免费电子书

学习

Android

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1: Android

Android Gradle`android-gradle` 。

Genymotion 。 RAM。

	API		
1.0	1	`BASE`	2008-09-23
1.1	2	`BASE_1_1`	2009-02-09
1.5	3	`CUPCAKE`	2009-04-27
1.6	4	`DONUT`	2009-09-15
2.0		`ECLAIR`	2009-10-26
2.0.1	6	`ECLAIR_0_1`	2009-12-03
2.1.x	7	`ECLAIR_MR1`	2010-01-12
2.2.x	8	`FROYO`	2010-05-20
2.3	9	`GINGERBREAD`	2010-12-06
2.3.3	10	`GINGERBREAD_MR1`	2011-02-09
3.0.x	11	`HONEYCOMB`	2011-02-22
3.1.X	12	`HONEYCOMB_MR1`	2011-05-10
3.2.x	13	`HONEYCOMB_MR2`	2011-07-15
4	14	`ICE_CREAM_SANDWICH`	2011-10-18
4.0.3	15	`ICE_CREAM_SANDWICH_MR1`	2011-12-16
4.1	16	`JELLY_BEAN`	2012-07-09
4.2	17	`JELLY_BEAN_MR1`	20121113
4.3	18	`JELLY_BEAN_MR2`	2013724
4.4	19	`KITKAT`	20131031
4.4W	20	`KITKAT_WATCH`	2014-06-25
5	21	`LOLLIPOP`	20141112

	API		
5.1	22	LOLLIPOP_MR1	201539
6	23	M	2015105
7	24	N	2016822
7.1	25	N_MR1 N_MR1MR1	2016104
8	26	O 4	2017724

Examples

Android Studio

Android StudioAndroidIDEGoogle。 Android StudioAndroid SDK Manager Android SDK。

Android StudioAndroid SDK

1. Android Studio 。
2. Android StudioAndroid SDKSDKSDK。 。

   SDK

Android Studio 2.2OpenJDKAndroid StudioJDK Java。 Oracle JDK。 SDK

1. Android Studio“ **”>“** ”。
2. **SDK LocationJDK Use embedded JDK**。
3. 。

Android Studio

Android Studio“ **”**

- studio.vmoptions StudioJavaJVM。 Linux*studio64.vmoptions* Android Studio。
- idea.properties Android Studio。

/

。 File->Settings->Editor->Colors & Fonts->。 http://color-themes.com/。 .jar.zipFile -> Import Settings...。

Android Studio“”。 Android Studio。

shelllocal.propertiesAndroid Studio。 Android Studiosdk.dir=SDK。

shell。 `./gradlew aR`Enter。 `aRassembleRelease`。 APK`ProjectName/ModuleName/build/outputs/apk ModuleName-release.apk` 。

Android Studio

Android Studio 。 Android

Android Studio 2.2。

- “ `Start a New Android Studio Project` ”。
- `New Project File` → `New Project` 。

1. - 。

   `Hello World` 。 `AndroidManifest.xml`。

2. - 。

   `stackoverflow.com` 。

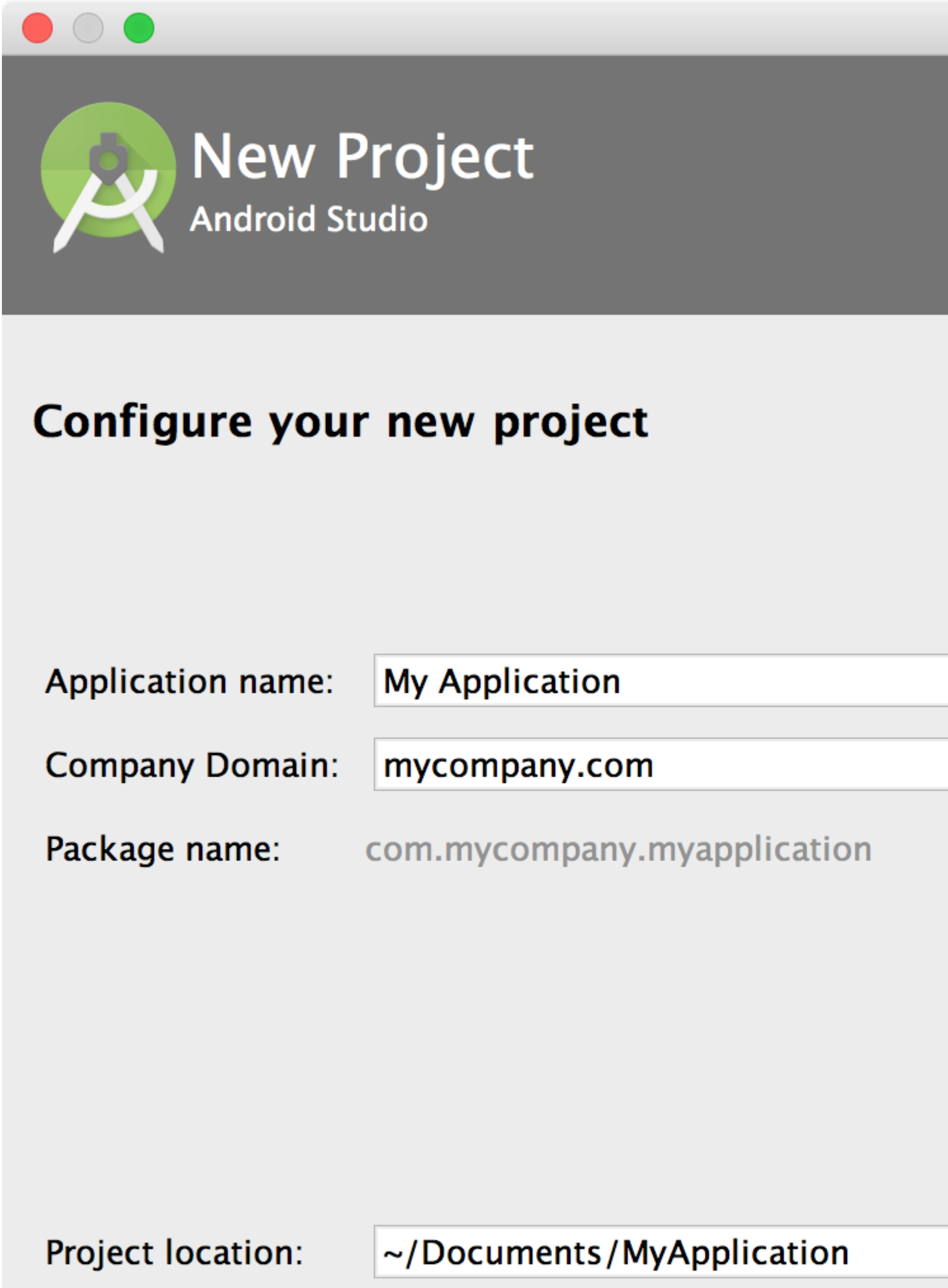
3. `applicationId` - 。

   DNS 。 。 [。] 。

   `com.stackoverflow.android.helloworldcom.stackoverflow.helloworld` 。 gradle*applicationId*。

   Google Play“com.example”。 Google Play**applicationId** 。

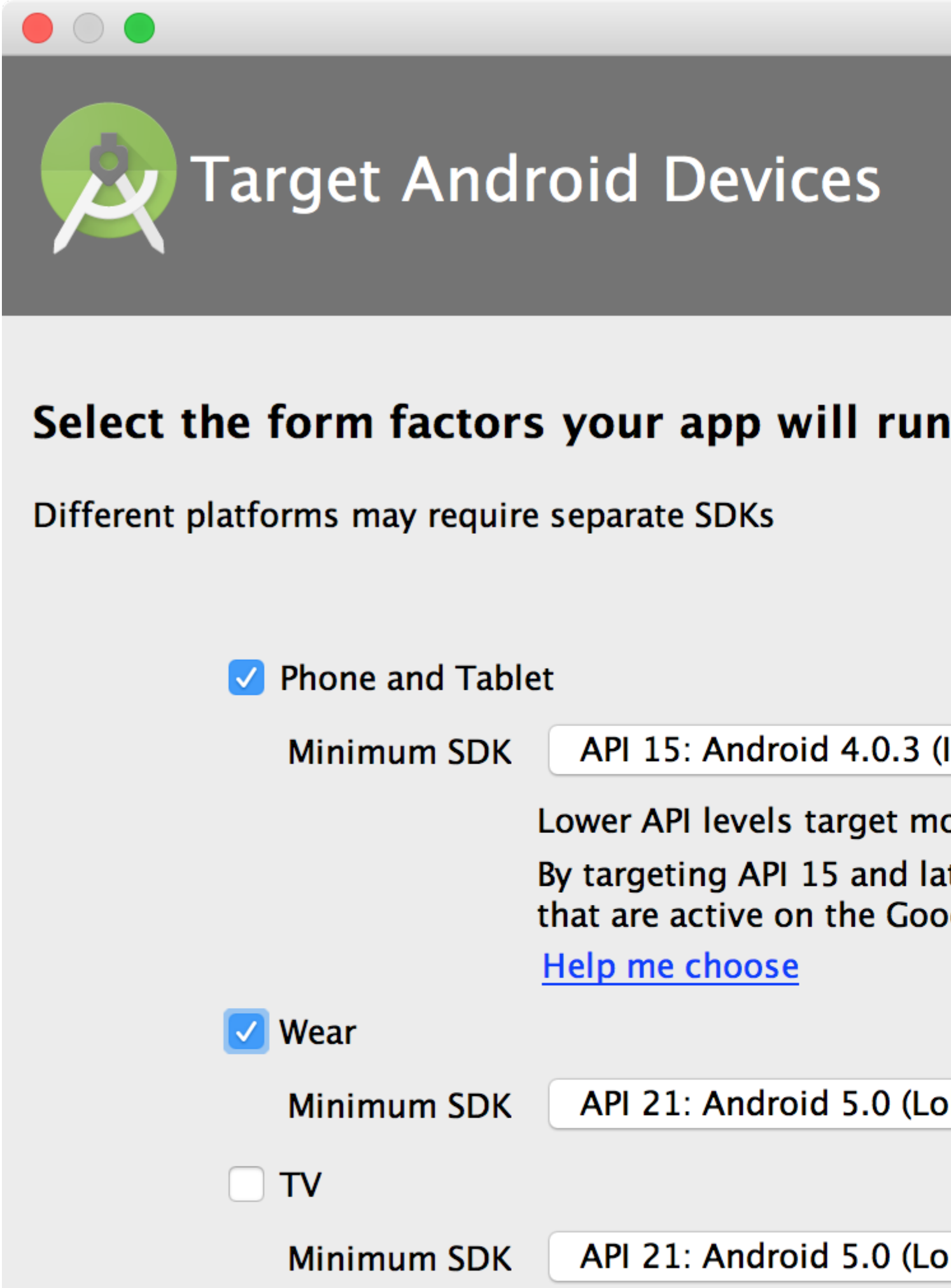
4. - 。


New Project
Android Studio
Configure your new project
Application name:
My Application
Company Domain:
mycompany.com
Package name:
com.mycompany.myapplication
Project location:
~/Documents/MyApplication

Android“”。

AndroidAndroid2。APIAndroid。API。 。

Android SDK 。


Target Android Devices
Select the form factors your app will run
Different platforms may require separate SDKs
Phone and Tablet
Minimum SDK
API 15: Android 4.0.3 (I
Lower API levels target mo
By targeting API 15 and lat
that are active on the Goo
Help me choose
Wear
Minimum SDK
API 21: Android 5.0 (Lo
TV
Minimum SDK
API 21: Android 5.0 (Lo
Android Auto

Android StudioSDK。

API。

Minimum SDK Dashboards Google Play。

AndroidDashboards 。

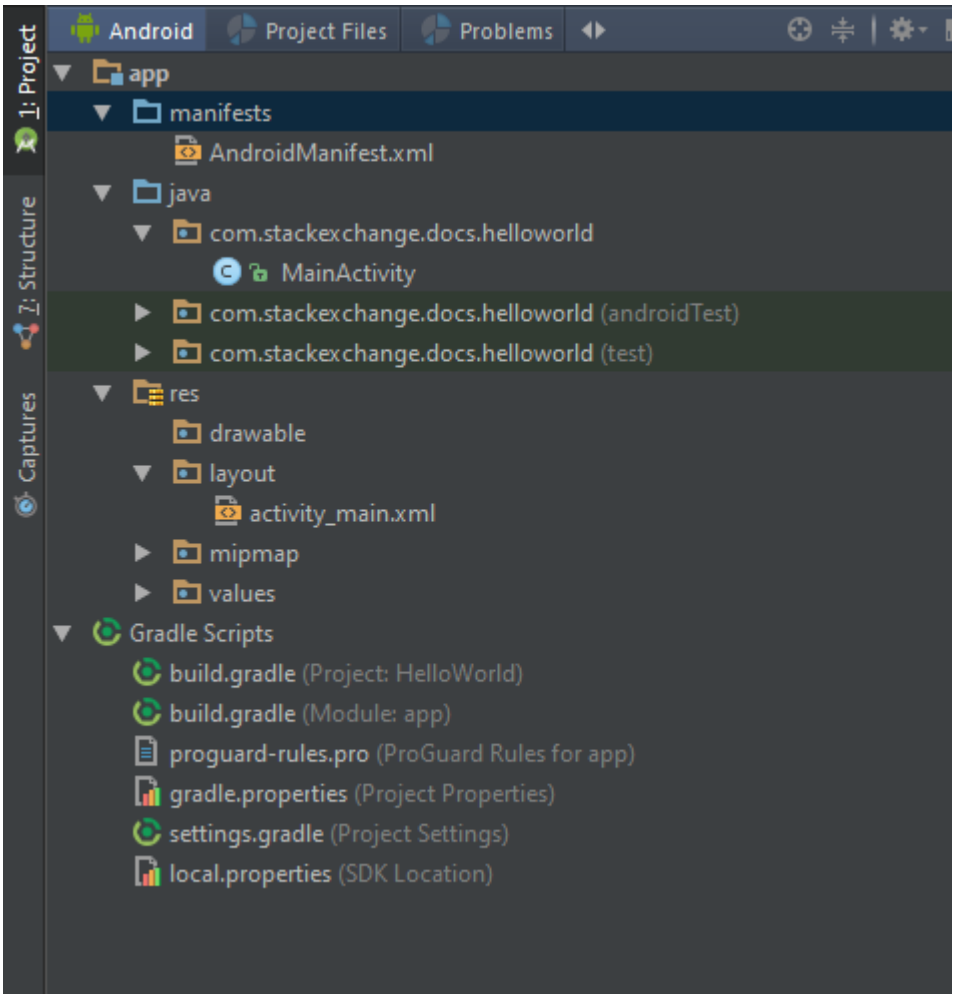
◦ Android `Activity`◦ ◦ `Empty Activity`next◦

◦ `Activityactivity_`◦ Android Studio`MainActivityactivity_main`◦ `Finish` ◦

Android Studio。

Android。

Android StudioAndroid 。



`AndroidManifest.xml` ◦ AndroidAndroid◦ ◦

`<uses-permission><uses-permission>` ◦ ◦ ◦ Androidandroid.Manifest.permission◦ ◦

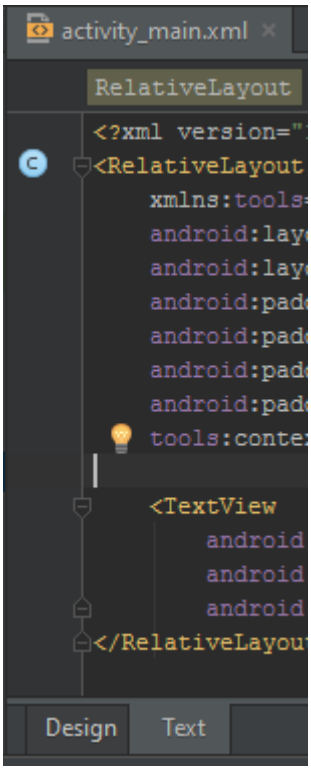
```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.stackoverflow.helloworld">

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:supportsRtl="true"
        android:theme="@style/AppTheme">
        <activity android:name=".MainActivity">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
    </application>
</manifest>
```

`app/src/main/res/layout/activity_main.xml` ◦ MainActivity◦ ◦ ◦

Android Studio“”xml




```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    tools:context="com.stackexchange.docs.helloworld.MainActivity">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hello World!" />
</RelativeLayout>
```

`TextViewandroid:text`“Hello World”。 。

。

`MainActivity`。 `MainActivity`Java。

```
public class MainActivity extends AppCompatActivity {

    // The onCreate method is called when an Activity starts
    // This is where we will set up our layout
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);

        // setContentView sets the Activity's layout to a specified XML layout
        // In our case we are using the activity_main layout
        setContentView(R.layout.activity_main);
```

```
    }
}
```

Android`HelloWorld MainActivity`。

`app/build.gradle`。
Android Studio**Gradle**Android。

```
apply plugin: 'com.android.application'

android {
signingConfigs {
         applicationName {
             keyAlias 'applicationName'
             keyPassword 'password'
             storeFile file('../key/applicationName.jks')
             storePassword 'anotherPassword'
         }
     }
    compileSdkVersion 26
    buildToolsVersion "26.0.0"

    defaultConfig {
        applicationId "com.stackexchange.docs.helloworld"
        minSdkVersion 16
        targetSdkVersion 26
        versionCode 1
        versionName "1.0"
        signingConfig signingConfigs.applicationName
    }
    buildTypes {
        release {
            minifyEnabled false
            proguardFiles getDefaultProguardFile('proguard-android.txt'), 'proguard-rules.pro'
        }
    }
}

dependencies {
    compile fileTree(dir: 'libs', include: ['*.jar'])
    testCompile 'junit:junit:4.12'
    compile 'com.android.support:appcompat-v7:26.0.0'
}
```

。 。

- buildToolsVersion 26.0.0
- com.android.support:appcompat-v726.0.02017 7
- 11.0.42017

compileSdkVersion

`compileSdkVersion`*Gradle*Android SDK。 Android SDKAPI。

`compileSdkVersion`。 `compileSdkVersion`/`compileSdkVersion`APK。

SDK。APIAPI。

minSdkVersion

`compileSdkVersion`API`minSdkVersion`。`minSdkVersion`Google Play。

lint`minSdkVersion`APIAPI。API。

targetSdkVersion

`targetSdkVersion`Android`targetSdkVersion`。API。SDK。`targetSdkVersion`。

targetSDKVersionAndroid。targetSDKVersion23API 23+。TargetSDKVersion AndroidAndroid。

Gradle

-
- androidGradle
- build.gradleDSL

HelloWorld。AndroidAndroid StudioAVD ManagerUSBAndroid。

Android

AndroidAndroid Studio`Developer Options``USB Debugging`。

`Settings > Developer options > USB debugging`

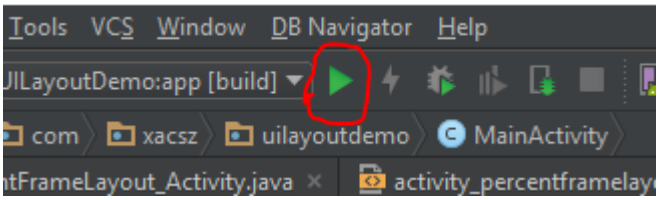
“`Developer Options`”“`About Phone`“`Build Number`。`Developer Options`。

`Settings > About phone > Build number`

`build.gradle`。

Android Studio

Android Studio`Run`。Android AVDAndroid “`OK`。



Android 4.4KitKatUSB。“`OK`。

Android。

APK

。 。 JDKAndroid SDK。 。 APKGoogle Play。

Android Studio

GradleAPK `<Your Project Location>/app/build/outputs/apk/app-debug.apk`

IntelliJ

StudioIntelliJIntelliJ。

```
out/production/...
```

1.0

Android Eclipse。 apkEclipse

```
bin/...
```

IDEAndroid

Hello World Android。

- Oracle JDK 1.7
- Android SDK

Linux。 。

Android SDK

SDK

1. SDK。 Readme.txt`android update sdk --no-ui` ;30 GB。 SDK`android sdk`。
2. JDKSDKPATH。 。
    - JDK / bin
    - SDK /
    - SDK /
    - SDK / build-tools / LATEST *1*
3. Android。 AVD `android avd` 。 ; 。
4. ```
   emulator -avd DEVICE
   ```
   ```

5. ◦

   ◦

---

6. ◦

7. ```
   mkdir --parents src/dom/domain
   touch src/dom/domain/SayingHello.java
   ```

   ```
   package dom.domain;
   import android.widget.TextView;

   public final class SayingHello extends android.app.Activity
   {
       protected @Override void onCreate( final android.os.Bundle activityState )
       {
           super.onCreate( activityState );
           final TextView textV = new TextView( SayingHello.this );
           textV.setText( "Hello world" );
           setContentView( textV );
       }
   }
   ```

8. ```
   touch AndroidManifest.xml
   ```

   ```
   <?xml version='1.0'?>
   <manifest xmlns:a='http://schemas.android.com/apk/res/android'
    package='dom.domain' a:versionCode='0' a:versionName='0'>
       <application a:label='Saying hello'>
           <activity a:name='dom.domain.SayingHello'>
                <intent-filter>
                   <category a:name='android.intent.category.LAUNCHER'/>
                   <action a:name='android.intent.action.MAIN'/>
                   </intent-filter>
               </activity>
           </application>
       </manifest>
   ```

9. ```
   mkdir res
   ```

   ◦

---

10. ◦ **SDKAPI** “android-23”

    ```
    aapt package -f \
      -I SDK/platforms/android-API/android.jar \
      -J src -m \
      -M AndroidManifest.xml -S res -v
    ```

    ◦ res /◦
    ```

11. Java.java→.class

```
javac \
  -bootclasspath SDK/platforms/android-API/android.jar \
  -classpath src -source 1.7 -target 1.7 \
  src/dom/domain/*.java
```

12. JavaAndroid.class→.dex

    Jill.class→.jayce

```
java -jar SDK/build-tools/LATEST/jill.jar \
  --output classes.jayce src
```

    .jayce→.dex

```
java -jar SDK/build-tools/LATEST/jack.jar \
  --import classes.jayce --output-dex .
```

    Android“Dalvik”“dex”。

    Jack1112;Java.java→.dex。 `javac`。 。

13.

```
aapt package -f \
  -F app.apkPart \
  -I SDK/platforms/android-API/android.jar \
  -M AndroidManifest.xml -S res -v
```

    APKAndroid。

14. `ApkBuilder`APK

```
java -classpath SDK/tools/lib/sdklib.jar \
  com.android.sdklib.build.ApkBuilderMain \
  app.apkUnalign \
  -d -f classes.dex -v -z app.apkPart
```

    “。 --help。 ”`--helpArrayIndexOutOfBoundsException`

```
java -classpath SDK/tools/lib/sdklib.jar \
  com.android.sdklib.build.ApkBuilderMain
```

    CLI `ApkBuilderMain` Java API `ApkBuilder`。 。

15. APK

```
zipalign -f -v 4 app.apkUnalign app.apk
```

16.

Android

```
adb install -r app.apk
```

17.

```
adb shell am start -n dom.domain/.SayingHello
```

。

。Android。

。“hello world”。1013res /。

。

18.

```
mkdir res/values
touch res/values/values.xml
```

```
<?xml version='1.0'?>
<resources>
    <string name='appLabel'>Saying hello</string>
</resources>
```

19. XML。

```
<!-- <application a:label='Saying hello'> -->
     <application a:label='@string/appLabel'>
```

20. Java。

```
// v.setText( "Hello world" );
   v.setText( "This app is called "
     + getResources().getString( R.string.appLabel ));
```

21. 10-17。

“Saying hello”。

```
adb uninstall dom.domain
```

- -
- -

AndroidJava。Android SDKAPKAndroid。APK。

VM。 Android。 。 LinuxIDSD。

Android。 Android。

1. UI。 Android。 。 UX。
2. 。 UI。 Android。
3. 。 SQLiteWebApp。 。 Android。 。
4. 。 UI。 。

Android。

Android。 。 Android`main()`。

Android。 。

`android.content.Context`Android。 Context。

。 。 Android。

。 。 Android。

。 UI - 。

。

AVDAndroid

TL; DR。

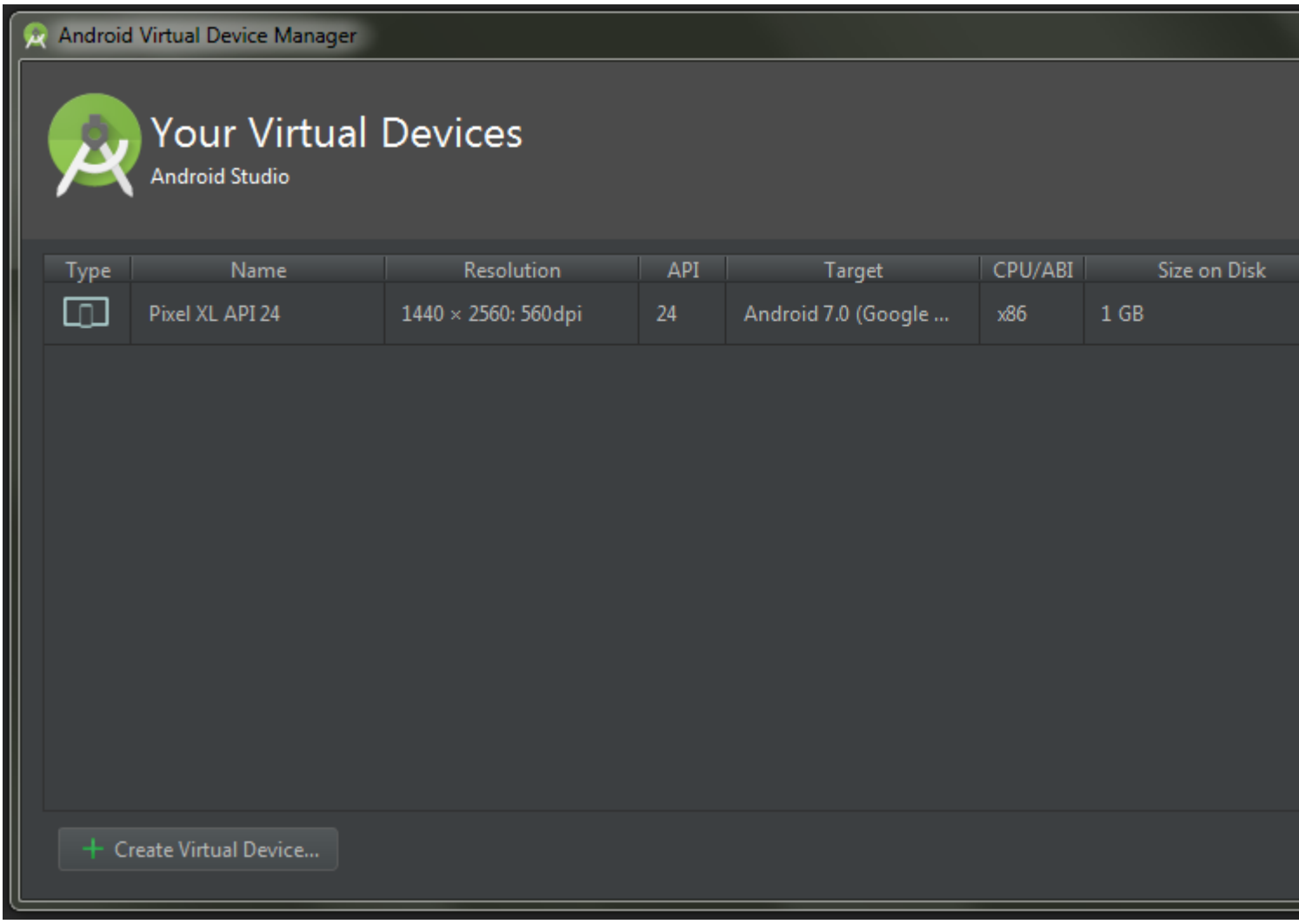
Android

AndroidAVD AndroidAndroidAndroid WearAndroid TV。 AVD ManagerAVD。

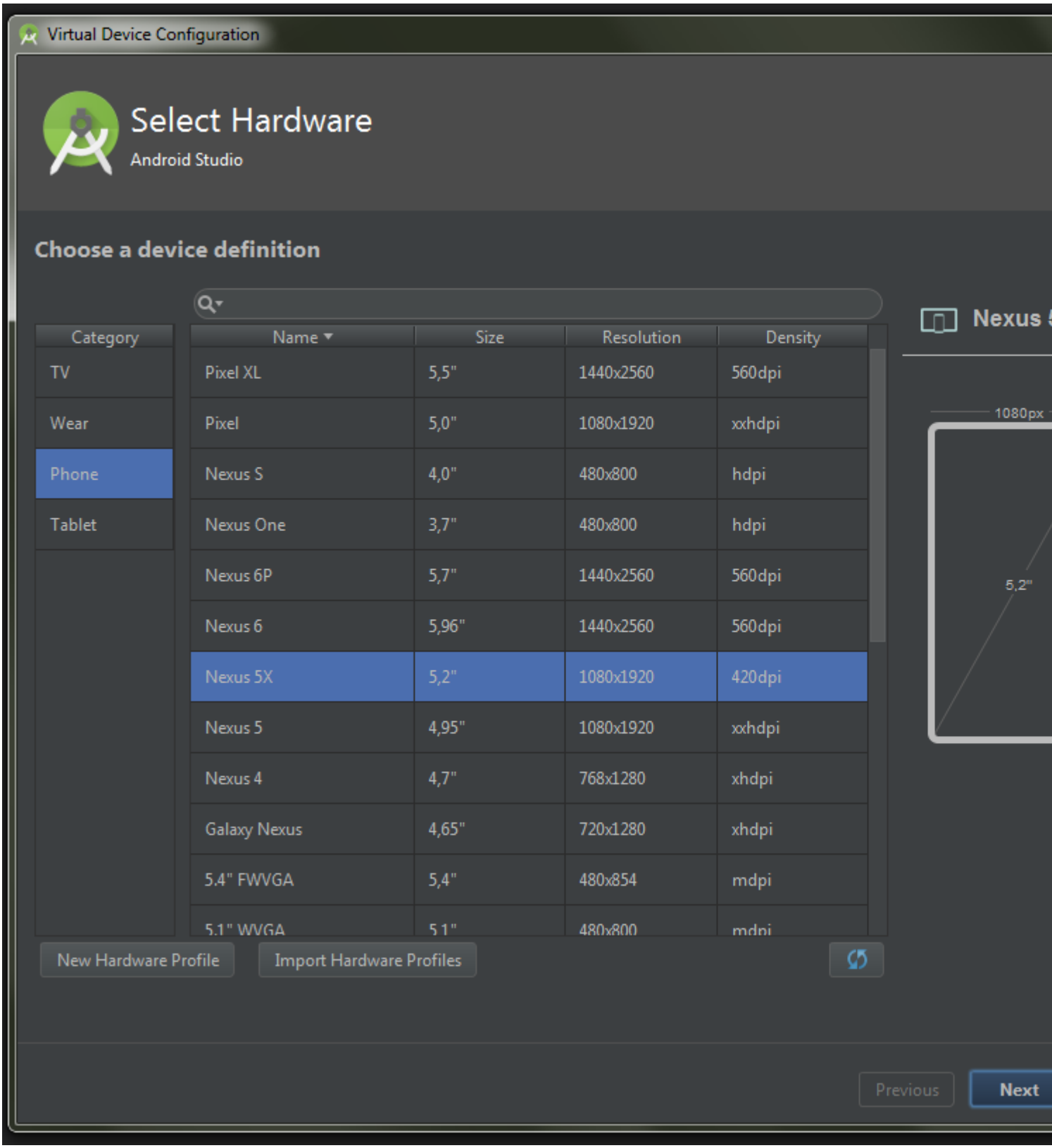
AVD

1.AVD

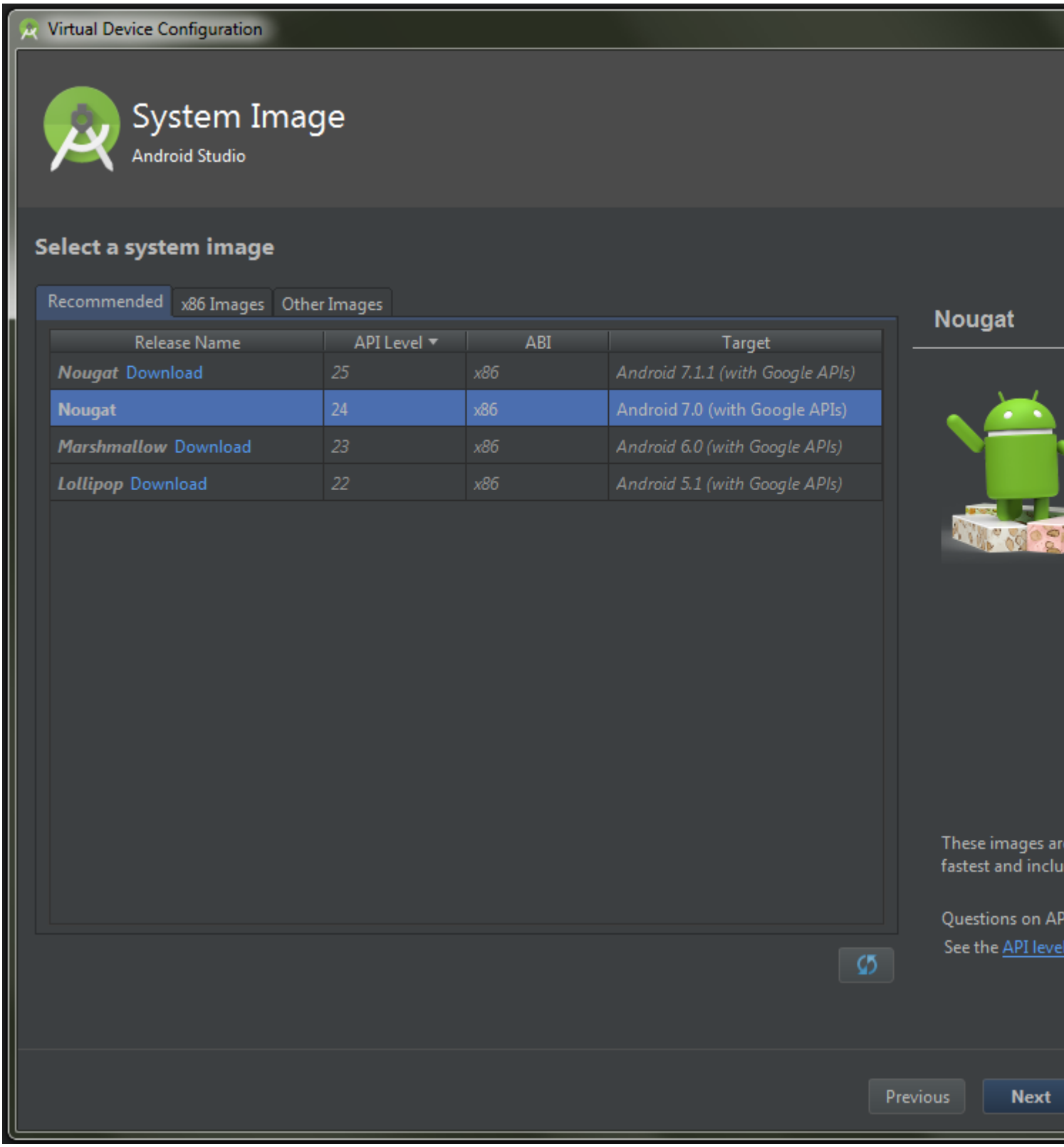
2.



3.`+ Create Virtual Device...`◦


Virtual Device Configuration
Select Hardware
Android Studio
Choose a device definition
Category
TV
Wear
Phone
Tablet
Name
Size
Resolution
Density
Pixel XL 5,5" 1440x2560 560dpi
Pixel 5,0" 1080x1920 xxhdpi
Nexus S 4,0" 480x800 hdpi
Nexus One 3,7" 480x800 hdpi
Nexus 6P 5,7" 1440x2560 560dpi
Nexus 6 5,96" 1440x2560 560dpi
Nexus 5X 5,2" 1080x1920 420dpi
Nexus 5 4,95" 1080x1920 xxhdpi
Nexus 4 4,7" 768x1280 xhdpi
Galaxy Nexus 4,65" 720x1280 xhdpi
5.4" FWVGA 5,4" 480x854 mdpi
5.1" WVGA 5.1" 480x800 mdpi
1080px
5,2"
New Hardware Profile
Import Hardware Profiles
Previous
Next

4.“ `Next`



5.Android。“Download。“Next。

6. “ `Finish` 。

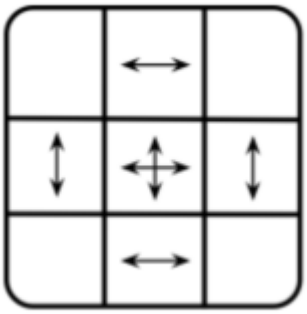
7. AVD。

Type	Name	Resolution	API	Target	CPU/ABI	Size on Disk
	Nexus 5X API 24	1080 × 1920: 420dpi	24	Android 7.0 (Google ...	x86	650 MB

Android https://riptutorial.com/zh-CN/android/topic/85/android

2: 9-Patch Images

9Android/。 3x3。 。



Nine Patch9-Patch。 4。 。 。

`.9.png`。

。 。

。 。

。

Google。

Android SDK `android-sdk\tools\lib\draw9patch.jar`

Examples

。

。

Toast。

。

Nine PatchSpinner ◦

3◦

◦ drawableSpinner◦

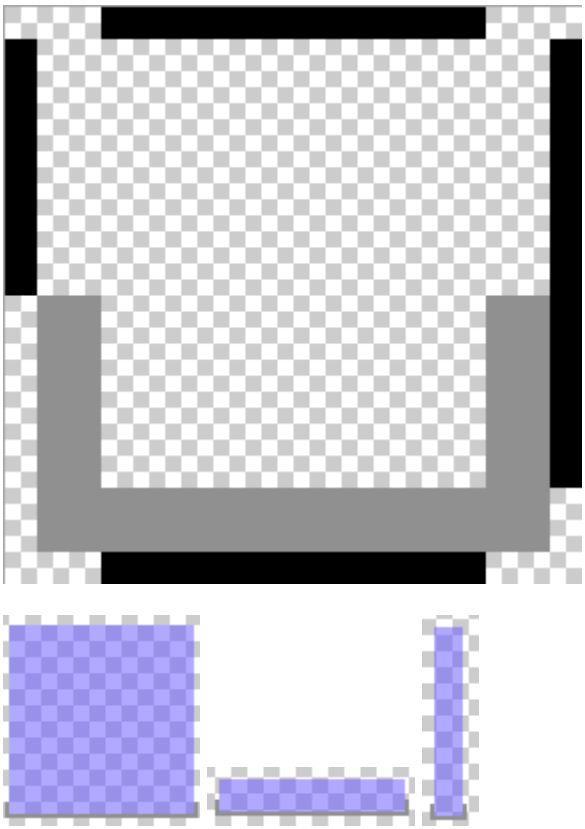
◦ Spinner◦ ◦

Nine Patch

Nine Patch

◦ ◦

9 EditText◦ ◦



9-Patch Images https://riptutorial.com/zh-CN/android/topic/461/9-patch-images

3: ACRA

- = “ACRAHandler”
- ACRA.initthisconfig;
- ACRAHandlerApplication {

@ReportCrashes	ACRA
formUri	

- ACRAGoogle https //github.com/ACRA/acra/wiki/Backends

Examples

ACRAHandler

```
@ReportsCrashes(

        formUri = "https://backend-of-your-choice.com/",//Non-password protected.
        customReportContent = { /* */ReportField.APP_VERSION_NAME,
ReportField.PACKAGE_NAME,ReportField.ANDROID_VERSION,
ReportField.PHONE_MODEL,ReportField.LOGCAT },
        mode = ReportingInteractionMode.TOAST,
        resToastText = R.string.crash

)
public class ACRAHandler extends Application {
    @Override
    protected void attachBaseContext(Context base) {
        super.attachBaseContext(base);

        final ACRAConfiguration config = new ConfigurationBuilder(this)

                .build();

        // Initialise ACRA
        ACRA.init(this, config);


    }

}
```

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    <!-- etc -->

>
```

```
    <!-- Internet is required. READ_LOGS are to ensure that the Logcat is transmitted-->
    <uses-permission android:name="android.permission.INTERNET"/>
    <uses-permission android:name="android.permission.READ_LOGS"/>

    <application
        android:allowBackup="true"
        android:name=".ACRAHandler"<!-- Activates ACRA on startup -->
        android:icon="@drawable/ic_launcher"
        android:label="@string/app_name"
        android:theme="@style/AppTheme" >



        <!-- Activities -->
    </application>

</manifest>
```

Maven

```
<dependency>
    <groupId>ch.acra</groupId>
    <artifactId>acra</artifactId>
    <version>4.9.2</version>
    <type>aar</type>
</dependency>
```

```
compile 'ch.acra:acra:4.9.2'
```

ACRA https://riptutorial.com/zh-CN/android/topic/1324/acra

4: adb shell

`adb shell`Linux shell。 `adb`Android。

ADBAndroid Debug Bridge`adb shell`。

- adb shell [-e escape] [-n] [-Tt] [-x] [command]

-e	“”:''
-n	
-T	PTY
-t	PTY
-X	stdout / stderr

Examples

ADBAndroid

6

SDK 23+

```
adb shell "input keyboard text 'Paste text on Android Device'"
```

`adb`

```
input text 'Paste text on Android Device'
```

6

SDK 23

```
adb shell "input keyboard text 'Paste%stext%son%sAndroid%sDevice'"
```

s。

```
adb shell input keyevent 26
```

```
adb shell input keyevent POWER
```

`keyevent`

```
adb shell input keyevent CAMERA
```

```
adb shell input tap Xpoint Ypoint
```

```
adb shell input swipe Xpoint1 Ypoint1 Xpoint2 Ypoint2 [DURATION*]
```

* DURATION= 300ms。

XY。

ADBshell

Ubuntu。 / 。

./script.sh

Script.sh

```
for (( c=1; c<=5; c++ ))
   do
      adb shell input tap X Y
      echo "Clicked $c times"
      sleep 5s
   done
```

- ADB Shell
- https://developer.android.com/reference/android/view/KeyEvent.html#KEYCODE_POWER
  。

<FILTER>。

```
adb shell pm list packages [options] <FILTER>

All <FILTER>

adb shell pm list packages
```

-f。

-i。

-u。

-u。

-d。

-e。

-s。

-3。

--user <USER_ID>。

API 23+

。

- `adb shell pm grant <sample.package.id> android.permission.<PERMISSION_NAME>`
- `adb shell pm revoke <sample.package.id> android.permission.<PERMISSION_NAME>`
- **-g**

  `adb install -g /path/to/sample_package.apk`

-
-
- Android API 23+
- ..

```
adb shell dumpsys package <your.package.id>
```

4.4

Android 4.4API19

```
adb shell screenrecord [options] <filename>
adb shell screenrecord /sdcard/demo.mp4
```

Ctrl-C

```
adb pull /sdcard/demo.mp4
```

Ctrl-C--time-limit。

```
adb shell screenrecord --size <WIDTHxHEIGHT>
```

1280x720。1280x720。AVC。

```
adb shell screenrecord --bit-rate <RATE>
```

。4Mbps。。5Mbps

```
adb shell screenrecord --bit-rate 5000000 /sdcard/demo.mp4
```

```
adb shell screenrecord --time-limit <TIME>
```

。1803。

```
adb shell screenrecord --rotate
```

90。。

```
adb shell screenrecord --verbose
```

。。

。

4.4

4.4Android

screenrecordshellAndroid 4.4API19。MPEG-4。

chmod

root *su*

```
adb shell su -c "chmod <numeric-permisson> <file>"
```

。

```
adb shell su -c "chmod 777 <file-path>"
```

```
adb shell su -c "chmod 000 <file-path>"
```

。

1 - 2 - 3 - 。

```
--- :   binary value:   000,  octal value: 0 (none)
--x :   binary value:   001,  octal value: 1 (execute)
-w- :   binary value:   010,  octal value: 2 (write)
-wx :   binary value:   011,  octal value: 3 (write, execute)
r-- :   binary value:   100,  octal value: 4 (read)
r-x :   binary value:   101,  octal value: 5 (read, execute)
rw- :   binary value:   110,  octal value: 6 (read, write)
rwx :   binary value:   111,  octal value: 7 (read, write, execute)
```

adb/

6

SET`MMDDhhmm[[CC]YY][.ss]` 2

71710:10

```
adb shell 'date 07171010.00'
```

1。
`TIME_SET`

```
adb shell 'date 07171010.00 ; am broadcast -a android.intent.action.TIME_SET'
```

2Android

Linux

```
adb shell date `date +%m%d%H%M%G.%S`
```

WindowsPowerShell

```
$currentDate = Get-Date -Format "MMddHHmmyyyy.ss" # Android's preferred format
adb shell "date $currentDate"
```

```
adb shell 'date `date +%m%d%H%M%G.%S` ; am broadcast -a android.intent.action.TIME_SET'
```

6

SET'YYYYMMDD.HHmmss'

```
adb shell 'date -s 20160117.095930'
```

AndroidLinux

```
adb shell date -s `date +%G%m%d.%H%M%S`
```

```
adb shell am start -n com.android.settings/.DevelopmentSettings
```

/“ `Developer Options`。

“”

`BootListener`。

```
adb shell am broadcast -a android.intent.action.BOOT_COMPLETED -c android.intent.category.HOME
-n your.app/your.app.BootListener
```

`your.package/your.app.BootListener` 。

/

```
adb shell ls \$EXTERNAL_STORAGE
adb shell ls \$SECONDARY_STORAGE
```

```
adb shell echo \$EXTERNAL_STORAGE
adb shell echo \$SECONDARY_STORAGE
```

Android

Androidlogcat。

。

Logcat

```
03-10 11:41:40.010 1550-1627/? E/SomeProcess: ....
```

1550

shell。 root。

```
adb shell
```

shell

```
ps -x | grep 1550
```

```
kill -9 1550
```

adb shell https://riptutorial.com/zh-CN/android/topic/9408/adb-shell

5: ADBAndroid

ADBAndroid Debug BridgeAndroid。

adb shell

adb shell

- API 23+
- ADBAndroid
-
-
-
- adb/
- chmod
- “”
-
- /
- http://stackoverflow.com/documentation/android/9408/adb-shell/29140/adb-shell
- Android

Examples

adb

```
adb devices -l
```

```
List of devices attached
ZX1G425DC6             device usb:336592896X product:shamu model:Nexus_6 device:shamu
013e4e127e59a868       device usb:337641472X product:bullhead model:Nexus_5X device:bullhead
ZX1D229KCN             device usb:335592811X product:titan_retde model:XT1068
device:titan_umtsds
A50PL                  device usb:331592812X
```

- 。 emulator-。
- usb: USB。
- product:。 ArchosA50PL。
- model:。 product。
- device:。 。

```
adb shell getprop
```

/。

。

```
adb shell getprop ro.product.model
```

- `ro.product.model` Nexus 6P
- `ro.build.version.sdk` API23
- `ro.product.brand`

```
[dalvik.vm.dex2oat-Xms]: [64m]
[dalvik.vm.dex2oat-Xmx]: [512m]
[dalvik.vm.heapsize]: [384m]
[dalvik.vm.image-dex2oat-Xms]: [64m]
[dalvik.vm.image-dex2oat-Xmx]: [64m]
[dalvik.vm.isa.x86.variant]: [dalvik.vm.isa.x86.features=default]
[dalvik.vm.isa.x86_64.features]: [default]
[dalvik.vm.isa.x86_64.variant]: [x86_64]
[dalvik.vm.lockprof.threshold]: [500]
[dalvik.vm.stack-trace-file]: [/data/anr/traces.txt]
[debug.atrace.tags.enableflags]: [0]
[debug.force_rtl]: [0]
[dev.bootcomplete]: [1]
[gsm.current.phone-type]: [1]
[gsm.defaultpdpcontext.active]: [true]
[gsm.network.type]: [UMTS]
[gsm.nitz.time]: [1469106902492]
[gsm.operator.alpha]: [Android]
[gsm.operator.iso-country]: [us]
[gsm.operator.isroaming]: [false]
[gsm.operator.numeric]: [310260]
[gsm.sim.operator.alpha]: [Android]
[gsm.sim.operator.iso-country]: [us]
[gsm.sim.operator.numeric]: [310260]
[gsm.sim.state]: [READY]
[gsm.version.ril-impl]: [android reference-ril 1.0]
[init.svc.adbd]: [running]
[init.svc.bootanim]: [stopped]
[init.svc.console]: [running]
[init.svc.debuggerd]: [running]
[init.svc.debuggerd64]: [running]
[init.svc.drm]: [running]
[init.svc.fingerprintd]: [running]
[init.svc.gatekeeperd]: [running]
[init.svc.goldfish-logcat]: [stopped]
[init.svc.goldfish-setup]: [stopped]
[init.svc.healthd]: [running]
[init.svc.installd]: [running]
[init.svc.keystore]: [running]
[init.svc.lmkd]: [running]
[init.svc.logd]: [running]
[init.svc.logd-reinit]: [stopped]
[init.svc.media]: [running]
[init.svc.netd]: [running]
[init.svc.perfprofd]: [running]
[init.svc.qemu-props]: [stopped]
[init.svc.ril-daemon]: [running]
[init.svc.servicemanager]: [running]
[init.svc.surfaceflinger]: [running]
[init.svc.ueventd]: [running]
[init.svc.vold]: [running]
[init.svc.zygote]: [running]
[init.svc.zygote_secondary]: [running]
[net.bt.name]: [Android]
[net.change]: [net.dns2]
[net.dns1]: [10.0.2.3]
```

```
[net.dns2]: [10.0.2.4]
[net.eth0.dns1]: [10.0.2.3]
[net.eth0.dns2]: [10.0.2.4]
[net.eth0.gw]: [10.0.2.2]
[net.gprs.local-ip]: [10.0.2.15]
[net.hostname]: [android-5e1af924d72dc578]
[net.qtaguid_enabled]: [1]
[net.tcp.default_init_rwnd]: [60]
[persist.sys.dalvik.vm.lib.2]: [libart.so]
[persist.sys.profiler_ms]: [0]
[persist.sys.timezone]: [Europe/Vienna]
[persist.sys.usb.config]: [adb]
[qemu.gles]: [1]
[qemu.hw.mainkeys]: [0]
[qemu.sf.fake_camera]: [none]
[qemu.sf.lcd_density]: [560]
[rild.libargs]: [-d /dev/ttyS0]
[rild.libpath]: [/system/lib/libreference-ril.so]
[ro.allow.mock.location]: [0]
[ro.baseband]: [unknown]
[ro.board.platform]: []
[ro.boot.hardware]: [ranchu]
[ro.bootimage.build.date]: [Thu Jul 7 15:56:30 UTC 2016]
[ro.bootimage.build.date.utc]: [1467906990]
[ro.bootimage.build.fingerprint]:
[Android/sdk_google_phone_x86_64/generic_x86_64:6.0/MASTER/3038907:userdebug/test-keys]
[ro.bootloader]: [unknown]
[ro.bootmode]: [unknown]
[ro.build.characteristics]: [emulator]
[ro.build.date]: [Thu Jul  7 15:55:30 UTC 2016]
[ro.build.date.utc]: [1467906930]
[ro.build.description]: [sdk_google_phone_x86_64-userdebug 6.0 MASTER 3038907 test-keys]
[ro.build.display.id]: [sdk_google_phone_x86_64-userdebug 6.0 MASTER 3038907 test-keys]
[ro.build.fingerprint]:
[Android/sdk_google_phone_x86_64/generic_x86_64:6.0/MASTER/3038907:userdebug/test-keys]
[ro.build.flavor]: [sdk_google_phone_x86_64-userdebug]
[ro.build.host]: [vpak15.mtv.corp.google.com]
[ro.build.id]: [MASTER]
[ro.build.product]: [generic_x86_64]
[ro.build.tags]: [test-keys]
[ro.build.type]: [userdebug]
[ro.build.user]: [android-build]
[ro.build.version.all_codenames]: [REL]
[ro.build.version.base_os]: []
[ro.build.version.codename]: [REL]
[ro.build.version.incremental]: [3038907]
[ro.build.version.preview_sdk]: [0]
[ro.build.version.release]: [6.0]
[ro.build.version.sdk]: [23]
[ro.build.version.security_patch]: [2015-10-01]
[ro.com.google.locationfeatures]: [1]
[ro.config.alarm_alert]: [Alarm_Classic.ogg]
[ro.config.nocheckin]: [yes]
[ro.config.notification_sound]: [OnTheHunt.ogg]
[ro.crypto.state]: [unencrypted]
[ro.dalvik.vm.native.bridge]: [0]
[ro.debuggable]: [1]
[ro.hardware]: [ranchu]
[ro.hardware.audio.primary]: [goldfish]
[ro.kernel.android.checkjni]: [1]
[ro.kernel.android.qemud]: [1]
```

```
[ro.kernel.androidboot.hardware]: [ranchu]
[ro.kernel.clocksource]: [pit]
[ro.kernel.console]: [0]
[ro.kernel.ndns]: [2]
[ro.kernel.qemu]: [1]
[ro.kernel.qemu.gles]: [1]
[ro.opengles.version]: [131072]
[ro.product.board]: []
[ro.product.brand]: [Android]
[ro.product.cpu.abi]: [x86_64]
[ro.product.cpu.abilist]: [x86_64,x86]
[ro.product.cpu.abilist32]: [x86]
[ro.product.cpu.abilist64]: [x86_64]
[ro.product.device]: [generic_x86_64]
[ro.product.locale]: [en-US]
[ro.product.manufacturer]: [unknown]
[ro.product.model]: [Android SDK built for x86_64]
[ro.product.name]: [sdk_google_phone_x86_64]
[ro.radio.use-ppp]: [no]
[ro.revision]: [0]
[ro.runtime.firstboot]: [1469106908722]
[ro.secure]: [1]
[ro.serialno]: []
[ro.wifi.channels]: []
[ro.zygote]: [zygote64_32]
[selinux.reload_policy]: [1]
[service.bootanim.exit]: [1]
[status.battery.level]: [5]
[status.battery.level_raw]: [50]
[status.battery.level_scale]: [9]
[status.battery.state]: [Slow]
[sys.boot_completed]: [1]
[sys.sysctl.extra_free_kbytes]: [43200]
[sys.sysctl.tcp_def_init_rwnd]: [60]
[sys.usb.config]: [adb]
[sys.usb.state]: [adb]
[vold.has_adoptable]: [1]
[wlan.driver.status]: [unloaded]
[xmpp.auto-presence]: [true]
```

WiFiADB

ADBUSB。
TCP / IPWiFiADB。

root

1.
   - 。
2. **USB**。
3. **adb**

   USB`adb` TCP / IP5555

   - `adb tcpip <port>` TCP / IP。
   -

USB。

- `adb connect <ip address>:<port>` ;5555。

```
adb tcpip 5555
adb connect 192.168.0.101:5555
```

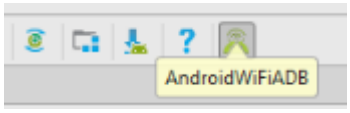
IP

- WiFiIP。
- ADBIPUSB
    1. USB
    2. `adb shell ifconfig`IP

USB

```
adb usb
```

Android StudioWiFiADB。>*ADB WiFi* Android Studio。。USB*AndroidWiFiADB*。。USB。



PlayADB WiFi。CyanogenMod ROM“”“”。`adb connect <ip address>:<port>adb`IP。

rootUSB

http //stackoverflow.com/questions/2604727/how-can-i-connect-to-android-with-adb-over-tcp/3623727#3623727。

```
su
setprop service.adb.tcp.port <a tcp port number>
stop adbd
start adbd
```

```
setprop service.adb.tcp.port 5555
```

```
adb connect <ip address>:<a tcp port number>
```

```
adb connect 192.168.1.2:5555
```

```
setprop service.adb.tcp.port -1
stop adbd
start adbd
```

`adb`5000 ms。WiFiAPK。

Gradle

```
android {
    adbOptions {
        timeOutInMs 10 * 1000
    }
}
```

```
adb pull <remote> <local>
```

```
adb pull /sdcard/ ~/
```

```
adb push <local> <remote>
```

```
adb push ~/image.jpg /sdcard/
```

```
sudo adb -d shell "run-as com.example.name cat /data/da/com.example.name
/databases/DATABASE_NAME  > /sdcard/file
```

```
adb reboot
```

bootloader

```
adb reboot bootloader
```

```
adb reboot recovery
```

/Wifi

```
adb shell svc wifi enable
```

```
adb shell svc wifi disable
```

```
 adb devices
```

```
List of devices attached
emulator-5554  device
PhoneRT45Fr54  offline
123.454.67.45  no device
```

-

-

Android

IP

Android

```
su
setprop service.adb.tcp.port 5555
stop adbd
start adbd
```

CMDADB

```
adb connect 192.168.0.101.5555
```

ADBUSB

```
setprop service.adb.tcp.port -1
stop adbd
start adbd
```

USBroot

USBWi-Fi。USB

```
adb tcpip 5555
adb connect 192.168.0.101:5555
```

192.168.0.101IP

/adb

```
adb kill-server
```

```
adb start-server
```

logcat

`logcat`adbshell。`adb`SDK platform-tools /

```
$ adb logcat
```

shell

```
$ adb shell
$ logcat
```

```
adb logcat -v threadtime
```

PIDTID。

Logcat

V - D - I - W - E - F - S -

logcat。

```
adb logcat *:D
```

Logcat

```
adb logcat <package-name>:<log level>
```

logcatgrep

```
adb logcat | grep <some text>
```

Windowsfindstr

```
adb logcat | findstr <some text>
```

[main | events | radio]`-blogcat`

```
adb logcat -b radio
```

```
adb logcat > logcat.txt
```

```
adb logcat | tee logcat.txt
```

```
adb logcat -c
```

ADB

1.

`-sadb。 -s。`

```
adb -s <device> <command>
```

```
adb devices

List of devices attached
emulator-5554       device
02157df2d1faeb33    device
```

```
adb -s emulator-5554 shell
```

2

```
adb devices -l

List of devices attached
06157df65c6b2633    device usb:1-3 product:zerofltexx model:SM_G920F device:zeroflte
LC62TB413962        device usb:1-5 product:a50mgp_dug_htc_emea model:HTC_Desire_820G_dual_sim
device:htc_a50mgp_dug

adb -s usb:1-3 shell
```

2.

-e

```
adb -e <command>
```

-dUSB

```
adb -d <command>
```

kitkat

1adb

`shell` adbshell。 `screencap` shell`/sdcard/screen.png`

```
adb shell screencap /sdcard/screen.png
```

pull

```
adb pull /sdcard/screen.png
```

2

```
adb shell screencap -p | perl -pe 's/\x0D\x0A/\x0A/g' > screen.png
```

```
adb shell screencap -p > screen.png
```

`-pscreencap`stdout。 PerlMarshmallow。 `screen.png`。 。

KitKatADB。 Kitkat

adb shell screenrecord /sdcard/example.mp4 /sdcard/example.mp4。

Ctrl + CLinuxz。 。 。

4Mbps180。

adb shell screenrecord –help 。 。

adb

```
adb shell pm clear <package>
```

。

- pm
- clear

adbBroadcastReceiver。

com.test.app.ACTION'foo'='bar'extra

```
adb shell am broadcast –a action com.test.app.ACTION ––es foo "bar"
```

--ez -
--ei -
--el - long
--ef -
--eu - uri
--eia - int''
--ela - ''
--efa - float''
--esa - ''

intentpackage / class –n–p。

```
–p com.test.app
```

com.test.app package SomeReceiver

```
–n com.test.app/.SomeReceiver
```

- “”
- adb“”

APK

```
adb install path/to/apk/file.apk
```

```
adb install -r path/to/apk/file.apk
```

```
adb uninstall application.package.name
```

```
adb shell am start -n adb shell am start <package>/<activity>
```

Waze

```
adb shell am start -n adb shell am start com.waze/com.waze.FreeMapAppActivity
```

adb backup◦

```
adb backup [-f <file>] [-apk|-noapk] [-obb|-noobb] [-shared|-noshared] [-all]
           [-system|nosystem] [<packages...>]
```

-f <filename> *backup.ab*

-apk|noapk/.apks *-noapk*

-obb|noobb/ *-noobb*

-shared|noshared/ SD *-noshared*

-all

-system|nosystem -

<packages>com.example.android.myapp-all

```
adb backup -apk -obb -shared -all -system -f fullbackup.ab
```

◦

```
adb restore backup.ab
```

LinuxADB

AndroidADBLinux◦

aptUbuntu / Debian

```
sudo apt-get update
sudo apt-get install adb
```

yumFedora / CentOS

```
sudo yum check-update
sudo yum install android-tools
```

portageGentoo

```
sudo emerge --ask dev-util/android-tools
```

zypperopenSUSE

```
sudo zypper refresh
sudo zypper install android-tools
```

pacmanArch

```
sudo pacman -Syyu
sudo pacman -S android-tools
```

Android 6.0

```
adb shell pm list permissions -g -d
```

//

AndroidManifest.xmlandroid:allowBackupfalse ◦

```
adb -s <device_id> backup -noapk <sample.package.id>
```

ddtar

```
dd if=backup.ab bs=1 skip=24 | python -c "import
zlib,sys;sys.stdout.write(zlib.decompress(sys.stdin.read()))" > backup.tar
```

```
tar -xvf backup.tar
```

◦

```
adb -s <serialNumber> shell dumpsys activity activities
```

`watch` unix

```
watch -n 5 "adb -s <serialNumber> shell dumpsys activity activities | sed -En -e '/Stack #/p'
-e '/Running activities/,/Run #0/p'"
```

debuggable apk

```
adb shell run-as <sample.package.id> ls /data/data/sample.package.id/cache
```

sdcard

```
#!/bin/sh
adb shell "run-as <sample.package.id> cat '/data/data/<sample.package.id>/$1' > '/sdcard/$1'"
adb pull "/sdcard/$1"
adb shell "rm '/sdcard/$1'"
```

```
./pull.sh cache/someCachedData.txt
```

ADB

```
sudo adb -d shell "run-as com.example.name cat /data/da/com.example.name
/databases/STUDENT_DATABASE  > /sdcard/file
```

ADBAndroid https://riptutorial.com/zh-CN/android/topic/1051/adb-android-

6: AdMob

- 'com.google.firebasefirebase-ads10.2.1'//
- `<uses-permission android:name="android.permission.INTERNET" />`
- AdRequest adRequest = new AdRequest.Builder。build; //
- AdView mAdView =AdViewfindViewByIdR.id.adView; //
- mAdView.loadAdadRequest; //

adUnitId= “@/ main_screen_ad”	ID。admobID。 *“ID。ID。* 。“ [1]

- Admob
- admob 。admob

Examples

AdmobAdmob。

Build.gradle

```
compile 'com.google.firebase:firebase-ads:10.2.1'
```

Internet。API 23+

```
<uses-permission android:name="android.permission.INTERNET" />
```

XML

XML

```
<com.google.android.gms.ads.AdView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:id="@+id/adView"
    ads:adSize="BANNER"
    ads:adUnitId="@string/main_screen_ad" />
```

Google AdMob 。

Java

。

```
// Alternative for faster initialization.
// MobileAds.initialize(getApplicationContext(), "AD_UNIT_ID");

AdView mAdView = (AdView) findViewById(R.id.adView);
// Add your device test ID if you are doing testing before releasing.
// The device test ID can be found in the admob stacktrace.
AdRequest adRequest = new AdRequest.Builder().build();
mAdView.loadAd(adRequest);
```

onResume() onPause()onDestroy()AdView

```
@Override
public void onPause() {
    if (mAdView != null) {
        mAdView.pause();
    }
    super.onPause();
}

@Override
public void onResume() {
    super.onResume();
    if (mAdView != null) {
        mAdView.resume();
    }
}

@Override
public void onDestroy() {
    if (mAdView != null) {
        mAdView.destroy();
    }
    super.onDestroy();
}
```

AdMob https://riptutorial.com/zh-CN/android/topic/5334/admob

7: AIDL

AIDLAndroid。

。 AIDL。 。

+。 。

.aidl

Examples

AIDL

ICalculator.aidl

```
// Declare any non-default types here with import statements

    interface ICalculator {
        int add(int x,int y);
        int sub(int x,int y);
    }
```

AidlService.java

```
public class AidlService extends Service {

    private static final String TAG = "AIDLServiceLogs";
    private static final String className = " AidlService";

    public AidlService() {
        Log.i(TAG, className+" Constructor");
    }

    @Override
    public IBinder onBind(Intent intent) {
        // TODO: Return the communication channel to the service.
        Log.i(TAG, className+" onBind");
        return iCalculator.asBinder();
    }

    @Override
    public void onCreate() {
        super.onCreate();
        Log.i(TAG, className+" onCreate");
    }

    @Override
    public void onDestroy() {
        super.onDestroy();
        Log.i(TAG, className+" onDestroy");
    }
```

```
    ICalculator.Stub iCalculator = new ICalculator.Stub() {
        @Override
        public int add(int x, int y) throws RemoteException {
            Log.i(TAG, className+" add Thread Name: "+Thread.currentThread().getName());
            int z = x+y;
            return z;
        }

        @Override
        public int sub(int x, int y) throws RemoteException {
            Log.i(TAG, className+" add Thread Name: "+Thread.currentThread().getName());
            int z = x-y;
            return z;
        }
    };

}
```

```
 // Return the stub as interface
ServiceConnection serviceConnection = new ServiceConnection() {
        @Override
        public void onServiceConnected(ComponentName name, IBinder service) {
            Log.i(TAG, className + " onServiceConnected");
            iCalculator = ICalculator.Stub.asInterface(service);
        }

        @Override
        public void onServiceDisconnected(ComponentName name) {

            unbindService(serviceConnection);
        }
    };
```

AIDL https://riptutorial.com/zh-CN/android/topic/9504/aidl

8: AlarmManager

Examples

1. 。 。

```
public class AlarmReceiver extends BroadcastReceiver
{
    @Override
    public void onReceive(Context context, Intent intent)
    {
        // Handle intent
        int reqCode = intent.getExtras().getInt("requestCode");
        ...
    }
}
```

2. AlarmManager。 1AlarmReceiver。

```
final int requestCode = 1337;
AlarmManager am = (AlarmManager) context.getSystemService(Context.ALARM_SERVICE);
Intent intent = new Intent(context, AlarmReceiver.class);
PendingIntent pendingIntent = PendingIntent.getBroadcast(context, requestCode, intent,
PendingIntent.FLAG_UPDATE_CURRENT);
am.set( AlarmManager.RTC_WAKEUP, System.currentTimeMillis() + 60000 , pendingIntent );
```

PendingIntentPendingIntent。

AlarmManager Intent

。 。

```
public static final int requestCode = 9999;
```

```
Intent intent  = new Intent(this, AlarmReceiver.class);
intent.setAction("SomeAction");
PendingIntent pendingIntent = PendingIntent.getBroadcast(this, requestCode, intent,
PendingIntent.FLAG_UPDATE_CURRENT);
AlarmManager alarmManager = (AlarmManager)getSystemService(Context.ALARM_SERVICE);
alarmManager.setExact(AlarmManager.RTC_WAKEUP, targetTimeInMillis, pendingIntent);
```

PendingIntentAlarmManager

```
Intent intent  = new Intent(this, AlarmReceiver.class);
intent.setAction("SomeAction");
PendingIntent pendingIntent = PendingIntent.getBroadcast(this, requestCode, intent,
PendingIntent.FLAG_NO_CREATE);
AlarmManager alarmManager = (AlarmManager)getSystemService(Context.ALARM_SERVICE);
if(pendingIntent != null) {
    alarmManager.cancel(pendingIntent);
}
```

Android

Android `AlarmManager` Android `PendingIntent`

```
public static void setExactAndAllowWhileIdle(AlarmManager alarmManager, int type, long
triggerAtMillis, PendingIntent operation) {
    if (android.os.Build.VERSION.SDK_INT >= android.os.Build.VERSION_CODES.M){
        alarmManager.setExactAndAllowWhileIdle(type, triggerAtMillis, operation);
    } else if (android.os.Build.VERSION.SDK_INT >= Build.VERSION_CODES.KITKAT){
        alarmManager.setExact(type, triggerAtMillis, operation);
    } else {
        alarmManager.set(type, triggerAtMillis, operation);
    }
}
```

API23 +AlarmManager

Android 6API23AlarmManagerDoze `setExactAndAllowWhileIdle()`

`Settings/General/Battery & power saving/Battery usage/Ignore optimizations`

...

```
String packageName = getPackageName();
PowerManager pm = (PowerManager) getSystemService(Context.POWER_SERVICE);
if (pm.isIgnoringBatteryOptimizations(packageName)) {
   // your app is ignoring Doze battery optimization
}
```

...

```
Intent intent = new Intent();
String packageName = getPackageName();
PowerManager pm = (PowerManager) getSystemService(Context.POWER_SERVICE);
intent.setAction(Settings.ACTION_REQUEST_IGNORE_BATTERY_OPTIMIZATIONS);
intent.setData(Uri.parse("package:" + packageName));
startActivity(intent);
```

AlarmManager https://riptutorial.com/zh-CN/android/topic/1361/alarmmanager

9: Android Java Native InterfaceJNI

JNI Java Native InterfaceAndroidNDKC ++。 Java < - > C ++。

Examples

JNI

Java Native Interface JNIJava。 JNIJNIJava。

`project/libs/<architecture>libjniexample.socom.example.jniexampleJNITest` Java。

JNITest

```
public native int testJNIfunction(int a, int b);
```

```
#include <jni.h>

JNIEXPORT jint JNICALL Java_com_example_jniexample_JNITest_testJNIfunction(JNIEnv *pEnv,
jobject thiz, jint a, jint b)
{
    return a + b;
}
```

`pEnv`JNIJNIJava。 `thiz`Java`jobject`。

Java`JNITest`

```
static{
    System.loadLibrary("jniexample");
}
```

`lib .so` 。

Java

```
JNITest test = new JNITest();
int c = test.testJNIfunction(3, 4);
```

Java

Java Native InterfaceJNIJava。

Java

```
package com.example.jniexample;
public class JNITest {
    public static int getAnswer(bool) {
```

```
        return 42;
    }
}
```

```
int getTheAnswer()
{
    // Get JNI environment
    JNIEnv *env = JniGetEnv();

    // Find the Java class - provide package ('.' replaced to '/') and class name
    jclass jniTestClass = env->FindClass("com/example/jniexample/JNITest");

    // Find the Java method - provide parameters inside () and return value (see table below
for an explanation of how to encode them)
    jmethodID getAnswerMethod = env->GetStaticMethodID(jniTestClass, "getAnswer", "(Z)I;");

    // Calling the method
    return (int)env->CallStaticObjectMethod(jniTestClass, getAnswerMethod, (jboolean)true);
}
```

JavaJNI

JNI	Java
ž	
C	
	INT
Ĵ	
F	
d	
L;	
[	[]

ZI - int。

JNI

C ++Java。

```
jstring getJavaStringFromCPPString(JNIEnv *global_env, const char* cstring) {

        jstring nullString = global_env->NewStringUTF(NULL);
```

```
        if (!cstring) {
            return nullString;
        }

        jclass strClass = global_env->FindClass("java/lang/String");
        jmethodID ctorID = global_env->GetMethodID(strClass, "<init>",
                "([BLjava/lang/String;)V");
        jstring encoding = global_env->NewStringUTF("UTF-8");

        jbyteArray bytes = global_env->NewByteArray(strlen(cstring));
        global_env->SetByteArrayRegion(bytes, 0, strlen(cstring), (jbyte*) cstring);
        jstring str = (jstring) global_env->NewObject(strClass, ctorID, bytes,
                encoding);

        global_env->DeleteLocalRef(strClass);
        global_env->DeleteLocalRef(encoding);
        global_env->DeleteLocalRef(bytes);

        return str;
    }
```

jbyteArraychar

```
char* as_unsigned_char_array(JNIEnv *env, jbyteArray array) {
    jsize length = env->GetArrayLength(array);
    jbyte* buffer = new jbyte[length + 1];

    env->GetByteArrayRegion(array, 0, length, buffer);
    buffer[length] = '\0';

    return (char*) buffer;
}
```

Android Java Native InterfaceJNI https://riptutorial.com/zh-CN/android/topic/8674/android-java-native-interface-jni-

10: Android NDK

Examples

Android

/ JNI / main.c

```
#include <stdio.h>
#include <unistd.h>

int main(void) {
  printf("Hello world!\n");
  return 0;
}
```

/ JNI / Android.mk

```
LOCAL_PATH := $(call my-dir)

include $(CLEAR_VARS)
LOCAL_MODULE    := hello_world
LOCAL_SRC_FILES := main.c
include $(BUILD_EXECUTABLE)
```

/ JNI / Application.mk

```
APP_ABI := all
APP_PLATFORM := android-21
```

5.0AndroidAPI 21`APP_PLATFORM`API`android-8`。 Android 5.0 PIEPIE。 PIEPIE。 AndroidAPI。

`APP_ABI`armeabi。

PIEPIEndk-r10e14。

```
cd project
ndk-build
```

`project/libs/<architecture>/hello_world`。 ADB pushchmod chmod 。

CPU`ro.product.cpu.abi`ro.product.cpu.abilist 。 `android.os.Build`ADB`getprop <name>`。

```
ndk-build clean
```

Android.mkmakefile

ndk-build NDK_PROJECT_PATH = PROJECT_PATH APP_BUILD_SCRIPT = MyAndroid.mk

ndk

Android.mk

```
LOCAL_LDLIBS := -llog
```

__android_log_print()

```
#include <android/log.h>
#define TAG "MY LOG"

__android_log_print(ANDROID_LOG_VERBOSE,    TAG, "The value of 1 + 1 is %d", 1 + 1)
__android_log_print(ANDROID_LOG_WARN,       TAG, "The value of 1 + 1 is %d", 1 + 1)
__android_log_print(ANDROID_LOG_DEBUG,      TAG, "The value of 1 + 1 is %d", 1 + 1)
__android_log_print(ANDROID_LOG_INFO,       TAG, "The value of 1 + 1 is %d", 1 + 1)
__android_log_print(ANDROID_LOG_ERROR,      TAG, "The value of 1 + 1 is %d", 1 + 1)
```

```
#define  LOGV(...)  __android_log_print(ANDROID_LOG_VERBOSE,    TAG, __VA_ARGS__)
#define  LOGW(...)  __android_log_print(ANDROID_LOG_WARN,       TAG, __VA_ARGS__)
#define  LOGD(...)  __android_log_print(ANDROID_LOG_DEBUG,      TAG, __VA_ARGS__)
#define  LOGI(...)  __android_log_print(ANDROID_LOG_INFO,       TAG, __VA_ARGS__)
#define  LOGE(...)  __android_log_print(ANDROID_LOG_ERROR,      TAG, __VA_ARGS__)
```

```
int x = 42;
LOGD("The value of x is %d", x);
```

Android NDK https://riptutorial.com/zh-CN/android/topic/492/android-ndk

11: Android Paypal

Paypal。 。

Examples

Androidpaypal

1Paypal Developer。

2

```
<uses-permission android:name="android.permission.INTERNET" />
<uses-permission android:name="android.permission.ACCESS_NETWORK_STATE" />
```

3 -

```
 <service
        android:name="com.paypal.android.sdk.payments.PayPalService"
        android:exported="false" />
    <activity android:name="com.paypal.android.sdk.payments.PaymentActivity" />
    <activity android:name="com.paypal.android.sdk.payments.LoginActivity" />
    <activity android:name="com.paypal.android.sdk.payments.PaymentMethodActivity" />
    <activity android:name="com.paypal.android.sdk.payments.PaymentConfirmActivity" />
    <activity android:name="com.paypal.android.sdk.payments.PayPalFuturePaymentActivity" />
    <activity android:name="com.paypal.android.sdk.payments.FuturePaymentConsentActivity" />
    <activity android:name="com.paypal.android.sdk.payments.FuturePaymentInfoActivity" />
    <activity
        android:name="io.card.payment.CardIOActivity"
        android:configChanges="keyboardHidden|orientation" />
    <activity android:name="io.card.payment.DataEntryActivity" />
```

4Activityapp -

```
//set the environment for production/sandbox/no netowrk
 private static final String CONFIG_ENVIRONMENT = PayPalConfiguration.ENVIRONMENT_PRODUCTION;
```

5PaypalID - CONFIG_CLIENT_ID =“ID”; 6onCreatePaypal - Intent intent = new Intentthis PayPalService.class; intent.putExtraPayPalService.EXTRA_PAYPAL_CONFIGURATIONconfig; startService;

7 -

```
PayPalPayment thingToBuy = new PayPalPayment(new BigDecimal(1),"USD", "androidhub4you.com",
                                PayPalPayment.PAYMENT_INTENT_SALE);
                            Intent intent = new Intent(MainActivity.this,
PaymentActivity.class);
                            intent.putExtra(PaymentActivity.EXTRA_PAYMENT, thingToBuy);

                            startActivityForResult(intent, REQUEST_PAYPAL_PAYMENT);
```

8onActivityResult -

```
 @Override
           protected void onActivityResult(int requestCode, int resultCode, Intent data) {
               if (requestCode == REQUEST_PAYPAL_PAYMENT) {
                   if (resultCode == Activity.RESULT_OK) {
                       PaymentConfirmation confirm = data
                               .getParcelableExtra(PaymentActivity.EXTRA_RESULT_CONFIRMATION);
                       if (confirm != null) {
                           try {
                           System.out.println("Responseeee"+confirm);
                               Log.i("paymentExample", confirm.toJSONObject().toString());

                               JSONObject jsonObj=new
JSONObject(confirm.toJSONObject().toString());

                               String
paymentId=jsonObj.getJSONObject("response").getString("id");
                               System.out.println("payment id:-==="+paymentId);
                               Toast.makeText(getApplicationContext(), paymentId,
Toast.LENGTH_LONG).show();
                           } catch (JSONException e) {
                               Log.e("paymentExample", "an extremely unlikely failure
occurred: ", e);
                           }
                       }
                   } else if (resultCode == Activity.RESULT_CANCELED) {
                       Log.i("paymentExample", "The user canceled.");
                   } else if (resultCode == PaymentActivity.RESULT_EXTRAS_INVALID) {
                       Log.i("paymentExample", "An invalid Payment was submitted. Please see
the docs.");
                   }
               }


         }
```

Android Paypal https://riptutorial.com/zh-CN/android/topic/5895/android-paypal

12: Android Places API

Examples

Place PickerPlaces APIUI。。

Place Picker UI。

```
private static int PLACE_PICKER_REQUEST = 1;

private TextView txtPlaceName;

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_place_picker_sample);

    txtPlaceName = (TextView) this.findViewById(R.id.txtPlaceName);
    Button btnSelectPlace = (Button) this.findViewById(R.id.btnSelectPlace);
    btnSelectPlace.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
            openPlacePickerView();
        }
    });

}

private void openPlacePickerView(){
    PlacePicker.IntentBuilder builder = new PlacePicker.IntentBuilder();
    try {
        startActivityForResult(builder.build(this), PLACE_PICKER_REQUEST);
    } catch (GooglePlayServicesRepairableException e) {
        e.printStackTrace();
    } catch (GooglePlayServicesNotAvailableException e) {
        e.printStackTrace();
    }
}

protected void onActivityResult(int requestCode, int resultCode, Intent data) {
    if (requestCode == PLACE_PICKER_REQUEST) {
        if (resultCode == RESULT_OK) {
            Place place = PlacePicker.getPlace(this, data);
            Log.i(LOG_TAG, String.format("Place Name : %s", place.getName()));
            Log.i(LOG_TAG, String.format("Place Address : %s", place.getAddress()));
            Log.i(LOG_TAG, String.format("Place Id : %s", place.getId()));

            txtPlaceName.setText(String.format("Place : %s - %s" , place.getName() ,
place.getAddress()));
        }
    }
}
```

Places API

Google Places API。

`PlaceDetectionApi.getCurrentPlace()。 PlaceLikelihoodBufferPlaceLikelihood。`

`PlaceLikelihood.getPlace()Place。`

`ACCESS_FINE_LOCATION`。

```
private static final int PERMISSION_REQUEST_TO_ACCESS_LOCATION = 1;

private TextView txtLocation;
private GoogleApiClient googleApiClient;

@Override
protected void onCreate(@Nullable Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_location);

    txtLocation = (TextView) this.findViewById(R.id.txtLocation);
    googleApiClient = new GoogleApiClient.Builder(this)
            .addApi(Places.GEO_DATA_API)
            .addApi(Places.PLACE_DETECTION_API)
            .enableAutoManage(this, this)
            .build();

    getCurrentLocation();
}

private void getCurrentLocation() {
    if (ActivityCompat.checkSelfPermission(this, Manifest.permission.ACCESS_FINE_LOCATION) !=
PackageManager.PERMISSION_GRANTED) {
        Log.e(LOG_TAG, "Permission is not granted");

        ActivityCompat.requestPermissions(this,new
String[]{Manifest.permission.ACCESS_FINE_LOCATION},PERMISSION_REQUEST_TO_ACCESS_LOCATION);
        return;
    }

    Log.i(LOG_TAG, "Permission is granted");

    PendingResult<PlaceLikelihoodBuffer> result =
Places.PlaceDetectionApi.getCurrentPlace(googleApiClient, null);
    result.setResultCallback(new ResultCallback<PlaceLikelihoodBuffer>() {
        @Override
        public void onResult(PlaceLikelihoodBuffer likelyPlaces) {
            Log.i(LOG_TAG, String.format("Result received : %d " , likelyPlaces.getCount() ));
            StringBuilder stringBuilder = new StringBuilder();

            for (PlaceLikelihood placeLikelihood : likelyPlaces) {
                stringBuilder.append(String.format("Place : '%s' %n",
                        placeLikelihood.getPlace().getName()));
            }
            likelyPlaces.release();
            txtLocation.setText(stringBuilder.toString());
        }
    });
}

@Override
public void onRequestPermissionsResult(int requestCode, String permissions[], int[]
```

```
grantResults) {
    switch (requestCode) {
        case PERMISSION_REQUEST_TO_ACCESS_LOCATION: {
            // If the request is cancelled, the result arrays are empty.
            if (grantResults.length > 0 && grantResults[0] ==
PackageManager.PERMISSION_GRANTED) {
                getCurrentLocation();
            } else {
                // Permission denied, boo!
                // Disable the functionality that depends on this permission.
            }
            return;
        }

        // Add further 'case' lines to check for other permissions this app might request.
    }
}

@Override
public void onConnectionFailed(@NonNull ConnectionResult connectionResult) {
    Log.e(LOG_TAG, "GoogleApiClient connection failed: " +
connectionResult.getErrorMessage());
}
```

Google Places API for Android。。

AutoCompleteActivity.java

```
private TextView txtSelectedPlaceName;

@Override
protected void onCreate(@Nullable Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_autocomplete);

    txtSelectedPlaceName = (TextView) this.findViewById(R.id.txtSelectedPlaceName);

    PlaceAutocompleteFragment autocompleteFragment = (PlaceAutocompleteFragment)
            getFragmentManager().findFragmentById(R.id.fragment_autocomplete);

    autocompleteFragment.setOnPlaceSelectedListener(new PlaceSelectionListener() {
        @Override
        public void onPlaceSelected(Place place) {
            Log.i(LOG_TAG, "Place: " + place.getName());
            txtSelectedPlaceName.setText(String.format("Selected places : %s  - %s" ,
place.getName(), place.getAddress()));
        }

        @Override
        public void onError(Status status) {
            Log.i(LOG_TAG, "An error occurred: " + status);
            Toast.makeText(AutoCompleteActivity.this, "Place cannot be selected!!",
Toast.LENGTH_SHORT).show();
        }
    });

}
```

}

activity_autocomplete.xml

```
<fragment
    android:id="@+id/fragment_autocomplete"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:name="com.google.android.gms.location.places.ui.PlaceAutocompleteFragment"
    />



<TextView
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:id="@+id/txtSelectedPlaceName"
    android:layout_margin="20dp"
    android:padding="15dp"
    android:hint="@string/txt_select_place_hint"
    android:textSize="@dimen/place_autocomplete_prediction_primary_text"/>
```

Google。

```
 public static final int PLACE_AUTOCOMPLETE_FROM_PLACE_REQUEST_CODE=1;
   public static final int PLACE_AUTOCOMPLETE_TO_PLACE_REQUEST_CODE=2;

fromPlaceEdit.setOnClickListener(new View.OnClickListener() {
                @Override
                public void onClick(View v) {

                    try {
                      //Do your stuff from place
                        startActivityForResult(intent,
PLACE_AUTOCOMPLETE_FROM_PLACE_REQUEST_CODE);

                    } catch (GooglePlayServicesRepairableException e) {
                        // TODO: Handle the error.
                    } catch (GooglePlayServicesNotAvailableException e) {
                        // TODO: Handle the error.
                    }
                }
            });
toPlaceEdit.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {

                try {
                   //Do your stuff to place
                    startActivityForResult(intent, PLACE_AUTOCOMPLETE_TO_PLACE_REQUEST_CODE);

                } catch (GooglePlayServicesRepairableException e) {
                    // TODO: Handle the error.
                } catch (GooglePlayServicesNotAvailableException e) {
                    // TODO: Handle the error.
                }
            }
        });
@Override
    protected void onActivityResult(int requestCode, int resultCode, Intent data) {
       if (requestCode == PLACE_AUTOCOMPLETE_FROM_PLACE_REQUEST_CODE) {
```

```
            if (resultCode == RESULT_OK) {
               //Do your ok >from place< stuff here
            } else if (resultCode == PlaceAutocomplete.RESULT_ERROR) {
               //Handle your error >from place<
            } else if (resultCode == RESULT_CANCELED) {
                // The user canceled the operation.
            }
        } else if (requestCode == PLACE_AUTOCOMPLETE_TO_PLACE_REQUEST_CODE) {
            if (resultCode == RESULT_OK) {
               //Do your ok >to place< stuff here
            } else if (resultCode == PlaceAutocomplete.RESULT_ERROR) {
               //Handle your error >to place<
            } else if (resultCode == RESULT_CANCELED) {
                // The user canceled the operation.
            }
         }
    }
```

PlaceAutocomplete

PlaceAutocomplete/。intent**AutocompleteFilter**。REGION

MainActivity.java

```
public class MainActivity extends AppComatActivity {

    private static final int PLACE_AUTOCOMPLETE_REQUEST_CODE = 1;
    private TextView selectedPlace;

    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        selectedPlace = (TextView) findViewById(R.id.selected_place);
        try {
            AutocompleteFilter typeFilter = new AutocompleteFilter.Builder()
                    .setTypeFilter(AutocompleteFilter.TYPE_FILTER_REGIONS)
                    .setCountry("IN")
                    .build();

            Intent intent =
                    new PlaceAutocomplete.IntentBuilder(PlaceAutocomplete.MODE_FULLSCREEN)
                            .setFilter(typeFilter)
                            .build(this);
            startActivityForResult(intent, PLACE_AUTOCOMPLETE_REQUEST_CODE);

        } catch (GooglePlayServicesRepairableException
                | GooglePlayServicesNotAvailableException e) {
            e.printStackTrace();
        }
}

protected void onActivityResult(int requestCode,
                                int resultCode, Intent data) {
    super.onActivityResult(requestCode, resultCode, data);

    if (requestCode == PLACE_AUTOCOMPLETE_REQUEST_CODE && resultCode == Activity.RESULT_OK) {
        final Place place = PlacePicker.getPlace(this, data);
        selectedPlace.setText(place.getName().toString().toUpperCase());
```

```
    } else {
        Toast.makeText(MainActivity.this, "Could not get location.",
Toast.LENGTH_SHORT).show();
    }
}
```

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
          android:orientation="vertical"
          android:layout_width="match_parent"
          android:layout_height="match_parent">

<TextView
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:id="@+id/selected_place"/>

</LinearLayout>
```

PlaceAutocompleteREGION/。。

Android Places API https://riptutorial.com/zh-CN/android/topic/4111/android-places-api

13: Android Studio

Examples

UI

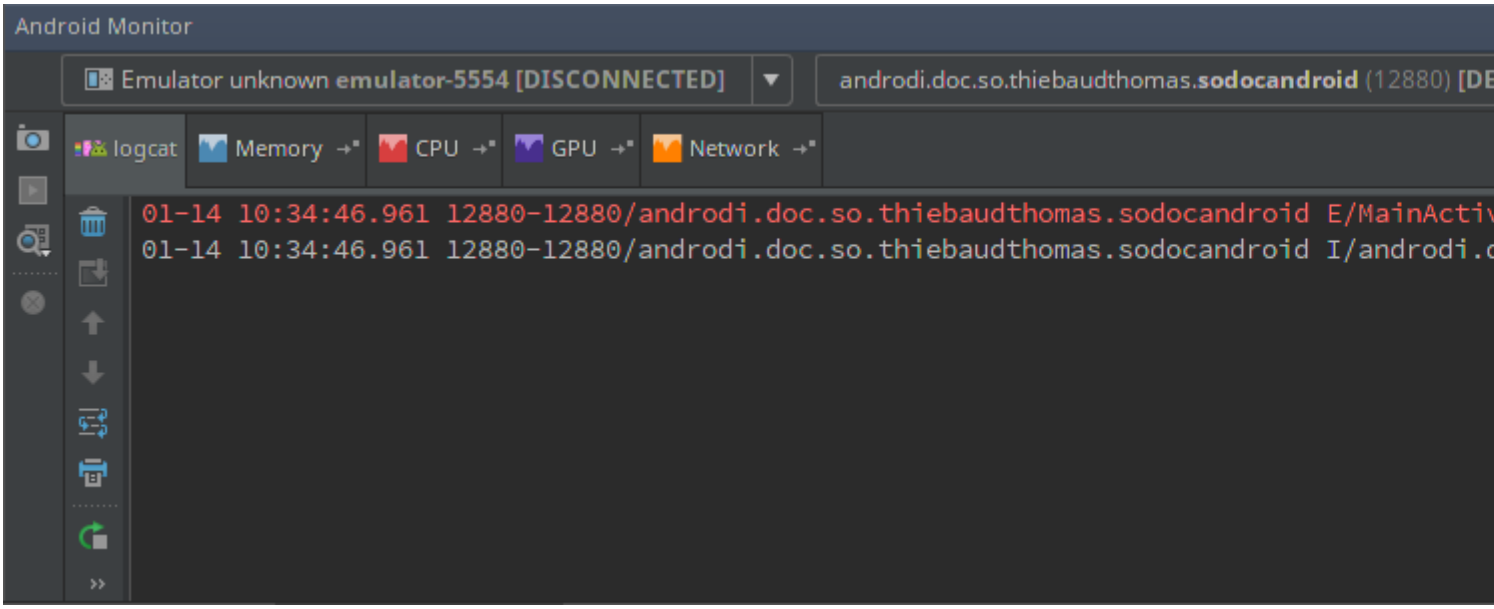
AndroidUI。

```
public class MainActivity extends AppCompatActivity {
    private final static String TAG1 = MainActivity.class.getSimpleName();
    private final static String TAG2 = MainActivity.class.getCanonicalName();

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Log.e(TAG1,"Log from onCreate method with TAG1");
        Log.i(TAG2,"Log from onCreate method with TAG2");
    }
}
```

TAG1|TAG2verbose

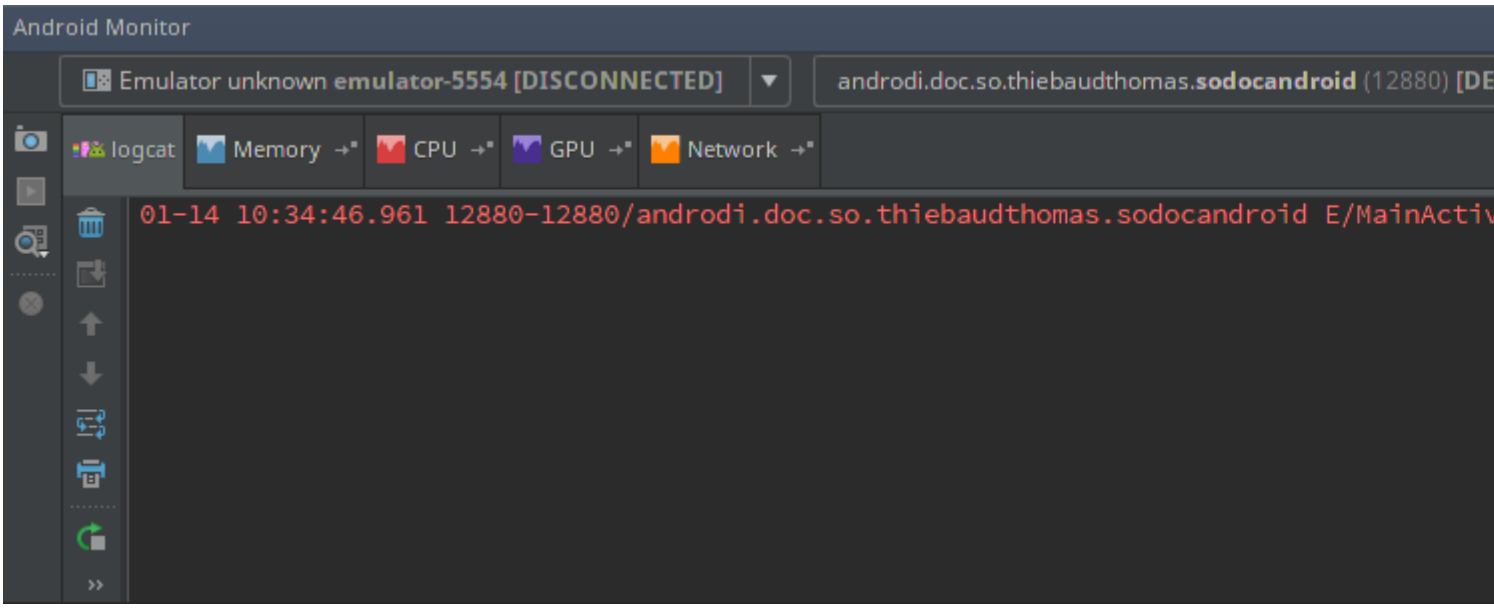
```
01-14 10:34:46.961 12880-12880/android.doc.so.thiebaudthomas.sodocandroid E/MainActivity: Log
from onCreate method with TAG1
01-14 10:34:46.961 12880-12880/android.doc.so.thiebaudthomas.sodocandroid
I/androdi.doc.so.thiebaudthomas.sodocandroid.MainActivity: Log from onCreate method with TAG2
```



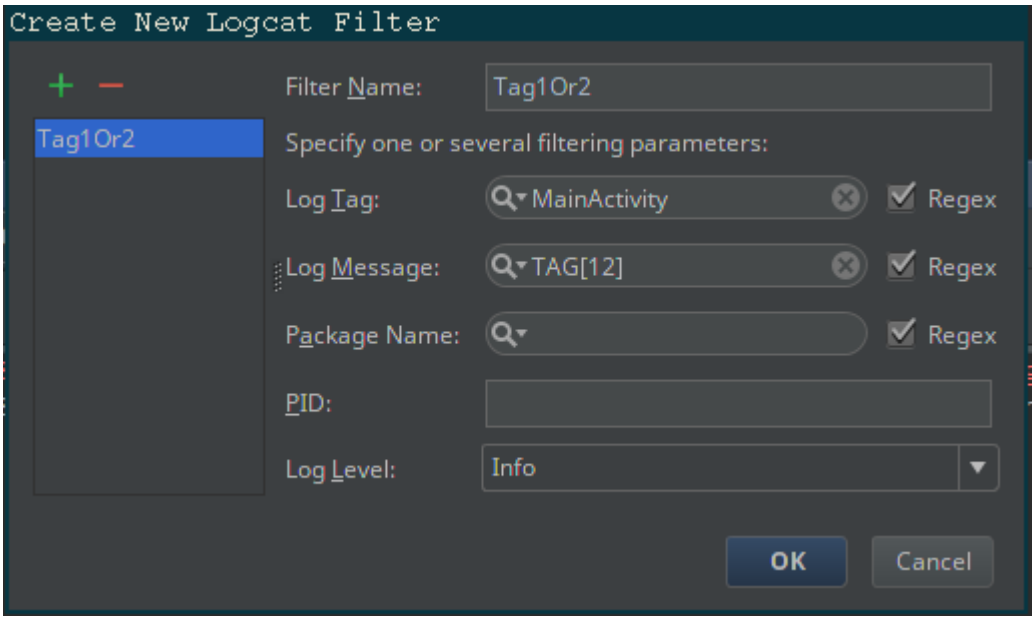
◦ verboseverbose, debug, info, warn, error and assert◦

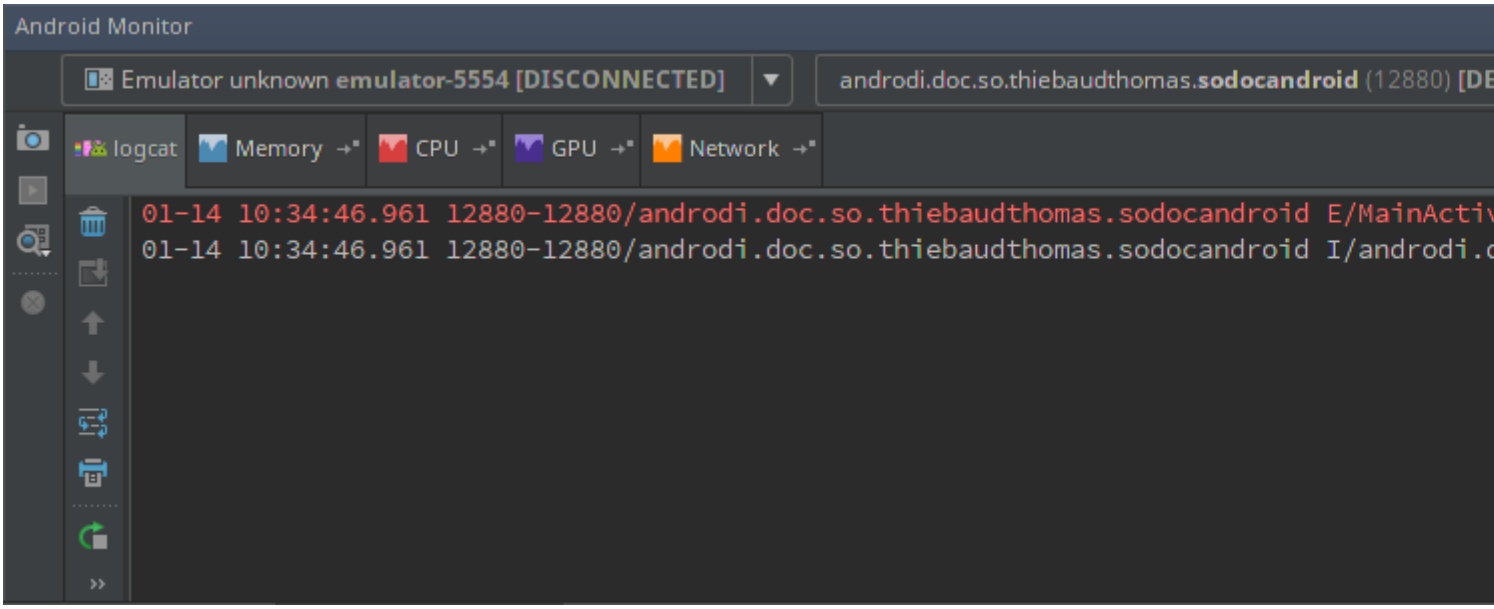
error

```
01-14 10:34:46.961 12880-12880/androdi.doc.so.thiebaudthomas.sodocandroid E/MainActivity: Log
from onCreate method with TAG1
```

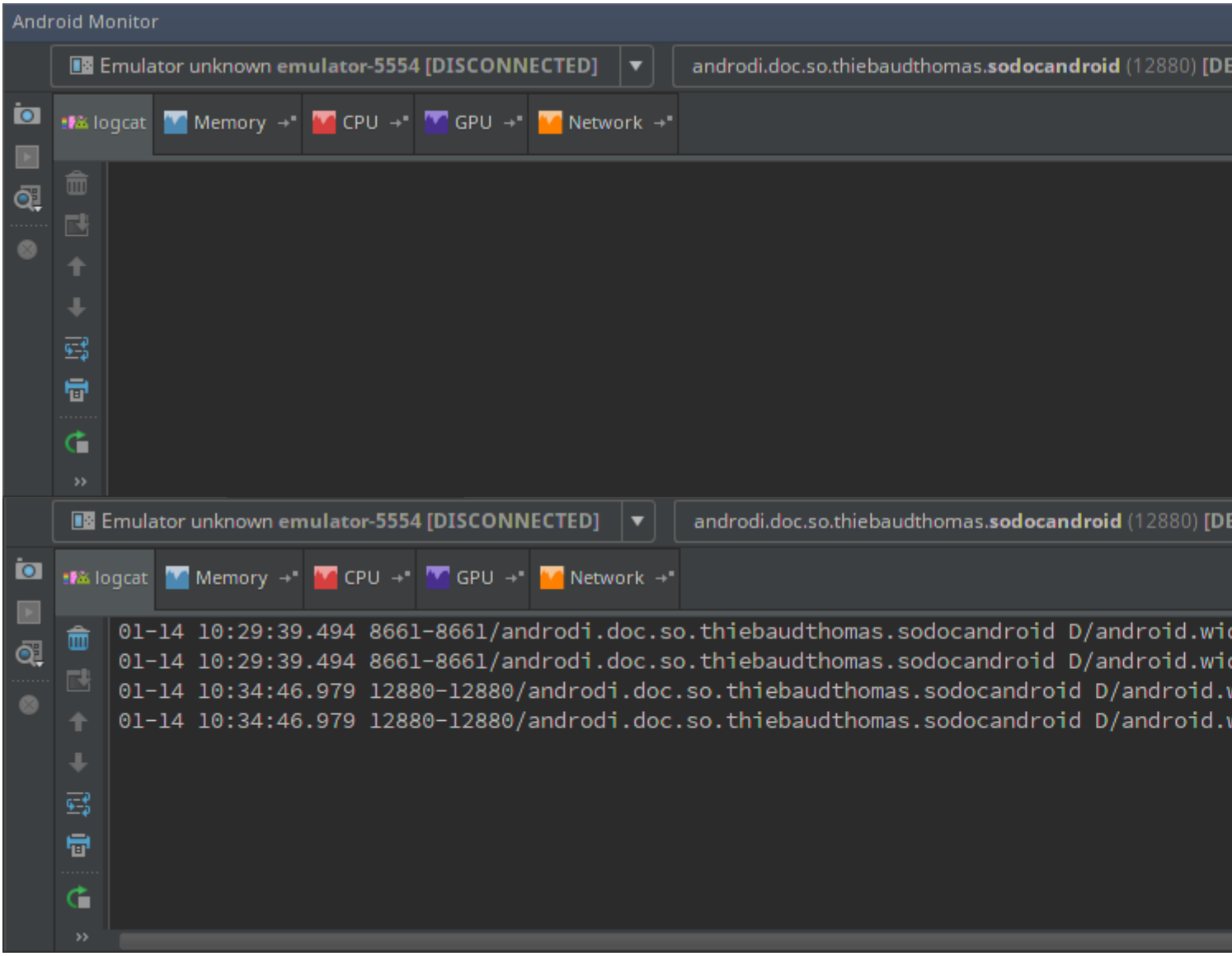


UI。 AndroidMonitorShow only selected applicationNo filters Edit filter configuration 。



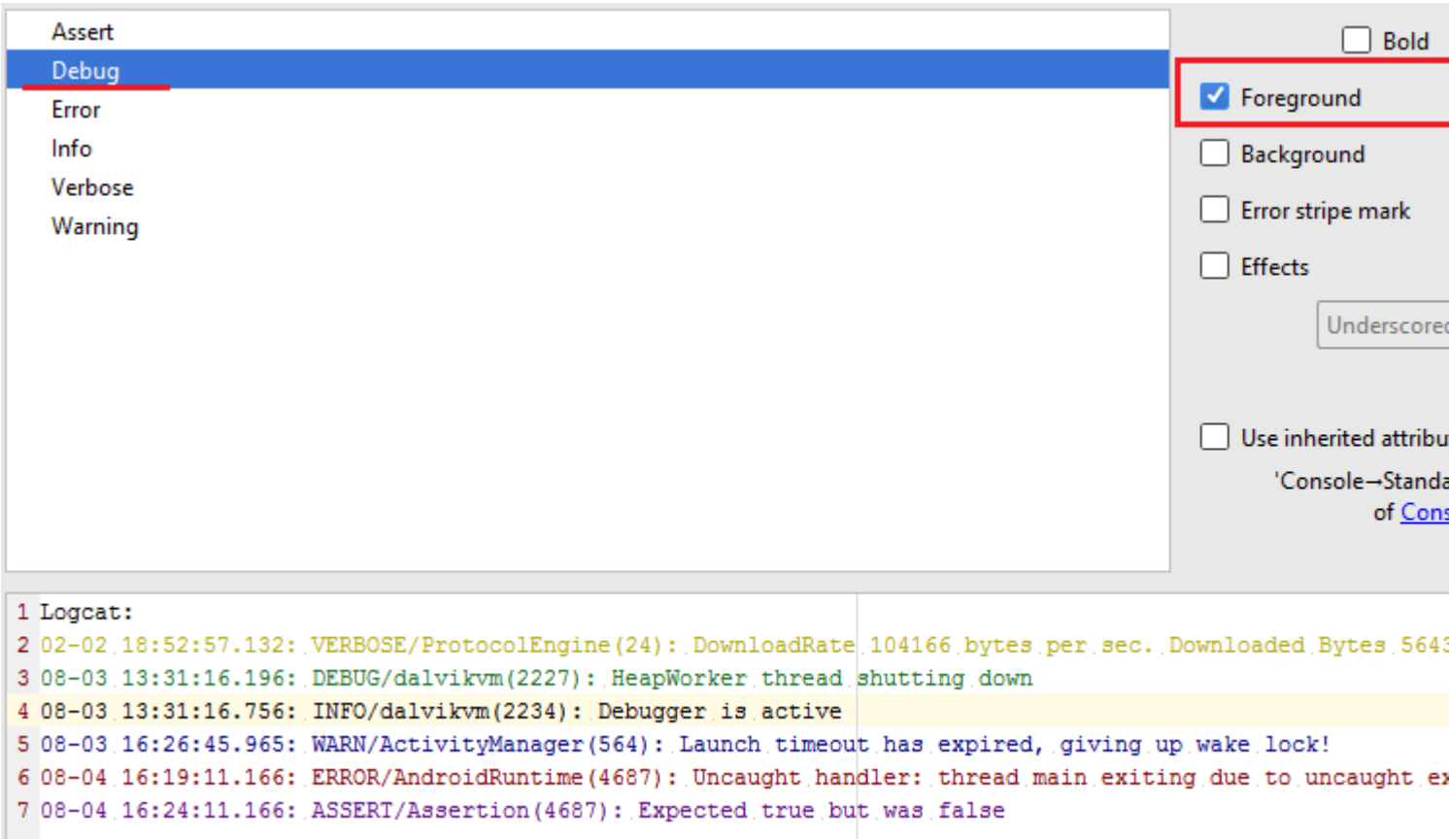


android studio。

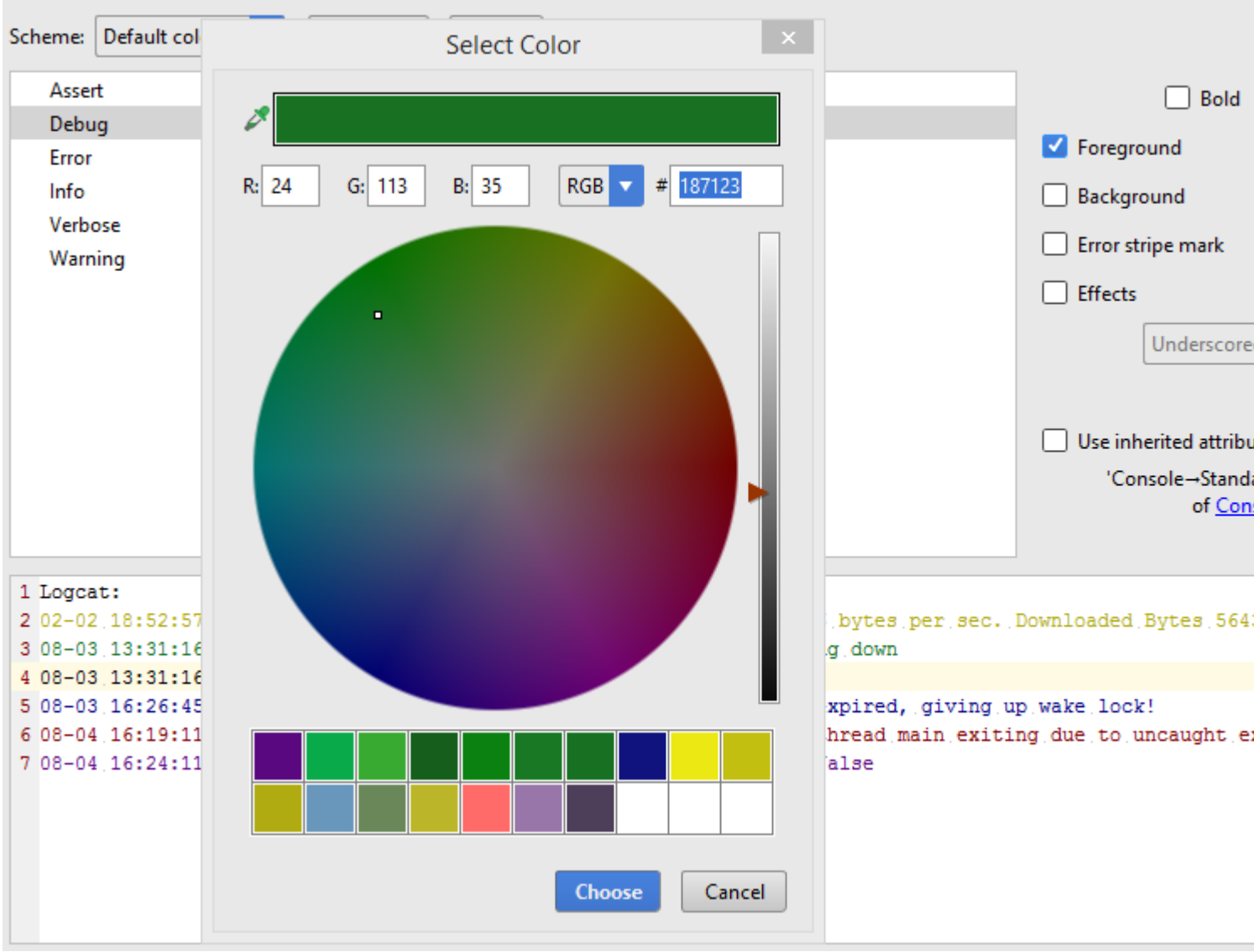


logcat

- > - > - > - > Android Logcat

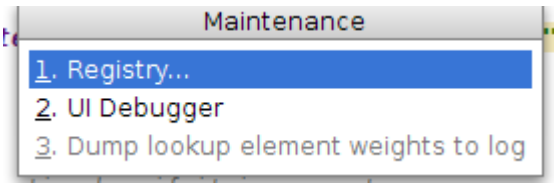



```
1 Logcat:
2 02-02 18:52:57.132: VERBOSE/ProtocolEngine(24): DownloadRate 104166 bytes per sec. Downloaded Bytes 5643
3 08-03 13:31:16.196: DEBUG/dalvikvm(2227): HeapWorker thread shutting down
4 08-03 13:31:16.756: INFO/dalvikvm(2234): Debugger is active
5 08-03 16:26:45.965: WARN/ActivityManager(564): Launch timeout has expired, giving up wake lock!
6 08-04 16:19:11.166: ERROR/AndroidRuntime(4687): Uncaught handler: thread main exiting due to uncaught ex
7 08-04 16:24:11.166: ASSERT/Assertion(4687): Expected true but was false
```

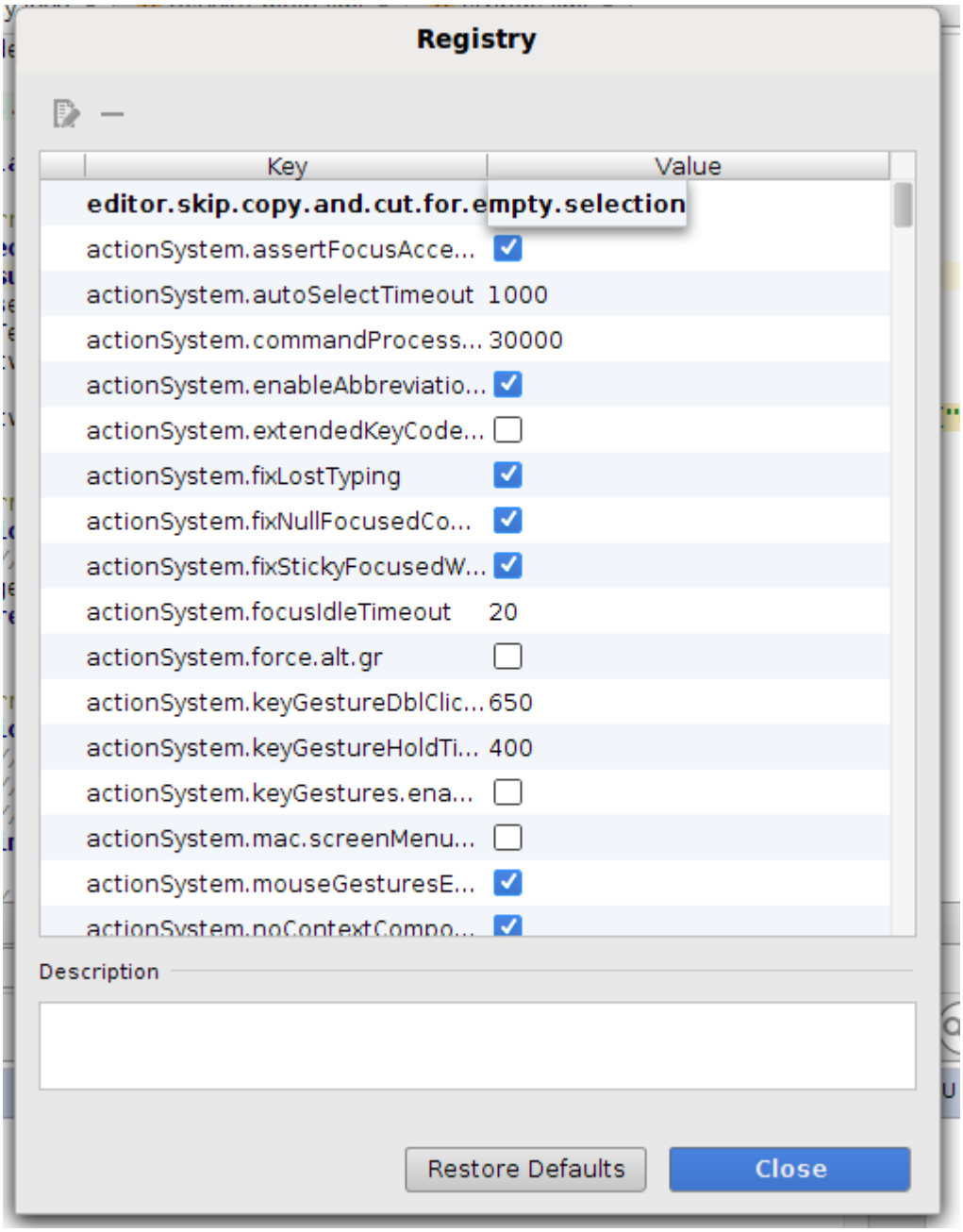


/

```
ctrl + alt + shift + / cmd + alt + shift + /MacOS
```




```
Registry
```



/

```
editor.skip.copy.and.cut.for.empty.selection
```

Linux UbuntuMacOS◦

Android Studio

/◦

IntelliJ◦ File -> Settings -> Keymap -> <Choose Eclipse/Visual Studio/etc from Keymaps dropdown>
IDEFile -> Settings -> Keymap -> <Choose Eclipse/Visual Studio/etc from Keymaps dropdown>

CTRL + ALT + L.	

	CTRL + □
logcat	ALT + 6
	CTRL + F9
	CTRL + F10
	CTRL + F.
	CTRL + SHIFT + F.
	CTRL + R.
	CTRL + SHIFT + R.
	CTRL + O.
	ALT + 1
- logcat	SHIFT + ESC
	CTRL + SHIFT + NumPad +
	CTRL + SHIFT + F8
	CTRL + SHIFT + NumPad -
	ALT + s
	ALT + F1 → ENTER
	SHIFT → SHIFT
|	CTRL → ALT + T.
	ALT + CTRL

/	Mac CTRL + T - Win / Linux CTRL + ALT + T.
	SHIFT + F6
	Mac CMD + ALT + M - Win / Linux CTRL + ALT + M.
	Mac CMD + ALT + P - Win / Linux CTRL + ALT + P.
	Mac CMD + ALT + V - Win / Linux CTRL + ALT + V.

Android Studio

1. - >。“gradle”“ `Offline work`。
2. `Gradle--offlineCommand-line Options`。

Gradle

gradle.properties。

```
org.gradle.daemon=true
org.gradle.parallel=true
```

`studio.vmoptions-Xmx-Xms`

```
-Xms1024m
-Xmx4096m
-XX:MaxPermSize=1024m
-XX:ReservedCodeCacheSize=256m
-XX:+UseCompressedOops
```

USERPROFILE。{FOLDER_NAME} \ studio.exe.vmoptions/USERPROFILE。{FOLDER_NAME} \ studio64.exe.vmoptions

/// {FOLDER_NAME} /studio.vmoptions

Linux

/。{FOLDER_NAME} /studio.vmoptions//。{FOLDER_NAME} /studio64.vmoptions

Android Studio

- Microsoft®Windows®8/ 7 / Vista / 20033264。
- Mac®OSX®10.8.510.9
- GNOMEKDE

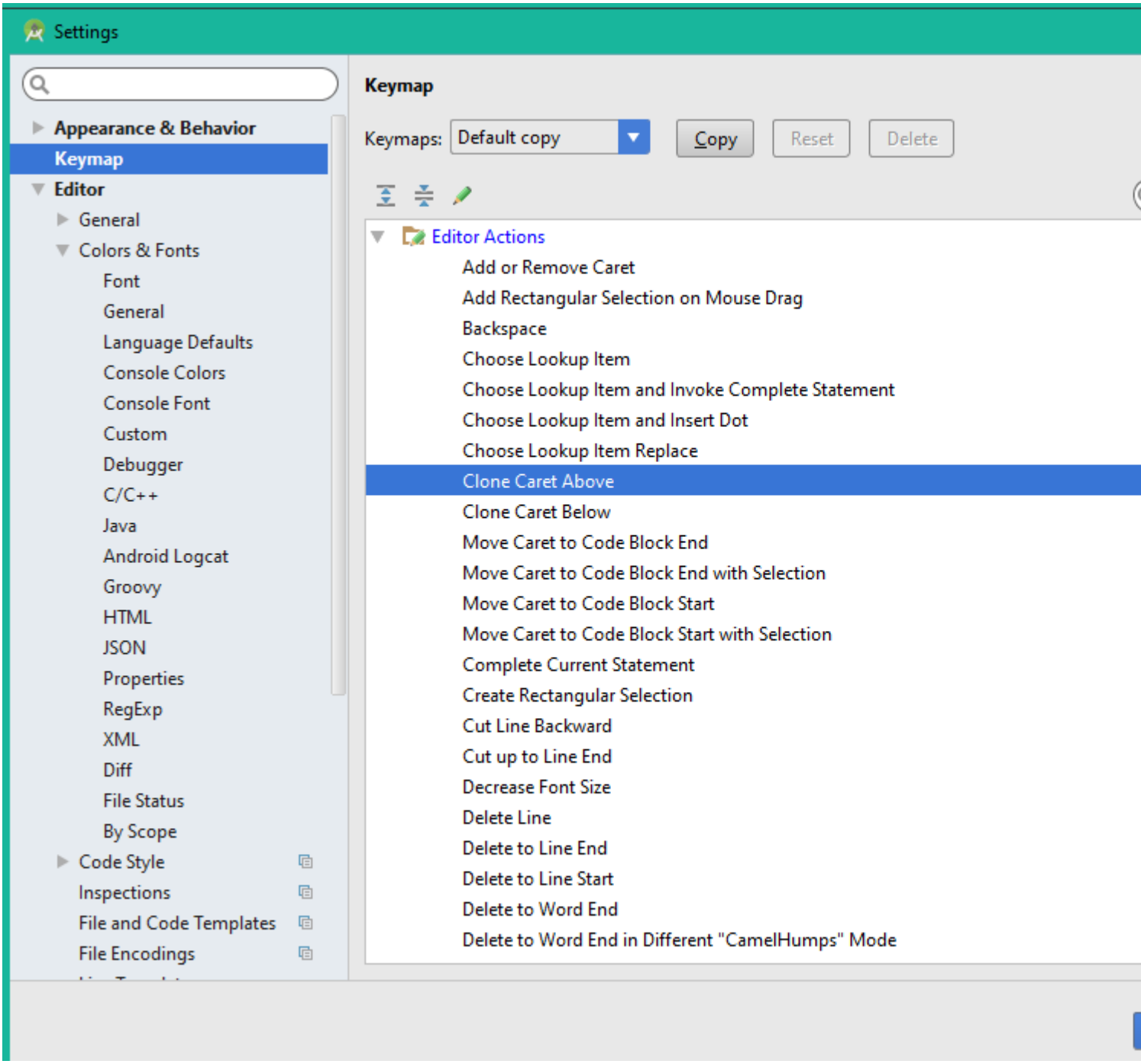
1. JDKJava Development Kit8
2. Android Studio
3. `Android Studio.exe`JDKSDK

Linux

1. JDKJava Development Kit8
2. Android Studio
3. zip
4. cdcdbin`cd android-studio/bin`
5. ./studio.sh

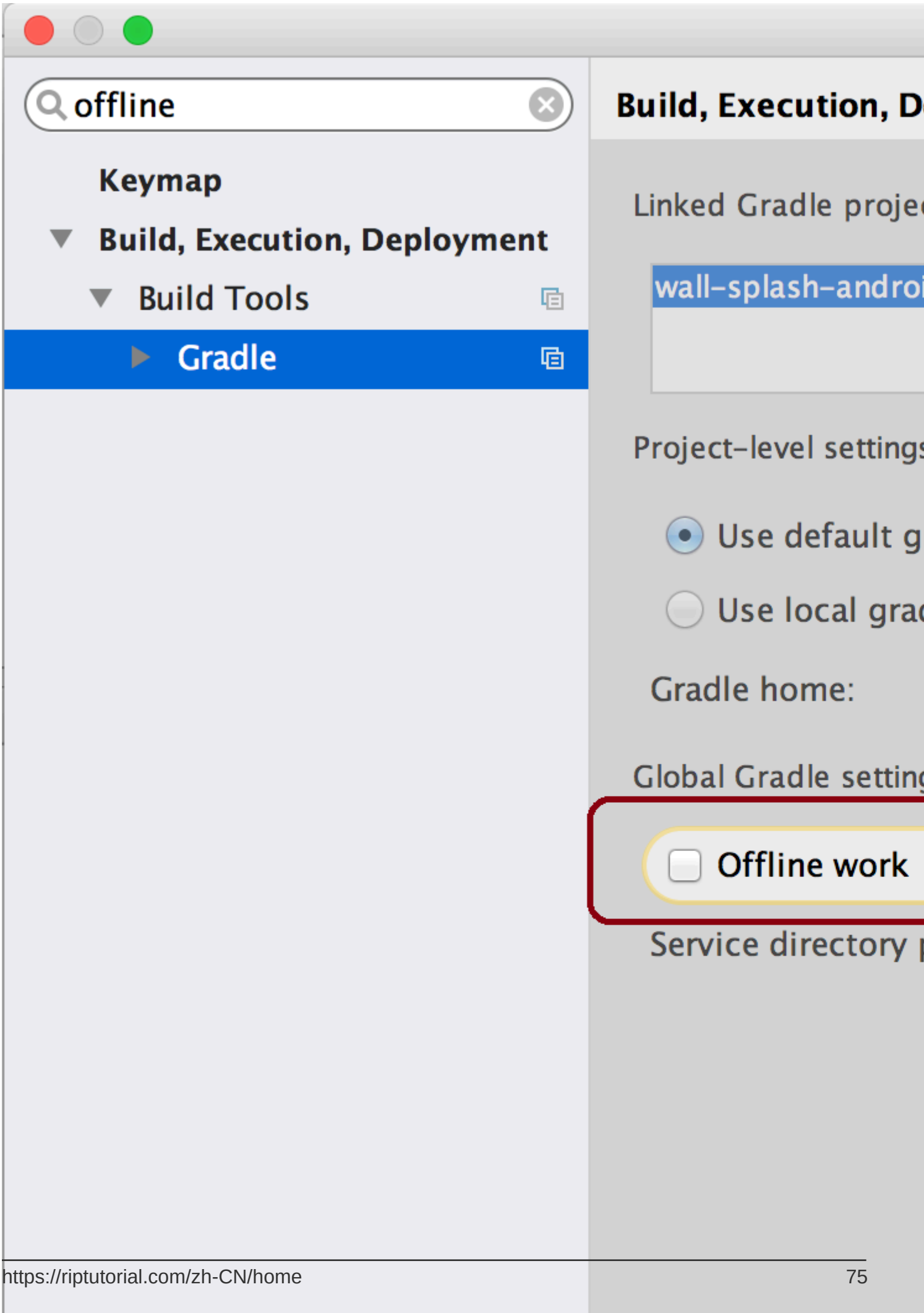
Android Studio

>>Editor Actions◦ Editor Actions◦ ◦

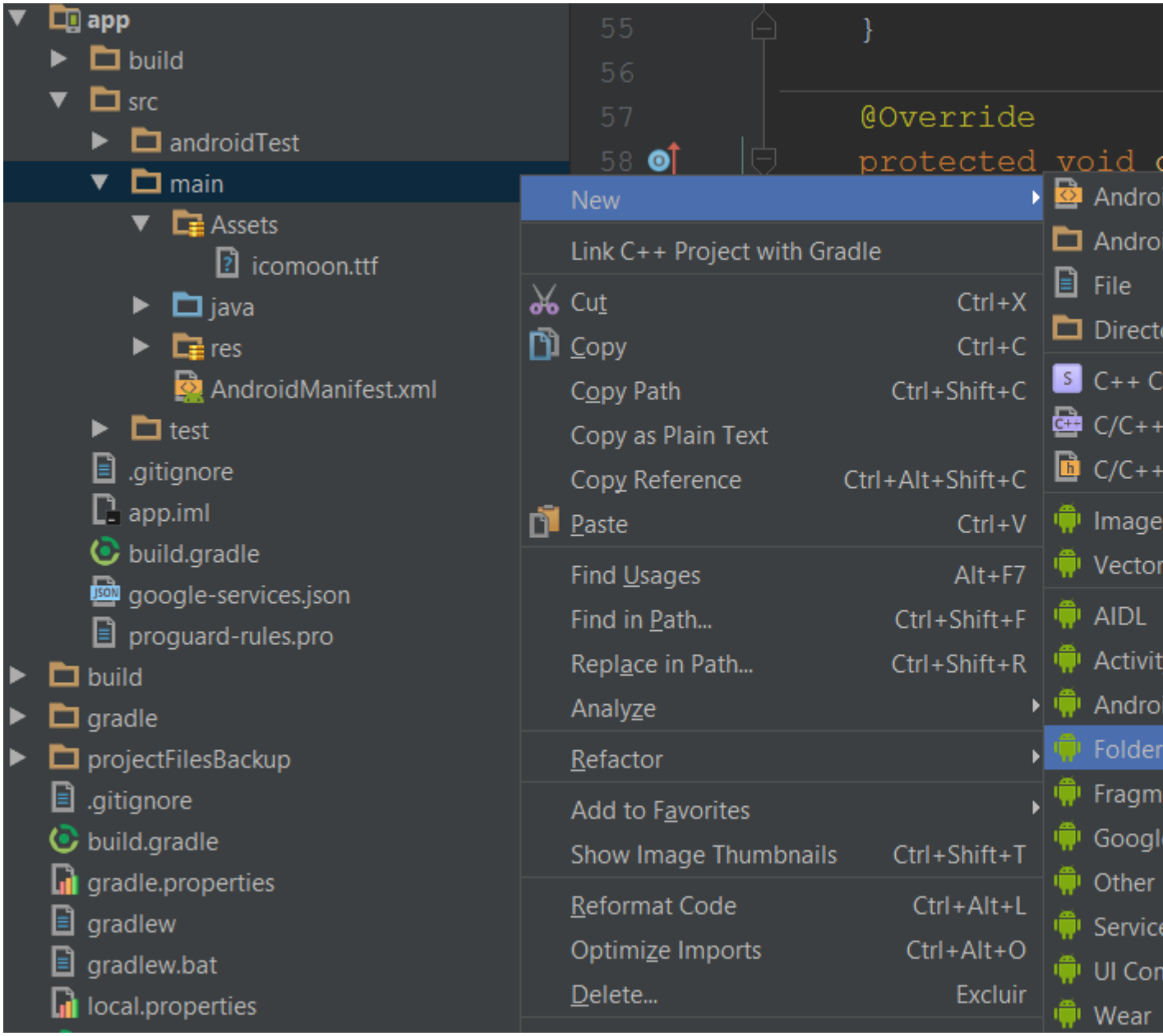


Gradle

Android Studio - > - > **Gradle** - > Android◦


offline
Keymap
Build, Execution, Deployment
Build Tools
Gradle
Build, Execution, D
Linked Gradle proje
wall-splash-androi
Project-level settings
Use default g
Use local grad
Gradle home:
Global Gradle setting
Offline work
Service directory

- AssetsMAINRES。
- 。



Android Studio https://riptutorial.com/zh-CN/android/topic/107/android-studio

14: Android Vk Sdk

Examples

1.
2. 。
3. **Android**。 *android*。
4. shell / cmd

```
keytool -exportcert -alias androiddebugkey -keystore path-to-debug-or-production-keystore -
list -v
```

SDK

```
String[] fingerprints = VKUtil.getCertificateFingerprint(this, this.getPackageName());
Log.d("MainActivity", fingerprints[0]);
```

5. **Android** Vk

6. gradle

```
compile 'com.vk:androidsdk:1.6.5'
```

8. SDK。 Applications onCreate。

```
private static final int VK_ID = your_vk_id;
public static final String VK_API_VERSION = "5.52"; //current version
@Override
    public void onCreate() {
        super.onCreate();
        VKSdk.customInitialize(this, VK_ID, VK_API_VERSION);
}
```

VKSdk。 VK_IDstrings.xmlmethidapi。

9. vksdk。

```
    public static final String[] VK_SCOPES = new String[]{
            VKScope.FRIENDS,
            VKScope.MESSAGES,
            VKScope.NOTIFICATIONS,
            VKScope.OFFLINE,
            VKScope.STATUS,
            VKScope.STATS,
            VKScope.PHOTOS
    };

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
```

```
        someButtonForLogin.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
               VKSdk.login(this, VK_SCOPES);
            }
        });

    }

    @Override
    protected void onActivityResult(int requestCode, int resultCode, Intent data) {
        super.onActivityResult(requestCode, resultCode, data);
        VKSdk.onActivityResult(requestCode, resultCode, data, new VKCallback<VKAccessToken>()
{
            @Override
            public void onResult(VKAccessToken res) {
                res.accessToken; //getting our token here.
            }

            @Override
            public void onError(VKError error) {
                Toast.makeText(SocialNetworkChooseActivity.this,
                        "User didn't pass Authorization", Toast.LENGTH_SHORT).show();
            }
        });
    }
```

Android Vk Sdk https://riptutorial.com/zh-CN/android/topic/6046/android-vk-sdk

15: AndroidJava

AndroidJava 7Java 8。 。

Examples

Java 8Retrolambda

RetrolambdaJava 7,65lambdatry-with-resourcesJava 8。 Java 8Java。

- Lambda。 lambda。 lambda。
- Java 7`Throwable.addSuppressed`Try-with-resources。 。
- Java 7`Objects.requireNonNull``Object.getClass`.JDK 9`Objects.requireNonNull` JDK `Object.getClass` 。
- 1. +“$”。
  2. +“$”。
- Java 8 API
- Retrolambda。 。 。
- JDK 8`invokedynamic`。 Retrolambda`java.lang.invoke.LambdaMetafactory`Retrolambda。

Retrolambda gradleRetrolambdaAndroid。 。

1. jdk8
2. `build.gradle`

```
buildscript {
  repositories {
     mavenCentral()
  }

  dependencies {
     classpath 'me.tatarka:gradle-retrolambda:<latest version>'
  }
}

// Required because retrolambda is on maven central
repositories {
  mavenCentral()
}

apply plugin: 'com.android.application' //or apply plugin: 'java'
apply plugin: 'me.tatarka.retrolambda'

android {
```

```
    compileOptions {
        sourceCompatibility JavaVersion.VERSION_1_8
        targetCompatibility JavaVersion.VERSION_1_8
    }
}
```

- Lintlambdajava。 Androidlintjava 8。 。
- Google PlayRetrolambda。5.0.77Retrolambda。 。 4.4.52`-noverify`jvm args。

```
retrolambda {
  jvmArgs '-noverify'
}
```

AndroidJava https://riptutorial.com/zh-CN/android/topic/9223/androidjava

16: AndroidJSONorg.json

- /。 {}。 :(/。
- 。 []。 。
- truefalsenull。 。
- Unicode。 。 CJava。
- **Number** CJava。

Android SDK`org.json`。

Examples

JSON

JSON

```
{
  "title": "test",
  "content": "Hello World!!!",
  "year": 2016,
  "names" : [
        "Hannah",
        "David",
        "Steve"
   ]
}
```

JSON

```
try {
    // create a new instance from a string
    JSONObject jsonObject = new JSONObject(jsonAsString);
    String title = jsonObject.getString("title");
    String content = jsonObject.getString("content");
    int year = jsonObject.getInt("year");
    JSONArray names = jsonObject.getJSONArray("names"); //for an array of String objects
} catch (JSONException e) {
    Log.w(TAG,"Could not parse JSON. Error: " + e.getMessage());
}
```

JSONArrayJSONObject

```
{
    "books":[
      {
        "title":"Android JSON Parsing",
        "times_sold":186
```

```
      }
    ]
}
```

```
JSONObject root = new JSONObject(booksJson);
JSONArray booksArray = root.getJSONArray("books");
JSONObject firstBook = booksArray.getJSONObject(0);
String title = firstBook.getString("title");
int timesSold = firstBook.getInt("times_sold");
```

JSON

JSONObjectput()

```
try {
    // Create a new instance of a JSONObject
    final JSONObject object = new JSONObject();

    // With put you can add a name/value pair to the JSONObject
    object.put("name", "test");
    object.put("content", "Hello World!!!1");
    object.put("year", 2016);
    object.put("value", 3.23);
    object.put("member", true);
    object.put("null_value", JSONObject.NULL);

    // Calling toString() on the JSONObject returns the JSON in string format.
    final String json = object.toString();

} catch (JSONException e) {
    Log.e(TAG, "Failed to create JSONObject", e);
}
```

JSON

```
{
   "name":"test",
   "content":"Hello World!!!1",
   "year":2016,
   "value":3.23,
   "member":true,
   "null_value":null
}
```

JSONArrayJSONObject

```
// Create a new instance of a JSONArray
JSONArray array = new JSONArray();

// With put() you can add a value to the array.
array.put("ASDF");
array.put("QWERTY");

// Create a new instance of a JSONObject
JSONObject obj = new JSONObject();
```

```
try {
    // Add the JSONArray to the JSONObject
    obj.put("the_array", array);
} catch (JSONException e) {
    e.printStackTrace();
}

String json = obj.toString();
```

JSON

```
{
   "the_array":[
      "ASDF",
      "QWERTY"
   ]
}
```

JSON。

`null`JSON

```
{
   "name":null
}
```

JSONObject.NULL 。

```
jsonObject.put("name", JSONObject.NULL);
```

json

```
{
    "some_string": null,
    "ather_string": "something"
}
```

```
JSONObject json = new JSONObject(jsonStr);
String someString = json.optString("some_string");
```

```
someString = "null";
```

```
/**
 * According to http://stackoverflow.com/questions/18226288/json-jsonobject-optstring-returns-string-null
 * we need to provide a workaround to opt string from json that can be null.
 * <strong></strong>
 */
public static String optNullableString(JSONObject jsonObject, String key) {
    return optNullableString(jsonObject, key, "");
}
```

```
/**
 * According to http://stackoverflow.com/questions/18226288/json-jsonobject-optstring-returns-
string-null
 * we need to provide a workaround to opt string from json that can be null.
 * <strong></strong>
 */
public static String optNullableString(JSONObject jsonObject, String key, String fallback) {
    if (jsonObject.isNull(key)) {
        return fallback;
    } else {
        return jsonObject.optString(key, fallback);
    }
}
```

```
JSONObject json = new JSONObject(jsonStr);
String someString = optNullableString(json, "some_string");
String someString2 = optNullableString(json, "some_string", "");
```

```
someString = null; //not "null"
someString2 = "";
```

JsonReaderJSON

`JsonReader`JSON。

```
   public List<Message> readJsonStream(InputStream in) throws IOException {
     JsonReader reader = new JsonReader(new InputStreamReader(in, "UTF-8"));
     try {
       return readMessagesArray(reader);
     } finally {
       reader.close();
     }
   }

   public List<Message> readMessagesArray(JsonReader reader) throws IOException {
     List<Message> messages = new ArrayList<Message>();

     reader.beginArray();
     while (reader.hasNext()) {
       messages.add(readMessage(reader));
     }
     reader.endArray();
     return messages;
   }

   public Message readMessage(JsonReader reader) throws IOException {
     long id = -1;
     String text = null;
     User user = null;
     List<Double> geo = null;

     reader.beginObject();
     while (reader.hasNext()) {
       String name = reader.nextName();
       if (name.equals("id")) {
         id = reader.nextLong();
```

```
      } else if (name.equals("text")) {
        text = reader.nextString();
      } else if (name.equals("geo") && reader.peek() != JsonToken.NULL) {
        geo = readDoublesArray(reader);
      } else if (name.equals("user")) {
        user = readUser(reader);
      } else {
        reader.skipValue();
      }
    }
    reader.endObject();
    return new Message(id, text, user, geo);
  }

  public List<Double> readDoublesArray(JsonReader reader) throws IOException {
    List<Double> doubles = new ArrayList<Double>();

    reader.beginArray();
    while (reader.hasNext()) {
      doubles.add(reader.nextDouble());
    }
    reader.endArray();
    return doubles;
  }

  public User readUser(JsonReader reader) throws IOException {
    String username = null;
    int followersCount = -1;

    reader.beginObject();
    while (reader.hasNext()) {
      String name = reader.nextName();
      if (name.equals("name")) {
        username = reader.nextString();
      } else if (name.equals("followers_count")) {
        followersCount = reader.nextInt();
      } else {
        reader.skipValue();
      }
    }
    reader.endObject();
    return new User(username, followersCount);
  }
```

JSON

JSONJSONJSON

```
JSONObject mainObject = new JSONObject();            // Host object
JSONObject requestObject = new JSONObject();         // Included object

try {
    requestObject.put("lastname", lastname);
    requestObject.put("phone", phone);
    requestObject.put("latitude", lat);
    requestObject.put("longitude", lon);
    requestObject.put("theme", theme);
    requestObject.put("text", message);
```

```
    mainObject.put("claim", requestObject);
} catch (JSONException e) {
    return "JSON Error";
}
```

mainObjectclaimrequestObject◦

JSON

◦ AB

```
{
  "response": [
    {
      "A": [
        {
          "name": "Tango"
        },
        {
          "name": "Ping"
        }
      ],
      "B": [
        {
          "name": "Jon"
        },
        {
          "name": "Mark"
        }
      ]
    }
  ]
}
```

Java

```
// ResponseData is raw string of response
JSONObject responseDataObj = new JSONObject(responseData);
JSONArray responseArray = responseDataObj.getJSONArray("response");
for (int i = 0; i < responseArray.length(); i++) {
    // Nodes ArrayList<ArrayList<String>> declared globally
    nodes = new ArrayList<ArrayList<String>>();
    JSONObject obj = responseArray.getJSONObject(i);
    Iterator keys = obj.keys();
    while(keys.hasNext()) {
       // Loop to get the dynamic key
       String currentDynamicKey = (String)keys.next();
       // Get the value of the dynamic key
       JSONArray currentDynamicValue = obj.getJSONArray(currentDynamicKey);
       int jsonArraySize = currentDynamicValue.length();
       if(jsonArraySize > 0) {
           for (int ii = 0; ii < jsonArraySize; ii++) {
                // NameList ArrayList<String> declared globally
                nameList = new ArrayList<String>();
               if(ii == 0) {
                JSONObject nameObj = currentDynamicValue.getJSONObject(ii);
                String name = nameObj.getString("name");
```

```
                System.out.print("Name = " + name);
                // Store name in an array list
                nameList.add(name);
              }
            }
        }
     nodes.add(nameList);
    }
}
```

JSON

JSON`JSONException`。

`JSONObject#has(String)`

JSON

```
{
   "name":"James"
}
```

Java

```
String jsonStr = " { \"name\":\"James\" }";
JSONObject json = new JSONObject(jsonStr);
// Check if the field "name" is present
String name, surname;

// This will be true, since the field "name" is present on our JSON.
if (json.has("name")) {
    name = json.getString("name");
}
else {
    name = "John";
}
// This will be false, since our JSON doesn't have the field "surname".
if (json.has("surname")) {
    surname = json.getString("surname");
}
else {
    surname = "Doe";
}

// Here name == "James" and surname == "Doe".
```

JSON

json

```
 {
 "student":{"name":"Rahul", "lastname":"sharma"},
 "marks":{"maths":"88"}
 }
```

json。

```
try {
    // Create a new instance of a JSONObject
    final JSONObject object = new JSONObject(jsonString);

    JSONObject studentJSON = object.getJSONObject("student");
    studentJSON.put("name","Kumar");

     object.remove("student");

     object.put("student",studentJSON);

    // Calling toString() on the JSONObject returns the JSON in string format.
    final String json = object.toString();

} catch (JSONException e) {
    Log.e(TAG, "Failed to create JSONObject", e);
}
```

```
 {
 "student":{"name":"Kumar", "lastname":"sharma"},
 "marks":{"maths":"88"}
 }
```

AndroidJSONorg.json https://riptutorial.com/zh-CN/android/topic/106/androidjsonorg-json

17: androidAPI

Github

Androidblogspot

Android

Examples

Android

AndroidAndroid 6.0MarshmallowSDK 23api

USE_FINGERPRINT。

```
<uses-permission
        android:name="android.permission.USE_FINGERPRINT" />
```

KeyGeneratorAndroidKeyGenParameterSpec。

```
KeyPairGenerator.getInstance(KeyProperties.KEY_ALGORITHM_EC, "AndroidKeyStore");
keyPairGenerator.initialize(
        new KeyGenParameterSpec.Builder(KEY_NAME,
                KeyProperties.PURPOSE_SIGN)
                .setDigests(KeyProperties.DIGEST_SHA256)
                .setAlgorithmParameterSpec(new ECGenParameterSpec("secp256r1"))
                .setUserAuthenticationRequired(true)
                .build());
keyPairGenerator.generateKeyPair();
```

KeyGenParameterSpec.Builder.setUserAuthenticationRequiredtrue。

```
KeyStore keyStore = KeyStore.getInstance("AndroidKeyStore");
keyStore.load(null);
PublicKey publicKey =
        keyStore.getCertificate(MainActivity.KEY_NAME).getPublicKey();

KeyStore keyStore = KeyStore.getInstance("AndroidKeyStore");
keyStore.load(null);
PrivateKey key = (PrivateKey) keyStore.getKey(KEY_NAME, null);
```

FingerprintManager.authenticate。 。

`fingerprintManger.classFingerprintManger`

`getContext().getSystemService(FingerprintManager.class)`

`FingerprintManger` api

`FingerprintManager.AuthenticationCallback`

```
onAuthenticationError
onAuthenticationHelp
onAuthenticationSucceeded
onAuthenticationFailed
```

cryptofingerPrintauthenticate

```
fingerprintManager
              .authenticate(cryptoObject, mCancellationSignal, 0 , this, null);
```

```
android.os.CancellationSignal;
```

FingerprintManager.AuthenticationCallbackonAuthenticationSucceeded。

```
@Override

public void onAuthenticationSucceeded(AuthenticationResult result) {

            }
```

Android Fingerprint API

。AES。 。

1. 。
2. 。
3. KeyStoreCipher 。
4. IVIV。

1. 。
2. 。
3. CipherIVKeyStore。

```
public class FingerPrintAuthHelper {

    private static final String FINGER_PRINT_HELPER = "FingerPrintAuthHelper";
    private static final String ENCRYPTED_PASS_SHARED_PREF_KEY =
"ENCRYPTED_PASS_SHARED_PREF_KEY";
    private static final String LAST_USED_IV_SHARED_PREF_KEY = "LAST_USED_IV_SHARED_PREF_KEY";
    private static final String MY_APP_ALIAS = "MY_APP_ALIAS";

    private KeyguardManager keyguardManager;
    private FingerprintManager fingerprintManager;

    private final Context context;
    private KeyStore keyStore;
    private KeyGenerator keyGenerator;

    private String lastError;


    public interface Callback {
```

```
        void onSuccess(String savedPass);

        void onFailure(String message);

        void onHelp(int helpCode, String helpString);
    }

    public FingerPrintAuthHelper(Context context) {
        this.context = context;
    }

    public String getLastError() {
        return lastError;
    }

    @TargetApi(Build.VERSION_CODES.M)
    public boolean init() {
        if (Build.VERSION.SDK_INT < Build.VERSION_CODES.M) {
            setError("This Android version does not support fingerprint authentication");
            return false;
        }

        keyguardManager = (KeyguardManager) context.getSystemService(KEYGUARD_SERVICE);
        fingerprintManager = (FingerprintManager)
context.getSystemService(FINGERPRINT_SERVICE);

        if (!keyguardManager.isKeyguardSecure()) {
            setError("User hasn't enabled Lock Screen");
            return false;
        }

        if (!hasPermission()) {
            setError("User hasn't granted permission to use Fingerprint");
            return false;
        }

        if (!fingerprintManager.hasEnrolledFingerprints()) {
            setError("User hasn't registered any fingerprints");
            return false;
        }

        if (!initKeyStore()) {
            return false;
        }
        return false;
    }

    @Nullable
    @RequiresApi(api = Build.VERSION_CODES.M)
    private Cipher createCipher(int mode) throws NoSuchPaddingException,
NoSuchAlgorithmException, UnrecoverableKeyException, KeyStoreException, InvalidKeyException,
InvalidAlgorithmParameterException {
        Cipher cipher = Cipher.getInstance(KeyProperties.KEY_ALGORITHM_AES + "/" +
                KeyProperties.BLOCK_MODE_CBC + "/" +
                KeyProperties.ENCRYPTION_PADDING_PKCS7);

        Key key = keyStore.getKey(MY_APP_ALIAS, null);
        if (key == null) {
            return null;
        }
        if(mode == Cipher.ENCRYPT_MODE) {
```

```
            cipher.init(mode, key);
            byte[] iv = cipher.getIV();
            saveIv(iv);
        } else {
            byte[] lastIv = getLastIv();
            cipher.init(mode, key, new IvParameterSpec(lastIv));
        }
        return cipher;
    }

    @NonNull
    @RequiresApi(api = Build.VERSION_CODES.M)
    private KeyGenParameterSpec createKeyGenParameterSpec() {
        return new KeyGenParameterSpec.Builder(MY_APP_ALIAS, KeyProperties.PURPOSE_ENCRYPT |
KeyProperties.PURPOSE_DECRYPT)
                        .setBlockModes(KeyProperties.BLOCK_MODE_CBC)
                        .setUserAuthenticationRequired(true)
                        .setEncryptionPaddings(KeyProperties.ENCRYPTION_PADDING_PKCS7)
                        .build();
    }

    @RequiresApi(api = Build.VERSION_CODES.M)
    private boolean initKeyStore() {
        try {
            keyStore = KeyStore.getInstance("AndroidKeyStore");
            keyGenerator = KeyGenerator.getInstance(KeyProperties.KEY_ALGORITHM_AES,
"AndroidKeyStore");
            keyStore.load(null);
            if (getLastIv() == null) {
                KeyGenParameterSpec keyGeneratorSpec = createKeyGenParameterSpec();
                keyGenerator.init(keyGeneratorSpec);
                keyGenerator.generateKey();
            }
        } catch (Throwable t) {
            setError("Failed init of keyStore & keyGenerator: " + t.getMessage());
            return false;
        }
        return true;
    }

    @RequiresApi(api = Build.VERSION_CODES.M)
    private void authenticate(CancellationSignal cancellationSignal,
FingerPrintAuthenticationListener authListener, int mode) {
        try {
            if (hasPermission()) {
                Cipher cipher = createCipher(mode);
                FingerprintManager.CryptoObject crypto = new
FingerprintManager.CryptoObject(cipher);
                fingerprintManager.authenticate(crypto, cancellationSignal, 0, authListener,
null);
            } else {
                authListener.getCallback().onFailure("User hasn't granted permission to use
Fingerprint");
            }
        } catch (Throwable t) {
            authListener.getCallback().onFailure("An error occurred: " + t.getMessage());
        }
    }

    private String getSavedEncryptedPassword() {
        SharedPreferences sharedPreferences = getSharedPreferences();
```

```
        if (sharedPreferences != null) {
            return sharedPreferences.getString(ENCRYPTED_PASS_SHARED_PREF_KEY, null);
        }
        return null;
    }

    private void saveEncryptedPassword(String encryptedPassword) {
        SharedPreferences.Editor edit = getSharedPreferences().edit();
        edit.putString(ENCRYPTED_PASS_SHARED_PREF_KEY, encryptedPassword);
        edit.commit();
    }

    private byte[] getLastIv() {
        SharedPreferences sharedPreferences = getSharedPreferences();
        if (sharedPreferences != null) {
            String ivString = sharedPreferences.getString(LAST_USED_IV_SHARED_PREF_KEY, null);

            if (ivString != null) {
                return decodeBytes(ivString);
            }
        }
        return null;
    }

    private void saveIv(byte[] iv) {
        SharedPreferences.Editor edit = getSharedPreferences().edit();
        String string = encodeBytes(iv);
        edit.putString(LAST_USED_IV_SHARED_PREF_KEY, string);
        edit.commit();
    }

    private SharedPreferences getSharedPreferences() {
        return context.getSharedPreferences(FINGER_PRINT_HELPER, 0);
    }

    @RequiresApi(api = Build.VERSION_CODES.M)
    private boolean hasPermission() {
        return ActivityCompat.checkSelfPermission(context,
Manifest.permission.USE_FINGERPRINT) == PackageManager.PERMISSION_GRANTED;
    }

    @RequiresApi(api = Build.VERSION_CODES.M)
    public void savePassword(@NonNull String password, CancellationSignal cancellationSignal,
Callback callback) {
        authenticate(cancellationSignal, new FingerPrintEncryptPasswordListener(callback,
password), Cipher.ENCRYPT_MODE);
    }

    @RequiresApi(api = Build.VERSION_CODES.M)
    public void getPassword(CancellationSignal cancellationSignal, Callback callback) {
        authenticate(cancellationSignal, new FingerPrintDecryptPasswordListener(callback),
Cipher.DECRYPT_MODE);
    }

    @RequiresApi(api = Build.VERSION_CODES.M)
    public boolean encryptPassword(Cipher cipher, String password) {
        try {
            // Encrypt the text
            if(password.isEmpty()) {
                setError("Password is empty");
                return false;
```

```
            }

            if (cipher == null) {
                setError("Could not create cipher");
                return false;
            }

            ByteArrayOutputStream outputStream = new ByteArrayOutputStream();
            CipherOutputStream cipherOutputStream = new CipherOutputStream(outputStream,
cipher);
            byte[] bytes = password.getBytes(Charset.defaultCharset());
            cipherOutputStream.write(bytes);
            cipherOutputStream.flush();
            cipherOutputStream.close();
            saveEncryptedPassword(encodeBytes(outputStream.toByteArray()));
        } catch (Throwable t) {
            setError("Encryption failed " + t.getMessage());
            return false;
        }

        return true;
    }

    private byte[] decodeBytes(String s) {
        final int len = s.length();

        // "111" is not a valid hex encoding.
        if( len%2 != 0 )
            throw new IllegalArgumentException("hexBinary needs to be even-length: "+s);

        byte[] out = new byte[len/2];

        for( int i=0; i<len; i+=2 ) {
            int h = hexToBin(s.charAt(i  ));
            int l = hexToBin(s.charAt(i+1));
            if( h==-1 || l==-1 )
                throw new IllegalArgumentException("contains illegal character for hexBinary:
"+s);

            out[i/2] = (byte)(h*16+l);
        }

        return out;
    }

    private static int hexToBin( char ch ) {
        if( '0'<=ch && ch<='9' )    return ch-'0';
        if( 'A'<=ch && ch<='F' )    return ch-'A'+10;
        if( 'a'<=ch && ch<='f' )    return ch-'a'+10;
        return -1;
    }

    private static final char[] hexCode = "0123456789ABCDEF".toCharArray();

    public String encodeBytes(byte[] data) {
        StringBuilder r = new StringBuilder(data.length*2);
        for ( byte b : data) {
            r.append(hexCode[(b >> 4) & 0xF]);
            r.append(hexCode[(b & 0xF)]);
        }
        return r.toString();
```

```
    }

    @NonNull
    private String decipher(Cipher cipher) throws IOException, IllegalBlockSizeException,
BadPaddingException {
        String retVal = null;
        String savedEncryptedPassword = getSavedEncryptedPassword();
        if (savedEncryptedPassword != null) {
            byte[] decodedPassword = decodeBytes(savedEncryptedPassword);
            CipherInputStream cipherInputStream = new CipherInputStream(new
ByteArrayInputStream(decodedPassword), cipher);

            ArrayList<Byte> values = new ArrayList<>();
            int nextByte;
            while ((nextByte = cipherInputStream.read()) != -1) {
                values.add((byte) nextByte);
            }
            cipherInputStream.close();

            byte[] bytes = new byte[values.size()];
            for (int i = 0; i < values.size(); i++) {
                bytes[i] = values.get(i).byteValue();
            }

            retVal = new String(bytes, Charset.defaultCharset());
        }
        return retVal;
    }

    private void setError(String error) {
        lastError = error;
        Log.w(FINGER_PRINT_HELPER, lastError);
    }

    @RequiresApi(Build.VERSION_CODES.M)
    protected class FingerPrintAuthenticationListener extends
FingerprintManager.AuthenticationCallback {

        protected final Callback callback;

        public FingerPrintAuthenticationListener(@NonNull Callback callback) {
            this.callback = callback;
        }

        public void onAuthenticationError(int errorCode, CharSequence errString) {
            callback.onFailure("Authentication error [" + errorCode + "] " + errString);
        }

        /**
         * Called when a recoverable error has been encountered during authentication. The
help
         * string is provided to give the user guidance for what went wrong, such as
         * "Sensor dirty, please clean it."
         * @param helpCode An integer identifying the error message
         * @param helpString A human-readable string that can be shown in UI
         */
        public void onAuthenticationHelp(int helpCode, CharSequence helpString) {
            callback.onHelp(helpCode, helpString.toString());
        }

        /**
```

```
         * Called when a fingerprint is recognized.
         * @param result An object containing authentication-related data
         */
        public void onAuthenticationSucceeded(FingerprintManager.AuthenticationResult result)
{
        }

        /**
         * Called when a fingerprint is valid but not recognized.
         */
        public void onAuthenticationFailed() {
            callback.onFailure("Authentication failed");
        }

        public @NonNull
        Callback getCallback() {
            return callback;
        }

    }

    @RequiresApi(api = Build.VERSION_CODES.M)
    private class FingerPrintEncryptPasswordListener extends FingerPrintAuthenticationListener
{

        private final String password;

        public FingerPrintEncryptPasswordListener(Callback callback, String password) {
            super(callback);
            this.password = password;
        }

        public void onAuthenticationSucceeded(FingerprintManager.AuthenticationResult result)
{
            Cipher cipher = result.getCryptoObject().getCipher();
            try {
                if (encryptPassword(cipher, password)) {
                    callback.onSuccess("Encrypted");
                } else {
                    callback.onFailure("Encryption failed");
                }

            } catch (Exception e) {
                callback.onFailure("Encryption failed " + e.getMessage());
            }
        }
    }

    @RequiresApi(Build.VERSION_CODES.M)
    protected class FingerPrintDecryptPasswordListener extends
FingerPrintAuthenticationListener {

        public FingerPrintDecryptPasswordListener(@NonNull Callback callback) {
            super(callback);
        }

        public void onAuthenticationSucceeded(FingerprintManager.AuthenticationResult result)
{
            Cipher cipher = result.getCryptoObject().getCipher();
            try {
                String savedPass = decipher(cipher);
```

```
                if (savedPass != null) {
                    callback.onSuccess(savedPass);
                } else {
                    callback.onFailure("Failed deciphering");
                }

            } catch (Exception e) {
                callback.onFailure("Deciphering failed " + e.getMessage());
            }
        }
    }
}
```

。

```
public class MainActivity extends AppCompatActivity {

    private TextView passwordTextView;
    private FingerPrintAuthHelper fingerPrintAuthHelper;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        passwordTextView = (TextView) findViewById(R.id.password);
        errorTextView = (TextView) findViewById(R.id.error);

        View savePasswordButton = findViewById(R.id.set_password_button);
        savePasswordButton.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.M) {
                    fingerPrintAuthHelper.savePassword(passwordTextView.getText().toString(),
new CancellationSignal(), getAuthListener(false));
                }
            }
        });

        View getPasswordButton = findViewById(R.id.get_password_button);
        getPasswordButton.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.M) {
                    fingerPrintAuthHelper.getPassword(new CancellationSignal(),
getAuthListener(true));
                }
            }
        });
    }

    // Start the finger print helper. In case this fails show error to user
    private void startFingerPrintAuthHelper() {
        fingerPrintAuthHelper = new FingerPrintAuthHelper(this);
        if (!fingerPrintAuthHelper.init()) {
            errorTextView.setText(fingerPrintAuthHelper.getLastError());
        }
    }

    @NonNull
    private FingerPrintAuthHelper.Callback getAuthListener(final boolean isGetPass) {
        return new FingerPrintAuthHelper.Callback() {
```

```
            @Override
            public void onSuccess(String result) {
                if (isGetPass) {
                    errorTextView.setText("Success!!! Pass = " + result);
                } else {
                    errorTextView.setText("Encrypted pass = " + result);
                }
            }

            @Override
            public void onFailure(String message) {
                errorTextView.setText("Failed - " + message);
            }

            @Override
            public void onHelp(int helpCode, String helpString) {
                errorTextView.setText("Help needed - " + helpString);
            }
        };
    }
}
```

androidAPI https://riptutorial.com/zh-CN/android/topic/7523/androidapi

18: Android/

DateUtils12h / 24h。。

SimpleDateFormat。

Examples

DateUtils.formatDateTime

DateUtils.formatDateTime。。

```
Date date = new Date();
String localizedDate = DateUtils.formatDateTime(context, date.getTime(),
DateUtils.FORMAT_SHOW_DATE | DateUtils.FORMAT_SHOW_WEEKDAY);
```

formatDateTime。

Android/

```
Date date = new Date();
DateFormat df = DateFormat.getDateInstance(DateFormat.MEDIUM);
String localizedDate = df.format(date)
```

。

```
Date date = new Date();
DateFormat df = DateFormat.getDateTimeInstance(DateFormat.SHORT, DateFormat.LONG);
String localizedDate = df.format(date)
```

/

```
Date date = new Date();
df = new SimpleDateFormat("HH:mm", Locale.US);
String localizedDate = df.format(date)
```

- HH0-23
- hh1-12
- aAM / PM
- mm0-59
- ss
- 1-31
- MM
- yyyy

Android/ https://riptutorial.com/zh-CN/android/topic/6057/android-

19: Android

Examples

- 0180
- 20
- 0.5 ms
- 2.5 ms

◦ Android Things◦ `ServoController setup()setPosition()`

```
public class ServoController {
    private double periodMs, maxTimeMs, minTimeMs;
    private Pwm pin;

    public void setup(String pinName) throws IOException {
        periodMs  = 20;
        maxTimeMs = 2.5;
        minTimeMs = 0.5;

        PeripheralManagerService service = new PeripheralManagerService();
        pin = service.openPwm(pinName);

        pin.setPwmFrequencyHz(1000.0d / periodMs);
        setPosition(90);
        pin.setEnabled(true);
    }

    public void setPosition(double degrees) {
        double pulseLengthMs = (degrees / 180.0 * (maxTimeMs - minTimeMs)) + minTimeMs;

        if (pulseLengthMs < minTimeMs) {
            pulseLengthMs = minTimeMs;
        } else if (pulseLengthMs > maxTimeMs) {
            pulseLengthMs = maxTimeMs;
        }

        double dutyCycle = pulseLengthMs / periodMs * 100.0;

        Log.i(TAG, "Duty cycle = " + dutyCycle + " pulse length = " + pulseLengthMs);

        try {
            pin.setPwmDutyCycle(dutyCycle);
        } catch (IOException e) {
            e.printStackTrace();
        }
    }
}
```

PWM

```
PeripheralManagerService service = new PeripheralManagerService();

for (String pinName : service.getPwmList() ) {
```

```
    Log.i("ServoControlled","Pwm pin found: " + pinName);
}
```

80100

```
final ServoController servoController = new ServoController(pinName);

Thread th = new Thread(new Runnable() {
    @Override
    public void run() {
        while (true) {
            try {
                servoController.setPosition(80);
                Thread.sleep(500);
                servoController.setPosition(100);
                Thread.sleep(500);
            } catch (InterruptedException e) {
                e.printStackTrace();
            }
        }
    }
});
th.start();
```

- Raspberry Pi 3。

VccGnd。

Android https://riptutorial.com/zh-CN/android/topic/8938/android

20: Android

Examples

RAM

Android512MB RAM。OEMAndroid 4.4。。

Ram

ActivityManager.isLowRamDeviceAPI。

512MBAPI“true”makefile。

```
PRODUCT_PROPERTY_OVERRIDES += ro.config.low_ram=true
```

JIT

JIT。 JIT。JIT3M6M。

1M。JIT100K200K。JIT。JIT。

makefile

```
PRODUCT_PROPERTY_OVERRIDES += dalvik.vm.jit.codecachesize=0
```

CPU

CPU1 Ckernel_source / drivers / cpufreq /cpufreq_smartass2.c。

1. cpufreq_govname.ckernel_source / drivers / cpufreq。
2. Kconfig。。

```
config CPU_FREQ_GOV_GOVNAMEHERE
tristate "'gov_name_lowercase' cpufreq governor"
depends on CPU_FREQ
help
governor' - a custom governor!
```

smartassV2。

```
config CPU_FREQ_GOV_SMARTASS2
 tristate "'smartassV2' cpufreq governor"
 depends on CPU_FREQ
 help
 'smartassV2' - a "smart" optimized governor!
```

。

```
 config CPU_FREQ_DEFAULT_GOV_GOVNAMEHERE
 bool "gov_name_lowercase"
 select CPU_FREQ_GOV_GOVNAMEHERE
 help
 Use the CPUFreq governor 'govname' as default.
```

smartassV2。

```
config CPU_FREQ_DEFAULT_GOV_SMARTASS2
 bool "smartass2"
 select CPU_FREQ_GOV_SMARTASS2
 help
 Use the CPUFreq governor 'smartassV2' as default.
```

- “CPU_FREQ_GOV_CONSERVATIVE” “CPU_FREQ_DEFAULT_GOV_CONSERVATIVE”

Kconfig。

3. /drivers/cpufreqMakefile。 MakefileCPU Governor。

```
obj-$(CONFIG_CPU_FREQ_GOV_SMARTASS2)    += cpufreq_smartass2.o
```

COC。 。

4. kernel_source/includes/linux。 cpufreq.h

```
#elif defined(CONFIG_CPU_FREQ_DEFAULT_GOV_ONDEMAND)
 extern struct cpufreq_governor cpufreq_gov_ondemand;
 #define CPUFREQ_DEFAULT_GOVERNOR    (&amp;cpufreq_gov_ondemand)
```

cpu

CPU

```
#elif defined(CONFIG_CPU_FREQ_DEFAULT_GOV_SMARTASS2)
 extern struct cpufreq_governor cpufreq_gov_smartass2;
 #define CPUFREQ_DEFAULT_GOVERNOR (&amp;cpufreq_gov_smartass2)
```

。

CPU。 gconfig menuconfig xconfig gconfig nconfig。 。

smartassV2lulzactive

I / O

I / O。;。 CPU/。 I / OI / O。 *noopcfq*。

*kernel_source / block*I / O。

1. I / O *sio-iosched.c kernel_source / block* 。 。

2. *Kconfig.ioschedKconfig SIO*

```
config IOSCHED_SIO
  tristate "Simple I/O scheduler"
  default y
  ---help---
    The Simple I/O scheduler is an extremely simple scheduler,
    based on noop and deadline, that relies on deadlines to
    ensure fairness. The algorithm does not do any sorting but
    basic merging, trying to keep a minimum overhead. It is aimed
    mainly for aleatory access devices (eg: flash devices).
```

3. ```
   default "sio" if DEFAULT_SIO
   ```

   。

4. *kernel_source / block /Makefile SIO*

   ```
   obj-$(CONFIG_IOSCHED_SIO)    += sio-iosched.o
   ```

   I / O。

GitHub I / O 。

Android https://riptutorial.com/zh-CN/android/topic/9106/android
   ```

21: Android

Examples

api> 19

◦ 1919API◦

```
if (Build.VERSION.SDK_INT <= 19) {
                        Intent i = new Intent();
                        i.setType("image/*");
                        i.setAction(Intent.ACTION_GET_CONTENT);
                        i.addCategory(Intent.CATEGORY_OPENABLE);
                        startActivityForResult(i, 10);
                    } else if (Build.VERSION.SDK_INT > 19) {
                        Intent intent = new Intent(Intent.ACTION_PICK,
android.provider.MediaStore.Images.Media.EXTERNAL_CONTENT_URI);
                        startActivityForResult(intent, 10);
                    }
```

```
if (Build.VERSION.SDK_INT <= 19) {
                        Intent i = new Intent();
                        i.setType("video/*");
                        i.setAction(Intent.ACTION_GET_CONTENT);
                        i.addCategory(Intent.CATEGORY_OPENABLE);
                        startActivityForResult(i, 20);
                    } else if (Build.VERSION.SDK_INT > 19) {
                        Intent intent = new Intent(Intent.ACTION_PICK,
android.provider.MediaStore.Video.Media.EXTERNAL_CONTENT_URI);
                        startActivityForResult(intent, 20);
                    }
```

◦

```
     @Override
    public void onActivityResult(int requestCode, int resultCode, Intent data) {
        super.onActivityResult(requestCode, resultCode, data);
        if (resultCode == Activity.RESULT_OK) {

            if (requestCode == 10) {
                Uri selectedImageUri = data.getData();
                String selectedImagePath = getRealPathFromURI(selectedImageUri);
            } else if (requestCode == 20) {
                Uri selectedVideoUri = data.getData();
                String selectedVideoPath = getRealPathFromURI(selectedVideoUri);
            }

     public String getRealPathFromURI(Uri uri) {
            if (uri == null) {
                return null;
            }
            String[] projection = {MediaStore.Images.Media.DATA};
            Cursor cursor = getActivity().getContentResolver().query(uri, projection, null,
null, null);
```

```
            if (cursor != null) {
                int column_index = cursor
                        .getColumnIndexOrThrow(MediaStore.Images.Media.DATA);
                cursor.moveToFirst();
                return cursor.getString(column_index);
            }
            return uri.getPath();
        }
```

SoundPool

```
public class PlaySound extends Activity implements OnTouchListener {
    private SoundPool soundPool;
    private int soundID;
    boolean loaded = false;

    /** Called when the activity is first created. */
    @Override
    public void onCreate(Bundle savedInstanceState) {
            super.onCreate(savedInstanceState);
            setContentView(R.layout.main);
            View view = findViewById(R.id.textView1);
            view.setOnTouchListener(this);
            // Set the hardware buttons to control the music
            this.setVolumeControlStream(AudioManager.STREAM_MUSIC);
            // Load the sound
            soundPool = new SoundPool(10, AudioManager.STREAM_MUSIC, 0);
            soundPool.setOnLoadCompleteListener(new OnLoadCompleteListener() {
                    @Override
                    public void onLoadComplete(SoundPool soundPool, int sampleId,
                                    int status) {
                            loaded = true;
                    }
            });
            soundID = soundPool.load(this, R.raw.sound1, 1);

    }

    @Override
    public boolean onTouch(View v, MotionEvent event) {
            if (event.getAction() == MotionEvent.ACTION_DOWN) {
                    // Getting the user sound settings
                    AudioManager audioManager = (AudioManager)
getSystemService(AUDIO_SERVICE);
                    float actualVolume = (float) audioManager
                                    .getStreamVolume(AudioManager.STREAM_MUSIC);
                    float maxVolume = (float) audioManager
                                    .getStreamMaxVolume(AudioManager.STREAM_MUSIC);
                    float volume = actualVolume / maxVolume;
                    // Is the sound loaded already?
                    if (loaded) {
                            soundPool.play(soundID, volume, volume, 1, 0, 1f);
                            Log.e("Test", "Played sound");
                    }
            }
            return false;
    }
}
```

Android https://riptutorial.com/zh-CN/android/topic/4730/android

22: Android

Android Architecture Components。LifecyclesViewModelLiveDataRoom。

Examples

build.gradle

```
allprojects {
    repositories {
        jcenter()
        // Add this if you use Gradle 4.0+
        google()
        // Add this if you use Gradle < 4.0
        maven { url 'https://maven.google.com' }
    }
}

ext {
    archVersion = '1.0.0-alpha5'
}
```

gradle

```
// For Lifecycles, LiveData, and ViewModel
compile "android.arch.lifecycle:runtime:$archVersion"
compile "android.arch.lifecycle:extensions:$archVersion"
annotationProcessor "android.arch.lifecycle:compiler:$archVersion"

// For Room
compile "android.arch.persistence.room:runtime:$archVersion"
annotationProcessor "android.arch.persistence.room:compiler:$archVersion"

// For testing Room migrations
testCompile "android.arch.persistence.room:testing:$archVersion"

// For Room RxJava support
compile "android.arch.persistence.room:rxjava2:$archVersion"
```

AppCompatActivity

```
public abstract class BaseCompatLifecycleActivity extends AppCompatActivity implements
LifecycleRegistryOwner {
    // We need this class, because LifecycleActivity extends FragmentActivity not
AppCompatActivity

    @NonNull
    private final LifecycleRegistry lifecycleRegistry = new LifecycleRegistry(this);

    @NonNull
    @Override
    public LifecycleRegistry getLifecycle() {
        return lifecycleRegistry;
```

```
    }
}
```

LiveDataViewModel

```
public class BaseViewModel extends ViewModel {
    private static final int TAG_SEGMENT_INDEX = 2;
    private static final int VIDEOS_LIMIT = 100;

    // We save input params here
    private final MutableLiveData<Pair<String, String>> urlWithReferrerLiveData = new
MutableLiveData<>();

    // transform specific uri param to "tag"
    private final LiveData<String> currentTagLiveData =
Transformations.map(urlWithReferrerLiveData, pair -> {
        Uri uri = Uri.parse(pair.first);
        List<String> segments = uri.getPathSegments();
        if (segments.size() > TAG_SEGMENT_INDEX)
            return segments.get(TAG_SEGMENT_INDEX);
        return null;
    });

    // transform "tag" to videos list
    private final LiveData<List<VideoItem>> videoByTagData =
Transformations.switchMap(currentTagLiveData, tag -> contentRepository.getVideoByTag(tag,
VIDEOS_LIMIT));

    ContentRepository contentRepository;

    public BaseViewModel() {
        // some inits
    }

    public void setUrlWithReferrer(String url, String referrer) {
        // set value activates observers and transformations
        urlWithReferrerLiveData.setValue(new Pair<>(url, referrer));
    }

    public LiveData<List<VideoItem>> getVideoByTagData() {
        return videoByTagData;
    }
}
```

UI

```
public class VideoActivity extends BaseCompatLifecycleActivity {
    private VideoViewModel viewModel;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);

        // Get ViewModel
        viewModel = ViewModelProviders.of(this).get(BaseViewModel.class);
        // Add observer
        viewModel.getVideoByTagData().observe(this, data -> {
            // some checks
```

```
            adapter.updateData(data);
        });

        ...
        if (savedInstanceState == null) {
            // init loading only at first creation
            // you just set params and
            viewModel.setUrlWithReferrer(url, referrer);
        }
}
```

DAO**DDL**

```
// Set custom table name, add indexes
@Entity(tableName = "videos",
        indices = {@Index("title")}
)
public final class VideoItem {
    @PrimaryKey // required
    public long articleId;
    public String title;
    public String url;
}

// Use ForeignKey for setup table relation
@Entity(tableName = "tags",
        indices = {@Index("score"), @Index("videoId"), @Index("value")},
        foreignKeys = @ForeignKey(entity = VideoItem.class,
                parentColumns = "articleId",
                childColumns = "videoId",
                onDelete = ForeignKey.CASCADE)
)
public final class VideoTag {
    @PrimaryKey
    public long id;
    public long videoId;
    public String displayName;
    public String value;
    public double score;
}
```

DAO

```
@Dao
public interface VideoDao {
    // Create insert with custom conflict strategy
    @Insert(onConflict = OnConflictStrategy.REPLACE)
    void saveVideos(List<VideoItem> videos);

    // Simple update
    @Update
    void updateVideos(VideoItem... videos);

    @Query("DELETE FROM tags WHERE videoId = :videoId")
    void deleteTagsByVideoId(long videoId);

    // Custom query, you may use select/delete here
    @Query("SELECT v.* FROM tags t LEFT JOIN videos v ON v.articleId = t.videoId WHERE t.value
```

```
= :tag ORDER BY updatedAt DESC LIMIT :limit")
    LiveData<List<VideoItem>> getVideosByTag(String tag, int limit);
}
```

```
// register your entities and DAOs
@Database(entities = {VideoItem.class, VideoTag.class}, version = 2)
public abstract class ContentDatabase extends RoomDatabase {
    public abstract VideoDao videoDao();
}
```

```
public final class Migrations {
    private static final Migration MIGRATION_1_2 = new Migration(1, 2) {
        @Override
        public void migrate(SupportSQLiteDatabase database) {
            final String[] sqlQueries = {
                    "CREATE TABLE IF NOT EXISTS `tags` (`id` INTEGER PRIMARY KEY
AUTOINCREMENT," +
                            " `videoId` INTEGER, `displayName` TEXT, `value` TEXT, `score`
REAL," +
                            " FOREIGN KEY(`videoId`) REFERENCES `videos`(`articleId`)" +
                            " ON UPDATE NO ACTION ON DELETE CASCADE )",
                    "CREATE  INDEX `index_tags_score` ON `tags` (`score`)",
                    "CREATE  INDEX `index_tags_videoId` ON `tags` (`videoId`)"};
            for (String query : sqlQueries) {
                database.execSQL(query);
            }
        }
    };

    public static final Migration[] ALL = {MIGRATION_1_2};

    private Migrations() {
    }
}
```

ApplicationDagger

```
ContentDatabase provideContentDatabase() {
    return Room.databaseBuilder(context, ContentDatabase.class, "data.db")
            .addMigrations(Migrations.ALL).build();
}
```

```
public final class ContentRepository {
    private final ContentDatabase db;
    private final VideoDao videoDao;

    public ContentRepository(ContentDatabase contentDatabase, VideoDao videoDao) {
        this.db = contentDatabase;
        this.videoDao = videoDao;
    }

    public LiveData<List<VideoItem>> getVideoByTag(@Nullable String tag, int limit) {
        // you may fetch from network, save to database
        ....
        return videoDao.getVideosByTag(tag, limit);
    }
```

```
}
```

ViewModel

```
ContentRepository contentRepository = ...;
contentRepository.getVideoByTag(tag, limit);
```

LiveData

LiveData。
Transformations

```
public class LocationLiveData extends LiveData<Location> {
    private LocationManager locationManager;

    private LocationListener listener = new LocationListener() {
        @Override
        public void onLocationChanged(Location location) {
            setValue(location);
        }

        @Override
        public void onStatusChanged(String provider, int status, Bundle extras) {
            // Do something
        }

        @Override
        public void onProviderEnabled(String provider) {
            // Do something
        }

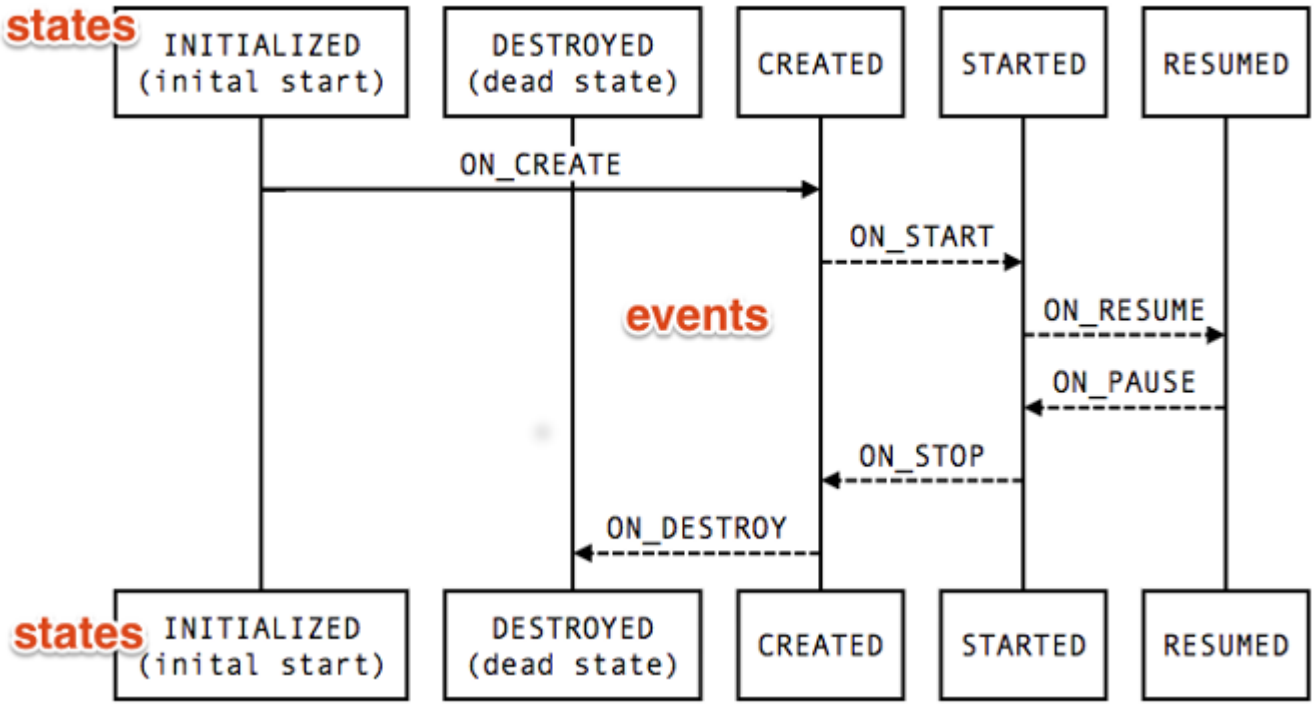
        @Override
        public void onProviderDisabled(String provider) {
            // Do something
        }
    };

    public LocationLiveData(Context context) {
        locationManager = (LocationManager)
context.getSystemService(Context.LOCATION_SERVICE);
    }

    @Override
    protected void onActive() {
        // We have observers, start working
        locationManager.requestLocationUpdates(LocationManager.GPS_PROVIDER, 0, 0, listener);
    }

    @Override
    protected void onInactive() {
        // We have no observers, stop working
        locationManager.removeUpdates(listener);
    }
}
```

UI。




```
public class MyLocationListener implements LifecycleObserver {
    private boolean enabled = false;
    private Lifecycle lifecycle;
    public MyLocationListener(Context context, Lifecycle lifecycle, Callback callback) {
       ...
    }

    @OnLifecycleEvent(Lifecycle.Event.ON_START)
    void start() {
        if (enabled) {
           // connect
        }
    }

    public void enable() {
        enabled = true;
        if (lifecycle.getState().isAtLeast(STARTED)) {
            // connect if not connected
        }
    }

    @OnLifecycleEvent(Lifecycle.Event.ON_STOP)
    void stop() {
        // disconnect if connected
    }
}
```

Android https://riptutorial.com/zh-CN/android/topic/10872/android

23: Android

JavaAndroid

- SurfaceView2D。
- ;

Examples

CanvasSurfaceView

SurfaceView2D。

```
public class GameLauncher extends AppCompatActivity {

    private Game game;
    @Override
    public void onCreate(Bundle sis){
        super.onCreate(sis);
        game = new Game(GameLauncher.this);//Initialize the game instance
        setContentView(game);//setContentView to the game surfaceview
        //Custom XML files can also be used, and then retrieve the game instance using
findViewById.
    }

}
```

Android Manifest。

。

```
public class Game extends SurfaceView implements SurfaceHolder.Callback, Runnable{

    /**
     * Holds the surface frame
     */
    private SurfaceHolder holder;

    /**
     * Draw thread
     */
    private Thread drawThread;

    /**
     * True when the surface is ready to draw
     */
    private boolean surfaceReady = false;


    /**
     * Drawing thread flag
```

```
     */

    private boolean drawingActive = false;

    /**
     * Time per frame for 60 FPS
     */
    private static final int MAX_FRAME_TIME = (int) (1000.0 / 60.0);

    private static final String LOGTAG = "surface";

    /*
     * All the constructors are overridden to ensure functionality if one of the different
constructors are used through an XML file or programmatically
     */
    public Game(Context context) {
        super(context);
        init();
    }
    public Game(Context context, AttributeSet attrs) {
        super(context, attrs);
        init();
    }
    public Game(Context context, AttributeSet attrs, int defStyleAttr) {
        super(context, attrs, defStyleAttr);
        init();
    }
    @TargetApi(21)
    public Game(Context context, AttributeSet attrs, int defStyleAttr, int defStyleRes) {
        super(context, attrs, defStyleAttr, defStyleRes);
        init();
    }

    public void init(Context c) {
        this.c = c;

        SurfaceHolder holder = getHolder();
        holder.addCallback(this);
        setFocusable(true);
        //Initialize other stuff here later
    }

    public void render(Canvas c){
        //Game rendering here
    }

    public void tick(){
        //Game logic here
    }

    @Override
    public void surfaceChanged(SurfaceHolder holder, int format, int width, int height)
    {
        if (width == 0 || height == 0){
            return;
        }

        // resize your UI
    }

    @Override
```

```
    public void surfaceCreated(SurfaceHolder holder){
        this.holder = holder;

        if (drawThread != null){
            Log.d(LOGTAG, "draw thread still active..");
            drawingActive = false;
            try{
                drawThread.join();
            } catch (InterruptedException e){}
        }

        surfaceReady = true;
        startDrawThread();
        Log.d(LOGTAG, "Created");
    }

    @Override
    public void surfaceDestroyed(SurfaceHolder holder){
        // Surface is not used anymore - stop the drawing thread
        stopDrawThread();
        // and release the surface
        holder.getSurface().release();

        this.holder = null;
        surfaceReady = false;
        Log.d(LOGTAG, "Destroyed");
    }

    @Override
    public boolean onTouchEvent(MotionEvent event){
        // Handle touch events
        return true;
    }

    /**
     * Stops the drawing thread
     */
    public void stopDrawThread(){
        if (drawThread == null){
            Log.d(LOGTAG, "DrawThread is null");
            return;
        }
        drawingActive = false;
        while (true){
            try{
                Log.d(LOGTAG, "Request last frame");
                drawThread.join(5000);
                break;
            } catch (Exception e) {
                Log.e(LOGTAG, "Could not join with draw thread");
            }
        }
        drawThread = null;
    }

    /**
     * Creates a new draw thread and starts it.
     */
    public void startDrawThread(){
        if (surfaceReady && drawThread == null){
            drawThread = new Thread(this, "Draw thread");
```

```
            drawingActive = true;
            drawThread.start();
        }
    }

    @Override
    public void run() {
        Log.d(LOGTAG, "Draw thread started");
        long frameStartTime;
        long frameTime;

        /*
         * In order to work reliable on Nexus 7, we place ~500ms delay at the start of drawing
thread
         * (AOSP - Issue 58385)
         */
        if (android.os.Build.BRAND.equalsIgnoreCase("google") &&
android.os.Build.MANUFACTURER.equalsIgnoreCase("asus") &&
android.os.Build.MODEL.equalsIgnoreCase("Nexus 7")) {
            Log.w(LOGTAG, "Sleep 500ms (Device: Asus Nexus 7)");
            try {
                Thread.sleep(500);
            } catch (InterruptedException ignored) {}
        }

        while (drawing) {
            if (sf == null) {
                return;
            }

            frameStartTime = System.nanoTime();
            Canvas canvas = sf.lockCanvas();
            if (canvas != null) {
                try {
                    synchronized (sf) {
                        tick();
                        render(canvas);
                    }
                } finally {

                    sf.unlockCanvasAndPost(canvas);
                }
            }

            // calculate the time required to draw the frame in ms
            frameTime = (System.nanoTime() - frameStartTime) / 1000000;

            if (frameTime < MAX_FRAME_TIME){
                try {
                    Thread.sleep(MAX_FRAME_TIME - frameTime);
                } catch (InterruptedException e) {
                    // ignore
                }
            }

        }
        Log.d(LOGTAG, "Draw thread finished");
    }
}
```

。 。

```
public final int x = 100;//The reason for this being static will be shown when the game is
runnable
public int y;
public int velY;
```

。100x100。Rect

```
private Bitmap PLAYER_BMP = BitmapFactory.decodeResource(getResources(),
R.drawable.my_player_drawable);
```

。

```
...
c.drawBitmap(PLAYER_BMP, x, y, null);
...
```

```
boolean up = false;
```

onTouchEvent

```
if(ev.getAction() == MotionEvent.ACTION_DOWN){
    up = true;
}else if(ev.getAction() == MotionEvent.ACTION_UP){
    up = false;
}
```

```
if(up){
    velY -=1;
}
else{
    velY +=1;
}
if(velY >14)velY = 14;
if(velY <-14)velY = -14;
y += velY *2;
```

init

```
WindowManager wm = (WindowManager) c.getSystemService(Context.WINDOW_SERVICE);
Display display = wm.getDefaultDisplay();
Point size = new Point();
display.getSize(size);
WIDTH = size.x;
HEIGHT = size.y;
y = HEIGHT/ 2 - PLAYER_BMP.getHeight();
```

```
public static int WIDTH, HEIGHT;
```

。 。

◦ ◦ ◦

◦ ◦

Rect

```
private Rect screen;
```

initrect◦

```
screen = new Rect(0,0,WIDTH,HEIGHT);
```

rect

```
private Rect getPlayerBound(){
    return new Rect(x, y, x + PLAYER_BMP.getWidth(), y + PLAYER_BMP.getHeight();
}
```

```
if(!getPlayerBound().intersects(screen){
    gameOver = true;
}
```

gameOVer◦

Android https://riptutorial.com/zh-CN/android/topic/10011/android

24: Android

	Android		API	Build.VERSION_CODES
	1.0	2008923	1	
	1.1	200929	2	BASE_1_1
	1.5	2009430	3	CUPCAKE
	1.6	2009915	4	
	2.0	20091026		ECLAIR
	2.0.1	2009123	6	ECLAIR_0_1
	2.1	2010112	7	ECLAIR_MR1
Froyo	2.2	2010520	8	Froyo
	2.3	2010126	9	
	2.3.3	201129	10	GINGERBREAD_MR1
	3.0	2011222	11	
	3.1	2011510	12	HONEYCOMB_MR2
	3.2	2011715	13	HONEYCOMB_MR1
	4	20111019	14	
	4.0.3	20111216	15	ICE_CREAM_SANDWICH_MR1
	4.1	201279	16	
	4.2	20121113	17	JELLY_BEAN_MR1
	4.3	2013724	18	JELLY_BEAN_MR2
	4.4	20131031	19	
		2014725	20	KITKAT_WATCH
	5	20141017	21	
	5.1	201539	22	LOLLIPOP_MR1
	6	2015105	23	

	Android		API	Build.VERSION_CODES
	7	2016822	24	ñ
	7.1.1	2016125	25	N_MR1

Examples

Android

`Build.VERSION_CODES`SDK。

Android`TargetApi`LintAPI。

23APIAPI-23

```
@Override
@TargetApi(23)
public void onResume() {
    super.onResume();
    if (android.os.Build.VERSION.SDK_INT <= Build.VERSION_CODES.M) {
        //run Marshmallow code
        FingerprintManager fingerprintManager =
this.getSystemService(FingerprintManager.class);
        //.....................
    }
}
```

Android https://riptutorial.com/zh-CN/android/topic/3264/android

25: Android

Examples

Android。

- `android.accounts.AccountAuthenticator。 onBindAbstractAccountAuthenticator。`
-
- xml

1.

AndroidManifest.xml

```
<uses-permission android:name="android.permission.GET_ACCOUNTS" />
<uses-permission android:name="android.permission.MANAGE_ACCOUNTS" />
<uses-permission android:name="android.permission.AUTHENTICATE_ACCOUNTS" />
<uses-permission android:name="android.permission.USE_CREDENTIALS" />
```

```
<service android:name="com.example.MyAuthenticationService">
    <intent-filter>
        <action android:name="android.accounts.AccountAuthenticator" />
    </intent-filter>
    <meta-data
        android:name="android.accounts.AccountAuthenticator"
        android:resource="@xml/authenticator" />
</service>
```

`android.accounts.AccountAuthenticatorintent-filter。` xml`authenticator meta-data。`

```
public class MyAuthenticationService extends Service {

    private static final Object lock = new Object();
    private MyAuthenticator mAuthenticator;

    public MyAuthenticationService() {
        super();
    }

    @Override
    public void onCreate() {
        super.onCreate();

        synchronized (lock) {
            if (mAuthenticator == null) {
                mAuthenticator = new MyAuthenticator(this);
            }
        }
    }

    @Override
    public IBinder onBind(Intent intent) {
        return mAuthenticator.getIBinder();
```

```
    }

}
```

2. xml

```
<account-authenticator xmlns:android="http://schemas.android.com/apk/res/android"
    android:accountType="com.example.account"
    android:icon="@drawable/appicon"
    android:smallIcon="@drawable/appicon"
    android:label="@string/app_name" />
```

`android:label`drawable。。

3.AbstractAccountAuthenticator

```
public class MyAuthenticator extends AbstractAccountAuthenticator {

    private Context mContext;

    public MyAuthenticator(Context context) {
        super(context);
        mContext = context;
    }

    @Override
    public Bundle addAccount(AccountAuthenticatorResponse response,
                             String accountType,
                             String authTokenType,
                             String[] requiredFeatures,
                             Bundle options) throws NetworkErrorException {

        Intent intent = new Intent(mContext, LoginActivity.class);
        intent.putExtra(AccountManager.KEY_ACCOUNT_AUTHENTICATOR_RESPONSE, response);

        Bundle bundle = new Bundle();
        bundle.putParcelable(AccountManager.KEY_INTENT, intent);

        return bundle;
    }

    @Override
    public Bundle confirmCredentials(AccountAuthenticatorResponse response, Account account,
Bundle options) throws NetworkErrorException {
        return null;
    }

    @Override
    public Bundle editProperties(AccountAuthenticatorResponse response, String accountType) {
        return null;
    }

    @Override
    public Bundle getAuthToken(AccountAuthenticatorResponse response, Account account, String
authTokenType, Bundle options) throws NetworkErrorException {
        return null;
    }
```

```
    @Override
    public String getAuthTokenLabel(String authTokenType) {
        return null;
    }

    @Override
    public Bundle hasFeatures(AccountAuthenticatorResponse response, Account account, String[]
features) throws NetworkErrorException {
        return null;
    }

    @Override
    public Bundle updateCredentials(AccountAuthenticatorResponse response, Account account,
String authTokenType, Bundle options) throws NetworkErrorException {
        return null;
    }
}
```

`AbstractAccountAuthenticatoraddAccount()`""""。 `AccountManager.KEY_ACCOUNT_AUTHENTICATOR_RESPONSE` AccountAuthenticatorResponse。

Android https://riptutorial.com/zh-CN/android/topic/6759/android

26: AndroidJenkins CI

Examples

Jenkins for Android

Jenkins CIAndroid。Linux。。

---

1. *ssh*Ubuntu

   ssh username@xxx.xxx.xxx

2. Android SDK

   wget https://dl.google.com/android/android-sdk_r24.4.1-linux.tgz

3. *tar*

   sudo apt-get install tar
   tar -xvf android-sdk_r24.4.1-linux.tgz

4. UbuntuJava 8NougatAndroid。JenkinsJDKJRE 7

   sudo apt-get install python-software-properties
   sudo add-apt-repository ppawebupd8team / java
   sudo apt-get update
   apt-get install openjdk-8-jdk

5. UbuntuJenkins

   wget -q -O - https://pkg.jenkins.io/debian/jenkins-ci.org.key | sudo apt-key add -
   sudo sh -c'echo deb http://pkg.jenkins.io/debian-stable binary /> /etc/apt/sources.list.d/jenkins.list'
   sudo apt-get update
   sudo apt-get install jenkins

6. AndroidGradle

   wget https://services.gradle.org/distributions/gradle-2.14.1-all.zip
   gradle-2.14.1-all.zip

7. UbuntuAndroid。2Android SDK*tools*

   cd android-sdk-linux / tools ***//SDK***
   android update sdk --no-ui ***//SDK***
   android list sdk -a | grep“SDK Build-tools” ***//***

android update sdk -a -u -t 4 **//prev4**。 CMD。
java

8. *Git*VCS

   sudo apt-get install git

9. Jenkins。 **`ipAddress:8080`** 。

10. su

    cat / var / lib / jenkins / secrets / initialAdminPassword

JenkinsAndroid Jobs

1. Jenkins>Jenkins>

2. `JAVA_HOME`

   Name = JAVA_HOME
   JAVA_HOME = / usr / lib / jvm / java-8-openjdk-amd64

3. *Git*

   =
   / usr / bin/

4. Jenkins>Jenkins>

5. `ANDROID_HOME`“”

   Name = ANDROID_HOME
   = / home / username / android-sdk-linux

AndroidJenkins

1. Jenkins*New Item* 。

2. 。

3. 。 *Use custom workspace*

   / home / user / Code / ProjectFolder

4. *Git* 。 *Bitbucket*

   URL = https//password@bitbucket.org/project/projectname.git

5.

- repo / home / user / Code / ProjectFolder

6. */

7. *BuildAdd build step Execute Shell*。

8. *Execute shell*

   cd / home / user / Code / ProjectFolder && gradle clean assemble --no-daemon

9. Lint*Execute shell*

   /home/user/gradle/gradle-2.14.1/bin/gradle lint

JenkinsAndroid。 QAUAT。

PSJenkinsUbuntu

```
chown -R jenkins .git
```

AndroidJenkins CI https://riptutorial.com/zh-CN/android/topic/7830/androidjenkins-ci

27: API-23 +

Android MarshmallowRuntime Permission。 。 。

sdk 23AndroidAndroid 6.0。 /。

Android 6.0sdk23。

。 sdk 23。

ACCESS_LOCATION_EXTRA_COMMANDS
ACCESS_NETWORK_STATE
ACCESS_NOTIFICATION_POLICY
ACCESS_WIFI_STATE

BLUETOOTH_ADMIN
BROADCAST_STICKY
CHANGE_NETWORK_STATE
CHANGE_WIFI_MULTICAST_STATE
CHANGE_WIFI_STATE
DISABLE_KEYGUARD
EXPAND_STATUS_BAR
GET_PACKAGE_SIZE
INSTALL_SHORTCUT

KILL_BACKGROUND_PROCESSES

NFC
READ_SYNC_SETTINGS
READ_SYNC_STATS

REORDER_TASKS
REQUEST_IGNORE_BATTERY_OPTIMIZATIONS
REQUEST_INSTALL_PACKAGES
SET_ALARM
SET_TIME_ZONE

SET_WALLPAPER
SET_WALLPAPER_HINTS
TRANSMIT_IR
UNINSTALL_SHORTCUT
USE_FINGERPRINT
VIBRATE
WAKE_LOCK
WRITE_SYNC_SETTINGS

Examples

Android 6.0

Android 6。

```
public static final int MULTIPLE_PERMISSIONS = 10; // code you want.

String[] permissions = new String[] {
    Manifest.permission.WRITE_EXTERNAL_STORAGE,
    Manifest.permission.CAMERA,
    Manifest.permission.ACCESS_COARSE_LOCATION,
    Manifest.permission.ACCESS_FINE_LOCATION
};

@Override
void onStart() {
    if (checkPermissions()){
        // permissions granted.
    } else {
        // show dialog informing them that we lack certain permissions
    }
}

private boolean checkPermissions() {
    int result;
    List<String> listPermissionsNeeded = new ArrayList<>();
    for (String p:permissions) {
        result = ContextCompat.checkSelfPermission(getActivity(),p);
        if (result != PackageManager.PERMISSION_GRANTED) {
            listPermissionsNeeded.add(p);
        }
    }
    if (!listPermissionsNeeded.isEmpty()) {
        ActivityCompat.requestPermissions(this, listPermissionsNeeded.toArray(new
String[listPermissionsNeeded.size()]), MULTIPLE_PERMISSIONS);
        return false;
    }
    return true;
}

@Override
public void onRequestPermissionsResult(int requestCode, String permissions[], int[]
grantResults) {
    switch (requestCode) {
        case MULTIPLE_PERMISSIONS:{
            if(grantResults.length > 0 && grantResults[0] ==
```

```
PackageManager.PERMISSION_GRANTED){
                // permissions granted.
            } else {
                // no permissions granted.
            }
            return;
        }
    }
}
```

URI

◦ ◦ ◦

`Context.sendBroadcast(Intent intent, String permission)◦ ◦`

```
 void sendBroadcast (Intent intent, String receiverPermission)
 //for example to send a broadcast to Bcastreceiver receiver
 Intent broadcast = new Intent(this, Bcastreceiver.class);
 sendBroadcast(broadcast, "org.quadcore.mypermission");
```

sendBroadcast

```
 <!--  Your special permission -->
 <permission android:name="org.quadcore.mypermission"
    android:label="my_permission"
    android:protectionLevel="dangerous"></permission>
```

```
 <!--  I use the permission ! -->
 <uses-permission android:name="org.quadcore.mypermission"/>
 <!-- along with the receiver -->
 <receiver android:name="Bcastreceiver" android:exported="true" />
```

◦ ◦

◦

◦

```
<!-- Required to read and write to shredPref file. -->
<uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE"/>
<uses-permission android:name="android.permission.READ_EXTERNAL_STORAGE"/>

<!-- Required to get location of device. -->
<uses-permission android:name="android.permission.ACCESS_FINE_LOCATION"/>
<uses-permission android:name="android.permission.ACCESS_COARSE_LOCATION"/>
```

◦ ◦

```
final private int REQUEST_CODE_ASK_MULTIPLE_PERMISSIONS = 124;
```

```
@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.act_layout);

    // A simple check of whether runtime permissions need to be managed
    if (Build.VERSION.SDK_INT >= 23) {
        checkMultiplePermissions();
    }
```

。

```
private void checkMultiplePermissions() {

    if (Build.VERSION.SDK_INT >= 23) {
        List<String> permissionsNeeded = new ArrayList<String>();
        List<String> permissionsList = new ArrayList<String>();

        if (!addPermission(permissionsList, android.Manifest.permission.ACCESS_FINE_LOCATION))
{
            permissionsNeeded.add("GPS");
        }

        if (!addPermission(permissionsList,
android.Manifest.permission.READ_EXTERNAL_STORAGE)) {
            permissionsNeeded.add("Read Storage");
        }

        if (permissionsList.size() > 0) {
            requestPermissions(permissionsList.toArray(new String[permissionsList.size()]),
                    REQUEST_CODE_ASK_MULTIPLE_PERMISSIONS);
            return;
        }
    }
}



private boolean addPermission(List<String> permissionsList, String permission) {
    if (Build.VERSION.SDK_INT >= 23)

        if (checkSelfPermission(permission) != PackageManager.PERMISSION_GRANTED) {
            permissionsList.add(permission);

            // Check for Rationale Option
            if (!shouldShowRequestPermissionRationale(permission))
                return false;
        }
    return true;
}
```

。 。

```
@Override
public void onRequestPermissionsResult(int requestCode, String[] permissions, int[]
grantResults) {
    switch (requestCode) {
        case REQUEST_CODE_ASK_MULTIPLE_PERMISSIONS: {
```

```
            Map<String, Integer> perms = new HashMap<String, Integer>();
            // Initial
            perms.put(android.Manifest.permission.ACCESS_FINE_LOCATION,
PackageManager.PERMISSION_GRANTED);
            perms.put(android.Manifest.permission.READ_EXTERNAL_STORAGE,
PackageManager.PERMISSION_GRANTED);

            // Fill with results
            for (int i = 0; i < permissions.length; i++)
                perms.put(permissions[i], grantResults[i]);
            if (perms.get(android.Manifest.permission.ACCESS_FINE_LOCATION) ==
PackageManager.PERMISSION_GRANTED
                    && perms.get(android.Manifest.permission.READ_EXTERNAL_STORAGE) ==
PackageManager.PERMISSION_GRANTED) {
                // All Permissions Granted
                return;
            } else {
                // Permission Denied
                if (Build.VERSION.SDK_INT >= 23) {
                    Toast.makeText(
                            getApplicationContext(),
                            "My App cannot run without Location and Storage " +
                                    "Permissions.\nRelaunch My App or allow permissions" +
                                    " in Applications Settings",
                            Toast.LENGTH_LONG).show();
                    finish();
                }
            }
        }
        break;
        default:
            super.onRequestPermissionsResult(requestCode, permissions, grantResults);
    }
}
```

https://inthecheesefactory.com/blog/things-you-need-to-know-about-android-m-permission-developer-edition/en

PermissionUtil

PermissionUtil。 `onAllGranted()` `onAnyDenied()` `onRational()` 。

AppCompatActivityFragment

```
mRequestObject =
PermissionUtil.with(this).request(Manifest.permission.WRITE_EXTERNAL_STORAGE).onAllGranted(
                new Func() {
                    @Override protected void call() {
                        //Happy Path
                    }
                }).onAnyDenied(
                new Func() {
                    @Override protected void call() {
                        //Sad Path
                    }
                }).ask(REQUEST_CODE_STORAGE);
```

onRequestPermissionsResult

```
if(mRequestObject!=null){
    mRequestObject.onRequestPermissionsResult(requestCode, permissions, grantResults);
}
```

AndroidManifest.xml

```
<uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE" />
```

/

```
public abstract class BaseActivity extends AppCompatActivity {
    private Map<Integer, PermissionCallback> permissionCallbackMap = new HashMap<>();

    @Override
    protected void onStart() {
        super.onStart();
        ...
    }

    @Override
    public void setContentView(int layoutResId) {
        super.setContentView(layoutResId);
        bindViews();
    }

    ...

    @Override
    public void onRequestPermissionsResult(
            int requestCode, @NonNull String[] permissions, @NonNull int[] grantResults) {
        super.onRequestPermissionsResult(requestCode, permissions, grantResults);
        PermissionCallback callback = permissionCallbackMap.get(requestCode);

        if (callback == null) return;

        // Check whether the permission request was rejected.
        if (grantResults.length < 0 && permissions.length > 0) {
            callback.onPermissionDenied(permissions);
            return;
        }

        List<String> grantedPermissions = new ArrayList<>();
        List<String> blockedPermissions = new ArrayList<>();
        List<String> deniedPermissions = new ArrayList<>();
        int index = 0;

        for (String permission : permissions) {
            List<String> permissionList = grantResults[index] ==
PackageManager.PERMISSION_GRANTED
                    ? grantedPermissions
                    : ! ActivityCompat.shouldShowRequestPermissionRationale(this, permission)
                        ? blockedPermissions
                        : deniedPermissions;
            permissionList.add(permission);
            index ++;
        }
```

```
        if (grantedPermissions.size() > 0) {
            callback.onPermissionGranted(
                    grantedPermissions.toArray(new String[grantedPermissions.size()]));
        }

        if (deniedPermissions.size() > 0) {
            callback.onPermissionDenied(
                    deniedPermissions.toArray(new String[deniedPermissions.size()]));
        }

        if (blockedPermissions.size() > 0) {
            callback.onPermissionBlocked(
                    blockedPermissions.toArray(new String[blockedPermissions.size()]));
        }

        permissionCallbackMap.remove(requestCode);
    }

    /**
     * Check whether a permission is granted or not.
     *
     * @param permission
     * @return
     */
    public boolean hasPermission(String permission) {
        return ContextCompat.checkSelfPermission(this, permission) ==
PackageManager.PERMISSION_GRANTED;
    }

    /**
     * Request permissions and get the result on callback.
     *
     * @param permissions
     * @param callback
     */
    public void requestPermission(String [] permissions, @NonNull PermissionCallback callback)
{
        int requestCode = permissionCallbackMap.size() + 1;
        permissionCallbackMap.put(requestCode, callback);
        ActivityCompat.requestPermissions(this, permissions, requestCode);
    }

    /**
     * Request permission and get the result on callback.
     *
     * @param permission
     * @param callback
     */
    public void requestPermission(String permission, @NonNull PermissionCallback callback) {
        int requestCode = permissionCallbackMap.size() + 1;
        permissionCallbackMap.put(requestCode, callback);
        ActivityCompat.requestPermissions(this, new String[] { permission }, requestCode);
    }
}
```

```
private void requestLocationAfterPermissionCheck() {
    if (hasPermission(Manifest.permission.ACCESS_FINE_LOCATION)) {
        requestLocation();
```

```
        return;
    }

    // Call the base class method.
    requestPermission(Manifest.permission.ACCESS_FINE_LOCATION, new PermissionCallback() {
        @Override
        public void onPermissionGranted(String[] grantedPermissions) {
            requestLocation();
        }

        @Override
        public void onPermissionDenied(String[] deniedPermissions) {
            // Do something.
        }

        @Override
        public void onPermissionBlocked(String[] blockedPermissions) {
            // Do something.
        }
    });
}
```

API-23 + https://riptutorial.com/zh-CN/android/topic/1525/api-23-plus

28: AudioManager

Examples

```
audioManager = (AudioManager) getSystemService(Context.AUDIO_SERVICE);

audioManager.requestAudioFocus(audioListener, AudioManager.STREAM_MUSIC,
AudioManager.AUDIOFOCUS_GAIN_TRANSIENT);

changedListener = new AudioManager.OnAudioFocusChangeListener() {
    @Override
    public void onAudioFocusChange(int focusChange) {
        if (focusChange == AudioManager.AUDIOFOCUS_GAIN) {
            // You now have the audio focus and may play sound.
            // When the sound has been played you give the focus back.
            audioManager.abandonAudioFocus(changedListener);
        }
    }
}
```

```
audioManager = (AudioManager) getSystemService(Context.AUDIO_SERVICE);

audioManager.requestAudioFocus(audioListener, AudioManager.STREAM_MUSIC,
AudioManager.AUDIOFOCUS_GAIN);

changedListener = new AudioManager.OnAudioFocusChangeListener() {
    @Override
    public void onAudioFocusChange(int focusChange) {
        if (focusChange == AudioManager.AUDIOFOCUS_GAIN) {
            // You now have the audio focus and may play sound.
        }
        else if (focusChange == AudioManager.AUDIOFOCUS_REQUEST_FAILED) {
            // Handle the failure.
        }
    }
}
```

AudioManager https://riptutorial.com/zh-CN/android/topic/6798/audiomanager

29: AudioTrack

Examples

◦ ◦

```
final int duration = 10; // duration of sound
final int sampleRate = 22050; // Hz (maximum frequency is 7902.13Hz (B8))
final int numSamples = duration * sampleRate;
final double samples[] = new double[numSamples];
final short buffer[] = new short[numSamples];
for (int i = 0; i < numSamples; ++i)
{
 samples[i] = Math.sin(2 * Math.PI * i / (sampleRate / note[0])); // Sine wave
 buffer[i] = (short) (samples[i] * Short.MAX_VALUE);  // Higher amplitude increases volume
}
```

AudioTrack◦

```
AudioTrack audioTrack = new AudioTrack(AudioManager.STREAM_MUSIC,
                    sampleRate, AudioFormat.CHANNEL_OUT_MONO,
                    AudioFormat.ENCODING_PCM_16BIT, buffer.length,
                    AudioTrack.MODE_STATIC);
```

```
audioTrack.write(buffer, 0, buffer.length);
audioTrack.play();
```

AudioTrack https://riptutorial.com/zh-CN/android/topic/9155/audiotrack

30: AutoCompleteTextView

AutoCompleteTextView ◦ ◦ ◦

Examples

AutoCompleteTextView

XML

```
<AutoCompleteTextView
   android:id="@+id/autoCompleteTextView1"
   android:layout_width="wrap_content"
   android:layout_height="wrap_content"
   android:layout_alignParentTop="true"
   android:layout_centerHorizontal="true"
   android:layout_marginTop="65dp"
   android:ems="10" />
```

setContentView()

```
final AutoCompleteTextView myAutoCompleteTextView =
    (AutoCompleteTextView) findViewById(R.id.autoCompleteTextView1);
```

```
String[] countries = getResources().getStringArray(R.array.list_of_countries);
ArrayAdapter<String> adapter = new
ArrayAdapter<String>(this,android.R.layout.simple_list_item_1,countries);
myAutoCompleteTextView.setAdapter(adapter);
```

Loader◦

CustomAdapterClickListenerFilter

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:id="@+id/activity_main"
    android:layout_width="match_parent"
    android:layout_height="match_parent">

    <AutoCompleteTextView
        android:id="@+id/auto_name"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:completionThreshold="2"
        android:hint="@string/hint_enter_name" />
</LinearLayout>
```

row.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical">

    <TextView
        android:id="@+id/lbl_name"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:paddingBottom="16dp"
        android:paddingLeft="8dp"
        android:paddingRight="8dp"
        android:paddingTop="16dp"
        android:text="Medium Text"
        android:textAppearance="?android:attr/textAppearanceMedium" />
</RelativeLayout>
```

strings.xml

```
<resources>
    <string name="hint_enter_name">Enter Name</string>
</resources>
```

MainActivity.java

```
public class MainActivity extends AppCompatActivity {
    AutoCompleteTextView txtSearch;
    List<People> mList;
    PeopleAdapter adapter;
    private People selectedPerson;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        mList = retrievePeople();
        txtSearch = (AutoCompleteTextView) findViewById(R.id.auto_name);
        adapter = new PeopleAdapter(this, R.layout.activity_main, R.id.lbl_name, mList);
        txtSearch.setAdapter(adapter);
        txtSearch.setOnItemClickListener(new AdapterView.OnItemClickListener() {
            @Override
            public void onItemClick(AdapterView<?> adapterView, View view, int pos, long id) {
                //this is the way to find selected object/item
                selectedPerson = (People) adapterView.getItemAtPosition(pos);
            }
        });
    }

    private List<People> retrievePeople() {
        List<People> list = new ArrayList<People>();
        list.add(new People("James", "Bond", 1));
        list.add(new People("Jason", "Bourne", 2));
        list.add(new People("Ethan", "Hunt", 3));
```

```
        list.add(new People("Sherlock", "Holmes", 4));
        list.add(new People("David", "Beckham", 5));
        list.add(new People("Bryan", "Adams", 6));
        list.add(new People("Arjen", "Robben", 7));
        list.add(new People("Van", "Persie", 8));
        list.add(new People("Zinedine", "Zidane", 9));
        list.add(new People("Luis", "Figo", 10));
        list.add(new People("John", "Watson", 11));
        return list;
    }
}
```

People.java

```
public class People {

    private String name, lastName;
    private int id;

    public People(String name, String lastName, int id) {
        this.name = name;
        this.lastName = lastName;
        this.id = id;
    }

    public int getId() {
        return id;
    }

    public void setId(int id) {
        this.id = id;
    }

    public String getName() {
        return name;
    }

    public void setName(String name) {
        this.name = name;
    }

    public String getlastName() {
        return lastName;
    }

    public void setlastName(String lastName) {
        this.lastName = lastName;
    }
}
```

PeopleAdapter.java

```
public class PeopleAdapter extends ArrayAdapter<People> {

    Context context;
    int resource, textViewResourceId;
    List<People> items, tempItems, suggestions;
```

```
    public PeopleAdapter(Context context, int resource, int textViewResourceId, List<People>
items) {
        super(context, resource, textViewResourceId, items);
        this.context = context;
        this.resource = resource;
        this.textViewResourceId = textViewResourceId;
        this.items = items;
        tempItems = new ArrayList<People>(items); // this makes the difference.
        suggestions = new ArrayList<People>();
    }

    @Override
    public View getView(int position, View convertView, ViewGroup parent) {
        View view = convertView;
        if (convertView == null) {
            LayoutInflater inflater = (LayoutInflater)
context.getSystemService(Context.LAYOUT_INFLATER_SERVICE);
            view = inflater.inflate(R.layout.row, parent, false);
        }
        People people = items.get(position);
        if (people != null) {
            TextView lblName = (TextView) view.findViewById(R.id.lbl_name);
            if (lblName != null)
                lblName.setText(people.getName());
        }
        return view;
    }

    @Override
    public Filter getFilter() {
        return nameFilter;
    }

    /**
     * Custom Filter implementation for custom suggestions we provide.
     */
    Filter nameFilter = new Filter() {
        @Override
        public CharSequence convertResultToString(Object resultValue) {
            String str = ((People) resultValue).getName();
            return str;
        }

        @Override
        protected FilterResults performFiltering(CharSequence constraint) {
            if (constraint != null) {
                suggestions.clear();
                for (People people : tempItems) {
                    if
(people.getName().toLowerCase().contains(constraint.toString().toLowerCase())) {
                        suggestions.add(people);
                    }
                }
                FilterResults filterResults = new FilterResults();
                filterResults.values = suggestions;
                filterResults.count = suggestions.size();
                return filterResults;
            } else {
                return new FilterResults();
            }
```

```
        }

        @Override
        protected void publishResults(CharSequence constraint, FilterResults results) {
            List<People> filterList = (ArrayList<People>) results.values;
            if (results != null && results.count > 0) {
                clear();
                for (People people : filterList) {
                    add(people);
                    notifyDataSetChanged();
                }
            }
        }
    };
}
```

AutoCompleteTextView https://riptutorial.com/zh-CN/android/topic/5300/autocompletetextview

31: BottomNavigationView

。

。

。 。

- Javadoc

Examples

BottomNavigationView

1. build.gradle

```
compile 'com.android.support:design:25.1.0'
```

2. BottomNavigationView

```
<android.support.design.widget.BottomNavigationView
        xmlns:android="http://schemas.android.com/apk/res/android"
        xmlns:app="http://schemas.android.com/apk/res-auto"
        android:id="@+id/bottom_navigation"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        app:menu="@menu/bottom_navigation_menu"/>
```

3.

```
<!-- res/menu/bottom_navigation_menu.xml -->

<?xml version="1.0" encoding="utf-8"?>
<menu xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto">
    <item
        android:id="@+id/my_action1"
        android:enabled="true"
        android:icon="@drawable/my_drawable"
        android:title="@string/text"
        app:showAsAction="ifRoom" />
    ....
</menu>
```

4.

```
//Get the view
BottomNavigationView bottomNavigationView = (BottomNavigationView)
                findViewById(R.id.bottom_navigation);
//Attach the listener
bottomNavigationView.setOnNavigationItemSelectedListener(
```

```
        new BottomNavigationView.OnNavigationItemSelectedListener() {
            @Override
            public boolean onNavigationItemSelected(@NonNull MenuItem item) {
                switch (item.getItemId()) {

                    case R.id.my_action1:
                        //Do something...
                        break;

                    //...
                }
                return true;//returning false disables the Navigation bar animations
            }
        });
```

BottomNavigation-Demo

BottomNavigationView

BottomNavigationView ◦

BottomNavigationView◦ UI◦

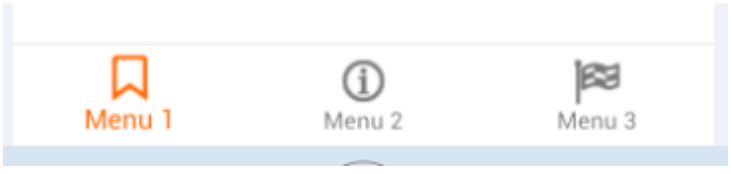
drawable `bottom_navigation_view_selector.xml`

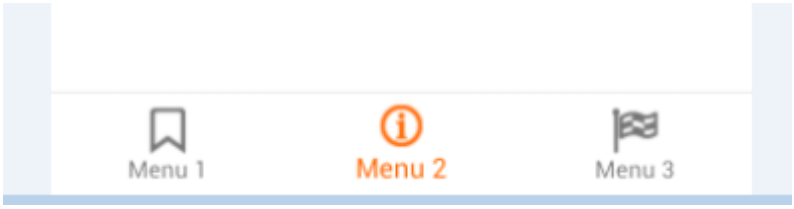
```
<?xml version="1.0" encoding="utf-8"?>
<selector xmlns:android="http://schemas.android.com/apk/res/android">
    <item  android:color="@color/bottom_nv_menu_selected" android:state_checked="true" />
    <item android:color="@color/bottom_nv_menu_default" />
</selector>
```

BottomNavigationView

```
app:itemIconTint="@drawable/bottom_navigation_view_selector"
app:itemTextColor="@drawable/bottom_navigation_view_selector"
```

`app:itemIconTintapp:itemTextColorbottom_navigation_view_selector` ◦ 2◦





I

/。

selector.xml

```
<?xml version="1.0" encoding="utf-8"?>
<selector xmlns:android="http://schemas.android.com/apk/res/android">
    <item android:color="@color/white" android:state_enabled="true" />
    <item android:color="@color/colorPrimaryDark" android:state_enabled="false" />
</selector>
```

design.xml

```
<android.support.design.widget.BottomNavigationView
    android:id="@+id/bottom_navigation"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_alignParentBottom="true"
    app:itemBackground="@color/colorPrimary"
    app:itemIconTint="@drawable/nav_item_color_state"
    app:itemTextColor="@drawable/nav_item_color_state"
    app:menu="@menu/bottom_navigation_main" />
```

3

ShiftMode。

。

```
public static void disableMenuShiftMode(BottomNavigationView view) {
    BottomNavigationMenuView menuView = (BottomNavigationMenuView) view.getChildAt(0);
    try {
        Field shiftingMode = menuView.getClass().getDeclaredField("mShiftingMode");
        shiftingMode.setAccessible(true);
        shiftingMode.setBoolean(menuView, false);
        shiftingMode.setAccessible(false);
        for (int i = 0; i < menuView.getChildCount(); i++) {
            BottomNavigationItemView item = (BottomNavigationItemView) menuView.getChildAt(i);
            //noinspection RestrictedApi
            item.setShiftingMode(false);
            // set once again checked value, so view will be updated
            //noinspection RestrictedApi
            item.setChecked(item.getItemData().isChecked());
        }
    } catch (NoSuchFieldException e) {
        Log.e("BNVHelper", "Unable to get shift mode field", e);
    } catch (IllegalAccessException e) {
        Log.e("BNVHelper", "Unable to change value of shift mode", e);
    }
}
```

3“”。

```
BottomNavigationView navView = (BottomNavigationView)
findViewById(R.id.bottom_navigation_bar);
disableMenuShiftMode(navView);
```

Proguard proguard。

```
-keepclassmembers class android.support.design.internal.BottomNavigationMenuView {
boolean mShiftingMode;
}
```

。

HOTFIX Google。

BottomNavigationView https://riptutorial.com/zh-CN/android/topic/7565/bottomnavigationview

32: Camera 2 API

CameraCaptureSession	CameraDevice
CameraDevice	Android
CameraCharacteristics	CameraDevice。 CameraDeviceCameraManager getCameraCharacteristics(String)
CameraManager	CameraDevices。 Context.getSystemService()
CaptureRequest	。 。 。 createCaptureRequest(int)CaptureRequest.Builder
CaptureResult	。 。 CaptureRequestCameraDevice CaptureRequest

- Camera2 APIAPI 21+Lollipop
- Android21+ ROMCamera2 APILG G2LollipopCamera2 API
- Camera2Camera“Camera1”
- API。
- Camera2Intent

Examples

TextureView

API 23。

ManifestAPI

```
<uses-permission android:name="android.permission.CAMERA"/>
```

Camera2Activity.java TextureViewTextureView 。

ActivityAppCompatActivity

```
public class Camera2Activity extends AppCompatActivity {
```

Camera2 APIMAX_PREVIEW_SIZE1920x1080

```
private static final int MAX_PREVIEW_WIDTH = 1920;
private static final int MAX_PREVIEW_HEIGHT = 1080;
```

TextureView.SurfaceTextureListenerTextureView 。 。 SurfaceTexture。

```
private final TextureView.SurfaceTextureListener mSurfaceTextureListener
```

```
        = new TextureView.SurfaceTextureListener() {

    @Override
    public void onSurfaceTextureAvailable(SurfaceTexture texture, int width, int height) {
        openCamera(width, height);
    }

    @Override
    public void onSurfaceTextureSizeChanged(SurfaceTexture texture, int width, int height) {
        configureTransform(width, height);
    }

    @Override
    public boolean onSurfaceTextureDestroyed(SurfaceTexture texture) {
        return true;
    }

    @Override
    public void onSurfaceTextureUpdated(SurfaceTexture texture) {
    }

};
```

CameraDevice◦ CameraDeviceID

```
private String mCameraId;
```

“” TextureView

```
private TextureView mTextureView;
```

CameraCaptureSession

```
private CameraCaptureSession mCaptureSession;
```

CameraDevice

```
private CameraDevice mCameraDevice;
```

Size ◦

```
private Size mPreviewSize;
```

CameraDevice.StateCallbackCameraDevice

```
private final CameraDevice.StateCallback mStateCallback = new CameraDevice.StateCallback() {

    @Override
    public void onOpened(@NonNull CameraDevice cameraDevice) {
        // This method is called when the camera is opened.  We start camera preview here.
        mCameraOpenCloseLock.release();
        mCameraDevice = cameraDevice;
        createCameraPreviewSession();
    }
```

```
    @Override
    public void onDisconnected(@NonNull CameraDevice cameraDevice) {
        mCameraOpenCloseLock.release();
        cameraDevice.close();
        mCameraDevice = null;
    }

    @Override
    public void onError(@NonNull CameraDevice cameraDevice, int error) {
        mCameraOpenCloseLock.release();
        cameraDevice.close();
        mCameraDevice = null;
        finish();
    }

};
```

UI

```
private HandlerThread mBackgroundThread;
```

Handler

```
private Handler mBackgroundHandler;
```

ImageReader

```
private ImageReader mImageReader;
```

CaptureRequest.Builder

```
private CaptureRequest.Builder mPreviewRequestBuilder;
```

CaptureRequestmPreviewRequestBuilder

```
private CaptureRequest mPreviewRequest;
```

Semaphore ◦

```
private Semaphore mCameraOpenCloseLock = new Semaphore(1);
```

ID

```
private static final int REQUEST_CAMERA_PERMISSION = 1;
```

Android

```
@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_camera2);
```

```
    mTextureView = (TextureView) findViewById(R.id.texture);
}

@Override
public void onResume() {
    super.onResume();
    startBackgroundThread();

    // When the screen is turned off and turned back on, the SurfaceTexture is already
    // available, and "onSurfaceTextureAvailable" will not be called. In that case, we can
open
    // a camera and start preview from here (otherwise, we wait until the surface is ready in
    // the SurfaceTextureListener).
    if (mTextureView.isAvailable()) {
        openCamera(mTextureView.getWidth(), mTextureView.getHeight());
    } else {
        mTextureView.setSurfaceTextureListener(mSurfaceTextureListener);
    }
}

@Override
public void onPause() {
    closeCamera();
    stopBackgroundThread();
    super.onPause();
}
```

Camera2

Camera2 API

```
private void openCamera(int width, int height) {
    if (ContextCompat.checkSelfPermission(this, Manifest.permission.CAMERA)
            != PackageManager.PERMISSION_GRANTED) {
        requestCameraPermission();
        return;
    }
    setUpCameraOutputs(width, height);
    configureTransform(width, height);
    CameraManager manager = (CameraManager) getSystemService(Context.CAMERA_SERVICE);
    try {
        if (!mCameraOpenCloseLock.tryAcquire(2500, TimeUnit.MILLISECONDS)) {
            throw new RuntimeException("Time out waiting to lock camera opening.");
        }
        manager.openCamera(mCameraId, mStateCallback, mBackgroundHandler);
    } catch (CameraAccessException e) {
        e.printStackTrace();
    } catch (InterruptedException e) {
        throw new RuntimeException("Interrupted while trying to lock camera opening.", e);
    }
}
```

```
private void closeCamera() {
    try {
        mCameraOpenCloseLock.acquire();
        if (null != mCaptureSession) {
            mCaptureSession.close();
            mCaptureSession = null;
```

```
        }
        if (null != mCameraDevice) {
            mCameraDevice.close();
            mCameraDevice = null;
        }
        if (null != mImageReader) {
            mImageReader.close();
            mImageReader = null;
        }
    } catch (InterruptedException e) {
        throw new RuntimeException("Interrupted while trying to lock camera closing.", e);
    } finally {
        mCameraOpenCloseLock.release();
    }
}
```

```
private void setUpCameraOutputs(int width, int height) {
    CameraManager manager = (CameraManager) getSystemService(Context.CAMERA_SERVICE);
    try {
        for (String cameraId : manager.getCameraIdList()) {
            CameraCharacteristics characteristics
                    = manager.getCameraCharacteristics(cameraId);

            // We don't use a front facing camera in this sample.
            Integer facing = characteristics.get(CameraCharacteristics.LENS_FACING);
            if (facing != null && facing == CameraCharacteristics.LENS_FACING_FRONT) {
                continue;
            }

            StreamConfigurationMap map = characteristics.get(
                    CameraCharacteristics.SCALER_STREAM_CONFIGURATION_MAP);
            if (map == null) {
                continue;
            }

            // For still image captures, we use the largest available size.
            Size largest = Collections.max(
                    Arrays.asList(map.getOutputSizes(ImageFormat.JPEG)),
                    new CompareSizesByArea());
            mImageReader = ImageReader.newInstance(largest.getWidth(), largest.getHeight(),
                    ImageFormat.JPEG, /*maxImages*/2);
            mImageReader.setOnImageAvailableListener(
                    null, mBackgroundHandler);

            Point displaySize = new Point();
            getWindowManager().getDefaultDisplay().getSize(displaySize);
            int rotatedPreviewWidth = width;
            int rotatedPreviewHeight = height;
            int maxPreviewWidth = displaySize.x;
            int maxPreviewHeight = displaySize.y;

            if (maxPreviewWidth > MAX_PREVIEW_WIDTH) {
                maxPreviewWidth = MAX_PREVIEW_WIDTH;
            }

            if (maxPreviewHeight > MAX_PREVIEW_HEIGHT) {
                maxPreviewHeight = MAX_PREVIEW_HEIGHT;
            }

            // Danger! Attempting to use too large a preview size could  exceed the camera
```

```
            // bus' bandwidth limitation, resulting in gorgeous previews but the storage of
            // garbage capture data.
            mPreviewSize = chooseOptimalSize(map.getOutputSizes(SurfaceTexture.class),
                    rotatedPreviewWidth, rotatedPreviewHeight, maxPreviewWidth,
                    maxPreviewHeight, largest);

            mCameraId = cameraId;
            return;
        }
    } catch (CameraAccessException e) {
        e.printStackTrace();
    } catch (NullPointerException e) {
        // Currently an NPE is thrown when the Camera2API is used but not supported on the
        // device this code runs.
        Toast.makeText(Camera2Activity.this, "Camera2 API not supported on this device",
Toast.LENGTH_LONG).show();
    }
}
```

CameraCaptureSession

```
private void createCameraPreviewSession() {
    try {
        SurfaceTexture texture = mTextureView.getSurfaceTexture();
        assert texture != null;

        // We configure the size of default buffer to be the size of camera preview we want.
        texture.setDefaultBufferSize(mPreviewSize.getWidth(), mPreviewSize.getHeight());

        // This is the output Surface we need to start preview.
        Surface surface = new Surface(texture);

        // We set up a CaptureRequest.Builder with the output Surface.
        mPreviewRequestBuilder
                = mCameraDevice.createCaptureRequest(CameraDevice.TEMPLATE_PREVIEW);
        mPreviewRequestBuilder.addTarget(surface);

        // Here, we create a CameraCaptureSession for camera preview.
        mCameraDevice.createCaptureSession(Arrays.asList(surface, mImageReader.getSurface()),
                new CameraCaptureSession.StateCallback() {

                    @Override
                    public void onConfigured(@NonNull CameraCaptureSession
cameraCaptureSession) {
                        // The camera is already closed
                        if (null == mCameraDevice) {
                            return;
                        }

                        // When the session is ready, we start displaying the preview.
                        mCaptureSession = cameraCaptureSession;
                        try {
                            // Auto focus should be continuous for camera preview.
                            mPreviewRequestBuilder.set(CaptureRequest.CONTROL_AF_MODE,
                                    CaptureRequest.CONTROL_AF_MODE_CONTINUOUS_PICTURE);

                            // Finally, we start displaying the camera preview.
                            mPreviewRequest = mPreviewRequestBuilder.build();
                            mCaptureSession.setRepeatingRequest(mPreviewRequest,
                                    null, mBackgroundHandler);
```

```
                        } catch (CameraAccessException e) {
                            e.printStackTrace();
                        }
                    }

                    @Override
                    public void onConfigureFailed(
                            @NonNull CameraCaptureSession cameraCaptureSession) {
                        showToast("Failed");
                    }
                }, null
        );
    } catch (CameraAccessException e) {
        e.printStackTrace();
    }
}
```

Android API 23+

```
private void requestCameraPermission() {
    if (ActivityCompat.shouldShowRequestPermissionRationale(this, Manifest.permission.CAMERA))
{
        new AlertDialog.Builder(Camera2Activity.this)
                .setMessage("R string request permission")
                .setPositiveButton(android.R.string.ok, new DialogInterface.OnClickListener()
{
                    @Override
                    public void onClick(DialogInterface dialog, int which) {
                        ActivityCompat.requestPermissions(Camera2Activity.this,
                                new String[]{Manifest.permission.CAMERA},
                                REQUEST_CAMERA_PERMISSION);
                    }
                })
                .setNegativeButton(android.R.string.cancel,
                        new DialogInterface.OnClickListener() {
                            @Override
                            public void onClick(DialogInterface dialog, int which) {
                                finish();

                            }
                        })
                .create();

    } else {
        ActivityCompat.requestPermissions(this, new String[]{Manifest.permission.CAMERA},
                REQUEST_CAMERA_PERMISSION);
    }
}

@Override
public void onRequestPermissionsResult(int requestCode, @NonNull String[] permissions,
                                       @NonNull int[] grantResults) {
    if (requestCode == REQUEST_CAMERA_PERMISSION) {
        if (grantResults.length != 1 || grantResults[0] != PackageManager.PERMISSION_GRANTED)
{
            Toast.makeText(Camera2Activity.this, "ERROR: Camera permissions not granted",
Toast.LENGTH_LONG).show();
        }
    } else {
        super.onRequestPermissionsResult(requestCode, permissions, grantResults);
```

```
    }
}
```

/

```
private void startBackgroundThread() {
    mBackgroundThread = new HandlerThread("CameraBackground");
    mBackgroundThread.start();
    mBackgroundHandler = new Handler(mBackgroundThread.getLooper());
}

private void stopBackgroundThread() {
    mBackgroundThread.quitSafely();
    try {
        mBackgroundThread.join();
        mBackgroundThread = null;
        mBackgroundHandler = null;
    } catch (InterruptedException e) {
        e.printStackTrace();
    }
}
```

`Size` **S**◦

```
private static Size chooseOptimalSize(Size[] choices, int textureViewWidth,
                                      int textureViewHeight, int maxWidth, int maxHeight, Size
aspectRatio) {

    // Collect the supported resolutions that are at least as big as the preview Surface
    List<Size> bigEnough = new ArrayList<>();
    // Collect the supported resolutions that are smaller than the preview Surface
    List<Size> notBigEnough = new ArrayList<>();
    int w = aspectRatio.getWidth();
    int h = aspectRatio.getHeight();
    for (Size option : choices) {
        if (option.getWidth() <= maxWidth && option.getHeight() <= maxHeight &&
                option.getHeight() == option.getWidth() * h / w) {
            if (option.getWidth() >= textureViewWidth &&
                    option.getHeight() >= textureViewHeight) {
                bigEnough.add(option);
            } else {
                notBigEnough.add(option);
            }
        }
    }

    // Pick the smallest of those big enough. If there is no one big enough, pick the
    // largest of those not big enough.
    if (bigEnough.size() > 0) {
        return Collections.min(bigEnough, new CompareSizesByArea());
    } else if (notBigEnough.size() > 0) {
        return Collections.max(notBigEnough, new CompareSizesByArea());
    } else {
        Log.e("Camera2", "Couldn't find any suitable preview size");
        return choices[0];
    }
}
```

mTextureView MatrixmTextureView

```
private void configureTransform(int viewWidth, int viewHeight) {
    if (null == mTextureView || null == mPreviewSize) {
        return;
    }
    int rotation = getWindowManager().getDefaultDisplay().getRotation();
    Matrix matrix = new Matrix();
    RectF viewRect = new RectF(0, 0, viewWidth, viewHeight);
    RectF bufferRect = new RectF(0, 0, mPreviewSize.getHeight(), mPreviewSize.getWidth());
    float centerX = viewRect.centerX();
    float centerY = viewRect.centerY();
    if (Surface.ROTATION_90 == rotation || Surface.ROTATION_270 == rotation) {
        bufferRect.offset(centerX - bufferRect.centerX(), centerY - bufferRect.centerY());
        matrix.setRectToRect(viewRect, bufferRect, Matrix.ScaleToFit.FILL);
        float scale = Math.max(
                (float) viewHeight / mPreviewSize.getHeight(),
                (float) viewWidth / mPreviewSize.getWidth());
        matrix.postScale(scale, scale, centerX, centerY);
        matrix.postRotate(90 * (rotation - 2), centerX, centerY);
    } else if (Surface.ROTATION_180 == rotation) {
        matrix.postRotate(180, centerX, centerY);
    }
    mTextureView.setTransform(matrix);
}
```

Size ◦

```
static class CompareSizesByArea implements Comparator<Size> {

    @Override
    public int compare(Size lhs, Size rhs) {
        // We cast here to ensure the multiplications won't overflow
        return Long.signum((long) lhs.getWidth() * lhs.getHeight() -
                (long) rhs.getWidth() * rhs.getHeight());
    }
}
```

```
/**
 * Shows a {@link Toast} on the UI thread.
 *
 * @param text The message to show
 */
private void showToast(final String text) {
    runOnUiThread(new Runnable() {
        @Override
        public void run() {
            Toast.makeText(Camera2Activity.this, text, Toast.LENGTH_SHORT).show();
        }
    });
}
```

Camera 2 API https://riptutorial.com/zh-CN/android/topic/619/camera-2-api

33: CardView

FrameLayout。

CardViewLollipop。

LollipopCardView。 setPreventCornerOverlapboolean。

cardBackgroundColor	CardView。
cardCornerRadius	CardView。
cardElevation	CardView。
cardMaxElevation	CardView。
cardPreventCornerOverlap	v20CardView。
cardUseCompatPadding	API v21 +。 “true”“false”。
contentPadding	CardView。
contentPaddingBottom	CardView。
contentPaddingLeft	CardView。
contentPaddingRight	CardView。
cardElevation	CardView。
contentPaddingTop	CardView。

`CardView`LollipopAPI 21`CardView`。 Lollipop `CardView`。

`ImageViewCardView`LollipopAPI 21。 `CardViewsetPreventCornerOverlap(false)` `app:cardPreventCornerOverlap="false"` 。

`CardViewbuild.gradlebuild.gradle`

```
dependencies{
    compile 'com.android.support:cardview-v7:25.2.0'
}
```

https://developer.android.com/reference/android/support/v7/widget/CardView.html
https://developer.android.com/training/material/lists-cards.html

Examples

CardView

CardViewAndroid。

CardViewbuild.gradle。

```
compile 'com.android.support:cardview-v7:25.1.1'
```

。

```
<android.support.v7.widget.CardView
        xmlns:card_view="http://schemas.android.com/apk/res-auto"
        android:layout_width="match_parent"
        android:layout_height="wrap_content">

        <!-- one child layout containing other layouts or views -->

</android.support.v7.widget.CardView>
```

。

CardViewUI。

```
<?xml version="1.0" encoding="utf-8"?>
<android.support.v7.widget.CardView
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:card_view="http://schemas.android.com/apk/res-auto"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:id="@+id/card_view"
    android:layout_margin="5dp"
    card_view:cardBackgroundColor="#81C784"
    card_view:cardCornerRadius="12dp"
    card_view:cardElevation="3dp"
    card_view:contentPadding="4dp" >

    <RelativeLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:padding="16dp" >

        <ImageView
            android:layout_width="100dp"
            android:layout_height="100dp"
            android:id="@+id/item_image"
            android:layout_alignParentLeft="true"
            android:layout_alignParentTop="true"
            android:layout_marginRight="16dp"
            />

        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
```

```
            android:id="@+id/item_title"
            android:layout_toRightOf="@+id/item_image"
            android:layout_alignParentTop="true"
            android:textSize="30sp"
            />

        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:id="@+id/item_detail"
            android:layout_toRightOf="@+id/item_image"
            android:layout_below="@+id/item_title"
            />

    </RelativeLayout>
</android.support.v7.widget.CardView>
```

CardView

CardView。

xml

1. `card_view:cardElevation`CardView。
2. `card_view:cardBackgroundColor`CardView。
3. `card_view:cardCornerRadius`4CardView
4. `card_view:contentPadding`

card_view。 xmlnscard_view =“ http://schemas.android.com/apk/res-auto ”

```
<android.support.v7.widget.CardView
        xmlns:card_view="http://schemas.android.com/apk/res-auto"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        card_view:cardElevation="4dp"
        card_view:cardBackgroundColor="@android:color/white"
        card_view:cardCornerRadius="8dp"
        card_view:contentPadding="16dp">

        <!-- one child layout containing other layouts or views -->

</android.support.v7.widget.CardView>
```

```
card.setCardBackgroundColor(....);
card.setCardElevation(...);
card.setRadius(....);
card.setContentPadding();
```

javadoc。

Ripple

CardView

```
<android.support.v7.widget.CardView
  ...
  android:clickable="true"
  android:foreground="?android:attr/selectableItemBackground">
  ...
</android.support.v7.widget.CardView>
```

CardView

CardView“/”。 。 Pre-lollipop。

`card_view:cardPreventCornerOverlap="false"card_view:cardPreventCornerOverlap="false"` 。 1。 XML 。

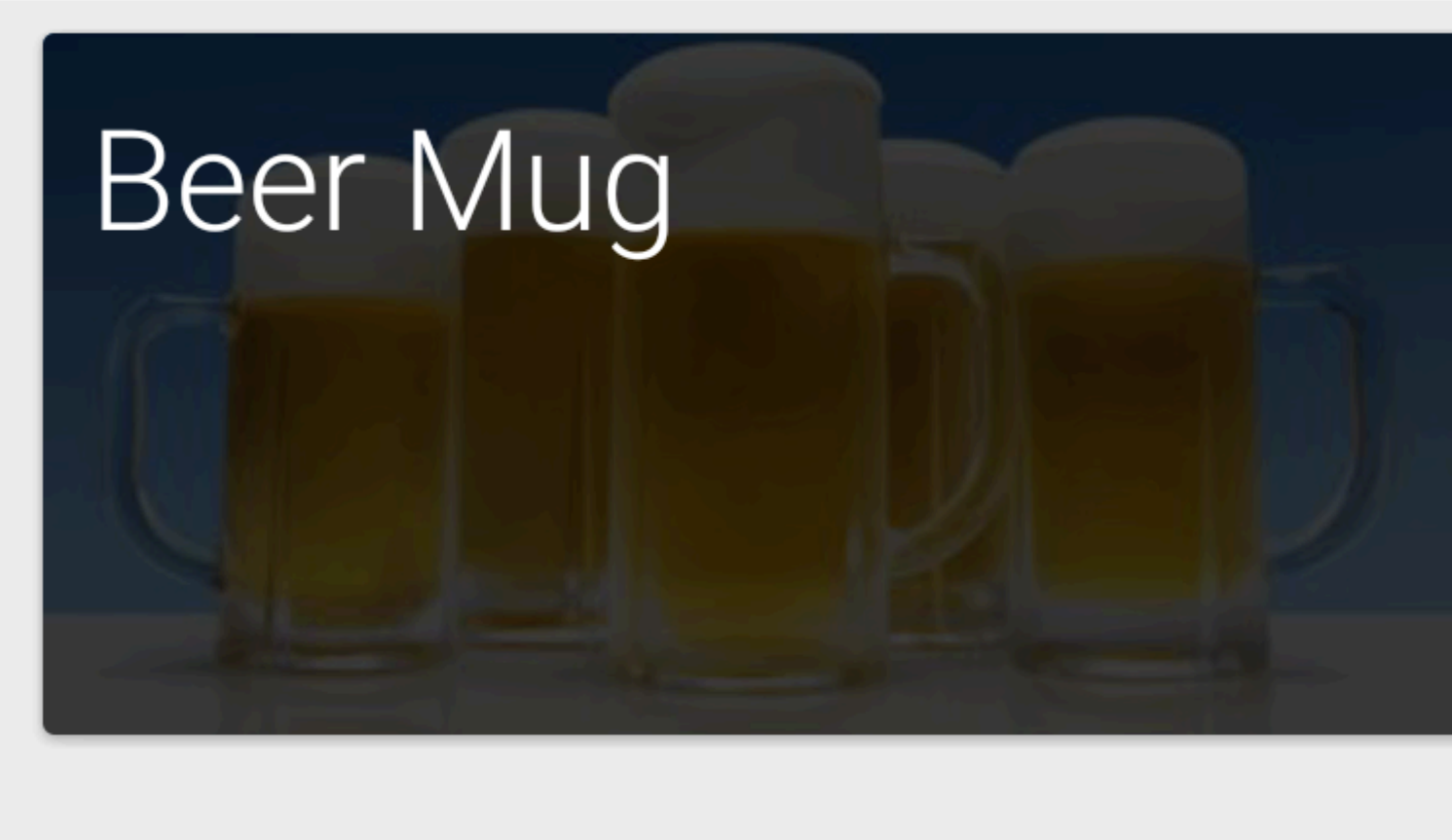
```
<android.support.v7.widget.CardView
    xmlns:card_view="http://schemas.android.com/apk/res-auto"
    android:layout_width="match_parent"
    card_view:cardPreventCornerOverlap="false"
    android:layout_height="wrap_content">
      <ImageView
            android:id="@+id/row_wallet_redeem_img"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:adjustViewBounds="true"
            android:scaleType="centerCrop"
            android:src="@drawable/bg_image" />

</android.support.v7.widget.CardView>
```

2. Java`cardView.setPreventCornerOverlap(false)` 。

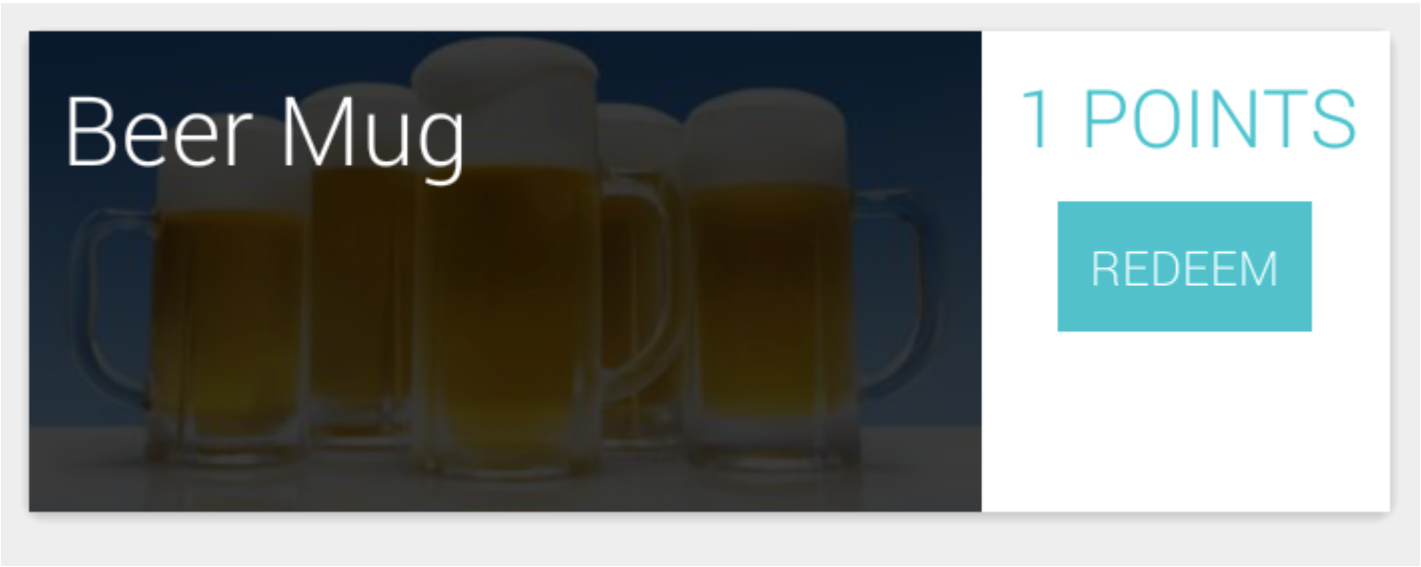
。 。

1API



2API 19

3 `cardView.setPreventCornerOverlap(false)` **API 19**



SOF

TransitionDrawableCardView

```
public void setCardColorTran(CardView card) {
    ColorDrawable[] color = {new ColorDrawable(Color.BLUE), new ColorDrawable(Color.RED)};
    TransitionDrawable trans = new TransitionDrawable(color);
    if(Build.VERSION.SDK_INT > Build.VERSION_CODES.ICE_CREAM_SANDWICH_MR1) {
        card.setBackground(trans);
    } else {
        card.setBackgroundDrawable(trans);
    }
    trans.startTransition(5000);
}
```

CardView https://riptutorial.com/zh-CN/android/topic/726/cardview

34: CleverTap

CleverTapSDK - Android

https://clevertap.comCleverTap。

Examples

SDK

```
CleverTapAPI cleverTap;
try {
  cleverTap = CleverTapAPI.getInstance(getApplicationContext());
} catch (CleverTapMetaDataNotFoundException e) {
  // thrown if you haven't specified your CleverTap Account ID or Token in your
AndroidManifest.xml
} catch (CleverTapPermissionsNotSatisfied e) {
  // thrown if you haven’t requested the required permissions in your AndroidManifest.xml
}
```

`onCreate()`

```
CleverTapAPI.setDebugLevel(1);
```

CleverTap https://riptutorial.com/zh-CN/android/topic/9337/clevertap

35: ConstraintLayout

`ConstraintLayoutViewGroup` ◦ Android 2.3API9◦

◦ `RelativeLayout` `RelativeLayout`Android Studio◦

- **ConstraintLayout**
  - public void addViewView childint indexViewGroup.LayoutParams params
  - public ConstraintLayout.LayoutParams generateLayoutParamsAttributeSet attrs
  - public void onViewAdded
  - public void onViewRemoved
  - public void removeView
  - public void requestLayout
  - protected boolean checkLayoutParamsViewGroup.LayoutParams params
  - protected ConstraintLayout.LayoutParams generateDefaultLayoutParams
  - protected ViewGroup.LayoutParams generateLayoutParamsViewGroup.LayoutParams params
  - protected void onLayoutboolean changedint leftint topint rightint bottom
  - protected void onMeasureint widthMeasureSpecint heightMeasureSpec
- **ConstraintLayout.LayoutParams**
  - public void resolveLayoutDirectionint layoutDirection
  - public void validate
  - protected void setBaseAttributesTypedArray aint widthAttrint heightAttr

	`View`
	`View`
PARAMS	`ViewLayoutParams`
ATTRS	`AttributeSetLayoutParams`
	`View`
	`View`

	`View`
	`View`
	`View`
	`View`
widthMeasureSpec	`View`
heightMeasureSpec	`View`
layoutDirection	-
	-
widthAttr	-
heightAttr	-

IO 2016ConstraintLayoutAndroid。
Beta 。

https://codelabs.developers.google.com/codelabs/constraint-layout/index.html

Examples

ConstraintLayout

ConstraintLayoutAndroid Studio 2.232Android。

1. `build.gradle`Constraint Layout`build.gradle`

```
dependencies {
   compile 'com.android.support.constraint:constraint-layout:1.0.2'
}
```

2.

1. “ `New > XML > Layout XML.`
2. `"android.support.constraint.ConstraintLayout"` 。
3. 。

```
<?xml version="1.0" encoding="utf-8"?>
<android.support.constraint.ConstraintLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    android:layout_width="match_parent"
    android:layout_height="match_parent">

</android.support.constraint.ConstraintLayout>
```

`ConstraintLayout` alpha 9 。 `ConstraintLayout`**AB BA.**

```
<android.support.constraint.ConstraintLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    android:layout_width="match_parent"
    android:layout_height="match_parent">

    <!-- this view is linked to the bottomTextView -->
    <TextView
        android:id="@+id/topTextView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="TextView"
        app:layout_constraintBottom_toTopOf="@+id/bottomTextView"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_chainPacked="true"/>

    <!-- this view is linked to the topTextView at the same time -->
    <TextView
        android:id="@+id/bottomTextView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Bottom\nMkay"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/topTextView"/>

</android.support.constraint.ConstraintLayout>
```

。 。

```
app:layout_constraintVertical_bias="0.2"
```

。 。

。 Android。

ConstraintLayout https://riptutorial.com/zh-CN/android/topic/5076/constraintlayout

36: CoordinatorLayoutBehaviors

CoordinatorLayoutFrameLayoutViewGroup。

CoordinatorLayoutXML。

CoordinatorLayout

chrome

CoordinatorLayoutFrameLayout。

CoordinatorLayout.BehaviorCoordinatorLayout.BehaviorCoordinatorLayout 。

CoordinatorLayoutBehaviors 。 DefaultBehaviorViewCoordinatorLayout。

Examples

BehaviorCoordinatorLayout.Behavior。

CoordinatorLayout.Behavior

```
public class MyBehavior<V extends View> extends CoordinatorLayout.Behavior<V> {

      /**
       * Default constructor.
       */
      public MyBehavior() {
      }

      /**
       * Default constructor for inflating a MyBehavior from layout.
       *
       * @param context The {@link Context}.
       * @param attrs The {@link AttributeSet}.
       */
      public MyBehavior(Context context, AttributeSet attrs) {
        super(context, attrs);
      }
}
```

CoordinatorLayout。

```
MyBehavior myBehavior = new MyBehavior();
CoordinatorLayout.LayoutParams params = (CoordinatorLayout.LayoutParams)
view.getLayoutParams();
params.setBehavior(myBehavior);
```

XML

layout_behaviorXML

```
<View
  android:layout_height="...."
  android:layout_width="...."
  app:layout_behavior=".MyBehavior" />
```

@CoordinatorLayout.DefaultBehavior

```
@CoordinatorLayout.DefaultBehavior(MyBehavior.class)
public class MyView extends ..... {

}
```

SwipeDismissBehavior

SwipeDismissBehaviorCoordinatorLayout。

```
        final SwipeDismissBehavior<MyView> swipe = new SwipeDismissBehavior();

        //Sets the swipe direction for this behavior.
        swipe.setSwipeDirection(
            SwipeDismissBehavior.SWIPE_DIRECTION_ANY);

        //Set the listener to be used when a dismiss event occurs
        swipe.setListener(
            new SwipeDismissBehavior.OnDismissListener() {
            @Override public void onDismiss(View view) {
                //......
            }

            @Override
            public void onDragStateChanged(int state) {
                //......
            }
        });

        //Attach the SwipeDismissBehavior to a view
        LayoutParams coordinatorParams =
            (LayoutParams) mView.getLayoutParams();
        coordinatorParams.setBehavior(swipe);
```

CoordinatorLayout.Behavior。 ViewView

- layout_anchor。
- BehaviorlayoutDependsOntrue 。

ImageViewImageViewBehavior

-

```
public class MyBehavior extends CoordinatorLayout.Behavior<ImageView> {...}
```

- layoutDependsOntrue ◦

```
@Override
public boolean layoutDependsOn(CoordinatorLayout parent,
        ImageView child, View dependency) {
    // Returns true to add a dependency.
    return dependency instanceof Toolbar;
}
```

- layoutDependsOntrue onDependentViewChangedonDependentViewChanged

```
@Override
public boolean onDependentViewChanged(CoordinatorLayout parent, ImageView child, View
dependency) {
    // Implement here animations, translations, or movements; always related to the
provided dependency.
    float translationY = Math.min(0, dependency.getTranslationY() -
dependency.getHeight());
    child.setTranslationY(translationY);
}
```

CoordinatorLayoutBehaviors https://riptutorial.com/zh-CN/android/topic/5714/coordinatorlayout behaviors

37: DayNightAppCompat v23.2 / API 14+

Examples

DayNight

DayNight。

styles.xml

```
<style name="AppTheme" parent="Theme.AppCompat.DayNight">
        <!-- Customize your theme here. -->
        <item name="colorPrimary">@color/colorPrimary</item>
        <item name="colorPrimaryDark">@color/colorPrimaryDark</item>
        <item name="colorAccent">@color/colorAccent</item>
</style>
```

- "Theme.AppCompat.DayNight"
- "Theme.AppCompat.DayNight.NoActionBar"
- "Theme.AppCompat.DayNight.DarkActionBar"

colorPrimary colorPrimaryDarkcolorAccent textColorPrimarytextColorSecondary。 style。

res/valuescolors.xml res/values-nightcolors.xml /。

JavaAppCompatDelegate.setDefaultNightMode(int)。 。

```
AppCompatDelegate.setDefaultNightMode(AppCompatDelegate.MODE_NIGHT_NO);
```

- AppCompatDelegate.MODE_NIGHT_NO res/values。 。
- AppCompatDelegate.MODE_NIGHT_YES res/values-night。 。
- AppCompatDelegate.MODE_NIGHT_AUTO valuesvalues-night。

getDefaultNightMode()。

```
int modeType = AppCompatDelegate.getDefaultNightMode();
```

。 AppCompatDelegate.MODE_NIGHT_AUTO。 。

DayNightAppCompat v23.2 / API 14+ https://riptutorial.com/zh-CN/android/topic/7650/daynight-appcompat-v23-2---api-14plus-

38: ExoPlayer

Examples

ExoPlayer

jCenter

build.gradle

```
compile 'com.google.android.exoplayer:exoplayer:rX.X.X'
```

rX.XX。 。Bintray。

ExoPlayer

ExoPlayer

```
exoPlayer = ExoPlayer.Factory.newInstance(RENDERER_COUNT, minBufferMs, minRebufferMs);
```

```
RENDERER_COUNT = 1 //since you want to render simple audio
minBufferMs = 1000
minRebufferMs = 5000
```

。

DataSource。mp3DefaultUriDataSource。ContextUserAgent。nulluserAgent

```
DataSource dataSource = new DefaultUriDataSource(context, null);
```

sampleSource

```
ExtractorSampleSource sampleSource = new ExtractorSampleSource(
                uri, dataSource, new Mp3Extractor(), RENDERER_COUNT, requestedBufferSize);
```

uriExtractormp3Mp3Extractor。 requestedBufferSize。5000。

```
MediaCodecAudioTrackRenderer audioRenderer = new MediaCodecAudioTrackRenderer(sampleSource);
```

exoPlayerprepare

```
exoPlayer.prepare(audioRenderer);
```

```
exoPlayer.setPlayWhenReady(true);
```

TrackRenderer

```
// 1. Instantiate the player.
player = ExoPlayer.Factory.newInstance(RENDERER_COUNT);
// 2. Construct renderers.
MediaCodecVideoTrackRenderer videoRenderer = ...
MediaCodecAudioTrackRenderer audioRenderer = ...
// 3. Inject the renderers through prepare.
player.prepare(videoRenderer, audioRenderer);
// 4. Pass the surface to the video renderer.
player.sendMessage(videoRenderer, MediaCodecVideoTrackRenderer.MSG_SET_SURFACE,     surface);
// 5. Start playback.
player.setPlayWhenReady(true);
...
player.release(); // Don’t forget to release when done!
```

ExoPlayer https://riptutorial.com/zh-CN/android/topic/6248/exoplayer

39: FASTJSON

FastjsonJavaJavaJSON。JSONJava。

Fastjson

Android

`toJSONString()parseObject()`JavaJSON

JSONJSON

Java Generics

- String text
- JSONObject parseObjectString text
- T parseObjectString textClass <T> clazz
- JSONArray parseArrayString text
- <T> List <T> parseArrayString textClass <T> clazz
- String toJSONStringObject object
- String toJSONStringObject objectboolean prettyFormat
- Object toJSONObject javaObject

Examples

FastjsonJSON

Fastjson

```
import com.alibaba.fastjson.JSON;

Group group = new Group();
group.setId(0L);
group.setName("admin");

User guestUser = new User();
guestUser.setId(2L);
guestUser.setName("guest");

User rootUser = new User();
rootUser.setId(3L);
rootUser.setName("root");

group.addUser(guestUser);
group.addUser(rootUser);

String jsonString = JSON.toJSONString(group);

System.out.println(jsonString);
```

```
{"id":0,"name":"admin","users":[{"id":2,"name":"guest"},{"id":3,"name":"root"}]}
```

```
String jsonString = ...;
Group group = JSON.parseObject(jsonString, Group.class);
```

Group.java

```
public class Group {

    private Long id;
    private String name;
    private List<User> users = new ArrayList<User>();

    public Long getId() {
        return id;
    }

    public void setId(Long id) {
        this.id = id;
    }

    public String getName() {
        return name;
    }

    public void setName(String name) {
        this.name = name;
    }

    public List<User> getUsers() {
        return users;
    }

    public void setUsers(List<User> users) {
        this.users = users;
    }

    public void addUser(User user) {
        users.add(user);
    }
}
```

User.java

```
public class User {

    private Long   id;
    private String name;

    public Long getId() {
        return id;
    }

    public void setId(Long id) {
        this.id = id;
    }

    public String getName() {
```

```
        return name;
    }

    public void setName(String name) {
        this.name = name;
    }
}
```

MapJSON String

```
    Group group = new Group();
    group.setId(1);
    group.setName("Ke");

    User user1 = new User();
    user1.setId(2);
    user1.setName("Liu");

    User user2 = new User();
    user2.setId(3);
    user2.setName("Yue");
    group.getList().add(user1);
    group.getList().add(user2);

    Map<Integer, Object> map = new HashMap<Integer,Object>();
    map.put(1, "No.1");
    map.put(2, "No.2");
    map.put(3, group.getList());

    String jsonString = JSON.toJSONString(map);
    System.out.println(jsonString);
```

```
{1:"No.1",2:"No.2",3:[{"id":2,"name":"Liu"},{"id":3,"name":"Yue"}]}
```

FASTJSON https://riptutorial.com/zh-CN/android/topic/10865/fastjson

40: FileIOAndroid

AndroidJava。 `java.io`。 MTP。

Android 。 。

Android。 。

AndroidJavaIO。 `File.delete()` `Context.deleteFile()` `File.listFiles()` `Context.fileList()`。 `java.io`。

Examples

Activity`getFilesDir()`ActivityContext。 。 。 。

```
File myFolder = getFilesDir();
File myFile = new File(myFolder, "myData.bin");
```

```
File myFile = new File(getFilesDir(), "myData.bin");
FileOutputStream out = new FileOutputStream(myFile);

// Write four bytes one two three four:
out.write(new byte [] { 1, 2, 3, 4}
out.close()
```

Android。 BufferedOutputStreamSSD。

AndroidJava。 Serializable

```
class Cirle implements Serializable {
  final int radius;
  final String name;

  Circle(int radius, int name) {
    this.radius = radius;
    this.name = name;
  }
}
```

ObjectOutputStream

```
File myFile = new File(getFilesDir(), "myObjects.bin");
FileOutputStream out = new FileOutputStream(myFile);
ObjectOutputStream oout = new ObjectOutputStream(new BufferedOutputStream(out));

oout.writeObject(new Circle(10, "One"));
oout.writeObject(new Circle(12, "Two"));

oout.close()
```

Java - 。 。

SD

AndroidSD。USBPCMTP。

SD。EnvironmentSD“”SD。 。

Android

```
<uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE" />
<uses-permission android:name="android.permission.READ_EXTERNAL_STORAGE" />
```

Android。Android 6.0Android。

Android 6.0。SO。

“MTP”。

MTPUSBPC。MediaScannerConnection

```
File file = new File(Environment.getExternalStoragePublicDirectory(
        Environment.DIRECTORY_DOCUMENTS), "theDocument.txt");
FileOutputStream out = new FileOutputStream(file)

... (write the document)

out.close()
MediaScannerConnection.scanFile(this, new String[] {file.getPath()}, null, null);
    context.sendBroadcast(new Intent(Intent.ACTION_MEDIA_SCANNER_SCAN_FILE,
            Uri.fromFile(file)));
```

MediaScannerConnection。 Android。 。

/。AndroidAsyncTask

```
    class FileOperation extends AsyncTask<String, Void, File> {

        @Override
        protected File doInBackground(String... params) {
          try {
            File file = new File(Environment.getExternalStoragePublicDirectory(
            Environment.DIRECTORY_DOCUMENTS), "bigAndComplexDocument.odf");
            FileOutputStream out = new FileOutputStream(file)

           ... (write the document)

            out.close()
            return file;
            } catch (IOException ex) {
               Log.e("Unable to write", ex);
               return null;
              }
        }
```

```
        @Override
        protected void onPostExecute(File result) {
          // This is called when we finish
        }

        @Override
        protected void onPreExecute() {
           // This is called before we begin
        }

        @Override
        protected void onProgressUpdate(Void... values) {
            // Unlikely required for this example
        }
    }
}
```

```
new FileOperation().execute("Some parameters");
```

SOAsyncTask。IOExceptions。

FileIOAndroid https://riptutorial.com/zh-CN/android/topic/8689/fileioandroid

41: FileProvider

Examples

◦ pdf◦

FileProvider◦ FileProvider◦

1. XML*res / xml / filepaths.xml*

2. ```
   <paths xmlns:android="http://schemas.android.com/apk/res/android">
       <files-path name="pdf_folder" path="documents/"/>
   </paths>
   ```

FileProvider

```
<manifest>
    ...
    <application>
        ...
        <provider
            android:name="android.support.v4.context.FileProvider"
            android:authorities="com.mydomain.fileprovider"
            android:exported="false"
            android:grantUriPermissions="true">
            <meta-data
                android:name="android.support.FILE_PROVIDER_PATHS"
                android:resource="@xml/filepaths" />
        </provider>
        ...
    </application>
    ...
</manifest>
```

URI

◦ URI◦

```
// We assume the file we want to load is in the documents/ subdirectory
// of the internal storage
File documentsPath = new File(Context.getFilesDir(), "documents");
File file = new File(documentsPath, "sample.pdf");
// This can also in one line of course:
// File file = new File(Context.getFilesDir(), "documents/sample.pdf");

Uri uri = FileProvider.getUriForFile(getContext(), "com.mydomain.fileprovider", file);
```
```

File。URIFileProvider。FileProvider。FileProvider。

ShareCompat

```
Intent intent = ShareCompat.IntentBuilder.from(getContext())
    .setType("application/pdf")
    .setStream(uri)
    .setChooserTitle("Choose bar")
    .createChooserIntent()
    .addFlags(Intent.FLAG_GRANT_READ_URI_PERMISSION);

Context.startActivity(intent);
```

/。Intent.FLAG_GRANT_READ_URI_PERMISSIONURI。

FileProvider https://riptutorial.com/zh-CN/android/topic/6266/fileprovider

42: Firebase

FirebaseFCM。

FCM。 。 4KB。

Examples

AndroidFirebase

1. Firebase。
   Firebase。

2. Firebase Cloud Messagingbuild.gradle

```
dependencies {
     compile 'com.google.firebase:firebase-messaging:10.2.1'
}
```

AndroidFCM。

FCMAndroid 2.3Google PlayGoogle APIAndroid 2.3。

AndroidManifest.xml

```
<service
    android:name=".MyFirebaseMessagingService">
    <intent-filter>
        <action android:name="com.google.firebase.MESSAGING_EVENT"/>
    </intent-filter>
</service>

<service
    android:name=".MyFirebaseInstanceIDService">
    <intent-filter>
        <action android:name="com.google.firebase.INSTANCE_ID_EVENT"/>
    </intent-filter>
</service>
```

FCM SDK。

FirebaseInstanceIdService。

onTokenRefreshFirebaseInstanceID.getToken()。

```
public class MyFirebaseInstanceIDService extends FirebaseInstanceIdService {

   /**
     * Called if InstanceID token is updated. This may occur if the security of
     * the previous token had been compromised. Note that this is called when the InstanceID
token
```

```
     * is initially generated so this is where you would retrieve the token.
     */

    @Override
    public void onTokenRefresh() {
        // Get updated InstanceID token.
        String refreshedToken = FirebaseInstanceId.getInstance().getToken();
        Log.d(TAG, "Refreshed token: " + refreshedToken);

    }

}
```

webView

FirebaseMessagingService

```
    public class MyFirebaseMessagingService extends FirebaseMessagingService {
Bitmap bitmap;
@Override
public void onMessageReceived(RemoteMessage remoteMessage) {
    String message = remoteMessage.getData().get("message");
    //imageUri will contain URL of the image to be displayed with Notification
    String imageUri = remoteMessage.getData().get("image");
    String link=remoteMessage.getData().get("link");

    //To get a Bitmap image from the URL received
    bitmap = getBitmapfromUrl(imageUri);
    sendNotification(message, bitmap,link);

}


/**
 * Create and show a simple notification containing the received FCM message.
 */

private void sendNotification(String messageBody, Bitmap image, String link) {
    Intent intent = new Intent(this, NewsListActivity.class);
    intent.addFlags(Intent.FLAG_ACTIVITY_CLEAR_TOP);
    intent.putExtra("LINK",link);
    PendingIntent pendingIntent = PendingIntent.getActivity(this, 0 /* Request code */,
intent,
            PendingIntent.FLAG_ONE_SHOT);
    Uri defaultSoundUri = RingtoneManager.getDefaultUri(RingtoneManager.TYPE_NOTIFICATION);
    NotificationCompat.Builder notificationBuilder = new NotificationCompat.Builder(this)
            .setLargeIcon(image)/*Notification icon image*/
            .setSmallIcon(R.drawable.hindi)
            .setContentTitle(messageBody)
            .setStyle(new NotificationCompat.BigPictureStyle()
                    .bigPicture(image))/*Notification with Image*/
            .setAutoCancel(true)
            .setSound(defaultSoundUri)
            .setContentIntent(pendingIntent);
    NotificationManager notificationManager =
            (NotificationManager) getSystemService(Context.NOTIFICATION_SERVICE);

    notificationManager.notify(0 /* ID of notification */, notificationBuilder.build());
}
```

```
public Bitmap getBitmapfromUrl(String imageUrl) {
    try {
        URL url = new URL(imageUrl);
        HttpURLConnection connection = (HttpURLConnection) url.openConnection();
        connection.setDoInput(true);
        connection.connect();
        InputStream input = connection.getInputStream();
        Bitmap bitmap = BitmapFactory.decodeStream(input);
        return bitmap;

    } catch (Exception e) {
        // TODO Auto-generated catch block
        e.printStackTrace();
        return null;

    }
}}
```

MainActivityWebView。

```
if (getIntent().getExtras() != null) {
    if (getIntent().getStringExtra("LINK")!=null) {
        Intent i=new Intent(this,BrowserActivity.class);
        i.putExtra("link",getIntent().getStringExtra("LINK"));
        i.putExtra("PUSH","yes");
        NewsListActivity.this.startActivity(i);
        finish();
    }}
```

FirebaseMessagingServiceonMessageReceived。

```
public class MyFcmListenerService extends FirebaseMessagingService {

    /**
     * Called when message is received.
     *
     * @param remoteMessage Object representing the message received from Firebase Cloud
Messaging.
     */
    @Override
    public void onMessageReceived(RemoteMessage message) {
        String from = message.getFrom();

        // Check if message contains a data payload.
        if (remoteMessage.getData().size() > 0) {
            Log.d(TAG, "Message data payload: " + remoteMessage.getData());
            Map<String, String> data = message.getData();
        }

        // Check if message contains a notification payload.
        if (remoteMessage.getNotification() != null) {
            Log.d(TAG, "Message Notification Body: " +
remoteMessage.getNotification().getBody());
        }

        //.....
    }
```

Android。。

Notifications。。

	onMessageReceived	onMessageReceived	onMessageReceived
		onMessageReceived	
			。

。FCM。

`subscribeToTopic()`

```
FirebaseMessaging.getInstance().subscribeToTopic("myTopic");
```

Firebase https://riptutorial.com/zh-CN/android/topic/8826/firebase

43: Firebase

-

Examples

Firebase

FirebaseDatabase

```
FirebaseDatabase database = FirebaseDatabase.getInstance();
```

```
// Write a message to the database
FirebaseDatabase database = FirebaseDatabase.getInstance();
DatabaseReference myRef = database.getReference("message");

myRef.setValue("Hello, World!");
```

```
// Read from the database
myRef.addValueEventListener(new ValueEventListener() {
    @Override
    public void onDataChange(DataSnapshot dataSnapshot) {
        // This method is called once with the initial value and again
        // whenever data at this location is updated.
        String value = dataSnapshot.getValue(String.class);
        Log.d(TAG, "Value is: " + value);
    }

    @Override
    public void onCancelled(DatabaseError error) {
        // Failed to read value
        Log.w(TAG, "Failed to read value.", error.toException());
    }
});
```

Android

```
ChildEventListener childEventListener = new ChildEventListener() {
    @Override
    public void onChildAdded(DataSnapshot dataSnapshot, String previousChildName) {
        Log.d(TAG, "onChildAdded:" + dataSnapshot.getKey());
    }

    @Override
    public void onChildChanged(DataSnapshot dataSnapshot, String previousChildName) {
        Log.d(TAG, "onChildChanged:" + dataSnapshot.getKey());
    }

    @Override
    public void onChildRemoved(DataSnapshot dataSnapshot) {
        Log.d(TAG, "onChildRemoved:" + dataSnapshot.getKey());

    }
```

```
    @Override
    public void onChildMoved(DataSnapshot dataSnapshot, String previousChildName) {
        Log.d(TAG, "onChildMoved:" + dataSnapshot.getKey());

    }

    @Override
    public void onCancelled(DatabaseError databaseError) {
        Log.w(TAG, "postComments:onCancelled", databaseError.toException());
        Toast.makeText(mContext, "Failed to load comments.",
                Toast.LENGTH_SHORT).show();
    }
};
ref.addChildEventListener(childEventListener);
```

1. Firebase。
   Firebase。

2. Firebase`build.gradle`

```
compile 'com.google.firebase:firebase-database:10.2.1'
```

3. Firebase

Android。

`messageHello World`。

```
// Write a message to the database
FirebaseDatabase database = FirebaseDatabase.getInstance();
DatabaseReference myRef = database.getReference("message");

myRef.setValue("Hello, World!");
```

Firebase

Firebase。 FirebaseAndroid。

Firebase*build.gradle*

```
compile 'com.google.firebase:firebase-database:9.4.0'
```

Firebase。

1Chat

```
public class Chat{
    public String name, message;
}
```

2JSON

/Firebase/JSON。。

```
[
    {
        "name":"John Doe",
        "message":"My first Message"
    },
    {
        "name":"John Doe",
        "message":"Second Message"
    },
    {
        "name":"John Doe",
        "message":"Third Message"
    }
]
```

3

。 childEventListener

```
DatabaseReference chatDb = FirebaseDatabase.getInstance().getReference() // Referencing the
root of the database.
        .child("chats"); // Referencing the "chats" node under the root.

chatDb.addChildEventListener(new ChildEventListener() {
    @Override
    public void onChildAdded(DataSnapshot dataSnapshot, String s) {
        // This function is called for every child id chat in this case, so using the above
        // example, this function is going to be called 3 times.

        // Retrieving the Chat object from this function is simple.
        Chat chat; // Create a null chat object.

        // Use the getValue function in the dataSnapshot and pass the object's class name to
        // which you want to convert and get data. In this case it is Chat.class.
        chat = dataSnapshot.getValue(Chat.class);

        // Now you can use this chat object and add it into an ArrayList or something like
        // that and show it in the recycler view.
    }

    @Override
    public void onChildChanged(DataSnapshot dataSnapshot, String s) {
        // This function is called when any of the node value is changed, dataSnapshot will
        // get the data with the key of the child, so you can swap the new value with the
        // old one in the ArrayList or something like that.

        // To get the key, use the .getKey() function.
        // To get the value, use code similar to the above one.
    }
```

```
    @Override
    public void onChildRemoved(DataSnapshot dataSnapshot) {
        // This function is called when any of the child node is removed. dataSnapshot will
        // get the data with the key of the child.

        // To get the key, use the s String parameter .
    }

    @Override
    public void onChildMoved(DataSnapshot dataSnapshot, String s) {
        // This function is called when any of the child nodes is moved to a different
position.

        // To get the key, use the s String parameter.
    }

    @Override
    public void onCancelled(DatabaseError databaseError) {
        // If anything goes wrong, this function is going to be called.

        // You can get the exception by using databaseError.toException();
    }
});
```

4

Chat

```
Chat chat=new Chat();
chat.name="John Doe";
chat.message="First message from android";
```

```
DatabaseReference chatDb = FirebaseDatabase.getInstance().getReference().child("chats");
```

◦ DatabaseReferencepush()DatabaseReference ◦

```
// The parameter is the chat object that was newly created a few lines above.
chatDb.push().setValue(chat);
```

setValue()onDataChanged“”◦

◦ ◦ ◦

◦

```
|--database
  |-- memos
     |-- memokey1
       |-- title: "Title"
       |-- content: "Message"
     |-- memokey2
```

```
      |-- title: "Important Title"
      |-- content: "Important Message"
  |-- users
     |-- userKey1
       |-- name: "John Doe"
       |-- memos
         |-- memokey1 : true //The values here don't matter, we only need the keys.
         |-- memokey2 : true
     |-- userKey2
       |-- name: "Max Doe"
```

```
public class Memo {
    private String title, content;
    //getters and setters ...

    //toMap() is necessary for the push process
    private Map<String, Object> toMap() {
        HashMap<String, Object> result = new HashMap<>();
        result.put("title", title);
        result.put("content", content);
        return result;
    }
}
```

```
//We need to store the keys and the memos seperately
private ArrayList<String> mKeys = new ArrayList<>();
private ArrayList<Memo> mMemos = new ArrayList<>();

//The user needs to be logged in to retrieve the uid
String currentUserId = FirebaseAuth.getInstance().getCurrentUser().getUid();

//This is the reference to the list of memos a user has
DatabaseReference currentUserMemoReference = FirebaseDatabase.getInstance().getReference()
    .child("users").child(currentUserId).child("memos");

//This is a reference to the list of all memos
DatabaseReference memoReference = FirebaseDatabase.getInstance().getReference()
    .child("memos");

//We start to listen to the users memos,
//this will also retrieve the memos initially
currentUserMemoReference.addChildEventListener(new ChildEventListener() {
        @Override
        public void onChildAdded(DataSnapshot dataSnapshot, String s) {
            //Here we retrieve the key of the memo the user has.
            String key = dataSnapshot.getKey(); //for example memokey1
            //For later manipulations of the lists, we need to store the key in a list
            mKeys.add(key);
            //Now that we know which message belongs to the user,
            //we request it from our memos:
            memoReference.child(key).addValueEventListener(new ValueEventListener() {
                @Override
                    public void onDataChange(DataSnapshot dataSnapshot) {
                         //Here we retrieve our memo:
                         Memo memo = dataSnapshot.getValue(Memo.class);
                         mMemos.add(memo);
                    }

                @Override
```

```
                public void onCancelled(DatabaseError databaseError) { }
            });
        }

        @Override
        public void onChildChanged(DataSnapshot dataSnapshot, String s) { }

        @Override
        public void onChildRemoved(DataSnapshot dataSnapshot) { }

        @Override
        public void onChildMoved(DataSnapshot dataSnapshot, String s) { }

        @Override
        public void onCancelled(DatabaseError databaseError) { }
    }
```

```
//The user needs to be logged in to retrieve the uid
String currentUserUid = FirebaseAuth.getInstance().getCurrentUser().getUid();

//This is the path to the list of memos a user has
String userMemoPath = "users/" + currentUserUid + "/memos/";

//This is the path to the list of all memos
String memoPath = "memos/";

//We need to retrieve an unused key from the memos reference
DatabaseReference memoReference =
FirebaseDatabase.getInstance().getReference().child("memos");
String key = memoReference.push().getKey();
Memo newMemo = new Memo("Important numbers", "1337, 42, 3.14159265359");

Map<String, Object> childUpdates = new HashMap<>();
//The second parameter **here** (the value) does not matter, it's just that the key exists
childUpdates.put(userMemoPath + key, true);
childUpdates.put(memoPath + key, newMemo.toMap());

FirebaseDatabase.getInstance().getReference().updateChildren(childUpdates);
```

```
|--database
  |-- memos
     |-- memokey1
       |-- title: "Title"
       |-- content: "Message"
     |-- memokey2
       |-- title: "Important Title"
       |-- content: "Important Message"
     |-- generatedMemokey3
       |-- title: "Important numbers"
       |-- content: "1337, 42, 3.14159265359"
  |-- users
     |-- userKey1
       |-- name: "John Doe"
       |-- memos
         |-- memokey1 : true //The values here don't matter, we only need the keys.
         |-- memokey2 : true
         |-- generatedMemokey3 : true
     |-- userKey2
       |-- name: "Max Doe"
```

firebase JSON

firebase。firebaseJSON。JSON。。JSON。RDBMS。JSON。

JSONfirebase

```
{
 "user_base" : {
   "342343" : {
     "email" : "kaushal.xxxxx@gmail.com",
     "authToken" : "some string",
     "name" : "Kaushal",
     "phone" : "+919916xxxxxx",
     "serviceProviderId" : "firebase",
     "signInServiceType" : "google",
   },
   "354895" : {
     "email" : "xxxxx.devil@gmail.com",
     "authToken" : "some string",
     "name" : "devil",
     "phone" : "+919685xxxxxx",
     "serviceProviderId" : "firebase",
     "signInServiceType" : "github"
   },
   "371298" : {
     "email" : "bruce.wayne@wayneinc.com",
     "authToken" : "I am batman",
     "name" : "Bruce Wayne",
     "phone" : "+14085xxxxxx",
     "serviceProviderId" : "firebase",
     "signInServiceType" : "shield"
   }
 },
 "user_prefs": {
   "key1":{
     "data": "for key one"
   },
   "key2":{
     "data": "for key two"
   },
   "key3":{
     "data": "for key three"
   }
 },
 //other structures
}
```

JSON。Android。

firebase

android studiogradlefirebase。。firebaseandroid studio。firebasefirebase。

gradlefirebase android SDK。

firebase

```
DatabaseReference userDBRef = FirebaseDatabase.getInstance().getReference();
// above statement point to base tree
userDBRef = DatabaseReference.getInstance().getReference().child("user_base")
// points to user_base table JSON (see previous section)
```

child。Bruce Wayne

```
DatabaseReference bruceWayneRef = userDBRef.child("371298");
// 371298 is key of bruce wayne user in JSON structure (previous section)
```

JSON

```
DatabaseReference bruceWayneRef = DatabaseReference.getInstance().getReference()
     .child("user_base/371298");
// deeply nested data can also be referenced this way, just put the fully
// qualified path in pattern shown in above code "blah/blah1/blah1-2/blah1-2-3..."
```

Android。REST API。Firebase sdk。

ValueEventListener ChildEventListener 。valueJSON。。firebasefirebaselistDBRef。

```
userDBRef.addValueEventListener(new ValueEventListener() {
    @Override
    public void onDataChange(DataSnapshot dataSnapshot) {
        User bruceWayne = dataSnapshot.child("371298").getValue(User.class);
        // Do something with the retrieved data or Bruce Wayne
    }

    @Override
    public void onCancelled(DatabaseError databaseError) {
        Log.e("UserListActivity", "Error occured");
        // Do something about the error
    });
```

Class。DataSnapshotJSONPOJO。

user_base ***addListenerForSingleValueEvent***。。

```
userDBRef.addListenerForSingleValueEvent(new ValueEventListener() {
    @Override
    public void onDataChange(DataSnapshot dataSnapshot) {
        // Do something
    }

    @Override
    public void onCancelled(DatabaseError databaseError) {
        // Do something about the error
    });
```

JSON。

```
String myKey = dataSnapshot.getKey();
```

。firebase。。

ChildEvenListener。JSON

```
userDBRef.addChildEventListener(new ChildEventListener() {
    @Override
    public void onChildAdded(DataSnapshot dataSnapshot, String s) {
    }

    @Override
    public void onChildChanged(DataSnapshot dataSnapshot, String s) {
    }

    @Override
    public void onChildRemoved(DataSnapshot dataSnapshot) {
    }

    @Override
    public void onChildMoved(DataSnapshot dataSnapshot, String s) {
        //If not dealing with ordered data forget about this
    }

    @Override
    public void onCancelled(DatabaseError databaseError) {
    });
```

。。UIonChildAddedJSONPOJOUI。。

onChildChanged。

onChiledRemoved。

JSON。JSON。。。Query。

。33050

```
// class level
final int limit = 50;
int start = 0;

// event level
Query userListQuery = userDBRef.orderByChild("email").limitToFirst(limit)
        .startAt(start)
userListQuery.addValueEventListener(new ValueEventListener() {
    @Override
        public void onDataChange(DataSnapshot dataSnapshot) {
        // Do something
        start += (limit+1);
    }

    @Override
    public void onCancelled(DatabaseError databaseError) {
        // Do something about the error
    });
```

。50. **orderByChild**。 Firebase。

Firebase https://riptutorial.com/zh-CN/android/topic/5511/firebase

44: Firebase

Examples

Firebase

Firebase

- *Firebase*。
- `google-services.json`app/。
- *build.gradle*`google-services`

```
buildscript {
    // ...
    dependencies {
        // ...
        classpath 'com.google.gms:google-services:3.0.0'
    }
}
```

- Gradle`apply plugin`Gradle

```
apply plugin: 'com.google.gms.google-services'
```

- *Crash Reportingbuild.gradle*

```
compile 'com.google.firebase:firebase-crash:10.2.1'
```

- `FirebaseCrash.report(new Exception("Non Fatal Error logging"));`

  Firebase 。

- `FirebaseCrash.log("Level 2 completed.");`
-
- Stack Overflow

Firebase。

```
FirebaseCrash.report(new Exception("My first Android non-fatal error"));
```

FirebaseCrash

> 07-20 085724.442 D / FirebaseCrashApiImpl **FirebaseCrashAPI** 07-20 085724.442 I / FirebaseCrash **FirebaseCrash** d com.google.firebase.crash.internal.zzg@3333d325

07-20 08 5724.442 D / FirebaseApp**com.google.firebase.crash.FirebaseCrash**。

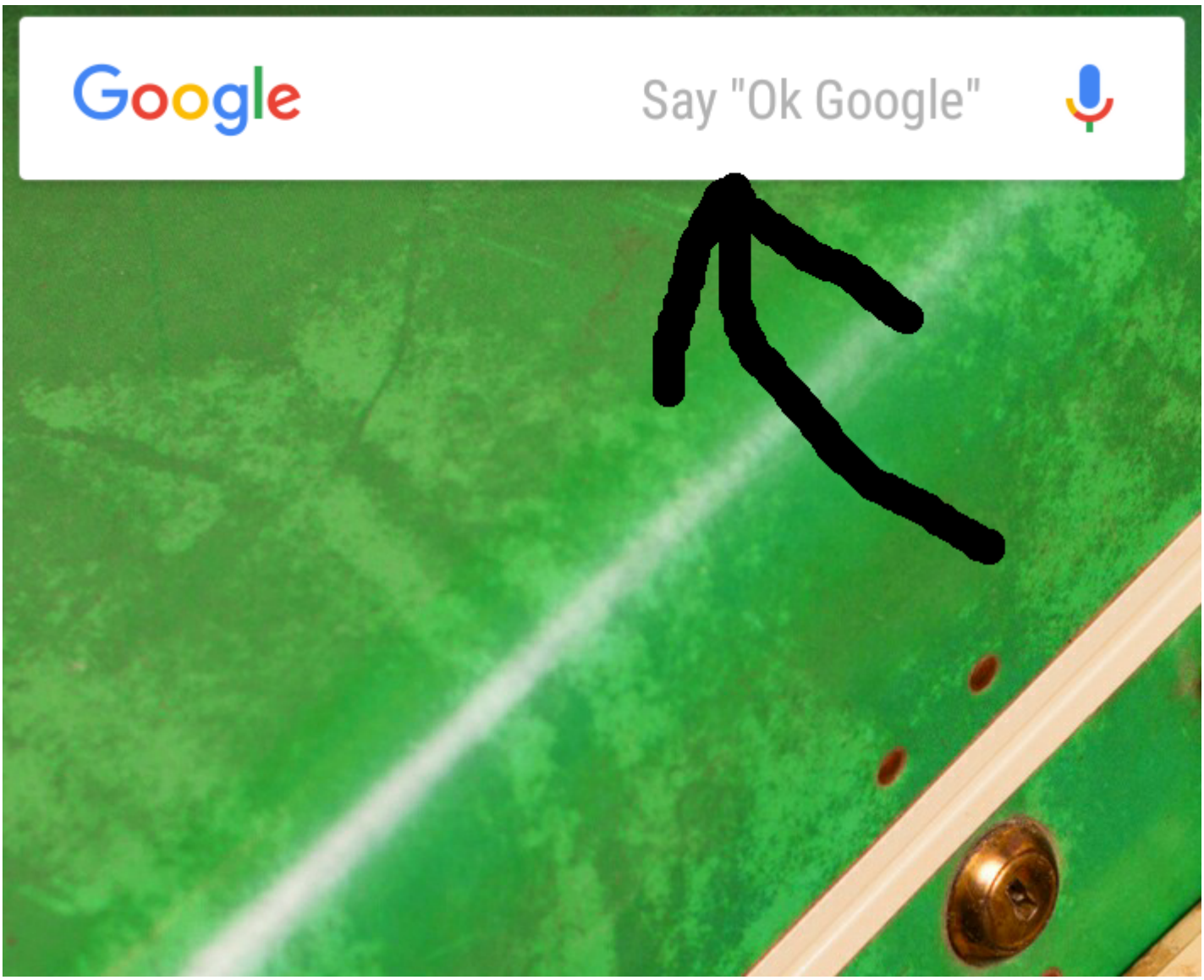
07-20 085747.052 D / FirebaseCrashApiImpl **throwable java.lang.ExceptionAndroid** 07-20 085818.822 D / FirebaseCrashSenderServiceImpl **200** 07-20 085818.822 D / FirebaseCrashSenderServiceImpl

```
FirebaseCrash.log("Activity created");
```

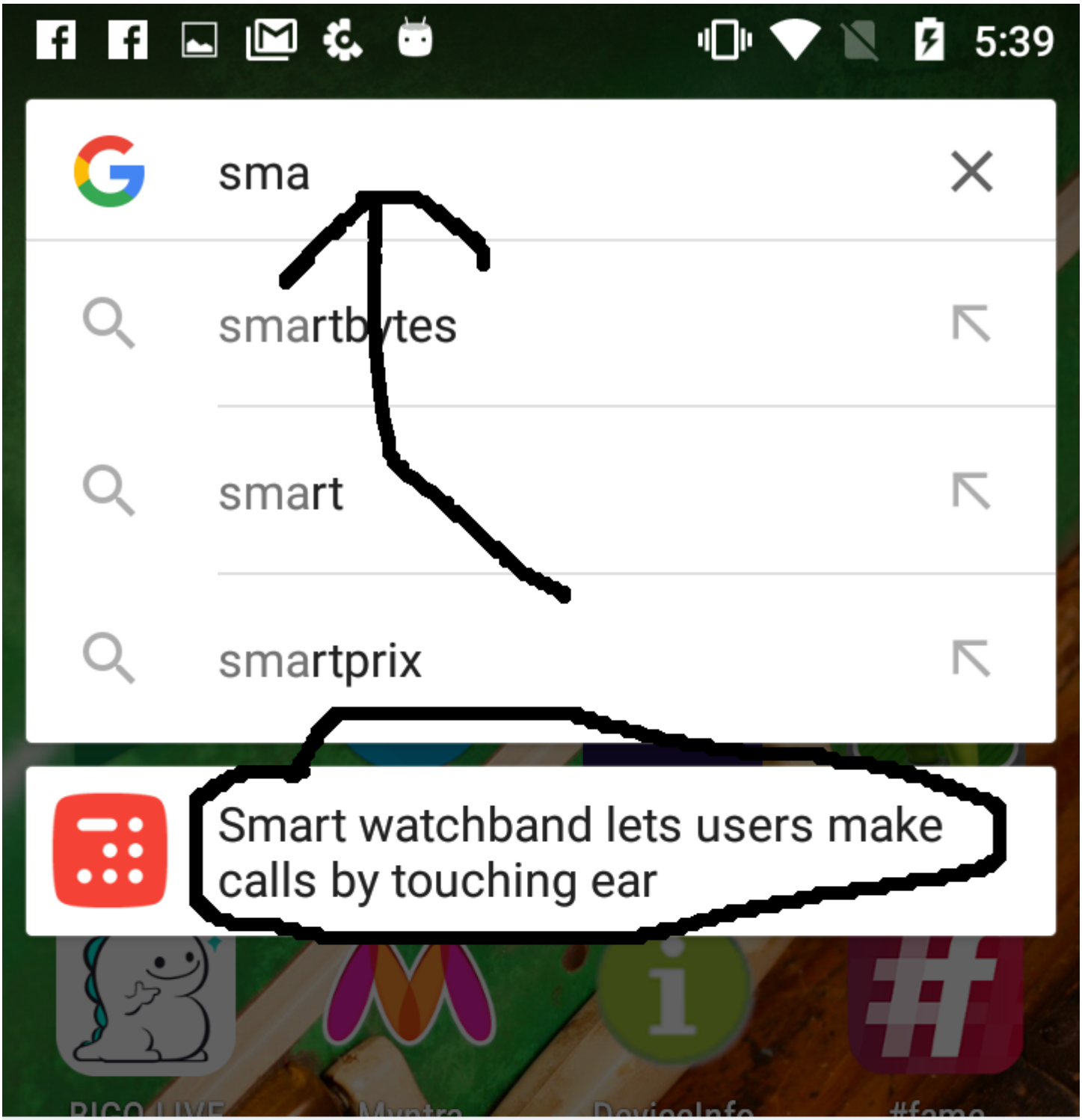
Firebase https://riptutorial.com/zh-CN/android/topic/5965/firebase

45: Firebase

- Firebase-Google。。
- Google24。。。
- HTTP URL。Google。URL。。
- AppIndexing APIGoogle。inShorts Application。23。



。。AppIndexing API`onCreate()`。


5:39
sma
smartbytes
smart
smartprix
Smart watchband lets users make calls by touching ear

46: FloatingActionButton

。FABUI。。

`android.support.design:elevation`	FAB。“@ [+] [package] type / name”“[package] type / name”。
`android.support.design:fabSize`	FAB。
`android.support.design:rippleColor`	FAB。
`android.support.design:useCompatPadding`	compat。

。UI。

。

`FloatingActionButtonbuild.gradlebuild.gradle`

```
dependencies {
    compile 'com.android.support:design:25.1.0'
}
```

https://developer.android.com/reference/android/support/design/widget/FloatingActionButton.html

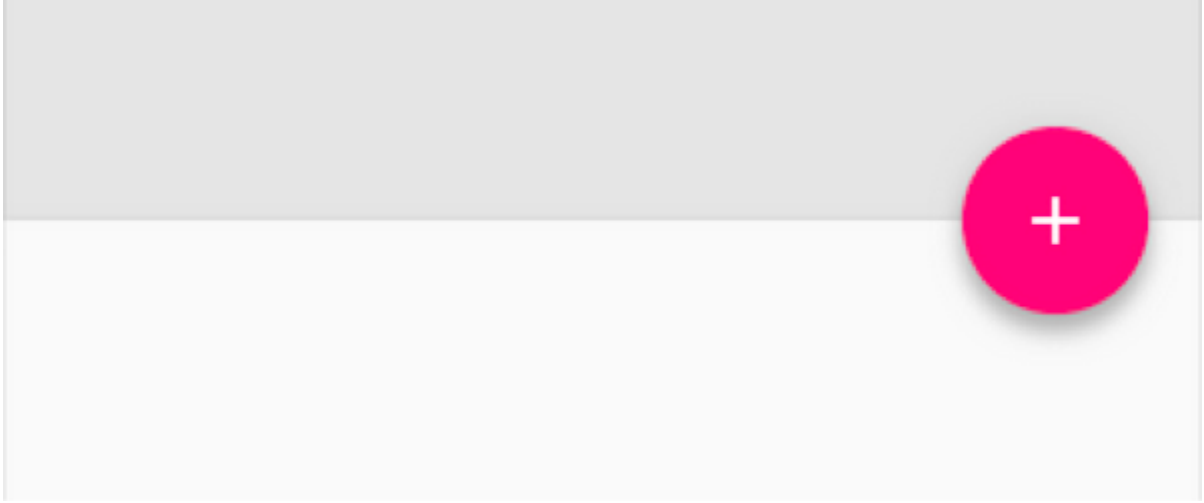
https://material.google.com/components/buttons-floating-action-button.html

Examples

FAB

FloatingActionButton`build.gradle`。

```
<android.support.design.widget.FloatingActionButton
       android:id="@+id/fab"
       android:layout_width="wrap_content"
       android:layout_height="wrap_content"
       android:layout_gravity="bottom|end"
       android:layout_margin="@dimen/fab_margin"
       android:src="@drawable/my_icon" />
```



colorAccent。

`src`+24x24 dp `app:backgroundTint="@color/your_colour"`

`myFab.setBackgroundTintList(ColorStateList.valueOf(your color in int));`

FAB

```
mFab.setRippleColor(your color in int);
```

16dp/24dp。

src`FloatingActionButton`。

56 x 56dp

40 x 40dp

24 x 24dp

FloatingActionButton

`FloatingActionButton` `show()` `hide()` ◦ `FloatingActionButton`ActivityFragment。

`ViewPager`

-
- Tab`FloatingActionButton`
- `FloatingActionButton`

```
public class MainActivity extends AppCompatActivity {

    FloatingActionButton fab;
    ViewPager viewPager;
```

```
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        fab = (FloatingActionButton) findViewById(R.id.fab);
        viewPager = (ViewPager) findViewById(R.id.viewpager);

        // ..... set up ViewPager .....

        viewPager.addOnPageChangeListener(new ViewPager.OnPageChangeListener() {

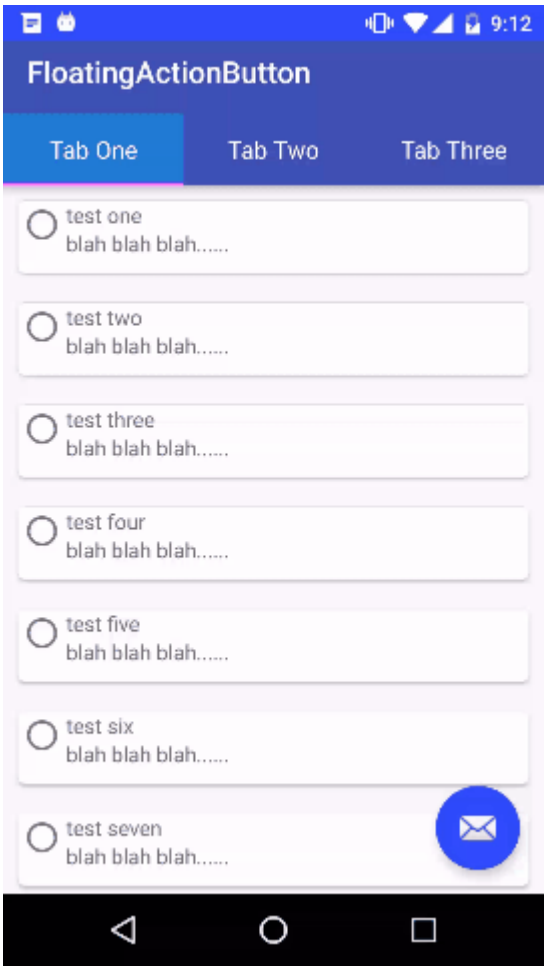
            @Override
            public void onPageSelected(int position) {
                if (position == 0) {
                    fab.setImageResource(android.R.drawable.ic_dialog_email);
                    fab.show();
                } else if (position == 2) {
                    fab.setImageResource(android.R.drawable.ic_dialog_map);
                    fab.show();
                } else {
                    fab.hide();
                }
            }

            @Override
            public void onPageScrolled(int position, float positionOffset, int
positionOffsetPixels) {}

            @Override
            public void onPageScrollStateChanged(int state) {}
        });

        // Handle the FloatingActionButton click event:
        fab.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                int position = viewPager.getCurrentItem();
                if (position == 0) {
                    openSend();
                } else if (position == 2) {
                    openMap();
                }
            }
        });

    }
}
```



ScrollFloatingActionButton

22.2.1`show()` `hide()` `FloatingActionButton.Behavior`FloatingActionButton。

CoordinatorLayoutRecyclerViewNestedScrollView 。

`ScrollAwareFABBehavior` `ScrollAwareFABBehavior`Android cc-wiki

```
public class ScrollAwareFABBehavior extends FloatingActionButton.Behavior {
    public ScrollAwareFABBehavior(Context context, AttributeSet attrs) {
        super();
    }

    @Override
    public boolean onStartNestedScroll(final CoordinatorLayout coordinatorLayout, final
FloatingActionButton child,
                                       final View directTargetChild, final View target, final
int nestedScrollAxes) {
        // Ensure we react to vertical scrolling
        return nestedScrollAxes == ViewCompat.SCROLL_AXIS_VERTICAL
                || super.onStartNestedScroll(coordinatorLayout, child, directTargetChild,
target, nestedScrollAxes);
    }

    @Override
    public void onNestedScroll(final CoordinatorLayout coordinatorLayout, final
FloatingActionButton child,
                               final View target, final int dxConsumed, final int dyConsumed,
```

```
                                final int dxUnconsumed, final int dyUnconsumed) {
        super.onNestedScroll(coordinatorLayout, child, target, dxConsumed, dyConsumed,
dxUnconsumed, dyUnconsumed);
        if (dyConsumed > 0 && child.getVisibility() == View.VISIBLE) {
            // User scrolled down and the FAB is currently visible -> hide the FAB
            child.hide();
        } else if (dyConsumed < 0 && child.getVisibility() != View.VISIBLE) {
            // User scrolled up and the FAB is currently not visible -> show the FAB
            child.show();
        }
    }
}
```

FloatingActionButtonxml`app:layout_behavior`app:layout_behavior `ScrollAwareFABBehavior`

```
app:layout_behavior="com.example.app.ScrollAwareFABBehavior"
```

```
<android.support.design.widget.CoordinatorLayout
    android:id="@+id/main_layout"
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <android.support.design.widget.AppBarLayout
        android:id="@+id/appBarLayout"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        app:elevation="6dp">
        <android.support.v7.widget.Toolbar
            android:id="@+id/toolbar"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_alignParentTop="true"
            android:background="?attr/colorPrimary"
            android:minHeight="?attr/actionBarSize"
            android:theme="@style/ThemeOverlay.AppCompat.Dark.ActionBar"
            app:popupTheme="@style/ThemeOverlay.AppCompat.Light"
            app:elevation="0dp"
            app:layout_scrollFlags="scroll|enterAlways"
            />

        <android.support.design.widget.TabLayout
            android:id="@+id/tab_layout"
            app:tabMode="fixed"
            android:layout_below="@+id/toolbar"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:background="?attr/colorPrimary"
            app:elevation="0dp"
            app:tabTextColor="#d3d3d3"
            android:minHeight="?attr/actionBarSize"
            />

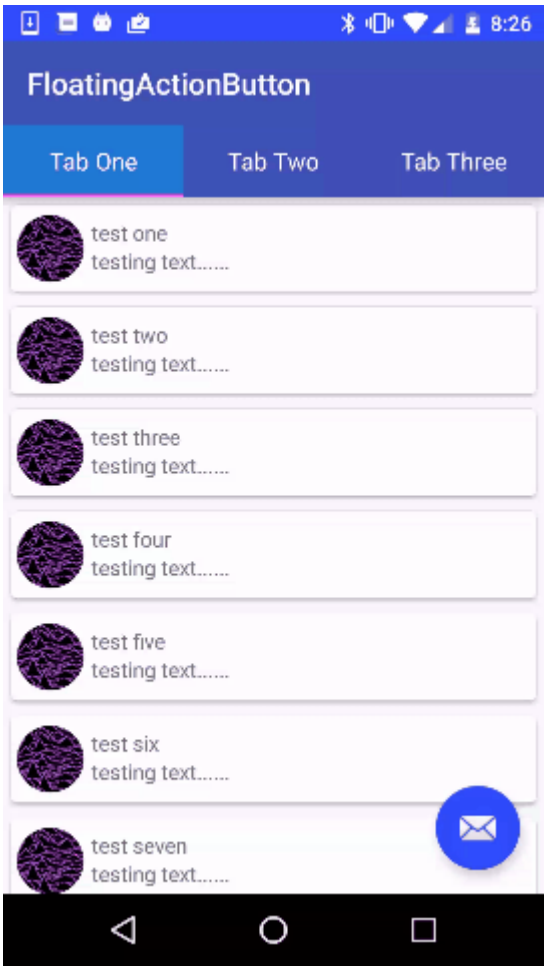
    </android.support.design.widget.AppBarLayout>

    <android.support.v4.view.ViewPager
```

```
        android:id="@+id/viewpager"
        android:layout_below="@+id/tab_layout"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        app:layout_behavior="@string/appbar_scrolling_view_behavior"
        />

    <android.support.design.widget.FloatingActionButton
        android:id="@+id/fab"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="bottom|end"
        app:layout_behavior="com.example.app.ScrollAwareFABBehavior"
        android:layout_margin="@dimen/fab_margin"
        android:src="@android:drawable/ic_dialog_email" />

</android.support.design.widget.CoordinatorLayout>
```



FloatingActionButton

XMLFAB。

```
<android.support.design.widget.FloatingActionButton
   app:layout_behavior=".MyBehavior" />
```

```
CoordinatorLayout.LayoutParams p = (CoordinatorLayout.LayoutParams) fab.getLayoutParams();
p.setBehavior(xxxx);
```

```
fab.setLayoutParams(p);
```

FloatingActionButton https://riptutorial.com/zh-CN/android/topic/2979/floatingactionbutton

47: Genymotion for android

GenymotionAndroid。

Examples

Genymotion

1 - VirtualBox

VirtualBox 。 Genymotion 。

---

2 - Genymotion

GenymotionGenymotion 。

。

---

3 - Genymotion

Linux .bin。

---

4 - Genymotion

- Genymotion
- “”。
- 。
- 。

---

5 - genymotionAndroid Studio

Genymotion Android StudioAndroid Studio

- /WindowsLinuxAndroid Studio /Mac OS X
- “”“”。
- Genymotion“”。

“”>“”。

---

6 - Android StudioGenymotion

- /WindowsLinuxAndroid Studio /Mac OS X
- / GenymotionGenymotion's。

Genymotion's

GenymotionGoogle

GmailYoutubeGenymotion。 -

4.4 Kitkat
5.0
5.1
6.0
7.0
7.1webview

1.
2. zipgenymotion
3. Google“Google Play”。

-

Genymotion for android https://riptutorial.com/zh-CN/android/topic/9245/genymotion-for-android

48: Google Awareness API

Snapshot APIFence API。

Snapshot APIFence API

- Google Developers ConsoleAPI
- API

```
<!-- Not required for getting current headphone state -->
<uses-permission android:name="android.permission.ACCESS_FINE_LOCATION"/>
<!-- Only required for actvity recognition -->
<uses-permission android:name="com.google.android.gms.permission.ACTIVITY_RECOGNITION"/>

<!-- Replace with your actual API key from console -->
<meta-data android:name="com.google.android.awareness.API_KEY"
           android:value="YOUR_API_KEY"/>

<!-- Required for Snapshot API only -->
<meta-data android:name="com.google.android.geo.API_KEY"
           android:value="YOUR_API_KEY"/>
```

- `GoogleApiClient` onCreate。

```
GoogleApiClient client = new GoogleApiClient.Builder(context)
    .addApi(Awareness.API)
    .build();
client.connect();
```

- API
-

```
private boolean isFineLocationGranted() {
    if (ActivityCompat.checkSelfPermission(context, Manifest.permission.ACCESS_FINE_LOCATION)
                != PackageManager.PERMISSION_GRANTED) {
        Log.e(getClass().getSimpleName(), "Fine location permission not granted!");
    }
}
```

Examples

Snapshot API

Snapshot API

```
// Remember to initialize your client as described in the Remarks section
Awareness.SnapshotApi.getDetectedActivity(client)
    .setResultCallback(new ResultCallback<DetectedActivityResult>() {
        @Override
```

```
        public void onResult(@NonNull DetectedActivityResult detectedActivityResult) {
            if (!detectedActivityResult.getStatus().isSuccess()) {
                Log.e(getClass().getSimpleName(), "Could not get the current activity.");
                return;
            }
            ActivityRecognitionResult result = detectedActivityResult
                .getActivityRecognitionResult();
            DetectedActivity probableActivity = result.getMostProbableActivity();
            Log.i(getClass().getSimpleName(), "Activity received : " +
                probableActivity.toString());
        }
    });
```

Snapshot API

```
// Remember to initialize your client as described in the Remarks section
Awareness.SnapshotApi.getHeadphoneState(client)
    .setResultCallback(new ResultCallback<HeadphoneStateResult>() {
        @Override
        public void onResult(@NonNull HeadphoneStateResult headphoneStateResult) {
            Log.i(TAG, "Headphone state connection state: " +
                headphoneStateResult.getHeadphoneState()
                .getState() == HeadphoneState.PLUGGED_IN));
        }
    });
```

Snapshot API

```
// Remember to intialize your client as described in the Remarks section
Awareness.SnapshotApi.getLocation(client)
    .setResultCallback(new ResultCallback<LocationResult>() {
        @Override
        public void onResult(@NonNull LocationResult locationResult) {
            Location location = locationResult.getLocation();
            Log.i(getClass().getSimpleName(), "Coordinates: "location.getLatitude() + "," +
                location.getLongitude() + ", radius : " + location.getAccuracy());
        }
    });
```

Snapshot API

```
// Remember to initialize your client as described in the Remarks section
Awareness.SnapshotApi.getPlaces(client)
    .setResultCallback(new ResultCallback<PlacesResult>() {
        @Override
        public void onResult(@NonNull PlacesResult placesResult) {
            List<PlaceLikelihood> likelihoodList = placesResult.getPlaceLikelihoods();
            if (likelihoodList == null || likelihoodList.isEmpty()) {
                Log.e(getClass().getSimpleName(), "No likely places");
            }
        }
    });
```

```
Place place = placeLikelihood.getPlace();
String likelihood = placeLikelihood.getLikelihood();
```

```
Place place = likelihood.getPlace();
String placeName = place.getName();
String placeAddress = place.getAddress();
String placeCoords = place.getLatLng();
String locale = extractFromLocale(place.getLocale()));
```

Snapshot API

```
// Remember to initialize your client as described in the Remarks section
Awareness.SnapshotApi.getWeather(client)
    .setResultCallback(new ResultCallback<WeatherResult>() {
        @Override
        public void onResult(@NonNull WeatherResult weatherResult) {
            Weather weather = weatherResult.getWeather();
            if (weather == null) {
                Log.e(getClass().getSimpleName(), "No weather received");
            } else {
                Log.i(getClass().getSimpleName(), "Temperature is " +
                        weather.getTemperature(Weather.CELSIUS) + ", feels like " +
                        weather.getFeelsLikeTemperature(Weather.CELSIUS) +
                        ", humidity is " + weather.getHumidity());
            }
        }
    });
```

Fence API

DetectedActivityFence /。 BroadcastReceiver Intent

```
// Your own action filter, like the ones used in the Manifest.
private static final String FENCE_RECEIVER_ACTION = BuildConfig.APPLICATION_ID +
    "FENCE_RECEIVER_ACTION";
private static final String FENCE_KEY = "walkingFenceKey";
private FenceReceiver mFenceReceiver;
private PendingIntent mPendingIntent;

// Make sure to initialize your client as described in the Remarks section.
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    // etc.

    // The 0 is a standard Activity request code that can be changed to your needs.
    mPendingIntent = PendingIntent.getBroadcast(this, 0,
        new Intent(FENCE_RECEIVER_ACTION), 0);
    registerReceiver(mFenceReceiver, new IntentFilter(FENCE_RECEIVER_ACTION));

    // Create the fence.
    AwarenessFence fence = DetectedActivityFence.during(DetectedActivityFence.WALKING);
    // Register the fence to receive callbacks.
    Awareness.FenceApi.updateFences(client, new FenceUpdateRequest.Builder()
        .addFence(FENCE_KEY, fence, mPendingIntent)
        .build())
        .setResultCallback(new ResultCallback<Status>() {
            @Override
            public void onResult(@NonNull Status status) {
                if (status.isSuccess()) {
                    Log.i(FENCE_KEY, "Successfully registered.");
```

```
                } else {
                    Log.e(FENCE_KEY, "Could not be registered: " + status);
                }
            }
        });
    }
}
```

`BroadcastReceiver`intent

```
public class FenceReceiver extends BroadcastReceiver {

    private static final String TAG = "FenceReceiver";

    @Override
    public void onReceive(Context context, Intent intent) {
        // Get the fence state
        FenceState fenceState = FenceState.extract(intent);

        switch (fenceState.getCurrentState()) {
            case FenceState.TRUE:
                Log.i(TAG, "User is walking");
                break;
            case FenceState.FALSE:
                Log.i(TAG, "User is not walking");
                break;
            case FenceState.UNKNOWN:
                Log.i(TAG, "User is doing something unknown");
                break;
        }
    }
}
```

Fence API

。

```
// Your own action filter, like the ones used in the Manifest
private static final String FENCE_RECEIVER_ACTION = BuildConfig.APPLICATION_ID +
    "FENCE_RECEIVER_ACTION";
private static final String FENCE_KEY = "locationFenceKey";
private FenceReceiver mFenceReceiver;
private PendingIntent mPendingIntent;

// Make sure to initialize your client as described in the Remarks section
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    // etc

    // The 0 is a standard Activity request code that can be changed for your needs
    mPendingIntent = PendingIntent.getBroadcast(this, 0,
        new Intent(FENCE_RECEIVER_ACTION), 0);
    registerReceiver(mFenceReceiver, new IntentFilter(FENCE_RECEIVER_ACTION));

    // Create the fence
    AwarenessFence fence = LocationFence.entering(48.136334, 11.581660, 25);
    // Register the fence to receive callbacks.
    Awareness.FenceApi.updateFences(client, new FenceUpdateRequest.Builder()
```

```
        .addFence(FENCE_KEY, fence, mPendingIntent)
        .build())
        .setResultCallback(new ResultCallback<Status>() {
            @Override
            public void onResult(@NonNull Status status) {
                if (status.isSuccess()) {
                    Log.i(FENCE_KEY, "Successfully registered.");
                } else {
                    Log.e(FENCE_KEY, "Could not be registered: " + status);
                }
            }
        });
    }
}
```

BroadcastReciver

```
public class FenceReceiver extends BroadcastReceiver {

    private static final String TAG = "FenceReceiver";

    @Override
    public void onReceive(Context context, Intent intent) {
        // Get the fence state
        FenceState fenceState = FenceState.extract(intent);

        switch (fenceState.getCurrentState()) {
            case FenceState.TRUE:
                Log.i(TAG, "User is in location");
                break;
            case FenceState.FALSE:
                Log.i(TAG, "User is not in location");
                break;
            case FenceState.UNKNOWN:
                Log.i(TAG, "User is doing something unknown");
                break;
        }
    }
}
```

Google Awareness API https://riptutorial.com/zh-CN/android/topic/3361/google-awareness-api

49: Google Drive API

Google**Google**。 。 Google Drive APIGoogle。

Google Drive Android APIGoogle Play“”。

“”。

`GooglePlayServicesUtil.getOpenSourceSoftwareLicenseInfo()`。

Examples

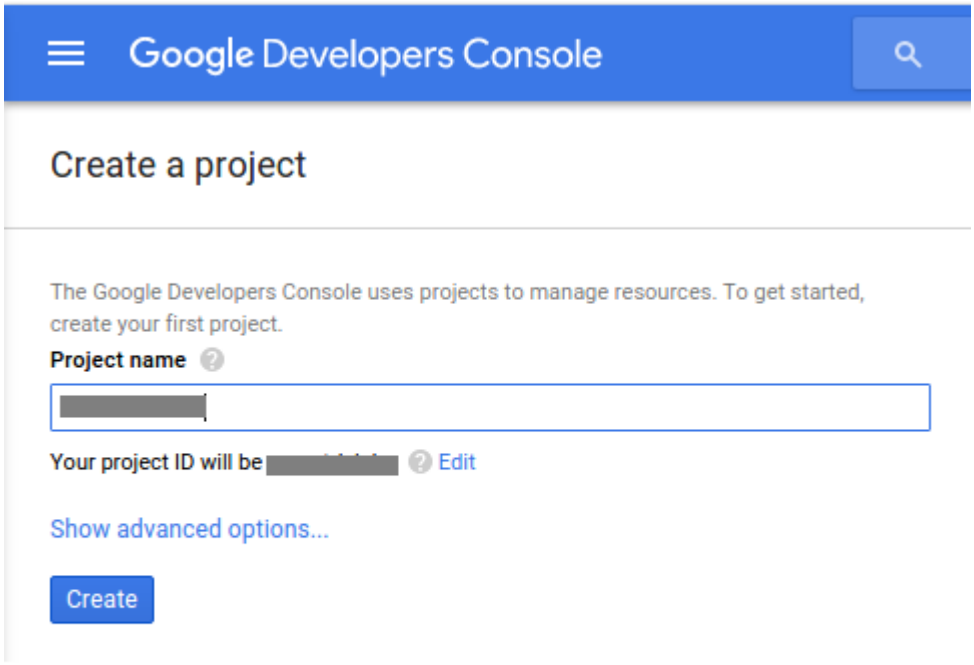
AndroidGoogle

Google Developer Console

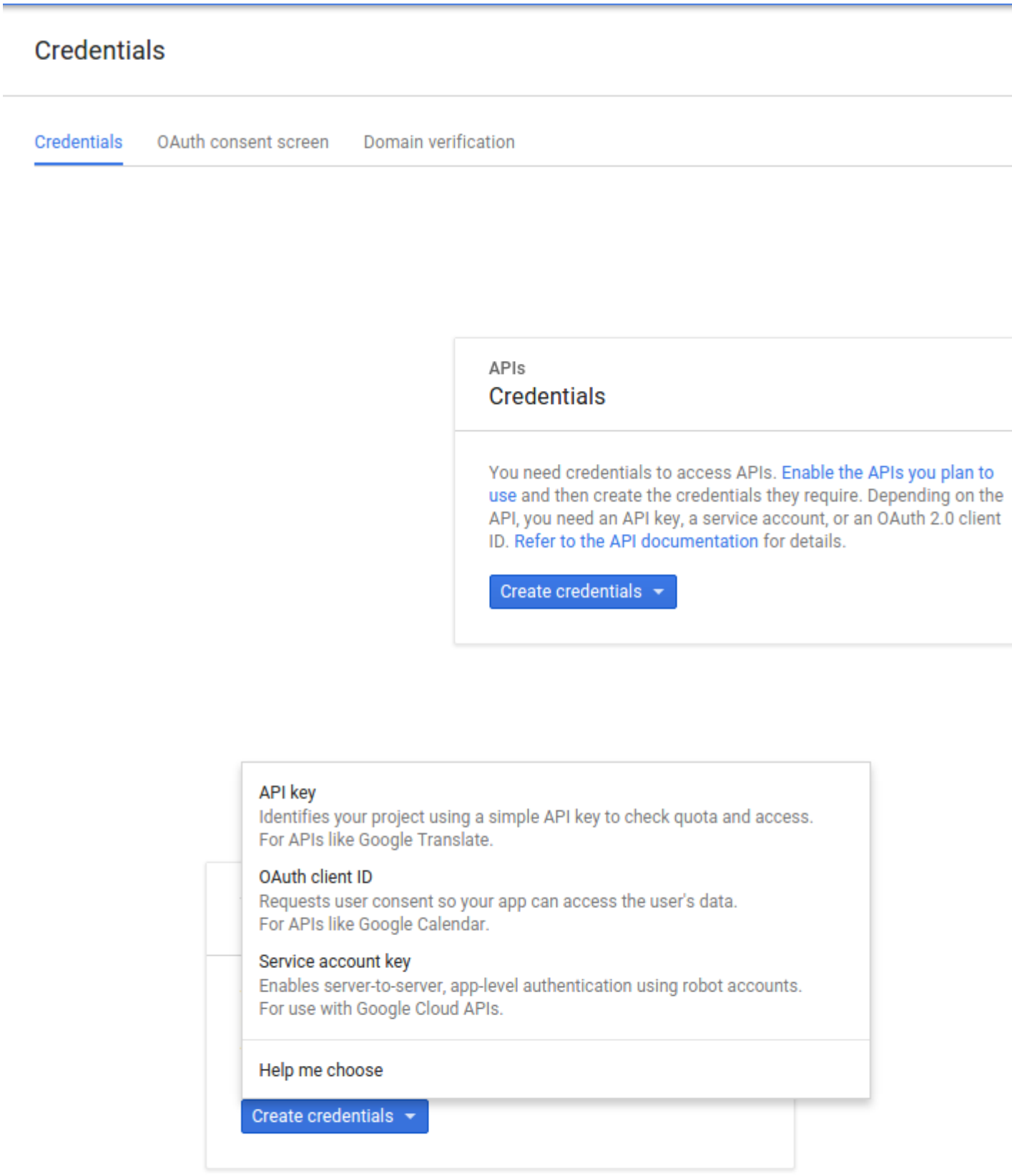
AndroidGoogleGoogle Developers Console。 Google Developer Console。

Google Developer Console

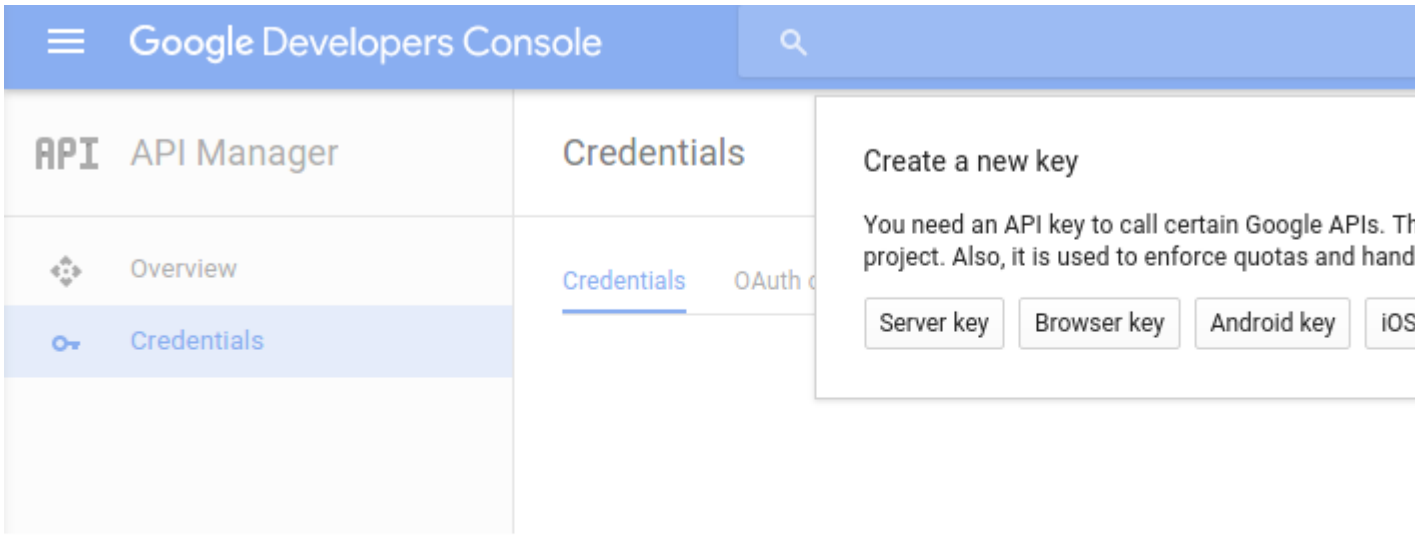
- AndroidGoogle Developer Console 。 “ ”Google Developer。



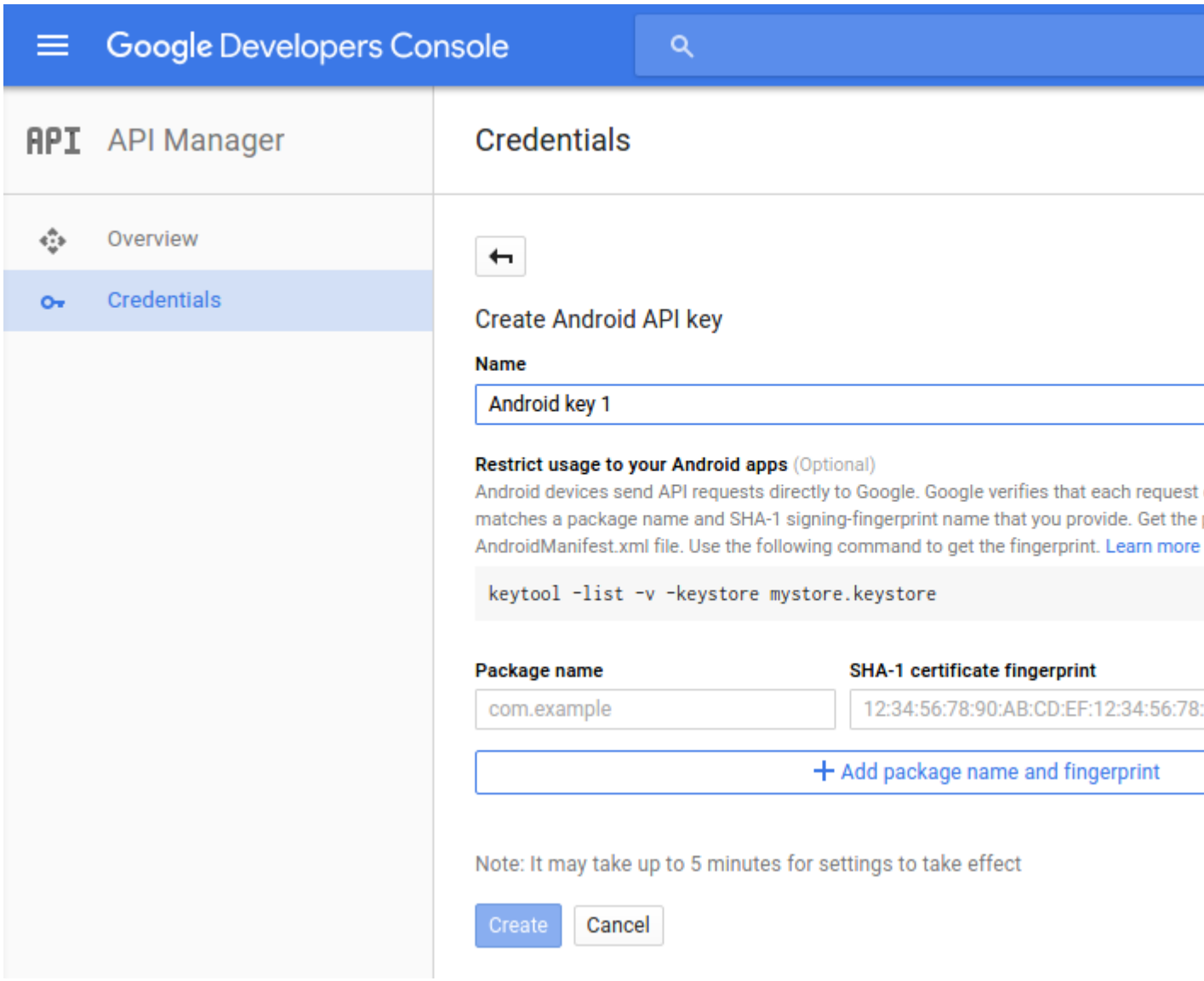
- API。 “ ”。



- 。 **API Key**API。
- APIAndroidGoogle API。 **Android Key**Android。



- Android**SHA-1**API。



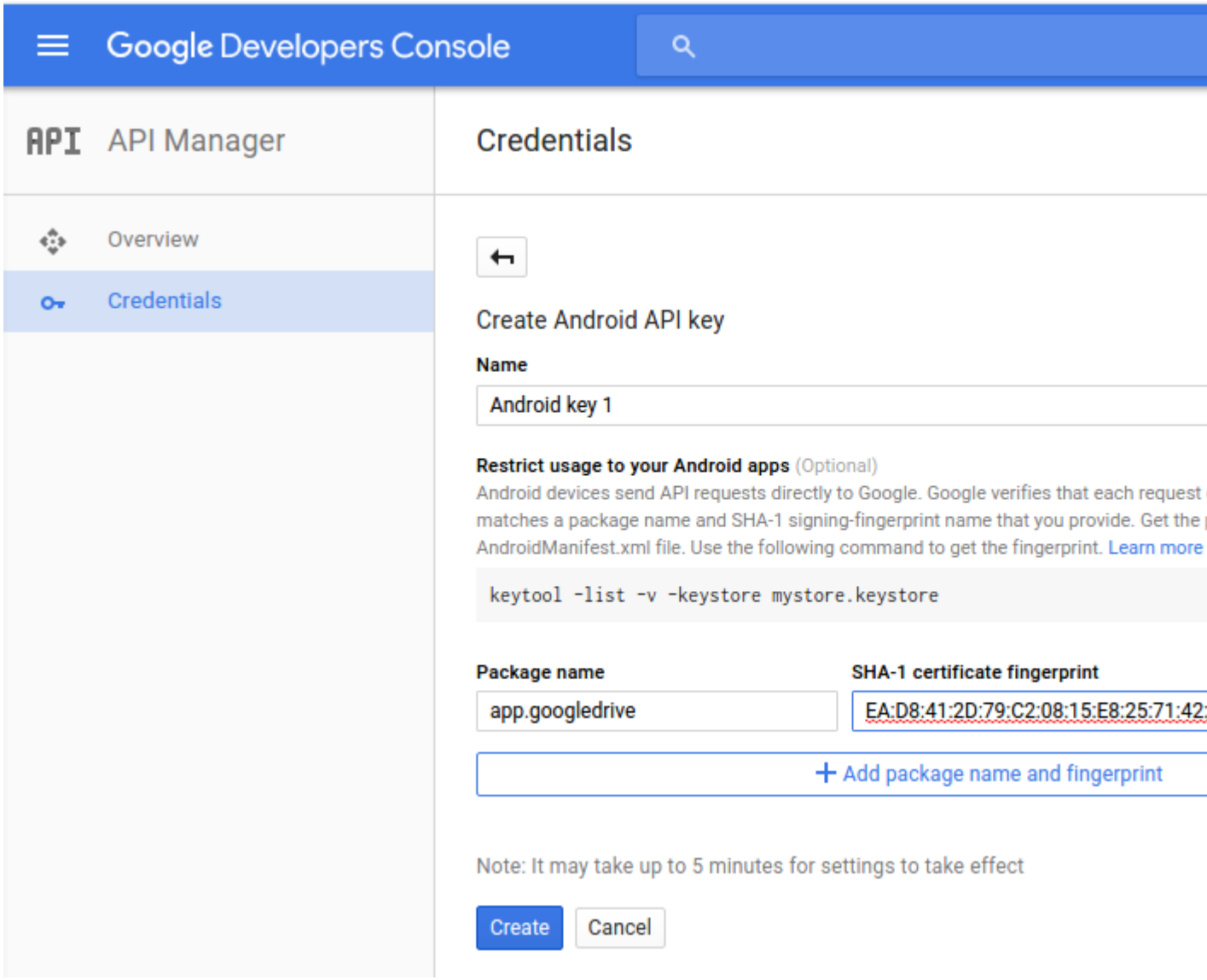
- **SHA-1** 。 **Keytool**SHA1。 Keytool 。 keytool**“android”** 。 `keytool -exportcert -alias androiddebugkey -keystore ~/.android/debug.keystore -list -v`

```
[redacted]@[redacted]:~$ keytool -exportcert -alias androiddebugkey -keystore ~/.android/debug.keystore -list -v
Enter keystore password:
Alias name: androiddebugkey
Creation date: 18 Jul, 2015
Entry type: PrivateKeyEntry
Certificate chain length: 1
Certificate[1]:
Owner: CN=Android Debug, O=Android, C=US
Issuer: CN=Android Debug, O=Android, C=US
Serial number: 3adbdb98
Valid from: Sat Jul 18 09:32:08 IST 2015 until: Mon Jul 10 09:32:08 IST 2045
Certificate fingerprints:
         MD5:  77:C7:A9:6A:30:0F:43:B9:84:E0:61:0F:B2:B6:22:74
         SHA1: EA:D8:41:2D:79:C2:08:15:E8:25:71:42:3F:0E:51:A5:52:4C:EF:40
         SHA256: A2:12:5A:18:E2:F3:FE:8B:93:E8:03:0C:12:3A:52:8D:B5:B0:70:32:C
F3:A7:C3:47:F0:9E:B6:8E:AF:33:68
         Signature algorithm name: SHA256withRSA
         Version: 3

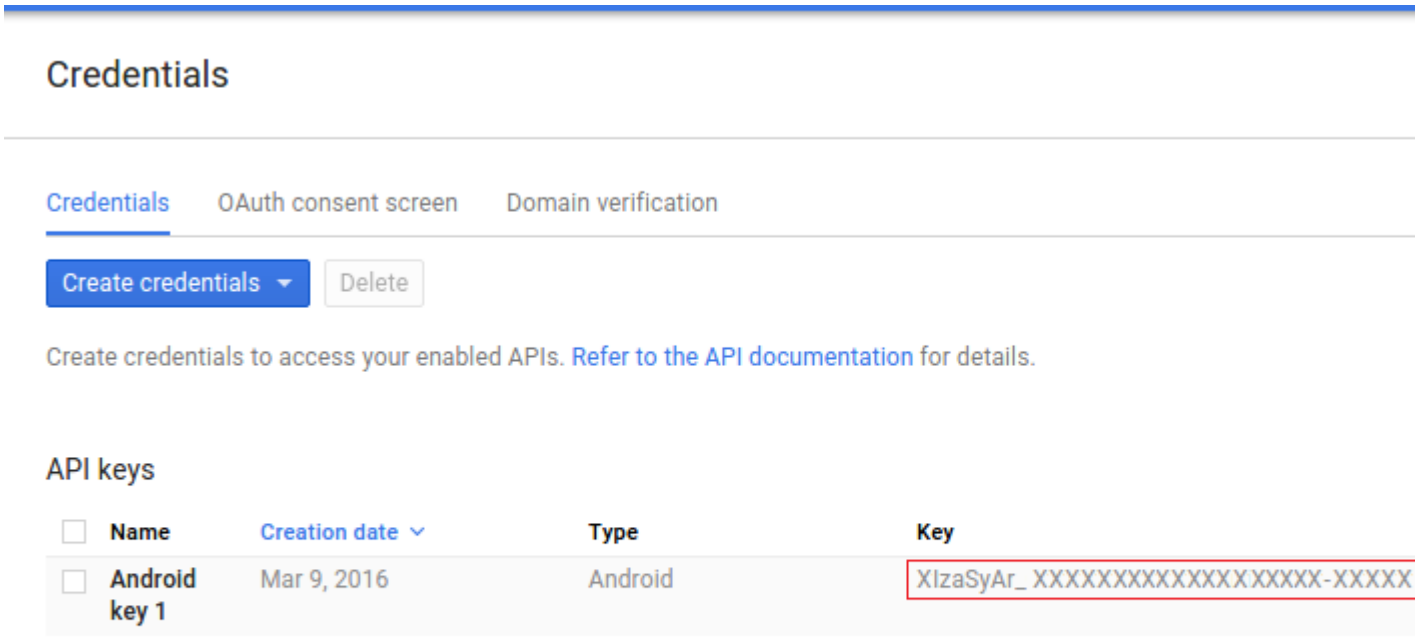
Extensions:

#1: ObjectId: 2.5.29.14 Criticality=false
SubjectKeyIdentifier [
KeyIdentifier [
0000: D3 8F C7 0C 95 B4 DA 73   6B 67 99 5A A3 C0 05 4A  .......skg.Z...J
0010: 93 BE 25 4F                                        ..%O
]
]
```

- **SHA-1**。“”API。



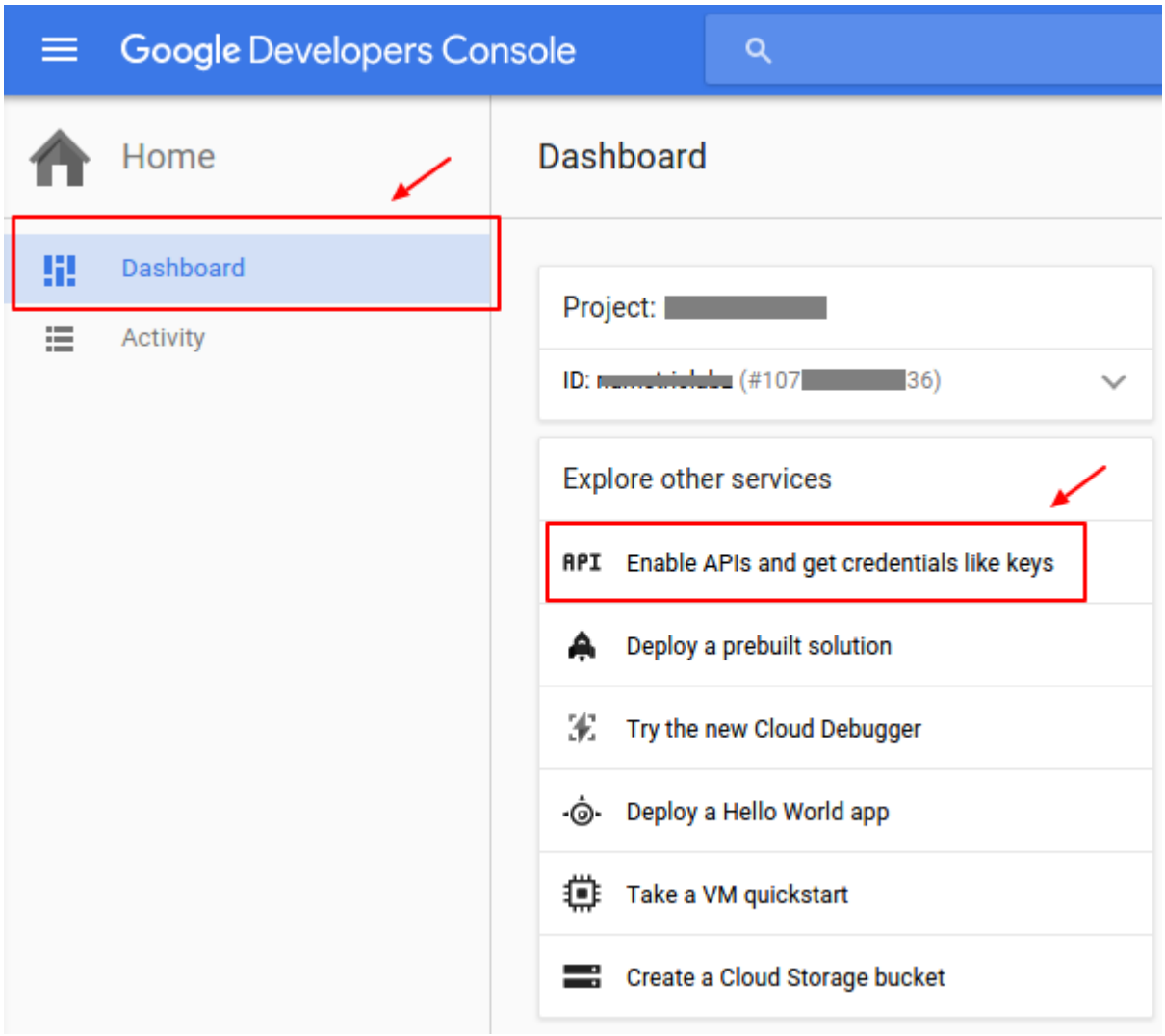
- AndroidAPI。APIAndroidGoogle。



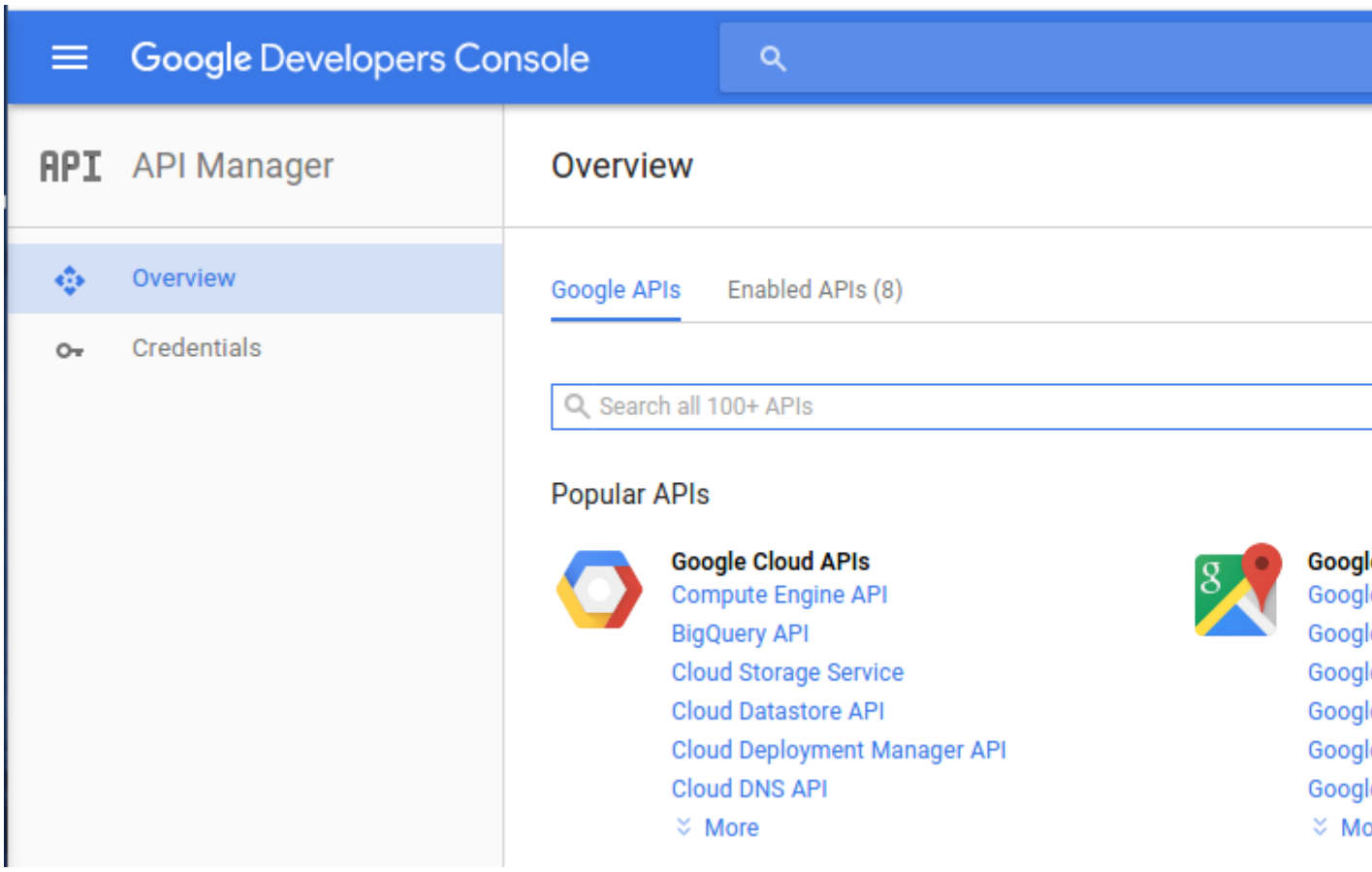
Google Drive API

Google Drive ApiAndroidGoogle。Google Drive API

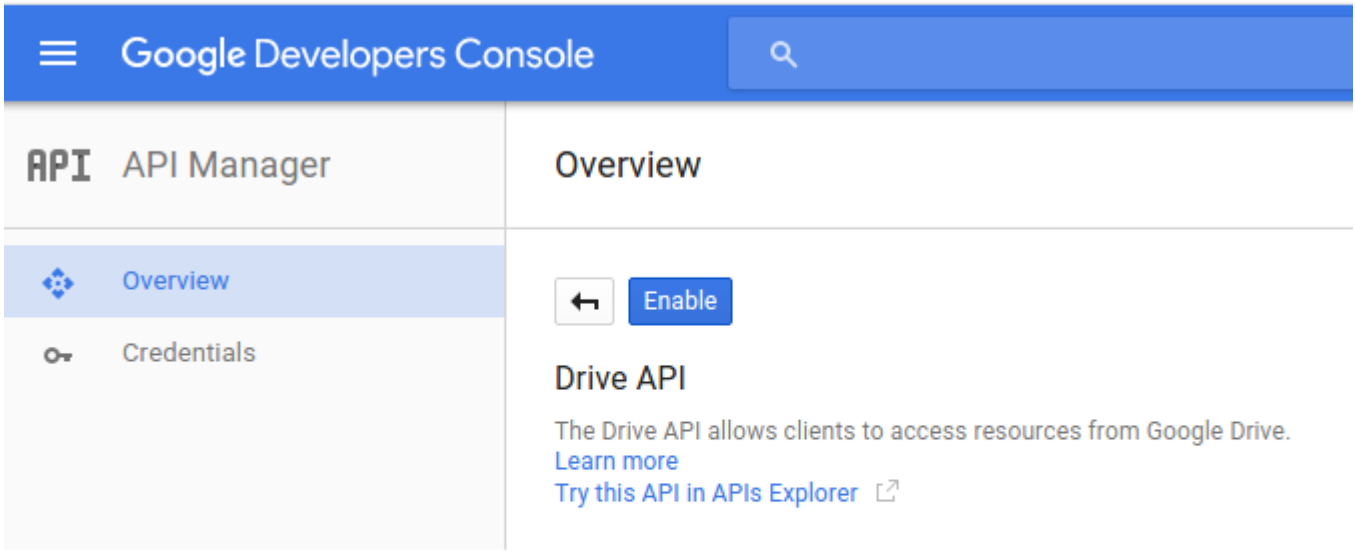
- Google Developer **API**Google API。



- **API**GoogleAPI。



- “”Google Drive API。Google。



Internet

InternetGoogle Drive。AndroidManifest.xmlInternet

```
<uses-permission android:name="android.permission.INTERNET" />
```

Google Play

Google PlayAPI Google Drive Android API 。 AndroidGoogle PlaySDK。 `build.gradle` app moduleGoogle PlaySDK。

```
dependencies {
  ....
    compile 'com.google.android.gms:play-services:<latest_version>'
  ....
}
```

ManifestAPI

AndroidGoogle APIAndroidManifest.xmlAPIGoogle Play。AndroidManifest.xml。

Google Drive Android API

Google Drive Android API Android。 **Google Drive Android APIGoogleApiClient**。**onResume GoogleApiClient** 。

```
/**
 * Called when the activity will start interacting with the user.
 * At this point your activity is at the top of the activity stack,
 * with user input going to it.
 */
@Override
protected void onResume() {
   super.onResume();
   if (mGoogleApiClient == null) {

       /**
        * Create the API client and bind it to an instance variable.
        * We use this instance as the callback for connection and connection failures.
        * Since no account name is passed, the user is prompted to choose.
        */
         mGoogleApiClient = new GoogleApiClient.Builder(this)
                 .addApi(Drive.API)
                 .addScope(Drive.SCOPE_FILE)
                 .addConnectionCallbacks(this)
                 .addOnConnectionFailedListener(this)
                 .build();
        }

        mGoogleApiClient.connect();
    }
```

Google Deive Android API

activity**onStopdisconnect**AndroidGoogle Drive Android API。

```
@Override
protected void onStop() {
```

```
    super.onStop();
    if (mGoogleApiClient != null) {

         // disconnect Google Android Drive API connection.
         mGoogleApiClient.disconnect();
    }
    super.onPause();
}
```

MainActivity.javaGoogle APIGoogle API。**onConnectedonConnectionFailed** **onConnectionSuspended**appDrive。

onConnected。**onConnectionFailed**Google。**onConnectionSuspended**。

ConnectionCallbacksOnConnectionFailedListener 。Java。

```
@Override
    public void onConnectionFailed(ConnectionResult result) {

        // Called whenever the API client fails to connect.
        Log.i(TAG, "GoogleApiClient connection failed:" + result.toString());

        if (!result.hasResolution()) {

            // show the localized error dialog.
            GoogleApiAvailability.getInstance().getErrorDialog(this, result.getErrorCode(),
0).show();
            return;
        }

        /**
         *  The failure has a resolution. Resolve it.
         *  Called typically when the app is not yet authorized, and an  authorization
         *  dialog is displayed to the user.
         */

        try {

            result.startResolutionForResult(this, REQUEST_CODE_RESOLUTION);

        } catch (SendIntentException e) {

            Log.e(TAG, "Exception while starting resolution activity", e);
        }
    }

   /**
    * It invoked when Google API client connected
    * @param connectionHint
    */
    @Override
    public void onConnected(Bundle connectionHint) {

        Toast.makeText(getApplicationContext(), "Connected", Toast.LENGTH_LONG).show();
    }

   /**
    * It invoked when connection suspended
```

```
    * @param cause
    */
    @Override
    public void onConnectionSuspended(int cause) {

        Log.i(TAG, "GoogleApiClient connection suspended");
    }
```

Google

Google◦ DrivecreateFile()Google◦ ◦ ◦

CreateMyFile()DriveDriveContents◦ APIDrivedriveContentsCallbackDriveContents◦

DriveContents◦

```
public void CreateMyFile(){
    fileOperation = true;
    // Create new contents resource.
    Drive.DriveApi.newDriveContents(mGoogleApiClient)
                  .setResultCallback(driveContentsCallback);
}
```

DriveContents

◦ DriveContents◦

DriveContents◦ CreateFileOnGoogleDrive()DriveContentsResult

```
/**
 * This is the Result result handler of Drive contents.
 * This callback method calls the CreateFileOnGoogleDrive() method.
 */
final ResultCallback<DriveContentsResult> driveContentsCallback =
         new ResultCallback<DriveContentsResult>() {
            @Override
            public void onResult(DriveContentsResult result) {
                if (result.getStatus().isSuccess()) {
                    if (fileOperation == true){
                        CreateFileOnGoogleDrive(result);
                    }
                }
            }
        };
```

MetadataChangeSet◦ ◦ DriveFoldercreateFile()GoogleAPI MetaDataChangeSetdriveContents◦ ◦

```
/**
 * Create a file in the root folder using a MetadataChangeSet object.
 * @param result
```

```
 */
public void CreateFileOnGoogleDrive(DriveContentsResult result){

    final DriveContents driveContents = result.getDriveContents();

    // Perform I/O off the UI thread.
    new Thread() {
        @Override
        public void run() {
            // Write content to DriveContents.
            OutputStream outputStream = driveContents.getOutputStream();
            Writer writer = new OutputStreamWriter(outputStream);
            try {
                writer.write("Hello Christlin!");
                writer.close();
            } catch (IOException e) {
                Log.e(TAG, e.getMessage());
            }

            MetadataChangeSet changeSet = new MetadataChangeSet.Builder()
                    .setTitle("My First Drive File")
                    .setMimeType("text/plain")
                    .setStarred(true).build();

            // Create a file in the root folder.
            Drive.DriveApi.getRootFolder(mGoogleApiClient)
                    .createFile(mGoogleApiClient, changeSet, driveContents)
                    setResultCallback(fileCallback);
        }
   }.start();
}
```

```
/**
 * Handle result of Created file
 */
final private ResultCallback<DriveFolder.DriveFileResult> fileCallback = new
        ResultCallback<DriveFolder.DriveFileResult>() {
            @Override
            public void onResult(DriveFolder.DriveFileResult result) {
                if (result.getStatus().isSuccess()) {
                    Toast.makeText(getApplicationContext(), "file created: "+
                                result.getDriveFile().getDriveId(), Toast.LENGTH_LONG).show();
                }
                return;
            }
        };
```

Google Drive API https://riptutorial.com/zh-CN/android/topic/10646/google-drive-api

50: Google Play

Examples

Google Play

Google Play。 。

```
private void openPlayStore() {
    String packageName = getPackageName();
    Intent playStoreIntent = new Intent(Intent.ACTION_VIEW,
            Uri.parse("market://details?id=" + packageName));
    setFlags(playStoreIntent);
    try {
        startActivity(playStoreIntent);
    } catch (Exception e) {
        Intent webIntent = new Intent(Intent.ACTION_VIEW,
                Uri.parse("https://play.google.com/store/apps/details?id=" + packageName));
        setFlags(webIntent);
        startActivity(webIntent);
    }
}

@SuppressWarnings("deprecation")
private void setFlags(Intent intent) {
    intent.addFlags(Intent.FLAG_ACTIVITY_NO_HISTORY);
    if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.LOLLIPOP)
        intent.addFlags(Intent.FLAG_ACTIVITY_NEW_DOCUMENT);
    else
        intent.addFlags(Intent.FLAG_ACTIVITY_CLEAR_WHEN_TASK_RESET);
}
```

Google Play。 Web。

Google Play

“”Google Play。

```
String urlApp = "market://search?q=pub:Google+Inc.";
String urlWeb = "http://play.google.com/store/search?q=pub:Google+Inc.";
try {
    Intent i = new Intent(Intent.ACTION_VIEW, Uri.parse(urlApp));
    setFlags(i);
    startActivity(i);
} catch (android.content.ActivityNotFoundException anfe) {
    Intent i = new Intent(Intent.ACTION_VIEW, Uri.parse(urlWeb)));
    setFlags(i);
    startActivity(i);
}


@SuppressWarnings("deprecation")
public void setFlags(Intent i) {
```

```
    i.addFlags(Intent.FLAG_ACTIVITY_NO_HISTORY);
    if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.LOLLIPOP)  {
        i.addFlags(Intent.FLAG_ACTIVITY_NEW_DOCUMENT);
    }
    else  {
        i.addFlags(Intent.FLAG_ACTIVITY_CLEAR_WHEN_TASK_RESET);
    }
}
```

Google Play https://riptutorial.com/zh-CN/android/topic/10900/google-play

51: Gradle for Android

GradleJVM。 ;. `jar` `AndroidManifest`SDK。

- `apply plugin 'com.android.application''com.android.library'`。
- `android`
  - `compileSdkVersion` SDK
  - `buildToolsVersion`
  - `defaultConfig` flavor
    - `applicationId` PlayStoreID
    - `minSdkVersion` SDK
    - `targetSdkVersion` SDK
    - `versionCode`
    - `versionName`
  - `buildTypes` TODO
- `dependencies` maven
  - `compile`
  - `testCompile`

- gradle
- gradle
- gradleandroid
- Android Gradle DSL

Gradle for Android -

Androidgradle。
http://www.riptutorial.com/topic/2092

Examples

build.gradle

`build.gradle`。

```
apply plugin: 'com.android.application'

android {
    compileSdkVersion 25
    buildToolsVersion '25.0.3'

    signingConfigs {
        applicationName {
```

```
            keyAlias 'applicationName'
            keyPassword 'password'
            storeFile file('../key/applicationName.jks')
            storePassword 'keystorePassword'
        }
    }
    defaultConfig {
        applicationId 'com.company.applicationName'
        minSdkVersion 14
        targetSdkVersion 25
        versionCode 1
        versionName '1.0'
        signingConfig signingConfigs.applicationName
    }
    buildTypes {
        release {
            minifyEnabled true
            proguardFiles getDefaultProguardFile('proguard-android.txt'), 'proguard-rules.pro'
        }
    }
}

dependencies {
    compile fileTree(dir: 'libs', include: ['*.jar'])

    compile 'com.android.support:appcompat-v7:25.3.1'
    compile 'com.android.support:design:25.3.1'

    testCompile 'junit:junit:4.12'
}
```

DSL

DSL ◦

`apply plugin: 'com.android.application'` GradleAndroid`android {}`Android◦

Android

```
apply plugin: 'com.android.application'
```

Android

```
apply plugin: 'com.android.library'
```

DSL

`android {...}`Android `DSL`。

`compileSdkVersion` Android APIGradle。
`defaultConfig`。 Product Flavors `override`。

- DSL
-
-
-

`dependenciesandroid{...}`AndroidGradle。
`dependencies`AndroidJava。 Gradle`compile`。

```
compile 'com.android.support:design:25.3.1'
```

Android。

Gradle。

Maven*GroupId* *ArtifactId* 。

+;。

-
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-

aar flat 。

。

appcompat-v7-v7

```
compile 'com.android.support:appcompat-v7:25.3.1'
```

`appcompat` Android API7。

junitjunit4.12

。

`debugCompile testCompilereleaseCompilecompile`。 。

`APK`。

---

signingConfig

signingConfigGradlekeystoreAPKPlay Store。

。

Gradle。 signingConfigs。

-
- 。

APK 。

GradleGradle for Android 。

android { ... }build.gradle。

```
...
android {
    ...
    productFlavors {
        free {
            applicationId "com.example.app.free"
            versionName "1.0-free"
        }
        paid {
            applicationId "com.example.app.paid"
            versionName "1.0-paid"
        }
    }
}
```

freepaid。 。 applicationIdversionNamemain。

。

freepaid。
freeAdMobpaidPicasso

```
android {
    ...

    productFlavors {
        free {
            applicationId "com.example.app.free"
            versionName "1.0-free"
        }
        paid {
            applicationId "com.example.app.paid"
            versionName "1.0-paid"
        }
```

```
    }
}

...
dependencies {
    ...
    // Add AdMob only for free flavor
    freeCompile 'com.android.support:appcompat-v7:23.1.1'
    freeCompile 'com.google.android.gms:play-services-ads:8.4.0'
    freeCompile 'com.android.support:support-v4:23.1.1'

    // Add picasso only for paid flavor
    paidCompile 'com.squareup.picasso:picasso:2.5.2'
}
...
```

◦

freepaid◦ main/res◦ status

*/ src / **main** /res/values/strings.xml*

```
<resources>
    <string name="status">Default</string>
</resources>
```

*/ src / **free** /res/values/strings.xml*

```
<resources>
    <string name="status">Free</string>
</resources>
```

*/ src / **paid** /res/values/strings.xml*

```
<resources>
    <string name="status">Paid</string>
</resources>
```

statusmainstatus◦

BuildConfigField

Gradle buildConfigField◦ BuildConfig◦ defaultConfig ◦

```
android {
    ...
    defaultConfig {
        ...
        // defining the build date
        buildConfigField "long", "BUILD_DATE", System.currentTimeMillis() + "L"
        // define whether this build is a production build
        buildConfigField "boolean", "IS_PRODUCTION", "false"
        // note that to define a string you need to escape it
```

```
        buildConfigField "String", "API_KEY", "\"my_api_key\""
    }

    productFlavors {
        prod {
            // override the productive flag for the flavor "prod"
            buildConfigField "boolean", "IS_PRODUCTION", "true"
            resValue 'string', 'app_name', 'My App Name'
        }
        dev {
            // inherit default fields
            resValue 'string', 'app_name', 'My App Name - Dev'
        }
    }
}
```

<package_name>。 gen`BuildConfig`.java

```
public class BuildConfig {
    // ... other generated fields ...
    public static final long BUILD_DATE = 1469504547000L;
    public static final boolean IS_PRODUCTION = false;
    public static final String API_KEY = "my_api_key";
}
```

`BuildConfig`

```
public void example() {
    // format the build date
    SimpleDateFormat dateFormat = new SimpleDateFormat("yyyy/MM/dd");
    String buildDate = dateFormat.format(new Date(BuildConfig.BUILD_DATE));
    Log.d("build date", buildDate);

    // do something depending whether this is a productive build
    if (BuildConfig.IS_PRODUCTION) {
        connectToProductionApiEndpoint();
    } else {
        connectToStagingApiEndpoint();
    }
}
```

ResValue

`productFlavorsresValue。 string dimen color。 strings.xml。` productFlavor / buildVariantgradle。 res

```
getResources().getString(R.string.app_name)
```

。 。

Google Maps Android APIManifestAPI`meta-data。` Gradle。

`AndroidManifest.xml`

```
<meta-data
    android:name="com.google.android.geo.API_KEY"
    android:value="${MAPS_API_KEY}"/>
```

build.gradle

```
android {
    defaultConfig {
        ...
        // Your development key
        manifestPlaceholders = [ MAPS_API_KEY: "AIza..." ]
    }

    productFlavors {
        prod {
            // Your production key
            manifestPlaceholders = [ MAPS_API_KEY: "AIza..." ]
        }
    }
}
```

AndroidBuildConfig.java ◦

DEBUG	Boolean
APPLICATION_ID	IDString com.example.app
BUILD_TYPE	String debugrelease
FLAVOR	String
VERSION_CODE	int ◦ versionCodebuild.gradleversionCodeAndroidManifest.xml
VERSION_NAME	String ◦ versionNamebuild.gradleversionNameAndroidManifest.xml

flavor◦ colorsize

FLAVOR_color	“”String ◦
FLAVOR_size	'size'String ◦

“dependencies.gradle”

AndroidFirebase ◦

Gradlebuild.gradle

```
root
```

```
  +- gradleScript/
  |     dependencies.gradle
  +- module1/
  |     build.gradle
  +- module2/
  |     build.gradle
  +- build.gradle
```

gradleScript/dependencies.gradle

```
ext {
    // Version
    supportVersion = '24.1.0'

    // Support Libraries dependencies
    supportDependencies = [
            design:            "com.android.support:design:${supportVersion}",
            recyclerView:      "com.android.support:recyclerview-v7:${supportVersion}",
            cardView:          "com.android.support:cardview-v7:${supportVersion}",
            appCompat:         "com.android.support:appcompat-v7:${supportVersion}",
            supportAnnotation: "com.android.support:support-annotations:${supportVersion}",
    ]

    firebaseVersion = '9.2.0';

    firebaseDependencies = [
            core:         "com.google.firebase:firebase-core:${firebaseVersion}",
            database:     "com.google.firebase:firebase-database:${firebaseVersion}",
            storage:      "com.google.firebase:firebase-storage:${firebaseVersion}",
            crash:        "com.google.firebase:firebase-crash:${firebaseVersion}",
            auth:         "com.google.firebase:firebase-auth:${firebaseVersion}",
            messaging:    "com.google.firebase:firebase-messaging:${firebaseVersion}",
            remoteConfig: "com.google.firebase:firebase-config:${firebaseVersion}",
            invites:      "com.google.firebase:firebase-invites:${firebaseVersion}",
            adMod:        "com.google.firebase:firebase-ads:${firebaseVersion}",
            appIndexing:  "com.google.android.gms:play-services-
appindexing:${firebaseVersion}",
    ];
}
```

build.gradlebuild.gradle

```
// Load dependencies
apply from: 'gradleScript/dependencies.gradle'
```

module1/build.gradle

```
// Module build file
dependencies {
    // ...
    compile supportDependencies.appCompat
    compile supportDependencies.design
    compile firebaseDependencies.crash
}
```

。

root `build.gradle`

```
ext.v = [
    supportVersion:'24.1.1',
]
```

```
compile "com.android.support:support-v4:${v.supportVersion}"
compile "com.android.support:recyclerview-v7:${v.supportVersion}"
compile "com.android.support:design:${v.supportVersion}"
compile "com.android.support:support-annotations:${v.supportVersion}"
```

◦ flavor`src`◦

`Development`src/development/res/drawable-mdpiic_launcher.png◦

```
src/
  main/
    res/
      drawable-mdpi/
        ic_launcher.png  <-- the default launcher icon
  development/
    res/
      drawable-mdpi/
        ic_launcher.png  <-- the launcher icon used when the product flavor is 'Development'
```

drawable-hdpidrawable-xhdpi ◦

Android Studiobuild.gradle

`<PROJECT_ROOT>\app\build.gradle`**app** ◦

`<PROJECT_ROOT>\build.gradle`**“” /**◦

`build.gradle` `<PROJECT_ROOT>\module\build.gradle`

buildscript◦

```
buildscript {
    repositories {
        mavenCentral()
    }

    dependencies {
       classpath 'com.android.tools.build:gradle:2.2.0'
       classpath 'com.google.gms:google-services:3.0.0'
    }
}

ext {
    compileSdkVersion = 23
    buildToolsVersion = "23.0.1"
}
```

app\build.gradle

```
apply plugin: 'com.android.application'


android {
    compileSdkVersion rootProject.ext.compileSdkVersion
    buildToolsVersion rootProject.ext.buildToolsVersion
}

dependencies {
    //.....
}
```

gradleshell

shell。

protobufjava

```
def compilePb() {
    exec {
        // NOTICE: gradle will fail if there's an error in the protoc file...
        executable "../pbScript.sh"
    }
}

project.afterEvaluate {
    compilePb()
}
```

'pbScript.sh'shell

```
#!/usr/bin/env bash
pp=/home/myself/my/proto

/usr/local/bin/protoc -I=$pp \
 --java_out=./src/main/java \
  --proto_path=$pp \
 $pp/my.proto \
 --proto_path=$pp \
 $pp/my_other.proto
```

Gradle

Gradle- 。

Gradle。

```
:module:someTask FAILED
FAILURE: Build failed with an exception.
* What went wrong:
Execution failed for task ':module:someTask'.
> some message here...  finished with non-zero exit value X
```

```
* Try:
Run with --stacktrace option to get the stack trace. Run with --info or --debug option to get
more log output.
BUILD FAILED
Total time: Y.ZZ secs
```

StackOverflowMultiDex 。

Gradle `module:someTask FAILED`last `:module:someOtherTask`。 。

“”。 。 。

- 1Gradle
- 2。
- 3。

- 1 - 。 。 AndroidXMLJava。
- 23 - multidex 。 。 。 Google Play。

ID

applicationIdSuffix`buildType`productFlavorID

`buildTypeapplicationIdbuildType`

```
defaultConfig {
    applicationId "com.package.android"
    minSdkVersion 17
    targetSdkVersion 23
    versionCode 1
    versionName "1.0"
}

buildTypes {
    release {
        debuggable false
    }

    development {
        debuggable true
        applicationIdSuffix ".dev"
    }

    testing {
        debuggable true
        applicationIdSuffix ".qa"
    }
}
```

`applicationIds`

- com.package.android `release`
- com.package.android。 `development`
- com.package.android。 **qa**`testing`

productFlavors

```
productFlavors {
    free {
        applicationIdSuffix ".free"
    }
    paid {
        applicationIdSuffix ".paid"
    }
}
```

applicationIds

- com.package.android◦ free
- com.package.android◦ paid

APK

build.gradleapk

- storeFile
- storePassword
- keyAlias
- keyPassword

build.gradle◦

Akeystore.properties

build.gradlekeystore.properties◦

- build.gradle
-
- keystore.properties

keystore.properties

```
storeFile=keystore.jks
storePassword=storePassword
keyAlias=keyAlias
keyPassword=keyPassword
```

appbuild.gradlesigningConfigs

```
android {
...

    signingConfigs {
        release {
            def propsFile = rootProject.file('keystore.properties')
```

```
            if (propsFile.exists()) {
                def props = new Properties()
                props.load(new FileInputStream(propsFile))
                storeFile = file(props['storeFile'])
                storePassword = props['storePassword']
                keyAlias = props['keyAlias']
                keyPassword = props['keyPassword']
            }
        }
    }
}
```

keystore.properties ◦

- keystore.propertiesstoreFilebuild.gradle◦ build.gradle◦
- keystore.properties◦ rootProject.file('keystore.properties')◦

B

```
android {

  signingConfigs {
    release {
        storeFile file('/your/keystore/location/key')
        keyAlias 'your_alias'
        String ps = System.getenv("ps")
        if (ps == null) {
             throw new GradleException('missing ps env variable')
        }
        keyPassword ps
        storePassword ps
    }
}
```

"ps"Android Studioshell◦
linuxAndroid StudioDesktop Entry

```
Exec=sh -c "export ps=myPassword123 ; /path/to/studio.sh"
```

◦

“version.properties”

Gradle◦ build.gradleversion.properties

```
VERSION_MAJOR=0
VERSION_MINOR=1
VERSION_BUILD=1
```

◦ build.gradleandroid

```
// Read version information from local file and increment as appropriate
def versionPropsFile = file('version.properties')
if (versionPropsFile.canRead()) {
  def Properties versionProps = new Properties()

  versionProps.load(new FileInputStream(versionPropsFile))

  def versionMajor = versionProps['VERSION_MAJOR'].toInteger()
  def versionMinor = versionProps['VERSION_MINOR'].toInteger()
  def versionBuild = versionProps['VERSION_BUILD'].toInteger() + 1

  // Update the build number in the local file
  versionProps['VERSION_BUILD'] = versionBuild.toString()
  versionProps.store(versionPropsFile.newWriter(), null)

  defaultConfig {
    versionCode versionBuild
    versionName "${versionMajor}.${versionMinor}." + String.format("%05d", versionBuild)
  }
}
```

Java`BuildConfig.VERSION_NAME`{major}。{minor}。{build}`BuildConfig.VERSION_CODE`。

apk

.apk。`newName`

```
android {

    applicationVariants.all { variant ->
        def newName = "ApkName";
        variant.outputs.each { output ->
            def apk = output.outputFile;

            newName += "-v" + defaultConfig.versionName;
            if (variant.buildType.name == "release") {
                newName += "-release.apk";
            } else {
                newName += ".apk";
            }
            if (!output.zipAlign) {
                newName = newName.replace(".apk", "-unaligned.apk");
            }

            output.outputFile = new File(apk.parentFile, newName);
            logger.info("INFO: Set outputFile to "
                        + output.outputFile
                        + " for [" + output.name + "]");
        }
    }
}
```

APK

APT CruncherAPK。

```
android {

    aaptOptions {
        cruncherEnabled = false
    }
}
```

gradleProguard

Proguardgradle。 `minifyEnabledtrue` 。

```
buildTypes {
        release {
            minifyEnabled true
            proguardFiles getDefaultProguardFile('proguard-android.txt'), 'proguard-rules.pro'
        }
    }
```

Android SDKProguard“proguard-rules.pro”apk。

GradleAndroidStudioNDK

GradleAndroidStudioNDK。

- Gradle 2.10
- Android NDK r10
- v19.0.0Android SDK

MyApp / build.gradle

build.gradledependencies.classpath

```
classpath 'com.android.tools.build:gradle:2.1.2'
```

```
classpath 'com.android.tools.build:gradle-experimental:0.7.2'
```

v0.7.2。

build.gradle

```
buildscript {
    repositories {
        jcenter()
    }
    dependencies {
        classpath 'com.android.tools.build:gradle-experimental:0.7.2'
    }
}

allprojects {
```

```
    repositories {
        jcenter()
    }
}

task clean(type: Delete) {
    delete rootProject.buildDir
}
```

MyApp / app / build.gradle

build.gradle。。

```
apply plugin: 'com.android.model.application'

model {
    android {
        compileSdkVersion 19
        buildToolsVersion "24.0.1"

        defaultConfig {
            applicationId "com.example.mydomain.myapp"
            minSdkVersion.apiLevel 19
            targetSdkVersion.apiLevel 19
            versionCode 1
            versionName "1.0"
        }
        buildTypes {
            release {
                minifyEnabled false
                proguardFiles.add(file('proguard-android.txt'))
            }
        }
        ndk {
            moduleName "myLib"

            /* The following lines are examples of a some optional flags that
               you may set to configure your build environment
            */
            cppFlags.add("-I${file("path/to/my/includes/dir")}".toString())
            cppFlags.add("-std=c++11")
            ldLibs.addAll(['log', 'm'])
            stl = "c++_static"
            abiFilters.add("armeabi-v7a")
        }
    }
}

dependencies {
    compile fileTree(dir: 'libs', include: ['*.jar'])
}
```

Gradle。

Android NDK。AndroidStudioActivityMain

```
public class MainActivity implements Activity {
    onCreate() {
        // Pregenerated code. Not important here
    }
    static {
        System.loadLibrary("myLib");
    }
    public static native String getString();
}
```

`getString()`JNI。。`create function JNI_...`myApp / app / src / main / jniJNImyLib.c。

```
#include <jni.h>

JNIEXPORT jstring JNICALL
Java_com_example_mydomain_myapp_MainActivity_getString(JNIEnv *env, jobject instance)
{
    // TODO

    return (*env)->NewStringUTF(env, returnValue);
}
```

NDK

gradle

```
gradlew tasks -- show all tasks



Android tasks
-------------
androidDependencies - Displays the Android dependencies of the project.
signingReport - Displays the signing info for each variant.
sourceSets - Prints out all the source sets defined in this project.

Build tasks
-----------
assemble - Assembles all variants of all applications and secondary packages.
assembleAndroidTest - Assembles all the Test applications.
assembleDebug - Assembles all Debug builds.
assembleRelease - Assembles all Release builds.
build - Assembles and tests this project.
buildDependents - Assembles and tests this project and all projects that depend on it.
buildNeeded - Assembles and tests this project and all projects it depends on.
classes - Assembles main classes.
clean - Deletes the build directory.
compileDebugAndroidTestSources
compileDebugSources
compileDebugUnitTestSources
compileReleaseSources
compileReleaseUnitTestSources
extractDebugAnnotations - Extracts Android annotations for the debug variant into the archive
file
extractReleaseAnnotations - Extracts Android annotations for the release variant into the
```

```
archive file
jar - Assembles a jar archive containing the main classes.
mockableAndroidJar - Creates a version of android.jar that's suitable for unit tests.
testClasses - Assembles test classes.

Build Setup tasks
-----------------
init - Initializes a new Gradle build. [incubating]
wrapper - Generates Gradle wrapper files. [incubating]

Documentation tasks
-------------------
javadoc - Generates Javadoc API documentation for the main source code.

Help tasks
----------
buildEnvironment - Displays all buildscript dependencies declared in root project
'LeitnerBoxPro'.
components - Displays the components produced by root project 'LeitnerBoxPro'. [incubating]
dependencies - Displays all dependencies declared in root project 'LeitnerBoxPro'.
dependencyInsight - Displays the insight into a specific dependency in root project
'LeitnerBoxPro'.
help - Displays a help message.
model - Displays the configuration model of root project 'LeitnerBoxPro'. [incubating]
projects - Displays the sub-projects of root project 'LeitnerBoxPro'.
properties - Displays the properties of root project 'LeitnerBoxPro'.
tasks - Displays the tasks runnable from root project 'LeitnerBoxPro' (some of the displayed
tasks may belong to subprojects)
.

Install tasks
-------------
installDebug - Installs the Debug build.
installDebugAndroidTest - Installs the android (on device) tests for the Debug build.
uninstallAll - Uninstall all applications.
uninstallDebug - Uninstalls the Debug build.
uninstallDebugAndroidTest - Uninstalls the android (on device) tests for the Debug build.
uninstallRelease - Uninstalls the Release build.

Verification tasks
------------------
check - Runs all checks.
connectedAndroidTest - Installs and runs instrumentation tests for all flavors on connected
devices.
connectedCheck - Runs all device checks on currently connected devices.
connectedDebugAndroidTest - Installs and runs the tests for debug on connected devices.
deviceAndroidTest - Installs and runs instrumentation tests using all Device Providers.
deviceCheck - Runs all device checks using Device Providers and Test Servers.
lint - Runs lint on all variants.
lintDebug - Runs lint on the Debug build.
lintRelease - Runs lint on the Release build.
test - Run unit tests for all variants.
testDebugUnitTest - Run unit tests for the debug build.
testReleaseUnitTest - Run unit tests for the release build.

Other tasks
-----------
assembleDefault
clean
jarDebugClasses
jarReleaseClasses
```

```
transformResourcesWithMergeJavaResForDebugUnitTest
transformResourcesWithMergeJavaResForReleaseUnitTest
```

“unaligned”apk

unalignedapkbuild.gradle

```
// delete unaligned files
android.applicationVariants.all { variant ->
  variant.assemble.doLast {
    variant.outputs.each { output ->
        println "aligned " + output.outputFile
        println "unaligned " + output.packageApplication.outputFile

        File unaligned = output.packageApplication.outputFile;
        File aligned = output.outputFile
        if (!unaligned.getName().equalsIgnoreCase(aligned.getName())) {
            println "deleting " + unaligned.getName()
            unaligned.delete()
        }
    }
  }
}
```

。 "/。

mockRelease。 build.gradle

```
    // Remove mockRelease as it's not needed.
    android.variantFilter { variant ->
        if (variant.buildType.name.equals('release') &&
variant.getFlavors().get(0).name.equals('mock')) {
            variant.setIgnore(true);
        }
    }
```

◦ ./gradlew dependencies./gradlew :app:dependencies

build.gradle

```
dependencies {
    compile 'com.android.support:design:23.2.1'
    compile 'com.android.support:cardview-v7:23.1.1'

    compile 'com.google.android.gms:play-services:6.5.87'
}
```

```
Parallel execution is an incubating feature.
:app:dependencies

------------------------------------------------------------
Project :app
------------------------------------------------------------
. . .
```

```
_releaseApk - ## Internal use, do not manually configure ##
+--- com.android.support:design:23.2.1
|    +--- com.android.support:support-v4:23.2.1
|    |    \--- com.android.support:support-annotations:23.2.1
|    +--- com.android.support:appcompat-v7:23.2.1
|    |    +--- com.android.support:support-v4:23.2.1 (*)
|    |    +--- com.android.support:animated-vector-drawable:23.2.1
|    |    |    \--- com.android.support:support-vector-drawable:23.2.1
|    |    |         \--- com.android.support:support-v4:23.2.1 (*)
|    |    \--- com.android.support:support-vector-drawable:23.2.1 (*)
|    \--- com.android.support:recyclerview-v7:23.2.1
|         +--- com.android.support:support-v4:23.2.1 (*)
|         \--- com.android.support:support-annotations:23.2.1
+--- com.android.support:cardview-v7:23.1.1
\--- com.google.android.gms:play-services:6.5.87
     \--- com.android.support:support-v4:21.0.0 -> 23.2.1 (*)

. . .
```

`com.android.support:design`23.2.1`com.android.support:support-v4`23.2.1。
`com.google.android.gms:play-servicessupport-v4`21.0.0gradle。

gradle`(*)` 。

gradle.properties/

- gradle“dependencies.gradle”
- “version.properties”

root `gradle.properties`

```
root
  +- module1/
  |     build.gradle
  +- module2/
  |     build.gradle
  +- build.gradle
  +- gradle.properties
```

gradle.properties

```
# used for manifest
# todo increment for every release
appVersionCode=19
appVersionName=0.5.2.160726

# android tools settings
appCompileSdkVersion=23
appBuildToolsVersion=23.0.2
```

```
apply plugin: 'com.android.application'
android {
    // appXXX are defined in gradle.properties
    compileSdkVersion = Integer.valueOf(appCompileSdkVersion)
    buildToolsVersion = appBuildToolsVersion
```

```
    defaultConfig {
        // appXXX are defined in gradle.properties
        versionCode = Long.valueOf(appVersionCode)
        versionName = appVersionName
    }
}

dependencies {
    ...
}
```

F-Droidgradlef-droid/。

Google API。 Gradle

```
./gradlew signingReport
```

```
:app:signingReport
Variant: release
Config: none
----------
Variant: debug
Config: debug
Store: /Users/user/.android/debug.keystore
Alias: AndroidDebugKey
MD5: 25:08:76:A9:7C:0C:19:35:99:02:7B:00:AA:1E:49:CA
SHA1: 26:BE:89:58:00:8C:5A:7D:A3:A9:D3:60:4A:30:53:7A:3D:4E:05:55
Valid until: Saturday 18 June 2044
----------
Variant: debugAndroidTest
Config: debug
Store: /Users/user/.android/debug.keystore
Alias: AndroidDebugKey
MD5: 25:08:76:A9:7C:0C:19:35:99:02:7B:00:AA:1E:49:CA
SHA1: 26:BE:89:58:00:8C:5A:7D:A3:A9:D3:60:4A:30:53:7A:3D:4E:05:55
Valid until: Saturday 18 June 2044
----------
Variant: debugUnitTest
Config: debug
Store: /Users/user/.android/debug.keystore
Alias: AndroidDebugKey
MD5: 25:08:76:A9:7C:0C:19:35:99:02:7B:00:AA:1E:49:CA
SHA1: 26:BE:89:58:00:8C:5A:7D:A3:A9:D3:60:4A:30:53:7A:3D:4E:05:55
Valid until: Saturday 18 June 2044
----------
Variant: releaseUnitTest
Config: none
----------
```

`android {}build.gradle`。

```
    android {
        ...
        defaultConfig {...}

        buildTypes {
```

```
            release {
                minifyEnabled true
                proguardFiles getDefaultProguardFile('proguard-android.txt'), 'proguard-
rules.pro'
            }

            debug {
                applicationIdSuffix ".debug"
            }
        }
    }
```

Gradle for Android https://riptutorial.com/zh-CN/android/topic/95/gradle-for-android

52: GreenDAO

GreenDAOSQLite。

Examples

SELECTINSERTDELETEUPDATE

- Java Generic。

```
public <T> List<T> selectElements(AbstractDao<T, ?> dao) {
    if (dao == null) {
        return null;
    }
    QueryBuilder<T> qb = dao.queryBuilder();
    return qb.list();
}

public <T> void insertElements(AbstractDao<T, ?> absDao, List<T> items) {
    if (items == null || items.size() == 0 || absDao == null) {
        return;
    }
    absDao.insertOrReplaceInTx(items);
}

public <T> T insertElement(AbstractDao<T, ?> absDao, T item) {
    if (item == null || absDao == null) {
        return null;
    }
    absDao.insertOrReplaceInTx(item);
    return item;
}

public <T> void updateElements(AbstractDao<T, ?> absDao, List<T> items) {
    if (items == null || items.size() == 0 || absDao == null) {
        return;
    }
    absDao.updateInTx(items);
}

public <T> T selectElementByCondition(AbstractDao<T, ?> absDao,
                                      WhereCondition... conditions) {
    if (absDao == null) {
        return null;
    }
    QueryBuilder<T> qb = absDao.queryBuilder();
    for (WhereCondition condition : conditions) {
        qb = qb.where(condition);
    }
    List<T> items = qb.list();
    return items != null && items.size() > 0 ? items.get(0) : null;
}

public <T> List<T> selectElementsByCondition(AbstractDao<T, ?> absDao,
                                             WhereCondition... conditions) {
    if (absDao == null) {
```

```
        return null;
    }
    QueryBuilder<T> qb = absDao.queryBuilder();
    for (WhereCondition condition : conditions) {
        qb = qb.where(condition);
    }
    List<T> items = qb.list();
    return items != null ? items : null;
}

public <T> List<T> selectElementsByConditionAndSort(AbstractDao<T, ?> absDao,
                                                    Property sortProperty,
                                                    String sortStrategy,
                                                    WhereCondition... conditions) {
    if (absDao == null) {
        return null;
    }
    QueryBuilder<T> qb = absDao.queryBuilder();
    for (WhereCondition condition : conditions) {
        qb = qb.where(condition);
    }
    qb.orderCustom(sortProperty, sortStrategy);
    List<T> items = qb.list();
    return items != null ? items : null;
}

public <T> List<T> selectElementsByConditionAndSortWithNullHandling(AbstractDao<T, ?> absDao,
                                                                    Property sortProperty,
                                                                    boolean handleNulls,
                                                                    String sortStrategy,
                                                                    WhereCondition...
conditions) {
    if (!handleNulls) {
        return selectElementsByConditionAndSort(absDao, sortProperty, sortStrategy,
conditions);
    }
    if (absDao == null) {
        return null;
    }
    QueryBuilder<T> qb = absDao.queryBuilder();
    for (WhereCondition condition : conditions) {
        qb = qb.where(condition);
    }
    qb.orderRaw("(CASE WHEN " + "T." + sortProperty.columnName + " IS NULL then 1 ELSE 0
END)," + "T." + sortProperty.columnName + " " + sortStrategy);
    List<T> items = qb.list();
    return items != null ? items : null;
}

public <T, V extends Class> List<T> selectByJoin(AbstractDao<T, ?> absDao,
                                                 V className,
                                                 Property property, WhereCondition
whereCondition) {
    QueryBuilder<T> qb = absDao.queryBuilder();
    qb.join(className, property).where(whereCondition);
    return qb.list();
}

public <T> void deleteElementsByCondition(AbstractDao<T, ?> absDao,
                                          WhereCondition... conditions) {
    if (absDao == null) {
```

```
        return;
    }
    QueryBuilder<T> qb = absDao.queryBuilder();
    for (WhereCondition condition : conditions) {
        qb = qb.where(condition);
    }
    List<T> list = qb.list();
    absDao.deleteInTx(list);
}

public <T> T deleteElement(DaoSession session, AbstractDao<T, ?> absDao, T object) {
    if (absDao == null) {
        return null;
    }
    absDao.delete(object);
    session.clear();
    return object;
}

public <T, V extends Class> void deleteByJoin(AbstractDao<T, ?> absDao,
                                              V className,
                                              Property property, WhereCondition
whereCondition) {
    QueryBuilder<T> qb = absDao.queryBuilder();
    qb.join(className, property).where(whereCondition);
    qb.buildDelete().executeDeleteWithoutDetachingEntities();
}

public <T> void deleteAllFromTable(AbstractDao<T, ?> absDao) {
    if (absDao == null) {
        return;
    }
    absDao.deleteAll();
}

public <T> long countElements(AbstractDao<T, ?> absDao) {
    if (absDao == null) {
        return 0;
    }
    return absDao.count();
}
```

GreenDAO 3.X

Object。

SQL。 `customer_iditem_id`。

SQL

```
CREATE TABLE review (
    customer_id STRING NOT NULL,
    item_id STRING NOT NULL,
    star_rating INTEGER NOT NULL,
    content STRING,
    PRIMARY KEY (customer_id, item_id)
);
```

`@Id@Unique`

1. `@Entity@Index` value `unique`

2. GreenDAO`longLong` Entity `localID`

```
@Entity(indexes = { @Index(value = "customer_id,item_id", unique = true)})
public class Review {

    @Id(autoincrement = true)
    private Long localID;

    private String customer_id;
    private String item_id;

    @NotNull
    private Integer star_rating;

    private String content;

    public Review() {}
}
```

GreenDao v3.X

GreenDaoGradle

Java*POJO* GreenDaoSQLiteSQL

```
@Entity
public class Users {

    @Id(autoincrement = true)
    private Long id;

    private String firstname;
    private String lastname;

    @Unique
    private String email;

    // Getters and setters for the fields...

}
```

GreenDao

GreenDao GreenDaoApplication

```
DaoMaster.DevOpenHelper helper = new DaoMaster.DevOpenHelper(this, "mydatabase", null);
db = helper.getWritableDatabase();
DaoMaster daoMaster = new DaoMaster(db);
DaoSession daoSession = daoMaster.newSession();
```

GreenDao

GreenDao。 `Dao daoSession`。

```
UsersDao usersDao = daoSession.getUsersDao();
```

Dao。

```
String email = "jdoe@example.com";
String firstname = "John";

// Single user query WHERE email matches "jdoe@example.com"
Users user = userDao.queryBuilder()
                .where(UsersDao.Properties.Email.eq(email)).build().unique();

// Multiple user query WHERE firstname = "John"
List<Users> user = userDao.queryBuilder()
                .where(UsersDao.Properties.Firstname.eq(firstname)).build().list();
```

```
Users newUser = new User("John","Doe","jdoe@example.com");
usersDao.insert(newUser);
```

```
// Modify a previously retrieved user object and update
user.setLastname("Dole");
usersDao.update(user);
```

```
// Delete a previously retrieved user object
usersDao.delete(user);
```

GreenDAO https://riptutorial.com/zh-CN/android/topic/1345/greendao

53: GreenRobot EventBus

- @SubscribethreadMode = ThreadMode.POSTINGpublic void onEventEventClass event{}

ThreadMode.POSTING	。 。
ThreadMode.MAIN	UI。
ThreadMode.BACKGROUND	。 。 EventBus。
ThreadMode.ASYNC	。

Examples

Event

Event。 POJO。

```
public class ArbitaryEvent{
    public static final int TYPE_1 = 1;
    public static final int TYPE_2 = 2;
    private int eventType;
    public ArbitaryEvent(int eventType){
        this.eventType = eventType;
    }

    public int getEventType(){
        return eventType;
    }
}
```

EventBus。

```
@Override
public void onStart() {
    super.onStart();
    EventBus.getDefault().register(this);
}

@Override
public void onStop() {
   EventBus.getDefault().unregister(this);
   super.onStop();
}
```

。

```
@Subscribe(threadMode = ThreadMode.MAIN)
```

```
public void handleEvent(ArbitaryEvent event) {
    Toast.makeText(getActivity(), "Event type: "+event.getEventType(),
Toast.LENGTH_SHORT).show();
}
```

Event。

```
EventBus.getDefault().post(new ArbitaryEvent(ArbitaryEvent.TYPE_1));
```

EventBusgradle

```
dependencies {
    ...
    compile 'org.greenrobot:eventbus:3.0.0'
    ...
}
```

。 。 。

```
public class DeviceConnectedEvent
{
}
```

`Activity` EventBus。

```
public class MainActivity extends AppCompatActivity
{
    private EventBus _eventBus;

    @Override
    protected void onCreate (Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        _eventBus = EventBus.getDefault();
    }

    @Override
    protected void onStart ()
    {
        super.onStart();
        _eventBus.register(this);
    }

    @Override
    protected void onStop ()
    {
        _eventBus.unregister(this);
        super.onStop();
    }

    @Subscribe(threadMode = ThreadMode.MAIN)
    public void onDeviceConnected (final DeviceConnectedEvent event)
    {
```

```
        // Process event and update UI
    }
}
```

ActivityonCreate()EventBus。 onStart() / onStop()/。 Activity 。

。 @SubscribeEventBus。 @Subscribe@Subscribe。 。 EventBus。 UI。 ThreadMode.MAINAndroidUIUI。
。 EventBus@Subscribe。 。

。 Service 。

```
EventBus.getDefault().post(new DeviceConnectedEvent());
```

EventBusDeviceConnectedEventDeviceConnectedEvent。

GreenRobot EventBus https://riptutorial.com/zh-CN/android/topic/3551/greenrobot-eventbus

54: GSON

GsonJavaJavaJSON。 Gson。

Gson

`toJson()` `fromJson()` JavaJSON

JSONJSON

Java Generics

-
- FieldNamingStrategy fieldNamingStrategy
- <T>JsonJsonElement jsonClass <T> classOfT
- <T>JsonJsonElement jsonType typeOfT
- <T>JsonJsonReader readerType typeOfT
- <T>JsonjsonClass <T> classOfT
- <T>JsonReader jsonType typeOfT
- <T> fromJsonString jsonClass <T> classOfT
- <T> fromJsonString jsonType typeOfT
- <T> TypeAdapter <T> getAdapterClass <T>
- <T> TypeAdapter <T> getAdapterTypeToken <T>
- <T> TypeAdapter <T> getDelegateAdapterTypeAdapterFactory skipPastTypeToken <T> type
- JsonReader newJsonReader
- JsonWriter newJsonWriter
- JsonElement toJsonTreeObject src
- JsonElement toJsonTreeObject srcType typeOfSrc
- boolean serializeNulls
- boolean htmlSafe
- String toJsonJsonElement jsonElement
- toJsonObject src
- String toJsonObject srcType typeOfSrc
- toString
- void toJsonObject srcType typeOfSrcAppendable writer
- void toJsonObject srcType typeOfSrcJsonWriter writer
- void toJsonJsonElement jsonElementAppendable writer
- void toJsonJsonElement jsonElementJsonWriter writer
- void toJsonObject srcAppendable writer

Examples

GsonJSON

GoogleGsonJSON。

```
class Robot {
    //OPTIONAL - this annotation allows for the key to be different from the field name, and
can be omitted if key and field name are same . Also this is good coding practice as it
decouple your variable names with server keys name
    @SerializedName("version")
    private String version;

    @SerializedName("age")
    private int age;

    @SerializedName("robotName")
    private String name;

    // optional : Benefit it allows to set default values and retain them, even if key is
missing from Json response. Not required for primitive data types.

    public Robot{
       version = "";
       name = "";
    }


}
```

```
String robotJson = "{
                        \"version\": \"JellyBean\",
                        \"age\": 3,
                        \"robotName\": \"Droid\"
                    }";

Gson gson = new Gson();
Robot robot = gson.fromJson(robotJson, Robot.class);
```

JSONJava。

JSON

```
{
  "owned_dogs": [
    {
      "name": "Ron",
      "age": 12,
      "breed": "terrier"
    },
    {
      "name": "Bob",
      "age": 4,
      "breed": "bulldog"
    },
    {
      "name": "Johny",
      "age": 3,
      "breed": "golden retriever"
    }
  ]
}
```

JSON。 Java Dog。 Dog

```
private class Dog {
    public String name;
    public int age;

    @SerializedName("breed")
    public String breedName;
}
```

JSON`Dog[]`

```
Dog[] arrayOfDogs = gson.fromJson(jsonArrayString, Dog[].class);
```

`Dog[]`JSON

```
String jsonArray = gson.toJson(arrayOfDogs, Dog[].class);
```

JSON`ArrayList<Dog>`

```
Type typeListOfDogs = new TypeToken<List<Dog>>(){}.getType();
List<Dog> listOfDogs = gson.fromJson(jsonArrayString, typeListOfDogs);
```

Type`typeListOfDogsDog`。 GSONJSON。

`List<Dog>`JSON。

```
String jsonArray = gson.toJson(listOfDogs, typeListOfDogs);
```

GsonJSON

GsonString

{“status”“open”}

```
public enum Status {
    @SerializedName("open")
    OPEN,
    @SerializedName("waiting")
    WAITING,
    @SerializedName("confirm")
    CONFIRM,
    @SerializedName("ready")
    READY
}
```

Gson

1

```
Gson gson = new Gson();
String json = "[ \"Adam\", \"John\", \"Mary\" ]";
```

```
Type type = new TypeToken<List<String>>(){}.getType();
List<String> members = gson.fromJson(json, type);
Log.v("Members", members.toString());
```

List<String>.class ◦

2

```
public class StringList extends ArrayList<String> { }

...

List<String> members = gson.fromJson(json, StringList.class);
```

◦ StringList;

AutoValueGsonJSON/

gradle

```
classpath 'com.neenbedankt.gradle.plugins:android-apt:1.8'
```

gradle app

```
apt 'com.google.auto.value:auto-value:1.2'
apt 'com.ryanharter.auto.value:auto-value-gson:0.3.1'
provided 'com.jakewharton.auto.value:auto-value-annotations:1.2-update1'
provided 'org.glassfish:javax.annotation:10.0-b28'
```

autovalue

```
@AutoValue public abstract class SignIn {
    @SerializedName("signin_token") public abstract String signinToken();
    public abstract String username();

    public static TypeAdapter<SignIn> typeAdapter(Gson gson) {
        return new AutoValue_SignIn.GsonTypeAdapter(gson);
    }

    public static SignIn create(String signin, String username) {
        return new AutoValue_SignIn(signin, username);
    }
}
```

GsonBuilderGson

```
Gson gson = new GsonBuilder()
                .registerTypeAdapterFactory(
                    new AutoValueGsonTypeAdapterFactory())
                .create());
```

```
String myJsonData = "{
```

```
    \"signin_token\": \"mySigninToken\",
    \"username\": \"myUsername\" }";
SignIn signInData = gson.fromJson(myJsonData, Signin.class);
```

```
Signin myData = SignIn.create("myTokenData", "myUsername");
String myJsonData = gson.toJson(myData);
```

GsonPOJO。。AutoValue-GsonCustomTypeAdapterapi。

GsonJSON

JSON

```
["first","second","third"]
```

JSON`String`

```
Gson gson = new Gson();
String jsonArray = "[\"first\",\"second\",\"third\"]";
String[] strings = gson.fromJson(jsonArray, String[].class);
```

`List<String>`TypeToken。

```
Gson gson = new Gson();
String jsonArray = "[\"first\",\"second\",\"third\"]";
List<String> stringList = gson.fromJson(jsonArray, new TypeToken<List<String>>()
{}.getType());
```

```
public class Outer<T> {
    public int index;
    public T data;
}

public class Person {
    public String firstName;
    public String lastName;
}
```

JSON`Outer<Person>`。

JSON

```
String json = "......";
Type userType = new TypeToken<Outer<Person>>(){}.getType();
Result<User> userResult = gson.fromJson(json,userType);
```

JSON`Outer<List<Person>>`

```
Type userListType = new TypeToken<Outer<List<Person>>>(){}.getType();
Result<List<User>> userListResult = gson.fromJson(json,userListType);
```

Gson

```
dependencies {
    compile 'com.google.code.gson:gson:2.8.1'
}
```

Gson

gson。

。

。

```
compile 'com.google.code.gson:gson:+'
```

GsonJSON。

JSON。

```
public static <T> T getFile(String fileName, Class<T> type) throws FileNotFoundException {
    Gson gson = new GsonBuilder()
            .create();
    FileReader json = new FileReader(fileName);
    return gson.fromJson(json, type);
}
```

Gson

“YYYY-MM-dd HHmm”POJOSJoda TimeDateTime。

DateTimes。

```
/**
 * Gson serialiser/deserialiser for converting Joda {@link DateTime} objects.
 */
public class DateTimeConverter implements JsonSerializer<DateTime>, JsonDeserializer<DateTime>
{

    private final DateTimeFormatter dateTimeFormatter;

    @Inject
    public DateTimeConverter() {
        this.dateTimeFormatter = DateTimeFormat.forPattern("YYYY-MM-dd HH:mm");
    }

    @Override
    public JsonElement serialize(DateTime src, Type typeOfSrc, JsonSerializationContext
context) {
        return new JsonPrimitive(dateTimeFormatter.print(src));
    }

    @Override
```

```
    public DateTime deserialize(JsonElement json, Type typeOfT, JsonDeserializationContext
context)
            throws JsonParseException {

        if (json.getAsString() == null || json.getAsString().isEmpty()) {
            return null;
        }

        return dateTimeFormatter.parseDateTime(json.getAsString());
    }
}
```

GsonGson

```
    DateTimeConverter dateTimeConverter = new DateTimeConverter();
    Gson gson = new GsonBuilder().registerTypeAdapter(DateTime.class, dateTimeConverter)
            .create();

    String s = gson.toJson(DateTime.now());
    // this will show the date in the desired format
```

DateTime

```
public class SomePojo {
    private DateTime someDate;
}
```

GsonDateTime。

GsonRetrofit

`GsonConverterFactory`build.gradle

```
compile 'com.squareup.retrofit2:converter-gson:2.1.0'
```

Retrofit

```
Gson gson = new GsonBuilder().create();
new Retrofit.Builder()
        .baseUrl(someUrl)
        .addConverterFactory(GsonConverterFactory.create(gson))
        .build()
        .create(RetrofitService.class);
```

Gson。。

Gsonjson

json

```
{
  "total_count": 132,
```

```
  "page_size": 2,
  "page_index": 1,
  "twitter_posts": [
    {
      "created_on": 1465935152,
      "tweet_id": 210462857140252672,
      "tweet": "Along with our new #Twitterbird, we've also updated our Display Guidelines",
      "url": "https://twitter.com/twitterapi/status/210462857140252672"
    },
    {
      "created_on": 1465995741,
      "tweet_id": 735128881808691200,
      "tweet": "Information on the upcoming changes to Tweets is now on the developer site",
      "url": "https://twitter.com/twitterapi/status/735128881808691200"
    }
  ]
}
```

Custom Tweets`fromJson`

```
Gson gson = new Gson();
String jsonArray = "....";
Tweets tweets = gson.fromJson(jsonArray, Tweets.class);
```

```
class Tweets {
    @SerializedName("total_count")
    int totalCount;
    @SerializedName("page_size")
    int pageSize;
    @SerializedName("page_index")
    int pageIndex;
    // all you need to do it is just define List variable with correct name
    @SerializedName("twitter_posts")
    List<Tweet> tweets;
}

class Tweet {
    @SerializedName("created_on")
    long createdOn;
    @SerializedName("tweet_id")
    String tweetId;
    @SerializedName("tweet")
    String tweetBody;
    @SerializedName("url")
    String url;
}
```

json

```
String tweetsJsonArray = "[{.....},{.....}]"
List<Tweet> tweets = gson.fromJson(tweetsJsonArray, new TypeToken<List<Tweet>>()
{}.getType());
```

GsonJSON

`/Date(1465935152)/` `/Date(1465935152)/`JsonJava `Date`。 Json。

json

```
{
  "id": 1,
  "created_on": "Date(1465935152)",
  "updated_on": "Date(1465968945)",
  "name": "Oleksandr"
}
```

```
class User {
    @SerializedName("id")
    long id;
    @SerializedName("created_on")
    Date createdOn;
    @SerializedName("updated_on")
    Date updatedOn;
    @SerializedName("name")
    String name;
}
```

```
class DateDeSerializer implements JsonDeserializer<Date> {
    private static final String DATE_PREFIX = "/Date(";
    private static final String DATE_SUFFIX = ")/";

    @Override
    public Date deserialize(JsonElement json, Type typeOfT, JsonDeserializationContext
context) throws JsonParseException {
        String dateString = json.getAsString();
        if (dateString.startsWith(DATE_PREFIX) && dateString.endsWith(DATE_SUFFIX)) {
            dateString = dateString.substring(DATE_PREFIX.length(), dateString.length() -
DATE_SUFFIX.length());
        } else {
            throw new JsonParseException("Wrong date format: " + dateString);
        }
        return new Date(Long.parseLong(dateString) - TimeZone.getDefault().getRawOffset());
    }
}
```

```
Gson gson = new GsonBuilder()
                .registerTypeAdapter(Date.class, new DateDeSerializer())
                .create();
String json = "....";
User user = gson.fromJson(json, User.class);
```

Jackson JSON

Gson DateJackson。

Date“”GsonAug 31, 2016 10:26:17。 JacksonGsonJsonSyntaxExceptions。

```
JsonSerializer<Date> ser = new JsonSerializer<Date>() {
    @Override
    public JsonElement serialize(Date src, Type typeOfSrc, JsonSerializationContext
                context) {
        return src == null ? null : new JsonPrimitive(src.getTime());
```

```
    }
};

JsonDeserializer<Date> deser = new JsonDeserializer<Date>() {
    @Override
    public Date deserialize(JsonElement json, Type typeOfT,
                JsonDeserializationContext context) throws JsonParseException {
        return json == null ? null : new Date(json.getAsLong());
    }
};

Gson gson = new GsonBuilder()
                .registerTypeAdapter(Date.class, ser)
                .registerTypeAdapter(Date.class, deser)
                .create();
```

Gson

Gson。

```
public class BaseClass {
    int a;

    public int getInt() {
        return a;
   }
}

public class DerivedClass1 extends BaseClass {
     int b;

     @Override
     public int getInt() {
         return b;
     }
 }

public class DerivedClass2 extends BaseClass {
    int c;

    @Override
    public int getInt() {
        return c;
    }
}
```

`DerivedClass1`JSON

```
DerivedClass1 derivedClass1 = new DerivedClass1();
derivedClass1.b = 5;
derivedClass1.a = 10;

Gson gson = new Gson();
String derivedClass1Json = gson.toJson(derivedClass1);
```

json - `BaseClass`

```
BaseClass maybeDerivedClass1 = gson.fromJson(derivedClass1Json, BaseClass.class);
System.out.println(maybeDerivedClass1.getInt());
```

GSON`derivedClass1JsonDerivedClass1` 10。

`JsonDeserializer` 。 。

```
@SerializedName("type")
private String typeName;
```

```
public BaseClass() {
    typeName = getClass().getName();
}
```

```
public class JsonDeserializerWithInheritance<T> implements JsonDeserializer<T> {

 @Override
 public T deserialize(
     JsonElement json, Type typeOfT, JsonDeserializationContext context)
     throws JsonParseException {
     JsonObject jsonObject = json.getAsJsonObject();
     JsonPrimitive classNamePrimitive = (JsonPrimitive) jsonObject.get("type");

     String className = classNamePrimitive.getAsString();

     Class<?> clazz;
     try {
     clazz = Class.forName(className);
     } catch (ClassNotFoundException e) {
     throw new JsonParseException(e.getMessage());
     }
     return context.deserialize(jsonObject, clazz);
 }
}
```

-

```
GsonBuilder builder = new GsonBuilder();
 builder
 .registerTypeAdapter(BaseClass.class, new JsonDeserializerWithInheritance<BaseClass>());
 Gson gson = builder.create();
```

-

```
 DerivedClass1 derivedClass1 = new DerivedClass1();
 derivedClass1.b = 5;
 derivedClass1.a = 10;
 String derivedClass1Json = gson.toJson(derivedClass1);

 BaseClass maybeDerivedClass1 = gson.fromJson(derivedClass1Json, BaseClass.class);
 System.out.println(maybeDerivedClass1.getInt());
```

5。

GSON https://riptutorial.com/zh-CN/android/topic/4158/gson

55: HttpURLConnection

- abstract void disconnect
- abstract boolean usingProxy
- static boolean getFollowRedirects
- static void setFollowRedirectsboolean set
- String getHeaderFieldint n
- String getHeaderFieldKeyint n
- String getRequestMethod
- String getResponseMessage
- int getResponseCode
- long getHeaderFieldDateString namelong Default
- boolean getInstanceFollowRedirects
- getPermission
- InputStream getErrorStream
- void setChunkedStreamingModeint chunklen
- void setFixedLengthStreamingModeint contentLength
- void setFixedLengthStreamingModelong contentLength
- void setInstanceFollowRedirectsboolean followRedirects
- void setRequestMethodString method

`HttpURLConnection`AndroidHTTPWeb。 HTTPURLConnectionRFC 2616。

Examples

HttpURLConnection

Android HTTP Client `HttpURLConnection` URL`openConnection()` 。 `openConnection()URLConnection` 。

```
URL url = new URL("http://example.com");
HttpURLConnection connection = (HttpURLConnection) url.openConnection();
// do something with the connection
```

`URL` URL。

```
try {
    URL url = new URL("http://example.com");
    HttpURLConnection connection = (HttpURLConnection) url.openConnection();
    // do something with the connection
} catch (MalformedURLException e) {
    e.printStackTrace();
}
```

`disconnect()disconnect()` 。

```
URL url = new URL("http://example.com");
```

```
HttpURLConnection connection = (HttpURLConnection) url.openConnection();
try {
    // do something with the connection
} finally {
    connection.disconnect();
}
```

HTTP GET

```
URL url = new URL("http://example.com");
HttpURLConnection connection = (HttpURLConnection) url.openConnection();

try {
    BufferedReader br = new BufferedReader(new
InputStreamReader(connection.getInputStream()));

    // read the input stream
    // in this case, I simply read the first line of the stream
    String line = br.readLine();
    Log.d("HTTP-GET", line);

} finally {
    connection.disconnect();
}
```

。

```
URL url;
HttpURLConnection connection = null;

try {
    url = new URL("http://example.com");
    connection = (HttpURLConnection) url.openConnection();
    BufferedReader br = new BufferedReader(new
InputStreamReader(connection.getInputStream()));

    // read the input stream
    // in this case, I simply read the first line of the stream
    String line = br.readLine();
    Log.d("HTTP-GET", line);

} catch (IOException e) {
    e.printStackTrace();
} finally {
    if (connection != null) {
        connection.disconnect();
    }
}
```

HTTP GET

```
URL url = new URL("http://example.com");
HttpURLConnection connection = (HttpURLConnection) url.openConnection();

try {
    BufferedReader br = new BufferedReader(new
```

```
InputStreamReader(connection.getInputStream()));

    // use a string builder to bufferize the response body
    // read from the input strea.
    StringBuilder sb = new StringBuilder();
    String line;
    while ((line = br.readLine()) != null) {
        sb.append(line).append('\n');
    }

    // use the string builder directly,
    // or convert it into a String
    String body = sb.toString();

    Log.d("HTTP-GET", body);

} finally {
    connection.disconnect();
}
```

。

HttpURLConnectionmultipart / form-data

multipart / form-data HttpURLConnection

MultipartUtility.java

```
public class MultipartUtility {
        private final String boundary;
        private static final String LINE_FEED = "\r\n";
        private HttpURLConnection httpConn;
        private String charset;
        private OutputStream outputStream;
        private PrintWriter writer;

        /**
         * This constructor initializes a new HTTP POST request with content type
         * is set to multipart/form-data
         *
         * @param requestURL
         * @param charset
         * @throws IOException
         */
        public MultipartUtility(String requestURL, String charset)
                throws IOException {
            this.charset = charset;

            // creates a unique boundary based on time stamp
            boundary = "===" + System.currentTimeMillis() + "===";
            URL url = new URL(requestURL);
            httpConn = (HttpURLConnection) url.openConnection();
            httpConn.setUseCaches(false);
            httpConn.setDoOutput(true);    // indicates POST method
            httpConn.setDoInput(true);
            httpConn.setRequestProperty("Content-Type",
                    "multipart/form-data; boundary=" + boundary);
            outputStream = httpConn.getOutputStream();
```

```
            writer = new PrintWriter(new OutputStreamWriter(outputStream, charset),
                    true);
        }

        /**
         * Adds a form field to the request
         *
         * @param name  field name
         * @param value field value
         */
        public void addFormField(String name, String value) {
            writer.append("--" + boundary).append(LINE_FEED);
            writer.append("Content-Disposition: form-data; name=\"" + name + "\"")
                    .append(LINE_FEED);
            writer.append("Content-Type: text/plain; charset=" + charset).append(
                    LINE_FEED);
            writer.append(LINE_FEED);
            writer.append(value).append(LINE_FEED);
            writer.flush();
        }

        /**
         * Adds a upload file section to the request
         *
         * @param fieldName  name attribute in <input type="file" name="..." />
         * @param uploadFile a File to be uploaded
         * @throws IOException
         */
        public void addFilePart(String fieldName, File uploadFile)
                throws IOException {
            String fileName = uploadFile.getName();
            writer.append("--" + boundary).append(LINE_FEED);
            writer.append(
                    "Content-Disposition: form-data; name=\"" + fieldName
                            + "\"; filename=\"" + fileName + "\"")
                    .append(LINE_FEED);
            writer.append(
                    "Content-Type: "
                            + URLConnection.guessContentTypeFromName(fileName))
                    .append(LINE_FEED);
            writer.append("Content-Transfer-Encoding: binary").append(LINE_FEED);
            writer.append(LINE_FEED);
            writer.flush();

            FileInputStream inputStream = new FileInputStream(uploadFile);
            byte[] buffer = new byte[4096];
            int bytesRead = -1;
            while ((bytesRead = inputStream.read(buffer)) != -1) {
                outputStream.write(buffer, 0, bytesRead);
            }
            outputStream.flush();
            inputStream.close();
            writer.append(LINE_FEED);
            writer.flush();
        }

        /**
         * Adds a header field to the request.
         *
         * @param name  - name of the header field
         * @param value - value of the header field
```

```
         */
        public void addHeaderField(String name, String value) {
            writer.append(name + ": " + value).append(LINE_FEED);
            writer.flush();
        }

        /**
         * Completes the request and receives response from the server.
         *
         * @return a list of Strings as response in case the server returned
         * status OK, otherwise an exception is thrown.
         * @throws IOException
         */
        public List<String> finish() throws IOException {
            List<String> response = new ArrayList<String>();
            writer.append(LINE_FEED).flush();
            writer.append("--" + boundary + "--").append(LINE_FEED);
            writer.close();

            // checks server's status code first
            int status = httpConn.getResponseCode();
            if (status == HttpURLConnection.HTTP_OK) {
                BufferedReader reader = new BufferedReader(new InputStreamReader(
                        httpConn.getInputStream()));
                String line = null;
                while ((line = reader.readLine()) != null) {
                    response.add(line);
                }
                reader.close();
                httpConn.disconnect();
            } else {
                throw new IOException("Server returned non-OK status: " + status);
            }
            return response;
        }
    }
```

```
    MultipartUtility multipart = new MultipartUtility(requestURL, charset);

    // In your case you are not adding form data so ignore this
                /*This is to add parameter values */
                for (int i = 0; i < myFormDataArray.size(); i++) {
                    multipart.addFormField(myFormDataArray.get(i).getParamName(),
                            myFormDataArray.get(i).getParamValue());
                }


//add your file here.
                /*This is to add file content*/
                for (int i = 0; i < myFileArray.size(); i++) {
                    multipart.addFilePart(myFileArray.getParamName(),
                            new File(myFileArray.getFileName()));
                }

                List<String> response = multipart.finish();
                Debug.e(TAG, "SERVER REPLIED:");
                for (String line : response) {
                    Debug.e(TAG, "Upload Files Response:::" + line);
// get your server response here.
                    responseString = line;
```

```
                }
```

HTTP POST

HashMapPOST

```
HashMap<String, String> params;
```

`params` HashMapStringBuilder

```
    StringBuilder sbParams = new StringBuilder();
    int i = 0;
    for (String key : params.keySet()) {
        try {
            if (i != 0){
                sbParams.append("&");
            }
            sbParams.append(key).append("=")
                    .append(URLEncoder.encode(params.get(key), "UTF-8"));

        } catch (UnsupportedEncodingException e) {
            e.printStackTrace();
        }
        i++;
    }
```

HttpURLConnectionPOST

```
try{
    String url = "http://www.example.com/test.php";
    URL urlObj = new URL(url);
    HttpURLConnection conn = (HttpURLConnection) urlObj.openConnection();
    conn.setDoOutput(true);
    conn.setRequestMethod("POST");
    conn.setRequestProperty("Accept-Charset", "UTF-8");

    conn.setReadTimeout(10000);
    conn.setConnectTimeout(15000);

    conn.connect();

    String paramsString = sbParams.toString();

    DataOutputStream wr = new DataOutputStream(conn.getOutputStream());
    wr.writeBytes(paramsString);
    wr.flush();
    wr.close();
} catch (IOException e) {
  e.printStackTrace();
}
```

```
try {
  InputStream in = new BufferedInputStream(conn.getInputStream());
  BufferedReader reader = new BufferedReader(new InputStreamReader(in));
  StringBuilder result = new StringBuilder();
```

```
  String line;
  while ((line = reader.readLine()) != null) {
    result.append(line);
  }

  Log.d("test", "result from server: " + result.toString());

} catch (IOException e) {
  e.printStackTrace();
} finally {
    if (conn != null) {
        conn.disconnect();
    }
}
```

HttpURLConnectionPOST

/。POSTAndroid。

`multipart/form-data` POST`multipart/form-data`。

```
URL url = new URL(postTarget);
HttpURLConnection connection = (HttpURLConnection) url.openConnection();

String auth = "Bearer " + oauthToken;
connection.setRequestProperty("Authorization", basicAuth);

String boundary = UUID.randomUUID().toString();
connection.setRequestMethod("POST");
connection.setDoOutput(true);
connection.setRequestProperty("Content-Type", "multipart/form-data;boundary=" + boundary);

DataOutputStream request = new DataOutputStream(uc.getOutputStream());

request.writeBytes("--" + boundary + "\r\n");
request.writeBytes("Content-Disposition: form-data; name=\"description\"\r\n\r\n");
request.writeBytes(fileDescription + "\r\n");

request.writeBytes("--" + boundary + "\r\n");
request.writeBytes("Content-Disposition: form-data; name=\"file\"; filename=\"" +
file.fileName + "\"\r\n\r\n");
request.write(FileUtils.readFileToByteArray(file));
request.writeBytes("\r\n");

request.writeBytes("--" + boundary + "--\r\n");
request.flush();
int respCode = connection.getResponseCode();

switch(respCode) {
    case 200:
        //all went ok - read response
        ...
        break;
    case 301:
    case 302:
    case 307:
        //handle redirect - for example, re-post to the new location
        ...
```

```
        break;
    ...
    default:
        //do something sensible
}
```

。

1. `postTarget`POSTURL; `oauthToken`; `fileDescriptiondescription`; `file` - `java.io.File` - `new File(filePath)` 。
2. oAuth auth`Authorization`
3. Apache Common `FileUtil` - 。

HttpURLConnectionHTTP

`GET POST PUT PATCH`

```
class APIResponseObject{
    int responseCode;
    String response;

    APIResponseObject(int responseCode,String response)
    {
         this.responseCode = responseCode;
         this.response = response;
    }
}

public class APIAccessTask extends AsyncTask<String,Void,APIResponseObject> {
    URL requestUrl;
    Context context;
    HttpURLConnection urlConnection;
    List<Pair<String,String>> postData, headerData;
    String method;
    int responseCode = HttpURLConnection.HTTP_OK;

    interface OnCompleteListener{
        void onComplete(APIResponseObject result);
    }

    public OnCompleteListener delegate = null;

    APIAccessTask(Context context, String requestUrl, String method, OnCompleteListener
delegate){
        this.context = context;
        this.delegate = delegate;
        this.method = method;
        try {
            this.requestUrl = new URL(requestUrl);
        }
        catch(Exception ex){
            ex.printStackTrace();
        }
    }

    APIAccessTask(Context context, String requestUrl, String method, List<Pair<String,String>>
postData, OnCompleteListener delegate){
```

```
        this(context, requestUrl, method, delegate);
        this.postData = postData;
    }

    APIAccessTask(Context context, String requestUrl, String method, List<Pair<String,String>>
postData,
            List<Pair<String,String>> headerData, OnCompleteListener delegate ){
        this(context, requestUrl,method,postData,delegate);
        this.headerData = headerData;
    }

    @Override
    protected void onPreExecute() {
        super.onPreExecute();
    }

    @Override
    protected APIResponseObject doInBackground(String... params) {
        Log.d("debug", "url = "+ requestUrl);
        try {
            urlConnection = (HttpURLConnection) requestUrl.openConnection();

            if(headerData != null) {
                for (Pair pair : headerData) {

urlConnection.setRequestProperty(pair.first.toString(),pair.second.toString());
                }
            }

            urlConnection.setDoInput(true);
            urlConnection.setChunkedStreamingMode(0);
            urlConnection.setRequestMethod(method);
            urlConnection.connect();

            StringBuilder sb = new StringBuilder();

            if(!(method.equals("GET"))) {
                OutputStream out = new BufferedOutputStream(urlConnection.getOutputStream());
                BufferedWriter writer = new BufferedWriter(new OutputStreamWriter(out, "UTF-
8"));
                writer.write(getPostDataString(postData));
                writer.flush();
                writer.close();
                out.close();
            }

            urlConnection.connect();
            responseCode = urlConnection.getResponseCode();
            if (responseCode == HttpURLConnection.HTTP_OK) {
                InputStream in = new BufferedInputStream(urlConnection.getInputStream());
                BufferedReader reader = new BufferedReader(new InputStreamReader(in, "UTF-
8"));
                String line;

                while ((line = reader.readLine()) != null) {
                    sb.append(line);
                }
            }

            return new APIResponseObject(responseCode, sb.toString());
        }
```

```
        catch(Exception ex){
            ex.printStackTrace();
        }
        return null;
    }

    @Override
    protected void onPostExecute(APIResponseObject result) {
        delegate.onComplete(result);
        super.onPostExecute(result);
    }

    private String getPostDataString(List<Pair<String, String>> params) throws
UnsupportedEncodingException {
        StringBuilder result = new StringBuilder();
        boolean first = true;
        for(Pair<String,String> pair : params){
            if (first)
                first = false;
            else
                result.append("&");

            result.append(URLEncoder.encode(pair.first,"UTF-8"));
            result.append("=");
            result.append(URLEncoder.encode(pair.second, "UTF-8"));
        }
        return result.toString();
    }
}
```

POST。

onComplete()。 APIResponseObjectHTTP。 XMLJSON。

execute()

```
class MainClass {
    String url = "https://example.com./api/v1/ex";
    String method = "POST";
    List<Pair<String,String>> postData = new ArrayList<>();

    postData.add(new Pair<>("email","whatever");
    postData.add(new Pair<>("password", "whatever");

    new APIAccessTask(MainActivity.this, url, method, postData,
            new APIAccessTask.OnCompleteListener() {
        @Override
        public void onComplete(APIResponseObject result) {
            if (result.responseCode == HttpURLConnection.HTTP_OK) {
                String str = result.response;
                // Do your XML/JSON parsing here
            }
        }
    }).execute();
}
```

HttpURLConnection https://riptutorial.com/zh-CN/android/topic/781/httpurlconnection

56: ImageView

ImageView `android.widget.ImageView` DrawablesBitmaps。

。 XML `layout`Java。

- `setImageResource(int resId)`drawable`ImageView`。
- `imageView.setImageResource(R.drawable.anyImage)`

resId	resdrawable

Examples

```
<ImageView
 android:id="@+id/imgExample"
 android:layout_width="wrap_content"
 android:layout_height="wrap_content"
 ...
 />
```

XMLdrawable`ImageView`

```
android:src="@drawable/android2"
```

drawable

```
 ImageView imgExample = (ImageView) findViewById(R.id.imgExample);
 imgExample.setImageResource(R.drawable.android2);
```

alpha

“alpha”。

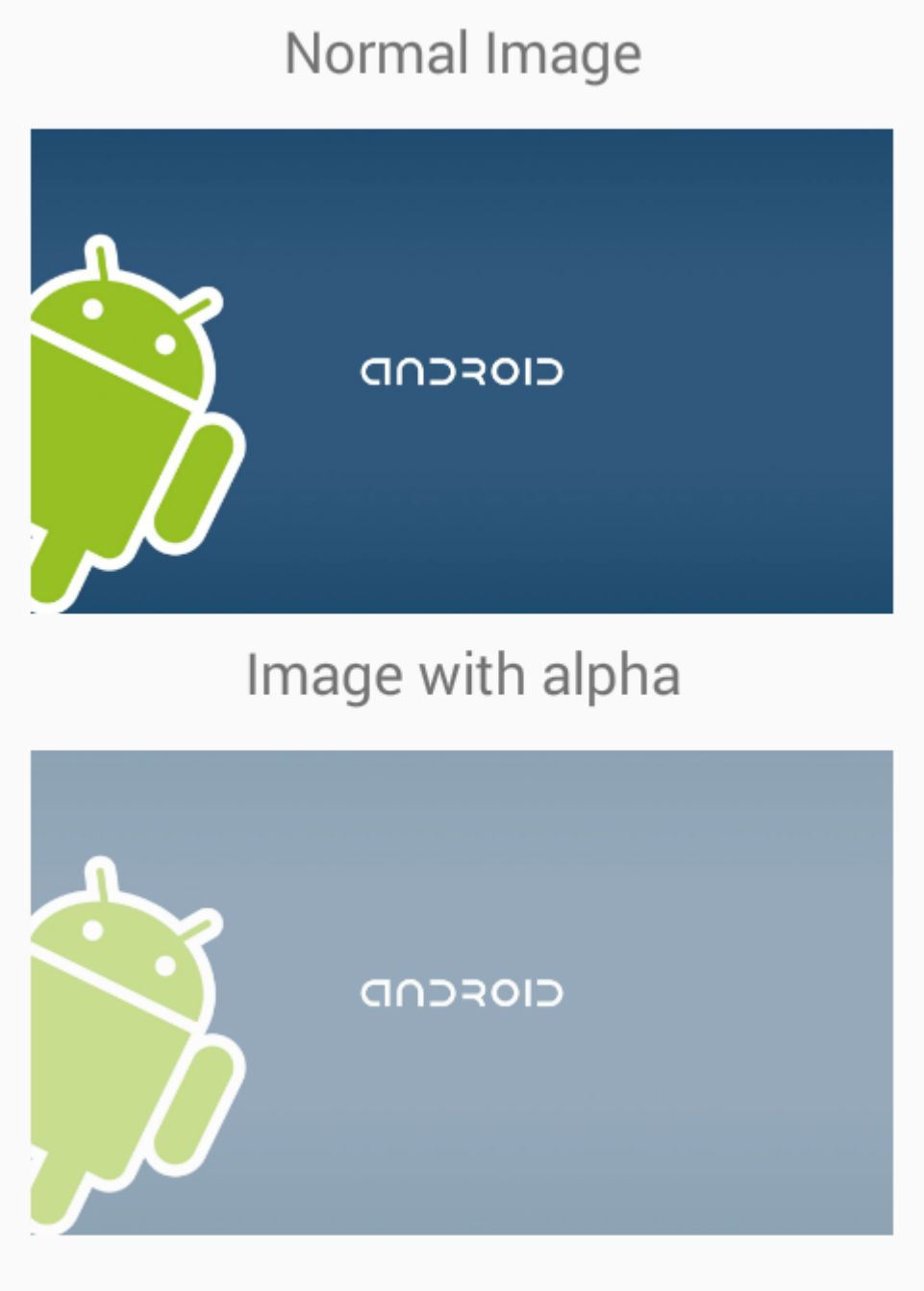
XMLalpha

```
android:alpha="0.5"
```

01

alpha

```
imgExample.setAlpha(0.5f);
```

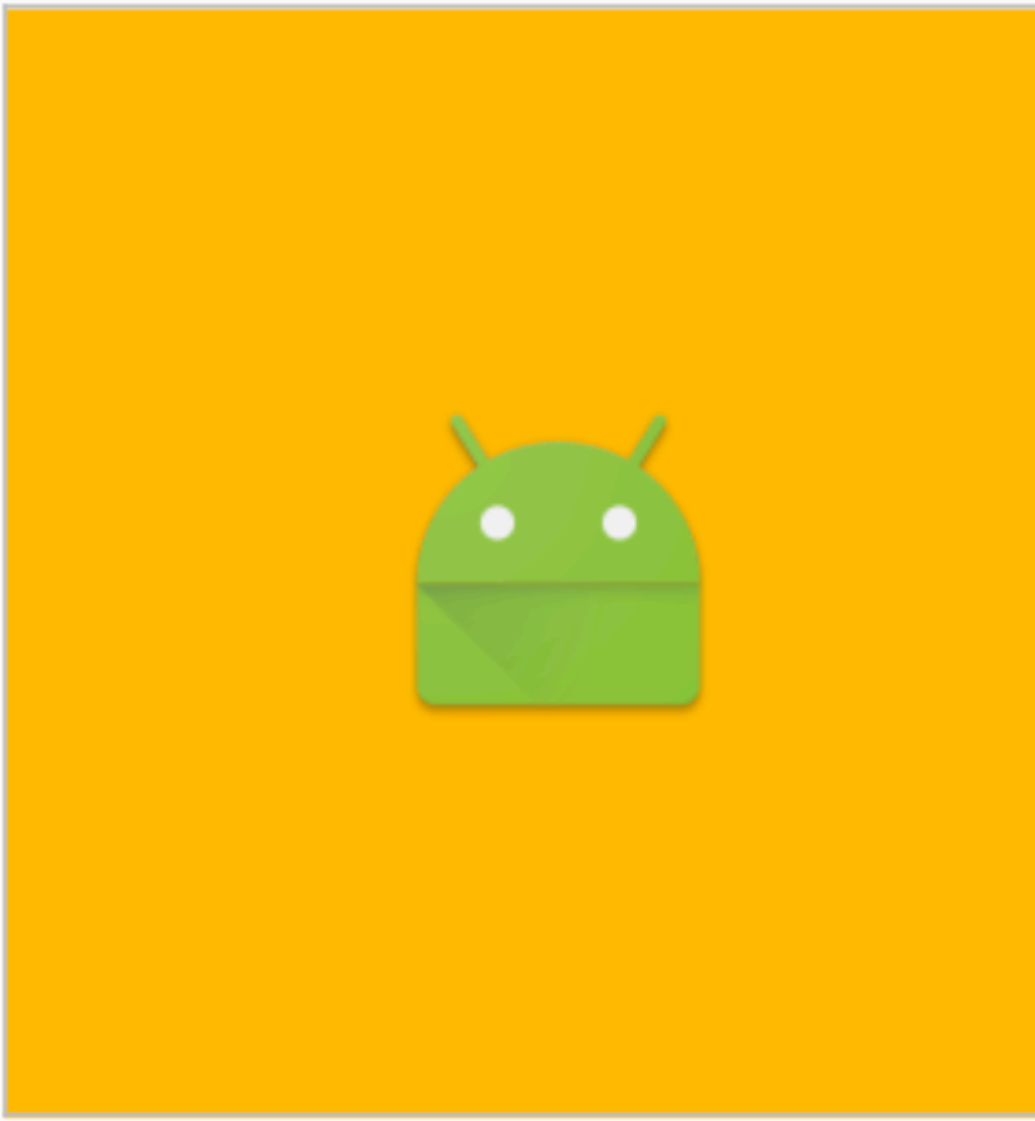


ImageView ScaleType -

ImageView。 。

```
    <ImageView android:layout_width="20dp"
           android:layout_height="20dp"
           android:src="@mipmap/ic_launcher"
           android:id="@+id/imageView"
           android:scaleType="center"
           android:background="@android:color/holo_orange_light"/>
```

Orange =



57: IntentService

4. <service androidname =“。 UploadS3IntentService”androidexported =“false”/>

IntentService。 。 UI。

Examples

IntentService

IntentServiceIntentServiceonHandleIntent

```
package com.example.myapp;
public class MyIntentService extends IntentService {
    @Override
     protected void onHandleIntent (Intent workIntent) {
         //Do something in the background, based on the contents of workIntent.
     }
}
```

IntentService。 IntentServicesuper(String)onHandleIntent(Intent)。

```
public class ImageLoaderIntentService extends IntentService {

    public static final String IMAGE_URL = "url";

    /**
     * Define a constructor and call the super(String) constructor, in order to name the
worker
     * thread - this is important if you want to debug and know the name of the thread upon
     * which this Service is operating its jobs.
     */
    public ImageLoaderIntentService() {
        super("Example");
    }

    @Override
    protected void onHandleIntent(Intent intent) {
        // This is where you do all your logic - this code is executed on a background thread

        String imageUrl = intent.getStringExtra(IMAGE_URL);

        if (!TextUtils.isEmpty(imageUrl)) {
            Drawable image = HttpUtils.loadImage(imageUrl); // HttpUtils is made-up for the
example
        }

        // Send your drawable back to the UI now, so that you can use it - there are many ways
        // to achieve this, but they are out of reach for this example
    }
}
```

IntentService Intent 。 Activity。 。 ActivityService。

```
Intent serviceIntent = new Intent(this, ImageLoaderIntentService.class); // you can use 'this'
as the first parameter if your class is a Context (i.e. an Activity, another Service, etc.),
otherwise, supply the context differently
serviceIntent.putExtra(IMAGE_URL, "http://www.example-site.org/some/path/to/an/image");
startService(serviceIntent); // if you are not using 'this' in the first line, you also have
to put the call to the Context object before startService(Intent) here
```

IntentServiceIntentIntent◦ Intent ◦ IntentService◦

IntentService

IntentService◦ UIBroadcastReceiverResultReceiver

- BroadcastReceiver ◦
- ResultReceiver ∴

IntentService onHandleIntent() ◦

IntentService

```
public class YourIntentService extends IntentService {
    public YourIntentService () {
        super("YourIntentService ");
    }

    @Override
    protected void onHandleIntent(Intent intent) {
        // TODO: Write your own code here.
    }
}
```

/

```
Intent i = new Intent(this, YourIntentService.class);
startService(i);  // For the service.
startActivity(i); // For the activity; ignore this for now.
```

```
Intent passDataIntent = new Intent(this, YourIntentService.class);
msgIntent.putExtra("foo","bar");
startService(passDataIntent);
```

YourIntentService◦

```
public class YourIntentService extends IntentService {
    private String actvityValue="bar";
    String retrivedValue=intent.getStringExtra("foo");

    public YourIntentService () {
        super("YourIntentService ");
    }

    @Override
    protected void onHandleIntent(Intent intent) {
```

```
        if(retrivedValue.equals(actvityValue)){
            // Send the notification to foo.
        } else {
            // Retrieving data failed.
        }
    }
}
```

OnHandleIntent()◦

IntentService https://riptutorial.com/zh-CN/android/topic/5319/intentservice

58: JCodec

Examples

mavenJCodec。 pom.xml。

```
<dependency>
    <groupId>org.jcodec</groupId>
    <artifactId>jcodec-javase</artifactId>
    <version>0.1.9</version>
</dependency>
```

AVCMP4H.264ISO BMFQuicktime

```
int frameNumber = 150;
BufferedImage frame = FrameGrab.getFrame(new File("filename.mp4"), frameNumber);
ImageIO.write(frame, "png", new File("frame_150.png"));
```

AVCMP4H.264ISO BMFQuicktime

```
double startSec = 51.632;
FileChannelWrapper ch = null;
try {
    ch = NIOUtils.readableFileChannel(new File("filename.mp4"));
    FrameGrab fg = new FrameGrab(ch);
    grab.seek(startSec);
    for (int i = 0; i < 100; i++) {
        ImageIO.write(grab.getFrame(), "png",
            new File(System.getProperty("user.home"), String.format("Desktop/frame_%08d.png",
i)));
    }
} finally {
    NIOUtils.closeQuietly(ch);
}
```

JCodec https://riptutorial.com/zh-CN/android/topic/9948/jcodec

59: Leakcanary

Leak CanaryAndroidJava

https://github.com/square/leakcanary

Examples

Android

build.gradle

```
debugCompile 'com.squareup.leakcanary:leakcanary-android:1.5.1'
releaseCompile 'com.squareup.leakcanary:leakcanary-android-no-op:1.5.1'
testCompile 'com.squareup.leakcanary:leakcanary-android-no-op:1.5.1'
```

`ApplicationonCreate()`

```
LeakCanary.install(this);
```

LeakCanary 。

Leakcanary https://riptutorial.com/zh-CN/android/topic/10041/leakcanary

60: Library Dagger 2

GitHub Dagger 2。 Dagger 1.xDagger 2.x`ObjectGraph` / `Injector@Component`。

1. mavengradlejava
2. Dragger
3.
4. Dragger

Dagger 2 API

Dagger 2

@Module

@Provides@Module

@Inject

@Component

GitHub https //github.com/google/dagger

UserGuideGoogle https //google.github.io/dagger/users-guide.html

https //google.github.io/dagger/resources.html

Vogella http **//www.vogella.com/tutorials/Dagger/article.html**

Codepath https //github.com/codepath/android_guides/wiki/Dependency-Injection-with-Dagger-2

Examples

Object@Module@Singleton

```
import javax.inject.Singleton;
import dagger.Module;
import dagger.Provides;

@Module
public class VehicleModule {

    @Provides @Singleton
    Motor provideMotor(){
        return new Motor();
    }
```

```
    @Provides @Singleton
    Vehicle provideVehicle(){
        return new Vehicle(new Motor());
    }
}
```

@Provides@Module◦ @Singleton◦

◦ VehicleMotor Vehicle@Inject

```
@Inject
public Vehicle(Motor motor){
    this.motor = motor;
}
```

@Inject◦ ◦

@Modules@Inject

@Module@Inject@Component

```
import javax.inject.Singleton;
import dagger.Component;

@Singleton
@Component(modules = {VehicleModule.class})
public interface VehicleComponent {
    Vehicle provideVehicle();
}
```

@Component◦ VehicleModule ◦ ◦

@Component

```
VehicleComponent component = Dagger_VehicleComponent.builder().vehicleModule(new
VehicleModule()).build();
vehicle = component.provideVehicle();
Toast.makeText(this, String.valueOf(vehicle.getSpeed()), Toast.LENGTH_SHORT).show();
```

@ComponentDagger_<NameOfTheComponentInterface> Dagger_VehicleComponent builder◦

Library Dagger 2 https://riptutorial.com/zh-CN/android/topic/9079/library-dagger-2-

61: LruCache

Lru Cache。 128x128。

Lru。

Lru Cache。

LruinSampleSize。

Examples

Lru Cache。

Lru。 。 1/8。

Lru Cache。 `String` `Bitmap`

```
int maxMemory = (int) (Runtime.getRuntime().maxMemory() / 1024);
int cacheSize = maxMemory / 8;

LruCache<String, Bitmap> = memoryCache = new LruCache<String, Bitmap>(cacheSize) {
    protected int sizeOf(String key, Bitmap bitmap) {
        return bitmap.getByteCount();
    }
};
```

。

```
public void addResourceToMemoryCache(String key, Bitmap resource) {
    if (memoryCache.get(key) == null)
        memoryCache.put(key, resource);
}
```

Resouce

String

```
public Bitmap getResourceFromMemoryCache(String key) {
    memoryCache.get(key);
}
```

LruCache https://riptutorial.com/zh-CN/android/topic/7709/lrucache

62: MediaSession

- void mediaSessionCompat.setFlagsint flags
- void mediaSessionCompat.setMediaButtonReceiverPendingIntent mbr
- void mediaSessionCompat.setCallbackMediaSessionCompat.Callback
- void mediaSessionCompat.setActiveboolean active
- MediaSessionCompat.Token mediaSessionCompat.getSessionToken
- void mediaSessionCompat.release
- void mediaSessionCompat.setPlaybackStatePlaybackStateCompat state
- void mediaSessionCompat.setMetadataMediaMetadataCompat

media-compat。 。

Examples

ServiceMediaSession。 ServiceMediaSession

```
public final class MyService extends Service {
    private static MediaSession s_mediaSession;

    @Override
    public void onCreate() {
        // Instantiate new MediaSession object.
        configureMediaSession();
    }

    @Override
    public void onDestroy() {
        if (s_mediaSession != null)
            s_mediaSession.release();
    }
}
```

MediaSession

```
private void configureMediaSession {
    s_mediaSession = new MediaSession(this, "MyMediaSession");

    // Overridden methods in the MediaSession.Callback class.
    s_mediaSession.setCallback(new MediaSession.Callback() {
        @Override
        public boolean onMediaButtonEvent(Intent mediaButtonIntent) {
            Log.d(TAG, "onMediaButtonEvent called: " + mediaButtonIntent);
            KeyEvent ke = mediaButtonIntent.getParcelableExtra(Intent.EXTRA_KEY_EVENT);
            if (ke != null && ke.getAction() == KeyEvent.ACTION_DOWN) {
                int keyCode = ke.getKeyCode();
                Log.d(TAG, "onMediaButtonEvent Received command: " + ke);
            }
            return super.onMediaButtonEvent(mediaButtonIntent);
        }

        @Override
        public void onSkipToNext() {
```

```
            Log.d(TAG, "onSkipToNext called (media button pressed)");
            Toast.makeText(getApplicationContext(), "onSkipToNext called",
Toast.LENGTH_SHORT).show();
            skipToNextPlaylistItem(); // Handle this button press.
            super.onSkipToNext();
        }

        @Override
        public void onSkipToPrevious() {
            Log.d(TAG, "onSkipToPrevious called (media button pressed)");
            Toast.makeText(getApplicationContext(), "onSkipToPrevious called",
Toast.LENGTH_SHORT).show();
            skipToPreviousPlaylistItem(); // Handle this button press.
            super.onSkipToPrevious();
        }

        @Override
        public void onPause() {
            Log.d(TAG, "onPause called (media button pressed)");
            Toast.makeText(getApplicationContext(), "onPause called",
Toast.LENGTH_SHORT).show();
            mpPause(); // Pause the player.
            super.onPause();
        }

        @Override
        public void onPlay() {
            Log.d(TAG, "onPlay called (media button pressed)");
            mpStart(); // Start player/playback.
            super.onPlay();
        }

        @Override
        public void onStop() {
            Log.d(TAG, "onStop called (media button pressed)");
            mpReset(); // Stop and/or reset the player.
            super.onStop();
        }
    });

    s_mediaSession.setFlags(MediaSession.FLAG_HANDLES_MEDIA_BUTTONS |
MediaSession.FLAG_HANDLES_TRANSPORT_CONTROLS);
    s_mediaSession.setActive(true);
}
```

A2DP HashMap

```
void sendMetaData(@NonNull final HashMap<String, String> hm) {
    // Return if Bluetooth A2DP is not in use.
    if (!((AudioManager) getSystemService(Context.AUDIO_SERVICE)).isBluetoothA2dpOn()) return;

    MediaMetadata metadata = new MediaMetadata.Builder()
            .putString(MediaMetadata.METADATA_KEY_TITLE, hm.get("Title"))
            .putString(MediaMetadata.METADATA_KEY_ALBUM, hm.get("Album"))
            .putString(MediaMetadata.METADATA_KEY_ARTIST, hm.get("Artist"))
            .putString(MediaMetadata.METADATA_KEY_AUTHOR, hm.get("Author"))
            .putString(MediaMetadata.METADATA_KEY_COMPOSER, hm.get("Composer"))
            .putString(MediaMetadata.METADATA_KEY_WRITER, hm.get("Writer"))
            .putString(MediaMetadata.METADATA_KEY_DATE, hm.get("Date"))
            .putString(MediaMetadata.METADATA_KEY_GENRE, hm.get("Genre"))
```

```
            .putLong(MediaMetadata.METADATA_KEY_YEAR, tryParse(hm.get("Year")))
            .putLong(MediaMetadata.METADATA_KEY_DURATION, tryParse(hm.get("Raw Duration")))
            .putLong(MediaMetadata.METADATA_KEY_TRACK_NUMBER, tryParse(hm.get("Track
Number")))
            .build();

    s_mediaSession.setMetadata(metadata);
}
```

PlaybackState ◦ MediaSession

```
private void setPlaybackState(@NonNull final int stateValue) {
    PlaybackState state = new PlaybackState.Builder()
            .setActions(PlaybackState.ACTION_PLAY | PlaybackState.ACTION_SKIP_TO_NEXT
                    | PlaybackState.ACTION_PAUSE | PlaybackState.ACTION_SKIP_TO_PREVIOUS
                    | PlaybackState.ACTION_STOP | PlaybackState.ACTION_PLAY_PAUSE)
            .setState(stateValue, PlaybackState.PLAYBACK_POSITION_UNKNOWN, 0)
            .build();

    s_mediaSession.setPlaybackState(state);
}
```

MediaSession https://riptutorial.com/zh-CN/android/topic/6250/mediasession

63: MediaStore

Examples

/ MP3

```
<uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE" />
<uses-permission android:name="android.permission.READ_EXTERNAL_STORAGE" />
```

AudioModel.class

```
public class AudioModel {
    String aPath;
    String aName;
    String aAlbum;
    String aArtist;

    public String getaPath() {
        return aPath;
    }
    public void setaPath(String aPath) {
        this.aPath = aPath;
    }
    public String getaName() {
        return aName;
    }
    public void setaName(String aName) {
        this.aName = aName;
    }
    public String getaAlbum() {
        return aAlbum;
    }
    public void setaAlbum(String aAlbum) {
        this.aAlbum = aAlbum;
    }
    public String getaArtist() {
        return aArtist;
    }
    public void setaArtist(String aArtist) {
        this.aArtist = aArtist;
    }
}
```

MP3

```
public List<AudioModel> getAllAudioFromDevice(final Context context) {
    final List<AudioModel> tempAudioList = new ArrayList<>();

    Uri uri = MediaStore.Audio.Media.EXTERNAL_CONTENT_URI;
    String[] projection = {MediaStore.Audio.AudioColumns.DATA,
MediaStore.Audio.AudioColumns.TITLE, MediaStore.Audio.AudioColumns.ALBUM,
MediaStore.Audio.ArtistColumns.ARTIST,};
    Cursor c = context.getContentResolver().query(uri, projection, MediaStore.Audio.Media.DATA
+ " like ? ", new String[]{"%utm%"}, null);
```

```
    if (c != null) {
        while (c.moveToNext()) {
            AudioModel audioModel = new AudioModel();
            String path = c.getString(0);
            String name = c.getString(1);
            String album = c.getString(2);
            String artist = c.getString(3);

            audioModel.setaName(name);
            audioModel.setaAlbum(album);
            audioModel.setaArtist(artist);
            audioModel.setaPath(path);

            Log.e("Name :" + name, " Album :" + album);
            Log.e("Path :" + path, " Artist :" + artist);

            tempAudioList.add(audioModel);
        }
        c.close();
    }

    return tempAudioList;
}
```

MP3。Media.Store.Audio。

```
Cursor c = context.getContentResolver().query(uri,
    projection,
    MediaStore.Audio.Media.DATA + " like ? ",
    new String[]{"%yourFolderName%"}, // Put your device folder / file location here.
    null);
```

```
Cursor c = context.getContentResolver().query(uri,
    projection,
    null,
    null,
    null);
```

。

MP3

```
getAllAudioFromDevice(this);
```

```
public class ReadAudioFilesActivity extends AppCompatActivity {
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_audio_list);

        /**
         * This will return a list of all MP3 files. Use the list to display data.
         */
```

```
        getAllAudioFromDevice(this);
    }

    // Method to read all the audio/MP3 files.
    public List<AudioModel> getAllAudioFromDevice(final Context context) {
        final List<AudioModel> tempAudioList = new ArrayList<>();

        Uri uri = MediaStore.Audio.Media.EXTERNAL_CONTENT_URI;
        String[] projection =
{MediaStore.Audio.AudioColumns.DATA,MediaStore.Audio.AudioColumns.TITLE
,MediaStore.Audio.AudioColumns.ALBUM, MediaStore.Audio.ArtistColumns.ARTIST,};
        Cursor c = context.getContentResolver().query(uri, projection,
MediaStore.Audio.Media.DATA + " like ? ", new String[]{"%utm%"}, null);

        if (c != null) {
            while (c.moveToNext()) {
                // Create a model object.
                AudioModel audioModel = new AudioModel();

                String path = c.getString(0);   // Retrieve path.
                String name = c.getString(1);   // Retrieve name.
                String album = c.getString(2);  // Retrieve album name.
                String artist = c.getString(3); // Retrieve artist name.

                // Set data to the model object.
                audioModel.setaName(name);
                audioModel.setaAlbum(album);
                audioModel.setaArtist(artist);
                audioModel.setaPath(path);

                Log.e("Name :" + name, " Album :" + album);
                Log.e("Path :" + path, " Artist :" + artist);

                // Add the model object to the list .
                tempAudioList.add(audioModel);
            }
            c.close();
        }

        // Return the list.
        return tempAudioList;
    }
}
```

MediaStore https://riptutorial.com/zh-CN/android/topic/7136/mediastore

64: MultidexDex

DEXDalvikDEXAndroidAPK。

DalvikDEX65,53664K - Android。

DEXMultidex。

dex

DexAndroid Java。 AndroidDalvik`dex`。 AndroidAndroid RuntimeART`dex`。

Dex。 。

`dex`。 `0xFFFF`65535.。

GoogleMultidex。 。 `dex`。 `ClassLoader`。

。 `Application Not Responding`。

Multidex。

64K。 dex

- -。 。 dex。
- **ProGuard** - ProGuardProGuard。 APK。

。 。 JSONJacksonGson。 GsonAndroid。 9,000Gson1,900。

- dexcount-gradle-pluginAPKAAR
- dex-method-countsAPK
- www.methodscount.comAPK。

Examples

MultiDexApplicationMultidex

`Application`。

`Application`。 `Application`。

AndroidManifest.xml`applicationandroid:nameandroid.support.multidex.MultiDexApplication`

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.android.multidex.myapplication">
```

```
    <application
        ...
        android:name="android.support.multidex.MultiDexApplication">
        ...
    </application>
</manifest>
```

Multidex

`Application`◦

`applicationandroid:nameApplication`◦

`ApplicationattachBaseContext()MultiDex.install()`

```
package com.example;

import android.app.Application;
import android.content.Context;

/**
 * Extended application that support multidex
 */
public class MyApplication extends Application {

    @Override
    protected void attachBaseContext(Context base) {
        super.attachBaseContext(base);
        MultiDex.install(this);
    }
}
```

AndroidManifest.xml`applicationApplication`

```
<application
    android:name="com.example.MyApplication"
    android:icon="@drawable/ic_launcher"
    android:label="@string/app_name">
</application>
```

Multidex

multidex

- Gradle
- `MultiDexApplicationApplication`MultiDex

Gradle

`app/build.gradle`

```
android {
    compileSdkVersion 24
```

```
    buildToolsVersion "24.0.1"

    defaultConfig {
        ...
        minSdkVersion 14
        targetSdkVersion 24
        ...

        // Enabling multidex support.
        multiDexEnabled true
    }
    ...
}

dependencies {
  compile 'com.android.support:multidex:1.0.1'
}
```

MultiDex

- Multidex
- MultidexMultiDexApplication
- MultiDexApplicationMultidex

Androiddexclasses.dexclasses2.dexclasses3.dex。
APK。

Dexcount Gradle

dexcount。

app/build.gradle

```
apply plugin: 'com.android.application'

buildscript {
    repositories {
        mavenCentral() // or jcenter()
    }

    dependencies {
        classpath 'com.getkeepsafe.dexcount:dexcount-gradle-plugin:0.5.5'
    }
}
```

app/build.gradle

```
apply plugin: 'com.getkeepsafe.dexcount'
```

../app/build/outputs/dexcount

.html

../app/build/outputs/dexcount/debugChart/index.html

MultidexMultiDexApplication

ApplicationattachBaseContext()◦

attachBaseContext()MultiDexApplication◦

MultiDexApplicationApplication

```
package com.example;

import android.support.multidex.MultiDexApplication;
import android.content.Context;

/**
 * Extended MultiDexApplication
 */
public class MyApplication extends MultiDexApplication {

     // No need to override attachBaseContext()

     //..........
}
```

AndroidManifest.xmlApplication

```
<application
    android:name="com.example.MyApplication"
    android:icon="@drawable/ic_launcher"
    android:label="@string/app_name">
</application>
```

MultidexDex https://riptutorial.com/zh-CN/android/topic/1887/multidexdex

65: MVP

AndroidModel-View-PresenterMVP。

Android。 。 。

MVP

。 。

View`ActivityFragment` 。 Presenter。

PresenterViewModel。 ModelView。 MVCView。

* Antonio Leiva。

App

。 。 Java。

Examples

MVP

MVP。 `Button` s-one;`EditText` s-one。

LoginFragment

```
public class LoginFragment extends Fragment implements LoginContract.PresenterToView,
View.OnClickListener {

    private View view;
    private EditText email, password;
    private Button login, register;

    private LoginContract.ToPresenter presenter;

    @Nullable
    @Override
    public View onCreateView(LayoutInflater inflater, ViewGroup container, Bundle
savedInstanceState) {
        return inflater.inflate(R.layout.fragment_login, container, false);
    }

    @Override
    public void onViewCreated(View view, @Nullable Bundle savedInstanceState) {
        email = (EditText) view.findViewById(R.id.email_et);
        password = (EditText) view.findViewById(R.id.password_et);
```

```
        login = (Button) view.findViewById(R.id.login_btn);
        login.setOnClickListener(this);
        register = (Button) view.findViewById(R.id.register_btn);
        register.setOnClickListener(this);

        presenter = new LoginPresenter(this);

        presenter.isLoggedIn();

    }

    @Override
    public void onLoginResponse(boolean isLoginSuccess) {
        if (isLoginSuccess) {
            startActivity(new Intent(getActivity(), MapActivity.class));
            getActivity().finish();
        }
    }

    @Override
    public void onError(String message) {
        Toast.makeText(getActivity(), message, Toast.LENGTH_SHORT).show();
    }

    @Override
    public void isLoggedIn(boolean isLoggedIn) {
        if (isLoggedIn) {
            startActivity(new Intent(getActivity(), MapActivity.class));
            getActivity().finish();
        }
    }

    @Override
    public void onClick(View view) {
        switch (view.getId()) {
            case R.id.login_btn:
                LoginItem loginItem = new LoginItem();
                loginItem.setPassword(password.getText().toString().trim());
                loginItem.setEmail(email.getText().toString().trim());
                presenter.login(loginItem);
                break;
            case R.id.register_btn:
                startActivity(new Intent(getActivity(), RegisterActivity.class));
                getActivity().finish();
                break;
        }
    }
}
```

LoginPresenter

```
public class LoginPresenter implements LoginContract.ToPresenter {

    private LoginContract.PresenterToModel model;
    private LoginContract.PresenterToView view;

    public LoginPresenter(LoginContract.PresenterToView view) {
        this.view = view;
        model = new LoginModel(this);
    }
```

```
    @Override
    public void login(LoginItem userCredentials) {
        model.login(userCredentials);
    }

    @Override
    public void isLoggedIn() {
        model.isLoggedIn();
    }

    @Override
    public void onLoginResponse(boolean isLoginSuccess) {
        view.onLoginResponse(isLoginSuccess);
    }

    @Override
    public void onError(String message) {
        view.onError(message);
    }

    @Override
    public void isloggedIn(boolean isLoggedin) {
        view.isLoggedIn(isLoggedin);
    }
}
```

LoginModel

```
public class LoginModel implements LoginContract.PresenterToModel,
ResponseErrorListener.ErrorListener {

    private static final String TAG = LoginModel.class.getSimpleName();
    private LoginContract.ToPresenter presenter;

    public LoginModel(LoginContract.ToPresenter presenter) {
        this.presenter = presenter;
    }

    @Override
    public void login(LoginItem userCredentials) {
        if (validateData(userCredentials)) {
            try {
                performLoginOperation(userCredentials);
            } catch (JSONException e) {
                e.printStackTrace();
            }
        } else {

presenter.onError(BaseContext.getContext().getString(R.string.error_login_field_validation));
        }
    }

    @Override
    public void isLoggedIn() {
        DatabaseHelper database = new DatabaseHelper(BaseContext.getContext());
        presenter.isloggedIn(database.isLoggedIn());
    }

    private boolean validateData(LoginItem userCredentials) {
```

```
        return Patterns.EMAIL_ADDRESS.matcher(userCredentials.getEmail()).matches()
                && !userCredentials.getPassword().trim().equals("");
    }

    private void performLoginOperation(final LoginItem userCredentials) throws JSONException {

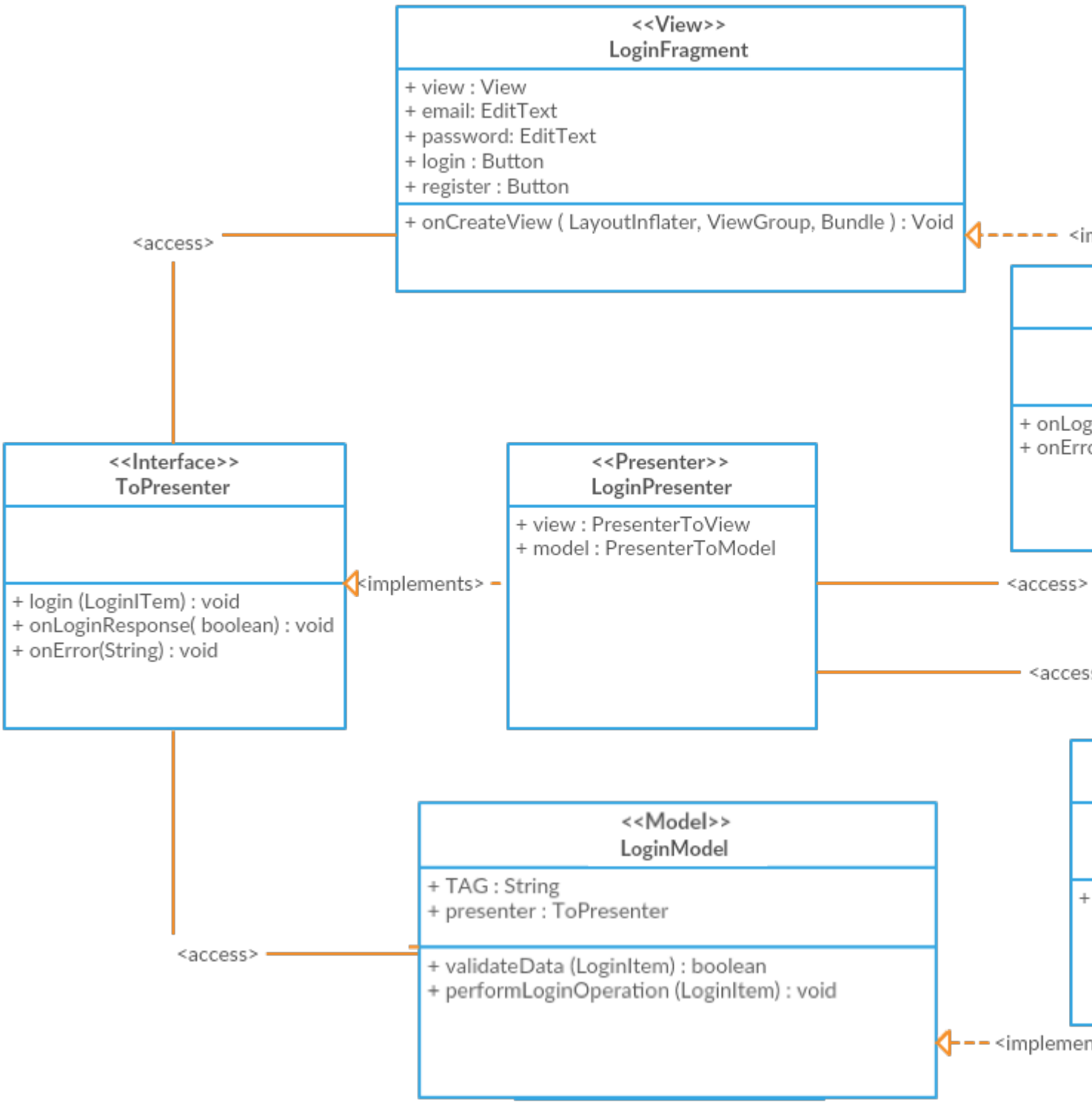
        JSONObject postData = new JSONObject();
        postData.put(Constants.EMAIL, userCredentials.getEmail());
        postData.put(Constants.PASSWORD, userCredentials.getPassword());

        JsonObjectRequest request = new JsonObjectRequest(Request.Method.POST, Url.AUTH,
postData,
                new Response.Listener<JSONObject>() {
                    @Override
                    public void onResponse(JSONObject response) {
                        try {
                            String token = response.getString(Constants.ACCESS_TOKEN);
                            DatabaseHelper databaseHelper = new
DatabaseHelper(BaseContext.getContext());
                            databaseHelper.login(token);
                            Log.d(TAG, "onResponse: " + token);
                        } catch (JSONException e) {
                            e.printStackTrace();
                        }
                        presenter.onLoginResponse(true);
                    }
                }, new ErrorResponse(this));

        RequestQueue queue = Volley.newRequestQueue(BaseContext.getContext());
        queue.add(request);
    }

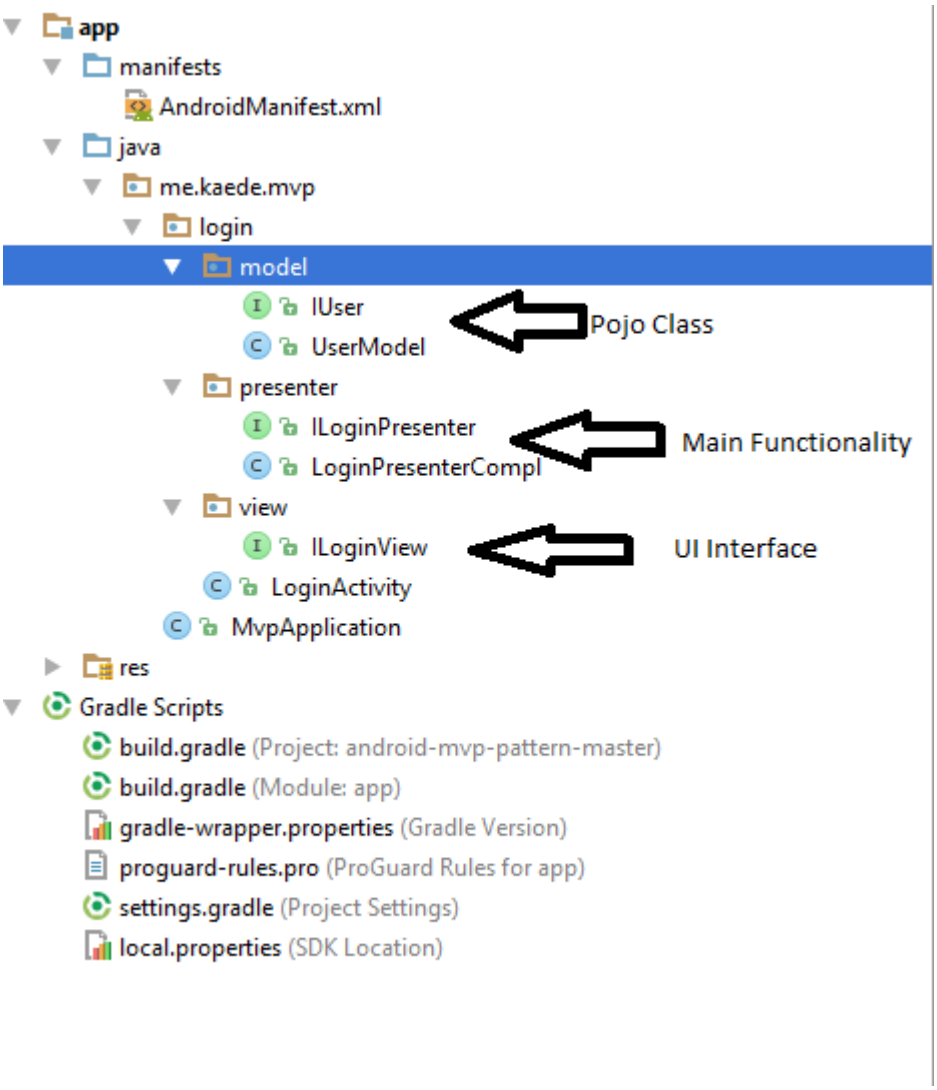
    @Override
    public void onError(String message) {
        presenter.onError(message);
    }
}
```

。



- VolleyMVP
- `UrlUtils`API
- `ResponseErrorListener.ErrorListenerErrorResponseinterface implements` Volley `Response.ErrorListener` ;

MVP



XML activity_login

```
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:gravity="center_vertical"
    android:orientation="vertical"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin">

    <EditText
        android:id="@+id/et_login_username"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="USERNAME" />

    <EditText
        android:id="@+id/et_login_password"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="PASSWORD" />
```

```
    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="horizontal">

        <Button
            android:id="@+id/btn_login_login"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_marginRight="4dp"
            android:layout_weight="1"
            android:text="Login" />

        <Button
            android:id="@+id/btn_login_clear"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_marginLeft="4dp"
            android:layout_weight="1"
            android:text="Clear" />
    </LinearLayout>

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="3dp"
        android:text="correct user: mvp, mvp" />

    <ProgressBar
        android:id="@+id/progress_login"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="40dp" />

</LinearLayout>
```

LoginActivity.class

```
public class LoginActivity extends AppCompatActivity implements ILoginView,
View.OnClickListener {
    private EditText editUser;
    private EditText editPass;
    private Button   btnLogin;
    private Button   btnClear;
    private ILoginPresenter loginPresenter;
    private ProgressBar progressBar;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_login);

        //find view
        editUser = (EditText) this.findViewById(R.id.et_login_username);
        editPass = (EditText) this.findViewById(R.id.et_login_password);
        btnLogin = (Button) this.findViewById(R.id.btn_login_login);
        btnClear = (Button) this.findViewById(R.id.btn_login_clear);
        progressBar = (ProgressBar) this.findViewById(R.id.progress_login);
```

```
        //set listener
        btnLogin.setOnClickListener(this);
        btnClear.setOnClickListener(this);

        //init
        loginPresenter = new LoginPresenterCompl(this);
        loginPresenter.setProgressBarVisiblity(View.INVISIBLE);
    }

    @Override
    public void onClick(View v) {
        switch (v.getId()){
            case R.id.btn_login_clear:
                loginPresenter.clear();
                break;
            case R.id.btn_login_login:
                loginPresenter.setProgressBarVisiblity(View.VISIBLE);
                btnLogin.setEnabled(false);
                btnClear.setEnabled(false);
                loginPresenter.doLogin(editUser.getText().toString(),
editPass.getText().toString());
                break;
        }
    }

    @Override
    public void onClearText() {
        editUser.setText("");
        editPass.setText("");
    }

    @Override
    public void onLoginResult(Boolean result, int code) {
        loginPresenter.setProgressBarVisiblity(View.INVISIBLE);
        btnLogin.setEnabled(true);
        btnClear.setEnabled(true);
        if (result){
            Toast.makeText(this,"Login Success",Toast.LENGTH_SHORT).show();
        }
        else
            Toast.makeText(this,"Login Fail, code = " + code,Toast.LENGTH_SHORT).show();
    }

    @Override
    protected void onDestroy() {
        super.onDestroy();
    }

    @Override
    public void onSetProgressBarVisibility(int visibility) {
        progressBar.setVisibility(visibility);
    }
}
```

ILoginView

Presenter`ILoginView`

```
public interface ILoginView {
    public void onClearText();
    public void onLoginResult(Boolean result, int code);
    public void onSetProgressBarVisibility(int visibility);
}
```

ILoginPresenter

ILoginPresenterLoginActivity Views LoginPresenterCompl◦ LoginPresenterComplILoginPresenter

ILoginPresenter.class

```
public interface ILoginPresenter {
    void clear();
    void doLogin(String name, String passwd);
    void setProgressBarVisiblity(int visiblity);
}
```

LoginPresenterCompl.class

```
public class LoginPresenterCompl implements ILoginPresenter {
    ILoginView iLoginView;
    IUser user;
    Handler handler;

    public LoginPresenterCompl(ILoginView iLoginView) {
        this.iLoginView = iLoginView;
        initUser();
        handler = new Handler(Looper.getMainLooper());
    }

    @Override
    public void clear() {
        iLoginView.onClearText();
    }

    @Override
    public void doLogin(String name, String passwd) {
        Boolean isLoginSuccess = true;
        final int code = user.checkUserValidity(name,passwd);
        if (code!=0) isLoginSuccess = false;
        final Boolean result = isLoginSuccess;
        handler.postDelayed(new Runnable() {
            @Override
            public void run() {
                    iLoginView.onLoginResult(result, code);
            }
        }, 5000);
    }

    @Override
    public void setProgressBarVisiblity(int visiblity){
        iLoginView.onSetProgressBarVisibility(visiblity);
```

```
    }

    private void initUser(){
        user = new UserModel("mvp","mvp");
    }
}
```

UserModel

UserModelPOJOLoginActivity。 PojoIUser

UserModel.class

```
public class UserModel implements IUser {
String name;
String passwd;

public UserModel(String name, String passwd) {
    this.name = name;
    this.passwd = passwd;
}

@Override
public String getName() {
    return name;
}

@Override
public String getPasswd() {
    return passwd;
}

@Override
public int checkUserValidity(String name, String passwd){
    if (name==null||passwd==null||!name.equals(getName())||!passwd.equals(getPasswd())){
        return -1;
    }
    return 0;
}
```

IUser.class

```
public interface IUser {
    String getName();

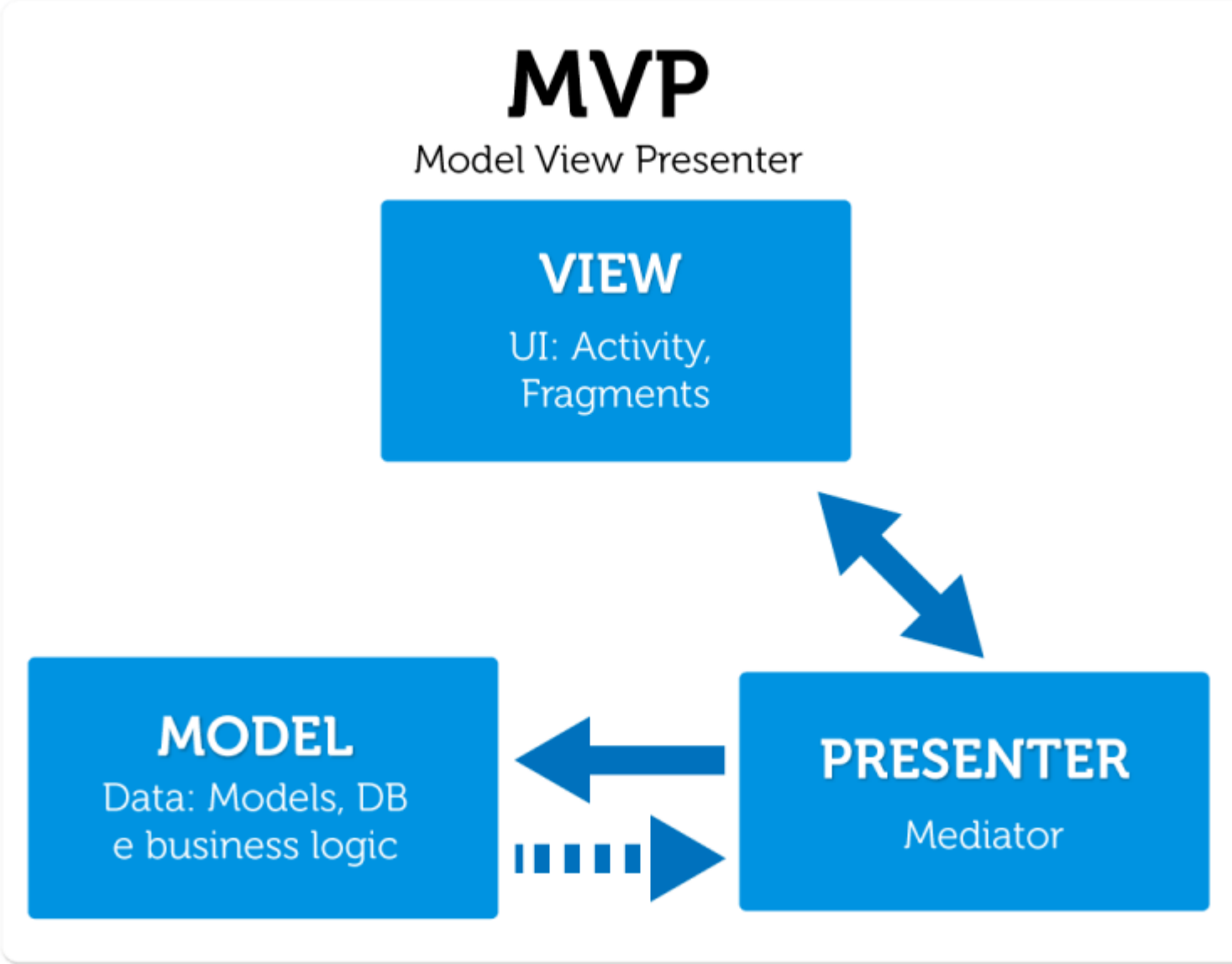
    String getPasswd();

    int checkUserValidity(String name, String passwd);
}
```

MVP

- - MVP - - MVC。

- 。 PresenterModelView。
- 。
- ViewPresenterPresenter。



MVP https://riptutorial.com/zh-CN/android/topic/4615/mvp

66: MVVM

DataBinding

viewModelxml`getis ◦ ◦ ViewModel::getFormattedTextViewModel::getFormattedText`xml `@{viewModel.formattedText} ◦ ViewModel::isContentVisible @{viewModel.contentVisible}` - > `@{viewModel.contentVisible}` Java Bean

`ActivityMainBinding`xmljava◦

activity_main.xml`app`textColor`android◦ textColor`setterColorResidViewModel◦

```
public class CustomBindings {

    @TargetApi(23)
    @BindingAdapter({"bind:textColor"})
    public static void setTextColor(TextView textView, int colorResId) {
        final Context context = textView.getContext();
        final Resources resources = context.getResources();
        final int apiVersion = Build.VERSION.SDK_INT;
        int color;

        if (apiVersion >= Build.VERSION_CODES.M) {
           color = resources.getColor(colorResId, context.getTheme());
        } else {
            color = resources.getColor(colorResId);
        }

        textView.setTextColor(color);
    }

}
```

DataBinding LibraryCustom Setters

.....xml!!!

xml for `android:visibilityapp:textColor`MVVM/◦ ViewModelAndroid◦

`app:textColor`ressource◦ ViewModel◦

`android:visibility◦ isLoadingVisibleisContentVisible◦` ViewModel◦

`viewModel.isLoading ? View.VISIBLE : View.GONE◦`

- Jeremy Likness - - - MVVM C08.2010
- Shamlia Shukkur - MVVM C03.2013
- Frode Nilsen - AndroidGoodbye PresenterHello ViewModel 07.2015
- Joe Birch - MVVMAndroid 09.2015
- Florina Muntenescu - Android3 - - ViewModel 10.2016

Examples

DataBinding LibraryMVVM

MVVM。

AndroidDataBindingAndroid。

-
- TextViewTextView
-

`activity_main.xml`

DataBinding10。 setterviewModel。

`android:visibilityapp:textColor“”`。

```
<layout
   xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:app="http://schemas.android.com/apk/res-auto"
   xmlns:tools="http://schemas.android.com/tools">

   <data>

       <import type="android.view.View" />

       <variable
           name="viewModel"
           type="de.walled.mvvmtest.viewmodel.ClickerViewModel"/>
   </data>

   <RelativeLayout
       android:id="@+id/activity_main"
       android:layout_width="match_parent"
       android:layout_height="match_parent"
       android:padding="@dimen/activity_horizontal_margin"

       tools:context="de.walled.mvvmtest.view.MainActivity">

       <LinearLayout
           android:id="@+id/click_counter"
           android:layout_width="wrap_content"
           android:layout_height="wrap_content"
           android:layout_centerHorizontal="true"
           android:layout_marginTop="60dp"
           android:visibility="@{viewModel.contentVisible ? View.VISIBLE : View.GONE}"

           android:padding="8dp"

           android:orientation="horizontal">

           <TextView
               android:id="@+id/number_of_clicks"
               android:layout_width="wrap_content"
               android:layout_height="wrap_content"
```

```
            style="@style/ClickCounter"

            android:text="@{viewModel.numberOfClicks}"
            android:textAlignment="center"
            app:textColor="@{viewModel.counterColor}"

            tools:text="8"
            tools:textColor="@color/red"
        />

        <TextView
            android:id="@+id/static_label"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_marginLeft="4dp"
            android:layout_marginStart="4dp"
            style="@style/ClickCounter"

            android:text="@string/label.clicks"
            app:textColor="@{viewModel.counterColor}"
            android:textAlignment="center"

            tools:textColor="@color/red"
        />
    </LinearLayout>


    <TextView
        android:id="@+id/message"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@id/click_counter"
        android:layout_centerHorizontal="true"
        android:visibility="@{viewModel.contentVisible ? View.VISIBLE : View.GONE}"

        android:text="@{viewModel.labelText}"
        android:textAlignment="center"
        android:textSize="18sp"

        tools:text="You're bad and you should feel bad!"
    />

    <Button
        android:id="@+id/clicker"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@id/message"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="8dp"
        android:visibility="@{viewModel.contentVisible ? View.VISIBLE : View.GONE}"

        android:padding="8dp"

        android:text="@string/label.button"

        android:onClick="@{() -> viewModel.onClickIncrement()}"
    />

    <android.support.v4.widget.ContentLoadingProgressBar
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
```

```
            android:layout_marginTop="90dp"
            android:layout_centerHorizontal="true"
            style="@android:style/Widget.ProgressBar.Inverse"
            android:visibility="@{viewModel.loadingVisible ? View.VISIBLE : View.GONE}"

            android:indeterminate="true"
        />

    </RelativeLayout>

</layout>
```

。

-
-
-
-

“”。 。

ClickerModel.java

```
import com.google.common.base.Optional;

import de.walled.mvvmtest.viewmodel.ViewState;

public class ClickerModel implements IClickerModel {

    private int numberOfClicks;
    private Excitement stateOfExcitement;

    public void incrementClicks() {
        numberOfClicks += 1;
        updateStateOfExcitement();
    }

    public int getNumberOfClicks() {
        return Optional.fromNullable(numberOfClicks).or(0);
    }

    public Excitement getStateOfExcitement() {
        return Optional.fromNullable(stateOfExcitement).or(Excitement.BOO);
    }

    public void restoreState(ViewState state) {
        numberOfClicks = state.getNumberOfClicks();
        updateStateOfExcitement();
    }

    private void updateStateOfExcitement() {
        if (numberOfClicks < 10) {
            stateOfExcitement = Excitement.BOO;
        } else if (numberOfClicks <= 20) {
            stateOfExcitement = Excitement.MEH;
        } else {
            stateOfExcitement = Excitement.WOOHOO;
        }
    }
```

```
}
```

ViewModel。

◦ GUI `resolveCounterColorresolveLabelText ◦ UnderachieverClickerModel` viewModelview◦

ViewModel◦ `@BindablenotifyChange() notifyPropertyChanged(BR.propertyName) ◦`

`ClickerViewModel.java`

```
import android.databinding.BaseObservable;

import android.databinding.Bindable;
import android.support.annotation.ColorRes;
import android.support.annotation.StringRes;

import com.android.databinding.library.baseAdapters.BR;

import de.walled.mvvmtest.R;
import de.walled.mvvmtest.api.IClickerApi;
import de.walled.mvvmtest.model.Excitement;
import de.walled.mvvmtest.model.IClickerModel;
import rx.Observable;

public class ClickerViewModel extends BaseObservable {

    private final IClickerApi api;
    boolean isLoading = false;
    private IClickerModel model;

    public ClickerViewModel(IClickerModel model, IClickerApi api) {
        this.model = model;
        this.api = api;
    }

    public void onClickIncrement() {
        model.incrementClicks();
        notifyChange();
    }

    public ViewState getViewState() {
        ViewState viewState = new ViewState();
        viewState.setNumberOfClicks(model.getNumberOfClicks());
        return viewState;
    }

    public Observable<ViewState> loadData() {
        isLoading = true;
        return api.fetchInitialState()
                .doOnNext(this::initModel)
                .doOnTerminate(() -> {
                    isLoading = false;
                    notifyPropertyChanged(BR.loadingVisible);
                    notifyPropertyChanged(BR.contentVisible);
                });
    }

    public void initFromSavedState(ViewState savedState) {
        initModel(savedState);
```

```
    }

    @Bindable
    public String getNumberOfClicks() {
        final int clicks = model.getNumberOfClicks();
        return String.valueOf(clicks);
    }

    @Bindable
    @StringRes
    public int getLabelText() {
        final Excitement stateOfExcitement = model.getStateOfExcitement();
        return resolveLabelText(stateOfExcitement);
    }

    @Bindable
    @ColorRes
    public int getCounterColor() {
        final Excitement stateOfExcitement = model.getStateOfExcitement();
        return resolveCounterColor(stateOfExcitement);
    }

    @Bindable
    public boolean isLoadingVisible() {
        return isLoading;
    }

    @Bindable
    public boolean isContentVisible() {
        return !isLoading;
    }

    private void initModel(final ViewState viewState) {
        model.restoreState(viewState);
        notifyChange();
    }

    @ColorRes
    private int resolveCounterColor(Excitement stateOfExcitement) {
        switch (stateOfExcitement) {
            case MEH:
                return R.color.yellow;
            case WOOHOO:
                return R.color.green;
            default:
                return R.color.red;
        }
    }

    @StringRes
    private int resolveLabelText(Excitement stateOfExcitement) {
        switch (stateOfExcitement) {
            case MEH:
                return R.string.label_indifferent;
            case WOOHOO:
                return R.string.label_excited;
            default:
                return R.string.label_negative;
        }
    }
```

```
}
```

viewModelandroid。

viewModelDataBindingUtilxml"。

NPE。OrientationChangesviewState

MainActivity.java

```
import android.databinding.DataBindingUtil;
import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;

import de.walled.mvvmtest.R;
import de.walled.mvvmtest.api.ClickerApi;
import de.walled.mvvmtest.api.IClickerApi;
import de.walled.mvvmtest.databinding.ActivityMainBinding;
import de.walled.mvvmtest.model.ClickerModel;
import de.walled.mvvmtest.viewmodel.ClickerViewModel;
import de.walled.mvvmtest.viewmodel.ViewState;
import rx.Subscription;
import rx.subscriptions.Subscriptions;

public class MainActivity extends AppCompatActivity {

    private static final String KEY_VIEW_STATE = "state.view";

    private ClickerViewModel viewModel;
    private Subscription fakeLoader = Subscriptions.unsubscribed();

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);

        // would usually be injected but I feel Dagger would be out of scope
        final IClickerApi api = new ClickerApi();
        setupViewModel(savedInstanceState, api);

        ActivityMainBinding binding = DataBindingUtil.setContentView(this,
R.layout.activity_main);
        binding.setViewModel(viewModel);
    }

    @Override
    protected void onPause() {
        fakeLoader.unsubscribe();
        super.onPause();
    }

    @Override
    protected void onDestroy() {
        fakeLoader.unsubscribe();
        super.onDestroy();
    }

    @Override
    protected void onSaveInstanceState(Bundle outState) {
        outState.putSerializable(KEY_VIEW_STATE, viewModel.getViewState());
```

```
    }

    private void setupViewModel(Bundle savedInstance, IClickerApi api) {
        viewModel = new ClickerViewModel(new ClickerModel(), api);
        final ViewState savedState = getViewStateFromBundle(savedInstance);

        if (savedState == null) {
            fakeLoader = viewModel.loadData().subscribe();
        } else {
            viewModel.initFromSavedState(savedState);
        }
    }

    private ViewState getViewStateFromBundle(Bundle savedInstance) {
        if (savedInstance != null) {
            return (ViewState) savedInstance.getSerializable(KEY_VIEW_STATE);
        }
        return null;
    }
}
```

。

MVVM https://riptutorial.com/zh-CN/android/topic/7549/mvvm--

67: NavigationView

NavigationView。 。

`NavigationView`build.gradle

```
 dependencies {
    compile 'com.android.support:design:24.2.0'
}
```

https://developer.android.com/reference/android/support/design/widget/NavigationView.html

https://material.google.com/patterns/navigation-drawer.html#navigation-drawer-content

Examples

NavigationView

NavigationView`build.gradle`

`NavigationView`

```
<?xml version="1.0" encoding="utf-8"?>
<android.support.v4.widget.DrawerLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/drawer_layout"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:fitsSystemWindows="true"
    tools:openDrawer="start">

    <include
        layout="@layout/app_bar_main"
        android:layout_width="match_parent"
        android:layout_height="match_parent" />

    <android.support.design.widget.NavigationView
        android:id="@+id/nav_view"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_gravity="start"
        app:headerLayout="@layout/nav_header_main"
        app:menu="@menu/activity_main_drawer" />

</android.support.v4.widget.DrawerLayout>
```

res/layout/nav_header_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
```

```
    android:layout_width="match_parent"
    android:layout_height="@dimen/nav_header_height"
    android:background="@drawable/side_nav_bar"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    android:theme="@style/ThemeOverlay.AppCompat.Dark"
    android:orientation="vertical"
    android:gravity="bottom">

    <ImageView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:paddingTop="@dimen/nav_header_vertical_spacing"
        android:src="@android:drawable/sym_def_app_icon"
        android:id="@+id/imageView" />

    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:paddingTop="@dimen/nav_header_vertical_spacing"
        android:text="Android Studio"
        android:textAppearance="@style/TextAppearance.AppCompat.Body1" />

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="android.studio@android.com"
        android:id="@+id/textView" />

</LinearLayout>
```

res/layout/app_bar_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<android.support.design.widget.CoordinatorLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:fitsSystemWindows="true"
    tools:context="eu.rekisoft.playground.MainActivity">

    <android.support.design.widget.AppBarLayout
        android:layout_height="wrap_content"
        android:layout_width="match_parent"
        android:theme="@style/AppTheme.AppBarOverlay">

        <android.support.v7.widget.Toolbar
            android:id="@+id/toolbar"
            android:layout_width="match_parent"
            android:layout_height="?attr/actionBarSize"
            android:background="?attr/colorPrimary"
            app:popupTheme="@style/AppTheme.PopupOverlay" />

    </android.support.design.widget.AppBarLayout>

    <include layout="@layout/content_main"/>
```

```
    <android.support.design.widget.FloatingActionButton
        android:id="@+id/fab"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="bottom|end"
        android:layout_margin="@dimen/fab_margin"
        android:src="@android:drawable/ic_dialog_email" />

</android.support.design.widget.CoordinatorLayout>
```

*res/layout/content_main.xml*xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    android:paddingBottom="@dimen/activity_vertical_margin"
    app:layout_behavior="@string/appbar_scrolling_view_behavior"
    tools:showIn="@layout/app_bar_main"
    tools:context="eu.rekisoft.playground.MainActivity">

    <TextView
        android:text="Hello World!"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content" />
</RelativeLayout>
```

res/menu/activity_main_drawer.xml

```
<?xml version="1.0" encoding="utf-8"?>
<menu xmlns:android="http://schemas.android.com/apk/res/android">

    <group android:checkableBehavior="single">
        <item
            android:id="@+id/nav_camera"
            android:icon="@drawable/ic_menu_camera"
            android:title="Import" />
        <item
            android:id="@+id/nav_gallery"
            android:icon="@drawable/ic_menu_gallery"
            android:title="Gallery" />
        <item
            android:id="@+id/nav_slideshow"
            android:icon="@drawable/ic_menu_slideshow"
            android:title="Slideshow" />
        <item
            android:id="@+id/nav_manage"
            android:icon="@drawable/ic_menu_manage"
            android:title="Tools" />
    </group>

    <item android:title="Communicate">
```

```
        <menu>
            <item
                android:id="@+id/nav_share"
                android:icon="@drawable/ic_menu_share"
                android:title="Share" />
            <item
                android:id="@+id/nav_send"
                android:icon="@drawable/ic_menu_send"
                android:title="Send" />
        </menu>
    </item>

</menu>
```

java/main/eu/rekisoft/playground/MainActivity.java

```
public class MainActivity extends AppCompatActivity
        implements NavigationView.OnNavigationItemSelectedListener {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Toolbar toolbar = (Toolbar) findViewById(R.id.toolbar);
        setSupportActionBar(toolbar);

        FloatingActionButton fab = (FloatingActionButton) findViewById(R.id.fab);
        fab.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Snackbar.make(view, "Replace with your own action", Snackbar.LENGTH_LONG)
                        .setAction("Action", null).show();
            }
        });

        DrawerLayout drawer = (DrawerLayout) findViewById(R.id.drawer_layout);
        ActionBarDrawerToggle toggle = new ActionBarDrawerToggle(
            this, drawer, toolbar, R.string.navigation_drawer_open,
R.string.navigation_drawer_close);
        drawer.setDrawerListener(toggle);
        toggle.syncState();

        NavigationView navigationView = (NavigationView) findViewById(R.id.nav_view);
        navigationView.setNavigationItemSelectedListener(this);
    }

    @Override
    public void onBackPressed() {
        DrawerLayout drawer = (DrawerLayout) findViewById(R.id.drawer_layout);
        if (drawer.isDrawerOpen(GravityCompat.START)) {
            drawer.closeDrawer(GravityCompat.START);
        } else {
            super.onBackPressed();
        }
    }

    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        // Inflate the menu; this adds items to the action bar if it is present.
        getMenuInflater().inflate(R.menu.main, menu);
```

```
        return true;
    }

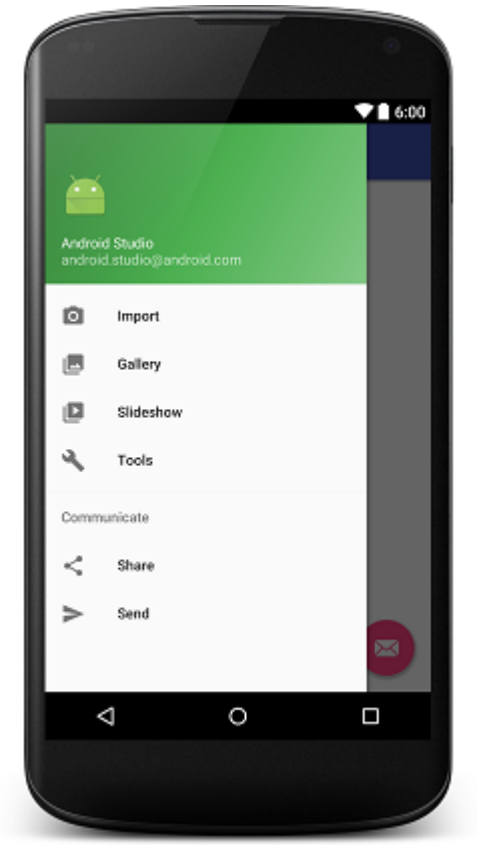
    @Override
    public boolean onOptionsItemSelected(MenuItem item) {
        // Handle action bar item clicks here. The action bar will
        // automatically handle clicks on the Home/Up button, so long
        // as you specify a parent activity in AndroidManifest.xml.
        int id = item.getItemId();

        //noinspection SimplifiableIfStatement
        if (id == R.id.action_settings) {
            return true;
        }

        return super.onOptionsItemSelected(item);
    }

    @SuppressWarnings("StatementWithEmptyBody")
    @Override
    public boolean onNavigationItemSelected(MenuItem item) {
        // Handle navigation view item clicks here.
        switch(item.getItemId()) {/*...*/}

        DrawerLayout drawer = (DrawerLayout) findViewById(R.id.drawer_layout);
        drawer.closeDrawer(GravityCompat.START);
        return true;
    }
}
```



◦ ◦ android:id◦ menu.xmlmenu.xml android:checkable="true"android:checkableBehavior="single" ◦

```
<?xml version="1.0" encoding="utf-8"?>
    <menu xmlns:android="http://schemas.android.com/apk/res/android">

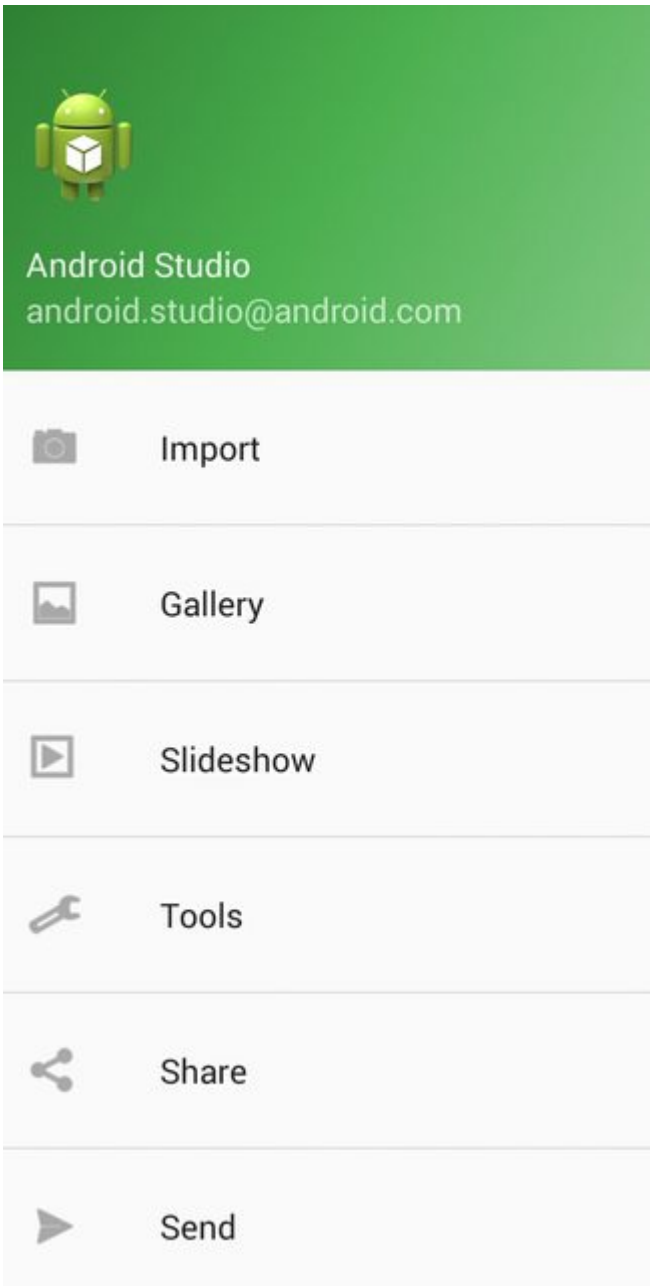
    <item
          android:id="@+id/pos_item_help"
          android:checkable="true"
          android:title="Help" />
     <item
        android:id="@+id/pos_item_pos"
        android:checkable="true"
        android:title="POS" />

    <item
        android:id="@+id/pos_item_orders"
        android:checkable="true"
        android:title="Orders" />

       <group
            android:id="@+id/group"
            android:checkableBehavior="single">

                <item
                android:id="@+id/menu_nav_home"
                android:icon="@drawable/ic_home_black_24dp"
                android:title="@string/menu_nav_home" />
        </group>

    ......
    </menu>
```



NavigationViewRecyclerViewItemDecoration。

```
NavigationView navigationView = (NavigationView) findViewById(R.id.nav_view);
NavigationMenuView navMenuView = (NavigationMenuView) navigationView.getChildAt(0);
navMenuView.addItemDecoration(new DividerItemDecoration(this));
```

DividerItemDecoration

```
public class DividerItemDecoration extends RecyclerView.ItemDecoration {

    private static final int[] ATTRS = new int[]{android.R.attr.listDivider};

    private Drawable mDivider;

    public DividerItemDecoration(Context context) {
        final TypedArray styledAttributes = context.obtainStyledAttributes(ATTRS);
        mDivider = styledAttributes.getDrawable(0);
        styledAttributes.recycle();
```

```
    }

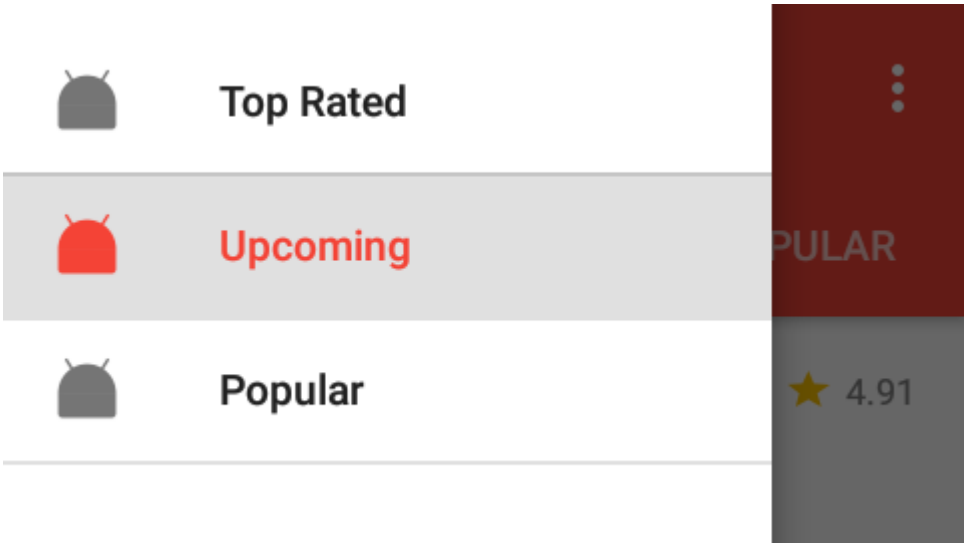

    @Override
    public void onDraw(Canvas c, RecyclerView parent, RecyclerView.State state) {
        int left = parent.getPaddingLeft();
        int right = parent.getWidth() - parent.getPaddingRight();

        int childCount = parent.getChildCount();
        for (int i = 1; i < childCount; i++) {
            View child = parent.getChildAt(i);

            RecyclerView.LayoutParams params = (RecyclerView.LayoutParams)
child.getLayoutParams();

            int top = child.getBottom() + params.bottomMargin;
            int bottom = top + mDivider.getIntrinsicHeight();

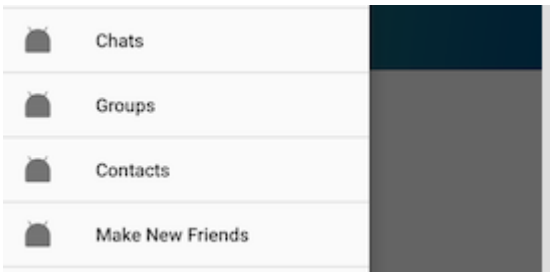
            mDivider.setBounds(left, top, right, bottom);
            mDivider.draw(c);
        }
    }
}
```



DividerItemDecoration

DividerItemDecoration

```
NavigationView navigationView = (NavigationView) findViewById(R.id.navigation);
NavigationMenuView navMenuView = (NavigationMenuView) navigationView.getChildAt(0);
navMenuView.addItemDecoration(new
DividerItemDecoration(context,DividerItemDecoration.VERTICAL));
```



NavigationView https://riptutorial.com/zh-CN/android/topic/97/navigationview

68: OkHttp

Examples

InterceptorsOkHttp◦ ◦ ◦

```
class LoggingInterceptor implements Interceptor {
  @Override public Response intercept(Interceptor.Chain chain) throws IOException {
    Request request = chain.request();

    long t1 = System.nanoTime();
    logger.info(String.format("Sending request %s on %s%n%s",
        request.url(), chain.connection(), request.headers()));

    Response response = chain.proceed(request);

    long t2 = System.nanoTime();
    logger.info(String.format("Received response for %s in %.1fms%n%s",
        response.request().url(), (t2 - t1) / 1e6d, response.headers()));

    return response;
  }
}
```

```
private static final Interceptor REWRITE_CACHE_CONTROL_INTERCEPTOR = new Interceptor() {
  @Override public Response intercept(Interceptor.Chain chain) throws IOException {
    Response originalResponse = chain.proceed(chain.request());
    return originalResponse.newBuilder()
        .header("Cache-Control", "max-age=60")
        .build();
  }
};
```

OkHttpHttpClientHTTP post get putdelete ◦

```
public class HttpClient implements HttpClientInterface{

private static final String TAG = OkHttpClient.class.getSimpleName();
public static final MediaType JSON
        = MediaType.parse("application/json; charset=utf-8");

OkHttpClient httpClient = new OkHttpClient();

@Override
public String post(String url, String json) throws IOException {
    Log.i(TAG, "Sending a post request with body:\n" + json + "\n to URL: " + url);

    RequestBody body = RequestBody.create(JSON, json);
    Request request = new Request.Builder()
            .url(url)
            .post(body)
            .build();
    Response response = httpClient.newCall(request).execute();
    return response.body().string();
```

```
}
```

1 .put(body) put getdelete◦ jsonurl◦ json JSONObject

```
String response = httpClient.post(MY_URL, JSON_PAYLOAD);
JSONObject json = new JSONObject(response);
// continue to parse the response according to it's structure
```

```
private final OkHttpClient client = new OkHttpClient();

  public void run() throws Exception {
    Request request = new Request.Builder()
        .url(yourUrl)
        .build();

    Response response = client.newCall(request).execute();
    if (!response.isSuccessful()) throw new IOException("Unexpected code " + response);

    Headers responseHeaders = response.headers();

    System.out.println(response.body().string());
  }
```

```
private final OkHttpClient client = new OkHttpClient();

  public void run() throws Exception {
    Request request = new Request.Builder()
        .url(yourUrl)
        .build();

    client.newCall(request).enqueue(new Callback() {
      @Override public void onFailure(Call call, IOException e) {
        e.printStackTrace();
      }

      @Override
      public void onResponse(Call call, Response response) throws IOException {
        if (!response.isSuccessful()) throw new IOException("Unexpected code " + response);

        Headers responseHeaders = response.headers();

        System.out.println(response.body().string());
      }
    });
  }
```

```
private final OkHttpClient client = new OkHttpClient();

  public void run() throws Exception {
    RequestBody formBody = new FormBody.Builder()
        .add("search", "Jurassic Park")
        .build();
    Request request = new Request.Builder()
        .url("https://en.wikipedia.org/w/index.php")
        .post(formBody)
        .build();
```

```
    Response response = client.newCall(request).execute();
    if (!response.isSuccessful()) throw new IOException("Unexpected code " + response);

    System.out.println(response.body().string());
  }
```

```
 private static final String IMGUR_CLIENT_ID = "...";
  private static final MediaType MEDIA_TYPE_PNG = MediaType.parse("image/png");

  private final OkHttpClient client = new OkHttpClient();

  public void run() throws Exception {
    // Use the imgur image upload API as documented at https://api.imgur.com/endpoints/image
    RequestBody requestBody = new MultipartBody.Builder()
        .setType(MultipartBody.FORM)
        .addFormDataPart("title", "Square Logo")
        .addFormDataPart("image", "logo-square.png",
            RequestBody.create(MEDIA_TYPE_PNG, new File("website/static/logo-square.png")))
        .build();

    Request request = new Request.Builder()
        .header("Authorization", "Client-ID " + IMGUR_CLIENT_ID)
        .url("https://api.imgur.com/3/image")
        .post(requestBody)
        .build();

    Response response = client.newCall(request).execute();
    if (!response.isSuccessful()) throw new IOException("Unexpected code " + response);

    System.out.println(response.body().string());
  }
```

OkHttp

Maven

```
<dependency>
  <groupId>com.squareup.okhttp3</groupId>
  <artifactId>okhttp</artifactId>
  <version>3.6.0</version>
</dependency>
```

Gradle

```
compile 'com.squareup.okhttp3:okhttp:3.6.0'
```

OkHttp https://riptutorial.com/zh-CN/android/topic/3625/okhttp

69: OpenGL ES 2.0+

Android**OpenGL ES 2.0+** 。 OpenGL ES2D3D - 。

Examples

GLSurfaceViewOpenGL ES 2.0+

OpenGL ES

```
<uses-feature android:glEsVersion="0x00020000" android:required="true"/>
```

GLSurfaceView

```
import static android.opengl.GLES20.*; // To use all OpenGL ES 2.0 methods and constants
statically

public class MyGLSurfaceView extends GLSurfaceView {

    public MyGLSurfaceView(Context context, AttributeSet attrs) {
        super(context, attrs);

        setEGLContextClientVersion(2); // OpenGL ES version 2.0
        setRenderer(new MyRenderer());
        setRenderMode(GLSurfaceView.RENDERMODE_CONTINUOUSLY);
    }

    public final class MyRenderer implements GLSurfaceView.Renderer{
        public final void onSurfaceCreated(GL10 unused, EGLConfig config) {
            // Your OpenGL ES init methods
            glClearColor(1f, 0f, 0f, 1f);
        }
        public final void onSurfaceChanged(GL10 unused, int width, int height) {
            glViewport(0, 0, width, height);
        }

        public final void onDrawFrame(GL10 unused) {
            // Your OpenGL ES draw methods
            glClear(GL_COLOR_BUFFER_BIT | GL_DEPTH_BUFFER_BIT);
        }
    }
}
```

`MyGLSurfaceView`

```
<com.example.app.MyGLSurfaceView
    android:id="@+id/gles_renderer"
    android:layout_width="match_parent"
    android:layout_height="match_parent"/>
```

OpenGL ES`setEGLContextClientVersion`。

GLSL-ES

AssetsGLSL-ES。OpenGL ES。

```
private String loadStringFromAssetFile(Context myContext, String filePath){
    StringBuilder shaderSource = new StringBuilder();
    try {
        BufferedReader reader = new BufferedReader(new
InputStreamReader(myContext.getAssets().open(filePath)));
        String line;
        while((line = reader.readLine()) != null){
            shaderSource.append(line).append("\n");
        }
        reader.close();
        return shaderSource.toString();
    } catch (IOException e) {
        e.printStackTrace();
        Log.e(TAG, "Could not load shader file");
        return null;
    }
}
```

sting

```
private int compileShader(int shader_type, String shaderString){

    // This compiles the shader from the string
    int shader = glCreateShader(shader_type);
    glShaderSource(shader, shaderString);
    glCompileShader(shader);

    // This checks for for compilation errors
    int[] compiled = new int[1];
    glGetShaderiv(shader, GL_COMPILE_STATUS, compiled, 0);
    if (compiled[0] == 0) {
        String log = glGetShaderInfoLog(shader);

        Log.e(TAG, "Shader compilation error: ");
        Log.e(TAG, log);
    }
    return shader;
}
```

```
// Load shaders from file
String vertexShaderString = loadStringFromAssetFile(context, "your_vertex_shader.glsl");
String fragmentShaderString = loadStringFromAssetFile(context, "your_fragment_shader.glsl");

// Compile shaders
int vertexShader = compileShader(GL_VERTEX_SHADER, vertexShaderString);
int fragmentShader = compileShader(GL_FRAGMENT_SHADER, fragmentShaderString);

// Link shaders and create shader program
int shaderProgram = glCreateProgram();
glAttachShader(shaderProgram , vertexShader);
glAttachShader(shaderProgram , fragmentShader);
glLinkProgram(shaderProgram);
```

```
// Check for linking errors:
int linkStatus[] = new int[1];
glGetProgramiv(shaderProgram, GL_LINK_STATUS, linkStatus, 0);
if (linkStatus[0] != GL_TRUE) {
    String log = glGetProgramInfoLog(shaderProgram);

    Log.e(TAG,"Could not link shader program: ");
    Log.e(TAG, log);
}
```

```
glUseProgram(shaderProgram);
```

OpenGL ES 2.0+ https://riptutorial.com/zh-CN/android/topic/8662/opengl-es-2-0plus

70: PackageManager

Examples

```
public String getAppVersion() throws PackageManager.NameNotFoundException {
    PackageManager manager = getApplicationContext().getPackageManager();
    PackageInfo info = manager.getPackageInfo(
                            getApplicationContext().getPackageName(),
                            0);

    return info.versionName;
}
```

`versionNameversionCode` Android。

```
try {
    // Reference to Android's package manager
    PackageManager packageManager = this.getPackageManager();

    // Getting package info of this application
    PackageInfo info = packageManager.getPackageInfo(this.getPackageName(), 0);

    // Version code
    info.versionCode

    // Version name
    info.versionName

} catch (NameNotFoundException e) {
    // Handle the exception
}
```

Android。

```
try {
    // Reference to Android's package manager
    PackageManager packageManager = this.getPackageManager();

    // Getting package info of this application
    PackageInfo info = packageManager.getPackageInfo(this.getPackageName(), 0);

    // Install time. Units are as per currentTimeMillis().
    info.firstInstallTime

    // Last update time. Units are as per currentTimeMillis().
    info.lastUpdateTime

} catch (NameNotFoundException e) {
    // Handle the exception
}
```

PackageManager

PackageManager

```
private String getAppNameFromPackage(String packageName, Context context) {
    Intent mainIntent = new Intent(Intent.ACTION_MAIN, null);
    mainIntent.addCategory(Intent.CATEGORY_LAUNCHER);
    List<ResolveInfo> pkgAppsList = context.getPackageManager()
            .queryIntentActivities(mainIntent, 0);
    for (ResolveInfo app : pkgAppsList) {
        if (app.activityInfo.packageName.equals(packageName)) {
            return app.activityInfo.loadLabel(context.getPackageManager()).toString();
        }
    }
    return null;
}
```

```
private Drawable getAppIcon(String packageName, Context context) {
    Drawable appIcon = null;
    try {
        appIcon = context.getPackageManager().getApplicationIcon(packageName);
    } catch (PackageManager.NameNotFoundException e) {
    }

    return appIcon;
}
```

。

```
public static List<ApplicationInfo> getLaunchIntent(PackageManager packageManager) {

    List<ApplicationInfo> list =
packageManager.getInstalledApplications(PackageManager.GET_META_DATA);

    return list;
}
```

    。

。

```
public static void hideLockerApp(Context context, boolean hide) {
    ComponentName componentName = new ComponentName(context.getApplicationContext(),
            SplashActivity.class);

    int setting = hide ? PackageManager.COMPONENT_ENABLED_STATE_DISABLED
            : PackageManager.COMPONENT_ENABLED_STATE_ENABLED;

    int current = context.getPackageManager().getComponentEnabledSetting(componentName);

    if (current != setting) {
        context.getPackageManager().setComponentEnabledSetting(componentName, setting,
                PackageManager.DONT_KILL_APP);
    }
}
```

    。

PackageManager https://riptutorial.com/zh-CN/android/topic/4670/packagemanager

71: Parcelable

ParcelableAndroid。 SerializableJava。

。

parcelable1 MB。 1MB。 。 。

Examples

Parcelable。

```
/**
 * Created by Alex Sullivan on 7/21/16.
 */
public class Foo implements Parcelable
{
    private final int myFirstVariable;
    private final String mySecondVariable;
    private final long myThirdVariable;

    public Foo(int myFirstVariable, String mySecondVariable, long myThirdVariable)
    {
        this.myFirstVariable = myFirstVariable;
        this.mySecondVariable = mySecondVariable;
        this.myThirdVariable = myThirdVariable;
    }

    // Note that you MUST read values from the parcel IN THE SAME ORDER that
    // values were WRITTEN to the parcel! This method is our own custom method
    // to instantiate our object from a Parcel. It is used in the Parcelable.Creator variable
we declare below.
    public Foo(Parcel in)
    {
        this.myFirstVariable = in.readInt();
        this.mySecondVariable = in.readString();
        this.myThirdVariable = in.readLong();
    }

    // The describe contents method can normally return 0. It's used when
    // the parceled object includes a file descriptor.
    @Override
    public int describeContents()
    {
        return 0;
    }

    @Override
    public void writeToParcel(Parcel dest, int flags)
    {
        dest.writeInt(myFirstVariable);
        dest.writeString(mySecondVariable);
        dest.writeLong(myThirdVariable);
    }
```

```
    // Note that this seemingly random field IS NOT OPTIONAL. The system will
    // look for this variable using reflection in order to instantiate your
    // parceled object when read from an Intent.
    public static final Parcelable.Creator<Foo> CREATOR = new Parcelable.Creator<Foo>()
    {
        // This method is used to actually instantiate our custom object
        // from the Parcel. Convention dictates we make a new constructor that
        // takes the parcel in as its only argument.
        public Foo createFromParcel(Parcel in)
        {
            return new Foo(in);
        }

        // This method is used to make an array of your custom object.
        // Declaring a new array with the provided size is usually enough.
        public Foo[] newArray(int size)
        {
            return new Foo[size];
        }
    };
}
```

ParcelableParcelable

parcelable

```
public class Repository implements Parcelable {
    private String name;
    private Owner owner;
    private boolean isPrivate;

    public Repository(String name, Owner owner, boolean isPrivate) {
        this.name = name;
        this.owner = owner;
        this.isPrivate = isPrivate;
    }

    protected Repository(Parcel in) {
        name = in.readString();
        owner = in.readParcelable(Owner.class.getClassLoader());
        isPrivate = in.readByte() != 0;
    }

    @Override
    public void writeToParcel(Parcel dest, int flags) {
        dest.writeString(name);
        dest.writeParcelable(owner, flags);
        dest.writeByte((byte) (isPrivate ? 1 : 0));
    }

    @Override
    public int describeContents() {
        return 0;
    }

    public static final Creator<Repository> CREATOR = new Creator<Repository>() {
        @Override
        public Repository createFromParcel(Parcel in) {
            return new Repository(in);
```

```
        }

        @Override
        public Repository[] newArray(int size) {
            return new Repository[size];
        }
    };

    //getters and setters

    public String getName() {
        return name;
    }

    public void setName(String name) {
        this.name = name;
    }

    public Owner getOwner() {
        return owner;
    }

    public void setOwner(Owner owner) {
        this.owner = owner;
    }

     public boolean isPrivate() {
        return isPrivate;
    }

    public void setPrivate(boolean isPrivate) {
        this.isPrivate = isPrivate;
    }
}
```

。

Parcelable

```
/**
 * Created by Nick Cardoso on 03/08/16.
 * This is not a complete parcelable implementation, it only highlights the easiest
 * way to read and write your Enum values to your parcel
 */
public class Foo implements Parcelable {

    private final MyEnum myEnumVariable;
    private final MyEnum mySaferEnumVariableExample;

    public Foo(Parcel in) {

        //the simplest way
        myEnumVariable = MyEnum.valueOf( in.readString() );

        //with some error checking
        try {
            mySaferEnumVariableExample= MyEnum.valueOf( in.readString() );
        } catch (IllegalArgumentException e) { //bad string or null value
            mySaferEnumVariableExample= MyEnum.DEFAULT;
```

```
        }

    }

    ...

    @Override
    public void writeToParcel(Parcel dest, int flags) {

        //the simple way
        dest.writeString(myEnumVariable.name());

        //avoiding NPEs with some error checking
        dest.writeString(mySaferEnumVariableExample == null? null :
mySaferEnumVariableExample.name());

    }

}

public enum MyEnum {
    VALUE_1,
    VALUE_2,
    DEFAULT
}
```

Parcelable https://riptutorial.com/zh-CN/android/topic/1849/parcelable

72: Ping ICMP

pingAndroidICMP Ping。 ping。

Examples

Ping

Ping。 `runtime.exec`pingping。

```
try {
    Process ipProcess = runtime.exec("/system/bin/ping -c 1 8.8.8.8");
    int exitValue = ipProcess.waitFor();
    ipProcess.destroy();

    if(exitValue == 0){
        // Success
    } else {
        // Failure
    }
} catch (IOException | InterruptedException e) {
    e.printStackTrace();
}
```

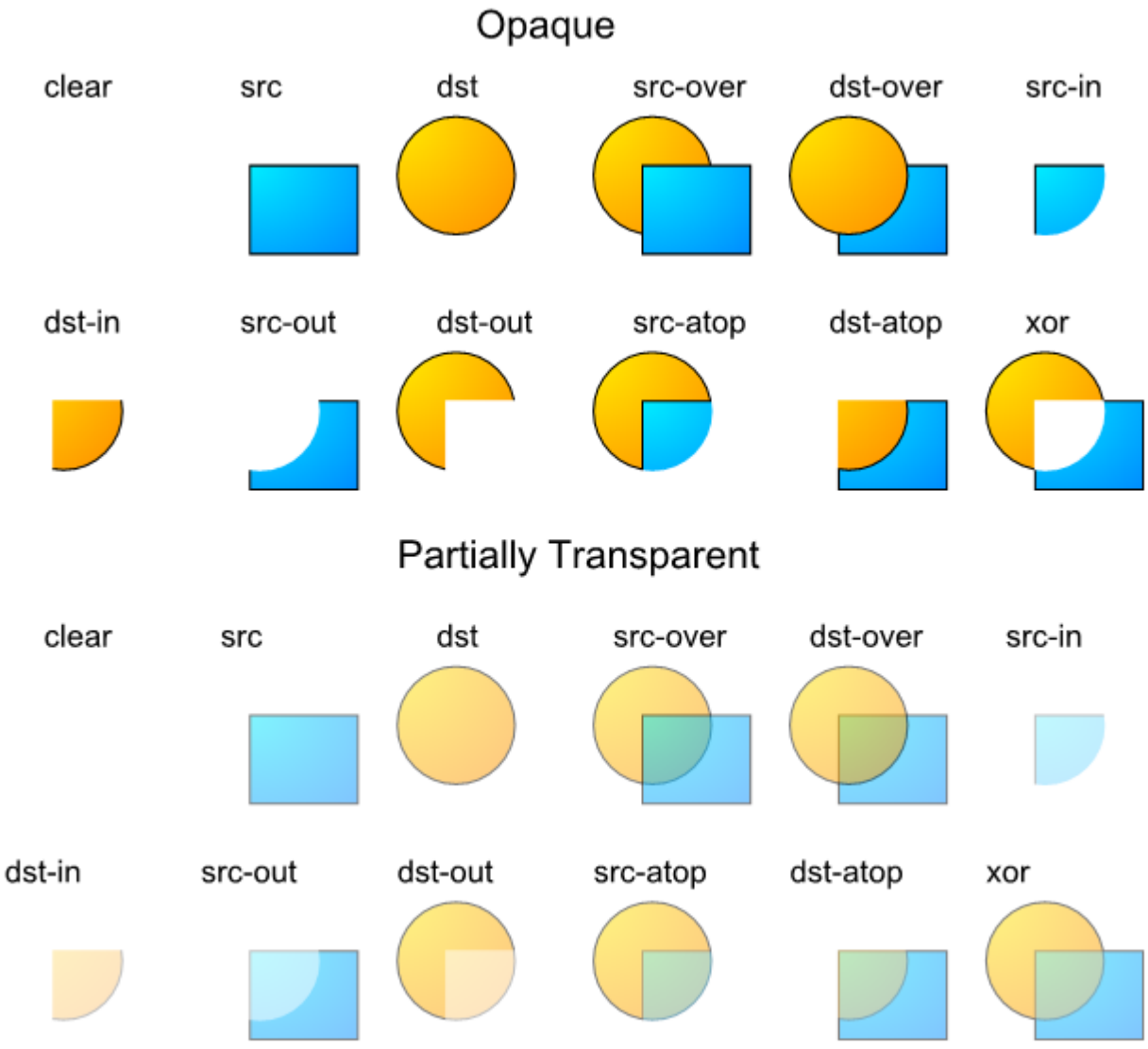
Ping ICMP https://riptutorial.com/zh-CN/android/topic/9434/ping-icmp

73: PorterDuff

PorterDuff“”

“Porter Duff”Thomas PorterTom Duffalpha ◦

α◦ ◦



Examples

PorterDuff ColorFilter

`PorterDuff.ModePorterDuffColorFilter` ◦ ◦

```
ColorFilter filter = new PorterDuffColorFilter(Color.BLUE, PorterDuff.Mode.SRC_IN);
```

。

Drawable

```
drawable.setColorFilter(filter);
```

ImageView

```
imageView.setColorFilter(filter);
```

Paint

```
paint.setColorFilter(filter);
```

PorterDuff XferMode

Xfermode “”。 XfermodePaint

```
paint.setColor(Color.BLUE);
paint.setXfermode(new PorterDuffXfermode(PorterDuff.Mode.SRC_IN));
```

。 。

PorterDuffXfermode

```
/**
 * Apply a radial mask (vignette, i.e. fading to black at the borders) to a bitmap
 * @param imageToApplyMaskTo Bitmap to modify
 */
public static void radialMask(final Bitmap imageToApplyMaskTo) {
    Canvas canvas = new Canvas(imageToApplyMaskTo);

    final float centerX = imageToApplyMaskTo.getWidth() * 0.5f;
    final float centerY = imageToApplyMaskTo.getHeight() * 0.5f;
    final float radius = imageToApplyMaskTo.getHeight() * 0.7f;

    RadialGradient gradient = new RadialGradient(centerX, centerY, radius,
            0x00000000, 0xFF000000, android.graphics.Shader.TileMode.CLAMP);

    Paint p = new Paint();
    p.setShader(gradient);
    p.setColor(0xFF000000);
    p.setXfermode(new PorterDuffXfermode(PorterDuff.Mode.DST_OUT));
    canvas.drawRect(0, 0, imageToApplyMaskTo.getWidth(), imageToApplyMaskTo.getHeight(), p);
}
```

PorterDuff https://riptutorial.com/zh-CN/android/topic/377/porterduff

74: ProGuard -

Examples

-

1.
2. RxJava
3. Android
4. Android
5.
6. GsonJackson
7.
8. Crashlitycs
9.
10.
11. OkHttp3
12. Parcelable

```
#Butterknife
-keep class butterknife.** { *; }
-keepnames class * { @butterknife.Bind *;}

-dontwarn butterknife.internal.**
-keep class **$$ViewBinder { *; }

-keepclasseswithmembernames class * {
    @butterknife.* <fields>;
}

-keepclasseswithmembernames class * {
    @butterknife.* <methods>;
}

# rxjava
-keep class rx.schedulers.Schedulers {
    public static <methods>;
}
-keep class rx.schedulers.ImmediateScheduler {
    public <methods>;
}
-keep class rx.schedulers.TestScheduler {
    public <methods>;
}
-keep class rx.schedulers.Schedulers {
    public static ** test();
}
-keepclassmembers class rx.internal.util.unsafe.*ArrayQueue*Field* {
    long producerIndex;
    long consumerIndex;
}
-keepclassmembers class rx.internal.util.unsafe.BaseLinkedQueueProducerNodeRef {
    long producerNode;
    long consumerNode;
```

```
}

# Support library
-dontwarn android.support.**
-dontwarn android.support.v4.**
-keep class android.support.v4.** { *; }
-keep interface android.support.v4.** { *; }
-dontwarn android.support.v7.**
-keep class android.support.v7.** { *; }
-keep interface android.support.v7.** { *; }

# support design
-dontwarn android.support.design.**
-keep class android.support.design.** { *; }
-keep interface android.support.design.** { *; }
-keep public class android.support.design.R$* { *; }

# retrofit
-dontwarn okio.**
-keepattributes Signature
-keepattributes *Annotation*
-keep class com.squareup.okhttp.** { *; }
-keep interface com.squareup.okhttp.** { *; }
-dontwarn com.squareup.okhttp.**

-dontwarn rx.**
-dontwarn retrofit.**
-keep class retrofit.** { *; }
-keepclasseswithmembers class * {
    @retrofit.http.* <methods>;
}

-keep class sun.misc.Unsafe { *; }
#your package path where your gson models are stored
-keep class com.abc.model.** { *; }

# Keep these for GSON and Jackson
-keepattributes Signature
-keepattributes *Annotation*
-keepattributes EnclosingMethod
-keep class sun.misc.Unsafe { *; }
-keep class com.google.gson.** { *; }

#keep otto
-keepattributes *Annotation*
-keepclassmembers class ** {
    @com.squareup.otto.Subscribe public *;
    @com.squareup.otto.Produce public *;
}

# Crashlitycs 2.+
-keep class com.crashlytics.** { *; }
-keep class com.crashlytics.android.**
-keepattributes SourceFile, LineNumberTable, *Annotation*
# If you are using custom exceptions, add this line so that custom exception types are skipped
during obfuscation:
-keep public class * extends java.lang.Exception
# For Fabric to properly de-obfuscate your crash reports, you need to remove this line from
your ProGuard config:
# -printmapping mapping.txt
```

```
# Picasso
-dontwarn com.squareup.okhttp.**

# Volley
-keep class com.android.volley.toolbox.ImageLoader { *; }

# OkHttp3
-keep class okhttp3.** { *; }
-keep interface okhttp3.** { *; }
-dontwarn okhttp3.**

# Needed for Parcelable/SafeParcelable Creators to not get stripped
-keepnames class * implements android.os.Parcelable {
    public static final ** CREATOR;
}
```

ProGuard

`ProGuard`gradle。 `minifyEnabled trueminifyEnabled true` 。

`shrinkResources true` `ProGuard`。

```
buildTypes {
        release {
            minifyEnabled true
            shrinkResources true
            proguardFiles getDefaultProguardFile('proguard-android.txt'), 'proguard-rules.pro'
        }
    }
```

`proguard-rules.pro` Eclipse“proguard-project.txt”ProGuardapk。

“proguard-rules.pro”

```
-renamesourcefileattribute SourceFile
-keepattributes SourceFile,LineNumberTable
```

EclipseProguard`proguard.config=${sdk.dir}/tools/proguard/proguard-android.txt:proguard-project.txt`“project.properties”

voidProGuard。

/。

```
# Remove the debug and verbose level Logging statements.
# That means the code to generate the arguments to these methods will also not be called.
# ONLY WORKS IF -dontoptimize IS _NOT_ USED in any ProGuard configs
-assumenosideeffects class android.util.Log {
    public static *** d(...);
    public static *** v(...);
}
```

ProGuard`-dontoptimize` /。

2。 apk。

。

Log.x(..)。

```
-assumenosideeffects class android.util.Log {
    public static *** d(...);
    ...etc
}
```

Log。

Log.d(MyTag,"Score="+score); +Log'new StringBuilder'。 ProGuard。

StringBuilder"Score=" scoreb 。

b 。

StringproguardLog

```
    if (BuildConfig.DEBUG) {
        Log.d(TAG,".."+var);
    }
```

1. dex2jar - apkjar
2. jd - jargui

ProGuard

ProGuard。

1proguard 。

'minifyEnabled'true

2proguard

'proguardFiles'

```
buildTypes {
    debug {
        minifyEnabled false
    }
    testRelease {
        minifyEnabled true
        proguardFiles getDefaultProguardFile('proguard-android-optimize.txt'), 'proguard-
rules-tests.pro'
    }
    productionRelease {
        minifyEnabled true
        proguardFiles getDefaultProguardFile('proguard-android-optimize.txt'), 'proguard-
rules-tests.pro', 'proguard-rules-release.pro'
```

```
    }
}
```

3proguard。

'proguard-rules-tests.pro'。 *proguard*

```
// default & basic optimization configurations
-optimizationpasses 5
-dontpreverify
-repackageclasses ''
-allowaccessmodification
-optimizations !code/simplification/arithmetic
-keepattributes *Annotation*

-verbose

-dump obfuscation/class_files.txt
-printseeds obfuscation/seeds.txt
-printusage obfuscation/unused.txt // unused classes that are stripped out in the process
-printmapping obfuscation/mapping.txt // mapping file that shows the obfuscated names of the
classes after proguad is applied

// the developer can specify keywords for the obfuscation (I myself use fruits for obfuscation
names once in a while :-) )
-obfuscationdictionary obfuscation/keywords.txt
-classobfuscationdictionary obfuscation/keywords.txt
-packageobfuscationdictionary obfuscation/keywords.txt
```

/.APK。

ProGuard - https://riptutorial.com/zh-CN/android/topic/4500/proguard----

75: Project SDK

Android。 Android。

AndroidAndroid。

SDK	SDKAndroidSDK API。 FroyoAndroid 2.2API8.`Build.VERSION_CODES`。

SDK

- `targetSdkVersion`Android。

  `targetSdkVersion`。 API23 。

- `minSdkVersion`Android。 AndroidPlay。

- `maxSdkVersion`Android。 AndroidPlay。 Android。

- `compileSdkVersion`Android SDK。 Android。 API。 `compileSdkVersion`22API23。

Examples

SDK

app `build.gradle`。

```
android {
    //the version of sdk source used to compile your project
    compileSdkVersion 23

    defaultConfig {
        //the minimum sdk version required by device to run your app
        minSdkVersion 19
        //you normally don't need to set max sdk limit so that your app can support future
versions of android without updating app
        //maxSdkVersion 23
        //
        //the latest sdk version of android on which you are targeting(building and testing)
your app, it should be same as compileSdkVersion
        targetSdkVersion 23
    }
}
```

Project SDK https://riptutorial.com/zh-CN/android/topic/162/project-sdk

76: RecyclerView

RecyclerView。

	RecyclerView.Adapter
	getChildAtint。
	。
	。 RecyclerView

`RecyclerView。`

`RecyclerViewbuild.gradlebuild.gradle`

```
dependencies {
    // Match the version of your support library dependency
    compile 'com.android.support:recyclerview-v7:25.3.1'
}
```

recyclerview。

`RecyclerView`

- RecyclerView LayoutManagers
- RecyclerView ItemDecorations
- RecyclerView onClickListeners

http://developer.android.com/reference/android/support/v7/widget/RecyclerView.html

```
  //it requires compileSdkVersion 25
  compile 'com.android.support:recyclerview-v7:25.2.0'
  compile 'com.android.support:recyclerview-v7:25.1.0'
  compile 'com.android.support:recyclerview-v7:25.0.0'

  //it requires compileSdkVersion 24
  compile 'com.android.support:recyclerview-v7:24.2.1'
  compile 'com.android.support:recyclerview-v7:24.2.0'
  compile 'com.android.support:recyclerview-v7:24.1.1'
  compile 'com.android.support:recyclerview-v7:24.1.0'

  //it requires compileSdkVersion 23
  compile 'com.android.support:recyclerview-v7:23.4.0'
  compile 'com.android.support:recyclerview-v7:23.3.0'
  compile 'com.android.support:recyclerview-v7:23.2.1'
```

```
  compile 'com.android.support:recyclerview-v7:23.2.0'
  compile 'com.android.support:recyclerview-v7:23.1.1'
  compile 'com.android.support:recyclerview-v7:23.1.0'
  compile 'com.android.support:recyclerview-v7:23.0.1'
  compile 'com.android.support:recyclerview-v7:23.0.0'

  //it requires compileSdkVersion 22
  compile 'com.android.support:recyclerview-v7:22.2.1'
  compile 'com.android.support:recyclerview-v7:22.2.0'
  compile 'com.android.support:recyclerview-v7:22.1.1'
  compile 'com.android.support:recyclerview-v7:22.1.0'
  compile 'com.android.support:recyclerview-v7:22.0.0'

  //it requires compileSdkVersion 21
  compile 'com.android.support:recyclerview-v7:21.0.3'
  compile 'com.android.support:recyclerview-v7:21.0.2'
  compile 'com.android.support:recyclerview-v7:21.0.0'
```

Examples

RecyclerView

RecyclerView

```
<android.support.v7.widget.RecyclerView
    android:id="@+id/my_recycler_view"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"/>
```

RecyclerView

```
mRecyclerView = (RecyclerView) findViewById(R.id.my_recycler_view);

// set a layout manager (LinearLayoutManager in this example)

mLayoutManager = new LinearLayoutManager(getApplicationContext());
mRecyclerView.setLayoutManager(mLayoutManager);

// specify an adapter
mAdapter = new MyAdapter(myDataset);
mRecyclerView.setAdapter(mAdapter);
```

xml

```
xmlns:app="http://schemas.android.com/apk/res-auto"
app:layoutManager="android.support.v7.widget.LinearLayoutManager"
```

RecyclerViewRecyclerView◦ RecyclerViewRecyclerView◦ ◦ ◦ LayoutManagerAdapter

```
mRecyclerView.setHasFixedSize(true);
```

RecyclerView◦ RecyclerView

1. LinearLayoutManager。
2. GridLayoutManager。
3. StaggeredGridLayoutManager。

RecyclerView。 LinearLayoutManager

```
package com.example;

import android.content.Context;
import android.support.v7.widget.LinearLayoutManager;
import android.support.v7.widget.OrientationHelper;
import android.support.v7.widget.RecyclerView;

/**
 * A LinearLayoutManager that preloads items off-screen.
 * <p>
 * Preloading is useful in situations where items might take some time to load
 * fully, commonly because they have maps, images or other items that require
 * network requests to complete before they can be displayed.
 * <p>
 * By default, this layout will load a single additional page's worth of items,
 * a page being a pixel measure equivalent to the on-screen size of the
 * recycler view.  This can be altered using the relevant constructor, or
 * through the {@link #setPages(int)} method.
 */
public class PreLoadingLinearLayoutManager extends LinearLayoutManager {
  private int mPages = 1;
  private OrientationHelper mOrientationHelper;

  public PreLoadingLinearLayoutManager(final Context context) {
    super(context);
  }

  public PreLoadingLinearLayoutManager(final Context context, final int pages) {
    super(context);
    this.mPages = pages;
  }

  public PreLoadingLinearLayoutManager(final Context context, final int orientation, final
boolean reverseLayout) {
    super(context, orientation, reverseLayout);
  }

  @Override
  public void setOrientation(final int orientation) {
    super.setOrientation(orientation);
    mOrientationHelper = null;
  }

  /**
   * Set the number of pages of layout that will be preloaded off-screen,
   * a page being a pixel measure equivalent to the on-screen size of the
   * recycler view.
   * @param pages the number of pages; can be {@code 0} to disable preloading
   */
  public void setPages(final int pages) {
    this.mPages = pages;
  }
```

```
  @Override
  protected int getExtraLayoutSpace(final RecyclerView.State state) {
    if (mOrientationHelper == null) {
      mOrientationHelper = OrientationHelper.createOrientationHelper(this, getOrientation());
    }
    return mOrientationHelper.getTotalSpace() * mPages;
  }
}
```

RecyclerView

RecyclerView。
RecyclerView ItemTouchHelper。

SimpleCallback ItemTouchHelper onMove(RecyclerView, ViewHolder, ViewHolder) / onSwiped(ViewHolder, int) RecyclerView 。

```
ItemTouchHelper.SimpleCallback simpleItemTouchCallback = new ItemTouchHelper.SimpleCallback(0,
ItemTouchHelper.LEFT | ItemTouchHelper.RIGHT) {

    @Override
    public void onSwiped(RecyclerView.ViewHolder viewHolder, int swipeDir) {
        // remove item from adapter
    }

    @Override
    public boolean onMove(RecyclerView recyclerView, RecyclerView.ViewHolder viewHolder,
RecyclerView.ViewHolder target) {
            final int fromPos = viewHolder.getAdapterPosition();
            final int toPos = target.getAdapterPosition();
            // move item in `fromPos` to `toPos` in adapter.
            return true;// true if moved, false otherwise
        }

};

ItemTouchHelper itemTouchHelper = new ItemTouchHelper(simpleItemTouchCallback);
itemTouchHelper.attachToRecyclerView(recyclerView);
```

SimpleCallback RecyclerView。 getSwipeDirs(RecyclerView, ViewHolder)。

RecyclerViewHeaderViewHolder 。 getSwipeDirs

```
@Override
public int getSwipeDirs(RecyclerView recyclerView, RecyclerView.ViewHolder viewHolder) {
    if (viewHolder instanceof HeaderViewHolder) {
        // no swipe for header
        return 0;
    }
    // default swipe for all other items
    return super.getSwipeDirs(recyclerView, viewHolder);
}
```

/RecyclerView

。

```
public class SampleAdapter extends RecyclerView.Adapter<RecyclerView.ViewHolder> {

private static final int FOOTER_VIEW = 1;

// Define a view holder for Footer view

public class FooterViewHolder extends ViewHolder {
    public FooterViewHolder(View itemView) {
        super(itemView);
        itemView.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                // Do whatever you want on clicking the item
            }
        });
    }
}

// Now define the viewholder for Normal list item
public class NormalViewHolder extends ViewHolder {
    public NormalViewHolder(View itemView) {
        super(itemView);

        itemView.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                // Do whatever you want on clicking the normal items
            }
        });
    }
}

// And now in onCreateViewHolder you have to pass the correct view
// while populating the list item.

@Override
public RecyclerView.ViewHolder onCreateViewHolder(ViewGroup parent, int viewType) {

    View v;

    if (viewType == FOOTER_VIEW) {
        v = LayoutInflater.from(parent.getContext()).inflate(R.layout.list_item_footer,
parent, false);

        FooterViewHolder vh = new FooterViewHolder(v);

        return vh;
    }

    v = LayoutInflater.from(parent.getContext()).inflate(R.layout.list_item_normal, parent,
false);

    NormalViewHolder vh = new NormalViewHolder(v);

    return vh;
}

// Now bind the viewholders in onBindViewHolder
@Override
```

```
public void onBindViewHolder(RecyclerView.ViewHolder holder, int position) {

    try {
        if (holder instanceof NormalViewHolder) {
            NormalViewHolder vh = (NormalViewHolder) holder;

            vh.bindView(position);
        } else if (holder instanceof FooterViewHolder) {
            FooterViewHolder vh = (FooterViewHolder) holder;
        }
    } catch (Exception e) {
        e.printStackTrace();
    }
}

// Now the critical part. You have return the exact item count of your list
// I've only one footer. So I returned data.size() + 1
// If you've multiple headers and footers, you've to return total count
// like, headers.size() + data.size() + footers.size()

@Override
public int getItemCount() {
    if (data == null) {
        return 0;
    }

    if (data.size() == 0) {
        //Return 1 here to show nothing
        return 1;
    }

    // Add extra view to show the footer view
    return data.size() + 1;
}

// Now define getItemViewType of your own.

@Override
public int getItemViewType(int position) {
    if (position == data.size()) {
        // This is where we'll add footer.
        return FOOTER_VIEW;
    }

    return super.getItemViewType(position);
}

// So you're done with adding a footer and its action on onClick.
// Now set the default ViewHolder for NormalViewHolder

public class ViewHolder extends RecyclerView.ViewHolder {
    // Define elements of a row here
    public ViewHolder(View itemView) {
        super(itemView);
        // Find view by ID and initialize here
    }

    public void bindView(int position) {
        // bindView() method to implement actions
    }
}
```

```
}
```

RecyclerView ◦

NestedScrollView◦

```
<android.support.v4.widget.NestedScrollView
        android:layout_width="match_parent"
        android:layout_height="match_parent">

     <RelativeLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent">

        <include
            layout="@layout/drawer_view_header"
            android:id="@+id/navigation_header"/>

        <android.support.v7.widget.RecyclerView
            android:layout_below="@id/navigation_header"
            android:id="@+id/followers_list"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"/>

    </RelativeLayout>
</android.support.v4.widget.NestedScrollView>
```

NestedScrollViewLinearLayout ◦

RecyclerView**23.2.0**

```
compile 'com.android.support:recyclerview-v7:23.2.0'
```

ItemViewTypeViewHolders

RecyclerViewUIViewxml◦

ViewHoldersRecyclerView - `getItemViewType(int position)` ◦

ViewHolders

1. ViewHolder
2. ViewHolder

```
@Override
public RecyclerView.ViewHolder onCreateViewHolder(ViewGroup parent, int viewType) {
    View itemView = LayoutInflater.from(context).inflate(viewType, parent, false);
    return ViewHolder.create(itemView, viewType);
}

@Override
public void onBindViewHolder(RecyclerView.ViewHolder holder, int position) {
    final Item model = this.items.get(position);
```

```
    ((ViewHolder) holder).bind(model);
}

@Override
public int getItemViewType(int position) {
    return inSearchState ? R.layout.item_header : R.layout.item_entry;
}

abstract class ViewHolder {
    abstract void bind(Item model);

    public static ViewHolder create(View v, int viewType) {
        return viewType == R.layout.item_header ? new HeaderViewHolder(v) :new
EntryViewHolder(v);
    }
}

static class EntryViewHolder extends ViewHolder {
    private View v;

    public EntryViewHolder(View v) {
        this.v = v;
    }

    @Override public void bind(Item model) {
        // Bind item data to entry view.
    }
}

static class HeaderViewHolder extends ViewHolder {
    private View v;

    public HeaderViewHolder(View v) {
        this.v = v;
    }

    @Override public void bind(Item model) {
        // Bind item data to header view.
    }
}
```

SearchViewRecyclerView

`RecyclerView.Adapterfilter`

```
public void filter(String text) {
        if(text.isEmpty()){
            items.clear();
            items.addAll(itemsCopy);
        } else{
            ArrayList<PhoneBookItem> result = new ArrayList<>();
            text = text.toLowerCase();
            for(PhoneBookItem item: itemsCopy){
                //match by name or phone
                if(item.name.toLowerCase().contains(text) ||
item.phone.toLowerCase().contains(text)){
                    result.add(item);
                }
            }
```

```
            items.clear();
            items.addAll(result);
        }
        notifyDataSetChanged();
    }
```

itemsCopyadapteritemsCopy.addAll(items) ◦

SearchViewOnQueryTextListener filter

```
searchView.setOnQueryTextListener(new SearchView.OnQueryTextListener() {
    @Override
    public boolean onQueryTextSubmit(String query) {
        adapter.filter(query);
        return true;
    }

    @Override
    public boolean onQueryTextChange(String newText) {
        adapter.filter(newText);
        return true;
    }
});
```

recyclerView

ViewHolder

btnExpand click-eventrecyclerview clicklisteneritemView◦

```
public class MyViewHolder extends RecyclerView.ViewHolder{
        CardView cv;
        TextView recordName, visibleFile, date, time;
        Button btnIn, btnExpand;

        public MyViewHolder(final View itemView) {
            super(itemView);

            cv = (CardView)itemView.findViewById(R.id.cardview);
            recordName = (TextView)itemView.findViewById(R.id.tv_record);
            visibleFile = (TextView)itemView.findViewById(R.id.visible_file);
            date = (TextView)itemView.findViewById(R.id.date);
            time = (TextView)itemView.findViewById(R.id.time);
            btnIn = (Button)itemView.findViewById(R.id.btn_in_out);

            btnExpand = (Button) itemView.findViewById(R.id.btn_expand);

            btnExpand.setOnClickListener(new View.OnClickListener() {
                @Override
                public void onClick(View v) {
                    PopupMenu popup = new PopupMenu(btnExpand.getContext(), itemView);

                    popup.setOnMenuItemClickListener(new PopupMenu.OnMenuItemClickListener() {
                        @Override
                        public boolean onMenuItemClick(MenuItem item) {
                            switch (item.getItemId()) {
                                case R.id.action_delete:
```

```
                                    moveFile(recordName.getText().toString(),
getAdapterPosition());
                                    return true;
                                case R.id.action_play:
                                    String valueOfPath = recordName.getText().toString();
                                    Intent intent = new Intent();
                                    intent.setAction(android.content.Intent.ACTION_VIEW);
                                    File file = new File(valueOfPath);
                                    intent.setDataAndType(Uri.fromFile(file), "audio/*");
                                    context.startActivity(intent);
                                    return true;
                                case R.id.action_share:
                                    String valueOfPath = recordName.getText().toString();
                                    File filee = new File(valueOfPath);
                                    try {
                                        Intent sendIntent = new Intent();
                                        sendIntent.setAction(Intent.ACTION_SEND);
                                        sendIntent.setType("audio/*");
                                        sendIntent.putExtra(Intent.EXTRA_STREAM,
Uri.fromFile(filee));
                                        context.startActivity(sendIntent);
                                    } catch (NoSuchMethodError | IllegalArgumentException |
NullPointerException e) {
                                        e.printStackTrace();
                                    } catch (Exception e) {
                                        e.printStackTrace();
                                    }
                                    return true;
                                default:
                                    return false;
                            }
                        }
                    });
                    // here you can inflate your menu
                    popup.inflate(R.menu.my_menu_item);
                    popup.setGravity(Gravity.RIGHT);

                    // if you want icon with menu items then write this try-catch block.
                    try {
                        Field mFieldPopup=popup.getClass().getDeclaredField("mPopup");
                        mFieldPopup.setAccessible(true);
                        MenuPopupHelper mPopup = (MenuPopupHelper) mFieldPopup.get(popup);
                        mPopup.setForceShowIcon(true);
                    } catch (Exception e) {

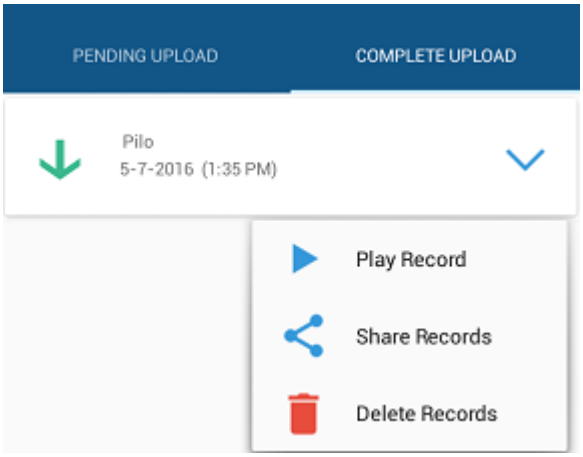
                    }
                    popup.show();
                }
            });

        }
    }
```

```
try {
    Field[] fields = popup.getClass().getDeclaredFields();
    for (Field field : fields) {
        if ("mPopup".equals(field.getName())) {
            field.setAccessible(true);
            Object menuPopupHelper = field.get(popup);
            Class<?> classPopupHelper = Class.forName(menuPopupHelper
```

```
                .getClass().getName());
            Method setForceIcons = classPopupHelper.getMethod(
                "setForceShowIcon", boolean.class);
            setForceIcons.invoke(menuPopupHelper, true);
            break;
        }
    }
} catch (Exception e) {

}
```



“notify” RecyclerViewnotifyDataSetChanged;notifyItemChanged notifyItemInserted notifyItemMoved notifyItemRemoved◦

RecyclerView.Adapter ◦

```
import android.support.annotation.NonNull;
import android.support.v7.widget.RecyclerView;

import java.util.List;

public abstract class AnimatedRecyclerAdapter<T, VH extends RecyclerView.ViewHolder>
        extends RecyclerView.Adapter<VH> {
    protected List<T> models;

    protected AnimatedRecyclerAdapter(@NonNull List<T> models) {
        this.models = models;
    }

    //Set new models.
    public void setModels(@NonNull final List<T> models) {
        applyAndAnimateRemovals(models);
        applyAndAnimateAdditions(models);
        applyAndAnimateMovedItems(models);
    }

    //Remove an item at position and notify changes.
    private T removeItem(int position) {
        final T model = models.remove(position);
        notifyItemRemoved(position);
        return model;
    }

    //Add an item at position and notify changes.
```

```
    private void addItem(int position, T model) {
        models.add(position, model);
        notifyItemInserted(position);
    }

    //Move an item at fromPosition to toPosition and notify changes.
    private void moveItem(int fromPosition, int toPosition) {
        final T model = models.remove(fromPosition);
        models.add(toPosition, model);
        notifyItemMoved(fromPosition, toPosition);
    }

    //Remove items that no longer exist in the new models.
    private void applyAndAnimateRemovals(@NonNull final List<T> newTs) {
        for (int i = models.size() - 1; i >= 0; i--) {
            final T model = models.get(i);
            if (!newTs.contains(model)) {
                removeItem(i);
            }
        }
    }

    //Add items that do not exist in the old models.
    private void applyAndAnimateAdditions(@NonNull final List<T> newTs) {
        for (int i = 0, count = newTs.size(); i < count; i++) {
            final T model = newTs.get(i);
            if (!models.contains(model)) {
                addItem(i, model);
            }
        }
    }

    //Move items that have changed their position.
    private void applyAndAnimateMovedItems(@NonNull final List<T> newTs) {
        for (int toPosition = newTs.size() - 1; toPosition >= 0; toPosition--) {
            final T model = newTs.get(toPosition);
            final int fromPosition = models.indexOf(model);
            if (fromPosition >= 0 && fromPosition != toPosition) {
                moveItem(fromPosition, toPosition);
            }
        }
    }
}
```

ListsetModelsList。

models。 DataModel。

```
private List<DataModel> models;
private YourAdapter adapter;
```

modelsmodels。 YourAdapterAnimatedRecyclerAdapter。

```
models = new ArrayList<>();
//Add models
models.add(new DataModel());
//Do NOT pass the models directly. Otherwise, when you modify global models,
//you will also modify models in adapter.
```

```
//adapter = new YourAdapter(models); <- This is wrong.
adapter = new YourAdapter(new ArrayList(models));
```

modelsmodels ◦

```
adapter.setModels(new ArrayList(models));
```

equals ◦

SortedList

RecyclerViewAndroidSortedList◦ RecyclerView.Adapter“notify”◦

```
import android.support.v7.util.SortedList;
import android.support.v7.widget.RecyclerView;
import android.support.v7.widget.util.SortedListAdapterCallback;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;

import java.util.List;

public class MyAdapter extends RecyclerView.Adapter<MyAdapter.ViewHolder> {

    private SortedList<DataModel> mSortedList;

    class ViewHolder extends RecyclerView.ViewHolder {

        TextView text;
        CheckBox checkBox;

        ViewHolder(View itemView){
            super(itemView);

            //Initiate your code here...

        }

        void setDataModel(DataModel model) {
            //Update your UI with the data model passed here...
            text.setText(modle.getText());
            checkBox.setChecked(model.isChecked());
        }
    }

    public MyAdapter() {
        mSortedList = new SortedList<>(DataModel.class, new
SortedListAdapterCallback<DataModel>(this) {
            @Override
            public int compare(DataModel o1, DataModel o2) {
                //This gets called to find the ordering between objects in the array.
                if (o1.someValue() < o2.someValue()) {
                    return -1;
                } else if (o1.someValue() > o2.someValue()) {
                    return 1;
                } else {
```

```
                    return 0;
                }
            }

            @Override
            public boolean areContentsTheSame(DataModel oldItem, DataModel newItem) {
                //This is to see of the content of this object has changed. These items are
only considered equal if areItemsTheSame() returned true.

                //If this returns false, onBindViewHolder() is called with the holder
containing the item, and the item's position.
                return oldItem.getText().equals(newItem.getText()) && oldItem.isChecked() ==
newItem.isChecked();
            }

            @Override
            public boolean areItemsTheSame(DataModel item1, DataModel item2) {
                //Checks to see if these two items are the same. If not, it is added to the
list, otherwise, check if content has changed.
                return item1.equals(item2);
            }
        });
    }

    @Override
    public ViewHolder onCreateViewHolder(ViewGroup parent, int viewType) {
        View itemView = //Initiate your item view here.
        return new ViewHolder(itemView);
    }

    @Override
    public void onBindViewHolder(ViewHolder holder, int position) {
        //Just update the holder with the object in the sorted list from the given position
        DataModel model = mSortedList.get(position);
        if (model != null) {
            holder.setDataModel(model);
        }
    }

    @Override
    public int getItemCount() {
        return mSortedList.size();
    }

    public void resetList(List<DataModel> models) {
        //If you are performing multiple changes, use the batching methods to ensure proper
animation.
        mSortedList.beginBatchedUpdates();
        mSortedList.clear();
        mSortedList.addAll(models);
        mSortedList.endBatchedUpdates();
    }

    //The following methods each modify the data set and automatically handles calling the
appropriate 'notify' method on the adapter.
    public void addModel(DataModel model) {
        mSortedList.add(model);
    }

    public void addModels(List<DataModel> models) {
        mSortedList.addAll(models);
```

```
    }

    public void clear() {
        mSortedList.clear();
    }

    public void removeModel(DataModel model) {
        mSortedList.remove(model);
    }

    public void removeModelAt(int i) {
        mSortedList.removeItemAt(i);
    }
}
```

DataBindingRecyclerView

ViewHolderDataBinding。 ViewDataBindingUtilViewDataBinding。

```
import android.databinding.DataBindingUtil;
import android.support.v7.widget.RecyclerView;
import android.view.View;

public class BindingViewHolder<T> extends RecyclerView.ViewHolder{

    private final T binding;

    public BindingViewHolder(View itemView) {
        super(itemView);
        binding = (T)DataBindingUtil.bind(itemView);
    }

    public T getBinding() {
        return binding;
    }
}
```

```
<layout>

file name: my_item.xml
```

```
<?xml version="1.0" encoding="utf-8"?>
<layout xmlns:android="http://schemas.android.com/apk/res/android">

    <data>
        <variable
            name="item"
            type="ItemModel" />
    </data>

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent">

        <TextView
            android:layout_width="wrap_content"
            android:layout_height="match_parent"
            android:text="@{item.itemLabel}" />
```

```
    </LinearLayout>
</layout>
```

dataModel

```
public class ItemModel {
    public String itemLabel;
}
```

Android`ViewDataBinding`Pascal“Binding”。`MyItemBindingmy_item.xml`。 Bindingsetter`ItemModel`。

```
class MyAdapter extends RecyclerView.Adapter<BindingViewHolder<MyItemBinding>>{
    ArrayList<ItemModel> items = new ArrayList<>();

    public MyAdapter(ArrayList<ItemModel> items) {
        this.items = items;
    }

    @Override public BindingViewHolder<MyItemBinding> onCreateViewHolder(ViewGroup parent, int
viewType) {
        return new
BindingViewHolder<>(LayoutInflater.from(parent.getContext()).inflate(R.layout.my_item, parent,
false));
    }

    @Override public void onBindViewHolder(BindingViewHolder<ItemModel> holder, int position)
{
        holder.getBinding().setItemModel(items.get(position));
        holder.getBinding().executePendingBindings();
    }

    @Override public int getItemCount() {
        return items.size();
    }
}
```

Recycleview。

。

1Recycleview。

```
public abstract class ViewAllCategoryAdapter extends
RecyclerView.Adapter<RecyclerView.ViewHolder> {
    public abstract void load();
}
```

2ViewAllCategoryAdapteronBindViewHolder`getItemCount()Load()`。

```
@Override
public void onBindViewHolder(RecyclerView.ViewHolder holder, final int position) {
    if ((position >= getItemCount() - 1)) {
        load();
    }
```

```
}

@Override
public int getItemCount() {
    return YOURLIST.size();
}
```

3。load。。

```
  adapter = new ViewAllCategoryAdapter(CONTEXT, YOURLIST) {
        @Override
        public void load() {

            /* do your stuff here */
            /* This method is automatically call while user reach at end of your list. */
        }
    };
    recycleCategory.setAdapter(adapter);
```

load()。

```
private class MyAdapter extends RecyclerView.Adapter<RecyclerView.ViewHolder> {

final int EMPTY_VIEW = 77777;
```

```
List<CustomData> datalist = new ArrayList<>();

MyAdapter() {
    super();
}

@Override
public RecyclerView.ViewHolder onCreateViewHolder(ViewGroup parent, int viewType) {

    LayoutInflater layoutInflater = LayoutInflater.from(parent.getContext());

    if (viewType == EMPTY_VIEW) {
        return new EmptyView(layoutInflater.inflate(R.layout.nothing_yet, parent, false));
    } else {
        return new ItemView(layoutInflater.inflate(R.layout.my_item, parent, false));
    }
}

@SuppressLint("SetTextI18n")
@Override
public void onBindViewHolder(final RecyclerView.ViewHolder holder, int position) {
    if (getItemViewType(position) == EMPTY_VIEW) {
        EmptyView emptyView = (EmptyView) holder;
        emptyView.primaryText.setText("No data yet");
        emptyView.secondaryText.setText("You're doing good !");
        emptyView.primaryText.setCompoundDrawablesWithIntrinsicBounds(null, new
IconicsDrawable(getActivity()).icon(FontAwesome.Icon.faw_ticket).sizeDp(48).color(Color.DKGRAY),
null, null);

    } else {
        ItemView itemView = (ItemView) holder;
        // Bind data to itemView
    }
}

@Override
public int getItemCount() {
    return datalist.size() > 0 ? datalist.size() : 1;
}

@Override
public int getItemViewType(int position) {
    if  datalist.size() == 0) {
        return EMPTY_VIEW;
    }
    return super.getItemViewType(position);
}

}
```

nothing_yet.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_gravity="center"
    android:orientation="vertical"
    android:paddingBottom="100dp"
```

```
    android:paddingTop="100dp">

    <TextView
        android:id="@+id/nothingPrimary"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center"
        android:drawableTint="@android:color/secondary_text_light"
        android:drawableTop="@drawable/ic_folder_open_black_24dp"
        android:enabled="false"
        android:fontFamily="sans-serif-light"
        android:text="No Item's Yet"
        android:textAppearance="?android:attr/textAppearanceLarge"
        android:textColor="@android:color/secondary_text_light"
        android:textSize="40sp"
        tools:targetApi="m" />

    <TextView
        android:id="@+id/nothingSecondary"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center_horizontal"
        android:enabled="false"
        android:fontFamily="sans-serif-condensed"
        android:text="You're doing good !"
        android:textAppearance="?android:attr/textAppearanceSmall"
        android:textColor="@android:color/tertiary_text_light" />
</LinearLayout>
```

Iconics LibraryFontAwesome。build.gradle。

```
compile 'com.mikepenz:fontawesome-typeface:4.6.0.3@aar'
compile 'com.mikepenz:iconics-core:2.8.1@aar'
```

RecyclerView

```
RecyclerView mRecyclerView = (RecyclerView) view.findViewById(recyclerView);
mRecyclerView.setLayoutManager(new LinearLayoutManager(getActivity()));
mRecyclerView.addItemDecoration(new DividerItemDecoration(getActivity(),
DividerItemDecoration.VERTICAL));
```

`adapter.notifyDataSetChanged();`

Recyclerview。build.gradle

```
compile "com.android.support:appcompat-v7:25.3.1"
compile "com.android.support:recyclerview-v7:25.3.1"
```

ItemDecorationsRecyclerView。

itemDecoration。

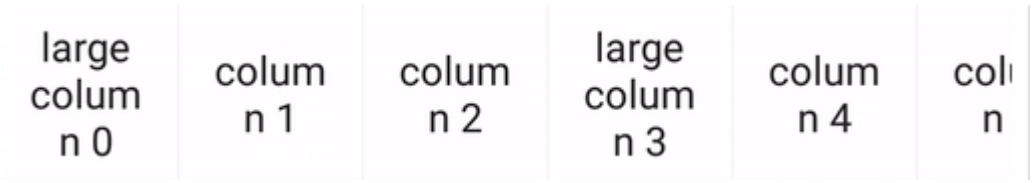
1. `divider.xmldrawable`

```
<?xml version="1.0" encoding="utf-8"?>
```

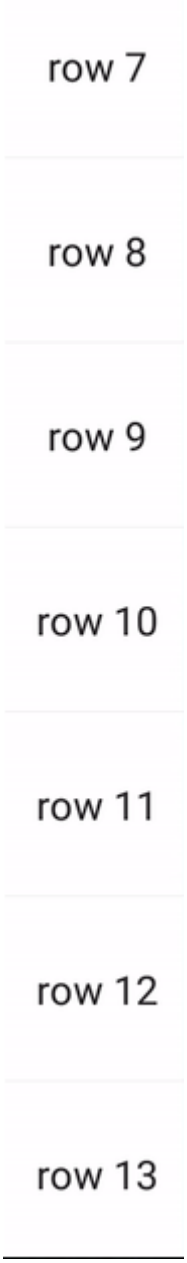
```
<shape xmlns:android="http://schemas.android.com/apk/res/android"
       android:shape="line">
    <size
        android:width="1px"
        android:height="1px"/>
    <solid android:color="@color/divider_color"/>
</shape>
```

2. drawable

```
    // Get drawable object
    Drawable mDivider = ContextCompat.getDrawable(m_jContext, R.drawable.divider);
    // Create a DividerItemDecoration whose orientation is Horizontal
    DividerItemDecoration hItemDecoration = new DividerItemDecoration(m_jContext,
            DividerItemDecoration.HORIZONTAL);
    // Set the drawable on it
    hItemDecoration.setDrawable(mDivider);
```




```
    // Create a DividerItemDecoration whose orientation is vertical
    DividerItemDecoration vItemDecoration = new DividerItemDecoration(m_jContext,
            DividerItemDecoration.VERTICAL);
    // Set the drawable on it
    vItemDecoration.setDrawable(mDivider);
```



RecyclerView https://riptutorial.com/zh-CN/android/topic/169/recyclerview

77: RecyclerView onClickListeners

Examples

```
public class SampleAdapter extends RecyclerView.Adapter<SampleAdapter.ViewHolder> {

    private String[] mDataSet;
    private OnRVItemClickListener mListener;

    /**
     * Provide a reference to the type of views that you are using (custom ViewHolder)
     */
    public static class ViewHolder extends RecyclerView.ViewHolder {
        private final TextView textView;

        public ViewHolder(View v) {
            super(v);
            // Define click listener for the ViewHolder's View.
            v.setOnClickListener(new View.OnClickListener() {
                @Override
                public void onClick(View v) { // handle click events here
                    Log.d(TAG, "Element " + getPosition() + " clicked.");
                    mListener.onRVItemClicked(getPosition(),v); //set callback
                }
            });
            textView = (TextView) v.findViewById(R.id.textView);
        }

        public TextView getTextView() {
            return textView;
        }
    }

    /**
     * Initialize the dataset of the Adapter.
     *
     * @param dataSet String[] containing the data to populate views to be used by
RecyclerView.
     */
    public SampleAdapter(String[] dataSet) {
        mDataSet = dataSet;
    }

    // Create new views (invoked by the layout manager)
    @Override
    public ViewHolder onCreateViewHolder(ViewGroup viewGroup, int viewType) {
        // Create a new view.
        View v = LayoutInflater.from(viewGroup.getContext())
                .inflate(R.layout.text_row_item, viewGroup, false);

        return new ViewHolder(v);
    }

    // Replace the contents of a view (invoked by the layout manager)
    @Override
    public void onBindViewHolder(ViewHolder viewHolder, final int position) {
        // Get element from your dataset at this position and replace the contents of the view
```

```
        // with that element
        viewHolder.getTextView().setText(mDataSet[position]);
    }

    // Return the size of your dataset (invoked by the layout manager)
    @Override
    public int getItemCount() {
        return mDataSet.length;
    }

    public void setOnRVClickListener(OnRVItemClickListener) {
        mListener = OnRVItemClickListener;
    }

    public interface OnRVItemClickListener {
       void onRVItemClicked(int position, View v);
    }
}
```

KotlinRxJava

KotlinRxJava。

```
import android.view.LayoutInflater
import android.view.View
import android.view.ViewGroup
import android.support.v7.widget.RecyclerView
import rx.subjects.PublishSubject

public class SampleAdapter(private val items: Array<String>) :
RecyclerView.Adapter<SampleAdapter.ViewHolder>() {

    // change to different subjects from rx.subjects to get different behavior
    // BehaviorSubject for example allows to receive last event on subscribe
    // PublishSubject sends events only after subscribing on the other hand which is desirable
for clicks
    public val itemClickStream: PublishSubject<View> = PublishSubject.create()

    override fun getItemCount(): Int {
        return items.size
    }

    override fun onCreateViewHolder(parent: ViewGroup, viewType: Int): ViewHolder? {
        val v = LayoutInflater.from(parent.getContext()).inflate(R.layout.text_row_item,
parent, false);
        return ViewHolder(view)
    }

    override fun onBindViewHolder(holder: ViewHolder, position: Int) {
        holder.bind(items[position])
    }

    public inner class ViewHolder(view: View) : RecyclerView.ViewHolder(view) {
        private val textView: TextView by lazy { view.findViewById(R.id.textView) as TextView
}

        init {
            view.setOnClickListener { v -> itemClickStream.onNext(v) }
        }
```

```
        fun bind(text: String) {
            textView.text = text
        }
    }
}
```

◦ RxJava◦

```
val adapter = SampleAdapter(arrayOf("Hello", "World"))
adapter.itemClickStream.subscribe { v ->
    if (v.id == R.id.textView) {
        // do something
    }
}
```

Easy OnLongClickOnClick

```
implements View.OnClickListener, View.OnLongClickListener
```

```
itemView.setOnClickListener(this);
itemView.setOnLongClickListener(this);
```

```
@Override
public void onClick(View v) {
    onclicklistner.onItemClick(getAdapterPosition(), v);
}

@Override
public boolean onLongClick(View v) {
    onclicklistner.onItemLongClick(getAdapterPosition(), v);
    return true;
}
```

```
public void setOnItemClickListener(onClickListner onclicklistner) {
    SampleAdapter.onclicklistner = onclicklistner;
}

public void setHeader(View v) {
    this.headerView = v;
}

public interface onClickListner {
    void onItemClick(int position, View v);
    void onItemLongClick(int position, View v);
}
```

```
package adaptor;

import android.annotation.SuppressLint;
import android.content.Context;
import android.support.v7.widget.RecyclerView;
```

```
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.TextView;

import com.wings.example.recycleview.MainActivity;
import com.wings.example.recycleview.R;

import java.util.ArrayList;

public class SampleAdapter extends RecyclerView.Adapter<RecyclerView.ViewHolder> {
    Context context;
    private ArrayList<String> arrayList;
    private static onClickListner onclicklistner;
    private static final int VIEW_HEADER = 0;
    private static final int VIEW_NORMAL = 1;
    private View headerView;

    public SampleAdapter(Context context) {
        this.context = context;
        arrayList = MainActivity.arrayList;
    }

    public class HeaderViewHolder extends RecyclerView.ViewHolder {
        public HeaderViewHolder(View itemView) {
            super(itemView);
        }
    }

    public class ItemViewHolder extends RecyclerView.ViewHolder implements
View.OnClickListener, View.OnLongClickListener {
        TextView txt_pos;
        SampleAdapter sampleAdapter;

        public ItemViewHolder(View itemView, SampleAdapter sampleAdapter) {
            super(itemView);

            itemView.setOnClickListener(this);
            itemView.setOnLongClickListener(this);

            txt_pos = (TextView) itemView.findViewById(R.id.txt_pos);
            this.sampleAdapter = sampleAdapter;

            itemView.setOnClickListener(this);
        }

        @Override
        public void onClick(View v) {
            oncliclistner.onItemClick(getAdapterPosition(), v);
        }

        @Override
        public boolean onLongClick(View v) {
            oncliclistner.onItemLongClick(getAdapterPosition(), v);
            return true;
        }
    }

    public void setOnItemClickListener(onClickListner oncliclistner) {
        SampleAdapter.oncliclistner = oncliclistner;
    }
```

```
    public void setHeader(View v) {
        this.headerView = v;
    }

    public interface onClickListner {
        void onItemClick(int position, View v);
        void onItemLongClick(int position, View v);
    }

    @Override
    public int getItemCount() {
        return arrayList.size()+1;
    }

    @Override
    public int getItemViewType(int position) {
        return position == 0 ? VIEW_HEADER : VIEW_NORMAL;
    }

    @SuppressLint("InflateParams")
    @Override
    public RecyclerView.ViewHolder onCreateViewHolder(ViewGroup viewGroup, int viewType) {
        if (viewType == VIEW_HEADER) {
            return new HeaderViewHolder(headerView);
        } else {
            View view =
LayoutInflater.from(viewGroup.getContext()).inflate(R.layout.custom_recycler_row_sample_item,
viewGroup, false);
            return new ItemViewHolder(view, this);
        }
    }

    @Override
    public void onBindViewHolder(RecyclerView.ViewHolder viewHolder, int position) {
        if (viewHolder.getItemViewType() == VIEW_HEADER) {
            return;
        } else {
            ItemViewHolder itemViewHolder = (ItemViewHolder) viewHolder;
            itemViewHolder.txt_pos.setText(arrayList.get(position-1));
        }
    }
}
```

```
sampleAdapter.setOnItemClickListener(new SampleAdapter.onClickListner() {
    @Override
    public void onItemClick(int position, View v) {
        position = position+1;//As we are adding header
        Log.e(TAG + "ON ITEM CLICK", position + "");
        Snackbar.make(v, "On item click "+position, Snackbar.LENGTH_LONG).show();
    }

    @Override
    public void onItemLongClick(int position, View v) {
        position = position+1;//As we are adding header
        Log.e(TAG + "ON ITEM LONG CLICK", position + "");
        Snackbar.make(v, "On item longclick  "+position, Snackbar.LENGTH_LONG).show();
    }
});
```

“”

/

```
public class CustomAdapter extends RecyclerView.Adapter<CustomAdapter.ViewHolder> {

    public interface OnItemClickListener {

        void onItemSeleted(int position, View view, CustomObject object);
    }

    public interface OnItemLongClickListener {

        boolean onItemSelected(int position, View view, CustomObject object);
    }

    public final class ViewHolder extends RecyclerView.ViewHolder {

        public ViewHolder(View itemView) {
            super(itemView);
            final int position = getAdapterPosition();

            itemView.setOnClickListener(new View.OnClickListener() {
                @Override
                public void onClick(View view) {
                    if(mOnItemClickListener != null) {
                        mOnItemClickListener.onItemSeleted(position, view,
mDataSet.get(position));
                    }
                }
            });

            itemView.setOnLongClickListener(new View.OnLongClickListener() {
                @Override
                public boolean onLongClick(View view) {
                    if(mOnItemLongClickListener != null) {
                        return mOnItemLongClickListener.onItemSelected(position, view,
mDataSet.get(position));
                    }
                }
            });

        }
    }

    private List<CustomObject> mDataSet;

    private OnItemClickListener mOnItemClickListener;
    private OnItemLongClickListener mOnItemLongClickListener;

    public CustomAdapter(List<CustomObject> dataSet) {
        mDataSet = dataSet;
    }

    @Override
    public CustomAdapter.ViewHolder onCreateViewHolder(ViewGroup parent, int viewType) {
        View view = LayoutInflater.from(parent.getContext())
                .inflate(R.layout.view_item_custom, parent, false);
        return new ViewHolder(view);
    }
```

```
    @Override
    public void onBindViewHolder(CustomAdapter.ViewHolder holder, int position) {
        // Bind views
    }

    @Override
    public int getItemCount() {
        return mDataSet.size();
    }

    public void setOnItemClickListener(OnItemClickListener listener) {
        mOnItemClickListener = listener;
    }

    public void setOnItemLongClickListener(OnItemLongClickListener listener) {
        mOnItemLongClickListener = listener;
    }

}
```

```
customAdapter.setOnItemClickListener(new CustomAdapter.OnItemClickListener {
    @Override
    public void onItemSelected(int position, View view, CustomObject object) {
        // Your implementation here
    }
});

customAdapter.setOnItemLongClickListener(new CustomAdapter.OnItemLongClickListener {
    @Override
    public boolean onItemSelected(int position, View view, CustomObject object) {
        // Your implementation here
        return true;
    }
});
```

Item Click Listener

。 。

```
public class CustomAdapter extends RecyclerView.Adapter<CustomAdapter.CustomHolder> {

    private ArrayList<Object> mObjects;
    private ClickInterface mClickInterface;

    public interface ClickInterface {
        void clickEventOne(Object obj);
        void clickEventTwo(Object obj1, Object obj2);
    }

    public void setClickInterface(ClickInterface clickInterface) {
        mClickInterface = clickInterface;
    }

    public CustomAdapter(){
        mList = new ArrayList<>();
    }
```

```
    public void addItems(ArrayList<Object> objects) {
        mObjects.clear();
        mObjects.addAll(objects);
        notifyDataSetChanged();
    }

    @Override
    public CustomHolder onCreateViewHolder(ViewGroup parent, int viewType) {
        View v = LayoutInflater.from(parent.getContext())
                               .inflate(R.layout.list_item, parent, false);
        return new CustomHolder(v);
    }

    @Override
    public void onBindViewHolder(CustomHolder holder, int position) {
        //make all even positions not clickable
        holder.firstClickListener.setClickable(position%2==0);
        holder.firstClickListener.setPosition(position);
        holder.secondClickListener.setPosition(position);
    }


    private class FirstClickListener implements View.OnClickListener {
        private int mPosition;
        private boolean mClickable;

        void setPosition(int position) {
            mPosition = position;
        }

        void setClickable(boolean clickable) {
            mPosition = position;
        }

        @Override
        public void onClick(View v) {
            if(mClickable) {
                mClickInterface.clickEventOne(mObjects.get(mPosition));
            }
        }
    }

    private class SecondClickListener implements View.OnClickListener {
        private int mPosition;

        void setPosition(int position) {
            mPosition = position;
        }

        @Override
        public void onClick(View v) {
            mClickInterface.clickEventTwo(mObjects.get(mPosition), v);
        }
    }

    @Override
    public int getItemCount() {
        return mObjects.size();
    }

    protected class CustomHolder extends RecyclerView.ViewHolder {
```

```
        FirstClickListener firstClickListener;
        SecondClickListener secondClickListener;
        View v1, v2;

        public DialogHolder(View itemView) {
            super(itemView);
            v1 = itemView.findViewById(R.id.v1);
            v2 = itemView.findViewById(R.id.v2);
            firstClickListener = new FirstClickListener();
            secondClickListener = new SecondClickListener();

            v1.setOnClickListener(firstClickListener);
            v2.setOnClickListener(secondClickListener);
        }
    }
}
```

```
customAdapter.setClickInterface(new CustomAdapter.ClickInterface {
    @Override
    public void clickEventOne(Object obj) {
        // Your implementation here
    }
    @Override
    public void clickEventTwo(Object obj1, Object obj2) {
        // Your implementation here
    }
});
```

RecyclerView

```
public  class RecyclerTouchListener implements RecyclerView.OnItemTouchListener {

    private GestureDetector gestureDetector;
    private RecyclerTouchListener.ClickListener clickListener;

    public RecyclerTouchListener(Context context, final RecyclerView recyclerView, final
RecyclerTouchListener.ClickListener clickListener) {
        this.clickListener = clickListener;

        gestureDetector = new GestureDetector(context, new
GestureDetector.SimpleOnGestureListener() {
            @Override
            public boolean onSingleTapUp(MotionEvent e) {
                return true;
            }
            @Override
            public void onLongPress(MotionEvent e) {
                View child = recyclerView.findChildViewUnder(e.getX(), e.getY());
                if (child != null && clickListener != null) {
                    clickListener.onLongClick(child, recyclerView.getChildPosition(child));
                }
            }
        });
    }


    @Override
    public boolean onInterceptTouchEvent(RecyclerView rv, MotionEvent e) {
```

```
        View child = rv.findChildViewUnder(e.getX(), e.getY());
        if (child != null && clickListener != null && gestureDetector.onTouchEvent(e)) {
            clickListener.onClick(child, rv.getChildPosition(child));
        }
        return false;
    }

    @Override
    public void onTouchEvent(RecyclerView rv, MotionEvent e) {

    }

    @Override
    public void onRequestDisallowInterceptTouchEvent(boolean disallowIntercept) {

    }

    public interface ClickListener {
        void onLongClick(View child, int childPosition);

        void onClick(View child, int childPosition);
    }
}
```

MainActivity

```
RecyclerView recyclerView =(RecyclerView) findViewById(R.id.recyclerview);
 recyclerView.addOnItemTouchListener(new RecyclerTouchListener(getActivity(),recyclerView, new
RecyclerTouchListener.ClickListener() {
      @Override
      public void onLongClick(View child, int childPosition) {

      }

      @Override
      public void onClick(View child, int childPosition) {


     }
    }));
```

RecyclerView onClickListeners https://riptutorial.com/zh-CN/android/topic/96/recyclerview-onclicklisteners

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。“”。 CWAC Endless AdapterAndroid

Examples

MainActivity.java

```
import android.os.Bundle;
import android.os.Handler;
import android.support.v7.app.AppCompatActivity;
import android.support.v7.widget.LinearLayoutManager;
import android.support.v7.widget.RecyclerView;
import android.support.v7.widget.Toolbar;
import android.util.Log;
import android.widget.TextView;

import com.android.volley.Request;
import com.android.volley.Response;
import com.android.volley.VolleyError;
import com.android.volley.VolleyLog;

import org.json.JSONArray;
import org.json.JSONException;
import org.json.JSONObject;

import java.util.ArrayList;
import java.util.HashMap;
import java.util.List;
import java.util.Map;

public class MainActivity extends AppCompatActivity {

    private static final String TAG = "MainActivity";
    private Toolbar toolbar;

    private TextView tvEmptyView;
    private RecyclerView mRecyclerView;
    private DataAdapter mAdapter;
    private LinearLayoutManager mLayoutManager;
    private int mStart=0,mEnd=20;
    private List<Student> studentList;
    private List<Student> mTempCheck;
    public static int pageNumber;
    public int total_size=0;


    protected Handler handler;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        pageNumber = 1;
        toolbar = (Toolbar) findViewById(R.id.toolbar);
        tvEmptyView = (TextView) findViewById(R.id.empty_view);
```

```
        mRecyclerView = (RecyclerView) findViewById(R.id.my_recycler_view);
        studentList = new ArrayList<>();
        mTempCheck=new ArrayList<>();
        handler = new Handler();
        if (toolbar != null) {
            setSupportActionBar(toolbar);
            getSupportActionBar().setTitle("Android Students");

        }

        mRecyclerView.setHasFixedSize(true);
        mLayoutManager = new LinearLayoutManager(this);
        mRecyclerView.setLayoutManager(mLayoutManager);
        mAdapter = new DataAdapter(studentList, mRecyclerView);
        mRecyclerView.setAdapter(mAdapter);
        GetGroupData("" + mStart, "" + mEnd);
        mAdapter.setOnLoadMoreListener(new OnLoadMoreListener() {
            @Override
            public void onLoadMore() {
                if( mTempCheck.size()> 0) {
                    studentList.add(null);
                    mAdapter.notifyItemInserted(studentList.size() - 1);
                    int start = pageNumber * 20;
                    start = start + 1;
                    ++ pageNumber;
                    mTempCheck.clear();
                    GetData("" + start,""+ mEnd);
                }
            }
        });
    }

    public void GetData(final String LimitStart, final String LimitEnd) {
        Map<String, String> params = new HashMap<>();
        params.put("LimitStart", LimitStart);
        params.put("Limit", LimitEnd);
        Custom_Volly_Request jsonObjReq = new Custom_Volly_Request(Request.Method.POST,
                "Your php file link", params,
                new Response.Listener<JSONObject>() {
                    @Override
                    public void onResponse(JSONObject response) {
                        Log.d("ResponseSuccess",response.toString());
                        // handle the data from the servoce
                    }
                }, new Response.ErrorListener() {

            @Override
            public void onErrorResponse(VolleyError error) {
                VolleyLog.d("ResponseErrorVolly: " + error.getMessage());

            }});

    }
    // load initial data
    private void loadData(int start,int end,boolean notifyadapter) {
        for (int i = start; i <= end; i++) {
            studentList.add(new Student("Student " + i, "androidstudent" + i + "@gmail.com"));
            if(notifyadapter)
                mAdapter.notifyItemInserted(studentList.size());
        }
    }
```

```
}
```

OnLoadMoreListener.java

OnLoadMoreListener {void onLoadMore; }

DataAdapter.java

```
import android.support.v7.widget.LinearLayoutManager;
import android.support.v7.widget.RecyclerView;
import android.view.LayoutInflater;
import android.view.View;
import android.view.View.OnClickListener;
import android.view.ViewGroup;
import android.widget.ProgressBar;
import android.widget.TextView;
import android.widget.Toast;

import java.util.List;

public class DataAdapter extends RecyclerView.Adapter {
    private final int VIEW_ITEM = 1;
    private final int VIEW_PROG = 0;

    private List<Student> studentList;

    // The minimum amount of items to have below your current scroll position
    // before loading more.
    private int visibleThreshold = 5;
    private int lastVisibleItem, totalItemCount;
    private boolean loading;
    private OnLoadMoreListener onLoadMoreListener;



    public DataAdapter(List<Student> students, RecyclerView recyclerView) {
        studentList = students;
        if (recyclerView.getLayoutManager() instanceof LinearLayoutManager) {
            final LinearLayoutManager linearLayoutManager = (LinearLayoutManager)
recyclerView.getLayoutManager();
                    recyclerView.addOnScrollListener(new RecyclerView.OnScrollListener() {
                        @Override
                        public void onScrolled(RecyclerView recyclerView, int dx, int dy) {
                            super.onScrolled(recyclerView, dx, dy);
                            totalItemCount = linearLayoutManager.getItemCount();
                            lastVisibleItem =
linearLayoutManager.findLastVisibleItemPosition();
                            if (! loading && totalItemCount <= (lastVisibleItem +
visibleThreshold)) {
                                if (onLoadMoreListener != null) {
                                    onLoadMoreListener.onLoadMore();
                                }
                                loading = true;
                            }
                        }
                    });
        }
    }
```

```
    @Override
    public int getItemViewType(int position) {

            return studentList.get(position) != null ? VIEW_ITEM : VIEW_PROG;
    }

    @Override
    public RecyclerView.ViewHolder onCreateViewHolder(ViewGroup parent, int viewType) {
        RecyclerView.ViewHolder vh;
        if (viewType == VIEW_ITEM) {
            View v = LayoutInflater.from(parent.getContext()).inflate(R.layout.list_row,
parent, false);
            vh = new StudentViewHolder(v);
        } else {
            View v = LayoutInflater.from(parent.getContext()).inflate(R.layout.progress_item,
parent, false);
            vh = new ProgressViewHolder(v);
        }
        return vh;
    }

    @Override
    public void onBindViewHolder(RecyclerView.ViewHolder holder, int position) {
        if (holder instanceof StudentViewHolder) {
            Student singleStudent=studentList.get(position);
            ((StudentViewHolder) holder).tvName.setText(singleStudent.getName());
            ((StudentViewHolder) holder).tvEmailId.setText(singleStudent.getEmailId());
            ((StudentViewHolder) holder).student= singleStudent;
        } else {
            ((ProgressViewHolder) holder).progressBar.setIndeterminate(true);
        }
    }

    public void setLoaded(boolean state) {
        loading = state;
    }

    @Override
    public int getItemCount() {
        return studentList.size();
    }

    public void setOnLoadMoreListener(OnLoadMoreListener onLoadMoreListener) {
        this.onLoadMoreListener = onLoadMoreListener;
    }


    //
    public static class StudentViewHolder extends RecyclerView.ViewHolder {
        public TextView tvName;

        public TextView tvEmailId;

        public Student student;

        public StudentViewHolder(View v) {
            super(v);
            tvName = (TextView) v.findViewById(R.id.tvName);
            tvEmailId = (TextView) v.findViewById(R.id.tvEmailId);
```

```
        }
    }

    public static class ProgressViewHolder extends RecyclerView.ViewHolder {
        public ProgressBar progressBar;

        public ProgressViewHolder(View v) {
            super(v);
            progressBar = (ProgressBar) v.findViewById(R.id.progressBar1);
        }
    }

}
```

RecyclerView https://riptutorial.com/zh-CN/android/topic/9243/recyclerview

79: RecyclerViewLayoutManagers

Examples

GridLayoutManager

gridlayoutrecyclerview。 。 。 。 。

RecyclerView

```
public class AutofitRecyclerView extends RecyclerView {
    private GridLayoutManager manager;
    private int columnWidth = -1;

    public AutofitRecyclerView(Context context) {
        super(context);
        init(context, null);
    }

    public AutofitRecyclerView(Context context, AttributeSet attrs) {
        super(context, attrs);
        init(context, attrs);
    }

    public AutofitRecyclerView(Context context, AttributeSet attrs, int defStyle) {
        super(context, attrs, defStyle);
        init(context, attrs);
    }

    private void init(Context context, AttributeSet attrs) {
        if (attrs != null) {
            int[] attrsArray = {
                    android.R.attr.columnWidth
            };
            TypedArray array = context.obtainStyledAttributes(attrs, attrsArray);
            columnWidth = array.getDimensionPixelSize(0, -1);
            array.recycle();
        }

        manager = new GridLayoutManager(getContext(), 1);
        setLayoutManager(manager);
    }

    @Override
    protected void onMeasure(int widthSpec, int heightSpec) {
        super.onMeasure(widthSpec, heightSpec);
        if (columnWidth > 0) {
            int spanCount = Math.max(1, getMeasuredWidth() / columnWidth);
            manager.setSpanCount(spanCount);
        }
    }
}
```

Recyclerview。 layout.xml

```
<?xml version="1.0" encoding="utf-8"?>
<com.path.to.your.class.autofitRecyclerView.AutofitRecyclerView
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:id="@+id/auto_fit_recycler_view"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:columnWidth="200dp"
    android:clipToPadding="false"
    />
```

columnWidth。 recyclerview。

/recylerview。

```
RecyclerView recyclerView = (RecyclerView) findViewById(R.id.auto_fit_recycler_view);
recyclerView.setAdapter(new MyAdapter());
```

MyAdapter

Recyclerviewspancount。recyclerviewlayout_start。AutofitRecyclerView。recyclerview。GridLayoutManager。

```
public class AutofitRecyclerView extends RecyclerView {

    // etc see above

    private class CenteredGridLayoutManager extends GridLayoutManager {

        public CenteredGridLayoutManager(Context context, AttributeSet attrs, int
defStyleAttr, int defStyleRes) {
            super(context, attrs, defStyleAttr, defStyleRes);
        }

        public CenteredGridLayoutManager(Context context, int spanCount) {
            super(context, spanCount);
        }

        public CenteredGridLayoutManager(Context context, int spanCount, int orientation,
boolean reverseLayout) {
            super(context, spanCount, orientation, reverseLayout);
        }

        @Override
        public int getPaddingLeft() {
            final int totalItemWidth = columnWidth * getSpanCount();
            if (totalItemWidth >= AutofitRecyclerView.this.getMeasuredWidth()) {
                return super.getPaddingLeft(); // do nothing
            } else {
                return Math.round((AutofitRecyclerView.this.getMeasuredWidth() / (1f +
getSpanCount())) - (totalItemWidth / (1f + getSpanCount())));
            }
        }

        @Override
        public int getPaddingRight() {
            return getPaddingLeft();
        }
```

```
    }
}
```

AutofitRecyclerViewLayoutManagerCenteredGridLayoutManager

```
private void init(Context context, AttributeSet attrs) {
    if (attrs != null) {
        int[] attrsArray = {
                android.R.attr.columnWidth
        };
        TypedArray array = context.obtainStyledAttributes(attrs, attrsArray);
        columnWidth = array.getDimensionPixelSize(0, -1);
        array.recycle();
    }

    manager = new CenteredGridLayoutManager(getContext(), 1);
    setLayoutManager(manager);
}
```

spancountgridlayoutmanagerrecyclerview。

- Chiu-Ki Chan
-

gridlayout managerrecyclerview

gridlayoutRecyclerview - 。 * span。 *

RecyclerView.Adapter

```
public class HeaderAdapter extends RecyclerView.Adapter<RecyclerView.ViewHolder> {

    private static final int ITEM_VIEW_TYPE_HEADER = 0;
    private static final int ITEM_VIEW_TYPE_ITEM = 1;

    private List<YourModel> mModelList;

    public HeaderAdapter (List<YourModel> modelList) {
        mModelList = modelList;
    }

    public boolean isHeader(int position) {
        return position == 0;
    }

    @Override
    public RecyclerView.ViewHolder onCreateViewHolder(ViewGroup parent, int viewType) {
        LayoutInflater inflater = LayoutInflater.from(parent.getContext());

        if (viewType == ITEM_VIEW_TYPE_HEADER) {
            View headerView = inflater.inflate(R.layout.header, parent, false);
            return new HeaderHolder(headerView);
        }

        View cellView = inflater.inflate(R.layout.gridcell, parent, false);
        return new ModelHolder(cellView);
```

```
    }

    @Override
    public int getItemViewType(int position) {
        return isHeader(position) ? ITEM_VIEW_TYPE_HEADER : ITEM_VIEW_TYPE_ITEM;
    }

    @Override
    public void onBindViewHolder(RecyclerView.ViewHolder h, int position) {
        if (isHeader(position)) {
            return;
        }

        final YourModel model = mModelList.get(position -1 ); // Subtract 1 for header

        ModelHolder holder = (ModelHolder) h;
        // populate your holder with data from your model as usual
    }

    @Override
    public int getItemCount() {
        return _categories.size() + 1; // add one for the header
    }
}
```

activity / fragment

```
final HeaderAdapter adapter = new HeaderAdapter (mModelList);
final GridLayoutManager manager = new GridLayoutManager();
manager.setSpanSizeLookup(new GridLayoutManager.SpanSizeLookup() {
    @Override
    public int getSpanSize(int position) {
        return adapter.isHeader(position) ? manager.getSpanCount() : 1;
    }
});
mRecyclerView.setLayoutManager(manager);
mRecyclerView.setAdapter(adapter);
```

。

Chiu-Ki ChanSquare Island

LinearLayoutManager

PlaceArrayList。

/RecyclerViewRecyclerView。 ScrollView。

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent">

    <android.support.v7.widget.RecyclerView
        android:id="@+id/my_recycler_view"
```

```
        android:layout_width="match_parent"
        android:layout_height="match_parent" />

</RelativeLayout>
```

`int` `String` `float[]`CustomObject ◦ RecyclerView/`List` ◦

◦

```
public class Place {
    // these fields will be shown in a list item
    private Bitmap image;
    private String name;

    // typical constructor
    public Place(Bitmap image, String name) {
        this.image = image;
        this.name = name;
    }

    // getters
    public Bitmap getImage() {
        return image;
    }
    public String getName() {
        return name;
    }
}
```

---

xml◦ `ImageView` `TextView`◦ `LinearLayout`ImageViewTextView◦

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:gravity="center_vertical"
    android:orientation="horizontal"
    android:padding="8dp">

    <ImageView
        android:id="@+id/image"
        android:layout_width="36dp"
        android:layout_height="36dp"
        android:layout_marginEnd="8dp"
        android:layout_marginRight="8dp" />

    <TextView
        android:id="@+id/name"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content" />

</LinearLayout>
```

RecyclerViewViewHolder

RecyclerView.AdapterRecyclerView.ViewHolder ◦

```
public class PlaceListAdapter extends RecyclerView.Adapter<PlaceListAdapter.ViewHolder> {
    // ...

    public class ViewHolder extends RecyclerView.ViewHolder {
        // ...
    }
}
```

ViewHolder ◦

```
public class ViewHolder extends RecyclerView.ViewHolder {
    private ImageView imageView;
    private TextView nameView;

    public ViewHolder(View itemView) {
        super(itemView);

        imageView = (ImageView) itemView.findViewById(R.id.image);
        nameView = (TextView) itemView.findViewById(R.id.name);
    }
}
```

```
public class PlaceListAdapter extends RecyclerView.Adapter<PlaceListAdapter.ViewHolder> {
    private List<Place> mPlaces;

    public PlaceListAdapter(List<Place> contacts) {
        mPlaces = contacts;
    }

    // ...
}
```

onCreateViewHolder(...)◦ place_list_item.xml ◦

```
public class PlaceListAdapter extends RecyclerView.Adapter<PlaceListAdapter.ViewHolder> {
    // ...

    @Override
    public ViewHolder onCreateViewHolder(ViewGroup parent, int viewType) {
        View view = LayoutInflater.from(parent.getContext()).inflate(
                R.layout.place_list_item,
                parent,
                false
        );
        return new ViewHolder(view);
    }

    // ...
}
```

onBindViewHolder(...) ◦ ListViewHolder◦

```
public class PlaceListAdapter extends RecyclerView.Adapter<PlaceListAdapter.ViewHolder> {
    // ...

    @Override
    public void onBindViewHolder(PlaceListAdapter.ViewHolder viewHolder, int position) {
        Place place = mPlaces.get(position);

        viewHolder.nameView.setText(place.getName());
        viewHolder.imageView.setImageBitmap(place.getImage());
    }

    // ...
}
```

getItemCount() getItemCount()List◦

```
public class PlaceListAdapter extends RecyclerView.Adapter<PlaceListAdapter.ViewHolder> {
    // ...

    @Override
    public int getItemCount() {
        return mPlaces.size();
    }

    // ...
}
```

◦

```
@Override
protected void onCreate(Bundle savedInstanceState) {
    // ...

    List<Place> places = randomPlaces(5);

    // ...
}

private List<Place> randomPlaces(int amount) {
    List<Place> places = new ArrayList<>();
    for (int i = 0; i < amount; i++) {
        places.add(new Place(
                BitmapFactory.decodeResource(getResources(), Math.random() > 0.5 ?
                        R.drawable.ic_account_grey600_36dp :
                        R.drawable.ic_android_grey600_36dp
                ),
                "Place #" + (int) (Math.random() * 1000)
        ));
    }
    return places;
}
```

RecyclerViewPlaceListAdapter

RecyclerView◦ LinearLayoutManager◦

```
@Override
protected void onCreate(Bundle savedInstanceState) {
    // ...

    RecyclerView recyclerView = (RecyclerView) findViewById(R.id.my_recycler_view);
    recyclerView.setAdapter(new PlaceListAdapter(places));
    recyclerView.setLayoutManager(new LinearLayoutManager(this));
}
```

StaggeredGridLayoutManager

1. xmlRecyclerView

```
<android.support.v7.widget.RecyclerView
            android:id="@+id/recycleView"
            android:layout_width="match_parent"
            android:layout_height="match_parent" />
```

2. Model

```
     public class PintrestItem {
     String url;
     public PintrestItem(String url,String name){
         this.url=url;
         this.name=name;
     }
     public String getUrl() {
         return url;
     }

    public String getName(){
        return name;
    }
     String name;
 }
```

3. RecyclerView

```
<ImageView
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:adjustViewBounds="true"
    android:scaleType="centerCrop"
    android:id="@+id/imageView"/>
    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:gravity="center"
```

```
        android:id="@+id/name"
        android:layout_gravity="center"
        android:textColor="@android:color/white"/>
```

4. RecyclerView

```
 public class PintrestAdapter extends
RecyclerView.Adapter<PintrestAdapter.PintrestViewHolder>{
    private ArrayList<PintrestItem>images;
    Picasso picasso;
    Context context;
    public PintrestAdapter(ArrayList<PintrestItem>images,Context context){
        this.images=images;
        picasso=Picasso.with(context);
        this.context=context;

    }

    @Override
    public PintrestViewHolder onCreateViewHolder(ViewGroup parent, int viewType) {
        View view=
LayoutInflater.from(parent.getContext()).inflate(R.layout.pintrest_layout_item,parent,false);

        return new PintrestViewHolder(view);
    }

    @Override
    public void onBindViewHolder(PintrestViewHolder holder, int position) {
          picasso.load(images.get(position).getUrl()).into(holder.imageView);
          holder.tv.setText(images.get(position).getName());
    }

    @Override
    public int getItemCount() {
        return images.size();
    }

    public class PintrestViewHolder extends RecyclerView.ViewHolder{
        ImageView imageView;
        TextView tv;
        public PintrestViewHolder(View itemView) {
            super(itemView);
            imageView=(ImageView)itemView.findViewById(R.id.imageView);
            tv=(TextView)itemView.findViewById(R.id.name);

        }
    }
}
```

5. RecyclerView

```
RecyclerView recyclerView = (RecyclerView)findViewById(R.id.recyclerView);
//Create the instance of StaggeredGridLayoutManager with 2 rows i.e the span count and
provide the orientation
StaggeredGridLayoutManager layoutManager=new new StaggeredGridLayoutManager(2,
StaggeredGridLayoutManager.VERTICAL);
recyclerView.setLayoutManager(layoutManager);
// Create Dummy Data and Add to your List<PintrestItem>
```

```
List<PintrestItem>items=new ArrayList<PintrestItem>
items.add(new PintrestItem("url of image you want to show","imagename"));
items.add(new PintrestItem("url of image you want to show","imagename"));
items.add(new PintrestItem("url of image you want to show","imagename"));
recyclerView.setAdapter(new PintrestAdapter(items,getContext() );
```

build.gradlePicasso

```
compile 'com.squareup.picasso:picasso:2.5.2'
```

RecyclerViewLayoutManagers https://riptutorial.com/zh-CN/android/topic/6772/recyclerview layoutmanagers

80: RecyclerView

- RecyclerView addItemDecorationRecyclerView.ItemDecoration
- RecyclerView addItemDecorationRecyclerView.ItemDecorationint

	RecyclerView
	RecyclerView◦ getItemOffsetonDraw◦ ◦

UI◦

RecyclerViewAPI◦ ◦

RecyclerView
RecyclerView onClickListeners

javadoc

https://developer.android.com/reference/android/support/v7/widget/RecyclerView.ItemDecoration.html

Examples

◦

```
public class SeparatorDecoration extends RecyclerView.ItemDecoration {

    private final Paint mPaint;
    private final int mAlpha;

    public SeparatorDecoration(@ColorInt int color, float width) {
        mPaint = new Paint();
        mPaint.setColor(color);
        mPaint.setStrokeWidth(width);
        mAlpha = mPaint.getAlpha();
    }

    @Override
    public void getItemOffsets(Rect outRect, View view, RecyclerView parent,
RecyclerView.State state) {
        final RecyclerView.LayoutParams params = (RecyclerView.LayoutParams)
view.getLayoutParams();

        // we retrieve the position in the list
        final int position = params.getViewAdapterPosition();

        // add space for the separator to the bottom of every view but the last one
```

```
        if (position < state.getItemCount()) {
            outRect.set(0, 0, 0, (int) mPaint.getStrokeWidth()); // left, top, right, bottom
        } else {
            outRect.setEmpty(); // 0, 0, 0, 0
        }
    }

    @Override
    public void onDraw(Canvas c, RecyclerView parent, RecyclerView.State state) {
        // a line will draw half its size to top and bottom,
        // hence the offset to place it correctly
        final int offset = (int) (mPaint.getStrokeWidth() / 2);

        // this will iterate over every visible view
        for (int i = 0; i < parent.getChildCount(); i++) {
            final View view = parent.getChildAt(i);
            final RecyclerView.LayoutParams params = (RecyclerView.LayoutParams)
view.getLayoutParams();

            // get the position
            final int position = params.getViewAdapterPosition();

            // and finally draw the separator
            if (position < state.getItemCount()) {
                // apply alpha to support animations
                mPaint.setAlpha((int) (view.getAlpha() * mAlpha));

                float positionY = view.getBottom() + offset + view.getTranslationY();
                // do the drawing
                c.drawLine(view.getLeft() + view.getTranslationX(),
                        positionY,
                        view.getRight() + view.getTranslationX(),
                        positionY,
                        mPaint);
            }
        }
    }
}
```

ItemDecoration

`RecyclerView.ItemDecoration`RecyclerView。 XML。

```
public class MyItemDecoration
    extends RecyclerView.ItemDecoration {

    private final int extraMargin;

    @Override
    public void getItemOffsets(Rect outRect, View view,
            RecyclerView parent, RecyclerView.State state) {

        int position = parent.getChildAdapterPosition(view);

        // It's easy to put extra margin on the last item...
        if (position + 1 == parent.getAdapter().getItemCount()) {
            outRect.bottom = extraMargin; // unit is px
        }
```

```
        // ...or you could give each item in the RecyclerView different
        // margins based on its position...
        if (position % 2 == 0) {
            outRect.right = extraMargin;
        } else {
            outRect.left = extraMargin;
        }

        // ...or based on some property of the item itself
        MyListItem item = parent.getAdapter().getItem(position);
        if (item.isFirstItemInSection()) {
            outRect.top = extraMargin;
        }
    }

    public MyItemDecoration(Context context) {
        extraMargin = context.getResources()
                .getDimensionPixelOffset(R.dimen.extra_margin);
    }
}
```

RecyclerView

```
// in your onCreate()
RecyclerView rv = (RecyclerView) findItemById(R.id.myList);
rv.addItemDecoration(new MyItemDecoration(context));
```

RecyclerView

RecyclerView.ItemDecoration

```
public class SimpleBlueDivider extends RecyclerView.ItemDecoration {
private Drawable mDivider;

public SimpleBlueDivider(Context context) {
    mDivider = context.getResources().getDrawable(R.drawable.divider_blue);
}

@Override
public void onDrawOver(Canvas c, RecyclerView parent, RecyclerView.State state) {
    //divider padding give some padding whatever u want or disable
    int left =parent.getPaddingLeft()+80;
    int right = parent.getWidth() - parent.getPaddingRight()-30;

    int childCount = parent.getChildCount();
    for (int i = 0; i < childCount; i++) {
        View child = parent.getChildAt(i);

        RecyclerView.LayoutParams params = (RecyclerView.LayoutParams)
child.getLayoutParams();

        int top = child.getBottom() + params.bottomMargin;
        int bottom = top + mDivider.getIntrinsicHeight();

        mDivider.setBounds(left, top, right, bottom);
        mDivider.draw(c);
    }
}
```

```
}
```

`divider_blue.xml`drawable

```
<?xml version="1.0" encoding="utf-8"?>
<shape xmlns:android="http://schemas.android.com/apk/res/android" android:shape="rectangle">
<size android:width="1dp" android:height="4dp" />
<solid android:color="#AA123456" />
</shape>
```

```
recyclerView.addItemDecoration(new SimpleBlueDivider(context));
```

28% 14:20
Stackoverflow :)
Stackoverflow :)
Stackoverflow :)
Stackoverflow :)
Stackoverflow :)
Stackoverflow :)
Stackoverflow :)

Material Design @Brenden Kromhout 。

DividerItemDecoration

DividerItemDecorationRecyclerView.ItemDecoration 。

```
DividerItemDecoration mDividerItemDecoration = new DividerItemDecoration(context,
             mLayoutManager.getOrientation());
recyclerView.addItemDecoration(mDividerItemDecoration);
```

DividerItemDecoration.VERTICALDividerItemDecoration.HORIZONTAL。

RecycleViewGridLayoutManagerItemOffsetDecoration

GridLayout。

ItemOffsetDecoration.java

```
public class ItemOffsetDecoration extends RecyclerView.ItemDecoration {

    private int mItemOffset;

    private int spanCount = 2;

    public ItemOffsetDecoration(int itemOffset) {
        mItemOffset = itemOffset;
    }

    public ItemOffsetDecoration(@NonNull Context context, @DimenRes int itemOffsetId) {
        this(context.getResources().getDimensionPixelSize(itemOffsetId));
    }

    @Override
    public void getItemOffsets(Rect outRect, View view, RecyclerView parent,
                               RecyclerView.State state) {
        super.getItemOffsets(outRect, view, parent, state);

        int position = parent.getChildLayoutPosition(view);

        GridLayoutManager manager = (GridLayoutManager) parent.getLayoutManager();

        if (position < manager.getSpanCount())
            outRect.top = mItemOffset;

        if (position % 2 != 0) {
            outRect.right = mItemOffset;
        }

        outRect.left = mItemOffset;
        outRect.bottom = mItemOffset;
    }
}
```

ItemDecoration。

```
recyclerView = (RecyclerView) view.findViewById(R.id.recycler_view);

GridLayoutManager lLayout = new GridLayoutManager(getActivity(), 2);

ItemOffsetDecoration itemDecoration = new ItemOffsetDecoration(mActivity,
R.dimen.item_offset);
recyclerView.addItemDecoration(itemDecoration);

recyclerView.setLayoutManager(lLayout);
```

```
<dimen name="item_offset">5dp</dimen>
```

RecyclerView https://riptutorial.com/zh-CN/android/topic/506/recyclerview

81: Retrofit2

Retrofit

AndroidJavaREST。

RetrofitREST APIJava。HTTPURL。。

```
dependencies {
    ...
    compile 'com.squareup.retrofit2:converter-gson:2.3.0'
    compile 'com.squareup.retrofit2:retrofit:2.3.0'
    ...
}
```

Maven

```
<dependency>
  <groupId>com.squareup.retrofit2</groupId>
  <artifactId>retrofit</artifactId>
  <version>2.3.0</version>
</dependency>
```

Examples

GET

JSONJSONAPIGET。RetrofitGSON Convertergradle。

“”。

JSON

```
{
    "deviceId": "56V56C14SF5B4SF",
    "name": "Steven",
    "eventCount": 0
}
```

JSON

```
[
    {
        "deviceId": "56V56C14SF5B4SF",
        "name": "Steven",
        "eventCount": 0
    },
    {
        "deviceId": "35A80SF3QDV7M9F",
        "name": "John",
```

```
        "eventCount": 2
    }
]
```

```
public class Device
{
    @SerializedName("deviceId")
    public String id;

    @SerializedName("name")
    public String name;

    @SerializedName("eventCount")
    public int eventCount;
}
```

@SerializedNameGSONdeserializeserializedeserialize serialize JSON。 API。

```
public interface DeviceAPI
{
    @GET("device/{deviceId}")
    Call<Device> getDevice (@Path("deviceId") String deviceID);

    @GET("devices")
    Call<List<Device>> getDevices();
}
```

- @GETRetrofitGET。
- GETURL。
- 。
- getDevice ID。
- @PATHRetrofit“deviceId”。
- DeviceCall。

APIRetrofit。

```
public class DeviceAPIHelper
{
    public final DeviceAPI api;

    private DeviceAPIHelper ()
    {

        Retrofit retrofit = new Retrofit.Builder()
                .baseUrl("http://example.com/")
                .addConverterFactory(GsonConverterFactory.create())
                .build();

        api = retrofit.create(DeviceAPI.class);
    }
}
```

GSONJSONURLGSONConverterRetrofitAPI。

API

```
// Getting a JSON object
Call<Device> callObject = api.getDevice(deviceID);
callObject.enqueue(new Callback<Response<Device>>()
{
    @Override
    public void onResponse (Call<Device> call, Response<Device> response)
    {
        if (response.isSuccessful())
        {
           Device device = response.body();
        }
    }

    @Override
    public void onFailure (Call<Device> call, Throwable t)
    {
        Log.e(TAG, t.getLocalizedMessage());
    }
});

// Getting a JSON array
Call<List<Device>> callArray = api.getDevices();
callArray.enqueue(new Callback<Response<List<Device>>()
{
    @Override
    public void onResponse (Call<List<Device>> call, Response<List<Device>> response)
    {
        if (response.isSuccessful())
        {
           List<Device> devices = response.body();
        }
    }

    @Override
    public void onFailure (Call<List<Device>> call, Throwable t)
    {
        Log.e(TAG, t.getLocalizedMessage());
    }
});
```

API`Call<Device>``Call<List<Device>>` ◦ `enqueue`Retrofit◦

JSON*String**Integer**Boolean**Double* JSON◦ ◦ `Call<List<String>>`◦

Retrofit2

◦ NONEBASICHEADERSBODY◦ Github ◦

1. build.gradle

```
compile 'com.squareup.okhttp3:logging-interceptor:3.8.1'
```

2. Retrofit

```
  HttpLoggingInterceptor loggingInterceptor = new HttpLoggingInterceptor();
  loggingInterceptor.setLevel(LoggingInterceptor.Level.BODY);
  OkHttpClient okHttpClient = new OkHttpClient().newBuilder()
          .addInterceptor(loggingInterceptor)
          .build();
  Retrofit retrofit = new Retrofit.Builder()
          .baseUrl("http://example.com/")
          .client(okHttpClient)
          .addConverterFactory(GsonConverterFactory.create(gson))
          .build();
```

AndroidAuth Tokens。

```
if(BuildConfig.DEBUG){
     //your interfector code here
    }
```

```
HttpLoggingInterceptor loggingInterceptor = new HttpLoggingInterceptor();
if(BuildConfig.DEBUG){
     //print the logs in this case
    loggingInterceptor.setLevel(LoggingInterceptor.Level.BODY);
}else{
    loggingInterceptor.setLevel(LoggingInterceptor.Level.NONE);
}

OkHttpClient okHttpClient = new OkHttpClient().newBuilder()
      .addInterceptor(loggingInterceptor)
      .build();

Retrofit retrofit = new Retrofit.Builder()
      .baseUrl("http://example.com/")
      .client(okHttpClient)
      .addConverterFactory(GsonConverterFactory.create(gson))
      .build();
```

Multipart

Retrofit2

```
public interface BackendApiClient {
    @Multipart
    @POST("/uploadFile")
    Call<RestApiDefaultResponse> uploadPhoto(@Part("file\"; filename=\"photo.jpg\" ")
RequestBody photo);
}
```

`RestApiDefaultResponse`。

API

```
Retrofit retrofit = new Retrofit.Builder()
                                .addConverterFactory(GsonConverterFactory.create())
                                .baseUrl("http://<yourhost>/")
                                .client(okHttpClient)
                                .build();
```

```
BackendApiClient apiClient = retrofit.create(BackendApiClient.class);
RequestBody reqBody = RequestBody.create(MediaType.parse("image/jpeg"), photoFile);
Call<RestApiDefaultResponse> call = apiClient.uploadPhoto(reqBody);
call.enqueue(<your callback function>);
```

OkHttp

OkHttp。

- header。
-
- response
-
-

```
Retrofit.Builder builder = new Retrofit.Builder()
        .addCallAdapterFactory(RxJavaCallAdapterFactory.create())
        .addConverterFactory(GsonConverterFactory.create())
        .baseUrl("https://api.github.com/");

if (!TextUtils.isEmpty(githubToken)) {
    // `githubToken`: Access token for GitHub
    OkHttpClient client = new OkHttpClient.Builder().addInterceptor(new Interceptor() {
        @Override public Response intercept(Chain chain) throws IOException {
            Request request = chain.request();
            Request newReq = request.newBuilder()
                    .addHeader("Authorization", format("token %s", githubToken))
                    .build();
            return chain.proceed(newReq);
        }
    }).build();

    builder.client(client);
}

return builder.build().create(GithubApi.class);
```

OkHttp 。

`@Header` `@Body`Retrofit。

```
public interface MyService {
     @POST("authentication/user")
     Call<AuthenticationResponse> authenticateUser(@Body AuthenticationRequest request,
@Header("Authorization") String basicToken);
}
```

AuthenticaionRequestPOJO。 。

```
public class AuthenticationRequest {
     String clientKey;
     String clientSecret;
}
```

`@Header("Authorization")`Authorization。 Retrofit。

Retrofit。 HTTPS。

```
Retrofit retrofit = new Retrofit.Builder()
            .baseUrl("https:// some example site")
            .client(client)
            .build();
MyService myService = retrofit.create(MyService.class)
```

。

```
AuthenticationRequest request = new AuthenticationRequest();
request.setClientKey(getClientKey());
request.setClientSecret(getClientSecret());
String basicToken = "Basic " + token;
myService.authenticateUser(request, basicToken);
```

Retrofitmultipart

RetrofitRetrofit

```
private void mulipleFileUploadFile(Uri[] fileUri) {
    OkHttpClient okHttpClient = new OkHttpClient();
    OkHttpClient clientWith30sTimeout = okHttpClient.newBuilder()
            .readTimeout(30, TimeUnit.SECONDS)
            .build();

    Retrofit retrofit = new Retrofit.Builder()
            .baseUrl(API_URL_BASE)
            .addConverterFactory(new MultiPartConverter())
            .client(clientWith30sTimeout)
            .build();

    WebAPIService service = retrofit.create(WebAPIService.class); //here is the interface
which you have created for the call service
    Map<String, okhttp3.RequestBody> maps = new HashMap<>();

    if (fileUri!=null && fileUri.length>0) {
        for (int i = 0; i < fileUri.length; i++) {
            String filePath = getRealPathFromUri(fileUri[i]);
            File file1 = new File(filePath);

            if (filePath != null && filePath.length() > 0) {
                if (file1.exists()) {
                    okhttp3.RequestBody requestFile =
okhttp3.RequestBody.create(okhttp3.MediaType.parse("multipart/form-data"), file1);
                    String filename = "imagePath" + i; //key for upload file like : imagePath0
                    maps.put(filename + "\"; filename=\"" + file1.getName(), requestFile);
                }
            }
        }
    }

    String descriptionString = " string request";//
    //hear is the your json request
```

```
    Call<String> call = service.postFile(maps, descriptionString);
    call.enqueue(new Callback<String>() {
        @Override
        public void onResponse(Call<String> call,
                               Response<String> response) {
            Log.i(LOG_TAG, "success");
            Log.d("body==>", response.body().toString() + "");
            Log.d("isSuccessful==>", response.isSuccessful() + "");
            Log.d("message==>", response.message() + "");
            Log.d("raw==>", response.raw().toString() + "");
            Log.d("raw().networkResponse()", response.raw().networkResponse().toString() +
"");
        }

        @Override
        public void onFailure(Call<String> call, Throwable t) {
            Log.e(LOG_TAG, t.getMessage());
        }
    });
}

public String getRealPathFromUri(final Uri uri) { // function for file path from uri,
    if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.KITKAT &&
DocumentsContract.isDocumentUri(mContext, uri)) {
        // ExternalStorageProvider
        if (isExternalStorageDocument(uri)) {
            final String docId = DocumentsContract.getDocumentId(uri);
            final String[] split = docId.split(":");
            final String type = split[0];

            if ("primary".equalsIgnoreCase(type)) {
                return Environment.getExternalStorageDirectory() + "/" + split[1];
            }
        }
        // DownloadsProvider
        else if (isDownloadsDocument(uri)) {

            final String id = DocumentsContract.getDocumentId(uri);
            final Uri contentUri = ContentUris.withAppendedId(
                    Uri.parse("content://downloads/public_downloads"), Long.valueOf(id));

            return getDataColumn(mContext, contentUri, null, null);
        }
        // MediaProvider
        else if (isMediaDocument(uri)) {
            final String docId = DocumentsContract.getDocumentId(uri);
            final String[] split = docId.split(":");
            final String type = split[0];

            Uri contentUri = null;
            if ("image".equals(type)) {
                contentUri = MediaStore.Images.Media.EXTERNAL_CONTENT_URI;
            } else if ("video".equals(type)) {
                contentUri = MediaStore.Video.Media.EXTERNAL_CONTENT_URI;
            } else if ("audio".equals(type)) {
                contentUri = MediaStore.Audio.Media.EXTERNAL_CONTENT_URI;
            }

            final String selection = "_id=?";
            final String[] selectionArgs = new String[]{
                    split[1]
```

```
            };

            return getDataColumn(mContext, contentUri, selection, selectionArgs);
        }
    }
    // MediaStore (and general)
    else if ("content".equalsIgnoreCase(uri.getScheme())) {

        // Return the remote address
        if (isGooglePhotosUri(uri))
            return uri.getLastPathSegment();

        return getDataColumn(mContext, uri, null, null);
    }
    // File
    else if ("file".equalsIgnoreCase(uri.getScheme())) {
        return uri.getPath();
    }

    return null;
}
```

```
public interface WebAPIService {
    @Multipart
    @POST("main.php")
    Call<String> postFile(@PartMap Map<String,RequestBody> Files, @Part("json") String
description);
}
```

Retrofit2Server

```
public interface ApiInterface {
    @GET("movie/now_playing")
    Call<MovieResponse> getNowPlayingMovies(@Query("api_key") String apiKey, @Query("page")
int page);

    // option 1: a resource relative to your base URL
    @GET("resource/example.zip")
    Call<ResponseBody> downloadFileWithFixedUrl();

    // option 2: using a dynamic URL
    @GET
    Call<ResponseBody> downloadFileWithDynamicUrl(@Url String fileUrl);
}
```

1URL。2URL。。

api

```
public class ServiceGenerator {

    public static final String API_BASE_URL = "http://your.api-base.url/";

    private static OkHttpClient.Builder httpClient = new OkHttpClient.Builder();

    private static Retrofit.Builder builder =
            new Retrofit.Builder()
```

```
            .baseUrl(API_BASE_URL)
            .addConverterFactory(GsonConverterFactory.create());

    public static <S> S createService(Class<S> serviceClass){
        Retrofit retrofit = builder.client(httpClient.build()).build();
        return retrofit.create(serviceClass);
    }

}
```

api

```
private void downloadFile(){
        ApiInterface apiInterface = ServiceGenerator.createService(ApiInterface.class);

        Call<ResponseBody> call = apiInterface.downloadFileWithFixedUrl();

        call.enqueue(new Callback<ResponseBody>() {
            @Override
            public void onResponse(Call<ResponseBody> call, Response<ResponseBody> response) {
                if (response.isSuccessful()){
                    boolean writtenToDisk = writeResponseBodyToDisk(response.body());

                    Log.d("File download was a success? ", String.valueOf(writtenToDisk));
                }
            }

            @Override
            public void onFailure(Call<ResponseBody> call, Throwable t) {

            }
        });
    }
```

IO。

```
private boolean writeResponseBodyToDisk(ResponseBody body) {
        try {
            // todo change the file location/name according to your needs
            File futureStudioIconFile = new File(getExternalFilesDir(null) + File.separator +
"Future Studio Icon.png");

            InputStream inputStream = null;
            OutputStream outputStream = null;

            try {
                byte[] fileReader = new byte[4096];

                long fileSize = body.contentLength();
                long fileSizeDownloaded = 0;

                inputStream = body.byteStream();
                outputStream = new FileOutputStream(futureStudioIconFile);

                while (true) {
                    int read = inputStream.read(fileReader);

                    if (read == -1) {
                        break;
```

```
                    }

                    outputStream.write(fileReader, 0, read);

                    fileSizeDownloaded += read;

                    Log.d("File Download: " , fileSizeDownloaded + " of " + fileSize);
                }

                outputStream.flush();

                return true;
            } catch (IOException e) {
                return false;
            } finally {
                if (inputStream != null) {
                    inputStream.close();
                }

                if (outputStream != null) {
                    outputStream.close();
                }
            }
        } catch (IOException e) {
            return false;
        }
    }
```

ResponseBodyRetrofit。

Retrofit。 [1] https //futurestud.io/blog/retrofit-getting-started-and-android-client

Stetho

。

```
compile 'com.facebook.stetho:stetho:1.5.0'
compile 'com.facebook.stetho:stetho-okhttp3:1.5.0'
```

Application`onCreate`。

```
Stetho.initializeWithDefaults(this);
```

`Retrofit`OkHttp。

```
OkHttpClient.Builder clientBuilder = new OkHttpClient.Builder();
clientBuilder.addNetworkInterceptor(new StethoInterceptor());
```

RetrofitOkHttp。

```
Retrofit retrofit = new Retrofit.Builder()
    // ...
    .client(clientBuilder.build())
    .build();
```

Chrome`chrome://inspect` ◦ ◦

2Xml

build.gradle◦

```
dependencies {
    ....
    compile 'com.squareup.retrofit2:retrofit:2.1.0'
    compile ('com.thoughtworks.xstream:xstream:1.4.7') {
        exclude group: 'xmlpull', module: 'xmlpull'
    }
    ....
}
```

Converter Factory

```
public class XStreamXmlConverterFactory extends Converter.Factory {

    /** Create an instance using a default {@link com.thoughtworks.xstream.XStream} instance
for conversion. */
    public static XStreamXmlConverterFactory create() {
        return create(new XStream());
    }

    /** Create an instance using {@code xStream} for conversion. */
    public static XStreamXmlConverterFactory create(XStream xStream) {
        return new XStreamXmlConverterFactory(xStream);
    }

    private final XStream xStream;

    private XStreamXmlConverterFactory(XStream xStream) {
        if (xStream == null) throw new NullPointerException("xStream == null");
        this.xStream = xStream;
    }

    @Override
    public Converter<ResponseBody, ?> responseBodyConverter(Type type, Annotation[]
annotations, Retrofit retrofit) {

        if (!(type instanceof Class)) {
            return null;
        }

        Class<?> cls = (Class<?>) type;

        return new XStreamXmlResponseBodyConverter<>(cls, xStream);
    }

    @Override
    public Converter<?, RequestBody> requestBodyConverter(Type type,
          Annotation[] parameterAnnotations, Annotation[] methodAnnotations, Retrofit
retrofit) {

        if (!(type instanceof Class)) {
            return null;
        }
```

```
        return new XStreamXmlRequestBodyConverter<>(xStream);
    }
}
```

body。

```
final class XStreamXmlResponseBodyConverter <T> implements Converter<ResponseBody, T> {

    private final Class<T> cls;
    private final XStream xStream;

    XStreamXmlResponseBodyConverter(Class<T> cls, XStream xStream) {
        this.cls = cls;
        this.xStream = xStream;
    }

    @Override
    public T convert(ResponseBody value) throws IOException {

        try {

            this.xStream.processAnnotations(cls);
            Object object =  this.xStream.fromXML(value.byteStream());
            return (T) object;

        }finally {
            value.close();
        }
    }
}
```

。

```
final class XStreamXmlRequestBodyConverter<T> implements Converter<T, RequestBody> {

    private static final MediaType MEDIA_TYPE = MediaType.parse("application/xml; charset=UTF-
8");
    private static final String CHARSET = "UTF-8";

    private final XStream xStream;

    XStreamXmlRequestBodyConverter(XStream xStream) {
        this.xStream = xStream;
    }

    @Override
    public RequestBody convert(T value) throws IOException {

        Buffer buffer = new Buffer();

        try {
            OutputStreamWriter osw = new OutputStreamWriter(buffer.outputStream(), CHARSET);
            xStream.toXML(value, osw);
            osw.flush();
        } catch (Exception e) {
            throw new RuntimeException(e);
        }
```

```
        return RequestBody.create(MEDIA_TYPE, buffer.readByteString());
    }
}
```

XMLXStream Annotations。

Retrofit

```
XStream xs = new XStream(new DomDriver());
xs.autodetectAnnotations(true);

Retrofit retrofit = new Retrofit.Builder()
    .baseUrl("http://example.com/")
    .addConverterFactory(XStreamXmlConverterFactory.create(xs))
    .client(client)
    .build();
```

GSONPOST

JSON

```
{
    "id": "12345",
    "type": "android"
}
```

```
public class GetDeviceRequest {

    @SerializedName("deviceId")
    private String mDeviceId;

    public GetDeviceRequest(String deviceId) {
        this.mDeviceId = deviceId;
    }

    public String getDeviceId() {
        return mDeviceId;
    }

}
```

```
public interface Service {

    @POST("device")
    Call<Device> getDevice(@Body GetDeviceRequest getDeviceRequest);

}
```

```
public class RestClient {

    private static Service REST_CLIENT;

    static {
```

```
        setupRestClient();
    }

    private static void setupRestClient() {

        // Define gson
        Gson gson = new Gson();

        // Define our client
        Retrofit retrofit = new Retrofit.Builder()
                .baseUrl("http://example.com/")
                .addConverterFactory(GsonConverterFactory.create(gson))
                .build();

        REST_CLIENT = retrofit.create(Service.class);
    }

    public static Retrofit getRestClient() {
        return REST_CLIENT;
    }

}
```

```
public class Device {

    @SerializedName("id")
    private String mId;

    @SerializedName("type")
    private String mType;

    public String getId() {
        return mId;
    }

    public String getType() {
        return mType;
    }

}
```

```
public class DeviceController {

    // Other initialization code here...

    public void getDeviceFromAPI() {

        // Define our request and enqueue
        Call<Device> call = RestClient.getRestClient().getDevice(new
GetDeviceRequest("12345"));

        // Go ahead and enqueue the request
        call.enqueue(new Callback<Device>() {
            @Override
            public void onSuccess(Response<Device> deviceResponse) {
                // Take care of your device here
                if (deviceResponse.isSuccess()) {
                    // Handle success
                    //delegate.passDeviceObject();
```

```
            }
        }

        @Override
        public void onFailure(Throwable t) {
            // Go ahead and handle the error here
        }

    });
```

Retrofit 2XMLURL

retrofit 2SimpleXmlConverterurlxmlJava。

Gradle

```
compile 'com.squareup.retrofit2:retrofit:2.1.0'
compile 'com.squareup.retrofit2:converter-simplexml:2.1.0'
```

Rssxml

```
    public interface ApiDataInterface{

        // path to xml link on web site

        @GET (data/read.xml)

        Call<Rss> getData();

}
```

Xml

```
private void readXmlFeed() {
        try {

            // base url - url of web site
            Retrofit retrofit = new Retrofit.Builder()
                    .baseUrl(http://www.google.com/)
                    .client(new OkHttpClient())
                    .addConverterFactory(SimpleXmlConverterFactory.create())
                    .build();

            ApiDataInterface apiService = retrofit.create(ApiDataInterface.class);

            Call<Rss> call = apiService.getData();
            call.enqueue(new Callback<Rss>() {

                @Override
                public void onResponse(Call<Rss> call, Response<Rss> response) {

                    Log.e("Response success", response.message());

                }

                @Override
```

```
                public void onFailure(Call<Rss> call, Throwable t) {
                    Log.e("Response fail", t.getMessage());
                }
            });

        } catch (Exception e) {
            Log.e("Exception", e.getMessage());
        }


    }
```

SimpleXMLJava

SimpleXmlDocumentation

```
@Root (name = "rss")

public class Rss
{


    public Rss() {

    }



    public Rss(String title, String description, String link, List<Item> item, String
language) {

        this.title = title;
        this.description = description;
        this.link = link;
        this.item = item;
        this.language = language;

    }

    @Element (name = "title")
    private String title;

    @Element(name = "description")
    private String description;

    @Element(name = "link")
    private String link;

    @ElementList (entry="item", inline=true)
    private List<Item> item;

    @Element(name = "language")
    private String language;
```

Retrofit2 https://riptutorial.com/zh-CN/android/topic/1132/retrofit2

82: RoboGuice

Examples

RoboGuiceGoogleGuiceAndroid。

```
@ContentView(R.layout.main)
class RoboWay extends RoboActivity {
    @InjectView(R.id.name)              TextView name;
    @InjectView(R.id.thumbnail)         ImageView thumbnail;
    @InjectResource(R.drawable.icon)    Drawable icon;
    @InjectResource(R.string.app_name) String myName;
    @Inject                             LocationManager loc;

    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        name.setText( "Hello, " + myName );
    }
}
```

Gradle

pomgradledependencies

```
project.dependencies {
    compile 'org.roboguice:roboguice:3.+'
    provided 'org.roboguice:roboblender:3.+'
}
```

@ContentView

@ContentViewsetContentView

```
@ContentView(R.layout.myactivity_layout)
public class MyActivity extends RoboActivity {
    @InjectView(R.id.text1) TextView textView;

    @Override
    protected void onCreate( Bundle savedState ) {
        textView.setText("Hello!");
    }
}
```

@InjectResource

Drawables。

- RoboActivity
- @InjectResource

```
@InjectResource(R.string.app_name) String name;

@InjectResource(R.drawable.ic_launcher) Drawable icLauncher;

@InjectResource(R.anim.my_animation) Animation myAnimation;
```

@InjectView

@InjectView

- RoboActivity
-
- @InjectView

```
@InjectView(R.id.textView1) TextView textView1;

@InjectView(R.id.textView2) TextView textView2;

@InjectView(R.id.imageView1) ImageView imageView1;
```

RoboGuice

`RoboGuice`GoogleGuiceAndroid。

RoboGuice 3。 。 - Android。

Android `Activity`

```
class AndroidWay extends Activity {
        TextView name;
        ImageView thumbnail;
        LocationManager loc;
        Drawable icon;
        String myName;

        public void onCreate(Bundle savedInstanceState) {
            super.onCreate(savedInstanceState);
            setContentView(R.layout.main);
            name      = (TextView) findViewById(R.id.name);
            thumbnail = (ImageView) findViewById(R.id.thumbnail);
            loc       = (LocationManager) getSystemService(Activity.LOCATION_SERVICE);
            icon      = getResources().getDrawable(R.drawable.icon);
            myName    = getString(R.string.app_name);
            name.setText( "Hello, " + myName );
        }
    }
```

19。 `onCreate()` 5 `name.setText()` 。 。

`RoboGuiceRoboGuice`

```
 @ContentView(R.layout.main)
    class RoboWay extends RoboActivity {
```

```
        @InjectView(R.id.name)              TextView name;
        @InjectView(R.id.thumbnail)         ImageView thumbnail;
        @InjectResource(R.drawable.icon)    Drawable icon;
        @InjectResource(R.string.app_name) String myName;
        @Inject                             LocationManager loc;

        public void onCreate(Bundle savedInstanceState) {
            super.onCreate(savedInstanceState);
            name.setText( "Hello, " + myName );
        }
    }
```

RoboGuiceAndroid。

@ContentView

@ContentViewsetContentView

```
@ContentView(R.layout.myactivity_layout)
    public class MyActivity extends RoboActivity {
        @InjectView(R.id.text1) TextView textView;

        @Override
        protected void onCreate( Bundle savedState ) {
            textView.setText("Hello!");
        }
    }
```

@InjectResource

RoboActivityActivity。res / animmy_animation.xml

```
public class MyActivity extends RoboActivity {
    @InjectResource(R.anim.my_animation) Animation myAnimation;
    // the rest of your code
}
```

@Inject

RoboActivity@Inject。 Roboguice。

```
class MyActivity extends RoboActivity {
    @Inject Vibrator vibrator;
    @Inject NotificationManager notificationManager;

    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);

        // we can use the instances directly!
        vibrator.vibrate(1000L); // RoboGuice took care of the
getSystemService(VIBRATOR_SERVICE)
        notificationManager.cancelAll();
```

AndroidRoboGuicePlain Old Java Objects。RoboguicePOJO

```
class MyActivity extends RoboActivity {
    @Inject Foo foo; // this will basically call new Foo();
}
```

RoboGuice https://riptutorial.com/zh-CN/android/topic/2563/roboguice

83: Robolectric

。

RobolectricAndroid SDK jarAndroid。 JVM。

Android APIJVN。

Examples

Robolectric

```
@RunWith(RobolectricTestRunner.class)
public class MyActivityTest {

  @Test
  public void clickingButton_shouldChangeResultsViewText() throws Exception {
    MyActivity activity = Robolectric.setupActivity(MyActivity.class);

    Button button = (Button) activity.findViewById(R.id.button);
    TextView results = (TextView) activity.findViewById(R.id.results);

    button.performClick();
    assertThat(results.getText().toString()).isEqualTo("Robolectric Rocks!");
  }
}
```

robolectric`@Config`。

Application

```
@RunWith(RobolectricTestRunner.class)
@Config(application = MyApplication.class)
public final class MyTest {
}
```

SDK

```
@RunWith(RobolectricTestRunner.class)
@Config(sdk = Build.VERSION_CODES.LOLLIPOP)
public final class MyTest {
}
```

robolectric。 `AndroidManifest.xml`

。

```
@RunWith(RobolectricTestRunner.class)
@Config(manifest = "path/AndroidManifest.xml")
public final class MyTest {
}
```

android。

```
@RunWith(RobolectricTestRunner.class)
public final class MyTest {

    @Config(qualifiers = "sw600dp")
    public void testForTablet() {
    }
}
```

Robolectric https://riptutorial.com/zh-CN/android/topic/8743/robolectric

84: SharedPreferences

SharedPreferences。

- ◦ public SharedPreferences getSharedPreferencesString nameint mode
- ◦ public SharedPreferences getPreferences
- **SharedPreferences**
  - ◦ public SharedPreferences.Editor edit
  - ◦ public boolean contains
  - ◦ public Map <String> getAll
  - ◦ public boolean getBooleanString keyboolean defValue
  - ◦ public float getFloatString keyfloat defValue
  - ◦ public int getIntString keyint defValue
  - ◦ public long getLongString keylong defValue
  - ◦ public String getStringString keyString defValue
  - ◦ public Set getStringSetString keySet defValues
  - ◦ public void registerOnSharedPreferenceChangeListener SharedPreferences.OnSharedPreferenceChangeListener listener
  - ◦ public void unregisterOnSharedPreferenceChangeListener SharedPreferences.OnSharedPreferenceChangeListener listener
- **SharedPreferences.Editor**
  - ◦ public void apply
  - ◦ public boolean commit
  - ◦ public SharedPreferences.Editor clear
  - ◦ public SharedPreferences.Editor putBooleanString keyboolean value
  - ◦ public SharedPreferences.Editor putFloatString keyfloat value
  - ◦ public SharedPreferences.Editor putIntString keyint value
  - ◦ public SharedPreferences.Editor putLongString keylong value
  - ◦ public SharedPreferences.Editor putStringString keyString value
  - ◦ public SharedPreferences.Editor putStringSetString keySet values
  - ◦ public SharedPreferences.Editor removeString key

	null `String` ◦ ◦ XML◦ ◦
DefValue	get`SharedPreferences`◦ `ClassCastException` ◦

- `SharedPreferences`◦ `SQLiteDatabase`◦
- `SharedPreferencesMODE_MULTI_PROCESS` ◦ `SharedPreferences` ◦ `MODE_MULTI_PROCESS`◦
- `SingletonSharedPreferences`

Application `context` ◦ Activity`getPreferences()` ◦

- `SharedPreferences`◦

https://developer.android.com/reference/android/content/SharedPreferences.html

Examples

SharedPreferences

```
public class MyActivity extends Activity {

    private static final String PREFS_FILE = "NameOfYourPrefrenceFile";
    // PREFS_MODE defines which apps can access the file
    private static final int PREFS_MODE = Context.MODE_PRIVATE;
    // you can use live template "key" for quickly creating keys
    private static final String KEY_BOOLEAN = "KEY_FOR_YOUR_BOOLEAN";
    private static final String KEY_STRING = "KEY_FOR_YOUR_STRING";
    private static final String KEY_FLOAT = "KEY_FOR_YOUR_FLOAT";
    private static final String KEY_INT = "KEY_FOR_YOUR_INT";
    private static final String KEY_LONG = "KEY_FOR_YOUR_LONG";

    @Override
    protected void onStart() {
        super.onStart();

        // Get the saved flag (or default value if it hasn't been saved yet)
        SharedPreferences settings = getSharedPreferences(PREFS_FILE, PREFS_MODE);
        // read a boolean value (default false)
        boolean booleanVal = settings.getBoolean(KEY_BOOLEAN, false);
        // read an int value (Default 0)
        int intVal = settings.getInt(KEY_INT, 0);
        // read a string value (default "my string")
        String str = settings.getString(KEY_STRING, "my string");
        // read a long value (default 123456)
        long longVal = settings.getLong(KEY_LONG, 123456);
        // read a float value (default 3.14f)
        float floatVal = settings.getFloat(KEY_FLOAT, 3.14f);
    }

    @Override
    protected void onStop() {
        super.onStop();

        // Save the flag
        SharedPreferences settings = getSharedPreferences(PREFS_FILE, PREFS_MODE);
        SharedPreferences.Editor editor = settings.edit();
        // write a boolean value
        editor.putBoolean(KEY_BOOLEAN, true);
        // write an integer value
        editor.putInt(KEY_INT, 123);
        // write a string
        editor.putString(KEY_STRING, "string value");
        // write a long value
        editor.putLong(KEY_LONG, 456876451);
        // write a float value
        editor.putFloat(KEY_FLOAT, 1.51f);
```

```
        editor.apply();
    }
}
```

`getSharedPreferences()` `Context` - `Activity`。 `getSharedPreferences()` `context.getSharedPreferences()` `Activity` `ViewApplicationContext` Object。

```
private static final String MY_PREF = "MyPref";

// ...

SharedPreferences prefs = ...;

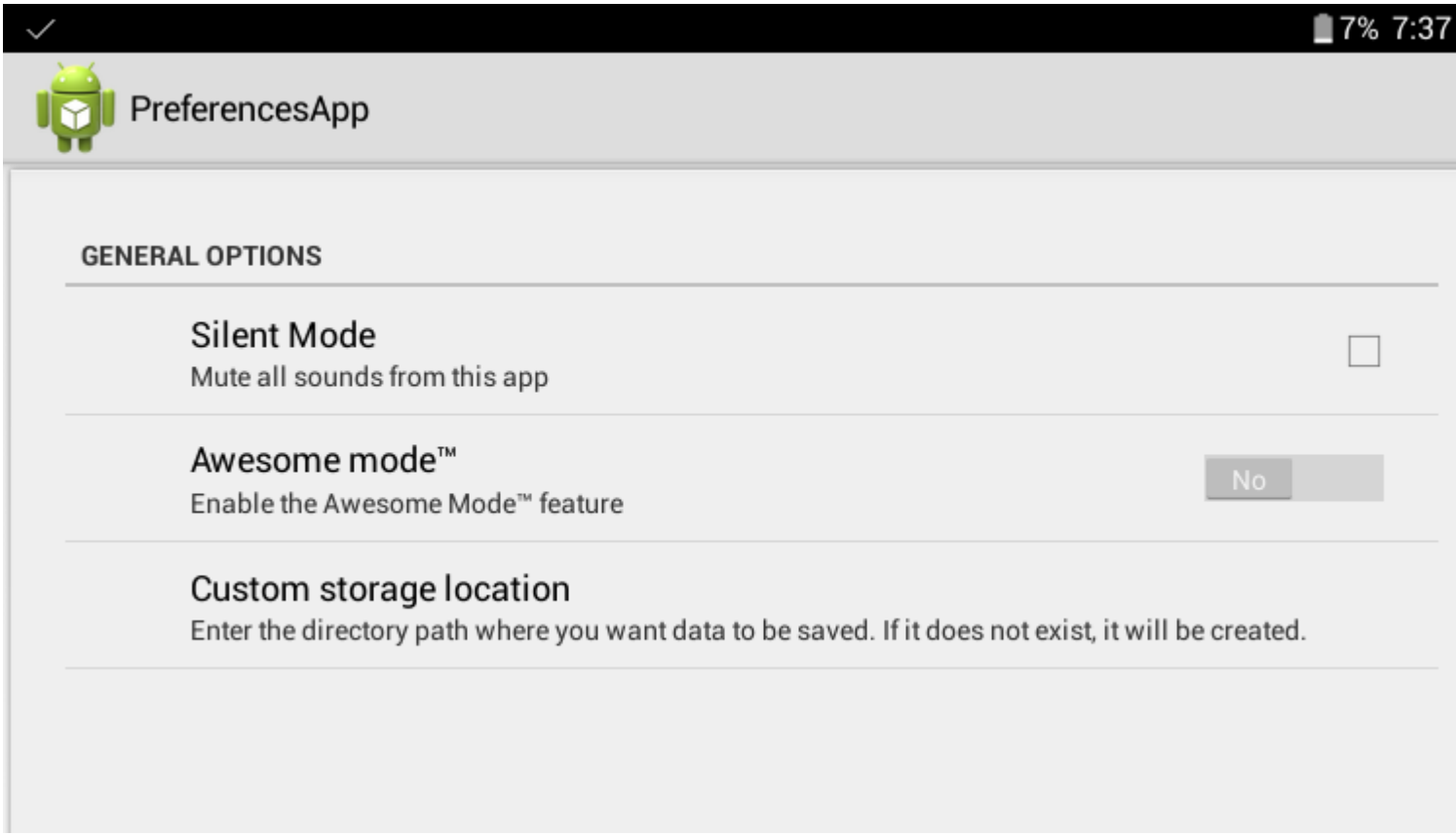
// ...

SharedPreferences.Editor editor = prefs.edit();
editor.putString(MY_PREF, "value");
editor.remove(MY_PREF);
editor.apply();
```

`apply()` `prefs`“key” - >“value”。 “key”。 `Editor`。 。

SharedPreferences

`SharedPreferences`“”/。



PreferenceScreen`SharedPreferences`。 PreferenceScreen

XML

/res/xml/preferences.xml

```
<PreferenceScreen
    xmlns:android="http://schemas.android.com/apk/res/android">
    <PreferenceCategory
        android:title="General options">
        <CheckBoxPreference
            android:key = "silent_mode"
            android:defaultValue="false"
            android:title="Silent Mode"
            android:summary="Mute all sounds from this app" />

        <SwitchPreference
            android:key="awesome_mode"
            android:defaultValue="false"
            android:switchTextOn="Yes"
            android:switchTextOff="No"
            android:title="Awesome mode™"
            android:summary="Enable the Awesome Mode™ feature"/>

        <EditTextPreference
            android:key="custom_storage"
            android:defaultValue="/sdcard/data/"
            android:title="Custom storage location"
            android:summary="Enter the directory path where you want data to be saved. If it
does not exist, it will be created."
            android:dialogTitle="Enter directory path (eg. /sdcard/data/ )"/>
    </PreferenceCategory>
</PreferenceScreen>
```

◦ Preference ClassAndroid`Preference` ◦

ActivityPreferences◦

```
package com.example.preferences;

import android.preference.PreferenceActivity;
import android.os.Bundle;

public class PreferencesActivity extends PreferenceActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        addPreferencesFromResource(R.xml.preferences);
    }
}
```

`PreferenceActivity` ◦

```
Intent i = new Intent(this, PreferencesActivity.class);
startActivity(i);
```

`PreferencesActivityAndroidManifest.xml` ◦

`setDefaultValues()` XML`SharedPreferences` ◦

```
//set the default values we defined in the XML
PreferenceManager.setDefaultValues(this, R.xml.preferences, false);
SharedPreferences preferences = PreferenceManager.getDefaultSharedPreferences(this);

//get the values of the settings options
boolean silentMode = preferences.getBoolean("silent_mode", false);
boolean awesomeMode = preferences.getBoolean("awesome_mode", false);

String customStorage = preferences.getString("custom_storage", "");
```

SharedPreferences

getAll()。 SharedPreferences

```
private static final String PREFS_FILE = "MyPrefs";

public static void logSharedPreferences(final Context context) {
    SharedPreferences sharedPreferences = context.getSharedPreferences(PREFS_FILE,
Context.MODE_PRIVATE);
    Map<String, ?> allEntries = sharedPreferences.getAll();
    for (Map.Entry<String, ?> entry : allEntries.entrySet()) {
        final String key = entry.getKey();
        final Object value = entry.getValue();
        Log.d("map values", key + ": " + value);
    }
}
```

getAllCollection

。 。

SharedPreferences

```
SharedPreferences sharedPreferences = ...;
sharedPreferences.registerOnSharedPreferenceChangeListener(mOnSharedPreferenceChangeListener);


private final SharedPreferences.OnSharedPreferenceChangeListener
mOnSharedPreferenceChangeListener = new SharedPreferences.OnSharedPreferenceChangeListener() {
    @Override
    public void onSharedPreferenceChanged(SharedPreferences sharedPreferences, String key) {
        //TODO
    }
}
```

- ;
- registerOnSharedPreferenceChangeListener;
- registerOnSharedPreferenceChangeListener(this);
  registerOnSharedPreferenceChangeListener(this);
- unregisterOnSharedPreferenceChangeListener。

SingletonSharedPreferences

SharedPreferences ManagerSingleton。

```
import android.content.Context;
import android.content.SharedPreferences;
import android.util.Log;

import com.google.gson.Gson;

import java.lang.reflect.Type;

/**
 * Singleton Class for accessing SharedPreferences,
 * should be initialized once in the beginning by any application component using static
 * method initialize(applicationContext)
 */
public class SharedPrefsManager {

    private static final String TAG = SharedPrefsManager.class.getName();
    private SharedPreferences prefs;
    private static SharedPrefsManager uniqueInstance;
    public static final String PREF_NAME = "com.example.app";

    private SharedPrefsManager(Context appContext) {
        prefs = appContext.getSharedPreferences(PREF_NAME, Context.MODE_PRIVATE);
    }

    /**
     * Throws IllegalStateException if this class is not initialized
     *
     * @return unique SharedPrefsManager instance
     */
    public static SharedPrefsManager getInstance() {
        if (uniqueInstance == null) {
            throw new IllegalStateException(
                    "SharedPrefsManager is not initialized, call
initialize(applicationContext) " +
                            "static method first");
        }
        return uniqueInstance;
    }

    /**
     * Initialize this class using application Context,
     * should be called once in the beginning by any application Component
     *
     * @param appContext application context
     */
    public static void initialize(Context appContext) {
        if (appContext == null) {
            throw new NullPointerException("Provided application context is null");
        }
        if (uniqueInstance == null) {
            synchronized (SharedPrefsManager.class) {
                if (uniqueInstance == null) {
                    uniqueInstance = new SharedPrefsManager(appContext);
                }
            }
        }
    }

    private SharedPreferences getPrefs() {
        return prefs;
    }
```

```
/**
 * Clears all data in SharedPreferences
 */
public void clearPrefs() {
    SharedPreferences.Editor editor = getPrefs().edit();
    editor.clear();
    editor.commit();
}

public void removeKey(String key) {
    getPrefs().edit().remove(key).commit();
}

public boolean containsKey(String key) {
    return getPrefs().contains(key);
}

public String getString(String key, String defValue) {
    return getPrefs().getString(key, defValue);
}

public String getString(String key) {
    return getString(key, null);
}

public void setString(String key, String value) {
    SharedPreferences.Editor editor = getPrefs().edit();
    editor.putString(key, value);
    editor.apply();
}

public int getInt(String key, int defValue) {
    return getPrefs().getInt(key, defValue);
}

public int getInt(String key) {
    return getInt(key, 0);
}

public void setInt(String key, int value) {
    SharedPreferences.Editor editor = getPrefs().edit();
    editor.putInt(key, value);
    editor.apply();
}

public long getLong(String key, long defValue) {
    return getPrefs().getLong(key, defValue);
}

public long getLong(String key) {
    return getLong(key, 0L);
}

public void setLong(String key, long value) {
    SharedPreferences.Editor editor = getPrefs().edit();
    editor.putLong(key, value);
    editor.apply();
}

public boolean getBoolean(String key, boolean defValue) {
```

```
        return getPrefs().getBoolean(key, defValue);
    }

    public boolean getBoolean(String key) {
        return getBoolean(key, false);
    }

    public void setBoolean(String key, boolean value) {
        SharedPreferences.Editor editor = getPrefs().edit();
        editor.putBoolean(key, value);
        editor.apply();
    }

    public boolean getFloat(String key) {
        return getFloat(key, 0f);
    }

    public boolean getFloat(String key, float defValue) {
        return getFloat(key, defValue);
    }

    public void setFloat(String key, Float value) {
        SharedPreferences.Editor editor = getPrefs().edit();
        editor.putFloat(key, value);
        editor.apply();
    }

    /**
     * Persists an Object in prefs at the specified key, class of given Object must implement
Model
     * interface
     *
     * @param key         String
     * @param modelObject Object to persist
     * @param <M>         Generic for Object
     */
    public <M extends Model> void setObject(String key, M modelObject) {
        String value = createJSONStringFromObject(modelObject);
        SharedPreferences.Editor editor = getPrefs().edit();
        editor.putString(key, value);
        editor.apply();
    }

    /**
     * Fetches the previously stored Object of given Class from prefs
     *
     * @param key                String
     * @param classOfModelObject Class of persisted Object
     * @param <M>                Generic for Object
     * @return Object of given class
     */
    public <M extends Model> M getObject(String key, Class<M> classOfModelObject) {
        String jsonData = getPrefs().getString(key, null);
        if (null != jsonData) {
            try {
                Gson gson = new Gson();
                M customObject = gson.fromJson(jsonData, classOfModelObject);
                return customObject;
            } catch (ClassCastException cce) {
                Log.d(TAG, "Cannot convert string obtained from prefs into collection of type
" +
```

```
                        classOfModelObject.getName() + "\n" + cce.getMessage());
            }
        }
        return null;
    }

    /**
     * Persists a Collection object in prefs at the specified key
     *
     * @param key            String
     * @param dataCollection Collection Object
     * @param <C>            Generic for Collection object
     */
    public <C> void setCollection(String key, C dataCollection) {
        SharedPreferences.Editor editor = getPrefs().edit();
        String value = createJSONStringFromObject(dataCollection);
        editor.putString(key, value);
        editor.apply();
    }

    /**
     * Fetches the previously stored Collection Object of given type from prefs
     *
     * @param key     String
     * @param typeOfC Type of Collection Object
     * @param <C>     Generic for Collection Object
     * @return Collection Object which can be casted
     */
    public <C> C getCollection(String key, Type typeOfC) {
        String jsonData = getPrefs().getString(key, null);
        if (null != jsonData) {
            try {
                Gson gson = new Gson();
                C arrFromPrefs = gson.fromJson(jsonData, typeOfC);
                return arrFromPrefs;
            } catch (ClassCastException cce) {
                Log.d(TAG, "Cannot convert string obtained from prefs into collection of type
" +
                        typeOfC.toString() + "\n" + cce.getMessage());
            }
        }
        return null;
    }

    public void registerPrefsListener(SharedPreferences.OnSharedPreferenceChangeListener
listener) {
        getPrefs().registerOnSharedPreferenceChangeListener(listener);
    }

    public void unregisterPrefsListener(

            SharedPreferences.OnSharedPreferenceChangeListener listener) {
        getPrefs().unregisterOnSharedPreferenceChangeListener(listener);
    }

    public SharedPreferences.Editor getEditor() {
        return getPrefs().edit();
    }

    private static String createJSONStringFromObject(Object object) {
        Gson gson = new Gson();
```

```
        return gson.toJson(object);
    }
}
```

`Model interface Gson`proguard。

```
public interface Model {

}
```

`Model`Proguard

```
-keep interface com.example.app.Model
-keep class * implements com.example.app.Model { *;}
```

SharedPreferences

SharedPreferences

SharedPreferences

```
import android.preference.PreferenceManager;
SharedPreferences prefs = PreferenceManager.getDefaultSharedPreferences(this);
```

SharedPreferences

```
public static final String PREF_FILE_NAME = "PrefFile";
SharedPreferences prefs = getSharedPreferences(PREF_FILE_NAME, MODE_PRIVATE);
```

SharedPreferences

```
// Note that the other app must declare prefs as MODE_WORLD_WRITEABLE
final ArrayList<HashMap<String,String>> LIST = new ArrayList<HashMap<String,String>>();
Context contextOtherApp = createPackageContext("com.otherapp", Context.MODE_WORLD_WRITEABLE);
SharedPreferences prefs = contextOtherApp.getSharedPreferences("pref_file_name",
Context.MODE_WORLD_READABLE);
```

getPreferencesintVS getSharedPreferencesStringint

`getPreferences(int)`

`Activity's class name`

SharedPreferences。 getSharedPreferencesStringint。

getSharedPreferencesString nameint mode`name`prefs。

“name”SharedPreferences。

`SharedPreferencesgetSharedPreferences (String name, int mode) 。 getPreferences(int)`/`Activity`。

editor.apply() editor.commit() ◦

apply()commit() ◦

2.3

```
SharedPreferences settings = getSharedPreferences(PREFS_FILE, MODE_PRIVATE);
SharedPreferences.Editor editor = settings.edit();
editor.putBoolean(PREF_CONST, true);
// This will asynchronously save the shared preferences without holding the current thread.
editor.apply();
```

```
SharedPreferences settings = getSharedPreferences(PREFS_FILE, MODE_PRIVATE);
SharedPreferences.Editor editor = settings.edit();
editor.putBoolean(PREF_CONST, true);
// This will synchronously save the shared preferences while holding the current thread until
done and returning a success flag.
boolean result = editor.commit();
```

apply()2.3API 9◦

commit()truefalse◦

apply()Androidapply◦

commit() apply()SharedPreferences ◦ SharedPreferencesapply()commit() commit()apply◦

SharedPreferences

SharedPreferences boolean float long int Stringstring set ◦ SharedPreferences◦

SharedPreferencesKeyValue◦ ◦

```
    String keyToUseToFindLater = "High Score";
    int newHighScore = 12938;
    //getting SharedPreferences & Editor objects
    SharedPreferences sharedPref = getActivity().getPreferences(Context.MODE_PRIVATE);
    SharedPreferences.Editor editor = sharedPref.edit();
    //saving an int in the SharedPreferences file
    editor.putInt(keyToUseToFindLater, newHighScore);
    editor.commit();
```

SharedPreferences

SharedPreferences BuyyaPref

```
SharedPreferences pref = getApplicationContext().getSharedPreferences("BuyyaPref",
MODE_PRIVATE);
Editor editor = pref.edit();
```

KEY / VALUE

```
editor.putBoolean("key_name1", true);           // Saving boolean - true/false
editor.putInt("key_name2", 10);        // Saving integer
editor.putFloat("key_name3", 10.1f);    // Saving float
editor.putLong("key_name4", 1000);      // Saving long
editor.putString("key_name5", "MyString");  // Saving string

// Save the changes in SharedPreferences
editor.commit(); // commit changes
```

SharedPreferences

keyparamnull

```
pref.getBoolean("key_name1", null);         // getting boolean
pref.getInt("key_name2", null);             // getting Integer
pref.getFloat("key_name3", null);           // getting Float
pref.getLong("key_name4", null);            // getting Long
pref.getString("key_name5", null);          // getting String
```

SharedPreferences

```
editor.remove("key_name3"); // will delete key key_name3
editor.remove("key_name4"); // will delete key key_name4

// Save the changes in SharedPreferences
editor.commit(); // commit changes
```

SharedPreferences

```
 editor.clear();
 editor.commit(); // commit changes
```

StringSet

```
public class SharedPreferencesCompat {

    public static void putStringSet(SharedPreferences.Editor editor, String key, Set<String>
values) {
            if (Build.VERSION.SDK_INT >= 11) {
                while (true) {
                    try {
                        editor.putStringSet(key, values).apply();
                        break;
                    } catch (ClassCastException ex) {
                        // Clear stale JSON string from before system upgrade
                        editor.remove(key);
                    }
                }
            } else putStringSetToJson(editor, key, values);
    }

    public static Set<String> getStringSet(SharedPreferences prefs, String key, Set<String>
defaultReturnValue) {
        if (Build.VERSION.SDK_INT >= 11) {
            try {
```

```
                return prefs.getStringSet(key, defaultReturnValue);
            } catch (ClassCastException ex) {
                // If user upgraded from Gingerbread to something higher read the stale JSON
string
                return getStringSetFromJson(prefs, key, defaultReturnValue);
            }
        } else return getStringSetFromJson(prefs, key, defaultReturnValue);
    }

    private static Set<String> getStringSetFromJson(SharedPreferences prefs, String key,
Set<String> defaultReturnValue) {
        final String input = prefs.getString(key, null);
        if (input == null) return defaultReturnValue;

        try {
            HashSet<String> set = new HashSet<>();
            JSONArray json = new JSONArray(input);
            for (int i = 0, size = json.length(); i < size; i++) {
                String value = json.getString(i);
                set.add(value);
            }
            return set;
        } catch (JSONException e) {
            e.printStackTrace();
            return defaultReturnValue;
        }
    }

    private static void putStringSetToJson(SharedPreferences.Editor editor, String key,
Set<String> values) {
        JSONArray json = new JSONArray(values);
        if (Build.VERSION.SDK_INT >= 9)
            editor.putString(key, json.toString()).apply();
        else
            editor.putString(key, json.toString()).commit();
    }

    private SharedPreferencesCompat() {}
}
```

StringSet

```
Set<String> sets = new HashSet<>();
sets.add("John");
sets.add("Nicko");
SharedPreferences preferences = PreferenceManager.getDefaultSharedPreferences(this);
SharedPreferencesCompat.putStringSet(preferences.edit(), "pref_people", sets);
```

```
Set<String> people = SharedPreferencesCompat.getStringSet(preferences, "pref_people", new
HashSet<String>());
```

Android

EditTextPreference

```
public class InputFilterMinMax implements InputFilter {
```

```
    private int min, max;

    public InputFilterMinMax(int min, int max) {
        this.min = min;
        this.max = max;
    }

    public InputFilterMinMax(String min, String max) {
        this.min = Integer.parseInt(min);
        this.max = Integer.parseInt(max);
    }

    @Override
    public CharSequence filter(CharSequence source, int start, int end, Spanned dest, int
dstart, int dend) {
        try {
            int input = Integer.parseInt(dest.toString() + source.toString());
            if (isInRange(min, max, input))
                return null;
        } catch (NumberFormatException nfe) { }
        return "";
    }

    private boolean isInRange(int a, int b, int c) {
        return b > a ? c >= a && c <= b : c >= b && c <= a;
    }
}
```

```
EditText compressPic = ((EditTextPreference)
findPreference(getString("pref_key_compress_pic"))).getEditText();
compressPic.setFilters(new InputFilter[]{ new InputFilterMinMax(1, 100) });
```

SharedPreferences https://riptutorial.com/zh-CN/android/topic/119/sharedpreferences

85: ShortcutManager

Examples

```
ShortcutManager shortcutManager = getSystemService(ShortcutManager.class);

ShortcutInfo shortcut = new ShortcutInfo.Builder(this, "id1")
    .setShortLabel("Web site") // Shortcut Icon tab
    .setLongLabel("Open the web site") // Displayed When Long Pressing On App Icon
    .setIcon(Icon.createWithResource(context, R.drawable.icon_website))
    .setIntent(new Intent(Intent.ACTION_VIEW,
                   Uri.parse("https://www.mysite.example.com/")))
    .build();

shortcutManager.setDynamicShortcuts(Arrays.asList(shortcut));
```

-

```
 shortcutManager.removeAllDynamicShortcuts();
```

Dynamic Shorcuts

```
shortcutManager.updateShortcuts(Arrays.asList(shortcut);
```

`setDynamicShortcuts(List)` `addDynamicShortcuts(List)`

ShortcutManager https://riptutorial.com/zh-CN/android/topic/7661/shortcutmanager

86: SpannableString

- `char charAt (int i)`
- `boolean equals (Object o)`
- `void getChars (int start, int end, char[] dest, int off)`
- `int getSpanEnd (Object what)`
- `int getSpanFlags (Object what)`
- `int getSpanStart (Object what)`
- `T[] getSpans (int queryStart, int queryEnd, Class<T> kind)`
- `int hashCode ()`
- `int length ()`
- `int nextSpanTransition (int start, int limit, Class kind)`
- void removeSpan
- `void setSpan (Object what, int start, int end, int flags)`
- `CharSequence subSequence (int start, int end)`
- `String toString ()`
- `SpannableString valueOf (CharSequence source)`

Examples

TextView

ActivityTextView。

TextView`SpannableString`。

'

-
-
-
-
-
-
-
-
-
-
- 。

```
@Override
protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);

 SpannableString styledString
  = new SpannableString("Large\n\n"     // index 0 - 5
       + "Bold\n\n"          // index 7 - 11
       + "Underlined\n\n"    // index 13 - 23
       + "Italic\n\n"        // index 25 - 31
       + "Strikethrough\n\n" // index 33 - 46
       + "Colored\n\n"       // index 48 - 55
       + "Highlighted\n\n"   // index 57 - 68
```

```
        + "K Superscript\n\n" // "Superscript" index 72 - 83
        + "K Subscript\n\n"   // "Subscript" index 87 - 96
        + "Url\n\n"           //  index 98 - 101
        + "Clickable\n\n");   // index 103 - 112

 // make the text twice as large
 styledString.setSpan(new RelativeSizeSpan(2f), 0, 5, 0);

 // make text bold
 styledString.setSpan(new StyleSpan(Typeface.BOLD), 7, 11, 0);

 // underline text
 styledString.setSpan(new UnderlineSpan(), 13, 23, 0);

 // make text italic
 styledString.setSpan(new StyleSpan(Typeface.ITALIC), 25, 31, 0);

 styledString.setSpan(new StrikethroughSpan(), 33, 46, 0);

 // change text color
 styledString.setSpan(new ForegroundColorSpan(Color.GREEN), 48, 55, 0);

 // highlight text
 styledString.setSpan(new BackgroundColorSpan(Color.CYAN), 57, 68, 0);

 // superscript
 styledString.setSpan(new SuperscriptSpan(), 72, 83, 0);
 // make the superscript text smaller
 styledString.setSpan(new RelativeSizeSpan(0.5f), 72, 83, 0);

 // subscript
 styledString.setSpan(new SubscriptSpan(), 87, 96, 0);
 // make the subscript text smaller
 styledString.setSpan(new RelativeSizeSpan(0.5f), 87, 96, 0);

 // url
 styledString.setSpan(new URLSpan("http://www.google.com"), 98, 101, 0);

 // clickable text
 ClickableSpan clickableSpan = new ClickableSpan() {

 @Override
 public void onClick(View widget) {
// We display a Toast. You could do anything you want here.
Toast.makeText(SpanExample.this, "Clicked", Toast.LENGTH_SHORT).show();

  }
};

 styledString.setSpan(clickableSpan, 103, 112, 0);


 // Give the styled string to a TextView
 TextView textView = new TextView(this);

 // this step is mandated for the url and clickable styles.
 textView.setMovementMethod(LinkMovementMethod.getInstance());

 // make it neat
textView.setGravity(Gravity.CENTER);
textView.setBackgroundColor(Color.WHITE);
```

```
textView.setText(styledString);

setContentView(textView);

}
```

setSpanColor

```
public Spanned setSpanColor(String string, int color){
    SpannableStringBuilder builder = new SpannableStringBuilder();
    SpannableString ss = new SpannableString(string);
    ss.setSpan(new ForegroundColorSpan(color), 0, string.length(), 0);
    builder.append(ss);
    return ss;
}
```

```
String a = getString(R.string.string1);
String b = getString(R.string.string2);

Spanned color1 = setSpanColor(a,Color.CYAN);
Spanned color2 = setSpanColor(b,Color.RED);
Spanned mixedColor = TextUtils.concat(color1, " ", color2);
// Now we use `mixedColor`
```

SpannableString https://riptutorial.com/zh-CN/android/topic/10553/spannablestring

87: SQLite

SQLiteC。 AndroidSQLiteSQLiteOpenHelper。

SQLiteOpenHelperonCreate()onUpgrade()。 SQLiteOpenHelperSQLiteOpenHelper 。

Examples

SQLiteOpenHelper

```
public class DatabaseHelper extends SQLiteOpenHelper {
    private static final String DATABASE_NAME = "Example.db";
    private static final int DATABASE_VERSION = 3;

    // For all Primary Keys _id should be used as column name
    public static final String COLUMN_ID = "_id";

    // Definition of table and column names of Products table
    public static final String TABLE_PRODUCTS = "Products";
    public static final String COLUMN_NAME = "Name";
    public static final String COLUMN_DESCRIPTION = "Description";
    public static final String COLUMN_VALUE = "Value";

    // Definition of table and column names of Transactions table
    public static final String TABLE_TRANSACTIONS = "Transactions";
    public static final String COLUMN_PRODUCT_ID = "ProductId";
    public static final String COLUMN_AMOUNT = "Amount";

    // Create Statement for Products Table
    private static final String CREATE_TABLE_PRODUCT = "CREATE TABLE " + TABLE_PRODUCTS + "
(" +
            COLUMN_ID + " INTEGER PRIMARY KEY, " +
            COLUMN_DESCRIPTION + " TEXT, " +
            COLUMN_NAME + " TEXT, " +
            COLUMN_VALUE + " REAL" +
            ");";

    // Create Statement for Transactions Table
    private static final String CREATE_TABLE_TRANSACTION = "CREATE TABLE " +
TABLE_TRANSACTIONS + "  (" +
            COLUMN_ID + " INTEGER PRIMARY KEY," +
            COLUMN_PRODUCT_ID + " INTEGER," +
            COLUMN_AMOUNT + " INTEGER," +
            " FOREIGN KEY (" + COLUMN_PRODUCT_ID + ") REFERENCES " + TABLE_PRODUCTS + "(" +
COLUMN_ID + ")" +
            ");";

    public DatabaseHelper(Context context) {
        super(context, DATABASE_NAME, null, DATABASE_VERSION);
    }

    @Override
    public void onCreate(SQLiteDatabase db) {
        // onCreate should always create your most up to date database
        // This method is called when the app is newly installed
```

```
        db.execSQL(CREATE_TABLE_PRODUCT);
        db.execSQL(CREATE_TABLE_TRANSACTION);
    }

    @Override
    public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {
        // onUpgrade is responsible for upgrading the database when you make
        // changes to the schema. For each version the specific changes you made
        // in that version have to be applied.
        for (int version = oldVersion + 1; version <= newVersion; version++) {
            switch (version) {

                case 2:
                    db.execSQL("ALTER TABLE " + TABLE_PRODUCTS + " ADD COLUMN " +
COLUMN_DESCRIPTION + " TEXT;");
                    break;

                case 3:
                    db.execSQL(CREATE_TABLE_TRANSACTION);
                    break;
            }
        }
    }
}
```

```
// You need a writable database to insert data
final SQLiteDatabase database = openHelper.getWritableDatabase();

// Create a ContentValues instance which contains the data for each column
// You do not need to specify a value for the PRIMARY KEY column.
// Unique values for these are automatically generated.
final ContentValues values = new ContentValues();
values.put(COLUMN_NAME, model.getName());
values.put(COLUMN_DESCRIPTION, model.getDescription());
values.put(COLUMN_VALUE, model.getValue());

// This call performs the update
// The return value is the rowId or primary key value for the new row!
// If this method returns -1 then the insert has failed.
final int id = database.insert(
        TABLE_NAME, // The table name in which the data will be inserted
        null,       // String: optional; may be null. If your provided values is empty,
                    // no column names are known and an empty row can't be inserted.
                    // If not set to null, this parameter provides the name
                    // of nullable column name to explicitly insert a NULL

        values      // The ContentValues instance which contains the data
);
```

onUpgrade

SQLiteOpenHelper。

onUpgrade()。 。 。

```
@Override
public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {
```

```
    // Loop through each version when an upgrade occurs.
    for (int version = oldVersion + 1; version <= newVersion; version++) {
        switch (version) {

            case 2:
                // Apply changes made in version 2
                db.execSQL(
                    "ALTER TABLE " +
                    TABLE_PRODUCTS +
                    " ADD COLUMN " +
                    COLUMN_DESCRIPTION +
                    " TEXT;"
                );
                break;

            case 3:
                // Apply changes made in version 3
                db.execSQL(CREATE_TABLE_TRANSACTION);
                break;
        }
    }
}
```

Cursor

SQLiteOpenHelper searchTerm StringCursorProductList

Product POJO

```
public class Product {
  long mId;
  String mName;
  String mDescription;
  float mValue;
  public Product(long id, String name, String description, float value) {
    mId = id;
    mName = name;
    mDescription = description;
    mValue = value;
  }
}
```

ProductList

```
public List<Product> searchForProducts(String searchTerm) {

    // When reading data one should always just get a readable database.
    final SQLiteDatabase database = this.getReadableDatabase();

    final Cursor cursor = database.query(
            // Name of the table to read from
            TABLE_NAME,

            // String array of the columns which are supposed to be read
            new String[]{COLUMN_NAME, COLUMN_DESCRIPTION, COLUMN_VALUE},

            // The selection argument which specifies which row is read.
```

```
            // ? symbols are parameters.
            COLUMN_NAME + " LIKE ?",

            // The actual parameters values for the selection as a String array.
            // ? above take the value from here
            new String[]{"%" + searchTerm + "%"},

            // GroupBy clause. Specify a column name to group similar values
            // in that column together.
            null,

            // Having clause. When using the GroupBy clause this allows you to
            // specify which groups to include.
            null,

            // OrderBy clause. Specify a column name here to order the results
            // according to that column. Optionally append ASC or DESC to specify
            // an ascending or descending order.
            null
    );

    // To increase performance first get the index of each column in the cursor
    final int idIndex = cursor.getColumnIndex(COLUMN_ID);
    final int nameIndex = cursor.getColumnIndex(COLUMN_NAME);
    final int descriptionIndex = cursor.getColumnIndex(COLUMN_DESCRIPTION);
    final int valueIndex = cursor.getColumnIndex(COLUMN_VALUE);

    try {

        // If moveToFirst() returns false then cursor is empty
        if (!cursor.moveToFirst()) {
            return new ArrayList<>();
        }

        final List<Product> products = new ArrayList<>();

        do {

            // Read the values of a row in the table using the indexes acquired above
            final long id = cursor.getLong(idIndex);
            final String name = cursor.getString(nameIndex);
            final String description = cursor.getString(descriptionIndex);
            final float value = cursor.getFloat(valueIndex);

            products.add(new Product(id, name, description, value));

        } while (cursor.moveToNext());

        return products;

    } finally {
        // Don't forget to close the Cursor once you are done to avoid memory leaks.
        // Using a try/finally like in this example is usually the best way to handle this
        cursor.close();

        // close the database
        database.close();
    }
}
```

AndroidSQLite

DBContract.java

```
//Define the tables and columns of your local database
public final class DBContract {
/*Content Authority its a name for the content provider, is convenient to use the package app
name to be unique on the device */

    public static final String CONTENT_AUTHORITY = "com.yourdomain.yourapp";

    //Use CONTENT_AUTHORITY to create all the database URI's that the app will use to link the
content provider.
    public static final Uri BASE_CONTENT_URI = Uri.parse("content://" + CONTENT_AUTHORITY);

    /*the name of the uri that can be the same as the name of your table.
    this will translate to content://com.yourdomain.yourapp/user/ as a valid URI
    */
    public static final String PATH_USER = "User";

    // To prevent someone from accidentally instantiating the contract class,
    // give it an empty constructor.
    public DBContract () {}

    //Intern class that defines the user table
    public static final class UserEntry implements BaseColumns {
        public static final URI CONTENT_URI =
BASE_CONTENT_URI.buildUpon().appendPath(PATH_USER).build();

        public static final String CONTENT_TYPE =
ContentResolver.CURSOR_DIR_BASE_TYPE+"/"+CONTENT_AUTHORITY+"/"+PATH_USER;

        //Name of the table
        public static final String TABLE_NAME="User";

        //Columns of the user table
        public static final String COLUMN_Name="Name";
        public static final String COLUMN_Password="Password";

        public static Uri buildUri(long id){
            return ContentUris.withAppendedId(CONTENT_URI,id);
        }
}
```

DBHelper.java

```
public class DBHelper extends SQLiteOpenHelper{

//if you change the schema of the database, you must increment this number
private static final int DATABASE_VERSION=1;
static final String DATABASE_NAME="mydatabase.db";
private static DBHelper mInstance=null;
public static DBHelper getInstance(Context ctx){
    if(mInstance==null){
    mInstance= new DBHelper(ctx.getApplicationContext());
    }
    return mInstance;
}
```

```
public DBHelper(Context context){
    super(context,DATABASE_NAME,null,DATABASE_VERSION);
}

public int GetDatabase_Version() {
    return DATABASE_VERSION;
}

@Override
public void onCreate(SQLiteDatabase sqLiteDatabase){
//Create the table users
final String SQL_CREATE_TABLE_USERS="CREATE TABLE "+UserEntry.TABLE_NAME+ " ("+
UserEntry._ID+" INTEGER PRIMARY KEY, "+
UserEntry.COLUMN_Name+" TEXT , "+
UserEntry.COLUMN_Password+" TEXT "+
" ); ";

sqLiteDatabase.execSQL(SQL_CREATE_TABLE_USERS);

}

@Override
public void onUpgrade(SQLiteDatabase sqLiteDatabase, int oldVersion, int newVersion) {
    sqLiteDatabase.execSQL("DROP TABLE IF EXISTS " + UserEntry.TABLE_NAME);
}

}
```

DBProvider.java

```
public class DBProvider extends ContentProvider {

    private static final UriMatcher sUriMatcher = buildUriMatcher();
    private DBHelper mDBHelper;
    private Context mContext;

    static final int USER = 100;

    static UriMatcher buildUriMatcher() {

        final UriMatcher matcher = new UriMatcher(UriMatcher.NO_MATCH);
        final String authority = DBContract.CONTENT_AUTHORITY;

        matcher.addURI(authority, DBContract.PATH_USER, USER);

        return matcher;
    }

    @Override
    public boolean onCreate() {
        mDBHelper = new DBHelper(getContext());
        return false;
    }

    public PeaberryProvider(Context context) {
        mDBHelper = DBHelper.getInstance(context);
        mContext = context;
    }
```

```
    @Override
    public String getType(Uri uri) {
        // determine what type of Uri is
        final int match = sUriMatcher.match(uri);

        switch (match) {
            case USER:
                return DBContract.UserEntry.CONTENT_TYPE;

            default:
                throw new UnsupportedOperationException("Uri unknown: " + uri);
        }
    }

    @Override
    public Cursor query(Uri uri, String[] projection, String selection, String[]
selectionArgs,
                        String sortOrder) {
        Cursor retCursor;
        try {
            switch (sUriMatcher.match(uri)) {
                case USER: {
                    retCursor = mDBHelper.getReadableDatabase().query(
                            DBContract.UserEntry.TABLE_NAME,
                            projection,
                            selection,
                            selectionArgs,
                            null,
                            null,
                            sortOrder
                    );
                    break;
                }
                default:
                    throw new UnsupportedOperationException("Uri unknown: " + uri);
            }
        } catch (Exception ex) {
            Log.e("Cursor", ex.toString());
        } finally {
            mDBHelper.close();
        }
        return null;
    }

    @Override
    public Uri insert(Uri uri, ContentValues values) {
        final SQLiteDatabase db = mDBHelper.getWritableDatabase();
        final int match = sUriMatcher.match(uri);
        Uri returnUri;
        try {

            switch (match) {
                case USER: {
                    long _id = db.insert(DBContract.UserEntry.TABLE_NAME, null, values);
                    if (_id > 0)
                        returnUri = DBContract.UserEntry.buildUri(_id);
                    else
                        throw new android.database.SQLException("Error at inserting row in " +
uri);
                    break;
                }
```

```
                default:
                    throw new UnsupportedOperationException("Uri unknown: " + uri);
            }
            mContext.getContentResolver().notifyChange(uri, null);
            return returnUri;
        } catch (Exception ex) {
            Log.e("Insert", ex.toString());
            db.close();
        } finally {
            db.close();
        }
        return null;
    }

    @Override
    public int delete(Uri uri, String selection, String[] selectionArgs) {
        final SQLiteDatabase db = DBHelper.getWritableDatabase();
        final int match = sUriMatcher.match(uri);
        int deletedRows;
        if (null == selection) selection = "1";
        try {
            switch (match) {
                case USER:
                    deletedRows = db.delete(
                            DBContract.UserEntry.TABLE_NAME, selection, selectionArgs);
                    break;
                default:
                    throw new UnsupportedOperationException("Uri unknown: " + uri);
            }
            if (deletedRows != 0) {
                mContext.getContentResolver().notifyChange(uri, null);
            }
            return deletedRows;
        } catch (Exception ex) {
            Log.e("Insert", ex.toString());
        } finally {
            db.close();
        }
        return 0;
    }

    @Override
    public int update(Uri uri, ContentValues values, String selection, String[] selectionArgs)
{
        final SQLiteDatabase db = mDBHelper.getWritableDatabase();
        final int match = sUriMatcher.match(uri);
        int updatedRows;
        try {
            switch (match) {
                case USER:
                    updatedRows = db.update(DBContract.UserEntry.TABLE_NAME, values,
selection, selectionArgs);
                    break;
                default:
                    throw new UnsupportedOperationException("Uri unknown: " + uri);
            }
            if (updatedRows != 0) {
                mContext.getContentResolver().notifyChange(uri, null);
            }
            return updatedRows;
        } catch (Exception ex) {
```

```
            Log.e("Update", ex.toString());
        } finally {
            db.close();
        }
        return -1;
    }

}
```

```
public void InsertUser() {
    try {
        ContentValues userValues = getUserData("Jhon","XXXXX");
        DBProvider dbProvider = new DBProvider(mContext);
        dbProvider.insert(UserEntry.CONTENT_URI, userValues);

    } catch (Exception ex) {
        Log.e("Insert", ex.toString());
    }
}

public ContentValues getUserData(String name, String pass) {
    ContentValues userValues = new ContentValues();
    userValues.put(UserEntry.COLUMN_Name, name);
    userValues.put(UserEntry.COLUMN_Password, pass);
    return userValues;
}
```

```
// You need a writable database to update a row
final SQLiteDatabase database = openHelper.getWritableDatabase();

// Create a ContentValues instance which contains the up to date data for each column
// Unlike when inserting data you need to specify the value for the PRIMARY KEY column as well
final ContentValues values = new ContentValues();
values.put(COLUMN_ID, model.getId());
values.put(COLUMN_NAME, model.getName());
values.put(COLUMN_DESCRIPTION, model.getDescription());
values.put(COLUMN_VALUE, model.getValue());

// This call performs the update
// The return value tells you how many rows have been updated.
final int count = database.update(
        TABLE_NAME,         // The table name in which the data will be updated
        values,             // The ContentValues instance with the new data
        COLUMN_ID + " = ?", // The selection which specifies which row is updated. ? symbols
are parameters.
        new String[] {      // The actual parameters for the selection as a String[].
                String.valueOf(model.getId())
        }
);
```

。

```
// You need a writable database to perform transactions
final SQLiteDatabase database = openHelper.getWritableDatabase();

// This call starts a transaction
database.beginTransaction();
```

```
// Using try/finally is essential to reliably end transactions even
// if exceptions or other problems occur.
try {

    // Here you can make modifications to the database
    database.insert(TABLE_CARS, null, productValues);
    database.update(TABLE_BUILDINGS, buildingValues, COLUMN_ID + " = ?", new String[] {
String.valueOf(buildingId) });

    // This call marks a transaction as successful.
    // This causes the changes to be written to the database once the transaction ends.
    database.setTransactionSuccessful();
} finally {
    // This call ends a transaction.
    // If setTransactionSuccessful() has not been called then all changes
    // will be rolled back and the database will not be modified.
    database.endTransaction();
}
```

beginTransaction()◦

```
//get writable database
SQLiteDatabase db = openHelper.getWritableDatabase();

db.delete(TABLE_NAME, null, null);
db.close();
```

```
//get writable database
SQLiteDatabase db = openHelper.getWritableDatabase();

int numRowsDeleted = db.delete(TABLE_NAME, String.valueOf(1), null);
db.close();
```

WHERE

```
//get writable database
SQLiteDatabase db = openHelper.getWritableDatabase();

String whereClause = KEY_NAME + " = ?";
String[] whereArgs = new String[]{String.valueOf(KEY_VALUE)};

//for multiple condition, join them with AND
//String whereClause = KEY_NAME1 + " = ? AND " + KEY_NAME2 + " = ?";
//String[] whereArgs = new String[]{String.valueOf(KEY_VALUE1), String.valueOf(KEY_VALUE2)};

int numRowsDeleted = db.delete(TABLE_NAME, whereClause, whereArgs);
db.close();
```

SQLite

```
public class DatabaseHelper extends SQLiteOpenHelper {
    // Database Version
    private static final int DATABASE_VERSION = 1;
```

```
    // Database Name
    private static final String DATABASE_NAME = "database_name";

    // Table Names
    private static final String DB_TABLE = "table_image";

    // column names
    private static final String KEY_NAME = "image_name";
    private static final String KEY_IMAGE = "image_data";

    // Table create statement
    private static final String CREATE_TABLE_IMAGE = "CREATE TABLE " + DB_TABLE + "("+
                        KEY_NAME + " TEXT," +
                        KEY_IMAGE + " BLOB);";

    public DatabaseHelper(Context context) {
        super(context, DATABASE_NAME, null, DATABASE_VERSION);
    }

    @Override
    public void onCreate(SQLiteDatabase db) {

        // creating table
        db.execSQL(CREATE_TABLE_IMAGE);
    }

    @Override
    public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {
        // on upgrade drop older tables
        db.execSQL("DROP TABLE IF EXISTS " + DB_TABLE);

        // create new table
        onCreate(db);
    }
}
```

```
public void addEntry( String name, byte[] image) throws SQLiteException{
    SQLiteDatabase database = this.getWritableDatabase();
    ContentValues cv = new  ContentValues();
    cv.put(KEY_NAME,     name);
    cv.put(KEY_IMAGE,     image);
    database.insert( DB_TABLE, null, cv );
}
```

```
 byte[] image = cursor.getBlob(1);
```

1. Bitmap。
2. 。 BitmapFactory。

```
public class DbBitmapUtility {
```

```
    // convert from bitmap to byte array
    public static byte[] getBytes(Bitmap bitmap) {
        ByteArrayOutputStream stream = new ByteArrayOutputStream();
        bitmap.compress(CompressFormat.PNG, 0, stream);
        return stream.toByteArray();
    }

    // convert from byte array to bitmap
    public static Bitmap getImage(byte[] image) {
        return BitmapFactory.decodeByteArray(image, 0, image.length);
    }
}
```

assets

dbname.sqlitedbname.dbassets。

```
public class Databasehelper extends SQLiteOpenHelper {
        public static final String TAG = Databasehelper.class.getSimpleName();
        public static int flag;
        // Exact Name of you db file that you put in assets folder with extension.
        static String DB_NAME = "dbname.sqlite";
        private final Context myContext;
        String outFileName = "";
        private String DB_PATH;
        private SQLiteDatabase db;

        public Databasehelper(Context context) {
            super(context, DB_NAME, null, 1);
            this.myContext = context;
            ContextWrapper cw = new ContextWrapper(context);
            DB_PATH = cw.getFilesDir().getAbsolutePath() + "/databases/";
            Log.e(TAG, "Databasehelper: DB_PATH " + DB_PATH);
            outFileName = DB_PATH + DB_NAME;
            File file = new File(DB_PATH);
            Log.e(TAG, "Databasehelper: " + file.exists());
            if (!file.exists()) {
                file.mkdir();
            }
        }

        /**
         * Creates a empty database on the system and rewrites it with your own database.
         */
        public void createDataBase() throws IOException {
            boolean dbExist = checkDataBase();
            if (dbExist) {
                //do nothing - database already exist
            } else {
                //By calling this method and empty database will be created into the default
system path
                //of your application so we are gonna be able to overwrite that database with
our database.
                this.getReadableDatabase();
                try {
                    copyDataBase();
                } catch (IOException e) {
                    throw new Error("Error copying database");
```

```
                }
            }
        }

        /**
         * Check if the database already exist to avoid re-copying the file each time you open
the application.
         *
         * @return true if it exists, false if it doesn't
         */
        private boolean checkDataBase() {
            SQLiteDatabase checkDB = null;
            try {
                checkDB = SQLiteDatabase.openDatabase(outFileName, null,
SQLiteDatabase.OPEN_READWRITE);
            } catch (SQLiteException e) {
                try {
                    copyDataBase();
                } catch (IOException e1) {
                    e1.printStackTrace();
                }
            }

            if (checkDB != null) {
                checkDB.close();
            }
            return checkDB != null ? true : false;
        }

        /**
         * Copies your database from your local assets-folder to the just created empty
database in the
         * system folder, from where it can be accessed and handled.
         * This is done by transfering bytestream.
         */

        private void copyDataBase() throws IOException {

            Log.i("Database",
                    "New database is being copied to device!");
            byte[] buffer = new byte[1024];
            OutputStream myOutput = null;
            int length;
            // Open your local db as the input stream
            InputStream myInput = null;
            try {
                myInput = myContext.getAssets().open(DB_NAME);
                // transfer bytes from the inputfile to the
                // outputfile
                myOutput = new FileOutputStream(DB_PATH + DB_NAME);
                while ((length = myInput.read(buffer)) > 0) {
                    myOutput.write(buffer, 0, length);
                }
                myOutput.close();
                myOutput.flush();
                myInput.close();
                Log.i("Database",
                        "New database has been copied to device!");
            } catch (IOException e) {
                e.printStackTrace();
            }
```

```
        }

        public void openDataBase() throws SQLException {
            //Open the database
            String myPath = DB_PATH + DB_NAME;
            db = SQLiteDatabase.openDatabase(myPath, null, SQLiteDatabase.OPEN_READWRITE);
            Log.e(TAG, "openDataBase: Open " + db.isOpen());
        }

        @Override
        public synchronized void close() {
            if (db != null)
                db.close();
            super.close();
        }

        public void onCreate(SQLiteDatabase arg0) {

        }

        @Override
        public void onUpgrade(SQLiteDatabase arg0, int arg1, int arg2) {

        }
    }
```

。

```
// Create Databasehelper class object in your activity.
   private Databasehelper db;
```

onCreatecreateDatabase。

```
db = new Databasehelper(MainActivity.this);
        try {
            db.createDataBase();
        } catch (Exception e) {
            e.printStackTrace();
        }
```

。

```
String query = "select Max(Id) as Id from " + TABLE_NAME;
        db.openDataBase();
        int count = db.getId(query);
        db.close();
```

bacukup。。

```
public void exportDatabase(){
    try
    {
        File sd = Environment.getExternalStorageDirectory();
        File data = Environment.getDataDirectory();
```

```
        String currentDBPath = "//data//MY.PACKAGE.NAME//databases//MY_DATABASE_NAME";
        String backupDBPath = "MY_DATABASE_FILE.db";
        File currentDB = new File(data, currentDBPath);
        File backupDB = new File(sd, backupDBPath);

        FileChannel src = new FileInputStream(currentDB).getChannel();
        FileChannel dst = new FileOutputStream(backupDB).getChannel();
        dst.transferFrom(src, 0, src.size());
        src.close();
        dst.close();

        Toast.makeText(c, c.getResources().getString(R.string.exporterenToast),
Toast.LENGTH_SHORT).show();
    }
    catch (Exception e) {
        Toast.makeText(c, c.getResources().getString(R.string.portError),
Toast.LENGTH_SHORT).show();
        Log.d("Main", e.toString());
    }
}

public void importDatabase(){
    try
    {
        File sd = Environment.getExternalStorageDirectory();
        File data = Environment.getDataDirectory();

        String currentDBPath = "//data//" + "MY.PACKAGE.NAME" + "//databases//" +
"MY_DATABASE_NAME";
        String backupDBPath = "MY_DATABASE_FILE.db";
        File backupDB = new File(data, currentDBPath);
        File currentDB = new File(sd, backupDBPath);

        FileChannel src = new FileInputStream(currentDB).getChannel();
        FileChannel dst = new FileOutputStream(backupDB).getChannel();
        dst.transferFrom(src, 0, src.size());
        src.close();
        dst.close();
        Toast.makeText(c, c.getResources().getString(R.string.importerenToast),
Toast.LENGTH_LONG).show();
    }
    catch (Exception e) {
        Toast.makeText(c, c.getResources().getString(R.string.portError),
Toast.LENGTH_SHORT).show();
    }
}
```

◦ ContentValues◦

```
@Override
public int bulkInsert(Uri uri, ContentValues[] values) {
    int count = 0;
    String table = null;

    int uriType = IChatContract.MessageColumns.uriMatcher.match(uri);
    switch (uriType) {
        case IChatContract.MessageColumns.MESSAGES:
            table = IChatContract.MessageColumns.TABLE_NAME;
            break;
    }
```

```
    mDatabase.beginTransaction();
    try {
        for (ContentValues cv : values) {
            long rowID = mDatabase.insert(table, " ", cv);
            if (rowID <= 0) {
                throw new SQLException("Failed to insert row into " + uri);
            }
        }
        mDatabase.setTransactionSuccessful();
        getContext().getContentResolver().notifyChange(uri, null);
        count = values.length;
    } finally {
        mDatabase.endTransaction();
    }
    return count;
}
```

```
ContentResolver resolver = mContext.getContentResolver();
ContentValues[] valueList = new ContentValues[object.size()];
//add whatever you like to the valueList
resolver.bulkInsert(IChatContract.MessageColumns.CONTENT_URI, valueList);
```

SQLite https://riptutorial.com/zh-CN/android/topic/871/sqlite

88: SyncAdapter

。 。

SyncAdapter。

Examples

。

```
<provider
        android:name=".DummyContentProvider"
        android:authorities="sample.map.com.ipsyncadapter"
        android:exported="false" />

    <!-- This service implements our SyncAdapter. It needs to be exported, so that the system
    sync framework can access it. -->
    <service android:name=".SyncService"
        android:exported="true">
        <!-- This intent filter is required. It allows the system to launch our sync service
        as needed. -->
        <intent-filter>
            <action android:name="android.content.SyncAdapter" />
        </intent-filter>
        <!-- This points to a required XML file which describes our SyncAdapter. -->
        <meta-data android:name="android.content.SyncAdapter"
            android:resource="@xml/syncadapter" />
    </service>

    <!-- This implements the account we'll use as an attachment point for our SyncAdapter.
Since
    our SyncAdapter doesn't need to authenticate the current user (it just fetches a public
RSS
    feed), this account's implementation is largely empty.

    It's also possible to attach a SyncAdapter to an existing account provided by another
    package. In that case, this element could be omitted here. -->
    <service android:name=".AuthenticatorService"
        >
        <!-- Required filter used by the system to launch our account service. -->
        <intent-filter>
            <action android:name="android.accounts.AccountAuthenticator" />
        </intent-filter>
        <!-- This points to an XMLf ile which describes our account service. -->
        <meta-data android:name="android.accounts.AccountAuthenticator"
            android:resource="@xml/authenticator" />
    </service>
```

syncserviceconteproviderauthenticatorservice。

appxmlsyncadpterauthenticator xml。 **authenticator.xml**

```
<account-authenticator xmlns:android="http://schemas.android.com/apk/res/android"
    android:accountType="@string/R.String.accountType"
```

```
    android:icon="@mipmap/ic_launcher"
    android:smallIcon="@mipmap/ic_launcher"
    android:label="@string/app_name"
    />
```

syncadapter

```
<sync-adapter xmlns:android="http://schemas.android.com/apk/res/android"
    android:contentAuthority="@string/R.String.contentAuthority"
    android:accountType="@string/R.String.accountType"
    android:userVisible="true"
    android:allowParallelSyncs="true"
    android:isAlwaysSyncable="true"
    android:supportsUploading="false"/>
```

```
import android.accounts.AbstractAccountAuthenticator;
import android.accounts.Account;
import android.accounts.AccountAuthenticatorResponse;
import android.accounts.NetworkErrorException;
import android.content.Context;
import android.os.Bundle;

public class Authenticator extends AbstractAccountAuthenticator {
    private Context mContext;
    public Authenticator(Context context) {
        super(context);
         this.mContext=context;
    }

    @Override
    public Bundle editProperties(AccountAuthenticatorResponse accountAuthenticatorResponse,
String s) {
        return null;
    }

    @Override
    public Bundle addAccount(AccountAuthenticatorResponse accountAuthenticatorResponse, String
s, String s1, String[] strings, Bundle bundle) throws NetworkErrorException {
        return null;
    }

    @Override
    public Bundle confirmCredentials(AccountAuthenticatorResponse
accountAuthenticatorResponse, Account account, Bundle bundle) throws NetworkErrorException {
        return null;
    }

    @Override
    public Bundle getAuthToken(AccountAuthenticatorResponse accountAuthenticatorResponse,
Account account, String s, Bundle bundle) throws NetworkErrorException {
        return null;
    }

    @Override
    public String getAuthTokenLabel(String s) {
        return null;
    }

    @Override
```

```
    public Bundle updateCredentials(AccountAuthenticatorResponse accountAuthenticatorResponse,
Account account, String s, Bundle bundle) throws NetworkErrorException {
        return null;
    }

    @Override
    public Bundle hasFeatures(AccountAuthenticatorResponse accountAuthenticatorResponse,
Account account, String[] strings) throws NetworkErrorException {
        return null;
    }
}
```

AuthenticatorService

```
public class AuthenticatorService extends Service {

    private Authenticator authenticator;

    public AuthenticatorService() {
        super();
    }

    @Nullable
    @Override
    public IBinder onBind(Intent intent) {
        IBinder ret = null;
        if (intent.getAction().equals(AccountManager.ACTION_AUTHENTICATOR_INTENT)) ;
        ret = getAuthenticator().getIBinder();
        return ret;
    }

    public Authenticator getAuthenticator() {
        if (authenticator == null)
            authenticator = new Authenticator(this);
        return authenticator;
    }
}
```

IpDataDBHelper

```
 public class IpDataDBHelper extends SQLiteOpenHelper {
    private static final int DATABASE_VERSION=1;
    private static final String DATABASE_NAME="ip.db";
    public static final String TABLE_IP_DATA="ip";

    public static final String COLUMN_ID="_id";
    public static final String COLUMN_IP="ip";
    public static final String COLUMN_COUNTRY_CODE="country_code";
    public static final String COLUMN_COUNTRY_NAME="country_name";
    public static final String COLUMN_CITY="city";
    public static final String COLUMN_LATITUDE="latitude";
    public static final String COLUMN_LONGITUDE="longitude";

    public IpDataDBHelper(Context context, String name, SQLiteDatabase.CursorFactory factory,
int version) {
        super(context, DATABASE_NAME, factory, DATABASE_VERSION);
    }

    @Override
```

```
    public void onCreate(SQLiteDatabase sqLiteDatabase) {
        String CREATE_TABLE="CREATE TABLE " + TABLE_IP_DATA + "( " + COLUMN_ID + " INTEGER
PRIMARY KEY ,"
                + COLUMN_IP + " INTEGER ," + COLUMN_COUNTRY_CODE + " INTEGER ," +
COLUMN_COUNTRY_NAME +
                " TEXT ," + COLUMN_CITY + " TEXT ," + COLUMN_LATITUDE + " INTEGER ," +
COLUMN_LONGITUDE + " INTEGER)";
        sqLiteDatabase.execSQL(CREATE_TABLE);
        Log.d("SQL",CREATE_TABLE);
    }

    @Override
    public void onUpgrade(SQLiteDatabase sqLiteDatabase, int i, int i1) {
        sqLiteDatabase.execSQL("DROP TABLE IF EXISTS " + TABLE_IP_DATA);
        onCreate(sqLiteDatabase);
    }

    public long AddIPData(ContentValues values)
    {
        SQLiteDatabase sqLiteDatabase =getWritableDatabase();
        long insertedRow=sqLiteDatabase.insert(TABLE_IP_DATA,null,values);
        return insertedRow;
    }

    public Cursor getAllIpData()
    {
        String[]
projection={COLUMN_ID,COLUMN_IP,COLUMN_COUNTRY_CODE,COLUMN_COUNTRY_NAME,COLUMN_CITY,COLUMN_LATITUDE,COL

        SQLiteDatabase sqLiteDatabase =getReadableDatabase();
        Cursor cursor =
sqLiteDatabase.query(TABLE_IP_DATA,projection,null,null,null,null,null);
        return cursor;
    }

    public int deleteAllIpData()
    {
        SQLiteDatabase sqLiteDatabase=getWritableDatabase();
        int rowDeleted=sqLiteDatabase.delete(TABLE_IP_DATA,null,null);
        return rowDeleted;
    }
}
```

```
     public class MainActivity extends AppCompatActivity {

        private static final String ACCOUNT_TYPE="sample.map.com.ipsyncadapter";
        private static final String AUTHORITY="sample.map.com.ipsyncadapter";
        private static final String ACCOUNT_NAME="Sync";

        public TextView mIp,mCountryCod,mCountryName,mCity,mLatitude,mLongitude;
        CursorAdapter cursorAdapter;
        Account mAccount;
        private String TAG=this.getClass().getCanonicalName();
        ListView mListView;
        public SharedPreferences mSharedPreferences;
        @Override
        protected void onCreate(Bundle savedInstanceState) {
            super.onCreate(savedInstanceState);
            setContentView(R.layout.activity_main);
            mListView = (ListView) findViewById(R.id.list);
```

```
            mIp=(TextView)findViewById(R.id.txt_ip);
            mCountryCod=(TextView)findViewById(R.id.txt_country_code);
            mCountryName=(TextView)findViewById(R.id.txt_country_name);
            mCity=(TextView)findViewById(R.id.txt_city);
            mLatitude=(TextView)findViewById(R.id.txt_latitude);
            mLongitude=(TextView)findViewById(R.id.txt_longitude);
            mSharedPreferences=getSharedPreferences("MyIp",0);

//Using shared preference iam displaying values in text view.
            String txtIp=mSharedPreferences.getString("ipAdr","");
            String txtCC=mSharedPreferences.getString("CCode","");
            String txtCN=mSharedPreferences.getString("CName","");
            String txtC=mSharedPreferences.getString("City","");
            String txtLP=mSharedPreferences.getString("Latitude","");
            String txtLN=mSharedPreferences.getString("Longitude","");

            mIp.setText(txtIp);
            mCountryCod.setText(txtCC);
            mCountryName.setText(txtCN);
            mCity.setText(txtC);
            mLatitude.setText(txtLP);
            mLongitude.setText(txtLN);

            mAccount=createSyncAccount(this);
//In this code i am using content provider to save data.
           /* Cursor
cursor=getContentResolver().query(MyIPContentProvider.CONTENT_URI,null,null,null,null);
            cursorAdapter=new SimpleCursorAdapter(this,R.layout.list_item,cursor,new String
[]{"ip","country_code","country_name","city","latitude","longitude"},
                                                              new int[]
{R.id.txt_ip,R.id.txt_country_code,R.id.txt_country_name,R.id.txt_city,R.id.txt_latitude,R.id.txt_longi


            mListView.setAdapter(cursorAdapter);

getContentResolver().registerContentObserver(MyIPContentProvider.CONTENT_URI,true,new
StockContentObserver(new Handler()));
    */
            Bundle settingBundle=new Bundle();
            settingBundle.putBoolean(ContentResolver.SYNC_EXTRAS_MANUAL,true);
            settingBundle.putBoolean(ContentResolver.SYNC_EXTRAS_EXPEDITED,true);
            ContentResolver.requestSync(mAccount,AUTHORITY,settingBundle);
            ContentResolver.setSyncAutomatically(mAccount,AUTHORITY,true);
            ContentResolver.addPeriodicSync(mAccount,AUTHORITY,Bundle.EMPTY,60);
        }

        private Account createSyncAccount(MainActivity mainActivity) {
            Account account=new Account(ACCOUNT_NAME,ACCOUNT_TYPE);
            AccountManager
accountManager=(AccountManager)mainActivity.getSystemService(ACCOUNT_SERVICE);
            if(accountManager.addAccountExplicitly(account,null,null))
            {

            }else
            {

            }
            return account;
        }
```

```
        private class StockContentObserver extends ContentObserver {
            @Override
            public void onChange(boolean selfChange, Uri uri) {
                Log.d(TAG, "CHANGE OBSERVED AT URI: " + uri);

cursorAdapter.swapCursor(getContentResolver().query(MyIPContentProvider.CONTENT_URI, null,
null, null, null));
            }

            public StockContentObserver(Handler handler) {
                super(handler);

            }
        }
        @Override
        protected void onResume() {
            super.onResume();
            registerReceiver(syncStaredReceiver, new IntentFilter(SyncAdapter.SYNC_STARTED));
            registerReceiver(syncFinishedReceiver, new
IntentFilter(SyncAdapter.SYNC_FINISHED));
        }

        @Override
        protected void onPause() {
            super.onPause();
            unregisterReceiver(syncStaredReceiver);
            unregisterReceiver(syncFinishedReceiver);
        }
        private BroadcastReceiver syncFinishedReceiver = new BroadcastReceiver() {

            @Override
            public void onReceive(Context context, Intent intent) {
                Log.d(TAG, "Sync finished!");
                Toast.makeText(getApplicationContext(), "Sync Finished",
Toast.LENGTH_SHORT).show();
            }
        };
        private BroadcastReceiver syncStaredReceiver = new BroadcastReceiver() {

            @Override
            public void onReceive(Context context, Intent intent) {
                Log.d(TAG, "Sync started!");
                Toast.makeText(getApplicationContext(), "Sync started...",
Toast.LENGTH_SHORT).show();
            }
        };
    }
```

MyIPContentProvider

```
public class MyIPContentProvider extends ContentProvider {

public static final int IP_DATA=1;
private static final String AUTHORITY="sample.map.com.ipsyncadapter";
private static final String TABLE_IP_DATA="ip_data";
public static final Uri CONTENT_URI=Uri.parse("content://" + AUTHORITY + '/' + TABLE_IP_DATA);
private static final UriMatcher URI_MATCHER= new UriMatcher(UriMatcher.NO_MATCH);

static
{
```

```
    URI_MATCHER.addURI(AUTHORITY,TABLE_IP_DATA,IP_DATA);
}

private IpDataDBHelper myDB;

@Override
public boolean onCreate() {
    myDB=new IpDataDBHelper(getContext(),null,null,1);
    return false;
}

@Nullable
@Override
public Cursor query(Uri uri, String[] strings, String s, String[] strings1, String s1) {
    int uriType=URI_MATCHER.match(uri);
    Cursor cursor=null;
    switch (uriType)
    {
        case IP_DATA:
            cursor=myDB.getAllIpData();
            break;
        default:
            throw new IllegalArgumentException("UNKNOWN URL");
    }
    cursor.setNotificationUri(getContext().getContentResolver(), uri);
    return cursor;
}

@Nullable
@Override
public String getType(Uri uri) {
    return null;
}

@Nullable
@Override
public Uri insert(Uri uri, ContentValues contentValues) {
    int uriType=URI_MATCHER.match(uri);
    long id=0;
    switch (uriType)
    {
        case IP_DATA:
            id=myDB.AddIPData(contentValues);
            break;
        default:
            throw new IllegalArgumentException("UNKNOWN URI :" +uri);
    }
    getContext().getContentResolver().notifyChange(uri,null);
    return Uri.parse(contentValues + "/" + id);
}

@Override
public int delete(Uri uri, String s, String[] strings) {
    int uriType=URI_MATCHER.match(uri);
    int rowsDeleted=0;

    switch (uriType)
    {
        case IP_DATA:
            rowsDeleted=myDB.deleteAllIpData();
            break;
```

```
        default:
            throw new IllegalArgumentException("UNKNOWN URI :" +uri);
    }
    getContext().getContentResolver().notifyChange(uri,null);
    return rowsDeleted;
}

@Override
public int update(Uri uri, ContentValues contentValues, String s, String[] strings) {
    return 0;
}
```

}

SyncAdapter

```
public class SyncAdapter extends AbstractThreadedSyncAdapter {
ContentResolver mContentResolver;
Context mContext;
public static final String SYNC_STARTED="Sync Started";
public static final String SYNC_FINISHED="Sync Finished";
private static final String TAG=SyncAdapter.class.getCanonicalName();
public SharedPreferences mSharedPreferences;

public SyncAdapter(Context context, boolean autoInitialize) {
    super(context, autoInitialize);
    this.mContext=context;
    mContentResolver=context.getContentResolver();
    Log.i("SyncAdapter","SyncAdapter");
}

@Override
public void onPerformSync(Account account, Bundle bundle, String s, ContentProviderClient
contentProviderClient, SyncResult syncResult) {

    Intent intent = new Intent(SYNC_STARTED);
    mContext.sendBroadcast(intent);

    Log.i(TAG, "onPerformSync");

    intent = new Intent(SYNC_FINISHED);
    mContext.sendBroadcast(intent);
    mSharedPreferences =mContext.getSharedPreferences("MyIp",0);
    SharedPreferences.Editor editor=mSharedPreferences.edit();

    mContentResolver.delete(MyIPContentProvider.CONTENT_URI,null,null);

    String data="";

    try {
        URL url =new URL("https://freegeoip.net/json/");
        Log.d(TAG, "URL :"+url);
        HttpURLConnection connection=(HttpURLConnection)url.openConnection();
        Log.d(TAG,"Connection :"+connection);
        connection.connect();
        Log.d(TAG,"Connection 1:"+connection);
        InputStream inputStream=connection.getInputStream();
        data=getInputData(inputStream);
        Log.d(TAG,"Data :"+data);
```

```
        if (data != null || !data.equals("null")) {
            JSONObject jsonObject = new JSONObject(data);


            String ipa = jsonObject.getString("ip");
            String country_code = jsonObject.getString("country_code");
            String country_name = jsonObject.getString("country_name");
            String region_code=jsonObject.getString("region_code");
            String region_name=jsonObject.getString("region_name");
            String zip_code=jsonObject.getString("zip_code");
            String time_zone=jsonObject.getString("time_zone");
            String metro_code=jsonObject.getString("metro_code");

            String city = jsonObject.getString("city");
            String latitude = jsonObject.getString("latitude");
            String longitude = jsonObject.getString("longitude");
           /* ContentValues values = new ContentValues();
            values.put("ip", ipa);
            values.put("country_code", country_code);
            values.put("country_name", country_name);
            values.put("city", city);
            values.put("latitude", latitude);
            values.put("longitude", longitude);*/
            //Using cursor adapter for results.
            //mContentResolver.insert(MyIPContentProvider.CONTENT_URI, values);

            //Using Shared preference for results.
            editor.putString("ipAdr",ipa);
            editor.putString("CCode",country_code);
            editor.putString("CName",country_name);
            editor.putString("City",city);
            editor.putString("Latitude",latitude);
            editor.putString("Longitude",longitude);
            editor.commit();

        }
        }catch(Exception e){
            e.printStackTrace();
        }

}

private String getInputData(InputStream inputStream) throws IOException {
    StringBuilder builder=new StringBuilder();
    BufferedReader bufferedReader=new BufferedReader(new InputStreamReader(inputStream));
    //String data=null;
    /*Log.d(TAG,"Builder 2:"+ bufferedReader.readLine());
    while ((data=bufferedReader.readLine())!= null);
    {
        builder.append(data);
        Log.d(TAG,"Builder :"+data);
    }
    Log.d(TAG,"Builder 1 :"+data);
    bufferedReader.close();*/
    String data=bufferedReader.readLine();
    bufferedReader.close();
    return data.toString();
}
```

}

SyncService

```
public class SyncService extends Service {
private static SyncAdapter syncAdapter=null;
private static final Object syncAdapterLock=new Object();

@Override
public void onCreate() {
    synchronized (syncAdapterLock)
    {
        if(syncAdapter==null)
        {
            syncAdapter =new SyncAdapter(getApplicationContext(),true);
        }
    }
}

@Nullable
@Override
public IBinder onBind(Intent intent) {
    return syncAdapter.getSyncAdapterBinder();
}
```

}

SyncAdapter https://riptutorial.com/zh-CN/android/topic/10774/syncadapter

89: TabLayout

Examples

ViewPagerTabLayout

`TabLayout`ViewPager。

`TabLayoutViewPagerTabLayout.OnTabSelectedListener`。

`TabLayout`XML

```
<android.support.design.widget.TabLayout
    android:layout_height="wrap_content"
    android:layout_width="match_parent"
    android:id="@+id/tabLayout" />
```

“ `Activity`UI。

```
TabLayout tabLayout = (TabLayout) findViewById(R.id.tabLayout);
tabLayout.addOnTabSelectedListener(new TabLayout.OnTabSelectedListener() {
    @Override
    public void onTabSelected(TabLayout.Tab tab) {
        int position = tab.getPosition();
        switch (tab.getPosition()) {
            case 1:
                getSupportFragmentManager().beginTransaction()
                    .replace(R.id.fragment_container, new ChildFragment()).commit();
                break;
            // Continue for each tab in TabLayout
    }

    @Override
    public void onTabUnselected(TabLayout.Tab tab) {

    }

    @Override
    public void onTabReselected(TabLayout.Tab tab) {

    }
});
```

TabLayout https://riptutorial.com/zh-CN/android/topic/7601/tablayout

90: TensorFlow

TensorFlow。

Android iOS Raspberry Pi

MindRocks

Examples

Bazel。 BazelTensorFlow。WORKSPACETensorFlowWORKSPACE。

```
# Uncomment and update the paths in these entries to build the Android demo.
#android_sdk_repository(
#    name = "androidsdk",
#    api_level = 23,
#    build_tools_version = "25.0.1",
#    # Replace with path to Android SDK on your system
#    path = "<PATH_TO_SDK>",
#)
#
#android_ndk_repository(
#    name="androidndk",
#    path="<PATH_TO_NDK>",
#    api_level=14)
```

sdkndk

```
android_sdk_repository(
    name = "androidsdk",
    api_level = 23,
    build_tools_version = "25.0.1",
    # Replace with path to Android SDK on your system
    path = "/Users/amitshekhar/Library/Android/sdk/",
)
android_ndk_repository(
    name="androidndk",
    path="/Users/amitshekhar/Downloads/android-ndk-r13/",
    api_level=14)
```

TensorFlow https://riptutorial.com/zh-CN/android/topic/9991/tensorflow

91: TextInputLayout

TextInputLayoutEditText。 EditTextTextInputLayout。

TextInputLayoutEditText 。 TextInputLayoutEditText。

build.gradlebuild.gradle

```
compile 'com.android.support:design:25.3.1'
```

Examples

TextInputLayout。

build.gradle。

```
<android.support.design.widget.TextInputLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content">

    <EditText
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:hint="@string/username"/>

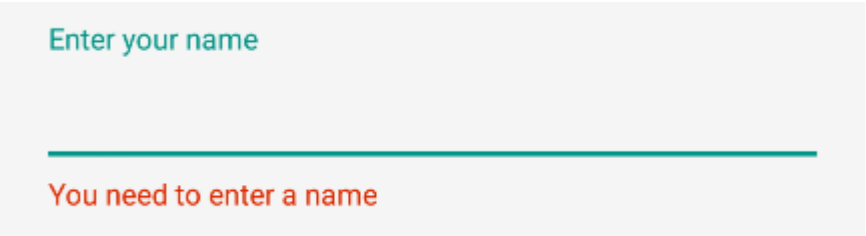
</android.support.design.widget.TextInputLayout>
```

TextInputLayoutsetErrorsetErrorEnabled。

EditText

```
TextInputLayout til = (TextInputLayout) findViewById(R.id.username);
til.setErrorEnabled(true);
til.setError("You need to enter a name");
```

TextInputLayoutxmltil.setErrorEnabled(true);app:errorEnabled="true" til.setErrorEnabled(true);。



TextInputLayoutEditText 。
EditText。

setCounterEnabled()setCounterMaxLength

```
TextInputLayout til = (TextInputLayout) findViewById(R.id.username);
```

```
til.setCounterEnabled(true);
til.setCounterMaxLength(15);
```

app:counterEnabledapp:counterMaxLengthXML。

```
<android.support.design.widget.TextInputLayout
    app:counterEnabled="true"
    app:counterMaxLength="15">

    <EditText/>

</android.support.design.widget.TextInputLayout>
```

passwordToggleEnabled 。

- passwordToggleDrawable
- passwordToggleTint drawable。
- passwordToggleTintMode 。

```
<android.support.design.widget.TextInputLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        app:passwordToggleContentDescription="@string/description"
        app:passwordToggleDrawable="@drawable/another_toggle_drawable"
        app:passwordToggleEnabled="true">

            <EditText/>

</android.support.design.widget.TextInputLayout>
```

TextInputEditText

TextInputEditTextEditText""IME。

EditText。
EditTextIME

TextInputEditTextIME。

```
<android.support.design.widget.TextInputLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:hint="Description"
    >
    <android.support.design.widget.TextInputEditText
        android:id="@+id/description"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"/>

</android.support.design.widget.TextInputLayout>
```

TextInputLayout

styles.xmlTextInputLayoutEditText◦ TextInputLayout ◦

styles.xml

```
<!--Floating label text style-->
<style name="MyHintStyle" parent="TextAppearance.AppCompat.Small">
    <item name="android:textColor">@color/black</item>
</style>

<!--Input field style-->
<style name="MyEditText" parent="Theme.AppCompat.Light">
    <item name="colorControlNormal">@color/indigo</item>
    <item name="colorControlActivated">@color/pink</item>
</style>
```

TextInputLayoutEditText

```
<android.support.design.widget.TextInputLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    app:hintTextAppearance="@style/MyHintStyle">

    <EditText
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="@string/Title"
        android:theme="@style/MyEditText" />

</android.support.design.widget.TextInputLayout>
```

TextInputLayout◦ EditText

styles.xml

```
<style name="TextInputLayoutWithPrimaryColor" parent="Widget.Design.TextInputLayout">
    <item name="colorAccent">@color/primary</item>
</style>
```

```
<android.support.design.widget.TextInputLayout
            android:id="@+id/textInputLayout_password"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:theme="@style/TextInputLayoutWithPrimaryColor">

            <android.support.design.widget.TextInputEditText
                android:id="@+id/textInputEditText_password"
                android:layout_width="match_parent"
                android:layout_height="wrap_content"
                android:hint="@string/login_hint_password"
                android:inputType="textPassword" />

</android.support.design.widget.TextInputLayout>
```

TextInputLayout https://riptutorial.com/zh-CN/android/topic/5652/textinputlayout

92: TransitionDrawable

Examples

。

1XML

transition.xmlres/drawable。

```
<transition xmlns:android="http://schemas.android.com/apk/res/android">
    <item android:drawable="@drawable/image1"/>
    <item android:drawable="@drawable/image2"/>
</transition>
```

image1image2res/drawable。

2XMLImageViewdrawable。

```
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    tools:context=".MainActivity" >

    <ImageView
        android:id="@+id/image_view"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:src="@drawable/image1"/>

</LinearLayout>
```

3ActivityonCreateXMLonClick。

```
@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);

    imageView = (ImageView) findViewById(R.id.image_view);
    transitionDrawable = (TransitionDrawable)
        ContextCompat.getDrawable(this, R.drawable.transition);

    birdImageView.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(final View view) {
            birdImageView.setImageDrawable(transitionDrawable);
```

```
            transitionDrawable.startTransition(1000);
        }
    });
}
```

TransitionDrawable

```
public void setCardColorTran(View view) {
   ColorDrawable[] color = {new ColorDrawable(Color.BLUE), new ColorDrawable(Color.RED)};
   TransitionDrawable trans = new TransitionDrawable(color);
    if(Build.VERSION.SDK_INT < android.os.Build.VERSION_CODES.JELLY_BEAN) {
        view.setBackgroundDrawable(trans);
        }else {
        view.setBackground(trans);
    }
    trans.startTransition(5000);
}
```

TransitionDrawable https://riptutorial.com/zh-CN/android/topic/6088/transitiondrawable

93: Twitter API

Examples

twitter

1. Login

```
<com.twitter.sdk.android.core.identity.TwitterLoginButton
    android:id="@+id/twitter_login_button"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_centerInParent="true"/>
```

2. ActivityFragmentCallbackLogin

```
import com.twitter.sdk.android.core.Callback;
import com.twitter.sdk.android.core.Result;
import com.twitter.sdk.android.core.TwitterException;
import com.twitter.sdk.android.core.TwitterSession;
import com.twitter.sdk.android.core.identity.TwitterLoginButton;
...

loginButton = (TwitterLoginButton) findViewById(R.id.login_button);
loginButton.setCallback(new Callback<TwitterSession>() {
    @Override
    public void success(Result<TwitterSession> result) {
        Log.d(TAG, "userName: " + session.getUserName());
        Log.d(TAG, "userId: " + session.getUserId());
        Log.d(TAG, "authToken: " + session.getAuthToken());
        Log.d(TAG, "id: " + session.getId());
        Log.d(TAG, "authToken: " + session.getAuthToken().token);
        Log.d(TAG, "authSecret: " + session.getAuthToken().secret);
    }

    @Override
    public void failure(TwitterException exception) {
        // Do something on failure
    }
});
```

3.
```
@Override
protected void onActivityResult(int requestCode, int resultCode, Intent data) {
    super.onActivityResult(requestCode, resultCode, data);
    // Make sure that the loginButton hears the result from any
    // Activity that it triggered.
    loginButton.onActivityResult(requestCode, resultCode, data);
}
```

TwitterLoginButton

```
@Override
```

```
protected void onActivityResult(int requestCode, int resultCode, Intent data) {
    super.onActivityResult(requestCode, resultCode, data);

    // Pass the activity result to the fragment, which will then pass the result to the
login
    // button.
    Fragment fragment = getFragmentManager().findFragmentById(R.id.your_fragment_id);
    if (fragment != null) {
        fragment.onActivityResult(requestCode, resultCode, data);
    }
}
```

4. **build.gradle**

```
apply plugin: 'io.fabric'

repositories {
    maven { url 'https://maven.fabric.io/public' }
}

compile('com.twitter.sdk.android:twitter:1.14.1@aar') {
    transitive = true;
}
```

Twitter API https://riptutorial.com/zh-CN/android/topic/4801/twitter-api

94: Typedef@ IntDef@ StringDef

。

build.gradlebuild.gradle。

```
dependencies {
    compile 'com.android.support:support-annotations:25.3.1'
}
```

Examples

IntDef

。

```
import android.support.annotation.IntDef;

public abstract class Car {

    //Define the list of accepted constants
    @IntDef({MICROCAR, CONVERTIBLE, SUPERCAR, MINIVAN, SUV})

    //Tell the compiler not to store annotation data in the .class file
    @Retention(RetentionPolicy.SOURCE)
    //Declare the CarType annotation
    public @interface CarType {}

    //Declare the constants
    public static final int MICROCAR = 0;
    public static final int CONVERTIBLE = 1;
    public static final int SUPERCAR = 2;
    public static final int MINIVAN = 3;
    public static final int SUV = 4;

    @CarType
    private int mType;

    @CarType
    public int getCarType(){
        return mType;
    };

    public void setCarType(@CarType int type){
        mType = type;
    }
}
```

。

type。

trueIntDef#flag()。

```
public abstract class Car {

    //Define the list of accepted constants
    @IntDef(flag=true, value={MICROCAR, CONVERTIBLE, SUPERCAR, MINIVAN, SUV})

    //Tell the compiler not to store annotation data in the .class file
    @Retention(RetentionPolicy.SOURCE)

    .....

}
```

| & ^ ◦

Typedef@ IntDef@ StringDef https://riptutorial.com/zh-CN/android/topic/4505/typedef---intdef---stringdef

95: UI

Examples

```
public class ExampleActivity extends Activity {

    private final static String EXAMPLE_ARG = "example_arg";
    private int mArg;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_example);

        if(savedInstanceState != null) {
            mArg = savedInstanceState.getInt(EXAMPLE_ARG);
        }
    }

    @Override
    public void onSaveInstanceState(Bundle outState) {
        super.onSaveInstanceState(outState);
        outState.putInt(EXAMPLE_ARG, mArg);
    }
}
```

Android。 Android`onTrimMemory()` 。

。 Bundle。 。 - `mArgEXAMPLE_ARG`。 Bundle

UI https://riptutorial.com/zh-CN/android/topic/3440/ui

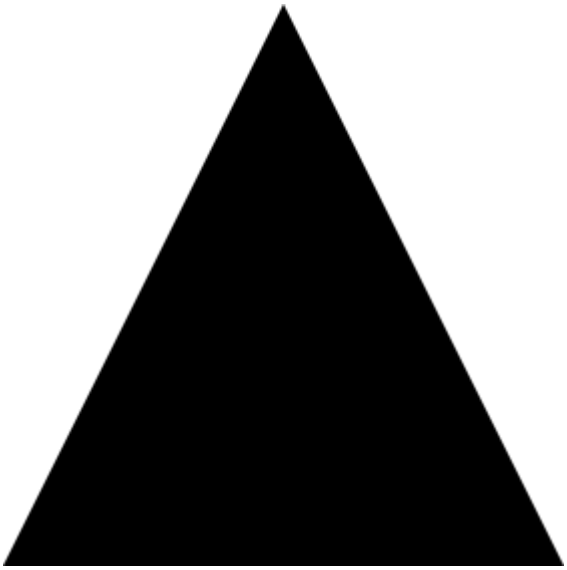
96: VectorDrawableAnimatedVectorDrawable

Examples

VectorDrawable

VectorDrawable<path>

```
<vector xmlns:android="http://schemas.android.com/apk/res/android"
    android:width="24dp"
    android:height="24dp"
    android:viewportWidth="24.0"
    android:viewportHeight="24.0">
    <path
        android:fillColor="#FF000000"
        android:pathData="M0,24 l12,-24 l12,24 z"/>
</vector>
```



<clip-path><path><clip-path>◦

```
<vector xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:width="24dp"
    android:height="24dp"
    android:viewportWidth="24.0"
    android:viewportHeight="24.0">
    <clip-path
        android:name="square clip path"
        android:pathData="M6,6 h12 v12 h-12 z"/>
    <path
        android:name="triangle"
        android:fillColor="#FF000000"
        android:pathData="M0,24 l12,-24 l12,24 z"/>

</vector>
```

<path><clip-path>

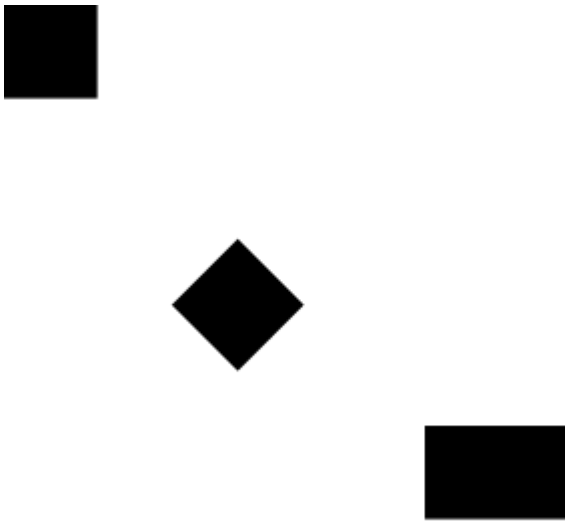
<group>VectorDrawable

```
<vector xmlns:android="http://schemas.android.com/apk/res/android"
android:width="24dp"
android:height="24dp"
android:viewportWidth="24.0"
android:viewportHeight="24.0">
    <path
        android:pathData="M0,0 h4 v4 h-4 z"
        android:fillColor="#FF000000"/>

    <group
        android:name="middle square group"
        android:translateX="10"
        android:translateY="10"
        android:rotation="45">
        <path
            android:pathData="M0,0 h4 v4 h-4 z"
            android:fillColor="#FF000000"/>
    </group>

    <group
        android:name="last square group"
        android:translateX="18"
        android:translateY="18"
        android:scaleX="1.5">
        <path
            android:pathData="M0,0 h4 v4 h-4 z"
            android:fillColor="#FF000000"/>
    </group>
</vector>
```

<path>◦ ◦ <group>45°◦ <group>50◦



<group><path><clip-path>◦ <group> ◦

AnimatedVectorDrawable

AnimatedVectorDrawable3

- VectorDrawable
- objectAnimator
- AnimatedVectorDrawableobjectAnimatorVectorDrawable

◦

VectorDrawable filename triangle_vector_drawable.xml

```
<vector xmlns:android="http://schemas.android.com/apk/res/android"
    android:width="24dp"
    android:height="24dp"
    android:viewportWidth="24.0"
    android:viewportHeight="24.0">

    <path
        android:name="triangle"
        android:fillColor="@android:color/black"
        android:pathData="M0,24 l12,-24 l12,24 z"/>

</vector>
```

objectAnimator filename color_change_animator.xml

```
<objectAnimator xmlns:android="http://schemas.android.com/apk/res/android"
    android:propertyName="fillColor"
    android:duration="2000"
    android:repeatCount="infinite"
    android:valueFrom="@android:color/black"
    android:valueTo="@android:color/holo_red_light"/>
```

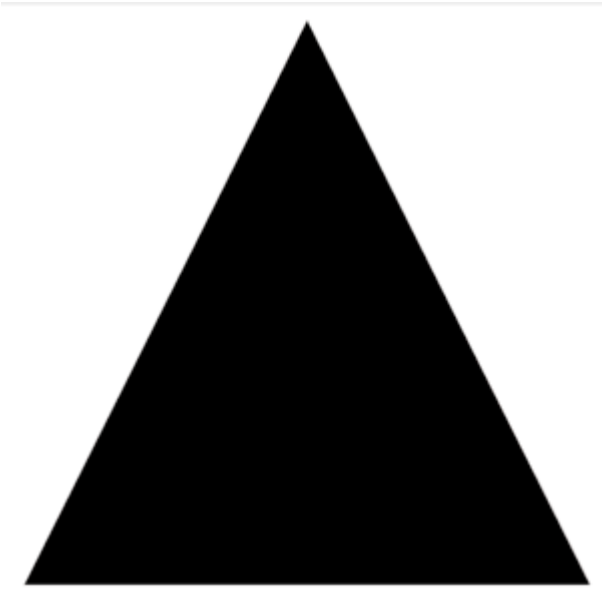
AnimatedVectorDrawable filename triangle_animated_vector.xml

```
<animated-vector xmlns:android="http://schemas.android.com/apk/res/android"
    android:drawable="@drawable/triangle_vector_drawable">

    <target
        android:animation="@animator/color_change_animator"
        android:name="triangle"/>

</animated-vector>
```

<target>android:name="triangle" VectorDrawable<path>◦ VectorDrawable android:name◦



Material Design SVGVector drawable

- 2dp◦

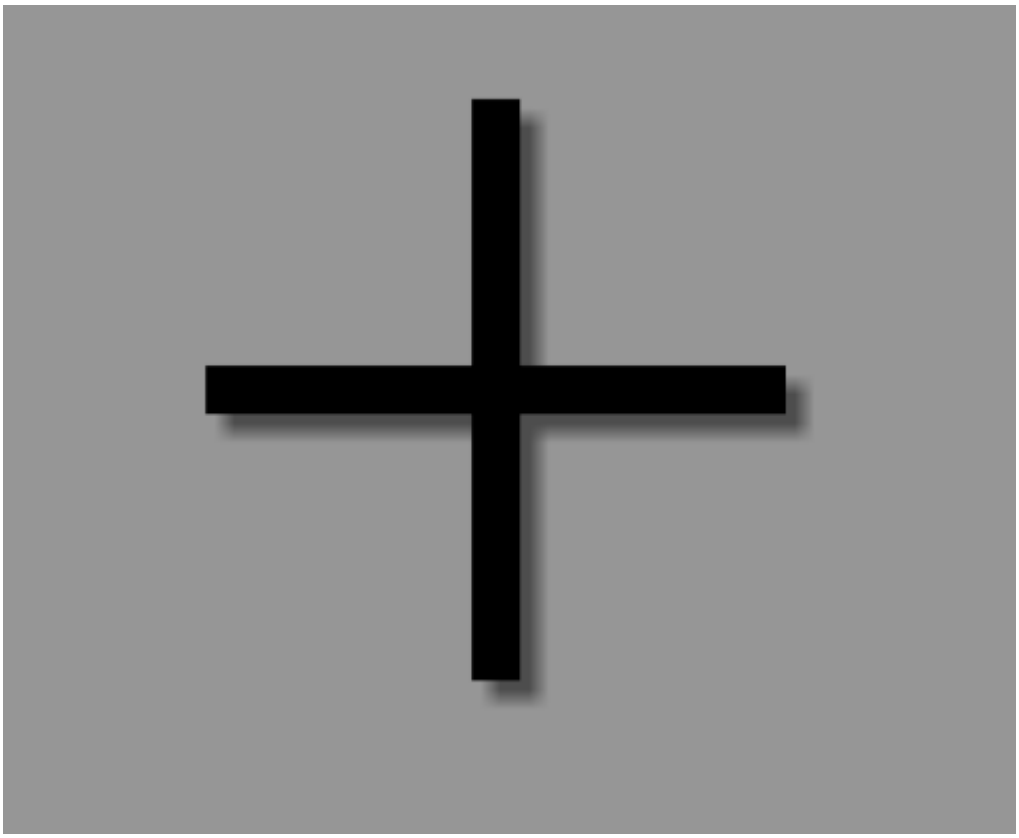
“”

```
<vector xmlns:android="http://schemas.android.com/apk/res/android"
android:width="24dp"
android:height="24dp"
android:viewportHeight="24.0"
android:viewportWidth="24.0">
    <path
        android:fillColor="#FF000000"
        android:strokeColor="#F000"
        android:strokeWidth="2"
        android:pathData="M12,0 V24 M0,12 H24" />
</vector>
```

- `strokeColor`◦
- `strokeWidth`dp2dp◦
- `pathData`SVG
- `M12,0`“”12,0

- `V24V24`

w3schools SVG“SVG Path”。



`AnimatedVectorDrawable` 。

AppCompat

`build.gradle`VectorDrawablesAPI 7AnimatedVectorDrawablesAPI 13

```
//Build Tools has to be 24+
buildToolsVersion '24.0.0'

defaultConfig {
    vectorDrawables.useSupportLibrary = true
    generatedDensities = []
    aaptOptions {
        additionalParameters "--no-version-vectors"
    }
}

dependencies {
    compile 'com.android.support:appcompat-v7:24.1.1'
}
```

`layout.xml`

```
<ImageView
    android:id="@+id/android"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
```

```
    appCompat:src="@drawable/vector_drawable"
    android:contentDescription="@null" />
```

VectorDrawableAnimatedVectorDrawable https://riptutorial.com/zh-CN/android/topic/1627/vectordrawableanimatedvectordrawable

97: VideoView

Examples

VideoView

ActivityVideoView。

```
VideoView videoView = (VideoView) .findViewById(R.id.videoView);
videoView.setVideoPath(pathToVideo);
```

。

```
videoView.start();
```

XMLVideoView。

```
<VideoView
    android:id="@+id/videoView"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_gravity="center" />
```

VideoViewURL

```
 videoView.setVideoURI(Uri.parse("http://example.com/examplevideo.mp4"));
 videoView.requestFocus();

 videoView.setOnCompletionListener(new MediaPlayer.OnCompletionListener() {
      @Override
      public void onCompletion(MediaPlayer mediaPlayer) {
      }
 });

 videoView.setOnPreparedListener(new MediaPlayer.OnPreparedListener() {
     @Override
     public void onPrepared(MediaPlayer mediaPlayer) {
          videoView.start();
          mediaPlayer.setOnVideoSizeChangedListener(new
MediaPlayer.OnVideoSizeChangedListener() {
                @Override
                public void onVideoSizeChanged(MediaPlayer mp, int width, int height) {
                      MediaController mediaController = new
MediaController(ActivityName.this);
                      videoView.setMediaController(mediaController);
                      mediaController.setAnchorView(videoView);
                }
          });
     }
 });
```

```
videoView.setOnErrorListener(new MediaPlayer.OnErrorListener() {
      @Override
      public boolean onError(MediaPlayer mediaPlayer, int i, int i1) {
           return false;
      }
});
```

VideoView https://riptutorial.com/zh-CN/android/topic/8962/videoview

98: ViewFlipper

ViewFlipperViewAnimator ◦ ◦ ViewFlipper◦

Examples

ViewFlipper

XML

```
<ViewFlipper
    android:id="@+id/viewflip"
    android:layout_width="match_parent"
    android:layout_height="250dp"
    android:layout_weight="1"
    />
```

JAVA

```
public class BlankFragment extends Fragment{
    ViewFlipper viewFlipper;
    FragmentManager fragmentManager;
    int gallery_grid_Images[] = {drawable.image1, drawable.image2, drawable.image3,
            drawable.image1, drawable.image2, drawable.image3, drawable.image1,
            drawable.image2, drawable.image3, drawable.image1
    };

    @Override
    public View onCreateView(LayoutInflater inflater, ViewGroup container, Bundle
savedInstanceState){
        View rootView = inflater.inflate(fragment_blank, container, false);
        viewFlipper = (ViewFlipper)rootView.findViewById(R.id.viewflip);
        for(int i=0; i<gallery_grid_Images.length; i++){
            // This will create dynamic image views and add them to the ViewFlipper.
            setFlipperImage(gallery_grid_Images[i]);
        }
        return rootView;
    }

    private void setFlipperImage(int res) {
        Log.i("Set Filpper Called", res+"");
        ImageView image = new ImageView(getContext());
        image.setBackgroundResource(res);
        viewFlipper.addView(image);
        viewFlipper.setFlipInterval(1000);
        viewFlipper.setAutoStart(true);
    }
}
```

ViewFlipper https://riptutorial.com/zh-CN/android/topic/9032/viewflipper

99: ViewPager

ViewPager。 Fragment。

ViewPagerFragmentPagerAdapterFragmentStatePagerAdapter。

FragmentPagerAdapterFragmentStatePagerAdapterandroid.app.Fragmentv13

android.support.v13.app.FragmentStatePagerAdapter 。

FragmentPagerAdapterFragmentStatePagerAdapterandroid.support.v4.app.Fragmentv4

android.support.v4.app.FragmentStatePagerAdapter 。

Examples

ViewPager

ViewPager。 ViewPagerPagerAdapter 。

FragmentPagerAdapterFragmentStatePagerAdapter。 getItem(position) 。 getCount()ViewPager。

FragmentPagerAdapterFragmentStatePagerAdapterViewPager。 ViewPager3。 FragmentStatePagerAdapter

。

getItem()PagerAdapterinstantiateItem() destroyItem()getItemPosition()。

ViewPager

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout>
    <android.support.v4.view.ViewPager
        android:id="@+id/vpPager">
    </android.support.v4.view.ViewPager>
</LinearLayout>
```

。

```
public class MyViewPagerActivity extends AppCompatActivity {
    private static final String TAG = MyViewPagerActivity.class.getName();

    private MyPagerAdapter mFragmentAdapter;
    private ViewPager mViewPager;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.myActivityLayout);

        //Apply the Adapter
        mFragmentAdapter = new MyPagerAdapter(getSupportFragmentManager());
        mViewPager = (ViewPager) findViewById(R.id.view_pager);
```

```
        mViewPager.setAdapter(mFragmentAdapter);
    }

    private class MyPagerAdapter extends FragmentPagerAdapter{

        public MyPagerAdapter(FragmentManager supportFragmentManager) {
            super(supportFragmentManager);
        }

        // Returns the fragment to display for that page
        @Override
        public Fragment getItem(int position) {
            switch(position) {
                case 0:
                    return new Fragment1();

                case 1:
                    return new Fragment2();

                case 2:
                    return new Fragment3();

                default:
                    return null;
            }
        }

        // Returns total number of pages
        @Override
        public int getCount() {
            return 3;
        }

    }
}
```

3.2.x

android.app.Fragment

```
compile 'com.android.support:support-v13:25.3.1'
```

android.support.v4.app.Fragment

```
compile 'com.android.support:support-fragment:25.3.1'
```

TabLayoutViewPager

TabLayout◦

TabLayout.newTab()TabLayout.setupWithViewPager() ◦

ViewPager◦

◦

```
<?xml version="1.0" encoding="utf-8"?>
```

```
<LinearLayout>

    <android.support.design.widget.TabLayout
        android:id="@+id/tabs"
        app:tabMode="scrollable" />

    <android.support.v4.view.ViewPager
        android:id="@+id/viewpager"
        android:layout_width="match_parent"
        android:layout_height="0px"
        android:layout_weight="1" />

</LinearLayout>
```

FragmentPagerAdapterViewPager

```
public class MyViewPagerActivity extends AppCompatActivity {
    private static final String TAG = MyViewPagerActivity.class.getName();

    private MyPagerAdapter mFragmentAdapter;
    private ViewPager mViewPager;
    private TabLayout mTabLayout;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.myActivityLayout);

        // Get the ViewPager and apply the PagerAdapter
        mFragmentAdapter = new MyPagerAdapter(getSupportFragmentManager());
        mViewPager = (ViewPager) findViewById(R.id.view_pager);
        mViewPager.setAdapter(mFragmentAdapter);

        // link the tabLayout and the viewpager together
        mTabLayout = (TabLayout) findViewById(R.id.tab_layout);
        mTabLayout.setupWithViewPager(mViewPager);
    }

    private class MyPagerAdapter extends FragmentPagerAdapter{

        public MyPagerAdapter(FragmentManager supportFragmentManager) {
            super(supportFragmentManager);
        }

         // Returns the fragment to display for that page
        @Override
        public Fragment getItem(int position) {
            switch(position) {
                case 0:
                    return new Fragment1();

                case 1:
                    return new Fragment2();

                case 2:
                    return new Fragment3();

                default:
                    return null;
            }
```

```
        }

        // Will be displayed as the tab's label
        @Override
        public CharSequence getPageTitle(int position) {
            switch(position) {
                case 0:
                    return "Fragment 1 title";

                case 1:
                    return "Fragment 2 title";

                case 2:
                    return "Fragment 3 title";

                default:
                    return null;
            }
        }

        // Returns total number of pages
        @Override
        public int getCount() {
            return 3;
        }

    }
}
```

PreferenceFragmentViewPager

`android.support.v4.app.FragmentPagerAdapter`PreferenceFragment FragmentPagerAdapter。

support v7`PreferenceFragmentCompat` ViewPagerv4FragmentPagerAdapter。

`PreferenceFragmentCompat`

```
import android.os.Bundle;
import android.support.v7.preference.PreferenceFragmentCompat;
import android.view.View;

public class MySettingsPrefFragment extends PreferenceFragmentCompat {

    public MySettingsPrefFragment() {
        // Required empty public constructor
    }

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        addPreferencesFromResource(R.xml.fragment_settings_pref);
    }

    @Override
    public void onCreatePreferences(Bundle bundle, String s) {

    }
}
```

`android.support.v4.app.FragmentPagerAdapter`Fragment

```
private class PagerAdapterWithSettings extends FragmentPagerAdapter {

    public PagerAdapterWithSettings(FragmentManager supportFragmentManager) {
        super(supportFragmentManager);
    }

    @Override
    public Fragment getItem(int position) {
        switch(position) {
            case 0:
                return new FragmentOne();

            case 1:
                return new FragmentTwo();

            case 2:
                return new MySettingsPrefFragment();

            default:
                return null;
        }
    }

    // .......

}
```

ViewPager

`build.gradle`build.gradle

```
compile 'com.android.support:support-core-ui:25.3.0'
```

`ViewPager`

```
<android.support.v4.view.ViewPager
    android:id="@+id/viewpager"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    />
```

`PagerAdapter`

```
public class MyPagerAdapter extends PagerAdapter {

    private Context mContext;

    public CustomPagerAdapter(Context context) {
        mContext = context;
    }

    @Override
    public Object instantiateItem(ViewGroup collection, int position) {

        // Create the page for the given position. For example:
```

```
        LayoutInflater inflater = LayoutInflater.from(mContext);
        ViewGroup layout = (ViewGroup) inflater.inflate(R.layout.xxxx, collection, false);
        collection.addView(layout);
        return layout;
    }

    @Override
    public void destroyItem(ViewGroup collection, int position, Object view) {
        // Remove a page for the given position. For example:
        collection.removeView((View) view);
    }

    @Override
    public int getCount() {
        //Return the number of views available.
        return numberOfPages;
    }

    @Override
    public boolean isViewFromObject(View view, Object object) {
        // Determines whether a page View is associated with a specific key object
        // as returned by instantiateItem(ViewGroup, int). For example:
        return view == object;
    }
}
```

Activity`ViewPager`

```
public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        ViewPager viewPager = (ViewPager) findViewById(R.id.viewpager);
        viewPager.setAdapter(new MyPagerAdapter(this));
    }
}
```

ViewPager

ViewPager TabLayout2drawable。

TabLayoutViewPager。

ViewPagerTabLayout

```
<android.support.v4.view.ViewPager
    android:id="@+id/photos_viewpager"
    android:layout_width="match_parent"
    android:layout_height="match_parent">

    <android.support.design.widget.TabLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"/>
</android.support.v4.view.ViewPager>
```

TabLayoutViewPagerTabLayoutViewPager。

TabLayout

```
<android.support.v4.view.ViewPager
    android:id="@+id/photos_viewpager"
    android:layout_width="match_parent"
    android:layout_height="match_parent"/>

<android.support.design.widget.TabLayout
    android:id="@+id/tab_layout"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"/>
```

TabLayoutTabLayoutViewPager

```
ViewPager pager = (ViewPager) view.findViewById(R.id.photos_viewpager);
PagerAdapter adapter = new PhotosAdapter(getChildFragmentManager(), photosUrl);
pager.setAdapter(adapter);

TabLayout tabLayout = (TabLayout) view.findViewById(R.id.tab_layout);
tabLayout.setupWithViewPager(pager, true);
```

◦ selected_dot.xml default_dot.xmltab_selector.xml ◦

---

selected_dot.xml

```
<?xml version="1.0" encoding="utf-8"?>
<layer-list xmlns:android="http://schemas.android.com/apk/res/android">
    <item>
        <shape
            android:innerRadius="0dp"
            android:shape="ring"
            android:thickness="8dp"
            android:useLevel="false">
            <solid android:color="@color/colorAccent"/>
        </shape>
    </item>
</layer-list>
```

---

default_dot.xml

```
<?xml version="1.0" encoding="utf-8"?>
<layer-list xmlns:android="http://schemas.android.com/apk/res/android">
    <item>
        <shape
            android:innerRadius="0dp"
            android:shape="ring"
            android:thickness="8dp"
            android:useLevel="false">
            <solid android:color="@android:color/darker_gray"/>
        </shape>
    </item>
</layer-list>
```

---

tab_selector.xml

```
<?xml version="1.0" encoding="utf-8"?>
<selector xmlns:android="http://schemas.android.com/apk/res/android">

    <item android:drawable="@drawable/selected_dot"
          android:state_selected="true"/>

    <item android:drawable="@drawable/default_dot"/>
```

```
</selector>
```

---

xml`TabLayout`3。

```
app:tabBackground="@drawable/tab_selector"
app:tabGravity="center"
app:tabIndicatorHeight="0dp"
```

OnPageChangeListener

`ViewPager.OnPageChangeListener`ViewPager.OnPageChangeListener

```
viewPager.addOnPageChangeListener(new OnPageChangeListener() {

    // This method will be invoked when a new page becomes selected. Animation is not
necessarily complete.
    @Override
    public void onPageSelected(int position) {
         // Your code
    }

    // This method will be invoked when the current page is scrolled, either as part of
    // a programmatically initiated smooth scroll or a user initiated touch scroll.
    @Override
    public void onPageScrolled(int position, float positionOffset, int positionOffsetPixels) {
         // Your code
    }

    // Called when the scroll state changes. Useful for discovering when the user begins
    // dragging, when the pager is automatically settling to the current page,
    // or when it is fully stopped/idle.
    @Override
    public void onPageScrollStateChanged(int state) {
         // Your code
    }
});
```

ViewPager https://riptutorial.com/zh-CN/android/topic/692/viewpager

100: VirtualBoxAndroid-x86

Android-x86VirtualBox。 。 6.0。

VirtualBoxLinux。

Examples

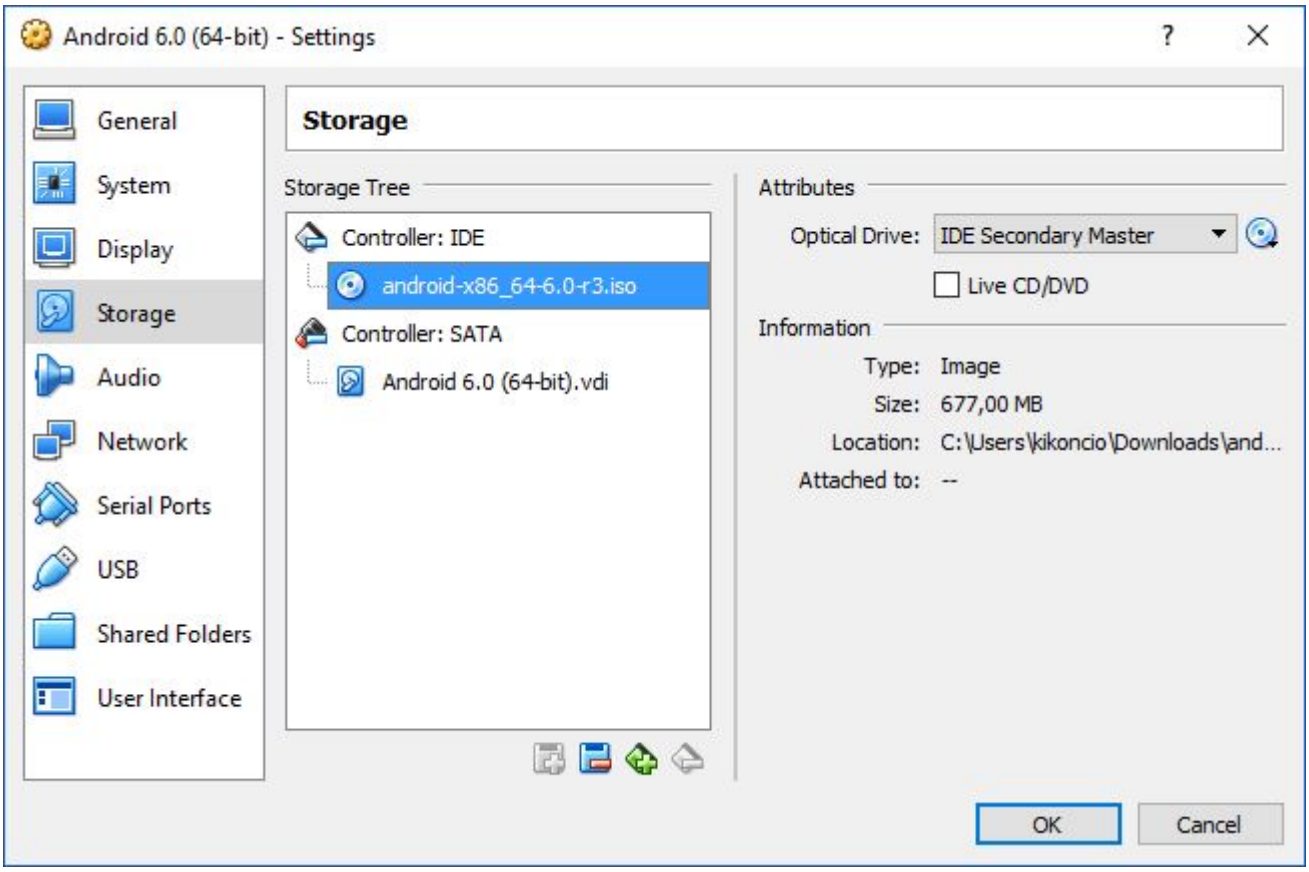
VirtualBox

- Linux 2.664
- 4Gb
- Ram Memory2048
- 8M
- Sound Blaster 16。
- PCnet-Fast IIINAT。 DHCP。

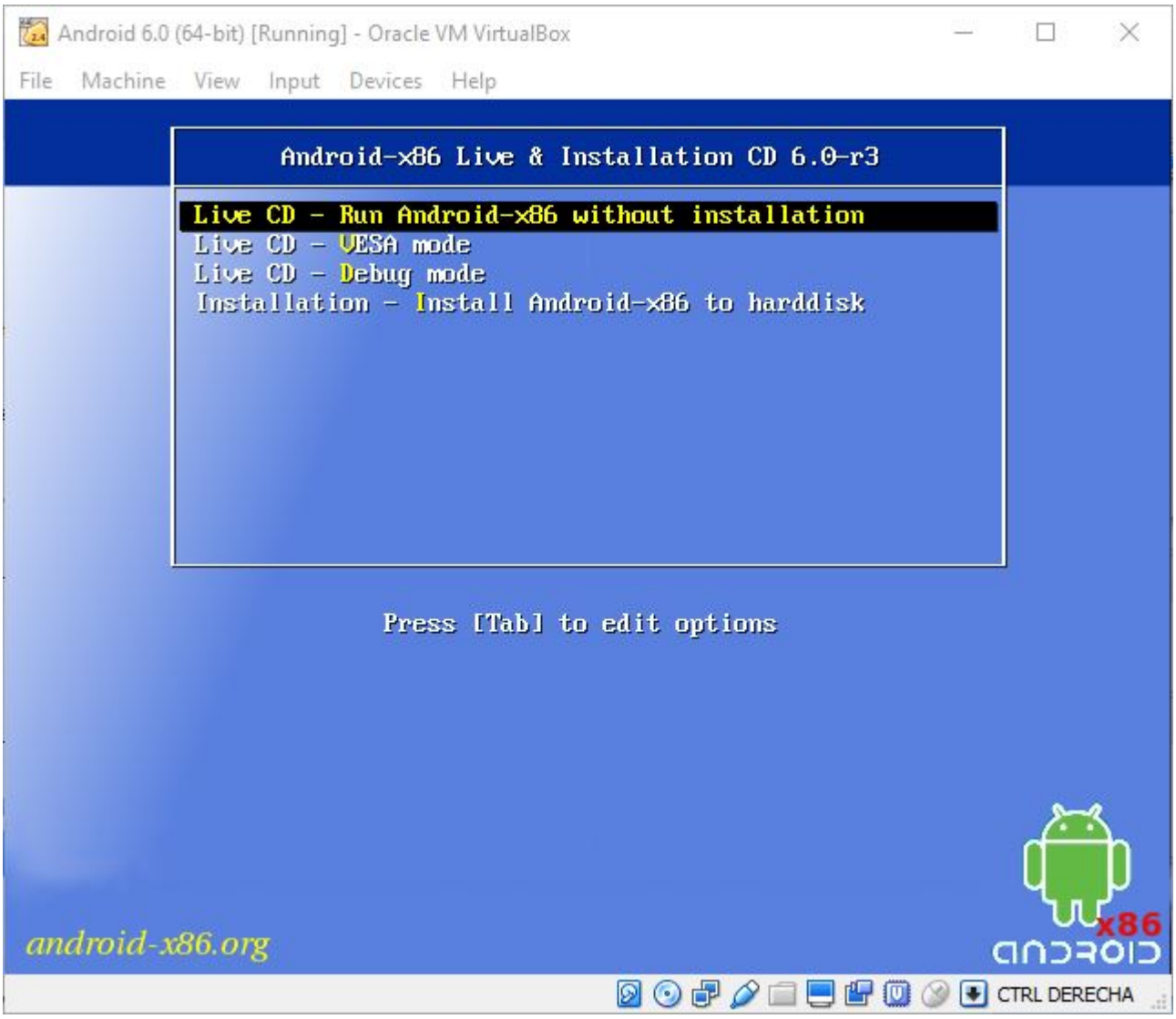
http://www.android-x86.org/downloadandroid-x86_64-6.0-r3.iso64。 32。

SDCARD

android-x86。



Live CDgrub



Debug Mode Optionshell。busybox shell。Alt-F1 / F2 / F3shell。

fdiskcfdisk。ext3。

```
# fdisk /dev/sda
```

“n”

“p”

“1”1

“1”

“261”50

“2”2

“262”262

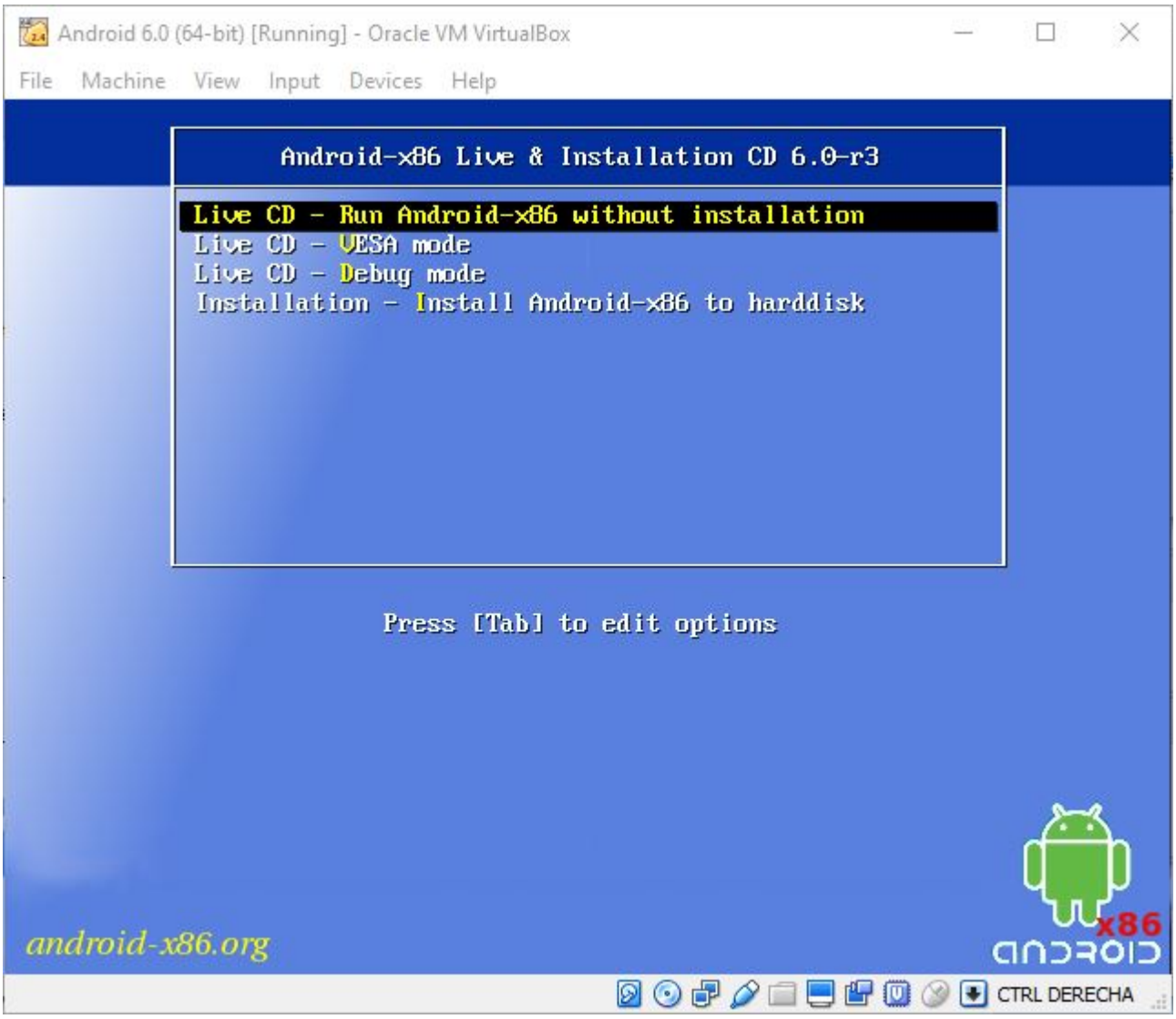
“522”

“w”

```
#mdev -s
#mke2fs -j -L DATA /dev/sda1
#mke2fs -j -L SDCARD /dev/sda2
#reboot -f
```

grub`DATA=sda1 SDCARD=sda2`sdcard。

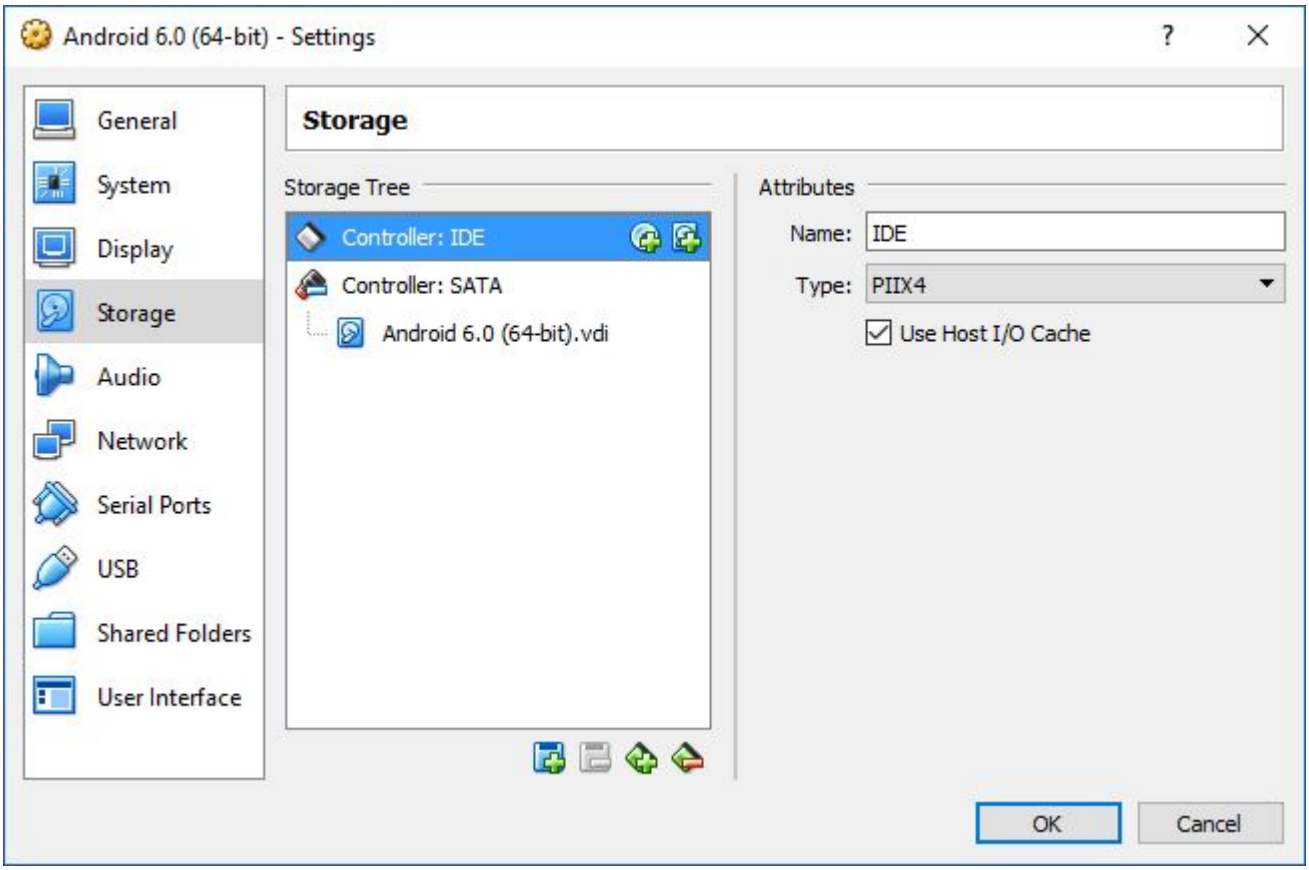
android-x86。



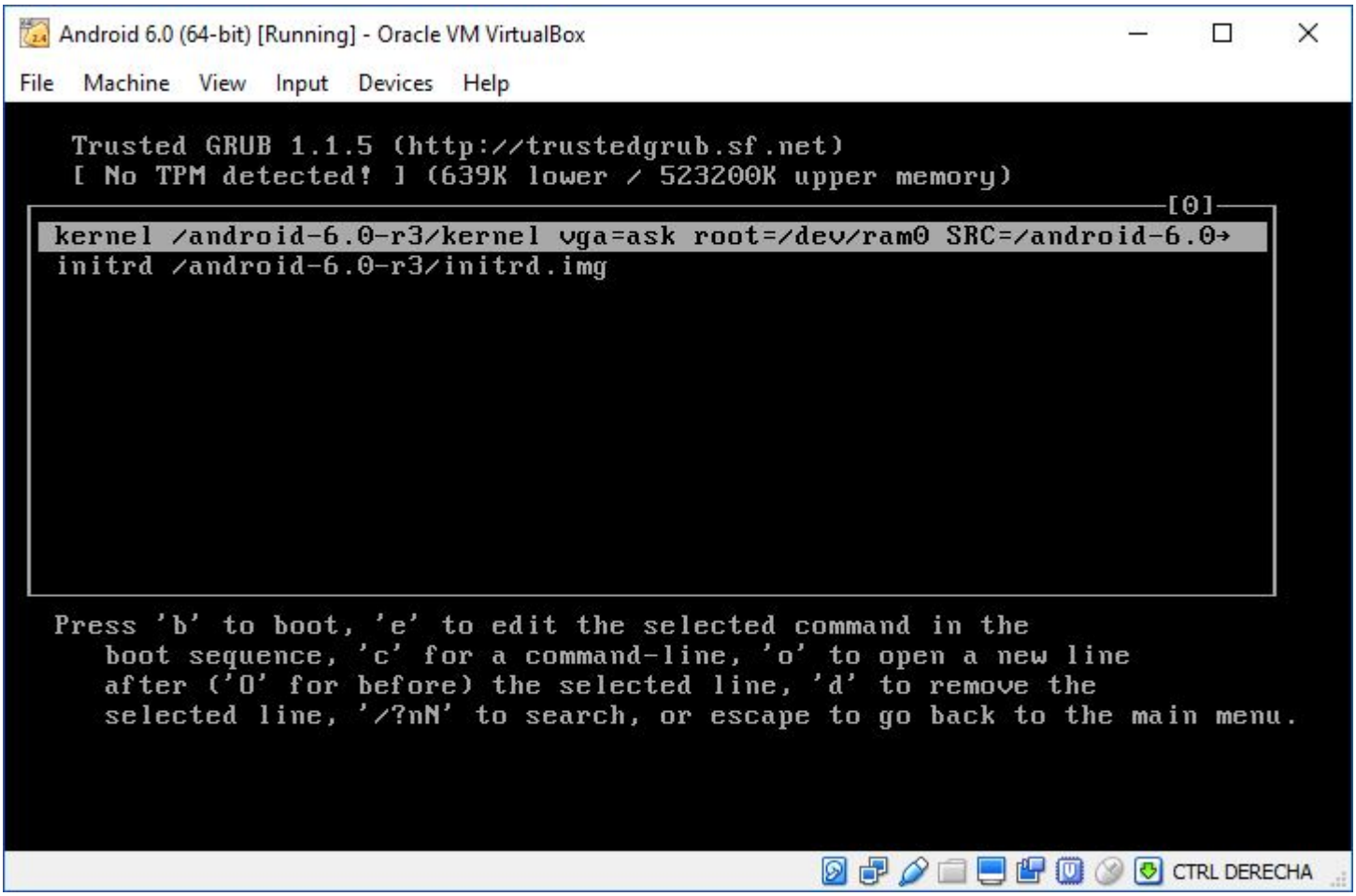
Live CD“ - Android”

sda1androidgrub。

。



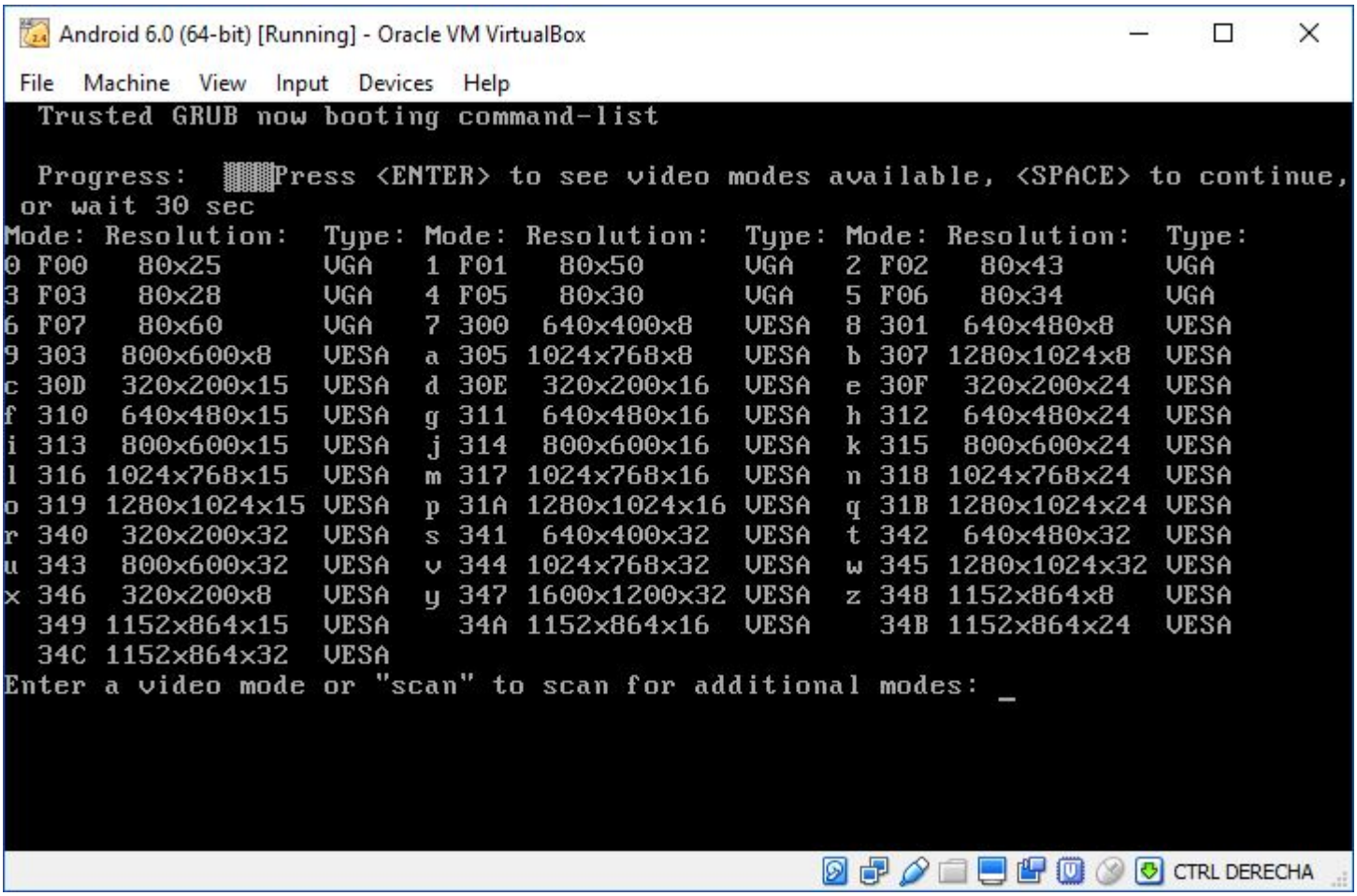
grub“Android-x86 6.0-r3”e。



“vga = ask”“quiet”“SDCARD = sda2”

```
kenel /android-6.0-r3/kernel vga=ask root=ram0 SRC=/android-6/android-6.0-r3 SDCARD=sda2
```

bENTER `vga=ask`



。 。

VirtualBoxAndroid-x86 https://riptutorial.com/zh-CN/android/topic/9903/virtualboxandroid-x86

101: Wi-Fi

Examples

WEP

SSIDWEPWi-Fi。

```
public boolean ConnectToNetworkWEP(String networkSSID, String password)
{
    try {
        WifiConfiguration conf = new WifiConfiguration();
        conf.SSID = "\"" + networkSSID + "\"";   // Please note the quotes. String should
contain SSID in quotes
        conf.wepKeys[0] = "\"" + password + "\""; //Try it with quotes first

        conf.allowedKeyManagement.set(WifiConfiguration.KeyMgmt.NONE);
        conf.allowedGroupCiphers.set(WifiConfiguration.AuthAlgorithm.OPEN);
        conf.allowedGroupCiphers.set(WifiConfiguration.AuthAlgorithm.SHARED);

        WifiManager wifiManager = (WifiManager)
this.getApplicationContext().getSystemService(Context.WIFI_SERVICE);
        int networkId = wifiManager.addNetwork(conf);

        if (networkId == -1){
            //Try it again with no quotes in case of hex password
            conf.wepKeys[0] = password;
            networkId = wifiManager.addNetwork(conf);
        }

        List<WifiConfiguration> list = wifiManager.getConfiguredNetworks();
        for( WifiConfiguration i : list ) {
            if(i.SSID != null && i.SSID.equals("\"" + networkSSID + "\"")) {
                wifiManager.disconnect();
                wifiManager.enableNetwork(i.networkId, true);
                wifiManager.reconnect();
                break;
            }
        }

        //WiFi Connection success, return true
        return true;
    } catch (Exception ex) {
        System.out.println(Arrays.toString(ex.getStackTrace()));
        return false;
    }
}
```

WPA2

WPA2Wi-Fi。

```
public boolean ConnectToNetworkWPA(String networkSSID, String password) {
  try {
```

```
    WifiConfiguration conf = new WifiConfiguration();
    conf.SSID = "\"" + networkSSID + "\"";   // Please note the quotes. String should contain
SSID in quotes

    conf.preSharedKey = "\"" + password + "\"";

    conf.status = WifiConfiguration.Status.ENABLED;
    conf.allowedGroupCiphers.set(WifiConfiguration.GroupCipher.TKIP);
    conf.allowedGroupCiphers.set(WifiConfiguration.GroupCipher.CCMP);
    conf.allowedKeyManagement.set(WifiConfiguration.KeyMgmt.WPA_PSK);
    conf.allowedPairwiseCiphers.set(WifiConfiguration.PairwiseCipher.TKIP);
    conf.allowedPairwiseCiphers.set(WifiConfiguration.PairwiseCipher.CCMP);

    Log.d("connecting", conf.SSID + " " + conf.preSharedKey);

    WifiManager wifiManager = (WifiManager)
this.getApplicationContext().getSystemService(Context.WIFI_SERVICE);
    wifiManager.addNetwork(conf);

    Log.d("after connecting", conf.SSID + " " + conf.preSharedKey);

    List<WifiConfiguration> list = wifiManager.getConfiguredNetworks();
    for( WifiConfiguration i : list ) {
      if(i.SSID != null && i.SSID.equals("\"" + networkSSID + "\"")) {
        wifiManager.disconnect();
        wifiManager.enableNetwork(i.networkId, true);
        wifiManager.reconnect();
        Log.d("re connecting", i.SSID + " " + conf.preSharedKey);

        break;
      }
    }

    //WiFi Connection success, return true
    return true;
  } catch (Exception ex) {
    System.out.println(Arrays.toString(ex.getStackTrace()));
    return false;
  }
}
```

ad hoc。 `btnScanWifiManager.startScan()`。 `WifiManagerSCAN_RESULTS_AVAILABLE_ACTION` `WifiScanReceiver`。 `TextView`。

```
public class MainActivity extends AppCompatActivity {

    private final static String TAG = "MainActivity";

    TextView txtWifiInfo;
    WifiManager wifi;
    WifiScanReceiver wifiReceiver;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        wifi=(WifiManager)getSystemService(Context.WIFI_SERVICE);
        wifiReceiver = new WifiScanReceiver();
```

```
        txtWifiInfo = (TextView)findViewById(R.id.txtWifiInfo);
        Button btnScan = (Button)findViewById(R.id.btnScan);
        btnScan.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Log.i(TAG, "Start scan...");
                wifi.startScan();
            }
        });
    }

    protected void onPause() {
        unregisterReceiver(wifiReceiver);
        super.onPause();
    }

    protected void onResume() {
        registerReceiver(
            wifiReceiver,
            new IntentFilter(WifiManager.SCAN_RESULTS_AVAILABLE_ACTION)
        );
        super.onResume();
    }

    private class WifiScanReceiver extends BroadcastReceiver {
        public void onReceive(Context c, Intent intent) {
            List<ScanResult> wifiScanList = wifi.getScanResults();
            txtWifiInfo.setText("");
            for(int i = 0; i < wifiScanList.size(); i++){
                String info = ((wifiScanList.get(i)).toString());
                txtWifiInfo.append(info+"\n\n");
            }
        }
    }
}
```

AndroidManifest.xml

```
<uses-permission android:name="android.permission.ACCESS_WIFI_STATE" />
<uses-permission android:name="android.permission.CHANGE_WIFI_STATE" />
```

`android.permission.ACCESS_WIFI_STATE`WifiManager.getScanResults()。

`android.permission.CHANGE_WIFI_STATE` WifiManager.startScan()。

api level 23Android 6.0`android.permission.ACCESS_FINE_LOCATION`

`android.permission.ACCESS_COARSE_LOCATION`。 onCreate

```
@Override
protected void onCreate(Bundle savedInstanceState) {
    ...
    String[] PERMS_INITIAL={
            Manifest.permission.ACCESS_FINE_LOCATION,
    };
    ActivityCompat.requestPermissions(this, PERMS_INITIAL, 127);
}
```

Wi-Fi https://riptutorial.com/zh-CN/android/topic/3288/wi-fi

102: XMPP

Examples

XMPP

openfire。

androidgradle

```
compile 'org.igniterealtime.smack:smack-android:4.2.0'
compile 'org.igniterealtime.smack:smack-tcp:4.2.0'
compile 'org.igniterealtime.smack:smack-im:4.2.0'
compile 'org.igniterealtime.smack:smack-android-extensions:4.2.0'
```

xmppxmpp

```
public class XMPP {

public static final int PORT = 5222;
private static XMPP instance;
private XMPPTCPConnection connection;
private static String TAG = "XMPP-EXAMPLE";
public static final String ACTION_LOGGED_IN = "liveapp.loggedin";
private String HOST = "192.168.0.10";

private XMPPTCPConnectionConfiguration buildConfiguration() throws XmppStringprepException {
    XMPPTCPConnectionConfiguration.Builder builder =
            XMPPTCPConnectionConfiguration.builder();


    builder.setHost(HOST);
    builder.setPort(PORT);
    builder.setCompressionEnabled(false);
    builder.setDebuggerEnabled(true);
    builder.setSecurityMode(ConnectionConfiguration.SecurityMode.disabled);
    builder.setSendPresence(true);

    if (Build.VERSION.SDK_INT >= 14) {
        builder.setKeystoreType("AndroidCAStore");
        // config.setTruststorePassword(null);
        builder.setKeystorePath(null);
    } else {
        builder.setKeystoreType("BKS");
        String str = System.getProperty("javax.net.ssl.trustStore");
        if (str == null) {
            str = System.getProperty("java.home") + File.separator + "etc" + File.separator +
"security"
                    + File.separator + "cacerts.bks";
        }
        builder.setKeystorePath(str);
    }
    DomainBareJid serviceName = JidCreate.domainBareFrom(HOST);
    builder.setServiceName(serviceName);
```

```
    return builder.build();
}

private XMPPTCPConnection getConnection() throws XMPPException, SmackException, IOException,
InterruptedException {
    Log.logDebug(TAG, "Getting XMPP Connect");
    if (isConnected()) {
        Log.logDebug(TAG, "Returning already existing connection");
        return this.connection;
    }

    long l = System.currentTimeMillis();
    try {
        if(this.connection != null){
            Log.logDebug(TAG, "Connection found, trying to connect");
            this.connection.connect();
        }else{
            Log.logDebug(TAG, "No Connection found, trying to create a new connection");
            XMPPTCPConnectionConfiguration config = buildConfiguration();
            SmackConfiguration.DEBUG = true;
            this.connection = new XMPPTCPConnection(config);
            this.connection.connect();
        }
    } catch (Exception e) {
        Log.logError(TAG,"some issue with getting connection :" + e.getMessage());

    }

    Log.logDebug(TAG, "Connection Properties: " + connection.getHost() + " " +
connection.getServiceName());
    Log.logDebug(TAG, "Time taken in first time connect: " + (System.currentTimeMillis() -
l));
    return this.connection;
}

public static XMPP getInstance() {
    if (instance == null) {
        synchronized (XMPP.class) {
            if (instance == null) {
                instance = new XMPP();
            }
        }
    }
    return instance;
}

public void close() {
    Log.logInfo(TAG, "Inside XMPP close method");
    if (this.connection != null) {
        this.connection.disconnect();
    }
}

private XMPPTCPConnection connectAndLogin(Context context) {
    Log.logDebug(TAG, "Inside connect and Login");
    if (!isConnected()) {
        Log.logDebug(TAG, "Connection not connected, trying to login and connect");
        try {
           // Save username and password then use here
            String username = AppSettings.getUser(context);
```

```
            String password = AppSettings.getPassword(context);
            this.connection = getConnection();
            Log.logDebug(TAG, "XMPP username :" + username);
            Log.logDebug(TAG, "XMPP password :" + password);
            this.connection.login(username, password);
            Log.logDebug(TAG, "Connect and Login method, Login successful");
            context.sendBroadcast(new Intent(ACTION_LOGGED_IN));
        } catch (XMPPException localXMPPException) {
            Log.logError(TAG, "Error in Connect and Login Method");
            localXMPPException.printStackTrace();
        } catch (SmackException e) {
            Log.logError(TAG, "Error in Connect and Login Method");
            e.printStackTrace();
        } catch (IOException e) {
            Log.logError(TAG, "Error in Connect and Login Method");
            e.printStackTrace();
        } catch (InterruptedException e) {
            Log.logError(TAG, "Error in Connect and Login Method");
            e.printStackTrace();
        } catch (IllegalArgumentException e) {
            Log.logError(TAG, "Error in Connect and Login Method");
            e.printStackTrace();
        } catch (Exception e) {
            Log.logError(TAG, "Error in Connect and Login Method");
            e.printStackTrace();
        }
    }
    Log.logInfo(TAG, "Inside getConnection - Returning connection");
    return this.connection;
}

public boolean isConnected() {
    return (this.connection != null) && (this.connection.isConnected());
}

public EntityFullJid getUser() {
    if (isConnected()) {
        return connection.getUser();
    } else {
        return null;
    }
}

public void login(String user, String pass, String username)
        throws XMPPException, SmackException, IOException, InterruptedException,
PurplKiteXMPPConnectException {
    Log.logInfo(TAG, "inside XMPP getlogin Method");
    long l = System.currentTimeMillis();
    XMPPTCPConnection connect = getConnection();
    if (connect.isAuthenticated()) {
        Log.logInfo(TAG, "User already logged in");
        return;
    }

    Log.logInfo(TAG, "Time taken to connect: " + (System.currentTimeMillis() - l));

    l = System.currentTimeMillis();
    try{
        connect.login(user, pass);
    }catch (Exception e){
        Log.logError(TAG, "Issue in login, check the stacktrace");
```

```
        e.printStackTrace();
    }

    Log.logInfo(TAG, "Time taken to login: " + (System.currentTimeMillis() - l));

    Log.logInfo(TAG, "login step passed");

    PingManager pingManager = PingManager.getInstanceFor(connect);
    pingManager.setPingInterval(5000);

}

public void register(String user, String pass) throws XMPPException,
SmackException.NoResponseException, SmackException.NotConnectedException {
    Log.logInfo(TAG, "inside XMPP register method, " + user + " : " + pass);
    long l = System.currentTimeMillis();
    try {
        AccountManager accountManager = AccountManager.getInstance(getConnection());
        accountManager.sensitiveOperationOverInsecureConnection(true);
        accountManager.createAccount(Localpart.from(user), pass);
    } catch (SmackException e) {
        e.printStackTrace();
    } catch (IOException e) {
        e.printStackTrace();
    } catch (InterruptedException e) {
        e.printStackTrace();
    } catch (PurplKiteXMPPConnectException e) {
        e.printStackTrace();
    }
    Log.logInfo(TAG, "Time taken to register: " + (System.currentTimeMillis() - l));
}


public void addStanzaListener(Context context, StanzaListener stanzaListener){
    XMPPTCPConnection connection =  connectAndLogin(context);
    connection.addAsyncStanzaListener(stanzaListener, null);
}

public void removeStanzaListener(Context context, StanzaListener stanzaListener){
    XMPPTCPConnection connection =  connectAndLogin(context);
    connection.removeAsyncStanzaListener(stanzaListener);
}

public void addChatListener(Context context, ChatManagerListener chatManagerListener){
    ChatManager.getInstanceFor(connectAndLogin(context))
            .addChatListener(chatManagerListener);
}

public void removeChatListener(Context context, ChatManagerListener chatManagerListener){

ChatManager.getInstanceFor(connectAndLogin(context)).removeChatListener(chatManagerListener);
}

public void getSrvDeliveryManager(Context context){
    ServiceDiscoveryManager sdm = ServiceDiscoveryManager
            .getInstanceFor(XMPP.getInstance().connectAndLogin(
                    context));
    //sdm.addFeature("http://jabber.org/protocol/disco#info");
    //sdm.addFeature("jabber:iq:privacy");
    sdm.addFeature("jabber.org/protocol/si");
    sdm.addFeature("http://jabber.org/protocol/si");
```

```
    sdm.addFeature("http://jabber.org/protocol/disco#info");
    sdm.addFeature("jabber:iq:privacy");

}

public String getUserLocalPart(Context context){
   return  connectAndLogin(context).getUser().getLocalpart().toString();
}

public EntityFullJid getUser(Context context){
    return  connectAndLogin(context).getUser();
}

public Chat getThreadChat(Context context, String party1, String party2){
    Chat chat = ChatManager.getInstanceFor(
            XMPP.getInstance().connectAndLogin(context))
            .getThreadChat(party1 + "-" + party2);
    return chat;
}

public Chat createChat(Context context, EntityJid jid, String party1, String party2,
ChatMessageListener messageListener){
    Chat chat = ChatManager.getInstanceFor(
            XMPP.getInstance().connectAndLogin(context))
            .createChat(jid, party1 + "-" + party2,
                    messageListener);
    return chat;
}

public void sendPacket(Context context, Stanza packet){
    try {
        connectAndLogin(context).sendStanza(packet);
    } catch (SmackException.NotConnectedException e) {
        e.printStackTrace();
    } catch (InterruptedException e) {
        e.printStackTrace();
    }
}

}
```

```
private UserLoginTask mAuthTask = null;
private ChatManagerListener chatListener;
private Chat chat;
private Jid opt_jid;
private ChatMessageListener messageListener;
private StanzaListener packetListener;

private boolean register(final String paramString1,final String paramString2) {
    try {
        XMPP.getInstance().register(paramString1, paramString2);
        return true;

    } catch (XMPPException localXMPPException) {
        localXMPPException.printStackTrace();
    } catch (SmackException.NoResponseException e) {
        e.printStackTrace();
    } catch (SmackException.NotConnectedException e) {
        e.printStackTrace();
    }
```

```
    return false;
}

private boolean login(final String user,final String pass,final String username) {

    try {

        XMPP.getInstance().login(user, pass, username);
        sendBroadcast(new Intent("liveapp.loggedin"));

        return true;
    } catch (Exception e) {
        e.printStackTrace();
        try {

            XMPP.getInstance()
                    .login(user, pass, username);
            sendBroadcast(new Intent("liveapp.loggedin"));

            return true;
        } catch (XMPPException e1) {
            e1.printStackTrace();
        } catch (SmackException e1) {
            e1.printStackTrace();
        } catch (InterruptedException e1) {
            e1.printStackTrace();
        } catch (IOException e1) {
            e1.printStackTrace();
        }catch (Exception e1){
            e1.printStackTrace();
        }
    }
    return false;
}

public class UserLoginTask extends AsyncTask<Void, Void, Boolean> {

    public UserLoginTask() {
    }

    protected Boolean doInBackground(Void... paramVarArgs) {
        String mEmail = "abc";
        String mUsername = "abc";
        String mPassword = "welcome";

        if (register(mEmail, mPassword)) {
            try {
                XMPP.getInstance().close();
            } catch (Exception e) {
                e.printStackTrace();
            }
        }
        return login(mEmail, mPassword, mUsername);

    }

    protected void onCancelled() {
        mAuthTask = null;

    }
```

```
    @Override
    protected void onPreExecute() {
        super.onPreExecute();

    }

    protected void onPostExecute(Boolean success) {
        mAuthTask = null;
        try {
            if (success) {

              messageListener = new ChatMessageListener() {
                @Override
                public void processMessage(Chat chat, Message message) {

                // here you will get only connected user by you

                }
        };


        packetListener = new StanzaListener() {
                @Override
                public void processPacket(Stanza packet) throws
SmackException.NotConnectedException, InterruptedException {

                    if (packet instanceof Message) {
                        final Message message = (Message) packet;

                 // here you will get all messages send by anybody
                    }
                }
        };

        chatListener = new ChatManagerListener() {

                @Override
                public void chatCreated(Chat chatCreated, boolean local) {
                    onChatCreated(chatCreated);
                }
        };


        try {
        String opt_jidStr = "abc";

        try {
            opt_jid = JidCreate.bareFrom(Localpart.from(opt_jidStr), Domainpart.from(HOST));
        } catch (XmppStringprepException e) {
            e.printStackTrace();
        }
        String addr1 = XMPP.getInstance().getUserLocalPart(getActivity());
        String addr2 = opt_jid.toString();
        if (addr1.compareTo(addr2) > 0) {
            String addr3 = addr2;
            addr2 = addr1;
            addr1 = addr3;
        }
        chat = XMPP.getInstance().getThreadChat(getActivity(), addr1, addr2);
        if (chat == null) {
            chat = XMPP.getInstance().createChat(getActivity(), (EntityJid) opt_jid, addr1,
```

```
addr2, messageListener);
            PurplkiteLogs.logInfo(TAG, "chat value single chat 1 :" + chat);
        } else {
            chat.addMessageListener(messageListener);
            PurplkiteLogs.logInfo(TAG, "chat value single chat  2:" + chat);
        }

        } catch (Exception e) {
        e.printStackTrace();
        }


        XMPP.getInstance().addStanzaListener(getActivity(), packetListener);
        XMPP.getInstance().addChatListener(getActivity(), chatListener);
        XMPP.getInstance().getSrvDeliveryManager(getActivity());

            } else {

            }
        } catch (Exception e) {
            e.printStackTrace();
        }

    }
}

/**
 * user attemptLogin for xmpp
 *
 */

private void attemptLogin() {
    if (mAuthTask != null) {
        return;
    }

    boolean cancel = false;
    View focusView = null;

    if (cancel) {
        focusView.requestFocus();
    } else {
        try {
            mAuthTask = new UserLoginTask();
            mAuthTask.execute((Void) null);
        } catch (Exception e) {

        }

    }
}

void onChatCreated(Chat chatCreated) {
    if (chat != null) {
        if (chat.getParticipant().getLocalpart().toString().equals(
                chatCreated.getParticipant().getLocalpart().toString())) {
            chat.removeMessageListener(messageListener);
            chat = chatCreated;
            chat.addMessageListener(messageListener);
        }
    } else {
```

```
        chat = chatCreated;
        chat.addMessageListener(messageListener);
    }
}

private void sendMessage(String message) {
    if (chat != null) {
        try {
            chat.sendMessage(message);
        } catch (SmackException.NotConnectedException e) {
            e.printStackTrace();
        } catch (Exception e) {
            e.printStackTrace();
        }
    }
}

 @Override
public void onDestroy() {
    // TODO Auto-generated method stub
    super.onDestroy();
    try {
        XMPP.getInstance().removeChatListener(getActivity(), chatListener);
        if (chat != null && messageListener != null) {
            XMPP.getInstance().removeStanzaListener(getActivity(), packetListener);
            chat.removeMessageListener(messageListener);
        }
    } catch (Exception e) {
        e.printStackTrace();
    }

}
```

Internet。

XMPP https://riptutorial.com/zh-CN/android/topic/6747/xmpp

103: Xposed

Examples

Xposed

***Xposed*。*APK/*。*/APK*。*Xposed*。*rootXposed*。*AndroidXposedAPK*。**

Android Studio。

build.gradle

```
repositories {
    jcenter();
}
```

```
provided 'de.robv.android.xposed:api:82'
provided 'de.robv.android.xposed:api:82:sources'
```

*AndroidManifest.xml*Xposed

```
<meta-data
        android:name="xposedmodule"
        android:value="true" />
<meta-data
        android:name="xposeddescription"
        android:value="YOUR_MODULE_DESCRIPTION" />
<meta-data
        android:name="xposedminversion"
        android:value="82" />
```

Xposed**82** 。

`IXposedHookLoadPackagehandleLoadPackage`

```
public class MultiPatcher implements IXposedHookLoadPackage
{
    @Override
    public void handleLoadPackage(XC_LoadPackage.LoadPackageParam loadPackageParam) throws
Throwable
    {

    }
}
```

`loadPackageParam.packageName`

```
@Override
public void handleLoadPackage(XC_LoadPackage.LoadPackageParam loadPackageParam) throws
Throwable
{
```

```
    if (!loadPackageParam.packageName.equals("other.package.name"))
    {
        return;
    }
}
```

```
@Override
public void handleLoadPackage(XC_LoadPackage.LoadPackageParam loadPackageParam) throws
Throwable
{
    if (!loadPackageParam.packageName.equals("other.package.name"))
    {
        return;
    }

    XposedHelpers.findAndHookMethod(
        "other.package.name",
        loadPackageParam.classLoader,
        "otherMethodName",
        YourFirstParameter.class,
        YourSecondParameter.class,
        new XC_MethodHook()
    {
        @Override
        protected void beforeHookedMethod(MethodHookParam param) throws Throwable
        {
            Object[] args = param.args;

            args[0] = true;
            args[1] = "example string";
            args[2] = 1;

            Object thisObject = param.thisObject;

            // Do something with the instance of the class
        }

        @Override
        protected void afterHookedMethod(MethodHookParam param) throws Throwable
        {
            Object result = param.getResult();

            param.setResult(result + "example string");
        }
    });
}
```

Xposed https://riptutorial.com/zh-CN/android/topic/4627/xposed

104: YouTubeAPI

1. jar https//developers.google.com/youtube/android/player/downloads/
2. jar。 jarlibsgradle{compile files'libs / YouTubeAndroidPlayerApi.jar'}
3. apiyoutube api。 https //developers.google.com/youtube/android/player/registerAPI。
4. 。 YoutubeAndroidPlayerApi。 YouTubeIDyoutube。 https //www.youtube.com/watch v = B08iLAtS3AQB08iLAtS3AQyoutubeID。

Examples

StandAlonePlayerActivity

1.
```
     Intent standAlonePlayerIntent = YouTubeStandalonePlayer.createVideoIntent((Activity)
context,
             Config.YOUTUBE_API_KEY, // which you have created in step 3
             videoId, // video which is to be played
             100,     //The time, in milliseconds, where playback should start in the
video
             true,    //autoplay or not
             false);   //lightbox mode or not; false will show in fullscreen
     context.startActivity(standAlonePlayerIntent);
```

YouTubeBaseActivity

```
public class CustomYouTubeActivity extends YouTubeBaseActivity implements
YouTubePlayer.OnInitializedListener, YouTubePlayer.PlayerStateChangeListener {

    private YouTubePlayerView mPlayerView;
    private YouTubePlayer mYouTubePlayer;
    private String mVideoId = "B08iLAtS3AQ";
    private String mApiKey;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        mApiKey = Config.YOUTUBE_API_KEY;
        mPlayerView = new YouTubePlayerView(this);
        mPlayerView.initialize(mApiKey, this); // setting up OnInitializedListener
        addContentView(mPlayerView, new LayoutParams(LayoutParams.MATCH_PARENT,
                LayoutParams.MATCH_PARENT)); //show it in full screen
    }

    //Called when initialization of the player succeeds.
    @Override
    public void onInitializationSuccess(YouTubePlayer.Provider provider,
                                        YouTubePlayer player,
                                        boolean wasRestored) {

        player.setPlayerStateChangeListener(this); // setting up the player state change
listener
        this.mYouTubePlayer = player;
        if (!wasRestored)
            player.cueVideo(mVideoId);
```

```
    }

        @Override
    public void onInitializationFailure(YouTubePlayer.Provider provider,
                                        YouTubeInitializationResult errorReason) {

        Toast.makeText(this, "Error While initializing", Toast.LENGTH_LONG).show();
    }

    @Override
    public void onAdStarted() {
    }

    @Override
    public void onLoaded(String videoId) { //video has been loaded
        if(!TextUtils.isEmpty(mVideoId) && !this.isFinishing() && mYouTubePlayer != null)
            mYouTubePlayer.play(); // if we dont call play then video will not auto play, but
user still has the option to play via play button
    }

    @Override
    public void onLoading() {
    }

    @Override
    public void onVideoEnded() {
    }

    @Override
    public void onVideoStarted() {

    }

    @Override
    public void onError(ErrorReason reason) {
        Log.e("onError", "onError : " + reason.name());
    }

}
```

YoutubePlayerFragment Activty

YoutubePlayerFragment。YoutubePlayerlansscapeYoutubePlayer。 YoutubePlayerFragment Youtube。YouTubePlayer.OnInitializedListenerYoutubePlayer。Activity

```
import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import android.util.Log;
import android.widget.Toast;

import com.google.android.youtube.player.YouTubeInitializationResult;
import com.google.android.youtube.player.YouTubePlayer;
import com.google.android.youtube.player.YouTubePlayerFragment;

public class MainActivity extends AppCompatActivity implements
YouTubePlayer.OnInitializedListener {

    public static final String API_KEY ;
```

```
    public static final String VIDEO_ID = "B08iLAtS3AQ";

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        YouTubePlayerFragment youTubePlayerFragment = (YouTubePlayerFragment)
getFragmentManager()
                .findFragmentById(R.id.youtubeplayerfragment);

        youTubePlayerFragment.initialize(API_KEY, this);

    }

    /**
     *
     * @param provider The provider which was used to initialize the YouTubePlayer
     * @param youTubePlayer A YouTubePlayer which can be used to control video playback in the
provider.
     * @param wasRestored Whether the player was restored from a previously saved state, as
part of the YouTubePlayerView
     *                    or YouTubePlayerFragment restoring its state. true usually means
playback is resuming from where
     *                    the user expects it would, and that a new video should not be loaded
     */
    @Override
    public void onInitializationSuccess(YouTubePlayer.Provider provider, YouTubePlayer
youTubePlayer, boolean wasRestored) {

youTubePlayer.setFullscreenControlFlags(YouTubePlayer.FULLSCREEN_FLAG_CONTROL_ORIENTATION |
                    YouTubePlayer.FULLSCREEN_FLAG_ALWAYS_FULLSCREEN_IN_LANDSCAPE);


        if(!wasRestored) {
            youTubePlayer.cueVideo(VIDEO_ID);
        }
    }

    /**
     *
     * @param provider The provider which failed to initialize a YouTubePlayer.
     * @param error The reason for this failure, along with potential resolutions to this
failure.
     */
    @Override
    public void onInitializationFailure(YouTubePlayer.Provider provider,
YouTubeInitializationResult error) {

        final int REQUEST_CODE = 1;

        if(error.isUserRecoverableError()) {
            error.getErrorDialog(this,REQUEST_CODE).show();
        } else {
            String errorMessage = String.format("There was an error initializing the
YoutubePlayer (%1$s)", error.toString());
            Toast.makeText(this, errorMessage, Toast.LENGTH_LONG).show();
        }
    }
}
```

YoutubePlayerFragmentxaml

```
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
              xmlns:tools="http://schemas.android.com/tools"
              android:layout_width="match_parent"
              android:layout_height="match_parent"
              android:orientation="vertical"
              android:paddingBottom="@dimen/activity_vertical_margin"
              android:paddingLeft="@dimen/activity_horizontal_margin"
              android:paddingRight="@dimen/activity_horizontal_margin"
              android:paddingTop="@dimen/activity_vertical_margin"
              tools:context=".MainActivity">

    <fragment
        android:id="@+id/youtubeplayerfragment"
        android:name="com.google.android.youtube.player.YouTubePlayerFragment"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"/>


    <ScrollView
        android:layout_width="match_parent"
        android:layout_height="match_parent">

        <LinearLayout
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:orientation="vertical">


            <TextView
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:layout_gravity="center_horizontal"
                android:layout_marginTop="20dp"
                android:text="This is a YoutubePlayerFragment example"
                android:textStyle="bold"/>

            <TextView
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"

                android:layout_gravity="center_horizontal"
                android:layout_marginTop="20dp"
                android:text="This is a YoutubePlayerFragment example"
                android:textStyle="bold"/>

            <TextView
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:layout_gravity="center_horizontal"
                android:layout_marginTop="20dp"
                android:text="This is a YoutubePlayerFragment example"
                android:textStyle="bold"/>

            <TextView
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:layout_gravity="center_horizontal"
                android:layout_marginTop="20dp"
                android:text="This is a YoutubePlayerFragment example"
```

```
                android:textStyle="bold"/>

            <TextView
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:layout_gravity="center_horizontal"
                android:layout_marginTop="20dp"
                android:text="This is a YoutubePlayerFragment example"
                android:textStyle="bold"/>
            <TextView
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:layout_gravity="center_horizontal"
                android:layout_marginTop="20dp"
                android:text="This is a YoutubePlayerFragment example"
                android:textStyle="bold"/>
            <TextView
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:layout_gravity="center_horizontal"
                android:layout_marginTop="20dp"
                android:text="This is a YoutubePlayerFragment example"
                android:textStyle="bold"/>

        </LinearLayout>
    </ScrollView>

</LinearLayout>
```

Manifest

```
android:configChanges="keyboardHidden|orientation|screenSize"
android:screenOrientation="portrait"
```

YouTubeAPI

Android API

java keytoolSHA-1。cmd / terminalSHA-1。

```
keytool -list -v -keystore ~/.android/debug.keystore -alias androiddebugkey -storepass android
-keypass android
```

MainActivity.java

```
public class Activity extends YouTubeBaseActivity implements
YouTubePlayer.OnInitializedListener {

    private static final int RECOVERY_DIALOG_REQUEST = 1;

    // YouTube player view
    private YouTubePlayerView youTubeView;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
```

```
        requestWindowFeature(Window.FEATURE_NO_TITLE);
        getWindow().setFlags(WindowManager.LayoutParams.FLAG_FULLSCREEN,
                WindowManager.LayoutParams.FLAG_FULLSCREEN);

        setContentView(R.layout.activity_main);

        youTubeView = (YouTubePlayerView) findViewById(R.id.youtube_view);

        // Initializing video player with developer key
        youTubeView.initialize(Config.DEVELOPER_KEY, this);

    }

    @Override
    public void onInitializationFailure(YouTubePlayer.Provider provider,
                                        YouTubeInitializationResult errorReason) {
        if (errorReason.isUserRecoverableError()) {
            errorReason.getErrorDialog(this, RECOVERY_DIALOG_REQUEST).show();
        } else {
            String errorMessage = String.format(
                    getString(R.string.error_player), errorReason.toString());
            Toast.makeText(this, errorMessage, Toast.LENGTH_LONG).show();
        }
    }

    @Override
    public void onInitializationSuccess(YouTubePlayer.Provider provider,
                                        YouTubePlayer player, boolean wasRestored) {
        if (!wasRestored) {

            // loadVideo() will auto play video
            // Use cueVideo() method, if you don't want to play it automatically
            player.loadVideo(Config.YOUTUBE_VIDEO_CODE);

            // Hiding player controls
            player.setPlayerStyle(YouTubePlayer.PlayerStyle.CHROMELESS);
        }
    }

    @Override
    protected void onActivityResult(int requestCode, int resultCode, Intent data) {
        if (requestCode == RECOVERY_DIALOG_REQUEST) {
            // Retry initialization if user performed a recovery action
            getYouTubePlayerProvider().initialize(Config.DEVELOPER_KEY, this);
        }
    }

    private YouTubePlayer.Provider getYouTubePlayerProvider() {
        return (YouTubePlayerView) findViewById(R.id.youtube_view);
    }
}
```

`Config.java`◦ Google Console APIYouTubeID

Config.java

```
public class Config {

    // Developer key
    public static final String DEVELOPER_KEY = "AIzaSyDZtE10od_hXM5aXYEh6Zn7c6brV9ZjKuk";
```

```
    // YouTube video id
    public static final String YOUTUBE_VIDEO_CODE = "_oEA18Y8gM0";
}
```

xml

```
<com.google.android.youtube.player.YouTubePlayerView
                android:id="@+id/youtube_view"
                android:layout_width="match_parent"
                android:layout_height="wrap_content"
                android:layout_marginBottom="30dp" />
```

AndroidYouTube Data API

AndroidYouTubeAPI。

SHA-1

SHA-1。。。

AndroidGoogle APIYouTube

SHA-1Google API。SHA-1YouTube Data API。。Android。

Gradle

YouTube Data APIGradle

```
compile 'com.google.apis:google-api-services-youtube:v3-rev183-1.22.0'
```

YouTubeGradle

```
compile 'com.google.http-client:google-http-client-android:+'
compile 'com.google.api-client:google-api-client-android:+'
compile 'com.google.api-client:google-api-client-gson:+'
```

Gradle

```
configurations.all {
    resolutionStrategy.force 'com.google.code.findbugs:jsr305:3.0.2'
}
```

gradle.build。

build.gradle

```
apply plugin: 'com.android.application'
android {
    compileSdkVersion 25
    buildToolsVersion "25.0.2"
```

```
    defaultConfig {
        applicationId "com.aam.skillschool"
        minSdkVersion 19
        targetSdkVersion 25
        versionCode 1
        versionName "1.0"
        testInstrumentationRunner "android.support.test.runner.AndroidJUnitRunner"
    }
    buildTypes {
        release {
            minifyEnabled false
            proguardFiles getDefaultProguardFile('proguard-android.txt'), 'proguard-rules.pro'
        }
    }
    configurations.all {
        resolutionStrategy.force 'com.google.code.findbugs:jsr305:3.0.2'
    }
}

dependencies {
    compile fileTree(include: ['*.jar'], dir: 'libs')
    androidTestCompile('com.android.support.test.espresso:espresso-core:2.2.2', {
        exclude group: 'com.android.support', module: 'support-annotations'
    })
    compile 'com.google.apis:google-api-services-youtube:v3-rev183-1.22.0'
    compile 'com.android.support:appcompat-v7:25.3.1'
    compile 'com.android.support:support-v4:25.3.1'
    compile 'com.google.http-client:google-http-client-android:+'
    compile 'com.google.api-client:google-api-client-android:+'
    compile 'com.google.api-client:google-api-client-gson:+'
}
```

Java。`HttpTransportGsonFactory`JSONPOJO。

IDYouTube API。`AsyncTask`。YouTubeAPI。

```
public class GetPlaylistDataAsyncTask extends AsyncTask<String[], Void, PlaylistListResponse>
{
    private static final String YOUTUBE_PLAYLIST_PART = "snippet";
    private static final String YOUTUBE_PLAYLIST_FIELDS = "items(id,snippet(title))";

    private YouTube mYouTubeDataApi;

    public GetPlaylistDataAsyncTask(YouTube api) {
        mYouTubeDataApi = api;
    }

    @Override
    protected PlaylistListResponse doInBackground(String[]... params) {

        final String[] playlistIds = params[0];

        PlaylistListResponse playlistListResponse;
        try {
            playlistListResponse = mYouTubeDataApi.playlists()
                    .list(YOUTUBE_PLAYLIST_PART)
                    .setId(TextUtils.join(",", playlistIds))
                    .setFields(YOUTUBE_PLAYLIST_FIELDS)
                    .setKey(AppConstants.YOUTUBE_KEY) //Here you will have to provide the keys
```

```
                    .execute();
        } catch (IOException e) {
            e.printStackTrace();
            return null;
        }

        return playlistListResponse;
    }
}
```

`PlaylistListResponse`YouTube SDK。 POJO。

`MainActivity`

```
public class MainActivity extends AppCompatActivity {
    private YouTube mYoutubeDataApi;
    private final GsonFactory mJsonFactory = new GsonFactory();
    private final HttpTransport mTransport = AndroidHttp.newCompatibleTransport();
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_review);
        mYoutubeDataApi = new YouTube.Builder(mTransport, mJsonFactory, null)
                .setApplicationName(getResources().getString(R.string.app_name))
                .build();
        String[] ids = {"some playlists ids here seperated by "," };
        new GetPlaylistDataAsyncTask(mYoutubeDataApi) {
            ProgressDialog progressDialog = new ProgressDialog(getActivity());

            @Override
            protected void onPreExecute() {
                progressDialog.setTitle("Please wait.....");
                progressDialog.show();
                super.onPreExecute();
            }

            @Override
            protected void onPostExecute(PlaylistListResponse playlistListResponse) {
                super.onPostExecute(playlistListResponse);
                //Here we get the playlist data
                progressDialog.dismiss();
                Log.d(TAG, playlistListResponse.toString());
            }
        }.execute(ids);
    }
}
```

YouTubeAPI https://riptutorial.com/zh-CN/android/topic/7587/youtubeapi

105:

Google“。。”

Context。。

- `getApplicationContext()`
- `getBaseContext()`
- `getContext()`
- `this`

StackOverflowContext

Examples

```
Context context = getApplicationContext();
```

```
Context context = getActivity().getApplicationContext();
```

`this` ContextApplicationActivityServiceIntentService

```
TextView textView = new TextView(this);
```

`this`

```
Intent intent = new Intent(this, MainActivity.class);
startActivity(intent);
```

https://riptutorial.com/zh-CN/android/topic/9774/

106: ◦

Android 2.3◦ ◦ UI◦ StrictMode◦

StrictMode◦ ◦

Examples

StrictMode◦ ◦

```
StrictMode.setThreadPolicy(new StrictMode.ThreadPolicy.Builder()
    .detectDiskWrites()
    .penaltyLog() //Logs a message to LogCat
    .build())
```

SQLLite finalize◦

```
StrictMode.setVmPolicy(new StrictMode.VmPolicy.Builder()
    .detectActivityLeaks()
    .detectLeakedClosableObjects()
    .penaltyLog()
    .build());
```

◦ https://riptutorial.com/zh-CN/android/topic/8756/--

107: Android

Examples

`File -> New -> New Module -> Android Library` ◦ ◦

```
[project root directory]
    [library root directory]
    [gradle]
    build.gradle //project level
    gradle.properties
    gradlew
    gradlew.bat
    local.properties
    settings.gradle //this is important!
```

`settings.gradle`

```
include ':[library root directory]'
```

`[library root directory]`

```
[libs]
[src]
   [main]
      [java]
         [library package]
   [test]
      [java]
         [library package]
build.gradle //"app"-level
proguard-rules.pro
```

“app”`build.gradle`

```
apply plugin: 'com.android.library'

android {
    compileSdkVersion 23
    buildToolsVersion "23.0.2"

    defaultConfig {
        minSdkVersion 14
        targetSdkVersion 23
    }
}
```

```
compile project(':[library root directory]')
```

Jitpack.io

1. GitHub。

2. Git。

3. `build.gradle`

```
apply plugin: 'com.github.dcendents.android-maven'

...

// Build a jar with source files.
task sourcesJar(type: Jar) {
    from android.sourceSets.main.java.srcDirs
    classifier = 'sources'
}

task javadoc(type: Javadoc) {
    failOnError  false
    source = android.sourceSets.main.java.sourceFiles
    classpath += project.files(android.getBootClasspath().join(File.pathSeparator))
    classpath += configurations.compile
}

// Build a jar with javadoc.
task javadocJar(type: Jar, dependsOn: javadoc) {
    classifier = 'javadoc'
    from javadoc.destinationDir
}

artifacts {
    archives sourcesJar
    archives javadocJar
}
```

/GitHub。

4. Github。

5. `gradlew install` 。

6.
```
compile 'com.github.[YourUser]:[github repository name]:[release tag]'
```

Android https://riptutorial.com/zh-CN/android/topic/4118/android

108: Toast MessageSingleton

Toast。 Android。 Toast。 SingeltonToast。

- Context contex
- void setDurationint duration
- void setGravityint gravityint xOffsetint yOffset
- void setView
- void show

	Toast。 “this”fragement“getActivity”。
	。
	。 Gravity。 Gravity.TOPGravity.BOTTOMGravity.LEFTGravity.RIGHT。
X	Toast。
Y	Toast。
	。 Toast.LENGTH_SHORTToast.LENGTH_LONG

Toast。 。

Toast。 https://developer.android.com/reference/android/widget/Toast.html

Examples

Toast。 。

```
    public class ToastGenerate {
        private static ToastGenerate ourInstance;

        public ToastGenerate (Context context) {
            this.context = context;
                                                }
        public static ToastGenerate getInstance(Context context) {
            if (ourInstance == null)
                ourInstance = new ToastGenerate(context);
            return ourInstance;
        }

       //pass message and message type to this method
        public void createToastMessage(String message,int type){

//inflate the custom layout
            LayoutInflater layoutInflater = (LayoutInflater)
context.getSystemService(Context.LAYOUT_INFLATER_SERVICE);
```

```
            LinearLayout toastLayout = (LinearLayout)
layoutInflater.inflate(R.layout.layout_custome_toast,null);
            TextView toastShowMessage = (TextView)
toastLayout.findViewById(R.id.textCustomToastTopic);

            switch (type){
                case 0:
                    //if the message type is 0 fail toaster method will call
                    createFailToast(toastLayout,toastShowMessage,message);
                    break;
                case 1:
                    //if the message type is 1 success toaster method will call
                    createSuccessToast(toastLayout,toastShowMessage,message);
                    break;

                case 2:
                    createWarningToast( toastLayout, toastShowMessage, message);
                    //if the message type is 2 warning toaster method will call
                    break;
                default:
                    createFailToast(toastLayout,toastShowMessage,message);

            }
        }

    //Failure toast message method
        private final void createFailToast(LinearLayout toastLayout,TextView
toastMessage,String message){

toastLayout.setBackgroundColor(context.getResources().getColor(R.color.button_alert_normal));
            toastMessage.setText(message);
            toastMessage.setTextColor(context.getResources().getColor(R.color.white));
            showToast(context,toastLayout);
        }

        //warning toast message method
        private final void createWarningToast( LinearLayout toastLayout, TextView
toastMessage, String message) {

toastLayout.setBackgroundColor(context.getResources().getColor(R.color.warning_toast));
            toastMessage.setText(message);
            toastMessage.setTextColor(context.getResources().getColor(R.color.white));
            showToast(context, toastLayout);
        }
    //success toast message method
        private final void createSuccessToast(LinearLayout toastLayout,TextView
toastMessage,String message){

toastLayout.setBackgroundColor(context.getResources().getColor(R.color.success_toast));

            toastMessage.setText(message);
            toastMessage.setTextColor(context.getResources().getColor(R.color.white));
            showToast(context,toastLayout);
        }

        private void showToast(View view){
            Toast toast = new Toast(context);
            toast.setGravity(Gravity.TOP,0,0); // show message in the top of the device
            toast.setDuration(Toast.LENGTH_SHORT);
            toast.setView(view);
```

```
            toast.show();
        }
    }
```

Toast MessageSingleton https://riptutorial.com/zh-CN/android/topic/10843/toast-messagesingleton

109:

Examples

themes.xml

```
<style name="AppTheme" parent="Theme.AppCompat">
    <!-- Theme attributes here -->
</style>
```

AndroidManifest.xml

```
<application
    android:icon="@mipmap/ic_launcher"
    android:label="@string/app_name"
    android:theme="@style/AppTheme">

    <!-- Activity declarations here -->

</application>
```

。

API

5

```
<style name="AppTheme" parent="Theme.Material">
    <item name="android:colorPrimary">@color/primary</item>
    <item name="android:colorPrimaryDark">@color/primary_dark</item>
    <item name="android:colorAccent">@color/accent</item>
</style>
```

Appcompat `AppCompatActivity`

2.1.x

```
<style name="AppTheme" parent="Theme.AppCompat">
    <item name="colorPrimary">@color/primary</item>
    <item name="colorPrimaryDark">@color/primary_dark</item>
    <item name="colorAccent">@color/accent</item>
</style>
```

themes.xml

```
<style name="MyActivityTheme" parent="Theme.AppCompat">
    <!-- Theme attributes here -->
</style>
```

AndroidManifest.xml

```
<application
    android:icon="@mipmap/ic_launcher"
    android:label="@string/app_name"
    android:theme="@style/Theme.AppCompat">

    <activity
        android:name=".MyActivity"
        android:theme="@style/MyActivityTheme" />

</application>
```

Overscroll ColorAPI 21+

```
<style name="AppTheme" parent="Theme.AppCompat">
    <item name="android:colorEdgeEffect">@color/my_color</item>
</style>
```

API 21+

5

◦

?android:colorControlHighlight ◦ android:colorControlHighlight

```
<style name="AppTheme" parent="Theme.AppCompat">
    <item name="android:colorControlHighlight">@color/my_color</item>
</style>
```

```
<style name="AppTheme" parent="android:Theme.Material.Light">
    <item name="android:colorControlHighlight">@color/your_custom_color</item>
</style>
```

API 23+

◦

```
<style name="AppTheme" parent="Theme.AppCompat">
    <item name="android:windowLightStatusBar">true</item>
</style>
```

API 19+

◦ ◦

```
<style name="AppTheme" parent="Theme.AppCompat">
    <item name="android:windowTranslucentNavigation">true</item>
</style>
```

```
<style name="AppTheme" parent="Theme.AppCompat">
```

```
    <item name="android:windowTranslucentStatus">true</item>
</style>
```

API 21+

5

“”“”。 。

```
<style name="AppTheme" parent="Theme.AppCompat">
    <item name="android:navigationBarColor">@color/my_color</item>
</style>
```

◦ Theme.AppCompat

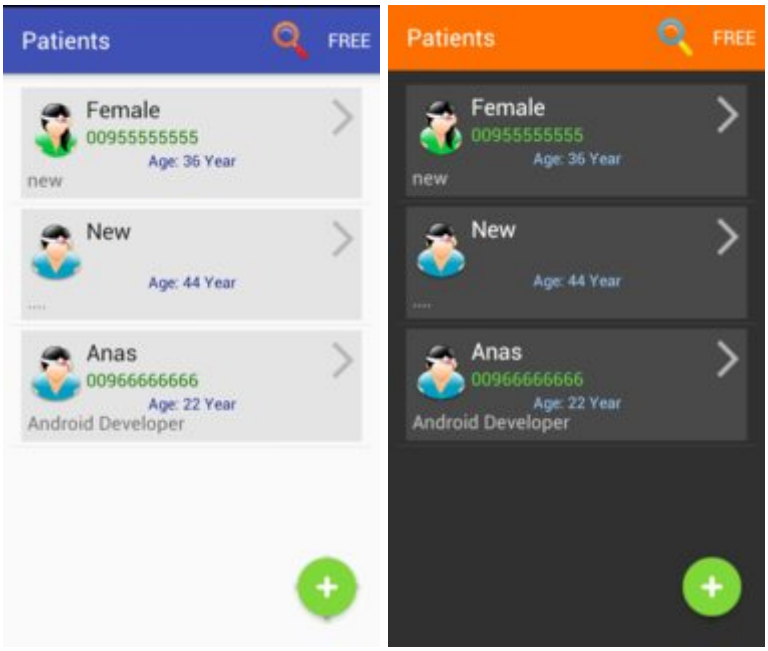
```
<style name="AppTheme" parent="Theme.AppCompat">
    <item name="colorPrimary">@color/colorPrimary</item>
    <item name="colorPrimaryDark">@color/colorPrimaryDark</item>
    <item name="colorAccent">@color/colorAccent</item>
</style>
```

Theme.AppCompat◦

```
<style name="AppTheme.Red">
    <item name="colorAccent">@color/red</item>
</style>
```

AppTheme.parent◦ ◦

Android



style.xml

```
<style name="OneTheme" parent="Theme.AppCompat.Light.DarkActionBar">

</style>

<!--  -->
<style name="TwoTheme" parent="Theme.AppCompat.Light.DarkActionBar" >

</style>
......
```

OneThemeTwoTheme。

`AndroidManifest.xml` `android:theme="@style/OneTheme"` **OneTheme**

```
<application
        android:theme="@style/OneTheme"
        ...>
```

`attrs.xml`xml

```
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <attr name="custom_red" format="color" />
    <attr name="custom_blue" format="color" />
    <attr name="custom_green" format="color" />
</resources>
<!-- add all colors you need (just color's name) -->
```

`style.xml`

```
<style name="OneTheme" parent="Theme.AppCompat.Light.DarkActionBar">
    <item name="custom_red">#8b030c</item>
    <item name="custom_blue">#0f1b8b</item>
    <item name="custom_green">#1c7806</item>
</style>

<style name="TwoTheme" parent="Theme.AppCompat.Light.DarkActionBar" >
    <item name="custom_red">#ff606b</item>
    <item name="custom_blue">#99cfff</item>
    <item name="custom_green">#62e642</item>
</style>
```

。

“attr /”**custom_blue**TextView

imageView

```
<TextView>
    android:id="@+id/txte_view"
    android:textColor="?attr/custom_blue" />
```

`setTheme(R.style.TwoTheme);setTheme(R.style.TwoTheme);setTheme(R.style.TwoTheme);onCreate()` `setContentView()Activity.java`

```
@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setTheme(R.style.TwoTheme);
    setContentView(R.layout.main_activity);
    ....
}
```

MyActivity`AppCompatActivityActivitysetTheme(R.style.TwoTheme);`**onCreate**

```
public class MyActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        if (new MySettings(this).isDarkTheme())
            setTheme(R.style.TwoTheme);
    }
}
```

make all all**MyActivity**

```
public class MainActivity extends MyActivity {
    ....
}
```

MyActivity`R.style.TwoTheme R.style.OneTheme  R.style.ThreeTheme ....`◦

https://riptutorial.com/zh-CN/android/topic/1843/--

110: ProGuardAndroid

ProguardJava。 。 。 。

Examples

proguard

APK。 。

ProGuard64k。 ProGuard。APK。

GradleAndroid。 。

`ProGuardminifyEnabled` true`build.gradle`。

。 APK。

`build.gradle`

```
android {
    buildTypes {
        release {
            minifyEnabled true
            proguardFiles getDefaultProguardFile('proguard-android.txt'),
                    'proguard-rules.pro'
        }
    }
    ...
}
```

`minifyEnabled` `proguardFiles`ProGuard `rules`

getDefaultProguardFile'proguard-android.txt'Android SDK `tools/proguard/ folder`ProGuard。 `proguard-android-optimize.txt`。 ProGuardAPK。 `proguard-rules.pro`ProGuard。 build.gradle。 ProGuard`productFlavor`proguardFiles。 Gradleflavor2-rules.proflavor2。 flavor2ProGuard。

```
android {
    ...
    buildTypes {
        release {
            minifyEnabled true
            proguardFiles getDefaultProguardFile('proguard-android.txt'),
                    'proguard-rules.pro'
        }
    }
    productFlavors {
        flavor1 {
        }
        flavor2 {
            proguardFile 'flavor2-rules.pro'
```

```
            }
        }
}
```

ProGuardAndroid https://riptutorial.com/zh-CN/android/topic/9205/proguard-android-

111: VideoView

VideoViewListViewSurfaceView。 。 。 VideoViewListViewInstagramFacebookTwitter。

Examples

ListViewVideoView

VideoView 。

VideoView

```
<your.packagename.VideoView
    android:id="@+id/video_view"
    android:layout_width="300dp"
    android:layout_height="300dp" />
```

VideoView

```
package your.package.com.whateveritis;

import android.content.Context;
import android.content.Intent;
import android.graphics.SurfaceTexture;
import android.media.AudioManager;
import android.media.MediaPlayer;
import android.media.MediaPlayer.OnCompletionListener;
import android.media.MediaPlayer.OnErrorListener;
import android.media.MediaPlayer.OnInfoListener;
import android.net.Uri;
import android.util.AttributeSet;
import android.util.Log;
import android.view.KeyEvent;
import android.view.MotionEvent;
import android.view.Surface;
import android.view.TextureView;
import android.view.View;
import android.widget.MediaController;
import android.widget.MediaController.MediaPlayerControl;

import java.io.IOException;


/**
 * VideoView is used to play video, just like
 * {@link android.widget.VideoView VideoView}. We define a custom view, because
 * we could not use {@link android.widget.VideoView VideoView} in ListView. <br/>
 * VideoViews inside ScrollViews do not scroll properly. Even if you use the
 * workaround to set the background color, the MediaController does not scroll
 * along with the VideoView. Also, the scrolling video looks horrendous with the
 * workaround, lots of flickering.
 *
 * @author leo
 */
```

```
public class VideoView extends TextureView implements MediaPlayerControl {

    private static final String TAG = "tag";

    // all possible internal states
    private static final int STATE_ERROR = -1;
    private static final int STATE_IDLE = 0;
    private static final int STATE_PREPARING = 1;
    private static final int STATE_PREPARED = 2;
    private static final int STATE_PLAYING = 3;
    private static final int STATE_PAUSED = 4;
    private static final int STATE_PLAYBACK_COMPLETED = 5;

    // currentState is a VideoView object's current state.
    // targetState is the state that a method caller intends to reach.
    // For instance, regardless the VideoView object's current state,
    // calling pause() intends to bring the object to a target state
    // of STATE_PAUSED.
    private int mCurrentState = STATE_IDLE;
    private int mTargetState = STATE_IDLE;

    // Stuff we need for playing and showing a video
    private MediaPlayer mMediaPlayer;
    private int mVideoWidth;
    private int mVideoHeight;
    private int mSurfaceWidth;
    private int mSurfaceHeight;
    private SurfaceTexture mSurfaceTexture;
    private Surface mSurface;
    private MediaController mMediaController;
    private MediaPlayer.OnCompletionListener mOnCompletionListener;
    private MediaPlayer.OnPreparedListener mOnPreparedListener;

    private MediaPlayer.OnErrorListener mOnErrorListener;
    private MediaPlayer.OnInfoListener mOnInfoListener;

    private int mSeekWhenPrepared; // recording the seek position while
    // preparing
    private int mCurrentBufferPercentage;
    private int mAudioSession;
    private Uri mUri;

    private Context mContext;

    public VideoView(final Context context) {
        super(context);
        mContext = context;
        initVideoView();
    }

    public VideoView(final Context context, final AttributeSet attrs) {
        super(context, attrs);
        mContext = context;
        initVideoView();
    }

    public VideoView(Context context, AttributeSet attrs, int defStyle) {
        super(context, attrs, defStyle);
        mContext = context;
        initVideoView();
    }
```

```
public void initVideoView() {
    mVideoHeight = 0;
    mVideoWidth = 0;
    setFocusable(false);
    setSurfaceTextureListener(mSurfaceTextureListener);
}

public int resolveAdjustedSize(int desiredSize, int measureSpec) {
    int result = desiredSize;
    int specMode = MeasureSpec.getMode(measureSpec);
    int specSize = MeasureSpec.getSize(measureSpec);

    switch (specMode) {
        case MeasureSpec.UNSPECIFIED:
        /*
         * Parent says we can be as big as we want. Just don't be larger
         * than max size imposed on ourselves.
         */
            result = desiredSize;
            break;

        case MeasureSpec.AT_MOST:
        /*
         * Parent says we can be as big as we want, up to specSize. Don't be
         * larger than specSize, and don't be larger than the max size
         * imposed on ourselves.
         */
            result = Math.min(desiredSize, specSize);
            break;

        case MeasureSpec.EXACTLY:
            // No choice. Do what we are told.
            result = specSize;
            break;
    }
    return result;
}

public void setVideoPath(String path) {
    Log.d(TAG, "Setting video path to: " + path);
    setVideoURI(Uri.parse(path));
}

public void setVideoURI(Uri _videoURI) {
    mUri = _videoURI;
    mSeekWhenPrepared = 0;
    requestLayout();
    invalidate();
    openVideo();
}

public Uri getUri() {
    return mUri;
}

public void setSurfaceTexture(SurfaceTexture _surfaceTexture) {
    mSurfaceTexture = _surfaceTexture;
}

public void openVideo() {
```

```
        if ((mUri == null) || (mSurfaceTexture == null)) {
            Log.d(TAG, "Cannot open video, uri or surface texture is null.");
            return;
        }
        // Tell the music playback service to pause
        // TODO: these constants need to be published somewhere in the
        // framework.
        Intent i = new Intent("com.android.music.musicservicecommand");
        i.putExtra("command", "pause");
        mContext.sendBroadcast(i);
        release(false);
        try {
            mSurface = new Surface(mSurfaceTexture);
            mMediaPlayer = new MediaPlayer();
            if (mAudioSession != 0) {
                mMediaPlayer.setAudioSessionId(mAudioSession);
            } else {
                mAudioSession = mMediaPlayer.getAudioSessionId();
            }

            mMediaPlayer.setOnBufferingUpdateListener(mBufferingUpdateListener);
            mMediaPlayer.setOnCompletionListener(mCompleteListener);
            mMediaPlayer.setOnPreparedListener(mPreparedListener);
            mMediaPlayer.setOnErrorListener(mErrorListener);
            mMediaPlayer.setOnInfoListener(mOnInfoListener);
            mMediaPlayer.setOnVideoSizeChangedListener(mVideoSizeChangedListener);

            mMediaPlayer.setSurface(mSurface);
            mCurrentBufferPercentage = 0;
            mMediaPlayer.setDataSource(mContext, mUri);

            mMediaPlayer.setAudioStreamType(AudioManager.STREAM_MUSIC);
            mMediaPlayer.setScreenOnWhilePlaying(true);

            mMediaPlayer.prepareAsync();
            mCurrentState = STATE_PREPARING;
        } catch (IllegalStateException e) {
            mCurrentState = STATE_ERROR;
            mTargetState = STATE_ERROR;
            String msg = (e.getMessage()==null)?"":e.getMessage();
            Log.i("",msg);  // TODO auto-generated catch block
        } catch (IOException e) {
            mCurrentState = STATE_ERROR;
            mTargetState = STATE_ERROR;
            String msg = (e.getMessage()==null)?"":e.getMessage();
            Log.i("",msg);  // TODO auto-generated catch block
        }
    }

    public void stopPlayback() {
        if (mMediaPlayer != null) {
            mMediaPlayer.stop();
            mMediaPlayer.release();
            mMediaPlayer = null;
            if (null != mMediaControllListener) {
                mMediaControllListener.onStop();
            }
        }
    }

    public void setMediaController(MediaController controller) {
```

```
        if (mMediaController != null) {
            mMediaController.hide();
        }
        mMediaController = controller;
        attachMediaController();
    }

    private void attachMediaController() {
        if (mMediaPlayer != null && mMediaController != null) {
            mMediaController.setMediaPlayer(this);
            View anchorView = this.getParent() instanceof View ? (View) this.getParent() :
this;
            mMediaController.setAnchorView(anchorView);
            mMediaController.setEnabled(isInPlaybackState());
        }
    }

    private void release(boolean cleartargetstate) {
        Log.d(TAG, "Releasing media player.");
        if (mMediaPlayer != null) {
            mMediaPlayer.reset();
            mMediaPlayer.release();
            mMediaPlayer = null;
            mCurrentState = STATE_IDLE;
            if (cleartargetstate) {
                mTargetState = STATE_IDLE;
            }
        } else {
            Log.d(TAG, "Media player was null, did not release.");
        }
    }

    @Override
    protected void onMeasure(final int widthMeasureSpec, final int heightMeasureSpec) {
        // Will resize the view if the video dimensions have been found.
        // video dimensions are found after onPrepared has been called by
        // MediaPlayer
        int width = getDefaultSize(mVideoWidth, widthMeasureSpec);
        int height = getDefaultSize(mVideoHeight, heightMeasureSpec);
        if ((mVideoWidth > 0) && (mVideoHeight > 0)) {
            if ((mVideoWidth * height) > (width * mVideoHeight)) {
                Log.d(TAG, "Video too tall, change size.");
                height = (width * mVideoHeight) / mVideoWidth;
            } else if ((mVideoWidth * height) < (width * mVideoHeight)) {
                Log.d(TAG, "Video too wide, change size.");
                width = (height * mVideoWidth) / mVideoHeight;
            } else {
                Log.d(TAG, "Aspect ratio is correct.");
            }
        }
        setMeasuredDimension(width, height);
    }

    @Override
    public boolean onTouchEvent(MotionEvent ev) {
        if (isInPlaybackState() && mMediaController != null) {
            toggleMediaControlsVisiblity();
        }
        return false;
    }
```

```
    @Override
    public boolean onTrackballEvent(MotionEvent ev) {
        if (isInPlaybackState() && mMediaController != null) {
            toggleMediaControlsVisiblity();
        }
        return false;
    }

    @Override
    public boolean onKeyDown(int keyCode, KeyEvent event) {
        boolean isKeyCodeSupported = keyCode != KeyEvent.KEYCODE_BACK && keyCode !=
KeyEvent.KEYCODE_VOLUME_UP && keyCode != KeyEvent.KEYCODE_VOLUME_DOWN
                && keyCode != KeyEvent.KEYCODE_VOLUME_MUTE && keyCode != KeyEvent.KEYCODE_MENU
&& keyCode != KeyEvent.KEYCODE_CALL
                && keyCode != KeyEvent.KEYCODE_ENDCALL;
        if (isInPlaybackState() && isKeyCodeSupported && mMediaController != null) {
            if (keyCode == KeyEvent.KEYCODE_HEADSETHOOK || keyCode ==
KeyEvent.KEYCODE_MEDIA_PLAY_PAUSE) {
                if (mMediaPlayer.isPlaying()) {
                    pause();
                    mMediaController.show();
                } else {
                    start();
                    mMediaController.hide();
                }
                return true;
            } else if (keyCode == KeyEvent.KEYCODE_MEDIA_PLAY) {
                if (!mMediaPlayer.isPlaying()) {
                    start();
                    mMediaController.hide();
                }
                return true;
            } else if (keyCode == KeyEvent.KEYCODE_MEDIA_STOP || keyCode ==
KeyEvent.KEYCODE_MEDIA_PAUSE) {
                if (mMediaPlayer.isPlaying()) {
                    pause();
                    mMediaController.show();
                }
                return true;
            } else {
                toggleMediaControlsVisiblity();
            }
        }

        return super.onKeyDown(keyCode, event);
    }

    private void toggleMediaControlsVisiblity() {
        if (mMediaController.isShowing()) {
            mMediaController.hide();
        } else {
            mMediaController.show();
        }
    }

    public void start() {
        // This can potentially be called at several points, it will go through
        // when all conditions are ready
        // 1. When setting the video URI
        // 2. When the surface becomes available
        // 3. From the activity
```

```
        if (isInPlaybackState()) {
            mMediaPlayer.start();
            mCurrentState = STATE_PLAYING;
            if (null != mMediaControllListener) {
                mMediaControllListener.onStart();
            }
        } else {
            Log.d(TAG, "Could not start. Current state " + mCurrentState);
        }
        mTargetState = STATE_PLAYING;
    }

    public void pause() {
        if (isInPlaybackState()) {
            if (mMediaPlayer.isPlaying()) {
                mMediaPlayer.pause();
                mCurrentState = STATE_PAUSED;
                if (null != mMediaControllListener) {
                    mMediaControllListener.onPause();
                }
            }
        }
        mTargetState = STATE_PAUSED;
    }

    public void suspend() {
        release(false);
    }

    public void resume() {
        openVideo();
    }

    @Override
    public int getDuration() {
        if (isInPlaybackState()) {
            return mMediaPlayer.getDuration();
        }

        return -1;
    }

    @Override
    public int getCurrentPosition() {
        if (isInPlaybackState()) {
            return mMediaPlayer.getCurrentPosition();
        }
        return 0;
    }

    @Override
    public void seekTo(int msec) {
        if (isInPlaybackState()) {
            mMediaPlayer.seekTo(msec);
            mSeekWhenPrepared = 0;
        } else {
            mSeekWhenPrepared = msec;
        }
    }

    @Override
```

```
    public boolean isPlaying() {
        return isInPlaybackState() && mMediaPlayer.isPlaying();
    }

    @Override
    public int getBufferPercentage() {
        if (mMediaPlayer != null) {
            return mCurrentBufferPercentage;
        }
        return 0;
    }

    private boolean isInPlaybackState() {
        return ((mMediaPlayer != null) && (mCurrentState != STATE_ERROR) && (mCurrentState !=
STATE_IDLE) && (mCurrentState != STATE_PREPARING));
    }

    @Override
    public boolean canPause() {
        return false;
    }

    @Override
    public boolean canSeekBackward() {
        return false;
    }

    @Override
    public boolean canSeekForward() {
        return false;
    }

    @Override
    public int getAudioSessionId() {
        if (mAudioSession == 0) {
            MediaPlayer foo = new MediaPlayer();
            mAudioSession = foo.getAudioSessionId();
            foo.release();
        }
        return mAudioSession;
    }

    // Listeners
    private MediaPlayer.OnBufferingUpdateListener mBufferingUpdateListener = new
MediaPlayer.OnBufferingUpdateListener() {
        @Override
        public void onBufferingUpdate(final MediaPlayer mp, final int percent) {
            mCurrentBufferPercentage = percent;
        }
    };

    private MediaPlayer.OnCompletionListener mCompleteListener = new
MediaPlayer.OnCompletionListener() {
        @Override
        public void onCompletion(final MediaPlayer mp) {
            mCurrentState = STATE_PLAYBACK_COMPLETED;
            mTargetState = STATE_PLAYBACK_COMPLETED;
            mSurface.release();

            if (mMediaController != null) {
                mMediaController.hide();
```

```
            }

            if (mOnCompletionListener != null) {
                mOnCompletionListener.onCompletion(mp);
            }

            if (mMediaControllListener != null) {
                mMediaControllListener.onComplete();
            }
        }
    };

    private MediaPlayer.OnPreparedListener mPreparedListener = new
MediaPlayer.OnPreparedListener() {
        @Override
        public void onPrepared(final MediaPlayer mp) {
            mCurrentState = STATE_PREPARED;

            mMediaController = new MediaController(getContext());

            if (mOnPreparedListener != null) {
                mOnPreparedListener.onPrepared(mMediaPlayer);
            }
            if (mMediaController != null) {
                mMediaController.setEnabled(true);
                //mMediaController.setAnchorView(getRootView());
            }

            mVideoWidth = mp.getVideoWidth();
            mVideoHeight = mp.getVideoHeight();

            int seekToPosition = mSeekWhenPrepared; // mSeekWhenPrepared may be
            // changed after seekTo()
            // call
            if (seekToPosition != 0) {
                seekTo(seekToPosition);
            }

            requestLayout();
            invalidate();
            if ((mVideoWidth != 0) && (mVideoHeight != 0)) {
                if (mTargetState == STATE_PLAYING) {
                    mMediaPlayer.start();
                    if (null != mMediaControllListener) {
                        mMediaControllListener.onStart();
                    }
                }
            } else {
                if (mTargetState == STATE_PLAYING) {
                    mMediaPlayer.start();
                    if (null != mMediaControllListener) {
                        mMediaControllListener.onStart();
                    }
                }
            }
        }
    };

    private MediaPlayer.OnVideoSizeChangedListener mVideoSizeChangedListener = new
MediaPlayer.OnVideoSizeChangedListener() {
        @Override
```

```
        public void onVideoSizeChanged(final MediaPlayer mp, final int width, final int
height) {
            mVideoWidth = mp.getVideoWidth();
            mVideoHeight = mp.getVideoHeight();
            if (mVideoWidth != 0 && mVideoHeight != 0) {
                requestLayout();
            }
        }
    };

    private MediaPlayer.OnErrorListener mErrorListener = new MediaPlayer.OnErrorListener() {
        @Override
        public boolean onError(final MediaPlayer mp, final int what, final int extra) {
            Log.d(TAG, "Error: " + what + "," + extra);
            mCurrentState = STATE_ERROR;
            mTargetState = STATE_ERROR;

            if (mMediaController != null) {
                mMediaController.hide();
            }

            /* If an error handler has been supplied, use it and finish. */
            if (mOnErrorListener != null) {
                if (mOnErrorListener.onError(mMediaPlayer, what, extra)) {
                    return true;
                }
            }

            /*
             * Otherwise, pop up an error dialog so the user knows that
             * something bad has happened. Only try and pop up the dialog if
             * we're attached to a window. When we're going away and no longer
             * have a window, don't bother showing the user an error.
             */
            if (getWindowToken() != null) {

//                new AlertDialog.Builder(mContext).setMessage("Error: " + what + "," +
extra).setPositiveButton("OK", new DialogInterface.OnClickListener() {
//                    public void onClick(DialogInterface dialog, int whichButton) {
//                        /*
//                         * If we get here, there is no onError listener, so at
//                         * least inform them that the video is over.
//                         */
//                        if (mOnCompletionListener != null) {
//                            mOnCompletionListener.onCompletion(mMediaPlayer);
//                        }
//                    }
//                }).setCancelable(false).show();
            }
            return true;
        }
    };

    SurfaceTextureListener mSurfaceTextureListener = new SurfaceTextureListener() {
        @Override
        public void onSurfaceTextureAvailable(final SurfaceTexture surface, final int width,
final int height) {
            Log.d(TAG, "onSurfaceTextureAvailable.");
            mSurfaceTexture = surface;
            openVideo();
        }
```

```
        @Override
        public void onSurfaceTextureSizeChanged(final SurfaceTexture surface, final int width,
final int height) {
            Log.d(TAG, "onSurfaceTextureSizeChanged: " + width + '/' + height);
            mSurfaceWidth = width;
            mSurfaceHeight = height;
            boolean isValidState = (mTargetState == STATE_PLAYING);
            boolean hasValidSize = (mVideoWidth == width && mVideoHeight == height);
            if (mMediaPlayer != null && isValidState && hasValidSize) {
                if (mSeekWhenPrepared != 0) {
                    seekTo(mSeekWhenPrepared);
                }
                start();
            }
        }

        @Override
        public boolean onSurfaceTextureDestroyed(final SurfaceTexture surface) {

            mSurface = null;
            if (mMediaController != null)
                mMediaController.hide();
            release(true);
            return true;
        }

        @Override
        public void onSurfaceTextureUpdated(final SurfaceTexture surface) {

        }
    };

    /**
     * Register a callback to be invoked when the media file is loaded and ready
     * to go.
     *
     * @param l The callback that will be run
     */
    public void setOnPreparedListener(MediaPlayer.OnPreparedListener l) {
        mOnPreparedListener = l;
    }

    /**
     * Register a callback to be invoked when the end of a media file has been
     * reached during playback.
     *
     * @param l The callback that will be run
     */
    public void setOnCompletionListener(OnCompletionListener l) {
        mOnCompletionListener = l;
    }

    /**
     * Register a callback to be invoked when an error occurs during playback or
     * setup. If no listener is specified, or if the listener returned false,
     * VideoView will inform the user of any errors.
     *
     * @param l The callback that will be run
     */
    public void setOnErrorListener(OnErrorListener l) {
```

```
        mOnErrorListener = l;
    }

    /**
     * Register a callback to be invoked when an informational event occurs
     * during playback or setup.
     *
     * @param l The callback that will be run
     */
    public void setOnInfoListener(OnInfoListener l) {
        mOnInfoListener = l;
    }

    public static interface MediaControllListener {
        public void onStart();

        public void onPause();

        public void onStop();

        public void onComplete();
    }

    MediaControllListener mMediaControllListener;

    public void setMediaControllListener(MediaControllListener mediaControllListener) {
        mMediaControllListener = mediaControllListener;
    }


    @Override
    public void setVisibility(int visibility) {
        System.out.println("setVisibility: " + visibility);
        super.setVisibility(visibility);
    }
}
```

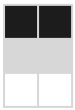
gitub。3。

VideoView https://riptutorial.com/zh-CN/android/topic/10638/videoview

112:

GC。。。android。bimap。

- `LruCache<String, Bitmap> mMemoryCache;//declaration of LruCache object.`
- void addBitmapToMemoryCacheString keyBitmap bitmap{} //
- getBitmapFromMemCacheString key{} //bimap。



Examples

LRU

LRU

LruCache。

```
private LruCache<String, Bitmap> mMemoryCache;
```

。

```
// Get max available VM memory, exceeding this amount will throw an
// OutOfMemory exception. Stored in kilobytes as LruCache takes an
// int in its constructor.
final int maxMemory = (int) (Runtime.getRuntime().maxMemory() / 1024);

// Use 1/8th of the available memory for this memory cache.
final int cacheSize = maxMemory / 8;

mMemoryCache = new LruCache<String, Bitmap>(cacheSize) {
    @Override
    protected int sizeOf(String key, Bitmap bitmap) {
        // The cache size will be measured in kilobytes rather than
        // number of items.
        return bitmap.getByteCount() / 1024;
    }
};
```

```
public void addBitmapToMemoryCache(String key, Bitmap bitmap) {
if (getBitmapFromMemCache(key) == null) {
        mMemoryCache.put(key, bitmap);
    }
}
```

```
public Bitmap getBitmapFromMemCache(String key) {
    return mMemoryCache.get(key);
}
```

imageview**getBitmapFromMemCache“Pass key”**。

https://riptutorial.com/zh-CN/android/topic/9901/

113:

Android 5.0API 21Bluetooth LE API。。

Examples

BLE

API

```
android.permission.BLUETOOTH
android.permission.BLUETOOTH_ADMIN
```

Android 6.0 **API23** /

```
android.permission.ACCESS_FINE_LOCATION
```

```
android.permission.ACCESS_COARSE_LOCATION
```

- Android 6.0API23。

BluetoothAdapter/

```
BluetoothManager bluetoothManager = (BluetoothManager)
context.getSystemService(Context.BLUETOOTH_SERVICE);
bluetoothAdapter = bluetoothManager.getAdapter();
```

BluetoothLeScanner`startScan (ScanCallback callback)。 ScanCallback`

```
bluetoothAdapter.getBluetoothLeScanner().startScan(new ScanCallback() {
     @Override
     public void onScanResult(int callbackType, ScanResult result) {
     super.onScanResult(callbackType, result);
     Log.i(TAG, "Remote device name: " + result.getDevice().getName());
       }
    });
```

GATT

BluetoothDevice`connectGatt()`ContextBLEBluetoothGattCallback

```
 if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.M) {
        device.connectGatt(context, false, bluetoothGattCallback,
BluetoothDevice.TRANSPORT_AUTO);
    } else {
        device.connectGatt(context, false, bluetoothGattCallback);
    }
```

BluetoothGattCallback`onConnectionStateChange`

```
    BluetoothGattCallback bluetoothGattCallback =
        new BluetoothGattCallback() {
    @Override
    public void onConnectionStateChange(BluetoothGatt gatt, int status,
            int newState) {
        if (newState == BluetoothProfile.STATE_CONNECTED) {
            Log.i(TAG, "Connected to GATT server.");

        } else if (newState == BluetoothProfile.STATE_DISCONNECTED) {

            Log.i(TAG, "Disconnected from GATT server.");
        }
    }
   };
```

Gatt。

```
 @Override
 public void onConnectionStateChange(BluetoothGatt gatt, int status,
        int newState) {
    if (newState == BluetoothProfile.STATE_CONNECTED) {
        Log.i(TAG, "Connected to GATT server.");
        gatt.discoverServices();

    }
. . .

 @Override
    public void onServicesDiscovered(BluetoothGatt gatt, int status) {
        if (status == BluetoothGatt.GATT_SUCCESS) {
             List<BluetoothGattService> services = gatt.getServices();
                for (BluetoothGattService service : services) {
                    List<BluetoothGattCharacteristic> characteristics =
service.getCharacteristics();
                    for (BluetoothGattCharacteristic characteristic : characteristics) {
                        ///Once you have a characteristic object, you can perform read/write
                        //operations with it
                    }
                 }
              }
            }
```

```
characteristic.setValue(newValue);
characteristic.setWriteType(BluetoothGattCharacteristic.WRITE_TYPE_DEFAULT);
gatt.writeCharacteristic(characteristic);
```

`BluetoothGattCallback`onCharacteristicWrite

```
    @Override
    public void onCharacteristicWrite(BluetoothGatt gatt, BluetoothGattCharacteristic
characteristic, int status) {
        super.onCharacteristicWrite(gatt, characteristic, status);
        Log.d(TAG, "Characteristic " + characteristic.getUuid() + " written);
    }
```

```
gatt.readCharacteristic(characteristic);
```

`BluetoothGattCallbackonCharacteristicRead`

```
@Override
public void onCharacteristicRead(BluetoothGatt gatt, BluetoothGattCharacteristic
characteristic, int status) {
  super.onCharacteristicRead(gatt, characteristic, status);
  byte[] value = characteristic.getValue();
  }
```

Gatt

Gatt

```
gatt.setCharacteristicNotification(characteristic, true);
BluetoothGattDescriptor descriptor = characteristic.getDescriptor(
    UUID.fromString("00002902-0000-1000-8000-00805f9b34fb");
descriptor.setValue(BluetoothGattDescriptor.ENABLE_NOTIFICATION_VALUE);
mBluetoothGatt.writeDescriptor(descriptor);
```

BluetoothGattCallback`onCharacteristicChanged`

```
    @Override
    public void onCharacteristicChanged(BluetoothGatt gatt, BluetoothGattCharacteristic
characteristic) {
        super.onCharacteristicChanged(gatt, characteristic);
        byte[] newValue = characteristic.getValue();
}
```

BLE

LE。31。。

LE。`BluetoothLeAdvertiser`

```
        if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.LOLLIPOP &&
bluetoothAdapter.isMultipleAdvertisementSupported())
        {
            BluetoothLeAdvertiser advertiser = bluetoothAdapter.getBluetoothLeAdvertiser();

            AdvertiseData.Builder dataBuilder = new AdvertiseData.Builder();
           //Define a service UUID according to your needs
           dataBuilder.addServiceUuid(SERVICE_UUID);
            dataBuilder.setIncludeDeviceName(true);


             AdvertiseSettings.Builder settingsBuilder = new AdvertiseSettings.Builder();
             settingsBuilder.setAdvertiseMode(AdvertiseSettings.ADVERTISE_MODE_LOW_POWER);
             settingsBuilder.setTimeout(0);

             //Use the connectable flag if you intend on opening a Gatt Server
             //to allow remote connections to your device.
             settingsBuilder.setConnectable(true);
```

```
            AdvertiseCallback advertiseCallback=new AdvertiseCallback() {
            @Override
            public void onStartSuccess(AdvertiseSettings settingsInEffect) {
                super.onStartSuccess(settingsInEffect);
                Log.i(TAG, "onStartSuccess: ");
            }

            @Override
            public void onStartFailure(int errorCode) {
                super.onStartFailure(errorCode);
                Log.e(TAG, "onStartFailure: "+errorCode );
            }
          };
advertising.startAdvertising(settingsBuilder.build(),dataBuilder.build(),advertiseCallback);
        }
```

Gatt

BluetoothGattServerBluetoothGattServiceBluetoothGattCharacteristic

```
BluetoothGattServer server=bluetoothManager.openGattServer(context,
bluetoothGattServerCallback);

BluetoothGattService service = new BluetoothGattService(SERVICE_UUID,
BluetoothGattService.SERVICE_TYPE_PRIMARY);
```

BluetoothGattCharacteristic。

```
BluetoothGattCharacteristic characteristic = new
BluetoothGattCharacteristic(CHARACTERISTIC_UUID,
                    BluetoothGattCharacteristic.PROPERTY_READ |
BluetoothGattCharacteristic.PROPERTY_WRITE |
                            BluetoothGattCharacteristic.PROPERTY_NOTIFY,
                    BluetoothGattCharacteristic.PERMISSION_READ |
BluetoothGattCharacteristic.PERMISSION_WRITE);

characteristic.addDescriptor(new BluetoothGattDescriptor(UUID.fromString("00002902-0000-1000-
8000-00805f9b34fb"), BluetoothGattCharacteristic.PERMISSION_WRITE));

service.addCharacteristic(characteristic);

server.addService(service);
```

BluetoothGattServerCallbackBluetoothGattServer

```
BluetoothGattServerCallback bluetoothGattServerCallback= new BluetoothGattServerCallback() {
                @Override
                public void onConnectionStateChange(BluetoothDevice device, int status, int
newState) {
                    super.onConnectionStateChange(device, status, newState);
                }

                @Override
                public void onCharacteristicReadRequest(BluetoothDevice device, int requestId,
int offset, BluetoothGattCharacteristic characteristic) {
                    super.onCharacteristicReadRequest(device, requestId, offset,
```

```
characteristic);
                }

                @Override
                public void onCharacteristicWriteRequest(BluetoothDevice device, int
requestId, BluetoothGattCharacteristic characteristic, boolean preparedWrite, boolean
responseNeeded, int offset, byte[] value) {
                    super.onCharacteristicWriteRequest(device, requestId, characteristic,
preparedWrite, responseNeeded, offset, value);
                }

                @Override
                public void onDescriptorReadRequest(BluetoothDevice device, int requestId, int
offset, BluetoothGattDescriptor descriptor) {
                    super.onDescriptorReadRequest(device, requestId, offset, descriptor);
                }

                @Override
                public void onDescriptorWriteRequest(BluetoothDevice device, int requestId,
BluetoothGattDescriptor descriptor, boolean preparedWrite, boolean responseNeeded, int offset,
byte[] value) {
                    super.onDescriptorWriteRequest(device, requestId, descriptor,
preparedWrite, responseNeeded, offset, value);
                }
```

/

```
@Override
 public void onCharacteristicReadRequest(BluetoothDevice device, int requestId, int offset,
BluetoothGattCharacteristic characteristic) {
    super.onCharacteristicReadRequest(device, requestId, offset, characteristic);
    server.sendResponse(device, requestId, BluetoothGatt.GATT_SUCCESS, offset, YOUR_RESPONSE);
}
```

https://riptutorial.com/zh-CN/android/topic/10020/

114:

JobServiceonStartJob()/ UIUI

ThreadAsyncTask ◦

Examples

JobService

JobServiceonStartJob()onStopJob()/onStartJob() ◦

```
public class MyJobService extends JobService
{
    final String TAG = getClass().getSimpleName();

    @Override
    public boolean onStartJob(JobParameters jobParameters) {
        Log.i(TAG, "Job started");

        // ... your code here ...

        jobFinished(jobParameters, false);  // signal that we're done and don't want to
reschedule the job
        return false;                       // finished: no more work to be done
    }

    @Override
    public boolean onStopJob(JobParameters jobParameters) {
        Log.w(TAG, "Job stopped");
        return false;
    }
}
```

JobServiceAndroidManifest.xml

MyJobServiceAndroidManifest.xml <application> </application><service>◦

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android" package="com.example">
    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:supportsRtl="true"
        android:theme="@style/AppTheme">
        <activity android:name=".MainActivity">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />
```

```
                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>

        <service
            android:name=".MyJobService"
            android:permission="android.permission.BIND_JOB_SERVICE" />
    </application>
</manifest>
```

JobService*AndroidManifest.xml*。

- `onButtonClick_startJob()`。 `JobInfo.Builder`。 。
- `onButtonClick_stopJob()`

```
public class MainActivity extends AppCompatActivity
{
    final String TAG = getClass().getSimpleName();

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }

    public void onButtonClick_startJob(View v) {
        // get the jobScheduler instance from current context
        JobScheduler jobScheduler = (JobScheduler) getSystemService(JOB_SCHEDULER_SERVICE);

        // MyJobService provides the implementation for the job
        ComponentName jobService = new ComponentName(getApplicationContext(),
MyJobService.class);

        // define that the job will run periodically in intervals of 10 seconds
        JobInfo jobInfo = new JobInfo.Builder(1, jobService).setPeriodic(10 * 1000).build();

        // schedule/start the job
        int result = jobScheduler.schedule(jobInfo);
        if (result == JobScheduler.RESULT_SUCCESS)
            Log.d(TAG, "Successfully scheduled job: " + result);
        else
            Log.e(TAG, "RESULT_FAILURE: " + result);
    }

    public void onButtonClick_stopJob(View v) {
        JobScheduler jobScheduler = (JobScheduler) getSystemService(JOB_SCHEDULER_SERVICE);
        Log.d(TAG, "Stopping all jobs...");
        jobScheduler.cancelAll(); // cancel all potentially running jobs
    }
}
```

`onButtonClick_startJob()`10。

`jobScheduler.cancel()`ID`onButtonClick_stopJob()`。

https://riptutorial.com/zh-CN/android/topic/6907/

115: ADB

Examples

```
adb install [-rtsdg] <file>
```

。

-r apks。 。

-g。

-d。

-sSD。

-t。

```
adb uninstall <packagename>
```

apk

Windows

```
for %f in (C:\your_app_path\*.apk) do adb install "%f"
```

Linux

```
for f in *.apk ; do adb install "$f" ; done
```

ADB https://riptutorial.com/zh-CN/android/topic/5301/adb

116: Android

Examples

```
Currency currency = Currency.getInstance("USD");
NumberFormat format = NumberFormat.getCurrencyInstance();
format.setCurrency(currency);
format.format(10.00);
```

Android

strings.xml◦

1. *res*
2. →
3.
4. “ ”>>
5.
6. *strings.xml*

strings.xml

```
<resources>
    <string name="app_name">Testing Application</string>
    <string name="hello">Hello World</string>
</resources>
```

strings.xmlHI

```
<resources>
    <string name="app_name">परीक्षण आवेदन</string>
    <string name="hello">नमस्ते दुनिया</string>
</resources>
```

```
public void setLocale(String locale) // Pass "en","hi", etc.
{
    myLocale = new Locale(locale);
    // Saving selected locale to session - SharedPreferences.
    saveLocale(locale);
    // Changing locale.
    Locale.setDefault(myLocale);
    android.content.res.Configuration config = new android.content.res.Configuration();
    if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.N) {
        config.setLocale(myLocale);
    } else {
        config.locale = myLocale;
    }
    if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.JELLY_BEAN_MR1) {
        getBaseContext().createConfigurationContext(config);
    } else {
        getBaseContext().getResources().updateConfiguration(config,
```

```
getBaseContext().getResources().getDisplayMetrics());
    }
}
```

strings.xml。

```
<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="@string/app_name"/>
<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="@string/hello"/>
```

ids `app_namehello`。

“res”

android。`\res`。

/	XML。
/	XML。 /。
/	XML。
/	“.png.9.png.jpg.gifXML:: `Bitmap files - Nine-Patches (re-sizable bitmaps) - State lists - Shapes - Animation drawables - Other drawables - "`
/	。mipmap /。
/	XML。 。
/	XML“”“”“”。 。
/	。InputStreamIDR.raw.filenameResources.openRawResource。
	assets //res /。/IDAssetManager。
/	XML
XML /	Resources.getXMLXML。XML。

“res”

`resconfiguration-typequalifier-values` 。

``android

- /
- /
- -FR-RCA /
- /
- notouch-12/
- -LDPI /
- -notouch-12/

Android

MCCMNC	
	mcc310
	mcc310-mnc004
	mcc208-mnc00
	FR
	EN-RUS
	FR-RFR
	FR-RCA
	ldrtl
	ldltr
	SWDP
	sw320dp
	sw600dp
	sw720dp
	WDP
	w720dp
	w1024dp

	HDP
	h720dp
	h1024dp
	XLARGE
	notround
UI	
	appliancewatch
	notnight
dpi	LDPI
	MDPI
	xhdpi
	xxhdpi
	xxxhdpi
	nodpi
	tvdpi
	anydpi
	keysexposed
	keyshidden
	keyssoft
	nokeys

	QWERTY
	12
	navexposed
	navhidden
	nonav
	DPAD
API	
	V3
	V4
	V7

android

◦ ◦ ◦

```
import android.app.Application;
import android.content.Context;
import android.content.SharedPreferences;
import android.content.res.Configuration;
import android.content.res.Resources;
import android.os.Build;
import android.preference.PreferenceManager;
import android.view.ContextThemeWrapper;

import java.util.Locale;

/**
 * Created by Umesh on 10/10/16.
 */
public class LocaleUtils {

    private static Locale mLocale;

    public static void setLocale(Locale locale){
        mLocale = locale;
        if(mLocale != null){
            Locale.setDefault(mLocale);
        }
    }

    public static void updateConfiguration(ContextThemeWrapper wrapper){
        if(mLocale != null && Build.VERSION.SDK_INT >= Build.VERSION_CODES.JELLY_BEAN_MR1){
            Configuration configuration = new Configuration();
```

```
            configuration.setLocale(mLocale);
            wrapper.applyOverrideConfiguration(configuration);
        }
    }

    public static void updateConfiguration(Application application, Configuration
configuration){
        if(mLocale != null && Build.VERSION.SDK_INT < Build.VERSION_CODES.JELLY_BEAN_MR1){
            Configuration config = new Configuration(configuration);
            config.locale = mLocale;
            Resources res = application.getBaseContext().getResources();
            res.updateConfiguration(configuration, res.getDisplayMetrics());
        }
    }

    public static void updateConfiguration(Context context, String language, String country){
        Locale locale = new Locale(language,country);
        setLocale(locale);
        if(mLocale != null){
            Resources res = context.getResources();
            Configuration configuration = res.getConfiguration();
            configuration.locale = mLocale;
            res.updateConfiguration(configuration,res.getDisplayMetrics());
        }
    }




    public static String getPrefLangCode(Context context) {
        return
PreferenceManager.getDefaultSharedPreferences(context).getString("lang_code","en");
    }

    public static void setPrefLangCode(Context context, String mPrefLangCode) {

        SharedPreferences.Editor editor =
PreferenceManager.getDefaultSharedPreferences(context).edit();
        editor.putString("lang_code",mPrefLangCode);
        editor.commit();
    }

    public static  String getPrefCountryCode(Context context) {
        return
PreferenceManager.getDefaultSharedPreferences(context).getString("country_code","US");
    }

    public static void setPrefCountryCode(Context context,String mPrefCountryCode) {

        SharedPreferences.Editor editor =
PreferenceManager.getDefaultSharedPreferences(context).edit();
        editor.putString("country_code",mPrefCountryCode);
        editor.commit();
    }
}
```

Application。

```
public class LocaleApp extends Application{
```

```
    @Override
    public void onCreate() {
        super.onCreate();

        LocaleUtils.setLocale(new Locale(LocaleUtils.getPrefLangCode(this),
LocaleUtils.getPrefCountryCode(this)));
        LocaleUtils.updateConfiguration(this, getResources().getConfiguration());
    }
}
```

```
public abstract class LocalizationActivity extends AppCompatActivity {

    public LocalizationActivity() {
        LocaleUtils.updateConfiguration(this);
    }

    // We only override onCreate
    @Override
    protected void onCreate(@Nullable Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
    }

}
```

。

LocalizationActivity。

```
public class MainActivity extends LocalizationActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

    }
}
```

`android:name=".LocaleApp"` inManifest.xml。

Lint。。

string.xml

```
<string name="developer" translatable="false">Developer Name</string>
```

toolsignore

```
<?xml version="1.0" encoding="utf-8"?>
<resources
  xmlns:tools="http://schemas.android.com/tools"
  tools:ignore="MissingTranslation" >
http://stackoverflow.com/documentation/android/3345/localization-with-resources-in-android#
  <!-- your strings here; no need now for the translatable attribute -->
```

```
</resources>
```

http://tools.android.com/recent/non-translatablestrings

donottranslate.xmllint。

```
<resources
xmlns:tools="http://schemas.android.com/tools"
    tools:locale="en" tools:ignore="MissingTranslation">
```

app / build.gradlelint

```
lintOptions {

        disable 'MissingTranslation'
    }
```

Android https://riptutorial.com/zh-CN/android/topic/3345/android

117: ContentValuesSQLite

Examples

SQLite

SQLite

```
SQLiteDatabase myDataBase;
String mPath = dbhelper.DATABASE_PATH + dbhelper.DATABASE_NAME;
myDataBase = SQLiteDatabase.openDatabase(mPath, null, SQLiteDatabase.OPEN_READWRITE);
```

ContentValues◦ str_edtfnamenameby str_edtlname ◦ table_name◦

```
ContentValues values = new ContentValues();
values.put("First_Name", str_edtfname);
values.put("Last_Name", str_edtlname);
myDataBase.insert("table_name", null, values);
```

```
ContentValues values = new ContentValues();
values.put("First_Name", str_edtfname);
values.put("Last_Name", str_edtlname);
myDataBase.update("table_name", values, "id" + " = ?", new String[] {id});
```

ContentValuesSQLite https://riptutorial.com/zh-CN/android/topic/10154/contentvaluessqlite

118: EspressoUI

Espresso

https://google.github.io/android-testing-support-library/docs/espresso/cheatsheet/

https://google.github.io/android-testing-support-library/docs/espresso/index.html

Googleespresso https //www.youtube.com/watchv = iihPOY2vS4

-

ViewAction“Espresso”。ViewAction。

```
ViewActions.closeSoftKeyboard;
Espresso.closeSoftKeyboard();
```

- 。onResumeonDestroy。 http //b.android.com/201513

Examples

Android`build.gradle`

```
dependencies {
    // Android JUnit Runner
    androidTestCompile 'com.android.support.test:runner:0.5'
    // JUnit4 Rules
    androidTestCompile 'com.android.support.test:rules:0.5'
    // Espresso core
    androidTestCompile 'com.android.support.test.espresso:espresso-core:2.2.2'
    // Espresso-contrib for DatePicker, RecyclerView, Drawer actions, Accessibility checks,
CountingIdlingResource
    androidTestCompile 'com.android.support.test.espresso:espresso-contrib:2.2.2'
    //UI Automator tests
    androidTestCompile 'com.android.support.test.uiautomator:uiautomator-v18:2.2.2'
}
```

`AndroidJUnitRunnertestInstrumentationRunnerbuild.gradle`。

```
android {

  defaultConfig {
    testInstrumentationRunner "android.support.test.runner.AndroidJUnitRunner"
  }

}
```

```
androidTestCompile 'com.android.support.test.espresso:espresso-intents:2.2.2'
```

webview

```
// Espresso-web for WebView support
androidTestCompile 'com.android.support.test.espresso:espresso-web:2.2.2'
```

Espresso

java**src / androidTest / java**。

```
public class UITest {

  @Test public void Simple_Test() {
    onView(withId(R.id.my_view))         // withId(R.id.my_view) is a ViewMatcher
        .perform(click())                // click() is a ViewAction
        .check(matches(isDisplayed()));  // matches(isDisplayed()) is a ViewAssertion
  }

}
```

DrawerLayout

```
public final class DrawerLayoutTest  {

  @Test public void Open_Close_Drawer_Layout() {
    onView(withId(R.id.drawer_layout)).perform(actionOpenDrawer());
    onView(withId(R.id.drawer_layout)).perform(actionCloseDrawer());
  }

  public static ViewAction actionOpenDrawer() {
    return new ViewAction() {
      @Override public Matcher<View> getConstraints() {
        return isAssignableFrom(DrawerLayout.class);
      }

      @Override public String getDescription() {
        return "open drawer";
      }

      @Override public void perform(UiController uiController, View view) {
        ((DrawerLayout) view).openDrawer(GravityCompat.START);
      }
    };
  }

  public static ViewAction actionCloseDrawer() {
    return new ViewAction() {
      @Override public Matcher<View> getConstraints() {
        return isAssignableFrom(DrawerLayout.class);
      }

      @Override public String getDescription() {
        return "close drawer";
      }

      @Override public void perform(UiController uiController, View view) {
        ((DrawerLayout) view).closeDrawer(GravityCompat.START);
```

```
      }
    };
  }

}
```

EspressoUI

UI

UIAppiumEspresso。

Appium	
	/
	/
iOSAndroid	Android
selenium	SpoonGoogle

---

espresso

```
dependencies {
  // Set this dependency so you can use Android JUnit Runner
  androidTestCompile 'com.android.support.test:runner:0.5'
  // Set this dependency to use JUnit 4 rules
  androidTestCompile 'com.android.support.test:rules:0.5'
  // Set this dependency to build and run Espresso tests
  androidTestCompile 'com.android.support.test.espresso:espresso-core:2.2.2'
  // Set this dependency to build and run UI Automator tests
  androidTestCompile 'com.android.support.test.uiautomator:uiautomator-v18:2.2.2'
}
```

espresso

```
    // there is a conflict with the test support library (see
http://stackoverflow.com/questions/29857695)
    // so for now re exclude the support-annotations dependency from here to avoid clashes
    androidTestCompile('com.android.support.test.espresso:espresso-core:2.2.2') {
        exclude group: 'com.android.support', module: 'support-annotations'
        exclude module: 'support-annotations'
        exclude module: 'recyclerview-v7'
        exclude module: 'support-v4'
        exclude module: 'support-v7'
    }
    // exclude a couple of more modules here because of
<http://stackoverflow.com/questions/29216327> and
```

```
    // more specifically of <https://code.google.com/p/android-test-kit/issues/detail?id=139>
    // otherwise you'll receive weird crashes on devices and dex exceptions on emulators
    // Espresso-contrib for DatePicker, RecyclerView, Drawer actions, Accessibility checks,
CountingIdlingResource
    androidTestCompile('com.android.support.test.espresso:espresso-contrib:2.2.2') {
        exclude group: 'com.android.support', module: 'support-annotations'
        exclude group: 'com.android.support', module: 'design'
        exclude module: 'support-annotations'
        exclude module: 'recyclerview-v7'
        exclude module: 'support-v4'
        exclude module: 'support-v7'
    }
    //excluded specific packages due to
https://code.google.com/p/android/issues/detail?id=183454
    androidTestCompile('com.android.support.test.espresso:espresso-intents:2.2.2') {
        exclude group: 'com.android.support', module: 'support-annotations'
        exclude module: 'support-annotations'
        exclude module: 'recyclerview-v7'
        exclude module: 'support-v4'
        exclude module: 'support-v7'
    }

    androidTestCompile('com.android.support.test.espresso:espresso-web:2.2.2') {
        exclude group: 'com.android.support', module: 'support-annotations'
        exclude module: 'support-annotations'
        exclude module: 'recyclerview-v7'
        exclude module: 'support-v4'
        exclude module: 'support-v7'
    }

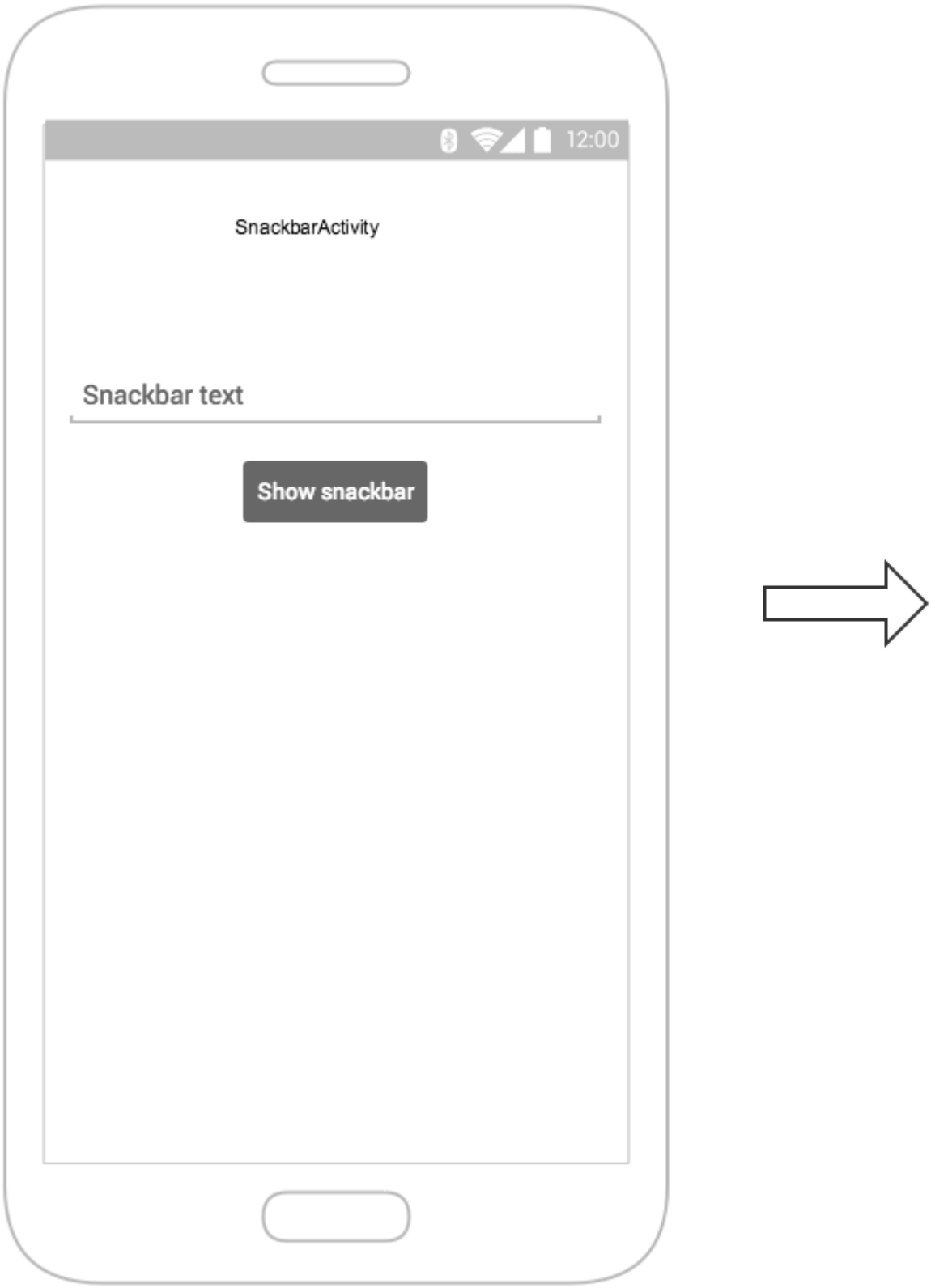
    androidTestCompile('com.android.support.test:runner:0.5') {
        exclude group: 'com.android.support', module: 'support-annotations'
        exclude module: 'support-annotations'
        exclude module: 'recyclerview-v7'
        exclude module: 'support-v4'
        exclude module: 'support-v7'
    }
    androidTestCompile('com.android.support.test:rules:0.5') {
        exclude group: 'com.android.support', module: 'support-annotations'
        exclude module: 'support-annotations'
        exclude module: 'recyclerview-v7'
        exclude module: 'support-v4'
        exclude module: 'support-v7'
    }
```

android instrumentation test runnerbuild.gradle android.defaultConfig

```
testInstrumentationRunner "android.support.test.runner.AndroidJUnitRunner"
```

- / -
- / -
- / -
- / -

ha



- - **R.id.textEntry**
- - **R.id.shownSnackbarBtn**
- snackbar - **android.support.design.R.id.snackbar_text**

```
/**
* Testing of the snackbar activity.
**/
```

```
@RunWith(AndroidJUnit4.class)
@LargeTest
public class SnackbarActivityTest{
    //espresso rule which tells which activity to start
    @Rule
    public final ActivityTestRule<SnackbarActivity> mActivityRule =
        new ActivityTestRule<>(SnackbarActivity.class, true, false);


    @Override
    public void tearDown() throws Exception {
        super.tearDown();
        //just an example how tear down should cleanup after itself
        mDatabase.clear();
        mSharedPrefs.clear();
    }

    @Override
    public void setUp() throws Exception {
        super.setUp();
        //setting up your application, for example if you need to have a user in shared
        //preferences to stay logged in you can do that for all tests in your setup
        User mUser = new User();
        mUser.setToken("randomToken");
    }

    /**
    *Test methods should always start with "testXYZ" and it is a good idea to
    *name them after the intent what you want to test
    **/
    @Test
    public void testSnackbarIsShown() {
        //start our activity
        mActivityRule.launchActivity(null);
        //check is our text entry displayed and enter some text to it
        String textToType="new snackbar text";
        onView(withId(R.id.textEntry)).check(matches(isDisplayed()));
        onView(withId(R.id.textEntry)).perform(typeText(textToType));
        //click the button to show the snackbar
        onView(withId(R.id.shownSnackbarBtn)).perform(click());
        //assert that a view with snackbar_id with text which we typed and is displayed
        onView(allOf(withId(android.support.design.R.id.snackbar_text),
        withText(textToType))) .check(matches(isDisplayed()));
    }
}
```

3-4

onViewwithXYZ < - viewMatchers

< - viewActions

checkmatchesisDisplayed < - viewAssertions

https //google.github.io/android-testing-support-library/docs/espresso/cheatsheet/index.html

/

```
./gradlew connectedFLAVORNAMEAndroidTest
```

```
@Test
public void testUpNavigation() {
    intending(hasComponent(ParentActivity.class.getName())).respondWith(new
Instrumentation.ActivityResult(0, null));

    onView(withContentDescription("Navigate up")).perform(click());

    intended(hasComponent(ParentActivity.class.getName()));
}
```

。

perform ViewActions 。
ViewActions

```
ViewActions.click()
ViewActions.typeText()
ViewActions.clearText()
```

```
onView(...).perform(click());
onView(withId(R.id.button_simple)).perform(click());
```

```
onView(...).perform(typeText("Hello"), click());
```

ScrollView scrollTo()click()typeText() scrollTo() 。

```
onView(...).perform(scrollTo(), click());
```

onView

ViewMatchers。

onView()。 onView()ViewInteraction。

R.id

```
onView(withId(R.id.my_view))
```

```
onView(withText("Hello World"))
```

Espresso。

https://google.github.io/android-testing-support-library/docs/espresso/cheatsheet/

- withIdR.id.ID_of_object_you_are_looking_for;
- withText“”;
- isDisplayed< - check

- doesNotExist< -

。

2 **TypeSafeMatcher BoundedMatcher**

TypeSafeMatcher。

drawable

```
public class DrawableMatcher extends TypeSafeMatcher<View> {

    private @DrawableRes final int expectedId;
    String resourceName;

    public DrawableMatcher(@DrawableRes int expectedId) {
        super(View.class);
        this.expectedId = expectedId;
    }

    @Override
    protected boolean matchesSafely(View target) {
        //Type check we need to do in TypeSafeMatcher
        if (!(target instanceof ImageView)) {
            return false;
        }
        //We fetch the image view from the focused view
        ImageView imageView = (ImageView) target;
        if (expectedId < 0) {
            return imageView.getDrawable() == null;
        }
        //We get the drawable from the resources that we are going to compare with image view
source
        Resources resources = target.getContext().getResources();
        Drawable expectedDrawable = resources.getDrawable(expectedId);
        resourceName = resources.getResourceEntryName(expectedId);

        if (expectedDrawable == null) {
            return false;
        }
        //comparing the bitmaps should give results of the matcher if they are equal
        Bitmap bitmap = ((BitmapDrawable) imageView.getDrawable()).getBitmap();
        Bitmap otherBitmap = ((BitmapDrawable) expectedDrawable).getBitmap();
        return bitmap.sameAs(otherBitmap);
    }


    @Override
    public void describeTo(Description description) {
        description.appendText("with drawable from resource id: ");
        description.appendValue(expectedId);
        if (resourceName != null) {
            description.appendText("[");
            description.appendText(resourceName);
            description.appendText("]");
        }
    }
}
```

```
  public static Matcher<View> withDrawable(final int resourceId) {
    return new DrawableMatcher(resourceId);
}

 onView(withDrawable(R.drawable.someDrawable)).check(matches(isDisplayed()));
```

```
 /**
 * Matches a {@link TextInputFormView}'s input hint with the given resource ID
 *
 * @param stringId
 * @return
 */
public static Matcher<View> withTextInputHint(@StringRes final int stringId) {
    return new BoundedMatcher<View, TextInputFormView>(TextInputFormView.class) {
        private String mResourceName = null;

        @Override
        public void describeTo(final Description description) {
            //fill these out properly so your logging and error reporting is more clear
            description.appendText("with TextInputFormView that has hint ");
            description.appendValue(stringId);
            if (null != mResourceName) {
                description.appendText("[");
                description.appendText(mResourceName);
                description.appendText("]");
            }
        }

        @Override
        public boolean matchesSafely(final TextInputFormView view) {
            if (null == mResourceName) {
                try {
                    mResourceName = view.getResources().getResourceEntryName(stringId);
                } catch (Resources.NotFoundException e) {
                    throw new IllegalStateException("could not find string with ID " +
stringId, e);
                }
            }
            return view.getResources().getString(stringId).equals(view.getHint());
        }
    };
}
```

http://hamcrest.org/

https://developer.android.com/reference/android/support/test/espresso/matcher/ViewMatchers.html

```
androidTestCompile 'com.android.support.test.espresso:espresso-core:2.2.2'
androidTestCompile 'com.android.support.test:runner:0.5'
```

ViewMatchers - `Matcher<? super View>Matcher<? super View>◦ onView◦`

ViewActions - `ViewInteraction.perform()ViewActions click() ◦`

ViewAssertions -`ViewAssertionsViewInteraction.check()◦` View◦

```
onView(ViewMatcher)
        .perform(ViewAction)
        .check(ViewAssertion);
```

View Matchers

USER PROPERTIES

```
withId(...)
withText(...)
withTagKey(...)
withTagValue(...)
hasContentDescription(...)
withContentDescription(...)
withHint(...)
withSpinnerText(...)
hasLinks()
hasEllipsizedText()
hasMultilineTest()
```

UI PROPERTIES

```
isDisplayed()
isCompletelyDisplayed()
isEnabled()
hasFocus()
isClickable()
isChecked()
isNotChecked()
withEffectiveVisibility(...)
isSelected()
```

OBJECT MATCHER

```
allOf(Matchers)
anyOf(Matchers)
is(...)
```

HIERARCHY

```
withParent(Matcher)
withChild(Matcher)
hasDescendant(Matcher)
isDescendantOfA(Matcher)
hasSibling(Matcher)
isRoot()
```

INPUT

```
supportsInputMethods(...)
hasIMEAction(...)
```

CLASS

```
isAssignableFrom(...)
withClassName(...)
```

ROOT MATCHERS

```
isFocusable()
isTouchable()
isDialog()
withDecorView()
isPlatformPopup()
```

SEE ALSO

```
Preference matchers
```

119: Gradle.aarApache Archiva

Examples

```
apply plugin: 'com.android.library'
apply plugin: 'maven'
apply plugin: 'maven-publish'
android {
compileSdkVersion 21
buildToolsVersion "21.1.2"


repositories {
    mavenCentral()
}

defaultConfig {
    minSdkVersion 9
    targetSdkVersion 21
    versionCode 1
    versionName "1.0"
}

buildTypes {
    release {
        minifyEnabled false
        proguardFiles getDefaultProguardFile('proguard-android.txt'), 'proguard-rules.pro'
    }
}


dependencies {
   compile fileTree(include: ['*.jar'], dir: 'libs')
   provided 'com.android.support:support-v4:21.0.3'
   provided 'com.android.support:appcompat-v7:21.0.3'
}

task sourceJar(type: Jar) {
   classifier "source"
}

publishing {
   publications {

       repositories.maven {
           url 'myurl/repositories/myrepo'
           credentials {
               username "user"
               password "password"
           }
       }

       maven(MavenPublication) {
           artifacts {
               groupId 'com.mycompany'
               artifactId 'mylibrary'
               version '1.0'
```

```
                artifact 'build/outputs/aar/app-release.aar'
            }
        }
    }

}
```

Gradle.aarApache Archiva https://riptutorial.com/zh-CN/android/topic/6453/gradle-aarapache-archiva

120: JUnitAndroid

- Vogella JUnit
- Junit java2novice.com
- junit.org
- JUnit Api tutorialspoint.com
- AnroidMedium.com

Examples

/src/test/<pkg_name>/

```
public class ExampleUnitTest {
    @Test
    public void addition_isCorrect() throws Exception {
        int a=4, b=5, c;
        c = a + b;
        assertEquals(9, c); // This test passes
        assertEquals(10, c); //Test fails
    }
}
```

```
public class ExampleUnitTest {
  ...
}
```

◦

```
@Test
public void addition_isCorrect() {
   ...
}
```

◦

@Test ◦

Test annotationJUnitpublic void◦

@Before @After◦

```
assertEquals(9, c); // This test passes
assertEquals(10, c); //Test fails
```

Assert◦ assertFalse() assertNotNull() assertTrue◦ ◦

JUnit

@Test Test annotationJUnitpublic void。 JUnit。

@Before。 `@Before`public voidTest。

@After Before。 `@After`voidTest。 BeforeTest`@After`

Android Studio

- 。
- Alt + EnterWindows。
- Create TestReturn。
- “”。
- 。
- 。

Android Studio

- 。
- '...
- 。

Android Componenets

JVM。 Android。 Model-View-Presenter。 。 Android。 /api。

Android。

```
public class LoginActivity extends Activity{
    ...
    private void onSubmitButtonClicked(){
        String username = findViewById(R.id.username).getText().toString();
        String password = findViewById(R.id.password).getText().toString();
        boolean isUsernameValid = username != null && username.trim().length() != 0;
        boolean isPasswordValid = password != null && password.trim().length() >= 8 &&
password.matches(".*\\d+.*");
        if(isUsernameValid && isPasswordValid){
            performSignUpApiCall(username, password);
        } else {
            displayInvalidCredentialsErrorMessage();
        }
    }
}
```

Android。

LoginContract。

```
public interface LoginContract {
```

```
    public interface View {
        performSignUpApiCall(String username, String password);
        displayInvalidCredentialsErrorMessage();
    }
    public interface Presenter {
        void validateUserCredentials(String username, String password);
    }
}
```

LoginActivity。 LoginActivityLoginPresenter。

```
public class LoginActivity extends Activity implements LoginContract.View{
    private LoginContract.Presenter presenter;

    protected void onCreate(Bundle savedInstanceState) {
            super.onCreate(savedInstanceState);
            presenter = new LoginPresenter(this);
            ....
        }
        ...

        private void onSubmitButtonClicked(){
            String username = findViewById(R.id.username).getText().toString();
            String password = findViewById(R.id.password).getText().toString();
            presenter.validateUserCredentials(username, password);
    }
    ...
}
```

LoginPresenter。

```
public class LoginPresenter implements LoginContract.Presenter{
    private LoginContract.View view;

    public LoginPresenter(LoginContract.View view){
        this.view = view;
    }

    public void validateUserCredentials(String username, String password){
        boolean isUsernameValid = username != null && username.trim().length() != 0;
        boolean isPasswordValid = password != null && password.trim().length() >= 8 &&
password.matches(".*\\d+.*");
        if(isUsernameValid && isPasswordValid){
            view.performSignUpApiCall(username, password);
        } else {
            view.displayInvalidCredentialsErrorMessage();
        }
    }
}
```

LoginPresenterJVM。

```
public class LoginPresenterTest {

    @Mock
    LoginContract.View view;
```

```
    private LoginPresenter presenter;

    @Before
    public void setUp() throws Exception {
        MockitoAnnotations.initMocks(this);
        presenter = new LoginPresenter(view);
    }

    @Test
    public void test_validateUserCredentials_userDidNotEnterUsername_displayErrorMessage()
throws Exception {
        String username = "";
        String password = "kingslayer1";
        presenter.validateUserCredentials(username, password);
        Mockito.verify(view). displayInvalidCredentialsErrorMessage();
    }

    @Test
    public void
test_validateUserCredentials_userEnteredFourLettersAndOneDigitPassword_displayErrorMessage()
throws Exception {
        String username = "Jaime Lanninster";
        String password = "king1";
        presenter.validateUserCredentials(username, password);
        Mockito.verify(view). displayInvalidCredentialsErrorMessage();
    }

    @Test
    public void
test_validateUserCredentials_userEnteredNineLettersButNoDigitsPassword_displayErrorMessage()
throws Exception {
        String username = "Jaime Lanninster";
        String password = "kingslayer";
        presenter.validateUserCredentials(username, password);
        Mockito.verify(view). displayInvalidCredentialsErrorMessage();
    }

    @Test
    public void
test_validateUserCredentials_userEnteredNineLettersButOneDigitPassword_performApiCallToSignUpUser()
throws Exception {
        String username = "Jaime Lanninster";
        String password = "kingslayer1";
        presenter.validateUserCredentials(username, password);
        Mockito.verify(view).performSignUpApiCall(username, password);
    }
}
```

LoginActivityLoginPresenter POJO 。 JVM。

。 MVP。 MVPMVVM 。 。

JUnit

JUnitAndroidJUnit。Android StudioJUnit

`build.gradleClosurebuild.gradle`

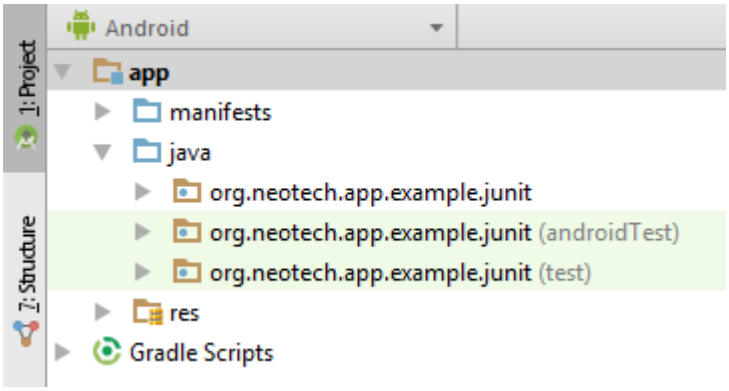
```
testCompile 'junit:junit:4.12'
```

JUnit`test` Android StudioGradle

```
<project-root-folder>
    /app (module root folder)
        /build
        /libs
        /src
            /main (source code)
            /test (unit test source code)
            /androidTest (instrumentation test source code)
        build.gradle (module gradle file)
    /build
    /gradle
    build.gradle (project gradle file)
    gradle.properties
    gradlew
    gradlew.bat
    local.properties
    settings.gradle (gradle settings)
```

`/app/src/test` `testjava` `test`java`main`

Android StudioAndroid



`androidTest`*Android Studio*

---

1. **`test`**

   `New` > `Java class`

   `Test` `StringUtilitiesStringUtilitiesTest`

2. **`@RunWith`**

   `@RunWith`JUnit JUnitJUnit 4`BlockJUnit4ClassRunnerJUnit4` JUnit

   ```
   @RunWith(JUnit4.class)
   public class StringUtilitiesTest {

   }
   ```

3.

◦ ◦ ◦ /◦ `@Test`◦ JUnit◦

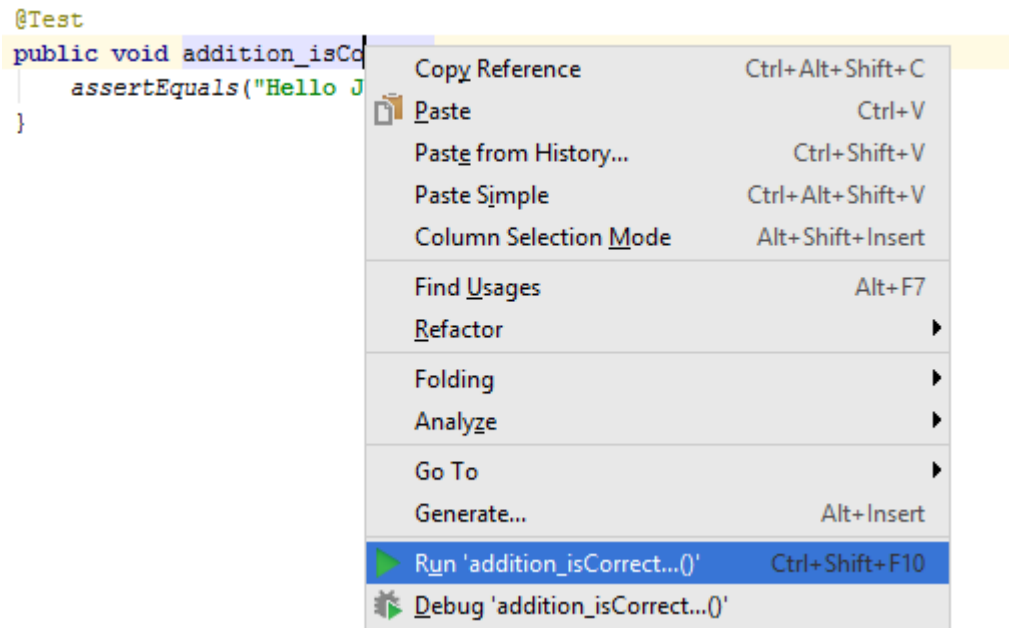
```
@RunWith(JUnit4.class)
public class StringUtilitiesTest {

    @Test
    public void addition_isCorrect() throws Exception {
        assertEquals("Hello JUnit", "Hello" + " " + "JUnit");
    }
}
```

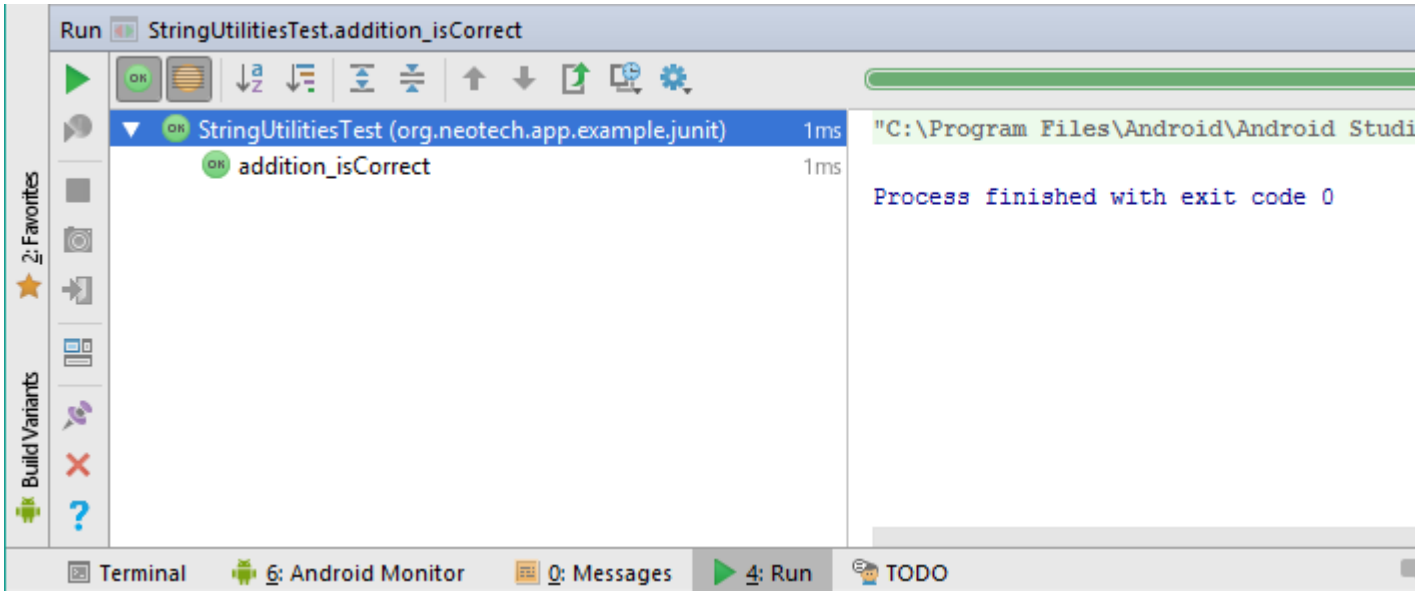
Java◦

1.

`Run 'addition_isCorrect()'ctrl+shift+f10` ◦



JUnitAndroid Studio



2.

Run 'StringUtilitiesTest 'ctrl+shift+f10 ◦

3.

Run ...◦

JUnit◦

/

```
public static boolean parseBoolean(@NonNull String raw) throws IllegalArgumentException{
    raw = raw.toLowerCase().trim();
    switch (raw) {
        case "t": case "yes": case "1": case "true":
            return true;
        case "f": case "no": case "0": case "false":
            return false;
        default:
            throw new IllegalArgumentException("Unknown boolean format: " + raw);
    }
}
```

expected@Test◦

```
@Test(expected = IllegalArgumentException.class)
public void parseBoolean_parsesInvalidFormat_throwsException(){
    StringUtilities.parseBoolean("Hello JUnit");
}
```

◦ ◦ try-catchAssert.fail()

```
@Test
public void parseBoolean_parsesInvalidFormats_throwsException(){
    try {
        StringUtilities.parseBoolean("Hello!");
        fail("Expected IllegalArgumentException");
    } catch(IllegalArgumentException e){
    }

    try {
        StringUtilities.parseBoolean("JUnit!");
        fail("Expected IllegalArgumentException");
    } catch(IllegalArgumentException e){
    }
}
```

◦

JUnitassertEquals◦ Assert.assertEquals ◦ ◦

assertEqualsimport

```
import static org.junit.Assert.assertEquals;
```

assertArrayEquals assertNotNullassertFalse

```
import static org.junit.Assert.*;
```

```
@Test
public void addition_isCorrect(){
    Assert.assertEquals(4 , 2 + 2);
}
```

```
@Test
public void addition_isCorrect(){
    assertEquals(4 , 2 + 2);
}
```

JUnitAndroid https://riptutorial.com/zh-CN/android/topic/3205/junitandroid

121: KotlinAndroid

KotlinAndroid StudioKotlinJetBrains。 IntelliJ IDEAAndroid StudioIDE。 。

Kotlin Programming Language 。

Examples

Kotlin

Kotlin。

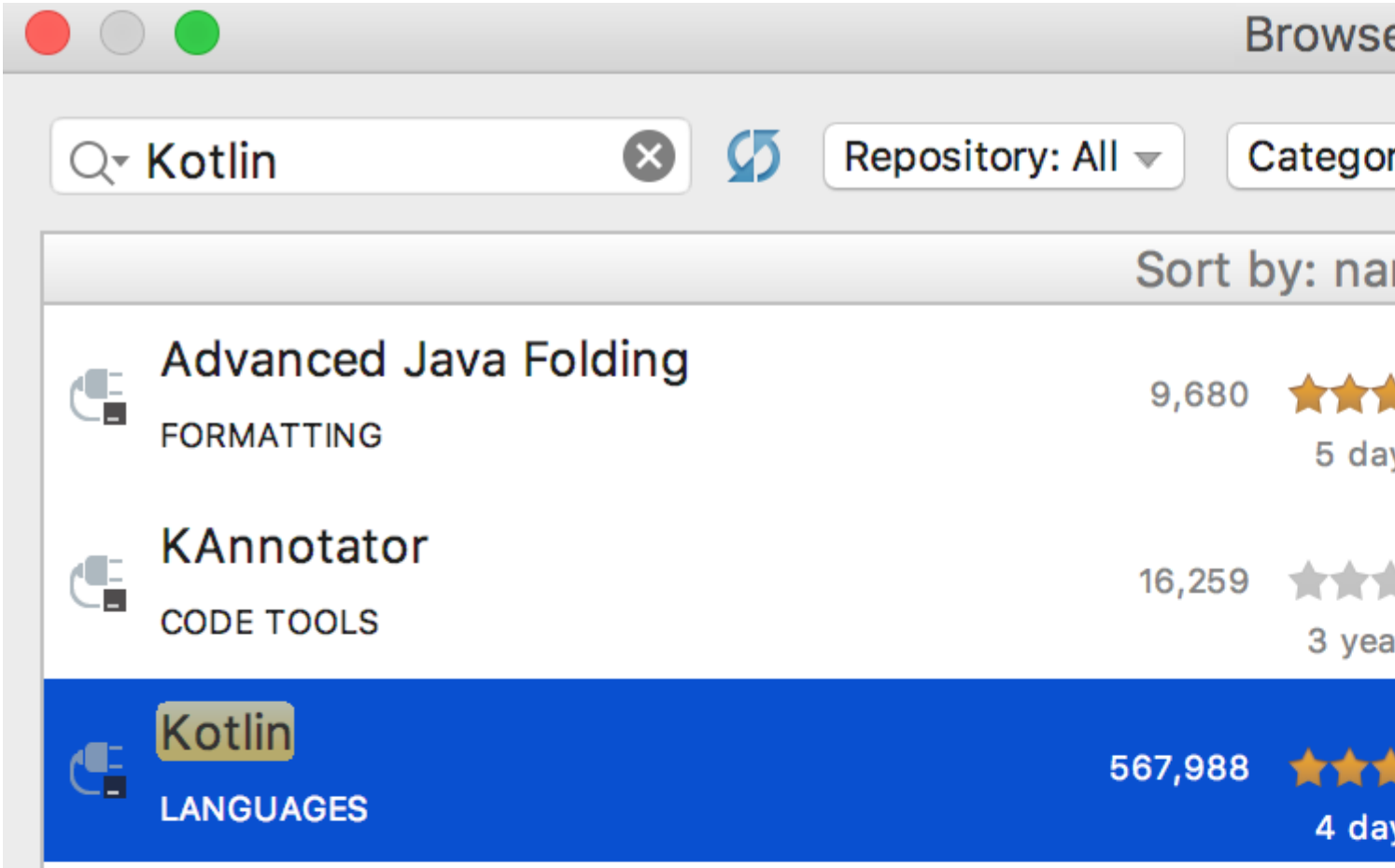
Windows

- `File` → `Settings` → `Plugins` → `Install JetBrains plugin`

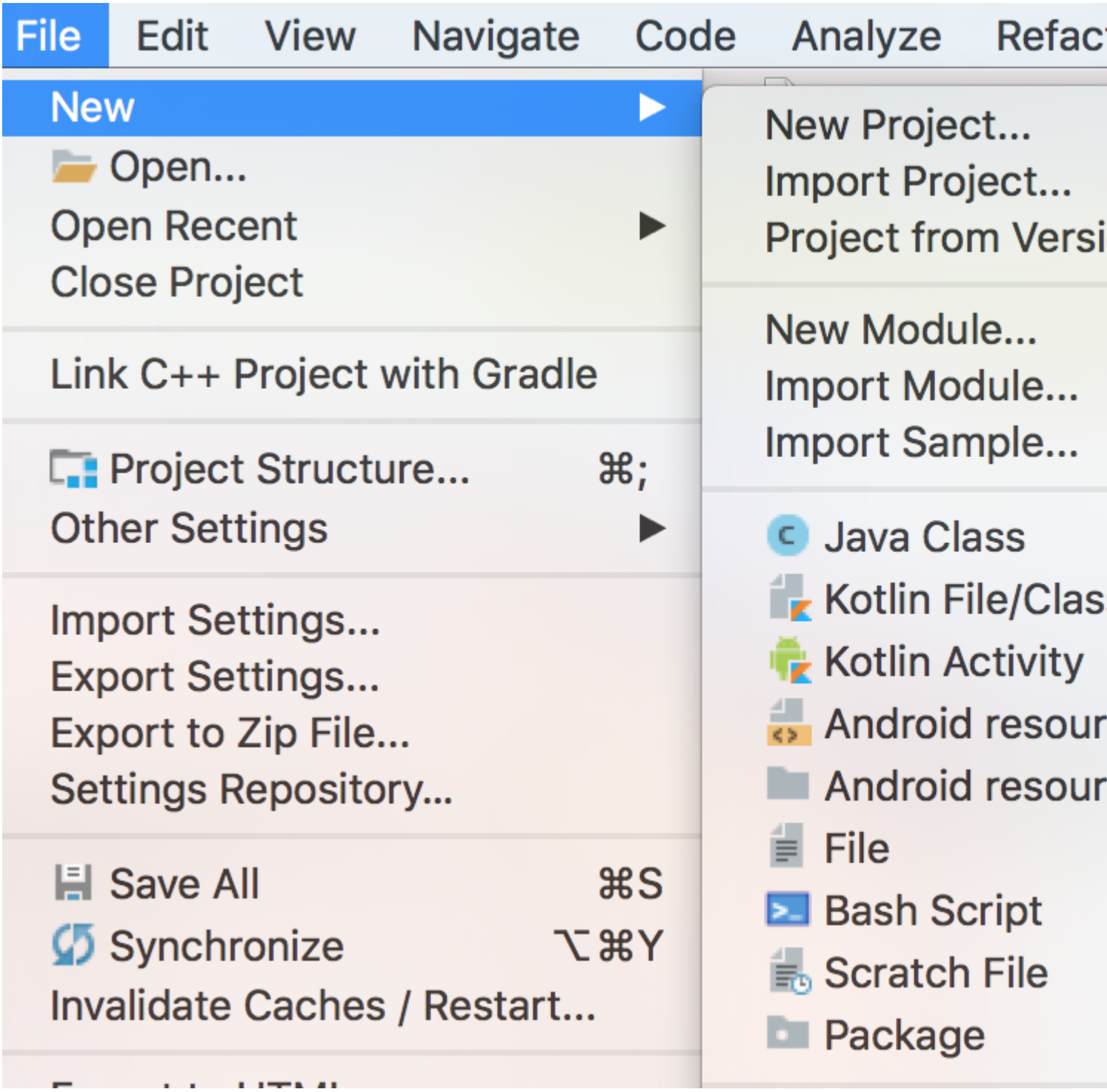
Mac

- `Android Studio` → `Preferences` → `Plugins` → `Install JetBrains plugin`

Kotlin。 IDE。


Browse
Kotlin
Repository: All
Categor
Sort by: na
Advanced Java Folding
FORMATTING
9,680
5 day
KAnnotator
CODE TOOLS
16,259
3 yea
Kotlin
LANGUAGES
567,988
4 day

2. ◦
3. ◦
4. ◦




```
import android.support.v7.app.AppCompatActivity
import android.os.Bundle

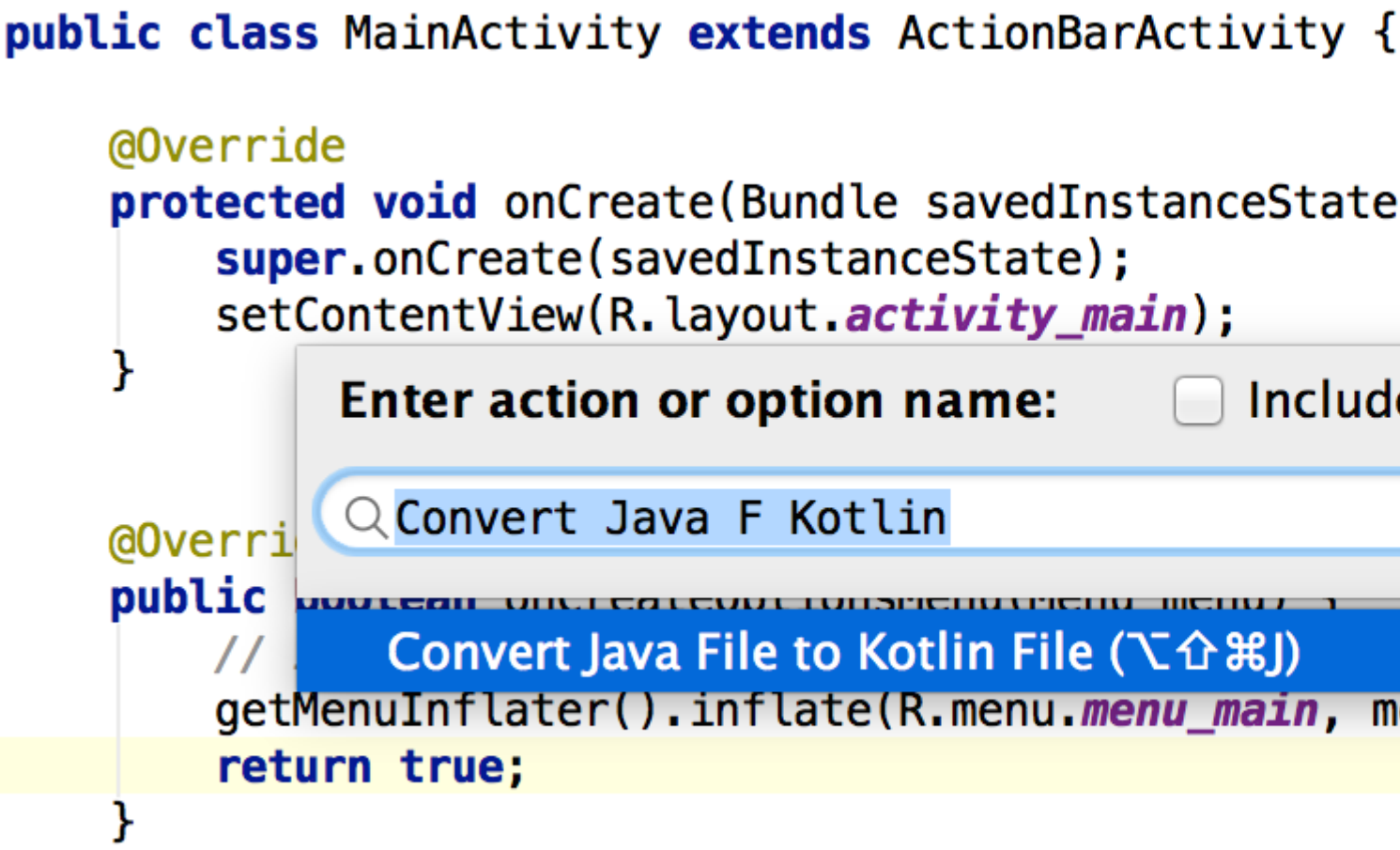
class MainActivity : AppCompatActivity() {

    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)
    }
```

```
}
```

JavaKotlin

Android StudioKotlinJavaKotlin。JavaJavaKotlin




```
fun startNewActivity(){
    val intent: Intent = Intent(context, Activity::class.java)
    startActivity(intent)
}
```

Javaintent。

```
fun startNewActivityWithIntents(){
    val intent: Intent = Intent(context, Activity::class.java)
    intent.putExtra(KEY_NAME, KEY_VALUE)
    startActivity(intent)
}
```

KotlinAndroid https://riptutorial.com/zh-CN/android/topic/9623/kotlinandroid

122: RxJavaRetrofit2

Examples

RxJavaRetrofit2

build.gradle。

```
dependencies {
    ....
    compile 'com.squareup.retrofit2:retrofit:2.3.0'
    compile 'com.squareup.retrofit2:converter-gson:2.3.0'
    compile 'com.squareup.retrofit2:adapter-rxjava:2.3.0'
    ....
}
```

```
public class Server {
    public String name;
    public String url;
    public String apikey;
    public List<Site> siteList;
}
```

```
public interface ApiServerRequests {

    @GET("api/get-servers")
    public Observable<List<Server>> getServers();
}
```

Retrofit

```
public ApiRequests DeviceAPIHelper ()
{
    Gson gson = new GsonBuilder().create();

    Retrofit retrofit = new Retrofit.Builder()
            .baseUrl("http://example.com/")
            .addConverterFactory(GsonConverterFactory.create(gson))
            .addCallAdapterFactory(RxJavaCallAdapterFactory.create())
            .build();

    api = retrofit.create(ApiServerRequests.class);
    return api;
}
```

```
apiRequests.getServers()
   .subscribeOn(Schedulers.io()) // the observable is emitted on io thread
   .observerOn(AndroidSchedulers.mainThread()) // Methods needed to handle request in
background thread
   .subscribe(new Subscriber<List<Server>>() {
       @Override
       public void onCompleted() {
```

```
        }

        @Override
        public void onError(Throwable e) {

        }

        @Override
        public void onNext(List<Server> servers) {
            //A list of servers is fetched successfully
        }
    });
```

RxJava

RxJavaGitHub *RxJavaReactive ExtensionsJava VM*。/。

RetrofitAndroidJavaHTTP。JSONRecyclerView。

build.gradleRxJavaRxAndroidRetrofit `compile "io.reactivex:rxjava:1.1.6"`

```
compile "io.reactivex:rxandroid:1.2.1"
compile "com.squareup.retrofit2:adapter-rxjava:2.0.2"
compile "com.google.code.gson:gson:2.6.2"
compile "com.squareup.retrofit2:retrofit:2.0.2"
compile "com.squareup.retrofit2:converter-gson:2.0.2"
```

ApiClientApiInterface

```
public class ApiClient {

private static Retrofit retrofitInstance = null;
private static final String BASE_URL = "https://api.github.com/";

public static Retrofit getInstance() {
    if (retrofitInstance == null) {
        retrofitInstance = new Retrofit.Builder()
                .baseUrl(BASE_URL)
                .addCallAdapterFactory(RxJavaCallAdapterFactory.create())
                .addConverterFactory(GsonConverterFactory.create())
                .build();
    }
    return retrofitInstance;
}

public static <T> T createRetrofitService(final Class<T> clazz, final String endPoint) {
    final Retrofit restAdapter = new Retrofit.Builder()
            .baseUrl(endPoint)
            .build();

    return restAdapter.create(clazz);
}

public static String getBaseUrl() {
    return BASE_URL;
}}
```

ApiInterface {

```
@GET("repos/{org}/{repo}/issues")
Observable<List<Issue>> getIssues(@Path("org") String organisation,
                                  @Path("repo") String repositoryName,
                                  @Query("page") int pageNumber);}
```

getReposObservable。

。 JsonSchema2Pojo。

```
public class Comment {

@SerializedName("url")
@Expose
private String url;
@SerializedName("html_url")
@Expose
private String htmlUrl;

//Getters and Setters
}
```

Retrofit

```
ApiInterface apiService = ApiClient.getInstance().create(ApiInterface.class);
```

```
Observable<List<Issue>> issueObservable = apiService.getIssues(org, repo,
pageNumber);
    issueObservable.subscribeOn(Schedulers.newThread())
            .observeOn(AndroidSchedulers.mainThread())
            .map(issues -> issues)    //get issues and map to issues list
            .subscribe(new Subscriber<List<Issue>>() {
                @Override
                public void onCompleted() {
                    Log.i(TAG, "onCompleted: COMPLETED!");
                }

                @Override
                public void onError(Throwable e) {
                    Log.e(TAG, "onError: ", e);
                }

                @Override
                public void onNext(List<Issue> issues) {
                    recyclerView.setAdapter(new IssueAdapter(MainActivity.this, issues,
apiService));
                }
            });
```

RetrofitRxJava。

API `getAllPets` `getSinglePet` 。

```
public class PetsFetcher {
```

```
static class PetRepository {
    List<Integer> ids;
}

static class Pet {
    int id;
    String name;
    int weight;
    int height;
}

interface PetApi {

    @GET("pets") Observable<PetRepository> getAllPets();

    @GET("pet/{id}") Observable<Pet> getSinglePet(@Path("id") int id);

}

PetApi petApi;

Disposable petsDisposable;

public void requestAllPets() {

    petApi.getAllPets()
            .doOnSubscribe(new Consumer<Disposable>() {
                @Override public void accept(Disposable disposable) throws Exception {
                    petsDisposable = disposable;
                }
            })
            .flatMap(new Function<PetRepository, ObservableSource<Integer>>() {
                @Override
                public ObservableSource<Integer> apply(PetRepository petRepository) throws
Exception {
                    List<Integer> petIds = petRepository.ids;
                    return Observable.fromIterable(petIds);
                }
            })
            .flatMap(new Function<Integer, ObservableSource<Pet>>() {
                @Override public ObservableSource<Pet> apply(Integer id) throws Exception {
                    return petApi.getSinglePet(id);
                }
            })
            .toList()
            .toObservable()
            .subscribeOn(Schedulers.io())
            .observeOn(AndroidSchedulers.mainThread())
            .subscribe(new Consumer<List<Pet>>() {
                @Override public void accept(List<Pet> pets) throws Exception {
                    //use your pets here
                }
            }, new Consumer<Throwable>() {
                @Override public void accept(Throwable throwable) throws Exception {
                    //show user something goes wrong
                }
            });

}
```

```
void cancelRequests(){
    if (petsDisposable!=null){
        petsDisposable.dispose();
        petsDisposable = null;
    }
}
```

}

RxJavaRetrofit2 https://riptutorial.com/zh-CN/android/topic/7632/rxjavaretrofit2

123: SurfaceView

-
- UI
- UI
-
- 。
- `unlockCanvasAndPost()`。

`lockCanvas()` `lockCanvas()` `unlockCanvasAndPost()`。

Examples

SurfaceView

SurfaceView。 /CPU。

```
import android.content.Context;
import android.graphics.Canvas;
import android.graphics.Paint;
import android.util.AttributeSet;
import android.util.Log;
import android.view.MotionEvent;
import android.view.SurfaceHolder;
import android.view.SurfaceView;
import android.view.View;
/**
* Defines a custom SurfaceView class which handles the drawing thread
**/
public class BaseSurface extends SurfaceView implements SurfaceHolder.Callback,
View.OnTouchListener, Runnable
{

    /**
     * Holds the surface frame
     */
    private SurfaceHolder holder;

    /**
     * Draw thread
     */
    private Thread drawThread;

    /**
     * True when the surface is ready to draw
     */
    private boolean surfaceReady = false;


    /**
     * Drawing thread flag
     */

    private boolean drawingActive = false;
```

```
/**
 * Paint for drawing the sample rectangle
 */
private Paint samplePaint = new Paint();

/**
 * Time per frame for 60 FPS
 */
private static final int MAX_FRAME_TIME = (int) (1000.0 / 60.0);

private static final String LOGTAG = "surface";

public BaseSurface(Context context, AttributeSet attrs)
{
    super(context, attrs);
    SurfaceHolder holder = getHolder();
    holder.addCallback(this);
    setOnTouchListener(this);

    // red
    samplePaint.setColor(0xffff0000);
    // smooth edges
    samplePaint.setAntiAlias(true);
}

@Override
public void surfaceChanged(SurfaceHolder holder, int format, int width, int height)
{
    if (width == 0 || height == 0)
    {
        return;
    }

    // resize your UI
}

@Override
public void surfaceCreated(SurfaceHolder holder)
{
    this.holder = holder;

    if (drawThread != null)
    {
        Log.d(LOGTAG, "draw thread still active..");
        drawingActive = false;
        try
        {
            drawThread.join();
        } catch (InterruptedException e)
        { // do nothing
        }
    }

    surfaceReady = true;
    startDrawThread();
    Log.d(LOGTAG, "Created");
}

@Override
public void surfaceDestroyed(SurfaceHolder holder)
```

```
    {
        // Surface is not used anymore - stop the drawing thread
        stopDrawThread();
        // and release the surface
        holder.getSurface().release();

        this.holder = null;
        surfaceReady = false;
        Log.d(LOGTAG, "Destroyed");
    }

    @Override
    public boolean onTouch(View v, MotionEvent event)
    {
        // Handle touch events
        return true;
    }

    /**
     * Stops the drawing thread
     */
    public void stopDrawThread()
    {
        if (drawThread == null)
        {
            Log.d(LOGTAG, "DrawThread is null");
            return;
        }
        drawingActive = false;
        while (true)
        {
            try
            {
                Log.d(LOGTAG, "Request last frame");
                drawThread.join(5000);
                break;
            } catch (Exception e)
            {
                Log.e(LOGTAG, "Could not join with draw thread");
            }
        }
        drawThread = null;
    }

    /**
     * Creates a new draw thread and starts it.
     */
    public void startDrawThread()
    {
        if (surfaceReady && drawThread == null)
        {
            drawThread = new Thread(this, "Draw thread");
            drawingActive = true;
            drawThread.start();
        }
    }

    @Override
    public void run()
    {
        Log.d(LOGTAG, "Draw thread started");
```

```
        long frameStartTime;
        long frameTime;

        /*
         * In order to work reliable on Nexus 7, we place ~500ms delay at the start of drawing
thread
         * (AOSP - Issue 58385)
         */
        if (android.os.Build.BRAND.equalsIgnoreCase("google") &&
android.os.Build.MANUFACTURER.equalsIgnoreCase("asus") &&
android.os.Build.MODEL.equalsIgnoreCase("Nexus 7"))
        {
            Log.w(LOGTAG, "Sleep 500ms (Device: Asus Nexus 7)");
            try
            {
                Thread.sleep(500);
            } catch (InterruptedException ignored)
            {
            }
        }
        try
        {
            while (drawingActive)
            {
                if (holder == null)
                {
                    return;
                }

                frameStartTime = System.nanoTime();
                Canvas canvas = holder.lockCanvas();
                if (canvas != null)
                {
                    // clear the screen using black
                    canvas.drawARGB(255, 0, 0, 0);

                    try
                    {
                        // Your drawing here
                        canvas.drawRect(0, 0, getWidth() / 2, getHeight() / 2, samplePaint);
                    } finally
                    {

                        holder.unlockCanvasAndPost(canvas);
                    }
                }

                // calculate the time required to draw the frame in ms
                frameTime = (System.nanoTime() - frameStartTime) / 1000000;

                if (frameTime < MAX_FRAME_TIME) // faster than the max fps - limit the FPS
                {
                    try
                    {
                        Thread.sleep(MAX_FRAME_TIME - frameTime);
                    } catch (InterruptedException e)
                    {
                        // ignore
                    }
                }
            }
```

```
        } catch (Exception e)
        {
            Log.w(LOGTAG, "Exception while locking/unlocking");
        }
        Log.d(LOGTAG, "Draw thread finished");
    }
}
```

SurfaceView。

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context="sample.devcore.org.surfaceviewsample.MainActivity">

    <sample.devcore.org.surfaceviewsample.BaseSurface
        android:id="@+id/baseSurface"
        android:layout_width="match_parent"
        android:layout_height="match_parent"/>
</LinearLayout>
```

SurfaceView。。

```
import android.app.Activity;
import android.os.Bundle;

public class MainActivity extends Activity
{

    /**
     * Surface object
     */
    private BaseSurface surface;

    @Override
    protected void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        surface = (BaseSurface) findViewById(R.id.baseSurface);
    }

    @Override
    protected void onResume()
    {
        super.onResume();
        // start the drawing
        surface.startDrawThread();
    }

    @Override
    protected void onPause()
    {
        // stop the drawing to save cpu time
        surface.stopDrawThread();
```

```
        super.onPause();
    }
}
```

SurfaceView https://riptutorial.com/zh-CN/android/topic/3754/surfaceview

124: UIAutomatorUI

- getInstrumentation
- UIDevice UiDevice.getInstanceInstrumentation instrumentation
- UIDevice.pressHome
- boolean UIDevice.pressBack
- boolean UIDevice.pressRecentApps
- void UIDevice.wakeUp
- boolean UIDevice.swipeint startXint startYint endXint endYint steps
- boolean UIDevice.dragint startXint startYint endXint endYint steps
- UIObject2 UIDevice.findObjectBy.descString contentDesc
- UIObject2.click

UIAutomator。*resource-idcontent-desc*。。UIAutomator。

Examples

UIAutomator

Androidbuild.gradledependencies

```
android {
...
  defaultConfig {
    ...
    testInstrumentationRunner "android.support.test.runner.AndroidJUnitRunner"
  }
}

dependencies {
  ...
  androidTestCompile 'com.android.support.test:runner:0.5'
  androidTestCompile 'com.android.support.test:rules:0.5'
  androidTestCompile 'com.android.support.test.uiautomator:uiautomator-v18:2.1.2'
  androidTestCompile 'com.android.support:support-annotations:23.4.0'
}
```

。

。

androidTestJava

```
public class InterAppTest extends InstrumentationTestCase {

  private UiDevice device;

  @Override
  public void setUp() throws Exception {
     device = UiDevice.getInstance(getInstrumentation());
```

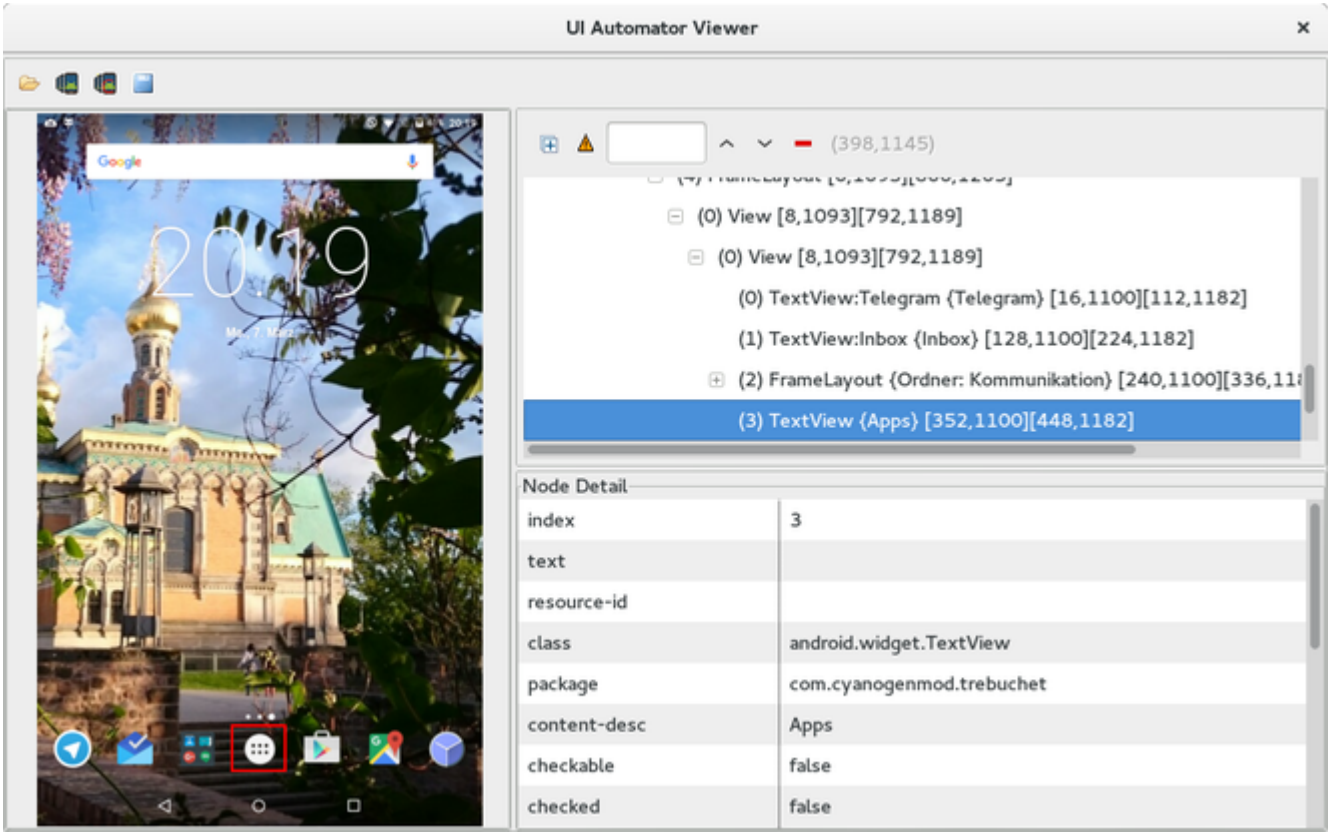
```
  }

  public void testPressHome() throws Exception {
    device.pressHome();
  }
}
```

“”InterAppTest。

UIAutomatorViewer

UI*UIAutomatorViewer* 。 */ tools /*。



UI*resource-id* *content-desc*。

uiautomatorviewer。

```
public void testOpenMyApp() throws Exception {
    // wake up your device
    device.wakeUp();

    // switch to launcher (hide the previous application, if some is opened)
    device.pressHome();

    // enter applications menu (timeout=200ms)
    device.wait(Until.hasObject(By.desc(("Apps"))), 200);
    UiObject2 appsButton = device.findObject(By.desc(("Apps")));
    assertNotNull(appsButton);
    appsButton.click();

    // enter some application (timeout=200ms)
```

```
    device.wait(Until.hasObject(By.desc(("MyApplication"))), 200);
    UiObject2 someAppIcon = device.findObject(By.desc(("MyApplication")));
    assertNotNull(someAppIcon);
    someAppIcon.click();

    // do a swipe (steps=20 is 0.1 sec.)
    device.swipe(200, 1200, 1300, 1200, 20);
    assertTrue(isSomeConditionTrue)
}
```

UIAutomator

UIAutomator

```
package de.androidtest.myapplication;

import org.junit.runner.RunWith;
import org.junit.runners.Suite;

@RunWith(Suite.class)
@Suite.SuiteClasses({InterAppTest1.class, InterAppTest2.class})
public class AppTestSuite {}
```

。

UIAutomatorUI https://riptutorial.com/zh-CN/android/topic/6249/uiautomatorui

125:

Examples

Stub Provider

SyncAdapter

```
/**
 * Define a sync adapter for the app.
 * <p/>
 * <p>This class is instantiated in {@link SyncService}, which also binds SyncAdapter to the
system.
 * SyncAdapter should only be initialized in SyncService, never anywhere else.
 * <p/>
 * <p>The system calls onPerformSync() via an RPC call through the IBinder object supplied by
 * SyncService.
 */
class SyncAdapter extends AbstractThreadedSyncAdapter {
    /**
     * Constructor. Obtains handle to content resolver for later use.
     */
    public SyncAdapter(Context context, boolean autoInitialize) {
        super(context, autoInitialize);
    }

    /**
     * Constructor. Obtains handle to content resolver for later use.
     */
    public SyncAdapter(Context context, boolean autoInitialize, boolean allowParallelSyncs) {
        super(context, autoInitialize, allowParallelSyncs);
    }

    @Override
    public void onPerformSync(Account account, Bundle extras, String authority,
                              ContentProviderClient provider, SyncResult syncResult) {
        //Jobs you want to perform in background.
        Log.e("" + account.name, "Sync Start");
    }

}
```

```
/**
 * Define a Service that returns an IBinder for the
 * sync adapter class, allowing the sync adapter framework to call
 * onPerformSync().
 */
public class SyncService extends Service {
    // Storage for an instance of the sync adapter
    private static SyncAdapter sSyncAdapter = null;
    // Object to use as a thread-safe lock
    private static final Object sSyncAdapterLock = new Object();

    /*
     * Instantiate the sync adapter object.
     */
```

```
    @Override
    public void onCreate() {
        /*
         * Create the sync adapter as a singleton.
         * Set the sync adapter as syncable
         * Disallow parallel syncs
         */
        synchronized (sSyncAdapterLock) {
            if (sSyncAdapter == null) {
                sSyncAdapter = new SyncAdapter(getApplicationContext(), true);
            }
        }
    }

    /**
     * Return an object that allows the system to invoke
     * the sync adapter.
     */
    @Override
    public IBinder onBind(Intent intent) {
        /*
         * Get the object that allows external processes
         * to call onPerformSync(). The object is created
         * in the base class code when the SyncAdapter
         * constructors call super()
         */
        return sSyncAdapter.getSyncAdapterBinder();
    }
}
```

```
public class Authenticator extends AbstractAccountAuthenticator {
    // Simple constructor
    public Authenticator(Context context) {
        super(context);
    }

    // Editing properties is not supported
    @Override
    public Bundle editProperties(
            AccountAuthenticatorResponse r, String s) {
        throw new UnsupportedOperationException();
    }

    // Don't add additional accounts
    @Override
    public Bundle addAccount(
            AccountAuthenticatorResponse r,
            String s,
            String s2,
            String[] strings,
            Bundle bundle) throws NetworkErrorException {
        return null;
    }

    // Ignore attempts to confirm credentials
    @Override
    public Bundle confirmCredentials(
            AccountAuthenticatorResponse r,
            Account account,
            Bundle bundle) throws NetworkErrorException {
        return null;
```

```
    }

    // Getting an authentication token is not supported
    @Override
    public Bundle getAuthToken(
            AccountAuthenticatorResponse r,
            Account account,
            String s,
            Bundle bundle) throws NetworkErrorException {
        throw new UnsupportedOperationException();
    }

    // Getting a label for the auth token is not supported
    @Override
    public String getAuthTokenLabel(String s) {
        throw new UnsupportedOperationException();
    }

    // Updating user credentials is not supported
    @Override
    public Bundle updateCredentials(
            AccountAuthenticatorResponse r,
            Account account,
            String s, Bundle bundle) throws NetworkErrorException {
        throw new UnsupportedOperationException();
    }

    // Checking features for the account is not supported
    @Override
    public Bundle hasFeatures(
            AccountAuthenticatorResponse r,
            Account account, String[] strings) throws NetworkErrorException {
        throw new UnsupportedOperationException();
    }
}
```

```
/**
 * A bound Service that instantiates the authenticator
 * when started.
 */
public class AuthenticatorService extends Service {
    // Instance field that stores the authenticator object
    private Authenticator mAuthenticator;
    @Override
    public void onCreate() {
        // Create a new authenticator object
        mAuthenticator = new Authenticator(this);
    }
    /*
     * When the system binds to this Service to make the RPC call
     * return the authenticator's IBinder.
     */
    @Override
    public IBinder onBind(Intent intent) {
        return mAuthenticator.getIBinder();
    }
}
```

AndroidManifest.xml

```
<uses-permission android:name="android.permission.GET_ACCOUNTS" />
<uses-permission android:name="android.permission.READ_SYNC_SETTINGS" />
<uses-permission android:name="android.permission.WRITE_SYNC_SETTINGS" />
<uses-permission android:name="android.permission.AUTHENTICATE_ACCOUNTS" />

     <service
        android:name=".syncAdapter.SyncService"
        android:exported="true">
        <intent-filter>
            <action android:name="android.content.SyncAdapter" />
        </intent-filter>
        <meta-data
            android:name="android.content.SyncAdapter"
            android:resource="@xml/syncadapter" />
    </service>

    <service android:name=".authenticator.AuthenticatorService">
        <intent-filter>
            <action android:name="android.accounts.AccountAuthenticator" />
        </intent-filter>
        <meta-data
            android:name="android.accounts.AccountAuthenticator"
            android:resource="@xml/authenticator" />
    </service>

    <provider
        android:name=".provider.StubProvider"
        android:authorities="com.yourpackage.provider"
        android:exported="false"
        android:syncable="true" />
```

RES / XML / authenticator.xml

```
<?xml version="1.0" encoding="utf-8"?>
<account-authenticator xmlns:android="http://schemas.android.com/apk/res/android"
    android:accountType="com.yourpackage"
    android:icon="@mipmap/ic_launcher"
    android:label="@string/app_name"
    android:smallIcon="@mipmap/ic_launcher" />
```

RES / XML / syncadapter.xml

```
<?xml version="1.0" encoding="utf-8"?>
<sync-adapter xmlns:android="http://schemas.android.com/apk/res/android"
    android:accountType="com.yourpackage.android"
    android:allowParallelSyncs="false"
    android:contentAuthority="com.yourpackage.provider"
    android:isAlwaysSyncable="true"
    android:supportsUploading="false"
    android:userVisible="false" />
```

StubProvider

```
/*
 * Define an implementation of ContentProvider that stubs out
 * all methods
 */
public class StubProvider extends ContentProvider {
    /*
```

```
     * Always return true, indicating that the
     * provider loaded correctly.
     */
    @Override
    public boolean onCreate() {
        return true;
    }

    /*
     * Return no type for MIME type
     */
    @Override
    public String getType(Uri uri) {
        return null;
    }

    /*
     * query() always returns no results
     *
     */
    @Override
    public Cursor query(
            Uri uri,
            String[] projection,
            String selection,
            String[] selectionArgs,
            String sortOrder) {
        return null;
    }

    /*
     * insert() always returns null (no URI)
     */
    @Override
    public Uri insert(Uri uri, ContentValues values) {
        return null;
    }

    /*
     * delete() always returns "no rows affected" (0)
     */
    @Override
    public int delete(Uri uri, String selection, String[] selectionArgs) {
        return 0;
    }

    /*
     * update() always returns "no rows affected" (0)
     */
    public int update(
            Uri uri,
            ContentValues values,
            String selection,
            String[] selectionArgs) {
        return 0;
    }
}
```

ID

```
public Account CreateSyncAccount(Context context, String accountName) {
        // Create the account type and default account
        Account newAccount = new Account(
                accountName, "com.yourpackage");
        // Get an instance of the Android account manager
        AccountManager accountManager =
                (AccountManager) context.getSystemService(
                        ACCOUNT_SERVICE);
        /*
         * Add the account and account type, no password or user data
         * If successful, return the Account object, otherwise report an error.
         */
        if (accountManager.addAccountExplicitly(newAccount, null, null)) {
            /*
             * If you don't set android:syncable="true" in
             * in your <provider> element in the manifest,
             * then call context.setIsSyncable(account, AUTHORITY, 1)
             * here.
             */
        } else {
            /*
             * The account exists or some other error occurred. Log this, report it,
             * or handle it internally.
             */
        }
        return newAccount;
    }
```

```
Bundle bundle = new Bundle();
bundle.putBoolean(ContentResolver.SYNC_EXTRAS_EXPEDITED, true);
bundle.putBoolean(ContentResolver.SYNC_EXTRAS_FORCE, true);
bundle.putBoolean(ContentResolver.SYNC_EXTRAS_MANUAL, true);
ContentResolver.requestSync(null, MyContentProvider.getAuthority(), bundle);
```

https://riptutorial.com/zh-CN/android/topic/1944/

126: Android

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-
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-
-

Android30kB。36.ttf9kB。361000kB。 。

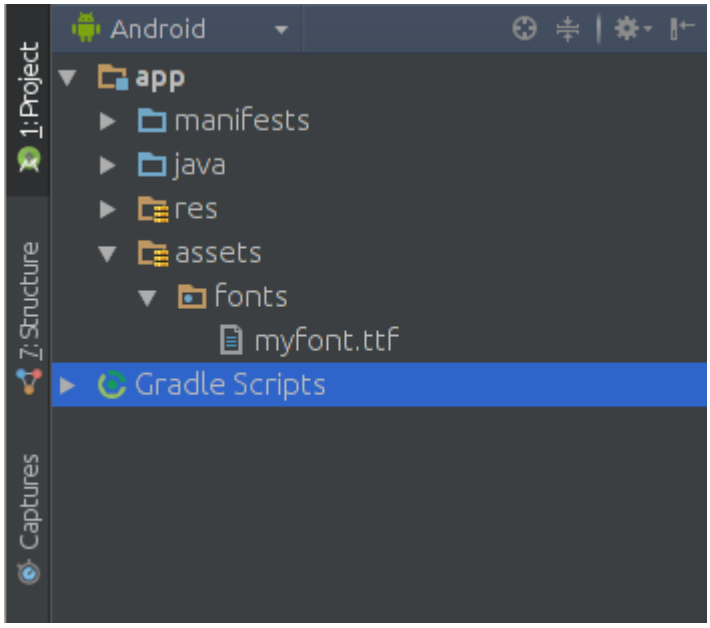
Icon。

- 。 。 svg。
- 。 `setText()`。
- xml。 java。

Examples

Icon

- icomoonSVG。*.ttf*assets*fonts*




- ```
  public class FontManager {
    public static final String ROOT = "fonts/";
    FONT_AWESOME = ROOT + "myfont.ttf";
    public static Typeface getTypeface(Context context) {
      return Typeface.createFromAsset(context.getAssets(), FONT_AWESOME);
  ```
  ```

```
  }
}
```

Typeface。

```
Button button=(Button) findViewById(R.id.button);
Typeface iconFont=FontManager.getTypeface(getApplicationContext());
button.setTypeface(iconFont);
```

。

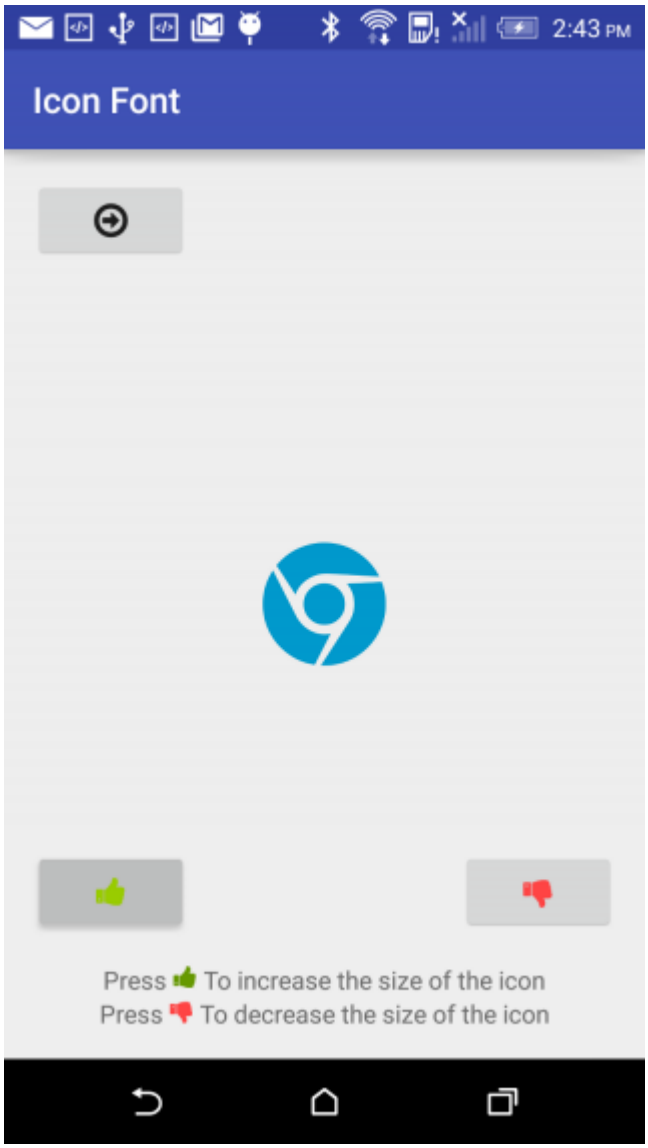
- *styles.css*。Unicode

```
.icon-arrow-circle-down:before {
  content: "\e001";
}
.icon-arrow-circle-left:before {
  content: "\e002";
}
.icon-arrow-circle-o-down:before {
  content: "\e003";
}
.icon-arrow-circle-o-left:before {
  content: "\e004";
}
```

Unicode。

```
<resources>
  <! — Icon Fonts -->
  <string name="icon_arrow_circle_down">&#xe001; </string>
  <string name="icon_arrow_circle_left">&#xe002; </string>
  <string name="icon_arrow_circle-o_down">&#xe003; </string>
  <string name="icon_arrow_circle_o_left">&#xe004; </string>
</resources>
```

- ```
  button.setText(getString(R.string.icon_arrow_circle_left))
  ```
  ```



TabLayout

```
public class TabAdapter extends FragmentPagerAdapter {

CustomTypefaceSpan fonte;
List<Fragment> fragments = new ArrayList<>(4);
private String[] icons = {"\ue001","\uE002","\uE003","\uE004"};

public TabAdapter(FragmentManager fm, CustomTypefaceSpan fonte) {
    super(fm);
    this.fonte = fonte
    for (int i = 0; i < 4; i++){
        fragments.add(MyFragment.newInstance());
    }
}

public List<Fragment> getFragments() {
    return fragments;
}

@Override
public Fragment getItem(int position) {
    return fragments.get(position);
}
```

```
@Override
public CharSequence getPageTitle(int position) {
    SpannableStringBuilder ss = new SpannableStringBuilder(icons[position]);
    ss.setSpan(fonte,0,ss.length(), Spanned.SPAN_INCLUSIVE_INCLUSIVE);
    ss.setSpan(new RelativeSizeSpan(1.5f),0,ss.length(), Spanned.SPAN_INCLUSIVE_INCLUSIVE );
    return ss;
}



@Override
public int getCount() {
    return 4;
}

}
```

- myfont.ttfAssets。
-

```
//..
TabLayout tabs;
ViewPager tabs_pager;
public CustomTypefaceSpan fonte;
//..

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    //...
    fm = getSupportFragmentManager();
    fonte = new
CustomTypefaceSpan("icomoon",Typeface.createFromAsset(getAssets(),"myfont.ttf"));
    this.tabs = ((TabLayout) hasViews.findViewById(R.id.tabs));
    this.tabs_pager = ((ViewPager) hasViews.findViewById(R.id.tabs_pager));
    //...
}

@Override
protected void onStart() {
    super.onStart();
    //..
    tabs_pager.setAdapter(new TabAdapter(fm,fonte));
    tabs.setupWithViewPager(tabs_pager);
    //..
```

Android https://riptutorial.com/zh-CN/android/topic/3642/android

127:

Examples

NetworkOnMainThreadException

。

Honeycomb SDK。SDK。

```
public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        Uri.Builder builder = new Uri.Builder().scheme("http").authority("www.google.com");
        HttpURLConnection urlConnection = null;
        BufferedReader reader = null;
        URL url;
        try {
            url = new URL(builder.build().toString());
            urlConnection = (HttpURLConnection) url.openConnection();
            urlConnection.setRequestMethod("GET");
            urlConnection.connect();
        } catch (IOException e) {
            Log.e("TAG","Connection error", e);
        } finally{
            if (urlConnection != null) {
                urlConnection.disconnect();
            }
            if (reader != null) {
                try {
                    reader.close();
                } catch (final IOException e) {
                    Log.e("TAG", "Error closing stream", e);
                }
            }
        }
    }
}
```

Honeycomb SDKAndroid v3.0`NetworkOnMainThreadException`。

`AsyncTask` `Thread` `IntentService`。

```
private class MyAsyncTask extends AsyncTask<String, Integer, Void> {

    @Override
    protected Void doInBackground(String[] params) {
        Uri.Builder builder = new Uri.Builder().scheme("http").authority("www.google.com");
        HttpURLConnection urlConnection = null;
        BufferedReader reader = null;
```

```
        URL url;
        try {
            url = new URL(builder.build().toString());
            urlConnection = (HttpURLConnection) url.openConnection();
            urlConnection.setRequestMethod("GET");
            urlConnection.connect();
        } catch (IOException e) {
            Log.e("TAG","Connection error", e);
        } finally{
            if (urlConnection != null) {
                urlConnection.disconnect();
            }
            if (reader != null) {
                try {
                    reader.close();
                } catch (final IOException e) {
                    Log.e("TAG", "Error closing stream", e);
                }
            }
        }

        return null;
    }
}
```

ActivityNotFoundException

Exception ◦ ◦ LogCat

```
android.content.ActivityNotFoundException : Unable to find explicit activity class;
have you declared this activity in your AndroidManifest.xml?
```

AndroidManifest.xml◦

AndroidManifest.xmlActivity

```
<activity  android:name="com.yourdomain.YourStoppedActivity" />
```

OutOfMemoryError

◦ BitmapImageView◦

1.

“largeHeap”AndroidManifest.xmlapplication◦ ◦

```
<application largeHeap="true" ... >
```

2.

```
    if (bitmap != null && !bitmap.isRecycled())
       bitmap.recycle();
```

3.

BitmapOptionsinSampleSize。

Android

DexException

```
com.android.dex.DexException: Multiple dex files define Lcom/example/lib/Class;
```

.dex。

2。

AB 。 BAA。 BAA A。

ApplicationonCreate

```
public class MyApp extends Application {
    @Override
    public void onCreate() {
        super.onCreate();
        try {
            Thread
                .setDefaultUncaughtExceptionHandler(
                            new Thread.UncaughtExceptionHandler() {

                @Override
                public void uncaughtException(Thread thread, Throwable e) {
                    Log.e(TAG,
                            "Uncaught Exception thread: "+thread.getName()+"
                             "+e.getStackTrace());
                    handleUncaughtException (thread, e);
                }
            });
        } catch (SecurityException e) {
            Log.e(TAG,
                    "Could not set the Default Uncaught Exception Handler:"
                    +e.getStackTrace());
        }
    }

    private void handleUncaughtException (Thread thread, Throwable e){
        Log.e(TAG, "uncaughtException:");
        e.printStackTrace();
    }
}
```

“XYZ”

```
import android.app.Application;
import android.util.Log;

import java.io.File;
import java.io.FileWriter;
import java.io.IOException;
```

```
import java.text.DateFormat;
import java.text.SimpleDateFormat;
import java.util.Date;
import java.util.Locale;

/**
 * Application class writing unexpected exceptions to a crash file before crashing.
 */
public class MyApplication extends Application {
    private static final String TAG = "ExceptionHandler";

    @Override
    public void onCreate() {
        super.onCreate();

        // Setup handler for uncaught exceptions.
        final Thread.UncaughtExceptionHandler defaultHandler =
Thread.getDefaultUncaughtExceptionHandler();
        Thread.setDefaultUncaughtExceptionHandler(new Thread.UncaughtExceptionHandler() {
            @Override
            public void uncaughtException(Thread thread, Throwable e) {
                try {
                    handleUncaughtException(e);
                    System.exit(1);
                } catch (Throwable e2) {
                    Log.e(TAG, "Exception in custom exception handler", e2);
                    defaultHandler.uncaughtException(thread, e);
                }
            }
        });
    }

    private void handleUncaughtException(Throwable e) throws IOException {
        Log.e(TAG, "Uncaught exception logged to local file", e);

        // Create a new unique file
        final DateFormat dateFormat =  new SimpleDateFormat("yyyy-MM-dd_HH-mm-ss", Locale.US);
        String timestamp;
        File file = null;
        while (file == null || file.exists()) {
            timestamp = dateFormat.format(new Date());
            file = new File(getFilesDir(), "crashLog_" + timestamp + ".txt");
        }
        Log.i(TAG, "Trying to create log file " + file.getPath());
        file.createNewFile();

        // Write the stacktrace to the file
        FileWriter writer = null;
        try {
            writer = new FileWriter(file, true);
            for (StackTraceElement element : e.getStackTrace()) {
                writer.write(element.toString());
            }
        } finally {
            if (writer != null) writer.close();
        }

        // You can (and probably should) also display a dialog to notify the user
    }
}
```

AndroidManifest.xmlApplication

```
<application android:name="de.ioxp.arkmobile.MyApplication" >
```

https://riptutorial.com/zh-CN/android/topic/112/

128:

`long millisInFuture`	。。
`long countDownInterval`	。。
`long millisUntilFinished`	`onTick()` `onTick()` CountDownTimer。

CountDownTimer - 。/CountDownTimer/。 Timer。

Examples

CountDownTimer。30。TextView“”。

```
TextView textView = (TextView)findViewById(R.id.text_view);

CountDownTimer countDownTimer = new CountDownTimer(30000, 1000) {
    public void onTick(long millisUntilFinished) {
        textView.setText(String.format(Locale.getDefault(), "%d sec.", millisUntilFinished /
1000L));
    }

    public void onFinish() {
        textView.setText("Done.");
    }
}.start();
```

Activity/CountDownTimer。

```
private static final long TIMER_DURATION = 60000L;
private static final long TIMER_INTERVAL = 1000L;

private CountDownTimer mCountDownTimer;
private TextView textView;

private long mTimeRemaining;

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);

    textView = (TextView)findViewById(R.id.text_view); // Define in xml layout.

    mCountDownTimer = new CountDownTimer(TIMER_DURATION, TIMER_INTERVAL) {

        @Override
        public void onTick(long millisUntilFinished) {
            textView.setText(String.format(Locale.getDefault(), "%d sec.", millisUntilFinished
/ 1000L));
            mTimeRemaining = millisUntilFinished; // Saving timeRemaining in Activity for
```

```
pause/resume of CountDownTimer.
        }

        @Override
        public void onFinish() {
            textView.setText("Done.");
        }
    }.start();
}


@Override
protected void onResume() {
    super.onResume();

    if (mCountDownTimer == null) { // Timer was paused, re-create with saved time.
        mCountDownTimer = new CountDownTimer(timeRemaining, INTERVAL) {
            @Override
            public void onTick(long millisUntilFinished) {
                textView.setText(String.format(Locale.getDefault(), "%d sec.",
millisUntilFinished / 1000L));
                timeRemaining = millisUntilFinished;
            }

            @Override
            public void onFinish() {
                textView.setText("Done.");
            }
        }.start();
    }
}

@Override
protected void onPause() {
    super.onPause();
    mCountDownTimer.cancel();
    mCountDownTimer = null;
}
```

https://riptutorial.com/zh-CN/android/topic/6063/

129:

ActivitiesFragments。 Google Play。

- transaction.addSharedElementsharedElementView“targetTransitionName”;
- fragment.setSharedElementEnterTransitionnew CustomTransaction;

Examples

ImageViewsChooserFragmentDetailFragment 。

ChooserFragmenttransitionName

```
<ImageView
    android:id="@+id/image_first"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:src="@drawable/ic_first"
    android:transitionName="fistImage" />

<ImageView
    android:id="@+id/image_second"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:src="@drawable/ic_second"
    android:transitionName="secondImage" />
```

ChooserFragmentsViewIDActivity IDDetailFragment。 。

```
view.findViewById(R.id.image_first).setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        if (mCallback != null) {
            mCallback.showDetailFragment(view, 1);
        }
    }
});

view.findViewById(R.id.image_second).setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        if (mCallback != null) {
            mCallback.showDetailFragment(view, 2);
        }
     }
});
```

DetailFragment ImageViewtransitionName。

```
<ImageView
    android:id="@+id/image_shared"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
```

```
    android:layout_gravity="center"
    android:transitionName="sharedImage" />
```

DetailFragmentonCreateView()◦

```
public static DetailFragment newInstance(Bundle args) {
    DetailFragment fragment = new DetailFragment();
    fragment.setArguments(args);
    return fragment;
}

@Nullable
@Override
public View onCreateView(LayoutInflater inflater, ViewGroup container, Bundle
savedInstanceState) {
    super.onCreateView(inflater, container, savedInstanceState);
    View view = inflater.inflate(R.layout.fragment_detail, container, false);

    ImageView sharedImage = (ImageView) view.findViewById(R.id.image_shared);

    // Check which resource should be shown.
    int type = getArguments().getInt("type");

    // Show image based on the type.
    switch (type) {
        case 1:
            sharedImage.setBackgroundResource(R.drawable.ic_first);
            break;

        case 2:
            sharedImage.setBackgroundResource(R.drawable.ic_second);
            break;
    }

    return view;
}
```

Activity◦

```
@Override
public void showDetailFragment(View sharedElement, int type) {
    // Get the chooser fragment, which is shown in the moment.
    Fragment chooserFragment = getFragmentManager().findFragmentById(R.id.fragment_container);

    // Set up the DetailFragment and put the type as argument.
    Bundle args = new Bundle();
    args.putInt("type", type);
    Fragment fragment = DetailFragment.newInstance(args);

    // Set up the transaction.
    FragmentTransaction transaction = getFragmentManager().beginTransaction();

    // Define the shared element transition.
    fragment.setSharedElementEnterTransition(new DetailsTransition());
    fragment.setSharedElementReturnTransition(new DetailsTransition());

    // The rest of the views are just fading in/out.
    fragment.setEnterTransition(new Fade());
```

```
    chooserFragment.setExitTransition(new Fade());

    // Now use the image's view and the target transitionName to define the shared element.
    transaction.addSharedElement(sharedElement, "sharedImage");

    // Replace the fragment.
    transaction.replace(R.id.fragment_container, fragment,
fragment.getClass().getSimpleName());

    // Enable back navigation with shared element transitions.
    transaction.addToBackStack(fragment.getClass().getSimpleName());

    // Finally press play.
    transaction.commit();
}
```

- Transition◦ ◦

```
@TargetApi(Build.VERSION_CODES.LOLLIPOP)
public class DetailsTransition extends TransitionSet {

    public DetailsTransition() {
        setOrdering(ORDERING_TOGETHER);
        addTransition(new ChangeBounds()).
            addTransition(new ChangeTransform()).
            addTransition(new ChangeImageTransform());
    }

}
```

https://riptutorial.com/zh-CN/android/topic/8933/

130:

Examples

1.

Toast`getApplicationContext()`toast

```
Intent myService = new Intent(getApplicationContext(), MyService.class);
```

	Application	Activity	Service	ContentProvider	Bro
Show a Dialog	NO	YES	NO	NO	
Start an Activity	NO[1]	YES	NO[1]	NO[1]	
Layout Inflation	NO[2]	YES	NO[2]	NO[2]	
Start a Service	YES	YES	YES	YES	
Bind to a Service	YES	YES	YES	YES	
Send a Broadcast	YES	YES	YES	YES	
Register BroadcastReceiver	YES	YES	YES	YES	
Load Resource Values	YES	YES	YES	YES	

。

2.Context

`View。 ViewContext。` Activity。 。

ViewContext。

3.。

GoogleAPIintentService。 `googleApiClient.disconnect();`

```
//Disconnect from API onDestroy()
if (googleApiClient.isConnected()) {
    LocationServices.FusedLocationApi.removeLocationUpdates(googleApiClient,
GoogleLocationService.this);
    googleApiClient.disconnect();
}
```

4.

Square**Picasso**.`fit()`50MB19MB

```
Picasso.with(ActivityExample.this)                    //Activity context
                .load(object.getImageUrl())
                .fit()                                 //This avoided the OutOfMemoryError
                .centerCrop()                          //makes image to not stretch
                .into(imageView);
```

5.◦

6.**java.util.Observer**

```
deleteObserver(observer);
```

AsyncTask

AsyncTask◦ APIAPI◦ ThreadEventBusRxAndroid◦

```
AsyncTaskActivity Fragment
```

```
class MyActivity extends Activity {
  private AsyncTask<Void, Void, Void> myTask = new AsyncTask<Void, Void, Void>() {
    // Don't do this! Inner classes implicitly keep a pointer to their
    // parent, which in this case is the Activity!
  }
}
```

```
AsyncTaskActivity◦
```

```
staticActivity
```

```
class MyActivity extends Activity {
  static class MyTask extends AsyncTask<Void, Void, Void> {
    // Weak references will still allow the Activity to be garbage-collected
    private final WeakReference<MyActivity> weakActivity;

    MyTask(MyActivity myActivity) {
      this.weakActivity = new WeakReference<>(myActivity);
    }

    @Override
    public Void doInBackground(Void... params) {
      // do async stuff here
    }

    @Override
    public void onPostExecute(Void result) {
      // Re-acquire a strong reference to the activity, and verify
      // that it still exists and is active.
      MyActivity activity = weakActivity.get();
```

```
      if (activity == null
          || activity.isFinishing()
          || activity.isDestroyed()) {
        // activity is no longer valid, don't do anything!
        return;
      }

      // The activity is still valid, do main-thread stuff here
    }
  }
}
```

。

```
public class LeakyActivity extends Activity
{

...

    foo.registerCallback(new BarCallback()
    {
        @Override
        public void onBar()
        {
            // do something
        }
    });
}
```

LeakyActivityfoo。LeakyActivityLeakyActivity。。

。。

```
public class NonLeakyActivity extends Activity
{
    private final BarCallback mBarCallback = new BarCallback()
    {
        @Override
        public void onBar()
        {
            // do something
        }
    });

    @Override
    protected void onResume()
    {
        super.onResume();
        foo.registerCallback(mBarCallback);
    }

    @Override
    protected void onPause()
    {
        super.onPause();
        foo.unregisterCallback(mBarCallback);
    }
}
```

Android。Android。SharedPreferences。Androids

`context.getSharedPreferences(prefsName, mode);`

```
public class LeakySharedPrefsWrapper
{
    private static Context sContext;

    public static void init(Context context)
    {
        sContext = context;
    }

    public int getInt(String name,int defValue)
    {
        return sContext.getSharedPreferences("a name",
Context.MODE_PRIVATE).getInt(name,defValue);
    }
}
```

`init()` LeakySharedPrefsWrapper。

`context.getApplicationContext();context.getApplicationContext();`

getApplicationContext。

```
public static void init(Context context)
{
    sContext = context.getApplicationContext();
}
```

Context。

```
public int getInt(Context context,String name,int defValue)
{
    // do not keep a reference of context to avoid potential leaks.
    return context.getSharedPreferences("a name", Context.MODE_PRIVATE).getInt(name,defValue);
}
```

LeakCanary

LeakCanaryJava。

`build.gradlebuild.gradle`

```
 dependencies {
   debugCompile 'com.squareup.leakcanary:leakcanary-android:1.5.1'
   releaseCompile 'com.squareup.leakcanary:leakcanary-android-no-op:1.5.1'
   testCompile 'com.squareup.leakcanary:leakcanary-android-no-op:1.5.1'
 }
```

`Application`

```
public class ExampleApplication extends Application {
```

```
  @Override public void onCreate() {
    super.onCreate();

    if (LeakCanary.isInAnalyzerProcess(this)) {
      // This process is dedicated to LeakCanary for heap analysis.
      // You should not init your app in this process.
      return;
    }

    LeakCanary.install(this);
  }
}
```

LeakCanary。

`leakcanary-android-no-op`LeakCanary。

Activity。

/。 `UserController`

```
public class UserController {
    private static UserController instance;
    private List<StateListener> listeners;

    public static synchronized UserController getInstance() {
        if (instance == null) {
            instance = new UserController();
        }
        return instance;
    }

    private UserController() {
        // Init
    }

    public void registerUserStateChangeListener(StateListener listener) {
        listeners.add(listener);
    }

    public void logout() {
        for (StateListener listener : listeners) {
            listener.userLoggedOut();
        }
    }

    public void login() {
        for (StateListener listener : listeners) {
            listener.userLoggedIn();
        }
    }

    public interface StateListener {
        void userLoggedIn();
        void userLoggedOut();
    }
}
```

SignInActivity

```
public class SignInActivity extends Activity implements UserController.StateListener{

    UserController userController;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);

        this.userController = UserController.getInstance();
        this.userController.registerUserStateChangeListener(this);
    }

    @Override
    public void userLoggedIn() {
        startMainActivity();
    }

    @Override
    public void userLoggedOut() {
        showLoginForm();
    }

    ...

    public void onLoginClicked(View v) {
        userController.login();
    }
}
```

MainActivity

```
public class MainActivity extends Activity implements UserController.StateListener{
    UserController userController;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);

        this.userController = UserController.getInstance();
        this.userController.registerUserStateChangeListener(this);
    }

    @Override
    public void userLoggedIn() {
        showUserAccount();
    }

    @Override
    public void userLoggedOut() {
        finish();
    }

    ...

    public void onLogoutClicked(View v) {
        userController.logout();
    }
```

```
}
```

MainActivity◦ UserController#listeners◦

```
...
this.userController.registerUserStateChangeListener(new UserController.StateListener() {
    @Override
    public void userLoggedIn() {
        showUserAccount();
    }

    @Override
    public void userLoggedOut() {
        finish();
    }
});
...
```

◦ ◦ ◦

◦

UserController#listenersWeakReference◦

1

removeUserStateChangeListener(StateListener listener)

```
public class UserController {

    ...

    public void registerUserStateChangeListener(StateListener listener) {
        listeners.add(listener);
    }

    public void removeUserStateChangeListener(StateListener listener) {
        listeners.remove(listener);
    }

    ...
}
```

activityonDestroy

```
public class MainActivity extends Activity implements UserController.StateListener{
    ...

    @Override
    protected void onDestroy() {
        super.onDestroy();
        userController.removeUserStateChangeListener(this);
    }
}
```

MainActivity◦ UserController◦

2

◦ ◦ GC◦ UserControllerWeakReferenceMainActivity◦

GC◦

UserControllerWeakReference

```
public class UserController {

    ...
    private List<WeakReference<StateListener>> listeners;
    ...

    public void registerUserStateChangeListener(StateListener listener) {
        listeners.add(new WeakReference<>(listener));
    }

    public void removeUserStateChangeListener(StateListener listenerToRemove) {
        WeakReference referencesToRemove = null;
        for (WeakReference<StateListener> listenerRef : listeners) {
            StateListener listener = listenerRef.get();
            if (listener != null && listener == listenerToRemove) {
                referencesToRemove = listenerRef;
                break;
            }
        }
        listeners.remove(referencesToRemove);
    }

    public void logout() {
        List referencesToRemove = new LinkedList();
        for (WeakReference<StateListener> listenerRef : listeners) {
            StateListener listener = listenerRef.get();
            if (listener != null) {
                listener.userLoggedOut();
            } else {
                referencesToRemove.add(listenerRef);
            }
        }
    }

    public void login() {
        List referencesToRemove = new LinkedList();
        for (WeakReference<StateListener> listenerRef : listeners) {
            StateListener listener = listenerRef.get();
            if (listener != null) {
                listener.userLoggedIn();
            } else {
                referencesToRemove.add(listenerRef);
            }
        }
    }
    ...
}
```

UserController

◦ ◦ WeakCollection

```
public class WeakCollection<T> {
    private LinkedList<WeakReference<T>> list;

    public WeakCollection() {
        this.list = new LinkedList<>();
    }
    public void put(T item){
        //Make sure that we don't re add an item if we already have the reference.
        List<T> currentList = get();
        for(T oldItem : currentList){
            if(item == oldItem){
                return;
            }
        }
        list.add(new WeakReference<T>(item));
    }

    public List<T> get() {
        List<T> ret = new ArrayList<>(list.size());
        List<WeakReference<T>> itemsToRemove = new LinkedList<>();
        for (WeakReference<T> ref : list) {
            T item = ref.get();
            if (item == null) {
                itemsToRemove.add(ref);
            } else {
                ret.add(item);
            }
        }
        for (WeakReference ref : itemsToRemove) {
            this.list.remove(ref);
        }
        return ret;
    }

    public void remove(T listener) {
        WeakReference<T> refToRemove = null;
        for (WeakReference<T> ref : list) {
            T item = ref.get();
            if (item == listener) {
                refToRemove = ref;
            }
        }
        if(refToRemove != null){
            list.remove(refToRemove);
        }
    }
}
```

UserControllerWeakCollection<T>

```
public class UserController {
    ...
    private WeakCollection<StateListener> listenerRefs;
    ...

    public void registerUserStateChangeListener(StateListener listener) {
        listenerRefs.put(listener);
    }
```

```
    public void removeUserStateChangeListener(StateListener listenerToRemove) {
        listenerRefs.remove(listenerToRemove);
    }

    public void logout() {
        for (StateListener listener : listenerRefs.get()) {
            listener.userLoggedOut();
        }
    }

    public void login() {
        for (StateListener listener : listenerRefs.get()) {
            listener.userLoggedIn();
        }
    }

    ...
}
```

WeakCollection<T>WeakReference◦ UserController#removeUserStateChangeListener(StateListener)◦

androidAnonymous Class Runnable◦ Anonymous Class◦ ◦ handlerAnonymous Runnable◦ Runnable◦

```
  new Handler().postDelayed(new Runnable() {
        @Override
        public void run() {
            // do abc long 5s or so
        }
    }, 10000); // run "do abc" after 10s. It same as timer, thread...
```

1. Anonymous ClassStatic classWeakReferenceactivityview ...◦ ThreadAnonymous Class◦
2. Handler Timer ◦

https://riptutorial.com/zh-CN/android/topic/2687/

131:

。 。 。

ContextContentResolver。 ContentResolverContentProvider。 。

。 。 。

Android。 android.provider。 Android。

Examples

1

URI。 ;。

Android。 。 Android。 Androidcom.example.appname com.example.appname.provider。

```
public class MyContract {
    public static final String CONTENT_AUTHORITY = "com.example.myApp";
    public static final String PATH_DATATABLE = "dataTable";
    public static final String TABLE_NAME = "dataTable";
}
```

URIURI。 URI。 id。 ContentProviderURI;。 。

```
public static final Uri BASE_CONTENT_URI = Uri.parse("content://" + CONTENT_AUTHORITY);
public static final Uri CONTENT_URI =
BASE_CONTENT_URI.buildUpon().appendPath(PATH_DATATABLE).build();

// define all columns of table and common functions required
```

2

。

```
public class DatabaseHelper extends SQLiteOpenHelper {

    // Increment the version when there is a change in the structure of database
    public static final int DATABASE_VERSION = 1;
    // The name of the database in the filesystem, you can choose this to be anything
    public static final String DATABASE_NAME = "weather.db";

    public DatabaseHelper(Context context) {
        super(context, DATABASE_NAME, null, DATABASE_VERSION);
    }

    @Override
    public void onCreate(SQLiteDatabase db) {
        // Called when the database is created for the first time. This is where the
        // creation of tables and the initial population of the tables should happen.
```

```
    }

    @Override
    public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {
        // Called when the database needs to be upgraded. The implementation
        // should use this method to drop tables, add tables, or do anything else it
        // needs to upgrade to the new schema version.
    }
}
```

3ContentProvider

```
public class MyProvider extends ContentProvider {

public DatabaseHelper dbHelper;

public static final UriMatcher matcher = buildUriMatcher();
public static final int DATA_TABLE = 100;
public static final int DATA_TABLE_DATE = 101;
```

UriMatcher。`match()`URI。 switch。 URIURIUriMatcher100;URI101。`#*`。

```
public static UriMatcher buildUriMatcher() {
    UriMatcher uriMatcher = new UriMatcher(UriMatcher.NO_MATCH);
    uriMatcher.addURI(CONTENT_AUTHORITY, MyContract.PATH_DATATABLE,        DATA_TABLE);
    uriMatcher.addURI(CONTENT_AUTHORITY, MyContract.PATH_DATATABLE + "/#", DATA_TABLE_DATE);
    return uriMatcher;
}
```

`addURI()addURI()` UriMatcher。`#*`URI。

```
uriMatcher.addURI(CONTENT_AUTHORITY, "/example", 1);
uriMatcher.addURI(CONTENT_AUTHORITY, "/*",       2);
```

`/*/example`。 `uriMatcher.match("/example")` `/*`UriMatcher

onCreate 。 Android。ContentResolver。

```
@Override
public boolean onCreate() {
    dbhelper = new DatabaseHelper(getContext());
    return true;
}
```

getType URIMIME

```
@Override
public String getType(Uri uri) {
    final int match = matcher.match(uri);
    switch (match) {
        case DATA_TABLE:
            return ContentResolver.CURSOR_DIR_BASE_TYPE + "/" + MyContract.CONTENT_AUTHORITY +
"/" + MyContract.PATH_DATATABLE;
        case DATA_TABLE_DATE:
```

```
            return ContentResolver.ANY_CURSOR_ITEM_TYPE + "/" + MyContract.CONTENT_AUTHORITY +
"/" + MyContract.PATH_DATATABLE;
        default:
            throw new UnsupportedOperationException("Unknown Uri: " + uri);

    }
}
```

query 。 。 Cursor。

```
@Override
public Cursor query(Uri uri, String[] projection, String selection, String[] selectionArgs,
String sortOrder) {
    Cursor retCursor = dbHelper.getReadableDatabase().query(
        MyContract.TABLE_NAME, projection, selection, selectionArgs, null, null, sortOrder);
    retCursor.setNotificationUri(getContext().getContentResolver(), uri);
    return retCursor;
}
```

。 。 URI。

```
@Override
public Uri insert(Uri uri, ContentValues values)
{
    final SQLiteDatabase db = dbHelper.getWritableDatabase();
    long id = db.insert(MyContract.TABLE_NAME, null, values);
    return ContentUris.withAppendedId(MyContract.CONTENT_URI, ID);
}
```

delete 。 。 。

```
@Override
public int delete(Uri uri, String selection, String[] selectionArgs) {
    SQLiteDatabase db = dbHelper.getWritableDatabase();
    int rowsDeleted = db.delete(MyContract.TABLE_NAME, selection, selectionArgs);
    getContext().getContentResolver().notifyChange(uri, null);
    return rowsDeleted;
}
```

update 。 。 。

```
@Override
public int update(Uri uri, ContentValues values, String selection, String[] selectionArgs) {
    SQLiteDatabase db = dbHelper.getWritableDatabase();
    int rowsUpdated = db.update(MyContract.TABLE_NAME, values, selection, selectionArgs);
    getContext().getContentResolver().notifyChange(uri, null);
    return rowsUpdated;
}
```

4

```
<provider
        android:authorities="com.example.myApp"
        android:name=".DatabaseProvider"/>
```

https://riptutorial.com/zh-CN/android/topic/3075/

132: /

Examples

Android Nougat。

```
android:resizeableActivity=["true" | "false"]
```

true。 false。 false。

API24true。

```
<--These are default values suggested by google.-->
<activity android:name=".MyActivity">
<layout android:defaultHeight="500dp"
      android:defaultWidth="600dp"
      android:gravity="top|end"
      android:minHeight="450dp"
      android:minWidth="300dp" />
</activity>
```

。

1. UI;。
2. **androidscreenOrientation**。

API23

API23。

Android 7.0。 。

。 。

/ https://riptutorial.com/zh-CN/android/topic/7130/-

133:

ListView。 Adapterlistview。

ListView。

AdapterAdapter。

AdapterView。 AdapterViewAdapter。

ListViewRecyclerView。

Examples

CursorAdapter

```
// Get the reference to your ListView
ListView listResults = (ListView) findViewById(R.id.listResults);

// Set its adapter
listResults.setAdapter(adapter);

// Enable filtering in ListView
listResults.setTextFilterEnabled(true);

// Prepare your adapter for filtering
adapter.setFilterQueryProvider(new FilterQueryProvider() {
    @Override
    public Cursor runQuery(CharSequence constraint) {

        // in real life, do something more secure than concatenation
        // but it will depend on your schema
        // This is the query that will run on filtering
        String query = "SELECT _ID as _id, name FROM MYTABLE "
                       + "where name like '%" + constraint + "%' "
                       + "ORDER BY NAME ASC";
        return db.rawQuery(query, null);
     }
});
```

EditText

```
    EditText queryText = (EditText) findViewById(R.id.textQuery);
    queryText.addTextChangedListener(new TextWatcher() {
        @Override
        public void beforeTextChanged(final CharSequence s, final int start, final int count,
final int after) {

        }

        @Override
        public void onTextChanged(final CharSequence s, final int start, final int before,
final int count) {
            // This is the filter in action
```

```
            adapter.getFilter().filter(s.toString());
            // Don't forget to notify the adapter
            adapter.notifyDataSetChanged();
        }

        @Override
        public void afterTextChanged(final Editable s) {

        }
    });
```

ArrayAdapter

ArrayAdapter`toString()`TextView。

ImageViewArrayAdapter`getView()`View。

```
public class MyAdapter extends ArrayAdapter<YourClassData>{

    private LayoutInflater inflater;

    public MyAdapter (Context context, List<YourClassData> data){
        super(context, 0, data);
        inflater = LayoutInflater.from(context);
    }

    @Override
    public long getItemId(int position)
    {
        //It is just an example
        YourClassData data = (YourClassData) getItem(position);
        return data.ID;
    }

    @Override
    public View getView(int position, View view, ViewGroup parent)
    {
        ViewHolder viewHolder;
        if (view == null) {
            view = inflater.inflate(R.layout.custom_row_layout_design, null);
            // Do some initialization

            //Retrieve the view on the item layout and set the value.
            viewHolder = new ViewHolder(view);
            view.setTag(viewHolder);
         }
         else {
             viewHolder = (ViewHolder) view.getTag();
         }

        //Retrieve your object
        YourClassData data = (YourClassData) getItem(position);

        viewHolder.txt.setTypeface(m_Font);
        viewHolder.txt.setText(data.text);
        viewHolder.img.setImageBitmap(BitmapFactory.decodeFile(data.imageAddr));

        return view;
```

```
    }

    private class ViewHolder
    {
         private final TextView txt;
         private final ImageView img;

         private ViewHolder(View view)
         {
             txt = (TextView) view.findViewById(R.id.txt);
             img = (ImageView) view.findViewById(R.id.img);
         }
    }
}
```

ArrayAdapterListView

ArrayAdaptertoString()TextView◦

```
ArrayAdapter<String> adapter = new ArrayAdapter<String>(this,
        android.R.layout.simple_list_item_1, myStringArray);
```

android.R.layout.simple_list_item_1TextView◦

ListViewsetAdapter()

```
ListView listView = (ListView) findViewById(R.id.listview);
listView.setAdapter(adapter);
```

TextViewsImageViewstoString()getView(int, View, ViewGroup)◦ ◦

https://riptutorial.com/zh-CN/android/topic/4226/

134: AndroidROM

Examples

◦ ◦ LinuxUbuntuUbuntu◦

Java

PPA `sudo apt-add-repository ppa:openjdk-r/ppa` ◦

`sudo apt-get update` `sudo apt-get update` ◦

```
sudo apt-get install git-core python gnupg flex bison gperf libsdl1.2-dev libesd0-dev
libwxgtk2.8-dev squashfs-tools build-essential zip curl libncurses5-dev zlib1g-dev openjdk-8-
jre openjdk-8-jdk pngcrush schedtool libxml2 libxml2-utils xsltproc lzop libc6-dev schedtool
g++-multilib lib32z1-dev lib32ncurses5-dev gcc-multilib liblz4-* pngquant ncurses-dev texinfo
gcc gperf patch libtool automake g++ gawk subversion expat libexpat1-dev python-all-dev
binutils-static bc libcloog-isl-dev libcap-dev autoconf libgmp-dev build-essential gcc-
multilib g++-multilib pkg-config libmpc-dev libmpfr-dev lzma* liblzma* w3m android-tools-adb
maven ncftp figlet
```

```
sudo curl --create-dirs -L -o /etc/udev/rules.d/51-android.rules -O -L
https://raw.githubusercontent.com/snowdream/51-android/master/51-android.rules
sudo chmod 644   /etc/udev/rules.d/51-android.rules
sudo chown root /etc/udev/rules.d/51-android.rules
sudo service udev restart
adb kill-server
sudo killall adb
```

repo

```
sudo install utils/repo /usr/bin/
sudo install utils/ccache /usr/bin/
```

Resurrection Remix OSAkhil Narang *akhilnarang* ◦ GitHub ◦

AndroidROM https://riptutorial.com/zh-CN/android/topic/9212/androidrom

135: Windows

Examples

◦

```
<uses-permission android:name="android.permission.SYSTEM_ALERT_WINDOW" />
```

◦ ◦

WindowManager

```
WindowManager mWindowManager = (WindowManager)
mContext.getSystemService(Context.WINDOW_SERVICE);
```

```
WindowManager.LayoutParams mLayoutParams = new WindowManager.LayoutParams(
        ViewGroup.LayoutParams.MATCH_PARENT,
        ViewGroup.LayoutParams.MATCH_PARENT,
        WindowManager.LayoutParams.TYPE_PHONE,
        WindowManager.LayoutParams.FLAG_TURN_SCREEN_ON,
        PixelFormat.TRANSLUCENT);
mLayoutParams.gravity = Gravity.CENTER_HORIZONTAL | Gravity.CENTER_VERTICAL;
```

```
mWindowManager.addView(yourView, mLayoutParams);
```

◦

◦

Android 6.0SYSTEM_ALERT_WINDOW

android 6.0

```
<uses-permission android:name="android.permission.SYSTEM_ALERT_WINDOW"/>
```

6.0

```
Caused by: android.view.WindowManager$BadTokenException: Unable to add window
android.view.ViewRootImpl$W@86fb55b -- permission denied for this window type
```

-

```
if(!Settings.canDrawOverlays(this)){
    // ask for setting
     Intent intent = new Intent(Settings.ACTION_MANAGE_OVERLAY_PERMISSION,
     Uri.parse("package:" + getPackageName()));
```

```
     startActivityForResult(intent, REQUEST_OVERLAY_PERMISSION);
}
```

```
@Override
protected void onActivityResult(int requestCode, int resultCode, Intent data) {
    if (requestCode == REQUEST_OVERLAY_PERMISSION) {
        if (Settings.canDrawOverlays(this)) {
            // permission granted...
        }else{
            // permission not granted...
        }
    }
}
```

Windows https://riptutorial.com/zh-CN/android/topic/6214/--windows

136:

◦ ◦

Examples

◦

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.package"
    android:versionCode="1"
    android:versionName="1.0" >

    <application
        android:allowBackup="false"
        android:icon="@drawable/ic_launcher"
        android:label="@string/app_name"
        android:theme="@style/AppTheme" >

        <activity
            android:name=".Splash"
            android:label="@string/app_name"
             >
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>

    </application>

</manifest>
```

◦

```
public class Splash extends Activity{

    public final int SPLASH_DISPLAY_LENGTH = 3000;

    private void checkPermission() {
        if (ContextCompat.checkSelfPermission(this, Manifest.permission.WAKE_LOCK) !=
PackageManager.PERMISSION_GRANTED ||
                ContextCompat.checkSelfPermission(this,Manifest.permission.INTERNET) !=
PackageManager.PERMISSION_GRANTED ||
                ContextCompat.checkSelfPermission(this,
Manifest.permission.ACCESS_NETWORK_STATE) != PackageManager.PERMISSION_GRANTED) {//Can add
more as per requirement


            ActivityCompat.requestPermissions(this,
                    new String[]{Manifest.permission.WAKE_LOCK,
                            Manifest.permission.INTERNET,
                            Manifest.permission.ACCESS_NETWORK_STATE},
```

```
                    123);
        }

    }
    @Override
    protected void onCreate(Bundle sis){
        super.onCreate(sis);
        //set the content view. The XML file can contain nothing but an image, such as a logo
or the app icon
        setContentView(R.layout.splash);


        //we want to display the splash screen for a few seconds before it automatically
        //disappears and loads the game. So we create a thread:
        new Handler().postDelayed(new Runnable() {
            @Override
            public void run() {

                //request permissions. NOTE: Copying this and the manifest will cause the app
to crash as the permissions requested aren't defined in the manifest.
                    if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.M ) {
                        checkPermission();
                    }
                    String lang = [load or determine the system language and set to default if
it isn't available.]
                    Locale locale = new Locale(lang);
                    Locale.setDefault(locale);
                    Configuration config = new Configuration    ();
                    config.locale = locale;
                    Splash.this.getResources().updateConfiguration(config,
                            Splash.this.getResources().getDisplayMetrics())    ;

                    //after three seconds, it will execute all of this code.
                    //as such, we then want to redirect to the master-activity
                    Intent mainIntent = new Intent(Splash.this, MainActivity.class);
                    Splash.this.startActivity(mainIntent);

                //then we finish this class. Dispose of it as it is longer needed
                Splash.this.finish();
            }
        }, SPLASH_DISPLAY_LENGTH);

    }

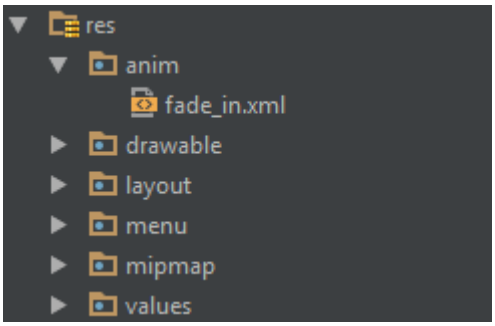
    public void onPause(){
        super.onPause();
        finish();
    }

}
```

Android Studio。

1

resanim。fade_in.xml



fade_in.xml

```
<?xml version="1.0" encoding="utf-8"?>
<set xmlns:android="http://schemas.android.com/apk/res/android" android:fillAfter="true" >
    <alpha
        android:duration="1000"
        android:fromAlpha="0.0"
        android:interpolator="@android:anim/accelerate_interpolator"
        android:toAlpha="1.0" />
</set>
```

2

`Splash` Android Studio 。

```
public class Splash extends AppCompatActivity {
    Animation anim;
    ImageView imageView;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_splash);
        imageView=(ImageView)findViewById(R.id.imageView2); // Declare an imageView to show
the animation.
        anim = AnimationUtils.loadAnimation(getApplicationContext(), R.anim.fade_in); //
Create the animation.
        anim.setAnimationListener(new Animation.AnimationListener() {
            @Override
            public void onAnimationStart(Animation animation) {
            }

            @Override
            public void onAnimationEnd(Animation animation) {
                startActivity(new Intent(this,HomeActivity.class));
                // HomeActivity.class is the activity to go after showing the splash screen.
            }

            @Override
            public void onAnimationRepeat(Animation animation) {
            }
        });
        imageView.startAnimation(anim);
    }
}
```

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/activity_splash"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    tools:context="your_packagename"
    android:orientation="vertical"
    android:background="@android:color/white">
    <ImageView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:id="@+id/imageView2"
        android:layout_weight="1"
        android:src="@drawable/Your_logo_or_image" />
</LinearLayout>
```

3

AndroidManifest`Splash`

```
<activity
    android:name=".Splash"
    android:theme="@style/AppTheme.NoActionBar">
    <intent-filter>
        <action android:name="android.intent.action.MAIN" />

        <category android:name="android.intent.category.LAUNCHER" />
    </intent-filter>
</activity>
```

AndroidManifest

```
<intent-filter>
    <action android:name="android.intent.action.MAIN" />

    <category android:name="android.intent.category.LAUNCHER" />
</intent-filter>
```

https://riptutorial.com/zh-CN/android/topic/9316/

137:

Examples

`View` Android `onMeasure(...)` `onDraw(...)`

1. ◦ `SmileyView`

```
public class SmileyView extends View {
    private Paint mCirclePaint;
    private Paint mEyeAndMouthPaint;

    private float mCenterX;
    private float mCenterY;
    private float mRadius;
    private RectF mArcBounds = new RectF();

    public SmileyView(Context context) {
        this(context, null, 0);
    }

    public SmileyView(Context context, AttributeSet attrs) {
        this(context, attrs, 0);
    }

    public SmileyView(Context context, AttributeSet attrs, int defStyleAttr) {
        super(context, attrs, defStyleAttr);
        initPaints();
    }

    private void initPaints() {/* ... */}

    @Override
    protected void onMeasure(int widthMeasureSpec, int heightMeasureSpec) {/* ... */}

    @Override
    protected void onDraw(Canvas canvas) {/* ... */}
}
```

2. “ `Paint◦ Paint`

```
private void initPaints() {
    mCirclePaint = new Paint(Paint.ANTI_ALIAS_FLAG);
    mCirclePaint.setStyle(Paint.Style.FILL);
    mCirclePaint.setColor(Color.YELLOW);
    mEyeAndMouthPaint = new Paint(Paint.ANTI_ALIAS_FLAG);
    mEyeAndMouthPaint.setStyle(Paint.Style.STROKE);
    mEyeAndMouthPaint.setStrokeWidth(16 * getResources().getDisplayMetrics().density);
    mEyeAndMouthPaint.setStrokeCap(Paint.Cap.ROUND);
    mEyeAndMouthPaint.setColor(Color.BLACK);
}
```

3. **`onMeasure(...)`**`FrameLayout ◦ measureSpecs ◦`

```
@Override
protected void onMeasure(int widthMeasureSpec, int heightMeasureSpec) {
    int w = MeasureSpec.getSize(widthMeasureSpec);
    int h = MeasureSpec.getSize(heightMeasureSpec);

    int size = Math.min(w, h);
    setMeasuredDimension(size, size);
}
```

onMeasure(...)setMeasuredDimension(..)IllegalStateException◦

4. **onSizeChanged(...)**◦

```
@Override
protected void onSizeChanged(int w, int h, int oldw, int oldh) {
    mCenterX = w / 2f;
    mCenterY = h / 2f;
    mRadius = Math.min(w, h) / 2f;
}
```

5. **onDraw(...)**◦ CanvasCanvas◦

```
@Override
protected void onDraw(Canvas canvas) {
    // draw face
    canvas.drawCircle(mCenterX, mCenterY, mRadius, mCirclePaint);
    // draw eyes
    float eyeRadius = mRadius / 5f;
    float eyeOffsetX = mRadius / 3f;
    float eyeOffsetY = mRadius / 3f;
    canvas.drawCircle(mCenterX - eyeOffsetX, mCenterY - eyeOffsetY, eyeRadius,
mEyeAndMouthPaint);
    canvas.drawCircle(mCenterX + eyeOffsetX, mCenterY - eyeOffsetY, eyeRadius,
mEyeAndMouthPaint);
    // draw mouth
    float mouthInset = mRadius /3f;
    mArcBounds.set(mouthInset, mouthInset, mRadius * 2 - mouthInset, mRadius * 2 -
mouthInset);
    canvas.drawArc(mArcBounds, 45f, 90f, false, mEyeAndMouthPaint);
}
```

6. ◦ FrameLayout

```
<FrameLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent">

    <com.example.app.SmileyView
        android:layout_width="match_parent"
        android:layout_height="match_parent" />
</FrameLayout>
```

◦ Android Studio◦

Android。

1. `res/values/attrs.xml` 。

```
<resources>
    <declare-styleable name="SmileyView">
        <attr name="smileyColor" format="color" />
        <attr name="smileyExpression" format="enum">
            <enum name="happy" value="0"/>
            <enum name="sad" value="1"/>
        </attr>
    </declare-styleable>
    <!-- attributes for other views -->
</resources>
```

2. 。

```
<FrameLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    android:layout_height="match_parent"
    android:layout_width="match_parent">

    <com.example.app.SmileyView
        android:layout_height="56dp"
        android:layout_width="56dp"
        app:smileyColor="#ffff00"
        app:smileyExpression="happy" />
</FrameLayout>
```

`tools:` Android Studio 2.1。 `tools:smileyColor``app:smileyColor` `tools:smileyColor``smileyColor` 。

3. 。 `SmileyView`

```
public class SmileyView extends View {
    // ...

    public SmileyView(Context context) {
        this(context, null);
    }

    public SmileyView(Context context, AttributeSet attrs) {
        this(context, attrs, 0);
    }

    public SmileyView(Context context, AttributeSet attrs, int defStyleAttr) {
        super(context, attrs, defStyleAttr);

        TypedArray a = context.obtainStyledAttributes(attrs, R.styleable.SmileyView,
defStyleAttr, 0);
        mFaceColor = a.getColor(R.styleable.SmileyView_smileyColor, Color.TRANSPARENT);
        mFaceExpression = a.getInteger(R.styleable.SmileyView_smileyExpression,
Expression.HAPPY);
        // Important: always recycle the TypedArray
        a.recycle();

        // initPaints(); ...
    }
}
```

4. ◦

```
<!-- styles.xml -->
<style name="DefaultSmileyStyle">
    <item name="smileyColor">#ffff00</item>
    <item name="smileyExpression">happy</item>
</style>
```

`obtainStyledAttributesSmileyView` 3

```
TypedArray a = context.obtainStyledAttributes(attrs, R.styleable.SmileyView,
defStyleAttr, R.style.DefaultSmileyViewStyle);
```

2◦

5. ◦ `smileyStyle`

```
<!-- attrs.xml -->
<attr name="smileyStyle" format="reference" />
```

4

```
<!-- themes.xml -->
<style name="AppTheme" parent="AppBaseTheme">
    <item name="smileyStyle">@style/DefaultSmileyStyle</item>
</style>
```

`ViewGroup` ◦ ViewGroupDDD◦ ◦

ActivityFragmentAdapterUI。

SOLID。

XML

◦ XML`<include/>` ◦ XML`<merge>`

```
<?xml version="1.0" encoding="utf-8"?>
<merge xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent">

        <ImageView
            android:id="@+id/photo"
            android:layout_width="48dp"
            android:layout_height="48dp"
            android:layout_alignParentRight="true" />

        <TextView
            android:id="@+id/name"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_toLeftOf="@id/photo" />

        <TextView
            android:id="@+id/phone_number"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_below="@id/name"
            android:layout_toLeftOf="@id/photo" />
</merge>
```

XMLAndroid Studio。 ◦

ViewGroup

XML。

```
import android.annotation.TargetApi;
import android.content.Context;
import android.os.Build;
import android.util.AttributeSet;
import android.view.LayoutInflater;
import android.view.View;
import android.widget.RelativeLayout;
import android.widget.ImageView;
import android.widget.TextView;

import myapp.R;

/**
 * A compound view to show contacts.
 *
 * This class can be put into an XML layout or instantiated programmatically, it
 * will work correctly either way.
 */
```

```
public class ContactView extends RelativeLayout {

    // This class extends RelativeLayout because that comes with an automatic
    // (MATCH_PARENT, MATCH_PARENT) layout for its child item. You can extend
    // the raw android.view.ViewGroup class if you want more control. See the
    // note in the layout XML why you wouldn't want to extend a complex view
    // such as RelativeLayout.

    // 1. Implement superclass constructors.
    public ContactView(Context context) {
        super(context);
        init(context, null);
    }

    // two extra constructors left out to keep the example shorter

    @TargetApi(Build.VERSION_CODES.LOLLIPOP)
    public ContactView(Context context, AttributeSet attrs, int defStyleAttr, int defStyleRes)
{
        super(context, attrs, defStyleAttr, defStyleRes);
        init(context, attrs);
    }

    // 2. Initialize the view by inflating an XML using `this` as parent
    private TextView mName;
    private TextView mPhoneNumber;
    private ImageView mPhoto;

    private void init(Context context, AttributeSet attrs) {
        LayoutInflater.from(context).inflate(R.layout.contact_view, this, true);
        mName = (TextView) findViewById(R.id.name);
        mPhoneNumber = (TextView) findViewById(R.id.phone_number);
        mPhoto = (ImageView) findViewById(R.id.photo);
    }

    // 3. Define a setter that's expressed in your domain model. This is what the example is
    //    all about. All controller code can just invoke this setter instead of fiddling with
    //    lots of strings, visibility options, colors, animations, etc. If you don't use a
    //    custom view, this code will usually end up in a static helper method (bad) or copies

    //    of this code will be copy-pasted all over the place (worse).
    public void setContact(Contact contact) {
        mName.setText(contact.getName());
        mPhoneNumber.setText(contact.getPhoneNumber());
        if (contact.hasPhoto()) {
            mPhoto.setVisibility(View.VISIBLE);
            mPhoto.setImageBitmap(contact.getPhoto());
        } else {
            mPhoto.setVisibility(View.GONE);
        }
    }
}
```

`init(Context, AttributeSet)`XML ◦

◦

XML

`fragment_contact_info.xml` ContactView

```
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical">

    <!-- The compound view becomes like any other view XML element -->
    <myapp.ContactView
        android:id="@+id/contact"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"/>

    <android.support.v7.widget.RecyclerView
        android:id="@+id/message_list"
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:layout_weight="1"/>

</LinearLayout>
```

`RecyclerView.Adapter` ◦ View◦

```
package myapp;

import android.content.Context;
import android.support.v7.widget.RecyclerView;
import android.view.ViewGroup;

public class ContactsAdapter extends RecyclerView.Adapter<ContactsViewHolder> {

    private final Context context;

    public ContactsAdapter(final Context context) {
        this.context = context;
    }

    @Override
    public ContactsViewHolder onCreateViewHolder(ViewGroup parent, int viewType) {
        ContactView v = new ContactView(context); // <--- this
        return new ContactsViewHolder(v);
    }

    @Override
    public void onBindViewHolder(ContactsViewHolder holder, int position) {
        Contact contact = this.getItem(position);
        holder.setContact(contact);  // <--- this
    }

    static class ContactsViewHolder extends RecyclerView.ViewHolder {

        public ContactsViewHolder(ContactView itemView) {
            super(itemView);
        }

        public void setContact(Contact contact) {
            ((ContactView) itemView).setContact(contact); // <--- this
        }
    }
```

```
}
```

CustomView

onDraw

```
@Override
protected void onDraw(Canvas canvas) {
    super.onDraw(canvas);
    Paint paint = new Paint(); //Do not allocate here
}
```

drawable ...

```
drawable.setBounds(boundsRect);

drawable.draw(canvas);
```

```
canvas.drawBitmap(bitmap, srcRect, boundsRect, paint);
```

。 。

```
invalidate(boundToBeRefreshed);
```

onStop()onStart()。

onDrawinvalidate()。 。

...。 。 。

```
// Save the canvas state
int save = canvas.save();
// Rotate the canvas by providing the  center point as pivot and angle
canvas.rotate(pivotX, pivotY, angle);
// Draw whatever you want
// Basically whatever you draw here will be drawn as per the angle you rotated the canvas
canvas.drawBitmap(...);
// Now restore your your canvas to its original state
canvas.restore(save);
// Unless canvas is restored to its original state, further draw will also be rotated.
```

SVG / VectorDrawabledrawableRight

5.0TextView / EditTextdrawablesvg。 EditTextdrawableRight heightwidth 。 。

custom_edit_drawable-c_d_e

“c_d_e_”app。 “abc”。

build.gradle

```
dependencies {
   compile 'com.android.support:appcompat-v7:25.3.1'
}
```

AppCompat> = 23

c_e_d_compound_view.xml

```
<?xml version="1.0" encoding="utf-8"?>
<FrameLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="wrap_content">

    <EditText
        android:id="@+id/edt_search"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:inputType="text"
        android:maxLines="1"
        android:paddingEnd="40dp"
        android:paddingLeft="5dp"
        android:paddingRight="40dp"
        android:paddingStart="5dp" />

    <!--make sure you are not using ImageView instead of this-->
    <android.support.v7.widget.AppCompatImageView
        android:id="@+id/drawbleRight_search"
        android:layout_width="30dp"
        android:layout_height="30dp"
        android:layout_gravity="right|center_vertical"
        android:layout_marginLeft="8dp"
        android:layout_marginRight="8dp" />
</FrameLayout>
```

attrs.xml

```
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <declare-styleable name="EditTextWithDrawable">
        <attr name="c_e_d_drawableRightSVG" format="reference" />
        <attr name="c_e_d_hint" format="string" />
        <attr name="c_e_d_textSize" format="dimension" />
        <attr name="c_e_d_textColor" format="color" />
    </declare-styleable>
</resources>
```

EditTextWithDrawable.java

```
public class EditTextWithDrawable extends FrameLayout {
    public AppCompatImageView mDrawableRight;
    public EditText mEditText;
```

```
    public EditTextWithDrawable(Context context) {
        super(context);
        init(null);
    }

    public EditTextWithDrawable(Context context, AttributeSet attrs) {
        super(context, attrs);
        init(attrs);
    }

    public EditTextWithDrawable(Context context, AttributeSet attrs, int defStyleAttr) {
        super(context, attrs, defStyleAttr);
        init(attrs);
    }

    @TargetApi(Build.VERSION_CODES.LOLLIPOP)
    public EditTextWithDrawable(Context context, AttributeSet attrs, int defStyleAttr, int
defStyleRes) {
        super(context, attrs, defStyleAttr, defStyleRes);
        init(attrs);
    }

    private void init(AttributeSet attrs) {
        if (attrs != null && !isInEditMode()) {
            LayoutInflater inflater = (LayoutInflater) getContext()
                    .getSystemService(Context.LAYOUT_INFLATER_SERVICE);
            inflater.inflate(R.layout.c_e_d_compound_view, this, true);
            mDrawableRight = (AppCompatImageView) ((FrameLayout) getChildAt(0)).getChildAt(1);
            mEditText = (EditText) ((FrameLayout) getChildAt(0)).getChildAt(0);

            TypedArray attributeArray = getContext().obtainStyledAttributes(
                    attrs,
                    R.styleable.EditTextWithDrawable);

            int drawableRes =
                    attributeArray.getResourceId(
                            R.styleable.EditTextWithDrawable_c_e_d_drawableRightSVG, -1);
            if (drawableRes != -1) {
                mDrawableRight.setImageResource(drawableRes);
            }

            mEditText.setHint(attributeArray.getString(
                    R.styleable.EditTextWithDrawable_c_e_d_hint));
            mEditText.setTextColor(attributeArray.getColor(
                    R.styleable.EditTextWithDrawable_c_e_d_textColor, Color.BLACK));
            int textSize =
attributeArray.getDimensionPixelSize(R.styleable.EditTextWithDrawable_c_e_d_textSize, 15);
            mEditText.setTextSize(TypedValue.COMPLEX_UNIT_PX, textSize);
            android.view.ViewGroup.LayoutParams layoutParams =
mDrawableRight.getLayoutParams();
            layoutParams.width = (textSize * 3) / 2;
            layoutParams.height = (textSize * 3) / 2;
            mDrawableRight.setLayoutParams(layoutParams);

            attributeArray.recycle();
        }
    }
}
```

activity_main.xml

```
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="vertical">

    <com.customeditdrawable.AppEditTextWithDrawable
        android:id="@+id/edt_search_emp"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        app:c_e_d_drawableRightSVG="@drawable/ic_svg_search"
        app:c_e_d_hint="@string/hint_search_here"
        app:c_e_d_textColor="@color/text_color_dark_on_light_bg"
        app:c_e_d_textSize="@dimen/text_size_small" />
</LinearLayout>
```

MainActivity.java

```
public class MainActivity extends AppCompatActivity {
    EditTextWithDrawable mEditTextWithDrawable;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        mEditTextWithDrawable= (EditTextWithDrawable) findViewById(R.id.edt_search_emp);
    }
}
```

◦ onTouchEvent◦ ◦

- ACTION_DOWN ◦
- ACTION_MOVE ◦ ◦
- ACTION_UP ◦

◦

```
@Override
public boolean onTouchEvent(MotionEvent event) {

    int x = (int) event.getX();
    int y = (int) event.getY();
    int action = event.getAction();

    switch (action) {
        case MotionEvent.ACTION_DOWN:
            Log.i("CustomView", "onTouchEvent: ACTION_DOWN: x = " + x + ", y = " + y);
            break;

        case MotionEvent.ACTION_MOVE:
            Log.i("CustomView", "onTouchEvent: ACTION_MOVE: x = " + x + ", y = " + y);
            break;

        case MotionEvent.ACTION_UP:
            Log.i("CustomView", "onTouchEvent: ACTION_UP: x = " + x + ", y = " + y);
            break;
    }
```

```
    return true;
}
```

- Android

https://riptutorial.com/zh-CN/android/topic/1446/

138: AlertDialog

..FadeinSlideleftSlidetopSlideBottomSliderightFallNewspagerFliphFlipvRotateBottomRotateLeftSlitShakeSidefill..

Examples

...

```
animated_android_dialog_box.xml

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
android:layout_width="match_parent"
android:layout_height="match_parent"
android:orientation="vertical"
android:padding="16dp">

<Button
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:background="#1184be"
    android:onClick="animatedDialog1"
    android:text="Animated Fall Dialog"
    android:textColor="#fff" />

<Button
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginBottom="16dp"
    android:layout_marginTop="16dp"
    android:background="#1184be"
    android:onClick="animatedDialog2"
    android:text="Animated Material Flip Dialog"
    android:textColor="#fff" />

<Button
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:background="#1184be"
    android:onClick="animatedDialog3"
    android:text="Animated Material Shake Dialog"
    android:textColor="#fff" />

<Button
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginBottom="16dp"
    android:layout_marginTop="16dp"
    android:background="#1184be"
    android:onClick="animatedDialog4"
    android:text="Animated Slide Top Dialog"
    android:textColor="#fff" />
```

AnimatedAndroidDialogExample.java

```
   public class AnimatedAndroidDialogExample extends AppCompatActivity {

    NiftyDialogBuilder materialDesignAnimatedDialog;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.animated_android_dialog_box);

        materialDesignAnimatedDialog = NiftyDialogBuilder.getInstance(this);
    }

    public void animatedDialog1(View view) {
        materialDesignAnimatedDialog
                .withTitle("Animated Fall Dialog Title")
                .withMessage("Add your dialog message here. Animated dialog description
place.")
                .withDialogColor("#FFFFFF")
                .withButton1Text("OK")
                .withButton2Text("Cancel")
                .withDuration(700)
                .withEffect(Effectstype.Fall)
                .show();
    }

    public void animatedDialog2(View view) {
        materialDesignAnimatedDialog
                .withTitle("Animated Flip Dialog Title")
                .withMessage("Add your dialog message here. Animated dialog description
place.")
                .withDialogColor("#1c90ec")
                .withButton1Text("OK")
                .withButton2Text("Cancel")
                .withDuration(700)
                .withEffect(Effectstype.Fliph)
                .show();
    }

    public void animatedDialog3(View view) {
        materialDesignAnimatedDialog
                .withTitle("Animated Shake Dialog Title")
                .withMessage("Add your dialog message here. Animated dialog description
place.")
                .withDialogColor("#1c90ec")
                .withButton1Text("OK")
                .withButton2Text("Cancel")
                .withDuration(700)
                .withEffect(Effectstype.Shake)
                .show();
    }

    public void animatedDialog4(View view) {
        materialDesignAnimatedDialog
                .withTitle("Animated Slide Top Dialog Title")
                .withMessage("Add your dialog message here. Animated dialog description
place.")
                .withDialogColor("#1c90ec")
                .withButton1Text("OK")
                .withButton2Text("Cancel")
                .withDuration(700)
                .withEffect(Effectstype.Slidetop)
```

```
                .show();
    }
}
```

build.gradleNifyBuilderCustomView

build.gradle

```
dependencies {

    compile 'com.nineoldandroids:library:2.4.0'

    compile 'com.github.sd6352051.niftydialogeffects:niftydialogeffects:1.0.0@aar'

}
```

https //github.com/sd6352051/NiftyDialogEffects

AlertDialog https://riptutorial.com/zh-CN/android/topic/10654/alertdialog

139:

Examples

ImageView

res“anim”。

shakeanimation.xml

```
<?xml version="1.0" encoding="utf-8"?>
<rotate xmlns:android="http://schemas.android.com/apk/res/android"
    android:duration="100"
    android:fromDegrees="-15"
    android:pivotX="50%"
    android:pivotY="50%"
    android:repeatCount="infinite"
    android:repeatMode="reverse"
    android:toDegrees="15" />
```

Landing

activity_landing.xml

```
  <RelativeLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent">

        <ImageView
            android:id="@+id/imgBell"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_centerInParent="true"
            android:src="@mipmap/ic_notifications_white_48dp"/>

    </RelativeLayout>
```

Landing.javaimageview

```
Context mContext;


 @Override
        protected void onCreate(Bundle savedInstanceState) {
            super.onCreate(savedInstanceState);
            mContext=this;
                setContentView(R.layout.activity_landing);

                AnimateBell();
        }

public void AnimateBell() {
        Animation shake = AnimationUtils.loadAnimation(mContext, R.anim.shakeanimation);
```

```
        ImageView imgBell= (ImageView) findViewById(R.id.imgBell);
        imgBell.setImageResource(R.mipmap.ic_notifications_active_white_48dp);
        imgBell.setAnimation(shake);
    }
```

/

ObjectAnimator。 .setDuration(millis)millis。 5001/2/。 ObjectAnimatorObjectAnimator .start() 。 onAnimationEnd(Animator animation) 。 View.GONEView.VISIBLE。

```
import android.animation.Animator;
import android.animation.AnimatorListenerAdapter;
import android.animation.ValueAnimator;

void fadeOutAnimation(View viewToFadeOut) {
    ObjectAnimator fadeOut = ObjectAnimator.ofFloat(viewToFadeOut, "alpha", 1f, 0f);

    fadeOut.setDuration(500);
    fadeOut.addListener(new AnimatorListenerAdapter() {
        @Override
        public void onAnimationEnd(Animator animation) {
            // We wanna set the view to GONE, after it's fade out. so it actually disappear
from the layout & don't take up space.
            viewToFadeOut.setVisibility(View.GONE);
        }
    });

    fadeOut.start();
}

void fadeInAnimation(View viewToFadeIn) {
    ObjectAnimator fadeIn = ObjectAnimator.ofFloat(viewToFadeIn, "alpha", 0f, 1f);
    fadeIn.setDuration(500);

    fadeIn.addListener(new AnimatorListenerAdapter() {
        @Override
        public void onAnimationStar(Animator animation) {
            // We wanna set the view to VISIBLE, but with alpha 0. So it appear invisible in
the layout.
            viewToFadeIn.setVisibility(View.VISIBLE);
            viewToFadeIn.setAlpha(0);
        }
    });

    fadeIn.start();
}
```

TransitionDrawable

。

- res/values/arrays.xml

```
<resources>

    <array
```

```
        name="splash_images">
        <item>@drawable/spash_imge_first</item>
        <item>@drawable/spash_img_second</item>
    </array>

</resources>
```

```
    private Drawable[] backgroundsDrawableArrayForTransition;
    private TransitionDrawable transitionDrawable;

private void backgroundAnimTransAction() {

        // set res image array
        Resources resources = getResources();
        TypedArray icons = resources.obtainTypedArray(R.array.splash_images);

        @SuppressWarnings("ResourceType")
        Drawable drawable = icons.getDrawable(0);    // ending image

        @SuppressWarnings("ResourceType")
        Drawable drawableTwo = icons.getDrawable(1);   // starting image


        backgroundsDrawableArrayForTransition = new Drawable[2];
        backgroundsDrawableArrayForTransition[0] = drawable;
        backgroundsDrawableArrayForTransition[1] = drawableTwo;
        transitionDrawable = new TransitionDrawable(backgroundsDrawableArrayForTransition);

        // your image view here - backgroundImageView
        backgroundImageView.setImageDrawable(transitionDrawable);
        transitionDrawable.startTransition(4000);

        transitionDrawable.setCrossFadeEnabled(false); // call public methods


    }
```

ValueAnimator

ValueAnimatorint float◦

1. ValueAnimator minmax
2. UpdateListener getAnimatedValue()

ValueAnimator

250ms20f40ffloat

1. xml /res/animator/

```
<animator xmlns:android="http://schemas.android.com/apk/res/android"
    android:duration="250"
    android:valueFrom="20"
    android:valueTo="40"
    android:valueType="floatType"/>
```

```
ValueAnimator animator = (ValueAnimator) AnimatorInflater.loadAnimator(context,
        R.animator.example_animator);
animator.addUpdateListener(new ValueAnimator.AnimatorUpdateListener() {
    @Override
    public void onAnimationUpdate(ValueAnimator anim) {
        // ... use the anim.getAnimatedValue()
    }
});
// set all the other animation-related stuff you want (interpolator etc.)
animator.start();
```

2.

```
ValueAnimator animator = ValueAnimator.ofFloat(20f, 40f);
animator.setDuration(250);
animator.addUpdateListener(new ValueAnimator.AnimatorUpdateListener() {
    @Override
    public void onAnimationUpdate(ValueAnimator anim) {
        // use the anim.getAnimatedValue()
    }
});
// set all the other animation-related stuff you want (interpolator etc.)
animator.start();
```

ObjectAnimator

ObjectAnimatorValueAnimatortarget View ◦

ValueAnimator ObjectAnimator

250msViewalpha0.4f0.2f

1. xml /res/animator

```
<objectAnimator xmlns:android="http://schemas.android.com/apk/res/android"
                android:duration="250"
                android:propertyName="alpha"
                android:valueFrom="0.4"
                android:valueTo="0.2"
                android:valueType="floatType"/>
```

```
ObjectAnimator animator = (ObjectAnimator) AnimatorInflater.loadAnimator(context,
        R.animator.example_animator);
animator.setTarget(exampleView);
// set all the animation-related stuff you want (interpolator etc.)
animator.start();
```

2.

```
ObjectAnimator animator = ObjectAnimator.ofFloat(exampleView, View.ALPHA, 0.4f, 0.2f);
animator.setDuration(250);
// set all the animation-related stuff you want (interpolator etc.)
animator.start();
```

ViewPropertyAnimator

ViewPropertyAnimatorView◦

Viewanimate()ViewPropertyAnimator◦ ◦ ViewPropertyAnimator ViewPropertyAnimator◦

```
View exampleView = ...;
exampleView.animate()
        .alpha(0.6f)
        .translationY(200)
        .translationXBy(10)
        .scaleX(1.5f)
        .setDuration(250)
        .setInterpolator(new FastOutLinearInInterpolator());
```

ViewPropertyAnimatorstart() ◦ ◦ start() ◦

```
public class ViewAnimationUtils {

        public static void expand(final View v) {
            v.measure(LayoutParams.MATCH_PARENT, LayoutParams.WRAP_CONTENT);
            final int targtetHeight = v.getMeasuredHeight();

            v.getLayoutParams().height = 0;
            v.setVisibility(View.VISIBLE);
            Animation a = new Animation()
            {
                @Override
                protected void applyTransformation(float interpolatedTime, Transformation t) {
                    v.getLayoutParams().height = interpolatedTime == 1
                            ? LayoutParams.WRAP_CONTENT
                            : (int)(targtetHeight * interpolatedTime);
                    v.requestLayout();
                }

                @Override
                public boolean willChangeBounds() {
                    return true;
                }
            };

            a.setDuration((int)(targtetHeight /
v.getContext().getResources().getDisplayMetrics().density));
            v.startAnimation(a);
        }

        public static void collapse(final View v) {
            final int initialHeight = v.getMeasuredHeight();

            Animation a = new Animation()
            {
                @Override
                protected void applyTransformation(float interpolatedTime, Transformation t) {
                    if(interpolatedTime == 1){
                        v.setVisibility(View.GONE);
                    }else{
                        v.getLayoutParams().height = initialHeight - (int)(initialHeight *
interpolatedTime);
```

```
                        v.requestLayout();
                    }
                }

                @Override
                public boolean willChangeBounds() {
                    return true;
                }
            };

            a.setDuration((int)(initialHeight /
v.getContext().getResources().getDisplayMetrics().density));
            v.startAnimation(a);
        }
    }
```

https://riptutorial.com/zh-CN/android/topic/1829/

140: 2

- @Module
- @Componentdependencies = {OtherComponent.class}modules = {ModuleA.class ModuleB.class}
- DaggerMyComponent.create
- DaggerMyComponent.builder。 MymodulenewMyModule。

2。

Examples

AppComponent AppModule。

```
@Singleton
@Component(modules = AppModule.class)
public interface AppComponent {

    void inject(App app);

    Context provideContext();

    Gson provideGson();
}
```

AppComponentAppComponent Gson。

```
@Module
public class AppModule {

    private final Application mApplication;

    public AppModule(Application application) {
        mApplication = application;
    }

    @Singleton
    @Provides
    Gson provideGson() {
        return new Gson();
    }

    @Singleton
    @Provides
    Context provideContext() {
        return mApplication;
    }
}
```

dagger。

```
public class App extends Application {

    @Inject
    AppComponent mAppComponent;

    @Override
    public void onCreate() {
        super.onCreate();

        DaggerAppComponent.builder().appModule(new AppModule(this)).build().inject(this);
    }

    public AppComponent getAppComponent() {
        return mAppComponent;
    }
}
```

AppComponent。

```
@ActivityScope
@Component(dependencies = AppComponent.class, modules = ActivityModule.class)
public interface MainActivityComponent {

    void inject(MainActivity activity);
}
```

ActivityModule FragmentManager

```
@Module
public class ActivityModule {

    private final AppCompatActivity mActivity;

    public ActivityModule(AppCompatActivity activity) {
        mActivity = activity;
    }

    @ActivityScope
    public AppCompatActivity provideActivity() {
        return mActivity;
    }


    @ActivityScope
    public FragmentManager provideFragmentManager(AppCompatActivity activity) {
        return activity.getSupportFragmentManager();
    }
}
```

Gson

```
public class MainActivity extends AppCompatActivity {

    @Inject
    Gson mGson;

    @Override
```

```
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        DaggerMainActivityComponent.builder()
                .appComponent(((App)getApplication()).getAppComponent())
                .activityModule(new ActivityModule(this))
                .build().inject(this);
    }
}
```

```
@Scope
@Documented
@Retention(RUNTIME)
public @interface ActivityScope {
}
```

。

dagger。

```
public class Engine {

    @Inject // <-- Annotate your constructor.
    public Engine() {
    }
}
```

。 。 。

。 Dagger。

```
public class Car {

    private Engine engine;

    @Inject
    public Car(Engine engine) {
        this.engine = engine;
    }
}
```

- Engine。 Engine Car。

。

-
-
- @Subcomponent
-

@Subcomponent@Componentdependencies = {...}

```
@Singleton
@Component(modules = AppModule.class)
public interface AppComponent {
    void inject(App app);

    Context provideContext();
    Gson provideGson();

    MainActivityComponent mainActivityComponent(ActivityModule activityModule);
}

@ActivityScope
@Subcomponent(modules = ActivityModule.class)
public interface MainActivityComponent {
    void inject(MainActivity activity);
}

public class MainActivity extends AppCompatActivity {

    @Inject
    Gson mGson;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        ((App)getApplication()).getAppComponent()
                .mainActivityComponent(new ActivityModule(this)).inject(this);
    }
}
```

build.gradleDagger 2

Gradle 2.2android-apt。Dagger 2。Gradle。

Gradle> = 2.2

```
dependencies {
    // apt command comes from the android-apt plugin
    annotationProcessor 'com.google.dagger:dagger-compiler:2.8'
    compile 'com.google.dagger:dagger:2.8'
    provided 'javax.annotation:jsr250-api:1.0'
}
```

Gradle <2.2

Dagger 2`android-apt`root build.gradle

```
buildscript {
    dependencies {
        classpath 'com.android.tools.build:gradle:2.1.0'
        classpath 'com.neenbedankt.gradle.plugins:android-apt:1.8'
    }
}
```

build.gradle

```
apply plugin: 'com.android.application'
apply plugin: 'com.neenbedankt.android-apt'


android {
    …
}

final DAGGER_VERSION = '2.0.2'
dependencies {
    …

    compile "com.google.dagger:dagger:${DAGGER_VERSION}"
    apt "com.google.dagger:dagger-compiler:${DAGGER_VERSION}"
}
```

https //github.com/codepath/android_guides/wiki/Dependency-Injection-with-Dagger-2

Dagger 2。

```
@Singleton
@Component(modules = {GeneralPurposeModule.class, SpecificModule.class})
public interface MyMultipleModuleComponent {
    void inject(MyFragment myFragment);
    void inject(MyService myService);
    void inject(MyController myController);
    void inject(MyActivity myActivity);
}
```

GeneralPurposeModuleSpecificModule

GeneralPurposeModule.java

```
@Module
public class GeneralPurposeModule {
    @Provides
    @Singleton
    public Retrofit getRetrofit(PropertiesReader propertiesReader, RetrofitHeaderInterceptor
headerInterceptor){
        // Logic here...
        return retrofit;
    }

    @Provides
    @Singleton
    public PropertiesReader getPropertiesReader(){
        return new PropertiesReader();
    }

    @Provides
    @Singleton
    public RetrofitHeaderInterceptor getRetrofitHeaderInterceptor(){
         return new RetrofitHeaderInterceptor();
    }
}
```

SpecificModule.java

```
@Singleton
@Module
public class SpecificModule {
    @Provides @Singleton
    public RetrofitController getRetrofitController(Retrofit retrofit){
        RetrofitController retrofitController = new RetrofitController();
        retrofitController.setRetrofit(retrofit);
        return retrofitController;
    }

    @Provides @Singleton
    public MyService getMyService(RetrofitController retrofitController){
        MyService myService = new MyService();
        myService.setRetrofitController(retrofitController);
        return myService;
    }
}
```

◦

◦ RetrofitPropertiesReader ◦ ◦

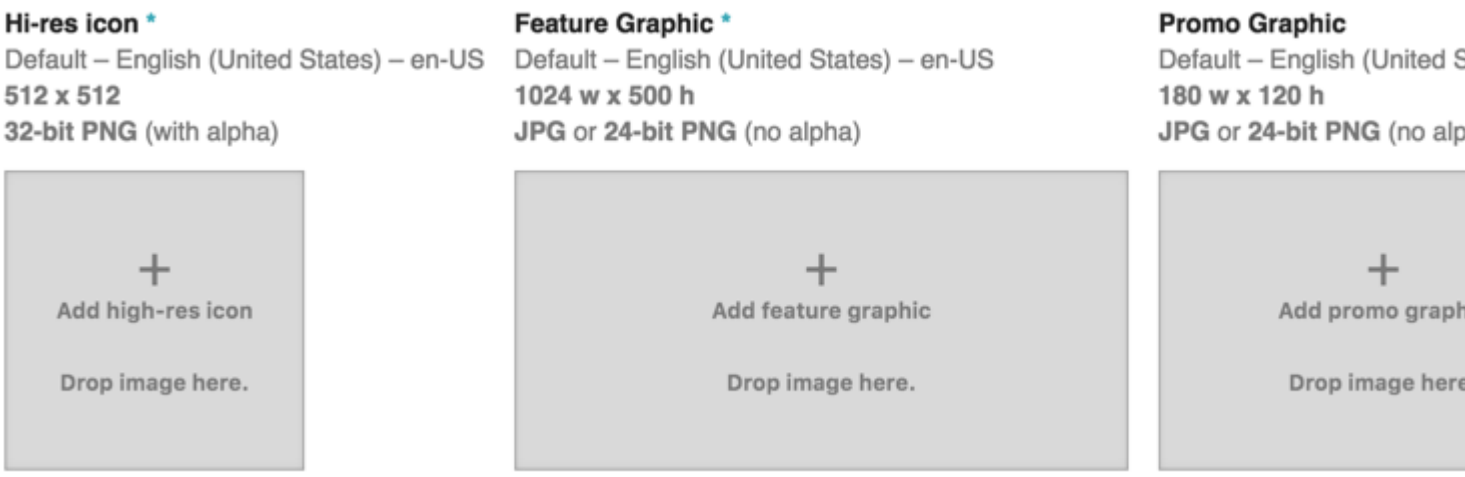
2 https://riptutorial.com/zh-CN/android/topic/3088/2

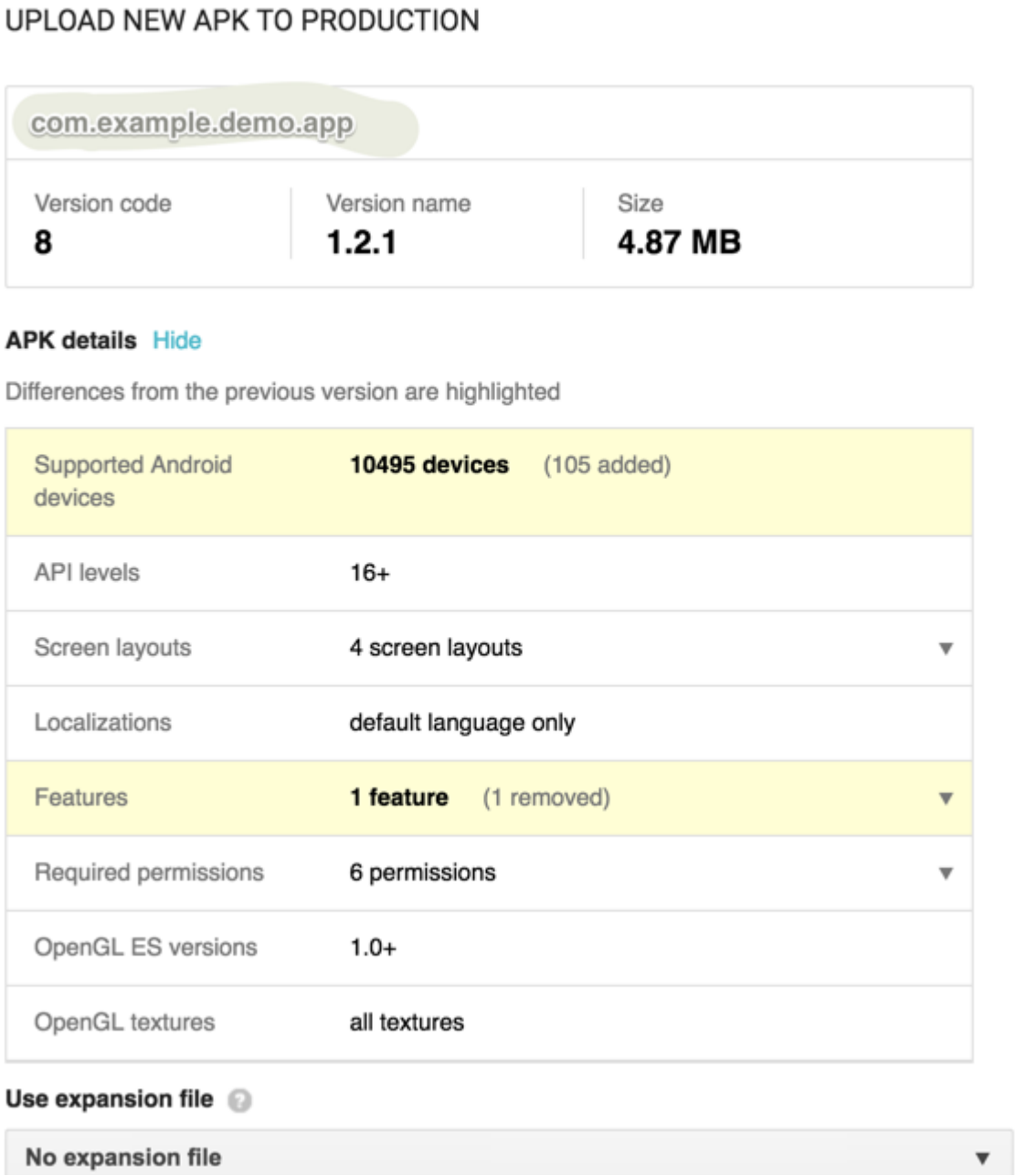
141: Play

Examples

-
- apk
-
- Firebase

1. https://play.google.com/apps/publish/
   1a
2. `Create new Application`
3. APK
4. Play
5. `Publish app`





Play https://riptutorial.com/zh-CN/android/topic/5369/play

142:

Examples

drawable

◦ ◦

SDK 21+API

```
Drawable d = context.getDrawable(R.drawable.ic_launcher);
d.setTint(Color.WHITE);
```

SDK 4+android.support.v4

```
//Load the untinted resource
final Drawable drawableRes = ContextCompat.getDrawable(context, R.drawable.ic_launcher);
//Wrap it with the compatibility library so it can be altered
Drawable tintedDrawable = DrawableCompat.wrap(drawableRes);
//Apply a coloured tint
DrawableCompat.setTint(tintedDrawable, Color.WHITE);
//At this point you may use the tintedDrawable just as you usually would
//(and drawableRes can be discarded)

//NOTE: If your original drawableRes was in use somewhere (i.e. it was the result of
//a call to a `getBackground()` method then at this point you still need to replace
//the background. setTint does *not* alter the instance that drawableRes points to,
//but instead creates a new drawable instance
```

`int color` “”◦ XML◦

Color.WHITE

API

```
getResources().getColor(R.color.your_color);
```

```
ContextCompat.getColor(context, R.color.your_color);
```

custom_rectangle.xml

```
<?xml version="1.0" encoding="utf-8"?>
<shape xmlns:android="http://schemas.android.com/apk/res/android"
    android:shape="rectangle" >

    <solid android:color="@android:color/white" />

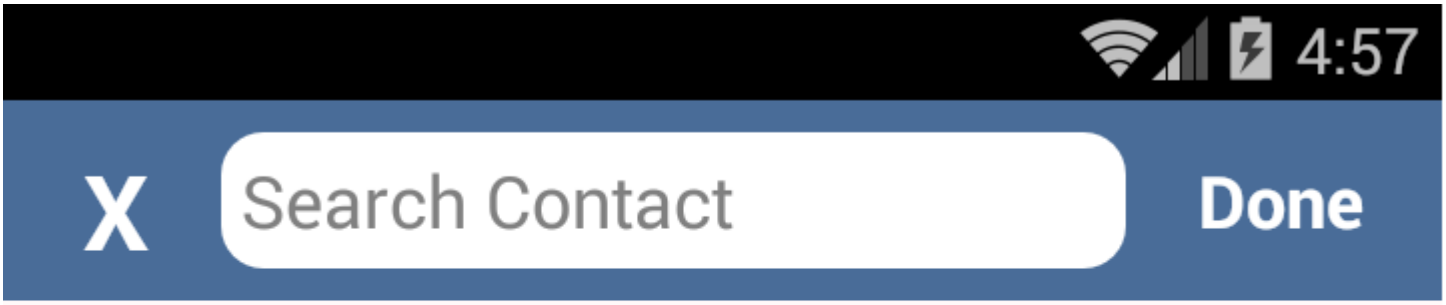
    <corners android:radius="10dip" />

    <stroke
```

```
        android:width="1dp"
        android:color="@android:color/white" />

</shape>
```

```
mView.setBackGround(R.drawlable.custom_rectangle);
```



`TextView` **drawble**drawble **round_view.xml**

```
<?xml version="1.0" encoding="utf-8"?>
<shape
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:shape="oval">
    <solid android:color="#FAA23C" />
    <stroke android:color="#FFF" android:width="2dp" />
</shape>
```

drawableView

```
    <TextView
        android:id="@+id/game_score"
        android:layout_width="60dp"
        android:layout_height="60dp"
        android:background="@drawable/round_score"
        android:padding="6dp"
        android:text="100"
        android:textColor="#fff"
        android:textSize="20sp"
        android:textStyle="bold"
        android:gravity="center" />
```

Drawable

```
public class IconDrawable extends Drawable {
    /**
     * Paint for drawing the shape
     */
    private Paint paint;
    /**
     * Icon drawable to be drawn to the center of the shape
     */
    private Drawable icon;
    /**
     * Desired width and height of icon
     */
    private int desiredIconHeight, desiredIconWidth;

    /**
     * Public constructor for the Icon drawable
     *
     * @param icon            pass the drawable of the icon to be drawn at the center
     * @param backgroundColor background color of the shape
     */
    public IconDrawable(Drawable icon, int backgroundColor) {
        this.icon = icon;
        paint = new Paint(Paint.ANTI_ALIAS_FLAG);
        paint.setColor(backgroundColor);
        desiredIconWidth = 50;
        desiredIconHeight = 50;
    }

    @Override
    public void draw(Canvas canvas) {
        //if we are setting this drawable to a 80dpX80dp imageview
        //getBounds will return that measurements,we can draw according to that width.
        Rect bounds = getBounds();
        //drawing the circle with center as origin and center distance as radius
        canvas.drawCircle(bounds.centerX(), bounds.centerY(), bounds.centerX(), paint);
        //set the icon drawable's bounds to the center of the shape
        icon.setBounds(bounds.centerX() - (desiredIconWidth / 2), bounds.centerY() -
(desiredIconHeight / 2), (bounds.centerX() - (desiredIconWidth / 2)) + desiredIconWidth,
(bounds.centerY() - (desiredIconHeight / 2)) + desiredIconHeight);
        //draw the icon to the bounds
        icon.draw(canvas);

    }
```

```
    @Override
    public void setAlpha(int alpha) {
        //sets alpha to your whole shape
        paint.setAlpha(alpha);
    }

    @Override
    public void setColorFilter(ColorFilter colorFilter) {
       //sets color filter to your whole shape
        paint.setColorFilter(colorFilter);
    }

    @Override
    public int getOpacity() {
        //give the desired opacity of the shape
        return PixelFormat.TRANSLUCENT;
    }
}
```

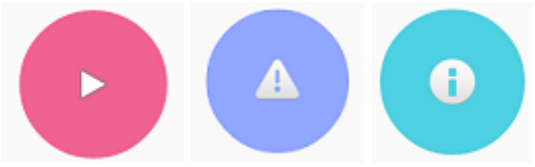
ImageView

```
<ImageView
   android:layout_width="80dp"
   android:id="@+id/imageView"
   android:layout_height="80dp" />
```

drawableImageView

```
 IconDrawable iconDrawable=new
IconDrawable(ContextCompat.getDrawable(this,android.R.drawable.ic_media_play),ContextCompat.getColor(th

 imageView.setImageDrawable(iconDrawable);
```



https://riptutorial.com/zh-CN/android/topic/4841/

143:

Examples

Instagram OAuthURL

OAuth。 Instagram“ ”Instagram`access_token`。 app`access_token`。

`Activity`。 `Activity<intent-filter/>`URL。 URL`appSchema://appName.com`。 *Manifest.xml*`Activity`

```
<action android:name="android.intent.action.VIEW" />
<category android:name="android.intent.category.BROWSABLE"/>
<data android:host="appName.com" android:scheme="appSchema"/>
```

- `<category android:name="android.intent.category.BROWSABLE"/>`Web。
- `<data android:host="appName.com" android:scheme="appSchema"/>`。
- URL`Activity`。

`Activity`URL`onResume()`

```
@Override
public void onResume() {
    // The following line will return "appSchema://appName.com".
    String CALLBACK_URL = getResources().getString(R.string.insta_callback);
    Uri uri = getIntent().getData();
    if (uri != null && uri.toString().startsWith(CALLBACK_URL)) {
        String access_token = uri.getQueryParameter("access_token");
    }
    // Perform other operations here.
}
```

Instagram`access_token` InstagramAPI。

https://riptutorial.com/zh-CN/android/topic/4790/

144: I18NL10N

i18nL10n。

。

//。

adb

1. adb adb shell
2. adb setprop persist.sys.locale [BCP-47 language tag];stop;sleep 5;start[BCP-47] BCP47

setprop persist.sys.locale ja-JP;stop;sleep 5;start

Examples

ManifestRTL

RTLi18nL10n。 。 。

AndroidManifestsupportsRtlAndroidRTL

```
<application
    ...
    android:supportsRtl="true"
    ...>
...
</application>
```

RTL

SDK 17Android 4.2AndroidRTL。 left/rightstart/end。 minSdk17 left/rightstart/end。

alignParentStartalignParentEnd

```
<RelativeLayout
    android:layout_width="match_parent"
    android:layout_height="match_parent">
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentTop="true"
        android:layout_alignParentLeft="true"
        android:layout_alignParentStart="true"/>
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentTop="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentEnd="true"/>
```

```
</RelativeLayout>
```

```
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="left|start"
        android:gravity="left|start"/>
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="right|end"
        android:gravity="right|end"/>
```

```
<include layout="@layout/notification"
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:layout_marginLeft="12dp"
    android:layout_marginStart="12dp"
    android:paddingLeft="128dp"
    android:paddingStart="128dp"
    android:layout_toLeftOf="@id/cancel_action"
    android:layout_toStartOf="@id/cancel_action"/>
<include layout="@layout/notification2"
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:layout_marginRight="12dp"
    android:layout_marginEnd="12dp"
    android:paddingRight="128dp"
    android:paddingEnd="128dp"
    android:layout_toRightOf="@id/cancel_action"
    android:layout_toEndOf="@id/cancel_action"/>
```

RTL

RTL

- > - > - >RTL

RTLRTL。/。

。 。 。 。

```
res/values/strings.xml
```

。

```
res/drawable/
res/layout/
```

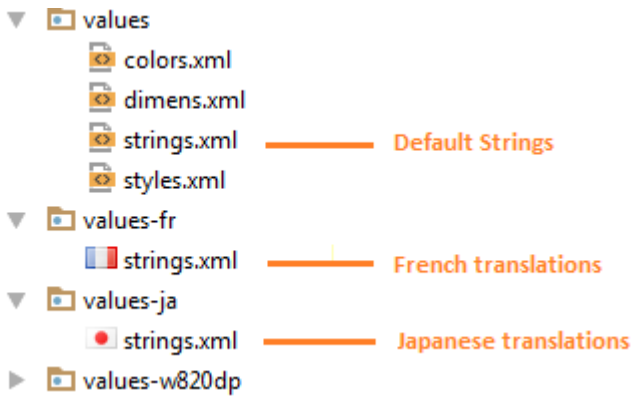
animxml

```
res/anim/
res/xml/
```

```
res/raw/
```

strings.xml

```
res/values-<locale>/strings.xml
```



res/values/strings.xmlres/values-fr/strings.xmlres/values-ja/strings.xml

。

ISO 639

。 SharedPreferences。 strings.xmltranslatable="false"。

```
<string name="pref_widget_display_label_hot">Hot News</string>
<string name="pref_widget_display_key" translatable="false">widget_display</string>
<string name="pref_widget_display_hot" translatable="false">0</string>
```

。 。

start/end。 。 RTL。 。

RTLldrtl ldrtllayout-direction-right-left}。 res/layout/res/layout-ldrtl/ RTLres/layout-ldrtl/ 。

ldrtl。

ldrtl

I18NL10N https://riptutorial.com/zh-CN/android/topic/8796/-i18nl10n-

145:

Examples

Singleton

```
ImageView imageView = (ImageView)findViewById(R.id.imageView);
Bitmap bitmap = ImageUtils.getInstant().getCompressedBitmap("Your_Image_Path_Here");
imageView.setImageBitmap(bitmap);
```

ImageUtils.java

```
public class ImageUtils {

    public static ImageUtils mInstant;

    public static ImageUtils getInstant(){
        if(mInstant==null){
            mInstant = new ImageUtils();
        }
        return mInstant;
    }

    public  Bitmap getCompressedBitmap(String imagePath) {
        float maxHeight = 1920.0f;
        float maxWidth = 1080.0f;
        Bitmap scaledBitmap = null;
        BitmapFactory.Options options = new BitmapFactory.Options();
        options.inJustDecodeBounds = true;
        Bitmap bmp = BitmapFactory.decodeFile(imagePath, options);

        int actualHeight = options.outHeight;
        int actualWidth = options.outWidth;
        float imgRatio = (float) actualWidth / (float) actualHeight;
        float maxRatio = maxWidth / maxHeight;

        if (actualHeight > maxHeight || actualWidth > maxWidth) {
            if (imgRatio < maxRatio) {
                imgRatio = maxHeight / actualHeight;
                actualWidth = (int) (imgRatio * actualWidth);
                actualHeight = (int) maxHeight;
            } else if (imgRatio > maxRatio) {
                imgRatio = maxWidth / actualWidth;
                actualHeight = (int) (imgRatio * actualHeight);
                actualWidth = (int) maxWidth;
            } else {
                actualHeight = (int) maxHeight;
                actualWidth = (int) maxWidth;

            }
        }

        options.inSampleSize = calculateInSampleSize(options, actualWidth, actualHeight);
        options.inJustDecodeBounds = false;
        options.inDither = false;
        options.inPurgeable = true;
```

```
        options.inInputShareable = true;
        options.inTempStorage = new byte[16 * 1024];

        try {
            bmp = BitmapFactory.decodeFile(imagePath, options);
        } catch (OutOfMemoryError exception) {
            exception.printStackTrace();

        }
        try {
            scaledBitmap = Bitmap.createBitmap(actualWidth, actualHeight,
Bitmap.Config.ARGB_8888);
        } catch (OutOfMemoryError exception) {
            exception.printStackTrace();
        }

        float ratioX = actualWidth / (float) options.outWidth;
        float ratioY = actualHeight / (float) options.outHeight;
        float middleX = actualWidth / 2.0f;
        float middleY = actualHeight / 2.0f;

        Matrix scaleMatrix = new Matrix();
        scaleMatrix.setScale(ratioX, ratioY, middleX, middleY);

        Canvas canvas = new Canvas(scaledBitmap);
        canvas.setMatrix(scaleMatrix);
        canvas.drawBitmap(bmp, middleX - bmp.getWidth() / 2, middleY - bmp.getHeight() / 2,
new Paint(Paint.FILTER_BITMAP_FLAG));

        ExifInterface exif = null;
        try {
            exif = new ExifInterface(imagePath);
            int orientation = exif.getAttributeInt(ExifInterface.TAG_ORIENTATION, 0);
            Matrix matrix = new Matrix();
            if (orientation == 6) {
                matrix.postRotate(90);
            } else if (orientation == 3) {
                matrix.postRotate(180);
            } else if (orientation == 8) {
                matrix.postRotate(270);
            }
            scaledBitmap = Bitmap.createBitmap(scaledBitmap, 0, 0, scaledBitmap.getWidth(),
scaledBitmap.getHeight(), matrix, true);
        } catch (IOException e) {
            e.printStackTrace();
        }
        ByteArrayOutputStream out = new ByteArrayOutputStream();
        scaledBitmap.compress(Bitmap.CompressFormat.JPEG, 85, out);

        byte[] byteArray = out.toByteArray();

        Bitmap updatedBitmap = BitmapFactory.decodeByteArray(byteArray, 0, byteArray.length);

        return updatedBitmap;
    }

    private int calculateInSampleSize(BitmapFactory.Options options, int reqWidth, int
reqHeight) {
        final int height = options.outHeight;
        final int width = options.outWidth;
        int inSampleSize = 1;
```

```
        if (height > reqHeight || width > reqWidth) {
            final int heightRatio = Math.round((float) height / (float) reqHeight);
            final int widthRatio = Math.round((float) width / (float) reqWidth);
            inSampleSize = heightRatio < widthRatio ? heightRatio : widthRatio;
        }
        final float totalPixels = width * height;
        final float totalReqPixelsCap = reqWidth * reqHeight * 2;

        while (totalPixels / (inSampleSize * inSampleSize) > totalReqPixelsCap) {
            inSampleSize++;
        }
        return inSampleSize;
    }
}
```

Bitmap ◦

```
Bitmap beforeBitmap = BitmapFactory.decodeFile("Your_Image_Path_Here");
Log.i("Before Compress Dimension", beforeBitmap.getWidth()+"-"+beforeBitmap.getHeight());

Bitmap afterBitmap = ImageUtils.getInstant().getCompressedBitmap("Your_Image_Path_Here");
Log.i("After Compress Dimension", afterBitmap.getWidth() + "-" + afterBitmap.getHeight());
```

```
Before Compress : Dimension: 1080-1452
After Compress : Dimension: 1080-1452
```

https://riptutorial.com/zh-CN/android/topic/5588/

146: Android App

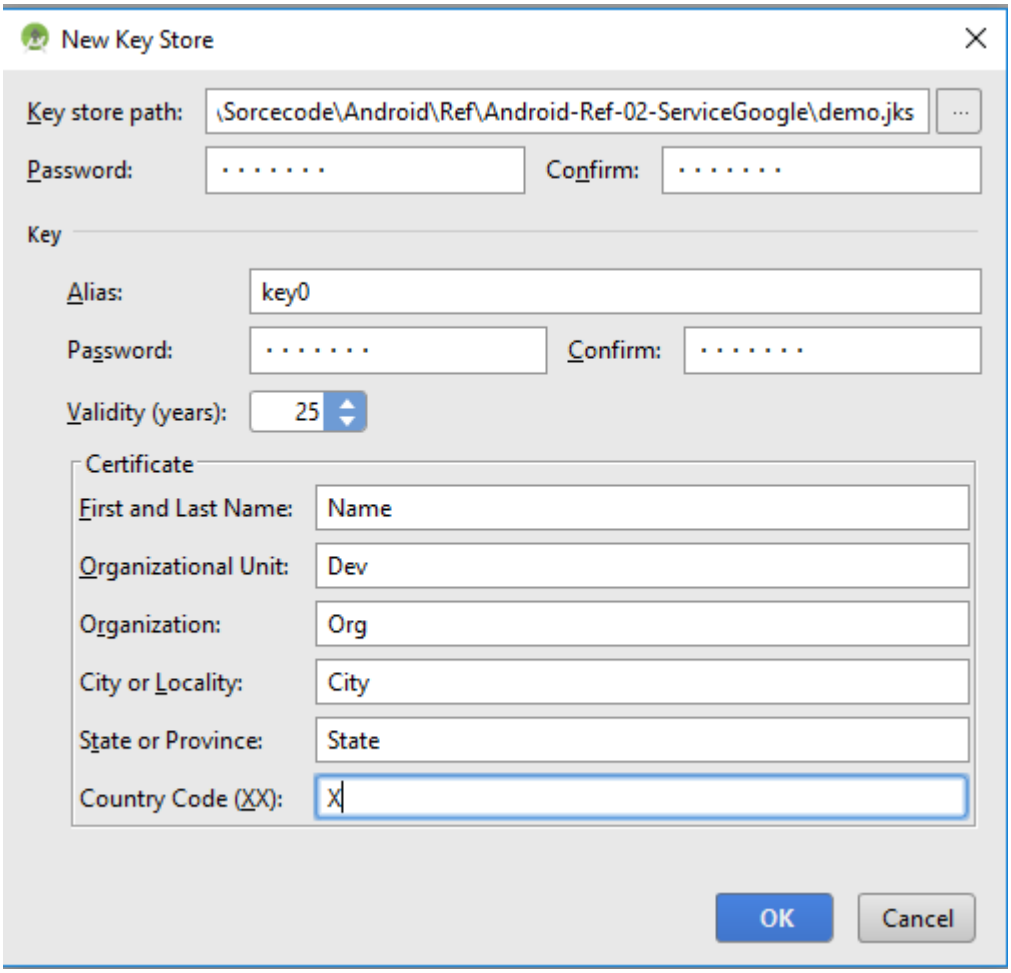
AndroidAPK。

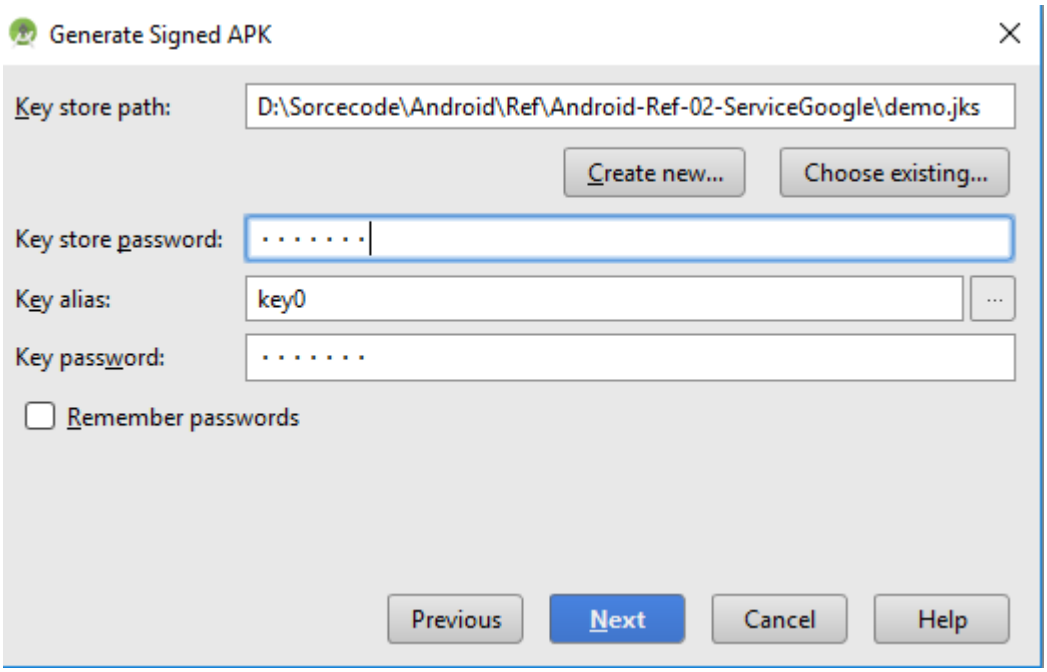
Examples

1. “”>“APK”。

2. “”。

3. “”。 。





4. APK。

5. APK“”。

build.gradle

`build.gradle`apk。

- `storeFile`
- `storePassword`
- `keyAlias`
- `keyPassword`

`signingConfigs`

```
android {
    signingConfigs {

        myConfig {
            storeFile file("myFile.keystore")
            storePassword "xxxx"
            keyAlias "xxxx"
            keyPassword "xxxx"
        }
    }
    //....
}
```

。

```
android {

    buildTypes {
        release {
```

```
            signingConfig signingConfigs.myConfig
        }
    }
}
```

Android App https://riptutorial.com/zh-CN/android/topic/9721/android-app

147: Android Studio

“”eevry。

Instant Run 2.0Android Studio 2.0RunDebug。 Instant RunAPK。

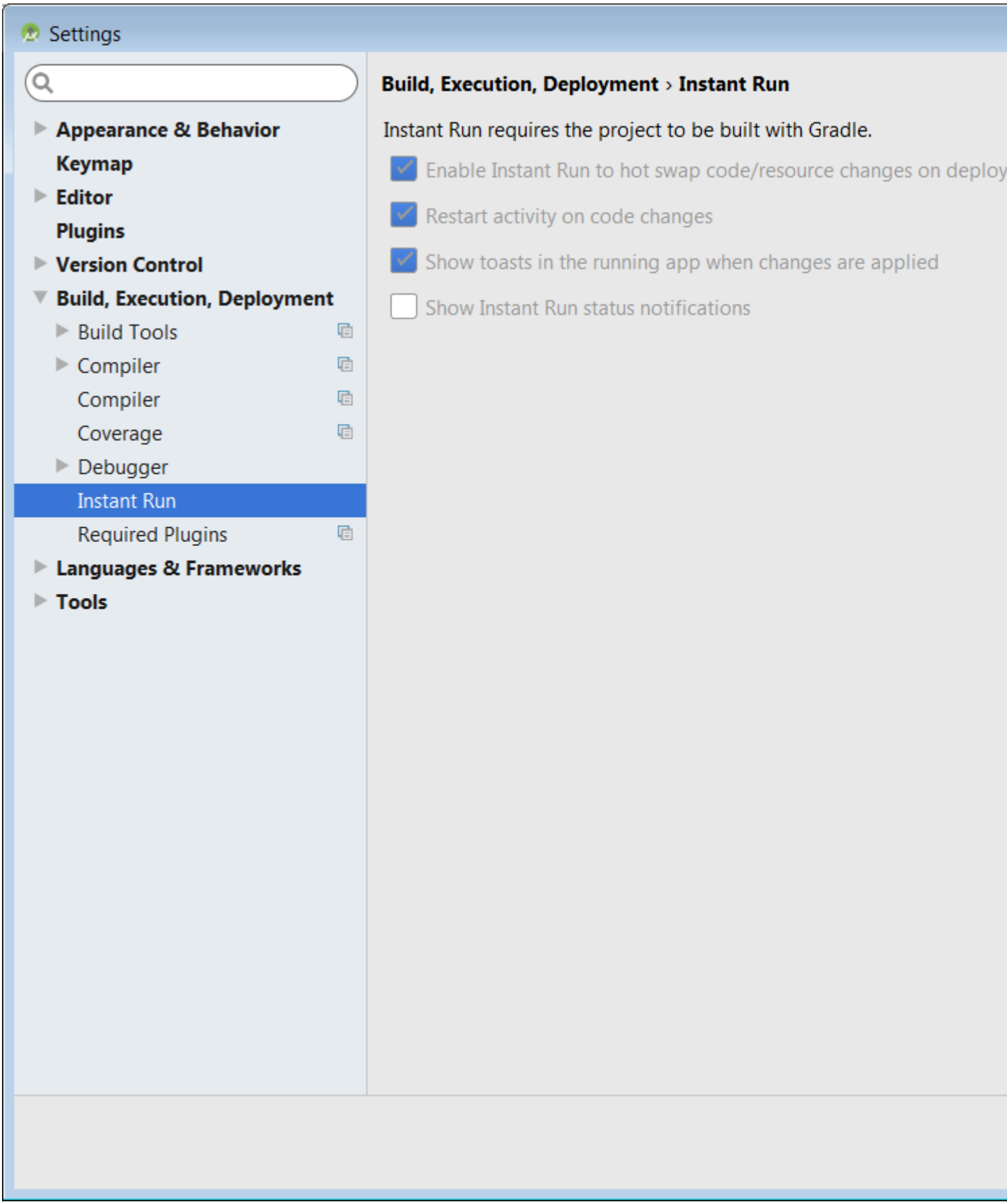
Instant RunGradle2.0.0Androidbuild.gradleminSdkVersion15。 minSdkVersion21。

“”“”“”。 APK。

。 。 。 Instant Run。

Examples

1. - WindowsLinux“ `File` > `Settings` 。
   - Mac OSX`Android Studio` > `Preferences`。
2. `Build, Execution, Deployment` > `Compiler` 。
3. “”。
4. “”。



。/。

Instant RunAndroid Studio。

-

-
-

HOT SWAP ◦

WARM SWAP res

1.

-
-
-
-
-

2.
3.
4.
5. ID

HOT SWAP - ◦

WARM SWAP

COLD SWAP

“”

Instant Run◦

1.
2.
3. AndroidUI

Android Studio https://riptutorial.com/zh-CN/android/topic/2119/android-studio

148: AndroidCling

Examples

AndroidCling

build.gradle

```
repositories {
  maven { url 'http://4thline.org/m2' }
}

dependencies {

// Cling
compile 'org.fourthline.cling:cling-support:2.1.0'

//Other dependencies required by Cling
compile 'org.eclipse.jetty:jetty-server:8.1.18.v20150929'
compile 'org.eclipse.jetty:jetty-servlet:8.1.18.v20150929'
compile 'org.eclipse.jetty:jetty-client:8.1.18.v20150929'
compile 'org.slf4j:slf4j-jdk14:1.7.14'

}
```

NAT

```
String myIp = getIpAddress();
int port = 55555;

//creates a port mapping configuration with the external/internal port, an internal host IP,
the protocol and an optional description
PortMapping[] desiredMapping = new PortMapping[2];
desiredMapping[0] = new PortMapping(port,myIp, PortMapping.Protocol.TCP);
desiredMapping[1] = new PortMapping(port,myIp, PortMapping.Protocol.UDP);

//starting the UPnP service
UpnpService upnpService = new UpnpServiceImpl(new AndroidUpnpServiceConfiguration());
RegistryListener registryListener = new PortMappingListener(desiredMapping);
upnpService.getRegistry().addListener(registryListener);
upnpService.getControlPoint().search();



//method for getting local ip
private String getIpAddress() {
    String ip = "";
    try {
        Enumeration<NetworkInterface> enumNetworkInterfaces = NetworkInterface
                .getNetworkInterfaces();
        while (enumNetworkInterfaces.hasMoreElements()) {
            NetworkInterface networkInterface = enumNetworkInterfaces
                    .nextElement();
            Enumeration<InetAddress> enumInetAddress = networkInterface
```

```
                    .getInetAddresses();
            while (enumInetAddress.hasMoreElements()) {
                InetAddress inetAddress = enumInetAddress.nextElement();

                if (inetAddress.isSiteLocalAddress()) {
                    ip +=inetAddress.getHostAddress();
                }
            }
        }
    } catch (SocketException e) {
        // TODO Auto-generated catch block
        e.printStackTrace();
        ip += "Something Wrong! " + e.toString() + "\n";
    }
    return ip;
}
```

AndroidCling https://riptutorial.com/zh-CN/android/topic/6208/androidcling

149: Android

Examples

AndroidShake Detector

```
public class ShakeDetector implements SensorEventListener {


    private static final float SHAKE_THRESHOLD_GRAVITY = 2.7F;
    private static final int SHAKE_SLOP_TIME_MS = 500;
    private static final int SHAKE_COUNT_RESET_TIME_MS = 3000;

    private OnShakeListener mListener;
    private long mShakeTimestamp;
    private int mShakeCount;

    public void setOnShakeListener(OnShakeListener listener) {
        this.mListener = listener;
    }

    public interface OnShakeListener {
        public void onShake(int count);
    }

    @Override
    public void onAccuracyChanged(Sensor sensor, int accuracy) {
        // ignore
    }

    @Override
    public void onSensorChanged(SensorEvent event) {

        if (mListener != null) {
            float x = event.values[0];
            float y = event.values[1];
            float z = event.values[2];

            float gX = x / SensorManager.GRAVITY_EARTH;
            float gY = y / SensorManager.GRAVITY_EARTH;
            float gZ = z / SensorManager.GRAVITY_EARTH;

            // gForce will be close to 1 when there is no movement.
            float gForce = FloatMath.sqrt(gX * gX + gY * gY + gZ * gZ);

            if (gForce > SHAKE_THRESHOLD_GRAVITY) {
                final long now = System.currentTimeMillis();
                // ignore shake events too close to each other (500ms)
                if (mShakeTimestamp + SHAKE_SLOP_TIME_MS > now) {
                    return;
                }

                // reset the shake count after 3 seconds of no shakes
                if (mShakeTimestamp + SHAKE_COUNT_RESET_TIME_MS < now) {
                    mShakeCount = 0;
                }
```

```
                mShakeTimestamp = now;
                mShakeCount++;

                mListener.onShake(mShakeCount);
            }
        }
    }
}
```

*Seismic*SquareAndroid。。

```
@Override
protected void onCreate(Bundle savedInstanceState) {
    sm = (SensorManager) getSystemService(SENSOR_SERVICE);
    sd = new ShakeDetector(() -> { /* react to detected shake */ });
}

@Override
protected void onResume() {
    sd.start(sm);
}

@Override
protected void onPause() {
    sd.stop();
}
```

`sd.setSensitivity(sensitivity)` `sensitivity`SENSITIVITY_LIGHT SENSITIVITY_MEDIUM SENSITIVITY_HARD 。*1115*。

```
compile 'com.squareup:seismic:1.0.2'
```

Android https://riptutorial.com/zh-CN/android/topic/4501/android

150: AndroidORMLite

Examples

Android OrmLiteSQLite

ORMLiteJavaSQLORM。

AndroidOrmLiteSQLite。APISQLite。

Gradle

gradle。

```
 // https://mvnrepository.com/artifact/com.j256.ormlite/ormlite-android
compile group: 'com.j256.ormlite', name: 'ormlite-android', version: '5.0'
POJO configuration
```

POJO。

- @DatabaseTable。@Entity。
- @DatabaseField。@Column。
- 。

```
@DatabaseTable(tableName = "form_model")
public class FormModel implements Serializable {

    @DatabaseField(generatedId = true)
    private Long id;
    @DatabaseField(dataType = DataType.SERIALIZABLE)
    ArrayList<ReviewItem> reviewItems;

    @DatabaseField(index = true)
    private String username;

    @DatabaseField
    private String createdAt;

    public FormModel() {
    }

    public FormModel(ArrayList<ReviewItem> reviewItems, String username, String createdAt) {
        this.reviewItems = reviewItems;
        this.username = username;
        this.createdAt = createdAt;
    }
}
```

4form_model。

id。

username。

。

OrmLiteSqliteOpenHelper。

DAO。

DAOScrum。

- onCreateSQLiteDatabase sqliteDatabaseConnectionSource connectionSource;

  onCreate

- onUpgradeSQLiteDatabaseConnectionSource connectionSourceint oldVersionint newVersion;

  onUpgrade

Database Helper

```
  public class OrmLite extends OrmLiteSqliteOpenHelper {

        //Database name
        private static final String DATABASE_NAME = "gaia";
        //Version of the database. Changing the version will call {@Link OrmLite.onUpgrade}
        private static final int DATABASE_VERSION = 2;

        /**
         * The data access object used to interact with the Sqlite database to do C.R.U.D
operations.
         */
        private Dao<FormModel, Long> todoDao;



        public OrmLite(Context context) {
            super(context, DATABASE_NAME, null, DATABASE_VERSION,
                    /**
                     * R.raw.ormlite_config is a reference to the ormlite_config2.txt file in
the
                     * /res/raw/ directory of this project
                     * */
                    R.raw.ormlite_config2);
        }

        @Override
        public void onCreate(SQLiteDatabase database, ConnectionSource connectionSource) {
            try {

                /**
                 * creates the database table
                 */
```

```
                TableUtils.createTable(connectionSource, FormModel.class);

            } catch (SQLException e) {
                e.printStackTrace();
            } catch (java.sql.SQLException e) {
                e.printStackTrace();
            }
        }
        /*
            It is called when you construct a SQLiteOpenHelper with version newer than the
version of the opened database.
         */
        @Override
        public void onUpgrade(SQLiteDatabase database, ConnectionSource connectionSource,
                              int oldVersion, int newVersion) {
            try {
                /**
                 * Recreates the database when onUpgrade is called by the framework
                 */
                TableUtils.dropTable(connectionSource, FormModel.class, false);
                onCreate(database, connectionSource);

            } catch (SQLException | java.sql.SQLException e) {
                e.printStackTrace();
            }
        }

        /**
         * Returns an instance of the data access object
         * @return
         * @throws SQLException
         */
        public Dao<FormModel, Long> getDao() throws SQLException {
            if(todoDao == null) {
                try {
                    todoDao = getDao(FormModel.class);
                } catch (java.sql.SQLException e) {
                    e.printStackTrace();
                }
            }
            return todoDao;
        }
    }
```

SQLite

。

```
     public class ReviewPresenter {
    Dao<FormModel, Long> simpleDao;


    public ReviewPresenter(Application application) {
        this.application = (GaiaApplication) application;
        simpleDao = this.application.getHelper().getDao();
    }
```

```
    public void storeFormToSqLite(FormModel form) {

        try {
            simpleDao.create(form);
        } catch (SQLException e) {
            e.printStackTrace();
        }
        List<FormModel> list = null;
        try {
// query for all of the data objects in the database
            list = simpleDao.queryForAll();
        } catch (SQLException e) {
            e.printStackTrace();
        }
// our string builder for building the content-view
        StringBuilder sb = new StringBuilder();
        int simpleC = 1;
        for (FormModel simple : list) {
            sb.append('#').append(simpleC).append(":
").append(simple.getUsername()).append('\n');
            simpleC++;
        }
        System.out.println(sb.toString());
    }

    //Query to database to get all forms by username
    public List<FormModel> getAllFormsByUsername(String username) {
        List<FormModel> results = null;
        try {
            results = simpleDao.queryBuilder().where().eq("username",
PreferencesManager.getInstance().getString(Constants.USERNAME)).query();
        } catch (SQLException e) {
            e.printStackTrace();
        }
        return results;
    }
}
```

DOA

```
 private OrmLite dbHelper = null;

/*
Provides the SQLite Helper Object among the application
 */
public OrmLite getHelper() {
    if (dbHelper == null) {
        dbHelper = OpenHelperManager.getHelper(this, OrmLite.class);
    }
    return dbHelper;
}
```

AndroidORMLite https://riptutorial.com/zh-CN/android/topic/7571/androidormlite

151: androidZip

Examples

androidZip

```
import android.util.Log;
import java.io.BufferedInputStream;
import java.io.BufferedOutputStream;
import java.io.FileInputStream;
import java.io.FileOutputStream;
import java.util.zip.ZipEntry;
import java.util.zip.ZipOutputStream;


  public class Compress {
      private static final int BUFFER = 2048;

      private String[] _files;
      private String _zipFile;

      public Compress(String[] files, String zipFile) {
        _files = files;
        _zipFile = zipFile;
      }

      public void zip() {
        try  {
          BufferedInputStream origin = null;
          FileOutputStream dest = new FileOutputStream(_zipFile);

          ZipOutputStream out = new ZipOutputStream(new BufferedOutputStream(dest));

          byte data[] = new byte[BUFFER];

          for(int i=0; i < _files.length; i++) {
            Log.v("Compress", "Adding: " + _files[i]);
            FileInputStream fi = new FileInputStream(_files[i]);
            origin = new BufferedInputStream(fi, BUFFER);
            ZipEntry entry = new ZipEntry(_files[i].substring(_files[i].lastIndexOf("/") +
1));
            out.putNextEntry(entry);
            int count;
            while ((count = origin.read(data, 0, BUFFER)) != -1) {
              out.write(data, 0, count);
            }
            origin.close();
          }

          out.close();
        } catch(Exception e) {
          e.printStackTrace();
        }

      }

    }
```

androidZip https://riptutorial.com/zh-CN/android/topic/8137/androidzip

152: Android

Examples

```
private boolean unpackZip(String path, String zipname){
 InputStream is;
 ZipInputStream zis;
 try
 {
     String filename;
     is = new FileInputStream(path + zipname);
     zis = new ZipInputStream(new BufferedInputStream(is));
     ZipEntry ze;
     byte[] buffer = new byte[1024];
     int count;

     while ((ze = zis.getNextEntry()) != null){
         // zapis do souboru
         filename = ze.getName();

         // Need to create directories if not exists, or
         // it will generate an Exception...
         if (ze.isDirectory()) {
            File fmd = new File(path + filename);
            fmd.mkdirs();
            continue;
         }

         FileOutputStream fout = new FileOutputStream(path + filename);

         // cteni zipu a zapis
         while ((count = zis.read(buffer)) != -1){
             fout.write(buffer, 0, count);
         }

         fout.close();
         zis.closeEntry();
     }

     zis.close();
 }
 catch(IOException e){
     e.printStackTrace();
     return false;
 }

return true;}
```

Android https://riptutorial.com/zh-CN/android/topic/3927/android

153: AndroidRetrolambda。

RetrolambdaJava 7,65Java 8 lambdatry-with-resources。

Gradle RetrolambdaRetrolambdaGradle。 AndroidAndroidJava 8。

Examples

1. jdk8。
2. build.gradle

```
buildscript {
    repositories {
        mavenCentral()
    }

    dependencies {
        classpath 'me.tatarka:gradle-retrolambda:3.2.3'
    }
}
```

3. build.gradle

```
apply plugin: 'com.android.application' // or apply plugin: 'java'
apply plugin: 'me.tatarka.retrolambda'
```

4. build.gradleIDE

```
android {
    compileOptions {
        sourceCompatibility JavaVersion.VERSION_1_8
        targetCompatibility JavaVersion.VERSION_1_8
    }
}
```

```
button.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        log("Clicked");
    }
});
```

```
button.setOnClickListener(v -> log("Clicked"));
```

AndroidRetrolambda。 https://riptutorial.com/zh-CN/android/topic/8822/androidretrolambda-

154:

- FileOutputStream openFileInputString name
- FileOutputStream openFileOutputString nameint mode
-
-
- File getExternalStoragePublicDirectoryString type
- File getExternalFilesDirString type

	◦
	◦ MODE_PRIVATEMODE_APPEND◦ MODE_WORLD_READABLEMODE_WORLD_WRITEABLE API 17◦
DIR	
	◦ null DIRECTORY_MUSIC DIRECTORY_PODCASTS DIRECTORY_RINGTONES DIRECTORY_ALARMS DIRECTORY_NOTIFICATIONS DIRECTORY_PICTURESDIRECTORY_MOVIES

Examples

◦ ◦ ◦

```
String fileName= "helloworld";
String textToWrite = "Hello, World!";
FileOutputStream fileOutputStream;

try {
  fileOutputStream = openFileOutput(fileName, Context.MODE_PRIVATE);
  fileOutputStream.write(textToWrite.getBytes());
  fileOutputStream.close();
} catch (Exception e) {
  e.printStackTrace();
}
```

Context.MODE_APPENDopenFileOutputmode

```
fileOutputStream = openFileOutput(fileName, Context.MODE_APPEND);
```

“”。“”

- ◦ SD◦
- ◦ ◦
- getExternalFilesDir()◦

◦

- android.permission.WRITE_EXTERNAL_STORAGE
- android.permission.READ_EXTERNAL_STORAGE

AndroidManifest.xml

```
<uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE" />
```

API23 。

。

```
String state = Environment.getExternalStorageState();
if (state.equals(Environment.MEDIA_MOUNTED)) {
    // Available to read and write
}
if (state.equals(Environment.MEDIA_MOUNTED) ||
        state.equals(Environment.MEDIA_MOUNTED_READ_ONLY)) {
    // Available to at least read
}
```

。 。

。 Public。

。 。 。 /。

PublicPrivate`Documents`。

```
// Access your app's directory in the device's Public documents directory
File docs = new File(Environment.getExternalStoragePublicDirectory(
        Environment.DIRECTORY_DOCUMENTS), "YourAppDirectory");
// Make the directory if it does not yet exist
myDocs.mkdirs();
```

```
// Access your app's Private documents directory
File file = new File(context.getExternalFilesDir(Environment.DIRECTORY_DOCUMENTS),
        "YourAppDirectory");
// Make the directory if it does not yet exist
myDocs.mkdirs();
```

Android -

Android。 Stackoverflow。 Google /AndroidAndroid OS。 。

- UT

UT	UT
	SDmicro SD
Nexus 6P32 GB。	SDsandiskstrontiumbeyondnd

Android/ - GT

GT

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GT

SD。

GT

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UT	SDUT
Nexus 6P32 GB。	SDsandiskstrontiumbeyondnd
USBPCUSB*PTP* Windows PC。	USBPCUSB Windows PC。

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GT=UT

GTUT。

GT。;“”。GTAndroid。/。

GT Nexus 6P32/64 GB

GT `/data/data/your.application.package.appname/someDirectory/`

GT

Android“”。USB。

GTUTGT micro SD。OEMAndroid OS。

GT`READ_EXTERNAL_STORAGEWRITE_EXTERNAL_STORAGE`。

```
<manifest ...>
    <uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE" />
    ...
</manifest>
```

`WRITE_EXTERNAL_STORAGE`。

GT app-private

。

GT

Android 4.4`READ_EXTERNAL_STORAGE``WRITE_EXTERNAL_STORAGE`。`maxSdkVersion`Android

```
<manifest ...>
    <uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE"
                     android:maxSdkVersion="18" />
    ...
</manifest
```

GT

Context

```
File getDir (String name, int mode)

File getFilesDir ()
```

UT

```
File getExternalStorageDirectory ()

File getExternalFilesDir (String type)

File getExternalStoragePublicDirectory (String type)
```

Environment.getExternalStorageDirectory 。。

1. `Context`getExternalFilesDir 。 。
2. Environment.getExternalStoragePublicDirectory。 。

GTSD

API19 SD。API。

API19Android4.4 - Kitkat`Context`。

```
File[] getExternalFilesDirs (String type)
```

/。。

GT - Micro SD。 SD。。

android

`MainActivity.java` `protected void onCreate(Bundle savedInstanceState)`

```
    File internal_m1 = getDir("custom", 0);
    File internal_m2 = getFilesDir();
```

```
    File external_m1 =  Environment.getExternalStorageDirectory();

    File external_m2 =  getExternalFilesDir(null);
    File external_m2_Args = getExternalFilesDir(Environment.DIRECTORY_PICTURES);

    File external_m3 =
Environment.getExternalStoragePublicDirectory(Environment.DIRECTORY_PICTURES);

    File[] external_AND_removable_storage_m1 = getExternalFilesDirs(null);
    File[] external_AND_removable_storage_m1_Args =
getExternalFilesDirs(Environment.DIRECTORY_PICTURES);
```

```
internal_m1: /data/data/your.application.package.appname/app_custom

internal_m2: /data/data/your.application.package.appname/files

external_m1: /storage/emulated/0

external_m2: /storage/emulated/0/Android/data/your.application.package.appname/files

external_m2_Args:
/storage/emulated/0/Android/data/your.application.package.appname/files/Pictures

external_m3: /storage/emulated/0/Pictures

external_AND_removable_storage_m1 (first path):
/storage/emulated/0/Android/data/your.application.package.appname/files

external_AND_removable_storage_m1 (second path):
/storage/sdcard1/Android/data/your.application.package.appname/files

 external_AND_removable_storage_m1_Args (first path):
/storage/emulated/0/Android/data/your.application.package.appname/files/Pictures

external_AND_removable_storage_m1_Args (second path):
/storage/sdcard1/Android/data/your.application.package.appname/files/Pictures
```

Windows PC;USB。 ;**Android**。Coolpad Note 3 - Android 5.1

Micro SD `/storage/sdcard1`

UT `/storage/sdcard0` 。

`/sdcard` `/storage/emulated/0`UT。 `/storage/sdcard0`。

Android

。 。 /Android。

SDSDDB

```
    public static Boolean ExportDB(String DATABASE_NAME , String packageName , String
folderName){
    //DATABASE_NAME including ".db" at the end like "mayApp.db"
    String DBName = DATABASE_NAME.substring(0, DATABASE_NAME.length() - 3);
    File data = Environment.getDataDirectory();
```

```
    FileChannel source=null;
    FileChannel destination=null;
    String currentDBPath = "/data/"+ packageName +"/databases/"+DATABASE_NAME; // getting app
db path

    File sd = Environment.getExternalStorageDirectory(); // getting phone SD card path
    String backupPath = sd.getAbsolutePath() + folderName; // if you want to set backup in
specific folder name
        /* be careful , foldername must initial like this : "/myFolder" . dont forget "/" at
begin of folder name
            you could define foldername like this : "/myOutterFolder/MyInnerFolder" and so on
...
        */
    File dir = new File(backupPath);
    if(!dir.exists()) // if there was no folder at this path , it create it .
    {
        dir.mkdirs();
    }

    DateFormat dateFormat = new SimpleDateFormat("yyyy-MM-dd_HH-mm-ss");
    Date date = new Date();
        /* use date including file name for arrange them and preventing to make file with the
same*/
    File currentDB = new File(data, currentDBPath);
    File backupDB = new File(backupPath, DBName +"("+ dateFormat.format(date)+").db");
    try {
        if (currentDB.exists() && !backupDB.exists()) {
            source = new FileInputStream(currentDB).getChannel();
            destination = new FileOutputStream(backupDB).getChannel();
            destination.transferFrom(source, 0, source.size());
            source.close();
            destination.close();
            return true;
        }
        return false;
    } catch(IOException e) {
        e.printStackTrace();
        return false;
    }
}
```

ExportDB “myDB.db” “com.example.exam” “/ MyFolder”;

I。

```
<uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE" />
<uses-permission android:name="android.permission.READ_EXTERNAL_STORAGE" />
```

```
//create one directory model class
//to store directory title and type in list

public class DirectoryModel {
    String dirName;
    int dirType; // set 1 or 0, where 0 for directory and 1 for file.

    public int getDirType() {
        return dirType;
    }
```

```
    public void setDirType(int dirType) {
        this.dirType = dirType;
    }

    public String getDirName() {
        return dirName;
    }

    public void setDirName(String dirName) {
        this.dirName = dirName;
    }
}
```

。

```
//define list to show directory

List<DirectoryModel> rootDir = new ArrayList<>();
```

。

```
//to fetch device directory

private void getDirectory(String currDir) { // pass device root directory
        File f = new File(currDir);
        File[] files = f.listFiles();
        if (files != null) {
            if (files.length > 0) {
                rootDir.clear();
                for (File inFile : files) {
                    if (inFile.isDirectory()) { //return true if it's directory
                        // is directory
                        DirectoryModel dir = new DirectoryModel();
                        dir.setDirName(inFile.toString().replace("/storage/emulated/0", ""));
                        dir.setDirType(0); // set 0 for directory
                        rootDir.add(dir);
                    } else if (inFile.isFile()) { // return true if it's file
                        //is file
                        DirectoryModel dir = new DirectoryModel();
                        dir.setDirName(inFile.toString().replace("/storage/emulated/0", ""));
                        dir.setDirType(1); // set 1 for file
                        rootDir.add(dir);
                    }
                }
            }
            printDirectoryList();
        }
    }
```

。

```
//print directory list in logs

private void printDirectoryList() {
    for (int i = 0; i < rootDir.size(); i++) {
        Log.e(TAG, "printDirectoryLogs: " + rootDir.get(i).toString());
```

```
    }
}
```

```
//to Fetch Directory Call function with root directory.

String rootPath = Environment.getExternalStorageDirectory().toString(); // return ==>
/storage/emulated/0/
getDirectory(rootPath );
```

/。

```
private String getExtension(String filename) {

    String filenameArray[] = filename.split("\\.");
    String extension = filenameArray[filenameArray.length - 1];
    Log.d(TAG, "getExtension: " + extension);

    return extension;
}
```

https://riptutorial.com/zh-CN/android/topic/150/

155:

Android Location APIGeofencing。

Android Location API。 AndroidLocationManager。

Android

- AndroidLocationManager
- GoogleFusedLocationProviderApi Google Play

LocationManager

-
-
- Android

-
- GPS

- NMEA
- GPS
- GPS
-
-
    - ACCESS_FINE_LOCATION
- 10 - 100
- HIGH
-
-
    - GPSA-GPS。
    - “ ”GPS“”。
-
    - ACCESS_COARSE_LOCATIONACCESS_FINE_LOCATION
- 100m - 1000m +
- -
- wifi
-
    - GPS
    - “”wifi。
-
    - ACCESS_FINE_LOCATION
- 10 - 1000+
-
- GPS
-
    - 。 。
    - FusedLocationProviderApi。

FusedLocationProviderApi

- “”
- GPS
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- /
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-
-
-
-

LocationRequest

PRIORITY_HIGH_ACCURACY

- ○ `ACCESS_FINE_LOCATION`ACCESS_COARSE_LOCATION
- 10 - 100
- HIGH
- Google Play。
- ○ `ACCESS_FINE_LOCATION` GPS。
  ○ `ACCESS_FINE_LOCATION` GPS。
  ○ “ ”。

PRIORITY_BALANCED_POWER_ACCURACY

- ○ `ACCESS_FINE_LOCATION`ACCESS_COARSE_LOCATION
- 100m - 1000m +
- MEDIUM
- Google Play。
- ○ `PRIORITY_HIGH_ACCURACY`
  ○ GPS。

PRIORITY_LOW_POWER

- ○ `ACCESS_FINE_LOCATION`ACCESS_COARSE_LOCATION
- 100m - 1000m +
-
- Google Play。
- ○ GPS。
  ○
  ○

PRIORITY_NO_POWER

- ○ `ACCESS_FINE_LOCATION`ACCESS_COARSE_LOCATION
- 10 - 1000+
-
- Google Play。
- ○ `LocationManager` `PASSIVE_PROVIDER`
  ○ Google `PASSIVE_PROVIDER`

OnLocationChanged

Android Locations

---

1. ◦ GPS`<uses-permission android:name="android.permission.ACCESS_FINE_LOCATION"/> <uses-permission android:name="android.permission.ACCESS_COARSE_LOCATION"/>` ◦ Google FusedLocationApi`ACCESS_FINE_LOCATION` ◦

---

2. Android 6+

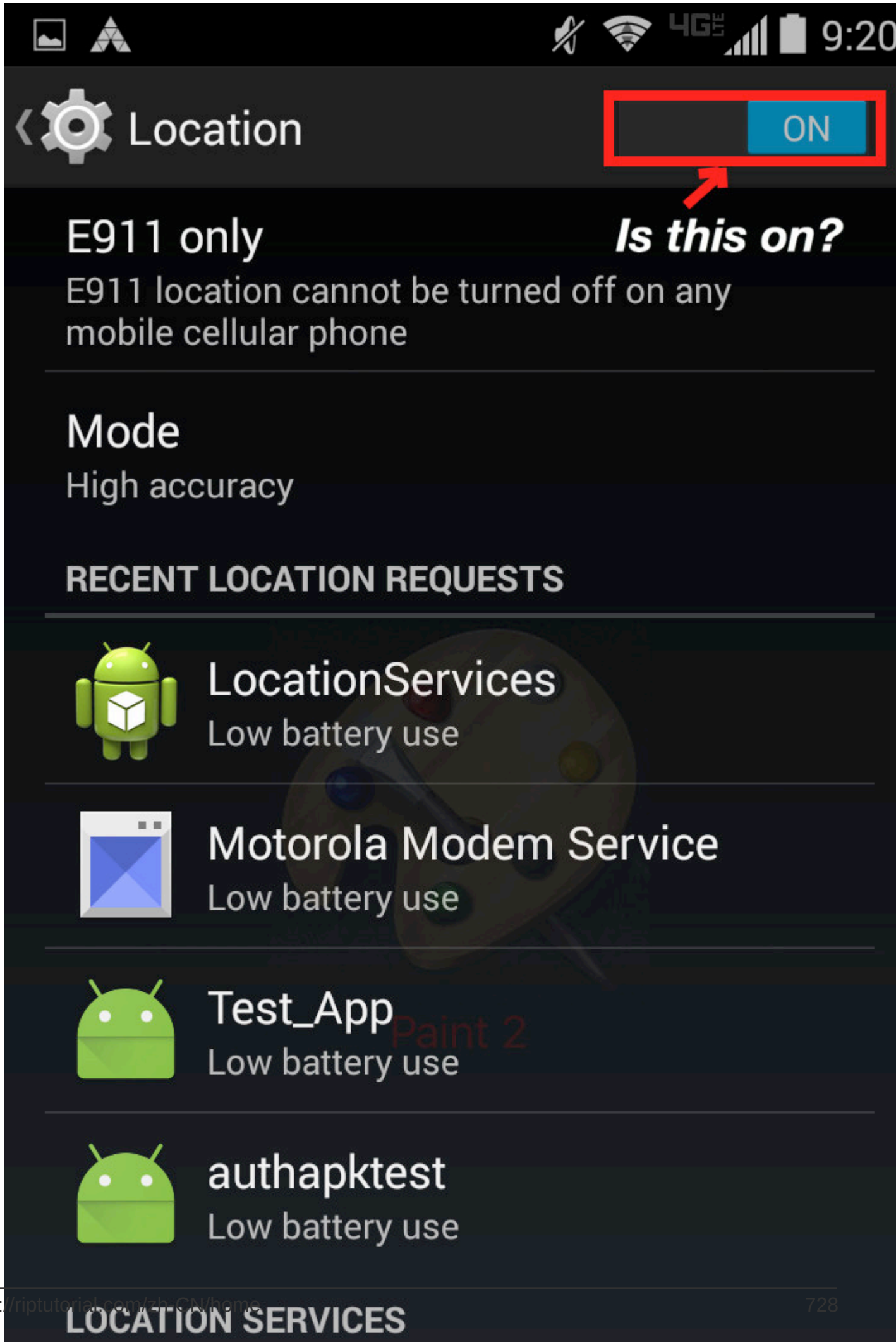
   ◦ ◦

---

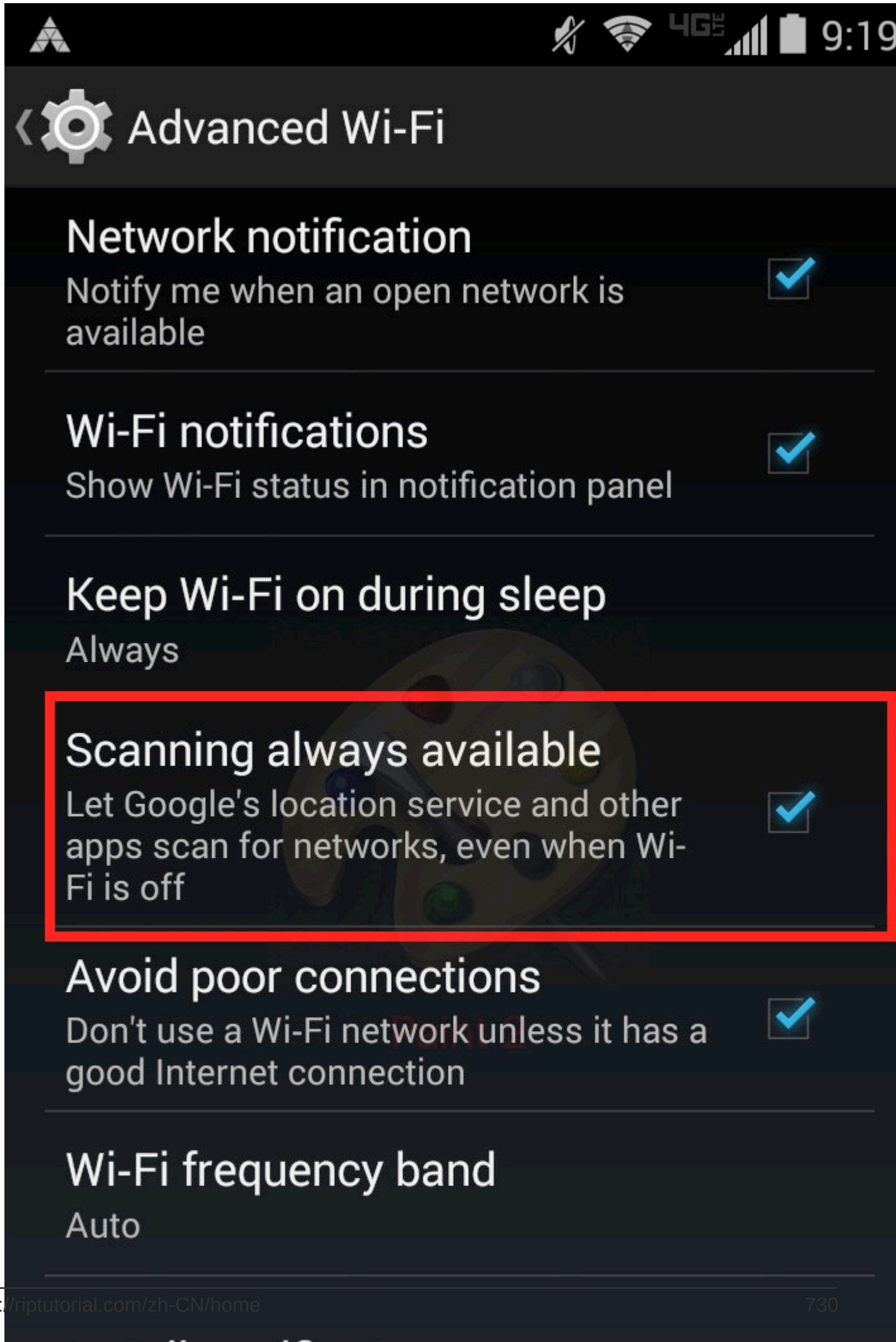
3. `BroadcastReceiverIntentServiceBroadcastReceiverPendingIntent.getService() IntentService IntentService getBroadcast()`

---

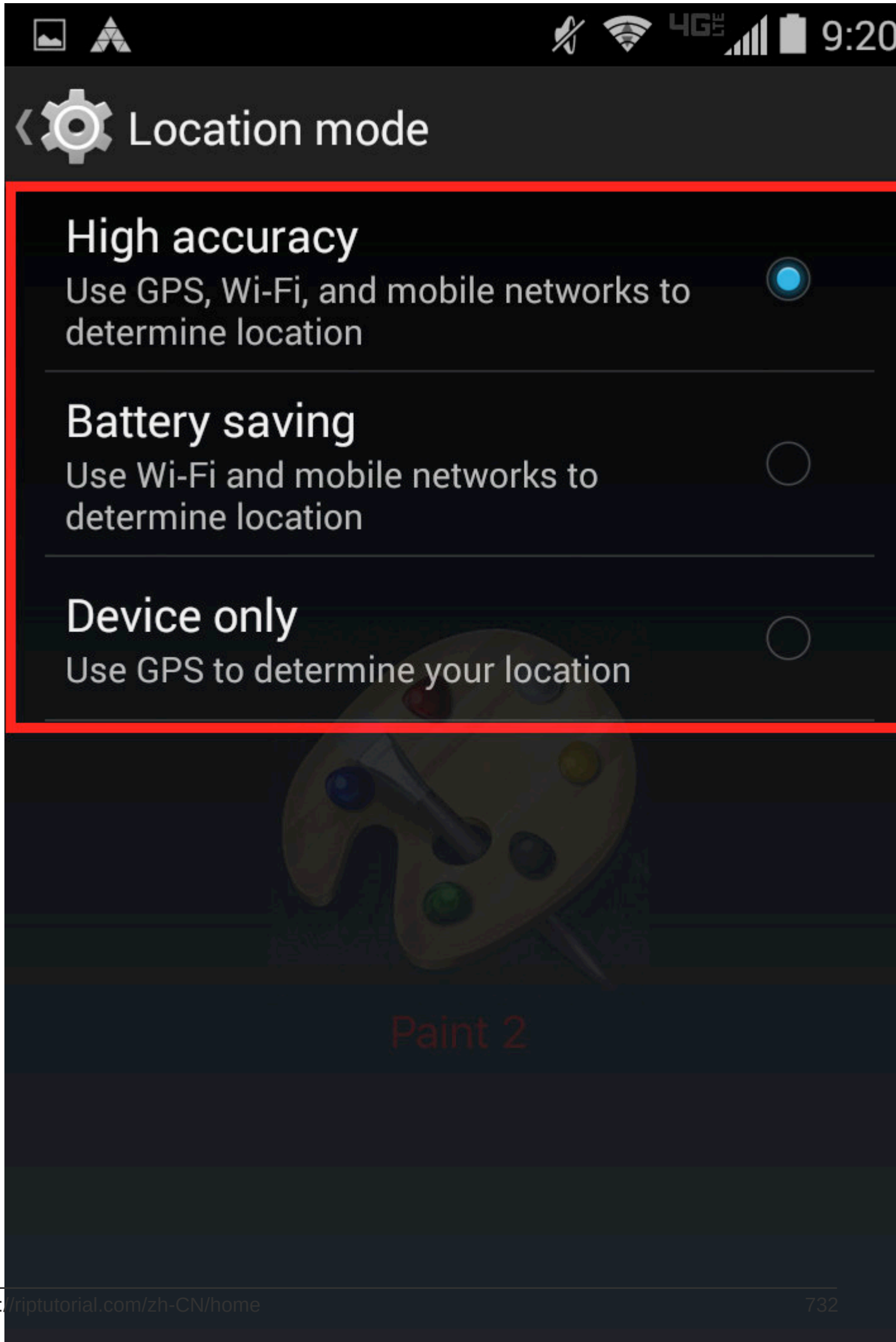
4. ◦


9:20
Location
ON
Is this on?
E911 only
E911 location cannot be turned off on any mobile cellular phone
Mode
High accuracy
RECENT LOCATION REQUESTS
LocationServices
Low battery use
Motorola Modem Service
Low battery use
Test_App
Low battery use
authapktest
Low battery use
LOCATION SERVICES

“”“”“”“”“”“”“”


9:19
Advanced Wi-Fi
Network notification
Notify me when an open network is available
Wi-Fi notifications
Show Wi-Fi status in notification panel
Keep Wi-Fi on during sleep
Always
Scanning always available
Let Google's location service and other apps scan for networks, even when Wi-Fi is off
Avoid poor connections
Don't use a Wi-Fi network unless it has a good Internet connection
Wi-Fi frequency band
Auto

GPS“”“”“”


9:20
Location mode
High accuracy
Use GPS, Wi-Fi, and mobile networks to determine location
Battery saving
Use Wi-Fi and mobile networks to determine location
Device only
Use GPS to determine your location
Paint 2

- LocationListenerPendingIntent LocationManager

6. GPS

-

Examples

API

LocationRequestActivity

```
/*
 * This example is useful if you only want to receive updates in this
 * activity only, and have no use for location anywhere else.
 */
public class LocationActivity extends AppCompatActivity implements
        GoogleApiClient.ConnectionCallbacks, GoogleApiClient.OnConnectionFailedListener,
LocationListener {

    private GoogleApiClient mGoogleApiClient;
    private LocationRequest mLocationRequest;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        mGoogleApiClient = new GoogleApiClient.Builder(this)
                .addConnectionCallbacks(this)
                .addOnConnectionFailedListener(this)
                .addApi(LocationServices.API)
                .build();

        mLocationRequest = new LocationRequest()
                .setPriority(LocationRequest.PRIORITY_HIGH_ACCURACY) //GPS quality location
points
                .setInterval(2000) //At least once every 2 seconds
                .setFastestInterval(1000); //At most once a second
    }

    @Override
    protected void onStart(){
        super.onStart();
        mGoogleApiClient.connect();
    }

    @Override
    protected void onResume(){
        super.onResume();
        //Permission check for Android 6.0+
        if(ActivityCompat.checkSelfPermission(this, Manifest.permission.ACCESS_FINE_LOCATION)
== PackageManager.PERMISSION_GRANTED) {
```

```
            if(mGoogleApiClient.isConnected()) {
                LocationServices.FusedLocationApi.requestLocationUpdates(mGoogleApiClient,
mLocationRequest, this);
            }
        }
    }

    @Override
    protected void onPause(){
        super.onPause();
        //Permission check for Android 6.0+
        if(ActivityCompat.checkSelfPermission(this, Manifest.permission.ACCESS_FINE_LOCATION)
== PackageManager.PERMISSION_GRANTED) {
            if(mGoogleApiClient.isConnected()) {
                LocationServices.FusedLocationApi.removeLocationUpdates(mGoogleApiClient,
this);
            }
        }
    }

    @Override
    protected void onStop(){
        super.onStop();
        mGoogleApiClient.disconnect();
    }

    @Override
    public void onConnected(@Nullable Bundle bundle) {
        if(ActivityCompat.checkSelfPermission(this, Manifest.permission.ACCESS_FINE_LOCATION)
== PackageManager.PERMISSION_GRANTED) {
            LocationServices.FusedLocationApi.requestLocationUpdates(mGoogleApiClient,
mLocationRequest, this);
        }
    }

    @Override
    public void onConnectionSuspended(int i) {
        mGoogleApiClient.connect();
    }

    @Override
    public void onConnectionFailed(@NonNull ConnectionResult connectionResult) {
    }

    @Override
    public void onLocationChanged(Location location) {
        //Handle your location update code here
    }
}
```

PendingIntentBroadcastReceiver

ExampleActivity

LocalBroadcastManager

```
/*
```

```
 * This example is useful if you have many different classes that should be
 * receiving location updates, but want more granular control over which ones
 * listen to the updates.
 *
 * For example, this activity will stop getting updates when it is not visible, but a database
 * class with a registered local receiver will continue to receive updates, until
"stopUpdates()" is called here.
 *
 */
public class ExampleActivity extends AppCompatActivity {

    private InternalLocationReceiver mInternalLocationReceiver;

    @Override
    protected void onCreate(Bundle savedInstanceState){
        super.onCreate(savedInstanceState);

        //Create internal receiver object in this method only.
        mInternalLocationReceiver = new InternalLocationReceiver(this);
    }

    @Override
    protected void onResume(){
        super.onResume();

        //Register to receive updates in activity only when activity is visible
        LocalBroadcastManager.getInstance(this).registerReceiver(mInternalLocationReceiver,
new IntentFilter("googleLocation"));
    }

    @Override
    protected void onPause(){
        super.onPause();

        //Unregister to stop receiving updates in activity when it is not visible.
        //NOTE: You will still receive updates even if this activity is killed.
        LocalBroadcastManager.getInstance(this).unregisterReceiver(mInternalLocationReceiver);
    }

    //Helper method to get updates
    private void requestUpdates(){
        startService(new Intent(this, LocationService.class).putExtra("request", true));
    }

    //Helper method to stop updates
    private void stopUpdates(){
        startService(new Intent(this, LocationService.class).putExtra("remove", true));
    }

    /*
     * Internal receiver used to get location updates for this activity.
     *
     * This receiver and any receiver registered with LocalBroadcastManager does
     * not need to be registered in the Manifest.
     *
     */
    private static class InternalLocationReceiver extends BroadcastReceiver{

        private ExampleActivity mActivity;

        InternalLocationReceiver(ExampleActivity activity){
```

```
            mActivity = activity;
        }

        @Override
        public void onReceive(Context context, Intent intent) {
            final ExampleActivity activity = mActivity;
            if(activity != null) {
                LocationResult result = intent.getParcelableExtra("result");
                //Handle location update here
            }
        }
    }
}
```

Manifest

```
public class LocationService extends Service implements
        GoogleApiClient.ConnectionCallbacks, GoogleApiClient.OnConnectionFailedListener {

    private GoogleApiClient mGoogleApiClient;
    private LocationRequest mLocationRequest;

    @Override
    public void onCreate(){
        super.onCreate();
        mGoogleApiClient = new GoogleApiClient.Builder(this)
                .addConnectionCallbacks(this)
                .addOnConnectionFailedListener(this)
                .addApi(LocationServices.API)
                .build();

        mLocationRequest = new LocationRequest()
                .setPriority(LocationRequest.PRIORITY_HIGH_ACCURACY) //GPS quality location
points
                .setInterval(2000) //At least once every 2 seconds
                .setFastestInterval(1000); //At most once a second
    }

    @Override
    public int onStartCommand(Intent intent, int flags, int startId){
        super.onStartCommand(intent, flags, startId);
        //Permission check for Android 6.0+
        if (ContextCompat.checkSelfPermission(this, Manifest.permission.ACCESS_FINE_LOCATION)
== PackageManager.PERMISSION_GRANTED) {
            if (intent.getBooleanExtra("request", false)) {
                if (mGoogleApiClient.isConnected()) {
                    LocationServices.FusedLocationApi.requestLocationUpdates(mGoogleApiClient,
mLocationRequest, getPendingIntent());
                } else {
                    mGoogleApiClient.connect();
                }
            }
            else if(intent.getBooleanExtra("remove", false)){
                stopSelf();
            }
        }

        return START_STICKY;
    }
```

```
    @Override
    public void onDestroy(){
        super.onDestroy();
        if(mGoogleApiClient.isConnected()){
            LocationServices.FusedLocationApi.removeLocationUpdates(mGoogleApiClient,
getPendingIntent());
            mGoogleApiClient.disconnect();
        }
    }

    private PendingIntent getPendingIntent(){

        //Example for IntentService
        //return PendingIntent.getService(this, 0, new Intent(this,
**YOUR_INTENT_SERVICE_CLASS_HERE**), PendingIntent.FLAG_UPDATE_CURRENT);

        //Example for BroadcastReceiver
        return PendingIntent.getBroadcast(this, 0, new Intent(this, LocationReceiver.class),
PendingIntent.FLAG_UPDATE_CURRENT);
    }

    @Override
    public void onConnected(@Nullable Bundle bundle) {
        //Permission check for Android 6.0+
        if(ContextCompat.checkSelfPermission(this, Manifest.permission.ACCESS_FINE_LOCATION)
== PackageManager.PERMISSION_GRANTED) {
            LocationServices.FusedLocationApi.requestLocationUpdates(mGoogleApiClient,
mLocationRequest, getPendingIntent());
        }
    }

    @Override
    public void onConnectionSuspended(int i) {
        mGoogleApiClient.connect();
    }

    @Override
    public void onConnectionFailed(@NonNull ConnectionResult connectionResult) {

    }

    @Nullable
    @Override
    public IBinder onBind(Intent intent) {
        return null;
    }
}
```

LocationReceiver

Manifest

```
public class LocationReceiver extends BroadcastReceiver {

    @Override
    public void onReceive(Context context, Intent intent) {
        if(LocationResult.hasResult(intent)){
            LocationResult locationResult = LocationResult.extractResult(intent);
            LocalBroadcastManager.getInstance(context).sendBroadcast(new
Intent("googleLocation").putExtra("result", locationResult));
```

```
        }
    }
}
```

LocationManager

。

```
public class MainActivity extends AppCompatActivity implements LocationListener{

    private LocationManager mLocationManager = null;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main2);

        mLocationManager = (LocationManager) getSystemService(Context.LOCATION_SERVICE);
    }


    @Override
    protected void onResume() {
        super.onResume();

        try {
            mLocationManager.requestLocationUpdates(LocationManager.GPS_PROVIDER, 0, 0, this);
        }
        catch(SecurityException e){
            // The app doesn't have the correct permissions
        }
    }


    @Override
    protected void onPause() {
        try{
            mLocationManager.removeUpdates(this);
        }
        catch (SecurityException e){
            // The app doesn't have the correct permissions
        }

        super.onPause();
    }




    @Override
    public void onLocationChanged(Location location) {
        // We received a location update!
        Log.i("onLocationChanged", location.toString());
    }

    @Override
    public void onStatusChanged(String provider, int status, Bundle extras) {

    }
```

```
    @Override
    public void onProviderEnabled(String provider) {

    }

    @Override
    public void onProviderDisabled(String provider) {

    }
}
```

LocationManager

。

```
public class MainActivity extends AppCompatActivity implements LocationListener{

    private LocationManager mLocationManager = null;
    HandlerThread mLocationHandlerThread = null;
    Looper mLocationHandlerLooper = null;


    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main2);

        mLocationManager = (LocationManager) getSystemService(Context.LOCATION_SERVICE);
        mLocationHandlerThread = new HandlerThread("locationHandlerThread");
    }


    @Override
    protected void onResume() {
        super.onResume();

        mLocationHandlerThread.start();
        mLocationHandlerLooper = mLocationHandlerThread.getLooper();

        try {
            mLocationManager.requestLocationUpdates(LocationManager.GPS_PROVIDER, 0, 0, this,
mLocationHandlerLooper);
        }
        catch(SecurityException e){
            // The app doesn't have the correct permissions
        }
    }


    @Override
    protected void onPause() {
        try{
            mLocationManager.removeUpdates(this);
        }
        catch (SecurityException e){
            // The app doesn't have the correct permissions
        }
```

```
        mLocationHandlerLooper = null;

        if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.JELLY_BEAN_MR2)
            mLocationHandlerThread.quitSafely();
        else
            mLocationHandlerThread.quit();

        mLocationHandlerThread = null;


        super.onPause();
    }




    @Override
    public void onLocationChanged(Location location) {
        // We received a location update on a separate thread!
        Log.i("onLocationChanged", location.toString());

        // You can verify which thread you're on by something like this:
        // Log.d("Which thread?", Thread.currentThread() == Looper.getMainLooper().getThread()
? "UI Thread" : "New thread");
    }

    @Override
    public void onStatusChanged(String provider, int status, Bundle extras) {

    }

    @Override
    public void onProviderEnabled(String provider) {

    }

    @Override
    public void onProviderDisabled(String provider) {

    }
}
```

GeoFenceObserversationService ◦

GeoFenceObserversationService.java

```
public class GeoFenceObserversationService extends Service implements
GoogleApiClient.ConnectionCallbacks, GoogleApiClient.OnConnectionFailedListener,
ResultCallback<Status> {

    protected static final String TAG = "GeoFenceObserversationService";
    protected GoogleApiClient mGoogleApiClient;
    protected ArrayList<Geofence> mGeofenceList;
    private boolean mGeofencesAdded;
    private SharedPreferences mSharedPreferences;
    private static GeoFenceObserversationService mInstant;
    public static GeoFenceObserversationService getInstant(){
        return mInstant;
    }
```

```
    @Override
    public void onCreate() {
        super.onCreate();
        mInstant = this;
        mGeofenceList = new ArrayList<Geofence>();
        mSharedPreferences = getSharedPreferences(AppConstants.SHARED_PREFERENCES_NAME,
MODE_PRIVATE);
        mGeofencesAdded = mSharedPreferences.getBoolean(AppConstants.GEOFENCES_ADDED_KEY,
false);

        buildGoogleApiClient();
    }


    @Override
    public void onDestroy() {
        mGoogleApiClient.disconnect();
        super.onDestroy();
    }

    @Nullable
    @Override
    public IBinder onBind(Intent intent) {
        return null;
    }

    @Override
    public int onStartCommand(Intent intent, int flags, int startId) {
        return START_STICKY;
    }

    protected void buildGoogleApiClient() {
        mGoogleApiClient = new GoogleApiClient.Builder(this)
                .addConnectionCallbacks(this)
                .addOnConnectionFailedListener(this)
                .addApi(LocationServices.API)
                .build();
        mGoogleApiClient.connect();
    }

    @Override
    public void onConnected(Bundle connectionHint) {
    }

    @Override
    public void onConnectionFailed(ConnectionResult result) {
    }

    @Override
    public void onConnectionSuspended(int cause) {

    }

    private GeofencingRequest getGeofencingRequest() {

        GeofencingRequest.Builder builder = new GeofencingRequest.Builder();
        builder.setInitialTrigger(GeofencingRequest.INITIAL_TRIGGER_ENTER);
        builder.addGeofences(mGeofenceList);
        return builder.build();
    }
```

```
    public void addGeofences() {
            if (!mGoogleApiClient.isConnected()) {
                Toast.makeText(this, getString(R.string.not_connected),
Toast.LENGTH_SHORT).show();
                return;
            }

        populateGeofenceList();
        if(!mGeofenceList.isEmpty()){
            try {
                LocationServices.GeofencingApi.addGeofences(mGoogleApiClient,
getGeofencingRequest(), getGeofencePendingIntent()).setResultCallback(this);
            } catch (SecurityException securityException) {
                securityException.printStackTrace();
            }
        }

        }

    public void removeGeofences() {
        if (!mGoogleApiClient.isConnected()) {
            Toast.makeText(this, getString(R.string.not_connected),
Toast.LENGTH_SHORT).show();
            return;
        }
        try {

LocationServices.GeofencingApi.removeGeofences(mGoogleApiClient,getGeofencePendingIntent()).setResultCa

        } catch (SecurityException securityException) {
            securityException.printStackTrace();
        }
    }


    public void onResult(Status status) {

        if (status.isSuccess()) {
            mGeofencesAdded = !mGeofencesAdded;
            SharedPreferences.Editor editor = mSharedPreferences.edit();
            editor.putBoolean(AppConstants.GEOFENCES_ADDED_KEY, mGeofencesAdded);
            editor.apply();
        } else {
            String errorMessage = AppConstants.getErrorString(this,status.getStatusCode());
            Log.i("Geofence", errorMessage);
        }
    }

    private PendingIntent getGeofencePendingIntent() {
        Intent intent = new Intent(this, GeofenceTransitionsIntentService.class);
        return PendingIntent.getService(this, 0, intent, PendingIntent.FLAG_UPDATE_CURRENT);
    }

    private void populateGeofenceList() {
        mGeofenceList.clear();
        List<GeoFencingResponce> geoFenceList = getGeofencesList;
        if(geoFenceList!=null&&!geoFenceList.isEmpty()){
            for (GeoFencingResponce obj : geoFenceList){
                mGeofenceList.add(obj.getGeofence());
```

```
                Log.i(TAG,"Registered Geofences : " + obj.Id+"-"+obj.Name+"-"+obj.Lattitude+"-
"+obj.Longitude);
            }
        }
    }
}
```

AppConstant

```
   public static final String SHARED_PREFERENCES_NAME = PACKAGE_NAME +
".SHARED_PREFERENCES_NAME";
    public static final String GEOFENCES_ADDED_KEY = PACKAGE_NAME + ".GEOFENCES_ADDED_KEY";
    public static final String DETECTED_GEOFENCES = "detected_geofences";
    public static final String DETECTED_BEACONS = "detected_beacons";

    public static String getErrorString(Context context, int errorCode) {
        Resources mResources = context.getResources();
        switch (errorCode) {
            case GeofenceStatusCodes.GEOFENCE_NOT_AVAILABLE:
                return mResources.getString(R.string.geofence_not_available);
            case GeofenceStatusCodes.GEOFENCE_TOO_MANY_GEOFENCES:
                return mResources.getString(R.string.geofence_too_many_geofences);
            case GeofenceStatusCodes.GEOFENCE_TOO_MANY_PENDING_INTENTS:
                return mResources.getString(R.string.geofence_too_many_pending_intents);
            default:
                return mResources.getString(R.string.unknown_geofence_error);
        }
    }
```

Application

- `startService(new Intent(getApplicationContext(),GeoFenceObserversationService.class));`

Geofences

- `GeoFenceObserversationService.getInstant().addGeofences();`

Geocoder

`FusedAPILocationAddress`。

```
private Address getCountryInfo(Location location) {
    Address address = null;
    Geocoder geocoder = new Geocoder(getActivity(), Locale.getDefault());
    String errorMessage;
    List<Address> addresses = null;
    try {
        addresses = geocoder.getFromLocation(
                location.getLatitude(),
                location.getLongitude(),
                // In this sample, get just a single address.
                1);
    } catch (IOException ioException) {
        // Catch network or other I/O problems.
        errorMessage = "IOException>>" + ioException.getMessage();
    } catch (IllegalArgumentException illegalArgumentException) {
        // Catch invalid latitude or longitude values.
```

```
        errorMessage = "IllegalArgumentException>>" + illegalArgumentException.getMessage();
    }
    if (addresses != null && !addresses.isEmpty()) {
        address = addresses.get(0);
    }
    return country;
}
```

BroadcastReceiver

BroadcastReceiverLocation

```
public class LocationReceiver extends BroadcastReceiver implements Constants {

    @Override
     public void onReceive(Context context, Intent intent) {

        if (LocationResult.hasResult(intent)) {
            LocationResult locationResult = LocationResult.extractResult(intent);
            Location location = locationResult.getLastLocation();
            if (location != null) {
                // Do something with your location
            } else {
                Log.d(LocationReceiver.class.getSimpleName(), "*** location object is null
***");
            }
        }
    }
}
```

onConnectedGoogleApiClient

```
@Override
public void onConnected(Bundle connectionHint) {
    Intent backgroundIntent = new Intent(this, LocationReceiver.class);
    mBackgroundPendingIntent = backgroundPendingIntent.getBroadcast(getApplicationContext(),
LOCATION_REUEST_CODE, backgroundIntent, PendingIntent.FLAG_CANCEL_CURRENT);
    mFusedLocationProviderApi.requestLocationUpdates(mLocationClient, mLocationRequest,
backgroundPendingIntent);
}
```

```
@Override
public void onDestroy() {
    if (servicesAvailable && mLocationClient != null) {
        if (mLocationClient.isConnected()) {
            fusedLocationProviderApi.removeLocationUpdates(mLocationClient,
backgroundPendingIntent);
            // Destroy the current location client
            mLocationClient = null;
        } else {
            mLocationClient.unregisterConnectionCallbacks(this);
            mLocationClient = null;
        }
    }
    super.onDestroy();
}
```

https://riptutorial.com/zh-CN/android/topic/1837/

156:

AlertDialog ◦

Examples

```
AlertDialog.Builder builder1 = new AlertDialog.Builder(youractivity.this);

builder1.setMessage(Html.fromHtml("your message,<a href=\"http://www.google.com\">link</a>"));

builder1.setCancelable(false);
builder1.setPositiveButton("ok", new DialogInterface.OnClickListener() {
    @Override
    public void onClick(DialogInterface dialog, int which) {
    }
});

AlertDialog Alert1 = builder1.create();
Alert1 .show();
((TextView)Alert1.findViewById(android.R.id.message)).setMovementMethod(LinkMovementMethod.getInstance
```

https://riptutorial.com/zh-CN/android/topic/10163/

157:

FrescoAndroid。

Android 4.xFresco**Android**ashmem。 - OutOfMemoryError。

FrescoJPEG。

app level build.gradle

```
dependencies {
    // Your app's other dependencies.
    compile 'com.facebook.fresco:fresco:0.14.1' // Or a newer version if available.
}
```

。

Examples

Fresco

Fresco`build.gradle`

GIFWebPFresco 。

。 Application。

```
public class MyApplication extends Application {
    @Override
    public void onCreate() {
        super.onCreate();
        Fresco.initialize(this);
    }
}
```

internt。 `AndroidManifest.xml`

```
<uses-permission android:name="android.permission.INTERNET" />
```

`SimpleDraweeView`XML。 Fresco`wrap_content` .....。

`match_parent SimpleDraweeView`

```
<com.facebook.drawee.view.SimpleDraweeView
    android:id="@+id/my_image_view"
    android:layout_width="120dp"
    android:layout_height="120dp"
    fresco:placeholderImage="@drawable/placeholder" />
```

```
<com.facebook.drawee.view.SimpleDraweeView
    android:id="@+id/my_image_view"
    android:layout_width="120dp"
    android:layout_height="wrap_content"
    fresco:viewAspectRatio="1.33"
    fresco:placeholderImage="@drawable/placeholder" />
```

JavaURI

```
SimpleDraweeView draweeView = (SimpleDraweeView) findViewById(R.id.my_image_view);
draweeView.setImageURI("http://yourdomain.com/yourimage.jpg");
```

。

OkHttp 3Fresco

Fresco GradleOkHttp 3`build.gradle`

```
compile "com.facebook.fresco:imagepipeline-okhttp3:1.2.0" // Or a newer version.
```

Fresco`Application`OkHttp

```
OkHttpClient okHttpClient = new OkHttpClient(); // Build on your own OkHttpClient.

Context context = ... // Your Application context.
ImagePipelineConfig config = OkHttpImagePipelineConfigFactory
        .newBuilder(context, okHttpClient)
        .build();
Fresco.initialize(context, config);
```

DraweeControllerFrescoJPEG

Fresco

```
SimpleDraweeView img = new SimpleDraweeView(context);
ImageRequest request = ImageRequestBuilder
        .newBuilderWithSource(Uri.parse("http://example.com/image.png"))
        .setProgressiveRenderingEnabled(true) // This is where the magic happens.
        .build();

DraweeController controller = Fresco.newDraweeControllerBuilder()
        .setImageRequest(request)
        .setOldController(img.getController()) // Get the current controller from our
SimpleDraweeView.
        .build();

img.setController(controller); // Set the new controller to the SimpleDraweeView to enable
progressive JPEGs.
```

https://riptutorial.com/zh-CN/android/topic/5217/

158:

◦ RunnablerunHandler.postDelayed◦

Examples

1.5

```
Handler handler = new Handler();
handler.postDelayed(new Runnable() {
    @Override
    public void run() {
        //The code you want to run after the time is up
    }
}, 1500); //the time you want to delay in milliseconds
```

1

```
Handler handler = new Handler();
handler.postDelayed(new Runnable() {
    @Override
    public void run() {
        handler.postDelayed(this, 1000);
    }
}, 1000); //the time you want to delay in milliseconds
```

HandlerThreadsThreads

`HandlerMessage` sRunnableThreadThread◦ `Looper` Thread◦ `HandlerThreadLooper`ThreadThreadUI Thread`HandlerThread`◦

```
Handler handler = new Handler();
```

UI

```
Handler handler = new Handler(Looper.getMainLooper());
```

Runnable

```
new Thread(new Runnable() {
    public void run() {
        // this is executed on another Thread

        // create a Handler associated with the main Thread
        Handler handler = new Handler(Looper.getMainLooper());

        // post a Runnable to the main Thread
```

```
        handler.post(new Runnable() {
            public void run() {
                // this is executed on the main Thread
            }
        });
    }
}).start();
```

HandlerThreadHandler

```
// create another Thread
HandlerThread otherThread = new HandlerThread("name");

// create a Handler associated with the other Thread
Handler handler = new Handler(otherThread.getLooper());

// post an event to the other Thread
handler.post(new Runnable() {
    public void run() {
        // this is executed on the other Thread
    }
});
```

Handlerrunnable

```
Runnable my_runnable = new Runnable() {
    @Override
    public void run() {
        // your code here
    }
};

public Handler handler = new Handler(); // use 'new Handler(Looper.getMainLooper());' if you
want this handler to control something in the UI
// to start the handler
public void start() {
    handler.postDelayed(my_runnable, 10000);
}

// to stop the handler
public void stop() {
    handler.removeCallbacks(my_runnable);
}

// to reset the handler
public void restart() {
    handler.removeCallbacks(my_runnable);
    handler.postDelayed(my_runnable, 10000);
}
```

HandlerTimerjavax.swing.Timer

。

```
import android.os.Handler;
```

```
public class Timer {
    private Handler handler;
    private boolean paused;

    private int interval;

    private Runnable task = new Runnable () {
        @Override
        public void run() {
            if (!paused) {
                runnable.run ();
                Timer.this.handler.postDelayed (this, interval);
            }
        }
    };

    private Runnable runnable;

    public int getInterval() {
        return interval;
    }

    public void setInterval(int interval) {
        this.interval = interval;
    }

    public void startTimer () {
        paused = false;
        handler.postDelayed (task, interval);
    }

    public void stopTimer () {
        paused = true;
    }

    public Timer (Runnable runnable, int interval, boolean started) {
        handler = new Handler ();
        this.runnable = runnable;
        this.interval = interval;
        if (started)
            startTimer ();
    }
}
```

```
Timer timer = new Timer(new Runnable() {
    public void run() {
        System.out.println("Hello");
    }
}, 1000, true)
```

“Hello”。

https://riptutorial.com/zh-CN/android/topic/1425/

159:

。 。

<data>	
	URI。 http https ftp
	URI。 google.com example.org
	URI。 80 443
	URI。 /。 / /about
pathPrefix	URI。 /item /article
pathPattern	URI。 /article/[0-9]* /item/.* /article/[0-9]*
mime	mime。 image/jpeg audio/*

<intent-filter>

<action><category>AndroidActivity。

```
<intent-filter>
    <action android:name="android.intent.action.VIEW" />
    <category android:name="android.intent.category.DEFAULT" />
    <category android:name="android.intent.category.BROWSABLE" />

    <data ... />

</intent-filter>
```

<data>

<intent-filter>intent-filter<data>。 。

- developer.android.com
- <intent-filter> developer.android.com

Examples

AndroidManifest.xml

```
<activity android:name="com.example.MainActivity" >

    <intent-filter>
        <action android:name="android.intent.action.VIEW" />
```

```
        <category android:name="android.intent.category.DEFAULT" />
        <category android:name="android.intent.category.BROWSABLE" />

        <data android:scheme="http"
              android:host="www.example.com" />

    </intent-filter>

</activity>
```

http://www.example.comMainActivity。

AndroidManifest.xml

```
<activity android:name="com.example.MainActivity" >

    <intent-filter>
        <action android:name="android.intent.action.VIEW" />
        <category android:name="android.intent.category.DEFAULT" />
        <category android:name="android.intent.category.BROWSABLE" />

        <data android:scheme="http"
              android:host="www.example.com" />

        <data android:path="/" />
        <data android:path="/about" />
        <data android:path="/map" />

    </intent-filter>

</activity>
```

MainActivity

- http://www.example.com/
- http://www.example.com/about
- http://www.example.com/map

AndroidManifest.xml

```
<activity android:name="com.example.MainActivity" >

    <intent-filter>
        <action android:name="android.intent.action.VIEW" />
        <category android:name="android.intent.category.DEFAULT" />
        <category android:name="android.intent.category.BROWSABLE" />

        <data android:scheme="http"
              android:host="www.example.com" />

        <data android:scheme="http"
              android:host="www.example2.com" />

        <data android:path="/" />
        <data android:path="/map" />

    </intent-filter>
```

```
</activity>
```

MainActivity

- http://www.example.com/
- http://www.example2.com/
- http://www.example.com/map
- http://www.example2.com/map

httphttps

AndroidManifest.xml

```
<activity android:name="com.example.MainActivity" >

    <intent-filter>
        <action android:name="android.intent.action.VIEW" />
        <category android:name="android.intent.category.DEFAULT" />
        <category android:name="android.intent.category.BROWSABLE" />

        <data android:scheme="http" />
        <data android:scheme="https" />

        <data android:host="www.example.com" />

        <data android:path="/" />
        <data android:path="/map" />

    </intent-filter>

</activity>
```

MainActivity

- http://www.example.com/
- https://www.example.com/
- http://www.example.com/map
- https://www.example.com/map

```
public class MainActivity extends Activity {

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.main);

        Intent intent = getIntent();
        Uri data = intent.getData();

        if (data != null) {
            String param1 = data.getQueryParameter("param1");
            String param2 = data.getQueryParameter("param2");
        }
    }
```

```
}
```

http://www.example.com/map?param1=FOO&param2=BAR param1"FOO"param2"BAR" ◦

pathPrefix

AndroidManifest.xml

```
<activity android:name="com.example.MainActivity" >

    <intent-filter>
        <action android:name="android.intent.action.VIEW" />
        <category android:name="android.intent.category.DEFAULT" />
        <category android:name="android.intent.category.BROWSABLE" />

        <data android:scheme="http"
              android:host="www.example.com"
              android:path="/item" />

    </intent-filter>

</activity>
```

http://www.example.com/itemMainActivity

- https://www.example.com/item
- http://www.example.com/item/1234
- https://www.example.com/item/xyz/details

https://riptutorial.com/zh-CN/android/topic/3716/

160:

Android API/。

onTouchListener	
onTouchEvent	SurfaceView。 onTouchListener
onLongTouch	onTouch。

Examples

Button

```
public class ExampleClass extends Activity implements View.OnClickListener,
View.OnLongClickListener{
    public Button onLong, onClick;

    @Override
    public void onCreate(Bundle sis){
        super.onCreate(sis);
        setContentView(R.layout.layout);
        onLong = (Button) findViewById(R.id.onLong);
        onClick = (Button) findViewById(R.id.onClick);
        // The buttons are created. Now we need to tell the system that
        // these buttons have a listener to check for touch events.
        // "this" refers to this class, as it contains the appropriate event listeners.
        onLong.setOnLongClickListener(this);
        onClick.setOnClickListener(this);

        [OR]

        onClick.setOnClickListener(new View.OnClickListener(){
            @Override
            public void onClick(View v){
                // Take action. This listener is only designed for one button.
                // This means, no other input will come here.
                // This makes a switch statement unnecessary here.
            }
        });

        onLong.setOnLongClickListener(new View.OnLongClickListener(){
            @Override
            public boolean onLongClick(View v){
                // See comment in onClick.setOnClickListener().
            }
        });
    }

    @Override
    public void onClick(View v) {
        // If you have several buttons to handle, use a switch to handle them.
        switch(v.getId()){
```

```
            case R.id.onClick:
                // Take action.
                break;
        }
    }

    @Override
    public boolean onLongClick(View v) {
        // If you have several buttons to handle, use a switch to handle them.
        switch(v.getId()){
            case R.id.onLong:
                // Take action.
                break;
        }
        return false;
    }
}
```

SurfaceViewGLSurfaceView

```
import android.app.Activity;
import android.os.Bundle;
import android.view.MotionEvent;
import android.view.SurfaceView;
import android.view.View;

public class ExampleClass extends Activity implements View.OnTouchListener{
    @Override
    public void onCreate(Bundle sis){
        super.onCreate(sis);
        CustomSurfaceView csv = new CustomSurfaceView(this);
        csv.setOnTouchListener(this);
        setContentView(csv);
    }

    @Override
    public boolean onTouch(View v, MotionEvent event) {
        // Add a switch (see buttons example) if you handle multiple views
        // here you can see (using MotionEvent event) to see what touch event
        // is being taken. Is the pointer touching or lifted? Is it moving?
        return false;
    }
}
```

```
public class CustomSurfaceView extends SurfaceView {
    @Override
    public boolean onTouchEvent(MotionEvent ev) {
        super.onTouchEvent(ev);
        // Handle touch events here. When doing this, you do not need to call a listener.
        // Please note that this listener only applies to the surface it is placed in
        // (in this case, CustomSurfaceView), which means that anything else which is
        // pressed outside the SurfaceView is handled by the parts of your app that
        // have a listener in that area.
        return true;
    }
}
```

```
public class CustomSurfaceView extends SurfaceView {
```

```
    @Override
    public boolean onTouchEvent(MotionEvent e) {
        super.onTouchEvent(e);
        if(e.getPointerCount() > 2){
            return false; // If we want to limit the amount of pointers, we return false
                // which disallows the pointer. It will not be reacted on either, for
                // any future touch events until it has been lifted and repressed.
        }

        // What can you do here? Check if the amount of pointers are [x] and take action,
        // if a pointer leaves, a new enters, or the [x] pointers are moved.
        // Some examples as to handling etc. touch/motion events.

        switch (MotionEventCompat.getActionMasked(e)) {
            case MotionEvent.ACTION_DOWN:
            case MotionEvent.ACTION_POINTER_DOWN:
                // One or more pointers touch the screen.
                break;
            case MotionEvent.ACTION_UP:
            case MotionEvent.ACTION_POINTER_UP:
                // One or more pointers stop touching the screen.
                break;
            case MotionEvent.ACTION_MOVE:
                // One or more pointers move.
                if(e.getPointerCount() == 2){
                    move();
                }else if(e.getPointerCount() == 1){
                    paint();
                }else{
                    zoom();
                }
                break;
        }
        return true; // Allow repeated action.
    }
}
```

https://riptutorial.com/zh-CN/android/topic/9315/

161:

Examples

/

JARMaven

```
<dependency>
    <groupId>com.squareup.okio</groupId>
    <artifactId>okio</artifactId>
    <version>1.12.0</version>
</dependency>
```

Gradle

```
compile 'com.squareup.okio:okio:1.12.0'
```

PNG

PNGOkio。

```
private static final ByteString PNG_HEADER = ByteString.decodeHex("89504e470d0a1a0a");

public void decodePng(InputStream in) throws IOException {
  try (BufferedSource pngSource = Okio.buffer(Okio.source(in))) {
    ByteString header = pngSource.readByteString(PNG_HEADER.size());
    if (!header.equals(PNG_HEADER)) {
      throw new IOException("Not a PNG.");
    }

    while (true) {
      Buffer chunk = new Buffer();

      // Each chunk is a length, type, data, and CRC offset.
      int length = pngSource.readInt();
      String type = pngSource.readUtf8(4);
      pngSource.readFully(chunk, length);
      int crc = pngSource.readInt();

      decodeChunk(type, chunk);
      if (type.equals("IEND")) break;
    }
  }
}

private void decodeChunk(String type, Buffer chunk) {
  if (type.equals("IHDR")) {
    int width = chunk.readInt();
    int height = chunk.readInt();
    System.out.printf("%08x: %s %d x %d%n", chunk.size(), type, width, height);
  } else {
    System.out.printf("%08x: %s%n", chunk.size(), type);
```

```
    }
}
```

ByteStringsBuffers

ByteStringsBuffers

OkioAPI

ByteString。String。 ByteStringString。hexbase64UTF-8。

。ArrayList。。。

`ByteStringBuffer`CPU。UTF-8ByteString。

`Buffer`。。。

https://riptutorial.com/zh-CN/android/topic/9952/

162:

Otto `RxJavaRxAndroid` ◦ Otto◦

Examples

Otto ◦

Android Studio Otto Event Busmodules gradle

```
dependencies {
    compile 'com.squareup:otto:1.3.8'
}
```

Java

```
public class DatabaseContentChangedEvent {
    public String message;

    public DatabaseContentChangedEvent(String message) {
        this.message = message;
    }
}
```

◦

```
import com.squareup.otto.Bus;

public final class BusProvider {
    private static final Bus mBus = new Bus();

    public static Bus getInstance() {
        return mBus;
    }

    private BusProvider() {
    }
}
```

BusProvider`post`◦ AsyncTask

```
public abstract class ContentChangingTask extends AsyncTask<Object, Void, Void> {

    ...

    @Override
    protected void onPostExecute(Void param) {
        BusProvider.getInstance().post(
            new DatabaseContentChangedEvent("Content changed")
        );
    }
}
```

@Subscribe@Subscribe ◦ BusProvider/

```
public class MyFragment extends Fragment {
    private final static String TAG = "MyFragment";

    ...

    @Override
    public void onResume() {
        super.onResume();
        BusProvider.getInstance().register(this);
    }

    @Override
    public void onPause() {
        super.onPause();
        BusProvider.getInstance().unregister(this);
    }

    @Subscribe
    public void onDatabaseContentChanged(DatabaseContentChangedEvent event) {
        Log.i(TAG, "onDatabaseContentChanged: "+event.message);
    }
}
```

◦ ◦ ◦

https://riptutorial.com/zh-CN/android/topic/6068/

163: SparseArray

SparseArrayMap。 Map。 int。 intInteger 。 int4 Integer16。 SparseArrayint。

- 。
- 。

- SparseArrayOlog nHashMap。

-SparseArray <IntegerObject> -SparseBooleanArray <IntegerBoolean> -SparseIntArray <Integer Integer> -SparseLongArray <IntegerLong> -LongSparseArray <LongObject> -LongSparseLongArray <LongLong >

SparseArray

- - putintx。 - appendintx/。 append。 put。
- - int。 - removeAtint。 - removeAtRangeintint。
- access element - getintint0。 - getintEint。 - valueAtint0 ... size - 1SparseIntArrayindexth。 。
- index / key search - keyAtint0 ... size - 1SparseIntArrayindexth。 。 - valueAtint0 ... size - 1 SparseIntArrayindexth。 。 - indexOfKeyintkeyAtint。 - indexOfValueEvalueAtint。 。 int4 Integer16.SparseArrayint。

Examples

SparseArray

```
class Person {
    String name;

    public Person(String name) {
        this.name = name;
    }

    @Override
    public boolean equals(Object o) {
        if (this == o) return true;
        if (o == null || getClass() != o.getClass()) return false;

        Person person = (Person) o;

        return name != null ? name.equals(person.name) : person.name == null;
    }

    @Override
    public int hashCode() {
        return name != null ? name.hashCode() : 0;
```

```
    }

    @Override
    public String toString() {
        return "Person{" +
                "name='" + name + '\'' +
                '}';
    }
}

final Person steve = new Person("Steve");
Person[] persons = new Person[] { new Person("John"), new Person("Gwen"), steve, new
Person("Rob") };
int[] identifiers = new int[] {1234, 2345, 3456, 4567};

final SparseArray<Person> demo = new SparseArray<>();

// Mapping persons to identifiers.
for (int i = 0; i < persons.length; i++) {
    demo.put(identifiers[i], persons[i]);
}

// Find the person with identifier 1234.
Person id1234 = demo.get(1234); // Returns John.

// Find the person with identifier 6410.
Person id6410 = demo.get(6410); // Returns null.

// Find the 3rd person.
Person third = demo.valueAt(3); // Returns Rob.

// Find the 42th person.
//Person fortysecond = demo.valueAt(42); // Throws ArrayIndexOutOfBoundsException.

// Remove the last person.
demo.removeAt(demo.size() - 1); // Rob removed.

// Remove the person with identifier 1234.
demo.delete(1234); // John removed.

// Find the index of Steve.
int indexOfSteve = demo.indexOfValue(steve);

// Find the identifier of Steve.
int identifierOfSteve = demo.keyAt(indexOfSteve);
```

YouTube

SparseArray https://riptutorial.com/zh-CN/android/topic/8824/sparsearray

164:

Examples

AES

AES。128。

SecureRandomsalt。 Androidjavax.cryptojava.security 。

。 S_KEY。 ENCRYPT_MODECipherdoFinal。 。

```
public class MainActivity extends AppCompatActivity {
    public static final String PROVIDER = "BC";
    public static final int SALT_LENGTH = 20;
    public static final int IV_LENGTH = 16;
    public static final int PBE_ITERATION_COUNT = 100;

    private static final String RANDOM_ALGORITHM = "SHA1PRNG";
    private static final String HASH_ALGORITHM = "SHA-512";
    private static final String PBE_ALGORITHM = "PBEWithSHA256And256BitAES-CBC-BC";
    private static final String CIPHER_ALGORITHM = "AES/CBC/PKCS5Padding";
    public static final String SECRET_KEY_ALGORITHM = "AES";
    private static final String TAG = "EncryptionPassword";

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        String originalPassword = "ThisIsAndroidStudio%$";
        Log.e(TAG, "originalPassword => " + originalPassword);
        String encryptedPassword = encryptAndStorePassword(originalPassword);
        Log.e(TAG, "encryptedPassword => " + encryptedPassword);
        String decryptedPassword = decryptAndGetPassword();
        Log.e(TAG, "decryptedPassword => " + decryptedPassword);
    }

    private String decryptAndGetPassword() {
        SharedPreferences prefs = getSharedPreferences("pswd", MODE_PRIVATE);
        String encryptedPasswrd = prefs.getString("token", "");
        String passwrd = "";
        if (encryptedPasswrd!=null && !encryptedPasswrd.isEmpty()) {
            try {
                String output = prefs.getString("S_KEY", "");
                byte[] encoded = hexStringToByteArray(output);
                SecretKey aesKey = new SecretKeySpec(encoded, SECRET_KEY_ALGORITHM);
                passwrd = decrypt(aesKey, encryptedPasswrd);
            } catch (Exception e) {
                e.printStackTrace();
            }
        }
        return passwrd;
    }

    public String encryptAndStorePassword(String password) {
        SharedPreferences.Editor editor = getSharedPreferences("pswd", MODE_PRIVATE).edit();
```

```
        String encryptedPassword = "";
        if (password!=null && !password.isEmpty()) {
            SecretKey secretKey = null;
            try {
                secretKey = getSecretKey(password, generateSalt());

                byte[] encoded = secretKey.getEncoded();
                String input = byteArrayToHexString(encoded);
                editor.putString("S_KEY", input);
                encryptedPassword = encrypt(secretKey, password);
            } catch (Exception e) {
                e.printStackTrace();
            }
            editor.putString("token", encryptedPassword);
            editor.commit();
        }
        return encryptedPassword;
    }

    public static String encrypt(SecretKey secret, String cleartext) throws Exception {
        try {
            byte[] iv = generateIv();
            String ivHex = byteArrayToHexString(iv);
            IvParameterSpec ivspec = new IvParameterSpec(iv);

            Cipher encryptionCipher = Cipher.getInstance(CIPHER_ALGORITHM, PROVIDER);
            encryptionCipher.init(Cipher.ENCRYPT_MODE, secret, ivspec);
            byte[] encryptedText = encryptionCipher.doFinal(cleartext.getBytes("UTF-8"));
            String encryptedHex = byteArrayToHexString(encryptedText);

            return ivHex + encryptedHex;

        } catch (Exception e) {
            Log.e("SecurityException", e.getCause().getLocalizedMessage());
            throw new Exception("Unable to encrypt", e);
        }
    }

    public static String decrypt(SecretKey secret, String encrypted) throws Exception {
        try {
            Cipher decryptionCipher = Cipher.getInstance(CIPHER_ALGORITHM, PROVIDER);
            String ivHex = encrypted.substring(0, IV_LENGTH * 2);
            String encryptedHex = encrypted.substring(IV_LENGTH * 2);
            IvParameterSpec ivspec = new IvParameterSpec(hexStringToByteArray(ivHex));
            decryptionCipher.init(Cipher.DECRYPT_MODE, secret, ivspec);
            byte[] decryptedText =
decryptionCipher.doFinal(hexStringToByteArray(encryptedHex));
            String decrypted = new String(decryptedText, "UTF-8");
            return decrypted;
        } catch (Exception e) {
            Log.e("SecurityException", e.getCause().getLocalizedMessage());
            throw new Exception("Unable to decrypt", e);
        }
    }

    public static String generateSalt() throws Exception {
        try {
            SecureRandom random = SecureRandom.getInstance(RANDOM_ALGORITHM);
            byte[] salt = new byte[SALT_LENGTH];
            random.nextBytes(salt);
            String saltHex = byteArrayToHexString(salt);
```

```
            return saltHex;
        } catch (Exception e) {
            throw new Exception("Unable to generate salt", e);
        }
    }

    public static String byteArrayToHexString(byte[] b) {
        StringBuffer sb = new StringBuffer(b.length * 2);
        for (int i = 0; i < b.length; i++) {
            int v = b[i] & 0xff;
            if (v < 16) {
                sb.append('0');
            }
            sb.append(Integer.toHexString(v));
        }
        return sb.toString().toUpperCase();
    }

    public static byte[] hexStringToByteArray(String s) {
        byte[] b = new byte[s.length() / 2];
        for (int i = 0; i < b.length; i++) {
            int index = i * 2;
            int v = Integer.parseInt(s.substring(index, index + 2), 16);
            b[i] = (byte) v;
        }
        return b;
    }

    public static SecretKey getSecretKey(String password, String salt) throws Exception {
        try {
            PBEKeySpec pbeKeySpec = new PBEKeySpec(password.toCharArray(),
hexStringToByteArray(salt), PBE_ITERATION_COUNT, 256);
            SecretKeyFactory factory = SecretKeyFactory.getInstance(PBE_ALGORITHM, PROVIDER);
            SecretKey tmp = factory.generateSecret(pbeKeySpec);
            SecretKey secret = new SecretKeySpec(tmp.getEncoded(), SECRET_KEY_ALGORITHM);
            return secret;
        } catch (Exception e) {
            throw new Exception("Unable to get secret key", e);
        }
    }

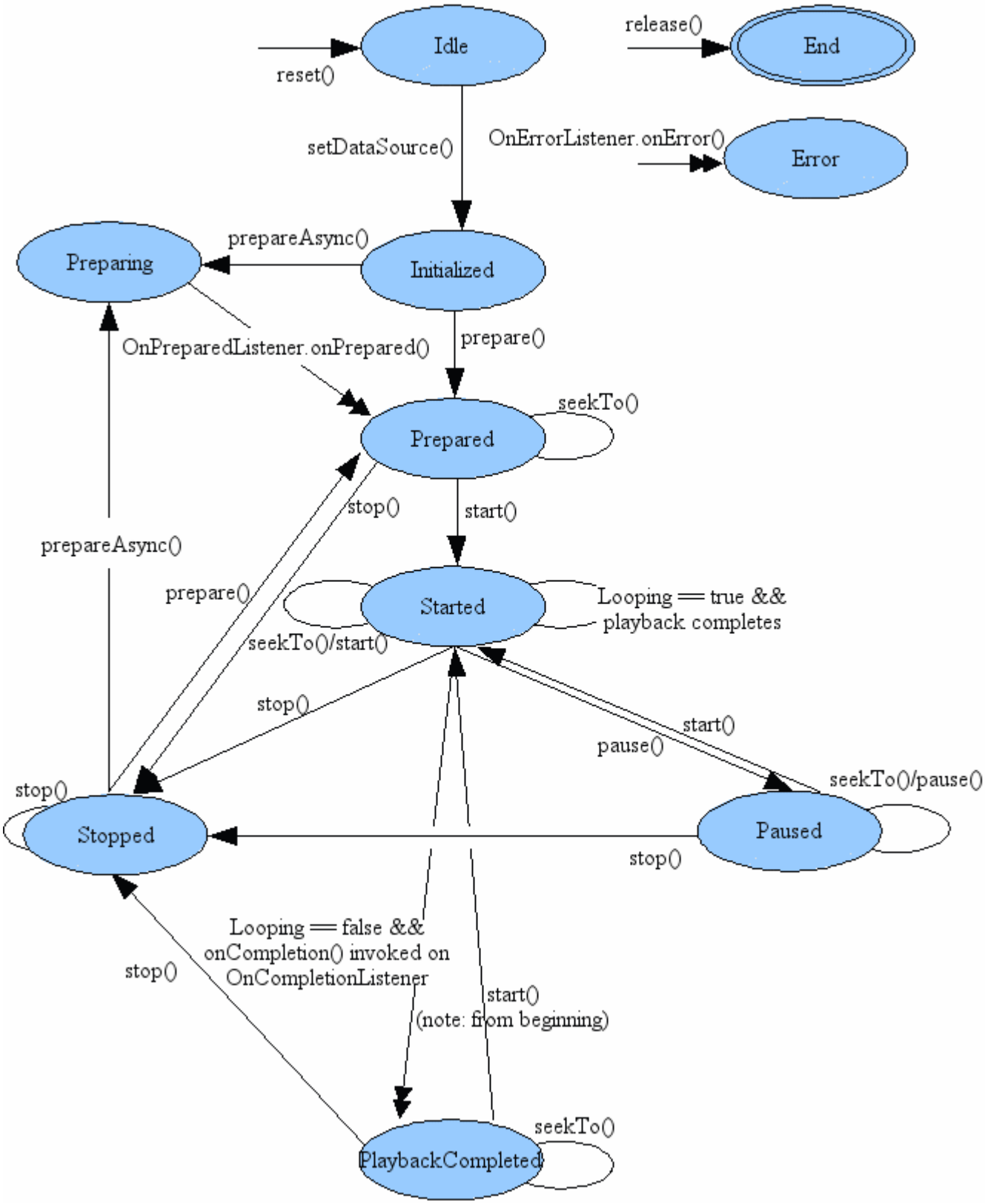
    private static byte[] generateIv() throws NoSuchAlgorithmException,
NoSuchProviderException {
        SecureRandom random = SecureRandom.getInstance(RANDOM_ALGORITHM);
        byte[] iv = new byte[IV_LENGTH];
        random.nextBytes(iv);
        return iv;
    }
}
```

https://riptutorial.com/zh-CN/android/topic/9093/

165:

- void setAudioStreamTypeint streamtype
- void setDataSourceContext contextUri uri
- void prepare
- void prepareAsync
- void start
- void stop

`MediaPlayer`



/。 。

MediaPlayer APIHTTPDASHSmoothStreaming。 ExoPlayer 。

Examples

MediaPlayer/。

MediaPlayer

1. ```
   MediaPlayer mediaPlayer = MediaPlayer.create(context, R.raw.resource);
   mediaPlayer.start(); // no need to call prepare(); create() does that for you
   ```

2. URIContentResolver

   ```
   Uri myUri = ....; // initialize Uri here
   MediaPlayer mediaPlayer = new MediaPlayer();
   mediaPlayer.setAudioStreamType(AudioManager.STREAM_MUSIC);
   mediaPlayer.setDataSource(getApplicationContext(), myUri);
   mediaPlayer.prepare();
   mediaPlayer.start();
   ```

3. URL

   ```
   String url = "http://........"; // your URL here
   MediaPlayer mediaPlayer = new MediaPlayer();
   mediaPlayer.setAudioStreamType(AudioManager.STREAM_MUSIC);
   mediaPlayer.setDataSource(url);
   mediaPlayer.prepare(); // might take long! (for buffering, etc)
   mediaPlayer.start();
   ```

`MediaPlayer$prepare()`UI。`MediaPlayer$prepareAsync()`。

```
mMediaPlayer = ... // Initialize it here
mMediaPlayer.setOnPreparedListener(new MediaPlayer.OnPreparedListener(){
    @Override
    public void onPrepared(MediaPlayer player) {
        // Called when the MediaPlayer is ready to play
        mMediaPlayer.start();
    }
}); // Set callback for when prepareAsync() finishes
mMediaPlayer.prepareAsync(); // Prepare asynchronously to not block the Main Thread
```

◦ MediaPlayer

```
mMediaPlayer.setOnErrorListener(new MediaPlayer.OnErrorListener(){
        @Override
        public boolean onError(MediaPlayer mp, int what, int extra) {
            // ... react appropriately ...
            // The MediaPlayer has moved to the Error state, must be reset!
            // Then return true if the error has been handled
        }
});
```

URI `RingtoneManager.TYPE_RINGTONE`

```
private List<Uri> loadLocalRingtonesUris() {
        List<Uri> alarms = new ArrayList<>();
        try {
            RingtoneManager ringtoneMgr = new RingtoneManager(getActivity());
            ringtoneMgr.setType(RingtoneManager.TYPE_RINGTONE);
```
```

```
            Cursor alarmsCursor = ringtoneMgr.getCursor();
            int alarmsCount = alarmsCursor.getCount();
            if (alarmsCount == 0 && !alarmsCursor.moveToFirst()) {
                alarmsCursor.close();
                return null;
            }

            while (!alarmsCursor.isAfterLast() && alarmsCursor.moveToNext()) {
                int currentPosition = alarmsCursor.getPosition();
                alarms.add(ringtoneMgr.getRingtoneUri(currentPosition));
            }

        } catch (Exception ex) {
            ex.printStackTrace();
        }

        return alarms;
    }
```

◦

- RingtoneManager.TYPE_RINGTONE
- RingtoneManager.TYPE_NOTIFICATION
- RingtoneManager.TYPE_ALARM
- RingtoneManager.TYPE_ALL = TYPE_RINGTONE | TYPE_NOTIFICATION | TYPE_ALARM

android.media.RingtoneUriRingtoneManager

```
android.media.Ringtone osRingtone = RingtoneManager.getRingtone(context, uri);
```

```
public void setDataSource(Context context, Uri uri)
```

android.media.MediaPlayer◦ MediaPlayer

◦ ◦

AudioManager.STREAM_RING◦ ◦

- STREAM_ALARM
- STREAM_DTMF
- STREAM_MUSIC
- STREAM_NOTIFICATION
- STREAM_RING
- STREAM_SYSTEM
- STREAM_VOICE_CALL

```
AudioManager audio = (AudioManager) getActivity().getSystemService(Context.AUDIO_SERVICE);
int currentVolume = audioManager.getStreamVolume(AudioManager.STREAM_RING);
```

```
AudioManager audio = (AudioManager) getActivity().getSystemService(Context.AUDIO_SERVICE);
int streamMaxVolume = audioManager.getStreamMaxVolume(AudioManager.STREAM_RING);
```

0 <<1

```
float volume = ((float) currentVolume) / streamMaxVolume
```

```
AudioManager audio = (AudioManager) getActivity().getSystemService(Context.AUDIO_SERVICE);
audio.adjustStreamVolume(AudioManager.STREAM_RING, AudioManager.ADJUST_RAISE, 0);
```

```
AudioManager audio = (AudioManager) getActivity().getSystemService(Context.AUDIO_SERVICE);
audio.adjustStreamVolume(AudioManager.STREAM_RING, AudioManager.ADJUST_LOWER, 0);
```

MediaPlayer

MediaPlayer◦

void setAudioStreamType(int streamtype)

```
MediaPlayer mMedia = new MediaPlayer();
mMedia.setAudioStreamType(AudioManager.STREAM_RING);
```

```
public class SoundActivity extends Activity  {

    private MediaPlayer mediaPlayer;
    ProgressBar progress_bar;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_tool_sound);
        mediaPlayer = new MediaPlayer();
        mediaPlayer.setAudioStreamType(AudioManager.STREAM_MUSIC);
        progress_bar = (ProgressBar) findViewById(R.id.progress_bar);

        btn_play_stop.setEnabled(false);
        btn_play_stop.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                if(mediaPlayer.isPlaying()) {
                    mediaPlayer.pause();
                    btn_play_stop.setImageResource(R.drawable.ic_pause_black_24dp);
                } else {
                    mediaPlayer.start();
                    btn_play_stop.setImageResource(R.drawable.ic_play_arrow_black_24px);
                }
            }
        });
```

```
        mediaPlayer.setDataSource(proxyUrl);
        mediaPlayer.setOnCompletionListener(new MediaPlayer.OnCompletionListener() {
            @Override
            public void onCompletion(MediaPlayer mp) {
                observer.stop();
                progress_bar.setProgress(mp.getCurrentPosition());
                // TODO Auto-generated method stub
                mediaPlayer.stop();
                mediaPlayer.reset();
            }
        });
        mediaPlayer.setOnBufferingUpdateListener(new MediaPlayer.OnBufferingUpdateListener() {
            @Override
            public void onBufferingUpdate(MediaPlayer mp, int percent) {
                progress_bar.setSecondaryProgress(percent);
            }
        });
        mediaPlayer.setOnPreparedListener(new MediaPlayer.OnPreparedListener() {
            @Override
            public void onPrepared(MediaPlayer mediaPlayer) {
                btn_play_stop.setEnabled(true);

            }
        });
        observer = new MediaObserver();
        mediaPlayer.prepare();
        mediaPlayer.start();
        new Thread(observer).start();
    }


    private MediaObserver observer = null;

    private class MediaObserver implements Runnable {
        private AtomicBoolean stop = new AtomicBoolean(false);

        public void stop() {
            stop.set(true);
        }

        @Override
        public void run() {
            while (!stop.get()) {
                progress_bar.setProgress((int)((double)mediaPlayer.getCurrentPosition() /
(double)mediaPlayer.getDuration()*100));
                try {
                    Thread.sleep(200);
                } catch (Exception ex) {
                    Logger.log(ToolSoundActivity.this, ex);
                }

            }
        }
    }

    @Override
    protected void onDestroy() {
        super.onDestroy();
        mediaPlayer.stop();
    }
```

```
}
```

```
<LinearLayout
    android:gravity="bottom"
    android:layout_gravity="bottom"
    android:orientation="vertical"
    android:layout_width="match_parent"
    android:layout_height="0dp"
    android:layout_weight="1"
    android:weightSum="1">

    <LinearLayout
        android:orientation="horizontal"
        android:layout_width="match_parent"
        android:layout_height="wrap_content">

        <ImageButton
            app:srcCompat="@drawable/ic_play_arrow_black_24px"
            android:layout_width="48dp"
            android:layout_height="48dp"
            android:id="@+id/btn_play_stop" />

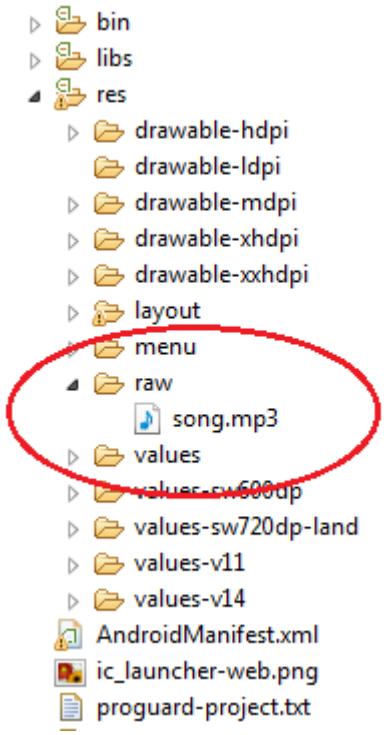
        <ProgressBar
            android:padding="8dp"
            android:progress="0"
            android:id="@+id/progress_bar"
            style="@style/Widget.AppCompat.ProgressBar.Horizontal"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_gravity="center" />

    </LinearLayout>

</LinearLayout>
```

androidstudio

/。resraw



◦ .mp3.wav◦

```
public class MainActivity extends AppCompatActivity {
@Override
public void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.aboutapp_activity);

    MediaPlayer song=MediaPlayer.create(this, R.raw.song);

    Button button=(Button)findViewById(R.id.button);
    button.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
           song.start();
        }
    });
}
}
```

```
 public class MainActivity extends AppCompatActivity {
 @Override
 public void onCreate(Bundle savedInstanceState) {
   super.onCreate(savedInstanceState);
   setContentView(R.layout.aboutapp_activity);

   MediaPlayer song=MediaPlayer.create(this, R.raw.song);

   Button button=(Button)findViewById(R.id.button);
   button.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        if (song.isPlaying()) {
            song.reset();
            song= MediaPlayer.create(getApplicationContext(), R.raw.song);
       }
```

```
            song.start();
        }
    });
  }
}
```

https://riptutorial.com/zh-CN/android/topic/1851/

166:

Examples

-

.apk。3

- 。
- String。
- 。

```
private static final int VALID = 0;
private static final int INVALID = 1;

public static int checkAppSignature(Context context) {

try {
      PackageInfo packageInfo =
context.getPackageManager().getPackageInfo(context.getPackageName(),
PackageManager.GET_SIGNATURES);

      for (Signature signature : packageInfo.signatures) {

        byte[] signatureBytes = signature.toByteArray();

        MessageDigest md = MessageDigest.getInstance("SHA");

        md.update(signature.toByteArray());

        final String currentSignature = Base64.encodeToString(md.digest(), Base64.DEFAULT);

        Log.d("REMOVE_ME", "Include this string as a value for SIGNATURE:" +
currentSignature);

        //compare signatures
        if (SIGNATURE.equals(currentSignature)){
          return VALID;
        };
      }
    } catch (Exception e) {
        //assumes an issue in checking signature., but we let the caller decide on what to do.
    }

    return INVALID;

}
```

https://riptutorial.com/zh-CN/android/topic/4664/

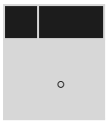
167: SharedPreferences

XML ◦ `/data/data/package_name/shared_prefs/<filename.xml>` ◦

root◦ ◦

◦

1. public static String encryptString input;
2. public static String decryptString input;



◦

◦

◦ Android`AccountManager` ◦

Examples

◦

```
public static String encrypt(String input) {
    // Simple encryption, not very strong!
    return Base64.encodeToString(input.getBytes(), Base64.DEFAULT);
}

public static String decrypt(String input) {
    return new String(Base64.decode(input, Base64.DEFAULT));
}
```

```
public static String pref_name = "My_Shared_Pref";

// To Write
SharedPreferences preferences = getSharedPreferences(pref_name, MODE_PRIVATE);
SharedPreferences.Editor editor = preferences.edit();
editor.putString(encrypt("password"), encrypt("my_dummy_pass"));
editor.apply(); // Or commit if targeting old devices

// To Read
SharedPreferences preferences = getSharedPreferences(pref_name, MODE_PRIVATE);
String passEncrypted = preferences.getString(encrypt("password"), encrypt("default_value"));
String password = decrypt(passEncrypted);
```

SharedPreferences https://riptutorial.com/zh-CN/android/topic/9887/sharedpreferences

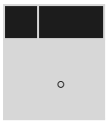
168: SharedPreferences

XML 。 / data / data / package_name / shared_prefs / <filename.xml>。

root。 。

。

1. public static String encryptString input;
2. public static String decryptString input;



。

。

。 Android`AccountManager` 。

Examples

。

```
public static String encrypt(String input) {
    // Simple encryption, not very strong!
    return Base64.encodeToString(input.getBytes(), Base64.DEFAULT);
}

public static String decrypt(String input) {
    return new String(Base64.decode(input, Base64.DEFAULT));
}
```

```
public static String pref_name = "My_Shared_Pref";

// To Write
SharedPreferences preferences = getSharedPreferences(pref_name, MODE_PRIVATE);
SharedPreferences.Editor editor = preferences.edit();
editor.putString(encrypt("password"), encrypt("my_dummy_pass"));
editor.apply(); // Or commit if targeting old devices

// To Read
SharedPreferences preferences = getSharedPreferences(pref_name, MODE_PRIVATE);
String passEncrypted = preferences.getString(encrypt("password"), encrypt("default_value"));
String password = decrypt(passEncrypted);
```

SharedPreferences https://riptutorial.com/zh-CN/android/topic/9890/sharedpreferences

169: RangeSeekBar

Alex Florescuhttps://github.com/anothem/android-range-seek-barAndroid RangeSeekBar

1-attrs.xmlincrement

```
<attr name="increment" format="integer|float"/>
```

2-RangeSeekBar.java

```
private static final int DEFAULT_INCREMENT = 1;
private int increment;
```

3-private void initContext contextAttributeSet attrs

```
if (attrs == null)
    increment = DEFAULT_INCREMENT;
else
    increment = a.getInt(R.styleable.RangeSeekBar_increment, DEFAULT_INCREMENT);
```

4-protected synchronized void onDraw@NonNull Canvas canvas

minTextmaxText。

- minText = valueToStringgetSelectedMinValue;
- maxText = valueToStringgetSelectedMaxValue;

int x;

```
        x = (int) ((getSelectedMinValue().intValue()+increment)/increment);
        x = x*increment;
        if (x<absoluteMaxValue.intValue())
            minText = ""+x;
        else
            minText=""+(absoluteMaxValue.intValue()-increment);


        x = (int) ((getSelectedMaxValue().intValue()+increment)/increment);
        x = x*increment;
        maxText = ""+x;
```

5 - 。

Examples

7

```
<RangeSeekBar
        android:id="@+id/barPrice"
```

```
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        app:barHeight="0.2dp"
        app:barHeight2="4dp"
        app:increment="7"
        app:showLabels="false" />
```

RangeSeekBar https://riptutorial.com/zh-CN/android/topic/8627/rangeseekbar--

170:

;	
setContentViewR.layout.yourlayout;	ContentView。

- Dialog`show()`
- `AlertDialog.Builder()`。 Builder Pattern AlertDialog.Builder“”。
- “”`show()` - AlertDialog`create() show()`

Examples

```
AlertDialog.Builder alertDialogBuilder = new AlertDialog.Builder(
                MainActivity.this);

        alertDialogBuilder.setTitle("Title Dialog");
        alertDialogBuilder
                .setMessage("Message Dialog")
                .setCancelable(true)
                .setPositiveButton("Yes",
                        new DialogInterface.OnClickListener() {

                            public void onClick(DialogInterface dialog, int arg1) {
                                // Handle Positive Button

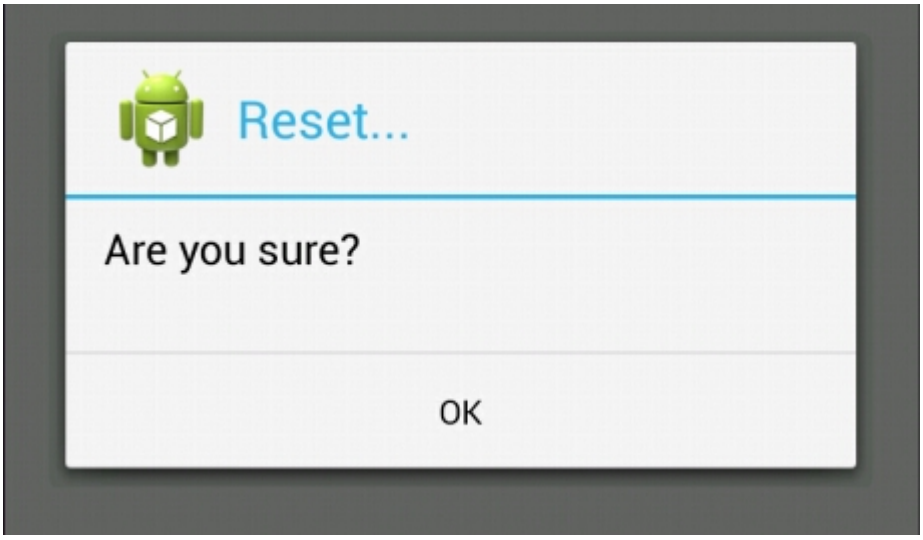
                            }
                        })
                .setNegativeButton("No",
                        new DialogInterface.OnClickListener() {

                            public void onClick(DialogInterface dialog, int arg1) {
                                // Handle Negative Button
                                dialog.cancel();
                            }
                        });

        AlertDialog alertDialog = alertDialogBuilder.create();
        alertDialog.show();
```

```
    AlertDialog.Builder builder = new AlertDialog.Builder(context);
    //Set Title
    builder.setTitle("Reset...")
            //Set Message
            .setMessage("Are you sure?")
            //Set the icon of the dialog
            .setIcon(drawable)
            //Set the positive button, in this case, OK, which will dismiss the dialog and do
everything in the onClick method
            .setPositiveButton(android.R.string.ok, new DialogInterface.OnClickListener() {
```

```
                @Override
                public void onClick(DialogInterface dialogInterface, int i) {
                    // Reset
                }
            });
    AlertDialog dialog = builder.create();
    //Now, any time you can call on:
    dialog.show();
    //So you can show the dialog.
```



WikiHow

DialogFragment

xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical" android:layout_width="match_parent"
    android:layout_height="match_parent">

    <DatePicker
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/datePicker"
        android:layout_gravity="center_horizontal"
        android:calendarViewShown="false"/>

    <Button
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="ACCEPT"
        android:id="@+id/buttonAccept" />

</LinearLayout>
```

```
public class ChooseDate extends DialogFragment implements View.OnClickListener {

    private DatePicker datePicker;
```

```
    private Button acceptButton;

    private boolean isDateSetted = false;
    private int year;
    private int month;
    private int day;

    private DateListener listener;

    public interface DateListener {
        onDateSelected(int year, int month, int day);
    }

    public ChooseDate(){}

    @Override
    public View onCreateView(LayoutInflater inflater, ViewGroup container,
                             Bundle savedInstanceState) {
        View rootView = inflater.inflate(R.layout.dialog_year_picker, container);

        getDialog().setTitle(getResources().getString("TITLE"));

        datePicker = (DatePicker) rootView.findViewById(R.id.datePicker);
        acceptButton = (Button) rootView.findViewById(R.id.buttonAccept);
        acceptButton.setOnClickListener(this);

        if (isDateSetted) {
            datePicker.updateDate(year, month, day);
        }

        return rootView;
    }

    @Override
    public void onClick(View v) {
        switch(v.getId()){
            case R.id.buttonAccept:
                int year = datePicker.getYear();
                int month = datePicker.getMonth() + 1; // months start in 0
                int day = datePicker.getDayOfMonth();

                listener.onDateSelected(year, month, day);
                break;
        }
        this.dismiss();
    }

    @Override
    public void onAttach(Context context) {
        super.onAttach(context);
        listener = (DateListener) context;
    }

    public void setDate(int year, int month, int day) {

        this.year = year;
        this.month = month;
        this.day = day;
        this.isDateSetted = true;
    }
```

```
}
```

```
public class MainActivity extends AppCompatActivity implements ChooseDate.DateListener{

    private int year;
    private int month;
    private int day;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        private void showDateDialog();
    }

    private void showDateDialog(){
        ChooseDate pickDialog = new ChooseDate();
        // We could set a date
        //  pickDialog.setDate(23, 10, 2016);
        pickDialog.show(getFragmentManager(), "");
    }

    @Override
    onDateSelected(int year, int month, int day){
        this.day = day;
        this.month = month;
        this.year = year;
    }
}
```

DatePickerDialog

DatePickerDialogDatePicker◦ DatePicker◦

```
DatePickerDialog datePickerDialog = new DatePickerDialog(context, listener, year, month, day);
datePickerDialog.show();
```

DataPicker

```
DatePicker datePicker = datePickerDialog.getDatePicker();
datePicker.setMinDate(System.currentTimeMillis());
```

DatePicker◦ DatePicker◦ ◦

DatePickerDialogDatePickerDatePicker ◦

◦

```
//In this case user can pick date only from future
datePicker.setMinDate(System.currentTimeMillis());
```

```
//In this case user can pick date only, before following week.
datePicker.setMaxDate(System.currentTimeMillis() + TimeUnit.DAYS.toMillis(7));
```

Listener ◦

DatePickerDialog DatePickerDialogOnDateSetListener

DatePickerDialog

```
public class SampleActivity extends AppCompatActivity implements
DatePickerDialog.OnDateSetListener {

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        ...
    }

    private void showDatePicker() {
        //We need calendar to set current date as initial date in DatePickerDialog.
        Calendar calendar = new GregorianCalendar(Locale.getDefault());
        int year = calendar.get(Calendar.YEAR);
        int month = calendar.get(Calendar.MONTH);
        int day = calendar.get(Calendar.DAY_OF_MONTH);

        DatePickerDialog datePickerDialog = new DatePickerDialog(this, this, year, month,
day);
        datePickerDialog.show();
    }

    @Override
    public void onDateSet(DatePicker datePicker, int year, int month, int day) {

    }
}
```

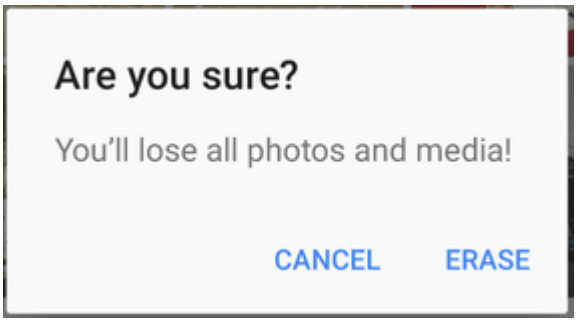
DatePicker

AppcompatMaterial Design AlertDialog

AlertDialogDialog◦ String setMessage()◦

android.appAlertDialogAndroid◦

Android V7 AppcompatAlertDialogAndroid OSMaterial Design



V7 Appcompat。app level build.gradle

```
dependencies {
    compile 'com.android.support:appcompat-v7:24.2.1'
    //........
}
```

```
import android.support.v7.app.AlertDialog;
```

AlertDialog

```
AlertDialog.Builder builder = new AlertDialog.Builder(this);
builder.setTitle("Are you sure?");
builder.setMessage("You'll lose all photos and media!");
builder.setPositiveButton("ERASE", null);
builder.setNegativeButton("CANCEL", null);
builder.show();
```

AlertDialogListView

ListViewRecyclerViewAlertDialog.Builder setAdapter。

```
    private void showDialog()
    {
        AlertDialog.Builder builder = new AlertDialog.Builder(this);
        builder.setTitle("Choose any item");

        final List<String> lables = new ArrayList<>();
        lables.add("Item 1");
        lables.add("Item 2");
        lables.add("Item 3");
        lables.add("Item 4");

        ArrayAdapter<String> dataAdapter = new ArrayAdapter<String>(this,
            android.R.layout.simple_dropdown_item_1line, lables);
        builder.setAdapter(dataAdapter, new DialogInterface.OnClickListener() {
            @Override
            public void onClick(DialogInterface dialog, int which) {
                Toast.makeText(MainActivity.this,"You have selected " +
lables.get(which),Toast.LENGTH_LONG).show();
            }
        });
        AlertDialog dialog = builder.create();
        dialog.show();
    }
```

ListView

```
AlertDialog.Builder builder = new AlertDialog.Builder(this);
builder.setTitle("Select an item")
       .setItems(R.array.your_array, new DialogInterface.OnClickListener() {
           public void onClick(DialogInterface dialog, int which) {
               // The 'which' argument contains the index position of the selected item
               Log.v(TAG, "Selected item on position " + which);
           }
        });
builder.create().show();
```

EditText

```
void alertDialogDemo() {
        // get alert_dialog.xml view
        LayoutInflater li = LayoutInflater.from(getApplicationContext());
        View promptsView = li.inflate(R.layout.alert_dialog, null);

        AlertDialog.Builder alertDialogBuilder = new AlertDialog.Builder(
                getApplicationContext());

        // set alert_dialog.xml to alertdialog builder
        alertDialogBuilder.setView(promptsView);

        final EditText userInput = (EditText) promptsView.findViewById(R.id.etUserInput);

        // set dialog message
        alertDialogBuilder
                .setCancelable(false)
                .setPositiveButton("OK", new DialogInterface.OnClickListener() {
                    public void onClick(DialogInterface dialog, int id) {
                        // get user input and set it to result
                        // edit text
                        Toast.makeText(getApplicationContext(), "Entered:
"+userInput.getText().toString(), Toast.LENGTH_LONG).show();
                    }
                })
                .setNegativeButton("Cancel",
                        new DialogInterface.OnClickListener() {
                            public void onClick(DialogInterface dialog, int id) {
                                dialog.cancel();
                            }
                        });

        // create alert dialog
        AlertDialog alertDialog = alertDialogBuilder.create();

        // show it
        alertDialog.show();
    }
```

Xmlres / layout / alert_dialog.xml

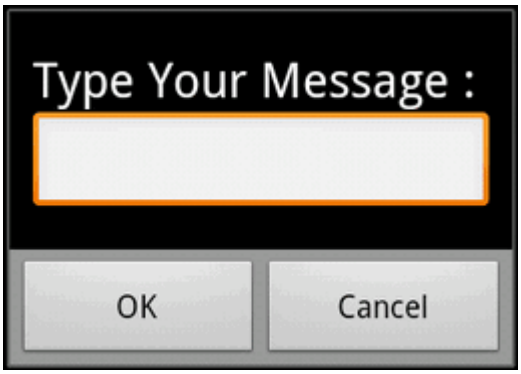
```
<TextView
    android:id="@+id/textView1"
    android:layout_width="wrap_content"
```

```
    android:layout_height="wrap_content"
    android:text="Type Your Message : "
    android:textAppearance="?android:attr/textAppearanceLarge" />

<EditText
    android:id="@+id/etUserInput"
    android:layout_width="match_parent"
    android:layout_height="wrap_content" >

    <requestFocus />

</EditText>
```



styles.xml

```
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <style name="AppBaseTheme" parent="@android:style/Theme.Light.NoTitleBar.Fullscreen">
    </style>
</resources>
```

fullscreen.xml

```
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent" >

</RelativeLayout>
```

javaActivityDialog

```
import android.app.Activity;
import android.app.Dialog;
import android.os.Bundle;

public class FullscreenActivity extends Activity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        //You can set no content for the activity.
        Dialog mDialog = new Dialog(this, R.style.AppBaseTheme);
        mDialog.setContentView(R.layout.fullscreen);
        mDialog.show();
    }
```

```
}
```

AlertDialog.BuildersetCustomTitle。。

```
AlertDialog.Builder builder = new AlertDialog.Builder(context, Theme_Material_Light_Dialog);
builder.setCustomTitle(inflate(context, R.layout.my_dialog_title, null))
       .setView(inflate(context, R.layout.my_dialog, null))
       .setPositiveButton("OK", null);

Dialog dialog = builder.create();
dialog.show();
```

my_dialog_title.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
              android:layout_width="match_parent"
              android:layout_height="match_parent"
              android:padding="16dp">

    <TextView
        style="@android:style/TextAppearance.Small"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Lorem ipsum dolor sit amet, consectetur adipiscing elit. Curabitur
tincidunt condimentum tristique. Vestibulum ante ante, pretium porttitor
iaculis vitae, congue ut sem. Curabitur ac feugiat ligula. Nulla
tincidunt est eu sapien iaculis rhoncus. Mauris eu risus sed justo
pharetra semper faucibus vel velit."
        android:textStyle="bold"/>

</LinearLayout>
```

my_dialog.xml

```
<?xml version="1.0" encoding="utf-8"?>
<ScrollView
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent">

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="vertical"
        android:padding="16dp"
        android:scrollbars="vertical">

        <TextView
            style="@android:style/TextAppearance.Small"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:paddingBottom="10dp"
            android:text="Hello world!"/>

        <TextView
            style="@android:style/TextAppearance.Small"
```

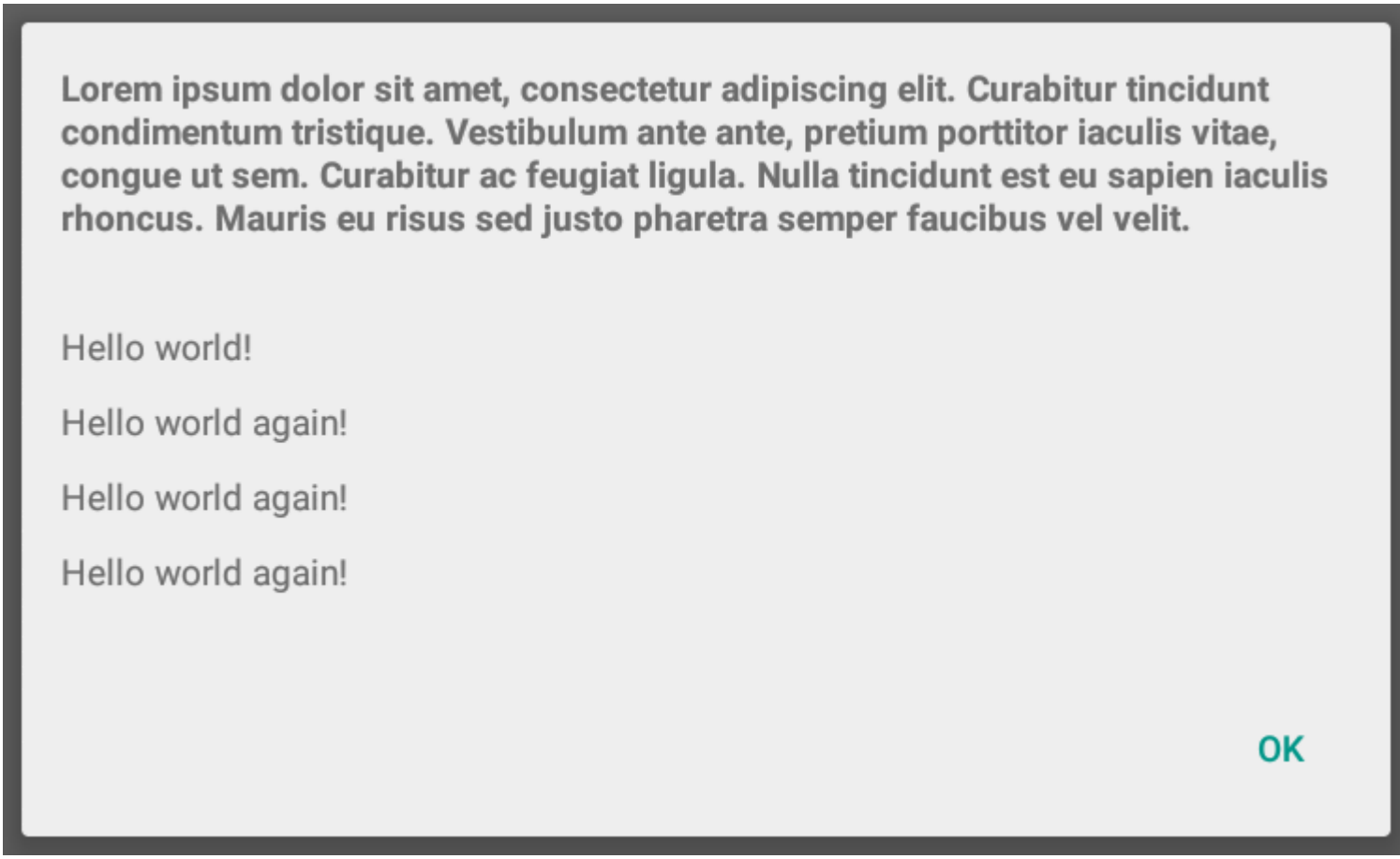
```
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:paddingBottom="10dp"
            android:text="Hello world again!"/>

        <TextView
            style="@android:style/TextAppearance.Small"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:paddingBottom="10dp"
            android:text="Hello world again!"/>

        <TextView

            style="@android:style/TextAppearance.Small"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:paddingBottom="10dp"
            android:text="Hello world again!"/>

    </LinearLayout>
</ScrollView>
```



https://riptutorial.com/zh-CN/android/topic/1225/

171: FuseViewAndroid

fusetoolsFuse.Viewandroid。

hikrActivity。

@ lucamtudor / hikr-fuse-view

Examples

hikr appandroid.view.View

- https://www.fusetools.com/downloads
-
- fuse install android
- uno install Fuse.Views

1

```
git clone https://github.com/fusetools/hikr
```

2 Fuse.Views

hikr.unoproj"Fuse.Views""Packages"。

```
{
  "RootNamespace":"",
  "Packages": [
    "Fuse",
    "FuseJS",
    "Fuse.Views"
  ],
  "Includes": [
    "*",
    "Modules/*.js:Bundle"
  ]
}
```

3 HikrApp

3.1 HikrApp.uxMainView.ux。

HikrApp.ux

```
<App Background="#022328">
    <iOS.StatusBarConfig Style="Light" />
```

```
    <Android.StatusBarConfig Color="#022328" />

    <Router ux:Name="router" />

    <ClientPanel>
        <Navigator DefaultPath="splash">
            <SplashPage ux:Template="splash" router="router" />
            <HomePage ux:Template="home" router="router" />
            <EditHikePage ux:Template="editHike" router="router" />
        </Navigator>
    </ClientPanel>
</App>
```

3.2HikrApp.ux

- <Page><App>
- ux:Class="HikrApp"<Page>
- <ClientPanel>

HikrApp.ux

```
<Page ux:Class="HikrApp" Background="#022328">
    <iOS.StatusBarConfig Style="Light" />
    <Android.StatusBarConfig Color="#022328" />

    <Router ux:Name="router" />

    <Navigator DefaultPath="splash">
        <SplashPage ux:Template="splash" router="router" />
        <HomePage ux:Template="home" router="router" />
        <EditHikePage ux:Template="editHike" router="router" />
    </Navigator>
</Page>
```

3.3MainView.uxHikrApp

MainView.ux

```
<App>
    <HikrApp/>
</App>
```

HikrApp

4MainView.ux<ExportedViews><App>ux:Template="HikrAppView"<HikrApp />

```
<ExportedViews>
    <HikrApp ux:Template="HikrAppView" />
</ExportedViews>
```

HikrAppView Java。

◦

```
fuse previewuno build ExportedViewsApp
```

◦ Fuse Studio

UXApp◦ appUX

5<GraphicsView>SplashPage.ux<DockPanel> <GraphicsView>

```
<Page ux:Class="SplashPage">
    <Router ux:Dependency="router" />

    <JavaScript File="SplashPage.js" />

    <GraphicsView>
        <DockPanel ClipToBounds="true">
            <Video Layer="Background" File="../Assets/nature.mp4" IsLooping="true"
AutoPlay="true" StretchMode="UniformToFill" Opacity="0.5">
            <Blur Radius="4.75" />
        </Video>

            <hikr.Text Dock="Bottom" Margin="10" Opacity=".5" TextAlignment="Center"
FontSize="12">original video by Graham Uhelski</hikr.Text>

            <Grid RowCount="2">
                <StackPanel Alignment="VerticalCenter">
                    <hikr.Text Alignment="HorizontalCenter" FontSize="70">hikr</hikr.Text>
                    <hikr.Text Alignment="HorizontalCenter" Opacity=".5">get out
there</hikr.Text>
                </StackPanel>

                <hikr.Button Text="Get Started" FontSize="18" Margin="50,0"
Alignment="VerticalCenter" Clicked="{goToHomePage}" />
            </Grid>
        </DockPanel>
    </GraphicsView>
</Page>
```

6aar

- `uno clean`
- `uno build -t=android -DLIBRARY`

7android

- aar`.../rootHikeProject/build/Android/Debug/app/build/outputs/aar/app-debug.aar .../androidRootProject/app/libs`
- `flatDir { dirs 'libs' }build.gradle`

```
// Top-level build file where you can add configuration options common to all sub-
projects/modules.

buildscript { ... }

...

allprojects {
    repositories {
        jcenter()
        flatDir {
            dirs 'libs'
        }
    }
}

...
```

- `compile(name: 'app-debug', ext: 'aar')app/build.gradleapp/build.gradle`

```
apply plugin: 'com.android.application'

android {
    compileSdkVersion 25
    buildToolsVersion "25.0.2"
    defaultConfig {
        applicationId "com.shiftstudio.fuseviewtest"
        minSdkVersion 16
        targetSdkVersion 25
        versionCode 1
        versionName "1.0"
        testInstrumentationRunner "android.support.test.runner.AndroidJUnitRunner"
    }
    buildTypes {
        release {
            minifyEnabled false
            proguardFiles getDefaultProguardFile('proguard-android.txt'), 'proguard-rules.pro'
        }
    }
}

dependencies {
    compile(name: 'app-debug', ext: 'aar')
    compile fileTree(dir: 'libs', include: ['*.jar'])
    androidTestCompile('com.android.support.test.espresso:espresso-core:2.2.2', {
        exclude group: 'com.android.support', module: 'support-annotations'
    })
    compile 'com.android.support:appcompat-v7:25.3.1'
    testCompile 'junit:junit:4.12'
}
```

- `AndroidManifest.xml`

```
android:launchMode="singleTask"
android:taskAffinity=""
android:configChanges="orientation|keyboardHidden|screenSize|smallestScreenSize"
```

`AndroidManifest.xml`

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.shiftstudio.fuseviewtest">

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:supportsRtl="true"
        android:theme="@style/AppTheme">
        <activity
            android:name=".MainActivity"
            android:launchMode="singleTask"
            android:taskAffinity=""
            android:configChanges="orientation|keyboardHidden|screenSize|smallestScreenSize">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
    </application>

</manifest>
```

8 `ActivityFuse.View HikrAppView`

- `ActivityFuseViewsActivity`

```
public class MainActivity extends FuseViewsActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        final ViewHandle fuseHandle = ExportedViews.instantiate("HikrAppView");

        final FrameLayout root = (FrameLayout) findViewById(R.id.fuse_root);
        final View fuseApp = fuseHandle.getView();
        root.addView(fuseApp);
    }
}
```

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/activity_main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
```

```
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    tools:context="com.shiftstudio.fuseviewtest.MainActivity">

    <TextView
        android:layout_width="wrap_content"
        android:layout_gravity="center_horizontal"
        android:textSize="24sp"
        android:textStyle="bold"
        android:layout_height="wrap_content"
        android:text="Hello World, from Kotlin" />

    <FrameLayout
        android:id="@+id/fuse_root"
        android:layout_width="match_parent"
        android:layout_height="match_parent">

        <TextView
            android:layout_width="wrap_content"
            android:text="THIS IS FROM NATIVE.\nBEHIND FUSE VIEW"
            android:layout_gravity="center"
            android:textStyle="bold"
            android:textSize="30sp"
            android:background="@color/colorAccent"
            android:textAlignment="center"
            android:layout_height="wrap_content" />

    </FrameLayout>

</LinearLayout>
```

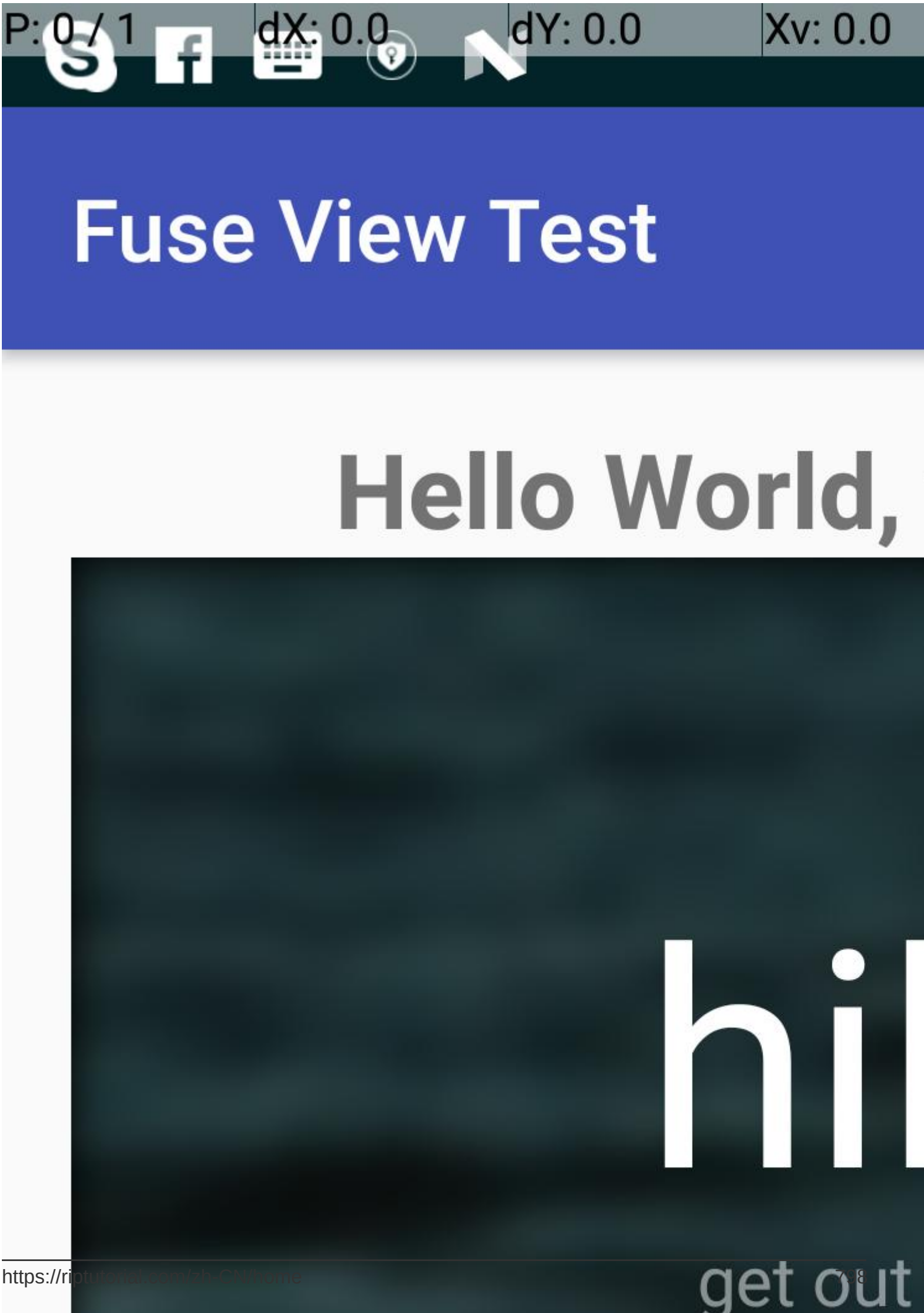
Android。。

```
A/libc: Fatal signal 11 (SIGSEGV), code 1, fault addr 0xdeadcab1 in tid 18026
(io.fuseviewtest)

        [ 05-25 11:52:33.658 16567:16567 W/ ]

        debuggerd: handling request: pid=18026 uid=10236 gid=10236 tid=18026
```

。 github。


P: 0 / 1
dX: 0.0
dY: 0.0
Xv: 0.0
Fuse View Test
Hello World,
hi
get out

172: OpenCVAndroid Studio

WebOpen CV。

- KitKatOpenCV*org.opencv.android.Camera2Renderer*。 apprpriate OpenCV .java。
- Lollipop。 。 。

Examples

AS v1.4.1。

1. Android Studio/ File / New Project

   - “ **cvtest1** ”
   - **API 19Android 4.4KitKat**
   - **MainActivity**

   cvtest1。 Android studiocvtest1

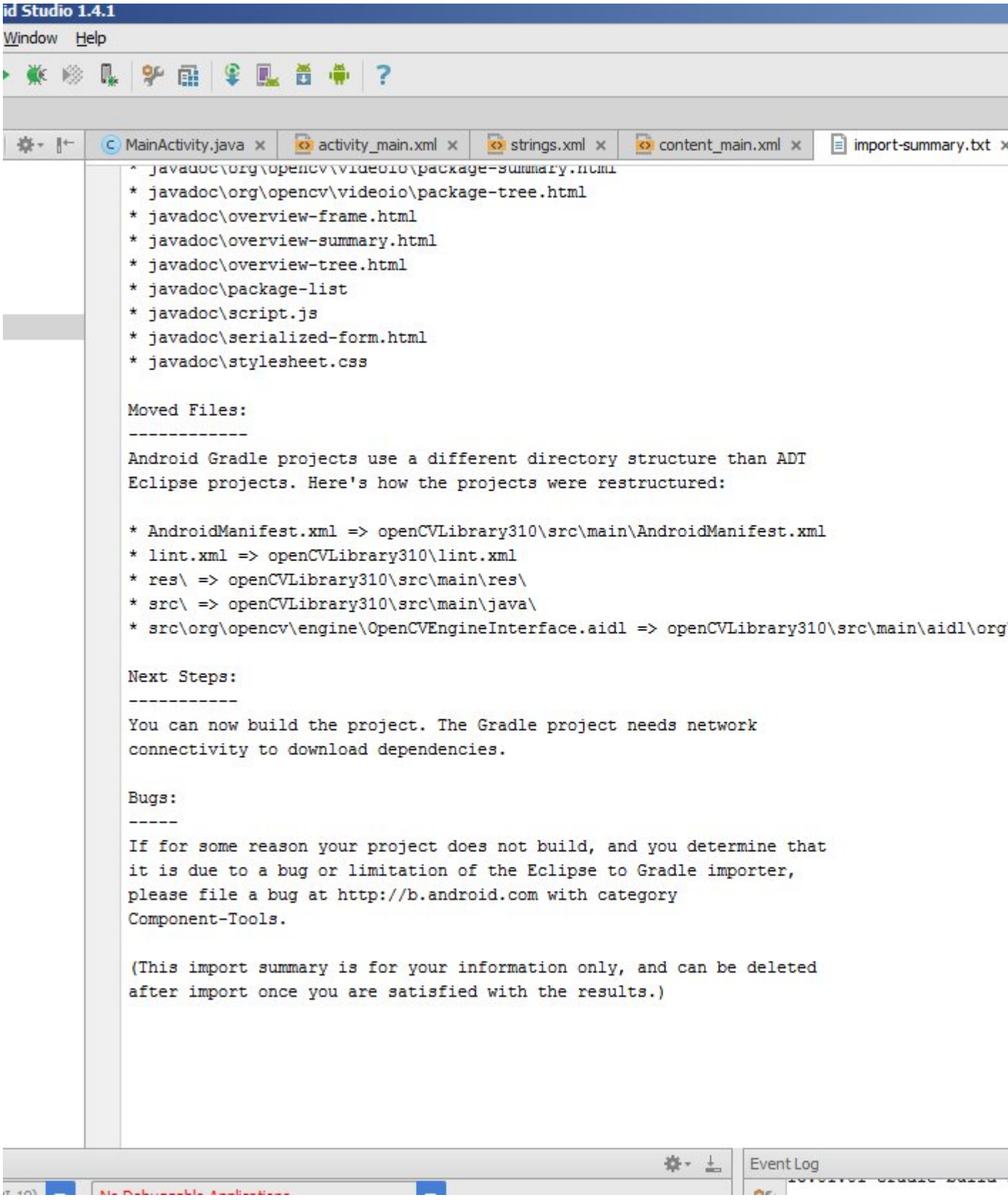
2. 。 “Hello World”/。 API 19。

3. Android v3.1.0OpenCV。 AndroidOpenCV for Java。 “ **unzip-dir** ”**unzip-dirsdk / native / libsarm** ... **mips** .....**x86** .....“”Android

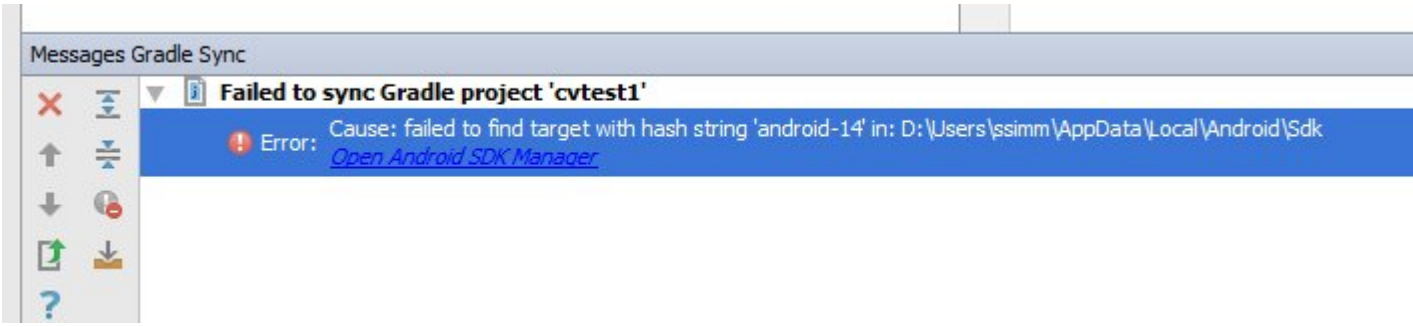
4. Android StudioOpenCV **Menu/ File / New / Import_Module**

   - **{unzip-dir} / sdk / java**
   - Android studio**openCVLibrary310**。
   - 。 jar。 。 **Finish**。

   Android Studio**import-summary.txt**javadoc。



'android-14'.... OpenCV zipbuild.gradleAndroid API14Android Studio v1.4.1。

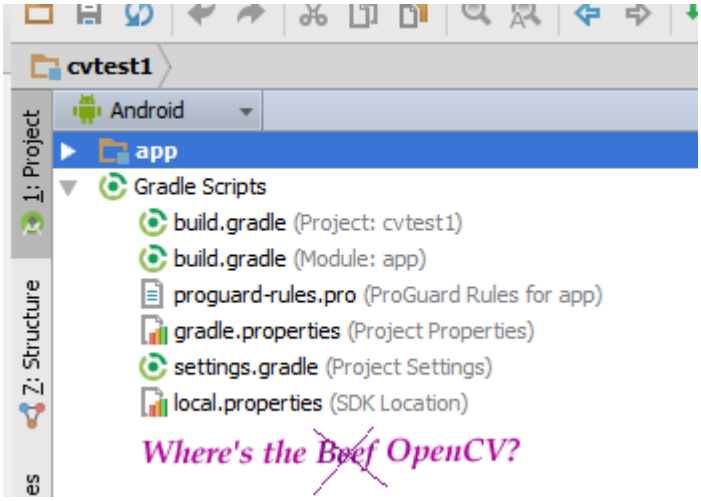


5. **/ File / Project_Structure** 。 “app”**DependenciesopenCVLibrary310**。 **Add / Module_Dependency**。 **not not-find-android-14**。

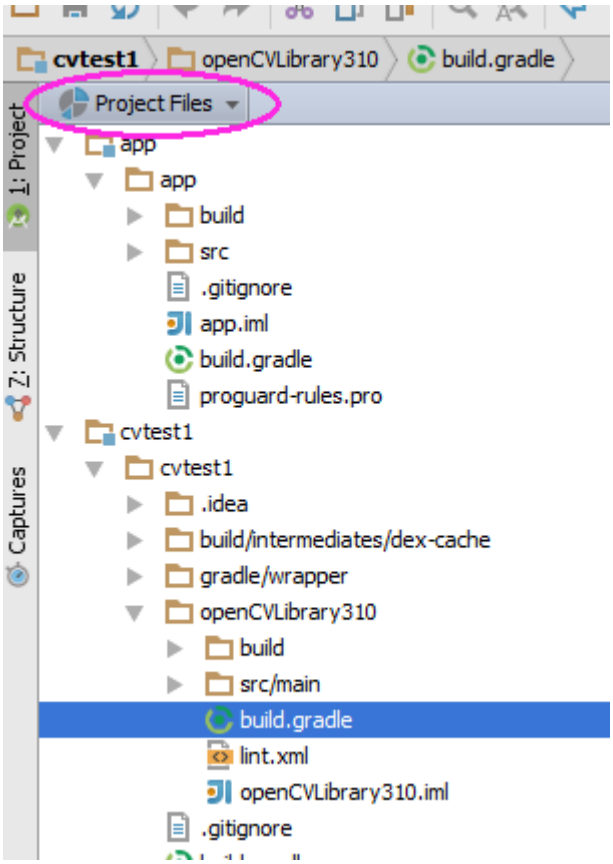
6. app**build.gradle**。 Androidbuild.gradle。 **cvtest1 / appbuild.gradleModuleapp** 。

    - compileSDKVersion23
    - buildToolsVersion23.0.2
    - minSdkVersion19
    - targetSdkVersion23

7. **cvtest1 / OpenCVLibrary310**

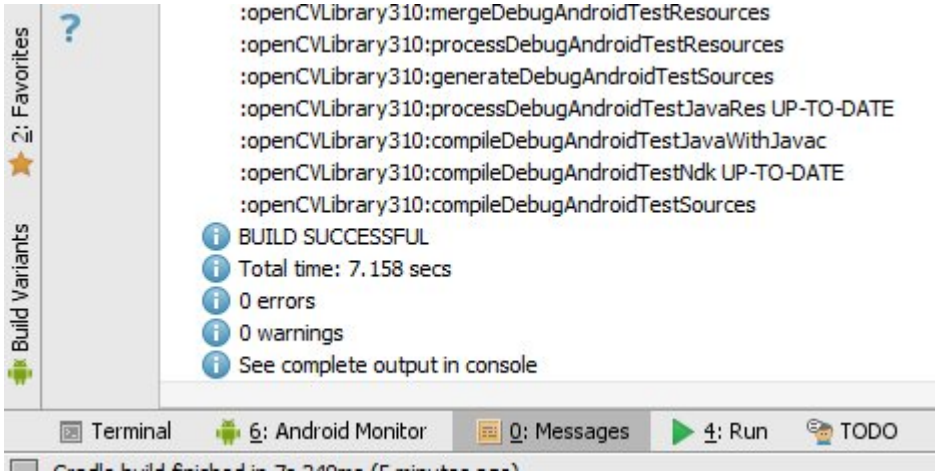


◦ **AndroidProject Files**



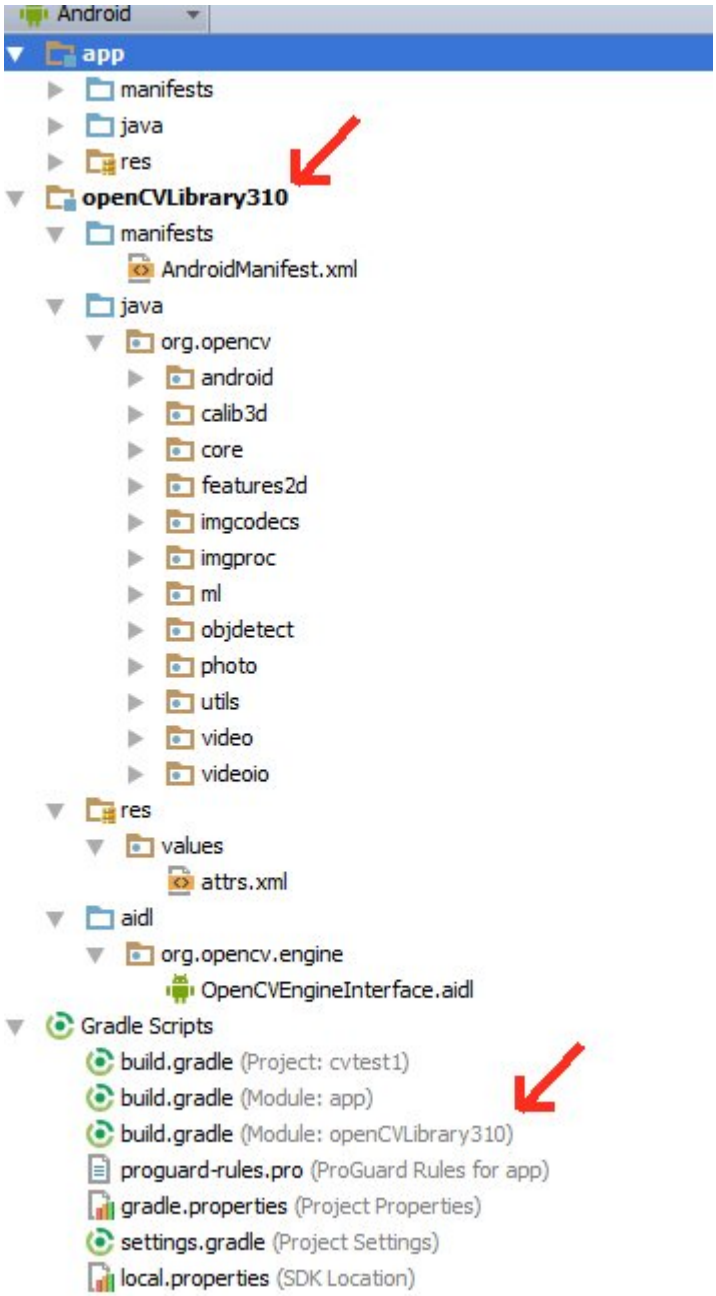
build.gradle。6。

8. /。 **/ Build / Clean_Project 0MessagesopenCVLibrary310** 。

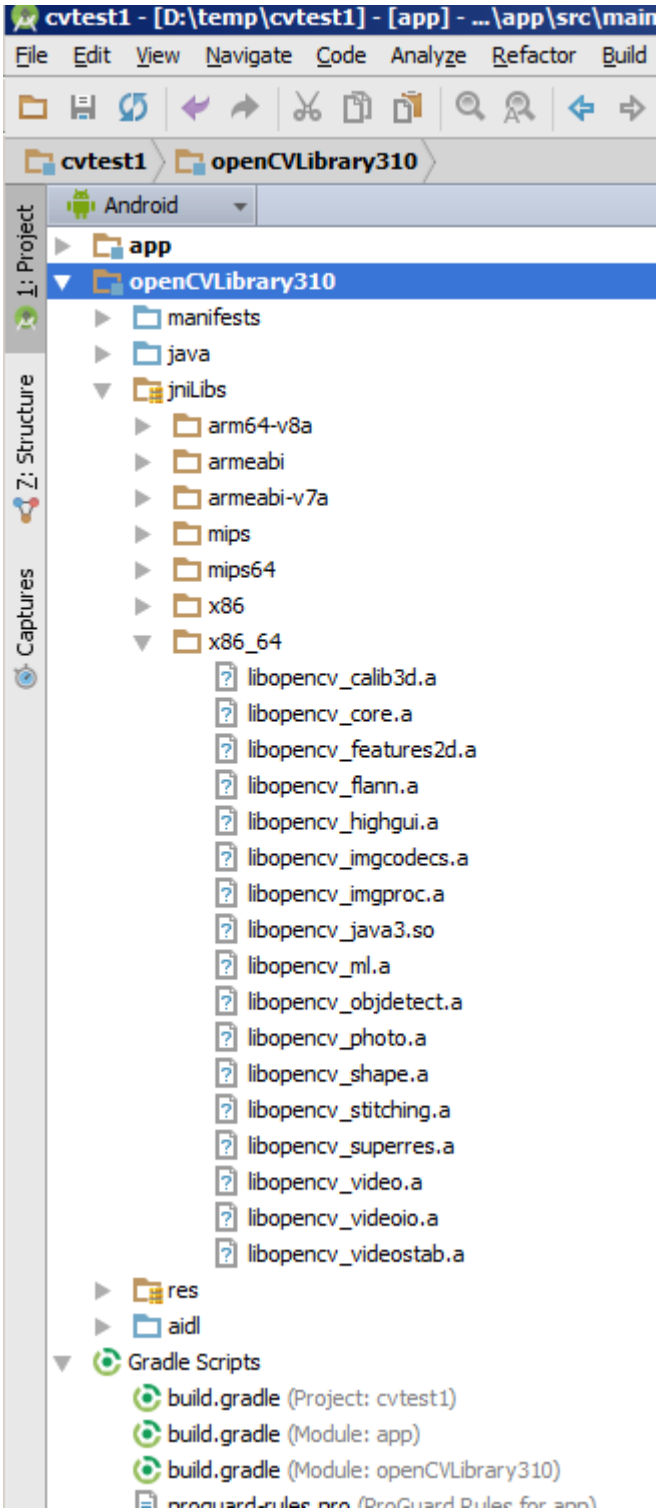


openCVLibrary310app。 **Android**。“Gradle Scripts”**build.gradle**Android Studio。Android Studio。

javaOpenCVopenCVLibrary310



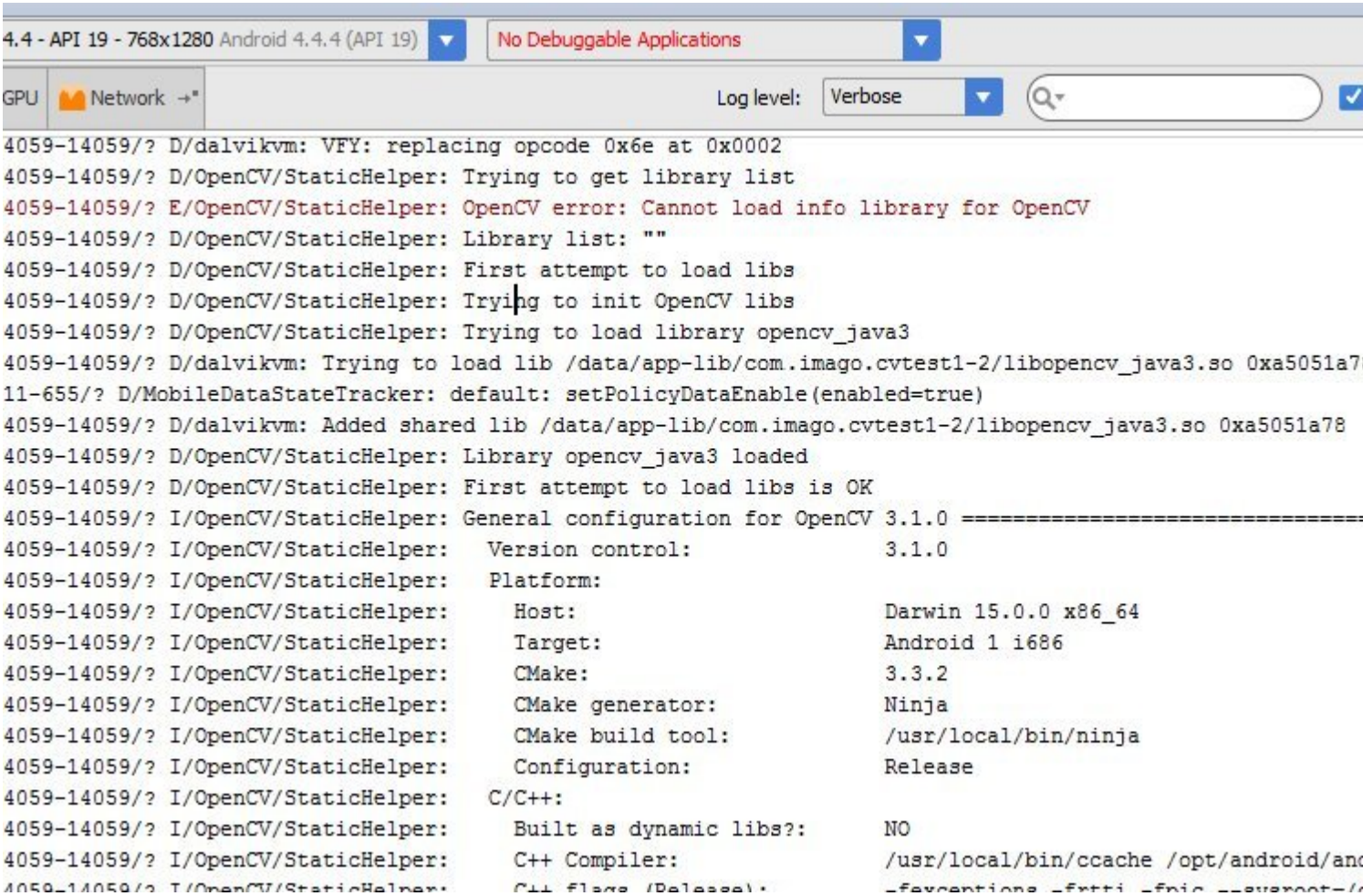
9. **{unzip-dir} / sdk / native / libs** Android **cvtest1 / OpenCVLibrary310 / src / main / libs jniLibs** 。 **cvtest1 / OpenCVLibrary310 / src / main / jniLibs**。 **openCVLibrary310**。



10. *MainActivity.java*onCreate

```
if (!OpenCVLoader.initDebug()) {
        Log.e(this.getClass().getSimpleName(), "  OpenCVLoader.initDebug(), not working.");
    } else {
        Log.d(this.getClass().getSimpleName(), "  OpenCVLoader.initDebug(), working.");
    }
```

Android Monitor



11. openCV。.jpgandroidcvtest1。canny.png。

```
Put this code just below the code from the previous step and alter it to match your own
files/directories.

    String inputFileName="simm_01";
    String inputExtension = "jpg";
    String inputDir = getCacheDir().getAbsolutePath();  // use the cache directory for i/o
    String outputDir = getCacheDir().getAbsolutePath();
    String outputExtension = "png";
    String inputFilePath = inputDir + File.separator + inputFileName + "." + inputExtension;


    Log.d (this.getClass().getSimpleName(), "loading " + inputFilePath + "...");
    Mat image = Imgcodecs.imread(inputFilePath);
    Log.d (this.getClass().getSimpleName(), "width of " + inputFileName + ": " +
image.width());
    // if width is 0 then it did not read your image.


    // for the canny edge detection algorithm, play with these to see different results
    int threshold1 = 70;
    int threshold2 = 100;

    Mat im_canny = new Mat();  // you have to initialize output image before giving it to the
Canny method
    Imgproc.Canny(image, im_canny, threshold1, threshold2);
    String cannyFilename = outputDir + File.separator + inputFileName + "_canny-" + threshold1
+ "-" + threshold2 + "." + outputExtension;
```

```
    Log.d (this.getClass().getSimpleName(), "Writing " + cannyFilename);
    Imgcodecs.imwrite(cannyFilename, im_canny);
```

12. “”。 Android。

OpenCVAndroid Studio https://riptutorial.com/zh-CN/android/topic/7068/opencvandroid-studio

173: Maven

Examples

.aarMaven

Mavengradle“maven-publish”。

build.gradle。

```
apply plugin: 'maven-publish'
```

build.gradle。 pom。 .aar。

```
publishing {
    publications {
        myPulication(MavenPublication) {
            groupId 'com.example.project'
            version '1.0.2'
            artifactId 'myProject'
            artifact("$buildDir/outputs/aar/myProject.aar")
        }
    }
}
```

URL

```
publishing{
    repositories {
        maven {
            url "http://www.myrepository.com"
        }
    }
}
```

build.gradle

```
apply plugin: 'com.android.library'
apply plugin: 'maven-publish'

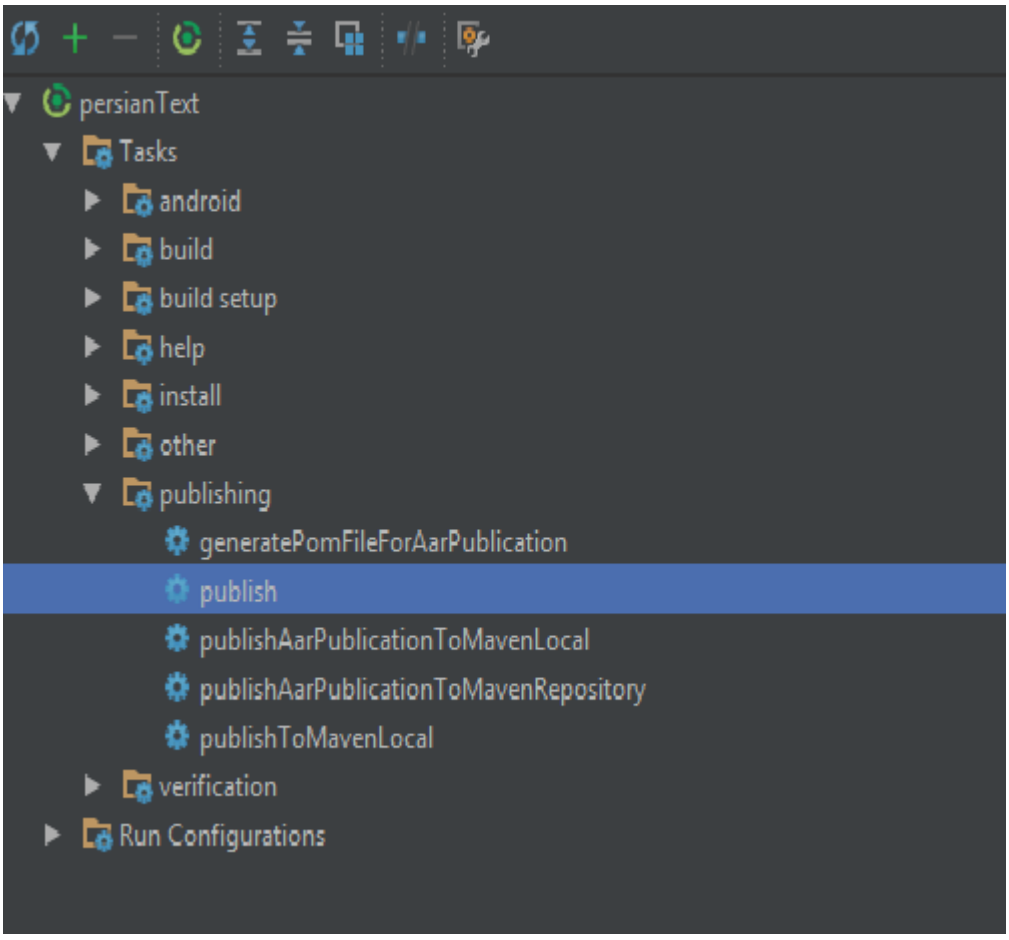
buildscript {
   ...
}
android {
    ...
}
publishing {
    publications {
        myPulication(MavenPublication) {
            groupId 'com.example.project'
            version '1.0.2'
            artifactId 'myProject'
```

```
            artifact("$buildDir/outputs/aar/myProject.aar")
        }
    }
    repositories {
        maven {
            url "http://www.myrepository.com"
        }
    }
}
```

gradle console

gradle

gradle



Maven https://riptutorial.com/zh-CN/android/topic/9359/maven

174: Android

Examples

```
String myStr = convert("Lê Minh Thoại là người Việt Nam");
```

```
"Le Minh Thoai la nguoi Viet Nam"
```

ChuyểnchuỗiTiếngViệtthànhchuỗikhôngdấu

```
  public static String convert(String str) {
    str = str.replaceAll("à|á|ạ|ả|ã|â|ầ|ấ|ậ|ẩ|ẫ|ă|ằ|ắ|ặ|ẳ|ẵ", "a");
    str = str.replaceAll("è|é|ẹ|ẻ|ẽ|ê|ề|ế|ệ|ể|ễ", "e");
    str = str.replaceAll("ì|í|ị|ỉ|ĩ", "i");
    str = str.replaceAll("ò|ó|ọ|ỏ|õ|ô|ồ|ố|ộ|ổ|ỗ|ơ|ờ|ớ|ợ|ở|ỡ", "o");
    str = str.replaceAll("ù|ú|ụ|ủ|ũ|ư|ừ|ứ|ự|ử|ữ", "u");
    str = str.replaceAll("ỳ|ý|ỵ|ỷ|ỹ", "y");
    str = str.replaceAll("đ", "d");

    str = str.replaceAll("À|Á|Ạ|Ả|Ã|Â|Ầ|Ấ|Ậ|Ẩ|Ẫ|Ă|Ằ|Ắ|Ặ|Ẳ|Ẵ", "A");
    str = str.replaceAll("È|É|Ẹ|Ẻ|Ẽ|Ê|Ề|Ế|Ệ|Ể|Ễ", "E");
    str = str.replaceAll("Ì|Í|Ị|Ỉ|Ĩ", "I");
    str = str.replaceAll("Ò|Ó|Ọ|Ỏ|Õ|Ô|Ồ|Ố|Ộ|Ổ|Ỗ|Ơ|Ờ|Ớ|Ợ|Ở|Ỡ", "O");
    str = str.replaceAll("Ù|Ú|Ụ|Ủ|Ũ|Ư|Ừ|Ứ|Ự|Ử|Ữ", "U");
    str = str.replaceAll("Ỳ|Ý|Ỵ|Ỷ|Ỹ", "Y");
    str = str.replaceAll("Đ", "D");
    return str;
}
```

Android https://riptutorial.com/zh-CN/android/topic/10946/android

175:

- Snackbar makeCharSequenceint
- Snackbar makeView viewint resIdint duration

	◦
	CharSequence◦ ◦
	intID◦ ◦
	int◦ LENGTH_SHORTLENGTH_LONGLENGTH_INDEFINITE

Snackbar◦ ◦ Snackbars◦

◦ Snackbar◦

SnackBarbuild.gradlebuild.gradle

```
dependencies {
    compile 'com.android.support:design:25.3.1'
}
```

https://developer.android.com/reference/android/support/design/widget/Snackbar.html

Examples

Snackbar

Snackbar

```
Snackbar.make(view, "Text to display", Snackbar.LENGTH_LONG).show();
```

viewSnackbar◦ XMLCoordinatorLayout FloatingActionButton ◦ CoordinatorLayout◦

Snackbar◦ “”◦

```
Snackbar.make(view, "Text to display", Snackbar.LENGTH_LONG)
        .setAction("UNDO", new View.OnClickListener() {
            @Override
               public void onClick(View view) {
                   // put your logic here

               }
         })
        .show();
```

Snackbar

```
Snackbar snackbar = Snackbar.make(view, "Text to display", Snackbar.LENGTH_LONG);
snackbar.show();
```

Snackbar

```
Snackbar snackbar = Snackbar.make(view, "Text to display", Snackbar.LENGTH_LONG);
View view = snackbar .getView();
TextView textView = (TextView) view.findViewById(android.support.design.R.id.snackbar_text);
textView.setTextColor(Color.parseColor("#FF4500"));
snackbar.show();
```

Snackbar。 snackBar 。

```
public static Snackbar makeText(Context context, String message, int duration) {
        Activity activity = (Activity) context;
        View layout;
        Snackbar snackbar = Snackbar
                .make(activity.findViewById(android.R.id.content), message, duration);
        layout = snackbar.getView();
        //setting background color
        layout.setBackgroundColor(context.getResources().getColor(R.color.orange));
        android.widget.TextView text = (android.widget.TextView)
layout.findViewById(android.support.design.R.id.snackbar_text);
        //setting font color
        text.setTextColor(context.getResources().getColor(R.color.white));
        Typeface font = null;
        //Setting font
        font = Typeface.createFromAsset(context.getAssets(), "DroidSansFallbackanmol256.ttf");
        text.setTypeface(font);
        return snackbar;

    }
```

```
 SnackBar.makeText(MyActivity.this, "Please Locate your address at Map",
Snackbar.LENGTH_SHORT).show();
```

Snackbar

Snackbar.Callback。

```
Snackbar.make(getView(), "Hi snackbar!", Snackbar.LENGTH_LONG).setCallback( new
Snackbar.Callback() {
                @Override
                public void onDismissed(Snackbar snackbar, int event) {
                    switch(event) {
                        case Snackbar.Callback.DISMISS_EVENT_ACTION:
                            Toast.makeText(getActivity(), "Clicked the action",
Toast.LENGTH_LONG).show();
                            break;
                        case Snackbar.Callback.DISMISS_EVENT_TIMEOUT:
                            Toast.makeText(getActivity(), "Time out",
Toast.LENGTH_LONG).show();
                            break;
```

```
                    }
                }

                @Override
                public void onShown(Snackbar snackbar) {
                    Toast.makeText(getActivity(), "This is my annoying step-brother",
Toast.LENGTH_LONG).show();
                }
            }).setAction("Go!", new View.OnClickListener() {
                @Override
                public void onClick(View v) {

                }
            }).show();
```

Snackbar。

```
Snackbar customBar = Snackbar.make(view , "Text to be displayed", Snackbar.LENGTH_LONG);
customBar.setAction("UNDO", new View.OnClickListener() {
    @Override
    public void onClick(View view) {
    //Put the logic for undo button here

    }
});

View sbView = customBar.getView();
//Changing background to White
sbView.setBackgroundColor(Color.WHITE));

TextView snackText = (TextView)
sbView.findViewById(android.support.design.R.id.snackbar_text);
if (snackText!=null) {
    //Changing text color to Black
   snackText.setTextColor(Color.BLACK);
}

TextView actionText = (TextView)
sbView.findViewById(android.support.design.R.id.snackbar_action);
if (actionText!=null) {
    // Setting custom Undo icon
    actionText.setCompoundDrawablesRelativeWithIntrinsicBounds(R.drawable.custom_undo, 0, 0,
0);
}
customBar.show();
```

Snackbar vs Toasts

Toasts。

```
Toast.makeText(this, "Message Sent!", Toast.LENGTH_SHORT).show();
```

Snackbars。 。 。 Snackbar“”。

```
Snackbar.make(getCurrentFocus(), "Picture Deleted", Snackbar.LENGTH_SHORT)
        .setAction("Undo", new View.OnClickListener() {
```

```
            @Override
            public void onClick(View view) {
                //Return his picture
            }
        })
        .show();
```

Toasts。 Snackbars。

SnackbarSnackbarandroid.R.id.contentandroid。

```
public class CustomSnackBar {

    public static final int STATE_ERROR = 0;
    public static final int STATE_WARNING = 1;
    public static final int STATE_SUCCESS = 2;
    public static final int VIEW_PARENT = android.R.id.content;

    public CustomSnackBar(View view, String message, int actionType) {
        super();

        Snackbar snackbar = Snackbar.make(view, message, Snackbar.LENGTH_LONG);
        View sbView = snackbar.getView();
        TextView textView = (TextView)
sbView.findViewById(android.support.design.R.id.snackbar_text);
        textView.setTextColor(Color.parseColor("#ffffff"));
        textView.setTextSize(TypedValue.COMPLEX_UNIT_SP, 14);
        textView.setGravity(View.TEXT_ALIGNMENT_CENTER);
        textView.setLayoutDirection(View.LAYOUT_DIRECTION_RTL);

        switch (actionType) {
            case STATE_ERROR:
                snackbar.getView().setBackgroundColor(Color.parseColor("#F12B2B"));
                break;
            case STATE_WARNING:
                snackbar.getView().setBackgroundColor(Color.parseColor("#000000"));
                break;
            case STATE_SUCCESS:
                snackbar.getView().setBackgroundColor(Color.parseColor("#7ED321"));
                break;
        }
        snackbar.show();
    }
}
```

new CustomSnackBarfindViewByIdCustomSnackBar.VIEW_PARENT“message” CustomSnackBar.STATE_ERROR;

https://riptutorial.com/zh-CN/android/topic/1500/

176:

SDV

Examples

-

`AndroidManifest.xml`AppWidgetProvider。

```
<receiver android:name="ExampleAppWidgetProvider" >
<intent-filter>
    <action android:name="android.appwidget.action.APPWIDGET_UPDATE" />
</intent-filter>
<meta-data android:name="android.appwidget.provider"
           android:resource="@xml/example_appwidget_info" />
</receiver>
```

`res/xml`AppWidgetProviderInfo

```
<appwidget-provider xmlns:android="http://schemas.android.com/apk/res/android"
    android:minWidth="40dp"
    android:minHeight="40dp"
    android:updatePeriodMillis="86400000"
    android:previewImage="@drawable/preview"
    android:initialLayout="@layout/example_appwidget"
    android:configure="com.example.android.ExampleAppWidgetConfigure"
    android:resizeMode="horizontal|vertical"
    android:widgetCategory="home_screen">
</appwidget-provider>
```

AppWidgetProvider

`AppWidgetProvider`**`onUpdate()`** 。 appwidget。

```
public class ExampleAppWidgetProvider extends AppWidgetProvider {

    public void onUpdate(Context context, AppWidgetManager appWidgetManager, int[]
appWidgetIds) {
        final int N = appWidgetIds.length;

        // Perform this loop procedure for each App Widget that belongs to this provider
        for (int i=0; i<N; i++) {
            int appWidgetId = appWidgetIds[i];

            // Create an Intent to launch ExampleActivity
            Intent intent = new Intent(context, ExampleActivity.class);
            PendingIntent pendingIntent = PendingIntent.getActivity(context, 0, intent, 0);

            // Get the layout for the App Widget and attach an on-click listener
            // to the button
            RemoteViews views = new RemoteViews(context.getPackageName(),
```

```
R.layout.appwidget_provider_layout);
            views.setOnClickPendingIntent(R.id.button, pendingIntent);

            // Tell the AppWidgetManager to perform an update on the current app widget
            appWidgetManager.updateAppWidget(appWidgetId, views);
        }
    }
}
```

onAppWidgetOptionsChanged() ◦

onDeleted(Context, int[]) ◦

1.

```
<receiver
    android:name=".UVMateWidget"
    android:label="UVMate Widget 1x1">
    <intent-filter>
        <action android:name="android.appwidget.action.APPWIDGET_UPDATE" />
    </intent-filter>

    <meta-data
        android:name="android.appwidget.provider"
        android:resource="@xml/widget_1x1" />
</receiver>
<receiver
    android:name=".UVMateWidget2x2"
    android:label="UVMate Widget 2x2">
    <intent-filter>
        <action android:name="android.appwidget.action.APPWIDGET_UPDATE" />
    </intent-filter>

    <meta-data
        android:name="android.appwidget.provider"
        android:resource="@xml/widget_2x2" />
</receiver>
```

2. - `@xml/widget_1x1`
   - `@xml/widget_2x2`
3. `UVMateWidgetUVMateWidget2x2`

```
package au.com.aershov.uvmate;

import android.content.Context;
import android.widget.RemoteViews;

public class UVMateWidget2x2 extends UVMateWidget {

    public RemoteViews getRemoteViews(Context context, int minWidth,
                                      int minHeight) {

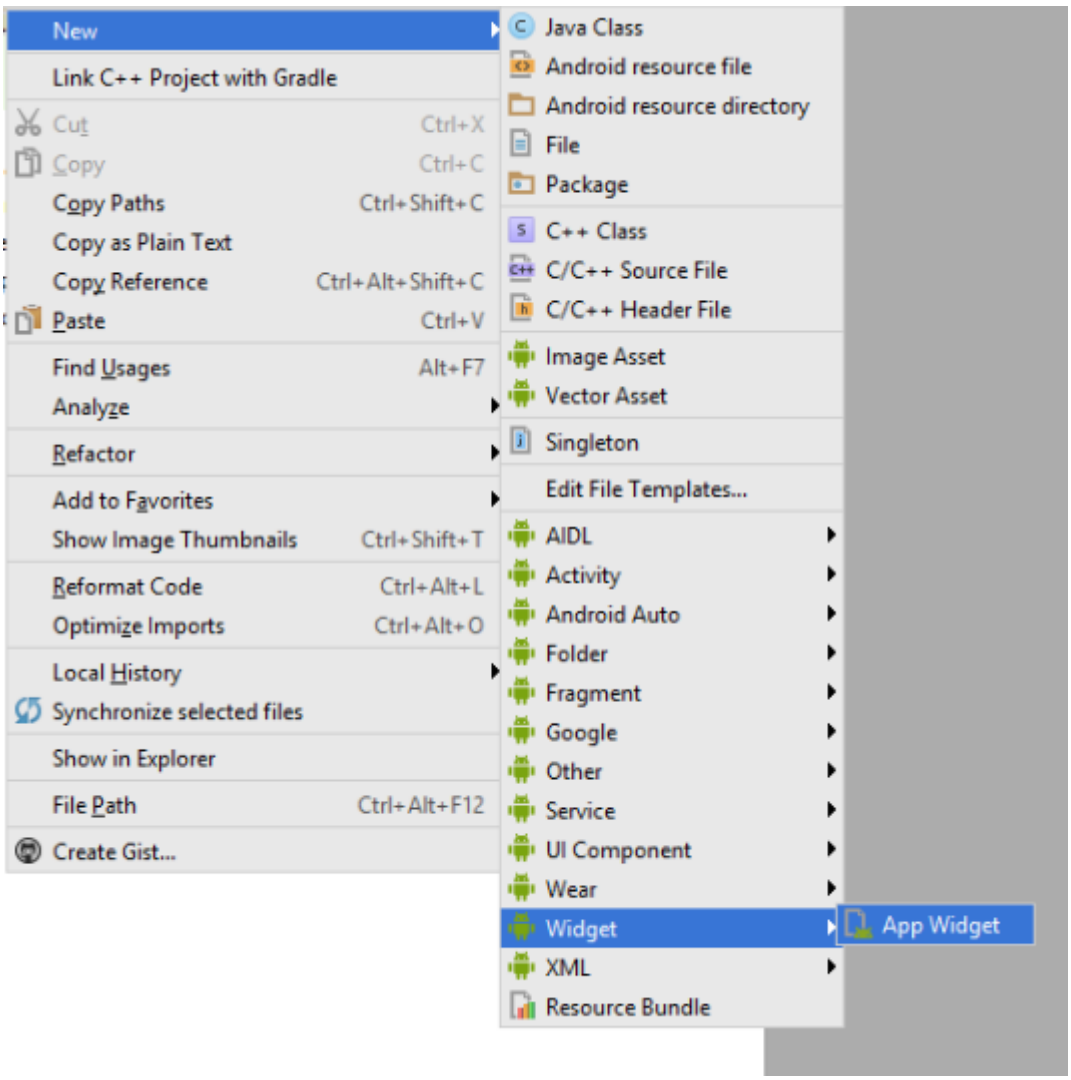
        mUVMateHelper.saveWidgetSize(mContext.getString(R.string.app_ws_2x2));
        return new RemoteViews(context.getPackageName(), R.layout.widget_2x2);
    }
}
```

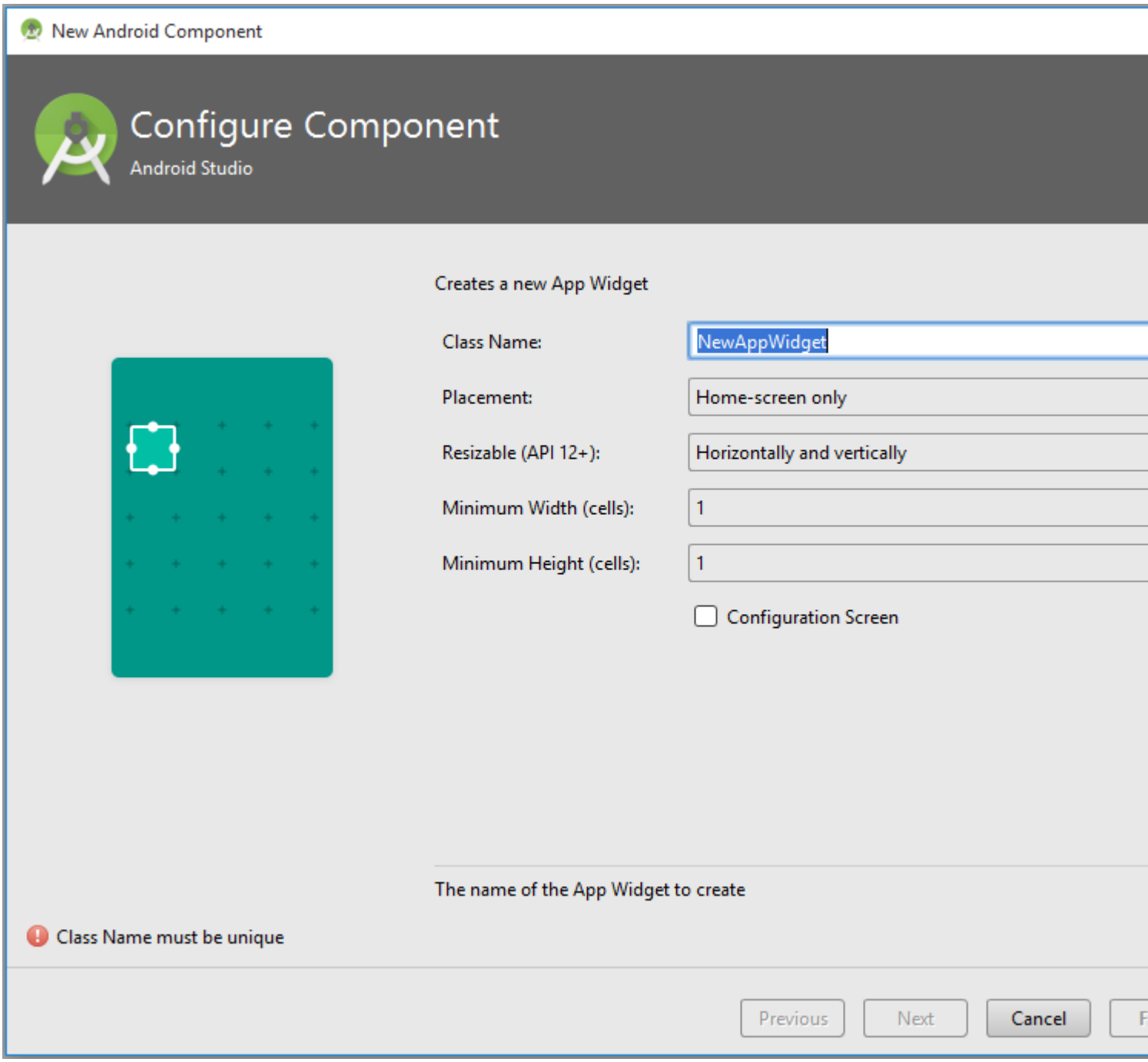
Android Studio/Basic Widget

Android StudioBasic Widget。

==>==>==>

。





。

HelloWorld 。

https://riptutorial.com/zh-CN/android/topic/2812/

177:

LooperAndroid。

AndroidLooper。 Looper.getMainLooper()。

LooperLooper.myLooper()。

Examples

LooperThread

LooperLooper.prepare()Looper.loop() Handler。

```
class LooperThread extends Thread {
    public Handler mHandler;

    public void run() {
        Looper.prepare();

        mHandler = new Handler() {
            public void handleMessage(Message msg) {
                // process incoming messages here
            }
        };

        Looper.loop();
    }
}
```

HandlerThread

HandlerThreadLooper。 Handler 。

```
HandlerThread thread = new HandlerThread("thread-name");
thread.start();
Handler handler = new Handler(thread.getLooper());
```

https://riptutorial.com/zh-CN/android/topic/10593/

178:

wikigithub 。

Examples

- Crashlytics

Fabric。 **Crashlytics**Fabric。

Fabric-Crashlytics

1`build.gradle`

gradle

```
 buildscript {
  repositories {
    maven { url 'https://maven.fabric.io/public' }
  }

  dependencies {
    // The Fabric Gradle plugin uses an open ended version to react
    // quickly to Android tooling updates
    classpath 'io.fabric.tools:gradle:1.+'
  }
}
```

```
apply plugin: 'com.android.application'
//Put Fabric plugin after Android plugin
apply plugin: 'io.fabric'
```

Fabric repo

```
repositories {
  maven { url 'https://maven.fabric.io/public' }
}
```

Crashlyrics

```
dependencies {

  compile('com.crashlytics.sdk.android:crashlytics:2.6.6@aar') {
    transitive = true;
  }
}
```

2`AndroidManifest.xml`**APIINTERNET**

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android">
  <application
     ... >

      <meta-data
          android:name="io.fabric.ApiKey"
          android:value="25eeca3bb31cd41577e097cabd1ab9eee9da151d"
          />

  </application>

  <uses-permission android:name="android.permission.INTERNET" />
</manifest>
```

3Kit

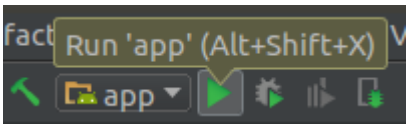
```
public class MainActivity extends ActionBarActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);

      //Init the KIT
      Fabric.with(this, new Crashlytics());

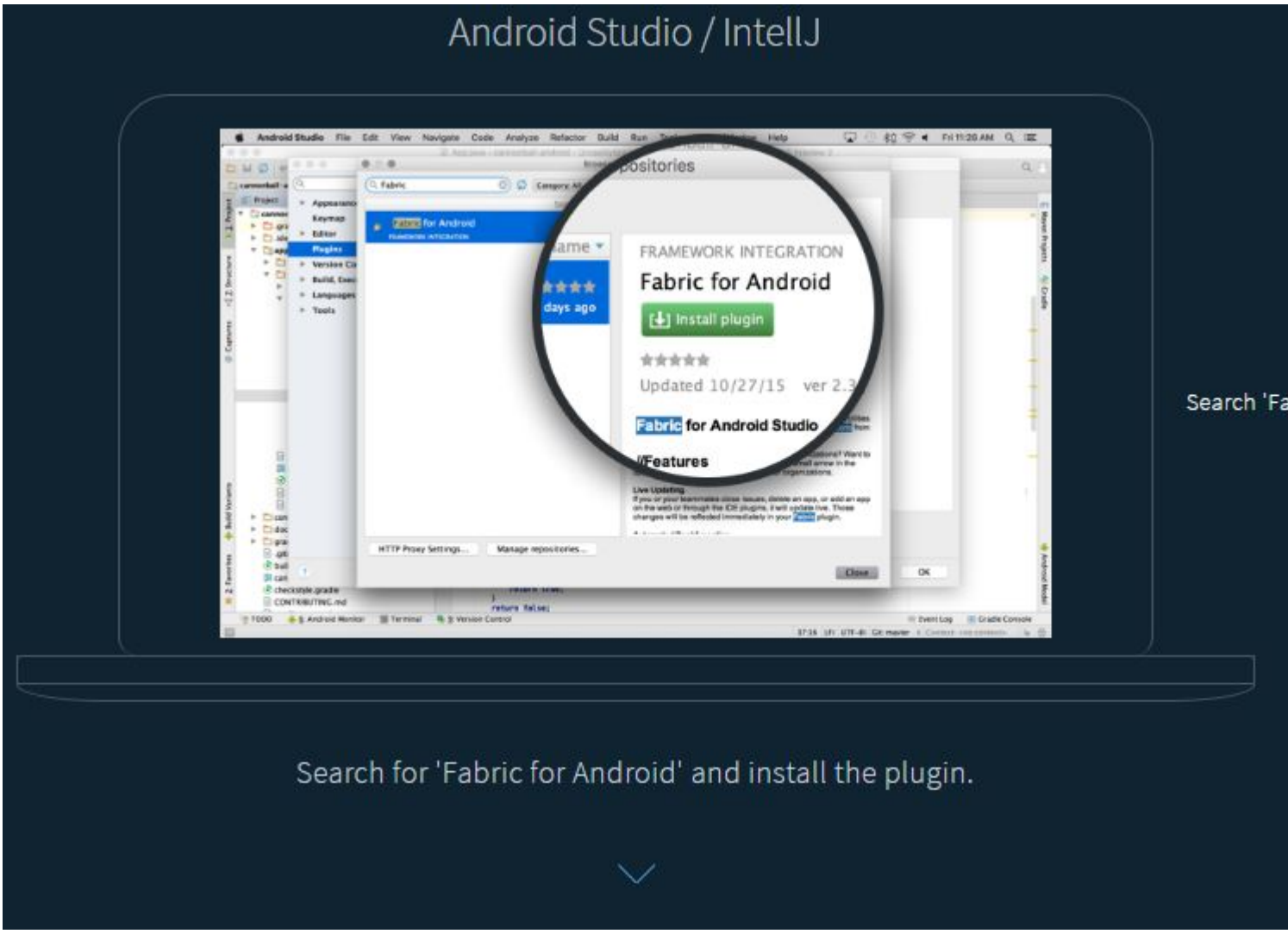
      setContentView(R.layout.activity_main);
    }
}
```

4。



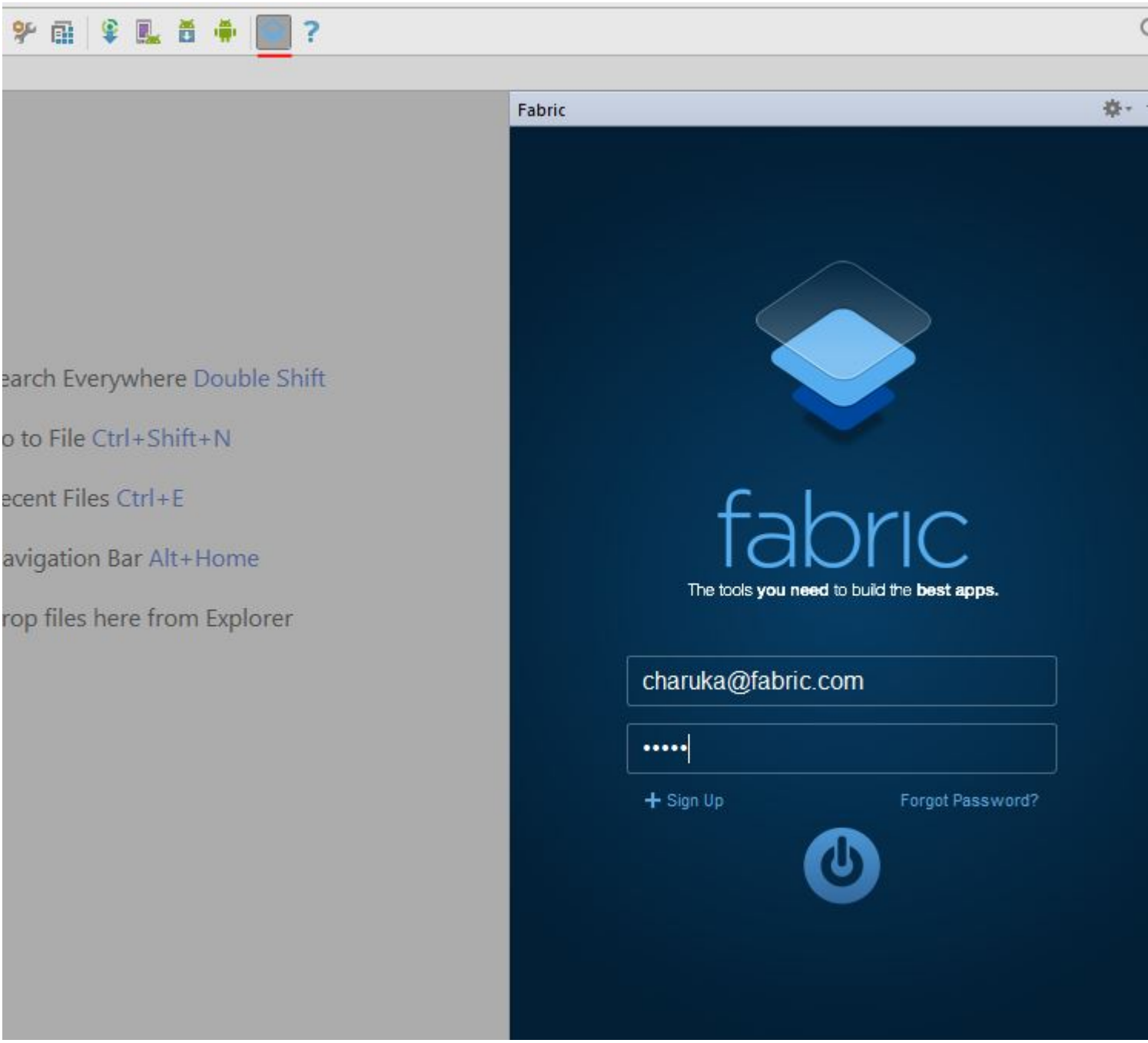
Fabric IDE

Android StudioIntelliJFabric IDE。



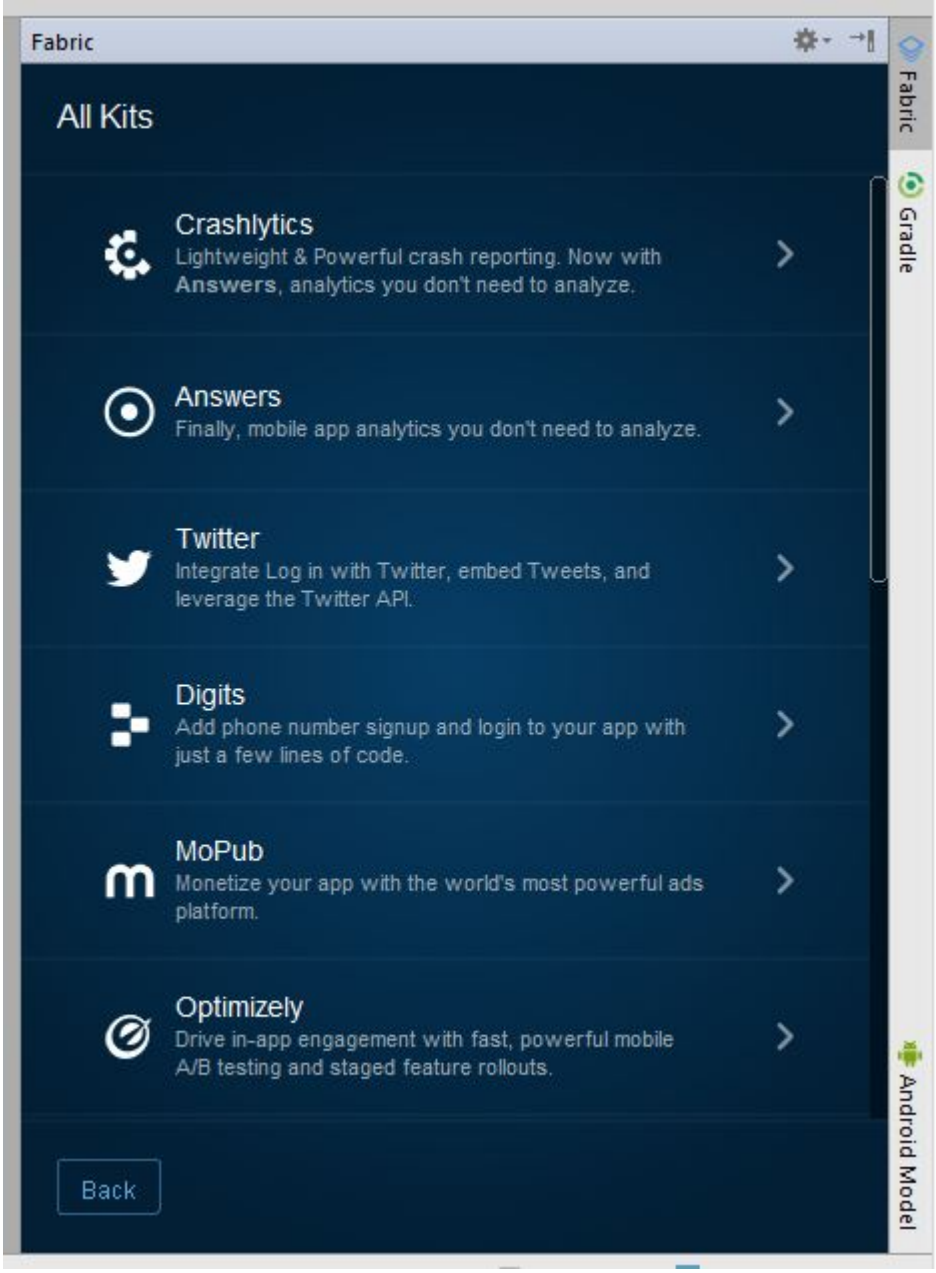
Android Studio**Android Studio** 。

> CTRL + L

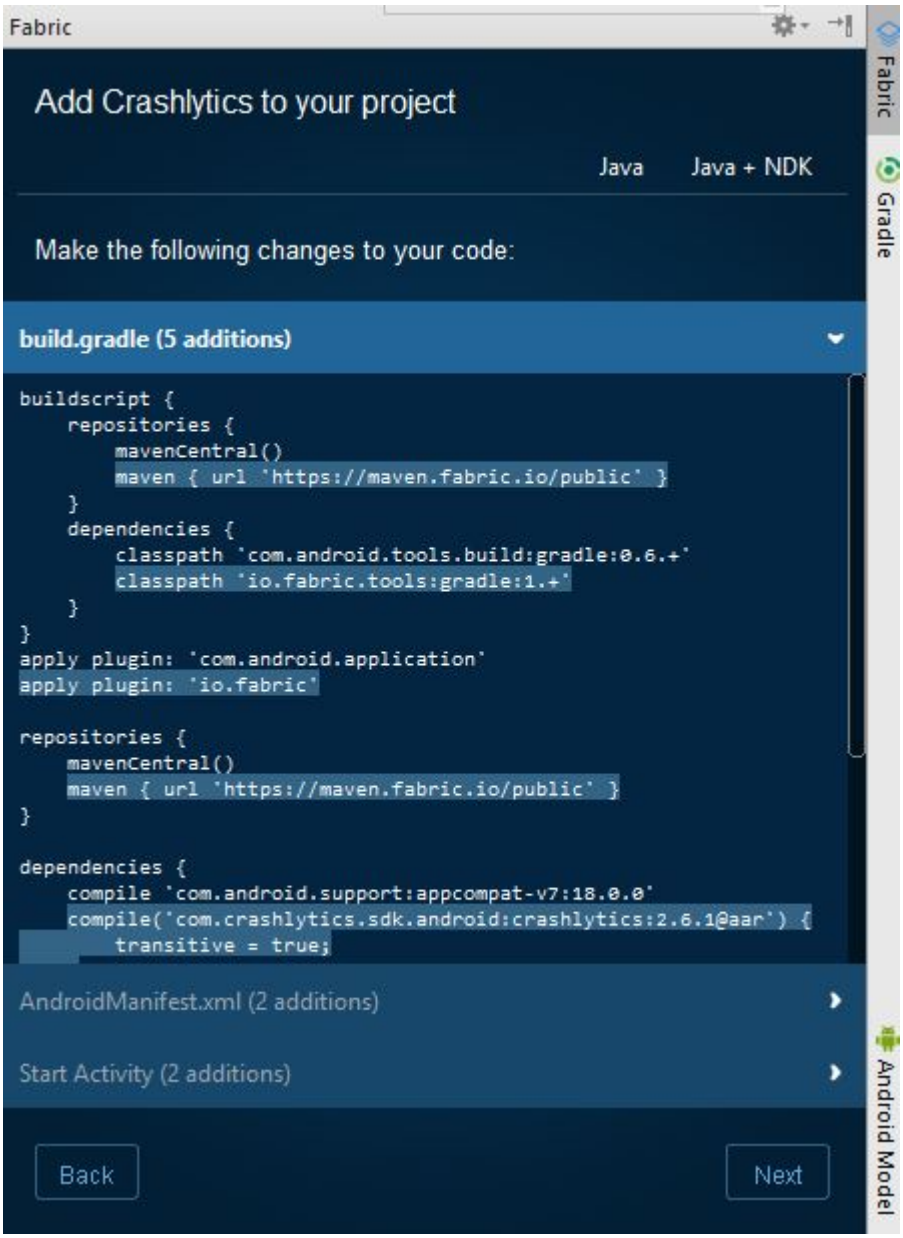


/..◦

Crashlytics



`Install ◦` **gradle**◦



ACRA

1ACRA AARgradlebuild.gradle。

2Application;`@ReportsCrashesattachBaseContext()`。

3ACRA

```
@ReportsCrashes(
    formUri = "Your choice of backend",
    reportType = REPORT_TYPES(JSON/FORM),
    httpMethod = HTTP_METHOD(POST/PUT),
    formUriBasicAuthLogin = "AUTH_USERNAME",
    formUriBasicAuthPassword = "AUTH_PASSWORD,
    customReportContent = {
            ReportField.USER_APP_START_DATE,
            ReportField.USER_CRASH_DATE,
            ReportField.APP_VERSION_CODE,
            ReportField.APP_VERSION_NAME,
            ReportField.ANDROID_VERSION,
```

```
            ReportField.DEVICE_ID,
            ReportField.BUILD,
            ReportField.BRAND,
            ReportField.DEVICE_FEATURES,
            ReportField.PACKAGE_NAME,
            ReportField.REPORT_ID,
            ReportField.STACK_TRACE,
    },
    mode = NOTIFICATION_TYPE(TOAST,DIALOG,NOTIFICATION)
    resToastText = R.string.crash_text_toast)

    public class MyApplication extends Application {
     @Override
            protected void attachBaseContext(Context base) {
                super.attachBaseContext(base);
                // Initialization of ACRA
                ACRA.init(this);
            }
    }
```

AUTH_USERNAMEAUTH_PASSWORD。

4AndroidManifest.xmlApplication

```
 <application
        android:name=".MyApplication">
        <service></service>
        <activity></activity>
        <receiver></receiver>
 </application>
```

5internet

```
<uses-permission android:name="android.permission.INTERNET"/>
```

。

```
ACRA.getErrorReporter().handleSilentException(e);
```

。 。

```
<Button
    android:layout_height="wrap_content"
    android:layout_width="wrap_content"
    android:text="Force Crash!"
    android:onClick="forceCrash"
    android:layout_centerVertical="true"
    android:layout_centerHorizontal="true" />
```

RuntimeException

```
public void forceCrash(View view) {
    throw new RuntimeException("This is a crash");
}
```

◦ Crashlytics◦

Sherlock

Sherlock◦

Sherlock

Sherlockgradle◦

```
dependencies {
    compile('com.github.ajitsing:sherlock:1.0.1@aar') {
        transitive = true
    }
}
```

android studioApplicationSherlock◦

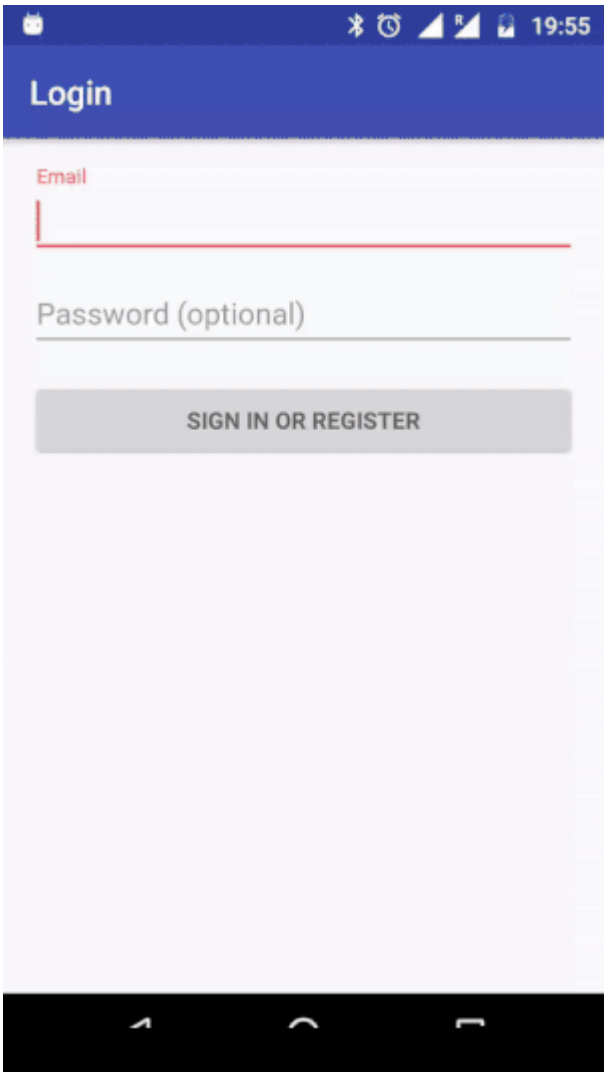
```
package com.singhajit.login;

import android.app.Application;

import com.singhajit.sherlock.core.Sherlock;

public class SampleApp extends Application {
  @Override
  public void onCreate() {
    super.onCreate();
    Sherlock.init(this);
  }
}
```

◦ Sherlock◦ ◦



https://riptutorial.com/zh-CN/android/topic/3871/

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AndroidXMLXML。

URI

`http://schemas.android.com/toolstools:`。

Examples

Android Studio。

Android`tools:` namespace`android:` namespace。 `android:` namespace`tools:` attribute。

。

`text`

```
<EditText
      tools:text="My Text"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content" />
```

`visibility`

```
<LinearLayout
        android:id="@+id/ll1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        tools:visibility="gone" />
```

`context`

```
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    tools:context=".MainActivity" >
```

`showIn`

```
<EditText xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="@string/text"
    tools:showIn="@layout/activity_main" />
```

https://riptutorial.com/zh-CN/android/topic/1676/

180:

。

XML。 XML。

- = “|||| center_vertical | fill_vertical | CENTER_HORIZONTAL | fill_horizontal ||| clip_vertical | clip_horizontal ||”
- layout_gravity = “|||| center_vertical | fill_vertical | CENTER_HORIZONTAL | fill_horizontal ||| clip_vertical | clip_horizontal ||”

LayoutParamsLayout_ Attributes

Layout Attributes

+CoordinatorLayout

layout_behavior

+FrameLayout

layout_gravity

+LinearLayout

layout_weight

+RelativeLayout

layout_above layout_below

layout_alignLeft/Top/Right/Bottom

layout_alignParentLeft/etc

layout_toLeftOf/etc

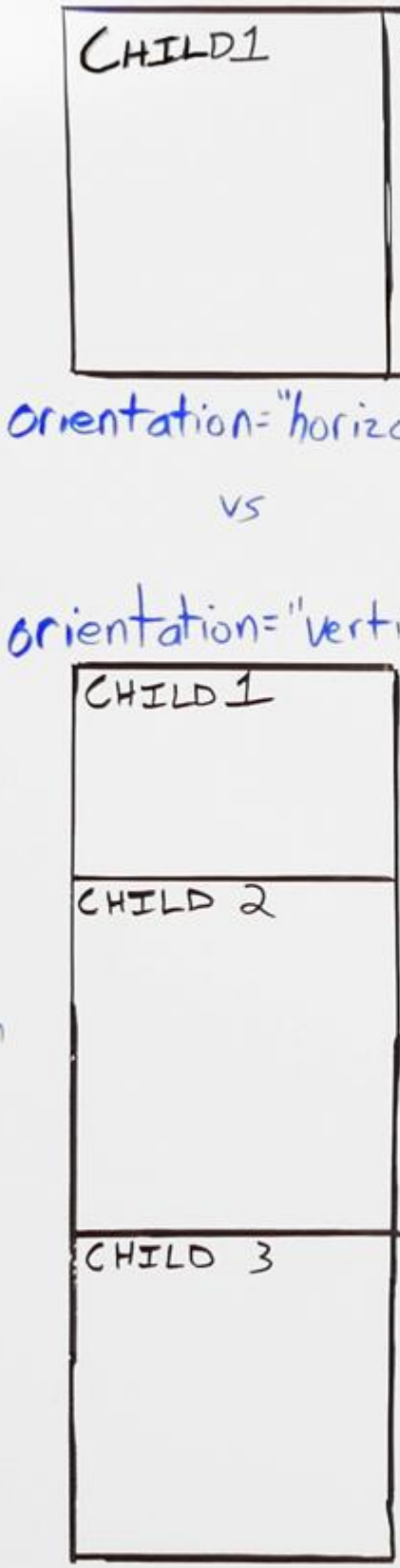
layout_alignBaseline

layout_centerInParent

+AbsoluteLayout NO

Please don't

Linear



```
    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="@string/app_name" />

    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="@android:string/cancel" />
```

LinearLayoutandroid:layout_weight。

RelativeLayout

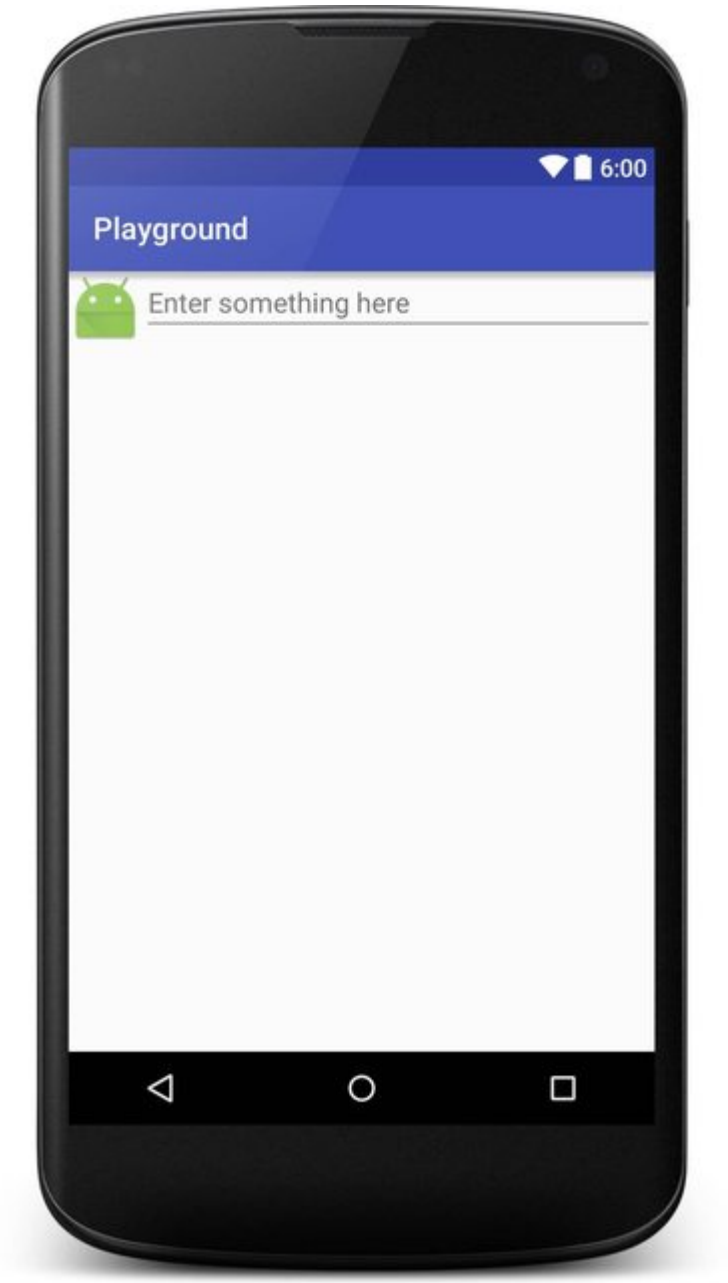
RelativeLayoutViewGroup。 RelativeLayout.LayoutParams。 RelativeLayoutID。

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent">

    <ImageView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/imageView"
        android:src="@mipmap/ic_launcher" />

    <EditText
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:id="@+id/editText"
        android:layout_toRightOf="@+id/imageView"
        android:layout_toEndOf="@+id/imageView"
        android:hint="@string/hint" />

</RelativeLayout>
```



layout_gravity

- `android:layout_gravity` LayoutView ◦
- LinearLayoutFrameLayout

- `android:gravity`TextView◦

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    android:orientation="vertical">
```

```
    <LinearLayout
        android:layout_width="wrap_content"
        android:layout_height="0dp"
        android:layout_weight="1"
        android:orientation="vertical"
        android:layout_gravity="left"
        android:gravity="center_vertical">

        <TextView
            android:layout_width="@dimen/fixed"
            android:layout_height="wrap_content"
            android:text="@string/first"
            android:background="@color/colorPrimary"
            android:gravity="left"/>

        <TextView
            android:layout_width="@dimen/fixed"
            android:layout_height="wrap_content"
            android:text="@string/second"
            android:background="@color/colorPrimary"
            android:gravity="center"/>

        <TextView
            android:layout_width="@dimen/fixed"
            android:layout_height="wrap_content"
            android:text="@string/third"
            android:background="@color/colorPrimary"
            android:gravity="right"/>

    </LinearLayout>

    <LinearLayout
        android:layout_width="wrap_content"
        android:layout_height="0dp"
        android:layout_weight="1"
        android:orientation="vertical"
        android:layout_gravity="center"
        android:gravity="center_vertical">

        <TextView
            android:layout_width="@dimen/fixed"
            android:layout_height="wrap_content"
            android:text="@string/first"
            android:background="@color/colorAccent"
            android:gravity="left"/>

        <TextView
            android:layout_width="@dimen/fixed"
            android:layout_height="wrap_content"
            android:text="@string/second"
            android:background="@color/colorAccent"
            android:gravity="center"/>

        <TextView
            android:layout_width="@dimen/fixed"
            android:layout_height="wrap_content"
            android:text="@string/third"
            android:background="@color/colorAccent"
            android:gravity="right"/>

    </LinearLayout>
```

```
    <LinearLayout
        android:layout_width="wrap_content"
        android:layout_height="0dp"
        android:layout_weight="1"
        android:orientation="vertical"
        android:layout_gravity="right"
        android:gravity="center_vertical">

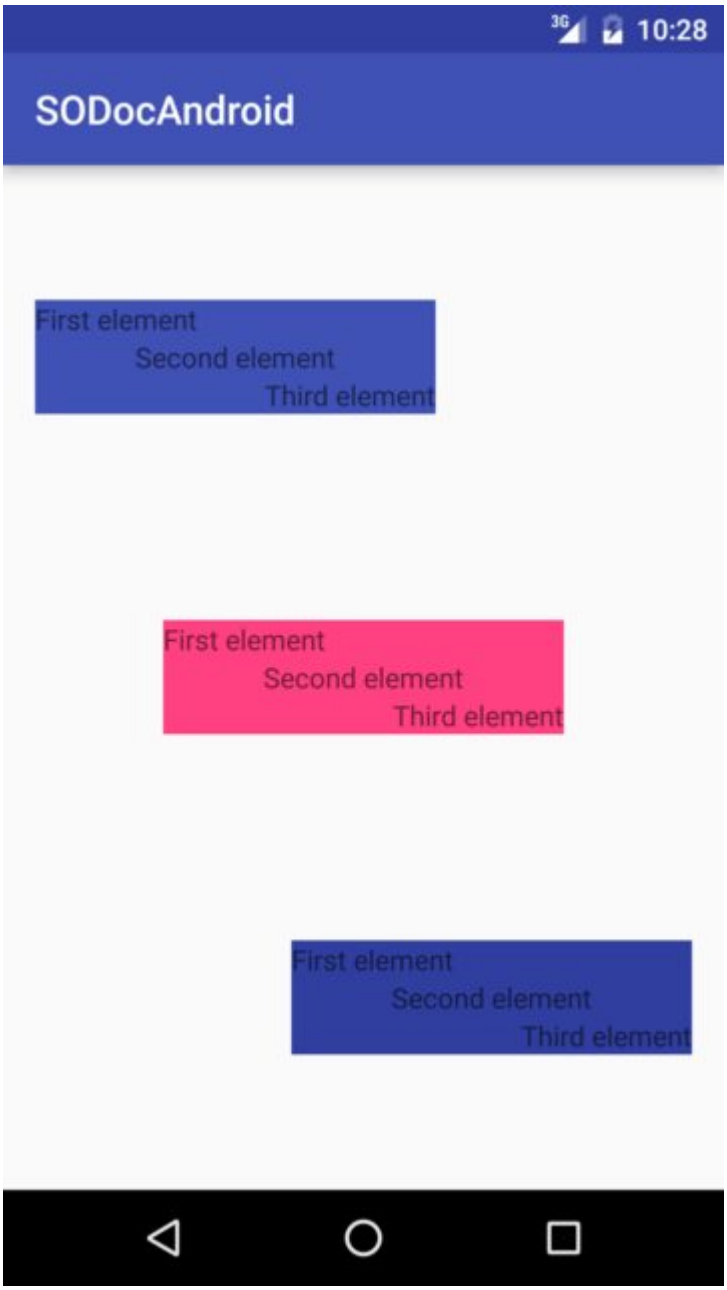
        <TextView
            android:layout_width="@dimen/fixed"
            android:layout_height="wrap_content"
            android:text="@string/first"
            android:background="@color/colorPrimaryDark"
            android:gravity="left"/>

        <TextView
            android:layout_width="@dimen/fixed"
            android:layout_height="wrap_content"
            android:text="@string/second"
            android:background="@color/colorPrimaryDark"
            android:gravity="center"/>

        <TextView
            android:layout_width="@dimen/fixed"
            android:layout_height="wrap_content"
            android:text="@string/third"
            android:background="@color/colorPrimaryDark"
            android:gravity="right"/>

    </LinearLayout>

</LinearLayout>
```



GridLayout。 GridLayout。 /`columnCountrowCount`。 。

```
<?xml version="1.0" encoding="utf-8"?>
<GridLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    android:columnCount="2"
    android:rowCount="2">

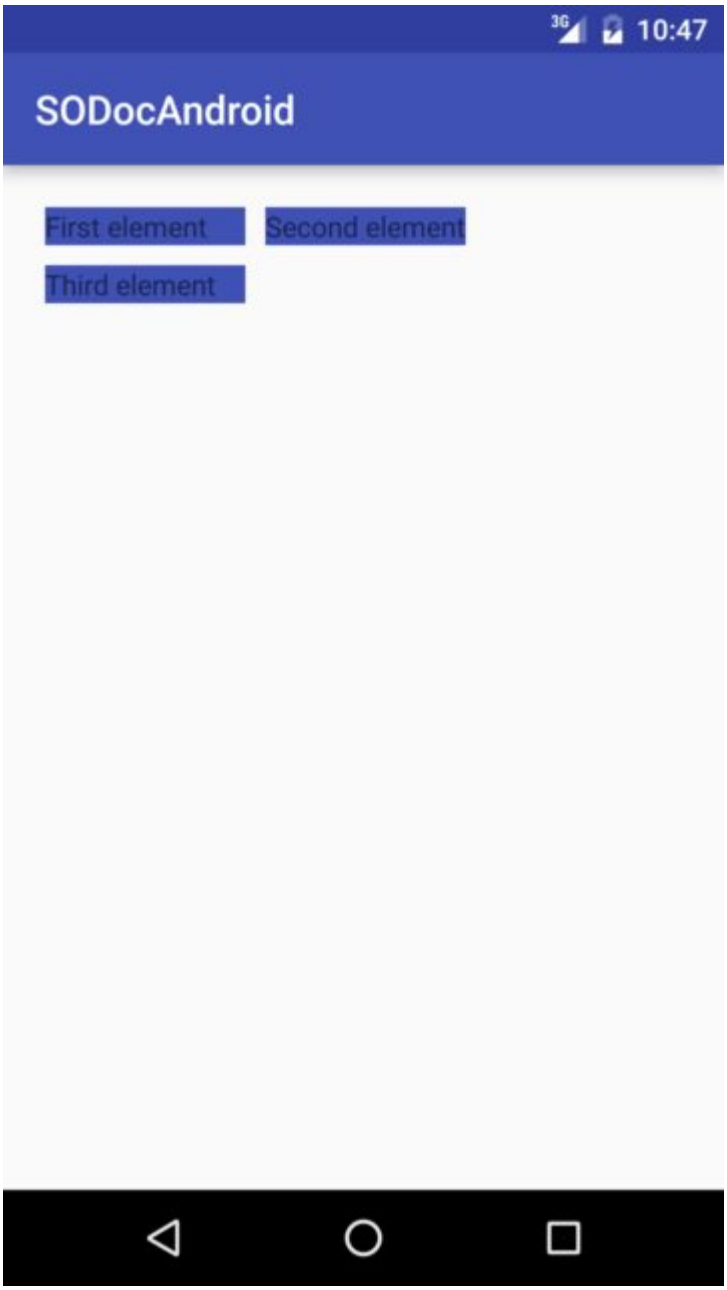
    <TextView
        android:layout_width="@dimen/fixed"
        android:layout_height="wrap_content"
        android:text="@string/first"
        android:background="@color/colorPrimary"
```

```
        android:layout_margin="@dimen/default_margin" />

    <TextView
        android:layout_width="@dimen/fixed"
        android:layout_height="wrap_content"
        android:text="@string/second"
        android:background="@color/colorPrimary"
        android:layout_margin="@dimen/default_margin" />

    <TextView
        android:layout_width="@dimen/fixed"
        android:layout_height="wrap_content"
        android:text="@string/third"
        android:background="@color/colorPrimary"
        android:layout_margin="@dimen/default_margin" />

</GridLayout>
```



2.3

PercentFrameLayoutPercentRelativeLayoutViewGroup。

。

```
compile 'com.android.support:percent:25.3.1'
```

。

```
<android.support.percent.PercentFrameLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    android:layout_width="match_parent"
    android:layout_height="match_parent">

    <FrameLayout
        app:layout_widthPercent="100%"
        app:layout_heightPercent="50%"
        android:background="@android:color/black" />

<android.support.percent.PercentFrameLayout>
```

XML

```
<fraction name="margin_start_percent">25%</fraction>
```

```
@fraction/margin_start_percent。
```

```
app:layout_aspectRatio app:layout_aspectRatio 。
```

4316911。

```
 <ImageView
    app:layout_widthPercent="100%"
    app:layout_aspectRatio="178%"
    android:scaleType="centerCrop"
    android:src="@drawable/header_background"/>
```

FrameLayout

FrameLayout。 androidlayout_gravityFrameLayoutFrameLayout。

```
FrameLayout。 ActivityFragments 。
```

```
<FrameLayout xmlns:android="http://schemas.android.com/apk/res/android"
android:layout_width="match_parent"
android:layout_height="match_parent">

    <ImageView
        android:src="@drawable/nougat"
        android:scaleType="fitCenter"
        android:layout_height="match_parent"
        android:layout_width="match_parent"/>
```

```
    <TextView
        android:text="FrameLayout Example"
        android:textSize="30sp"
        android:textStyle="bold"
        android:layout_height="match_parent"
        android:layout_width="match_parent"
        android:gravity="center"/>

</FrameLayout>
```

CoordinatorLayout

2.3

CoordinatorLayoutFrameLayoutFrameLayout ◦

CoordinatorLayout.BehaviorCoordinatorLayout.Behavior◦

gradle

```
compile 'com.android.support:design:25.3.1'
```

CoordinatorLayoutFloatingActionButton。 SwipeRefreshLayoutFloatingActionButtonRecyclerView 。

```
<?xml version="1.0" encoding="utf-8"?>
<android.support.design.widget.CoordinatorLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    android:id="@+id/coord_layout"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="horizontal">

    <android.support.v4.widget.SwipeRefreshLayout
        android:id="@+id/swipe_refresh_layout"
        android:layout_width="match_parent"
        android:layout_height="match_parent">

        <android.support.v7.widget.RecyclerView
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:id="@+id/recycler_view"/>

    </android.support.v4.widget.SwipeRefreshLayout>

    <android.support.design.widget.FloatingActionButton
        android:id="@+id/fab"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_margin="16dp"
        android:clickable="true"
        android:color="@color/colorAccent"
        android:src="@mipmap/ic_add_white"
        android:layout_gravity="end|bottom"
        app:layout_anchorGravity="bottom|right|end"/>

</android.support.design.widget.CoordinatorLayout>
```

FloatingActionButton`app:layout_anchor="@id/coord_layout"`CoordinatorLayout
`app:layout_anchor="@id/coord_layout"`

CoordinatorLayout

2.3-2.3.2

`NestedScrollViewRecyclerView`CoordinatorLayoutMaterial Design Scrolling Effects 。

- `app:layout_scrollFlags="scroll|enterAlways"`
- `app:layout_behavior="@string/appbar_scrolling_view_behavior"`ViewPager
- ViewPagerRecyclerView

Activityxml

```
<android.support.design.widget.CoordinatorLayout
    android:id="@+id/main_layout"
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
```

```
    android:layout_height="match_parent"
    tools:context=".MainActivity">

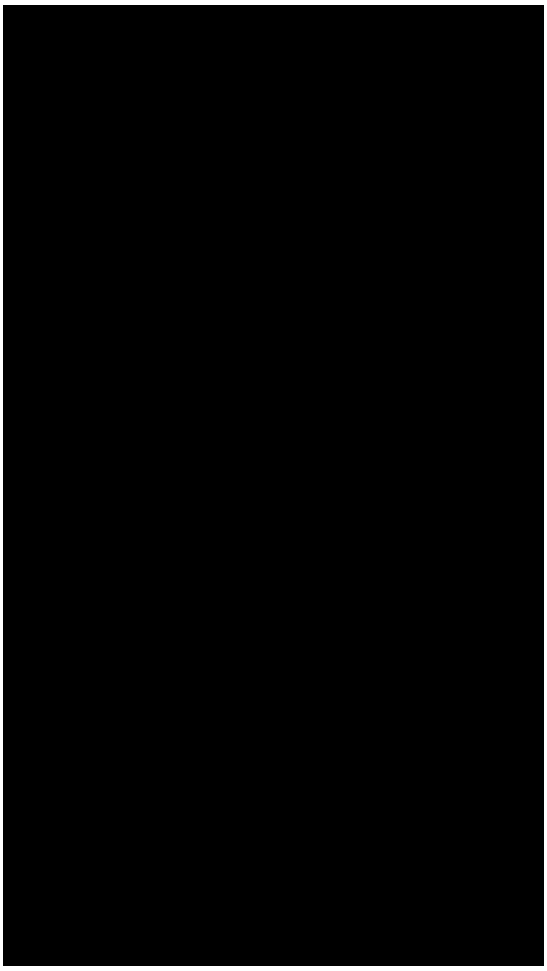

    <android.support.design.widget.AppBarLayout
        android:id="@+id/appBarLayout"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        app:elevation="6dp">
    <android.support.v7.widget.Toolbar
        android:id="@+id/toolbar"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_alignParentTop="true"
        android:background="?attr/colorPrimary"
        android:minHeight="?attr/actionBarSize"
        android:theme="@style/ThemeOverlay.AppCompat.Dark.ActionBar"
        app:popupTheme="@style/ThemeOverlay.AppCompat.Light"
        app:elevation="0dp"
        app:layout_scrollFlags="scroll|enterAlways"
        />

    <android.support.design.widget.TabLayout
        android:id="@+id/tab_layout"
        app:tabMode="fixed"
        android:layout_below="@+id/toolbar"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:background="?attr/colorPrimary"
        app:elevation="0dp"
        app:tabTextColor="#d3d3d3"
        android:minHeight="?attr/actionBarSize"
        />

    </android.support.design.widget.AppBarLayout>

    <android.support.v4.view.ViewPager
        android:id="@+id/viewpager"
        android:layout_below="@+id/tab_layout"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        app:layout_behavior="@string/appbar_scrolling_view_behavior"
        />

</android.support.design.widget.CoordinatorLayout>
```



LinearLayout。 LinearLayout。

。

- weightSum。 weightSum。
- layout_weight。

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/activity_main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="horizontal"
    android:weightSum="4">

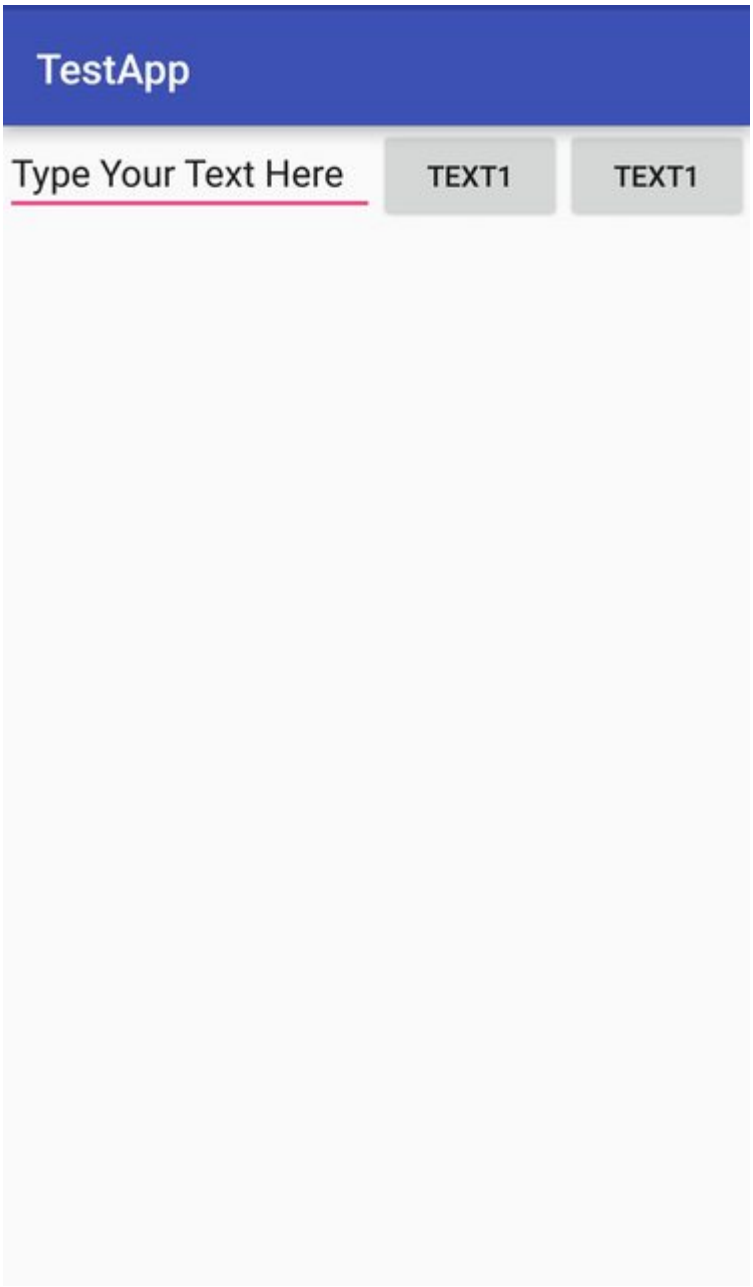
    <EditText
        android:layout_weight="2"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:text="Type Your Text Here" />

    <Button
        android:layout_weight="1"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
```

```
        android:text="Text1" />

    <Button
        android:layout_weight="1"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:text="Text1" />

</LinearLayout>
```



EditText2/4。 。

`layout_width0dp。 layout_height0dp。 。 wrap_content` /。

LinearLayout

```
- LinearLayout(horizontal)
   - ImageView
```

```
   - LinearLayout(vertical)
     - TextView
     - TextView
```

```
LinearLayout rootView = new LinearLayout(context);
rootView.setLayoutParams(new LinearLayout.LayoutParams(LayoutParams.MATCH_PARENT,
LayoutParams.WRAP_CONTENT));
rootView.setOrientation(LinearLayout.HORIZONTAL);

// for imageview
ImageView imageView = new ImageView(context);
// for horizontal linearlayout
LinearLayout linearLayout2 = new LinearLayout(context);
linearLayout2.setLayoutParams(new LinearLayout.LayoutParams(LayoutParams.MATCH_PARENT,
LayoutParams.WRAP_CONTENT));
linearLayout2.setOrientation(LinearLayout.VERTICAL);

TextView tv1 = new TextView(context);
TextView tv2 = new TextView(context);
// add 2 textview to horizontal linearlayout
linearLayout2.addView(tv1);
linearLayout2.addView(tv2);

// finally, add imageview and horizontal linearlayout to vertical linearlayout (rootView)
rootView.addView(imageView);
rootView.addView(linearLayout2);
```

LayoutParams

ViewGroup LinearLayout RelativeLayout CoordinatorLayout◦ ViewGroup◦ ViewGroup.LayoutParams◦

ViewGroupsViewGroup.LayoutParams◦

- LinearLayoutLinearLayout.LayoutParams
- RelativeLayoutRelativeLayout.LayoutParams
- CoordinatorLayoutCoordinatorLayout.LayoutParams
- ...

ViewGroupsmarginsViewGroup.LayoutParamsViewGroup.MarginLayoutParams ViewGroup.LayoutParams ◦

---

xmlLayoutParams

LayoutParamsxml◦

```
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
              android:layout_width="match_parent"
              android:layout_height="match_parent"
              android:orientation="vertical">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="50dp"
        android:layout_gravity="right"
        android:gravity="bottom"
```

```
        android:text="Example text"
        android:textColor="@android:color/holo_green_dark"/>

    <ImageView
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:layout_weight="1"
        android:background="@android:color/holo_green_dark"
        android:scaleType="centerInside"
        android:src="@drawable/example"/>

</LinearLayout>
```

layout_layout_◦ LayoutParamsLayoutViewGroupView ◦ ViewViewView◦

TextView

- layout_width layout_heightlayout_gravityLinearLayout.LayoutParamsLinearLayout
- TextViewgravity texttextColor

ImageView

- layout_width layout_heightlayout_weightLinearLayout.LayoutParamsLinearLayout
- background scaleTypesrcImageView

LayoutParams

getLayoutParamsView'sLayoutParams◦

LayoutParams ViewGroupViewViewGroupnull◦ ◦ View's◦

```
public class ExampleView extends View {

    public ExampleView(Context context) {
        super(context);
        setupView(context);
    }

    public ExampleView(Context context, AttributeSet attrs) {
        super(context, attrs);
        setupView(context);
    }

    public ExampleView(Context context, AttributeSet attrs, int defStyle) {
        super(context, attrs, defStyle);
        setupView(context);
    }

    private void setupView(Context context) {
        if (getLayoutParams().height == 50){  // DO NOT DO THIS!
                                              // This might produce NullPointerException
            doSomething();
        }
    }

    //...
```

```
}
```

LayoutParamsonAttachedToWindow◦

```
public class ExampleView extends View {

    public ExampleView(Context context) {
        super(context);
    }

    public ExampleView(Context context, AttributeSet attrs) {
        super(context, attrs);
    }

    public ExampleView(Context context, AttributeSet attrs, int defStyle) {
        super(context, attrs, defStyle);
    }

    @Override
    protected void onAttachedToWindow() {
        super.onAttachedToWindow();
        if (getLayoutParams().height == 50) { // getLayoutParams() will NOT return null here
            doSomething();
        }
    }

    //...
}
```

LayoutParams

ViewGroup RelativeLayout◦ ViewGroup.LayoutParams◦

ViewGroupViewLayoutParams◦

```
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
              android:id="@+id/outer_layout"
              android:layout_width="match_parent"
              android:layout_height="match_parent"
              android:orientation="vertical">

    <FrameLayout
        android:id="@+id/inner_layout"
        android:layout_width="match_parent"
        android:layout_height="50dp"
        android:layout_gravity="right"/>

</LinearLayout>
```

LayoutParams**ENCLOSING** ViewGroup◦

```
FrameLayout innerLayout = (FrameLayout)findViewById(R.id.inner_layout);
FrameLayout.LayoutParams par = (FrameLayout.LayoutParams) innerLayout.getLayoutParams();
                                        // INCORRECT! This will produce ClassCastException
```

```
FrameLayout innerLayout = (FrameLayout)findViewById(R.id.inner_layout);
LinearLayout.LayoutParams par = (LinearLayout.LayoutParams) innerLayout.getLayoutParams();
                                        // CORRECT! the enclosing layout is a LinearLayout
```

https://riptutorial.com/zh-CN/android/topic/94/

181: AccountManager

Examples

/

-

1.
2.
3.

AbstractAccountAuthenticator

```
public class AccountAuthenticator extends AbstractAccountAuthenticator {

  @Override
  public Bundle addAccount(AccountAuthenticatorResponse response, String accountType,
      String authTokenType, String[] requiredFeatures, Bundle options) {
    //intent to start the login activity
  }


  @Override
  public Bundle confirmCredentials(AccountAuthenticatorResponse response, Account account,
Bundle options) {
  }

  @Override
  public Bundle editProperties(AccountAuthenticatorResponse response, String accountType) {
  }

  @Override
  public Bundle getAuthToken(AccountAuthenticatorResponse response, Account account, String
authTokenType,
      Bundle options) throws NetworkErrorException {
    //retrieve authentication tokens from account manager storage or custom storage or re-
authenticate old tokens and return new ones
  }

  @Override
  public String getAuthTokenLabel(String authTokenType) {
  }

  @Override
  public Bundle hasFeatures(AccountAuthenticatorResponse response, Account account, String[]
features)
      throws NetworkErrorException {
    //check whether the account supports certain features
  }

  @Override
  public Bundle updateCredentials(AccountAuthenticatorResponse response, Account account,
```

```
String authTokenType,
      Bundle options) {
    //when the user's session has expired or requires their previously available credentials
to be updated, here is the function to do it.
  }
}
```

Account ManagerAbstractAccountAuthenticator

```
public class AuthenticatorService extends Service {

    private AccountAuthenticator authenticator;

    @Override
    public void onCreate(){
        authenticator = new AccountAuthenticator(this);
    }

    @Override
    public IBinder onBind(Intent intent) {
        return authenticator.getIBinder();
    }
}
```

Authenticator XML 。 *- > Android*

```
<account-authenticator xmlns:android="http://schemas.android.com/apk/res/android"
    android:accountType="rename.with.your.applicationid"
    android:icon="@drawable/app_icon"
    android:label="@string/app_name"
    android:smallIcon="@drawable/app_icon" />
```

AndroidManifest.xml *AccountManager*

```
<application
...>
    <service
        android:name=".authenticator.AccountAuthenticatorService"
        android:exported="false"
        android:process=":authentication">
        <intent-filter>
            <action android:name="android.accounts.AccountAuthenticator"/>
        </intent-filter>
        <meta-data
            android:name="android.accounts.AccountAuthenticator"
            android:resource="@xml/authenticator"/>
    </service>
</application>
```

。

AccountManager https://riptutorial.com/zh-CN/android/topic/7003/accountmanager

182:

BroadcastReceiverAndroid。 Android。

。

- 。

Examples

Android。

`AndroidManifest.xmlContext.registerReceiver()`。

```
public class MyReceiver extends BroadcastReceiver {
   @Override
   public void onReceive(Context context, Intent intent) {
      //Your implementation goes here.
   }
}
```

`ACTION_BOOT_COMPLETED`Android。

```
<application
   android:icon="@drawable/ic_launcher"
   android:label="@string/app_name"
   android:theme="@style/AppTheme" >
   <receiver android:name="MyReceiver">
      <intent-filter>
         <action android:name="android.intent.action.BOOT_COMPLETED">
         </action>
      </intent-filter>
   </receiver>
</application>
```

`onReceive()`。

BroadcastReceiver

BroadcastReceiversAndroid OSIntent 。

Intent*Intent Filter*String 。 Intent。

BroadcastReceiversIntent FilterIntents。

```
mContext.registerReceiver(new BroadcastReceiver() {
    @Override
   public void onReceive(Context context, Intent intent) {
      //Your implementation goes here.
   }
```

```
}, new IntentFilter("Some Action"));
```

AndroidManifest.xml

```
<receiver android:name=".MyBroadcastReceiver">
    <intent-filter>
        <action android:name="Some Action"/>
    </intent-filter>
</receiver>
```

Intent`sendBroadcast`ActionAndroid OSAPI`sendBroadcast`

```
mContext.sendBroadcast(new Intent("Some Action"));
```

Parcelables `onReceive`。

LocalBroadcastManager

LocalBroadcastManager。

LocalBroadcastManager`context.sendBroadcast()`。

```
BroadcastReceiver receiver = new BroadcastReceiver() {
    @Override
    public void onReceive(Context context, Intent intent) {
        if (intent.getAction().equals("Some Action")) {
            //Do something
        }
    }
});

LocalBroadcastManager manager = LocalBroadcastManager.getInstance(mContext);
manager.registerReceiver(receiver, new IntentFilter("Some Action"));

// onReceive() will be called as a result of this call:
manager.sendBroadcast(new Intent("Some Action"));//See also sendBroadcastSync

//Remember to unregister the receiver when you are done with it:
manager.unregisterReceiver(receiver);
```

```
<uses-permission android:name="android.permission.BLUETOOTH" />
```

-

```
private BroadcastReceiver mBluetoothStatusChangedReceiver = new BroadcastReceiver() {
    @Override
    public void onReceive(Context context, Intent intent) {
        final Bundle extras = intent.getExtras();
        final int bluetoothState = extras.getInt(Constants.BUNDLE_BLUETOOTH_STATE);
        switch(bluetoothState) {
            case BluetoothAdapter.STATE_OFF:
                // Bluetooth OFF
                break;
```

```
            case BluetoothAdapter.STATE_TURNING_OFF:
                // Turning OFF
                break;
            case BluetoothAdapter.STATE_ON:
                // Bluetooth ON
                break;
            case BluetoothAdapter.STATE_TURNING_ON:
                // Turning ON
                break;
    }
};
```

- onResume

```
private void registerBroadcastManager(){
    final LocalBroadcastManager manager = LocalBroadcastManager.getInstance(getActivity());
    manager.registerReceiver(mBluetoothStatusChangedReceiver, new
IntentFilter(Constants.BROADCAST_BLUETOOTH_STATE));
}
```

- onPause

```
private void unregisterBroadcastManager(){
    final LocalBroadcastManager manager = LocalBroadcastManager.getInstance(getActivity());
    // Beacon□□□
    manager.unregisterReceiver(mBluetoothStatusChangedReceiver);
}
```

BroadcastReceiver PackageManagerComponentName/

```
ComponentName componentName = new ComponentName(context, MyBroadcastReceiver.class);
PackageManager packageManager = context.getPackageManager();
```

BroadcastReceiver

```
packageManager.setComponentEnabledSetting(
    componentName,
    PackageManager.COMPONENT_ENABLED_STATE_ENABLED,
    PackageManager.DONT_KILL_APP);
```

COMPONENT_ENABLED_STATE_DISABLED

```
packageManager.setComponentEnabledSetting(
    componentName,
    PackageManager.COMPONENT_ENABLED_STATE_DISABLED,
    PackageManager.DONT_KILL_APP);
```

BroadcastReceiverBOOT_COMPLETED

BOOT_COMPLETEDBroadcastReceiver◦ ServiceActivity◦

BOOT_COMPLETED◦

BOOT_COMPLETED。

AndroidManifest.xml

```
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.test.example" >
    ...
    <uses-permission android:name="android.permission.RECEIVE_BOOT_COMPLETED" />

    ...

    <application>
        ...

        <receiver android:name="com.test.example.MyCustomBroadcastReceiver">
        <intent-filter>
                <!-- REGISTER TO RECEIVE BOOT_COMPLETED EVENTS -->
                <action android:name="android.intent.action.BOOT_COMPLETED" />
            </intent-filter>
        </receiver>
    </application>
</manifest>
```

MyCustomBroadcastReceiver.java

```
public class MyCustomBroadcastReceiver extends BroadcastReceiver {

    @Override
    public void onReceive(Context context, Intent intent) {
        String action = intent.getAction();

        if(action != null) {
            if (action.equals(Intent.ACTION_BOOT_COMPLETED) ) {
                // TO-DO: Code to handle BOOT COMPLETED EVENT
                // TO-DO: I can start an service.. display a notification... start an activity
            }
        }
    }
}
```

LocalBroadcastManager

BroadcastReceiverOSIntent。

> “Android。”

LocalBroadcastManager。

1. 。
2. LocalBroadcasts。

LocalBroastManager

SenderActivity

```
  Intent intent = new Intent("anEvent");
  intent.putExtra("key", "This is an event");
  LocalBroadcastManager.getInstance(this).sendBroadcast(intent);
```

ReceiverActivity

1.

```
LocalBroadcastManager.getInstance(this).registerReceiver(aLBReceiver,
              new IntentFilter("anEvent"));
```

2.

```
private BroadcastReceiver aLBReceiver = new BroadcastReceiver() {
    @Override
    public void onReceive(Context context, Intent intent) {
        // perform action here.
    }
};
```

3. 。

```
@Override
protected void onPause() {
    // Unregister since the activity is about to be closed.
    LocalBroadcastManager.getInstance(this).unregisterReceiver(aLBReceiver);
    super.onDestroy();
}
```

AB。

A.

```
final String eventName = "your.package.goes.here.EVENT";

@Override
protected void onCreate(Bundle savedInstanceState) {
    registerEventReceiver();
    super.onCreate(savedInstanceState);
}

@Override
protected void onDestroy() {
    unregisterEventReceiver(eventReceiver);
    super.onDestroy();
}

private void registerEventReceiver() {
    IntentFilter eventFilter = new IntentFilter();
    eventFilter.addAction(eventName);
    registerReceiver(eventReceiver, eventFilter);
}

private BroadcastReceiver eventReceiver = new BroadcastReceiver() {
    @Override
```

```
    public void onReceive(Context context, Intent intent) {
         //This code will be executed when the broadcast in activity B is launched
    }
};
```

B.

```
final String eventName = "your.package.goes.here.EVENT";

private void launchEvent() {
    Intent eventIntent = new Intent(eventName);
    this.sendBroadcast(eventIntent);
}
```

Intent。 。

sendStickyBroadcastintent。 StickyBroadcast。 `Activity's onCreate()`Activity。

```
Intent intent = new Intent("com.org.action");
intent.putExtra("anIntegerKey", 0);
sendStickyBroadcast(intent);
```

。

`firstReceiversecondReceiver`

```
final int highPriority = 2;
final int lowPriority = 1;
final String action = "action";

// intent filter for first receiver with high priority
final IntentFilter firstFilter = new IntentFilter(action);
first Filter.setPriority(highPriority);
final BroadcastReceiver firstReceiver = new MyReceiver();

// intent filter for second receiver with low priority
final IntentFilter secondFilter = new IntentFilter(action);
secondFilter.setPriority(lowPriority);
final BroadcastReceiver secondReceiver = new MyReceiver();

// register our receivers
context.registerReceiver(firstReceiver, firstFilter);
context.registerReceiver(secondReceiver, secondFilter);

// send ordered broadcast
context.sendOrderedBroadcast(new Intent(action), null);
```

```
@Override
public void onReceive(final Context context, final Intent intent) {
    abortBroadcast();
}
```

。

Android

Android 3.1。 。

APKAPP。

◦ INSTALL_REFERRER

```
Intent intent = new Intent();
intent.addFlags(Intent.FLAG_INCLUDE_STOPPED_PACKAGES);
intent.setComponent(new ComponentName(packageName, fullClassName));
sendBroadcast(intent);
```

https://riptutorial.com/zh-CN/android/topic/1460/

183:

Examples

。

4 `"item1", "item2", "item3", "item4"` 。

1. AIDL。
2. `AndroidManifest.xml`。
3. apkGoogle Developers Console。
4. 。
5. 。
6. 。

1

AIDL 。

`IInAppBillingService.aidl`AndroidAIDL3。 IPC。

2

AIDL`AndroidManifest.xml`BILLING

```
<!-- Required permission for implementing In-app Billing -->
<uses-permission android:name="com.android.vending.BILLING" />
```

3

apkGoogle Developers Console。 。

4

productID。 。 4 `"item1", "item2", "item3", "item4"` 。

5

。

```
public class MainActivity extends Activity {

    IInAppBillingService inAppBillingService;
    ServiceConnection serviceConnection;

    // productID for each item. You should define them in the Google Developers Console.
    final String item1 = "item1";
    final String item2 = "item2";
    final String item3 = "item3";
    final String item4 = "item4";

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        // Instantiate the views according to your layout file.
        final Button buy1 = (Button) findViewById(R.id.buy1);
        final Button buy2 = (Button) findViewById(R.id.buy2);
        final Button buy3 = (Button) findViewById(R.id.buy3);
        final Button buy4 = (Button) findViewById(R.id.buy4);

        // setOnClickListener() for each button.
        // buyItem() here is the method that we will implement to launch the PurchaseFlow.
        buy1.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                buyItem(item1);
            }
        });

        buy2.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                buyItem(item2);
            }
        });

        buy3.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                buyItem(item3);
            }
        });

        buy4.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                buyItem(item4);
            }
        });

        // Attach the service connection.
        serviceConnection = new ServiceConnection() {
            @Override
            public void onServiceDisconnected(ComponentName name) {
                inAppBillingService = null;
            }

            @Override
            public void onServiceConnected(ComponentName name, IBinder service) {
```

```
                inAppBillingService = IInAppBillingService.Stub.asInterface(service);
            }
        };

        // Bind the service.
        Intent serviceIntent = new
Intent("com.android.vending.billing.InAppBillingService.BIND");
        serviceIntent.setPackage("com.android.vending");
        bindService(serviceIntent, serviceConnection, BIND_AUTO_CREATE);

        // Get the price of each product, and set the price as text to
        // each button so that the user knows the price of each item.
        if (inAppBillingService != null) {
            // Attention: You need to create a new thread here because
            // getSkuDetails() triggers a network request, which can
            // cause lag to your app if it was called from the main thread.
            Thread thread = new Thread(new Runnable() {
                @Override
                public void run() {
                    ArrayList<String> skuList = new ArrayList<>();
                    skuList.add(item1);
                    skuList.add(item2);
                    skuList.add(item3);
                    skuList.add(item4);
                    Bundle querySkus = new Bundle();
                    querySkus.putStringArrayList("ITEM_ID_LIST", skuList);

                    try {
                        Bundle skuDetails = inAppBillingService.getSkuDetails(3,
getPackageName(), "inapp", querySkus);
                        int response = skuDetails.getInt("RESPONSE_CODE");

                        if (response == 0) {
                            ArrayList<String> responseList =
skuDetails.getStringArrayList("DETAILS_LIST");

                            for (String thisResponse : responseList) {
                                JSONObject object = new JSONObject(thisResponse);
                                String sku = object.getString("productId");
                                String price = object.getString("price");

                                switch (sku) {
                                    case item1:
                                        buy1.setText(price);
                                        break;
                                    case item2:
                                        buy2.setText(price);
                                        break;
                                    case item3:
                                        buy3.setText(price);
                                        break;
                                    case item4:
                                        buy4.setText(price);
                                        break;
                                }
                            }
                        }
                    } catch (RemoteException | JSONException e) {
                        e.printStackTrace();
                    }
                }
```

```
            });
            thread.start();
        }
    }

    // Launch the PurchaseFlow passing the productID of the item the user wants to buy as a
parameter.
    private void buyItem(String productID) {
        if (inAppBillingService != null) {
            try {
                Bundle buyIntentBundle = inAppBillingService.getBuyIntent(3, getPackageName(),
productID, "inapp", "bGoa+V7g/yqDXvKRqq+JTFn4uQZbPiQJo4pf9RzJ");
                PendingIntent pendingIntent = buyIntentBundle.getParcelable("BUY_INTENT");
                startIntentSenderForResult(pendingIntent.getIntentSender(), 1003, new
Intent(), 0, 0, 0);
            } catch (RemoteException | IntentSender.SendIntentException e) {
                e.printStackTrace();
            }
        }
    }

    // Unbind the service in onDestroy(). If you don't unbind, the open
    // service connection could cause your device's performance to degrade.
    @Override
    public void onDestroy() {
        super.onDestroy();
        if (inAppBillingService != null) {
            unbindService(serviceConnection);
        }
    }

    // Check here if the in-app purchase was successful or not. If it was successful,
    // then consume the product, and let the app make the required changes.
    @Override
    protected void onActivityResult(int requestCode, int resultCode, Intent data) {
        super.onActivityResult(requestCode, resultCode, data);

        if (requestCode == 1003 && resultCode == RESULT_OK) {

            final String purchaseData = data.getStringExtra("INAPP_PURCHASE_DATA");

            // Attention: You need to create a new thread here because
            // consumePurchase() triggers a network request, which can
            // cause lag to your app if it was called from the main thread.
            Thread thread = new Thread(new Runnable() {
                @Override
                public void run() {
                    try {
                        JSONObject jo = new JSONObject(purchaseData);
                        // Get the productID of the purchased item.
                        String sku = jo.getString("productId");
                        String productName = null;

                        // increaseCoins() here is a method used as an example in a game to
                        // increase the in-game currency if the purchase was successful.
                        // You should implement your own code here, and let the app apply
                        // the required changes after the purchase was successful.
                        switch (sku) {
                            case item1:
                                productName = "Item 1";
                                increaseCoins(2000);
```

```
                                break;
                            case item2:
                                productName = "Item 2";
                                increaseCoins(8000);
                                break;
                            case item3:
                                productName = "Item 3";
                                increaseCoins(18000);
                                break;
                            case item4:
                                productName = "Item 4";
                                increaseCoins(30000);
                                break;
                        }

                        // Consume the purchase so that the user is able to purchase the same
product again.
                        inAppBillingService.consumePurchase(3, getPackageName(),
jo.getString("purchaseToken"));
                        Toast.makeText(MainActivity.this, productName + " is successfully
purchased. Excellent choice, master!", Toast.LENGTH_LONG).show();
                    } catch (JSONException | RemoteException e) {
                        Toast.makeText(MainActivity.this, "Failed to parse purchase data.",
Toast.LENGTH_LONG).show();
                        e.printStackTrace();
                    }
                }
            });
            thread.start();
        }
    }
}
```

6

apkbeta / alpha。 。 /Play。

。

v3

1

1.

```
repositories {
           mavenCentral()
       }
       dependencies {
          compile 'com.anjlab.android.iab.v3:library:1.0.+'
       }
```

2.。

```
<uses-permission android:name="com.android.vending.BILLING" />
```

2

```
BillingProcessor bp = new BillingProcessor(this, "YOUR LICENSE KEY FROM GOOGLE PLAY CONSOLE
HERE", this);
```

Billing HandlerBillingProcessor.IBillingHandler4a。 onBillingInitialized;onProductPurchasedString productIdTransactionDetails details。 onBillingErrorint errorCodeThrowable errord。 onPurchaseHistoryRestored

3。

```
bp.purchase(YOUR_ACTIVITY, "YOUR PRODUCT ID FROM GOOGLE PLAY CONSOLE HERE");
```

```
bp.subscribe(YOUR_ACTIVITY, "YOUR SUBSCRIPTION ID FROM GOOGLE PLAY CONSOLE HERE");
```

4。

consumePurchase。

bp.consumePurchase“GOOGLE PLAY CONSOLEID”;

appgithub

https://riptutorial.com/zh-CN/android/topic/2843/

184:

。

。
v23.2.0Android。

Examples

GoogleBottomSheetBehavior

2.1.x

23.4.0。 +。

BottomSheetBehavior

1. 。
2. FAB“”FAB。
3. 。
4. TextView。
5. satus。
6. “”。

Google。 `ToolBarAppBarLayout` BottomSheetBottomSheet`COLLAPSED`。

- `BehaviorAppBarLayout.ScrollingViewBehavior`
- `layoutDependsOnonDependentViewChanged`。 bottomSheet。
- AppBarLayout / ToolBar。

ActionBar

```
@Override
public boolean layoutDependsOn(CoordinatorLayout parent, View child, View dependency) {
    return dependency instanceof NestedScrollView;
}

@Override
public boolean onDependentViewChanged(CoordinatorLayout parent, View child,
                                      View dependency) {

    if (mChild == null) {
```

```
        initValues(child, dependency);
        return false;
    }

    float dVerticalScroll = dependency.getY() - mPreviousY;
    mPreviousY = dependency.getY();

    //going up
    if (dVerticalScroll <= 0 && !hidden) {
        dismissAppBar(child);
        return true;
    }

    return false;
}

private void initValues(final View child, View dependency) {

    mChild = child;
    mInitialY = child.getY();

    BottomSheetBehaviorGoogleMapsLike bottomSheetBehavior =
BottomSheetBehaviorGoogleMapsLike.from(dependency);
    bottomSheetBehavior.addBottomSheetCallback(new
BottomSheetBehaviorGoogleMapsLike.BottomSheetCallback() {
        @Override
        public void onStateChanged(@NonNull View bottomSheet,
@BottomSheetBehaviorGoogleMapsLike.State int newState) {
            if (newState == BottomSheetBehaviorGoogleMapsLike.STATE_COLLAPSED ||
                    newState == BottomSheetBehaviorGoogleMapsLike.STATE_HIDDEN)
                showAppBar(child);
        }

        @Override
        public void onSlide(@NonNull View bottomSheet, float slideOffset) {

        }
    });
}

private void dismissAppBar(View child){
    hidden = true;
    AppBarLayout appBarLayout = (AppBarLayout)child;
    mToolbarAnimation =
appBarLayout.animate().setDuration(mContext.getResources().getInteger(android.R.integer.config_shortAni

    mToolbarAnimation.y(-(mChild.getHeight()+25)).start();
}

private void showAppBar(View child) {
    hidden = false;
    AppBarLayout appBarLayout = (AppBarLayout)child;
    mToolbarAnimation =
appBarLayout.animate().setDuration(mContext.getResources().getInteger(android.R.integer.config_mediumAn

    mToolbarAnimation.y(mInitialY).start();
}
```

“”

- /
- /
- ToolBar/BottomSheet
- bottomSheet

FAB

`FloatingActionButton.Behavior。 onDependentViewChanged`“offSet”。 FABCoordinatorLayoutToolBar AppBarLayout`OffSet`ToolBar

```
@Override
public boolean onDependentViewChanged(CoordinatorLayout parent, FloatingActionButton child,
View dependency) {

    if (offset == 0)
        setOffsetValue(parent);

    if (dependency.getY() <=0)
        return false;

    if (child.getY() <= (offset + child.getHeight()) && child.getVisibility() == View.VISIBLE)
        child.hide();
    else if (child.getY() > offset && child.getVisibility() != View.VISIBLE)
        child.show();

    return false;
}
```

FAB

BottomSheet

“”BottomSheet

```
@Override
public boolean onDependentViewChanged(CoordinatorLayout parent, View child,
                                      View dependency) {

    if (mYmultiplier == 0) {
        initValues(child, dependency);
        return true;
    }

    float dVerticalScroll = dependency.getY() - mPreviousY;
    mPreviousY = dependency.getY();

    //going up
    if (dVerticalScroll <= 0 && child.getY() <= 0) {
        child.setY(0);
```

```
        return true;
    }

    //going down
    if (dVerticalScroll >= 0 && dependency.getY() <= mImageHeight)
        return false;

    child.setY( (int)(child.getY() + (dVerticalScroll * mYmultiplier) ) );

    return true;
}
```

Custom BottomSheet Behavior

3BottomSheetBehavior5 `STATE_DRAGGING, STATE_SETTLING, STATE_EXPANDED, STATE_COLLAPSED, STATE_HIDDEN` Google Maps `STATE_ANCHOR_POINT` ◦ bottomSheetBehavior◦

1. Java`CoordinatorLayout.Behavior<V>`
2. `BottomSheetBehavior`◦
3. `clampViewPositionVertical`

```
@Override
public int clampViewPositionVertical(View child, int top, int dy) {
    return constrain(top, mMinOffset, mHideable ? mParentHeight : mMaxOffset);
}
int constrain(int amount, int low, int high) {
    return amount < low ? low : (amount > high ? high : amount);
}
```

4. public static final int STATE_ANCHOR_POINT = X;
5. `onLayoutChild onStopNestedScroll BottomSheetBehavior<V> from(V view)setState` optional

```
public boolean onLayoutChild(CoordinatorLayout parent, V child, int layoutDirection) {
    // First let the parent lay it out
    if (mState != STATE_DRAGGING && mState != STATE_SETTLING) {
        if (ViewCompat.getFitsSystemWindows(parent) &&
                !ViewCompat.getFitsSystemWindows(child)) {
            ViewCompat.setFitsSystemWindows(child, true);
        }
        parent.onLayoutChild(child, layoutDirection);
    }
    // Offset the bottom sheet
```

```
    mParentHeight = parent.getHeight();
    mMinOffset = Math.max(0, mParentHeight - child.getHeight());
    mMaxOffset = Math.max(mParentHeight - mPeekHeight, mMinOffset);

    //if (mState == STATE_EXPANDED) {
    //    ViewCompat.offsetTopAndBottom(child, mMinOffset);
    //} else if (mHideable && mState == STATE_HIDDEN...
    if (mState == STATE_ANCHOR_POINT) {
        ViewCompat.offsetTopAndBottom(child, mAnchorPoint);
    } else if (mState == STATE_EXPANDED) {
        ViewCompat.offsetTopAndBottom(child, mMinOffset);
    } else if (mHideable && mState == STATE_HIDDEN) {
        ViewCompat.offsetTopAndBottom(child, mParentHeight);
    } else if (mState == STATE_COLLAPSED) {
        ViewCompat.offsetTopAndBottom(child, mMaxOffset);
    }
    if (mViewDragHelper == null) {
        mViewDragHelper = ViewDragHelper.create(parent, mDragCallback);
    }
    mViewRef = new WeakReference<>(child);
    mNestedScrollingChildRef = new WeakReference<>(findScrollingChild(child));
    return true;
}

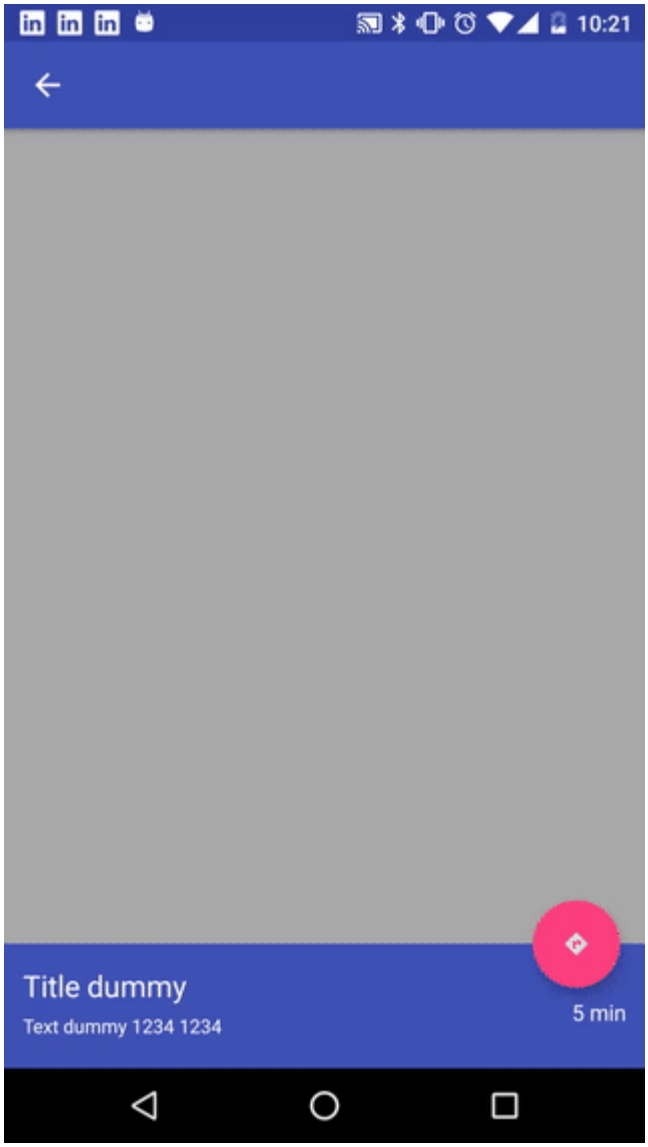

public void onStopNestedScroll(CoordinatorLayout coordinatorLayout, V child, View target) {
    if (child.getTop() == mMinOffset) {
        setStateInternal(STATE_EXPANDED);
        return;
    }
    if (target != mNestedScrollingChildRef.get() || !mNestedScrolled) {
        return;
    }
    int top;
    int targetState;
    if (mLastNestedScrollDy > 0) {
        //top = mMinOffset;
        //targetState = STATE_EXPANDED;
        int currentTop = child.getTop();
        if (currentTop > mAnchorPoint) {
            top = mAnchorPoint;
            targetState = STATE_ANCHOR_POINT;
        }
        else {
            top = mMinOffset;
            targetState = STATE_EXPANDED;
        }
    } else if (mHideable && shouldHide(child, getYVelocity())) {
        top = mParentHeight;
        targetState = STATE_HIDDEN;
    } else if (mLastNestedScrollDy == 0) {
        int currentTop = child.getTop();
        if (Math.abs(currentTop - mMinOffset) < Math.abs(currentTop - mMaxOffset)) {
            top = mMinOffset;
            targetState = STATE_EXPANDED;
        } else {
            top = mMaxOffset;
            targetState = STATE_COLLAPSED;
        }
    } else {
        //top = mMaxOffset;
```

```
        //targetState = STATE_COLLAPSED;
        int currentTop = child.getTop();
        if (currentTop > mAnchorPoint) {
            top = mMaxOffset;
            targetState = STATE_COLLAPSED;
        }
        else {
            top = mAnchorPoint;
            targetState = STATE_ANCHOR_POINT;
        }
    }
    if (mViewDragHelper.smoothSlideViewTo(child, child.getLeft(), top)) {
        setStateInternal(STATE_SETTLING);
        ViewCompat.postOnAnimation(child, new SettleRunnable(child, targetState));
    } else {
        setStateInternal(targetState);
    }
    mNestedScrolled = false;
}

public final void setState(@State int state) {
    if (state == mState) {
        return;
    }
    if (mViewRef == null) {
        // The view is not laid out yet; modify mState and let onLayoutChild handle it later
        /**
         * New behavior (added: state == STATE_ANCHOR_POINT ||)
         */
        if (state == STATE_COLLAPSED || state == STATE_EXPANDED ||
                state == STATE_ANCHOR_POINT ||
                (mHideable && state == STATE_HIDDEN)) {
            mState = state;
        }
        return;
    }
    V child = mViewRef.get();
    if (child == null) {
        return;
    }
    int top;
    if (state == STATE_COLLAPSED) {
        top = mMaxOffset;
    } else if (state == STATE_ANCHOR_POINT) {
        top = mAnchorPoint;
    } else if (state == STATE_EXPANDED) {
        top = mMinOffset;
    } else if (mHideable && state == STATE_HIDDEN) {
        top = mParentHeight;
    } else {
        throw new IllegalArgumentException("Illegal state argument: " + state);
    }
    setStateInternal(STATE_SETTLING);
    if (mViewDragHelper.smoothSlideViewTo(child, child.getLeft(), top)) {
        ViewCompat.postOnAnimation(child, new SettleRunnable(child, state));
    }
}


public static <V extends View> BottomSheetBehaviorGoogleMapsLike<V> from(V view) {
    ViewGroup.LayoutParams params = view.getLayoutParams();
```

```
    if (!(params instanceof CoordinatorLayout.LayoutParams)) {
        throw new IllegalArgumentException("The view is not a child of CoordinatorLayout");
    }
    CoordinatorLayout.Behavior behavior = ((CoordinatorLayout.LayoutParams) params)
            .getBehavior();
    if (!(behavior instanceof BottomSheetBehaviorGoogleMapsLike)) {
        throw new IllegalArgumentException(
                "The view is not associated with BottomSheetBehaviorGoogleMapsLike");
    }
    return (BottomSheetBehaviorGoogleMapsLike<V>) behavior;
}
```

[

]

build.gradle

```
compile 'com.android.support:design:25.3.1'
```

- BottomSheetBehaviorCoordinatorLayout
- BottomSheetDialog
- BottomSheetDialogFragmentDialogFragmentBottomSheetDialog◦

BottomSheetBehaviorCoordinatorLayout

```
<android.support.design.widget.CoordinatorLayout >

    <!-- .....   -->

    <LinearLayout
       android:id="@+id/bottom_sheet"
       android:elevation="4dp"
       android:minHeight="120dp"
       app:behavior_peekHeight="120dp"
       ...
       app:layout_behavior="android.support.design.widget.BottomSheetBehavior">

           <!-- .....   -->

       </LinearLayout>

</android.support.design.widget.CoordinatorLayout>
```

```
 // The View with the BottomSheetBehavior
 View bottomSheet = coordinatorLayout.findViewById(R.id.bottom_sheet);
 BottomSheetBehavior mBottomSheetBehavior = BottomSheetBehavior.from(bottomSheet);
```

setStateBottomSheetBehavior

```
mBottomSheetBehavior.setState(BottomSheetBehavior.STATE_EXPANDED);
```

- STATE_COLLAPSED ◦ app:behavior_peekHeight0
- STATE_EXPANDED CoordinatorLayout CoordinatorLayout
- STATE_HIDDEN app:behavior_hideable

BottomSheetCallback

```
mBottomSheetBehavior.setBottomSheetCallback(new BottomSheetCallback() {
    @Override
    public void onStateChanged(@NonNull View bottomSheet, int newState) {
      // React to state change
    }
      @Override
      public void onSlide(@NonNull View bottomSheet, float slideOffset) {
       // React to dragging events
   }
 });
```

BottomSheetDialogFragment

BottomSheetDialogFragment ◦

BottomSheetDialogFragment◦

DialogFragmentBottomSheetDialog◦

```
public class MyBottomSheetDialogFragment extends BottomSheetDialogFragment {

    @Override
    public View onCreateView(LayoutInflater inflater, ViewGroup container,
            Bundle savedInstanceState) {
        return inflater.inflate(R.layout.my_fragment_bottom_sheet, container);
    }
}
```

```
MyBottomSheetDialogFragment mySheetDialog = new MyBottomSheetDialogFragment();
FragmentManager fm = getSupportFragmentManager();
mySheetDialog.show(fm, "modalSheetDialog");
```

BottomSheetDialog ◦

BottomSheetDialog

BottomSheetDialog

```
//Create a new BottomSheetDialog
BottomSheetDialog dialog = new BottomSheetDialog(context);
//Inflate the layout R.layout.my_dialog_layout
dialog.setContentView(R.layout.my_dialog_layout);
//Show the dialog
dialog.show();
```

BottomSheet◦

ExpandedBottomSheet DialogFragment◦

BottomSheet DialogFragmentSTATE_COLLAPSED◦ STATE_EXPANDED◦

@NonNull @Override public Dialog onCreateDialogBundle savedInstanceState{

```
    BottomSheetDialog dialog = (BottomSheetDialog) super.onCreateDialog(savedInstanceState);

    dialog.setOnShowListener(new DialogInterface.OnShowListener() {
        @Override
        public void onShow(DialogInterface dialog) {
            BottomSheetDialog d = (BottomSheetDialog) dialog;

            FrameLayout bottomSheet = (FrameLayout)
d.findViewById(android.support.design.R.id.design_bottom_sheet);

BottomSheetBehavior.from(bottomSheet).setState(BottomSheetBehavior.STATE_EXPANDED);
```

```
        }
    });

    // Do something with your dialog like setContentView() or whatever
    return dialog;
}
```

DialogFragment。

https://riptutorial.com/zh-CN/android/topic/5702/

185:

Examples

/res/values/strings.xml

```
<string-array name="spinner_options">
    <item>Option 1</item>
    <item>Option 2</item>
    <item>Option 3</item>
</string-array>
```

XML

```
<Spinner
    android:id="@+id/spinnerName"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:entries="@array/spinner_options" />
```

```
Spinner spinnerName = (Spinner) findViewById(R.id.spinnerName);
spinnerName.setOnItemSelectedListener(new OnItemSelectedListener() {
    @Override
    public void onItemSelected(AdapterView<?> parent, View view, int position, long id) {
         String chosenOption = (String) parent.getItemAtPosition(position);
    }
    @Override
    public void onNothingSelected(AdapterView<?> parent) {}
});
```

Spinner。

```
  <Spinner
    android:id="@+id/spinner"     <!-- id to refer this spinner from JAVA-->
    android:layout_width="match_parent"
    android:layout_height="wrap_content">

</Spinner>
```

spinner。 spinner。

1. XML**resvaluesarray.xml** 。 array

```
  <string-array name="defaultValue">
    <item>--Select City Area--</item>
    <item>--Select City Area--</item>
    <item>--Select City Area--</item>
</string-array>
```

sppiner XML

```
            android:entries="@array/defaultValue"
```

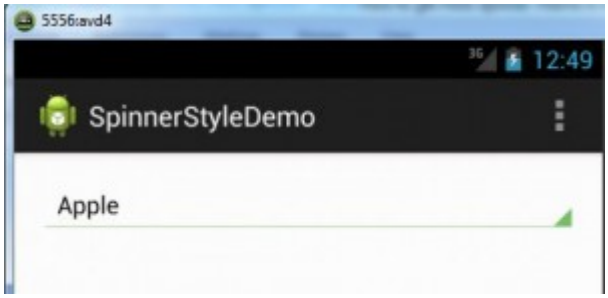
2. JAVA

`activity`cityArea =SpinnerfindViewByIdR.id.cityArea;`fragment`

```
cityArea = (Spinner) findViewById(R.id.cityArea);
```

`StringsarrayList`

```
ArrayList<String> area = new ArrayList<>();
//add values in area arrayList
cityArea.setAdapter(new ArrayAdapter<String>(context
                            , android.R.layout.simple_list_item_1, area));
```



Android

AndroidtargetSdkVersion

Android SDK	
<11	@android/
1113	@android/ Theme.Holo
14	@android/ Theme.DeviceDefault

xml`Spinner`

```
 android:background="@drawable/spinner_background"

 android:layout_margin="16dp"

 android:padding="16dp"
```

XML。

```
cityArea.setOnItemSelectedListener(new AdapterView.OnItemSelectedListener() {
        @Override
        public void onItemSelected(AdapterView<?> parent, View view, int position, long id) {
```

```
            areaNo = position;
        }

        @Override
        public void onNothingSelected(AdapterView<?> parent) {

        }
    });
```

XML

```
<item android:state_activated="true" android:color="@color/red"/>
```

。

JAVAsetOnItemSelectedListener...

```
 @Override
            public void onItemSelected(AdapterView<?> parent, View view, int position, long
id) {
                 ((TextView) parent.getChildAt(0)).setTextColor(0x00000000);
// similarly change `background color` etc.
            }
```

https://riptutorial.com/zh-CN/android/topic/3459/

186:

fastlaneiOSMacAndroid。

https //docs.fastlane.tools/

https //github.com/fastlane/fastlane

Examples

CrashlyticsFastfile

Fastfile。 。 **Slack**CrashlyticsBeta。

```
fastlane android beta
```

APK

```
fastlane android beta app:flavorName
```

FastlaneiOSAndroidMac。 `platform` 。

1. `android`fastlane:`android`。
2. `:android`。 `:beta` lane。 。
3. `options[:app]`
4. **Gradle**。 `gradle clean` 。 `app` keyflavorfastfile`gradle assembleReleaseFlavor` 。 `gradle assembleRelease`。
5. APK`SharedValues::GRADLE_ALL_APK_OUTPUT_PATHS` 。 **CrashlyticsBeta** 。 `notificationsgroups`。 **CrashlyticsBeta** 。
6. Crashlytics。 Crashlytics。 **Slack**。
7. **fastlaneSlack**。
8. `#{/([^\/]*)$/.match(apk)}`APKflavor。 。
9. `get_version_nameget_version_code`**Fastlane**。 。
10. APK`else`。 `apk_pathapk_path` 。
11. `error do`。

`SLACK_URL API_TOKEN GROUP_NAMEBUILD_SECRET` 。

```
fastlane_version "1.46.1"

default_platform :android

platform :android do

    before_all do
        ENV["SLACK_URL"] = "https://hooks.slack.com/servic...."
```

```
    end

    lane :beta do |options|
        # Clean and build the Release version of the app.
        # Usage `fastlane android beta app:flavorName`

        gradle(task: "clean")

        gradle(task: "assemble",
               build_type: "Release",
               flavor: options[:app])

        # If user calls `fastlane android beta` command, it will build all projects and push
them to Crashlytics
        if options[:app].nil?
            lane_context[SharedValues::GRADLE_ALL_APK_OUTPUT_PATHS].each do | apk |

                puts "Uploading APK to Crashlytics: " + apk

                begin
                    crashlytics(
                      api_token: "[API_TOKEN]",
                      build_secret: "[BUILD_SECRET]",
                      groups: "[GROUP_NAME]",
                      apk_path: apk,
                      notifications: "true"
                    )

                    slack(
                      message: "Successfully deployed new build for #{/([^\/]*)$/.match(apk)}
#{get_version_name} - #{get_version_code}",
                      success: true,
                      default_payloads: [:git_branch, :lane, :test_result]
                    )
                rescue => ex
                    # If the app is inactive in Crashlytics, deployment will fail. Handle it
here and report to slack
                    slack(
                        message: "Error uploading => #{/([^\/]*)$/.match(apk)}
#{get_version_name} - #{get_version_code}: #{ex}",
                        success: false,
                        default_payloads: [:git_branch, :lane, :test_result]
                    )
                end
            end

            after_all do |lane|
                # This block is called, only if the executed lane was successful
                slack(
                    message: "Operation completed for
#{lane_context[SharedValues::GRADLE_ALL_APK_OUTPUT_PATHS].size} app(s) for #{get_version_name}
- #{get_version_code}",
                    default_payloads: [:git_branch, :lane, :test_result],
                    success: true
                )
            end
        else
            # Single APK upload to Beta by Crashlytics
            crashlytics(
                api_token: "[API_TOKEN]",
                build_secret: "[BUILD_SECRET]",
```

```
                groups: "[GROUP_NAME]",
                notifications: "true"
            )

            after_all do |lane|
                # This block is called, only if the executed lane was successful
                slack(
                    message: "Successfully deployed new build for #{options[:app]}
#{get_version_name} - #{get_version_code}",
                    default_payloads: [:git_branch, :lane, :test_result],
                    success: true
                )
            end
        end

        error do |lane, exception|
            slack(
                message: exception.message,
                success: false,
                default_payloads: [:git_branch, :lane, :test_result]
            )
        end
    end
end
```

Fastfile laneflavor

Fastfile`fastlane installAll type:{BUILD_TYPE}◦ BUILD_TYPE◦`

`fastlane installAll type:Debug`

◦ ◦ ◦ ◦

```
lane :installAll do |options|

    gradle(task: "clean")

    gradle(task: "assemble",
       build_type: options[:type])

    lane_context[SharedValues::GRADLE_ALL_APK_OUTPUT_PATHS].each do | apk |

        puts "Uploading APK to Device: " + apk

        begin
            adb(
                command: "install -r #{apk}"
            )
        rescue => ex
            puts ex
        end
    end
end
```

https://riptutorial.com/zh-CN/android/topic/8215/

187:

◦ UI◦

Examples

ViewHolder

ListView findViewById()◦ ViewHolderListView◦

TextView ViewHolder

```
static class ViewHolder {
    TextView myTextView;
}
```

ViewHolder

```
public View getView(int position, View convertView, ViewGroup parent) {
    Item i = getItem(position);
    if(convertView == null) {
        convertView = LayoutInflater.from(getContext()).inflate(R.layout.list_item, parent,
false);

        // Create a new ViewHolder and save the TextView instance
        ViewHolder holder = new ViewHolder();
        holder.myTextView = (TextView)convertView.findViewById(R.id.my_text_view);
        convertView.setTag(holder);
    }

    // Retrieve the ViewHolder and use the TextView
    ViewHolder holder = (ViewHolder)convertView.getTag();
    holder.myTextView.setText(i.getText());

    return convertView;
}
```

ViewfindViewById() ListView◦

https://riptutorial.com/zh-CN/android/topic/8711/

188:

IntentAndroid。 。

。

-
-
-
- Uri uri
- Intent IntentContext packageContextClass <> cls
- Intent IntentString actionUri uriContext packageContextClass <> cls
- void startActivity
- void startActivityIntent intentBundle options
- void startActivityForResultIntent intentint requestCode
- void startActivityForResultIntent intentint requestCodeBundle options
- Intent putExtraString namedouble [] value
- Intent putExtraString nameint value
- Intent putExtraString nameCharSequence value
- Intent putExtraString namechar value
- Intent putExtraString nameBundle value
- Intent putExtraString nameParcelable [] value
- Intent putExtraString nameSerializable value
- Intent putExtraString nameint [] value
- Intent putExtraString namefloat value
- Intent putExtraString namebyte [] value
- Intent putExtraString namelong [] value
- Intent putExtraString nameParcelable value
- Intent putExtraString namefloat [] value
- Intent putExtraString namelong value
- Intent putExtraString nameString [] value
- Intent putExtraString nameboolean value
- Intent putExtraString nameboolean [] value
- Intent putExtraString nameshort value
- Intent putExtraString namedouble value
- Intent putExtraString nameshort [] value
- Intent putExtraString nameString value
- Intent putExtraString namebyte value
- Intent putExtraString namechar [] value
- Intent putExtraString nameCharSequence [] value

CHOOSE_CONTACT_REQUEST_CODE	`onActivityResult`
	Intent.ACTION_VIEW
URI	uri
packageContext	Intent
CLS	

◦

`PackageManager.queryIntentActivities(Intent intent, int flags)`◦

```
PackageManager pm = getActivity().getPackageManager();
if (intent.resolveActivity(pm) != null) {
    //intent can be handled
    startActivity(intent);
} else {
     //intent can not be handled
}
```

Activity `singleTasksingleTop`

`singleTasksingleTop` null`onActivityResult` ◦ `Intent.setFlags(0)`◦

Examples

`OriginActivityDestinationActivity` ◦

`Intent`

1. ContextActivityContext
2. Intent

```
public class OriginActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_origin);

        Intent intent = new Intent(this, DestinationActivity.class);

        startActivity(intent);
        finish(); // Optionally, you can close OriginActivity. In this way when the user press
back from DestinationActivity he/she won't land on OriginActivity again.
    }
}
```

IntentDestinationActivityIntentsetClass()Activity

```
Intent i=new Intent();
i.setClass(this, DestinationActivity.class);
startActivity(intent);
finish(); // Optionally, you can close OriginActivity. In this way when the user press back
from DestinationActivity he/she won't land on OriginActivity
```

"Some data!"String "Some data!"OriginActivityDestinationActivity ◦

◦ ◦

OriginActivity

```
public class OriginActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_origin);

        // Create a new Intent object, containing DestinationActivity as target Activity.
        final Intent intent = new Intent(this, DestinationActivity.class);

        // Add data in the form of key/value pairs to the intent object by using putExtra()
        intent.putExtra(DestinationActivity.EXTRA_DATA, "Some data!");

        // Start the target Activity with the intent object
        startActivity(intent);
    }
}
```

DestinationActivity

```
public class DestinationActivity extends AppCompatActivity {

    public static final String EXTRA_DATA = "EXTRA_DATA";

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_destination);

        // getIntent() returns the Intent object which was used to start this Activity
        final Intent intent = getIntent();

        // Retrieve the data from the intent object by using the same key that
        // was previously used to add data to the intent object in OriginActivity.
        final String data = intent.getStringExtra(EXTRA_DATA);
    }
}
```

primitivearrays

BundleParcelable。 SerializableParcelable。

SerializableJava interface 。 Serializable interfaceSerializable Java。

ParcelableAndroidinterface / POJO。 。

parcelableintent

```
intent.putExtra(DestinationActivity.EXTRA_DATA, myParcelableObject);
```

bundle /

```
bundle.putParcelable(DestinationActivity.EXTRA_DATA, myParcelableObject);
```

getParcelableExtra

```
final MyParcelableType data = intent.getParcelableExtra(EXTRA_DATA);
```

```
final MyParcelableType data = bundle.getParcelable(EXTRA_DATA);
```

Serializableintent

```
bundle.putSerializable(DestinationActivity.EXTRA_DATA, mySerializableObject);
```

intent

```
final SerializableType data = (SerializableType)bundle.getSerializable(EXTRA_DATA);
```

```
// Compile a Uri with the 'mailto' schema
Intent emailIntent = new Intent(Intent.ACTION_SENDTO, Uri.fromParts(
        "mailto","johndoe@example.com", null));
// Subject
emailIntent.putExtra(Intent.EXTRA_SUBJECT, "Hello World!");
// Body of email
emailIntent.putExtra(Intent.EXTRA_TEXT, "Hi! I am sending you a test email.");
// File attachment
emailIntent.putExtra(Intent.EXTRA_STREAM, attachedFileUri);

// Check if the device has an email client
if (emailIntent.resolveActivity(getPackageManager()) != null) {
     // Prompt the user to select a mail app
     startActivity(Intent.createChooser(emailIntent,"Choose your mail application"));
} else {
    // Inform the user that no email clients are installed or provide an alternative
}
```

。

Intent.ACTION_SENDIntent.ACTION_SENDTO。 ACTION_SEND_MULTIPLE

ACTION_SENDTOresolveActivity()startActivity()ActivityNotFoundException。

Activity

startActivityForResult(Intent intent, int requestCode)Activity onActivityResult(int requestCode, int resultCode, Intent data)Activity。 Intent。 Bundle

---

MainActivityDetailActivity。 intMainActivity onActivityResult(int requestCode, int resultCode, Intent data)requestCodeREQUEST_CODE_EXAMPLErequestCode 。

```
public class MainActivity extends Activity {

    // Use a unique request code for each use case
    private static final int REQUEST_CODE_EXAMPLE = 0x9345;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        // Create a new instance of Intent to start DetailActivity
        final Intent intent = new Intent(this, DetailActivity.class);

        // Start DetailActivity with the request code
        startActivityForResult(intent, REQUEST_CODE_EXAMPLE);
    }

    // onActivityResult only get called
    // when the other Activity previously started using startActivityForResult
    @Override
    public void onActivityResult(int requestCode, int resultCode, Intent data) {
        super.onActivityResult(requestCode, resultCode, data);

        // First we need to check if the requestCode matches the one we used.
        if(requestCode == REQUEST_CODE_EXAMPLE) {

            // The resultCode is set by the DetailActivity
            // By convention RESULT_OK means that whatever
            // DetailActivity did was executed successfully
            if(resultCode == Activity.RESULT_OK) {
                // Get the result from the returned Intent
                final String result = data.getStringExtra(DetailActivity.EXTRA_DATA);

                // Use the data - in this case, display it in a Toast.
                Toast.makeText(this, "Result: " + result, Toast.LENGTH_LONG).show();
            } else {
                // setResult wasn't successfully executed by DetailActivity
                // Due to some error or flow of control. No data to retrieve.
            }
        }
    }
}
```

DetailActivity

```
public class DetailActivity extends Activity {

    // Constant used to identify data sent between Activities.
    public static final String EXTRA_DATA = "EXTRA_DATA";

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_detail);

        final Button button = (Button) findViewById(R.id.button);
        // When this button is clicked we want to return a result
        button.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                // Create a new Intent object as container for the result
                final Intent data = new Intent();

                // Add the required data to be returned to the MainActivity
                data.putExtra(EXTRA_DATA, "Some interesting data!");

                // Set the resultCode as Activity.RESULT_OK to
                // indicate a success and attach the Intent
                // which contains our result data
                setResult(Activity.RESULT_OK, data);

                // With finish() we close the DetailActivity to
                // return back to MainActivity
                finish();
            }
        });
    }

    @Override
    public void onBackPressed() {
        // When the user hits the back button set the resultCode
        // as Activity.RESULT_CANCELED to indicate a failure
        setResult(Activity.RESULT_CANCELED);
        super.onBackPressed();
    }
}
```

- finish()◦ finish() setResult()setResult() ◦
- Activityandroid:launchMode="singleTask" Activity◦ ActivitysingleTaskonActivityResult() Activity.RESULT_CANCELED ◦
- android:launchMode="singleInstance"android:launchMode="singleInstance" ◦ LollipopAndroid 5.0API Level 21◦
- startActivityForResult()◦ ◦ intent ;filter◦ ◦

URL

WebURL。 INTERNET。

```
public void onBrowseClick(View v) {
    String url = "http://www.google.com";
    Uri uri = Uri.parse(url);
    Intent intent = new Intent(Intent.ACTION_VIEW, uri);
    // Verify that the intent will resolve to an activity
    if (intent.resolveActivity(getPackageManager()) != null) {
        // Here we use an intent without a Chooser unlike the next example
        startActivity(intent);
    }
}
```

Intent.createChooser()

```
public void onBrowseClick(View v) {
    String url = "http://www.google.com";
    Intent intent = new Intent(Intent.ACTION_VIEW, Uri.parse(url));
    // Note the Chooser below. If no applications match,
    // Android displays a system message.So here there is no need for try-catch.
    startActivity(Intent.createChooser(intent, "Browse with"));

}
```

URL**“www”**。

android.content.ActivityNotFoundException IntentActivity

URL**“http//”“https//”**。

```
if (!url.startsWith("https://") && !url.startsWith("http://")){
    url = "http://" + url;
}
Intent openUrlIntent = new Intent(Intent.ACTION_VIEW, Uri.parse(url));
if (openUrlIntent.resolveActivity(getPackageManager()) != null) {
    startActivity(openUrlIntent);
}
```

◦ startActivity()。 IntentresolveActivity() ◦ nullstartActivity() ◦ nullintentintent。

◦ LoginMainLogin。 intentFLAG_ACTIVITY_CLEAR_TOPLoginActivityIntentIntent。

```
Intent intent = new Intent(getApplicationContext(), LoginActivity.class);
intent.setFlags(Intent.FLAG_ACTIVITY_CLEAR_TOP);
startActivity(intent);
```

FLAG_ACTIVITY_NEW_TASKFLAG_ACTIVITY_CLEAR_TASK

```
Intent intent = new Intent(getApplicationContext(), LoginActivity.class);
// Closing all the Activities, clear the back stack.
intent.setFlags(Intent.FLAG_ACTIVITY_NEW_TASK | Intent.FLAG_ACTIVITY_CLEAR_TASK);
startActivity(intent);
```

URI

intent

```
<a href="intent://host.com/path#Intent;package=com.sample.test;scheme=yourscheme;end">Start
intent</a>
```

`com.sample.test`google play。

javascript

```
var intent = "intent://host.com/path#Intent;package=com.sample.test;scheme=yourscheme;end";
window.location.replace(intent)
```

```
@Override
public void onCreate(Bundle bundle) {
    super.onCreate(bundle);
    Uri data = getIntent().getData(); // returns host.com/path
}
```

Intent URI

```
HOST/URI-path // Optional host
#Intent;
    package=[string];
    action=[string];
    category=[string];
    component=[string];
    scheme=[string];
end;
```

IntentAndroid。

`LocalBroadcastManager`

```
Intent intent = new Intent("com.example.YOUR_ACTION"); // the intent action
intent.putExtra("key", "value"); // data to be passed with your broadcast

LocalBroadcastManager manager = LocalBroadcastManager.getInstance(context);
manager.sendBroadcast(intent);
```

`ContextsendBroadcast()`。

```
Intent intent = new Intent("com.example.YOUR_ACTION"); // the intent action
intent.putExtra("key", "value"); // data to be passed with your broadcast

context.sendBroadcast(intent);
```

ChromeCustomTabsIntent

4.0.3

CustomTabsIntent Chrome UI。

WebView。 Intent。

CustomTabsIntentURL

```
String url = "https://www.google.pl/";
CustomTabsIntent intent = new CustomTabsIntent.Builder()
                    .setStartAnimations(getContext(), R.anim.slide_in_right,
R.anim.slide_out_left)
                    .setExitAnimations(getContext(), android.R.anim.slide_in_left,
android.R.anim.slide_out_right)
                    .setCloseButtonIcon(BitmapFactory.decodeResource(getResources(),
R.drawable.ic_arrow_back_white_24dp))
                    .setToolbarColor(Color.parseColor("#43A047"))
                    .enableUrlBarHiding()
                    .build();
            intent.launchUrl(getActivity(), Uri.parse(url));
```

build.gradle

```
compile 'com.android.support:customtabs:24.1.1'
```

Intent

share()。

UriActivity。

```
  public static void share(AppCompatActivity context,List<String> paths) {

        if (paths == null || paths.size() == 0) {
            return;
        }
        ArrayList<Uri> uris = new ArrayList<>();
        Intent intent = new Intent();
        intent.setAction(android.content.Intent.ACTION_SEND_MULTIPLE);
        intent.setType("*/*");
        for (String path : paths) {
                File file = new File(path);
                uris.add(Uri.fromFile(file));
        }
        intent.putParcelableArrayListExtra(Intent.EXTRA_STREAM, uris);
        context.startActivity(intent);
    }
```

Activity。 。

starterActivity。 Intent Activity 。

Intent。 “”。 。

```
public class ExampleActivity extends AppCompatActivity {
```

```
    private static final String EXTRA_DATA = "EXTRA_DATA";

    public static void start(Context context, String data) {
        Intent intent = new Intent(context, ExampleActivity.class);
        intent.putExtra(EXTRA_DATA, data);
        context.startActivity(intent);
    }

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);

        Intent intent = getIntent();
        if(!intent.getExtras().containsKey(EXTRA_DATA)){
            throw new UnsupportedOperationException("Activity should be started using the
static start method");
        }
        String data = intent.getStringExtra(EXTRA_DATA);
    }
}
```

intent。

`ExampleActivity` `context`

```
ExampleActivity.start(context, "Some data!");
```

IntentUnbound Service

UI。 。

```
// This Intent will be used to start the service
Intent i= new Intent(context, ServiceName.class);
// potentially add data to the intent extras
i.putExtra("KEY1", "Value to be used by the service");
context.startService(i);
```

`onStartCommand()`

```
public class MyService extends Service {
    public MyService() {
    }

    @Override
    public int onStartCommand(Intent intent, int flags, int startId)
    {
        if (intent != null) {
            Bundle extras = intent.getExtras();
            String key1 = extras.getString("KEY1", "");
            if (key1.equals("Value to be used by the service")) {
                //do something
            }
        }
        return START_STICKY;
    }
```

```
    @Nullable
    @Override
    public IBinder onBind(Intent intent) {
        return null;
    }

}
```

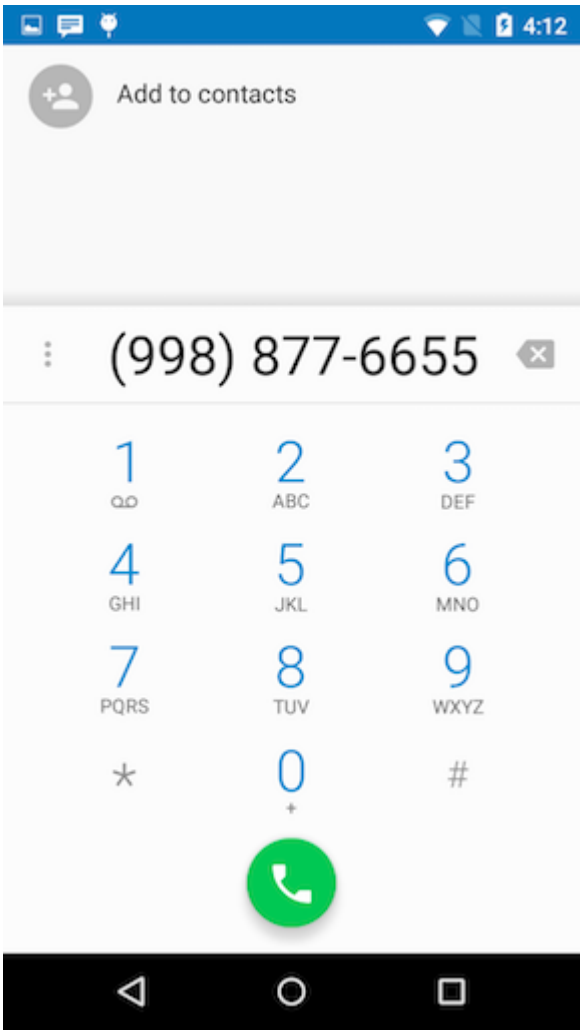
。

```
Intent sendIntent = new Intent();
sendIntent.setAction(Intent.ACTION_SEND);
sendIntent.putExtra(Intent.EXTRA_TEXT, "This is my text to send.");
sendIntent.setType("text/plain");
startActivity(Intent.createChooser(sendIntent, getResources().getText(R.string.send_to)));
```

。

```
Intent shareIntent = new Intent();
shareIntent.setAction(Intent.ACTION_SEND);
shareIntent.putExtra(Intent.EXTRA_STREAM, uriToImage);
shareIntent.setType("image/jpeg");
startActivity(Intent.createChooser(shareIntent, getResources().getText(R.string.send_to)));
```

```
Intent intent = new Intent(Intent.ACTION_DIAL);
intent.setData(Uri.parse("tel:9988776655")); //Replace with valid phone number. Remember to
add the tel: prefix, otherwise it will crash.
startActivity(intent);
```



Google

IntentGoogle

```
String uri = String.format(Locale.ENGLISH, "http://maps.google.com/maps?q=loc:%f,%f",
28.43242324,77.8977673);
Intent intent = new Intent(Intent.ACTION_VIEW, Uri.parse(uri));
startActivity(intent);
```

ActivityIntent

1.

SenderActivity

```
Intent myIntent = new Intent(SenderActivity.this, ReceiverActivity.class);
myIntent.putExtra("intVariableName", intValue);
startActivity(myIntent);
```

ReceiverActivity

```
Intent mIntent = getIntent();
int intValue = mIntent.getIntExtra("intVariableName", 0); // set 0 as the default value if no
```

```
value for intVariableName found
```

2.

SenderActivity

```
Intent myIntent = new Intent(SenderActivity.this, ReceiverActivity.class);
myIntent.putExtra("doubleVariableName", doubleValue);
startActivity(myIntent);
```

ReceiverActivity

```
Intent mIntent = getIntent();
double doubleValue = mIntent.getDoubleExtra("doubleVariableName", 0.00); // set 0.00 as the
default value if no value for doubleVariableName found
```

3.

SenderActivity

```
Intent myIntent = new Intent(SenderActivity.this, ReceiverActivity.class);
myIntent.putExtra("stringVariableName", stringValue);
startActivity(myIntent);
```

ReceiverActivity

```
Intent mIntent = getIntent();
String stringValue = mIntent.getExtras().getString("stringVariableName");
```

```
Intent mIntent = getIntent();
String stringValue = mIntent.getStringExtra("stringVariableName");
```

4.ArrayList

SenderActivity

```
Intent myIntent = new Intent(SenderActivity.this, ReceiverActivity.class);
myIntent.putStringArrayListExtra("arrayListVariableName", arrayList);
startActivity(myIntent);
```

ReceiverActivity

```
Intent mIntent = getIntent();
arrayList = mIntent.getStringArrayListExtra("arrayListVariableName");
```

5.

SenderActivity

```
Intent myIntent = new Intent(SenderActivity.this, ReceiverActivity.class);
```

```
myIntent.putExtra("ObjectVariableName", yourObject);
startActivity(myIntent);
```

ReceiverActivity

```
Intent mIntent = getIntent();
yourObj = mIntent.getSerializableExtra("ObjectVariableName");
```

Serializable。

6.HashMap <StringString>

SenderActivity

HashMap <StringString> hashMap;

```
Intent mIntent = new Intent(SenderActivity.this, ReceiverActivity.class);
mIntent.putExtra("hashMap", hashMap);
startActivity(mIntent);
```

ReceiverActivity

```
Intent mIntent = getIntent();
HashMap<String, String> hashMap = (HashMap<String, String>)
mIntent.getSerializableExtra("hashMap");
```

7.

SenderActivity

```
Intent myIntent = new Intent(SenderActivity.this, ReceiverActivity.class);
myIntent.putExtra("image",bitmap);
startActivity(mIntent);
```

ReceiverActivity

```
Intent mIntent = getIntent();
Bitmap bitmap = mIntent.getParcelableExtra("image");
```

```
public void showFileChooser() {
    Intent intent = new Intent(Intent.ACTION_GET_CONTENT);

    // Update with mime types
    intent.setType("*/*");

    // Update with additional mime types here using a String[].
    intent.putExtra(Intent.EXTRA_MIME_TYPES, mimeTypes);

    // Only pick openable and local files. Theoretically we could pull files from google drive
    // or other applications that have networked files, but that's unnecessary for this
example.
    intent.addCategory(Intent.CATEGORY_OPENABLE);
```

```
    intent.putExtra(Intent.EXTRA_LOCAL_ONLY, true);

    // REQUEST_CODE = <some-integer>
    startActivityForResult(intent, REQUEST_CODE);
}
```

```
@Override
protected void onActivityResult(int requestCode, int resultCode, Intent data) {
    // If the user doesn't pick a file just return
    if (requestCode != REQUEST_CODE || resultCode != RESULT_OK) {
        return;
    }

    // Import the file
    importFile(data.getData());
}

public void importFile(Uri uri) {
    String fileName = getFileName(uri);

    // The temp file could be whatever you want
    File fileCopy = copyToTempFile(uri, File tempFile)

    // Done!
}

/**
 * Obtains the file name for a URI using content resolvers. Taken from the following link
 * https://developer.android.com/training/secure-file-sharing/retrieve-
info.html#RetrieveFileInfo
 *
 * @param uri a uri to query
 * @return the file name with no path
 * @throws IllegalArgumentException if the query is null, empty, or the column doesn't exist
 */
private String getFileName(Uri uri) throws IllegalArgumentException {
    // Obtain a cursor with information regarding this uri
    Cursor cursor = getContentResolver().query(uri, null, null, null, null);

    if (cursor.getCount() <= 0) {
        cursor.close();
        throw new IllegalArgumentException("Can't obtain file name, cursor is empty");
    }

    cursor.moveToFirst();

    String fileName =
cursor.getString(cursor.getColumnIndexOrThrow(OpenableColumns.DISPLAY_NAME));

    cursor.close();

    return fileName;
}

/**
 * Copies a uri reference to a temporary file
 *
 * @param uri      the uri used as the input stream
 * @param tempFile the file used as an output stream
 * @return the input tempFile for convenience
```

```
 * @throws IOException if an error occurs
 */
private File copyToTempFile(Uri uri, File tempFile) throws IOException {
    // Obtain an input stream from the uri
    InputStream inputStream = getContentResolver().openInputStream(uri);

    if (inputStream == null) {
        throw new IOException("Unable to obtain input stream from URI");
    }

    // Copy the stream to the temp file
    FileUtils.copyInputStreamToFile(inputStream, tempFile);

    return tempFile;
}
```

Bundle。

- `Serializable` - JavaAndroid
- `Parcelable` - Android

Parcelable

。 。 。

```
public class MyObjects implements Parcelable {

    private int age;
    private String name;

    private ArrayList<String> address;

    public MyObjects(String name, int age, ArrayList<String> address) {
        this.name = name;
        this.age = age;
        this.address = address;

    }

    public MyObjects(Parcel source) {
        age = source.readInt();
        name = source.readString();
        address = source.createStringArrayList();
    }

    @Override
    public int describeContents() {
        return 0;
    }

    @Override
    public void writeToParcel(Parcel dest, int flags) {
        dest.writeInt(age);
        dest.writeString(name);
        dest.writeStringList(address);
    }
```

```
    public int getAge() {
        return age;
    }

    public String getName() {
        return name;
    }

    public ArrayList<String> getAddress() {
        if (!(address == null))
            return address;
        else
            return new ArrayList<String>();
    }

    public static final Creator<MyObjects> CREATOR = new Creator<MyObjects>() {
        @Override
        public MyObjects[] newArray(int size) {
            return new MyObjects[size];
        }

        @Override
        public MyObjects createFromParcel(Parcel source) {
            return new MyObjects(source);
        }
    };
}
```

```
MyObject mObject = new MyObject("name","age","Address array here");

//Passing MyOject
Intent mIntent = new Intent(FromActivity.this, ToActivity.class);
mIntent.putExtra("UniqueKey", mObject);
startActivity(mIntent);
```

。

```
//Getting MyObjects
Intent mIntent = getIntent();
MyObjects workorder = (MyObjects) mIntent.getParcelable("UniqueKey");
```

ParcebleArraylist

```
//Array of MyObjects
ArrayList<MyObject> mUsers;

//Passing MyObject List
Intent mIntent = new Intent(FromActivity.this, ToActivity.class);
mIntent.putParcelableArrayListExtra("UniqueKey", mUsers);
startActivity(mIntent);

//Getting MyObject List
Intent mIntent = getIntent();
ArrayList<MyObjects> mUsers = mIntent.getParcelableArrayList("UniqueKey");
```

Android StudioParcelable

```
Product product = new Product();
Bundle bundle = new Bundle();
bundle.putSerializable("product", product);
Intent cartIntent = new Intent(mContext, ShowCartActivity.class);
cartIntent.putExtras(bundle);
mContext.startActivity(cartIntent);
```

。

```
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    Bundle bundle = this.getIntent().getExtras();
    Product product = null;
    if (bundle != null) {
        product = (Product) bundle.getSerializable("product");
    }
```

Serializable`Arraylist`

`Serializable`。

ActivityFragment

Activity`Fragment``startActivityForResult(Intent intent, int requestCode)`。

`getActivity().startActivityForResult()`FragmentActivity。

`Fragment``onActivityResult()`。 FragmentActivity`onActivityResult()``super`。

`ActivityOneFragmentOne ActivityTwo`。

ActivityOne

```
public class ActivityOne extends Activity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_one);
    }

    // You must override this method as the second Activity will always send its results to
this Activity and then to the Fragment
    @Override
    public void onActivityResult(int requestCode, int resultCode, Intent data) {
       super.onActivityResult(requestCode, resultCode, data);
    }
}
```

activity_one.xml

```
<fragment android:name="com.example.FragmentOne"
    android:id="@+id/fragment_one"
    android:layout_width="match_parent"
```

```
    android:layout_height="match_parent" />
```

FragmentOne

```
public class FragmentOne extends Fragment {
    public static final int REQUEST_CODE = 11;
    public static final int RESULT_CODE = 12;
    public static final String EXTRA_KEY_TEST = "testKey";

    // Initializing and starting the second Activity
    private void startSecondActivity() {
        Intent intent = new Intent(getActivity(), ActivityTwo.class);
        startActivityForResult(REQUEST_CODE, intent);
    }

    @Override
    public void onActivityResult(int requestCode, int resultCode, Intent data) {
        super.onActivityResult(requestCode, resultCode, data);
        if (requestCode == REQUEST_CODE && resultCode == RESULT_CODE) {
            String testResult = data.getStringExtra(EXTRA_KEY_TEST);
            // TODO: Do something with your extra data
        }
    }
}
```

ActivityTwo

```
public class ActivityTwo extends Activity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_two);
    }

    private void closeActivity() {
        Intent intent = new Intent();
        intent.putExtra(FragmentOne.EXTRA_KEY_TEST, "Testing passing data back to
ActivityOne");
        setResult(FragmentOne.RESULT_CODE, intent); // You can also send result without any
data using setResult(int resultCode)
        finish();
    }
}
```

https://riptutorial.com/zh-CN/android/topic/103/

189:

Examples

```
public class OnSwipeListener implements View.OnTouchListener {

    private final GestureDetector gestureDetector;

    public OnSwipeListener(Context context) {
        gestureDetector = new GestureDetector(context, new GestureListener());
    }

    @Override
    public boolean onTouch(View v, MotionEvent event) {
        return gestureDetector.onTouchEvent(event);
    }

    private final class GestureListener extends GestureDetector.SimpleOnGestureListener {

        private static final int SWIPE_VELOCITY_THRESHOLD = 100;
        private static final int SWIPE_THRESHOLD = 100;

        @Override
        public boolean onDown(MotionEvent e) {
            return true;
        }

        @Override
        public boolean onFling(MotionEvent e1, MotionEvent e2, float velocityX, float
velocityY) {
            float diffY = e2.getY() - e1.getY();
            float diffX = e2.getX() - e1.getX();
            if (Math.abs(diffX) > Math.abs(diffY)) {
                if (Math.abs(diffX) > SWIPE_THRESHOLD && Math.abs(velocityX) >
SWIPE_VELOCITY_THRESHOLD) {
                    if (diffX > 0) {
                        onSwipeRight();
                    } else {
                        onSwipeLeft();
                    }
                }
            } else if (Math.abs(diffY) > SWIPE_THRESHOLD && Math.abs(velocityY) >
SWIPE_VELOCITY_THRESHOLD) {
                if (diffY > 0) {
                    onSwipeBottom();
                } else {
                    onSwipeTop();
                }
            }
            return true;
        }
    }

    public void onSwipeRight() {
    }

    public void onSwipeLeft() {
    }
```

```
    public void onSwipeTop() {
    }

    public void onSwipeBottom() {
    }

}
```

.....

```
view.setOnTouchListener(new OnSwipeListener(context) {
    public void onSwipeTop() {
        Log.d("OnSwipeListener", "onSwipeTop");
    }
    public void onSwipeRight() {
        Log.d("OnSwipeListener", "onSwipeRight");
    }
    public void onSwipeLeft() {
        Log.d("OnSwipeListener", "onSwipeLeft");
    }
    public void onSwipeBottom() {
        Log.d("OnSwipeListener", "onSwipeBottom");
    }

});
```

```
public class GestureActivity extends Activity implements
        GestureDetector.OnDoubleTapListener,
        GestureDetector.OnGestureListener {

    private GestureDetector mGestureDetector;

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        mGestureDetector = new GestureDetector(this, this);
        mGestureDetector.setOnDoubleTapListener(this);
    }

    @Override
    public boolean onTouchEvent(MotionEvent event){
        mGestureDetector.onTouchEvent(event);
        return super.onTouchEvent(event);
    }

    @Override
    public boolean onDown(MotionEvent event) {
        Log.d("GestureDetector","onDown");
        return true;
    }

    @Override
    public boolean onFling(MotionEvent event1, MotionEvent event2, float velocityX, float
velocityY) {
        Log.d("GestureDetector","onFling");
        return true;
    }
```

```
    @Override
    public void onLongPress(MotionEvent event) {
        Log.d("GestureDetector","onLongPress");
    }

    @Override
    public boolean onScroll(MotionEvent e1, MotionEvent e2, float distanceX, float distanceY)
{
        Log.d("GestureDetector","onScroll");
        return true;
    }

    @Override
    public void onShowPress(MotionEvent event) {
        Log.d("GestureDetector","onShowPress");
    }

    @Override
    public boolean onSingleTapUp(MotionEvent event) {
        Log.d("GestureDetector","onSingleTapUp");
        return true;
    }

    @Override
    public boolean onDoubleTap(MotionEvent event) {
        Log.d("GestureDetector","onDoubleTap");
        return true;
    }

    @Override
    public boolean onDoubleTapEvent(MotionEvent event) {
        Log.d("GestureDetector","onDoubleTapEvent");
        return true;
    }

    @Override
    public boolean onSingleTapConfirmed(MotionEvent event) {
        Log.d("GestureDetector","onSingleTapConfirmed");
        return true;
    }

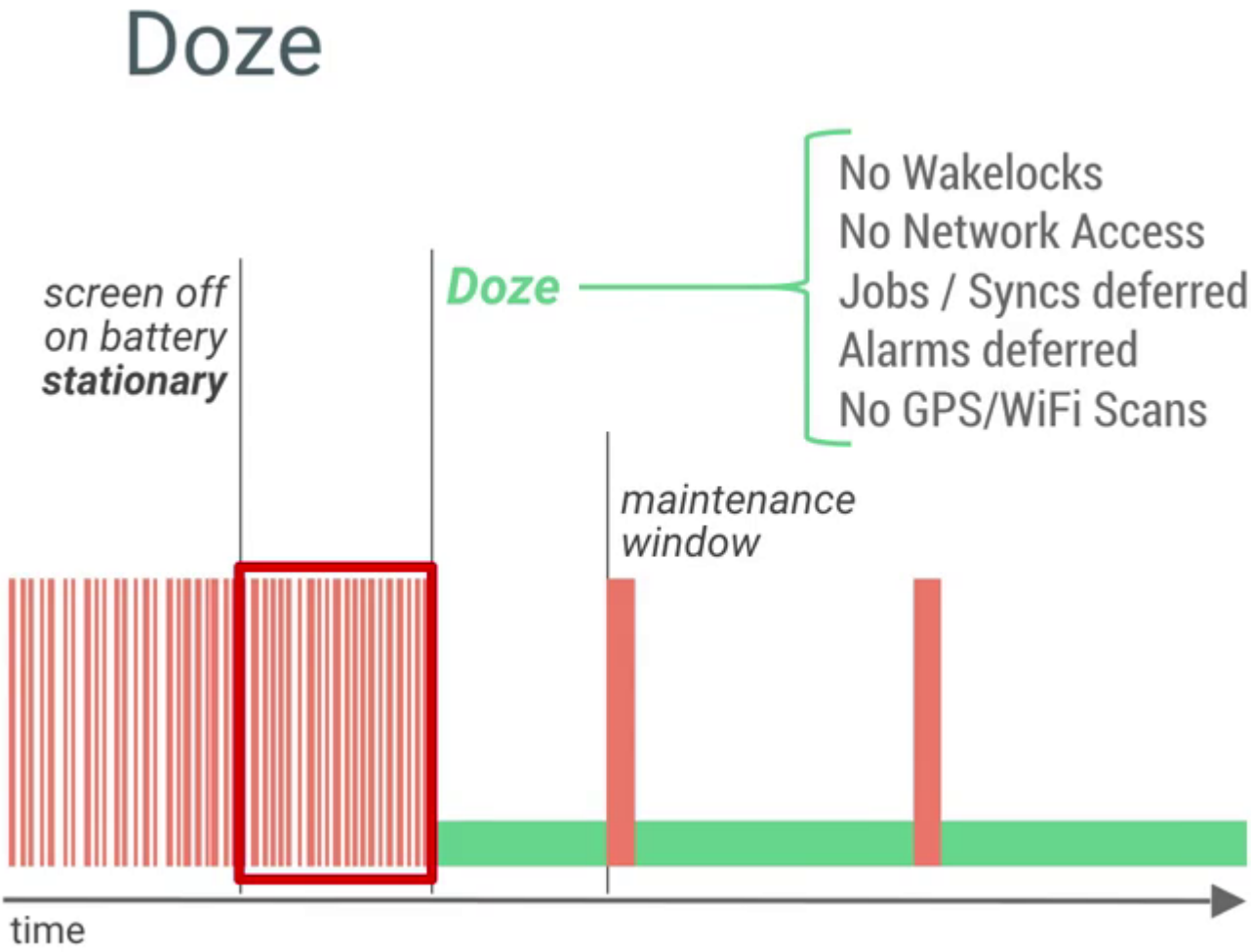
}
```

https://riptutorial.com/zh-CN/android/topic/4711/

190:

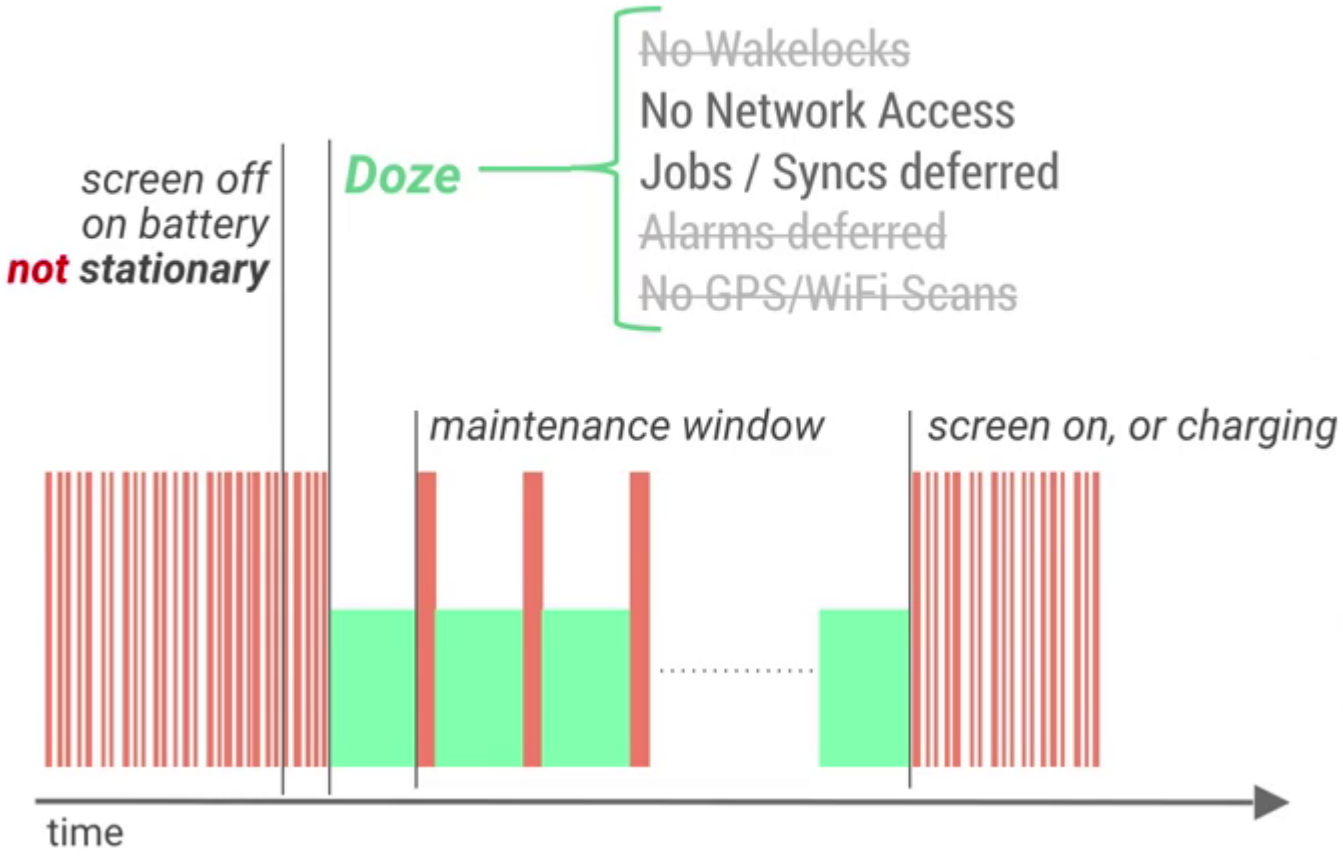
。

Android 6.0 Marshmallow。



/GPS / Wi-Fi。

Android 7.0。


Extended Doze
No Wakelocks
No Network Access
Jobs / Syncs deferred
Alarms deferred
No GPS/WiFi Scans
Doze
screen off
on battery
not stationary
maintenance window
screen on, or charging
time

/。 。 。

	Doze	extended
Trigger	Screen off, on battery, stationary	Screen off, on battery
Timing	Successively increasing periods with maintenance windows	Repeated N-minute periods with maintenance windows
Restrictions	No Network Access Jobs / Syncs deferred No Wakelocks Alarms deferred No GPS/WiFi Scans	No Network Access Jobs / Syncs deferred
Exit	Motion, screen on, alarm clock alarm, or device charging	Screen on or device charging

- DozeGCMGoogle Cloud Messaging;
- 。

https //developer.android.com/training/monitoring-device-state/doze-standby.html

Examples

1.
2.
3. “”
4. “”
5.
6. “”

。

```
isIgnoringBatteryOptimizations()
```

Android

。

Android

```
boolean isIgnoringBatteryOptimizations = pm.isIgnoringBatteryOptimizations(getPackageName());
if(!isIgnoringBatteryOptimizations){
    Intent intent = new Intent();
    intent.setAction(Settings.ACTION_REQUEST_IGNORE_BATTERY_OPTIMIZATIONS);
    intent.setData(Uri.parse("package:" + getPackageName()));
    startActivityForResult(intent, MY_IGNORE_OPTIMIZATION_REQUEST);
}
```

```
@Override
protected void onActivityResult(int requestCode, int resultCode, Intent data) {
    if (requestCode == MY_IGNORE_OPTIMIZATION_REQUEST) {
        PowerManager pm = (PowerManager)getSystemService(Context.POWER_SERVICE);
        boolean isIgnoringBatteryOptimizations =
pm.isIgnoringBatteryOptimizations(getPackageName());
        if(isIgnoringBatteryOptimizations){
            // Ignoring battery optimization
        }else{
           // Not ignoring battery optimization
        }
    }
}
```

https://riptutorial.com/zh-CN/android/topic/4719/

191:

- <... />
- onClick =“”
- button.setOnClickListenernew OnClickListener{...};
- classnameView.OnLongClickListener

Examples

onClickListener

findViewbyId...

```
Button btnOK = (...)
```

。

```
btnOk.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        // Do stuff here...
    }
});
```

android:onClick。

```
<Button
    android:width="120dp"
    android:height="wrap_content"
    android:text="Click me"
    android:onClick="handleClick" />
```

handleClick。

```
public void handleClick(View v) {
    // Do whatever.
}
```

XML

ViewandroidonClickclick。

XML

```
<Button android:id="@+id/button"
    ...
    // onClick should reference the method in your activity or fragment
    android:onClick="doSomething" />
```

```
// Note that this works with any class which is a subclass of View, not just Button
<ImageView android:id="@+id/image"
    ...
    android:onClick="doSomething" />
```

/

v。

```
public void doSomething(View v) {
    switch(v.getId()) {
        case R.id.button:
            // Button was clicked, do something.
            break;
        case R.id.image:
            // Image was clicked, do something else.
            break;
    }
}
```

ViewID。

```
View.OnLongClickListener listener = new View.OnLongClickListener() {
    public boolean onLongClick(View v) {
        Button clickedButton = (Button) v;
        String buttonText = clickedButton.getText().toString();
        Log.v(TAG, "button long pressed --> " + buttonText);
        return true;
    }
};

button.setOnLongClickListener(listener);
```

- /
-

View API。

```
public class HelpLongClickListener implements View.OnLongClickListener
{
    public HelpLongClickListener() {
    }

    @Override
    public void onLongClick(View v) {
        // show help toast or popup
    }
}
```

Activity

```
HelpLongClickListener helpListener = new HelpLongClickListener(...);
```

```
button1.setOnClickListener(helpListener);
button2.setOnClickListener(helpListener);
label.setOnClickListener(helpListener);
button1.setOnClickListener(helpListener);
```

---

publicgeters。

12***SingleClickListener*** 。

ClickListener1000。

。

```
public class SingleClickListener implements View.OnClickListener {

    protected int defaultInterval;
    private long lastTimeClicked = 0;

    public SingleClickListener() {
        this(1000);
    }

    public SingleClickListener(int minInterval) {
        this.defaultInterval = minInterval;
    }

    @Override
    public void onClick(View v) {
        if (SystemClock.elapsedRealtime() - lastTimeClicked < defaultInterval) {
            return;
        }
        lastTimeClicked = SystemClock.elapsedRealtime();
        performClick(v);
    }

    public abstract void performClick(View v);

}
```

SingleClickListenerButton

```
myButton = (Button) findViewById(R.id.my_button);
myButton.setOnClickListener(new SingleClickListener() {
    @Override
    public void performClick(View view) {
        // do stuff
    }
});
```

Button。

0ThemeOverlay/

styles.xml

```
<resources>
    <style name=“mybutton” parent=”ThemeOverlay.AppCompat.Ligth”>
        <!-- customize colorButtonNormal for the disable color -->
        <item name="colorButtonNormal">@color/colorbuttonnormal</item>
        <!-- customize colorAccent for the enabled color -->
        <item name="colorButtonNormal">@color/coloraccent</item>
    </style>
</resources>
```

MainActivity

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_gravity="center_horizontal"
    android:gravity="center_horizontal"
    android:orientation="vertical"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    tools:context=".MainActivity">

            <Button
                android:id="@+id/mybutton"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:text="Hello"
                android:theme="@style/mybutton"
                style="@style/Widget.AppCompat.Button.Colored"/>

</LinearLayout>
```

1

values / styles.xml

styles.xml

```
<resources>
        <style name="mybuttonstyle" parent="@android:style/Widget.Button">
            <item name="android:gravity">center_vertical|center_horizontal</item>
            <item name="android:textColor">#FFFFFFFF</item>
            <item name="android:shadowColor">#FF000000</item>
            <item name="android:shadowDx">0</item>
            <item name="android:shadowDy">-1</item>
            <item name="android:shadowRadius">0.2</item>
            <item name="android:textSize">16dip</item>
            <item name="android:textStyle">bold</item>
            <item name="android:background">@drawable/button</item>
        </style>
    </resources>
```

MainActivity

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_gravity="center_horizontal"
    android:gravity="center_horizontal"
    android:orientation="vertical"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    tools:context=".MainActivity">

            <Button
                android:id="@+id/mybutton"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:text="Hello"
                android:theme="@style/mybuttonstyle"/>

</LinearLayout>
```

2drawable

'mybuttondrawable.xml'xml

/ mybutton.xml

```
<selector xmlns:android="http://schemas.android.com/apk/res/android">
    <item
        android:state_enabled="false"
        android:drawable="@drawable/mybutton_disabled" />
    <item
        android:state_pressed="true"
        android:state_enabled="true"
        android:drawable="@drawable/mybutton_pressed" />
    <item
        android:state_focused="true"
        android:state_enabled="true"
        android:drawable="@drawable/mybutton_focused" />
    <item
        android:state_enabled="true"
        android:drawable="@drawable/mybutton_enabled" />
</selector>
```

drawabledrawablesmybutton_disabled.pngxml。

/ mybutton_disabled.xml

```
<?xml version="1.0" encoding="utf-8"?>
```

```
    <shape xmlns:android="http://schemas.android.com/apk/res/android"
android:shape="rectangle">
        <gradient
            android:startColor="#F2F2F2"
            android:centerColor="#A4A4A4"
            android:endColor="#F2F2F2"
            android:angle="90"/>
        <padding android:left="7dp"
            android:top="7dp"
            android:right="7dp"
            android:bottom="7dp" />
        <stroke
            android:width="2dip"
            android:color="#FFFFFF" />
        <corners android:radius= "8dp" />
    </shape>
```

MainActivity

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_gravity="center_horizontal"
    android:gravity="center_horizontal"
    android:orientation="vertical"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    tools:context=".MainActivity">

            <Button
                android:id="@+id/mybutton"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:text="Hello"
                android:background="@drawable/mybuttondrawable"/>

</LinearLayout>
```

3App

androidvalues / styles.xml。

styles.xml

```
<resources>
     <style name="AppTheme" parent="android:Theme">
            <item name="colorPrimary">@color/colorPrimary</item>
            <item name="colorPrimaryDark">@color/colorPrimaryDark</item>
            <item name="colorAccent">@color/colorAccent</item>
              <item name="android:button">@style/mybutton</item>
     </style>
```

```
    <style name="mybutton" parent="android:style/Widget.Button">
            <item name="android:gravity">center_vertical|center_horizontal</item>
               <item name="android:textColor">#FFFFFFFF</item>
               <item name="android:shadowColor">#FF000000</item>
               <item name="android:shadowDx">0</item>
               <item name="android:shadowDy">-1</item>
               <item name="android:shadowRadius">0.2</item>
               <item name="android:textSize">16dip</item>
               <item name="android:textStyle">bold</item>
               <item name="android:background">@drawable/anydrawable</item>
    </style>
</resources>
```

4

```
Button mybutton = (Button) findViewById(R.id.mybutton);
mybutton.getBackground().setColorFilter(anycolor, PorterDuff.Mode.MULTIPLY)
```

。

https://riptutorial.com/zh-CN/android/topic/5607/

192:

Examples

android manifest

```
<uses-permission android:name="android.permission.VIBRATE"/>
```

```
import android.os.Vibrator;
```

ContextVibrator

```
Vibrator vibrator = (Vibrator) getSystemService(Context.VIBRATOR_SERVICE);
```

```
void boolean isHaveVibrate(){
    if (vibrator.hasVibrator()) {
        return true;
    }
    return false;
}
```

long []int

```
Vibrator vibrator = (Vibrator) getSystemService(Context.VIBRATOR_SERVICE);

// Start time delay
// Vibrate for 500 milliseconds
// Sleep for 1000 milliseconds
long[] pattern = {0, 500, 1000};

// 0 meaning is repeat indefinitely
vibrator.vibrate(pattern, 0);
```

longlongs。。。

- 1001000
- 2002000

```
long[] pattern = {0, 100, 1000, 200, 2000};
```

-1。

```
Vibrator vibrator = (Vibrator) getSystemService(Context.VIBRATOR_SERVICE);
vibrator.vibrate(pattern, -1); // does not repeat
vibrator.vibrate(pattern,  0); // repeats forever
```

```
vibrator.cancel();
```

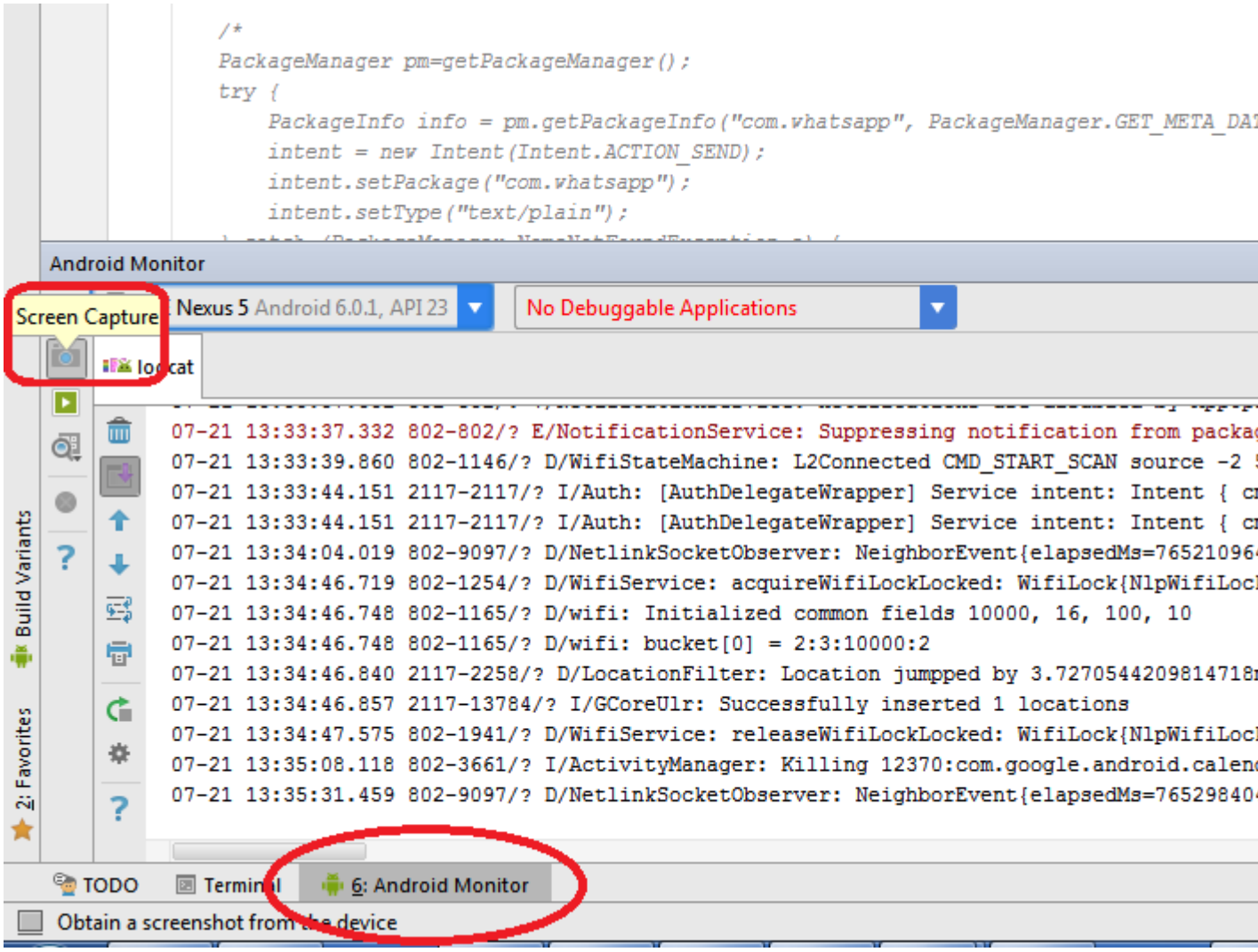
```
Vibrator vibrator = (Vibrator) getSystemService(Context.VIBRATOR_SERVICE);
vibrator.vibrate(500);
```

https://riptutorial.com/zh-CN/android/topic/3359/

193:

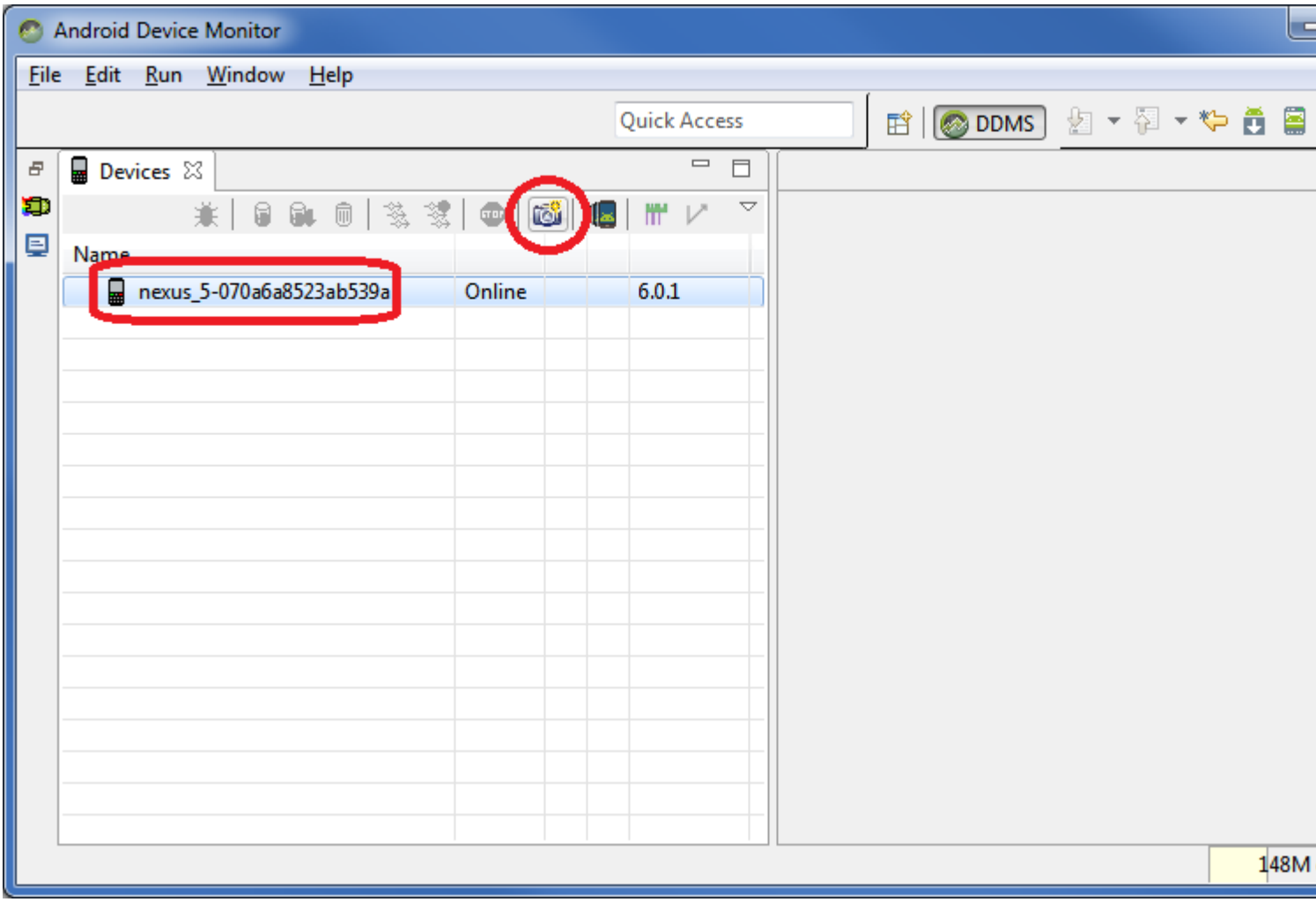
Examples

Android Studio

1. Android Monitor
2. 

Android

1. Android *C<ANDROID_SDK_LOCATION> \ tools \ monitor.bat*
2.
3.



ADB

。

```
adb shell screencap /sdcard/screen.png
```

ADBPC

LinuxCygwinWindows

```
adb shell screencap -p | sed 's/\r$//' > screenshot.png
```

View v

```
Bitmap viewBitmap = Bitmap.createBitmap(v.getWidth(), v.getHeight(), Bitmap.Config.RGB_565);
Canvas viewCanvas = new Canvas(viewBitmap);
Drawable backgroundDrawable = v.getBackground();

if(backgroundDrawable != null){
    // Draw the background onto the canvas.
    backgroundDrawable.draw(viewCanvas);
}
else{
```

```
    viewCanvas.drawColor(Color.GREEN);
    // Draw the view onto the canvas.
    v.draw(viewCanvas)
}

// Write the bitmap generated above into a file.
String fileStamp = new SimpleDateFormat("yyyyMMdd_HHmmss").format(new Date());
OutputStream outputStream = null;
try{
    imgFile = new
File(Environment.getExternalStoragePublicDirectory(Environment.DIRECTORY_PICTURES), fileStamp
+ ".png");
    outputStream = new FileOutputStream(imgFile);
    viewBitmap.compress(Bitmap.CompressFormat.PNG, 40, outputStream);
    outputStream.close();
}
catch(Exception e){
    e.printStackTrace();
}
```

https://riptutorial.com/zh-CN/android/topic/4506/

194:

Examples

```
//In this interface, you can define messages, which will be send to owner.
public interface MyCustomListener {
    //In this case we have two messages,
    //the first that is sent when the process is successful.
    void onSuccess(List<Bitmap> bitmapList);
    //And The second message, when the process will fail.
    void onFailure(String error);
}
```

`MyCustomListener` setter。

```
public class SampleClassB {
    private MyCustomListener listener;

    public void setMyCustomListener(MyCustomListener listener) {
        this.listener = listener;
    }
}
```

`SampleClassB`。

```
public class SomeActivity extends Activity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        SampleClassB sampleClass = new SampleClassB();
    }
}
```

`sampleClass`

implements `MyCustomListener`

```
public class SomeActivity extends Activity implements MyCustomListener {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        SampleClassB sampleClass = new SampleClassB();
        sampleClass.setMyCustomListener(this);
    }

    @Override
    public void onSuccess(List<Bitmap> bitmapList) {

    }
```

```
    @Override
    public void onFailure(String error) {

    }
}
```

```
public class SomeActivity extends Activity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        SampleClassB sampleClass = new SampleClassB();
        sampleClass.setMyCustomListener(new MyCustomListener() {

            @Override
            public void onSuccess(List<Bitmap> bitmapList) {

            }

            @Override
            public void onFailure(String error) {

            }
        });
    }
}
```

```
public class SampleClassB {
    private MyCustomListener listener;

    public void setMyCustomListener(MyCustomListener listener) {
        this.listener = listener;
    }

    public void doSomething() {
        fetchImages();
    }

    private void fetchImages() {
        AsyncImagefetch imageFetch = new AsyncImageFetch();
        imageFetch.start(new Response<Bitmap>() {
            @Override
            public void onDone(List<Bitmap> bitmapList, Exception e) {
                //do some stuff if needed

                //check if listener is set or not.
                if(listener == null)
                    return;
                //Fire proper event. bitmapList or error message will be sent to
                //class which set listener.
                if(e == null)
                    listener.onSuccess(bitmapList);
                else
                    listener.onFailure(e.getMessage());
            }
        });
    }
}
```

“”“”Android。

```
public class MyCustomObject {

  //1 - Define the interface
  public interface MyCustomObjectListener {
      public void onAction(String action);
  }

  //2 - Declare your listener object
  private MyCustomObjectListener listener;

  // and initialize it in the costructor
  public MyCustomObject() {
    this.listener = null;
 }

 //3 - Create your listener setter
 public void setCustomObjectListener(MyCustomObjectListener listener) {
    this.listener = listener;
 }

 // 4 - Trigger listener event
 public void makeSomething(){
    if (this.listener != null){
       listener.onAction("hello!");
 }
}
```

```
public class MyActivity extends Activity {
   public final String TAG = "MyActivity";

  @Override
  protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.main_activity);


      MyCustomObject mObj = new MyCustomObject();

      //5 - Implement listener callback
      mObj.setCustomObjectListener(new MyCustomObjectListener() {
        @Override
          public void onAction(String action) {
              Log.d(TAG, "Value: "+action);
          }
      });
   }
}
```

https://riptutorial.com/zh-CN/android/topic/1785/

195:

Examples

RxBindingsAppcompat SearchView

build.gradle

```
dependencies {
    compile 'com.android.support:appcompat-v7:23.3.0'
    compile 'com.jakewharton.rxbinding:rxbinding-appcompat-v7:0.4.0'
}
```

menu / menu.xml

```
<menu xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto">

    <item android:id="@+id/action_search" android:title="Search"
        android:icon="@android:drawable/ic_menu_search"
        app:actionViewClass="android.support.v7.widget.SearchView"
        app:showAsAction="always"/>
</menu>
```

MainActivity.java

```
@Override
public boolean onCreateOptionsMenu(Menu menu) {
    MenuInflater inflater = getMenuInflater();
    inflater.inflate(R.menu.menu, menu);

    MenuItem searchMenuItem = menu.findItem(R.id.action_search);
    setupSearchView(searchMenuItem );

    return true;
}

private void setupSearchView(MenuItem searchMenuItem) {
    SearchView searchView = (SearchView) searchMenuItem.getActionView();
    searchView.setQueryHint(getString(R.string.search_hint)); // your hint here

    SearchAdapter searchAdapter = new SearchAdapter(this);
    searchView.setSuggestionsAdapter(searchAdapter);

    // optional: set the letters count after which the search will begin to 1
    // the default is 2
    try {
        int autoCompleteTextViewID =
getResources().getIdentifier("android:id/search_src_text", null, null);
        AutoCompleteTextView searchAutoCompleteTextView = (AutoCompleteTextView)
searchView.findViewById(autoCompleteTextViewID);
        searchAutoCompleteTextView.setThreshold(1);
    } catch (Exception e) {
        Logs.e(TAG, "failed to set search view letters threshold");
```

```
    }

    searchView.setOnSearchClickListener(v -> {
        // optional actions to search view expand
    });
    searchView.setOnCloseListener(() -> {
        // optional actions to search view close
        return false;
    });

    RxSearchView.queryTextChanges(searchView)
            .doOnEach(notification -> {
                CharSequence query = (CharSequence) notification.getValue();
                searchAdapter.filter(query);
            })
            .debounce(300, TimeUnit.MILLISECONDS) // to skip intermediate letters
            .flatMap(query -> MyWebService.search(query)) // make a search request
            .retry(3)
            .subscribe(results -> {
                searchAdapter.populateAdapter(results);
            });

    //optional: collapse the searchView on close
    searchView.setOnQueryTextFocusChangeListener((view, queryTextFocused) -> {
        if (!queryTextFocused) {
            collapseSearchView();
        }
    });
}
```

SearchAdapter.java

```
public class SearchAdapter extends CursorAdapter {
    private List<SearchResult> items = Collections.emptyList();

    public SearchAdapter(Activity activity) {
        super(activity, null, CursorAdapter.FLAG_REGISTER_CONTENT_OBSERVER);
    }

    public void populateAdapter(List<SearchResult> items) {
        this.items = items;
        final MatrixCursor c = new MatrixCursor(new String[]{BaseColumns._ID});
        for (int i = 0; i < items.size(); i++) {
            c.addRow(new Object[]{i});
        }
        changeCursor(c);
        notifyDataSetChanged();
    }

    public void filter(CharSequence query) {
        final MatrixCursor c = new MatrixCursor(new String[]{BaseColumns._ID});
        for (int i = 0; i < items.size(); i++) {
            SearchResult result = items.get(i);
            if (result.getText().startsWith(query.toString())) {
                c.addRow(new Object[]{i});
            }
        }
        changeCursor(c);
        notifyDataSetChanged();
    }
```

```
    @Override
    public void bindView(View view, Context context, Cursor cursor) {
        ViewHolder holder = (ViewHolder) view.getTag();
        int position = cursor.getPosition();
        if (position < items.size()) {
            SearchResult result = items.get(position);
            // bind your view here
        }
    }

    @Override
    public View newView(Context context, Cursor cursor, ViewGroup parent) {
        LayoutInflater inflater = (LayoutInflater) context
                .getSystemService(Context.LAYOUT_INFLATER_SERVICE);

        View v = inflater.inflate(R.layout.search_list_item, parent, false);
        ViewHolder holder = new ViewHolder(v);

        v.setTag(holder);
        return v;
    }

    private static class ViewHolder {
        public final TextView text;

        public ViewHolder(View v) {
            this.text= (TextView) v.findViewById(R.id.text);
        }
    }
}
```

SearchView

menu.xml - `res` - > `menu`

```
<menu xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    tools:context=".HomeActivity">

    <item
        android:id="@+id/action_search"
        android:icon="@android:drawable/ic_menu_search"
        android:title="Search"
        app:actionViewClass="android.support.v7.widget.SearchView"
        app:showAsAction="always" />

</menu>
```

MainFragment.java

```
public class MainFragment extends Fragment {

    private SearchView searchView = null;
    private SearchView.OnQueryTextListener queryTextListener;

    @Nullable
```

```
    @Override
    public View onCreateView(LayoutInflater inflater, ViewGroup container, Bundle
savedInstanceState) {
        return inflater.inflate(R.layout.fragment_main, container, false);
    }

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setHasOptionsMenu(true);
    }

    @Override
    public void onCreateOptionsMenu(Menu menu, MenuInflater inflater) {
        inflater.inflate(R.menu.menu, menu);
        MenuItem searchItem = menu.findItem(R.id.action_search);
        SearchManager searchManager = (SearchManager)
getActivity().getSystemService(Context.SEARCH_SERVICE);

        if (searchItem != null) {
            searchView = (SearchView) searchItem.getActionView();
        }
        if (searchView != null) {

searchView.setSearchableInfo(searchManager.getSearchableInfo(getActivity().getComponentName()));


            queryTextListener = new SearchView.OnQueryTextListener() {
                @Override
                public boolean onQueryTextChange(String newText) {
                    Log.i("onQueryTextChange", newText);

                    return true;
                }
                @Override
                public boolean onQueryTextSubmit(String query) {
                    Log.i("onQueryTextSubmit", query);

                    return true;
                }
            };
            searchView.setOnQueryTextListener(queryTextListener);
        }
        super.onCreateOptionsMenu(menu, inflater);
    }

    @Override
    public boolean onOptionsItemSelected(MenuItem item) {
        switch (item.getItemId()) {
            case R.id.action_search:
                // Not implemented here
                return false;
            default:
                break;
        }
        searchView.setOnQueryTextListener(queryTextListener);
        return super.onOptionsItemSelected(item);
    }
}
```

Hello Android

196:

。Android。

;dpi。“”“”“”。Android。

。。。。;。dpUI。160 dpi“”。dp。 dppx = dp *dpi / 160。240 dpi1 dp1.5。UIdpUI。

- ## PX

  - 。

- - 。 1= 2.54

- - 。

- ## PT

  - 1/72。

- ## dpdip

  - 。160 dpidp160 dpi。 dp。“dip”“dp”“dp”“sp”。

- ## SP

  - dp。。Android

PX				
		1		
		25.4		
PT		72		
DP		160		
SP		160		

- https://developer.android.com/guide/practices/screens_support.html
- http://developer.android.com/guide/topics/resources/more-resources.html

Examples

Android。 Android。

1. res / `<resources_name>-<qualifier>` 。 `<resources_name>`drawablelayout。
2. `<qualifier>`hdpixlarge。

drawable。 `mipmap/`。

```
res/layout/my_layout.xml               // layout for normal screen size ("default")
res/layout-large/my_layout.xml         // layout for large screen size
res/layout-xlarge/my_layout.xml        // layout for extra-large screen size
res/layout-xlarge-land/my_layout.xml   // layout for extra-large in landscape orientation

res/drawable-mdpi/graphic.png          // bitmap for medium-density
res/drawable-hdpi/graphic.png          // bitmap for high-density
res/drawable-xhdpi/graphic.png         // bitmap for extra-high-density
res/drawable-xxhdpi/graphic.png        // bitmap for extra-extra-high-density

res/mipmap-mdpi/my_icon.png          // launcher icon for medium-density
res/mipmap-hdpi/my_icon.png          // launcher icon for high-density
res/mipmap-xhdpi/my_icon.png         // launcher icon for extra-high-density
res/mipmap-xxhdpi/my_icon.png        // launcher icon for extra-extra-high-density
res/mipmap-xxxhdpi/my_icon.png       // launcher icon for extra-extra-extra-high-density
```

dpsp

`Paint.setTextSize`dpsp。

```
DisplayMetrics metrics = Resources.getSystem().getDisplayMetrics();
float pixels = TypedValue.applyDimension(TypedValue.COMPLEX_UNIT_SP, 12f, metrics);

DisplayMetrics metrics = Resources.getSystem().getDisplayMetrics();
float pixels = TypedValue.applyDimension(TypedValue.COMPLEX_UNIT_DIP, 12f, metrics);
```

。

```
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <dimen name="size_in_sp">12sp</dimen>
    <dimen name="size_in_dp">12dp</dimen>
</resources>

// Get the exact dimension specified by the resource
float pixels = context.getResources().getDimension(R.dimen.size_in_sp);
float pixels = context.getResources().getDimension(R.dimen.size_in_dp);

// Get the dimension specified by the resource for use as a size.
// The value is rounded down to the nearest integer but is at least 1px.
int pixels = context.getResources().getDimensionPixelSize(R.dimen.size_in_sp);
int pixels = context.getResources().getDimensionPixelSize(R.dimen.size_in_dp);

// Get the dimension specified by the resource for use as an offset.
// The value is rounded down to the nearest integer and can be 0px.
```

```
int pixels = context.getResources().getDimensionPixelOffset(R.dimen.size_in_sp);
int pixels = context.getResources().getDimensionPixelOffset(R.dimen.size_in_dp);
```

Android

```
 style="@android:style/TextAppearance.Small"
 style="@android:style/TextAppearance.Medium"
 style="@android:style/TextAppearance.Large"
```

。

```
<TextView
        android:id="@+id/TextViewTopBarTitle"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        style="@android:style/TextAppearance.Small"/>
```

。

```
<TextView
        android:id="@+id/TextViewTopBarTitle"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"/>
```

。

https://riptutorial.com/zh-CN/android/topic/1086/-

197: /

Android。

Examples

AES

AES。1000SHA-256。CBCAESIV 。

EncryptedData salt ivencryptedData 。 。

```
private static final int SALT_BYTES = 8;
private static final int PBK_ITERATIONS = 1000;
private static final String ENCRYPTION_ALGORITHM = "AES/CBC/PKCS5Padding";
private static final String PBE_ALGORITHM = "PBEwithSHA256and128BITAES-CBC-BC";

private EncryptedData encrypt(String password, byte[] data) throws NoSuchPaddingException,
NoSuchAlgorithmException, InvalidKeySpecException, InvalidKeyException, BadPaddingException,
IllegalBlockSizeException, InvalidAlgorithmParameterException {
    EncryptedData encData = new EncryptedData();
    SecureRandom rnd = new SecureRandom();
    encData.salt = new byte[SALT_BYTES];
    encData.iv = new byte[16]; // AES block size
    rnd.nextBytes(encData.salt);
    rnd.nextBytes(encData.iv);

    PBEKeySpec keySpec = new PBEKeySpec(password.toCharArray(), encData.salt, PBK_ITERATIONS);
    SecretKeyFactory secretKeyFactory = SecretKeyFactory.getInstance(PBE_ALGORITHM);
    Key key = secretKeyFactory.generateSecret(keySpec);
    Cipher cipher = Cipher.getInstance(ENCRYPTION_ALGORITHM);
    IvParameterSpec ivSpec = new IvParameterSpec(encData.iv);
    cipher.init(Cipher.ENCRYPT_MODE, key, ivSpec);
    encData.encryptedData = cipher.doFinal(data);
    return encData;
}

private byte[] decrypt(String password, byte[] salt, byte[] iv, byte[] encryptedData) throws
NoSuchAlgorithmException, InvalidKeySpecException, NoSuchPaddingException,
InvalidKeyException, BadPaddingException, IllegalBlockSizeException,
InvalidAlgorithmParameterException {
    PBEKeySpec keySpec = new PBEKeySpec(password.toCharArray(), salt, PBK_ITERATIONS);
    SecretKeyFactory secretKeyFactory = SecretKeyFactory.getInstance(PBE_ALGORITHM);
    Key key = secretKeyFactory.generateSecret(keySpec);
    Cipher cipher = Cipher.getInstance("AES/CBC/PKCS5Padding");
    IvParameterSpec ivSpec = new IvParameterSpec(iv);
    cipher.init(Cipher.DECRYPT_MODE, key, ivSpec);
    return cipher.doFinal(encryptedData);
}

private static class EncryptedData {
    public byte[] salt;
    public byte[] iv;
    public byte[] encryptedData;
}
```

```
try {
    String password = "test12345";
    byte[] data = "plaintext11223344556677889900".getBytes("UTF-8");
    EncryptedData encData = encrypt(password, data);
    byte[] decryptedData = decrypt(password, encData.salt, encData.iv, encData.encryptedData);
    String decDataAsString = new String(decryptedData, "UTF-8");
    Toast.makeText(this, decDataAsString, Toast.LENGTH_LONG).show();
} catch (Exception e) {
    e.printStackTrace();
}
```

/ https://riptutorial.com/zh-CN/android/topic/3471/-

198:

build.gradle◦

```
android {
    ....
    dataBinding {
        enabled = true
    }
}
```

1.5.0Android Gradle

Pascal case“Binding”◦ item_detail_activity.xmlItemDetailActivityBinding◦

-

Examples

Gradleapp

```
android {
    ....
    dataBinding {
        enabled = true
    }
}
```

```
public class Item {
    public String name;
    public String description;

    public Item(String name, String description) {
        this.name = name;
        this.description = description;
    }
}
```

XML

<layout><data><variable>◦

@{model.fieldname}XMLmodel fieldname◦

item_detail_activity.xml

```
<?xml version="1.0" encoding="utf-8"?>
<layout xmlns:android="http://schemas.android.com/apk/res/android">
   <data>
       <variable name="item" type="com.example.Item"/>
   </data>
```

```
   <LinearLayout
       android:orientation="vertical"
       android:layout_width="match_parent"
       android:layout_height="match_parent">

       <TextView
           android:layout_width="wrap_content"
           android:layout_height="wrap_content"
           android:text="@{item.name}"/>

       <TextView
           android:layout_width="wrap_content"
           android:layout_height="wrap_content"
           android:text="@{item.description}"/>

   </LinearLayout>
</layout>
```

XMLAndroid Gradlebindings。*item_detail_activity*`ItemDetailActivityBinding`。

Activity

```
public class ItemDetailActivity extends Activity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
       super.onCreate(savedInstanceState);
       ItemDetailActivityBinding binding = DataBindingUtil.setContentView(this,
R.layout.item_detail_activity);
       Item item = new Item("Example item", "This is an example item.");
       binding.setItem(item);
    }
}
```

。

```
public class Item {
    private String name;

    public String getName() {
        return name;
    }
}
```

XML

```
<?xml version="1.0" encoding="utf-8"?>
<layout xmlns:android="http://schemas.android.com/apk/res/android">
   <data>
       <variable name="item" type="com.example.Item"/>
   </data>

   <LinearLayout
       android:orientation="vertical"
       android:layout_width="match_parent"
       android:layout_height="match_parent">
```

```
        <!-- Since the "name" field is private on our data model,
             this binding will utilize the public getName() method instead. -->
        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="@{item.name}"/>

    </LinearLayout>
</layout>
```

```
public class Item {
    private String name;

    public String getName() {
        return name;
    }
}
```

XML

Java。

```
<?xml version="1.0" encoding="utf-8"?>
<layout xmlns:android="http://schemas.android.com/apk/res/android">
    <data>
        <import type="android.view.View"/>
        <variable name="item" type="com.example.Item"/>
    </data>

    <LinearLayout
        android:orientation="vertical"
        android:layout_width="match_parent"
        android:layout_height="match_parent">

        <!-- We reference the View class to set the visibility of this TextView -->
        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="@{item.name}"
            android:visibility="@{item.name == null ? View.VISIBLE : View.GONE"/>

    </LinearLayout>
</layout>
```

`java.lang.*`。 `JVM` for `Java`

```
public class Item {
    private String name;

    public String getName() {
        return name;
    }

    public void setName(String name){
        this.name = name;
    }
```

```
}
```

XML

```
<?xml version="1.0" encoding="utf-8"?>
<layout xmlns:android="http://schemas.android.com/apk/res/android">
   <data>
       <variable name="item" type="com.example.Item"/>
   </data>

   <LinearLayout
       android:orientation="vertical"
       android:layout_width="match_parent"
       android:layout_height="match_parent">

       <TextView
           android:layout_width="wrap_content"
           android:layout_height="wrap_content"
           android:text="@{item.name}"/>

   </LinearLayout>
</layout>
```

```
@Override
public View onCreateView(LayoutInflater inflater, @Nullable ViewGroup container, @Nullable
Bundle savedInstanceState) {
    FragmentTest binding = DataBindingUtil.inflate(inflater, R.layout.fragment_test,
container, false);
    Item item = new Item();
    item.setName("Thomas");
    binding.setItem(item);
    return binding.getRoot();
}
```

AbsListView	android:selectedItemPosition
CalendarView	android:date
CompoundButton	android:checked
DatePicker	• android:year • android:month • android:day
EditText	android:text
NumberPicker	android:value
RadioGroup	android:checkedButton
RatingBar	android:rating
SeekBar	android:progress
TabHost	android:currentTab

TextView	android:text
TimePicker	• android:hour • android:minute
ToggleButton	android:checked
Switch	android:checked

```
<layout ...>
    <data>
        <variable type="com.example.myapp.User" name="user"/>
    </data>
    <RelativeLayout ...>
        <EditText android:text="@={user.firstName}" .../>
    </RelativeLayout>
</layout>
```

`@={}` **=** ◦ Binding◦

RecyclerView

RecyclerView◦

```
public class Item {
    private String name;

    public String getName() {
        return name;
    }
}
```

XML

```
<TextView
       android:layout_width="wrap_content"
       android:layout_height="wrap_content"
       android:text="@{item.name}"/>
```

```
public class ListItemAdapter extends RecyclerView.Adapter<RecyclerView.ViewHolder> {

    private Activity host;
    private List<Item> items;

    public ListItemAdapter(Activity activity, List<Item> items) {
        this.host = activity;
        this.items = items;
    }

    @Override
    public RecyclerView.ViewHolder onCreateViewHolder(ViewGroup parent, int viewType) {
```

```
        // inflate layout and retrieve binding
        ListItemBinding binding = DataBindingUtil.inflate(host.getLayoutInflater(),
                R.layout.list_item, parent, false);

        return new ItemViewHolder(binding);
    }

    @Override
    public void onBindViewHolder(RecyclerView.ViewHolder holder, int position) {
        Item item = items.get(position);

        ItemViewHolder itemViewHolder = (ItemViewHolder)holder;
        itemViewHolder.bindItem(item);
    }

    @Override
    public int getItemCount() {
        return items.size();
    }

    private static class ItemViewHolder extends RecyclerView.ViewHolder {
        ListItemBinding binding;

        ItemViewHolder(ListItemBinding binding) {
            super(binding.getRoot());
            this.binding = binding;
        }

        void bindItem(Item item) {
            binding.setItem(item);
            binding.executePendingBindings();
        }
    }
}
```

Binding

clickHandler

```
public interface ClickHandler {
    public void onButtonClick(View v);
}
```

XML

```
<?xml version="1.0" encoding="utf-8"?>
<layout xmlns:android="http://schemas.android.com/apk/res/android">

    <data>
        <variable
            name="handler"
            type="com.example.ClickHandler"/>
    </data>

    <RelativeLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent">
```

```
        <Button
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="click me"
            android:onClick="@{handler.onButtonClick}"/>
    </RelativeLayout>
</layout>
```

```
public class MainActivity extends Activity implements ClickHandler {

    private ActivityMainBinding binding;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        binding = DataBindingUtil.setContentView(this,R.layout.activity_main);
        binding.setHandler(this);
    }

    @Override
    public void onButtonClick(View v) {
        Toast.makeText(context,"Button clicked",Toast.LENGTH_LONG).show();
    }
}
```

lambda

```
public interface ClickHandler {
    public void onButtonClick(User user);
}
```

Model

```
public class User {
    private String name;

    public User(String name) {
        this.name = name;
    }

    public String getName() {
        return name;
    }

    public void setName(String name) {
        this.name = name;
    }
}
```

XML

```
<layout xmlns:android="http://schemas.android.com/apk/res/android">

    <data>
        <variable
            name="handler"
            type="com.example.ClickHandler"/>
```

```
        <variable
            name="user"
            type="com.example.User"/>
    </data>

    <RelativeLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent">

        <Button
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="@{user.name}"
            android:onClick="@{() -> handler.onButtonClick(user)}"/>
    </RelativeLayout>
</layout>
```

```
public class MainActivity extends Activity implements ClickHandler {

    private ActivityMainBinding binding;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        binding = DataBindingUtil.setContentView(this,R.layout.activity_main);
        binding.setUser(new User("DataBinding User"));
        binding.setHandler(this);
    }

    @Override
    public void onButtonClick(User user) {
        Toast.makeText(MainActivity.this,"Welcome " +
user.getName(),Toast.LENGTH_LONG).show();
    }
}
```

xmljava。

```
public class BindingUtil {
    @BindingAdapter({"bind:autoAdapter"})
    public static void setAdapter(AutoCompleteTextView view, ArrayAdapter<String>
pArrayAdapter) {
        view.setAdapter(pArrayAdapter);
    }
    @BindingAdapter({"bind:onKeyListener"})
    public static void setOnKeyListener(AutoCompleteTextView view , View.OnKeyListener
pOnKeyListener)
    {
        view.setOnKeyListener(pOnKeyListener);
    }
}
```

```
public class Handler extends BaseObservable {
    private ArrayAdapter<String> roleAdapter;

    public ArrayAdapter<String> getRoleAdapter() {
        return roleAdapter;
    }
```

```
    public void setRoleAdapter(ArrayAdapter<String> pRoleAdapter) {
        roleAdapter = pRoleAdapter;
    }
}
```

XML

```
<layout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:bind="http://schemas.android.com/tools" >

    <data>
        <variable
            name="handler"
            type="com.example.Handler" />
    </data>

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:orientation="vertical" >

        <AutoCompleteTextView
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:singleLine="true"
            bind:autoAdapter="@{handler.roleAdapter}" />

    </LinearLayout>
</layout>
```

“”。

```
android:layout_height="@{@dimen/main_layout_height, default=wrap_content}"
```

wrap_content wrap_content 。

```
android:text="@{user.name, default=`Preview Text`}"
```

Preview Text /

DataBindingintboolean

/。 DataBinding。

```
<layout xmlns:android="http://schemas.android.com/apk/res/android">

    <data>

        <import type="android.view.View" />

        <variable
            name="selected"
            type="Boolean" />
```

```
    </data>

    <RelativeLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent">

        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Hello World"
            android:visibility="@{selected ? View.VISIBLE : View.GONE}" />

    </RelativeLayout>
</layout>
```

java。

```
binding.setSelected(true);
```

```
public void doSomething() {
    DialogTestBinding binding = DataBindingUtil
            .inflate(LayoutInflater.from(context), R.layout.dialog_test, null, false);

    Dialog dialog = new Dialog(context);
    dialog.setContentView(binding.getRoot());
    dialog.show();
}
```

BindingAdapter

XML

```
<?xml version="1.0" encoding="utf-8"?>
<layout xmlns:android="http://schemas.android.com/apk/res/android">
   <data>

   </data>

   <LinearLayout
       android:orientation="vertical"
       android:layout_width="match_parent"
       android:layout_height="match_parent">

       <ProgressBar
        android:id="@+id/progressBar"
        style="?android:attr/progressBarStyleSmall"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"/>

        <ImageView
        android:id="@+id/img"
        android:layout_width="match_parent"
        android:layout_height="100dp"
        app:imageUrl="@{url}"
        app:progressbar="@{progressBar}"/>
```

```
   </LinearLayout>
</layout>
```

BindingAdapter

```
@BindingAdapter({"imageUrl","progressbar"})
public static void loadImage(ImageView view, String imageUrl, ProgressBar progressBar){
    Glide.with(view.getContext()).load(imageUrl)
                        .listener(new RequestListener<String, GlideDrawable>() {
                    @Override
                    public boolean onException(Exception e, String model,
Target<GlideDrawable> target, boolean isFirstResource) {
                        return false;
                    }

                    @Override
                    public boolean onResourceReady(GlideDrawable resource, String model,
Target<GlideDrawable> target, boolean isFromMemoryCache, boolean isFirstResource) {
                        progressBar.setVisibility(View.GONE);
                        return false;
                    }
                }).into(view);
}
```

https://riptutorial.com/zh-CN/android/topic/111/

199: Google

- newInstance - Google Helper
- initGoogleSignIn - Google
- getGoogleAccountDetails -
- signOut -
- getGoogleClient - GoogleApiClient

GoogleSignInHelper	
AppCompatActivity	
GoogleApiClient	GoogleAPIClient
RC_SIGN_IN	
isLoggingOut	

Examples

Google

`androidbuild.gradle`

```
// Apply plug-in to app.
apply plugin: 'com.google.gms.google-services'
```

util

```
/**
 * Created by Andy
 */
public class GoogleSignInHelper implements GoogleApiClient.OnConnectionFailedListener,
        GoogleApiClient.ConnectionCallbacks {
    private static final String TAG = GoogleSignInHelper.class.getSimpleName();

    private static GoogleSignInHelper googleSignInHelper;
    private AppCompatActivity mActivity;
    private GoogleApiClient mGoogleApiClient;
    public static final int RC_SIGN_IN = 9001;
    private boolean isLoggingOut = false;

    public static GoogleSignInHelper newInstance(AppCompatActivity mActivity) {
        if (googleSignInHelper == null) {
            googleSignInHelper = new GoogleSignInHelper(mActivity, fireBaseAuthHelper);
        }
        return googleSignInHelper;
    }
```

```
    public GoogleSignInHelper(AppCompatActivity mActivity) {
        this.mActivity = mActivity;
        initGoogleSignIn();
    }


    private void initGoogleSignIn() {
        // [START config_sign_in]
        // Configure Google Sign In
        GoogleSignInOptions gso = new
GoogleSignInOptions.Builder(GoogleSignInOptions.DEFAULT_SIGN_IN)
                .requestIdToken(mActivity.getString(R.string.default_web_client_id))
                .requestEmail()
                .build();
        // [END config_sign_in]

        mGoogleApiClient = new GoogleApiClient.Builder(mActivity)
                .enableAutoManage(mActivity /* FragmentActivity */, this /*
OnConnectionFailedListener */)
                .addApi(Auth.GOOGLE_SIGN_IN_API, gso)
                .addConnectionCallbacks(this)
                .build();

    }

    @Override
    public void onConnectionFailed(@NonNull ConnectionResult connectionResult) {
        // An unresolvable error has occurred and Google APIs (including Sign-In) will not
        // be available.
        Log.d(TAG, "onConnectionFailed:" + connectionResult);
        Toast.makeText(mActivity, "Google Play Services error.", Toast.LENGTH_SHORT).show();
    }

    public void getGoogleAccountDetails(GoogleSignInResult result) {
        // Google Sign In was successful, authenticate with FireBase
        GoogleSignInAccount account = result.getSignInAccount();
        // You are now logged into Google
    }
    public void signOut() {

        if (mGoogleApiClient.isConnected()) {

            // Google sign out
            Auth.GoogleSignInApi.signOut(mGoogleApiClient).setResultCallback(
                    new ResultCallback<Status>() {
                        @Override
                        public void onResult(@NonNull Status status) {
                            isLoggingOut = false;
                        }
                    });
        } else {
            isLoggingOut = true;
        }
    }

    public GoogleApiClient getGoogleClient() {
        return mGoogleApiClient;
    }

    @Override
```

```
    public void onConnected(@Nullable Bundle bundle) {
        Log.w(TAG, "onConnected");
        if (isLoggingOut) {
            signOut();
        }
    }

    @Override
    public void onConnectionSuspended(int i) {
        Log.w(TAG, "onConnectionSuspended");
    }
}
```

Activity`OnActivityResult`

```
 // [START onactivityresult]
    @Override
    public void onActivityResult(int requestCode, int resultCode, Intent data) {
        super.onActivityResult(requestCode, resultCode, data);

        // Result returned from launching the Intent from
GoogleSignInApi.getSignInIntent(...);
        if (requestCode == GoogleSignInHelper.RC_SIGN_IN) {
            GoogleSignInResult result = Auth.GoogleSignInApi.getSignInResultFromIntent(data);
            if (result.isSuccess()) {
                googleSignInHelper.getGoogleAccountDetails(result);
            } else {
                // Google Sign In failed, update UI appropriately
                // [START_EXCLUDE]
                Log.d(TAG, "signInWith Google failed");
                // [END_EXCLUDE]
            }
        }
    }
    // [END onactivityresult]

 // [START signin]
    public void signIn() {
        Intent signInIntent =
Auth.GoogleSignInApi.getSignInIntent(googleSignInHelper.getGoogleClient());
        startActivityForResult(signInIntent, GoogleSignInHelper.RC_SIGN_IN);
    }

    // [END signin]
```

Google https://riptutorial.com/zh-CN/android/topic/2837/google

200: TTS

Examples

layout_text_to_speech.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:padding="16dp">

    <EditText
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter text here!"
        android:id="@+id/textToSpeak"/>
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:layout_below="@id/textToSpeak"
        android:id="@+id/btnSpeak"/>

</RelativeLayout>
```

AndroidTextToSpeechActivity.java

```
public class AndroidTextToSpeechActivity extends Activity implements
        TextToSpeech.OnInitListener {

    EditText textToSpeak = null;
    Button btnSpeak = null;
    TextToSpeech tts;
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.main);
        textToSpeak = findViewById(R.id.textToSpeak);
        btnSpeak = findViewById(R.id.btnSpeak);
        btnSpeak.setEnabled(false);
        tts = new TextToSpeech(this, this);
        btnSpeak.setOnClickListener(new View.OnClickListener() {
                @Override
                public void onClick(View v) {
                    speakOut();
                }
            });
    }

    @Override
    public void onDestroy() {
        // Don't forget to shutdown tts!
        if (tts != null) {
            tts.stop();
            tts.shutdown();
```

```
        }
        super.onDestroy();
    }

    @Override
    public void onInit(int status) {
        if (status == TextToSpeech.SUCCESS) {
            int result = tts.setLanguage(Locale.US);

            if (result == TextToSpeech.LANG_MISSING_DATA
                    || result == TextToSpeech.LANG_NOT_SUPPORTED) {
                Log.e("TTS", "This Language is not supported");
            } else {
                btnSpeak.setEnabled(true);
                speakOut();
            }
        } else {
            Log.e("TTS", "Initilization Failed!");
        }
    }

    private void speakOut() {
        String text = textToSpeak.getText().toString();
        if(text == null || text.isEmpty())
            return;

        if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.LOLLIPOP) {
            String utteranceId=this.hashCode() + "";
            tts.speak(text, TextToSpeech.QUEUE_FLUSH, null, utteranceId);
        } else {
            tts.speak(text, TextToSpeech.QUEUE_FLUSH, null);
        }
    }
}
```

`setLanguage()Locale`

```
tts.setLanguage(Locale.CHINESE); // Chinese language
```

Android。`isLanguageAvailable()`

```
tts.isLanguageAvailable(Locale.CHINESE);
```

`setPitch()`。1.0。1.01.0

```
tts.setPitch(0.6);
```

`setSpeechRate()setSpeechRate()`。1.0。2.00.5

```
tts.setSpeechRate(2.0);
```

APITextToSpeech

TTStrue。API21

```
public class RxTextToSpeech {

@Nullable RxTTSObservableOnSubscribe audio;

WeakReference<Context> contextRef;

public RxTextToSpeech(Context context) {
    this.contextRef = new WeakReference<>(context);
}

public void requestTTS(FragmentActivity activity, int requestCode) {
    Intent checkTTSIntent = new Intent();
    checkTTSIntent.setAction(TextToSpeech.Engine.ACTION_CHECK_TTS_DATA);
    activity.startActivityForResult(checkTTSIntent, requestCode);
}

public void cancelCurrent() {
    if (audio != null) {
        audio.dispose();
        audio = null;
    }
}

public Observable<Boolean> speak(String textToRead) {
    audio = new RxTTSObservableOnSubscribe(contextRef.get(), textToRead, Locale.GERMANY);
    return Observable.create(audio);
}


public static class RxTTSObservableOnSubscribe extends UtteranceProgressListener
        implements ObservableOnSubscribe<Boolean>,
        Disposable, Cancellable, TextToSpeech.OnInitListener {

    volatile boolean disposed;
    ObservableEmitter<Boolean> emitter;
    TextToSpeech textToSpeech;
    String text = "";
    Locale selectedLocale;
    Context context;

    public RxTTSObservableOnSubscribe(Context context, String text, Locale locale) {
        this.selectedLocale = locale;
        this.context = context;
        this.text = text;
    }

    @Override public void subscribe(ObservableEmitter<Boolean> e) throws Exception {
        this.emitter = e;
        if (context == null) {
            this.emitter.onError(new Throwable("nullable context, cannot execute " + text));
        } else {
            this.textToSpeech = new TextToSpeech(context, this);
        }
    }

    @Override @DebugLog public void dispose() {
        if (textToSpeech != null) {
            textToSpeech.setOnUtteranceProgressListener(null);
            textToSpeech.stop();
            textToSpeech.shutdown();
            textToSpeech = null;
```

```
        }
        disposed = true;
    }

    @Override public boolean isDisposed() {
        return disposed;
    }

    @Override public void cancel() throws Exception {
        dispose();
    }

    @Override public void onInit(int status) {

        int languageCode = textToSpeech.setLanguage(selectedLocale);

        if (languageCode == android.speech.tts.TextToSpeech.LANG_COUNTRY_AVAILABLE) {
            textToSpeech.setPitch(1);
            textToSpeech.setSpeechRate(1.0f);
            textToSpeech.setOnUtteranceProgressListener(this);
            performSpeak();
        } else {
            emitter.onError(new Throwable("language " + selectedLocale.getCountry() + " is not
supported"));
        }
    }

    @Override public void onStart(String utteranceId) {
        //no-op
    }

    @Override public void onDone(String utteranceId) {
        this.emitter.onNext(true);
        this.emitter.onComplete();
    }

    @Override public void onError(String utteranceId) {
        this.emitter.onError(new Throwable("error TTS " + utteranceId));
    }

    void performSpeak() {

        if (isAtLeastApiLevel(21)) {
            speakWithNewApi();
        } else {
            speakWithOldApi();
        }
    }

    @RequiresApi(api = 21) void speakWithNewApi() {
        Bundle params = new Bundle();
        params.putString(TextToSpeech.Engine.KEY_PARAM_UTTERANCE_ID, "");
        textToSpeech.speak(text, TextToSpeech.QUEUE_ADD, params, uniqueId());
    }

    void speakWithOldApi() {
        HashMap<String, String> map = new HashMap<>();
        map.put(TextToSpeech.Engine.KEY_PARAM_UTTERANCE_ID, uniqueId());
        textToSpeech.speak(text, TextToSpeech.QUEUE_ADD, map);
    }
```

```
    private String uniqueId() {
        return UUID.randomUUID().toString();
    }
}

public static boolean isAtLeastApiLevel(int apiLevel) {
    return Build.VERSION.SDK_INT >= apiLevel;
}
```

}

TTS https://riptutorial.com/zh-CN/android/topic/3381/-tts-

201:

https //guides.codepath.com/android/Handling-Configuration-Changes#references

Examples

`onSaveInstanceState()`。 `EditTextListView`。

`onSaveInstanceState()`Bundle。

```
public class MainActivity extends Activity {
    static final String SOME_VALUE = "int_value";
    static final String SOME_OTHER_VALUE = "string_value";

    @Override
    protected void onSaveInstanceState(Bundle savedInstanceState) {
        // Save custom values into the bundle
        savedInstanceState.putInt(SOME_VALUE, someIntValue);
        savedInstanceState.putString(SOME_OTHER_VALUE, someStringValue);
        // Always call the superclass so it can save the view hierarchy state
        super.onSaveInstanceState(savedInstanceState);
    }
}
```

Activity。 `onRestoreInstanceState` bundle

```
@Override
protected void onRestoreInstanceState(Bundle savedInstanceState) {
    // Always call the superclass so it can restore the view hierarchy
    super.onRestoreInstanceState(savedInstanceState);
    // Restore state members from saved instance
    someIntValue = savedInstanceState.getInt(SOME_VALUE);
    someStringValue = savedInstanceState.getString(SOME_OTHER_VALUE);
}
```

ActivityonCreate`onRestoreInstanceState`。 stackoverflow。

`onSaveInstanceStateonRestoreInstanceState`。 Android`onSaveInstanceState()`。 `onSaveInstanceState` `onRestoreInstanceState`。

`onSaveInstanceState()`

```
public class MySimpleFragment extends Fragment {
    private int someStateValue;
    private final String SOME_VALUE_KEY = "someValueToSave";

    // Fires when a configuration change occurs and fragment needs to save state
    @Override
    protected void onSaveInstanceState(Bundle outState) {
        outState.putInt(SOME_VALUE_KEY, someStateValue);
        super.onSaveInstanceState(outState);
    }
```

```
}
```

onCreateView

```
public class MySimpleFragment extends Fragment {
   // ...

   // Inflate the view for the fragment based on layout XML
   @Override
   public View onCreateView(LayoutInflater inflater, ViewGroup container, Bundle
savedInstanceState) {
        View view = inflater.inflate(R.layout.my_simple_fragment, container, false);
        if (savedInstanceState != null) {
            someStateValue = savedInstanceState.getInt(SOME_VALUE_KEY);
            // Do something with value if needed
        }
        return view;
   }
}
```

◦ ◦ Activity

```
public class ParentActivity extends AppCompatActivity {
    private MySimpleFragment fragmentSimple;
    private final String SIMPLE_FRAGMENT_TAG = "myfragmenttag";

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        if (savedInstanceState != null) { // saved instance state, fragment may exist
           // look up the instance that already exists by tag
           fragmentSimple = (MySimpleFragment)
              getSupportFragmentManager().findFragmentByTag(SIMPLE_FRAGMENT_TAG);
        } else if (fragmentSimple == null) {
           // only create fragment if they haven't been instantiated already
           fragmentSimple = new MySimpleFragment();
        }
    }
}
```

```
public class ParentActivity extends AppCompatActivity {
    private MySimpleFragment fragmentSimple;
    private final String SIMPLE_FRAGMENT_TAG = "myfragmenttag";

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        // ... fragment lookup or instantation from above...
        // Always add a tag to a fragment being inserted into container
        if (!fragmentSimple.isInLayout()) {
            getSupportFragmentManager()
                .beginTransaction()
                .replace(R.id.container, fragmentSimple, SIMPLE_FRAGMENT_TAG)
                .commit();
        }
    }
}
```

◦

Activity。

```
public class RetainedFragment extends Fragment {
    // data object we want to retain
    private MyDataObject data;

    // this method is only called once for this fragment
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        // retain this fragment when activity is re-initialized
        setRetainInstance(true);
    }

    public void setData(MyDataObject data) {
        this.data = data;
    }

    public MyDataObject getData() {
        return data;
    }
}
```

。 Fragment Manager。 Android。

。 。

Android**AndroidManifest.xml**`<activity>android:screenOrientation`

```
<activity
    android:name="com.techblogon.screenorientationexample.MainActivity"
    android:screenOrientation="portrait"
    android:label="@string/app_name" >
    <!-- ... -->
</activity>
```

“ ”。

。

。 `android:configChanges`**AndroidManifest.xml**

```
<activity android:name=".MyActivity"
          android:configChanges="orientation|screenSize|keyboardHidden"
          android:label="@string/app_name">
```

`onConfigurationChanged()`

```
// Within the activity which receives these changes
// Checks the current device orientation, and toasts accordingly
@Override
public void onConfigurationChanged(Configuration newConfig) {
    super.onConfigurationChanged(newConfig);

    // Checks the orientation of the screen
```

```
    if (newConfig.orientation == Configuration.ORIENTATION_LANDSCAPE) {
        Toast.makeText(this, "landscape", Toast.LENGTH_SHORT).show();
    } else if (newConfig.orientation == Configuration.ORIENTATION_PORTRAIT){
        Toast.makeText(this, "portrait", Toast.LENGTH_SHORT).show();
    }
}
```

。 androidconfigChangesConfiguration。

AsyncTask

- AsyncTask。
- AsyncTaskUI。

/。

```
public class MainActivity extends AppCompatActivity
        implements LoaderManager.LoaderCallbacks<Bitmap> {

    //Unique id for the loader
    private static final int MY_LOADER = 0;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        LoaderManager loaderManager = getSupportLoaderManager();

        if(loaderManager.getLoader(MY_LOADER) == null) {
            loaderManager.initLoader(MY_LOADER, null, this).forceLoad();
        }
    }

    @Override
    public Loader<Bitmap> onCreateLoader(int id, Bundle args) {
        //Create a new instance of your Loader<Bitmap>
        MyLoader loader = new MyLoader(MainActivity.this);
        return loader;
    }

    @Override
    public void onLoadFinished(Loader<Bitmap> loader, Bitmap data) {
        // do something in the parent activity/service
        // i.e. display the downloaded image
        Log.d("MyAsyncTask", "Received result: ");
    }

    @Override
    public void onLoaderReset(Loader<Bitmap> loader) {

    }
}
```

AsyncTaskLoader

```
public class MyLoader extends AsyncTaskLoader<Bitmap> {
    private WeakReference<Activity> motherActivity;

    public MyLoader(Activity activity) {
        super(activity);
        //We don't use this, but if you want you can use it, but remember, WeakReference
        motherActivity = new WeakReference<>(activity);
    }

    @Override
    public Bitmap loadInBackground() {
        // Do work. I.e download an image from internet to be displayed in gui.
        // i.e. return the downloaded gui
        return result;
    }
}
```

v4◦ `android.support.v4.contentandroid.content`◦

I ◦

Dialog◦

```
<activity
    android:name=".TheActivity"
    android:screenOrientation="portrait"
    android:label="@string/app_name" >
</activity>
```

```
public void lockDeviceRotation(boolean value) {
    if (value) {
        int currentOrientation = getResources().getConfiguration().orientation;
        if (currentOrientation == Configuration.ORIENTATION_LANDSCAPE) {
            setRequestedOrientation(ActivityInfo.SCREEN_ORIENTATION_SENSOR_LANDSCAPE);
        } else {
            setRequestedOrientation(ActivityInfo.SCREEN_ORIENTATION_SENSOR_PORTRAIT);
        }
    } else {
        getWindow().clearFlags(WindowManager.LayoutParams.FLAG_NOT_TOUCHABLE);
        if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.JELLY_BEAN_MR2) {
            setRequestedOrientation(ActivityInfo.SCREEN_ORIENTATION_FULL_USER);
        } else {
            setRequestedOrientation(ActivityInfo.SCREEN_ORIENTATION_FULL_SENSOR);
        }
    }
}
```

```
lockDeviceRotation(true)
```

```
lockDeviceRotation(false)
```

https://riptutorial.com/zh-CN/android/topic/4621/

202:

Examples

DatePicker

`build.gradle`。

```
  compile 'com.wdullaer:materialdatetimepicker:2.3.0'
```

Button click`DatePicker`。

xmlButton。

```
     <Button
            android:id="@+id/dialog_bt_date"
            android:layout_below="@+id/resetButton"
            android:layout_width="wrap_content"
            android:layout_height="40dp"
            android:textColor="#FF000000"
            android:gravity="center"
            android:text="DATE"/>
```

MainActivity。

```
public class MainActivity extends AppCompatActivity implements
DatePickerDialog.OnDateSetListener{

    Button button;
    Calendar calendar ;
    DatePickerDialog datePickerDialog ;
    int Year, Month, Day ;


    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        calendar = Calendar.getInstance();

        Year = calendar.get(Calendar.YEAR) ;
        Month = calendar.get(Calendar.MONTH);
        Day = calendar.get(Calendar.DAY_OF_MONTH);


        Button dialog_bt_date = (Button)findViewById(R.id.dialog_bt_date);
        dialog_bt_date.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {

                datePickerDialog = DatePickerDialog.newInstance(MainActivity.this, Year,
Month, Day);
```

```
                datePickerDialog.setThemeDark(false);

                datePickerDialog.showYearPickerFirst(false);

                datePickerDialog.setAccentColor(Color.parseColor("#0072BA"));

                datePickerDialog.setTitle("Select Date From DatePickerDialog");

                datePickerDialog.show(getFragmentManager(), "DatePickerDialog");

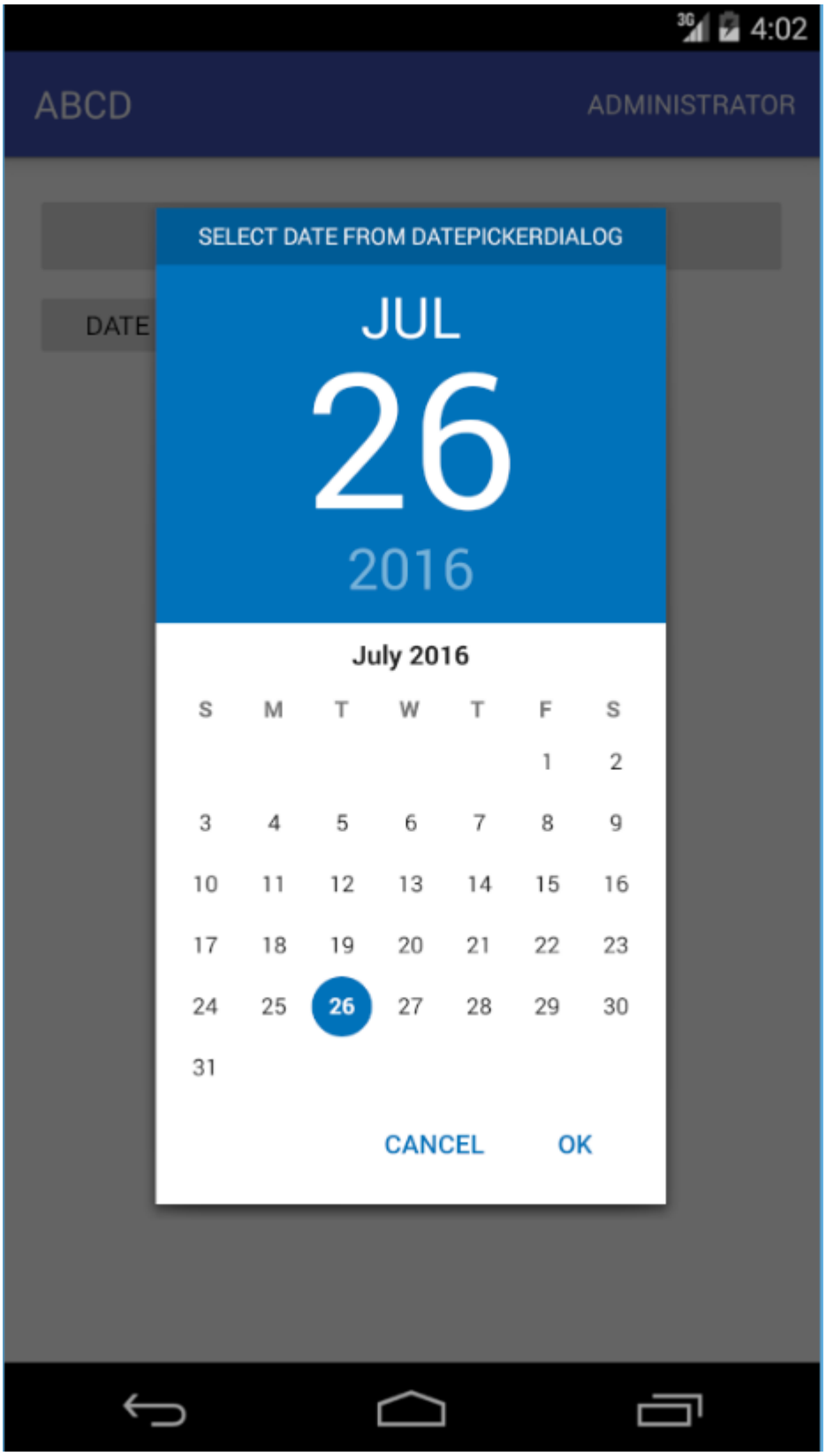
            }
        });
    }

    @Override
    public void onDateSet(DatePickerDialog view, int Year, int Month, int Day) {

        String date = "Selected Date : " + Day + "-" + Month + "-" + Year;

        Toast.makeText(MainActivity.this, date, Toast.LENGTH_LONG).show();
    }
    @Override
    public boolean onCreateOptionsMenu(Menu menu)
    {
        getMenuInflater().inflate(R.menu.abc_main_menu, menu);
        return true;
    }

}
```



DatePicker◦ ◦ DatePickerDialog.OnDateSetListener◦

```
public void showDatePicker(Context context,int initialYear, int initialMonth, int initialDay)
{
       DatePickerDialog datePickerDialog = new DatePickerDialog(context,
                new DatePickerDialog.OnDateSetListener() {
                    @Override
                    public void onDateSet(DatePicker datepicker,int year ,int month, int day)
```

```
{
                    //this condition is necessary to work properly on all android versions
                    if(view.isShown()){
                            //You now have the selected year, month and day
                    }

}
                }, initialYear, initialMonth , initialDay);

        //Call show() to simply show the dialog
        datePickerDialog.show();

    }
```

101211int

https://riptutorial.com/zh-CN/android/topic/2836/

203:

Examples

dd / MM / yyyy

```
public long getMilliFromDate(String dateFormat) {
    Date date = new Date();
    SimpleDateFormat formatter = new SimpleDateFormat("dd/MM/yyyy");
    try {
        date = formatter.parse(dateFormat);
    } catch (ParseException e) {
        e.printStackTrace();
    }
    System.out.println("Today is " + date);
    return date.getTime();
}
```

```
public String getTimeStamp(long timeinMillies) {
    String date = null;
    SimpleDateFormat formatter = new SimpleDateFormat("yyyy-MM-dd HH:mm:ss"); // modify format
    date = formatter.format(new Date(timeinMillies));
    System.out.println("Today is " + date);

    return date;
}
```

◦ TimpickerDatepicker

```
public static long getTimeInMillis(int day, int month, int year) {
    Calendar calendar = Calendar.getInstance();
    calendar.set(year, month, day);
    return calendar.getTimeInMillis();
}
```

```
public static String getNormalDate(long timeInMillies) {
    String date = null;
    SimpleDateFormat formatter = new SimpleDateFormat("dd/MM/yyyy");
    date = formatter.format(timeInMillies);
    System.out.println("Today is " + date);
    return date;
}
```

```
public static String getCurrentDate() {
    Calendar c = Calendar.getInstance();
    System.out.println("Current time => " + c.getTime());
    SimpleDateFormat df = new SimpleDateFormat("dd/MM/yyyy");
    String formattedDate = df.format(c.getTime());
    return formattedDate;
}
```

Java

。

DateUtils

```
boolean isToday = DateUtils.isToday(timeInMillis);
```

```
private static boolean isWithinWeek(final long millis) {
    return System.currentTimeMillis() - millis <= (DateUtils.WEEK_IN_MILLIS -
DateUtils.DAY_IN_MILLIS);
}
```

```
private static boolean isWithinYear(final long millis) {
    return System.currentTimeMillis() - millis <= DateUtils.YEAR_IN_MILLIS;
}
```

```
public static boolean isWithinDay(long timeInMillis, int day) {
    long diff = System.currentTimeMillis() - timeInMillis;

    float dayCount = (float) (diff / DateUtils.DAY_IN_MILLIS);

    return dayCount < day;
}
```

DateUtils**android.text.format.DateUtils**

GetCurrentRealTime

/

```
public static Calendar getCurrentRealTime() {

    long bootTime = networkTime - SystemClock.elapsedRealtime();
    Calendar calInstance = Calendar.getInstance();
    calInstance.setTimeZone(getUTCTimeZone());
    long currentDeviceTime = bootTime + SystemClock.elapsedRealtime();
    calInstance.setTimeInMillis(currentDeviceTime);
    return calInstance;
}
```

UTC。

```
public static TimeZone getUTCTimeZone() {
    return TimeZone.getTimeZone("GMT");
}
```

https://riptutorial.com/zh-CN/android/topic/7138/

204: Google

Examples

```
compile 'com.google.firebase:firebase-ads:10.2.1'
```

。

```
apply plugin: 'com.google.gms.google-services'
```

strings.xml。

```
<string name="banner_ad_unit_id">ca-app-pub-####/####</string>
```

adview。

```
    <com.google.android.gms.ads.AdView
        android:id="@+id/adView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:layout_alignParentBottom="true"
        ads:adSize="BANNER"
        ads:adUnitId="@string/banner_ad_unit_id">
    </com.google.android.gms.ads.AdView>
```

onCreate。

```
MobileAds.initialize(getApplicationContext(), "ca-app-pub-YOUR_ID");
AdView mAdView = (AdView) findViewById(R.id.adView);
    AdRequest adRequest = new AdRequest.Builder().build();
    mAdView.loadAd(adRequest);
```

。 AdView。

。 。

```
Manifest
```

```
<uses-permission android:name="android.permission.INTERNET" />
<uses-permission android:name="android.permission.ACCESS_NETWORK_STATE" />
```

1. AdMob。
2. “ ”。
3. 。
4. 。
5. ID。ca-app-pub-00000000000/000000000

6.

```
compile 'com.google.firebase:firebase-ads:10.2.1'
```

。

```
apply plugin: 'com.google.gms.google-services'
```

ID`strings.xml`

```
<string name="interstitial_full_screen">ca-app-pub-00000000/00000000</string>
```

ConfigChanges

```
<activity
            android:name="com.google.android.gms.ads.AdActivity"

android:configChanges="keyboard|keyboardHidden|orientation|screenLayout|uiMode|screenSize|smallestScree

            android:theme="@android:style/Theme.Translucent" />
```

```
<meta-data
            android:name="com.google.android.gms.version"
            android:value="@integer/google_play_services_version" />
```

```
public class AdActivity extends AppCompatActivity {

    private String TAG = AdActivity.class.getSimpleName();
    InterstitialAd mInterstitialAd;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_second);

        mInterstitialAd = new InterstitialAd(this);

        // set the ad unit ID
        mInterstitialAd.setAdUnitId(getString(R.string.interstitial_full_screen));

        AdRequest adRequest = new AdRequest.Builder()
                .build();

        // Load ads into Interstitial Ads
        mInterstitialAd.loadAd(adRequest);

        mInterstitialAd.setAdListener(new AdListener() {
            public void onAdLoaded() {
                showInterstitial();
            }
        });
    }

    private void showInterstitial() {
        if (mInterstitialAd.isLoaded()) {
```

```
            mInterstitialAd.show();
        }
    }

}
```

AdActivity。

Google https://riptutorial.com/zh-CN/android/topic/5984/google

205:

Examples

```
//Allows you to enumerate and communicate with connected USB devices.
UsbManager mUsbManager = (UsbManager) getSystemService(Context.USB_SERVICE);
//Explicitly asking for permission
final String ACTION_USB_PERMISSION = "com.android.example.USB_PERMISSION";
PendingIntent mPermissionIntent = PendingIntent.getBroadcast(this, 0, new
Intent(ACTION_USB_PERMISSION), 0);
HashMap<String, UsbDevice> deviceList = mUsbManager.getDeviceList();

UsbDevice device = deviceList.get("//the device you want to work with");
if (device != null) {
    mUsbManager.requestPermission(device, mPermissionIntent);
}
```

javaAndroidjavax.smarcard/APDU。

APDUAPDU。

```
UsbEndpoint epOut = null, epIn = null;
UsbInterface usbInterface;

UsbDeviceConnection connection = mUsbManager.openDevice(device);

    for (int i = 0; i < device.getInterfaceCount(); i++) {
        usbInterface = device.getInterface(i);
        connection.claimInterface(usbInterface, true);

        for (int j = 0; j < usbInterface.getEndpointCount(); j++) {
            UsbEndpoint ep = usbInterface.getEndpoint(j);

            if (ep.getType() == UsbConstants.USB_ENDPOINT_XFER_BULK) {
                if (ep.getDirection() == UsbConstants.USB_DIR_OUT) {
                    // from host to device
                    epOut = ep;

                } else if (ep.getDirection() == UsbConstants.USB_DIR_IN) {
                    // from device to host
                    epIn = ep;
                }
            }
        }
    }
```

APDUAPDU

```
public void write(UsbDeviceConnection connection, UsbEndpoint epOut, byte[] command) {
    result = new StringBuilder();
    connection.bulkTransfer(epOut, command, command.length, TIMEOUT);
    //For Printing logs you can use result variable
    for (byte bb : command) {
        result.append(String.format(" %02X ", bb));
```

```
    }
}
```

/

```
public int read(UsbDeviceConnection connection, UsbEndpoint epIn) {
result = new StringBuilder();
final byte[] buffer = new byte[epIn.getMaxPacketSize()];
int byteCount = 0;
byteCount = connection.bulkTransfer(epIn, buffer, buffer.length, TIMEOUT);

//For Printing logs you can use result variable
if (byteCount >= 0) {
    for (byte bb : buffer) {
        result.append(String.format(" %02X ", bb));
    }

    //Buffer received was : result.toString()
} else {
    //Something went wrong as count was : " + byteCount
}

return byteCount;
}
```

PC_to_RDR_IccPowerOn。

USB6.1.1。

```
62000000000000000000
```

```
write(connection, epOut, "62000000000000000000");
```

APDU

```
read(connection, epIn);
```

```
80 18000000 00 00 00 00 00 3BBF11008131FE45455041000000000000000000000000F1
```

```
read()result
```

https://riptutorial.com/zh-CN/android/topic/10945/

206:

Android。

。 AndroidResourceBitmap。 Gallery。

。

- `<uses-permission>` **- >**。
- `android:name` **- >**。
- `android.permission.READ_EXTERNAL_STORAGE` **- >**
- “android.permission.CAMERA”“android.permission.READ_CONTACTS”

Examples

Android。 。

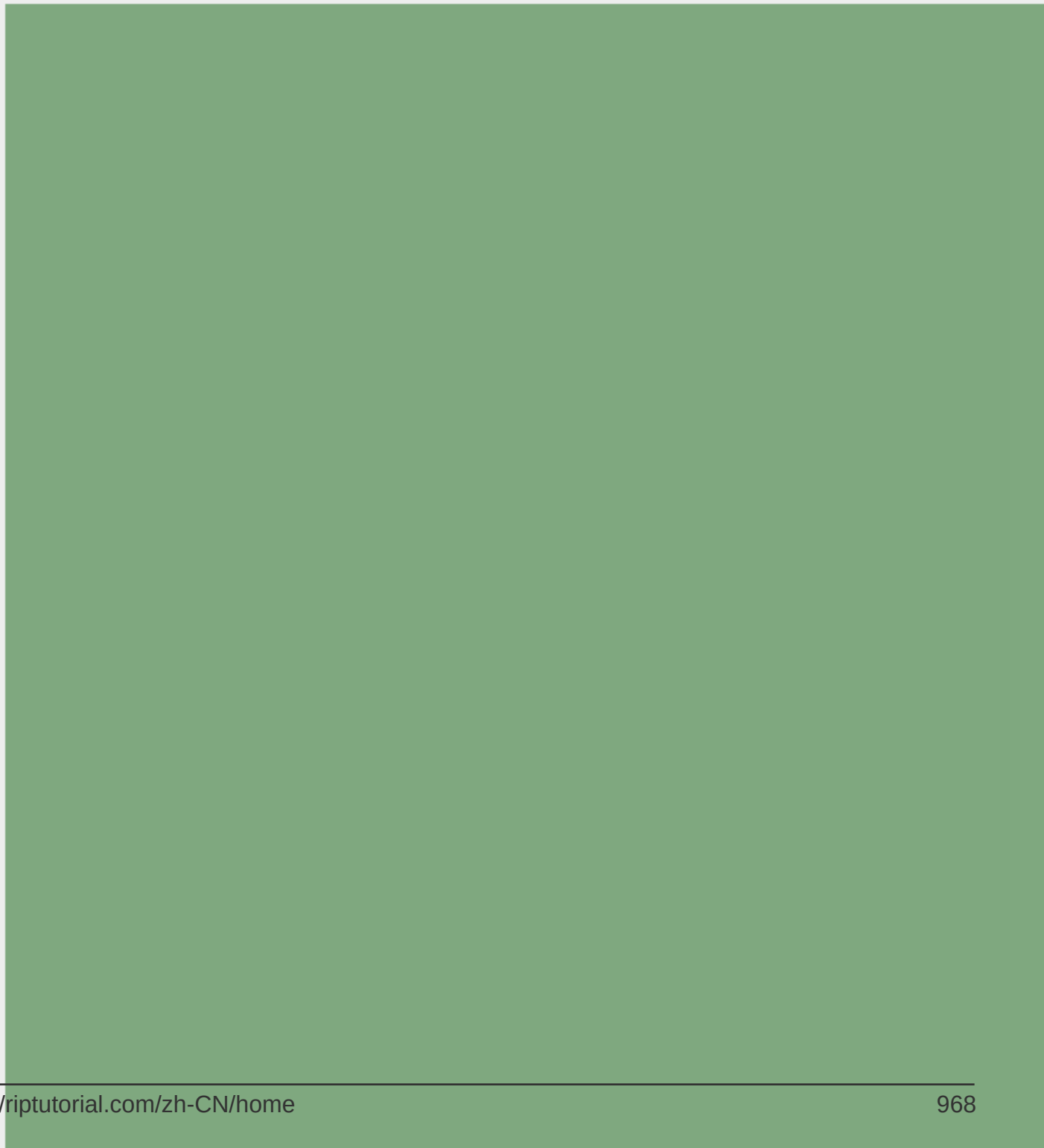
Intents。

1.

```
<uses-permission android:name="android.permission.READ_EXTERNAL_STORAGE"/>
```

2. 。

LoadImageFrmGallery



207:

。 。 Android。

AndroidManifest.xml`ServiceNotFoundException` 。

`IntentService` IntentService

Examples

Activity`startService`

```
Intent intent = new Intent(this, MyService.class);  //substitute MyService with the name of
your service
intent.putExtra(Intent.EXTRA_TEXT, "Some text"); //add any extra data to pass to the service

startService(intent); //Call startService to start the service.
```

- `onCreate()`

。 。

- `onStartCommand()`

`startService()`ActivityBroadcastReceiver `startService()`。 `stopSelf()`stopService() 。
`onStartCommand()`stopSelf()stopService()。

- `onBind()`

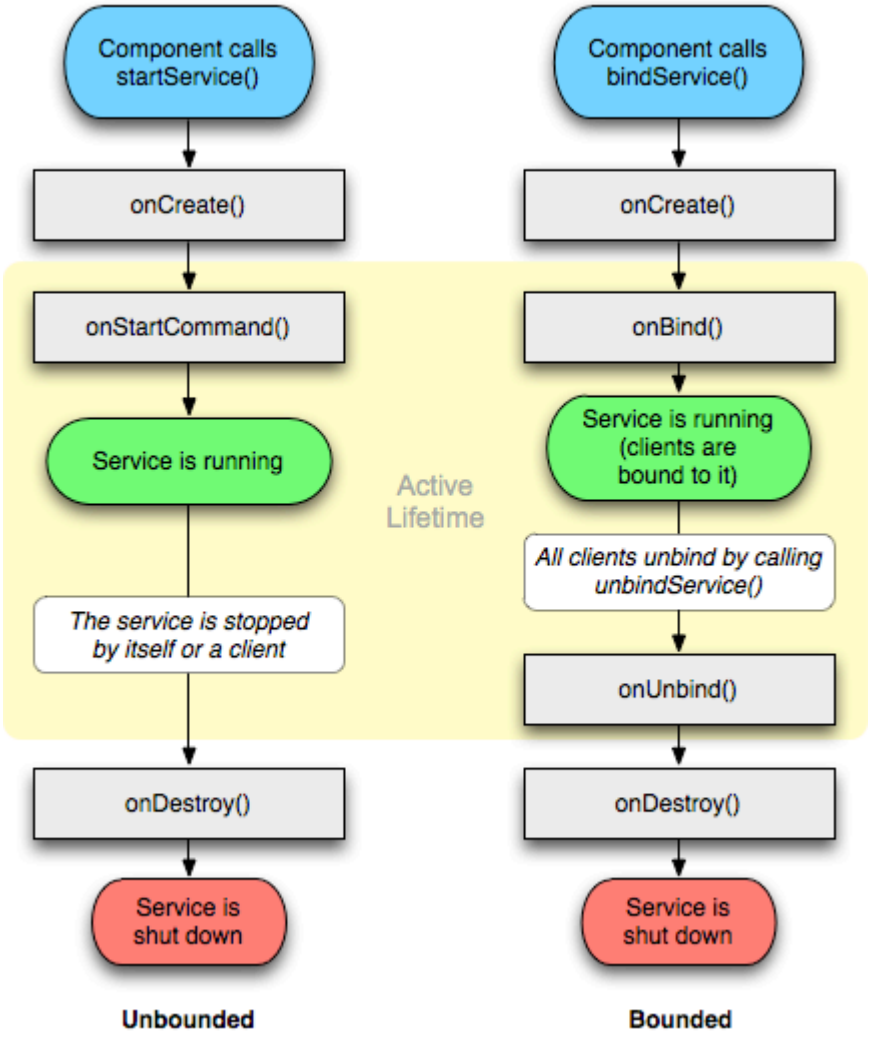
`bindService()`IBInder。 `bindService()`。

- `onDestroy()`

。

`onConfigurationChanged()`onLowMemory()

https://developer.android.com/guide/components/services.html



`android:process`◦ ◦ ◦

"◦

```
<service
  android:name="com.example.appName"
  android:process=":externalProcess" />
```

◦ ◦

Binder

`ServiceonBind`binder

```
public class LocalService extends Service {
    // Binder given to clients
    private final IBinder mBinder = new LocalBinder();

    /**
     * Class used for the client Binder.  Because we know this service always
     * runs in the same process as its clients, we don't need to deal with IPC.
     */
    public class LocalBinder extends Binder {
        LocalService getService() {
```

```
            // Return this instance of LocalService so clients can call public methods
            return LocalService.this;
        }
    }

    @Override
    public IBinder onBind(Intent intent) {
        return mBinder;
    }
}
```

ServiceConnectiononStartonStop

```
public class BindingActivity extends Activity {
    LocalService mService;
    boolean mBound = false;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.main);
    }

    @Override
    protected void onStart() {
        super.onStart();
        // Bind to LocalService
        Intent intent = new Intent(this, LocalService.class);
        bindService(intent, mConnection, Context.BIND_AUTO_CREATE);
    }

    @Override
    protected void onStop() {
        super.onStop();
        // Unbind from the service
        if (mBound) {
            unbindService(mConnection);
            mBound = false;
        }
    }

    /** Defines callbacks for service binding, passed to bindService() */
    private ServiceConnection mConnection = new ServiceConnection() {

        @Override
        public void onServiceConnected(ComponentName className,
                IBinder service) {
            // We've bound to LocalService, cast the IBinder and get LocalService instance
            LocalBinder binder = (LocalBinder) service;
            mService = binder.getService();
            mBound = true;
        }

        @Override
        public void onServiceDisconnected(ComponentName arg0) {
            mBound = false;
        }
    };
}
```

AIDL

`.aidl`

```
// IRemoteService.aidl
package com.example.android;

// Declare any non-default types here with import statements

/** Example service interface */
interface IRemoteService {
    /** Request the process ID of this service, to do evil things with it. */
    int getPid();
}
```

sdk`.java` aidl`Stub`

```
public class RemoteService extends Service {

    private final IRemoteService.Stub binder = new IRemoteService.Stub() {
        @Override
        public int getPid() throws RemoteException {
            return Process.myPid();
        }
    };

    @Nullable
    @Override
    public IBinder onBind(Intent intent) {
        return binder;
    }
}
```

```
public class MainActivity extends AppCompatActivity {
    private final ServiceConnection connection = new ServiceConnection() {
        @Override
        public void onServiceConnected(ComponentName componentName, IBinder iBinder) {
            IRemoteService service = IRemoteService.Stub.asInterface(iBinder);
            Toast.makeText(this, "Activity process: " + Process.myPid + ", Service process: "
+ getRemotePid(service), LENGTH_SHORT).show();
        }

        @Override
        public void onServiceDisconnected(ComponentName componentName) {}
    };

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }

    @Override
    protected void onStart() {
        super.onStart();
        Intent intent = new Intent(this, RemoteService.class);
        bindService(intent, connection, Context.BIND_AUTO_CREATE);
    }
```

```
    @Override
    protected void onStop() {
        super.onStop();
        unbindService(connection);
    }

    private int getRemotePid(IRemoteService service) {
        int result = -1;

        try {
            result = service.getPid();
        } catch (RemoteException e) {
            e.printStackTrace();
        }

        return result;
    }
}
```

<application>AndroidManifest.xml

```
<application ...>

    ...

    <service
        android:name=".RecordingService"
        <!--"enabled" tag specifies Whether or not the service can be instantiated by the
system — "true" -->
        <!--if it can be, and "false" if not. The default value is "true".-->
        android:enabled="true"
        <!--exported tag specifies Whether or not components of other applications can invoke
the -->
        <!--service or interact with it — "true" if they can, and "false" if not. When the
value-->
        <!--is "false", only components of the same application or applications with the same
user -->
        <!--ID can start the service or bind to it.-->
        android:exported="false" />

</application>
```

.AllServices.RecordingService。

```
android:name=".RecordingService"
```

```
android:name=".AllServices.RecordingService"
```

。

```
public class RecordingService extends Service {
    private int NOTIFICATION = 1; // Unique identifier for our notification

    public static boolean isRunning = false;
    public static RecordingService instance = null;
```

```
    private NotificationManager notificationManager = null;


    @Override
    public IBinder onBind(Intent intent) {
        return null;
    }

    @Override
    public void onCreate(){
        instance = this;
        isRunning = true;

        notificationManager = (NotificationManager) getSystemService(NOTIFICATION_SERVICE);

        super.onCreate();
    }

    @Override
    public int onStartCommand(Intent intent, int flags, int startId){
        // The PendingIntent to launch our activity if the user selects this notification
        PendingIntent contentIntent = PendingIntent.getActivity(this, 0, new Intent(this,
MainActivity.class), 0);

        // Set the info for the views that show in the notification panel.
        Notification notification = new NotificationCompat.Builder(this)
                .setSmallIcon(R.mipmap.ic_launcher)        // the status icon
                .setTicker("Service running...")           // the status text
                .setWhen(System.currentTimeMillis())       // the time stamp
                .setContentTitle("My App")                 // the label of the entry
                .setContentText("Service running...")      // the content of the entry
                .setContentIntent(contentIntent)           // the intent to send when the
entry is clicked
                .setOngoing(true)                          // make persistent (disable swipe-
away)
                .build();

        // Start service in foreground mode
        startForeground(NOTIFICATION, notification);

        return START_STICKY;
    }


    @Override
    public void onDestroy(){
        isRunning = false;
        instance = null;

        notificationManager.cancel(NOTIFICATION); // Remove notification

        super.onDestroy();
    }


    public void doSomething(){
        Toast.makeText(getApplicationContext(), "Doing stuff from service...",
Toast.LENGTH_SHORT).show();
    }
```

```
}
```

`doSomething()`toasts。

- 。“”。

```
public void startOrStopService(){
    if( RecordingService.isRunning ){
        // Stop service
        Intent intent = new Intent(this, RecordingService.class);
        stopService(intent);
    }
    else {
        // Start service
        Intent intent = new Intent(this, RecordingService.class);
        startService(intent);
    }
}
```

。

`doSomething()`

```
public void makeServiceDoSomething(){
    if( RecordingService.isRunning )
        RecordingService.instance.doSomething();
}
```

https://riptutorial.com/zh-CN/android/topic/137/

208:

Material Design。

Android

https://developer.android.com/design/material/index.html

https://material.io/guidelines

https://design.google.com/resources/

Examples

AppCompat

AppCompatMaterial Design。 `Theme.AppCompatTheme.AppCompatAppCompatActivity` 。

。
`res/styles.xml`

```
<!-- inherit from the AppCompat theme -->
<style name="AppTheme" parent="Theme.AppCompat">

    <!-- your app branding color for the app bar -->
    <item name="colorPrimary">#2196f3</item>

    <!-- darker variant for the status bar and contextual app bars -->
    <item name="colorPrimaryDark">#1976d2</item>

    <!-- theme UI controls like checkboxes and text fields -->
    <item name="colorAccent">#f44336</item>
</style>
```

`Theme.AppCompat Theme.AppCompat.LightTheme.AppCompat.Light.DarkActionBar` 。

。 。 “500”500;“700”;。 。

`AndroidManifest.xml`。 `AppTheme.NoActionBar`。

```
<application android:theme="@style/AppTheme"
    ...>
    <activity
        android:name=".MainActivity"
        android:theme="@style/AppTheme" />
</application>
```

`android:themeThemeOverlay`。 `Toolbar`

```
<android.support.v7.widget.Toolbar
```

```
  android:layout_width="match_parent"
  android:layout_height="wrap_content"
  android:background="?attr/colorPrimary"
  android:theme="@style/ThemeOverlay.AppCompat.Dark.ActionBar" />
```

Button

```
<Button
    style="@style/Widget.AppCompat.Button.Colored"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:theme="@style/MyButtonTheme"/>

<!-- res/values/themes.xml -->
<style name="MyButtonTheme" parent="ThemeOverlay.AppCompat.Light">
    <item name="colorAccent">@color/my_color</item>
</style>
```

ToolbarActionBar◦ ActionBarActivity'sToolbar◦

1. app **build.gradle**

   ```
   compile 'com.android.support:appcompat-v7:25.3.1'
   ```

2. ActionBar ◦ res/values**styles.xml**Theme.AppCompat◦

   Theme.AppCompat.NoActionBarTheme.AppCompat.NoActionBarAppTheme

   ```
   <style name="AppTheme" parent="Theme.AppCompat.NoActionBar">
       <item name="colorPrimary">@color/primary</item>
       <item name="colorPrimaryDark">@color/primaryDark</item>
       <item name="colorAccent">@color/accent</item>
   </style>
   ```

   Theme.AppCompat.Light.NoActionBarTheme.AppCompat.DayNight.NoActionBar ActionBar

3. Toolbar

   ```
   <android.support.v7.widget.Toolbar
       android:id="@+id/toolbar"
       android:layout_width="match_parent"
       android:layout_height="?attr/actionBarSize"
       android:background="?attr/colorPrimary"
       android:elevation="4dp"/>
   ```

   Toolbar◦

4. “ Activity “ ToolbarActivityActionBar ◦ *appcompat*AppCompatActivity setSupportActionBar()

   ```
   @Override
   protected void onCreate(Bundle savedInstanceState) {
       super.onCreate(savedInstanceState);
       setContentView(R.layout.activity_main);
   ```

```
    final Toolbar toolbar = (Toolbar) findViewById(R.id.toolbar);
    setSupportActionBar(toolbar);

    //...
}
```

getSupportActionBar()ActionBarToolbar ◦

```
getSupportActionBar().setTitle("Activity Title");
```

```
CharSequence title = "Your App Name";
SpannableString s = new SpannableString(title);
s.setSpan(new ForegroundColorSpan(Color.RED), 0, title.length(),
Spannable.SPAN_EXCLUSIVE_EXCLUSIVE);
getSupportActionBar().setTitle(s);
getSupportActionBar().setBackgroundDrawable(new ColorDrawable(Color.argb(128, 0, 0, 0)));
```

FloatingActionButtonFAB

“ ”“”。

UI◦

build.gradle

```
compile 'com.android.support:design:25.3.1'
```

FloatingActionButton

```
<android.support.design.widget.FloatingActionButton
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:layout_margin="16dp"
      android:src="@drawable/some_icon"/>
```

src◦

Material Pink

FloatingActionButton◦ FloatingActionButton◦ 16dp 24dp ◦

FloatingActionButtonxmlns:app="http://schemas.android.com/apk/res-auto

- **app:fabSize** normalmini◦
- **app:rippleColor** FloatingActionButton◦ ◦
- **app:elevation** ◦

- `app:useCompatPadding` compat。 `truefalse` 。 `true`api-21compatapi。

FAB。

Material Design

AppCompat`Widget.AppCompat.Button`。 Material Design。

。

1. `@style/Widget.AppCompat.Button`

```
<Button
    style="@style/Widget.AppCompat.Button"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_margin="16dp"
    android:text="@string/simple_button"/>
```

2. `@style/Widget.AppCompat.Button.Colored`

`Widget.AppCompat.Button.ColoredWidget.AppCompat.Button` 。

```
<Button
    style="@style/Widget.AppCompat.Button.Colored"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_margin="16dp"
    android:text="@string/colored_button"/>
```

`Button ThemeOverlay`android:theme

```
<Button
     style="@style/Widget.AppCompat.Button.Colored"
     android:layout_width="wrap_content"
     android:layout_height="wrap_content"
     android:layout_margin="16dp"
     android:theme="@style/MyButtonTheme"/>
```

`res/values/themes.xml`

```
 <style name="MyButtonTheme" parent="ThemeOverlay.AppCompat.Light">
```

```
      <item name="colorAccent">@color/my_color</item>
 </style>
```

3. `@style/Widget.AppCompat.Button.Borderless`

```
<Button
    style="@style/Widget.AppCompat.Button.Borderless"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_margin="16dp"
    android:text="@string/borderless_button"/>
```

4. `@style/Widget.AppCompat.Button.Borderless.Colored`

```
<Button
    style="@style/Widget.AppCompat.Button.Borderless.Colored"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_margin="16dp"
    android:text="@string/borderless_colored_button"/>
```

TextInputLayout

`build.gradlebuild.gradle`

```
compile 'com.android.support:design:25.3.1'
```

EditText。

```
<android.support.design.widget.TextInputLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content">

     <android.support.design.widget.TextInputEditText
         android:layout_width="match_parent"
         android:layout_height="wrap_content"
         android:hint="@string/form_username"/>

</android.support.design.widget.TextInputLayout>
```

TextInputLayout

```
<android.support.design.widget.TextInputLayout
    android:id="@+id/input_layout_current_password"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    app:passwordToggleEnabled="true">

    <android.support.design.widget.TextInputEditText

        android:id="@+id/current_password"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="@string/current_password"
        android:inputType="textPassword" />

</android.support.design.widget.TextInputLayout>
```

app:passwordToggleEnabled="true" android:inputType="textPassword"。

appxmlns:app="http://schemas.android.com/apk/res-auto"

。

TabLayout

TabLayoutViewPager。

build.gradlebuild.gradle

```
compile 'com.android.support:design:25.3.1'
```

TabItemTabLayout。

```
<android.support.design.widget.TabLayout
    android:layout_height="wrap_content"
    android:layout_width="match_parent"
    android:id="@+id/tabLayout">

    <android.support.design.widget.TabItem
        android:text="@string/tab_text_1"
        android:icon="@drawable/ic_tab_1"/>

    <android.support.design.widget.TabItem
        android:text="@string/tab_text_2"
        android:icon="@drawable/ic_tab_2"/>

</android.support.design.widget.TabLayout>
```

OnTabSelectedListener //TabLayout

```
TabLayout tabLayout = (TabLayout) findViewById(R.id.tabLayout);
tabLayout.addOnTabSelectedListener(new TabLayout.OnTabSelectedListener() {
    @Override
    public void onTabSelected(TabLayout.Tab tab) {
        int position = tab.getPosition();
        // Switch to view for this tab
```

```
    }

    @Override
    public void onTabUnselected(TabLayout.Tab tab) {

    }

    @Override
    public void onTabReselected(TabLayout.Tab tab) {

    }
});
```

TabLayout/。

```
TabLayout.Tab tab = tabLayout.newTab();
tab.setText(R.string.tab_text_1);
tab.setIcon(R.drawable.ic_tab_1);
tabLayout.addTab(tab);

tabLayout.removeTab(tab);
tabLayout.removeTabAt(0);
tabLayout.removeAllTabs();
```

TabLayout。

```
tabLayout.setTabMode(TabLayout.MODE_FIXED);
tabLayout.setTabMode(TabLayout.MODE_SCROLLABLE);
```

XML

```
<android.support.design.widget.TabLayout
    android:id="@+id/tabLayout"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    app:tabMode="fixed|scrollable" />
```

TabLayout。

Material Design。

styles.xmlTabLayout

```
<style name="MyCustomTabLayoutStyle" parent="Widget.Design.TabLayout">
    <item name="tabIndicatorColor">@color/your_color</item>
</style>
```

```
<android.support.design.widget.TabLayout
        android:id="@+id/tabs"
        style="@style/MyCustomTabLayoutStyle"
        android:layout_width="match_parent"
        android:layout_height="wrap_content">
</android.support.design.widget.TabLayout>
```

RippleDrawable

Android 5.0API21RippleDrawable。

Drawable。 `setHotspot(float x, float y)`。

5

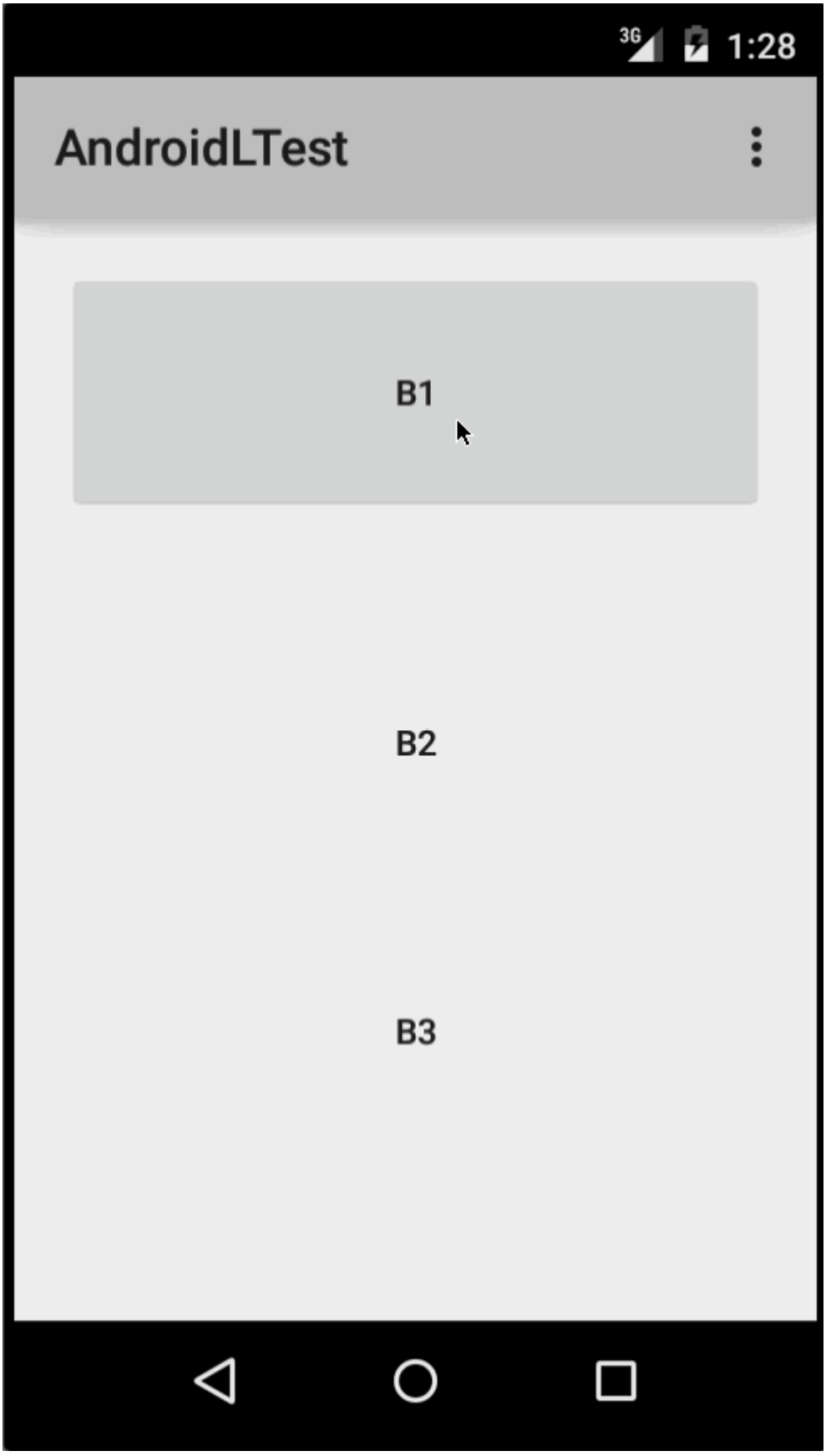
API 21

```
android:background="?android:attr/selectableItemBackground">
```

```
android:background="?android:attr/selectableItemBackgroundBorderless"
```

。

- B1
- B2`android:background="android:attr/selectableItemBackground"`
- B3`android:background="android:attr/selectableItemBackgroundBorderless"`



http //blog.csdn.net/a396901990/article/details/40187203

```
int[] attrs = new int[]{R.attr.selectableItemBackground};
TypedArray typedArray = getActivity().obtainStyledAttributes(attrs);
int backgroundResource = typedArray.getResourceId(0, 0);
myView.setBackgroundResource(backgroundResource);
```

`android:foreground`。 `ImageView` `LinearLayout`。

drawable`XML`。

1

```
<ripple xmlns:android="http://schemas.android.com/apk/res/android"
    android:color="#ffff0000" />
```

2

```
<ripple android:color="#7777777"
    xmlns:android="http://schemas.android.com/apk/res/android">
    <item android:id="@android:id/mask"
        android:drawable="#ffff00" />
    <item android:drawable="@android:color/white"/>
</ripple>
```

`shape` `cornersview` `mask` `layer`。

```
 <?xml version="1.0" encoding="utf-8"?>
    <ripple xmlns:android="http://schemas.android.com/apk/res/android"
        android:color="?android:attr/colorControlHighlight">
        <item android:id="@android:id/mask">
           <shape
              android:shape="rectangle">
              solid android:color="#000000"/>
               <corners
                 android:radius="25dp"/>
            </shape>
        </item>
        <item android:drawable="@drawable/rounded_corners" />
    </ripple>
```

3

```
<ripple xmlns:android="http://schemas.android.com/apk/res/android"
    android:color="#ff0000ff">
    <item android:drawable="@drawable/my_drawable" />
</ripple>
```

ripple xmlripple`my_ripple.xml`

```
<View
    android:id="@+id/myViewId"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:background="@drawable/my_ripple" />
```

v21`drawable-v21`drawable

```
<!-- /drawable/button.xml: -->
<selector xmlns:android="http://schemas.android.com/apk/res/android">
```

```
    <item android:state_pressed="true" android:drawable="@drawable/button_pressed"/>
    <item android:drawable="@drawable/button_normal"/>
</selector>

<!--/drawable-v21/button.xml:-->
<?xml version="1.0" encoding="utf-8"?>
<ripple xmlns:android="http://schemas.android.com/apk/res/android"
    android:color="?android:colorControlHighlight">
   <item android:drawable="@drawable/button_normal" />
</ripple>
```

。

?android:colorControlHighlight。

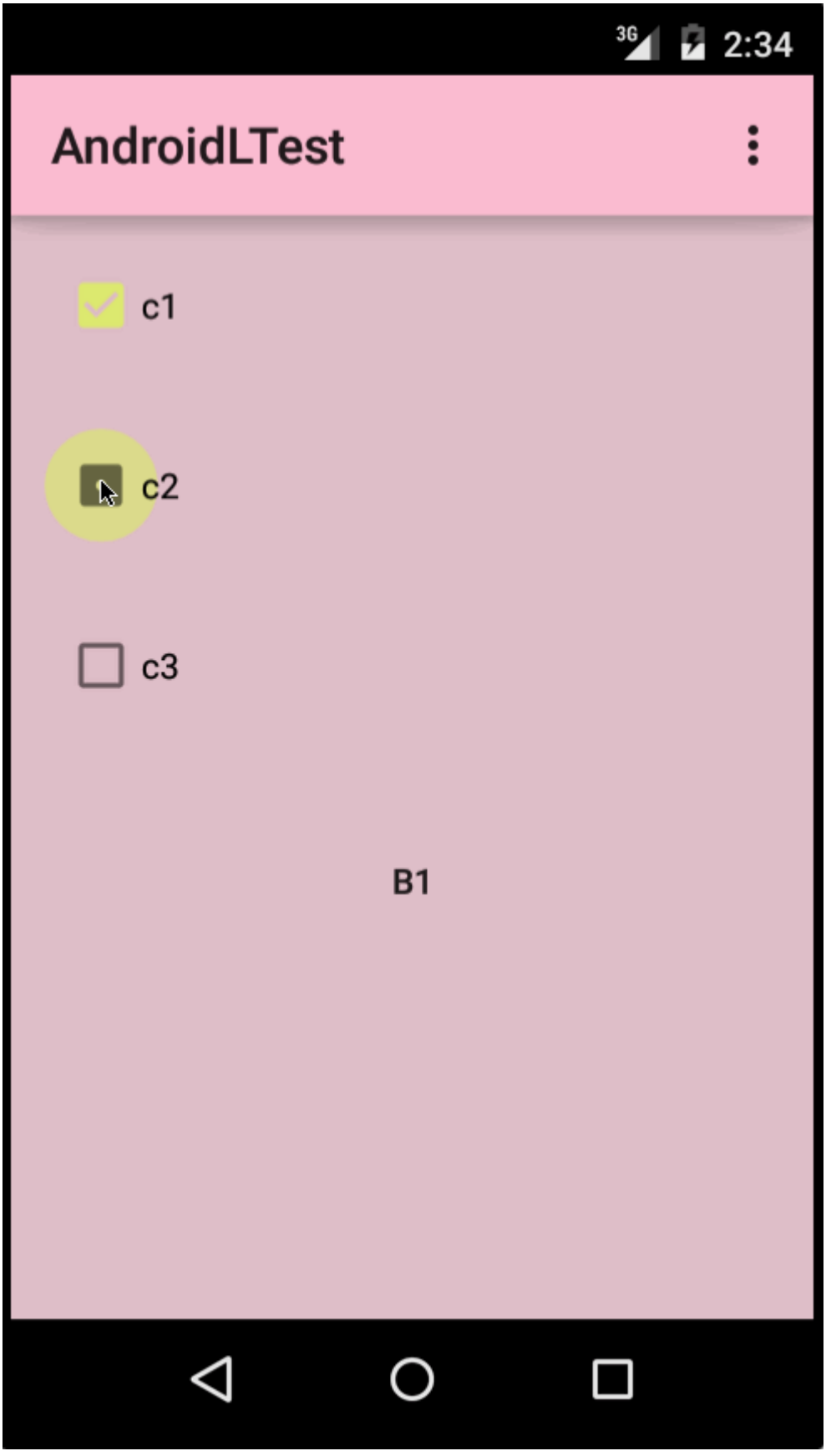
android:colorControlHighlight

```
<?xml version="1.0" encoding="utf-8"?>
<resources>

  <style name="AppTheme" parent="android:Theme.Material.Light.DarkActionBar">
    <item name="android:colorControlHighlight">@color/your_custom_color</item>
  </style>

</resources>
```

。



http //blog.csdn.net/a396901990/article/details/40187203

。

build.gradlebuild.gradle

```
 dependencies {
    // ...
    compile 'com.android.support:design:25.3.1'
}
```

XML`DrawerLayout``NavigationView`。

`DrawerLayout``NavigationView`。 320dp。

```
<!-- res/layout/activity_main.xml -->
<android.support.v4.widget.DrawerLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/navigation_drawer_layout"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:fitsSystemWindows="true"
    tools:openDrawer="start">
    <! -- You can use "end" to open drawer from the right side -->

    <android.support.design.widget.CoordinatorLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:fitsSystemWindows="true">

        <android.support.design.widget.AppBarLayout
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:theme="@style/AppTheme.AppBarOverlay">

            <android.support.v7.widget.Toolbar
                android:id="@+id/toolbar"
                android:layout_width="match_parent"
                android:layout_height="?attr/actionBarSize"
                android:background="?attr/colorPrimary"
                app:popupTheme="@style/AppTheme.PopupOverlay" />

        </android.support.design.widget.AppBarLayout>

    </android.support.design.widget.CoordinatorLayout>

    <android.support.design.widget.NavigationView
        android:id="@+id/navigation_drawer"
        android:layout_width="320dp"
        android:layout_height="match_parent"
        android:layout_gravity="start"
        android:fitsSystemWindows="true"
        app:headerLayout="@layout/drawer_header"
        app:menu="@menu/navigation_menu" />

</android.support.v4.widget.DrawerLayout>
```

。 。

```
<!-- res/layout/drawer_header.xml -->
<RelativeLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
```

```
    android:layout_height="190dp">

    <ImageView
        android:id="@+id/header_image"
        android:layout_width="140dp"
        android:layout_height="120dp"
        android:layout_centerInParent="true"
        android:scaleType="centerCrop"
        android:src="@drawable/image" />

    <TextView
        android:id="@+id/header_text_view"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@+id/header_image"
        android:text="User name"
        android:textSize="20sp" />

</RelativeLayout>
```

app:headerLayout="@layout/drawer_header"NavigationViewapp:headerLayout="@layout/drawer_header"。

app:headerLayout。

```
// Lookup navigation view
NavigationView navigationView = (NavigationView) findViewById(R.id.navigation_drawer);
// Inflate the header view at runtime
View headerLayout = navigationView.inflateHeaderView(R.layout.drawer_header);
```

。Material Design。

app:menu="@menu/navigation_menu" attributeNavigationView。

```
<!-- res/menu/menu_drawer.xml -->
<menu xmlns:android="http://schemas.android.com/apk/res/android">
    <item
        android:id="@+id/nav_item_1"
        android:title="Item #1"
        android:icon="@drawable/ic_nav_1" />
    <item
        android:id="@+id/nav_item_2"
        android:title="Item #2"
        android:icon="@drawable/ic_nav_2" />
    <item
        android:id="@+id/nav_item_3"
        android:title="Item #3"
        android:icon="@drawable/ic_nav_3" />
    <item
        android:id="@+id/nav_item_4"
        android:title="Item #4"
        android:icon="@drawable/ic_nav_4" />
</menu>
```

android:title<item><menu><group>。

Activity

```
  // Find the navigation view
```

```
  NavigationView navigationView = (NavigationView) findViewById(R.id.navigation_drawer);
  navigationView.setNavigationItemSelectedListener(new
NavigationView.OnNavigationItemSelectedListener() {
      @Override
      public boolean onNavigationItemSelected(MenuItem item) {
          // Get item ID to determine what to do on user click
          int itemId = item.getItemId();
          // Respond to Navigation Drawer selections with a new Intent
          startActivity(new Intent(this, OtherActivity.class));
          return true;
      }
  });

  DrawerLayout drawer = (DrawerLayout) findViewById(R.id.navigation_drawer_layout);
  // Necessary for automatically animated navigation drawer upon open and close
  ActionBarDrawerToggle toggle = new ActionBarDrawerToggle(this, drawer, "Open navigation
drawer", "Close navigation drawer");
  // The two Strings are not displayed to the user, but be sure to put them into a separate
strings.xml file.
  drawer.addDrawerListener(toggle);
  toogle.syncState();
```

NavigationView

```
View headerView = navigationView.getHeaderView();
TextView headerTextView = (TextView) headerview.findViewById(R.id.header_text_view);
ImageView headerImageView = (ImageView) headerview.findViewById(R.id.header_image);
// Set navigation header text
headerTextView.setText("User name");
// Set navigation header image
headerImageView.setImageResource(R.drawable.header_image);
```

View findViewById()View◦

◦

◦

v.25.1.0Android◦

build.gradle

```
 compile 'com.android.support:design:25.3.1'
```

BottomSheetBehaviorCoordinatorLayout

```
<android.support.design.widget.CoordinatorLayout >

    <!-- .....   -->

    <LinearLayout
       android:id="@+id/bottom_sheet"
       android:elevation="4dp"
       android:minHeight="120dp"
       app:behavior_peekHeight="120dp"
```

```
       ...
       app:layout_behavior="android.support.design.widget.BottomSheetBehavior">

           <!-- .....   -->

       </LinearLayout>

</android.support.design.widget.CoordinatorLayout>
```

```
 // The View with the BottomSheetBehavior
 View bottomSheet = coordinatorLayout.findViewById(R.id.bottom_sheet);
 BottomSheetBehavior mBottomSheetBehavior = BottomSheetBehavior.from(bottomSheet);
```

setStateBottomSheetBehavior

```
mBottomSheetBehavior.setState(BottomSheetBehavior.STATE_EXPANDED);
```

- STATE_COLLAPSED ◦ app:behavior_peekHeight0
- STATE_EXPANDED CoordinatorLayout CoordinatorLayout
- STATE_HIDDEN app:behavior_hideable

BottomSheet◦

```
mButton = (Button) findViewById(R.id.button_2);
    //On Button click we monitor the state of the sheet
    mButton.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
            if (mBottomSheetBehavior.getState() == BottomSheetBehavior.STATE_EXPANDED) {
                //If expanded then collapse it (setting in Peek mode).
                mBottomSheetBehavior.setState(BottomSheetBehavior.STATE_COLLAPSED);
                mButton.setText(R.string.button2_hide);
            } else if (mBottomSheetBehavior.getState() == BottomSheetBehavior.STATE_COLLAPSED)
{
                //If Collapsed then hide it completely.
                mBottomSheetBehavior.setState(BottomSheetBehavior.STATE_HIDDEN);
                mButton.setText(R.string.button2);
            } else if (mBottomSheetBehavior.getState() == BottomSheetBehavior.STATE_HIDDEN) {
                //If hidden then Collapse or Expand, as the need be.
                mBottomSheetBehavior.setState(BottomSheetBehavior.STATE_EXPANDED);
                mButton.setText(R.string.button2_peek);
            }
        }
    });
```

BottomSheetDRAG◦ Sheet◦ BottomSheetCallback

```
mBottomSheetBehavior.setBottomSheetCallback(new BottomSheetCallback() {
    @Override
    public void onStateChanged(@NonNull View bottomSheet, int newState) {
      // React to state change and notify views of the current state
    }
      @Override
```

```
      public void onSlide(@NonNull View bottomSheet, float slideOffset) {
       // React to dragging events and animate views or transparency of dependent views
   }
 });
```

COLLAPSEDEXPANDED

```
mBottomSheetBehavior2.setHideable(false);
```

DialogFragment

BottomSheetDialogFragmentView。 BottomSheetDialogFragment。

`setupDialog()`ActivityBottomSheetBehavior。 BottomSheetCallbackFragment。

```
public class BottomSheetDialogFragmentExample extends BottomSheetDialogFragment {

    private BottomSheetBehavior.BottomSheetCallback mBottomSheetBehaviorCallback = new
BottomSheetBehavior.BottomSheetCallback() {

        @Override
        public void onStateChanged(@NonNull View bottomSheet, int newState) {
            if (newState == BottomSheetBehavior.STATE_HIDDEN) {
                dismiss();
            }

        }

        @Override
        public void onSlide(@NonNull View bottomSheet, float slideOffset) {
        }
    };

    @Override
    public void setupDialog(Dialog dialog, int style) {
        super.setupDialog(dialog, style);
        View contentView = View.inflate(getContext(), R.layout.fragment_bottom_sheet, null);
        dialog.setContentView(contentView);

        CoordinatorLayout.LayoutParams params = (CoordinatorLayout.LayoutParams) ((View)
contentView.getParent()).getLayoutParams();
        CoordinatorLayout.Behavior behavior = params.getBehavior();

        if( behavior != null && behavior instanceof BottomSheetBehavior ) {
            ((BottomSheetBehavior)
behavior).setBottomSheetCallback(mBottomSheetBehaviorCallback);
        }
    }
}
```

Fragmentshow。

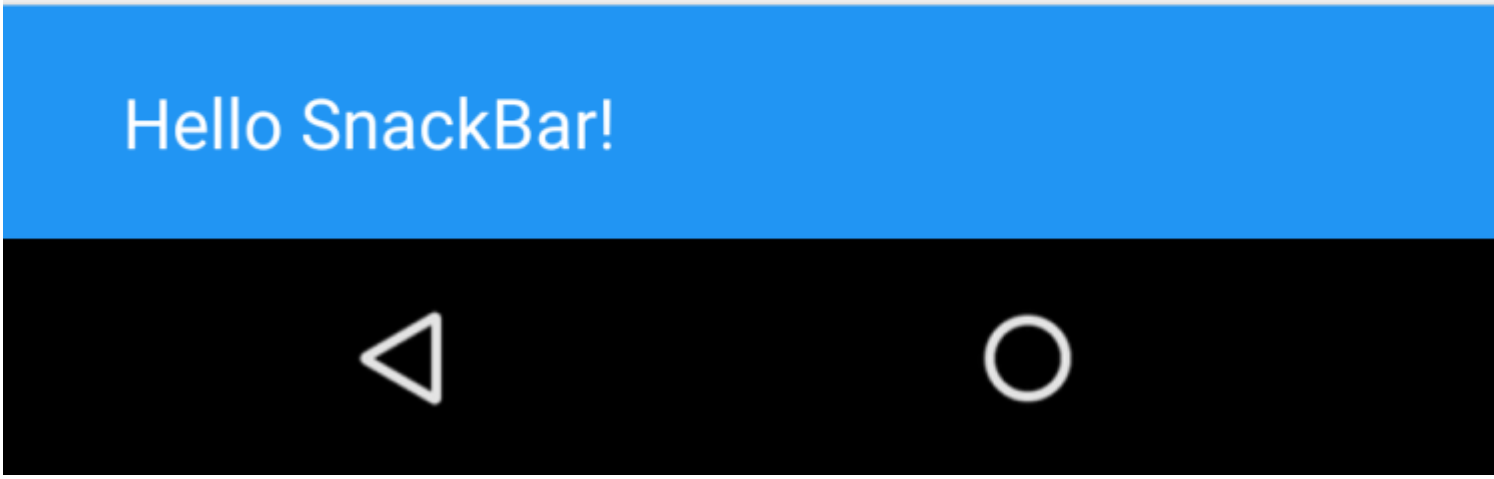
```
BottomSheetDialogFragment bottomSheetDialogFragment = new BottomSheetDialogFragmentExample();
bottomSheetDialogFragment.show(getSupportFragmentManager(),
```

```
bottomSheetDialogFragment.getTag());
```

Snackbar

Material DesignSnackbar Toast ◦ Android

Snackbars◦ ◦ Toasts◦ ◦



ToastAndroid◦ Snackbar◦

```
Snackbar snackbar = Snackbar
        .make(coordinatorLayout, "Here is your new Snackbar", Snackbar.LENGTH_LONG);
snackbar.show();
```

SnackbarToast

- LENGTH_SHORT
- LENGTH_LONG
- LENGTH_INDEFINITE
- setDuration()22.2.1

SnackbarActionCallback◦ SnackbarAndroid ◦

Snackbar◦ SnackbarCoordinatorLayout ◦ ◦

layout xmlCoordinatorLayout

```
<android.support.design.widget.CoordinatorLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    android:id="@+id/coordinatorLayout"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    //any other widgets in your layout go here.

</android.support.design.widget.CoordinatorLayout>
```

ActivityonCreateCoordinatorLayout Snackbar◦

Snackbar ◦

https://riptutorial.com/zh-CN/android/topic/124/

209: QR

QRCodeReaderView

Examples

QRCodeReaderViewZxing

QRCodeReaderViewAndroidQR。

zxing1D / 2D。

QRCodeReaderViewbuild.gradle

```
dependencies{
    compile 'com.dlazaro66.qrcodereaderview:qrcodereaderview:2.0.0'
}
```

- `QRCodeReaderView`

```
<com.dlazaro66.qrcodereaderview.QRCodeReaderView
       android:id="@+id/qrdecoderview"
       android:layout_width="match_parent"
       android:layout_height="match_parent" />
```

- `onQRCodeReadListener`Activity`QrCodeReaderViewQrCodeReaderView`。
- 。 https://developer.android.com/training/permissions/requesting.html

Activity

```
   public class DecoderActivity extends Activity implements OnQRCodeReadListener {

   private TextView resultTextView;
   private QRCodeReaderView qrCodeReaderView;

   @Override
   protected void onCreate(Bundle savedInstanceState) {
       super.onCreate(savedInstanceState);
       setContentView(R.layout.activity_decoder);

       qrCodeReaderView = (QRCodeReaderView) findViewById(R.id.qrdecoderview);
       qrCodeReaderView.setOnQRCodeReadListener(this);

       // Use this function to enable/disable decoding
       qrCodeReaderView.setQRDecodingEnabled(true);

       // Use this function to change the autofocus interval (default is 5 secs)
       qrCodeReaderView.setAutofocusInterval(2000L);
```

```
        // Use this function to enable/disable Torch
        qrCodeReaderView.setTorchEnabled(true);

        // Use this function to set front camera preview
        qrCodeReaderView.setFrontCamera();

        // Use this function to set back camera preview
        qrCodeReaderView.setBackCamera();
    }

    // Called when a QR is decoded
    // "text" : the text encoded in QR
    // "points" : points where QR control points are placed in View
    @Override
    public void onQRCodeRead(String text, PointF[] points) {
        resultTextView.setText(text);
    }

    @Override
    protected void onResume() {
        super.onResume();
        qrCodeReaderView.startCamera();
    }

    @Override
    protected void onPause() {
        super.onPause();
        qrCodeReaderView.stopCamera();
    }
}
```

QR https://riptutorial.com/zh-CN/android/topic/6067/qr

210:

JacksonJSONJava。。

Examples

JSON

```
{
  "name" : { "first" : "Joe", "last" : "Sixpack" },
  "gender" : "MALE",
  "verified" : false,
  "userImage" : "keliuyue"
}
```

JavaUser

```
ObjectMapper mapper = new ObjectMapper(); // can reuse, share globally
User user = mapper.readValue(new File("user.json"), User.class);
```

User.class

```
public class User {

    public enum Gender {MALE, FEMALE};

    public static class Name {
        private String _first, _last;

        public String getFirst() {
            return _first;
        }

        public String getLast() {
            return _last;
        }

        public void setFirst(String s) {
            _first = s;
        }

        public void setLast(String s) {
            _last = s;
        }
    }

    private Gender _gender;
    private Name _name;
    private boolean _isVerified;
    private byte[] _userImage;

    public Name getName() {
        return _name;
    }
```

```
    public boolean isVerified() {
        return _isVerified;
    }

    public Gender getGender() {
        return _gender;
    }

    public byte[] getUserImage() {
        return _userImage;
    }

    public void setName(Name n) {
        _name = n;
    }

    public void setVerified(boolean b) {
        _isVerified = b;
    }

    public void setGender(Gender g) {
        _gender = g;
    }

    public void setUserImage(byte[] b) {
        _userImage = b;
    }
}
```

JSON

```
mapper.writeValue(new File("user-modified.json"), user);
```

https://riptutorial.com/zh-CN/android/topic/10878/

211:

Examples

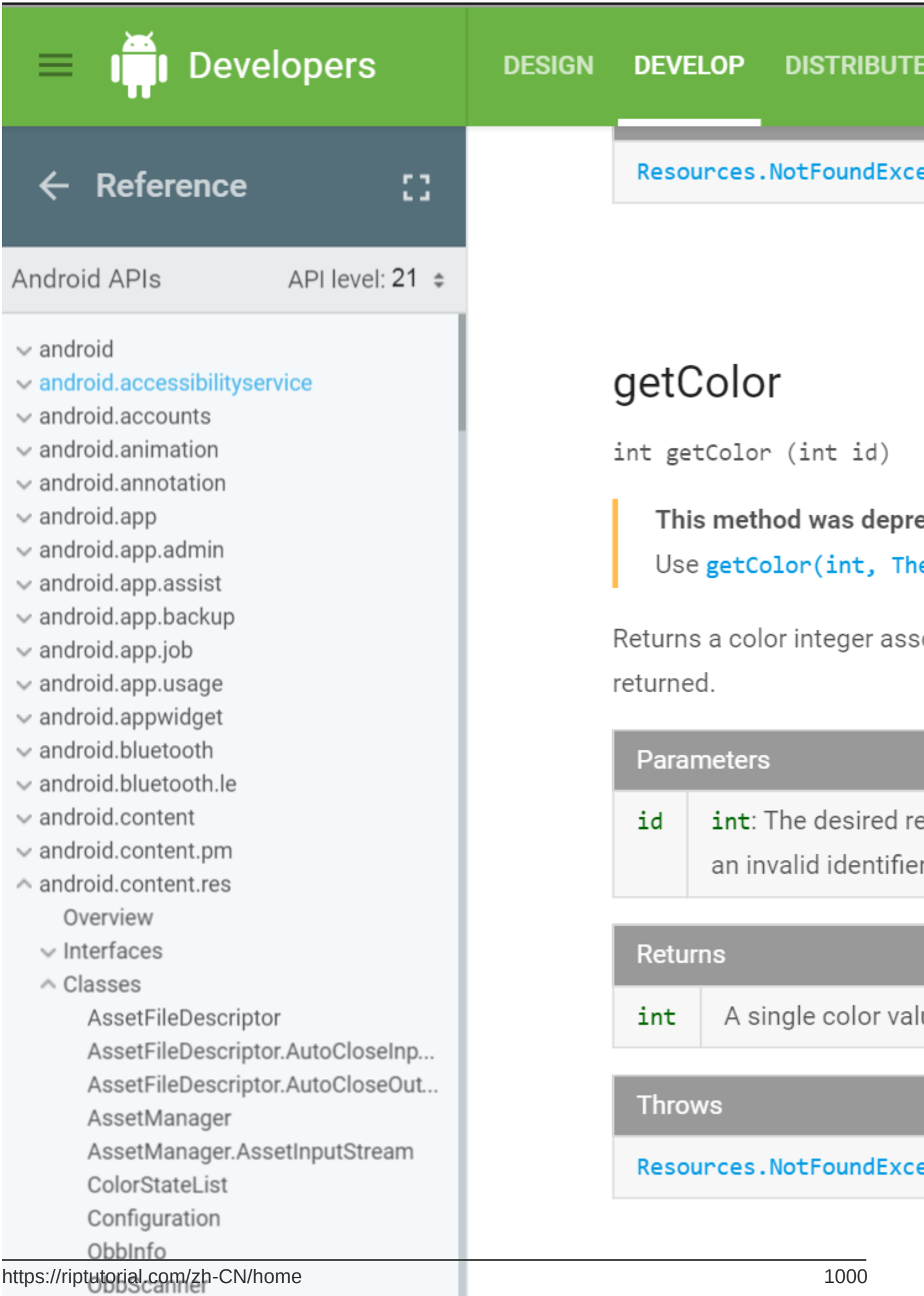
API

API。 。 LINT 。

Android StudioAPI。 `.getColor(int id)`

```
getResources().~~getColor~~(R.color.colorAccent));
```

API。 Android“APIx”


Developers
DESIGN
DEVELOP
DISTRIBUTE
Reference
Android APIs
API level: 21
android
android.accessibilityservice
android.accounts
android.animation
android.annotation
android.app
android.app.admin
android.app.assist
android.app.backup
android.app.job
android.app.usage
android.appwidget
android.bluetooth
android.bluetooth.le
android.content
android.content.pm
android.content.res
Overview
Interfaces
Classes
AssetFileDescriptor
AssetFileDescriptor.AutoCloseInp...
AssetFileDescriptor.AutoCloseOut...
AssetManager
AssetManager.AssetInputStream
ColorStateList
Configuration
ObbInfo
ObbScanner
Resources.NotFoundExce
getColor
int getColor (int id)
This method was depre
Use getColor(int, The
Returns a color integer ass
returned.
Parameters
id
int: The desired re
an invalid identifier
Returns
int
A single color valu
Throws
Resources.NotFoundExce

212:

Examples

1. strings.xml

```
<string name="my_string">This is %1$s</string>
```

2.
```
String fun = "fun";
context.getString(R.string.my_string, fun);
```

SimpleDateFormat

```
Date now = new Date();
long timestamp = now.getTime();
SimpleDateFormat sdf = new SimpleDateFormat("MM/dd/yyyy", Locale.US);
String dateStr = sdf.format(timestamp);
```

String

String.valueOfintfloatdoublelongboolean。

```
String.valueOf(1); //Output -> "1"
String.valueOf(1.0); //Output -> "1.0"
String.valueOf(1.2345); //Output -> "1.2345"
String.valueOf(true); //Output -> "true"
```

```
Integer.parseInt("1"); //Output -> 1
Float.parseFloat("1.2"); //Output -> 1.2
Boolean.parseBoolean("true"); //Output -> true
```

https://riptutorial.com/zh-CN/android/topic/1346/

213: Internet

WI-Fi。

- isNetworkAvailableInternet

truefalse。

Examples

```
<uses-permission android:name="android.permission.ACCESS_WIFI_STATE" />
<uses-permission android:name="android.permission.ACCESS_NETWORK_STATE" />
<uses-permission android:name="android.permission.INTERNET" />
```

```
/**
 * If network connectivity is available, will return true
 *
 * @param context the current context
 * @return boolean true if a network connection is available
 */
public static boolean isNetworkAvailable(Context context) {
    ConnectivityManager connectivity = (ConnectivityManager) context
            .getSystemService(Context.CONNECTIVITY_SERVICE);
    if (connectivity == null) {
        Log.d("NetworkCheck", "isNetworkAvailable: No");
        return false;
    }

    // get network info for all of the data interfaces (e.g. WiFi, 3G, LTE, etc.)
    NetworkInfo[] info = connectivity.getAllNetworkInfo();

    // make sure that there is at least one interface to test against
    if (info != null) {
        // iterate through the interfaces
        for (int i = 0; i < info.length; i++) {
            // check this interface for a connected state
            if (info[i].getState() == NetworkInfo.State.CONNECTED) {
                Log.d("NetworkCheck", "isNetworkAvailable: Yes");
                return true;
            }
        }
    }
    return false;
}
```

android

```
        ConnectivityManager cm = (ConnectivityManager)
getSystemService(Context.CONNECTIVITY_SERVICE);
        NetworkInfo Info = cm.getActiveNetworkInfo();
```

```
        if (Info == null || !Info.isConnectedOrConnecting()) {
            Log.i(TAG, "No connection");
        } else {
            int netType = Info.getType();
            int netSubtype = Info.getSubtype();

            if (netType == ConnectivityManager.TYPE_WIFI) {
                Log.i(TAG, "Wifi connection");
                WifiManager wifiManager = (WifiManager)
getApplication().getSystemService(Context.WIFI_SERVICE);
                List<ScanResult> scanResult = wifiManager.getScanResults();
                for (int i = 0; i < scanResult.size(); i++) {
                    Log.d("scanResult", "Speed of wifi"+scanResult.get(i).level);//The db
level of signal
                }


                // Need to get wifi strength
            } else if (netType == ConnectivityManager.TYPE_MOBILE) {
                Log.i(TAG, "GPRS/3G connection");
                // Need to get differentiate between 3G/GPRS
            }
        }
```

-

```
ConnectivityManager cm = (ConnectivityManager) getSystemService(Context.CONNECTIVITY_SERVICE);
    NetworkInfo Info = cm.getActiveNetworkInfo();
    if (Info == null || !Info.isConnectedOrConnecting()) {
        Log.i(TAG, "No connection");
    } else {
        int netType = Info.getType();
        int netSubtype = Info.getSubtype();

        if (netType == ConnectivityManager.TYPE_WIFI) {
            Log.i(TAG, "Wifi connection");
            WifiManager wifiManager = (WifiManager)
getApplication().getSystemService(Context.WIFI_SERVICE);
            List<ScanResult> scanResult = wifiManager.getScanResults();
            for (int i = 0; i < scanResult.size(); i++) {
                Log.d("scanResult", "Speed of wifi"+scanResult.get(i).level);//The db level of
signal
            }


            // Need to get wifi strength
        } else if (netType == ConnectivityManager.TYPE_MOBILE) {
            Log.i(TAG, "GPRS/3G connection");
            // Need to get differentiate between 3G/GPRS
        }
    }
```

-

```
 public class Connectivity {
        /*
         * These constants aren't yet available in my API level (7), but I need to
         * handle these cases if they come up, on newer versions
```

```
     */
    public static final int NETWORK_TYPE_EHRPD = 14; // Level 11
    public static final int NETWORK_TYPE_EVDO_B = 12; // Level 9
    public static final int NETWORK_TYPE_HSPAP = 15; // Level 13
    public static final int NETWORK_TYPE_IDEN = 11; // Level 8
    public static final int NETWORK_TYPE_LTE = 13; // Level 11

/**
 * Check if there is any connectivity
 *
 * @param context
 * @return
 */
public static boolean isConnected(Context context) {
    ConnectivityManager cm = (ConnectivityManager) context
            .getSystemService(Context.CONNECTIVITY_SERVICE);
    NetworkInfo info = cm.getActiveNetworkInfo();
    return (info != null && info.isConnected());
}

/**
 * Check if there is fast connectivity
 *
 * @param context
 * @return
 */
public static String isConnectedFast(Context context) {
    ConnectivityManager cm = (ConnectivityManager) context
            .getSystemService(Context.CONNECTIVITY_SERVICE);
    NetworkInfo info = cm.getActiveNetworkInfo();

    if ((info != null && info.isConnected())) {
        return Connectivity.isConnectionFast(info.getType(),
                info.getSubtype());
    } else
        return "No NetWork Access";

}

/**
 * Check if the connection is fast
 *
 * @param type
 * @param subType
 * @return
 */
public static String isConnectionFast(int type, int subType) {
    if (type == ConnectivityManager.TYPE_WIFI) {
        System.out.println("CONNECTED VIA WIFI");
        return "CONNECTED VIA WIFI";
    } else if (type == ConnectivityManager.TYPE_MOBILE) {
        switch (subType) {
        case TelephonyManager.NETWORK_TYPE_1xRTT:
            return "NETWORK TYPE 1xRTT"; // ~ 50-100 kbps
        case TelephonyManager.NETWORK_TYPE_CDMA:
            return "NETWORK TYPE CDMA (3G) Speed: 2 Mbps"; // ~ 14-64 kbps
        case TelephonyManager.NETWORK_TYPE_EDGE:

            return "NETWORK TYPE EDGE (2.75G) Speed: 100-120 Kbps"; // ~
                                                                    // 50-100
                                                                    // kbps
```

```
            case TelephonyManager.NETWORK_TYPE_EVDO_0:
                return "NETWORK TYPE EVDO_0"; // ~ 400-1000 kbps
            case TelephonyManager.NETWORK_TYPE_EVDO_A:
                return "NETWORK TYPE EVDO_A"; // ~ 600-1400 kbps
            case TelephonyManager.NETWORK_TYPE_GPRS:
                return "NETWORK TYPE GPRS (2.5G) Speed: 40-50 Kbps"; // ~ 100
                                                                     // kbps
            case TelephonyManager.NETWORK_TYPE_HSDPA:
                return "NETWORK TYPE HSDPA (4G) Speed: 2-14 Mbps"; // ~ 2-14
                                                                   // Mbps
            case TelephonyManager.NETWORK_TYPE_HSPA:
                return "NETWORK TYPE HSPA (4G) Speed: 0.7-1.7 Mbps"; // ~
                                                                     // 700-1700
                                                                     // kbps
            case TelephonyManager.NETWORK_TYPE_HSUPA:
                return "NETWORK TYPE HSUPA (3G) Speed: 1-23 Mbps"; // ~ 1-23
                                                                   // Mbps
            case TelephonyManager.NETWORK_TYPE_UMTS:
                return "NETWORK TYPE UMTS (3G) Speed: 0.4-7 Mbps"; // ~ 400-7000
                                                                   // kbps
                // NOT AVAILABLE YET IN API LEVEL 7
            case Connectivity.NETWORK_TYPE_EHRPD:
                return "NETWORK TYPE EHRPD"; // ~ 1-2 Mbps
            case Connectivity.NETWORK_TYPE_EVDO_B:
                return "NETWORK_TYPE_EVDO_B"; // ~ 5 Mbps
            case Connectivity.NETWORK_TYPE_HSPAP:
                return "NETWORK TYPE HSPA+ (4G) Speed: 10-20 Mbps"; // ~ 10-20
                                                                    // Mbps
            case Connectivity.NETWORK_TYPE_IDEN:
                return "NETWORK TYPE IDEN"; // ~25 kbps
            case Connectivity.NETWORK_TYPE_LTE:
                return "NETWORK TYPE LTE (4G) Speed: 10+ Mbps"; // ~ 10+ Mbps
                // Unknown
            case TelephonyManager.NETWORK_TYPE_UNKNOWN:
                return "NETWORK TYPE UNKNOWN";
            default:
                return "";
            }
        } else {
            return "";
        }
    }

}
```

Internet https://riptutorial.com/zh-CN/android/topic/3918/internet

214:

Examples

pingIP。

```
public Boolean isDataConnected() {
    try {
        Process p1 = java.lang.Runtime.getRuntime().exec("ping -c 1 8.8.8.8");
        int returnVal = p1.waitFor();
        boolean reachable = (returnVal==0);
        return reachable;
    } catch (Exception e) {
        // TODO Auto-generated catch block
        e.printStackTrace();
    }
    return false;
}
```

ConnectivityManager

```
    public static boolean isConnectedNetwork (Context context) {

        ConnectivityManager cm = (ConnectivityManager)
context.getSystemService(Context.CONNECTIVITY_SERVICE);
        return cm.getActiveNetworkInfo () != null && cm.getActiveNetworkInfo
().isConnectedOrConnecting ();

    }
```

。 。

```
if
(intent.getAction().equals(android.net.ConnectivityManager.CONNECTIVITY_ACTION)){
 NetworkInfo info =
intent.getParcelableExtra(ConnectivityManager.EXTRA_NETWORK_INFO);
//perform your action when connected to a network
}
```

https://riptutorial.com/zh-CN/android/topic/8670/

215:

LintAndroid。 Android StudioLint。

https://developer.android.com/studio/write/lint.html

Examples

xml

`tools:ignore`xmllint。

lint。

.....。

lint

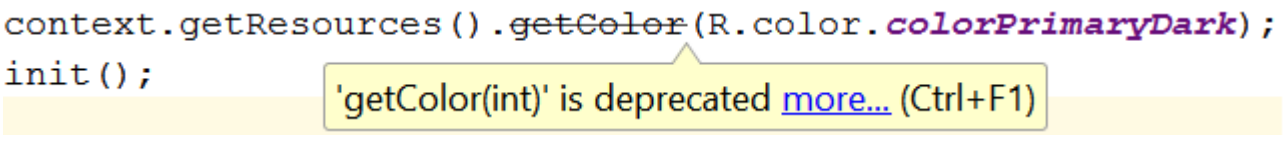
-
-

:(lint

```
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
      xmlns:tools="http://schemas.android.com/tools"
      ...>
    <uses-permission android:name="android.permission.SET_TIME"
        tools:ignore="ProtectedPermissions"/>
```

“Deprecated”

Android API 23



Android API。

```
public int getColor(@ColorRes int id, @Nullable Theme theme) throws NotFoundException
```

。 android.support.v4。

build.gradle

```
com.android.support:support-v4:24.0.0
```

```
ContextCompat.getColor(context, R.color.colorPrimaryDark);
ContextCompat.getDrawable(context, R.drawable.btn_check);
ContextCompat.getColorStateList(context, R.color.colorPrimary);
DrawableCompat.setTint(drawable);
ContextCompat.getColor(context,R.color.colorPrimaryDark));
```

```
ViewCompat.setElevation(textView, 1F);
ViewCompat.animate(textView);
TextViewCompat.setTextAppearance(textView, R.style.AppThemeTextStyle);
...
```

gradleLintOptions

`build.gradlelintOptions`lint

```
android {

    //.....

    lintOptions {
        // turn off checking the given issue id's
        disable 'TypographyFractions','TypographyQuotes'

        // turn on the given issue id's
        enable 'RtlHardcoded','RtlCompat', 'RtlEnabled'

        // check *only* the given issue id's
        check 'NewApi', 'InlinedApi'

       // set to true to turn off analysis progress reporting by lint
       quiet true

       // if true, stop the gradle build if errors are found
       abortOnError false

       // if true, only report errors
       ignoreWarnings true
    }
}
```

lint.`./gradlew lintRelease ./gradlew lint`。

DSL。

lint.xml

`lint.xml`Lint。Android。Android StudioLintlint.xmlAndroid。

```
<?xml version="1.0" encoding="UTF-8"?>
    <lint>
        <!-- list of issues to configure -->
</lint>
```

Lint。

`lint.xml`。

```
<?xml version="1.0" encoding="UTF-8"?>
<lint>
    <!-- Disable the given check in this project -->
    <issue id="IconMissingDensityFolder" severity="ignore" />

    <!-- Ignore the ObsoleteLayoutParam issue in the specified files -->
    <issue id="ObsoleteLayoutParam">
        <ignore path="res/layout/activation.xml" />
        <ignore path="res/layout-xlarge/activation.xml" />
    </issue>

    <!-- Ignore the UselessLeaf issue in the specified file -->
    <issue id="UselessLeaf">
        <ignore path="res/layout/main.xml" />
    </issue>

    <!-- Change the severity of hardcoded strings to "error" -->
    <issue id="HardcodedText" severity="error" />
</lint>
```

JavaXMLlint

JavaXMLLint。

Javalint

Android**Java**Lint`@SuppressLint` Java。

```
@SuppressLint("NewApi")
@Override
public void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.main);
```

Lint

```
@SuppressLint("all")
```

XMLlint

`tools:ignore`**XML**Lint。

```
tools:ignore="NewApi,StringFormatInvalid"
```

XMLLint

```
tools:ignore="all"
```

。。Lint。@SuppressWarnings。

。

```
@SuppressWarnings("deprecated");
public void setAnotherColor (int newColor) {
    getApplicationContext().getResources().getColor(newColor)
}
```

LintAndroid。

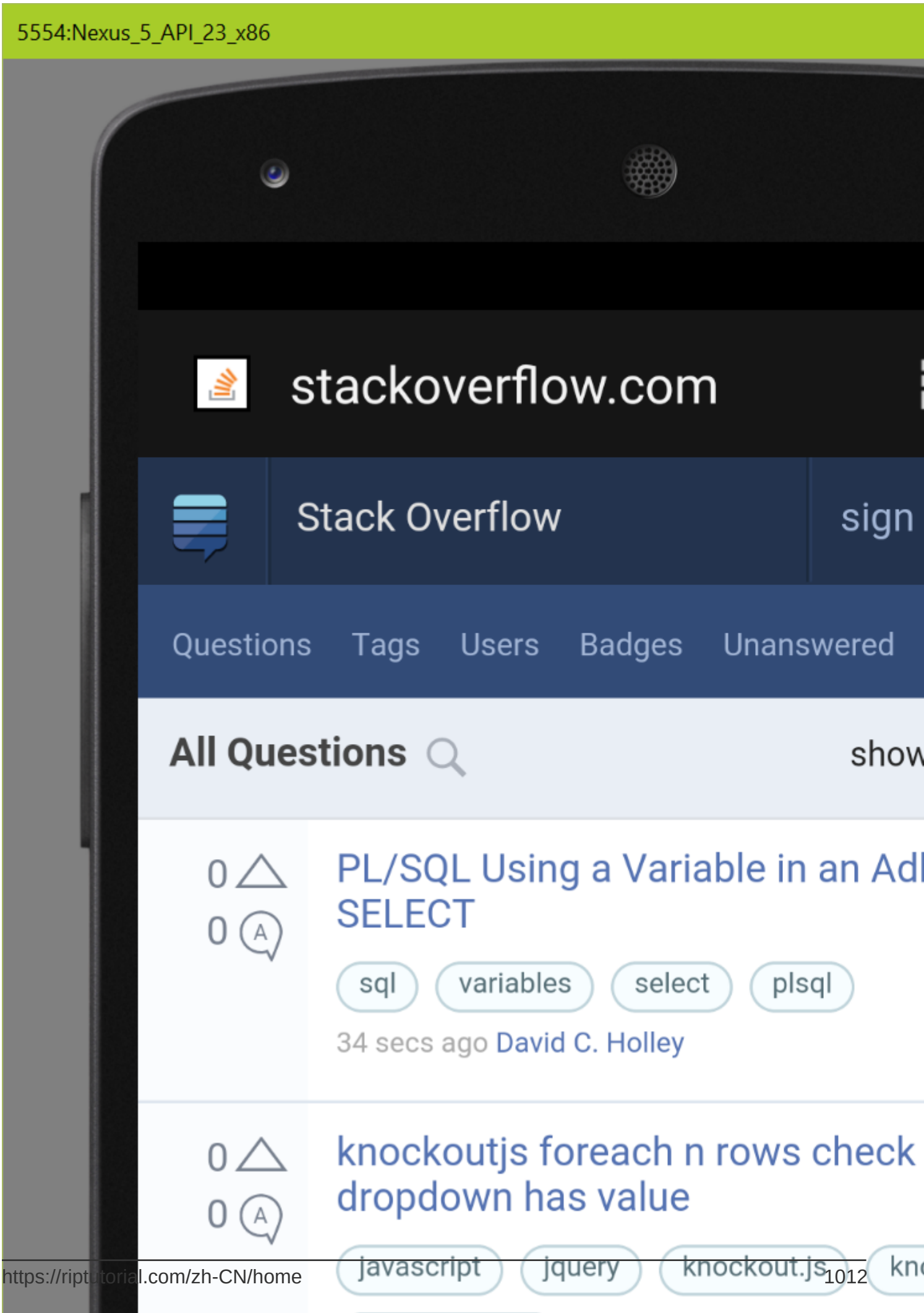
https://riptutorial.com/zh-CN/android/topic/129/

216:

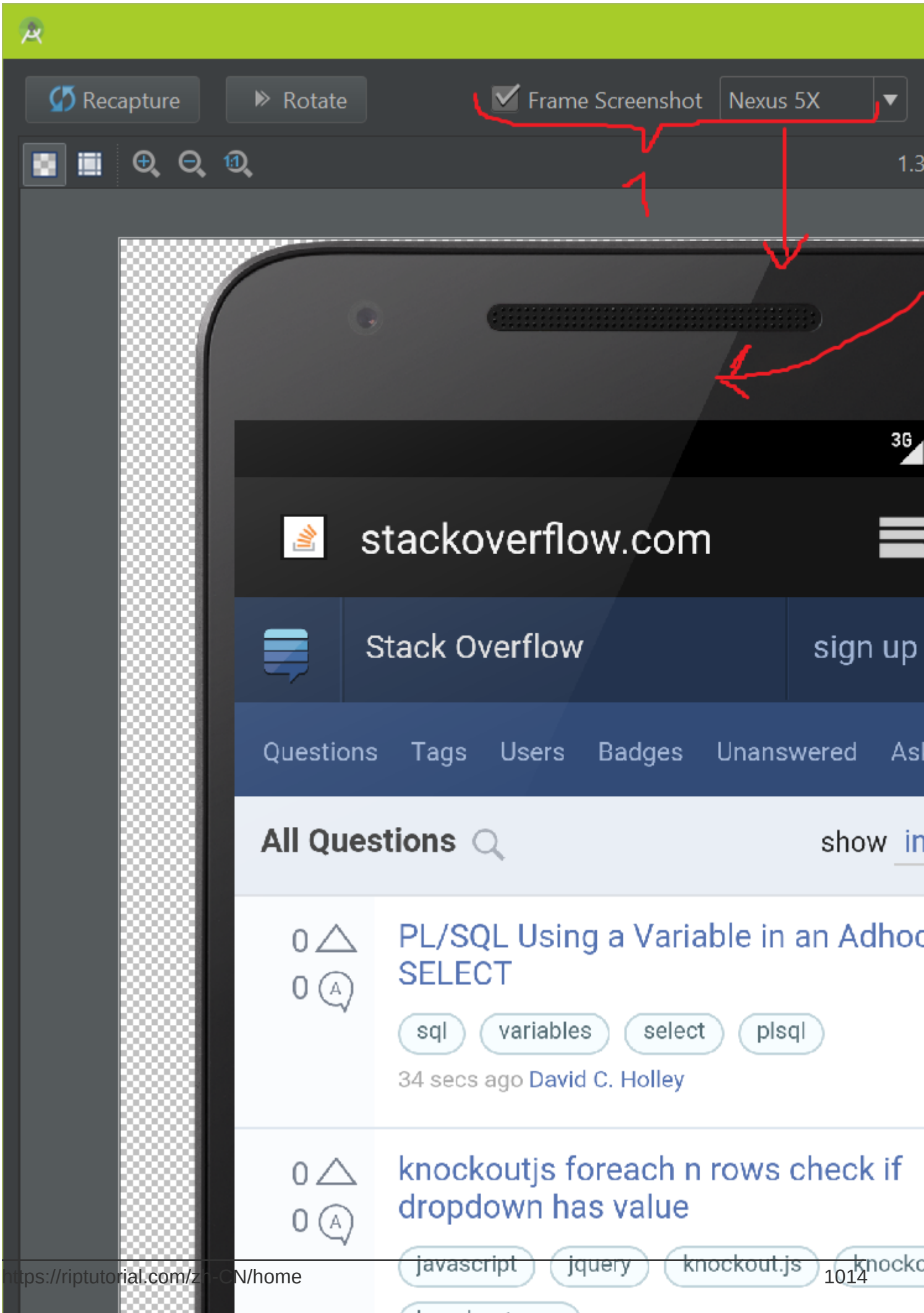
AVD*Android*

Examples

Android2.0`Ctrl` + `S`


5554:Nexus_5_API_23_x86
stackoverflow.com
Stack Overflow
sign
Questions
Tags
Users
Badges
Unanswered
All Questions
show
0
0
PL/SQL Using a Variable in an Adl
SELECT
sql
variables
select
plsql
34 secs ago David C. Holley
0
0
knockoutjs foreach n rows check
dropdown has value
javascript
jquery
knockout.js

2. ◦
3. ◦


Recapture
Rotate
Frame Screenshot
Nexus 5X
3G
stackoverflow.com
Stack Overflow
sign up
Questions
Tags
Users
Badges
Unanswered
All Questions
show
0
0
PL/SQL Using a Variable in an Adhoc SELECT
sql
variables
select
plsql
34 secs ago David C. Holley
0
0
knockoutjs foreach n rows check if dropdown has value
javascript
jquery
knockout.js

`/extras/intel/Hardware_Accelerated_Execution_Manager/IntelHAXM.exe`。

。

OS X `/extras/intel/Hardware_Accelerated_Execution_Manager/HAXM\ installation`

CPUVT-xSVMx86Android。 ARM。

```
sc query intelhaxm
```

VMx86x86AVD `emulator -avd <avd_name>`

HAXMAVD。

https://riptutorial.com/zh-CN/android/topic/122/

217:

PicassoAndroid。Square。。HTTP。。

PicassoAndroid。

。

-
-
-

Examples

Picasso LibraryAndroid

。

```
dependencies {
 compile "com.squareup.picasso:picasso:2.5.2"
}
```

Maven

```
<dependency>
  <groupId>com.squareup.picasso</groupId>
  <artifactId>picasso</artifactId>
  <version>2.5.2</version>
</dependency>
```

Picasso。。

```
Picasso.with(context)
  .load("YOUR IMAGE URL HERE")
  .placeholder(Your Drawable Resource)   //this is optional the image to display while the url
image is downloading
  .error(Your Drawable Resource)         //this is also optional if some error has occurred in
downloading the image this image would be displayed
  .into(imageView, new Callback(){
     @Override
        public void onSuccess() {}

        @Override
        public void onError() {}
   });
```

。

```
Picasso.with(context)
 .load("YOUR IMAGE URL HERE")
 .placeholder(DRAWABLE RESOURCE)   // optional
 .error(DRAWABLE RESOURCE)         // optional
 .resize(width, height)            // optional
 .rotate(degree)                   // optional
 .into(imageView);
```

Picasso Circle Transform

```
import android.graphics.Bitmap;
import android.graphics.BitmapShader;
import android.graphics.Canvas;
import android.graphics.Color;
import android.graphics.Paint;
import android.graphics.Paint.Style;

import com.squareup.picasso.Transformation;

public class CircleTransform implements Transformation {

    boolean mCircleSeparator = false;

    public CircleTransform(){
    }

    public CircleTransform(boolean circleSeparator){
        mCircleSeparator = circleSeparator;
    }

    @Override
    public Bitmap transform(Bitmap source) {
        int size = Math.min(source.getWidth(), source.getHeight());

        int x = (source.getWidth() - size) / 2;
        int y = (source.getHeight() - size) / 2;

        Bitmap squaredBitmap = Bitmap.createBitmap(source, x, y, size, size);

        if (squaredBitmap != source) {
            source.recycle();
        }

        Bitmap bitmap = Bitmap.createBitmap(size, size, source.getConfig());

        Canvas canvas = new Canvas(bitmap);
        BitmapShader shader = new BitmapShader(squaredBitmap, BitmapShader.TileMode.CLAMP,
BitmapShader.TileMode.CLAMP);
        Paint paint = new Paint(Paint.ANTI_ALIAS_FLAG | Paint.DITHER_FLAG |
Paint.FILTER_BITMAP_FLAG);
        paint.setShader(shader);

        float r = size/2f;
        canvas.drawCircle(r, r, r-1, paint);

        // Make the thin border:
        Paint paintBorder = new Paint();
        paintBorder.setStyle(Style.STROKE);
        paintBorder.setColor(Color.argb(84,0,0,0));
```

```
        paintBorder.setAntiAlias(true);
        paintBorder.setStrokeWidth(1);
        canvas.drawCircle(r, r, r-1, paintBorder);

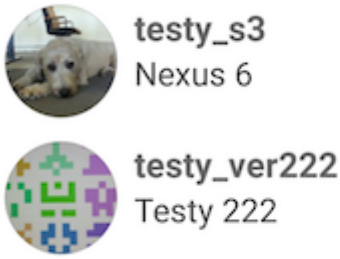
        // Optional separator for stacking:
        if (mCircleSeparator) {
            Paint paintBorderSeparator = new Paint();
            paintBorderSeparator.setStyle(Style.STROKE);
            paintBorderSeparator.setColor(Color.parseColor("#ffffff"));
            paintBorderSeparator.setAntiAlias(true);
            paintBorderSeparator.setStrokeWidth(4);
            canvas.drawCircle(r, r, r+1, paintBorderSeparator);
        }

        squaredBitmap.recycle();
        return bitmap;
    }

    @Override
    public String key() {
        return "circle";
    }
}
```

`this``url`urlString

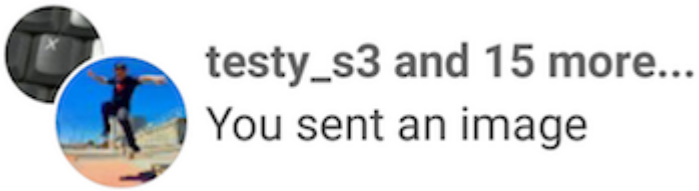
```
ImageView ivAvatar = (ImageView) itemView.findViewById(R.id.avatar);
Picasso.with(this).load(url)
    .fit()
    .transform(new CircleTransform())
    .into(ivAvatar);
```



top`true`

```
ImageView ivAvatar = (ImageView) itemView.findViewById(R.id.avatar);
Picasso.with(this).load(url)
    .fit()
    .transform(new CircleTransform(true))
    .into(ivAvatar);
```

FrameLayoutImageView



Picasso

```
Picasso.with(context)
.load(uri)
.networkPolicy(NetworkPolicy.NO_CACHE)
.memoryPolicy(MemoryPolicy.NO_CACHE)
.placeholder(R.drawable.placeholder)
.into(imageView);
```

```
String filename = "image.png";
String imagePath = getExternalFilesDir() + "/" + filename;

Picasso.with(context)
    .load(new File(imagePath))
    .into(imageView);
```

PicassoBitmap

`PicassoBitmap`

```
Picasso.with(mContext)
        .load(ImageUrl)
        .into(new Target() {
            @Override
            public void onBitmapLoaded(Bitmap bitmap, Picasso.LoadedFrom from) {
               // Todo: Do something with your bitmap here
            }

            @Override
            public void onBitmapFailed(Drawable errorDrawable) {
            }

            @Override
            public void onPrepareLoad(Drawable placeHolderDrawable) {
            }
        });
```

Picasso

Picasso。

。

`cancelRequest()`

```
ImageView imageView;
```

```
//......

Picasso.with(imageView.getContext()).cancelRequest(imageView);
```

PicassoHtml.fromHtmlImageGetter

PicassoHtml.fromHtmlImageGetter

```
public class PicassoImageGetter implements Html.ImageGetter {

private TextView textView;

private Picasso picasso;

public PicassoImageGetter(@NonNull Picasso picasso, @NonNull TextView textView) {
    this.picasso = picasso;
    this.textView = textView;
}

@Override
public Drawable getDrawable(String source) {
    Log.d(PicassoImageGetter.class.getName(), "Start loading url " + source);

    BitmapDrawablePlaceHolder drawable = new BitmapDrawablePlaceHolder();

    picasso
            .load(source)
            .error(R.drawable.connection_error)
            .into(drawable);

    return drawable;
}

private class BitmapDrawablePlaceHolder extends BitmapDrawable implements Target {

    protected Drawable drawable;

    @Override
    public void draw(final Canvas canvas) {
        if (drawable != null) {
            checkBounds();
            drawable.draw(canvas);
        }
    }

    public void setDrawable(@Nullable Drawable drawable) {
        if (drawable != null) {
            this.drawable = drawable;
            checkBounds();
        }
    }

    private void checkBounds() {
        float defaultProportion = (float) drawable.getIntrinsicWidth() / (float)
drawable.getIntrinsicHeight();
        int width = Math.min(textView.getWidth(), drawable.getIntrinsicWidth());
        int height = (int) ((float) width / defaultProportion);
```

```
        if (getBounds().right != textView.getWidth() || getBounds().bottom != height) {

            setBounds(0, 0, textView.getWidth(), height); //set to full width

            int halfOfPlaceHolderWidth = (int) ((float) getBounds().right / 2f);
            int halfOfImageWidth = (int) ((float) width / 2f);

            drawable.setBounds(
                    halfOfPlaceHolderWidth - halfOfImageWidth, //centering an image
                    0,
                    halfOfPlaceHolderWidth + halfOfImageWidth,
                    height);

            textView.setText(textView.getText()); //refresh text
        }
    }

    //-------------------------------------------------------------------//

    @Override
    public void onBitmapLoaded(Bitmap bitmap, Picasso.LoadedFrom from) {
        setDrawable(new BitmapDrawable(Application.getContext().getResources(), bitmap));
    }

    @Override
    public void onBitmapFailed(Drawable errorDrawable) {
        setDrawable(errorDrawable);
    }

    @Override
    public void onPrepareLoad(Drawable placeHolderDrawable) {
        setDrawable(placeHolderDrawable);
    }

    //-------------------------------------------------------------------//

}
}
```

```
Html.fromHtml(textToParse, new PicassoImageGetter(picasso, textViewTarget), null);
```

OkHttpappgradle

```
compile 'com.squareup.picasso:picasso:2.5.2'
compile 'com.squareup.okhttp:okhttp:2.4.0'
compile 'com.jakewharton.picasso:picasso2-okhttp3-downloader:1.0.2'
```

Application

```
import android.app.Application;

import com.squareup.picasso.OkHttpDownloader;
import com.squareup.picasso.Picasso;

public class Global extends Application {
    @Override
    public void onCreate() {
```

```
        super.onCreate();

        Picasso.Builder builder = new Picasso.Builder(this);
        builder.downloader(new OkHttpDownloader(this,Integer.MAX_VALUE));
        Picasso built = builder.build();
        built.setIndicatorsEnabled(true);
        built.setLoggingEnabled(true);
        Picasso.setSingletonInstance(built);

    }
}
```

Manifest

```
<application
        android:name=".Global"
        .. >

</application>
```

```
Picasso.with(getActivity())
.load(imageUrl)
.networkPolicy(NetworkPolicy.OFFLINE)
.into(imageView, new Callback() {
    @Override
    public void onSuccess() {
        //Offline Cache hit
    }

    @Override
    public void onError() {
        //Try again online if cache failed
        Picasso.with(getActivity())
                .load(imageUrl)
                .error(R.drawable.header)
                .into(imageView, new Callback() {
            @Override
            public void onSuccess() {
                 //Online download
            }

            @Override
            public void onError() {
                Log.v("Picasso","Could not fetch image");
            }
        });
    }
});
```

https://riptutorial.com/zh-CN/android/topic/2172/

218:

javac。

。 。

Examples

@NonNull

```
public class Foo {
    private String name;
    public Foo(@NonNull String name){...};
    ...
}
```

@NonNullandroidnull。

。

1. -

   ```
   @interface CustomAnnotation {}
   ```

2. -

   ```
   @interface CustomAnnotation {
       int value();
   }
   ```

3. -

   ```
   @interface CustomAnnotation{
       int value1();
       String value2();
       String value3();
   }
   ```

- -。
- -。

。

@

Element Types	Where the a
TYPE	class, interfac
FIELD	fields
METHOD	methods
CONSTRUCTOR	constructors
LOCAL_VARIABLE	local variable
ANNOTATION_TYPE	annotation ty
PARAMETER	parameter

@

RetentionPolicy	Availability
RetentionPolicy.SOURCE	refers to the source code, d class.
RetentionPolicy.CLASS	refers to the .class file, ava file.
RetentionPolicy.RUNTIME	refers to the runtime, availa

```
@Retention(RetentionPolicy.SOURCE) // will not be available in compiled class
@Target(ElementType.METHOD) // can be applied to methods only
@interface CustomAnnotation{
      int value();
}
```

```
class Foo{
  @CustomAnnotation(value = 1)  // will be used by an annotation processor
  public void foo(){..}
}
```

`@CustomAnnotation`Annotationprocessor。

https://riptutorial.com/zh-CN/android/topic/10726/

219:

UI。 Android。 。

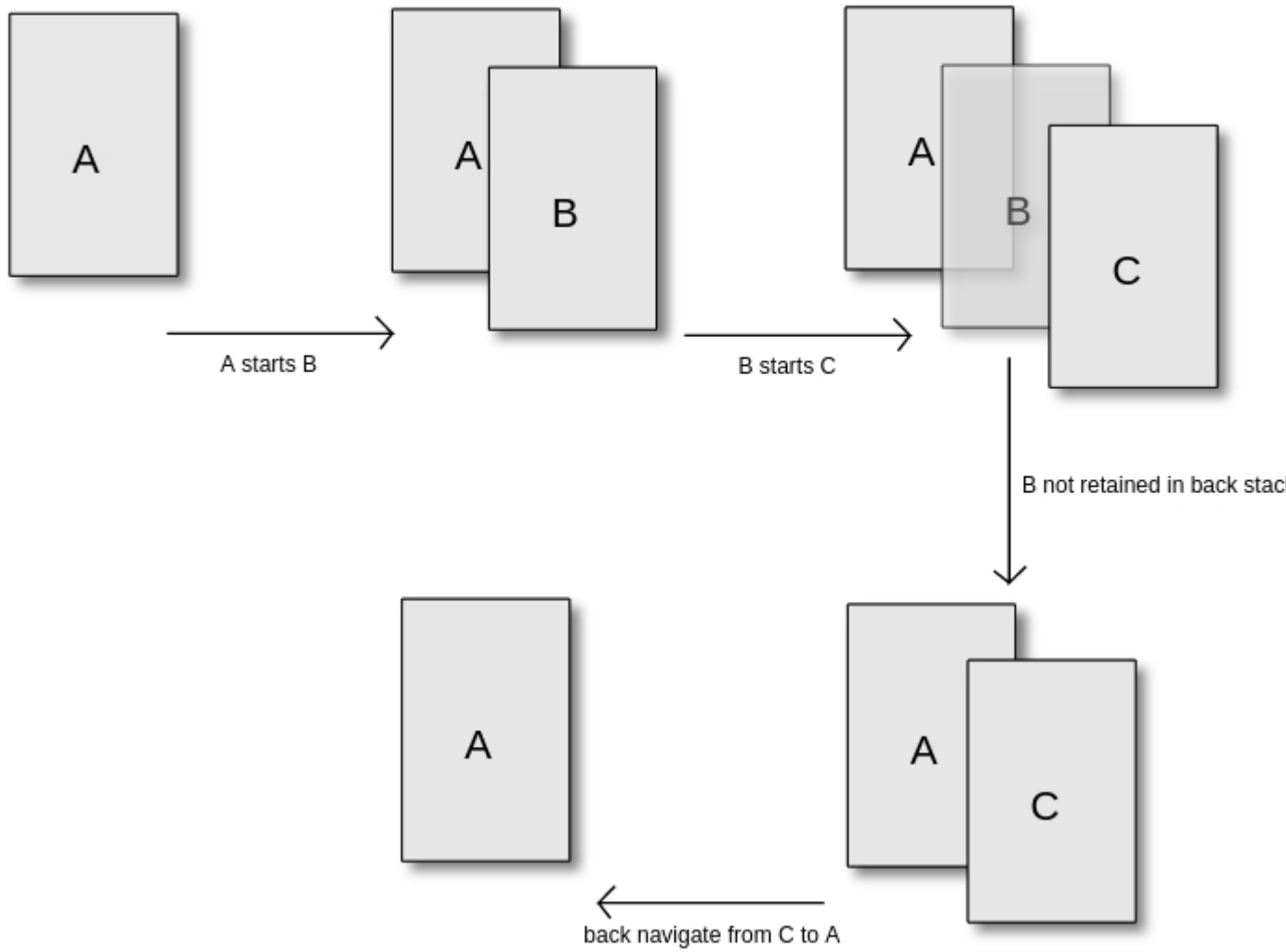
- void onCreateBundle savedInstanceState//。
- void onPostCreateBundle savedInstanceState//onStartonRestoreInstanceStateBundle。
- void onStart//onCreateBundle - onRestart。
- void onResume//onRestoreInstanceStateBundleonRestartonPause。
- void onPostResume//onResume。
- void onRestart//onStop。
- void onPause//。
- void onStop//。
- void onDestroy//。
- void onNewIntentIntent intent//launchMode“singleTop”startActivityIntent FLAG_ACTIVITY_SINGLE_TOP。
- void onSaveInstanceStateBundle outState//onCreateBundleonRestoreInstanceStateBundle Bundle。
- void onRestoreInstanceStateBundle savedInstanceState//onStartsavedInstanceState。

	startActivityActivity
	StringParcelable。
	。

。 。 。

Examples

B。 。



`AndroidManifest.xml<activity>noHistorytrue`

```
<activity
     android:name=".B"
     android:noHistory="true">
```

`Bfinish()`

```
finish();
startActivity(new Intent(context, C.class));
```

`noHistory`“Splash Screen”Login Activities。

Android Activity LifeCycle

MainActivityNext Activity。

```
public class MainActivity extends AppCompatActivity {
```

```
    private final String LOG_TAG = MainActivity.class.getSimpleName();
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Log.d(LOG_TAG, "calling onCreate from MainActivity");
    }
    @Override
    protected void onStart() {
        super.onStart();
        Log.d(LOG_TAG, "calling onStart from MainActivity");
    }
    @Override
    protected void onResume() {
        super.onResume();
        Log.d(LOG_TAG, "calling onResume  from MainActivity");
    }

    @Override
    protected void onPause() {
        super.onPause();
        Log.d(LOG_TAG, "calling onPause  from MainActivity");
    }

    @Override
    protected void onStop() {
        super.onStop();
        Log.d(LOG_TAG, "calling onStop  from MainActivity");
    }

    @Override
    protected void onDestroy() {
        super.onDestroy();
        Log.d(LOG_TAG, "calling onDestroy  from MainActivity");
    }

    @Override
    protected void onRestart() {
        super.onRestart();
        Log.d(LOG_TAG, "calling onRestart  from MainActivity");
    }
    public void toNextActivity(){
        Log.d(LOG_TAG, "calling Next Activity");
        Intent intent = new Intent(this, NextActivity.class);
        startActivity(intent);
    } }
```

```
public class NextActivity extends AppCompatActivity {
    private final String LOG_TAG = NextActivity.class.getSimpleName();
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_next);
        Log.d(LOG_TAG, "calling onCreate from Next Activity");
    }
    @Override
    protected void onStart() {
        super.onStart();
        Log.d(LOG_TAG, "calling onStart from Next Activity");
```

```
    }
    @Override
    protected void onResume() {
        super.onResume();
        Log.d(LOG_TAG, "calling onResume  from Next Activity");
    }

    @Override
    protected void onPause() {
        super.onPause();
        Log.d(LOG_TAG, "calling onPause  from Next Activity");
    }

    @Override
    protected void onStop() {
        super.onStop();
        Log.d(LOG_TAG, "calling onStop  from Next Activity");
    }

    @Override
    protected void onDestroy() {
        super.onDestroy();
        Log.d(LOG_TAG, "calling onDestroy  from Next Activity");
    }

    @Override
    protected void onRestart() {
        super.onRestart();
        Log.d(LOG_TAG, "calling onRestart  from Next Activity");
    } }
```

D / MainActivityMainActivityonCreate
D / MainActivityMainActivityonStart
D / MainActivityMainActivityonResume

081103.142 D / MainActivityMainActivityonPause
081103.192 D / MainActivityMainActivityonStop
。
081155.922 D / MainActivityMainActivityonRestart
081155.962 D / MainActivityMainActivityonStart
081155.962 D / MainActivityMainActivityonResume

1
D / MainActivityNext Activity
D / MainActivityMainActivityonPause
D / NextActivityNext ActivityonCreate
D / NextActivityNext ActivityonStart
D / NextActivityNext ActivityonResume
D / MainActivityMainActivityonStop

D / NextActivityNext ActivityonPause

D / MainActivityMainActivityonRestart
D / MainActivityMainActivityonStart
D / MainActivityMainActivityonResume
D / NextActivityNext ActivityonStop
D / NextActivityNext ActivityonDestroy

2
D / MainActivityMainActivityonPause
D / MainActivityMainActivityonStop

D / MainActivityMainActivityonRestart
D / MainActivityMainActivityonStart
D / MainActivityMainActivityonResume

3。
D / MainActivityMainActivityonPause

。
D / MainActivityMainActivityonResume

4
onPause onStop 。

onCreateonDestroy。 onPauseonStoponRestartonStartonResume。

launchMode

。

-
- singleTop
- singleTask
- singleInstance

`<activity/>`android manifest`android:launchMode`。

```
<activity
    android:launchMode=["standard" | "singleTop" | "singleTask" | "singleInstance"] />
```

。 。 。 。 Androidorroids <= 4.4> = 5.0。

SingleTop

`standard`。 singleTop。 `onNewIntent()`。

SingleTask

◦ ◦ onNewIntent ◦

SingleInstance

singleTask ◦ singleInstance◦ singleInstance◦

setContentViewUI

Activity`setContentView`UI◦
`setContentView`

- `setContentView(int layoutResID)` - ◦
- `setContentView(View view)` - ◦
- `setContentView(View view, ViewGroup.LayoutParams params)` - ◦

`setContentView` ◦ ◦

main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<FrameLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent" >

    <TextView android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hello" />

</FrameLayout>
```

```
public final class MainActivity extends Activity {

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);

        // The resource will be inflated,
        // adding all top-level views to the activity.
        setContentView(R.layout.main);
    }
}
```

```
public final class MainActivity extends Activity {
```

```
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);

        // Creating view with container
        final FrameLayout root = new FrameLayout(this);
        final TextView text = new TextView(this);
        text.setText("Hello");
        root.addView(text);

        // Set container as content view
        setContentView(root);
    }
}
```

。

1.API> = 16

Activity`finishAffinity()`

2.11 <= API <16

```
Intent intent = new Intent(this, LoginActivity.class);
intent.setFlags(Intent.FLAG_ACTIVITY_NEW_TASK | Intent.FLAG_ACTIVITY_CLEAR_TASK
|Intent.FLAG_ACTIVITY_CLEAR_TOP);
startActivity(intent);
finish();
```

AndroidManifest.xmlExitActivity

```
<activity
        android:name="com.your_example_app.activities.ExitActivity"
        android:autoRemoveFromRecents="true"
        android:theme="@android:style/Theme.NoDisplay" />
```

ExitActivity

```
/**
 * Activity to exit Application without staying in the stack of last opened applications
 */
public class ExitActivity extends Activity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);

        if (Utils.hasLollipop()) {
            finishAndRemoveTask();
        } else if (Utils.hasJellyBean()) {
            finishAffinity();
        } else {
            finish();
        }
    }

   /**
```

```
    * Exit Application and Exclude from Recents
    *
    * @param context Context to use
    */
    public static void exitApplication(ApplicationContext context) {
        Intent intent = new Intent(context, ExitActivity.class);
        intent.addFlags(Intent.FLAG_ACTIVITY_NEW_TASK | Intent.FLAG_ACTIVITY_CLEAR_TASK |
Intent.FLAG_ACTIVITY_NO_ANIMATION | Intent.FLAG_ACTIVITY_EXCLUDE_FROM_RECENTS);
        context.startActivity(intent);
    }
}
```

Manifest.xml `android:parentActivityName=""`activityandroid。。

```
<uses-permission android:name="android.permission.INTERNET" />

<application
    android:name=".SkillSchoolApplication"
    android:allowBackup="true"
    android:icon="@mipmap/ic_launcher"
    android:label="@string/app_name"
    android:supportsRtl="true"
    android:theme="@style/AppTheme">
    <activity
        android:name=".ui.activities.SplashActivity"
        android:theme="@style/SplashTheme">
        <intent-filter>
            <action android:name="android.intent.action.MAIN" />

            <category android:name="android.intent.category.LAUNCHER" />
        </intent-filter>
    </activity>
    <activity android:name=".ui.activities.MainActivity" />
    <activity android:name=".ui.activities.HomeActivity"
     android:parentActivityName=".ui.activities.MainActivity/> // HERE I JUST TOLD THE SYSTEM
THAT MainActivity is the parent of HomeActivity
</application>
```

HomeActivity。

Java

java。

```
public class HomeActivity extends AppCompatActivity {
    @BindView(R.id.toolbar)
    Toolbar toolbar;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_home);
        ButterKnife.bind(this);
        //Since i am using custom tool bar i am setting refernce of that toolbar to Actionbar.
If you are not using custom then you can simple leave this and move to next line
        setSupportActionBar(toolbar);
        getSupportActionBar.setDisplayHomeAsUpEnabled(true); // this will show the back arrow
```

```
in the tool bar.
}
}
```

MainActivity。

```
@Override
public boolean onOptionsItemSelected(MenuItem item) {
    switch (item.getItemId()) {
    // Respond to the action bar's Up/Home button
    case android.R.id.home:
        NavUtils.navigateUpFromSameTask(this); // Here you will write your logic for handling
up navigation
        return true;
    }
    return super.onOptionsItemSelected(item);
}
```

hackbackstack。 id`android.R.id.homeonBackPressed()`

```
@Override
    public boolean onOptionsItemSelected(MenuItem item) {
        int id = item.getItemId();
        switch (id) {
            case android.R.id.home:
                onBackPressed();
                return true;
        }
        return super.onOptionsItemSelected(item);
    }
```

https://riptutorial.com/zh-CN/android/topic/1481/

220:

wifi。

Examples

Google Play ActivityRecognitionAPI

GooglePlay ServiceActivityRecognitionApi。 Google Play。

ActivityRecognition API

```
<!-- This is needed to use Activity Recognition! -->
<uses-permission android:name="com.google.android.gms.permission.ACTIVITY_RECOGNITION" />

<application
    android:allowBackup="true"
    android:icon="@mipmap/ic_launcher"
    android:label="@string/app_name"
    android:roundIcon="@mipmap/ic_launcher_round"
    android:supportsRtl="true"
    android:theme="@style/AppTheme">

    <activity android:name=".MainActivity">
        <intent-filter>
            <action android:name="android.intent.action.MAIN" />

            <category android:name="android.intent.category.LAUNCHER" />
        </intent-filter>
    </activity>

    <receiver android:name=".ActivityReceiver" />
</application>
```

MainActivity.java

```
public class MainActivity extends AppCompatActivity implements
GoogleApiClient.ConnectionCallbacks, GoogleApiClient.OnConnectionFailedListener {

    private GoogleApiClient apiClient;
    private LocalBroadcastManager localBroadcastManager;
    private BroadcastReceiver localActivityReceiver;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        apiClient = new GoogleApiClient.Builder(this)
                .addApi(ActivityRecognition.API)
                .addConnectionCallbacks(this)
                .addOnConnectionFailedListener(this)
                .build();

        //This just gets the activity intent from the ActivityReceiver class
```

```
        localBroadcastManager = LocalBroadcastManager.getInstance(this);
        localActivityReceiver = new BroadcastReceiver() {
            @Override
            public void onReceive(Context context, Intent intent) {
                ActivityRecognitionResult recognitionResult =
ActivityRecognitionResult.extractResult(intent);
                TextView textView = (TextView) findViewById(R.id.activityText);

                //This is just to get the activity name. Use at your own risk.

textView.setText(DetectedActivity.zzkf(recognitionResult.getMostProbableActivity().getType()));

            }
        };
    }

    @Override
    protected void onResume() {
        super.onResume();

        //Register local broadcast receiver
        localBroadcastManager.registerReceiver(localActivityReceiver, new
IntentFilter("activity"));

        //Connect google api client
        apiClient.connect();
    }

    @Override
    protected void onPause() {
        super.onPause();

        //Unregister for activity recognition
        ActivityRecognition.ActivityRecognitionApi.removeActivityUpdates(apiClient,
PendingIntent.getBroadcast(this, 0, new Intent(this, ActivityReceiver.class),
PendingIntent.FLAG_UPDATE_CURRENT));

        //Disconnects api client
        apiClient.disconnect();

        //Unregister local receiver
        localBroadcastManager.unregisterReceiver(localActivityReceiver);
    }

    @Override
    public void onConnected(@Nullable Bundle bundle) {
        //Only register for activity recognition if google api client has connected
        ActivityRecognition.ActivityRecognitionApi.requestActivityUpdates(apiClient, 0,
PendingIntent.getBroadcast(this, 0, new Intent(this, ActivityReceiver.class),
PendingIntent.FLAG_UPDATE_CURRENT));
    }

    @Override
    public void onConnectionSuspended(int i) {
    }

    @Override
    public void onConnectionFailed(@NonNull ConnectionResult connectionResult) {

    }
}
```

ActivityReceiver

```
public class ActivityReceiver extends BroadcastReceiver {

    @Override
    public void onReceive(Context context, Intent intent) {

LocalBroadcastManager.getInstance(context).sendBroadcast(intent.setAction("activity"));
    }
}
```

PathSense

PathSenseGoogle Playhttp://developer.pathsense.comAPIID。

```
<application
    android:allowBackup="true"
    android:icon="@mipmap/ic_launcher"
    android:label="@string/app_name"
    android:roundIcon="@mipmap/ic_launcher_round"
    android:supportsRtl="true"
    android:theme="@style/AppTheme">

    <activity android:name=".MainActivity">
        <intent-filter>
            <action android:name="android.intent.action.MAIN" />

            <category android:name="android.intent.category.LAUNCHER" />
        </intent-filter>
    </activity>

    <receiver android:name=".ActivityReceiver" />

    <!-- You need to acquire these from their website (http://developer.pathsense.com) -->
    <meta-data
        android:name="com.pathsense.android.sdk.CLIENT_ID"
        android:value="YOUR_CLIENT_ID" />
    <meta-data
        android:name="com.pathsense.android.sdk.API_KEY"
        android:value="YOUR_API_KEY" />
</application>
```

MainActivity.java

```
public class MainActivity extends AppCompatActivity {

    private PathsenseLocationProviderApi pathsenseLocationProviderApi;
    private LocalBroadcastManager localBroadcastManager;
    private BroadcastReceiver localActivityReceiver;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        pathsenseLocationProviderApi = PathsenseLocationProviderApi.getInstance(this);

        //This just gets the activity intent from the ActivityReceiver class
```

```
        localBroadcastManager = LocalBroadcastManager.getInstance(this);
        localActivityReceiver = new BroadcastReceiver() {
            @Override
            public void onReceive(Context context, Intent intent) {
                //The detectedActivities object is passed as a serializable
                PathsenseDetectedActivities detectedActivities = (PathsenseDetectedActivities)
intent.getSerializableExtra("ps");
                TextView textView = (TextView) findViewById(R.id.activityText);

textView.setText(detectedActivities.getMostProbableActivity().getDetectedActivity().name());
            }
        };
    }

    @Override
    protected void onResume() {
        super.onResume();

        //Register local broadcast receiver
        localBroadcastManager.registerReceiver(localActivityReceiver, new
IntentFilter("activity"));

        //This gives an update everytime it receives one, even if it was the same as the last
update
        pathsenseLocationProviderApi.requestActivityUpdates(ActivityReceiver.class);

//        This gives updates only when it changes (ON_FOOT -> IN_VEHICLE for example)
//        pathsenseLocationProviderApi.requestActivityChanges(ActivityReceiver.class);
    }

    @Override
    protected void onPause() {
        super.onPause();

        pathsenseLocationProviderApi.removeActivityUpdates();

//        pathsenseLocationProviderApi.removeActivityChanges();

        //Unregister local receiver
        localBroadcastManager.unregisterReceiver(localActivityReceiver);
    }
}
```

ActivityReceiver.java

```
// You don't have to use their broadcastreceiver, but it's best to do so, and just pass the
result
// as needed to another class.
public class ActivityReceiver extends PathsenseActivityRecognitionReceiver {

    @Override
    protected void onDetectedActivities(Context context, PathsenseDetectedActivities
pathsenseDetectedActivities) {
        Intent intent = new Intent("activity").putExtra("ps", pathsenseDetectedActivities);
        LocalBroadcastManager.getInstance(context).sendBroadcast(intent);
    }
}
```

https://riptutorial.com/zh-CN/android/topic/9831/

221:

CanvasBitmapRectPathBitmap ...

Examples

Paint

3

- `new Paint()`
- `new Paint(int flags)`
- `new Paint(Paint from)`paint

onDraw。 Android Studio

```
public class CustomView extends View {

    private Paint paint;

    public CustomView(Context context) {
        super(context);
        paint = new Paint();
        //...
    }

    @Override
    protected void onDraw(Canvas canvas) {
        super.onDraw(canvas);
        paint.setColor(0xFF000000);
        // ...
    }
}
```

Paint

- `setTypeface(Typeface typeface)`。
- `setTextSize(int size)`。
- `setColor(int color)`。 `setARGB(int a, int r, int g, int bsetAlpha(int alpha)`
- `setLetterSpacing(float size)`ems。 0。
- `setTextAlign(Paint.Align align)`。 `Paint.Align.LEFT` `RIGHTCENTER`
- `setTextSkewX(float skewX)`。 SkewX。 -0.25
- `setStyle(Paint.Style style)``FILL` Stroke`STROKE``FILL_AND_STROKE`

`TypedValue.applyDimension(TypedValue.COMPLEX_UNIT_SP, size, getResources().getDisplayMetrics())`
SPDP。

- `float width = paint.measureText(String text)``float width = paint.measureText(String text)`
- `float height = paint.ascent()`

- paint.getTextBounds(String text, int start, int end, Rect bounds◦ Rectnull

```
String text = "Hello world!";
Rect bounds = new Rect();
paint.getTextBounds(text, 0, text.length(), bounds);
```

◦

Paint

- setStyle(Paint.Style style)FILL STROKEFILL_AND_STROKE
- setColor(int color)◦ setARGB(int a, int r, int g, int bsetAlpha(int alpha)
- setStrokeCap(Paint.Cap cap) ROUND SQUAREBUTT ◦
- setStrokeJoin(Paint.Join join) MITER ROUNDBEVEL◦ ◦
- setStrokeMiter(float miter)◦ X◦ ◦
- setStrokeWidth(float width)◦ 0◦ 1

setFlags(int flags)

- Paint.ANTI_ALIAS_FLAG◦
- Paint.DITHER_FLAG◦ ◦
- Paint.EMBEDDED_BITMAP_TEXT_FLAG◦
- Paint.FAKE_BOLD_TEXT_FLAG◦
- Paint.FILTER_BITMAP_FLAG◦
- Paint.HINTING_OFF Paint.HINTING_ON
- Paint.LINEAR_TEXT_FLAG
- Paint.SUBPIXEL_TEXT_FLAG◦
- Paint.STRIKE_THRU_TEXT_FLAG
- Paint.UNDERLINE_TEXT_FLAG

```
Paint paint = new Paint();
paint.setFlags(paint.getFlags() | Paint.FLAG);   // Add flag
paint.setFlags(paint.getFlags() & ~Paint.FLAG);  // Remove flag
```

◦ set<Flag>(boolean enabled) setAntialias(true) ◦

paint.reset()◦ EMBEDDED_BITMAP_TEXT_FLAG ◦ new Paint(0)

https://riptutorial.com/zh-CN/android/topic/9141/

222:

Manifest“AndroidManifest.xml”。 Java。

Examples

。

```
<?xml version="1.0" encoding="utf-8"?>
<manifest ... >
    <application android:icon="@drawable/app_icon.png" ... >
        <activity android:name="com.example.project.ExampleActivity"
                  android:label="@string/example_label" ... >
        </activity>
        ...
    </application>
</manifest>
```

<application> android:icon。

android:nameActivityandroidlabel。

- <activity>

- <service>

- <receiver>

- <provider>

。 BroadcastReceiverregisterReceiver()registerReceiver() 。

AndroidManifest.xml。

AndroidManifest.xmlAPI。 <uses-permission />。

```
 <uses-permission android:name="string"
    android:maxSdkVersion="integer"/>
```

androidname

androidmaxSdkVersionAPI。 API。

AndroidManifest.xml

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.android.samplepackage">

    <!-- request internet permission -->
```

```
    <uses-permission android:name="android.permission.INTERNET" />

    <!-- request camera permission -->
    <uses-permission android:name="android.permission.CAMERA"/>

    <!-- request permission to write to external storage -->
    <uses-permission
         android:name="android.permission.WRITE_EXTERNAL_STORAGE"
         android:maxSdkVersion="18" />

    <application>....</application>
</manifest>
```

*****。

https://riptutorial.com/zh-CN/android/topic/1848/

223:

1. **setColorSchemeResources**SwipeToRefreshLayout
2. **setOnRefreshListener**
3. **applayout_behavior =“@ string / appbar_scrolling_view_behavior”**scrollFlags。

Examples

RecyclerView

RecyclerView“ ”“/”

```
<android.support.v4.widget.SwipeRefreshLayout
    android:id="@+id/refresh_layout"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    app:layout_behavior="@string/appbar_scrolling_view_behavior">

    <android.support.v7.widget.RecyclerView
        android:id="@+id/recycler_view"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="vertical"
        android:scrollbars="vertical" />

</android.support.v4.widget.SwipeRefreshLayout>
```

Activity / Fragment**SwipeToRefreshLayout**

```
    SwipeRefreshLayout mSwipeRefreshLayout = (SwipeRefreshLayout)
findViewById(R.id.refresh_layout);
    mSwipeRefreshLayout.setColorSchemeResources(R.color.green_bg,
            android.R.color.holo_green_light,
            android.R.color.holo_orange_light,
            android.R.color.holo_red_light);

    mSwipeRefreshLayout.setOnRefreshListener(new SwipeRefreshLayout.OnRefreshListener() {
        @Override
        public void onRefresh() {
            // Execute code when refresh layout swiped
        }
    });
```

build.gradlebuild.gradle

```
compile 'com.android.support:support-core-ui:24.2.0'
```

SwipeRefreshLayout

```
<android.support.v4.widget.SwipeRefreshLayout
        android:id="@+id/swipe_refresh_layout"
```

```
        android:layout_width="match_parent"
        android:layout_height="wrap_content">

     <!-- place your view here -->

</android.support.v4.widget.SwipeRefreshLayout>
```

SwipeRefreshLayout.OnRefreshListener◦

```
mSwipeRefreshLayout = (SwipeRefreshLayout) findViewById(R.id.swipe_refresh_layout);
mSwipeRefreshLayout.setOnRefreshListener(new OnRefreshListener() {
    @Override
    public void onRefresh() {
         // your code
    }
});
```

https://riptutorial.com/zh-CN/android/topic/5241/

224:

****

Glide

Glide v4http://bumptech.github.io/glide/ 。 Glide v3https://github.com/bumptech/glide/wiki 。

GlideAndroid。

GlideGIF。 GlideAPI。
GlideHttpUrlConnectionGoogleVolleySquareOkHttp。

GlideGlide。

GitHub https //github.com/bumptech/glide

Examples

Glide

Gradle

```
repositories {
  mavenCentral() // jcenter() works as well because it pulls from Maven Central
}

dependencies {
  compile 'com.github.bumptech.glide:glide:4.0.0'
  compile 'com.android.support:support-v4:25.3.1'
  annotationProcessor 'com.github.bumptech.glide:compiler:4.0.0'
}
```

Maven

```
<dependency>
  <groupId>com.github.bumptech.glide</groupId>
  <artifactId>glide</artifactId>
  <version>4.0.0</version>
</dependency>
<dependency>
  <groupId>com.google.android</groupId>
  <artifactId>support-v4</artifactId>
  <version>r7</version>
</dependency>
<dependency>
  <groupId>com.github.bumptech.glide</groupId>
  <artifactId>compiler</artifactId>
  <version>4.0.0</version>
  <optional>true</optional>
</dependency>
```

ProGuardDexGuardproguard.cfgGlidewiki

```
-keep public class * implements com.bumptech.glide.module.GlideModule
-keep public class * extends com.bumptech.glide.AppGlideModule
-keep public enum com.bumptech.glide.load.resource.bitmap.ImageHeaderParser$**     {
  **[] $VALUES;
  public *;
}

# for DexGuard only
-keepresourcexmlelements manifest/application/meta-data@value=GlideModule
```

ImageView

URLUriID`ImageView`

```
ImageView imageView = (ImageView) findViewById(R.id.imageView);
String yourUrl = "http://www.yoururl.com/image.png";

Glide.with(context)
    .load(yourUrl)
    .into(imageView);
```

Uris`yourUrl`Uri `content://media/external/images/1` ◦ Drawable`yourUrl`ID `R.drawable.image` ◦

RecyclerViewListView

ListViewRecyclerView

```
@Override
public void onBindViewHolder(RecyclerView.ViewHolder viewHolder, int position) {
    MyViewHolder myViewHolder = (MyViewHolder) viewHolder;
    String currentUrl = myUrls.get(position);

    Glide.with(context)
        .load(currentUrl)
        .into(myViewHolder.imageView);
}
```

`onBindViewHolder` `onBindViewHolderImageViewclear()ImageView` Glide

```
@Override
public void onBindViewHolder(RecyclerView.ViewHolder viewHolder, int position) {
    MyViewHolder myViewHolder = (MyViewHolder) viewHolder;
    String currentUrl = myUrls.get(position);

    if (TextUtils.isEmpty(currentUrl)) {
        Glide.clear(viewHolder.imageView);
        // Now that the view has been cleared, you can safely set your own resource
        viewHolder.imageView.setImageResource(R.drawable.missing_image);
    } else {
        Glide.with(context)
            .load(currentUrl)
```

```
            .into(myViewHolder.imageView);
    }
}
```

ImageView

。

```
public class CircleTransform extends BitmapTransformation {

    public CircleTransform(Context context) {
        super(context);
    }

    @Override protected Bitmap transform(BitmapPool pool, Bitmap toTransform, int outWidth,
int outHeight) {
        return circleCrop(pool, toTransform);
    }

    private static Bitmap circleCrop(BitmapPool pool, Bitmap source) {
        if (source == null) return null;

        int size = Math.min(source.getWidth(), source.getHeight());
        int x = (source.getWidth() - size) / 2;
        int y = (source.getHeight() - size) / 2;

        Bitmap squared = Bitmap.createBitmap(source, x, y, size, size);

        Bitmap result = pool.get(size, size, Bitmap.Config.ARGB_8888);
        if (result == null) {
            result = Bitmap.createBitmap(size, size, Bitmap.Config.ARGB_8888);
        }

        Canvas canvas = new Canvas(result);
        Paint paint = new Paint();
        paint.setShader(new BitmapShader(squared, BitmapShader.TileMode.CLAMP,
BitmapShader.TileMode.CLAMP));
        paint.setAntiAlias(true);
        float r = size / 2f;
        canvas.drawCircle(r, r, r, paint);
        return result;
    }

    @Override public String getId() {
        return getClass().getName();
    }
}
```

```
Glide.with(context)
    .load(yourimageurl)
    .transform(new CircleTransform(context))
    .into(userImageView);
```

Glide。

```
Glide.with(context)
```

```
    .load(yourUrl)
    .fitCenter()
    .into(yourView);
```

Fit CenterAndroidScaleType.FIT_CENTER。

```
Glide.with(context)
    .load(yourUrl)
    .centerCrop()
    .into(yourView);
```

AndroidScaleType.CENTER_CROP。

Glidewiki 。

Glide

```
public class UIUtils {
public static BitmapImageViewTarget getRoundedImageTarget(@NonNull final Context context,
@NonNull final ImageView imageView,
                                                          final float radius) {
    return new BitmapImageViewTarget(imageView) {
        @Override
        protected void setResource(final Bitmap resource) {
            RoundedBitmapDrawable circularBitmapDrawable =
                    RoundedBitmapDrawableFactory.create(context.getResources(), resource);
            circularBitmapDrawable.setCornerRadius(radius);
            imageView.setImageDrawable(circularBitmapDrawable);
        }
    };
}
```

```
Glide.with(context)
     .load(imageUrl)
     .asBitmap()
     .into(UIUtils.getRoundedImageTarget(context, imageView, radius));
```

asBitmap。 animate。

Glide。

```
Glide.with(context)
     .load(imageUrl)
     .asBitmap()
     .animate(R.anim.abc_fade_in)
     .into(UIUtils.getRoundedImageTarget(context, imageView, radius));
```

- 。

RoundedBitmapDrawableFactory

```
Glide.with(context)
    .load(yourUrl)
```

```
    .diskCacheStrategy(DiskCacheStrategy.SOURCE)
    .preload();
```

```
Glide.with(context)
    .load(yourUrl)
    .diskCacheStrategy(DiskCacheStrategy.SOURCE) // ALL works here too
    .into(imageView);
```

```
Glide.with(context)
    .load(yourFilePathOrUri)
    .fitCenter() // Or whatever transformation you want
    .preload(200, 200); // Or whatever width and height you want
```

```
Glide.with(context)
    .load(yourFilePathOrUri)
    .fitCenter() // You must use the same transformation as above
    .override(200, 200) // You must use the same width and height as above
    .into(imageView);
```

Drawable

```
Glide.with(context)
    .load(yourUrl)
    .placeholder(R.drawable.placeholder)
    .into(imageView);
```

Drawable

```
Glide.with(context)
    .load(yourUrl)
    .error(R.drawable.error)
    .into(imageView);
```

URLUriDrawable

```
Glide.with(context)
    .load(maybeNullUrl)
    .fallback(R.drawable.fallback)
    .into(imageView);
```

ImageView

BitmapImageViewTarget

```
public class CircularBitmapImageViewTarget extends BitmapImageViewTarget
{
    private Context context;
    private ImageView imageView;

    public CircularBitmapImageViewTarget(Context context, ImageView imageView)
    {
        super(imageView);
```

```
        this.context = context;
        this.imageView = imageView;
    }

    @Override
    protected void setResource(Bitmap resource)
    {
        RoundedBitmapDrawable bitmapDrawable =
RoundedBitmapDrawableFactory.create(context.getResources(), resource);
        bitmapDrawable.setCircular(true);
        imageView.setImageDrawable(bitmapDrawable);
    }
}
```

```
Glide
    .with(context)
    .load(yourimageidentifier)
    .asBitmap()
    .into(new CircularBitmapImageViewTarget(context, imageView));
```

Glide

```
Glide
        .with(context)
        .load(currentUrl)
        .into(new BitmapImageViewTarget(profilePicture) {
    @Override
    protected void setResource(Bitmap resource) {
        RoundedBitmapDrawable circularBitmapDrawable =
                RoundedBitmapDrawableFactory.create(context.getResources(), resource);
        circularBitmapDrawable.setCornerRadius(radius);
        imageView.setImageDrawable(circularBitmapDrawable);
    }

    @Override
    public void onLoadFailed(@NonNull Exception e, Drawable errorDrawable) {
        super.onLoadFailed(e, SET_YOUR_DEFAULT_IMAGE);
        Log.e(TAG, e.getMessage(), e);
    }
});
```

`SET_YOUR_DEFAULT_IMAGE`Drawable ◦ ◦

https://riptutorial.com/zh-CN/android/topic/1091/

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FirebaseWeb。

FirebaseFirebaseFirebaseFirebaseAndroidFirebaseFirebase。

Firebase -

Firebase。

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Examples

Firebase

```
public class SignUpActivity extends BaseAppCompatActivity {

    @BindView(R.id.tIETSignUpEmail)
    EditText mEditEmail;
    @BindView(R.id.tIETSignUpPassword)
    EditText mEditPassword;

    @Override
    protected void onCreate(@Nullable Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        getSupportActionBar().setDisplayHomeAsUpEnabled(true);
    }

    @OnClick(R.id.btnSignUpSignUp)
    void signUp() {

        FormValidationUtils.clearErrors(mEditEmail, mEditPassword);

        if (FormValidationUtils.isBlank(mEditEmail)) {
            mEditEmail.setError("Please enter email");
            return;
        }

        if (!FormValidationUtils.isEmailValid(mEditEmail)) {
            mEditEmail.setError("Please enter valid email");
            return;
        }

        if (TextUtils.isEmpty(mEditPassword.getText())) {
            mEditPassword.setError("Please enter password");
            return;
        }
```

```
        createUserWithEmailAndPassword(mEditEmail.getText().toString(),
mEditPassword.getText().toString());
    }

    private void createUserWithEmailAndPassword(String email, String password) {
        DialogUtils.showProgressDialog(this, "", getString(R.string.str_creating_account),
false);
        mFirebaseAuth
                .createUserWithEmailAndPassword(email, password)
                .addOnCompleteListener(this, new OnCompleteListener<AuthResult>() {
                    @Override
                    public void onComplete(@NonNull Task<AuthResult> task) {
                        if (!task.isSuccessful()) {
                            Toast.makeText(SignUpActivity.this,
task.getException().getMessage(),
                                    Toast.LENGTH_SHORT).show();
                            DialogUtils.dismissProgressDialog();
                        } else {
                            Toast.makeText(SignUpActivity.this,
R.string.str_registration_successful, Toast.LENGTH_SHORT).show();
                            DialogUtils.dismissProgressDialog();
                            startActivity(new Intent(SignUpActivity.this,
HomeActivity.class));
                        }
                    }
                });
    }

    @Override
    protected int getLayoutResourceId() {
        return R.layout.activity_sign_up;
    }
}
```

Firebase

```
public class LoginActivity extends BaseAppCompatActivity {

    @BindView(R.id.tIETLoginEmail)
    EditText mEditEmail;
    @BindView(R.id.tIETLoginPassword)
    EditText mEditPassword;

    @Override
    protected void onResume() {
        super.onResume();
        FirebaseUser firebaseUser = mFirebaseAuth.getCurrentUser();
        if (firebaseUser != null)
            startActivity(new Intent(this, HomeActivity.class));
    }

    @Override
    protected int getLayoutResourceId() {
        return R.layout.activity_login;
    }

    @OnClick(R.id.btnLoginLogin)
    void onSignInClick() {
```

```
        FormValidationUtils.clearErrors(mEditEmail, mEditPassword);

        if (FormValidationUtils.isBlank(mEditEmail)) {
            FormValidationUtils.setError(null, mEditEmail, "Please enter email");
            return;
        }

        if (!FormValidationUtils.isEmailValid(mEditEmail)) {
            FormValidationUtils.setError(null, mEditEmail, "Please enter valid email");
            return;
        }

        if (TextUtils.isEmpty(mEditPassword.getText())) {
            FormValidationUtils.setError(null, mEditPassword, "Please enter password");
            return;
        }

        signInWithEmailAndPassword(mEditEmail.getText().toString(),
mEditPassword.getText().toString());
    }

    private void signInWithEmailAndPassword(String email, String password) {
        DialogUtils.showProgressDialog(this, "", getString(R.string.sign_in), false);
        mFirebaseAuth
                .signInWithEmailAndPassword(email, password)
                .addOnCompleteListener(this, new OnCompleteListener<AuthResult>() {
                    @Override
                    public void onComplete(@NonNull Task<AuthResult> task) {

                        DialogUtils.dismissProgressDialog();

                        if (task.isSuccessful()) {
                            Toast.makeText(LoginActivity.this, "Login Successful",
Toast.LENGTH_SHORT).show();
                            startActivity(new Intent(LoginActivity.this, HomeActivity.class));
                            finish();
                        } else {
                            Toast.makeText(LoginActivity.this,
task.getException().getMessage(),
                                    Toast.LENGTH_SHORT).show();
                        }
                    }
                });
    }

    @OnClick(R.id.btnLoginSignUp)
    void onSignUpClick() {
        startActivity(new Intent(this, SignUpActivity.class));
    }


    @OnClick(R.id.btnLoginForgotPassword)
    void forgotPassword() {
        startActivity(new Intent(this, ForgotPasswordActivity.class));
    }
}
```

Firebase

```
public class ForgotPasswordActivity extends AppCompatActivity {

    @BindView(R.id.tIETForgotPasswordEmail)
    EditText mEditEmail;
    private FirebaseAuth mFirebaseAuth;
    private FirebaseAuth.AuthStateListener mAuthStateListener;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_forgot_password);
        ButterKnife.bind(this);

        mFirebaseAuth = FirebaseAuth.getInstance();

        mAuthStateListener = new FirebaseAuth.AuthStateListener() {
            @Override
            public void onAuthStateChanged(@NonNull FirebaseAuth firebaseAuth) {
                FirebaseUser firebaseUser = firebaseAuth.getCurrentUser();
                if (firebaseUser != null) {
                    // Do whatever you want with the UserId by firebaseUser.getUid()
                } else {

                }
            }
        };
    }

    @Override
    protected void onStart() {
        super.onStart();
        mFirebaseAuth.addAuthStateListener(mAuthStateListener);
    }

    @Override
    protected void onStop() {
        super.onStop();
        if (mAuthStateListener != null) {
            mFirebaseAuth.removeAuthStateListener(mAuthStateListener);
        }
    }

    @OnClick(R.id.btnForgotPasswordSubmit)
    void onSubmitClick() {

        if (FormValidationUtils.isBlank(mEditEmail)) {
            FormValidationUtils.setError(null, mEditEmail, "Please enter email");
            return;
        }

        if (!FormValidationUtils.isEmailValid(mEditEmail)) {
            FormValidationUtils.setError(null, mEditEmail, "Please enter valid email");
            return;
        }

        DialogUtils.showProgressDialog(this, "", "Please wait...", false);
        mFirebaseAuth.sendPasswordResetEmail(mEditEmail.getText().toString())
                .addOnCompleteListener(new OnCompleteListener<Void>() {
                    @Override
                    public void onComplete(@NonNull Task<Void> task) {
                        DialogUtils.dismissProgressDialog();
```

```
                        if (task.isSuccessful()) {
                            Toast.makeText(ForgotPasswordActivity.this, "An email has been
sent to you.", Toast.LENGTH_SHORT).show();
                            finish();
                        } else {
                            Toast.makeText(ForgotPasswordActivity.this,
task.getException().getMessage(), Toast.LENGTH_SHORT).show();
                        }
                    }
                });
    }
}
```

Firebase

```
public class ChangeEmailActivity extends BaseAppCompatActivity implements
ReAuthenticateDialogFragment.OnReauthenticateSuccessListener {

    @BindView(R.id.et_change_email)
    EditText mEditText;
    private FirebaseUser mFirebaseUser;

    @OnClick(R.id.btn_change_email)
    void onChangeEmailClick() {

        FormValidationUtils.clearErrors(mEditText);

        if (FormValidationUtils.isBlank(mEditText)) {
            FormValidationUtils.setError(null, mEditText, "Please enter email");
            return;
        }

        if (!FormValidationUtils.isEmailValid(mEditText)) {
            FormValidationUtils.setError(null, mEditText, "Please enter valid email");
            return;
        }

        changeEmail(mEditText.getText().toString());
    }

    @Override
    protected void onCreate(@Nullable Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        getSupportActionBar().setDisplayHomeAsUpEnabled(true);
        mFirebaseUser = mFirebaseAuth.getCurrentUser();
    }

    private void changeEmail(String email) {
        DialogUtils.showProgressDialog(this, "Changing Email", "Please wait...", false);
        mFirebaseUser.updateEmail(email)
                .addOnCompleteListener(new OnCompleteListener<Void>() {
                    @Override
                    public void onComplete(@NonNull Task<Void> task) {
                        DialogUtils.dismissProgressDialog();
                        if (task.isSuccessful()) {
                            showToast("Email updated successfully.");
                            return;
                        }
```

```
                        if (task.getException() instanceof
FirebaseAuthRecentLoginRequiredException) {
                            FragmentManager fm = getSupportFragmentManager();
                            ReAuthenticateDialogFragment reAuthenticateDialogFragment = new
ReAuthenticateDialogFragment();
                            reAuthenticateDialogFragment.show(fm,
reAuthenticateDialogFragment.getClass().getSimpleName());
                        }
                    }
                });
    }

    @Override
    protected int getLayoutResourceId() {
        return R.layout.activity_change_email;
    }

    @Override
    public void onReauthenticateSuccess() {
        changeEmail(mEditText.getText().toString());
    }
}
```

```
public class ChangePasswordActivity extends BaseAppCompatActivity implements
ReAuthenticateDialogFragment.OnReauthenticateSuccessListener {
    @BindView(R.id.et_change_password)
    EditText mEditText;
    private FirebaseUser mFirebaseUser;

    @OnClick(R.id.btn_change_password)
    void onChangePasswordClick() {

        FormValidationUtils.clearErrors(mEditText);

        if (FormValidationUtils.isBlank(mEditText)) {
            FormValidationUtils.setError(null, mEditText, "Please enter password");
            return;
        }

        changePassword(mEditText.getText().toString());
    }

    private void changePassword(String password) {
        DialogUtils.showProgressDialog(this, "Changing Password", "Please wait...", false);
        mFirebaseUser.updatePassword(password)
                .addOnCompleteListener(new OnCompleteListener<Void>() {
                    @Override
                    public void onComplete(@NonNull Task<Void> task) {
                        DialogUtils.dismissProgressDialog();
                        if (task.isSuccessful()) {
                            showToast("Password updated successfully.");
                            return;
                        }

                        if (task.getException() instanceof
FirebaseAuthRecentLoginRequiredException) {
                            FragmentManager fm = getSupportFragmentManager();
                            ReAuthenticateDialogFragment reAuthenticateDialogFragment = new
ReAuthenticateDialogFragment();
                            reAuthenticateDialogFragment.show(fm,
```

```
reAuthenticateDialogFragment.getClass().getSimpleName());
                        }
                    }
                });
    }

    @Override
    protected void onCreate(@Nullable Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        getSupportActionBar().setDisplayHomeAsUpEnabled(true);
        mFirebaseUser = mFirebaseAuth.getCurrentUser();
    }

    @Override
    protected int getLayoutResourceId() {
        return R.layout.activity_change_password;
    }

    @Override
    public void onReauthenticateSuccess() {
        changePassword(mEditText.getText().toString());
    }
}
```

Firebase

```
public class ReAuthenticateDialogFragment extends DialogFragment {

    @BindView(R.id.et_dialog_reauthenticate_email)
    EditText mEditTextEmail;
    @BindView(R.id.et_dialog_reauthenticate_password)
    EditText mEditTextPassword;
    private OnReauthenticateSuccessListener mOnReauthenticateSuccessListener;

    @OnClick(R.id.btn_dialog_reauthenticate)
    void onReauthenticateClick() {

        FormValidationUtils.clearErrors(mEditTextEmail, mEditTextPassword);

        if (FormValidationUtils.isBlank(mEditTextEmail)) {
            FormValidationUtils.setError(null, mEditTextEmail, "Please enter email");
            return;
        }

        if (!FormValidationUtils.isEmailValid(mEditTextEmail)) {
            FormValidationUtils.setError(null, mEditTextEmail, "Please enter valid email");
            return;
        }

        if (TextUtils.isEmpty(mEditTextPassword.getText())) {
            FormValidationUtils.setError(null, mEditTextPassword, "Please enter password");
            return;
        }

        reauthenticateUser(mEditTextEmail.getText().toString(),
mEditTextPassword.getText().toString());
    }

    private void reauthenticateUser(String email, String password) {
```

```
        DialogUtils.showProgressDialog(getActivity(), "Re-Authenticating", "Please wait...",
false);
        FirebaseUser firebaseUser = FirebaseAuth.getInstance().getCurrentUser();
        AuthCredential authCredential = EmailAuthProvider.getCredential(email, password);
        firebaseUser.reauthenticate(authCredential)
                .addOnCompleteListener(new OnCompleteListener<Void>() {
                    @Override
                    public void onComplete(@NonNull Task<Void> task) {
                        DialogUtils.dismissProgressDialog();
                        if (task.isSuccessful()) {
                            mOnReauthenticateSuccessListener.onReauthenticateSuccess();
                            dismiss();
                        } else {
                            ((BaseAppCompatActivity)
getActivity()).showToast(task.getException().getMessage());
                        }
                    }
                });
    }

    @Override
    public void onAttach(Context context) {
        super.onAttach(context);
        mOnReauthenticateSuccessListener = (OnReauthenticateSuccessListener) context;
    }

    @OnClick(R.id.btn_dialog_reauthenticate_cancel)
    void onCancelClick() {
        dismiss();
    }

    @Override
    public View onCreateView(LayoutInflater inflater, ViewGroup container,
                             Bundle savedInstanceState) {
        View view = inflater.inflate(R.layout.dialog_reauthenticate, container);
        ButterKnife.bind(this, view);
        return view;
    }

    @Override
    public void onResume() {
        super.onResume();
        Window window = getDialog().getWindow();
        window.setLayout(WindowManager.LayoutParams.MATCH_PARENT,
WindowManager.LayoutParams.WRAP_CONTENT);
    }

    interface OnReauthenticateSuccessListener {
        void onReauthenticateSuccess();
    }
}
```

Firebase

1. Firebase
2. “images”
3. images
4. images
5. images

```
public class MainActivity extends AppCompatActivity {

    private static final int REQUEST_CODE_PICK_IMAGE = 1;
    private static final int PERMISSION_READ_WRITE_EXTERNAL_STORAGE = 2;

    private FirebaseStorage mFirebaseStorage;
    private StorageReference mStorageReference;
    private StorageReference mStorageReferenceImages;
    private Uri mUri;
    private ImageView mImageView;
    private ProgressDialog mProgressDialog;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        Toolbar toolbar = (Toolbar) findViewById(R.id.toolbar);
        mImageView = (ImageView) findViewById(R.id.imageView);
        setSupportActionBar(toolbar);

        // Create an instance of Firebase Storage
        mFirebaseStorage = FirebaseStorage.getInstance();
    }

    private void pickImage() {
        Intent intent = new Intent(Intent.ACTION_PICK,
android.provider.MediaStore.Images.Media.EXTERNAL_CONTENT_URI);
        intent.addFlags(Intent.FLAG_GRANT_READ_URI_PERMISSION);
        intent.addFlags(Intent.FLAG_GRANT_WRITE_URI_PERMISSION);
        startActivityForResult(intent, REQUEST_CODE_PICK_IMAGE);
    }

    @Override
    public void onActivityResult(int requestCode, int resultCode, Intent data) {
        if (resultCode == RESULT_OK) {
            if (requestCode == REQUEST_CODE_PICK_IMAGE) {
                String filePath = FileUtil.getPath(this, data.getData());
                mUri = Uri.fromFile(new File(filePath));
                uploadFile(mUri);
            }
        }
    }

    @Override
    public void onRequestPermissionsResult(int requestCode, @NonNull String[] permissions,
@NonNull int[] grantResults) {
        super.onRequestPermissionsResult(requestCode, permissions, grantResults);
        if (requestCode == PERMISSION_READ_WRITE_EXTERNAL_STORAGE) {
            if (grantResults[0] == PackageManager.PERMISSION_GRANTED) {
                pickImage();
            }
        }
    }

    private void showProgressDialog(String title, String message) {
        if (mProgressDialog != null && mProgressDialog.isShowing())
            mProgressDialog.setMessage(message);
        else
            mProgressDialog = ProgressDialog.show(this, title, message, true, false);
    }
```

```
    private void hideProgressDialog() {
        if (mProgressDialog != null && mProgressDialog.isShowing()) {
            mProgressDialog.dismiss();
        }
    }

    private void showToast(String message) {
        Toast.makeText(this, message, Toast.LENGTH_SHORT).show();
    }

    public void showHorizontalProgressDialog(String title, String body) {

        if (mProgressDialog != null && mProgressDialog.isShowing()) {
            mProgressDialog.setTitle(title);
            mProgressDialog.setMessage(body);
        } else {
            mProgressDialog = new ProgressDialog(this);
            mProgressDialog.setTitle(title);
            mProgressDialog.setMessage(body);
            mProgressDialog.setIndeterminate(false);
            mProgressDialog.setProgressStyle(ProgressDialog.STYLE_HORIZONTAL);
            mProgressDialog.setProgress(0);
            mProgressDialog.setMax(100);
            mProgressDialog.setCancelable(false);
            mProgressDialog.show();
        }
    }

    public void updateProgress(int progress) {
        if (mProgressDialog != null && mProgressDialog.isShowing()) {
            mProgressDialog.setProgress(progress);
        }
    }

    /**
     * Step 1: Create a Storage
     *
     * @param view
     */
    public void onCreateReferenceClick(View view) {
        mStorageReference =
mFirebaseStorage.getReferenceFromUrl("gs://**something**.appspot.com");
        showToast("Reference Created Successfully.");
        findViewById(R.id.button_step_2).setEnabled(true);
    }

    /**
     * Step 2: Create a directory named "Images"
     *
     * @param view
     */
    public void onCreateDirectoryClick(View view) {
        mStorageReferenceImages = mStorageReference.child("images");
        showToast("Directory 'images' created Successfully.");
        findViewById(R.id.button_step_3).setEnabled(true);
    }

    /**
     * Step 3: Upload an Image File and display it on ImageView
     *
```

```
     * @param view
     */
    public void onUploadFileClick(View view) {
        if (ContextCompat.checkSelfPermission(MainActivity.this,
Manifest.permission.READ_EXTERNAL_STORAGE) != PackageManager.PERMISSION_GRANTED ||
ActivityCompat.checkSelfPermission(MainActivity.this,
Manifest.permission.WRITE_EXTERNAL_STORAGE) != PackageManager.PERMISSION_GRANTED)
            ActivityCompat.requestPermissions(MainActivity.this, new
String[]{Manifest.permission.READ_EXTERNAL_STORAGE,
Manifest.permission.WRITE_EXTERNAL_STORAGE}, PERMISSION_READ_WRITE_EXTERNAL_STORAGE);
        else {
            pickImage();
        }
    }

    /**
     * Step 4: Download an Image File and display it on ImageView
     *
     * @param view
     */
    public void onDownloadFileClick(View view) {
        downloadFile(mUri);
    }

    /**
     * Step 5: Delete am Image File and remove Image from ImageView
     *
     * @param view
     */
    public void onDeleteFileClick(View view) {
        deleteFile(mUri);
    }

    private void showAlertDialog(Context ctx, String title, String body,
DialogInterface.OnClickListener okListener) {

        if (okListener == null) {
            okListener = new DialogInterface.OnClickListener() {

                public void onClick(DialogInterface dialog, int which) {
                    dialog.cancel();
                }
            };
        }

        AlertDialog.Builder builder = new
AlertDialog.Builder(ctx).setMessage(body).setPositiveButton("OK",
okListener).setCancelable(false);

        if (!TextUtils.isEmpty(title)) {
            builder.setTitle(title);
        }

        builder.show();
    }

    private void uploadFile(Uri uri) {
        mImageView.setImageResource(R.drawable.placeholder_image);

        StorageReference uploadStorageReference =
mStorageReferenceImages.child(uri.getLastPathSegment());
```

```
        final UploadTask uploadTask = uploadStorageReference.putFile(uri);
        showHorizontalProgressDialog("Uploading", "Please wait...");
        uploadTask
                .addOnSuccessListener(new OnSuccessListener<UploadTask.TaskSnapshot>() {
                    @Override
                    public void onSuccess(UploadTask.TaskSnapshot taskSnapshot) {
                        hideProgressDialog();
                        Uri downloadUrl = taskSnapshot.getDownloadUrl();
                        Log.d("MainActivity", downloadUrl.toString());
                        showAlertDialog(MainActivity.this, "Upload Complete",
downloadUrl.toString(), new DialogInterface.OnClickListener() {
                            @Override
                            public void onClick(DialogInterface dialogInterface, int i) {
                                findViewById(R.id.button_step_3).setEnabled(false);
                                findViewById(R.id.button_step_4).setEnabled(true);
                            }
                        });

                        Glide.with(MainActivity.this)
                                .load(downloadUrl)
                                .into(mImageView);
                    }
                })
                .addOnFailureListener(new OnFailureListener() {
                    @Override
                    public void onFailure(@NonNull Exception exception) {
                        exception.printStackTrace();
                        // Handle unsuccessful uploads
                        hideProgressDialog();
                    }
                })
                .addOnProgressListener(MainActivity.this, new
OnProgressListener<UploadTask.TaskSnapshot>() {
                    @Override
                    public void onProgress(UploadTask.TaskSnapshot taskSnapshot) {
                        int progress = (int) (100 * (float) taskSnapshot.getBytesTransferred()
/ taskSnapshot.getTotalByteCount());
                        Log.i("Progress", progress + "");
                        updateProgress(progress);
                    }
                });
    }

    private void downloadFile(Uri uri) {
        mImageView.setImageResource(R.drawable.placeholder_image);
        final StorageReference storageReferenceImage =
mStorageReferenceImages.child(uri.getLastPathSegment());
        File mediaStorageDir = new File(Environment.getExternalStoragePublicDirectory(
                Environment.DIRECTORY_PICTURES), "Firebase Storage");
        if (!mediaStorageDir.exists()) {
            if (!mediaStorageDir.mkdirs()) {
                Log.d("MainActivity", "failed to create Firebase Storage directory");
            }
        }

        final File localFile = new File(mediaStorageDir, uri.getLastPathSegment());
        try {
            localFile.createNewFile();
        } catch (IOException e) {
            e.printStackTrace();
        }
```

```
        showHorizontalProgressDialog("Downloading", "Please wait...");
        storageReferenceImage.getFile(localFile).addOnSuccessListener(new
OnSuccessListener<FileDownloadTask.TaskSnapshot>() {
            @Override
            public void onSuccess(FileDownloadTask.TaskSnapshot taskSnapshot) {
                hideProgressDialog();
                showAlertDialog(MainActivity.this, "Download Complete",
localFile.getAbsolutePath(), new DialogInterface.OnClickListener() {
                    @Override
                    public void onClick(DialogInterface dialogInterface, int i) {
                        findViewById(R.id.button_step_4).setEnabled(false);
                        findViewById(R.id.button_step_5).setEnabled(true);
                    }
                });

                Glide.with(MainActivity.this)
                        .load(localFile)
                        .into(mImageView);
            }
        }).addOnFailureListener(new OnFailureListener() {
            @Override
            public void onFailure(@NonNull Exception exception) {
                // Handle any errors
                hideProgressDialog();
                exception.printStackTrace();
            }
        }).addOnProgressListener(new OnProgressListener<FileDownloadTask.TaskSnapshot>() {
            @Override
            public void onProgress(FileDownloadTask.TaskSnapshot taskSnapshot) {
                int progress = (int) (100 * (float) taskSnapshot.getBytesTransferred() /
taskSnapshot.getTotalByteCount());
                Log.i("Progress", progress + "");
                updateProgress(progress);
            }
        });
    }

    private void deleteFile(Uri uri) {
        showProgressDialog("Deleting", "Please wait...");
        StorageReference storageReferenceImage =
mStorageReferenceImages.child(uri.getLastPathSegment());
        storageReferenceImage.delete().addOnSuccessListener(new OnSuccessListener<Void>() {
            @Override
            public void onSuccess(Void aVoid) {
                hideProgressDialog();
                showAlertDialog(MainActivity.this, "Success", "File deleted successfully.",
new DialogInterface.OnClickListener() {
                    @Override
                    public void onClick(DialogInterface dialogInterface, int i) {
                        mImageView.setImageResource(R.drawable.placeholder_image);
                        findViewById(R.id.button_step_3).setEnabled(true);
                        findViewById(R.id.button_step_4).setEnabled(false);
                        findViewById(R.id.button_step_5).setEnabled(false);
                    }
                });
                File mediaStorageDir = new File(Environment.getExternalStoragePublicDirectory(
                        Environment.DIRECTORY_PICTURES), "Firebase Storage");
                if (!mediaStorageDir.exists()) {
                    if (!mediaStorageDir.mkdirs()) {
                        Log.d("MainActivity", "failed to create Firebase Storage directory");
```

```
                    }
                }
                deleteFiles(mediaStorageDir);
            }
        }).addOnFailureListener(new OnFailureListener() {
            @Override
            public void onFailure(@NonNull Exception exception) {
                hideProgressDialog();
                exception.printStackTrace();
            }
        });
    }

    private void deleteFiles(File directory) {
        if (directory.isDirectory())
            for (File child : directory.listFiles())
                child.delete();
    }
}
```

Firebase。Firebase。。

```
 service firebase.storage {
   match /b/**something**.appspot.com/o {
     match /{allPaths=**} {
       allow read, write: if request.auth != null;
     }
   }
 }
```

```
service firebase.storage {
  match /b/**something**.appspot.com/o {
    match /{allPaths=**} {
      allow read, write;
    }
  }
}
```

Firebase

FirebaseAndroid。

FirebaseFCM SDK

FCM`build.gradle`

```
dependencies {
 compile 'com.google.firebase:firebase-messaging:11.0.4'
}
```

```
// ADD THIS AT THE BOTTOM
apply plugin: 'com.google.gms.google-services'
```

- FirebaseMessagingService◦ ◦
- FirebaseInstanceIdService◦

```
    <service
        android:name=".MyInstanceIdListenerService">
        <intent-filter>
            <action android:name="com.google.firebase.INSTANCE_ID_EVENT"/>
        </intent-filter>
    </service>
    <service
        android:name=".MyFcmListenerService">
        <intent-filter>
            <action android:name="com.google.firebase.MESSAGING_EVENT" />
        </intent-filter>
    </service>
```

2◦

FirebaseInstanceIdServiceonTokenRefresh()

```
public class MyInstanceIdListenerService extends FirebaseInstanceIdService {

    // Called if InstanceID token is updated. Occurs if the security of the previous token had
been
    // compromised. This call is initiated by the InstanceID provider.
    @Override
    public void onTokenRefresh() {
        // Get updated InstanceID token.
        String refreshedToken = FirebaseInstanceId.getInstance().getToken();

        // Send this token to your server or store it locally
    }
}
```

FirebaseMessagingServiceonMessageReceived◦

```
public class MyFcmListenerService extends FirebaseMessagingService {

    /**
     * Called when message is received.
     *
     * @param remoteMessage Object representing the message received from Firebase Cloud
Messaging.
     */
    @Override
    public void onMessageReceived(RemoteMessage remoteMessage) {
        String from = remoteMessage.getFrom();

        // Check if message contains a data payload.
        if (remoteMessage.getData().size() > 0) {
            Log.d(TAG, "Message data payload: " + remoteMessage.getData());
            Map<String, String> data = remoteMessage.getData();
        }

        // Check if message contains a notification payload.
        if (remoteMessage.getNotification() != null) {
```

```
            Log.d(TAG, "Message Notification Body: " +
remoteMessage.getNotification().getBody());
        }

        // do whatever you want with this, post your own notification, or update local state
    }
```

Firebase“AppVersion”fireBase。

```
FirebaseMessaging.getInstance().subscribeToTopic("Free");
```

fireBase

Firebase。

FirebaseAndroid

FirebaseAndroid 。

Firebase

1. FirebaseFirebase“ ”。
2. **FirebaseAndroid**。
3. 。
   ;Firebase。
4. `google-services.json`。 。
5. `google-services.jsonapp/`。

SDKFirebase。

SDK

FirebaseAndroid Studio。 Firebase。

1. `build.gradle`**google-services**

```
buildscript {
    // ...
    dependencies {
        // ...
        classpath 'com.google.gms:google-services:3.1.0'
    }
}
```

Gradle`app/build.gradle` apply pluginGradle

```
apply plugin: 'com.android.application'

android {
  // ...
}

dependencies {
  // ...
  compile 'com.google.firebase:firebase-core:11.0.4'
}

// ADD THIS AT THE BOTTOM
apply plugin: 'com.google.gms.google-services'
```

FirebaseFirebase SDK。

Gradle	
com.google.firebase11.0.4	Analytics
com.google.firebase11.0.4	
com.google.firebase11.0.4	
com.google.firebase11.0.4	
com.google.firebase-AUTH11.0.4	
com.google.firebase11.0.4	/
com.google.firebase-11.0.4	
com.google.firebase-11.0.4	/
com.google.firebase11.0.4	AdMob
com.google.android.gmsappindexing11.0.4	

Firebase/

```
{
  "rules": {
    ".read": "auth != null",
    ".write": "auth != null"
  }
}
```

。

https://your-project.firebaseio.com/**https://your-project.firebaseio.com/chat**

Android。JavaFirebase

Java

```
public class ChatMessage {
    private String username;
    private String message;

    public ChatMessage(String username, String message) {
        this.username = username;
        this.message = message;
    }

    public ChatMessage() {} // you MUST have an empty constructor

    public String getUsername() {
        return username;
    }

    public String getMessage() {
        return message;
    }
}
```

```
if (FirebaseAuth.getInstance().getCurrentUser() == null) {
        FirebaseAuth.getInstance().signInAnonymously().addOnCompleteListener(new
OnCompleteListener<AuthResult>() {
            @Override
            public void onComplete(@NonNull Task<AuthResult> task) {
                if (task.isComplete() && task.isSuccessful()){
                    FirebaseDatabase database = FirebaseDatabase.getInstance();
                    DatabaseReference reference = database.getReference("chat"); // reference
is 'chat' because we created the database at /chat
                }
            }
        });
}
```

```
ChatMessage msg = new ChatMessage("user1", "Hello World!");
reference.push().setValue(msg);
```

```
reference.addChildEventListener(new ChildEventListener() {
    @Override
    public void onChildAdded(DataSnapshot dataSnapshot, String s) {
        ChatMessage msg = dataSnapshot.getValue(ChatMessage.class);
        Log.d(TAG, msg.getUsername()+" "+msg.getMessage());
    }

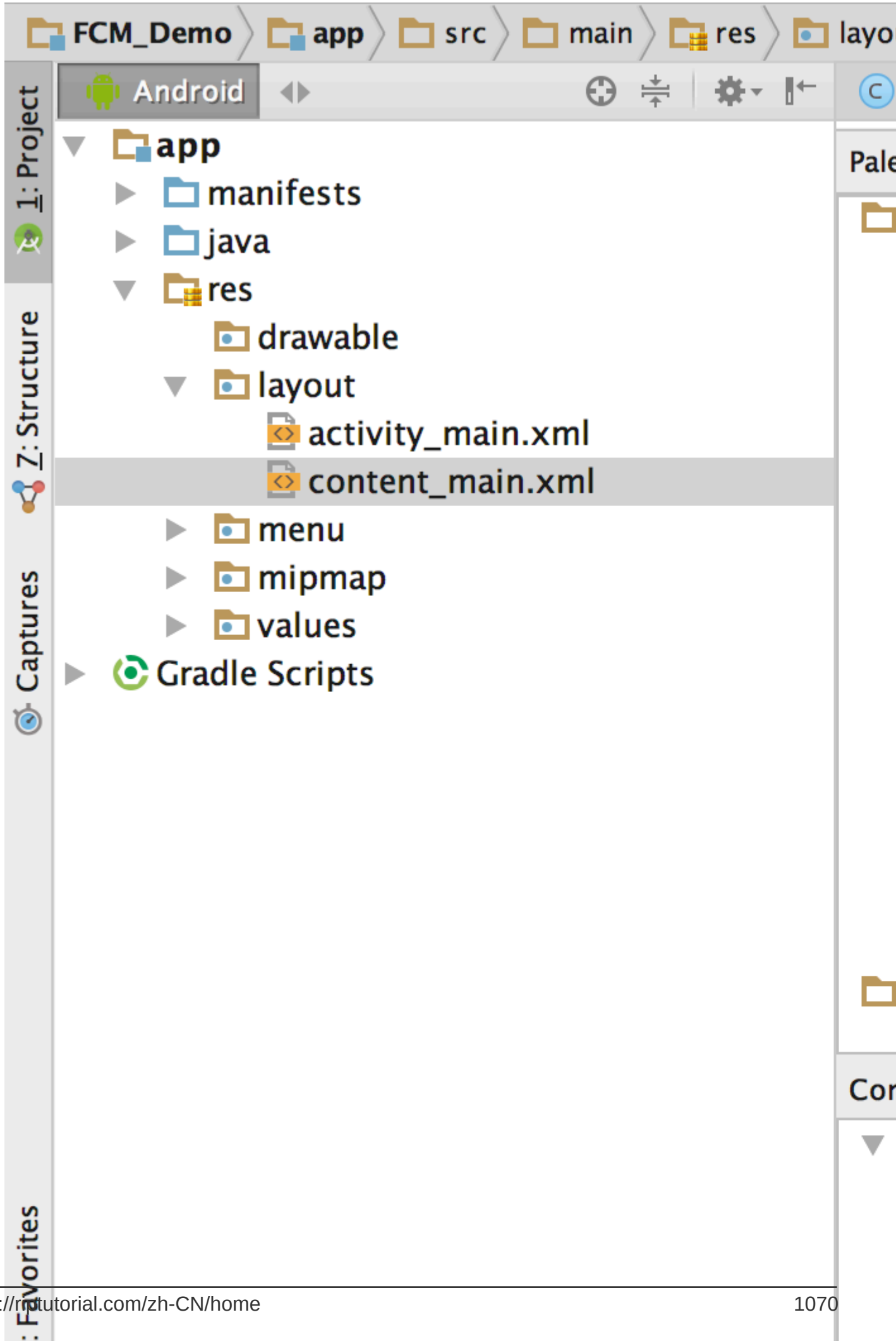
    public void onChildChanged(DataSnapshot dataSnapshot, String s) {}
    public void onChildRemoved(DataSnapshot dataSnapshot) {}
    public void onChildMoved(DataSnapshot dataSnapshot, String s) {}
    public void onCancelled(DatabaseError databaseError) {}
});
```

FCM

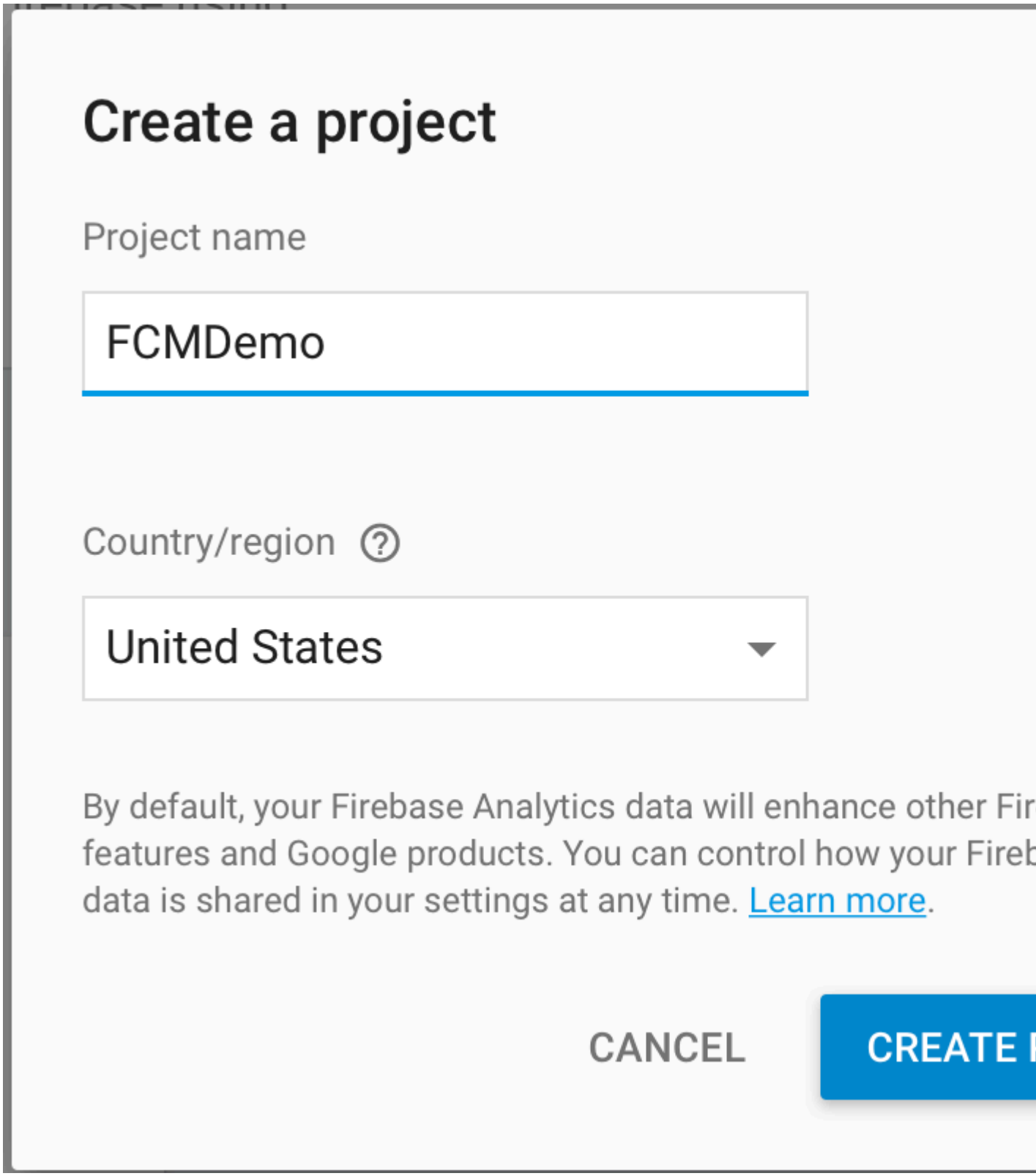
FirebaseFCM。 FCMGoogle Cloud MessagingGCM。C2D_MESSAGE。

FCM。

1. Android Studiohello worldAndroid。


FCM_Demo
app
src
main
res
layo
Android
1: Project
7: Structure
Captures
: Favorites
app
manifests
java
res
drawable
layout
activity_main.xml
content_main.xml
menu
mipmap
values
Gradle Scripts
Pale
Cor

2. firebase。https://console.firebase.google.com。



3. firebaseandroid。SHA-1。

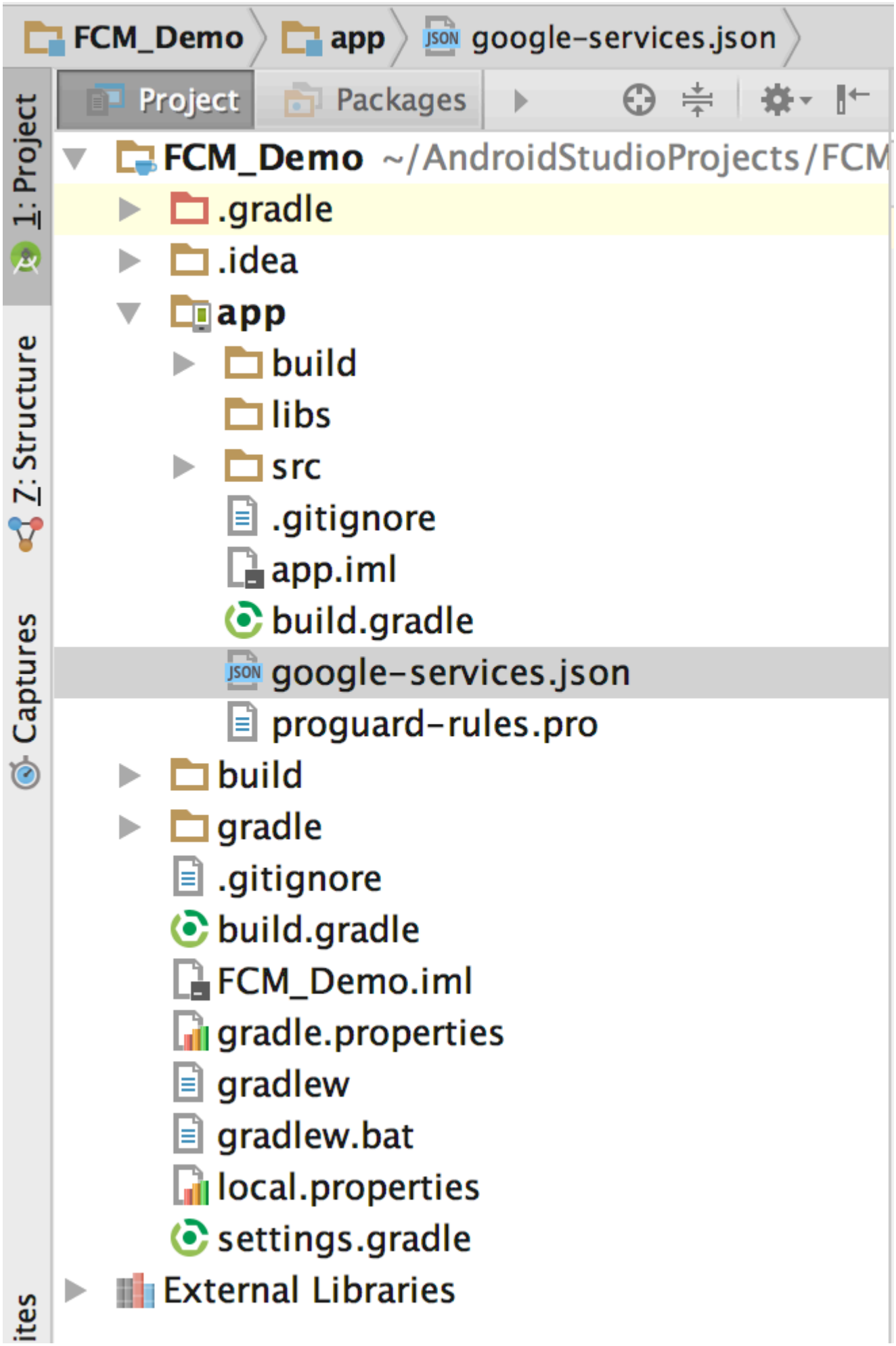
   。 - androidXML。

   SHA-1 - 。

```
keytool -list -v -keystore ~/.android/debug.keystore -alias androiddebugkey -storepass android -
keypass android
```

firebasefirebase。“”“google-services.json”JSON。

4. google-services.jsonAndroid。


FCM_Demo
app
google-services.json
Project
Packages
1: Project
Z: Structure
Captures
FCM_Demo ~/AndroidStudioProjects/FCM
.gradle
.idea
app
build
libs
src
.gitignore
app.iml
build.gradle
google-services.json
proguard-rules.pro
build
gradle
.gitignore
build.gradle
FCM_Demo.iml
gradle.properties
gradlew
gradlew.bat
local.properties
settings.gradle
External Libraries

5. firebase。。build.gradle

```
dependencies{ classpath 'com.google.gms:google-services:3.1.0' .....
```

build.gradle。

```
    //following are the dependencies to be added
    compile 'com.google.firebase:firebase-messaging:11.0.4'
    compile 'com.android.support:multidex:1.0.1'
}
// this line goes to the end of the file
apply plugin: 'com.google.gms.google-services'
```

C。Android。。

6. 。。intent-filterFirebaseMessagingService

```
    <intent-filter>
        <action android:name="com.google.firebase.MESSAGING_EVENT"/>
    </intent-filter>
```

FirebaseInstanceIDService。

```
<intent-filter>
    <action android:name="com.google.firebase.INSTANCE_ID_EVENT"/>
</intent-filter>
```

7. FirebaseMessagingService。

```
import android.app.Service;
import android.content.Intent;
import android.os.IBinder;

import com.google.firebase.messaging.FirebaseMessagingService;

public class MyFirebaseMessagingService extends FirebaseMessagingService {
    public MyFirebaseMessagingService() {
    }
}
```

8. FirebaseInstanceIdService。

```
import android.app.Service;
import android.content.Intent;
import android.os.IBinder;

import com.google.firebase.iid.FirebaseInstanceIdService;

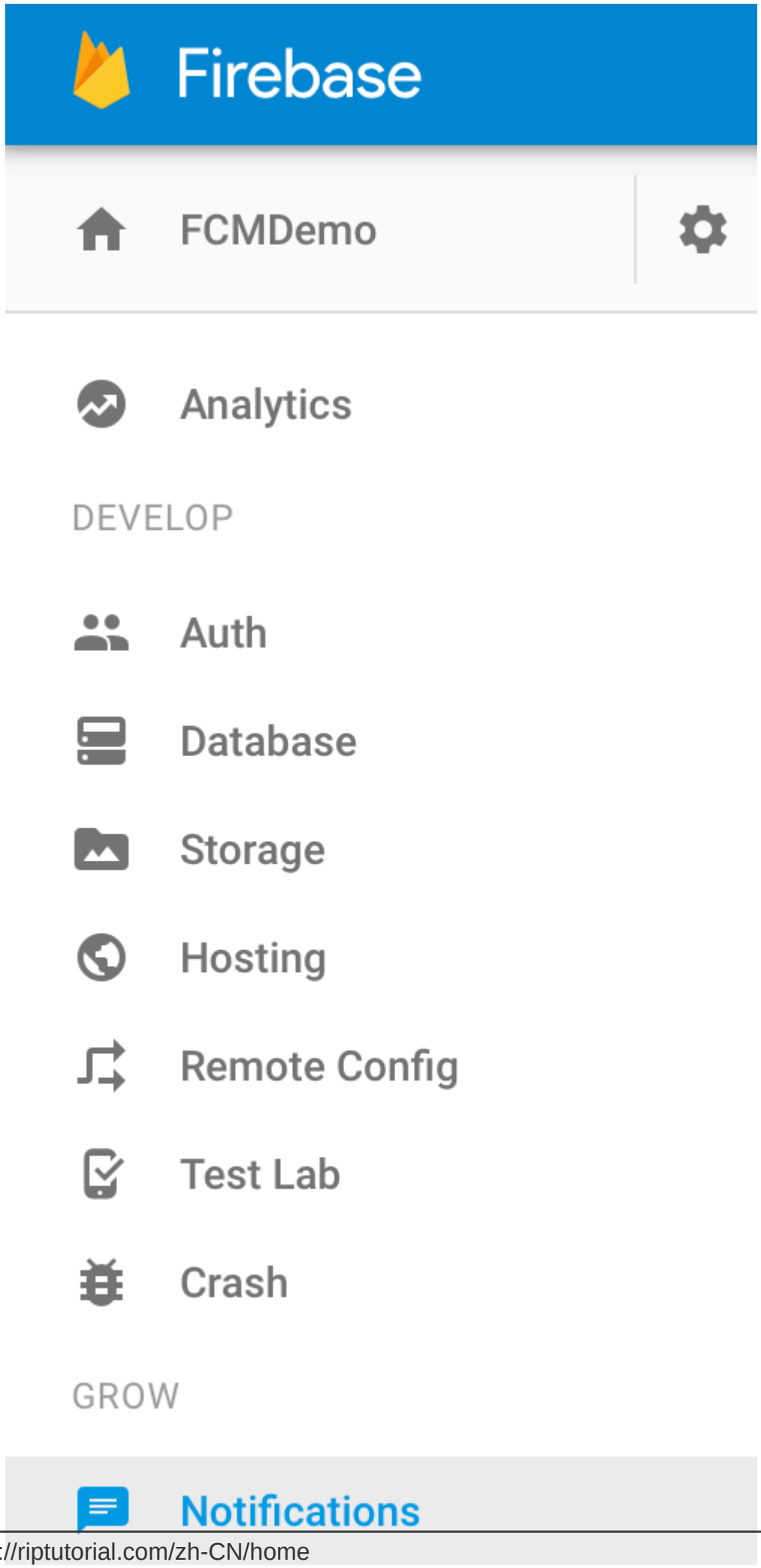
public class MyFirebaseInstanceIDService extends FirebaseInstanceIdService {
    public MyFirebaseInstanceIDService() {
    }
}
```

9.

- MainActivityonCreate。

```
String token = FirebaseInstanceId.getInstance().getToken();
Log.d("FCMAPP", "Token is "+token);
```

10. firebase。Android。


Firebase
FCMDemo
Analytics
DEVELOP
Auth
Database
Storage
Hosting
Remote Config
Test Lab
Crash
GROW
Notifications

226:

Toast。 。

- Toast makeTextCharSequenceint duration
- Toast makeTextContext contextint resIdint duration
- void setGravityint gravityint xOffsetint yOffset
- void show

	Toast in。 `this`Activity `getActivity()`Fragment
	CharSequenceToast。 CharSequenceString
	ToastStringID
	Toast。 `Toast.LENGTH_SHORT`Toast `.LENGTH_LONG`
	Toast“”。
X	Toast
Y	Toast

Toast。 。

ToastSnackBar。 SnackBar。 SnackBar。

https://developer.android.com/reference/android/widget/Toast.html

Examples

Toast

。 `setGravity(int, int, int)`。 xy。

```
toast.setGravity(Gravity.TOP|Gravity.LEFT, 0, 0);
```

Toast

AndroidToastUI。

Toast。

```
// Declare the parameters to use for the Toast
```

```
Context context = getApplicationContext();
// in an Activity, you may also use "this"
// in a fragment, you can use getActivity()

CharSequence message = "I'm an Android Toast!";
int duration = Toast.LENGTH_LONG; // Toast.LENGTH_SHORT is the other option

// Create the Toast object, and show it!
Toast myToast = Toast.makeText(context, message, duration);
myToast.show();
```

ToastToast

```
Toast.makeText(context, "Ding! Your Toast is ready.", Toast.LENGTH_SHORT).show();
```

UI`show()`。 Toast Activity runOnUiThread。

ToastUI`RuntimeException`

```
java.lang.RuntimeException: Can't create handler inside thread that has not called
Looper.prepare()
```

runOnUiThread。

```
   runOnUiThread(new Runnable() {
        @Override
        public void run() {
            // Your code here
        }
    });
```

Toast

Toast`Toast``setView(View)``setView(View)` 。

ToastXML。

```
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:id="@+id/toast_layout_root"
    android:orientation="vertical"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:padding="8dp"
    android:background="#111">

    <TextView android:id="@+id/title"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textColor="#FFF"/>

    <TextView android:id="@+id/description"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
```

```
        android:textColor="#FFF"/>

</LinearLayout>
```

ToastXML`setView`setView

```
// Inflate the custom view from XML
LayoutInflater inflater = getLayoutInflater();
View layout = inflater.inflate(R.layout.custom_toast_layout,
                               (ViewGroup) findViewById(R.id.toast_layout_root));

// Set the title and description TextViews from our custom layout
TextView title = (TextView) layout.findViewById(R.id.title);
title.setText("Toast Title");

TextView description = (TextView) layout.findViewById(R.id.description);
description.setText("Toast Description");

// Create and show the Toast object

Toast toast = new Toast(getApplicationContext());
toast.setGravity(Gravity.CENTER, 0, 0);
toast.setDuration(Toast.LENGTH_LONG);
toast.setView(layout);
toast.show();
```

ToastApplication Wide

```
public class MainApplication extends Application {

    private static Context context; //application context

    private Handler mainThreadHandler;
    private Toast toast;

    public Handler getMainThreadHandler() {
        if (mainThreadHandler == null) {
            mainThreadHandler = new Handler(Looper.getMainLooper());
        }
        return mainThreadHandler;
    }

    @Override public void onCreate() {
        super.onCreate();
        context = this;
    }

    public static MainApplication getApp(){
        return (MainApplication) context;
    }

    /**
     * Thread safe way of displaying toast.
     * @param message
     * @param duration
     */
    public void showToast(final String message, final int duration) {
        getMainThreadHandler().post(new Runnable() {
```

```
            @Override
            public void run() {
                if (!TextUtils.isEmpty(message)) {
                    if (toast != null) {
                        toast.cancel(); //dismiss current toast if visible
                        toast.setText(message);
                    } else {
                        toast = Toast.makeText(App.this, message, duration);
                    }
                    toast.show();
                }
            }
        });
    }
```

manifestMainApplication。

Toast。

```
MainApplication.getApp().showToast("Some message", Toast.LENGTH_LONG);
```

Toast

AndroidToast。 Toast。

```
public void showMessage(final String message, final int length) {
    View root = findViewById(android.R.id.content);
    Toast toast = Toast.makeText(this, message, length);
    int yOffset = Math.max(0, root.getHeight() - toast.getYOffset());
    toast.setGravity(Gravity.TOP | Gravity.CENTER_HORIZONTAL, 0, yOffset);
    toast.show();
}
```

ToastFor AsyncTask

ToastAsyncTaskspost execute。

```
public class MyAsyncTask extends AsyncTask <Void, Void, Void> {

    @Override
    protected Void doInBackground(Void... params) {
        // Do your background work here
    }

    @Override
    protected void onPostExecute(Void aVoid) {
        // Show toast messages here
        Toast.makeText(context, "Ding! Your Toast is ready.",   Toast.LENGTH_SHORT).show();
    }

}
```

https://riptutorial.com/zh-CN/android/topic/1741/

227:

- void onActivityCreatedBundle savedInstanceState//。
- void onActivityResultint requestCodeint resultCodeIntent data//startActivityForResultIntentint 。
- void onAttach//API23。 onAttachContext。
- void onAttachContext context//。
- void onAttachFragmentFragment childFragment//。
- void onConfigurationChangedConfiguration newConfig//。
- void onCreateBundle savedInstanceState//。
- onCreateViewLayoutInflater inflaterViewGroupBundle savedInstanceState//。
- void onDestroy//。
- void onDestroyView//onCreateViewLayoutInflaterViewGroupBundle。
- void onDetach//。
- void onInflateActivity activityAttributeSet attrsBundle savedInstanceState//API23。 onInflate ContextAttributeSetBundle。
- void onInflateContext contextAttributeSet attrsBundle savedInstanceState//。
- void onPause//Fragment。
- void onResume//。
- void onSaveInstanceStateBundle outState//。
- void onStart//。
- void onStop//。
- void onViewStateRestoredBundle savedInstanceState//。

。 UI。 “”。

。 。 setArgumentsBundleFragmentgetArguments。

Examples

newInstance

AndroidAndroid。。

newInstance()。

```
import android.os.Bundle;
import android.support.v4.app.Fragment;

public class MyFragment extends Fragment
{
  // Our identifier for obtaining the name from arguments
  private static final String NAME_ARG = "name";

  private String mName;

  // Required
  public MyFragment(){}

  // The static constructor.  This is the only way that you should instantiate
  // the fragment yourself
  public static MyFragment newInstance(final String name) {
    final MyFragment myFragment = new MyFragment();
    // The 1 below is an optimization, being the number of arguments that will
    // be added to this bundle.  If you know the number of arguments you will add
    // to the bundle it stops additional allocations of the backing map.  If
    // unsure, you can construct Bundle without any arguments
    final Bundle args = new Bundle(1);

    // This stores the argument as an argument in the bundle.  Note that even if
    // the 'name' parameter is NULL then this will work, so you should consider
    // at this point if the parameter is mandatory and if so check for NULL and
    // throw an appropriate error if so
    args.putString(NAME_ARG, name);

    myFragment.setArguments(args);
    return myFragment;
  }

  @Override
  public void onCreate(final Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    final Bundle arguments = getArguments();
    if (arguments == null || !arguments.containsKey(NAME_ARG)) {
      // Set a default or error as you see fit
    } else {
      mName = arguments.getString(NAME_ARG);
    }
  }
}
```

```
FragmentTransaction ft = getSupportFragmentManager().beginTransaction();
MyFragment mFragment = MyFragment.newInstance("my name");
ft.replace(R.id.placeholder, mFragment);
//R.id.placeholder is where we want to load our fragment
```

```
ft.commit();
```

◦ - onSaveInstanceState(Bundle)◦

backstack

Fragment Activity onCreate()

```
if (null == savedInstanceState) {
    getSupportFragmentManager().beginTransaction()
      .addToBackStack("fragmentA")
      .replace(R.id.container, FragmentA.newInstance(), "fragmentA")
      .commit();
}
```

backstack◦ FragmentTransactions◦

```
public void replaceFragment(Fragment fragment, String tag) {
    //Get current fragment placed in container
    Fragment currentFragment = getSupportFragmentManager().findFragmentById(R.id.container);

    //Prevent adding same fragment on top
    if (currentFragment.getClass() == fragment.getClass()) {
        return;
    }

    //If fragment is already on stack, we can pop back stack to prevent stack infinite growth
    if (getSupportFragmentManager().findFragmentByTag(tag) != null) {
        getSupportFragmentManager().popBackStack(tag,
FragmentManager.POP_BACK_STACK_INCLUSIVE);
    }

    //Otherwise, just replace fragment
    getSupportFragmentManager()
            .beginTransaction()
            .addToBackStack(tag)
            .replace(R.id.container, fragment, tag)
            .commit();
}
```

onBackPressed() backstackFragment◦

```
@Override
public void onBackPressed() {
    int fragmentsInStack = getSupportFragmentManager().getBackStackEntryCount();
    if (fragmentsInStack > 1) { // If we have more than one fragment, pop back stack
        getSupportFragmentManager().popBackStack();
    } else if (fragmentsInStack == 1) { // Finish activity, if only one fragment left, to
prevent leaving empty screen
        finish();
    } else {
        super.onBackPressed();
    }
}
```

```
replaceFragment(FragmentB.newInstance(), "fragmentB");
```

MainActivity

```
((MainActivity) getActivity()).replaceFragment(FragmentB.newInstance(), "fragmentB");
```

BundleActivityFragment

◦ Fragment`setArguments()`◦ bundleBundle◦ `onCreate()`onCreateView()Bundle◦

```
 Bundle bundle = new Bundle();
 String myMessage = "Stack Overflow is cool!";
 bundle.putString("message", myMessage );
 FragmentClass fragInfo = new FragmentClass();
 fragInfo.setArguments(bundle);
 transaction.replace(R.id.fragment_single, fragInfo);
 transaction.commit();
```

```
 @Override
 public View onCreateView(LayoutInflater inflater, ViewGroup container, Bundle
savedInstanceState) {
    String myValue = this.getArguments().getString("message");
    ...
 }
```

◦

```
public interface SampleCallback {
    void onButtonClicked();
}
```

```
public final class SampleFragment extends Fragment {

    private SampleCallback callback;

    @Override
    public void onAttach(Context context) {
        super.onAttach(context);
        if (context instanceof SampleCallback) {
            callback = (SampleCallback) context;
        } else {
            throw new RuntimeException(context.toString()
                    + " must implement SampleCallback");
        }
    }

    @Override
    public void onDetach() {
        super.onDetach();
        callback = null;
    }

    @Override
```

```
    public View onCreateView(LayoutInflater inflater, ViewGroup container, Bundle
savedInstanceState) {
        final View view = inflater.inflate(R.layout.sample, container, false);
        // Add button's click listener
        view.findViewById(R.id.actionButton).setOnClickListener(new View.OnClickListener() {
            public void onClick(View v) {
                callback.onButtonClicked(); // Invoke callback here
            }
        });
        return view;
    }
}
```

activity

```
public final class SampleActivity extends Activity implements SampleCallback {

    // ... Skipped code with settings content view and presenting the fragment

    @Override
    public void onButtonClicked() {
        // Invoked when fragment's button has been clicked
    }
}
```

FragmentManagerFragmentTransaction◦

FragmentTransaction◦

FragmentTransaction.setTransition(int transit)FragmentTransaction◦

```
FragmentTransaction.TRANSIT_NONE
FragmentTransaction.TRANSIT_FRAGMENT_OPEN
FragmentTransaction.TRANSIT_FRAGMENT_CLOSE
FragmentTransaction.TRANSIT_FRAGMENT_FADE
```

```
getSupportFragmentManager()
    .beginTransaction()
    .setTransition(FragmentTransaction.TRANSIT_FRAGMENT_FADE)
    .replace(R.id.contents, new MyFragment(), "MyFragmentTag")
    .commit();
```

FragmentTransaction.setCustomAnimations(int enter, int exit)

FragmentTransaction.setCustomAnimations(int enter, int exit, int popEnter, int popExit)◦

FragmentTransactionenterexit◦ popEnterpopExit◦

◦

```
getSupportFragmentManager()
    .beginTransaction()
    .setCustomAnimations(R.anim.slide_in_left, R.anim.slide_out_right)
    .replace(R.id.contents, new MyFragment(), "MyFragmentTag")
    .commit();
```

XML`objectAnimator`。 **slide_in_left.xml**

```
<?xml version="1.0" encoding="utf-8"?>
<set>
  <objectAnimator xmlns:android="http://schemas.android.com/apk/res/android"
    android:propertyName="x"
    android:valueType="floatType"
    android:valueFrom="-1280"
    android:valueTo="0"
    android:duration="500"/>
</set>
```

。 。

- OnFragmentInteractionListener
- Android |

`MainActivity` `SenderFragment` `ReceiverFragment` `message` String。

`SenderFragment` Button。 `ReceiverFragment` TextView。

MainActivity

```
// Our MainActivity implements the interface defined by the SenderFragment. This enables
// communication from the fragment to the activity
public class MainActivity extends AppCompatActivity implements
SenderFragment.SendMessageListener {

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
}

/**
 * This method is called when we click on the button in the SenderFragment
 * @param message The message sent by the SenderFragment
 */
@Override
public void onSendMessage(String message) {
    // Find our ReceiverFragment using the SupportFragmentManager and the fragment's id
    ReceiverFragment receiverFragment = (ReceiverFragment)
            getSupportFragmentManager().findFragmentById(R.id.fragment_receiver);

    // Make sure that such a fragment exists
    if (receiverFragment != null) {
        // Send this message to the ReceiverFragment by calling its public method
        receiverFragment.showMessage(message);
    }
}
}
```

`MainActivity` LinearLayout

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
```

```
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/activity_main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    tools:context="com.naru.fragmentcommunication.MainActivity">

<fragment
    android:id="@+id/fragment_sender"
    android:name="com.naru.fragmentcommunication.SenderFragment"
    android:layout_width="match_parent"
    android:layout_height="0dp"
    android:layout_weight="1"
    tools:layout="@layout/fragment_sender" />

<fragment
    android:id="@+id/fragment_receiver"
    android:name="com.naru.fragmentcommunication.ReceiverFragment"
    android:layout_width="match_parent"
    android:layout_height="0dp"
    android:layout_weight="1"
    tools:layout="@layout/fragment_receiver" />
</LinearLayout>
```

SenderFragmentSendMessageListener MainActivitySenderFragmentButtonSenderFragment ◦

SenderFragment

```
public class SenderFragment extends Fragment {

private SendMessageListener commander;

/**
 * This interface is created to communicate between the activity and the fragment. Any
activity
 * which implements this interface will be able to receive the message that is sent by this
 * fragment.
 */
public interface SendMessageListener {
    void onSendMessage(String message);
}

/**
 * API LEVEL >= 23
 * <p>
 * This method is called when the fragment is attached to the activity. This method here will
 * help us to initialize our reference variable, 'commander' , for our interface
 * 'SendMessageListener'
 *
 * @param context
 */
@Override
public void onAttach(Context context) {
    super.onAttach(context);
    // Try to cast the context to our interface SendMessageListener i.e. check whether the
    // activity implements the SendMessageListener. If not a ClassCastException is thrown.
```

```
    try {
        commander = (SendMessageListener) context;
    } catch (ClassCastException e) {
        throw new ClassCastException(context.toString()
                + "must implement the SendMessageListener interface");
    }
}

/**
 * API LEVEL < 23
 * <p>
 * This method is called when the fragment is attached to the activity. This method here will
 * help us to initialize our reference variable, 'commander' , for our interface
 * 'SendMessageListener'
 *
 * @param activity
 */
@Override
public void onAttach(Activity activity) {
    super.onAttach(activity);
    // Try to cast the context to our interface SendMessageListener i.e. check whether the
    // activity implements the SendMessageListener. If not a ClassCastException is thrown.
    try {
        commander = (SendMessageListener) activity;
    } catch (ClassCastException e) {
        throw new ClassCastException(activity.toString()
                + "must implement the SendMessageListener interface");
    }
}

@Nullable
@Override
public View onCreateView(LayoutInflater inflater, @Nullable ViewGroup container,
                         @Nullable Bundle savedInstanceState) {
    // Inflate view for the sender fragment.
    View view = inflater.inflate(R.layout.fragment_receiver, container, false);

    // Initialize button and a click listener on it
    Button send = (Button) view.findViewById(R.id.bSend);
    send.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {

            // Sanity check whether we were able to properly initialize our interface
reference
            if (commander != null) {

                // Call our interface method. This enables us to call the implemented method
                // in the activity, from where we can send the message to the
ReceiverFragment.
                commander.onSendMessage("HELLO FROM SENDER FRAGMENT!");
            }
        }
    });

    return view;
}
}
```

SenderFragment

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:gravity="center"
    android:orientation="vertical">

<Button
    android:id="@+id/bSend"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="SEND"
    android:layout_gravity="center_horizontal" />
</LinearLayout>
```

ReceiverFragmentTextView。 MainActivitySenderFragmentReceiverFragment

ReceiverFragment

```
public class ReceiverFragment extends Fragment {
TextView tvMessage;

@Nullable
@Override
public View onCreateView(LayoutInflater inflater, @Nullable ViewGroup container,
                         @Nullable Bundle savedInstanceState) {
    // Inflate view for the sender fragment.
    View view = inflater.inflate(R.layout.fragment_receiver, container, false);

    // Initialize the TextView
    tvMessage = (TextView) view.findViewById(R.id.tvReceivedMessage);

    return view;
}


/**
 * Method that is called by the MainActivity when it receives a message from the
SenderFragment.
 * This method helps update the text in the TextView to the message sent by the
SenderFragment.
 * @param message Message sent by the SenderFragment via the MainActivity.
 */
public void showMessage(String message) {
    tvMessage.setText(message);
}
}
```

ReceiverFragment

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:gravity="center"
    android:orientation="vertical">
<TextView
    android:id="@+id/tvReceivedMessage"
    android:layout_width="wrap_content"
```

```
    android:layout_height="wrap_content"
    android:text="Waiting for message!" />
</LinearLayout>
```

https://riptutorial.com/zh-CN/android/topic/1396/

228:

Butterknife。 SquareJake Wharton`findViewById(R.id.view)`。

Butterknife 。 Butterknife。 Android Annotations。

Android。

- @BindViewfindViewById。
- 。 。
- @OnClick。
- 。

http //jakewharton.github.io/butterknife/

2013 Jake Wharton

Apache2.0“”;。

http://www.apache.org/licenses/LICENSE-2.0

“”。 。

Examples

ButterKnife

`build.gradleandroid-apt`

```
buildscript {
   repositories {
      mavenCentral()
   }

   dependencies {
      classpath 'com.jakewharton:butterknife-gradle-plugin:8.5.1'
   }
}
```

`build.gradleandroid-apt`ButterKnife

```
apply plugin: 'android-apt'

android {
    ...
}

dependencies {
      compile 'com.jakewharton:butterknife:8.5.1'
      annotationProcessor 'com.jakewharton:butterknife-compiler:8.5.1'
```

```
}
```

2.2.0Jack`android-apt`apt`annotationProcessor`。

ButterKnife`onCreate()`onCreateView()

```
class ExampleActivity extends Activity {

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        // Binding annotations
        ButterKnife.bind(this);
        // ...
  }

}

// Or
class ExampleFragment extends Fragment {

    @Override
    public View onCreateView(LayoutInflater inflater, ViewGroup container, Bundle
savedInstanceState) {
        super.onCreateView(inflater, container, savedInstanceState);
        View view = inflater.inflate(getContentView(), container, false);
        // Binding annotations
        ButterKnife.bind(this, view);
        // ...
        return view;
  }

}
```

Sonatype。

ButterKnife

ButterKnife`build.gradle`

```
buildscript {
    dependencies {
        classpath 'com.jakewharton:butterknife-gradle-plugin:8.5.1'
    }
}
```

...`build.gradle`

```
apply plugin: 'com.android.library'
// ...
apply plugin: 'com.jakewharton.butterknife'
```

ButterKnife`R2R`

```
class ExampleActivity extends Activity {

    // Bind xml resource to their View
    @BindView(R2.id.user) EditText username;
    @BindView(R2.id.pass) EditText password;

    // Binding resources from drawable,strings,dimens,colors
    @BindString(R.string.choose) String choose;
    @BindDrawable(R.drawable.send) Drawable send;
    @BindColor(R.color.cyan) int cyan;
    @BindDimen(R.dimen.margin) Float generalMargin;

    // Listeners
    @OnClick(R.id.submit)
    public void submit(View view) {
    // TODO submit data to server...
    }

    // bind with butterknife in onCreate
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        ButterKnife.bind(this);
        // TODO continue
  }

}
```

ButterKnife

`@BindView`Butter KnifeID。

```
class ExampleActivity extends Activity {
  @BindView(R.id.title) TextView title;
  @BindView(R.id.subtitle) TextView subtitle;
  @BindView(R.id.footer) TextView footer;

  @Override public void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.simple_activity);
    ButterKnife.bind(this);
    // TODO Use fields...
  }
}
```

```
public class FancyFragment extends Fragment {
  @BindView(R.id.button1) Button button1;
  @BindView(R.id.button2) Button button2;
  private Unbinder unbinder;

  @Override
  public View onCreateView(LayoutInflater inflater, ViewGroup container, Bundle
savedInstanceState) {
    View view = inflater.inflate(R.layout.fancy_fragment, container, false);
    unbinder = ButterKnife.bind(this, view);
```

```
    // TODO Use fields...
    return view;
  }

  // in fragments or non activity bindings we need to unbind the binding when view is about to
be destroyed
  @Override
    public void onDestroy() {
        super.onDestroy();
        unbinder.unbind();
    }
}
```

ButterKnife.findByIdViewActivityDialog。 。

```
View view = LayoutInflater.from(context).inflate(R.layout.thing, null);
TextView firstName = ButterKnife.findById(view, R.id.first_name);
TextView lastName = ButterKnife.findById(view, R.id.last_name);
ImageView photo = ButterKnife.findById(view, R.id.photo);
```

ViewHolder

```
static class ViewHolder {
    @BindView(R.id.title) TextView name;
    @BindView(R.id.job_title) TextView jobTitle;

    public ViewHolder(View view) {
      ButterKnife.bind(this, view);
    }
  }
```

ButterKnifestrings.xml drawables.xml colors.xml dimens.xml。

```
public class ExampleActivity extends Activity {

    @BindString(R.string.title) String title;
    @BindDrawable(R.drawable.graphic) Drawable graphic;
    @BindColor(R.color.red) int red; // int or ColorStateList field
    @BindDimen(R.dimen.spacer) Float spacer; // int (for pixel size) or float (for exact
value) field

    @Override
    public void onCreate(Bundle savedInstanceState) {

        // ...

        ButterKnife.bind(this);
    }

}
```

List◦ ◦

```
@BindViews({ R.id.first_name, R.id.middle_name, R.id.last_name })
List<EditText> nameViews;

//The apply method allows you to act on all the views in a list at once.
ButterKnife.apply(nameViews, DISABLE);
ButterKnife.apply(nameViews, ENABLED, false);


//We can use Action and Setter interfaces allow specifying simple behavior.
static final ButterKnife.Action<View> DISABLE = new ButterKnife.Action<View>() {
  @Override public void apply(View view, int index) {
    view.setEnabled(false);
  }
};
static final ButterKnife.Setter<View, Boolean> ENABLED = new ButterKnife.Setter<View,
Boolean>() {
  @Override public void set(View view, Boolean value, int index) {
    view.setEnabled(value);
  }
};
```

@Bind◦ ◦ @Nullable@Optional◦

```
@Nullable
@BindView(R.id.might_not_be_there) TextView mightNotBeThere;

@Optional
@OnClick(R.id.maybe_missing)
void onMaybeMissingClicked() {
  // TODO ...
}
```

ButterKnife

OnClick

```
@OnClick(R.id.login)
public void login(View view) {
  // Additional logic
}
```

```
@OnClick(R.id.login)
public void login() {
   // Additional logic
}
```

```
@OnClick(R.id.submit)
public void sayHi(Button button) {
  button.setText("Hello!");
}
```

ID

```
@OnClick({ R.id.door1, R.id.door2, R.id.door3 })
public void pickDoor(DoorView door) {
  if (door.hasPrizeBehind()) {
    Toast.makeText(this, "You win!", LENGTH_SHORT).show();
  } else {
    Toast.makeText(this, "Try again", LENGTH_SHORT).show();
  }
}
```

ID

```
public class CustomButton extends Button {
  @OnClick
  public void onClick() {
    // TODO
  }
}
```

ButterKnife

。onCreateViewonDestroyViewnull。bindButter KnifeUnbinder。unbind。

```
public class MyFragment extends Fragment {
  @BindView(R.id.textView) TextView textView;
  @BindView(R.id.button) Button button;
  private Unbinder unbinder;

  @Override public View onCreateView(LayoutInflater inflater, ViewGroup container, Bundle
savedInstanceState) {
    View view = inflater.inflate(R.layout.my_fragment, container, false);
    unbinder = ButterKnife.bind(this, view);
    // TODO Use fields...
    return view;
  }

  @Override public void onDestroyView() {
    super.onDestroyView();
    unbinder.unbind();
  }
}
```

onDestroyViewunbindbackstack。

Android Studio ButterKnife

Android ButterKnife Zelezny

//XMLButterKnife。

your_xml_layou `(R.layout.your_xml_layou` *Generate*Butterknife。

```java
/**
 * Main UI for setting up GridWichterle.
 *
 * @author Michal Matl (michal.matl@inmite.eu)
 */
public class SettingsActivity extends FragmentActivity {

    private Config mConfig;


    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_settings);
        ButterKnife.inject(this);

        Intent intent = new Intent(this, GridOverlayService.class);
        startService(intent);

        setupViews();
    }
```

Jetbrains Plugin Android ButterKnife Zelezny

https://riptutorial.com/zh-CN/android/topic/1072/

229: ◦

gradle◦

'com.googlecode.libphonenumberlibphonenumber7.2.2'

Examples

+ 17861234 5678

+178612345678◦

```
private String getFormattedNumber(String phoneNumber) {

    PhoneNumberUtil phoneNumberUtil = PhoneNumberUtil.getInstance();

    Phonemetadata.NumberFormat numberFormat = new Phonemetadata.NumberFormat();

    numberFormat.pattern = "(\\d{3})(\\d{3})(\\d{4})";

    numberFormat.format = "($1) $2-$3";

    List<Phonemetadata.NumberFormat> newNumberFormats = new ArrayList<>();

    newNumberFormats.add(numberFormat);

    Phonenumber.PhoneNumber phoneNumberPN = null;

    try {
        phoneNumberPN = phoneNumberUtil.parse(phoneNumber, Locale.US.getCountry());
        phoneNumber = phoneNumberUtil.formatByPattern(phoneNumberPN,
PhoneNumberUtil.PhoneNumberFormat.INTERNATIONAL, newNumberFormats);

    } catch (NumberParseException e) {
        e.printStackTrace();
    }

    return phoneNumber;
}
```

◦ https://riptutorial.com/zh-CN/android/topic/9083/-

230:

Examples

```
private boolean isValidEmailId(String email){
  return Pattern.compile("^(([\\w-]+\\.)+[\\w-]+|([a-zA-Z]{1}|[\\w-]{2,}))@"
              + "((([0-1]?[0-9]{1,2}|25[0-5]|2[0-4][0-9])\\.([0-1]?"
              + "[0-9]{1,2}|25[0-5]|2[0-4][0-9])\\."
              + "([0-1]?[0-9]{1,2}|25[0-5]|2[0-4][0-9])\\.([0-1]?"
              + "[0-9]{1,2}|25[0-5]|2[0-4][0-9])){1}|"
              + "([a-zA-Z]+[\\w-]+\\.)+[a-zA-Z]{2,4})$").matcher(email).matches();
}
```

EditTextString

```
if(isValidEmailId(edtEmailId.getText().toString().trim())){
  Toast.makeText(getApplicationContext(), "Valid Email Address.", Toast.LENGTH_SHORT).show();
}else{
  Toast.makeText(getApplicationContext(), "InValid Email Address.",
Toast.LENGTH_SHORT).show();
}
```

```
  if (Patterns.EMAIL_ADDRESS.matcher(email).matches()){
       Log.i("EmailCheck","It is valid");
  }
```

https://riptutorial.com/zh-CN/android/topic/5605/

231: AsyncTask

PARAMS	◦
	◦

Examples

Android ◦ UII / OUI ◦

◦

AsyncTask UI◦

AsyncTask

- `onPreExecute()` **UI**
- `doInBackground()` `onPreExecute()`◦
- `onProgressUpdate()` `publishProgress(Progress...)` **UI**◦
- `onPostExecute()` **UI**

```
public class MyCustomAsyncTask extends AsyncTask<File, Void, String> {


    @Override
    protected void onPreExecute(){
        // This runs on the UI thread before the background thread executes.
        super.onPreExecute();
        // Do pre-thread tasks such as initializing variables.
        Log.v("myBackgroundTask", "Starting Background Task");
    }

    @Override
    protected String doInBackground(File... params) {
        // Disk-intensive work. This runs on a background thread.
        // Search through a file for the first line that contains "Hello", and return
        // that line.
        try (Scanner scanner = new Scanner(params[0])) {
            while (scanner.hasNextLine()) {
                final String line = scanner.nextLine();
                publishProgress(); // tell the UI thread we made progress

                if (line.contains("Hello")) {
                    return line;
                }
            }
            return null;
        }
```

```
    }

    @Override
    protected void onProgressUpdate(Void...p) {
        // Runs on the UI thread after publishProgress is invoked
        Log.v("Read another line!")
    }

    @Override
    protected void onPostExecute(String s) {
        // This runs on the UI thread after complete execution of the doInBackground() method
        // This function receives result(String s) returned from the doInBackground() method.
        // Update UI with the found string.
        TextView view = (TextView) findViewById(R.id.found_string);
        if (s != null) {
            view.setText(s);
        } else {
            view.setText("Match not found.");
        }
    }

}
```

```
MyCustomAsyncTask asyncTask = new MyCustomAsyncTask<File, Void, String>();
// Run the task with a user supplied filename.
asyncTask.execute(userSuppliedFilename);
```

```
new MyCustomAsyncTask().execute(userSuppliedFilename);
```

AsyncTask< >◦

<Params, Progress, Result>

<File, Void, String>

```
AsyncTask<File, Void, String>
// Params has type File
// Progress has unused type
// Result has type String
```

Void ◦

int float6◦ Integerint Floatfloat ◦

AsyncTaskActivity

AsyncTasksActivity◦ ActivityAsyncTaskActivity◦ AsyncTask◦ ◦

AsyncTaskLoader

LoadersAsyncTaskLoader◦ AsyncTask◦ ActivityFragmentsActivities◦ AsyncTaskLoader

AsyncTask。 Activity / FragmentAsyncTaskLoader。

AsyncTask

```
YourAsyncTask task = new YourAsyncTask();
task.execute();
task.cancel();
```

isCancelled()

```
class YourAsyncTask extends AsyncTask<Void, Void, Void> {
    @Override
    protected Void doInBackground(Void... params) {
        while(!isCancelled()) {
            ... doing long task stuff
            //Do something, you need, upload part of file, for example
            if (isCancelled()) {
                return null; // Task was detected as canceled
            }
            if (yourTaskCompleted) {
                return null;
            }
        }
    }
}
```

doInBackground(Params... params)AsyncTaskdoInBackground(Params... params)onPostExecute(Result result)。 AsyncTaskonCancelled(Result result)。

AsyncTask。 。 。 onProgressUpdateAsyncTask。

```
class YourAsyncTask extends AsyncTask<URL, Integer, Long> {
    @Override
    protected void onProgressUpdate(Integer... args) {
        setProgressPercent(args[0])
    }
}
```

doInBackgroundpublishProgress 。

```
protected Long doInBackground(URL... urls) {
     int count = urls.length;
     long totalSize = 0;
     for (int i = 0; i < count; i++) {
         totalSize += Downloader.downloadFile(urls[i]);
         publishProgress((int) ((i / (float) count) * 100));
     }
     return totalSize;
 }
```

AndroidAsyncTask

AndroidAsyncTaskImage。 。

Android AsyncTask

MultiThreading。 AsyncTaskUI。UI。UIAsyncTask。

- AsyncTasks。
- 3ParamsProgressResult4`onPreExecute() doInBackground() onProgressUpdate()onPostExecute()`
  。
- `onPreExecute()`。
- doInBackground`doInBackground()`publishProgress。
- `onProgressUpdate()doInBackground() onProgressUpdate()publishProgress()`
- `onPostExecute()doInBackground()`。
  -
  - 。
  - 。
- Void。
- `cancel(boolean)cancel(boolean)`。

Android AsyncTask

.xml

```
<?xml version="1.0" encoding="utf-8"?>

<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:orientation="vertical" >

<Button
    android:id="@+id/downloadButton"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="Click Here to Download" />

<ImageView
    android:id="@+id/imageView"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:contentDescription="Your image will appear here" />

</LinearLayout>
```

.java

```
package com.javatechig.droid;

import java.io.InputStream;
import org.apache.http.HttpEntity;
import org.apache.http.HttpResponse;
import org.apache.http.HttpStatus;
```

```
import org.apache.http.client.methods.HttpGet;
import org.apache.http.impl.client.DefaultHttpClient;
import android.app.Activity;
import android.app.ProgressDialog;
import android.graphics.Bitmap;
import android.graphics.BitmapFactory;
import android.os.AsyncTask;
import android.os.Bundle;
import android.util.Log;
import android.view.View;
import android.view.View.OnClickListener;
import android.widget.Button;
import android.widget.ImageView;

public class ImageDownladerActivity extends Activity {

    private ImageView downloadedImg;
    private ProgressDialog simpleWaitDialog;
    private String downloadUrl = "http://www.9ori.com/store/media/images/8ab579a656.jpg";

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.asynch);
        Button imageDownloaderBtn = (Button) findViewById(R.id.downloadButton);

        downloadedImg = (ImageView) findViewById(R.id.imageView);

        imageDownloaderBtn.setOnClickListener(new OnClickListener() {

            @Override
            public void onClick(View v) {
                // TODO Auto-generated method stub
                new ImageDownloader().execute(downloadUrl);
            }

        });
    }

    private class ImageDownloader extends AsyncTask {

        @Override
        protected Bitmap doInBackground(String... param) {
            // TODO Auto-generated method stub
            return downloadBitmap(param[0]);
        }

        @Override
        protected void onPreExecute() {
            Log.i("Async-Example", "onPreExecute Called");
            simpleWaitDialog = ProgressDialog.show(ImageDownladerActivity.this,
                    "Wait", "Downloading Image");

        }

        @Override
        protected void onPostExecute(Bitmap result) {
            Log.i("Async-Example", "onPostExecute Called");
            downloadedImg.setImageBitmap(result);
            simpleWaitDialog.dismiss();
```

```
        }

        private Bitmap downloadBitmap(String url) {
            // initilize the default HTTP client object
            final DefaultHttpClient client = new DefaultHttpClient();

            //forming a HttpGet request
            final HttpGet getRequest = new HttpGet(url);
            try {

                HttpResponse response = client.execute(getRequest);

                //check 200 OK for success
                final int statusCode = response.getStatusLine().getStatusCode();

                if (statusCode != HttpStatus.SC_OK) {
                    Log.w("ImageDownloader", "Error " + statusCode +
                            " while retrieving bitmap from " + url);
                    return null;

                }

                final HttpEntity entity = response.getEntity();
                if (entity != null) {
                    InputStream inputStream = null;
                    try {
                        // getting contents from the stream
                        inputStream = entity.getContent();

                        // decoding stream data back into image Bitmap that android
understands
                        final Bitmap bitmap = BitmapFactory.decodeStream(inputStream);

                        return bitmap;
                    } finally {
                        if (inputStream != null) {
                            inputStream.close();
                        }
                        entity.consumeContent();
                    }
                }
            } catch (Exception e) {
                // You Could provide a more explicit error message for IOException
                getRequest.abort();
                Log.e("ImageDownloader", "Something went wrong while" +
                        " retrieving bitmap from " + url + e.toString());
            }

            return null;
        }
    }
}
```

AsyncTask。

-
- 。

- ActivityWeakReference

- http://stackoverflow.com/documentation/android/117/asynctask/5377/possible-problems-with-inner-async-tasks
- AsyncTask

ActivityWeakReference

AsyncTaskActivity。

AsyncTaskActivity/。

AsyncTaskActivityActivityAsyncTask。AsyncTaskActivityAsyncTask。AsyncTaskActivity AsyncTaskActivity。

。

AsyncTaskWeakReference Activity。

WeakReferenceAsyncTask

```
private class MyAsyncTask extends AsyncTask<String, Void, Void> {

    private WeakReference<Activity> mActivity;

    public MyAsyncTask(Activity activity) {
        mActivity = new WeakReference<Activity>(activity);
    }

    @Override
    protected void onPreExecute() {
        final Activity activity = mActivity.get();
        if (activity != null) {
            ....
        }
    }

    @Override
    protected Void doInBackground(String... params) {
        //Do something
        String param1 = params[0];
        String param2 = params[1];
        return null;
    }

    @Override
    protected void onPostExecute(Void result) {
        final Activity activity = mActivity.get();
        if (activity != null) {
            activity.updateUI();
        }
    }
}
```

ActivityAsyncTask

```
new MyAsyncTask(this).execute("param1", "param2");
```

AsyncTask

```
new MyAsyncTask(getActivity()).execute("param1", "param2");
```

AsyncTasks◦ DONUT◦ HONEYCOMB◦

THREAD_POOL_EXECUTORexecuteOnExecutor(java.util.concurrent.Executor, Object[]) ◦

SERIAL_EXECUTOR - >Executor◦

THREAD_POOL_EXECUTOR - >◦

```
Task task = new Task();
if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.HONEYCOMB)
    task.executeOnExecutor(AsyncTask.SERIAL_EXECUTOR, data);
else
    task.execute(data);
```

AsyncTask

AsyncTaskThread◦ doInBackground(Params... params) ◦ AsyncTask.call()◦

Executorjava.util.concurrent◦

AsyncTask2Executor

THREAD_POOL_EXECUTOR

◦

```
public static final Executor THREAD_POOL_EXECUTOR = new ThreadPoolExecutor(CORE_POOL_SIZE,
MAXIMUM_POOL_SIZE, KEEP_ALIVE, TimeUnit.SECONDS, sPoolWorkQueue, sThreadFactory);
```

SERIAL_EXECUTOR

◦

```
private static class SerialExecutor implements Executor { }
```

Executor THREAD_POOL_EXECUTORSerialExecutorAsyncTask◦

Executor SerialExecutor SerialExecutor◦

THREAD_POOL_EXECUTOR◦

```
public class MainActivity extends Activity {
    private Button bt;
    private int CountTask = 0;
    private static final String TAG = "AsyncTaskExample";
```

```
@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    bt = (Button) findViewById(R.id.button);
    bt.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            BackgroundTask backgroundTask = new BackgroundTask ();
            Integer data[] = { ++CountTask, null, null };

            // Task Executed in thread pool ( 1 )
            backgroundTask.executeOnExecutor(AsyncTask.THREAD_POOL_EXECUTOR, data);

            // Task executed Serially ( 2 )
            // Uncomment the below code and comment the above code of Thread
            // pool Executor and check
            // backgroundTask.execute(data);
            Log.d(TAG, "Task = " + (int) CountTask + " Task Queued");

        }
    });

}

private class BackgroundTask extends AsyncTask<Integer, Integer, Integer> {
    int taskNumber;

    @Override
    protected Integer doInBackground(Integer... integers) {
        taskNumber = integers[0];

        try {
            Thread.sleep(1000);
        } catch (InterruptedException e) {
            // TODO Auto-generated catch block
            e.printStackTrace();
        }

        Log.d(TAG, "Task = " + taskNumber + " Task Running in Background");

        publishProgress(taskNumber);
        return null;
    }

    @Override
    protected void onPreExecute() {
        super.onPreExecute();
    }

    @Override
    protected void onPostExecute(Integer aLong) {
        super.onPostExecute(aLong);
    }

    @Override
    protected void onProgressUpdate(Integer... values) {
        super.onProgressUpdate(values);
        Log.d(TAG, "Task = " + (int) values[0]
                + " Task Execution Completed");
```

```
        }
    }
}
```

。

1

1000。

t = 36s2,34。

```
08-02 19:48:35.815: D/AsyncTaskExample(11693): Task = 1 Task Queued
08-02 19:48:35.815: D/AsyncTaskExample(11693): Task = 1 Task Running in Background
08-02 19:48:**36.025**: D/AsyncTaskExample(11693): Task = 2 Task Queued
08-02 19:48:**36.025**: D/AsyncTaskExample(11693): Task = 2 Task Running in Background
08-02 19:48:**36.165**: D/AsyncTaskExample(11693): Task = 3 Task Queued
08-02 19:48:**36.165**: D/AsyncTaskExample(11693): Task = 3 Task Running in Background
08-02 19:48:**36.325**: D/AsyncTaskExample(11693): Task = 4 Task Queued
08-02 19:48:**36.325**: D/AsyncTaskExample(11693): Task = 4 Task Running in Background
08-02 19:48:**36.815**: D/AsyncTaskExample(11693): Task = 1 Task Execution Completed
08-02 19:48:**36.915**: D/AsyncTaskExample(11693): Task = 5 Task Queued
08-02 19:48:**36.915**: D/AsyncTaskExample(11693): Task = 5 Task Running in Background
08-02 19:48:37.025: D/AsyncTaskExample(11693): Task = 2 Task Execution Completed
08-02 19:48:37.165: D/AsyncTaskExample(11693): Task = 3 Task Execution Completed
----------
```

`Task Executed in thread pool` 1`Task executed SeriallyTask executed Serially` 2。

。

。 12。 。

```
08-02 19:42:57.505: D/AsyncTaskExample(10299): Task = 1 Task Queued
08-02 19:42:57.505: D/AsyncTaskExample(10299): Task = 1 Task Running in Background
08-02 19:42:57.675: D/AsyncTaskExample(10299): Task = 2 Task Queued
08-02 19:42:57.835: D/AsyncTaskExample(10299): Task = 3 Task Queued
08-02 19:42:58.005: D/AsyncTaskExample(10299): Task = 4 Task Queued
08-02 19:42:58.155: D/AsyncTaskExample(10299): Task = 5 Task Queued
08-02 19:42:58.505: D/AsyncTaskExample(10299): Task = 1 Task Execution Completed
08-02 19:42:58.505: D/AsyncTaskExample(10299): Task = 2 Task Running in Background
08-02 19:42:58.755: D/AsyncTaskExample(10299): Task = 6 Task Queued
08-02 19:42:59.295: D/AsyncTaskExample(10299): Task = 7 Task Queued
08-02 19:42:59.505: D/AsyncTaskExample(10299): Task = 2 Task Execution Completed
08-02 19:42:59.505: D/AsyncTaskExample(10299): Task = 3 Task Running in Background
08-02 19:43:00.035: D/AsyncTaskExample(10299): Task = 8 Task Queued
08-02 19:43:00.505: D/AsyncTaskExample(10299): Task = 3 Task Execution Completed
08-02 19:43:**00.505**: D/AsyncTaskExample(10299): Task = 4 Task Running in Background
08-02 19:43:**01.505**: D/AsyncTaskExample(10299): Task = 4 Task Execution Completed
08-02 19:43:**01.515**: D/AsyncTaskExample(10299): Task = 5 Task Running in Background
08-02 19:43:**02.515**: D/AsyncTaskExample(10299): Task = 5 Task Execution Completed
08-02 19:43:**02.515**: D/AsyncTaskExample(10299): Task = 6 Task Running in Background
08-02 19:43:**03.515**: D/AsyncTaskExample(10299): Task = 7 Task Running in Background
08-02 19:43:**03.515**: D/AsyncTaskExample(10299): Task = 6 Task Execution Completed
08-02 19:43:04.515: D/AsyncTaskExample(10299): Task = 8 Task Running in Background
08-02 19:43:**04.515**: D/AsyncTaskExample(10299): Task = 7 Task Execution Completed
```

AsyncTask https://riptutorial.com/zh-CN/android/topic/117/asynctask

232: EditText

Examples

EditTexts

EditTextAndroid。 。

EditText

EditText。 。 。

EditTextXML

```
<EditText
    android:id="@+id/et_simple"
    android:layout_height="wrap_content"
    android:layout_width="match_parent">
</EditText>
```

EditTextTextView。

EditText

```
EditText simpleEditText = (EditText) findViewById(R.id.et_simple);
String strValue = simpleEditText.getText().toString();
```

```
<EditText
  android:singleLine="true"
  android:lines="1"
/>
```

digits

```
<EditText
  android:inputType="number"
  android:digits="01"
/>
```

“0”“1”。

```
<EditText
  android:maxLength="5"
/>
```

。

`android:textColorHighlight`EditText

```
<EditText
    android:textColorHighlight="#7cff88"
/>
```

EditText

```
<EditText
    ...
    android:hint="@string/my_hint">
</EditText>
```

AppCompatcolorControlNormalcolorControlActivatedcolorControlHighlight

```
<style name="Theme.App.Base" parent="Theme.AppCompat.Light.DarkActionBar">
    <item name="colorControlNormal">#d32f2f</item>
    <item name="colorControlActivated">#ff5722</item>
    <item name="colorControlHighlight">#f44336</item>
</style>
```

DialogFragmentonCreateViewLayoutInflater。

AppCompat v23。 。 ActivityinflateronCreateView

```
public View onCreateView(LayoutInflater inflater, ViewGroup container, Bundle
savedInstanceState) {
        View view = getActivity().getLayoutInflater().inflate(R.layout.dialog_fragment,
container);
  }
```

EditText

EditText。

EditText。 。

`TextInputLayout。 。`

InputType

。 。

`EditText。 inputType`

```
<EditText
    ...
    android:inputType="phone">
</EditText>
```

textUri	URI

textEmailAddress	
textPersonName	
textPassword	
textMultiLine	

`android:inputType`。

textCapSentences	
textCapWords	。
textAutoCorrect	

`inputType`“|”。

```
<EditText
    android:id="@+id/postal_address"
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:hint="@string/postal_address_hint"
    android:inputType="textPostalAddress|
                       textCapWords|
                       textNoSuggestions" />
```

。

`inputype`

`EditTextinputype`:(*Android 4.4.32.3.3*

```
<EditText android:id="@+id/et_test" android:inputType="?????"/>
```

textLongMessage =/。/。 。 。 。 。 。

textFilter =/。/。 。 。 。 。 。

textCapWords =/。/。 。 。 。 。 。

textCapSentences =/。/。 。 。 。 。 。

time =。/。 。 -。 。 。::

textMultiLine =/。 。 。 。 。 。 。

number = 。 /。 。 -。 。 。 chars

textEmailAddress =alphabet / default。 /。 。 。 。 。 chars @。

=/。 。 。 。 。 。 。

textPassword =/。 /。 。 。 。 。 。 。

text =/。 /。 。 。 。 。 。

textShortMessage =/。 。 。 。 。 。 。

textUri =/。 /。 。 。 。 。 **/**。

textCapCharacters =/。 /。 。 。 。 。 。

phone = 。 /。 。 -。 。 。 ***。 - /WPN+ **

textPersonName =/。 /。 。 。 。 。 。

Auto-capitalization。

2Numeric keyboard 1234567890。

3 Correction/Suggestion。

SoftKeyboard

SoftkeyboardEditText 。 InputMethodManagerAndroidhideSoftInputFromWindow。

```
public void hideSoftKeyboard()
{
        InputMethodManager inputMethodManager = (InputMethodManager)
getSystemService(Activity.INPUT_METHOD_SERVICE);
        inputMethodManager.hideSoftInputFromWindow(getCurrentFocus().getWindowToken(), 0);
}
```

hide。 EditTextonCreate。

```
public void setupUI(View view)
{
        String s = "inside";
        //Set up touch listener for non-text box views to hide keyboard.
        if (!(view instanceof EditText)) {

            view.setOnTouchListener(new View.OnTouchListener() {

                public boolean onTouch(View v, MotionEvent event) {
```

```
                    hideSoftKeyboard();
                    return false;
                }

            });
        }

        //If a layout container, iterate over children and seed recursion.
        if (view instanceof ViewGroup) {

            for (int i = 0; i < ((ViewGroup) view).getChildCount(); i++) {

                View innerView = ((ViewGroup) view).getChildAt(i);

                setupUI(innerView);
            }
        }
}
```

◦

◦

setCompoundDrawablesWithIntrinsicBoundssetIcon
setCompoundDrawablesWithIntrinsicBounds◦

```
public class MKEditText extends AppCompatEditText {

    public interface IconClickListener {
        public void onClick();
    }

    private IconClickListener mIconClickListener;

    private static final String TAG = MKEditText.class.getSimpleName();

    private final int EXTRA_TOUCH_AREA = 50;
    private Drawable mDrawable;
    private boolean touchDown;

    public MKEditText(Context context, AttributeSet attrs, int defStyle) {
        super(context, attrs, defStyle);
    }

    public MKEditText(Context context) {
        super(context);
    }

    public MKEditText(Context context, AttributeSet attrs) {
        super(context, attrs);
    }

    public void showRightIcon() {
        mDrawable = ContextCompat.getDrawable(getContext(), R.drawable.ic_android_black_24dp);

        setIcon();
    }
```

```
    public void setIconClickListener(IconClickListener iconClickListener) {
        mIconClickListener = iconClickListener;
    }

    private void setIcon() {
        Drawable[] drawables = getCompoundDrawables();

        setCompoundDrawablesWithIntrinsicBounds(drawables[0], drawables[1], mDrawable,
drawables[3]);

        setInputType(InputType.TYPE_CLASS_TEXT | InputType.TYPE_TEXT_VARIATION_PASSWORD);
        setSelection(getText().length());
    }

    @Override
    public boolean onTouchEvent(MotionEvent event) {
        final int right = getRight();
        final int drawableSize = getCompoundPaddingRight();
        final int x = (int) event.getX();
        switch (event.getAction()) {
            case MotionEvent.ACTION_DOWN:
                if (x + EXTRA_TOUCH_AREA >= right - drawableSize && x <= right +
EXTRA_TOUCH_AREA) {
                    touchDown = true;
                    return true;
                }
                break;
            case MotionEvent.ACTION_UP:
                if (x + EXTRA_TOUCH_AREA >= right - drawableSize && x <= right +
EXTRA_TOUCH_AREA && touchDown) {
                    touchDown = false;
                    if (mIconClickListener != null) {
                        mIconClickListener.onClick();
                    }
                    return true;
                }
                touchDown = false;
                break;

        }
        return super.onTouchEvent(event);
    }
}
```

EXTRA_TOUCH_AREA50。

```
MKEditText mkEditText = (MKEditText) findViewById(R.id.password);
mkEditText.showRightIcon();
mkEditText.setIconClickListener(new MKEditText.IconClickListener() {
            @Override
            public void onClick() {
              // You can do action here for the icon.

            }
        });
```

EditText https://riptutorial.com/zh-CN/android/topic/5843/edittext

233: renderScript

RenderScript。 。 CPUCPUGPU。 。

Examples

RenderScriptAndroid。 CPUGPU。

C99C99C。 JavaJavaRenderScript。

Android FrameworkRenderScript。 API11。 `18.1.0`

build.gradle

```
android {
    compileSdkVersion 24
    buildToolsVersion '24.0.1'

    defaultConfig {
        minSdkVersion 8
        targetSdkVersion 24

        renderscriptTargetApi 18
        renderscriptSupportModeEnabled true
    }
}
```

- `renderscriptTargetApi` APIRenderScript。
- `renderscriptSupportModeEnabled` RenderScript。

RenderScript

RenderScript。 - 。 RenderScript。

`Allocation`。 `AllocationBitmapbyteRenderScript` 。 `AllocationAllocation`。

。

RenderScript。 `ScriptC`_RenderScript。 RenderScript`example`Java`ScriptC_example` 。 `Script` - `ScriptIntrinsicBlur` 。

RenderScript

GitHub。 。 。 gif

RenderScript Boilerplate

RenderScript`src/main/rs` `.rs` `#pragma`

```
#pragma version(1)
#pragma rs java_package_name(your.package.name)
```

- `#pragma version(1)` RenderScript 1
- `#pragma rs java_package_name(your.package.name)` JavaRenderScript

RenderScript`#pragma`

- `#pragma rs_fp_full`
- `#pragma rs_fp_relaxed`
- `#pragma rs_fp_imprecise`

`#pragma rs_fp_relaxed`

C

```
const static float3 gMonoMult = {0.299f, 0.587f, 0.114f};

float saturationLevel = 0.0f;
```

gMonoMultfloat3 。 3。 saturationValue float。 RenderScripts。 Javagettersetter。

。 。 。

```
uchar4 __attribute__((kernel)) saturation(uchar4 in) {
    float4 f4 = rsUnpackColor8888(in);
    float3 dotVector = dot(f4.rgb, gMonoMult);
    float3 newColor = mix(dotVector, f4.rgb, saturationLevel);
    return rsPackColorTo8888(newColor);
}
```

C__attribute__((kernel)) 。 RenderScript。 uchar4uchar4。 uchar4 - float3 - 。 4uchar0255。

in.r。 uchar44 - r g b aalpha - 。 RenderScript。 in.rgbuchar3alpha。

RenderScriptKernieluchar4。 RenderScriptRenderScript。 RenderScript。

JavaAllocation。 AllocationKernelAllocation 。

RenderScript Runtime API

。 RenderScriptRenderScript。 sin()mix()。 。

RenderScriptAPI。 。

。

```
float4 f4 = rsUnpackColor8888(in);
```

rsUnpackColor8888() uchar4float4。 0.0f – 1.0f0.0f01.0f255。 。

```
float3 dotVector = dot(f4.rgb, gMonoMult);
```

dot()。 gMonoMult。 alpha.rgbfloat3 float3。 。 float3。 RenderScript。 。 float32.0f

```
float3 example = 2.0f;
```

float3。

saturationLevel

```
float3 newColor = mix(dotVector, f4.rgb, saturationLevel);
```

mix()。 saturationLevel。 saturationLevel0.0fdotVector。 1.0f1.0f。

```
return rsPackColorTo8888(newColor);
```

。 **rsPackColorTo8888()**float3uchar4。 0255.0f2550.00 。

◦ Java◦

JavaRenderScript

RenderScriptJava◦ ScriptC_RenderScript◦ RenderScript

```
final RenderScript renderScript = RenderScript.create(context);
```

create()ContextRenderScript◦ Java◦ RenderScriptsaturation.rsScriptC_saturation

```
final ScriptC_saturation script = new ScriptC_saturation(renderScript);
```

◦ saturationLevelsetterset_

```
script.set_saturationLevel(1.0f);
```

get_getter

```
float saturationLevel = script.get_saturationLevel();
```

RenderScriptforEach_Kernel◦ AllocationAllocation

```
script.forEach_saturation(inputAllocation, outputAllocation);
```

AllocationforEach_saturation◦

AllocationcopyFrom()copyTo()Allocations◦ “”

```
inputAllocation.copyFrom(inputBitmap);
```

AllocationcopyTo()

```
outputAllocation.copyTo(outputBitmap);
```

Allocation ◦ AllocationcopyTo()copyFrom()Allocations◦ Allocation

createFromBitmap()BitmapAllocation

```
final Allocation inputAllocation = Allocation.createFromBitmap(renderScript, image);
```

Allocation ◦ saturationLevelBitmap ◦

Allocation◦ Type ◦ TypeAllocation◦ Type.BuilderType ◦

```
final Type outputType = new Type.Builder(renderScript, Element.RGBA_8888(renderScript))
```

```
        .setX(inputBitmap.getWidth())
        .setY(inputBitmap.getHeight())
        .create();
```

324Bitmap4◦ Element.RGBA_8888Type ◦ setX()setY()◦ create()Type ◦

TypecreateTyped()Allocation

```
final Allocation outputAllocation = Allocation.createTyped(renderScript, outputType);
```

◦ Bitmap Allocation◦ createBitmap()Bitmap BitmapBitmap ◦

```
final Bitmap outputBitmap = Bitmap.createBitmap(
        inputBitmap.getWidth(),
        inputBitmap.getHeight(),
        inputBitmap.getConfig()
);
```

RenderScript◦

```
// Create the RenderScript instance
final RenderScript renderScript = RenderScript.create(context);

// Create the input Allocation
final Allocation inputAllocation = Allocation.createFromBitmap(renderScript, inputBitmap);

// Create the output Type.
final Type outputType = new Type.Builder(renderScript, Element.RGBA_8888(renderScript))
        .setX(inputBitmap.getWidth())
        .setY(inputBitmap.getHeight())
        .create();

// And use the Type to create am output Allocation
final Allocation outputAllocation = Allocation.createTyped(renderScript, outputType);

// Create an empty output Bitmap from the input Bitmap
final Bitmap outputBitmap = Bitmap.createBitmap(
        inputBitmap.getWidth(),
        inputBitmap.getHeight(),
        inputBitmap.getConfig()
);

// Create an instance of our script
final ScriptC_saturation script = new ScriptC_saturation(renderScript);

// Set the saturation level
script.set_saturationLevel(2.0f);

// Execute the Kernel
script.forEach_saturation(inputAllocation, outputAllocation);

// Copy the result data to the output Bitmap
outputAllocation.copyTo(outputBitmap);

// Display the result Bitmap somewhere
someImageView.setImageBitmap(outputBitmap);
```

RenderScript。

- **RenderScript** RenderScript。
- RenderScript。 `RenderScript。 。 Allocation。 Bitmaps。 。`
- RenderScript。 `AsyncTask`UI。 。 RenderScript`Context 。 View ActivityContext`
- 。 。 。 。

GitHub。 。 RenderScript

Renderscript APIBitmap。 android Renderscript APIScriptInstrinsicBlur API> = 17。

```
public class BlurProcessor {

    private RenderScript rs;
    private Allocation inAllocation;
    private Allocation outAllocation;
    private int width;
    private int height;

    private ScriptIntrinsicBlur blurScript;

    public BlurProcessor(RenderScript rs) {
        this.rs = rs;
    }

    public void initialize(int width, int height) {
        blurScript = ScriptIntrinsicBlur.create(rs, Element.U8_4(rs));
        blurScript.setRadius(7f); // Set blur radius. 25 is max

        if (outAllocation != null) {
            outAllocation.destroy();
            outAllocation = null;
        }

        // Bitmap must have ARGB_8888 config for this type
        Type bitmapType = new Type.Builder(rs, Element.RGBA_8888(rs))
            .setX(width)
            .setY(height)
            .setMipmaps(false) // We are using MipmapControl.MIPMAP_NONE
            .create();

        // Create output allocation
        outAllocation = Allocation.createTyped(rs, bitmapType);

        // Create input allocation with same type as output allocation
        inAllocation = Allocation.createTyped(rs, bitmapType);
    }

    public void release() {

        if (blurScript != null) {
            blurScript.destroy();
            blurScript = null;
        }

        if (inAllocation != null) {
            inAllocation.destroy();
```

```
            inAllocation = null;
        }

        if (outAllocation != null) {
            outAllocation.destroy();
            outAllocation = null;
        }
    }

    public Bitmap process(Bitmap bitmap, boolean createNewBitmap) {
        if (bitmap.getWidth() != width || bitmap.getHeight() != height) {
            // Throw error if required
            return null;
        }

        // Copy data from bitmap to input allocations
        inAllocation.copyFrom(bitmap);

        // Set input for blur script
        blurScript.setInput(inAllocation);

        // process and set data to the output allocation
        blurScript.forEach(outAllocation);

        if (createNewBitmap) {
            Bitmap returnVal = Bitmap.createBitmap(width, height, Bitmap.Config.ARGB_8888);
            outAllocation.copyTo(returnVal);
            return returnVal;
        }

        outAllocation.copyTo(bitmap);
        return bitmap;
    }
}
```

forEach◦

```
public class BlurActivity extends AppCompatActivity {
    private BlurProcessor blurProcessor;

    @Override
    public void onCreate(Bundle savedInstanceState) {
        // setup layout and other stuff


        blurProcessor = new BlurProcessor(Renderscript.create(getApplicationContext()));
    }

    private void loadImage(String path) {
        // Load image to bitmap
        Bitmap bitmap = loadBitmapFromPath(path);

        // Initialize processor for this bitmap
        blurProcessor.release();
        blurProcessor.initialize(bitmap.getWidth(), bitmap.getHeight());

        // Blur image
        Bitmap blurImage = blurProcessor.process(bitmap, true); // Use newBitamp as false if
you don't want to create a new bitmap
    }
```

```
}
```

◦ ◦

BlurBitmapTask.java

```
public class BlurBitmapTask extends AsyncTask<Bitmap, Void, Bitmap> {
    private final WeakReference<ImageView> imageViewReference;
    private final RenderScript renderScript;

    private boolean shouldRecycleSource = false;

    public BlurBitmapTask(@NonNull Context context, @NonNull ImageView imageView) {
        // Use a WeakReference to ensure
        // the ImageView can be garbage collected
        imageViewReference = new WeakReference<>(imageView);
        renderScript = RenderScript.create(context);
    }

    // Decode image in background.
    @Override
    protected Bitmap doInBackground(Bitmap... params) {
        Bitmap bitmap = params[0];
        return blurBitmap(bitmap);
    }

    // Once complete, see if ImageView is still around and set bitmap.
    @Override
    protected void onPostExecute(Bitmap bitmap) {
        if (bitmap == null || isCancelled()) {
            return;
        }

        final ImageView imageView = imageViewReference.get();
        if (imageView == null) {
            return;
        }

        imageView.setImageBitmap(bitmap);
    }

    public Bitmap blurBitmap(Bitmap bitmap) {
        // https://plus.google.com/+MarioViviani/posts/fhuzYkji9zz

        //Let's create an empty bitmap with the same size of the bitmap we want to blur
        Bitmap outBitmap = Bitmap.createBitmap(bitmap.getWidth(), bitmap.getHeight(),
                Bitmap.Config.ARGB_8888);

        //Instantiate a new Renderscript


        //Create an Intrinsic Blur Script using the Renderscript
        ScriptIntrinsicBlur blurScript = ScriptIntrinsicBlur.create(renderScript,
Element.U8_4(renderScript));

        //Create the in/out Allocations with the Renderscript and the in/out bitmaps
        Allocation allIn = Allocation.createFromBitmap(renderScript, bitmap);
        Allocation allOut = Allocation.createFromBitmap(renderScript, outBitmap);
```

```
        //Set the radius of the blur
        blurScript.setRadius(25.f);

        //Perform the Renderscript
        blurScript.setInput(allIn);
        blurScript.forEach(allOut);

        //Copy the final bitmap created by the out Allocation to the outBitmap
        allOut.copyTo(outBitmap);

        // recycle the original bitmap
        // nope, we are using the original bitmap as well :/
        if (shouldRecycleSource) {
            bitmap.recycle();
        }

        //After finishing everything, we destroy the Renderscript.
        renderScript.destroy();

        return outBitmap;
    }

    public boolean isShouldRecycleSource() {
        return shouldRecycleSource;
    }

    public void setShouldRecycleSource(boolean shouldRecycleSource) {
        this.shouldRecycleSource = shouldRecycleSource;
    }
}
```

```
ImageView imageViewOverlayOnViewToBeBlurred
        .setImageDrawable(ContextCompat.getDrawable(this, android.R.color.transparent));
View viewToBeBlurred.setDrawingCacheQuality(View.DRAWING_CACHE_QUALITY_LOW);
viewToBeBlurred.setDrawingCacheEnabled(true);
BlurBitmapTask blurBitmapTask = new BlurBitmapTask(this, imageViewOverlayOnViewToBeBlurred);
blurBitmapTask.execute(Bitmap.createBitmap(viewToBeBlurred.getDrawingCache()));
viewToBeBlurred.setDrawingCacheEnabled(false);
```

renderScript https://riptutorial.com/zh-CN/android/topic/5214/renderscript

234: SensorManager

Examples

```
public class MainActivity extends Activity implements SensorEventListener {

    private SensorManager mSensorManager;
    private Sensor accelerometer;
    private Sensor gyroscope;

    float[] accelerometerData = new float[3];
    float[] gyroscopeData = new float[3];

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        mSensorManager = (SensorManager) getSystemService(SENSOR_SERVICE);

        accelerometer = mSensorManager.getDefaultSensor(Sensor.TYPE_ACCELEROMETER);
        gyroscope = mSensorManager.getDefaultSensor(Sensor.TYPE_GYROSCOPE);

    }

    @Override
    public void onResume() {
        //Register listeners for your sensors of interest
        mSensorManager.registerListener(this, accelerometer,
SensorManager.SENSOR_DELAY_FASTEST);
        mSensorManager.registerListener(this, gyroscope, SensorManager.SENSOR_DELAY_FASTEST);
        super.onResume();
    }

    @Override
    protected void onPause() {
        //Unregister any previously registered listeners
        mSensorManager.unregisterListener(this);
        super.onPause();
    }

    @Override
    public void onSensorChanged(SensorEvent event) {
        //Check the type of sensor data being polled and store into corresponding float array
        if (event.sensor.getType() == Sensor.TYPE_ACCELEROMETER) {
            accelerometerData = event.values;
        } else if (event.sensor.getType() == Sensor.TYPE_GYROSCOPE) {
            gyroscopeData = event.values;
        }
    }

    @Override
    public void onAccuracyChanged(Sensor sensor, int accuracy) {
        // TODO Auto-generated method stub
    }
}
```

Android+ Y。+ Y

/onCreate

```
float[] accelerometerData = new float[3];
float[] accelerometerWorldData = new float[3];
float[] gravityData = new float[3];
float[] magneticData = new float[3];
float[] rotationMatrix = new float[9];
```

/

```
public void onSensorChanged(SensorEvent event) {
    sensor = event.sensor;
    int i = sensor.getType();

    if (i == Sensor.TYPE_ACCELEROMETER) {
        accelerometerData = event.values;
    } else if (i == Sensor.TYPE_GRAVITY) {
        gravityData = event.values;
    } else if (i == Sensor.TYPE_MAGNETIC) {
        magneticData = event.values;
    }

    //Calculate rotation matrix from gravity and magnetic sensor data
    SensorManager.getRotationMatrix(rotationMatrix, null, gravityData, magneticData);

    //World coordinate system transformation for acceleration
    accelerometerWorldData[0] = rotationMatrix[0] * accelerometerData[0] + rotationMatrix[1] *
accelerometerData[1] + rotationMatrix[2] * accelerometerData[2];
    accelerometerWorldData[1] = rotationMatrix[3] * accelerometerData[0] + rotationMatrix[4] *
accelerometerData[1] + rotationMatrix[5] * accelerometerData[2];
    accelerometerWorldData[2] = rotationMatrix[6] * accelerometerData[0] + rotationMatrix[7] *
accelerometerData[1] + rotationMatrix[8] * accelerometerData[2];

}
```

onCreate() / onResume()

```
SensorManager sensorManager;
Sensor mAccelerometer;
final float movementThreshold = 0.5f;  // You may have to change this value.
boolean isMoving = false;
float[] prevValues = {1.0f, 1.0f, 1.0f};
float[] currValues = new float[3];

sensorManager = (SensorManager)getSystemService(SENSOR_SERVICE);
mAccelerometer = sensorManager.getDefaultSensor(Sensor.TYPE_ACCELEROMETER);
sensorManager.registerListener(this, mAccelerometer, SensorManager.SENSOR_DELAY_NORMAL);
```

movementThreshold。 onSensorChanged()

```
@Override
public void onSensorChanged(SensorEvent event) {
    if (event.sensor == mAccelerometer) {
        System.arraycopy(event.values, 0, currValues, 0, event.values.length);
```

```
        if ((Math.abs(currValues[0] - prevValues[0]) > movementThreshold) ||
                (Math.abs(currValues[1] - prevValues[1]) > movementThreshold) ||
                (Math.abs(currValues[2] - prevValues[2]) > movementThreshold)) {
            isMoving = true;
        } else {
            isMoving = false;
        }
        System.arraycopy(currValues, 0, prevValues, 0, currValues.length);
    }
}
```

```
<uses-feature android:name="android.hardware.sensor.accelerometer" />
```

SensorManager https://riptutorial.com/zh-CN/android/topic/3344/sensormanager

235: TextView

Android SDKTextView

- TextView
- TextViewfindViewByIdint id
- void setTextint resid
- void setTextCharSequence text//String

xml。

Examples

TextviewTextsize

SpanTextviewTextsizes

```
TextView textView = (TextView) findViewById(R.id.textView);
Spannable span = new SpannableString(textView.getText());
span.setSpan(new RelativeSizeSpan(0.8f), start, end, Spannable.SPAN_EXCLUSIVE_EXCLUSIVE);
textView.setText(span)
```

TextView

```
public class CustomTextView extends TextView {

    private float strokeWidth;
    private Integer strokeColor;
    private Paint.Join strokeJoin;
    private float strokeMiter;


    public CustomTextView(Context context) {
        super(context);
        init(null);
    }

    public CustomTextView(Context context, AttributeSet attrs) {
        super(context, attrs);
        init(attrs);
    }

    public CustomTextView(Context context, AttributeSet attrs, int defStyle) {
        super(context, attrs, defStyle);
        init(attrs);
    }

    public void init(AttributeSet attrs) {

        if (attrs != null) {
            TypedArray a = getContext().obtainStyledAttributes(attrs,
R.styleable.CustomTextView);
```

```
            if (a.hasValue(R.styleable.CustomTextView_strokeColor)) {
                float strokeWidth =
a.getDimensionPixelSize(R.styleable.CustomTextView_strokeWidth, 1);
                int strokeColor = a.getColor(R.styleable.CustomTextView_strokeColor,
0xff000000);
                float strokeMiter =
a.getDimensionPixelSize(R.styleable.CustomTextView_strokeMiter, 10);
                Paint.Join strokeJoin = null;
                switch (a.getInt(R.styleable.CustomTextView_strokeJoinStyle, 0)) {
                    case (0):
                        strokeJoin = Paint.Join.MITER;
                        break;
                    case (1):
                        strokeJoin = Paint.Join.BEVEL;
                        break;
                    case (2):
                        strokeJoin = Paint.Join.ROUND;
                        break;
                }
                this.setStroke(strokeWidth, strokeColor, strokeJoin, strokeMiter);
            }
        }
    }

    public void setStroke(float width, int color, Paint.Join join, float miter) {
        strokeWidth = width;
        strokeColor = color;
        strokeJoin = join;
        strokeMiter = miter;
    }

    @Override
    public void onDraw(Canvas canvas) {
        super.onDraw(canvas);

        int restoreColor = this.getCurrentTextColor();
        if (strokeColor != null) {
            TextPaint paint = this.getPaint();
            paint.setStyle(Paint.Style.STROKE);
            paint.setStrokeJoin(strokeJoin);
            paint.setStrokeMiter(strokeMiter);
            this.setTextColor(strokeColor);
            paint.setStrokeWidth(strokeWidth);
            super.onDraw(canvas);
            paint.setStyle(Paint.Style.FILL);
            this.setTextColor(restoreColor);
        }
    }
}
```

```
public class MainActivity extends Activity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        CustomTextView customTextView = (CustomTextView) findViewById(R.id.pager_title);
    }
```

```
}
```

```
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:background="@mipmap/background">


    <pk.sohail.gallerytest.activity.CustomTextView
        android:id="@+id/pager_title"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:layout_centerVertical="true"
        android:gravity="center"
        android:text="@string/txt_title_photo_gallery"
        android:textColor="@color/white"
        android:textSize="30dp"
        android:textStyle="bold"
        app:outerShadowRadius="10dp"
        app:strokeColor="@color/title_text_color"
        app:strokeJoinStyle="miter"
        app:strokeWidth="2dp" />

</RelativeLayout>
```

attars

```
<?xml version="1.0" encoding="utf-8"?>
<resources>

    <declare-styleable name="CustomTextView">

        <attr name="outerShadowRadius" format="dimension" />
        <attr name="strokeWidth" format="dimension" />
        <attr name="strokeMiter" format="dimension" />
        <attr name="strokeColor" format="color" />
        <attr name="strokeJoinStyle">
            <enum name="miter" value="0" />
            <enum name="bevel" value="1" />
            <enum name="round" value="2" />
        </attr>
    </declare-styleable>

</resources>
```

```
CustomTextView mtxt_name = (CustomTextView) findViewById(R.id.pager_title);
//then use
setStroke(float width, int color, Paint.Join join, float miter);
//method before setting
setText("Sample Text");
```

Spannable TextView

Androidspannable `TextViewTextView`/。

TextView

```
TextView textview=findViewById(R.id.textview);
```

- ForegroundColorSpan

```
Spannable spannable = new SpannableString(firstWord+lastWord);
spannable.setSpan(new ForegroundColorSpan(firstWordColor), 0, firstWord.length(),
Spannable.SPAN_EXCLUSIVE_EXCLUSIVE);
spannable.setSpan(new ForegroundColorSpan(lastWordColor), firstWord.length(),
firstWord.length()+lastWord.length(), Spannable.SPAN_EXCLUSIVE_EXCLUSIVE);
textview.setText( spannable );
```

- **Spannable**RelativeSizeSpan

```
Spannable spannable = new SpannableString(firstWord+lastWord);
spannable.setSpan(new RelativeSizeSpan(1.1f),0, firstWord.length(),
Spannable.SPAN_EXCLUSIVE_EXCLUSIVE); // set size
spannable.setSpan(new RelativeSizeSpan(0.8f), firstWord.length(), firstWord.length() +
lastWord.length(),  Spannable.SPAN_EXCLUSIVE_EXCLUSIVE); // set size
textview.setText( spannable );
```

- **Spannable**TypefaceSpan

```
Spannable spannable = new SpannableString(firstWord+lastWord);
spannable.setSpan( new CustomTypefaceSpan("SFUIText-Bold.otf",fontBold), 0,
firstWord.length(), Spannable.SPAN_EXCLUSIVE_EXCLUSIVE);
spannable.setSpan( new CustomTypefaceSpan("SFUIText-Regular.otf",fontRegular),
firstWord.length(), firstWord.length() + lastWord.length(),
Spannable.SPAN_EXCLUSIVE_EXCLUSIVE);
text.setText( spannable );
```

CustomTypefaceSpanTypefaceSpan◦

```
public class CustomTypefaceSpan extends TypefaceSpan {
    private final Typeface newType;

    public CustomTypefaceSpan(String family, Typeface type) {
        super(family);
        newType = type;
    }

    @Override
    public void updateDrawState(TextPaint ds) {
```

```
        applyCustomTypeFace(ds, newType);
    }

    @Override
    public void updateMeasureState(TextPaint paint) {
        applyCustomTypeFace(paint, newType);
    }

    private static void applyCustomTypeFace(Paint paint, Typeface tf) {
        int oldStyle;
        Typeface old = paint.getTypeface();
        if (old == null) {
            oldStyle = 0;
        } else {
            oldStyle = old.getStyle();
        }
        int fake = oldStyle & ~tf.getStyle();
        if ((fake & Typeface.BOLD) != 0) {
            paint.setFakeBoldText(true);
        }

        if ((fake & Typeface.ITALIC) != 0) {
            paint.setTextSkewX(-0.25f);
        }

        paint.setTypeface(tf);
    }
}
```

TextView

Android`TextView`◦ `TextView`◦ Android`TextView`**drawable**

```
<TextView
        android:id="@+id/title"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerInParent="true"
        android:drawablePadding="4dp"
        android:drawableRight="@drawable/edit"
        android:text="Hello world"
        android:textSize="18dp" />
```

drawable`TextView`

```
android:drawableLeft="@drawable/edit"
android:drawableRight="@drawable/edit"
android:drawableTop="@drawable/edit"
android:drawableBottom="@drawable/edit"
```

drawable

```
yourTextView.setCompoundDrawables(leftDrawable, rightDrawable, topDrawable, bottomDrawable);
```

`setCompoundDrawables()null``TextView`◦

TextView

```
String sampleText = "This is a test strike";
textView.setPaintFlags(tv.getPaintFlags()| Paint.STRIKE_THRU_TEXT_FLAG);
textView.setText(sampleText);
```

```
String sampleText = "This is a test strike";
SpannableStringBuilder spanBuilder = new SpannableStringBuilder(sampleText);
StrikethroughSpan strikethroughSpan = new StrikethroughSpan();
spanBuilder.setSpan(
        strikethroughSpan, // Span to add
        0, // Start
        4, // End of the span (exclusive)
        Spanned.SPAN_EXCLUSIVE_EXCLUSIVE // Text changes will not reflect in the strike
changing
);
textView.setText(spanBuilder);
```

MainActivity.java

```
public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
}
```

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:custom="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:gravity="center"
    android:orientation="vertical"
    tools:context=".MainActivity">

    <com.customthemeattributedemo.customview.CustomTextView
        style="?mediumTextStyle"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_margin="20dp"
        android:text="@string/message_hello"
        custom:font_family="@string/bold_font" />
```

```
    <com.customthemeattributedemo.customview.CustomTextView
        style="?largeTextStyle"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_margin="20dp"
        android:text="@string/message_hello"
        custom:font_family="@string/bold_font" />
</LinearLayout>
```

CustomTextView.java

```
public class CustomTextView extends TextView {

    private static final String TAG = "TextViewPlus";
    private Context mContext;

    public CustomTextView(Context context) {
        super(context);
        mContext = context;
    }

    public CustomTextView(Context context, AttributeSet attrs) {
        super(context, attrs);
        mContext = context;
        setCustomFont(context, attrs);
    }

    public CustomTextView(Context context, AttributeSet attrs, int defStyle) {
        super(context, attrs, defStyle);
        mContext = context;
        setCustomFont(context, attrs);
    }

    private void setCustomFont(Context ctx, AttributeSet attrs) {
        TypedArray customFontNameTypedArray = ctx.obtainStyledAttributes(attrs,
R.styleable.CustomTextView);
        String customFont =
customFontNameTypedArray.getString(R.styleable.CustomTextView_font_family);
        Typeface typeface = null;
        typeface = Typeface.createFromAsset(ctx.getAssets(), customFont);
        setTypeface(typeface);
        customFontNameTypedArray.recycle();
    }
}
```

attrs.xml

```
<?xml version="1.0" encoding="utf-8"?>
<resources>

    <attr name="mediumTextStyle" format="reference" />
    <attr name="largeTextStyle" format="reference" />

    <declare-styleable name="CustomTextView">

        <attr name="font_family" format="string" />
        <!--- Your other attributes -->

    </declare-styleable>
```

```
</resources>
```

strings.xml

```
<resources>
    <string name="app_name">Custom Style Theme Attribute Demo</string>
    <string name="message_hello">Hello Hiren!</string>

    <string name="bold_font">bold.ttf</string>
</resources>
```

styles.xml

```
<resources>

    <!-- Base application theme. -->
    <style name="AppTheme" parent="Theme.AppCompat.Light.DarkActionBar">
        <!-- Customize your theme here. -->
        <item name="colorPrimary">@color/colorPrimary</item>
        <item name="colorPrimaryDark">@color/colorPrimaryDark</item>
        <item name="colorAccent">@color/colorAccent</item>

        <item name="mediumTextStyle">@style/textMedium</item>
        <item name="largeTextStyle">@style/textLarge</item>
    </style>


    <style name="textMedium" parent="textParentStyle">
        <item name="android:textAppearance">@android:style/TextAppearance.Medium</item>
    </style>

    <style name="textLarge" parent="textParentStyle">
        <item name="android:textAppearance">@android:style/TextAppearance.Large</item>
    </style>

    <style name="textParentStyle">
        <item name="android:textColor">@android:color/white</item>
        <item name="android:background">@color/colorPrimary</item>
        <item name="android:padding">5dp</item>
    </style>

</resources>
```

RelativeSizeSpan

RelativeSizeSpanSuperscriptSpan◦ TopAlignSuperscriptSpan

activity_main.xml

```
<TextView
    android:id="@+id/txtView"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="50dp"
    android:textSize="26sp" />
```

MainActivity.java

```
TextView txtView = (TextView) findViewById(R.id.txtView);

SpannableString spannableString = new SpannableString("RM123.456");
spannableString.setSpan( new TopAlignSuperscriptSpan( (float)0.35 ), 0, 2,
Spanned.SPAN_EXCLUSIVE_EXCLUSIVE );
txtView.setText(spannableString);
```

TopAlignSuperscriptSpan.java

```
private class TopAlignSuperscriptSpan extends SuperscriptSpan {
    //divide superscript by this number
    protected int fontScale = 2;

    //shift value, 0 to 1.0
    protected float shiftPercentage = 0;

    //doesn't shift
    TopAlignSuperscriptSpan() {}

    //sets the shift percentage
    TopAlignSuperscriptSpan( float shiftPercentage ) {
        if( shiftPercentage > 0.0 && shiftPercentage < 1.0 )
            this.shiftPercentage = shiftPercentage;
    }

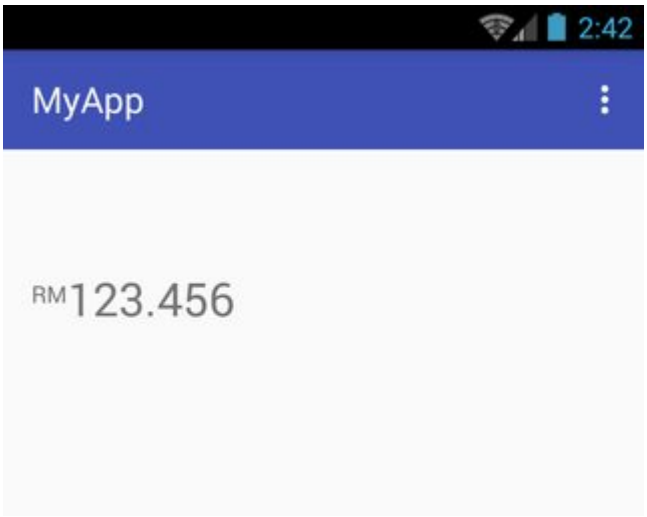
    @Override
    public void updateDrawState( TextPaint tp ) {
        //original ascent
        float ascent = tp.ascent();

        //scale down the font
        tp.setTextSize( tp.getTextSize() / fontScale );

        //get the new font ascent
        float newAscent = tp.getFontMetrics().ascent;

        //move baseline to top of old font, then move down size of new font
        //adjust for errors with shift percentage
        tp.baselineShift += ( ascent - ascent * shiftPercentage )
                - (newAscent - newAscent * shiftPercentage );
    }

    @Override
    public void updateMeasureState( TextPaint tp ) {
        updateDrawState( tp );
    }
}
```



TextViewPinchzoom

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:orientation="vertical" >

    <TextView
        android:id="@+id/mytv"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:layout_alignParentLeft="true"
        android:layout_alignParentTop="true"
        android:text="This is my sample text for pinch zoom demo, you can zoom in and out
using pinch zoom, thanks" />

</RelativeLayout>
```

MainActivity.java

```
import android.app.Activity;
import android.os.Bundle;
import android.view.MotionEvent;
import android.view.View;
import android.view.View.OnTouchListener;
import android.widget.TextView;

public class MyTextViewPinchZoomClass extends Activity implements OnTouchListener {

    final static float STEP = 200;
    TextView mytv;
    float mRatio = 1.0f;
    int mBaseDist;
    float mBaseRatio;
    float fontsize = 13;

    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
```

```
        mytv = (TextView) findViewById(R.id.mytv);
        mytv.setTextSize(mRatio + 13);
    }

    public boolean onTouchEvent(MotionEvent event) {
        if (event.getPointerCount() == 2) {
            int action = event.getAction();
            int pureaction = action & MotionEvent.ACTION_MASK;
            if (pureaction == MotionEvent.ACTION_POINTER_DOWN) {
                mBaseDist = getDistance(event);
                mBaseRatio = mRatio;
            } else {
                float delta = (getDistance(event) - mBaseDist) / STEP;
                float multi = (float) Math.pow(2, delta);
                mRatio = Math.min(1024.0f, Math.max(0.1f, mBaseRatio * multi));
                mytv.setTextSize(mRatio + 13);
            }
        }
        return true;
    }

    int getDistance(MotionEvent event) {
        int dx = (int) (event.getX(0) - event.getX(1));
        int dy = (int) (event.getY(0) - event.getY(1));
        return (int) (Math.sqrt(dx * dx + dy * dy));
    }

    public boolean onTouch(View v, MotionEvent event) {
        return false;
    }
}
```

TextView

```
private String getColoredSpanned(String text, String color) {
    String input = "<font color=" + color + ">" + text + "</font>";
    return input;
}
```

TextView Button EditText。

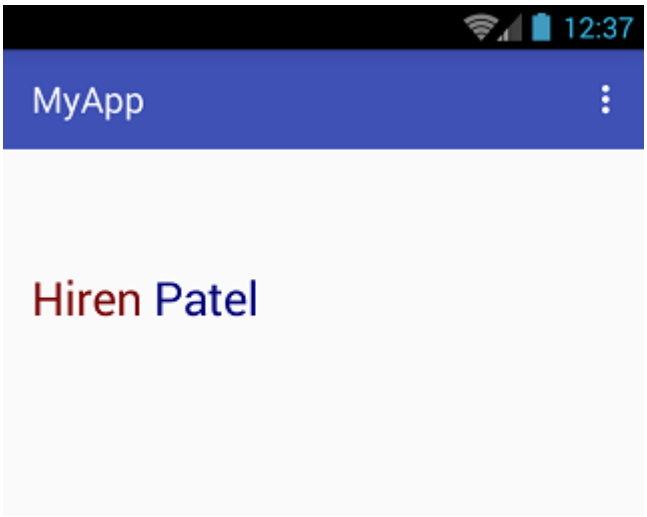
TextView

```
TextView txtView = (TextView)findViewById(R.id.txtView);
```

```
String name = getColoredSpanned("Hiren", "#800000");
String surName = getColoredSpanned("Patel","#000080");
```

TextView

```
txtView.setText(Html.fromHtml(name+" "+surName));
```



TextView https://riptutorial.com/zh-CN/android/topic/4212/textview

236: WebView

WebView。 URL。

Android

```
<uses-permission android:name="android.permission.INTERNET" />
```

Examples

WebViewJavaScript -

WebViewJavaScript。 `alert()`。 JavaScript..`WebChromeClient`

```
webView.setWebChromeClient(new WebChromeClient() {
    //Other methods for your WebChromeClient here, if needed..

    @Override
    public boolean onJsAlert(WebView view, String url, String message, JsResult result) {
        return super.onJsAlert(view, url, message, result);
    }
});
```

`onJsAlert` Android。 URL。

JavascriptJavaAndroid

Android

```
package com.example.myapp;

import android.os.Bundle;
import android.app.Activity;
import android.webkit.WebView;

public class WebViewActivity extends Activity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);

        WebView webView = new WebView(this);
        setContentView(webView);

       /*
        *   Note the label Android, this is used in the Javascript side of things
        *   You can of course change this.
        */
        webView.addJavascriptInterface(new JavascriptHandler(), "Android");

        webView.loadUrl("http://example.com");
    }
```

```
}
```

Java Javascript

```
import android.webkit.JavascriptInterface;

public class JavascriptHandler {

    /**
     *  Key point here is the annotation @JavascriptInterface
     *
     */
    @JavascriptInterface
    public void jsCallback() {
       // Do something
    }

    @JavascriptInterface
    public void jsCallbackTwo(String dummyData) {
       // Do something
    }
}
```

Javascript

```
<script>
...
Android.jsCallback();
...
Android.jsCallback('hello test');
...
</script>
```

JSON。

```
Android.jsCallback('{ "fake-var" : "fake-value", "fake-array" : [0,1,2] }');
```

AndroidJSONJSONObject

JavaJavascript

```
package com.example.myapp;

import android.os.Bundle;
import android.app.Activity;
import android.webkit.WebView;

public class WebViewActivity extends Activity {

    private Webview webView;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
       super.onCreate(savedInstanceState);
```

```
        webView = new WebView(this);
        webView.getSettings().setJavaScriptEnabled(true);

        setContentView(webView);

        webView.loadUrl("http://example.com");

        /*
         * Invoke Javascript function
         */
        webView.loadUrl("javascript:testJsFunction('Hello World!')");
    }

   /**
    * Invoking a Javascript function
    */
   public void doSomething() {
     this.webView.loadUrl("javascript:testAnotherFunction('Hello World Again!')");
   }
}
```

- telurl

```
public boolean shouldOverrideUrlLoading(WebView view, String url) {
    if (url.startsWith("tel:")) {
            Intent intent = new Intent(Intent.ACTION_DIAL,
                    Uri.parse(url));
            startActivity(intent);
    }else if(url.startsWith("http:") || url.startsWith("https:")) {
        view.loadUrl(url);
    }
    return true;
}
```

WebView

webviewlogcat

Web`console`onConsoleMessageWebChromeClient

```
final class ChromeClient extends WebChromeClient {
    @Override
    public boolean onConsoleMessage(ConsoleMessage msg) {
        Log.d(
            "WebView",
            String.format("%s %s:%d", msg.message(), msg.lineNumber(), msg.sourceId())
        );
        return true;
    }
}
```

```
webView.setWebChromeClient(new ChromeClient());
```

```
<html>
```

```
<head>
    <script type="text/javascript">
        console.log('test message');
    </script>
</head>
<body>
</body>
</html>
```

"logcat

WebViewsample.html4

chrome-client`console.info()` `console.warn()` `console.error()` 。

ChromeAndroid

Chromewebview。

AndroidUSB

Android“”“”USB。

Android

Chrome chrome// inspect /devices

“” 。 ChromeDevTools。

DevToolsdevelopers.google.com

Webview/

Layout.xml

```
                <WebView
                android:id="@+id/WebViewToDisplay"
                android:layout_width="fill_parent"
                android:layout_height="fill_parent"
                android:layout_gravity="center"
                android:fadeScrollbars="false" />
```

WebViewToDisplay

```
        WebView webViewDisplay;
        StringBuffer LoadWEb1;

        webViewDisplay = (WebView) findViewById(R.id.WebViewToDisplay);
        LoadWEb1 = new StringBuffer();
        LoadWEb1.append("<html><body><h1>My First Heading</h1><p>My first paragraph.</p>");
        //Sample code to read parameters at run time
```

```
        String strName = "Test Paragraph";
        LoadWEb1.append("<br/><p>"+strName+"</p>");
        String result = LoadWEb1.append("</body></html>").toString();
                WebSettings webSettings = webViewDisplay.getSettings();
                webSettings.setJavaScriptEnabled(true);
                webViewDisplay.getSettings().setBuiltInZoomControls(true);
                if (android.os.Build.VERSION.SDK_INT >= 11){
                    webViewDisplay.setLayerType(View.LAYER_TYPE_SOFTWARE, null);
                    webViewDisplay.getSettings().setDisplayZoomControls(false);
                }

                webViewDisplay.loadDataWithBaseURL(null, result, "text/html", "utf-8",
                        null);
                //To load local file directly from assets folder use below code
                //webViewDisplay.loadUrl("file:///android_asset/aboutapp.html");
```

WebView https://riptutorial.com/zh-CN/android/topic/153/webview

237:

Examples

AndroidManifest.xml。

- Camera - 。 requiredtrue 。
- WRITE_EXTERNAL_STORAGE - 。

AndroidManifest.xml

```
<uses-feature android:name="android.hardware.camera"
          android:required="true" />
<uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE"/>
```

。

```
private void dispatchTakePictureIntent() {
    Intent takePictureIntent = new Intent(MediaStore.ACTION_IMAGE_CAPTURE);
    // Ensure that there's a camera activity to handle the intent
    if (takePictureIntent.resolveActivity(getPackageManager()) != null) {
        // Create the File where the photo should go
        File photoFile = null;
        try {
            photoFile = createImageFile();
        } catch (IOException ex) {
            Log.e("DEBUG_TAG", "createFile", ex);
        }
        // Continue only if the File was successfully created
        if (photoFile != null) {
            takePictureIntent.putExtra(MediaStore.EXTRA_OUTPUT, Uri.fromFile(photoFile));
            startActivityForResult(takePictureIntent, REQUEST_IMAGE_CAPTURE);
        }
    }
}

private File createImageFile() throws IOException {
    // Create an image file name
    String timeStamp = new SimpleDateFormat("yyyyMMdd_HHmmss", Locale.getDefault()).format(new
Date());
    String imageFileName = "JPEG_" + timeStamp + "_";
    File storageDir = getAlbumDir();
    File image = File.createTempFile(
            imageFileName,  /* prefix */
            ".jpg",         /* suffix */
            storageDir      /* directory */
    );

    // Save a file: path for use with ACTION_VIEW intents
    mCurrentPhotoPath = image.getAbsolutePath();
    return image;
}
```

```
private File getAlbumDir() {
    File storageDir = null;

    if (Environment.MEDIA_MOUNTED.equals(Environment.getExternalStorageState())) {

        storageDir = new File(Environment.getExternalStorageDirectory()
                + "/dcim/"
                + "MyRecipes");

        if (!storageDir.mkdirs()) {
            if (!storageDir.exists()) {
                Log.d("CameraSample", "failed to create directory");
                return null;
            }
        }

    } else {
        Log.v(getString(R.string.app_name), "External storage is not mounted READ/WRITE.");
    }

    return storageDir;
}

private void setPic() {

    /* There isn't enough memory to open up more than a couple camera photos */
    /* So pre-scale the target bitmap into which the file is decoded */

    /* Get the size of the ImageView */
    int targetW = recipeImage.getWidth();
    int targetH = recipeImage.getHeight();

    /* Get the size of the image */
    BitmapFactory.Options bmOptions = new BitmapFactory.Options();
    bmOptions.inJustDecodeBounds = true;
    BitmapFactory.decodeFile(mCurrentPhotoPath, bmOptions);
    int photoW = bmOptions.outWidth;
    int photoH = bmOptions.outHeight;

    /* Figure out which way needs to be reduced less */
    int scaleFactor = 2;
    if ((targetW > 0) && (targetH > 0)) {
        scaleFactor = Math.max(photoW / targetW, photoH / targetH);
    }

    /* Set bitmap options to scale the image decode target */
    bmOptions.inJustDecodeBounds = false;
    bmOptions.inSampleSize = scaleFactor;
    bmOptions.inPurgeable = true;

    Matrix matrix = new Matrix();
    matrix.postRotate(getRotation());

    /* Decode the JPEG file into a Bitmap */
    Bitmap bitmap = BitmapFactory.decodeFile(mCurrentPhotoPath, bmOptions);
    bitmap = Bitmap.createBitmap(bitmap, 0, 0, bitmap.getWidth(), bitmap.getHeight(), matrix,
false);

    /* Associate the Bitmap to the ImageView */
    recipeImage.setImageBitmap(bitmap);
}
```

```
private float getRotation() {
    try {
        ExifInterface ei = new ExifInterface(mCurrentPhotoPath);
        int orientation = ei.getAttributeInt(ExifInterface.TAG_ORIENTATION,
ExifInterface.ORIENTATION_NORMAL);

        switch (orientation) {
            case ExifInterface.ORIENTATION_ROTATE_90:
                return 90f;
            case ExifInterface.ORIENTATION_ROTATE_180:
                return 180f;
            case ExifInterface.ORIENTATION_ROTATE_270:
                return 270f;
            default:
                return 0f;
        }
    } catch (Exception e) {
        Log.e("Add Recipe", "getRotation", e);
        return 0f;
    }
}

private void galleryAddPic() {
    Intent mediaScanIntent = new Intent(Intent.ACTION_MEDIA_SCANNER_SCAN_FILE);
    File f = new File(mCurrentPhotoPath);
    Uri contentUri = Uri.fromFile(f);
    mediaScanIntent.setData(contentUri);
    sendBroadcast(mediaScanIntent);
}

private void handleBigCameraPhoto() {

    if (mCurrentPhotoPath != null) {
        setPic();
        galleryAddPic();
    }
}


@Override
public void onActivityResult(int requestCode, int resultCode, Intent data) {
    super.onActivityResult(requestCode, resultCode, data);
    if (requestCode == REQUEST_IMAGE_CAPTURE && resultCode == Activity.RESULT_OK) {
        handleBigCameraPhoto();
    }
}
```

AndroidManifest

```
<uses-permission android:name="android.permission.CAMERA"></uses-permission>
<uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE" />
```

Xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical"
```

```
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    >
<SurfaceView android:id="@+id/surfaceView" android:layout_height="0dip"
android:layout_width="0dip"></SurfaceView>
<ImageView android:layout_width="wrap_content" android:layout_height="wrap_content"
android:id="@+id/imageView"></ImageView>
</LinearLayout>
```

```
import java.io.IOException;

import android.app.Activity;
import android.graphics.Bitmap;
import android.graphics.BitmapFactory;
import android.hardware.Camera;
import android.hardware.Camera.Parameters;
import android.os.Bundle;
import android.view.SurfaceHolder;
import android.view.SurfaceView;
import android.widget.ImageView;

public class TakePicture extends Activity implements SurfaceHolder.Callback
{
    //a variable to store a reference to the Image View at the main.xml file
    private ImageView iv_image;
    //a variable to store a reference to the Surface View at the main.xml file
    private SurfaceView sv;

    //a bitmap to display the captured image
    private Bitmap bmp;

    //Camera variables
    //a surface holder
    private SurfaceHolder sHolder;
    //a variable to control the camera
    private Camera mCamera;
    //the camera parameters
    private Parameters parameters;

    /** Called when the activity is first created. */
    @Override
    public void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.main);

        //get the Image View at the main.xml file
        iv_image = (ImageView) findViewById(R.id.imageView);

        //get the Surface View at the main.xml file
        sv = (SurfaceView) findViewById(R.id.surfaceView);

        //Get a surface
        sHolder = sv.getHolder();

        //add the callback interface methods defined below as the Surface View callbacks
        sHolder.addCallback(this);

        //tells Android that this surface will have its data constantly replaced
        sHolder.setType(SurfaceHolder.SURFACE_TYPE_PUSH_BUFFERS);
```

```
    }

    @Override
    public void surfaceChanged(SurfaceHolder arg0, int arg1, int arg2, int arg3)
    {
         //get camera parameters
         parameters = mCamera.getParameters();

         //set camera parameters
         mCamera.setParameters(parameters);
         mCamera.startPreview();

         //sets what code should be executed after the picture is taken
         Camera.PictureCallback mCall = new Camera.PictureCallback()
         {
             @Override
             public void onPictureTaken(byte[] data, Camera camera)
             {
                 //decode the data obtained by the camera into a Bitmap
                 bmp = BitmapFactory.decodeByteArray(data, 0, data.length);
                String filename=Environment.getExternalStorageDirectory()
                                + File.separator + "testimage.jpg";
                FileOutputStream out = null;
                try {
                    out = new FileOutputStream(filename);
                    bmp.compress(Bitmap.CompressFormat.PNG, 100, out); // bmp is your Bitmap
instance
                    // PNG is a lossless format, the compression factor (100) is ignored
                } catch (Exception e) {
                    e.printStackTrace();
                } finally {
                    try {
                        if (out != null) {
                            out.close();
                        }
                    } catch (IOException e) {
                        e.printStackTrace();
                    }
                }
                 //set the iv_image
                 iv_image.setImageBitmap(bmp);
             }
         };

         mCamera.takePicture(null, null, mCall);
    }

    @Override
    public void surfaceCreated(SurfaceHolder holder)
    {
        // The Surface has been created, acquire the camera and tell it where
        // to draw the preview.
        mCamera = Camera.open();
        try {
           mCamera.setPreviewDisplay(holder);

        } catch (IOException exception) {
            mCamera.release();
            mCamera = null;
        }
    }
```

```
    @Override
    public void surfaceDestroyed(SurfaceHolder holder)
    {
        //stop the preview
        mCamera.stopPreview();
        //release the camera
        mCamera.release();
        //unbind the camera from this object
        mCamera = null;
    }
}
```

Uri

```
public final int REQUEST_SELECT_PICTURE = 0x01;
public final int REQUEST_CODE_TAKE_PICTURE = 0x2;
public static String TEMP_PHOTO_FILE_NAME ="photo_";
Uri mImageCaptureUri;
File mFileTemp;
```

init mFileTemp

```
public void initTempFile(){
    String state = Environment.getExternalStorageState();
    if (Environment.MEDIA_MOUNTED.equals(state)) {

        mFileTemp = new File(Environment.getExternalStorageDirectory() + File.separator
                + getResources().getString(R.string.app_foldername) + File.separator
                + getResources().getString(R.string.pictures_folder)
                , TEMP_PHOTO_FILE_NAME
                + System.currentTimeMillis() + ".jpg");
        mFileTemp.getParentFile().mkdirs();
    } else {
        mFileTemp = new File(getFilesDir() + File.separator
                + getResources().getString(R.string.app_foldername)
                + File.separator + getResources().getString(R.string.pictures_folder)
                , TEMP_PHOTO_FILE_NAME + System.currentTimeMillis() + ".jpg");
        mFileTemp.getParentFile().mkdirs();
    }
}
```

CameraGallery

```
public void openCamera(){
    Intent intent = new Intent(MediaStore.ACTION_IMAGE_CAPTURE);
    try {
        mImageCaptureUri = null;
        String state = Environment.getExternalStorageState();
        if (Environment.MEDIA_MOUNTED.equals(state)) {
            mImageCaptureUri = Uri.fromFile(mFileTemp);

        } else {

            mImageCaptureUri = InternalStorageContentProvider.CONTENT_URI;

        }
        intent.putExtra(MediaStore.EXTRA_OUTPUT, mImageCaptureUri);
```

```
        intent.putExtra("return-data", true);
        startActivityForResult(intent, REQUEST_CODE_TAKE_PICTURE);
    } catch (Exception e) {

        Log.d("error", "cannot take picture", e);
    }
}

public void openGallery(){
    if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.JELLY_BEAN
            && ActivityCompat.checkSelfPermission(this,
Manifest.permission.READ_EXTERNAL_STORAGE)
            != PackageManager.PERMISSION_GRANTED) {
        requestPermission(Manifest.permission.READ_EXTERNAL_STORAGE,
                getString(R.string.permission_read_storage_rationale),
                REQUEST_STORAGE_READ_ACCESS_PERMISSION);
    } else {
        Intent intent = new Intent();
        intent.setType("image/*");
        intent.setAction(Intent.ACTION_GET_CONTENT);
        intent.addCategory(Intent.CATEGORY_OPENABLE);
        startActivityForResult(Intent.createChooser(intent, getString(R.string.select_image)),
REQUEST_SELECT_PICTURE);
    }

}
```

onActivityResult

```
@Override
protected void onActivityResult(int requestCode, int resultCode, Intent data) {

    if (resultCode != RESULT_OK) {
        return;
    }
    Bitmap bitmap;

    switch (requestCode) {

        case REQUEST_SELECT_PICTURE:
            try {
                Uri uri = data.getData();
                try {
                    bitmap = MediaStore.Images.Media.getBitmap(getContentResolver(), uri);
                    Bitmap bitmapScaled = Bitmap.createScaledBitmap(bitmap, 800, 800, true);
                    Drawable drawable=new BitmapDrawable(bitmapScaled);
                    mImage.setImageDrawable(drawable);
                    mImage.setVisibility(View.VISIBLE);
                } catch (IOException e) {
                    Log.v("act result", "there is an error : "+e.getContent());
                }
            } catch (Exception e) {
                Log.v("act result", "there is an error : "+e.getContent());
            }
            break;
        case REQUEST_CODE_TAKE_PICTURE:
            try{
               Bitmap bitmappicture = MediaStore.Images.Media.getBitmap(getContentResolver() ,
mImageCaptureUri);
               mImage.setImageBitmap(bitmappicture);
```

```
                mImage.setVisibility(View.VISIBLE);
            }catch (IOException e){
               Log.v("error camera",e.getMessage());
            }
            break;
    }
    super.onActivityResult(requestCode, resultCode, data);
}
```

`AndroidManifest.xml` theese

```
<uses-permission android:name="android.permission.READ_EXTERNAL_STORAGE" />
<uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE" />
<uses-permission android:name="android.permission.CAMERA" />
```

/...

`openGalleryREAD_EXTERNAL_STORAGE`

`requestPermission`

```
protected void requestPermission(final String permission, String rationale, final int
requestCode) {
    if (ActivityCompat.shouldShowRequestPermissionRationale(this, permission)) {
        showAlertDialog(getString(R.string.permission_title_rationale), rationale,
                new DialogInterface.OnClickListener() {
                    @Override
                    public void onClick(DialogInterface dialog, int which) {
                        ActivityCompat.requestPermissions(BasePermissionActivity.this,
                                new String[]{permission}, requestCode);
                    }
                }, getString(android.R.string.ok), null, getString(android.R.string.cancel));
    } else {
        ActivityCompat.requestPermissions(this, new String[]{permission}, requestCode);
    }
}
```

`onRequestPermissionsResult`

```
@Override
public void onRequestPermissionsResult(int requestCode, @NonNull String[] permissions,
@NonNull int[] grantResults) {
    switch (requestCode) {
        case REQUEST_STORAGE_READ_ACCESS_PERMISSION:
            if (grantResults[0] == PackageManager.PERMISSION_GRANTED) {
                handleGallery();
            }
            break;
        default:
            super.onRequestPermissionsResult(requestCode, permissions, grantResults);
    }
}
```

`showAlertDialog`

```
protected void showAlertDialog(@Nullable String title, @Nullable String message,
                               @Nullable DialogInterface.OnClickListener
```

```
onPositiveButtonClickListener,
                                @NonNull String positiveText,
                                @Nullable DialogInterface.OnClickListener
onNegativeButtonClickListener,
                                @NonNull String negativeText) {
    AlertDialog.Builder builder = new AlertDialog.Builder(this);
    builder.setTitle(title);
    builder.setMessage(message);
    builder.setPositiveButton(positiveText, onPositiveButtonClickListener);
    builder.setNegativeButton(negativeText, onNegativeButtonClickListener);
    mAlertDialog = builder.show();
}
```

。

```
Camera mCamera = Camera.open();
Camera.Parameters params = mCamera.getParameters();

// Check what resolutions are supported by your camera
List<Size> sizes = params.getSupportedPictureSizes();

// Iterate through all available resolutions and choose one.
// The chosen resolution will be stored in mSize.
Size mSize;
for (Size size : sizes) {
    Log.i(TAG, "Available resolution: "+size.width+" "+size.height);
        mSize = size;
    }
}

Log.i(TAG, "Chosen resolution: "+mSize.width+" "+mSize.height);
params.setPictureSize(mSize.width, mSize.height);
mCamera.setParameters(params);
```

intenturi

```
private static final String TAG = "IntentBitmapFetch";
private static final String COLON_SEPARATOR = ":";
private static final String IMAGE = "image";

@Nullable
public Bitmap getBitmap(@NonNull Uri bitmapUri, int maxDimen) {
    InputStream is = context.getContentResolver().openInputStream(bitmapUri);
    Bitmap bitmap = BitmapFactory.decodeStream(is, null, getBitmapOptions(bitmapUri,
maxDimen));

    int imgRotation = getImageRotationDegrees(bitmapUri);

    int endRotation = (imgRotation < 0) ? -imgRotation : imgRotation;
    endRotation %= 360;
    endRotation = 90 * (endRotation / 90);
    if (endRotation > 0 && bitmap != null) {
        Matrix m = new Matrix();
        m.setRotate(endRotation);
        Bitmap tmp = Bitmap.createBitmap(bitmap, 0, 0, bitmap.getWidth(), bitmap.getHeight(),
m, true);
        if (tmp != null) {
            bitmap.recycle();
```

```
            bitmap = tmp;
        }
    }

    return bitmap;
}

private BitmapFactory.Options getBitmapOptions(Uri uri, int imageMaxDimen){
    BitmapFactory.Options options = new BitmapFactory.Options();
    if (imageMaxDimen > 0) {
        options.inJustDecodeBounds = true;
        decodeImage(null, uri, options);
        options.inSampleSize = calculateScaleFactor(options, imageMaxDimen);
        options.inJustDecodeBounds = false;
        options.inPreferredConfig = Bitmap.Config.RGB_565;
        addInBitmapOptions(options);
    }
}

private int calculateScaleFactor(@NonNull BitmapFactory.Options bitmapOptionsMeasureOnly, int
imageMaxDimen) {
    int inSampleSize = 1;
    if (bitmapOptionsMeasureOnly.outHeight > imageMaxDimen ||
bitmapOptionsMeasureOnly.outWidth > imageMaxDimen) {
        final int halfHeight = bitmapOptionsMeasureOnly.outHeight / 2;
        final int halfWidth = bitmapOptionsMeasureOnly.outWidth / 2;
        while ((halfHeight / inSampleSize) > imageMaxDimen && (halfWidth / inSampleSize) >
imageMaxDimen) {
            inSampleSize *= 2;
        }
    }
    return inSampleSize;
}

    public int getImageRotationDegrees(@NonNull Uri imgUri) {
    int photoRotation = ExifInterface.ORIENTATION_UNDEFINED;

    try {
        boolean hasRotation = false;
        //If image comes from the gallery and is not in the folder DCIM (Scheme: content://)
        String[] projection = {MediaStore.Images.ImageColumns.ORIENTATION};
        Cursor cursor = context.getContentResolver().query(imgUri, projection, null, null,
null);
        if (cursor != null) {
            if (cursor.getColumnCount() > 0 && cursor.moveToFirst()) {
                photoRotation = cursor.getInt(cursor.getColumnIndex(projection[0]));
                hasRotation = photoRotation != 0;
                Log.d("Cursor orientation: "+ photoRotation);
            }
            cursor.close();
        }

        //If image comes from the camera (Scheme: file://) or is from the folder DCIM (Scheme:
content://)
        if (!hasRotation) {
            ExifInterface exif = new ExifInterface(getAbsolutePath(imgUri));
            int exifRotation = exif.getAttributeInt(ExifInterface.TAG_ORIENTATION,
                    ExifInterface.ORIENTATION_NORMAL);
            switch (exifRotation) {
                case ExifInterface.ORIENTATION_ROTATE_90: {
                    photoRotation = 90;
```

```
                    break;
                }
                case ExifInterface.ORIENTATION_ROTATE_180: {
                    photoRotation = 180;
                    break;
                }
                case ExifInterface.ORIENTATION_ROTATE_270: {
                    photoRotation = 270;
                    break;
                }
            }
            Log.d(TAG, "Exif orientation: "+ photoRotation);
        }
    } catch (IOException e) {
        Log.e(TAG, "Error determining rotation for image"+ imgUri, e);
    }
    return photoRotation;
}

@TargetApi(Build.VERSION_CODES.KITKAT)
private String getAbsolutePath(Uri uri) {
    //Code snippet edited from: http://stackoverflow.com/a/20559418/2235133
    String filePath = uri.getPath();
    if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.KITKAT &&
DocumentsContract.isDocumentUri(context, uri)) {
        // Will return "image:x*"
        String[] wholeID = TextUtils.split(DocumentsContract.getDocumentId(uri),
COLON_SEPARATOR);
        // Split at colon, use second item in the array
        String type = wholeID[0];
        if (IMAGE.equalsIgnoreCase(type)) {//If it not type image, it means it comes from a
remote location, like Google Photos
            String id = wholeID[1];
            String[] column = {MediaStore.Images.Media.DATA};
            // where id is equal to
            String sel = MediaStore.Images.Media._ID + "=?";
            Cursor cursor = context.getContentResolver().
                    query(MediaStore.Images.Media.EXTERNAL_CONTENT_URI,
                            column, sel, new String[]{id}, null);
            if (cursor != null) {
                int columnIndex = cursor.getColumnIndex(column[0]);
                if (cursor.moveToFirst()) {
                    filePath = cursor.getString(columnIndex);
                }
                cursor.close();
            }
            Log.d(TAG, "Fetched absolute path for uri" + uri);
        }
    }
    return filePath;
}
```

https://riptutorial.com/zh-CN/android/topic/4789/

238: Drawables

。 。 XMLdrawable。 mdpihdpixhdpi。 Vector Drawablexmldpi。 。

<vector>	drawable
<group>	。 。 。
<path>	。
<clip-path>	。 。

build.gradle。

```
dependencies {
    ...
   compile 'com.android.support:appcompat-v7:23.2.1'
}
```

Gradle v2.0 。

```
// Gradle Plugin 2.0+
 android {
   defaultConfig {
     vectorDrawables.useSupportLibrary = true
    }
 }
```

Gradle v1.5 。

```
// Gradle Plugin 1.5
 android {
   defaultConfig {
     generatedDensities = []
  }

  // This is handled for you by the 2.0+ Gradle Plugin
  aaptOptions {
    additionalParameters "--no-version-vectors"
  }
 }
```

Android23.2。

AppCompat Vector DrawablesAndroid。 。 。

Examples

VectorDrawable

AppCompat

RES // ic_search.xml

```
<vector xmlns:android="..."
        android:width="24dp"
        android:height="24dp"
        android:viewportWidth="24.0"
        android:viewportHeight="24.0"
        android:tint="?attr/colorControlNormal">

    <path
        android:pathData="..."
        android:fillColor="@android:color/white"/>

</vector>
```

drawable`ImageView`

```
<ImageView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    app:srcCompat="@drawable/ic_search"/>
```

```
ImageView iv = (ImageView) findViewById(...);
iv.setImageResource(R.drawable.ic_search);
```

`ImageButton` ◦

VectorDrawable xml

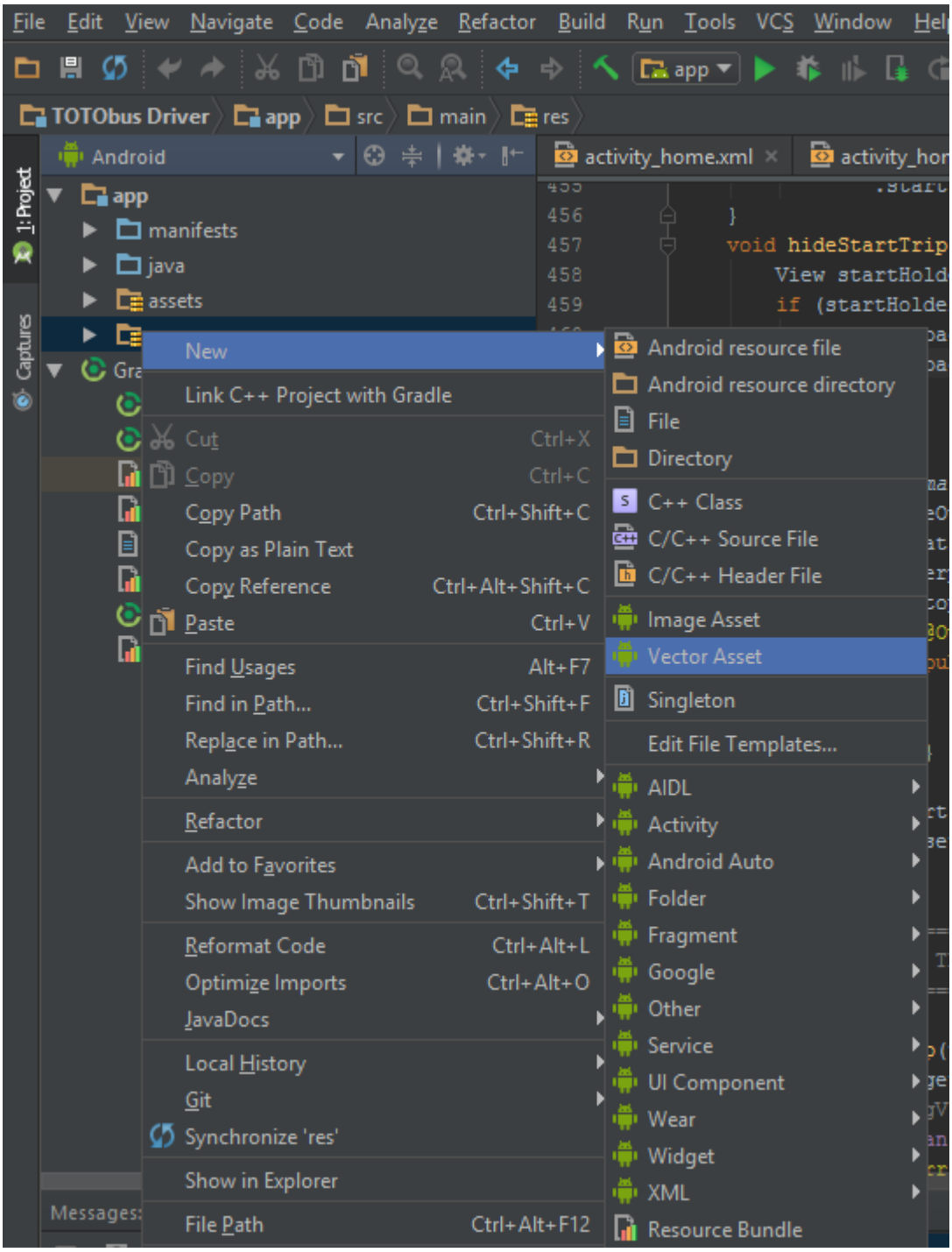
vectordrawable.xml`VectorDrawable` ◦

```
 <vector xmlns:android="http://schemas.android.com/apk/res/android"
     android:height="64dp"
     android:width="64dp"
     android:viewportHeight="600"
     android:viewportWidth="600" >
     <group
         android:name="rotationGroup"
         android:pivotX="300.0"
         android:pivotY="300.0"
         android:rotation="45.0" >
         <path
             android:name="v"
             android:fillColor="#000000"
             android:pathData="M300,70 l 0,-70 70,70 0,0 -70,70z" />
     </group>
 </vector>
```

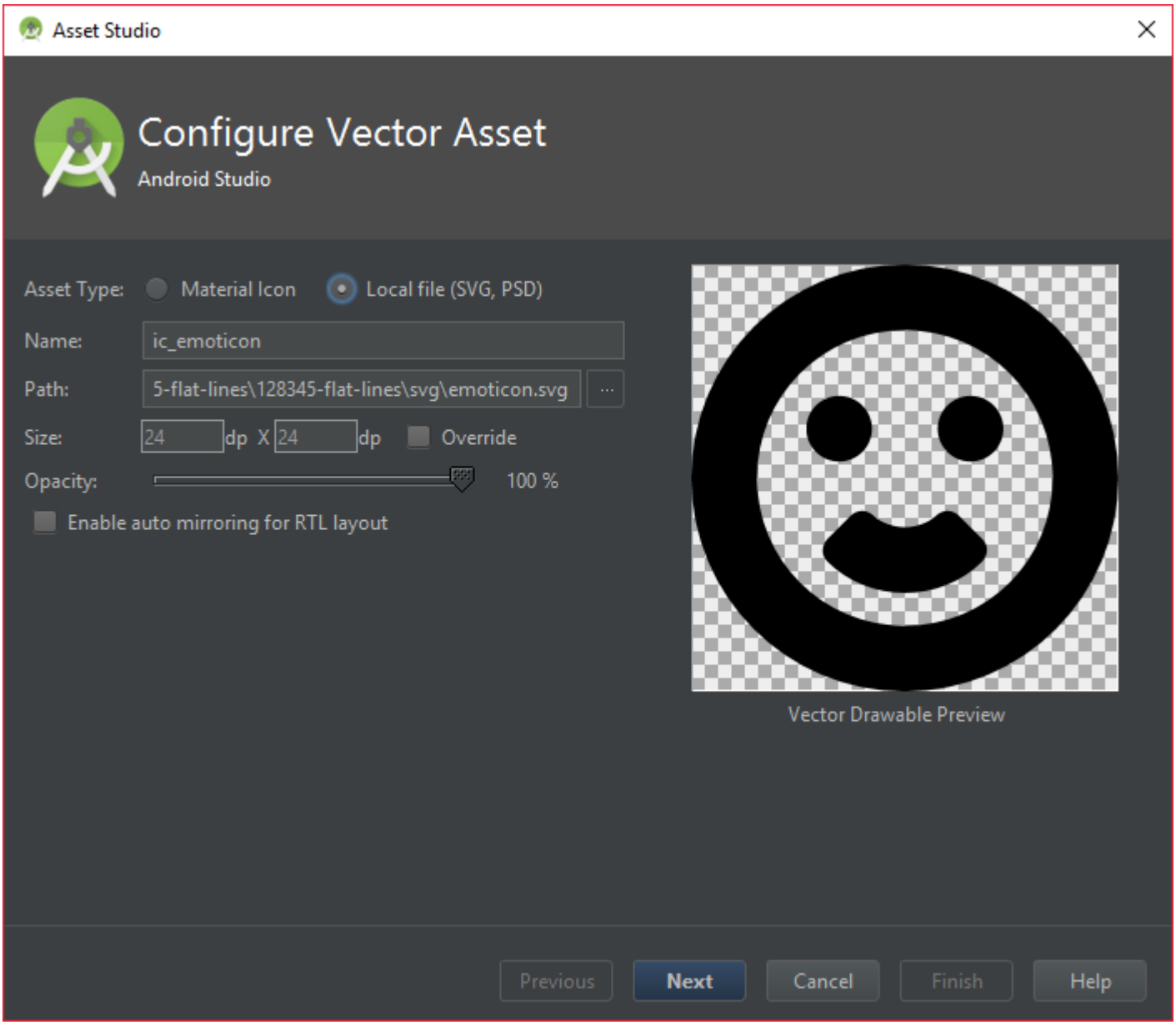
SVGVectorDrawable

Android Studio `VectorDrawable` *SVG*`VectorDrawable`

`res`“” > 。



“ ”.svg。 。 。



Drawables https://riptutorial.com/zh-CN/android/topic/8194/drawables

239: /PTTLWP

Android。 。

。

Examples

Sonim Devices

Sonim

PTT_KEY

```
com.sonim.intent.action.PTT_KEY_DOWN
com.sonim.intent.action.PTT_KEY_UP
```

YELLOW_KEY

```
com.sonim.intent.action.YELLOW_KEY_DOWN
com.sonim.intent.action.YELLOW_KEY_UP
```

SOS_KEY

```
com.sonim.intent.action.SOS_KEY_DOWN
com.sonim.intent.action.SOS_KEY_UP
```

GREEN_KEY

```
com.sonim.intent.action.GREEN_KEY_DOWN
com.sonim.intent.action.GREEN_KEY_UP
```

“”。 Sonim。

```
<meta-data
    android:name="app_key_green_data"
    android:value="your-key-here" />
```

PTT

```
android.intent.action.PTT.down
android.intent.action.PTT.up
```

RG730RG740A

/PTTLWP https://riptutorial.com/zh-CN/android/topic/10418/--ptt-lwp-

240:

ConstraintLayoutConstraintLayout ◦ ConstraintLayout ◦

Examples

ContraintLayoutConstraintSet

```
import android.content.Context;
import android.os.Bundle;
import android.support.constraint.ConstraintLayout;
import android.support.constraint.ConstraintSet;
import android.support.transition.TransitionManager;
import android.support.v7.app.AppCompatActivity;
import android.view.View;

public class MainActivity extends AppCompatActivity {
    ConstraintSet mConstraintSet1 = new ConstraintSet(); // create a Constraint Set
    ConstraintSet mConstraintSet2 = new ConstraintSet(); // create a Constraint Set
    ConstraintLayout mConstraintLayout; // cache the ConstraintLayout
    boolean mOld = true;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        Context context = this;
        mConstraintSet2.clone(context, R.layout.state2); // get constraints from layout
        setContentView(R.layout.state1);
        mConstraintLayout = (ConstraintLayout) findViewById(R.id.activity_main);
        mConstraintSet1.clone(mConstraintLayout); // get constraints from ConstraintSet
    }

    public void foo(View view) {
        TransitionManager.beginDelayedTransition(mConstraintLayout);
        if (mOld = !mOld) {
            mConstraintSet1.applyTo(mConstraintLayout); // set new constraints
        }  else {
            mConstraintSet2.applyTo(mConstraintLayout); // set new constraints
        }
    }
}
```

https://riptutorial.com/zh-CN/android/topic/9334/

241:

Examples

。UI。UI。

Thread

```
new Thread(new Runnable() {
    public void run() {
        for(int i = 1; i < 5;i++) {
            System.out.println(i);
        }
    }
}).start();
```

Thread`Thread.run()`。 `start()`run() `start()`。

MultiThreading。 。sleepInterruptedExceptiontry / catch。

```
try{Thread.sleep(500);}catch(InterruptedException e){System.out.println(e);}
```

UI

UI。

UI。

`runOnUiThread()`UI。

ActivityThread`42 runOnUiThread()`UI。

```
public class MainActivity extends AppCompatActivity {

    TextView mTextView;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        mTextView = (TextView) findViewById(R.id.my_text_view);

        new Thread(new Runnable() {
            @Override
            public void run() {
                while (true) {
                    //do stuff....
                    Random r = new Random();
                    if (r.nextInt(100) == 42) {
                       break;
                    }
```

```
                }

                runOnUiThread(new Runnable() {
                    @Override
                    public void run() {
                        mTextView.setText("Ready Player One");
                    }
                });
            }
        }).start();
    }
}
```

https://riptutorial.com/zh-CN/android/topic/7131/

242: UI - Android

Android UI。 EspressoUIAutomatorGoogleAppiumSpoon。

-
- String getName - 。
- boolean isIdleNow - true。
- void registerIdleTransitionCallbackIdlingResource.ResourceCallback callback - IdlingResource.ResourceCallback

JUnit

MockWebServerActivityTestRuleJUnit@see https //github.com/junit-team/junit4//

Appium

activityClass	
initialTouchMode	https //android-developers.blogspot.de/2008/12/touch-mode.html
launchActivity	TestActivitytrue。 BeforeAfter。

Examples

MockWebServer

UIMockWebServerAndroidlocalyUI。

https://github.com/square/okhttp/tree/master/mockwebserver

gradle

```
testCompile 'com.squareup.okhttp3:mockwebserver:(insert latest version)'
```

-
- localhostportnumber
-
-

mockwebservergithubJUnit

```
/**
 *JUnit  rule that starts and stops a mock web server for test runner
*/
 public class MockServerRule extends UiThreadTestRule {
```

```
 private MockWebServer mServer;

 public static final int MOCK_WEBSERVER_PORT = 8000;

    @Override
    public Statement apply(final Statement base, Description description) {
        return new Statement() {
            @Override
            public void evaluate() throws Throwable {
                startServer();
                try {
                    base.evaluate();
                } finally {
                    stopServer();
                }
            }
        };
    }

    /**
     * Returns the started web server instance
     *
     * @return mock server
     */
    public MockWebServer server() {
        return mServer;
    }

    public void startServer() throws IOException, NoSuchAlgorithmException {
        mServer = new MockWebServer();
        try {
            mServer(MOCK_WEBSERVER_PORT);
        } catch (IOException e) {
            throw new IllegalStateException(e,"mock server start issue");
        }
    }

    public void stopServer() {
        try {
            mServer.shutdown();
        } catch (IOException e) {
            Timber.e(e, "mock server shutdown error”);
        }
    }
}
```

https //someapi.com/name

NAME +。

```
/**
* Testing of the snackbar activity with networking.
**/
@RunWith(AndroidJUnit4.class)
@LargeTest
public class SnackbarActivityTest{
    //espresso rule which tells which activity to start
    @Rule
    public final ActivityTestRule<SnackbarActivity> mActivityRule =
```

```
        new ActivityTestRule<>(SnackbarActivity.class, true, false);

    //start mock web server
    @Rule
    public final MockServerRule mMockServerRule = new MockServerRule();

    @Override
    public void tearDown() throws Exception {
       //same as previous example
    }

    @Override
    public void setUp() throws Exception {
       //same as previous example

       **//IMPORTANT:** point your application to your mockwebserver endpoint e.g.
       MyAppConfig.setEndpointURL("http://localhost:8000");
    }

    /**
    *Test methods should always start with "testXYZ" and it is a good idea to
    *name them after the intent what you want to test
    **/
    @Test
    public void testSnackbarIsShown() {
        //setup mockweb server
        mMockServerRule.server().setDispatcher(getDispatcher());

        mActivityRule.launchActivity(null);
        //check is our text entry displayed and enter some text to it
        String textToType="new snackbar text";
        onView(withId(R.id.textEntry)).check(matches(isDisplayed()));
        //we check is our snackbar showing text from mock webserver plus the one we typed
        onView(withId(R.id.textEntry)).perform(typeText("JazzJackTheRabbit" + textToType));
        //click the button to show the snackbar
        onView(withId(R.id.shownSnackbarBtn)).perform(click());
        //assert that a view with snackbar_id with text which we typed and is displayed
        onView(allOf(withId(android.support.design.R.id.snackbar_text),
        withText(textToType))) .check(matches(isDisplayed()));
    }

     /**
     *creates a mock web server dispatcher with prerecorded requests and responses
     **/
    private Dispatcher getDispatcher() {
        final Dispatcher dispatcher = new Dispatcher() {
            @Override
            public MockResponse dispatch(RecordedRequest request) throws InterruptedException
{
                if (request.getPath().equals("/name")){
                    return new MockResponse().setResponseCode(200)
                            .setBody("JazzJackTheRabbit");
                }
                throw new IllegalStateException("no mock set up for " + request.getPath());
            }
        };
        return dispatcher;
    }
```

Builder。

```
 return newDispatcherBuilder()
            .withSerializedJSONBody("/authenticate", Mocks.getAuthenticationResponse())
            .withSerializedJSONBody("/getUserInfo", Mocks.getUserInfo())
            .withSerializedJSONBody("/checkNotBot", Mocks.checkNotBot());
```

IdlingResource

`sleep()` /。 。

`IdlingResource`

- **`getName()` -** 。
- **`isIdleNow()` -** xyz。
- **`registerIdleTransitionCallback`** `IdlingResource.ResourceCallback` callback - 。

。 。 。

- Google`IdlingResources`。 。 。
-

Espresso。 。

- 。
- **FragmentManager**。

```
/**
 * FragmentIdlingResource - idling resource which waits while Fragment has not been loaded.
 */
public class FragmentIdlingResource implements IdlingResource {
    private final FragmentManager mFragmentManager;
    private final String mTag;
    //resource callback you use when your activity transitions to idle
    private volatile ResourceCallback resourceCallback;

    public FragmentIdlingResource(FragmentManager fragmentManager, String tag) {
        mFragmentManager = fragmentManager;
        mTag = tag;
    }

    @Override
    public String getName() {
        return FragmentIdlingResource.class.getName() + ":" + mTag;
    }

    @Override
    public boolean isIdleNow() {
        //simple check, if your fragment is added, then your app has became idle
        boolean idle = (mFragmentManager.findFragmentByTag(mTag) != null);
        if (idle) {
            //IMPORTANT: make sure you call onTransitionToIdle
            resourceCallback.onTransitionToIdle();
        }
```

```
        return idle;
    }

    @Override
    public void registerIdleTransitionCallback(ResourceCallback resourceCallback) {
        this.resourceCallback = resourceCallback;
    }
}
```

IdlingResource

```
@Test
public void testSomeFragmentText() {
    mActivityTestRule.launchActivity(null);

    //creating the idling resource
    IdlingResource fragmentLoadedIdlingResource = new
FragmentIdlingResource(mActivityTestRule.getActivity().getSupportFragmentManager(),
SomeFragmentText.TAG);
    //registering the idling resource so espresso waits for it
    Espresso.registerIdlingResources(idlingResource1);
    onView(withId(R.id.txtHelloWorld)).check(matches(withText(helloWorldText)));

    //lets cleanup after ourselves
    Espresso.unregisterIdlingResources(fragmentLoadedIdlingResource);
}
```

JUnit

;JUnit。VolleySDKEspresso。JUnit

```
@Rule
public final SDKIdlingRule mSdkIdlingRule = new
SDKIdlingRule(SDKInstanceHolder.getInstance());
```

;

```
public class SDKIdlingRule implements TestRule {
    //idling resource you wrote to check is volley idle or not
    private VolleyIdlingResource mVolleyIdlingResource;
    //request queue that you need from volley to give it to idling resource
    private RequestQueue mRequestQueue;

    //when using the rule extract the request queue from your SDK
    public SDKIdlingRule(SDKClass sdkClass) {
        mRequestQueue = getVolleyRequestQueue(sdkClass);
    }

    private RequestQueue getVolleyRequestQueue(SDKClass sdkClass) {
        return sdkClass.getVolleyRequestQueue();
    }

    @Override
```

```
    public Statement apply(final Statement base, Description description) {
        return new Statement() {
            @Override
            public void evaluate() throws Throwable {
                //registering idling resource
                mVolleyIdlingResource = new VolleyIdlingResource(mRequestQueue);
                Espresso.registerIdlingResources(mVolleyIdlingResource);
                try {
                    base.evaluate();
                } finally {
                    if (mVolleyIdlingResource != null) {
                        //deregister the resource when test finishes
                        Espresso.unregisterIdlingResources(mVolleyIdlingResource);
                    }
                }
            }
        };
    }
}
```

UI - Android https://riptutorial.com/zh-CN/android/topic/3530/ui----android

243: TextViews

TextView。

Android OTextViewTextView。

XMLTextView。

TextView

Examples

Java

`setAutoSizeTextTypeUniformWithConfiguration()`

```
setAutoSizeTextTypeUniformWithConfiguration(int autoSizeMinTextSize, int autoSizeMaxTextSize,
int autoSizeStepGranularity, int unit)
```

XML

`autoSizeMinTextSize autoSizeMaxTextSizeautoSizeStepGranularity`XML

```
<TextView android:id="@+id/autosizing_textview_presetsize"
        android:layout_width="wrap_content"
        android:layout_height="250dp"
        android:layout_marginLeft="0dp"
        android:layout_marginTop="0dp"
        android:autoSizeMaxTextSize="100sp"
        android:autoSizeMinTextSize="12sp"
        android:autoSizeStepGranularity="2sp"
        android:autoSizeText="uniform"
        android:text="Hello World!"
        android:textSize="100sp"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
```

GitHubAutosizingTextViews-Demo 。

Java

`setAutoSizeTextTypeUniformWithPresetSizes()`

```
setAutoSizeTextTypeUniformWithPresetSizes(int[] presetSizes, int unit)
```

XML

XML`autoSizePresetSizes`

```
<TextView android:id="@+id/autosizing_textview_presetsize"
```

```
        android:layout_width="wrap_content"
        android:layout_height="250dp"
        android:layout_marginLeft="0dp"
        android:layout_marginTop="0dp"
        android:autoSizeText="uniform"
        android:autoSizePresetSizes="@array/autosize_text_sizes"
        android:text="Hello World!"
        android:textSize="100sp"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
```

res / values / arrays.xml

```
<array name="autosize_text_sizes">
    <item>10sp</item>
    <item>12sp</item>
    <item>20sp</item>
    <item>40sp</item>
    <item>100sp</item>
</array>
```

GitHubAutosizingTextViews-Demo 。

TextViews https://riptutorial.com/zh-CN/android/topic/9652/textviews

244:

Examples

1.
2. app - > src - > main。
3. 'assets - > fonts'。
4. 'fontfile.ttf'fonts。

```
private Typeface myFont;

// A good practice might be to call this in onCreate() of a custom
// Application class and pass 'this' as Context. Your font will be ready to use
// as long as your app lives
public void initFont(Context context) {
    myFont = Typeface.createFromAsset(context.getAssets(), "fonts/Roboto-Light.ttf");
}
```

TextView

```
public void setFont(TextView textView) {
    textView.setTypeface(myFont);
}
```

xmlTextViewJava

TextViewPlus.java

```
public class TextViewPlus extends TextView {
    private static final String TAG = "TextView";

    public TextViewPlus(Context context) {
        super(context);
    }

    public TextViewPlus(Context context, AttributeSet attrs) {
        super(context, attrs);
        setCustomFont(context, attrs);
    }

    public TextViewPlus(Context context, AttributeSet attrs, int defStyle) {
        super(context, attrs, defStyle);
        setCustomFont(context, attrs);
    }

    private void setCustomFont(Context ctx, AttributeSet attrs) {
        TypedArray a = ctx.obtainStyledAttributes(attrs, R.styleable.TextViewPlus);
        String customFont = a.getString(R.styleable.TextViewPlus_customFont);
        setCustomFont(ctx, customFont);
        a.recycle();
    }
```

```
    public boolean setCustomFont(Context ctx, String asset) {
        Typeface typeface = null;
        try {
            typeface = Typeface.createFromAsset(ctx.getAssets(), asset);
        } catch (Exception e) {
            Log.e(TAG, "Unable to load typeface: "+e.getMessage());
            return false;
        }

        setTypeface(typeface);
        return true;
    }
}
```

attrs.xml :(res / values

```
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <declare-styleable name="TextViewPlus">
        <attr name="customFont" format="string"/>
    </declare-styleable>
</resources>
```

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:foo="http://schemas.android.com/apk/res-auto"
    android:orientation="vertical" android:layout_width="fill_parent"
    android:layout_height="fill_parent">

    <com.mypackage.TextViewPlus
        android:id="@+id/textViewPlus1"
        android:layout_height="match_parent"
        android:layout_width="match_parent"
        android:text="@string/showingOffTheNewTypeface"
        foo:customFont="my_font_name_regular.otf">
    </com.mypackage.TextViewPlus>
</LinearLayout>
```

。

```
Typeface typeface = Typeface.createFromAsset(getAssets(), "fonts/SomeFont.ttf");
Paint textPaint = new Paint();
textPaint.setTypeface(typeface);
canvas.drawText("Your text here", x, y, textPaint);
```

。 /Hashtable。

```
public class TypefaceUtils {

private static final Hashtable<String, Typeface> sTypeFaces = new Hashtable<>();

/**
 * Get typeface by filename from assets main directory
 *
 * @param context
```

```
 * @param fileName the name of the font file in the asset main directory
 * @return
 */
public static Typeface getTypeFace(final Context context, final String fileName) {
    Typeface tempTypeface = sTypeFaces.get(fileName);

    if (tempTypeface == null) {
        tempTypeface = Typeface.createFromAsset(context.getAssets(), fileName);
        sTypeFaces.put(fileName, tempTypeface);
    }

    return tempTypeface;
}
```

}

```
Typeface typeface = TypefaceUtils.getTypeface(context, "RobotoSlab-Bold.ttf");
setTypeface(typeface);
```

```
public class ReplaceFont {

public static void changeDefaultFont(Context context, String oldFont, String assetsFont) {
    Typeface typeface = Typeface.createFromAsset(context.getAssets(), assetsFont);
    replaceFont(oldFont, typeface);
}

private static void replaceFont(String oldFont, Typeface typeface) {
    try {
        Field myField = Typeface.class.getDeclaredField(oldFont);
        myField.setAccessible(true);
        myField.set(null, typeface);
    } catch (NoSuchFieldException e) {
        e.printStackTrace();
    } catch (IllegalAccessException e) {
        e.printStackTrace();
    }
}
```

`onCreate()`

```
// Put your font to assets folder...

ReplaceFont.changeDefaultFont(getApplication(), "DEFAULT", "LinLibertine.ttf");
```

Android O

Android O。

Android O*Fonts in XML*。。*R*。

- `res/font`。
- 。`myfont.ttf` `R.font.myfont`。

XML`res/font`

```
<?xml version="1.0" encoding="utf-8"?>
<font-family xmlns:android="http://schemas.android.com/apk/res/android">
    <font
        android:fontStyle="normal"
        android:fontWeight="400"
        android:font="@font/lobster_regular" />
    <font
        android:fontStyle="italic"
        android:fontWeight="400"
        android:font="@font/lobster_italic" />
</font-family>
```

- **XML**`android:fontFamily`

  ```
  <TextView
          android:layout_width="wrap_content"
          android:layout_height="wrap_content"
          android:fontFamily="@font/myfont"/>
  ```

  ```
  <style name="customfontstyle" parent="@android:style/TextAppearance.Small">
      <item name="android:fontFamily">@font/myfont</item>
  </style>
  ```

- ```
  Typeface typeface = getResources().getFont(R.font.myfont);
  textView.setTypeface(typeface);
  ```

https://riptutorial.com/zh-CN/android/topic/3358/
  ```

245:

MoshiAndroidJavaJSON。JSONJavaJavaJSON。

README

Examples

JSONJava

```
String json = ...;

Moshi moshi = new Moshi.Builder().build();
JsonAdapter<BlackjackHand> jsonAdapter = moshi.adapter(BlackjackHand.class);

BlackjackHand blackjackHand = jsonAdapter.fromJson(json);
System.out.println(blackjackHand);
```

JavaJSON

```
BlackjackHand blackjackHand = new BlackjackHand(
    new Card('6', SPADES),
    Arrays.asList(new Card('4', CLUBS), new Card('A', HEARTS)));

Moshi moshi = new Moshi.Builder().build();
JsonAdapter<BlackjackHand> jsonAdapter = moshi.adapter(BlackjackHand.class);

String json = jsonAdapter.toJson(blackjackHand);
System.out.println(json);
```

MoshiJava

- intfloatchar .....。
-
-
-
-
-

◦ Moshi

```
class BlackjackHand {
  public final Card hidden_card;
  public final List<Card> visible_cards;
  ...
}

class Card {
  public final char rank;
  public final Suit suit;
  ...
```

```
}

enum Suit {
  CLUBS, DIAMONDS, HEARTS, SPADES;
}
to read and write this JSON:

{
  "hidden_card": {
    "rank": "6",
    "suit": "SPADES"
  },
  "visible_cards": [
    {
      "rank": "4",
      "suit": "CLUBS"
    },
    {
      "rank": "A",
      "suit": "HEARTS"
    }
  ]
}
```

https://riptutorial.com/zh-CN/android/topic/8744/

246:

/ system / fonts / `TextView`

Examples

```
ArrayList<String> fontNames = new ArrayList<String>();
File temp = new File("/system/fonts/");
String fontSuffix = ".ttf";

for(File font : temp.listFiles()) {
    String fontName = font.getName();
    if(fontName.endsWith(fontSuffix)) {
        fontNames.add(fontName.subSequence(0,fontName.lastIndexOf(fontSuffix)).toString());
    }
}
```

TextView

`fontsname`

```
TextView lblexample = (TextView) findViewById(R.id.lblexample);
lblexample.setTypeface(Typeface.createFromFile("/system/fonts/" + "fontsname" + ".ttf"));
```

https://riptutorial.com/zh-CN/android/topic/10930/

247:

ViewViewTreeObserverView◦ View.getViewTreeObserver javadocs

```
// The returned ViewTreeObserver observer is not guaranteed to remain
// valid for the lifetime of this View. If the caller of this method keeps
// a long-lived reference to ViewTreeObserver, it should always check for
// the return value of {@link ViewTreeObserver#isAlive()}.
```

ViewTreeObserverViewgetViewTreeObserverViewTreeObserver◦ isAlive;ViewTreeObserver

Examples

```
package com.example;

import android.os.Bundle;
import android.support.annotation.Nullable;
import android.util.Log;
import android.view.View;
import android.view.ViewTreeObserver;

public class ExampleActivity extends Activity {

    @Override
    protected void onCreate(@Nullable final Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_example);

        final View viewToMeasure = findViewById(R.id.view_to_measure);

        // viewToMeasure dimensions are not known at this point.
        // viewToMeasure.getWidth() and viewToMeasure.getHeight() both return 0,
        // regardless of on-screen size.

        viewToMeasure.getViewTreeObserver().addOnPreDrawListener(new
ViewTreeObserver.OnPreDrawListener() {
            @Override
            public boolean onPreDraw() {
                // viewToMeasure is now measured and laid out, and displayed dimensions are
known.
                logComputedViewDimensions(viewToMeasure.getWidth(),
viewToMeasure.getHeight());

                // Remove this listener, as we have now successfully calculated the desired
dimensions.
                viewToMeasure.getViewTreeObserver().removeOnPreDrawListener(this);

                // Always return true to continue drawing.
                return true;
            }
        });
    }

    private void logComputedViewDimensions(final int width, final int height) {
        Log.d("example", "viewToMeasure has width " + width);
```

```
        Log.d("example", "viewToMeasure has height " + height);
    }

}
```

https://riptutorial.com/zh-CN/android/topic/115/

248:

- inflater.inflateR.menu.your_xml_filemenu;

`inflate(int menuRes, Menu menu)`	XML。
`getMenuInflater ()`	`MenuInflater` 。
`onCreateOptionsMenu (Menu menu)`	Activity。 。
`onOptionsItemSelected (MenuItem item)`	

。

Examples

Android。 。 。

```
<style name="AppTheme" parent="Theme.AppCompat.Light.DarkActionBar">
    <!-- Customize your theme here. -->
    <item name="colorPrimary">@color/colorPrimary</item>
    <item name="colorPrimaryDark">@color/colorPrimaryDark</item>
    <item name="colorAccent">@color/colorAccent</item>
    <item name="android:dropDownListViewStyle">@style/PopupMenuListView</item>
</style>
<style name="PopupMenuListView" parent="@style/Widget.AppCompat.ListView.DropDown">
    <item name="android:divider">@color/black</item>
    <item name="android:dividerHeight">1dp</item>
</style>
```

。

```
public static void applyFontToMenu(Menu m, Context mContext){
    for(int i=0;i<m.size();i++) {
        applyFontToMenuItem(m.getItem(i),mContext);
    }
}
public static void applyFontToMenuItem(MenuItem mi, Context mContext) {
    if(mi.hasSubMenu())
        for(int i=0;i<mi.getSubMenu().size();i++) {
            applyFontToMenuItem(mi.getSubMenu().getItem(i),mContext);
        }
    Typeface font = Typeface.createFromAsset(mContext.getAssets(),
"fonts/yourCustomFont.ttf");
    SpannableString mNewTitle = new SpannableString(mi.getTitle());
    mNewTitle.setSpan(new CustomTypefaceSpan("", font, mContext), 0, mNewTitle.length(),
Spannable.SPAN_INCLUSIVE_INCLUSIVE);
    mi.setTitle(mNewTitle);
}
```

```
@Override
public boolean onCreateOptionsMenu(Menu menu) {
    getMenuInflater().inflate(R.menu.main, menu);
    applyFontToMenu(menu,this);
    return true;
}
```

`res/menu/`XML

- `<menu>` ◦
- `<item>` MenuItem◦ ◦

1

xml

`res/menu/main_menu.xml`

```
<?xml version="1.0" encoding="utf-8"?>

<menu xmlns:android="http://schemas.android.com/apk/res/android">
    <item
        android:id="@+id/aboutMenu"
        android:title="About" />
    <item
        android:id="@+id/helpMenu"
        android:title="Help" />
    <item
        android:id="@+id/signOutMenu"
        android:title="Sign Out" />
</menu>
```

2

`onCreateOptionsMenu()` ◦

XML`res/menu/main_menu.xml`

```
 @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        MenuInflater inflater = getMenuInflater();
        inflater.inflate(R.menu.main_menu, menu);
        return true;
    }
```

`onOptionsItemSelected()`◦

- MenuItem◦
- `getItemId()`ID`android:id attribute` - `res/menu/main_menu.xml` * /

```
 @Override
public boolean onOptionsItemSelected(MenuItem item) {
    switch (item.getItemId()) {
        case R.id.aboutMenu:
            Log.d(TAG, "Clicked on About!");
            // Code for About goes here
            return true;
        case R.id.helpMenu:
            Log.d(TAG, "Clicked on Help!");
            // Code for Help goes here
            return true;
        case R.id.signOutMenu:
            Log.d(TAG, "Clicked on Sign Out!");
            // SignOut method call goes here
            return true;
        default:
            return super.onOptionsItemSelected(item);
    }
}
```

Activity

```
public class MainActivity extends AppCompatActivity {

    private static final String TAG = "mytag";

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }

    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        MenuInflater inflater = getMenuInflater();
        inflater.inflate(R.menu.main_menu, menu);
        return true;
    }

    @Override
    public boolean onOptionsItemSelected(MenuItem item) {
        switch (item.getItemId()) {
            case R.id.aboutMenu:
                Log.d(TAG, "Clicked on About!");
                // Code for About goes here
                return true;
            case R.id.helpMenu:
                Log.d(TAG, "Clicked on Help!");
                // Code for Help goes here
                return true;
            case R.id.signOutMenu:
                Log.d(TAG, "User signed out");
                // SignOut method call goes here
                return true;
            default:
                return super.onOptionsItemSelected(item);
        }
    }
```

```
}
```

https://riptutorial.com/zh-CN/android/topic/2028/

249: LE API

Bluetooth ClassicAndroid 2.0API5。LEAndroid 4.3API18。

Examples

```
<uses-permission android:name="android.permission.BLUETOOTH" />
```

```
<uses-permission android:name="android.permission.BLUETOOTH_ADMIN" />
```

Android API23

```
<uses-permission android:name="android.permission.ACCESS_COARSE_LOCATION" />
<!-- OR -->
<uses-permission android:name="android.permission.ACCESS_FINE_LOCATION" />
```

*。

```
private static final int REQUEST_ENABLE_BT = 1; // Unique request code
BluetoothAdapter mBluetoothAdapter;

// ...

if (!mBluetoothAdapter.isEnabled()) {
    Intent enableBtIntent = new Intent(BluetoothAdapter.ACTION_REQUEST_ENABLE);
    startActivityForResult(enableBtIntent, REQUEST_ENABLE_BT);
}

// ...

@Override
protected void onActivityResult(final int requestCode, final int resultCode, final Intent
data) {
    super.onActivityResult(requestCode, resultCode, data);

    if (requestCode == REQUEST_ENABLE_BT) {
        if (resultCode == RESULT_OK) {
            // Bluetooth was enabled
        } else if (resultCode == RESULT_CANCELED) {
            // Bluetooth was not enabled
        }
    }
}
```

```
private static final int REQUEST_DISCOVERABLE_BT = 2; // Unique request code
private static final int DISCOVERABLE_DURATION = 120; // Discoverable duration time in seconds
                                                      // 0 means always discoverable
                                                      // maximum value is 3600

// ...

Intent discoverableIntent = new Intent(BluetoothAdapter.ACTION_REQUEST_DISCOVERABLE);
```

```
discoverableIntent.putExtra(BluetoothAdapter.EXTRA_DISCOVERABLE_DURATION,
DISCOVERABLE_DURATION);
startActivityForResult(discoverableIntent, REQUEST_DISCOVERABLE_BT);

// ...

@Override
protected void onActivityResult(final int requestCode, final int resultCode, final Intent
data) {
    super.onActivityResult(requestCode, resultCode, data);

    if (requestCode == REQUEST_DISCOVERABLE_BT) {
        if (resultCode == RESULT_OK) {
            // Device is discoverable
        } else if (resultCode == RESULT_CANCELED) {
            // Device is not discoverable
        }
    }
}
```

BluetoothAdapter ◦

```
BluetoothAdapter mBluetoothAdapter;
```

ACTION_FOUNDBroadcastReceiver

```
private final BroadcastReceiver mReceiver = new BroadcastReceiver() {
public void onReceive(Context context, Intent intent) {
    String action = intent.getAction();

    //Device found
    if (BluetoothDevice.ACTION_FOUND.equals(action))
    {
        // Get the BluetoothDevice object from the Intent
        BluetoothDevice device = intent.getParcelableExtra(BluetoothDevice.EXTRA_DEVICE);
        // Add the name and address to an array adapter to show in a list
        mArrayAdapter.add(device.getName() + "\n" + device.getAddress());
    }
  }
};
```

BroadcastReceiver

```
IntentFilter filter = new IntentFilter(BluetoothDevice.ACTION_FOUND);
registerReceiver(mReceiver, filter);
```

startDiscovery

```
mBluetoothAdapter.startDiscovery();
```

onDestroyBroadcastReceiver

```
unregisterReceiver(mReceiver);
```

BluetoothDevice◦ \

1

```
 private BluetoothSocket _socket;
 //...
 public InitializeSocket(BluetoothDevice device){
    try {
        _socket = device.createRfcommSocketToServiceRecord(<Your app UDID>);
    } catch (IOException e) {
        //Error
    }
  }
```

2

```
try {
    _socket.connect();
} catch (IOException connEx) {
    try {
        _socket.close();
    } catch (IOException closeException) {
        //Error
    }
}

if (_socket != null && _socket.isConnected()) {
    //Socket is connected, now we can obtain our IO streams
}
```

3

```
private InputStream _inStream;
private OutputStream _outStream;
//....
try {
    _inStream = _socket.getInputStream();
    _outStream =  _socket.getOutputStream();
} catch (IOException e) {
   //Error
}
```

-

-

3

1

```
byte[] buffer = new byte[1024];  // buffer (our data)
int bytesCount; // amount of read bytes

while (true) {
    try {
        //reading data from input stream
        bytesCount = _inStream.read(buffer);
        if(buffer != null && bytesCount > 0)
```

```
        {
            //Parse received bytes
        }
    } catch (IOException e) {
        //Error
    }
}
```

2

```
public void write(byte[] bytes) {
    try {
        _outStream.write(bytes);
    } catch (IOException e) {
        //Error
    }
}
```

- 。
-

BluetoothLE APIAPI 18。API 21。UUID16UUIDUUID。APIBLE

1.

```
public class BTDevice {
    String address;
    String name;

    public String getAddress() {
        return address;
    }

    public void setAddress(String address) {
        this.address = address;
    }

    public String getName() {
        return name;
    }

    public void setName(String name) {
        this.name = name;
    }
}
```

2.

```
public interface ScanningAdapter {

    void startScanning(String name, String[] uuids);
    void stopScanning();
    List<BTDevice> getFoundDeviceList();
}
```

3.

```
public class BluetoothScanningFactory implements ScanningAdapter {

    private ScanningAdapter mScanningAdapter;

    public BluetoothScanningFactory() {
        if (isNewerAPI()) {
            mScanningAdapter = new LollipopBluetoothLEScanAdapter();
        } else {
            mScanningAdapter = new JellyBeanBluetoothLEScanAdapter();
        }
    }

    private boolean isNewerAPI() {
        return Build.VERSION.SDK_INT >= Build.VERSION_CODES.LOLLIPOP;
    }

    @Override
    public void startScanning(String[] uuids) {
        mScanningAdapter.startScanning(uuids);
    }

    @Override
    public void stopScanning() {
        mScanningAdapter.stopScanning();
    }

    @Override
    public List<BTDevice> getFoundDeviceList() {
        return mScanningAdapter.getFoundDeviceList();
    }
}
```

4. API

API 18

```
import android.annotation.TargetApi;
import android.bluetooth.BluetoothAdapter;
import android.bluetooth.BluetoothDevice;
import android.os.Build;
import android.os.Parcelable;
import android.util.Log;

import bluetooth.model.BTDevice;

import java.util.ArrayList;
import java.util.List;
import java.util.UUID;

@TargetApi(Build.VERSION_CODES.JELLY_BEAN_MR2)
public class JellyBeanBluetoothLEScanAdapter implements ScanningAdapter{
    BluetoothAdapter bluetoothAdapter;
    ScanCallback mCallback;

    List<BTDevice> mBluetoothDeviceList;

    public JellyBeanBluetoothLEScanAdapter() {
        bluetoothAdapter = BluetoothAdapter.getDefaultAdapter();
        mCallback = new ScanCallback();
        mBluetoothDeviceList = new ArrayList<>();
```

```
    }

    @Override
    public void startScanning(String[] uuids) {
        if (uuids == null || uuids.length == 0) {
            return;
        }
        UUID[] uuidList = createUUIDList(uuids);
        bluetoothAdapter.startLeScan(uuidList, mCallback);
    }

    private UUID[] createUUIDList(String[] uuids) {
        UUID[] uuidList = new UUID[uuids.length];
        for (int i = 0 ; i < uuids.length ; ++i) {
            String uuid = uuids[i];
            if (uuid == null) {
                continue;
            }
            uuidList[i] = UUID.fromString(uuid);
        }
        return uuidList;
    }

    @Override
    public void stopScanning() {
        bluetoothAdapter.stopLeScan(mCallback);
    }

    @Override
    public List<BTDevice> getFoundDeviceList() {
        return mBluetoothDeviceList;
    }

    private class ScanCallback implements BluetoothAdapter.LeScanCallback {

        @Override
        public void onLeScan(BluetoothDevice device, int rssi, byte[] scanRecord) {
            if (isAlreadyAdded(device)) {
                return;
            }
            BTDevice btDevice = new BTDevice();
            btDevice.setName(new String(device.getName()));
            btDevice.setAddress(device.getAddress());
            mBluetoothDeviceList.add(btDevice);
            Log.d("Bluetooth discovery", device.getName() + " " + device.getAddress());
            Parcelable[] uuids = device.getUuids();
            String uuid = "";
            if (uuids != null) {
                for (Parcelable ep : uuids) {
                    uuid += ep + " ";
                }
                Log.d("Bluetooth discovery", device.getName() + " " + device.getAddress() + "
" + uuid);
            }
        }

        private boolean isAlreadyAdded(BluetoothDevice bluetoothDevice) {
            for (BTDevice device : mBluetoothDeviceList) {
                String alreadyAddedDeviceMACAddress = device.getAddress();
                String newDeviceMACAddress = bluetoothDevice.getAddress();
                if (alreadyAddedDeviceMACAddress.equals(newDeviceMACAddress)) {
```

```
                    return true;
                }
            }
            return false;
        }
    }
}
```

API 21

```
import android.annotation.TargetApi;
import android.bluetooth.BluetoothAdapter;
import android.bluetooth.le.BluetoothLeScanner;
import android.bluetooth.le.ScanFilter;
import android.bluetooth.le.ScanResult;
import android.bluetooth.le.ScanSettings;
import android.os.Build;
import android.os.ParcelUuid;

import bluetooth.model.BTDevice;

import java.util.ArrayList;
import java.util.List;

@TargetApi(Build.VERSION_CODES.LOLLIPOP)
public class LollipopBluetoothLEScanAdapter implements ScanningAdapter {
    BluetoothLeScanner bluetoothLeScanner;
    ScanCallback mCallback;

    List<BTDevice> mBluetoothDeviceList;

    public LollipopBluetoothLEScanAdapter() {
        bluetoothLeScanner = BluetoothAdapter.getDefaultAdapter().getBluetoothLeScanner();
        mCallback = new ScanCallback();
        mBluetoothDeviceList = new ArrayList<>();
    }

    @Override
    public void startScanning(String[] uuids) {
        if (uuids == null || uuids.length == 0) {
            return;
        }
        List<ScanFilter> filterList = createScanFilterList(uuids);
        ScanSettings scanSettings = createScanSettings();
        bluetoothLeScanner.startScan(filterList, scanSettings, mCallback);
    }

    private List<ScanFilter> createScanFilterList(String[] uuids) {
        List<ScanFilter> filterList = new ArrayList<>();
        for (String uuid : uuids) {
            ScanFilter filter = new ScanFilter.Builder()
                    .setServiceUuid(ParcelUuid.fromString(uuid))
                    .build();
            filterList.add(filter);
        };
        return filterList;
    }

    private ScanSettings createScanSettings() {
        ScanSettings settings = new ScanSettings.Builder()
```

```
                .setScanMode(ScanSettings.SCAN_MODE_BALANCED)
                .build();
        return settings;
    }

    @Override
    public void stopScanning() {
        bluetoothLeScanner.stopScan(mCallback);
    }

    @Override
    public List<BTDevice> getFoundDeviceList() {
        return mBluetoothDeviceList;
    }

    public class ScanCallback extends android.bluetooth.le.ScanCallback {

        @Override
        public void onScanResult(int callbackType, ScanResult result) {
            super.onScanResult(callbackType, result);
            if (result == null) {
                return;
            }
            BTDevice device = new BTDevice();
            device.setAddress(result.getDevice().getAddress());
            device.setName(new
StringBuffer(result.getScanRecord().getDeviceName()).toString());
            if (device == null || device.getAddress() == null) {
                return;
            }
            if (isAlreadyAdded(device)) {
                return;
            }
            mBluetoothDeviceList.add(device);
        }

        private boolean isAlreadyAdded(BTDevice bluetoothDevice) {
            for (BTDevice device : mBluetoothDeviceList) {
                String alreadyAddedDeviceMACAddress = device.getAddress();
                String newDeviceMACAddress = bluetoothDevice.getAddress();
                if (alreadyAddedDeviceMACAddress.equals(newDeviceMACAddress)) {
                    return true;
                }
            }
            return false;
        }
    }
}
```

5.
```
scanningFactory.startScanning({uuidlist});

wait few seconds...

List<BTDevice> bluetoothDeviceList = scanningFactory.getFoundDeviceList();
```

LE API https://riptutorial.com/zh-CN/android/topic/2462/le-api

250:

oncreateLoader。 oncreateAsynctaskAsyncTaskAsyntask。

LoaderManager	ActivityFragmentLoader。
LoaderManager.LoaderCallbacks	LoaderManager。
	。
AsyncTaskLoader	AsyncTask。
CursorLoader	AsyncTaskLoaderContentResolverCursor。

Android 3.0。

- ActivityFragment 。
- 。
- 。
- 。 。

。 AndroidLoadersActivities / Fragments。 Loaders。 。

Examples

AsyncTaskLoader

AsyncTaskLoaderLoader AsyncTask。

```
final class BasicLoader extends AsyncTaskLoader<String> {

    public BasicLoader(Context context) {
        super(context);
    }

    @Override
    public String loadInBackground() {
        // Some work, e.g. load something from internet
        return "OK";
    }

    @Override
    public void deliverResult(String data) {
        if (isStarted()) {
            // Deliver result if loader is currently started
            super.deliverResult(data);
```

```
        }
    }

    @Override
    protected void onStartLoading() {
        // Start loading
        forceLoad();
    }

    @Override
    protected void onStopLoading() {
        cancelLoad();
    }

    @Override
    protected void onReset() {
        super.onReset();

        // Ensure the loader is stopped
        onStopLoading();
    }
}
```

Loaderactivity`onCreate()`onActivityCreated()。 LoaderManager.LoaderCallbacks

```
public class MainActivity extends Activity implements LoaderManager.LoaderCallbacks<String> {

    // Unique id for loader
    private static final int LDR_BASIC_ID = 1;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        // Initialize loader; Some data can be passed as second param instead of Bundle.Empty
        getLoaderManager().initLoader(LDR_BASIC_ID, Bundle.EMPTY, this);
    }

    @Override
    public Loader<String> onCreateLoader(int id, Bundle args) {
        return new BasicLoader(this);
    }

    @Override
    public void onLoadFinished(Loader<String> loader, String data) {
        Toast.makeText(this, data, Toast.LENGTH_LONG).show();
    }

    @Override
    public void onLoaderReset(Loader<String> loader) {
    }
}
```

toast。

AsyncTaskLoader

。

onContentChanged()。 loader forceLoad()forceLoad() takeContentChanged()。

onContentChanged() 。

JavadocstakeContentChanged

- true。

```
public abstract class BaseLoader<T> extends AsyncTaskLoader<T> {

    // Cached result saved here
    private final AtomicReference<T> cache = new AtomicReference<>();

    public BaseLoader(@NonNull final Context context) {
        super(context);
    }

    @Override
    public final void deliverResult(final T data) {
        if (!isReset()) {
            // Save loaded result
            cache.set(data);
            if (isStarted()) {
                super.deliverResult(data);
            }
        }
    }

    @Override
    protected final void onStartLoading() {
        // Register observers
        registerObserver();

        final T cached = cache.get();
        // Start new loading if content changed in background
        // or if we never loaded any data
        if (takeContentChanged() || cached == null) {
            forceLoad();
        } else {
            deliverResult(cached);
        }
    }

    @Override
    public final void onStopLoading() {
        cancelLoad();
    }

    @Override
    protected final void onReset() {
        super.onReset();
        onStopLoading();
        // Clear cache and remove observers
        cache.set(null);
        unregisterObserver();
    }

    /* virtual */
```

```
    protected void registerObserver() {
        // Register observers here, call onContentChanged() to invalidate cache
    }

    /* virtual */
    protected void unregisterObserver() {
        // Remove observers
    }
}
```

`restartLoader()`

```
private void reload() {
    getLoaderManager().reastartLoader(LOADER_ID, Bundle.EMPTY, this);
}
```

Bundle

Bundle

```
Bundle myBundle = new Bundle();
myBundle.putString(MY_KEY, myValue);
```

onCreateLoader

```
@Override
public Loader<String> onCreateLoader(int id, final Bundle args) {
    final String myParam = args.getString(MY_KEY);
    ...
}
```

https://riptutorial.com/zh-CN/android/topic/4390/

251:

Examples

1. `onTouchEvents()boolean` onInterceptTouchEvent。

`OnInterceptTouchEvent`false。

`onTouchEvent` 。 `OnInterceptTouchEvent`falsemotion`OnTouchEvent`。 true。

`OnTouchEvent`。

。

2. requestDisallowInterceptTouchEvent`OnInterceptTouchEvent` 。

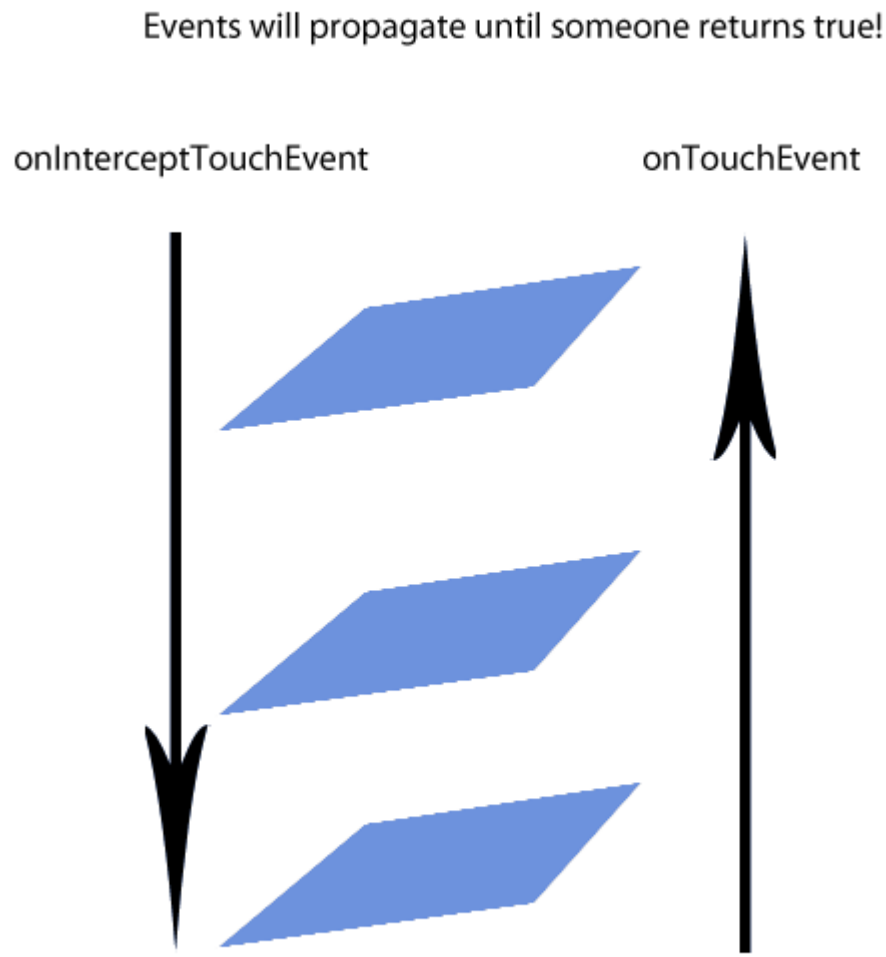
   public void requestDisallowInterceptTouchEventboolean disallowIntercept

`OnTouchEvent` 。

3.

`OnInterceptTouchEvent`false`OnTouchEvent` 。 OnTouchEvent。

```
parent -> child|parent -> child|parent -> child views.
```



4. `OnInterceptTouchEvent`。

ViewGroup `OnTouchEvent` 。

4A。

```
@Override
public boolean onInterceptTouchEvent(MotionEvent ev) {
    /*
     * This method JUST determines whether we want to intercept the motion.
     * If we return true, onTouchEvent will be called and we do the actual
     * scrolling there.
     */


    final int action = MotionEventCompat.getActionMasked(ev);

    // Always handle the case of the touch gesture being complete.
    if (action == MotionEvent.ACTION_CANCEL || action == MotionEvent.ACTION_UP) {
        // Release the scroll.
        mIsScrolling = false;
```

```
        return false; // Do not intercept touch event, let the child handle it
    }

    switch (action) {
        case MotionEvent.ACTION_MOVE: {
            if (mIsScrolling) {
                // We're currently scrolling, so yes, intercept the
                // touch event!
                return true;
            }

            // If the user has dragged her finger horizontally more than
            // the touch slop, start the scroll

            // left as an exercise for the reader
            final int xDiff = calculateDistanceX(ev);

            // Touch slop should be calculated using ViewConfiguration
            // constants.
            if (xDiff > mTouchSlop) {
                // Start scrolling!
                mIsScrolling = true;
                return true;
            }
            break;
        }
        ...
    }

    // In general, we don't want to intercept touch events. They should be
    // handled by the child view.
    return false;
}
```

4B。

```
// The hit rectangle for the ImageButton
myButton.getHitRect(delegateArea);

// Extend the touch area of the ImageButton beyond its bounds
// on the right and bottom.
delegateArea.right += 100;
delegateArea.bottom += 100;

// Instantiate a TouchDelegate.
// "delegateArea" is the bounds in local coordinates of
// the containing view to be mapped to the delegate view.
// "myButton" is the child view that should receive motion
// events.
TouchDelegate touchDelegate = new TouchDelegate(delegateArea, myButton);

// Sets the TouchDelegate on the parent view, such that touches
// within the touch delegate bounds are routed to the child.
if (View.class.isInstance(myButton.getParent())) {
    ((View) myButton.getParent()).setTouchDelegate(touchDelegate);
}
```

https://riptutorial.com/zh-CN/android/topic/7167/

252: Logcat

- `Log.v(String tag, String msg, Throwable tr)`
- `Log.v(String tag, String msg)`
- `Log.d(String tag, String msg, Throwable tr)`
- `Log.d(String tag, String msg)`
- `Log.i(String tag, String msg, Throwable tr)`
- `Log.i(String tag, String msg)`
- `Log.w(String tag, String msg, Throwable tr)`
- `Log.w(String tag, String msg)`
- `Log.e(String tag, String msg, Throwable tr)`
- `Log.e(String tag, String msg)`

-b	。。。
-C	。
-d	。
-f	。stdout。
-G	。
-n	count。4.-r。
-r	kbytes。16.-f。
-s	。
-v	。。

LogcatLog。

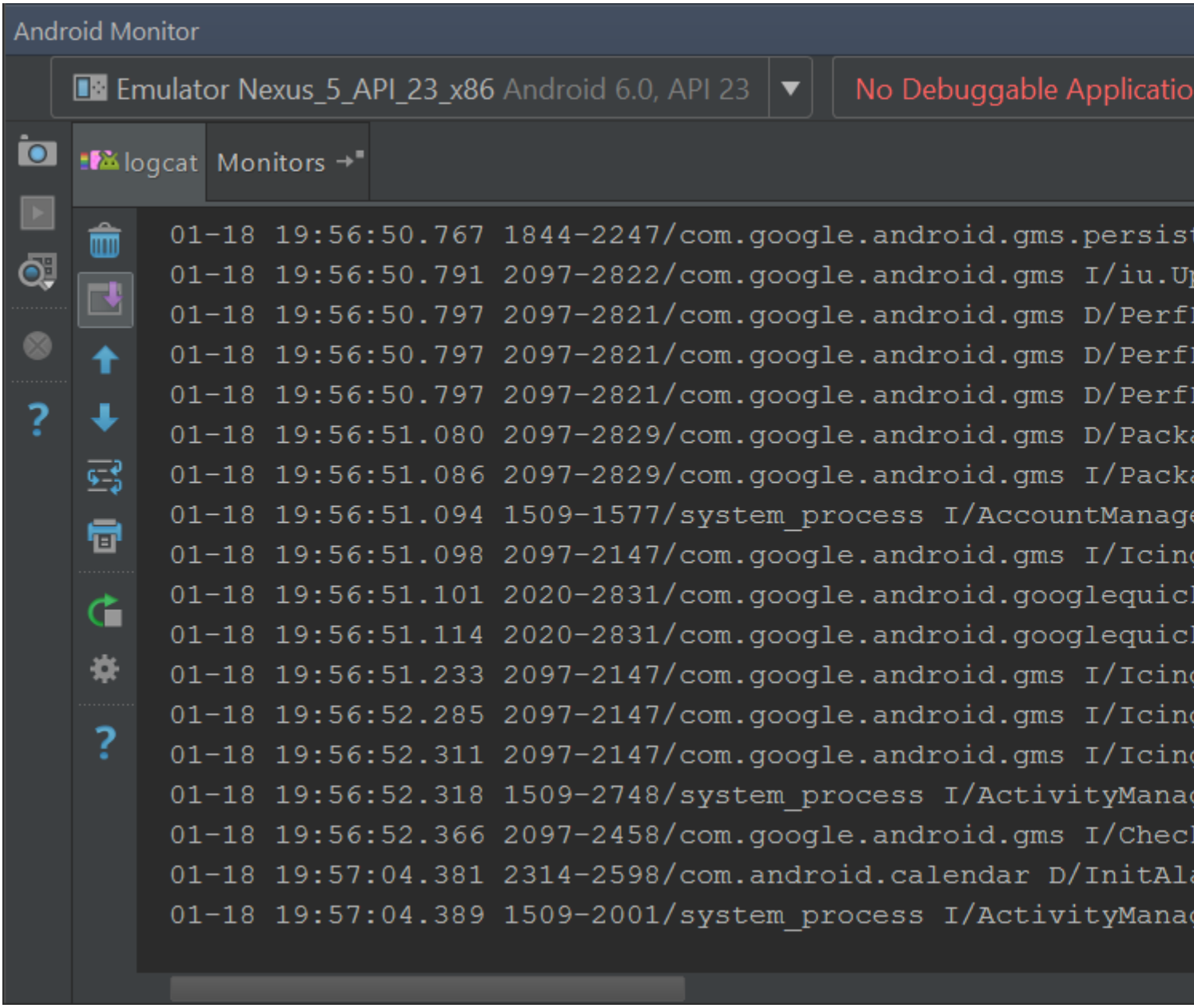
JavaSystem.outAndroidLog。JavaAndroidLog。System.out`Log.i()`。

- Loglogcat Android。
- Stackoveflow Android Log.vLog.dLog.iLog.wLog.e -

Examples

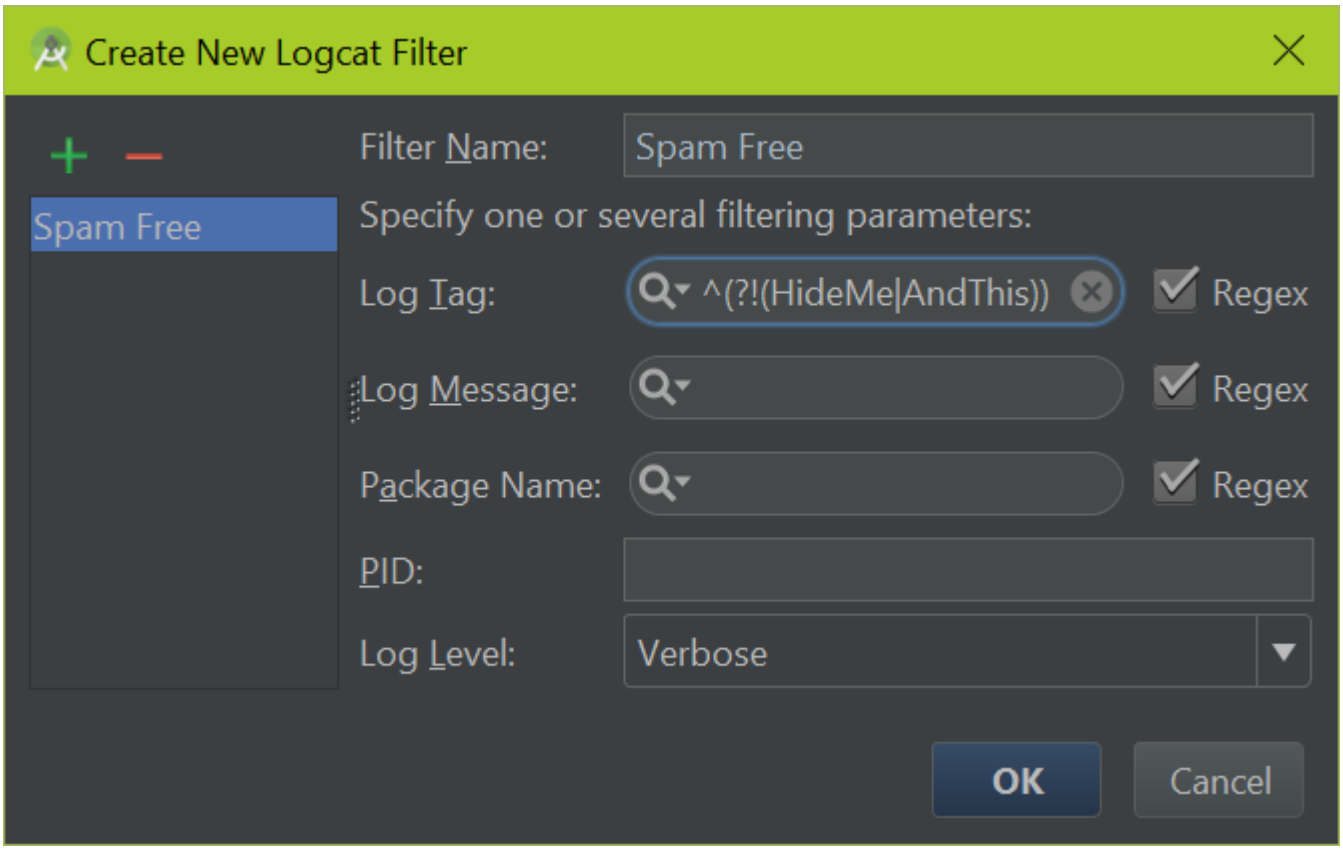
logcat

logcat。“Android Monitor”“ ”



。 。

```
^(?!(HideMe|AndThis))
```



。 |。 “GC”

```
^(?!(HideMe|AndThis|GC))
```

LoggingLogcat

Android。 。 Android

Logtagmessage。 。

```
Log.v(String tag, String msg);
```

Androidlogcat

```
07-28 12:00:00.759 24812-24839/my.packagename V/MyAnimator: Some log messages
 └ time stamp             |  app.package┘     |    └ any tag  |
    process & thread ids ┘          log level┘               └ the log message
```

IDID。 - / UI

```
public static final String tag = MyAnimator.class.getSimpleName();
```

Android6

- ERROR Log.e()
  - Exception。
- WARN Log.w()
  -
- INFO Log.i()
  -
- DEBUG Log.d()
  -
- VERBOSE Log.v()
  -
- ASSERT Log.wtf()
  - 。
  - *wtf*“”。

。 。

```
E/MyApplication: Process: com.example.myapplication, PID: 25788
                         com.example.SomeRandomException: Expected string, got 'null' instead
```

```
V/MyApplication: Looking for file myFile.txt on the SD card
D/MyApplication: Found file myFile.txt at path <path>
V/MyApplication: Opening file myFile.txt
D/MyApplication: Finished reading myFile.txt, found 0 lines
V/MyApplication: Closing file myFile.txt
...
E/MyApplication: Process: com.example.myapplication, PID: 25788
                         com.example.SomeRandomException: Expected string, got 'null' instead
```

。

Android。

Android。 。

。 。

Google PlayAndroid。 。 。

Android。 AndroidLog。

LoggingLogcat

Logcat

。

```
MyLogger.logWithLink("MyTag","param="+param);
```

```
07-26...012/com.myapp D/MyTag: MyFrag:onStart(param=3)  (MyFrag.java:2366) // << logcat
converts this to a link to source!
```

MyLogger

```
static StringBuilder sb0 = new StringBuilder(); // reusable string object

public static void logWithLink(String TAG, Object param) {
    StackTraceElement stack = Thread.currentThread().getStackTrace()[3];
    sb0.setLength(0);
    String c = stack.getFileName().substring(0, stack.getFileName().length() - 5); // removes
the ".java"
    sb0.append(c).append(":");
    sb0.append(stack.getMethodName()).append('(');
    if (param != null) {
        sb0.append(param);
    }
    sb0.append(") ");
    sb0.append("
(").append(stack.getFileName()).append(':').append(stack.getLineNumber()).append(')');
    Log.d(TAG, sb0.toString());
}
```

[4][3]。

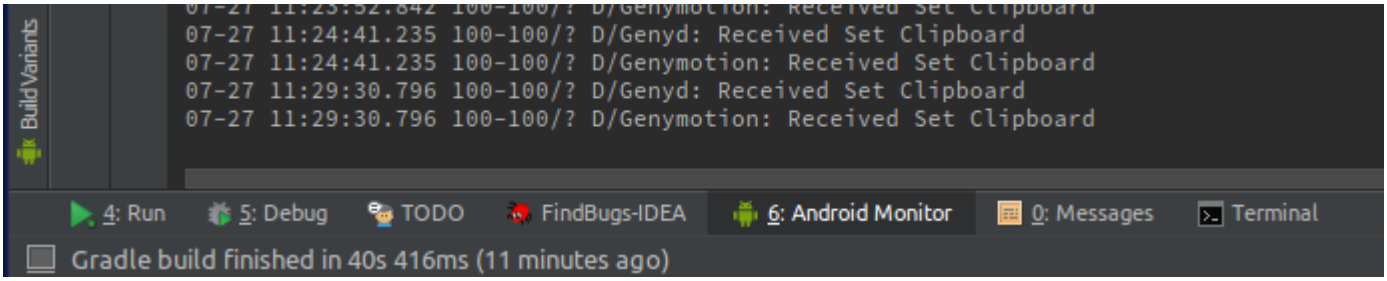
Logcat

LogcatLog。

LogcatAndroid StudioAndroid Monitoradb。

Android Studio

“Android Monitor”



Windows / LinuxAlt + 6MacCMD + 6 。

```
$ adb logcat
```

```
$ adb logcat -v time
```

```
$ adb logcat -v time | grep 'searchtext'
```

logcat 。
“error”

```
$ adb logcat *:E
```

Android StudioLive templates。

TAB。

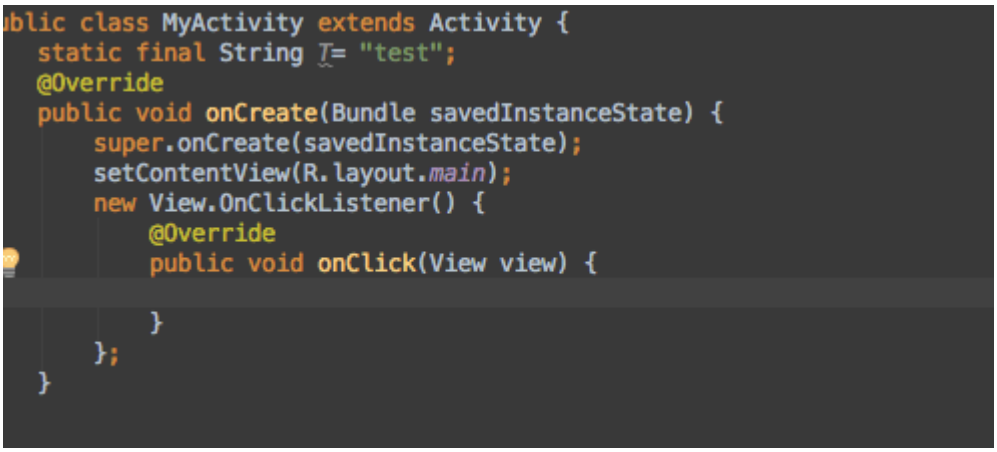
- logi →→ android.util.Log.i(TAG, "$METHOD_NAME$: $content$");
  - $METHOD_NAME$。
- loge →
- 。

Android Studio ALT + s“live”。 。

Android StudioLive templatesAndroid Postfix

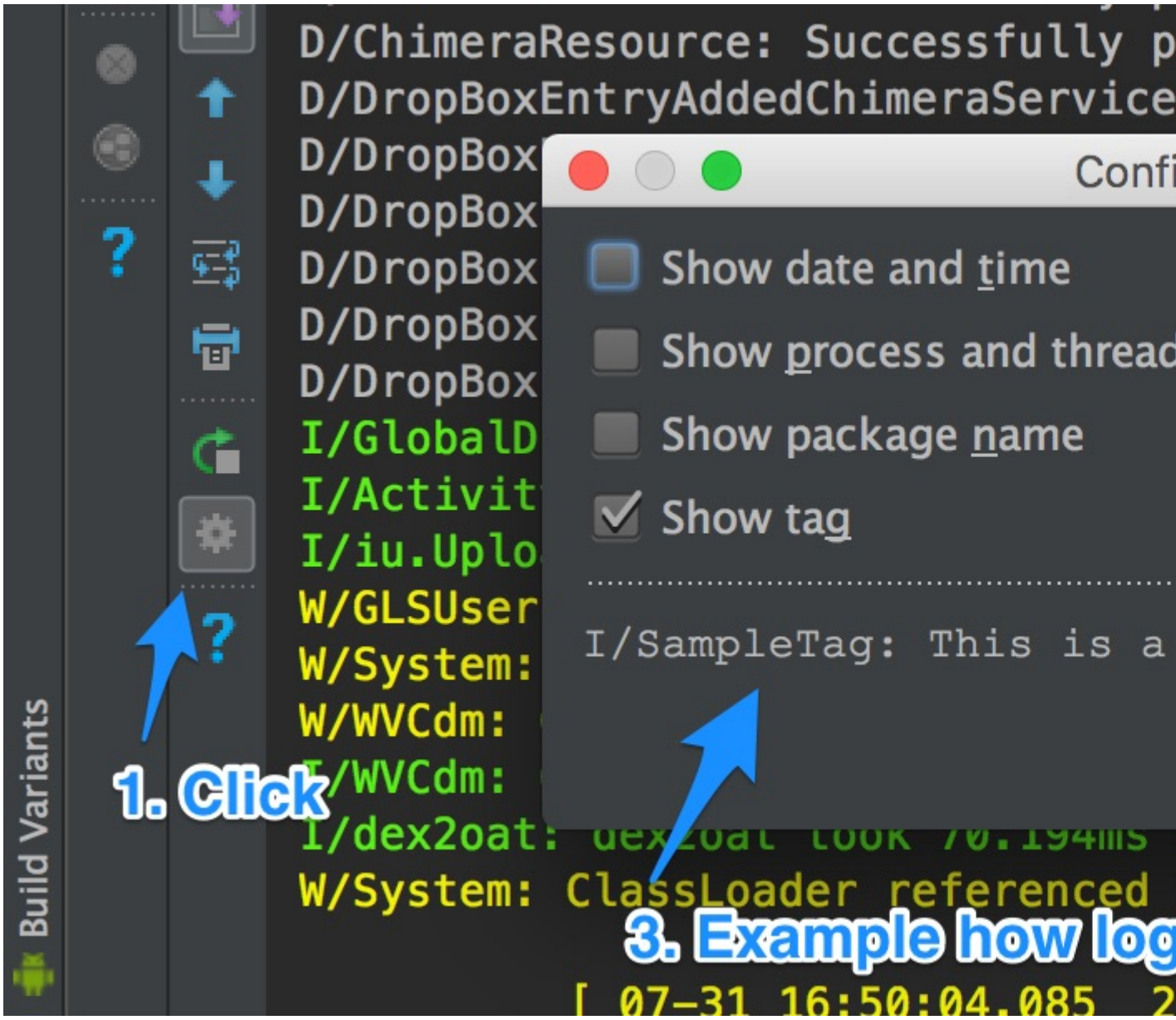
。

.log - 。 “TAG”“TAG”。 。

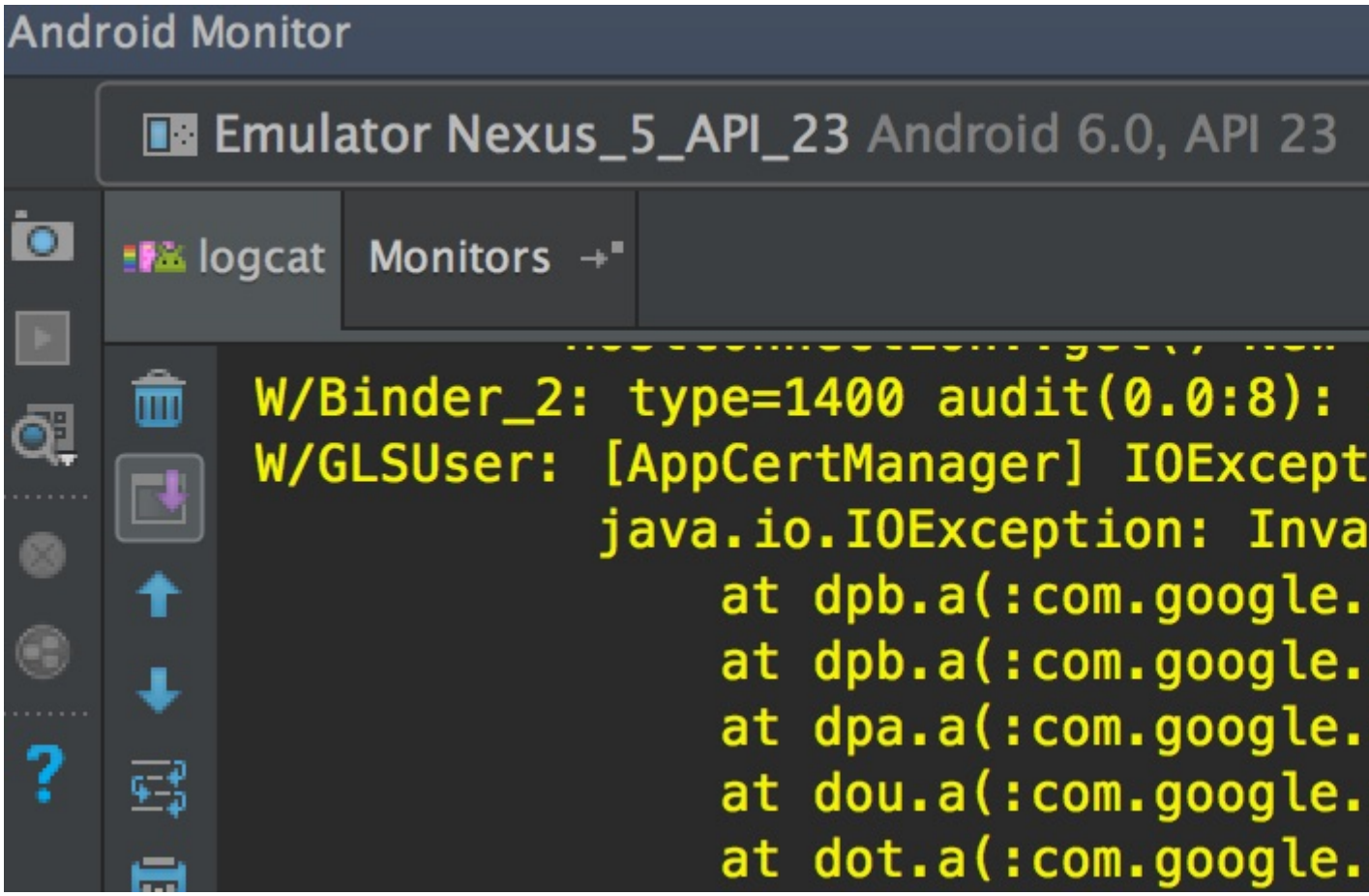


Android Studio

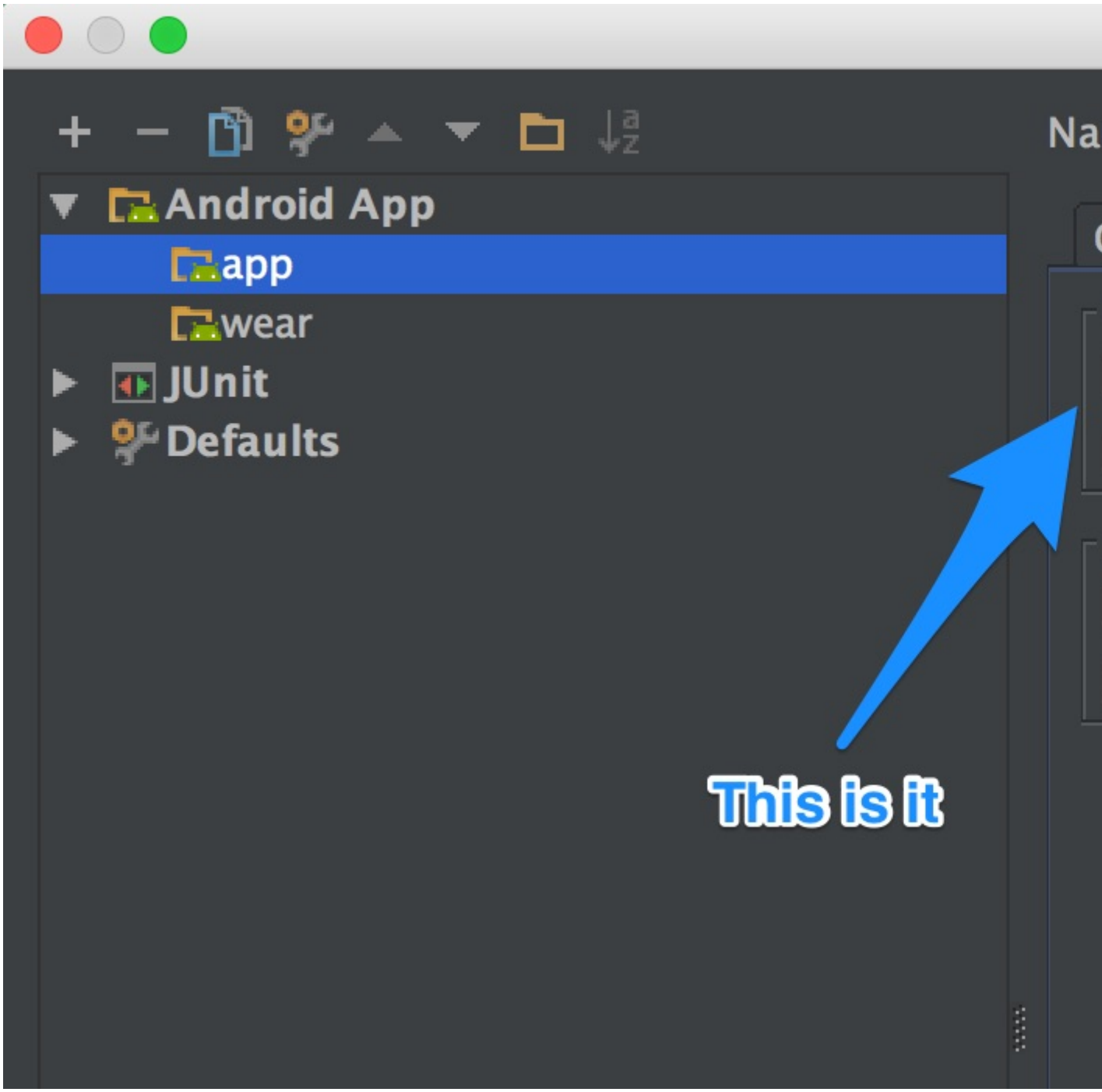
1. /


D/ChimeraResource: Successfully p
D/DropBoxEntryAddedChimeraService
D/DropBox
D/DropBox
D/DropBox
D/DropBox
D/DropBox
I/GlobalD
I/Activit
I/iu.Uplo
W/GLSUser
W/System:
W/WVCdm:
I/WVCdm:
I/dex2oat:
W/System: ClassLoader referenced
Confi
Show date and time
Show process and thread
Show package name
Show tag
I/SampleTag: This is a
1. Click
3. Example how log
Build Variants

2.


Android Monitor
Emulator Nexus_5_API_23 Android 6.0, API 23
logcat
Monitors
W/Binder_2: type=1400 audit(0.0:8):
W/GLSUser: [AppCertManager] IOExcept
java.io.IOException: Inva
at dpb.a(:com.google.
at dpb.a(:com.google.
at dpa.a(:com.google.
at dou.a(:com.google.
at dot.a(:com.google.

3. //




```
adb logcat -c
```

Logcat https://riptutorial.com/zh-CN/android/topic/1552/logcat

253:

Examples

WindowManagers。

```
// Get display metrics
DisplayMetrics metrics = new DisplayMetrics();
context.getWindowManager().getDefaultDisplay().getMetrics(metrics);
```

DisplayMetrics

```
// Get width and height in pixel
Integer heightPixels = metrics.heightPixels;
Integer widthPixels = metrics.widthPixels;
```

Windowmanagers DisplayMetrics 。

```
// Get density in dpi
DisplayMetrics metrics = new DisplayMetrics();
context.getWindowManager().getDefaultDisplay().getMetrics(metrics);
int densityInDpi =  metrics.densityDpi;
```

pxdpdppx

DP

```
private int dpToPx(int dp)
{
    return (int) (dp * Resources.getSystem().getDisplayMetrics().density);
}
```

DP

```
private int pxToDp(int px)
{
    return (int) (px / Resources.getSystem().getDisplayMetrics().density);
}
```

https://riptutorial.com/zh-CN/android/topic/4207/

254:

。

。

。

Examples

Java Singleton

Singleton。

- 。
- 。
-
- 。

```
/**
 * Singleton class.
 */
public final class Singleton {

  /**
   * Private constructor so nobody can instantiate the class.
   */
  private Singleton() {}

  /**
   * Static to class instance of the class.
   */
  private static final Singleton INSTANCE = new Singleton();

  /**
   * To be called by user to obtain instance of the class.
   *
   * @return instance of the singleton.
   */
  public static Singleton getInstance() {
    return INSTANCE;
  }
}
```

。 YouTube。 。

。 。 。 。 YouTube。

1. 。

```
class Channel{
    private List<Subscriber> subscribers;
    public void subscribe(Subscriber sub) {
        // Add new subscriber.
    }
    public void unsubscribe(Subscriber sub) {
        // Remove subscriber.
    }
    public void newEvent() {
        // Notification event for all subscribers.
    }
}
```

2.
```
interface Subscriber {
    void doSubscribe(Channel channel);
    void doUnsubscribe(Channel channel);
    void handleEvent();  // Process the new event.
}
```

https://riptutorial.com/zh-CN/android/topic/9949/

255:

Examples

Google

```
private void startListening() {

     //Intent to listen to user vocal input and return result in same activity
    Intent intent = new Intent(RecognizerIntent.ACTION_RECOGNIZE_SPEECH);

   //Use a language model based on free-form speech recognition.
    intent.putExtra(RecognizerIntent.EXTRA_LANGUAGE_MODEL,
            RecognizerIntent.LANGUAGE_MODEL_FREE_FORM);
    intent.putExtra(RecognizerIntent.EXTRA_LANGUAGE, Locale.getDefault());

    //Message to display in dialog box
    intent.putExtra(RecognizerIntent.EXTRA_PROMPT,
            getString(R.string.speech_to_text_info));
    try {
        startActivityForResult(intent, REQ_CODE_SPEECH_INPUT);
    } catch (ActivityNotFoundException a) {
        Toast.makeText(getApplicationContext(),
                getString(R.string.speech_not_supported),
                Toast.LENGTH_SHORT).show();
    }
}
```

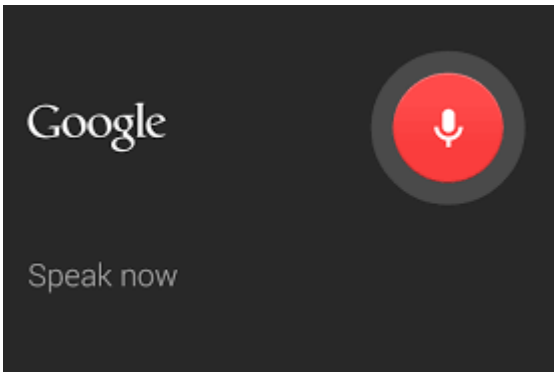
onActivityResult

```
@Override
protected void onActivityResult(int requestCode, int resultCode, Intent data) {
    super.onActivityResult(requestCode, resultCode, data);

    switch (requestCode) {
    case REQ_CODE_SPEECH_INPUT: {
        if (resultCode == RESULT_OK && null != data) {

            ArrayList<String> result = data
                    .getStringArrayListExtra(RecognizerIntent.EXTRA_RESULTS);
            txtSpeechInput.setText(result.get(0));
        }
        break;
    }

    }
}
```




```
public void startListeningWithoutDialog() {
    // Intent to listen to user vocal input and return the result to the same activity.
    Intent intent = new Intent(RecognizerIntent.ACTION_RECOGNIZE_SPEECH);

    // Use a language model based on free-form speech recognition.
    intent.putExtra(RecognizerIntent.EXTRA_LANGUAGE_MODEL,
            RecognizerIntent.LANGUAGE_MODEL_FREE_FORM);
    intent.putExtra(RecognizerIntent.EXTRA_LANGUAGE, Locale.getDefault());
    intent.putExtra(RecognizerIntent.EXTRA_MAX_RESULTS, 5);
    intent.putExtra(RecognizerIntent.EXTRA_CALLING_PACKAGE,
            appContext.getPackageName());

    // Add custom listeners.
    CustomRecognitionListener listener = new CustomRecognitionListener();
    SpeechRecognizer sr = SpeechRecognizer.createSpeechRecognizer(appContext);
    sr.setRecognitionListener(listener);
    sr.startListening(intent);
}
```

CustomRecognitionListener

```
class CustomRecognitionListener implements RecognitionListener {
    private static final String TAG = "RecognitionListener";

    public void onReadyForSpeech(Bundle params) {
        Log.d(TAG, "onReadyForSpeech");
    }

    public void onBeginningOfSpeech() {
        Log.d(TAG, "onBeginningOfSpeech");
    }

    public void onRmsChanged(float rmsdB) {
        Log.d(TAG, "onRmsChanged");
    }

    public void onBufferReceived(byte[] buffer) {
        Log.d(TAG, "onBufferReceived");
    }

    public void onEndOfSpeech() {
        Log.d(TAG, "onEndofSpeech");
    }

    public void onError(int error) {
        Log.e(TAG, "error " + error);

        conversionCallaback.onErrorOccured(TranslatorUtil.getErrorText(error));
```

```
    }

    public void onResults(Bundle results) {
        ArrayList<String> result = data
                .getStringArrayListExtra(RecognizerIntent.EXTRA_RESULTS);
        txtSpeechInput.setText(result.get(0));
    }

    public void onPartialResults(Bundle partialResults) {
        Log.d(TAG, "onPartialResults");
    }

    public void onEvent(int eventType, Bundle params) {
        Log.d(TAG, "onEvent " + eventType);
    }
}
```

https://riptutorial.com/zh-CN/android/topic/6252/

256: Android

Android

Examples

google Auth。

[https://developers.google.com/identity/sign-in/android/start-integrating] [1]

-
- SHA1SIGNIN

app /

1. build.gradle

   classpath'com.google.gmsgoogle-services3.0.0'

2. build.gradle :(

   'com.google.gms.google-services'

3. gradle

   {compile'com.google.android.gmsplay-services-auth9.8.0'}

Google SignIn

- onCreateGoogle。

```
 GoogleSignInOptions gso = new
GoogleSignInOptions.Builder(GoogleSignInOptions.DEFAULT_SIGN_IN)
        .requestEmail()
        .build();
```

- GoogleApiClientGoogleAPI。

```
 mGoogleApiClient = new GoogleApiClient.Builder(this)
        .enableAutoManage(this /* FragmentActivity */, this /* OnConnectionFailedListener */)
        .addApi(Auth.GOOGLE_SIGN_IN_API, gso)
        .build();
```

- Google。

```
 private void signIn() {
 Intent signInIntent = Auth.GoogleSignInApi.getSignInIntent(mGoogleApiClient);
 startActivityForResult(signInIntent, RC_SIGN_IN);
}
```

- OnActivityResult。

```
 @Override
public void onActivityResult(int requestCode, int resultCode, Intent data) {
    super.onActivityResult(requestCode, resultCode, data);

    // Result returned from launching the Intent from GoogleSignInApi.getSignInIntent(...);
    if (requestCode == RC_SIGN_IN) {
        GoogleSignInResult result = Auth.GoogleSignInApi.getSignInResultFromIntent(data);
        handleSignInResult(result);
    }
}
```

- ```
  private void handleSignInResult(GoogleSignInResult result) {
  Log.d(TAG, "handleSignInResult:" + result.isSuccess());
  if (result.isSuccess()) {
      // Signed in successfully, show authenticated UI.
      GoogleSignInAccount acct = result.getSignInAccount();
      mStatusTextView.setText(getString(R.string.signed_in_fmt, acct.getDisplayName()));
      updateUI(true);
  } else {
      // Signed out, show unauthenticated UI.
      updateUI(false);
  }
 }
  ```

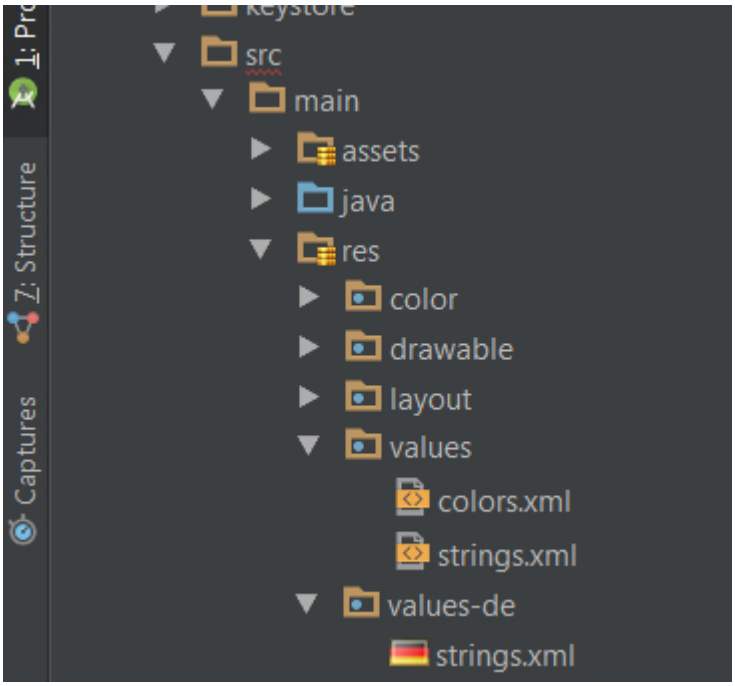
Android https://riptutorial.com/zh-CN/android/topic/9960/android
  ```

257:

Examples

strings.xml。

ISO。



xmlstrings.xml。 。

/res/values/strings.xml

```
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <string name="app_name">HelloWorld</string>
    <string name="hello_world">Hello World!</string>
</resources>
```

/res/values-fr/strings.xml

```
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <string name="hello_world">Bonjour tout le monde !!!</string>
</resources>
```

`strings.xml` 。 `<string>` XML。

strings.xml。 isostrings.xml。 'app_name'xmlstrings.xml。 。

/res/values/strings.xml

```
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <string name="app_name">Hello World App</string>
    <string name="hello_world">Hello World!</string>
</resources>
```

XML。

XML`@string/string_name<string>`。 /manifests/AndroidManifest.xmlAndroid Studio

```
android:label="@string/app_name"
```

android“app_name”`<string>`。

androidXML`<string>`。 TextView`hello_world`

```
<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="@string/hello_world"/>
```

java`<string>`。 Activity`hello_world`

```
String helloWorld = getString(R.string.hello_world);
```

RES // filename.xml

```
<string-array name="string_array_name">
    <item>text_string</item>
    <item>@string/string_id</item>
</string-array>
```

RES // arrays.xml

```
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <string-array name="string_array_example">
        <item>@string/app_name</item>
        <item>@string/hello_world</item>
    </string-array>
</resources>
```

java

```
String[] strings = getResources().getStringArray(R.array.string_array_example;
Log.i("TAG",Arrays.toString(strings)));
```

```
I/TAG: [HelloWorld, Hello World!]
```

`dimens.xml` ◦ `<dimen>`◦

RES // dimens.xml

```
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <dimen name="small_padding">5dp</dimen>
    <dimen name="medium_padding">10dp</dimen>
    <dimen name="large_padding">20dp</dimen>

    <dimen name="small_font">14sp</dimen>
    <dimen name="medium_font">16sp</dimen>
    <dimen name="large_font">20sp</dimen>
</resources>
```

- **sp**。。
- **dp**。。
- **pt**
- **px**
-
-

`@dimen/name_of_the_dimension`XML。

```
<RelativeLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:padding="@dimen/large_padding">
</RelativeLayout>
```

`integers.xml`。 `<integer>`

RES // integers.xml

```
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <integer name="max">100</integer>
</resources>
```

`@integer/name_of_the_integer`XML`@integer/name_of_the_integer`

```
<ProgressBar
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:max="@integer/max"/>
```

RES // filename.xml

```
<integer-array name="integer_array_name">
    <item>integer_value</item>
    <item>@integer/integer_id</item>
</integer-array>
```

RES // arrays.xml

```
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <integer-array name="fibo">
        <item>@integer/zero</item>
        <item>@integer/one</item>
        <item>@integer/one</item>
        <item>@integer/two</item>
        <item>@integer/three</item>
        <item>@integer/five</item>
    </integer-array>
</resources>
```

java

```
int[] values = getResources().getIntArray(R.array.fibo);
Log.i("TAG",Arrays.toString(values)));
```

```
I/TAG: [0, 1, 1, 2, 3, 5]
```

/res/values/colors.xml/res/values/◦

<color>

```
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <color name="colorPrimary">#3F51B5</color>
    <color name="colorPrimaryDark">#303F9F</color>
    <color name="colorAccent">#FF4081</color>

    <color name="blackOverlay">#66000000</color>
</resources>
```

(0 - FF)

- #RGB
- #ARGB
- #RRGGBB
- #AARRGGBB

- A - alpha - 0FF
- R -
- G -
- B -

@color/name_of_the_colorXML

```
<RelativeLayout
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="@color/blackOverlay">
```

this

Activity。 Context。

1.6

```
int color = ContextCompat.getColor(this, R.color.black_overlay);
view.setBackgroundColor(color);
```

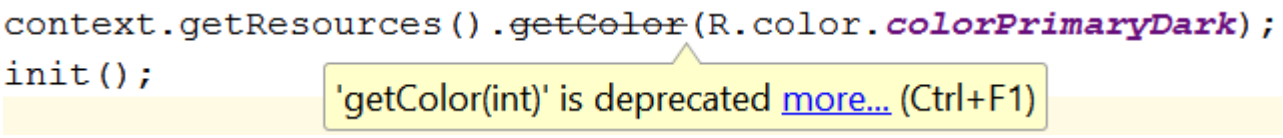
6

```
int color = this.getResources().getColor(this, R.color.black_overlay);
view.setBackgroundColor(color);
```

`colorPrimary colorPrimaryDarkcolorAccentstyles.xml`AndroidMaterial。 Android Studio。

“”

Android API 23



Android API。

```
public int getColor(@ColorRes int id, @Nullable Theme theme) throws NotFoundException
```

◦ `android.support.v4`◦

`build.gradle`

```
com.android.support:support-v4:24.0.0
```

```
ContextCompat.getColor(context, R.color.colorPrimaryDark);
ContextCompat.getDrawable(context, R.drawable.btn_check);
ContextCompat.getColorStateList(context, R.color.colorPrimary);
DrawableCompat.setTint(drawable);
ContextCompat.getColor(context,R.color.colorPrimaryDark));
```

```
ViewCompat.setElevation(textView, 1F);
ViewCompat.animate(textView);
TextViewCompat.setTextAppearance(textView, R.style.AppThemeTextStyle);
...
```

Activity / Fragment

res / menu

```
<?xml version="1.0" encoding="utf-8"?>
<menu
```

```
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto">

    <item
        android:id="@+id/first_item_id"
        android:orderInCategory="100"
        android:title="@string/first_item_string"
        android:icon="@drawable/first_item_icon"
        app:showAsAction="ifRoom"/>

    <item
        android:id="@+id/second_item_id"
        android:orderInCategory="110"
        android:title="@string/second_item_string"
        android:icon="@drawable/second_item_icon"
        app:showAsAction="ifRoom"/>

</menu>
```

Activity

```
@Override
public void onCreateOptionsMenu(Menu menu, MenuInflater inflater) {
    ///Override defining menu resource
    inflater.inflate(R.menu.menu_resource_id, menu);
    super.onCreateOptionsMenu(menu, inflater);
}

@Override
public void onPrepareOptionsMenu(Menu menu) {
    //Override for preparing items (setting visibility, change text, change icon...)
    super.onPrepareOptionsMenu(menu);
}

@Override
public boolean onOptionsItemSelected(MenuItem item) {
    //Override it for handling items
    int menuItemId = item.getItemId();
    switch (menuItemId) {
        case: R.id.first_item_id
             return true; //return true, if is handled
    }
    return super.onOptionsItemSelected(item);
}
```

```
getActivity().invalidateOptionsMenu();
```

Fragment

```
@Nullable
@Override
public View onCreateView(LayoutInflater inflater, ViewGroup container, Bundle
savedInstanceState) {
    setHasOptionsMenu(true);
    super.onCreateView(inflater, container, savedInstanceState);
}
```

strings.xml

strings.xml。String。

```
<string name="welcome_trainer">Hello Pokémon Trainer, %1$s! You have caught %2$d
Pokémon.</string>
```

```
String welcomePokemonTrainerText = getString(R.string.welcome_trainer, tranerName,
pokemonCount);
```

1$ S
"
'1'
'$'
's"d'

getString()ContextResourcesActivitygetActivity().getString()getContext().getString() 。

。

res/color/foo.xml

```
<?xml version="1.0" encoding="utf-8"?>
<selector xmlns:android="http://schemas.android.com/apk/res/android">
    <item android:color="#888888" android:state_enabled="false"/>
    <item android:color="@color/lightGray" android:state_selected="false"/>
    <item android:color="@android:color/white" />
</selector>
```

。catch-all。

。

strings.xml

```
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <plurals name="hello_people">
        <item quantity="one">Hello to %d person</item>
        <item quantity="other">Hello to %d people</item>
    </plurals>
</resources>
```

ResourcesgetQuantityString()Java

```
getResources().getQuantityString(R.plurals.hello_people, 3, 3);
```

R.plurals.hello_people。 3 quantity。 3 %d 。

```
few
many
one
```

```
other
two
zero
```

quantity ◦ one◦ zeroother◦ quantityIDELint◦

◦ JavaInteger Float String ◦

◦ Category 3

- ID
-
-

POJOcategories.xml◦

1.

```
public class Category {
    private Type id;
    private @ColorRes int color;
    private @StringRes String name;

    public Category getId() {
        return id;
    }

    public void setId(Category id) {
        this.id = id;
    }

    public String getName() {
        return name;
    }

    public void setName(String name) {
        this.name = name;
    }

    public int getColor() {
        return color;
    }

    public void setColor(int color) {
        this.color = color;
    }

    public enum Type{
        REGISTRATION,
        TO_ACCEPT,
        TO_COMPLETE,
        TO_VERIFY,
        CLOSED
    }
}
```

2. **res/values**

categories.xml

3.

```
<array name="no_action">
    <item>0</item>
    <item>@android:color/transparent</item>
    <item>@string/statusRegistration</item>
</array>
<array name="to_accept">
    <item>1</item>
    <item>@color/light_gray</item>
    <item>@string/acceptance</item>
</array>
<array name="opened">
    <item>2</item>
    <item>@color/material_green_500</item>
    <item>@string/open</item>
</array>
<array name="to_verify">
    <item>3</item>
    <item>@color/material_gray_800</item>
    <item>@string/verification</item>
</array>
<array name="to_close">
    <item>4</item>
    <item>@android:color/black</item>
    <item>@string/closed</item>
</array>
```

4.

```
<array name="categories">
    <item>@array/no_action</item>
    <item>@array/to_accept</item>
    <item>@array/opened</item>
    <item>@array/to_verify</item>
    <item>@array/to_close</item>
</array>
```

5.

```
@NonNull
public List<Category> getCategories(@NonNull Context context) {
final int DEFAULT_VALUE = 0;
final int ID_INDEX = 0;
final int COLOR_INDEX = 1;
final int LABEL_INDEX = 2;

if (context == null) {
    return Collections.emptyList();
}
// Get the array of objects from the `tasks_categories` array
TypedArray statuses = context.getResources().obtainTypedArray(R.array.categories);
if (statuses == null) {
    return Collections.emptyList();
}
List<Category> categoryList = new ArrayList<>();
for (int i = 0; i < statuses.length(); i++) {
    int statusId = statuses.getResourceId(i, DEFAULT_VALUE);
    // Get the properties of one object
    TypedArray rawStatus = context.getResources().obtainTypedArray(statusId);
```

```
    Category category = new Category();

    int id = rawStatus.getInteger(ID_INDEX, DEFAULT_VALUE);
    Category.Type categoryId;
    //The ID's should maintain the order with `Category.Type`
    switch (id) {
        case 0:
            categoryId = Category.Type.REGISTRATION;
            break;
        case 1:
            categoryId = Category.Type.TO_ACCEPT;
            break;
        case 2:
            categoryId = Category.Type.TO_COMPLETE;
            break;
        case 3:
            categoryId = Category.Type.TO_VERIFY;
            break;
        case 4:
            categoryId  = Category.Type.CLOSED;
            break;
        default:
            categoryId = Category.Type.REGISTRATION;
            break;
    }
    category.setId(categoryId);

    category.setColor(rawStatus.getResourceId(COLOR_INDEX, DEFAULT_VALUE));

    int labelId = rawStatus.getResourceId(LABEL_INDEX, DEFAULT_VALUE);
    category.setName(getString(context.getResources(), labelId));

    categoryList.add(taskCategory);
}
return taskCategoryList;
}
```

9

9。

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9。

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Android。

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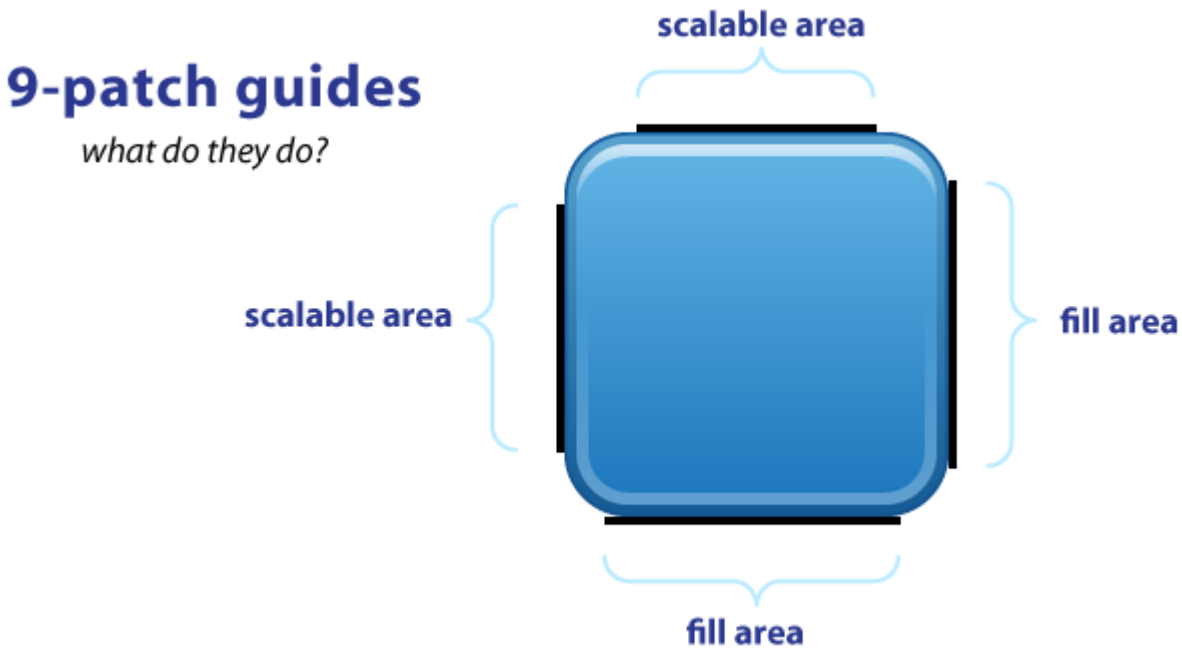
9-PATCH for ANDROID UI2011518

Android9-patch9.png。。

9-patchpng9scale9。1。name.9.pngAndroid9.png。



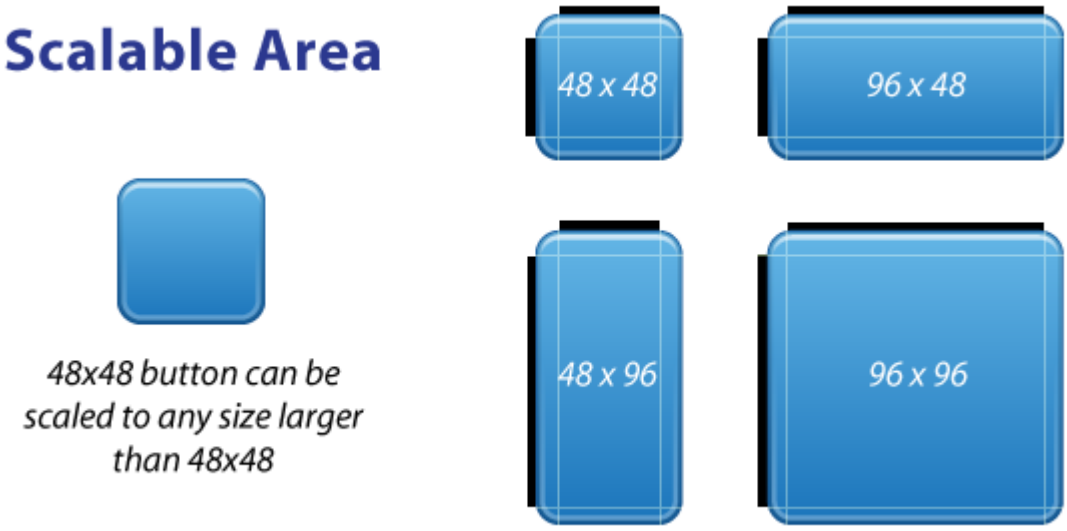
。 TOPLEFT9RIGHTBOTTOM。

/ -。48×48png50×50。。 4。1。

000000。000001alpha。*。。。

。 -。。Photoshop*。Photoshop“”“”“”。

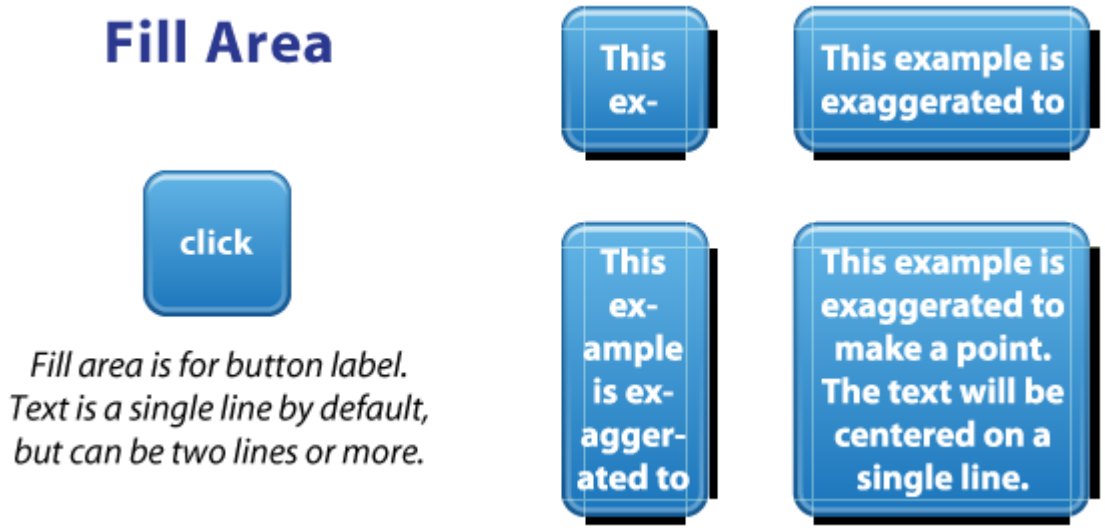
*20121“”。9。



TOPLEFT - LEFTTOP。。。

9 -。。

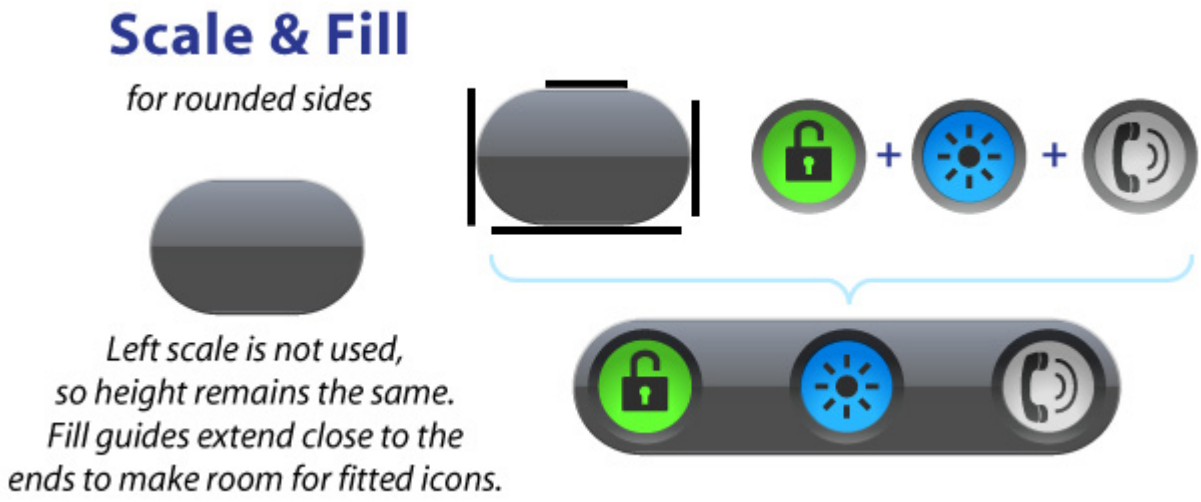
。LEFT。。



。。 9-patch。

-。 Android。

LinearLayout



LEFT。;TOP。。。

。9。9scale9。。

Alpha

Alpha(%)	Hex Value
100%	FF
95%	F2
90%	E6
85%	D9

```
   |     80%     |      CC        |
   |     75%     |      BF        |
   |     70%     |      B3        |
   |     65%     |      A6        |
   |     60%     |      99        |
   |     55%     |      8C        |
   |     50%     |      80        |
   |     45%     |      73        |
   |     40%     |      66        |
   |     35%     |      59        |
   |     30%     |      4D        |
   |     25%     |      40        |
   |     20%     |      33        |
   |     15%     |      26        |
   |     10%     |      1A        |
   |      5%     |      0D        |
   |      0%     |      00        |
    -------------------------------
```

45。

```
<color name="red_with_alpha_45">#73FF0000</color>
```

- FF0000

- 73FF00004573

strings.xml

。

```
XML resource that provides a single string.
```

```
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <string name="string_name">text_string</string>
</resources>
```

```
<TextView
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:text="@string/string_name" />
```

```
XML resource that provides an array of strings.
```

```
    <resources>
<string-array name="planets_array">
    <item>Mercury</item>
    <item>Venus</item>
    <item>Earth</item>
    <item>Mars</item>
</string-array>
```

```
Resources res = getResources();
String[] planets = res.getStringArray(R.array.planets_array);
```

```
XML resource that carries different strings for pluralization.
```

```
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <plurals
        name="plural_name">
        <item
            quantity=["zero" | "one" | "two" | "few" | "many" | "other"]
            >text_string</item>
    </plurals>
</resources>
```

```
int count = getNumberOfsongsAvailable();
Resources res = getResources();
String songsFound = res.getQuantityString(R.plurals.plural_name, count, count);
```

https://riptutorial.com/zh-CN/android/topic/108/

258:

ProgressBar

Examples

ProgressBar

ProgressBar。

ProgressBar

```
<ProgressBar
    android:id="@+id/progressBar"
    android:indeterminate="true"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"/>
```

ProgressBar

```
<ProgressBar
    android:id="@+id/progressBar"
    android:indeterminate="true"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    style="@android:style/Widget.ProgressBar.Horizontal"/>
```

ProgressBar

```
style="@android:style/Widget.ProgressBar.Small"
style="@android:style/Widget.ProgressBar.Large"
style="@android:style/Widget.ProgressBar.Inverse"
style="@android:style/Widget.ProgressBar.Small.Inverse"
style="@android:style/Widget.ProgressBar.Large.Inverse"
```

ActivityProgressBar

```
ProgressBar progressBar = (ProgressBar) findViewById(R.id.progressBar);
progressBar.setVisibility(View.VISIBLE);
progressBar.setVisibility(View.GONE);
```

ProgressBar

ProgressBar。

ProgressBar

```
<ProgressBar
    android:id="@+id/progressBar"
```

```
    android:indeterminate="false"
    android:layout_width="match_parent"
    android:layout_height="10dp"
    style="@android:style/Widget.ProgressBar.Horizontal"/>
```

ProgressBar

```
<ProgressBar
    android:id="@+id/progressBar"
    android:indeterminate="false"
    android:layout_width="10dp"
    android:layout_height="match_parent"
    android:progressDrawable="@drawable/progress_vertical"
    style="@android:style/Widget.ProgressBar.Horizontal"/>
```

RES // progress_vertical.xml

```
<?xml version="1.0" encoding="utf-8"?>
<layer-list xmlns:android="http://schemas.android.com/apk/res/android">
    <item android:id="@android:id/background">
        <shape>
            <corners android:radius="3dp"/>
            <solid android:color="@android:color/darker_gray"/>
        </shape>
    </item>
    <item android:id="@android:id/secondaryProgress">
        <clip android:clipOrientation="vertical" android:gravity="bottom">
            <shape>
                <corners android:radius="3dp"/>
                <solid android:color="@android:color/holo_blue_light"/>
            </shape>
        </clip>
    </item>
    <item android:id="@android:id/progress">
        <clip android:clipOrientation="vertical" android:gravity="bottom">
            <shape>
                <corners android:radius="3dp"/>
                <solid android:color="@android:color/holo_blue_dark"/>
            </shape>
        </clip>
    </item>
</layer-list>
```

RingProgressBar

```
<ProgressBar
    android:id="@+id/progressBar"
    android:indeterminate="false"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:progressDrawable="@drawable/progress_ring"
    style="@android:style/Widget.ProgressBar.Horizontal"/>
```

RES // progress_ring.xml

```
<?xml version="1.0" encoding="utf-8"?>
```

```
<layer-list xmlns:android="http://schemas.android.com/apk/res/android">
    <item android:id="@android:id/secondaryProgress">
        <shape
            android:shape="ring"
            android:useLevel="true"
            android:thicknessRatio="24"
            android:innerRadiusRatio="2.2">
            <corners android:radius="3dp"/>
            <solid android:color="#0000FF"/>
        </shape>
    </item>

    <item android:id="@android:id/progress">
        <shape
            android:shape="ring"
            android:useLevel="true"
            android:thicknessRatio="24"
            android:innerRadiusRatio="2.2">
            <corners android:radius="3dp"/>
            <solid android:color="#FFFFFF"/>
        </shape>
    </item>
</layer-list>
```

ActivityProgressBar。

```
ProgressBar progressBar = (ProgressBar) findViewById(R.id.progressBar);
progressBar.setSecondaryProgress(100);
progressBar.setProgress(10);
progressBar.setMax(100);
```

CustomProgressBarActivity.java

```
public class CustomProgressBarActivity extends AppCompatActivity {

    private TextView txtProgress;
    private ProgressBar progressBar;
    private int pStatus = 0;
    private Handler handler = new Handler();

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_custom_progressbar);

        txtProgress = (TextView) findViewById(R.id.txtProgress);
        progressBar = (ProgressBar) findViewById(R.id.progressBar);

        new Thread(new Runnable() {
            @Override
            public void run() {
                while (pStatus <= 100) {
                    handler.post(new Runnable() {
                        @Override
                        public void run() {
                            progressBar.setProgress(pStatus);
                            txtProgress.setText(pStatus + " %");
                        }
```

```
                    });
                    try {
                        Thread.sleep(100);
                    } catch (InterruptedException e) {
                        e.printStackTrace();
                    }
                    pStatus++;
                }
            }
        }).start();

    }
}
```

activity_custom_progressbar.xml

```
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    tools:context="com.skholingua.android.custom_progressbar_circular.MainActivity" >


    <RelativeLayout
        android:layout_width="wrap_content"
        android:layout_centerInParent="true"
        android:layout_height="wrap_content">

        <ProgressBar
            android:id="@+id/progressBar"
            style="?android:attr/progressBarStyleHorizontal"
            android:layout_width="250dp"
            android:layout_height="250dp"
            android:layout_centerInParent="true"
            android:indeterminate="false"
            android:max="100"
            android:progress="0"
            android:progressDrawable="@drawable/custom_progressbar_drawable"
            android:secondaryProgress="0" />


        <TextView
            android:id="@+id/txtProgress"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_alignBottom="@+id/progressBar"
            android:layout_centerInParent="true"
            android:textAppearance="?android:attr/textAppearanceSmall" />
    </RelativeLayout>



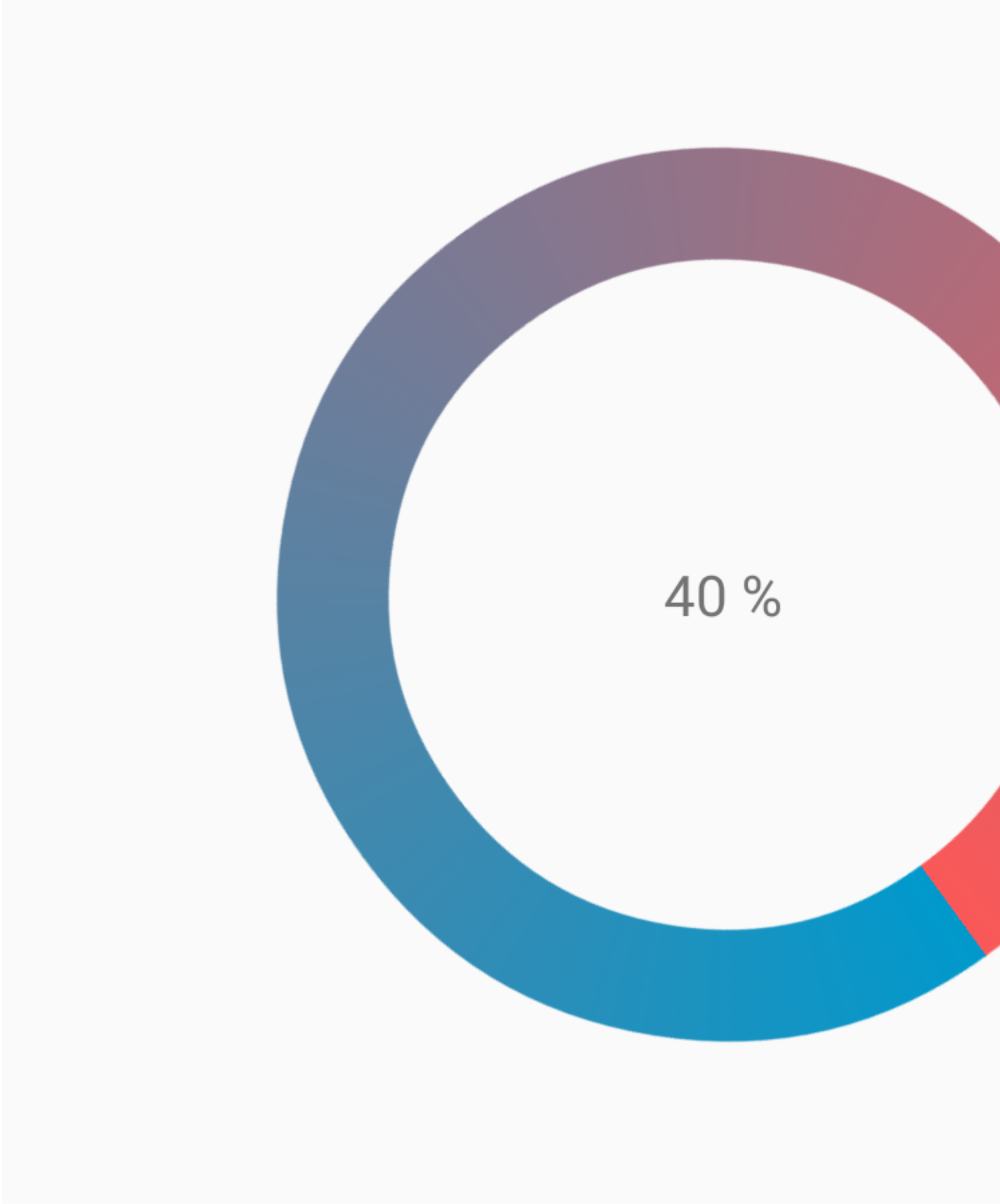
</RelativeLayout>
```

custom_progressbar_drawable.xml

```
<?xml version="1.0" encoding="utf-8"?>
<rotate xmlns:android="http://schemas.android.com/apk/res/android"
    android:fromDegrees="-90"
    android:pivotX="50%"
    android:pivotY="50%"
    android:toDegrees="270" >

    <shape
        android:shape="ring"
        android:useLevel="false" >
        <gradient
            android:centerY="0.5"
            android:endColor="#FA5858"
            android:startColor="#0099CC"
            android:type="sweep"
            android:useLevel="false" />
    </shape>

</rotate>
```



ProgressBar

AppCompat `ProgressBarcolorAccent ◦`

5

`ProgressBar`android:theme

```
<ProgressBar
    android:theme="@style/MyProgress"
    style="@style/Widget.AppCompat.ProgressBar" />

<!-- res/values/styles.xml -->
<style name="MyProgress" parent="Theme.AppCompat.Light">
    <item name="colorAccent">@color/myColor</item>
</style>
```

`ProgressBar`xml`android:indeterminateTintMode``android:indeterminateTint`

```
<ProgressBar
    android:indeterminateTintMode="src_in"
    android:indeterminateTint="@color/my_color"
/>
```

Material Linear ProgressBar

0100。

。

Linear ProgressBarxml

```
<ProgressBar
    android:id="@+id/my_progressBar"
    style="@style/Widget.AppCompat.ProgressBar.Horizontal"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"/>
```

ProgressBar`android:indeterminatetrue`◦

```
<ProgressBar
    android:id="@+id/my_progressBar"
    style="@style/Widget.AppCompat.ProgressBar.Horizontal"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:indeterminate="true"/>
```

ProgressBar`android:indeterminatefalseandroid:maxandroid:progress`

```
<ProgressBar
    android:id="@+id/my_progressBar"
    style="@style/Widget.AppCompat.ProgressBar.Horizontal"
    android:indeterminate="false"
    android:max="100"
    android:progress="10"/>
```

```
ProgressBar progressBar = (ProgressBar) findViewById(R.id.my_progressBar);
progressBar.setProgress(20);
```

ProgressBar`android:indeterminatefalseandroid:max android:progressandroid:secondaryProgress`

```
<ProgressBar
    android:id="@+id/my_progressBar"
    style="@style/Widget.AppCompat.ProgressBar.Horizontal"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:indeterminate="false"
    android:max="100"
    android:progress="10"
    android:secondaryProgress="25"/>
```

`android:secondaryProgress`。

```
ProgressBar progressBar = (ProgressBar) findViewById(R.id.my_progressBar);
progressBar.setProgress(20);
progressBar.setSecondaryProgress(50);
```

ProgressBarProgressBar`android:indeterminate`true。

```
<ProgressBar
    android:id="@+id/progressBar"
    style="@style/Widget.AppCompat.ProgressBar.Horizontal"
    android:indeterminate="true"/>
```

`setIndeterminate()`。

```
ProgressBar progressBar = (ProgressBar) findViewById(R.id.my_progressBar);
progressBar.setIndeterminate(false);
```

UI。

。

CustomProgress.java

```
public class CustomProgress {

   public static CustomProgress customProgress = null;
```

```
   private Dialog mDialog;

   public static CustomProgress getInstance() {
       if (customProgress == null) {
           customProgress = new CustomProgress();
       }
       return customProgress;
   }

   public void showProgress(Context context, String message, boolean cancelable) {
       mDialog = new Dialog(context);
    // no tile for the dialog
       mDialog.requestWindowFeature(Window.FEATURE_NO_TITLE);
       mDialog.setContentView(R.layout.prograss_bar_dialog);
       mProgressBar = (ProgressBar) mDialog.findViewById(R.id.progress_bar);
    //  mProgressBar.getIndeterminateDrawable().setColorFilter(context.getResources()
    // .getColor(R.color.material_blue_gray_500), PorterDuff.Mode.SRC_IN);
       TextView progressText = (TextView) mDialog.findViewById(R.id.progress_text);
       progressText.setText("" + message);
       progressText.setVisibility(View.VISIBLE);
       mProgressBar.setVisibility(View.VISIBLE);
    // you can change or add this line according to your need
       mProgressBar.setIndeterminate(true);
       mDialog.setCancelable(cancelable);
       mDialog.setCanceledOnTouchOutside(cancelable);
       mDialog.show();
   }

   public void hideProgress() {
       if (mDialog != null) {
           mDialog.dismiss();
           mDialog = null;
       }
   }
}
```

prograss_bar_dialog.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="wrap_content"
    android:layout_height="65dp"
    android:background="@android:color/background_dark"
    android:orientation="vertical">

    <TextView
        android:id="@+id/progress_text"
        android:layout_width="wrap_content"
        android:layout_height="40dp"
        android:layout_above="@+id/progress_bar"
        android:layout_marginLeft="10dp"
        android:layout_marginStart="10dp"
        android:background="@android:color/transparent"
        android:gravity="center_vertical"
        android:text=""
        android:textColor="@android:color/white"
        android:textSize="16sp"
        android:visibility="gone" />

    <-- Where the style can be changed to any kind of ProgressBar -->
```

```
    <ProgressBar
        android:id="@+id/progress_bar"
        style="@android:style/Widget.DeviceDefault.ProgressBar.Horizontal"
        android:layout_width="match_parent"
        android:layout_height="30dp"
        android:layout_alignParentBottom="true"
        android:layout_alignParentLeft="true"
        android:layout_alignParentStart="true"
        android:layout_gravity="center"
        android:background="@color/cardview_dark_background"
        android:maxHeight="20dp"
        android:minHeight="20dp" />

</RelativeLayout>
```

- CodeDialog

```
CustomProgress customProgress = CustomProgress.getInstance();

// now you have the instance of CustomProgres
// for showing the ProgressBar

customProgress.showProgress(#Context, getString(#StringId), #boolean);

// for hiding the ProgressBar

customProgress.hideProgress();
```

https://riptutorial.com/zh-CN/android/topic/3353/

259: AndroidFacebook SDK

- **newInstance** Facebook。
- **loginUser** 。
- **signOut** 。
- **getCallbackManager** Facebook。
- **getLoginCallback** Login。
- **getKeyHash** Facebook Key Hash。

FacebookSignInHelper	facebook
CallbackManager	Facebook
PERMISSION_LOGIN	facebook。
loginCallback	Facebook

Examples

AndroidFacebook

build.gradle

```
  // Facebook login
    compile 'com.facebook.android:facebook-android-sdk:4.21.1'
```

```
/**
 * Created by Andy
 * An utility for Facebook
 */
public class FacebookSignInHelper {
    private static final String TAG = FacebookSignInHelper.class.getSimpleName();
    private static FacebookSignInHelper facebookSignInHelper = null;
    private CallbackManager callbackManager;
    private Activity mActivity;
    private static final Collection<String> PERMISSION_LOGIN = (Collection<String>)
Arrays.asList("public_profile", "user_friends","email");
    private FacebookCallback<LoginResult> loginCallback;



    public static FacebookSignInHelper newInstance(Activity context) {
        if (facebookSignInHelper == null)
            facebookSignInHelper = new FacebookSignInHelper(context);
        return facebookSignInHelper;
    }
```

```
    public FacebookSignInHelper(Activity mActivity) {
        try {
            this.mActivity = mActivity;
            // Initialize the SDK before executing any other operations,
            // especially, if you're using Facebook UI elements.
            FacebookSdk.sdkInitialize(this.mActivity);
            callbackManager = CallbackManager.Factory.create();
            loginCallback = new FacebookCallback<LoginResult>() {
                @Override
                public void onSuccess(LoginResult loginResult) {
                   // You are logged into Facebook
                }

                @Override
                public void onCancel() {
                    Log.d(TAG, "Facebook: Cancelled by user");
                }

                @Override
                public void onError(FacebookException error) {
                    Log.d(TAG, "FacebookException: " + error.getMessage());
                }
            };
        } catch (Exception e) {
            e.printStackTrace();
        }
    }

    /**
     * To login user on facebook without default Facebook button
     */
    public void loginUser() {
        try {
            LoginManager.getInstance().registerCallback(callbackManager, loginCallback);
            LoginManager.getInstance().logInWithReadPermissions(this.mActivity,
PERMISSION_LOGIN);
        } catch (Exception e) {
            e.printStackTrace();
        }
    }


    /**
     * To log out user from facebook
     */
    public void signOut() {
        // Facebook sign out
        LoginManager.getInstance().logOut();
    }

    public CallbackManager getCallbackManager() {
        return callbackManager;
    }

    public FacebookCallback<LoginResult> getLoginCallback() {
        return loginCallback;
    }

    /**
     * Attempts to log debug key hash for facebook
```

```
     *
     * @param context : A reference to context
     * @return : A facebook debug key hash
     */
    public static String getKeyHash(Context context) {
        String keyHash = null;
        try {
            PackageInfo info = context.getPackageManager().getPackageInfo(
                    context.getPackageName(),
                    PackageManager.GET_SIGNATURES);
            for (Signature signature : info.signatures) {
                MessageDigest md = MessageDigest.getInstance("SHA");
                md.update(signature.toByteArray());
                keyHash = Base64.encodeToString(md.digest(), Base64.DEFAULT);
                Log.d(TAG, "KeyHash:" + keyHash);
            }
        } catch (PackageManager.NameNotFoundException e) {
            e.printStackTrace();
        } catch (NoSuchAlgorithmException e) {
            e.printStackTrace();
        } catch (Exception e) {
            e.printStackTrace();
        }
        return keyHash;
    }
}
```

```
FacebookSignInHelper facebookSignInHelper =
FacebookSignInHelper.newInstance(LoginActivity.this, fireBaseAuthHelper);
facebookSignInHelper.loginUser();
```

OnActivityResult

```
 facebookSignInHelper.getCallbackManager().onActivityResult(requestCode, resultCode, data);
```

Facebook

Facebook

```
loginButton = (LoginButton)findViewById(R.id.login_button);

loginButton.setReadPermissions(Arrays.asList("email", "user_about_me"));
```

。 。

ID。

Facebook

Facebook/

。

```
<FrameLayout
    android:layout_below="@+id/no_network_bar"
    android:id="@+id/FrameLayout1"
    android:layout_width="match_parent"
    android:layout_height="wrap_content">

    <com.facebook.login.widget.LoginButton
        android:id="@+id/login_button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:visibility="gone" />

    <Button
        android:background="#3B5998"
        android:layout_width="match_parent"
        android:layout_height="60dp"
        android:id="@+id/fb"
        android:onClick="onClickFacebookButton"
        android:textAllCaps="false"
        android:text="Sign up with Facebook"
        android:textSize="22sp"
        android:textColor="#ffffff" />
</FrameLayout>
```

com.facebook.login.widget.LoginButtonFrameLayout。

FrameLayout。 。 facebook。

facecbook

```
//The original Facebook button
LoginButton loginButton = (LoginButton)findViewById(R.id.login_button);

//Our custom Facebook button
fb = (Button) findViewById(R.id.fb);

public void onClickFacebookButton(View view) {
    if (view == fb) {
        loginButton.performClick();
    }
}
```

Facebook/

1.

。

2. Facebook*AndroidManifest.xml*

```
<activity
    android:name="com.facebook.FacebookActivity"
    android:configChanges= "keyboard|keyboardHidden|screenLayout|screenSize|orientation"
    android:theme="@android:style/Theme.Translucent.NoTitleBar"
    android:label="@string/app_name" />
```

3. XML

```
<com.facebook.login.widget.LoginButton
    android:id="@+id/login_button"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content" />
```

4. Facebook。Facebook。“ ”。 。

```
loginButton.registerCallback(callbackManager, new FacebookCallback<LoginResult>() {
    @Override
    public void onSuccess(LoginResult loginResult) {
        // Completed without error. You might want to use the retrieved data here.
    }

    @Override
    public void onCancel() {
        // The user either cancelled the Facebook login process or didn't authorize the
app.
    }

    @Override
    public void onError(FacebookException exception) {
        // The dialog was closed with an error. The exception will help you recognize
what exactly went wrong.
    }
});
```

Facebook

Facebook SDK 4.0

```
com.facebook.login.LoginManager.getInstance().logOut();
```

4.0

```
Session session = Session.getActiveSession();
session.closeAndClearTokenInformation();
```

AndroidFacebook SDK https://riptutorial.com/zh-CN/android/topic/3919/androidfacebook-sdk

260: AndroidGoogle Maps API v2

	`GoogleMaponMapReady()`
MarkerOptions	`MarkerOptionsMarker。`

1. Google Play Services SDK。
2. Google。
3. GoogleGoogle Maps API。

Examples

Google

SupportMapFragmentGoogle。

Google Maps V2 API。

OnMapReadyCallBackonMapReadySupportMapFragment。 getMapAsync OnMapReadyCallback ;。

。

MapsActivity.java

```
public class MapsActivity extends AppCompatActivity implements OnMapReadyCallback {

    private GoogleMap mMap;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_maps);
        SupportMapFragment mapFragment = (SupportMapFragment) getSupportFragmentManager()
                .findFragmentById(R.id.map);
        mapFragment.getMapAsync(this);
    }

    @Override
    public void onMapReady(GoogleMap googleMap) {
        mMap = googleMap;

        // Add a marker in Sydney, Australia, and move the camera.
        LatLng sydney = new LatLng(-34, 151);
        mMap.addMarker(new MarkerOptions().position(sydney).title("Marker in Sydney"));
        mMap.moveCamera(CameraUpdateFactory.newLatLng(sydney));
    }
}
```

SupportMapFragmentID`R.id.map`。

activity_maps.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical" android:layout_width="match_parent"
    android:layout_height="match_parent">

    <fragment xmlns:android="http://schemas.android.com/apk/res/android"
        xmlns:tools="http://schemas.android.com/tools"
        xmlns:map="http://schemas.android.com/apk/res-auto"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:id="@+id/map"
        tools:context="com.example.app.MapsActivity"
        android:name="com.google.android.gms.maps.SupportMapFragment"/>

</LinearLayout>
```

Google

Google

```
// Sets the map type to be "hybrid"
map.setMapType(GoogleMap.MAP_TYPE_HYBRID);
```

```
map.setMapType(GoogleMap.MAP_TYPE_NORMAL);
```

。 。 。

```
map.setMapType(GoogleMap.MAP_TYPE_HYBRID);
```

。 。

```
map.setMapType(GoogleMap.MAP_TYPE_SATELLITE);
```

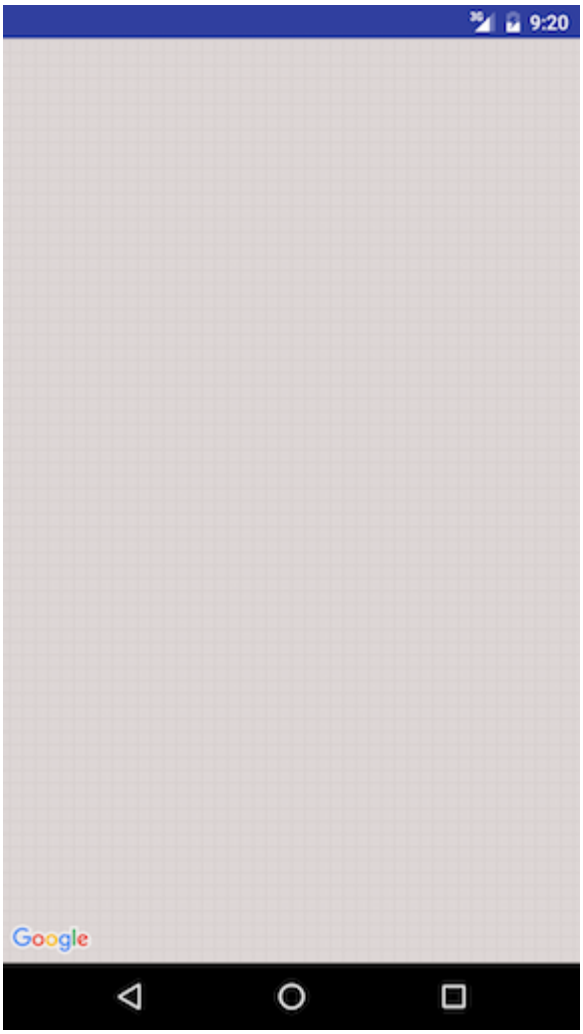
。 。

```
map.setMapType(GoogleMap.MAP_TYPE_TERRAIN);
```

。 。 。

```
map.setMapType(GoogleMap.MAP_TYPE_NONE);
```

。 。



。 “”“”。

```
GoogleMap.setIndoorEnabled(true).
GoogleMap.setIndoorEnabled(false).
```

。

onMapReady

```
mMap = googleMap;
    try {
        // Customise the styling of the base map using a JSON object defined
        // in a raw resource file.
        boolean success = mMap.setMapStyle(
                MapStyleOptions.loadRawResourceStyle(
                        MapsActivity.this, R.raw.style_json));

        if (!success) {
            Log.e(TAG, "Style parsing failed.");
        }
    } catch (Resources.NotFoundException e) {
        Log.e(TAG, "Can't find style.", e);
    }
```

*res/raw*json。style.json

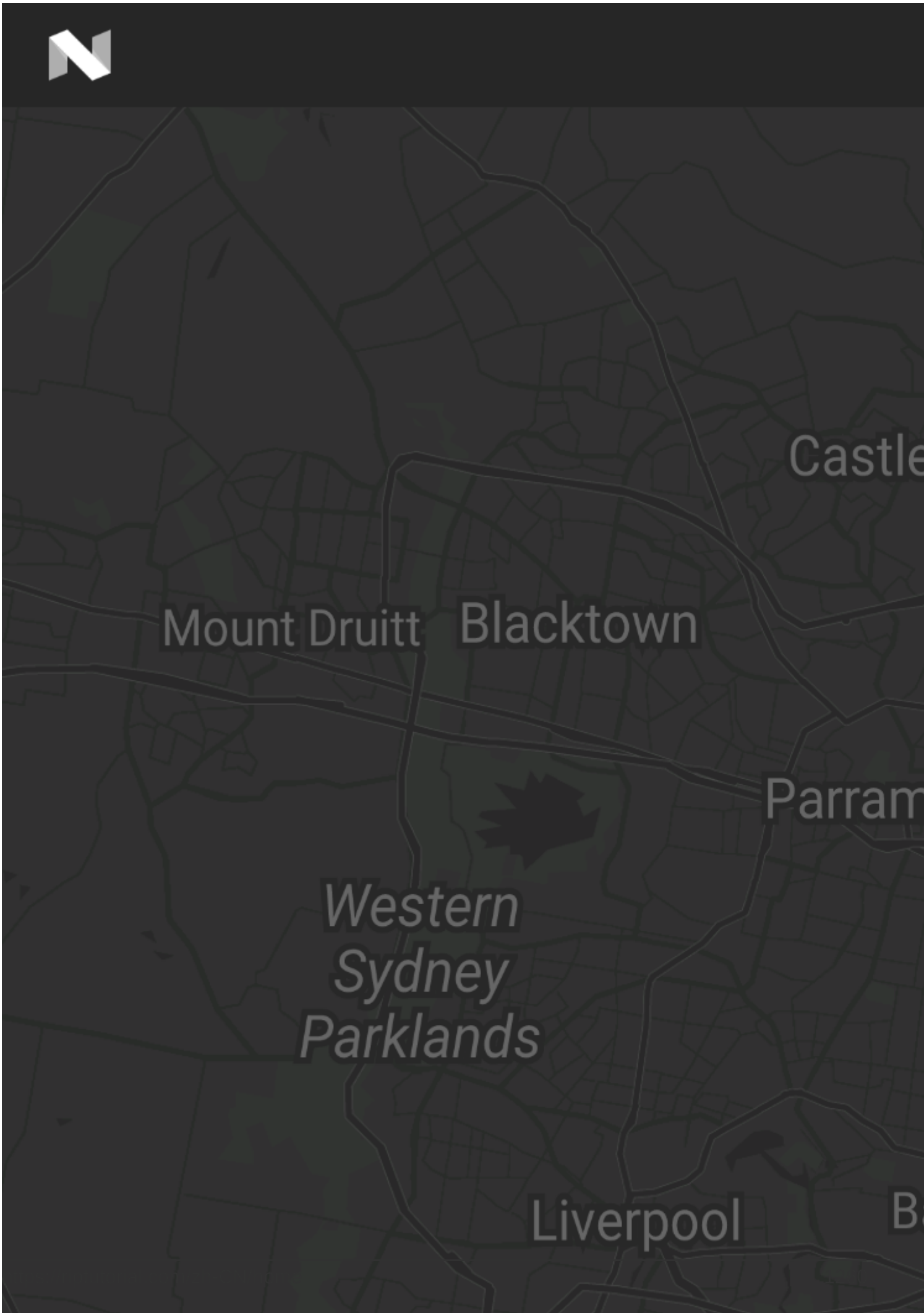
```
  [
{
  "featureType": "all",
  "elementType": "geometry",
  "stylers": [
    {
      "color": "#242f3e"
    }
  ]
},
{
  "featureType": "all",
  "elementType": "labels.text.stroke",
  "stylers": [
    {
      "lightness": -80
    }
  ]
},
{
  "featureType": "administrative",
  "elementType": "labels.text.fill",
  "stylers": [
    {
      "color": "#746855"
    }
  ]
},
{
  "featureType": "administrative.locality",
  "elementType": "labels.text.fill",
  "stylers": [
    {
      "color": "#d59563"
    }
  ]
},
{
  "featureType": "poi",
  "elementType": "labels.text.fill",
  "stylers": [
    {
      "color": "#d59563"
    }
  ]
},
{
  "featureType": "poi.park",
  "elementType": "geometry",
  "stylers": [
    {
      "color": "#263c3f"
    }
  ]
},
{
  "featureType": "poi.park",
  "elementType": "labels.text.fill",
  "stylers": [
```

```
    {
      "color": "#6b9a76"
    }
  ]
},
{
  "featureType": "road",
  "elementType": "geometry.fill",
  "stylers": [
    {
      "color": "#2b3544"
    }
  ]
},
{
  "featureType": "road",
  "elementType": "labels.text.fill",
  "stylers": [
    {
      "color": "#9ca5b3"
    }
  ]
},
{
  "featureType": "road.arterial",
  "elementType": "geometry.fill",
  "stylers": [
    {
      "color": "#38414e"
    }
  ]
},
{
  "featureType": "road.arterial",
  "elementType": "geometry.stroke",
  "stylers": [
    {
      "color": "#212a37"
    }
  ]
},
{
  "featureType": "road.highway",
  "elementType": "geometry.fill",
  "stylers": [
    {
      "color": "#746855"
    }
  ]
},
{
  "featureType": "road.highway",
  "elementType": "geometry.stroke",
  "stylers": [
    {
      "color": "#1f2835"
    }
  ]
},
{
  "featureType": "road.highway",
```

```
    "elementType": "labels.text.fill",
    "stylers": [
      {
        "color": "#f3d19c"
      }
    ]
  },
  {
    "featureType": "road.local",
    "elementType": "geometry.fill",
    "stylers": [
      {
        "color": "#38414e"
      }
    ]
  },
  {
    "featureType": "road.local",
    "elementType": "geometry.stroke",
    "stylers": [
      {
        "color": "#212a37"
      }
    ]
  },
  {
    "featureType": "transit",
    "elementType": "geometry",
    "stylers": [
      {
        "color": "#2f3948"
      }
    ]
  },
  {
    "featureType": "transit.station",
    "elementType": "labels.text.fill",
    "stylers": [
      {
        "color": "#d59563"
      }
    ]
  },
  {
    "featureType": "water",
    "elementType": "geometry",
    "stylers": [
      {
        "color": "#17263c"
      }
    ]
  },
  {
    "featureType": "water",
    "elementType": "labels.text.fill",
    "stylers": [
      {
        "color": "#515c6d"
      }
    ]
  },
```

```
  {
    "featureType": "water",
    "elementType": "labels.text.stroke",
    "stylers": [
      {
        "lightness": -20
      }
    ]
  }
]
```

json


Castle
Mount Druitt
Blacktown
Parram
Western
Sydney
Parklands
Liverpool

- `setMyLocationEnabled()` GoogleApiClient
- GoogleApiClient

```
public class MapLocationActivity extends AppCompatActivity
        implements OnMapReadyCallback,
        GoogleApiClient.ConnectionCallbacks,
        GoogleApiClient.OnConnectionFailedListener,
        LocationListener {

    GoogleMap mGoogleMap;
    SupportMapFragment mapFrag;
    LocationRequest mLocationRequest;
    GoogleApiClient mGoogleApiClient;
    Location mLastLocation;
    Marker mCurrLocationMarker;

    @Override
    protected void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        getSupportActionBar().setTitle("Map Location Activity");

        mapFrag = (SupportMapFragment) getSupportFragmentManager().findFragmentById(R.id.map);
        mapFrag.getMapAsync(this);
    }

    @Override
    public void onPause() {
        super.onPause();

        //stop location updates when Activity is no longer active
        if (mGoogleApiClient != null) {
            LocationServices.FusedLocationApi.removeLocationUpdates(mGoogleApiClient, this);
        }
    }

    @Override
    public void onMapReady(GoogleMap googleMap)
    {
        mGoogleMap=googleMap;
        mGoogleMap.setMapType(GoogleMap.MAP_TYPE_HYBRID);

        //Initialize Google Play Services
        if (android.os.Build.VERSION.SDK_INT >= Build.VERSION_CODES.M) {
            if (ContextCompat.checkSelfPermission(this,
                    Manifest.permission.ACCESS_FINE_LOCATION)
                    == PackageManager.PERMISSION_GRANTED) {
                //Location Permission already granted
                buildGoogleApiClient();
                mGoogleMap.setMyLocationEnabled(true);
            } else {
                //Request Location Permission
                checkLocationPermission();
            }
        }
        else {
            buildGoogleApiClient();
            mGoogleMap.setMyLocationEnabled(true);
```

```
        }
    }

    protected synchronized void buildGoogleApiClient() {
        mGoogleApiClient = new GoogleApiClient.Builder(this)
                .addConnectionCallbacks(this)
                .addOnConnectionFailedListener(this)
                .addApi(LocationServices.API)
                .build();
        mGoogleApiClient.connect();
    }

    @Override
    public void onConnected(Bundle bundle) {
        mLocationRequest = new LocationRequest();
        mLocationRequest.setInterval(1000);
        mLocationRequest.setFastestInterval(1000);
        mLocationRequest.setPriority(LocationRequest.PRIORITY_BALANCED_POWER_ACCURACY);
        if (ContextCompat.checkSelfPermission(this,
                Manifest.permission.ACCESS_FINE_LOCATION)
                == PackageManager.PERMISSION_GRANTED) {
            LocationServices.FusedLocationApi.requestLocationUpdates(mGoogleApiClient,
mLocationRequest, this);
        }
    }

    @Override
    public void onConnectionSuspended(int i) {}

    @Override
    public void onConnectionFailed(ConnectionResult connectionResult) {}

    @Override
    public void onLocationChanged(Location location)
    {
        mLastLocation = location;
        if (mCurrLocationMarker != null) {
            mCurrLocationMarker.remove();
        }

        //Place current location marker
        LatLng latLng = new LatLng(location.getLatitude(), location.getLongitude());
        MarkerOptions markerOptions = new MarkerOptions();
        markerOptions.position(latLng);
        markerOptions.title("Current Position");

markerOptions.icon(BitmapDescriptorFactory.defaultMarker(BitmapDescriptorFactory.HUE_MAGENTA));

        mCurrLocationMarker = mGoogleMap.addMarker(markerOptions);

        //move map camera
        mGoogleMap.moveCamera(CameraUpdateFactory.newLatLng(latLng));
        mGoogleMap.animateCamera(CameraUpdateFactory.zoomTo(11));

        //stop location updates
        if (mGoogleApiClient != null) {
            LocationServices.FusedLocationApi.removeLocationUpdates(mGoogleApiClient, this);
        }
    }

    public static final int MY_PERMISSIONS_REQUEST_LOCATION = 99;
```

```
    private void checkLocationPermission() {
        if (ContextCompat.checkSelfPermission(this, Manifest.permission.ACCESS_FINE_LOCATION)
                != PackageManager.PERMISSION_GRANTED) {

            // Should we show an explanation?
            if (ActivityCompat.shouldShowRequestPermissionRationale(this,
                    Manifest.permission.ACCESS_FINE_LOCATION)) {

                // Show an explanation to the user *asynchronously* -- don't block
                // this thread waiting for the user's response! After the user
                // sees the explanation, try again to request the permission.
                new AlertDialog.Builder(this)
                        .setTitle("Location Permission Needed")
                        .setMessage("This app needs the Location permission, please accept to
use location functionality")
                        .setPositiveButton("OK", new DialogInterface.OnClickListener() {
                            @Override
                            public void onClick(DialogInterface dialogInterface, int i) {
                                //Prompt the user once explanation has been shown
                                ActivityCompat.requestPermissions(MapLocationActivity.this,
                                        new
String[]{Manifest.permission.ACCESS_FINE_LOCATION},
                                        MY_PERMISSIONS_REQUEST_LOCATION );
                            }
                        })
                        .create()
                        .show();


            } else {
                // No explanation needed, we can request the permission.
                ActivityCompat.requestPermissions(this,
                        new String[]{Manifest.permission.ACCESS_FINE_LOCATION},
                        MY_PERMISSIONS_REQUEST_LOCATION );
            }
        }
    }

    @Override
    public void onRequestPermissionsResult(int requestCode,
                                           String permissions[], int[] grantResults) {
        switch (requestCode) {
            case MY_PERMISSIONS_REQUEST_LOCATION: {
                // If request is cancelled, the result arrays are empty.
                if (grantResults.length > 0
                        && grantResults[0] == PackageManager.PERMISSION_GRANTED) {

                    // permission was granted, yay! Do the
                    // location-related task you need to do.
                    if (ContextCompat.checkSelfPermission(this,
                            Manifest.permission.ACCESS_FINE_LOCATION)
                            == PackageManager.PERMISSION_GRANTED) {

                        if (mGoogleApiClient == null) {
                            buildGoogleApiClient();
                        }
                        mGoogleMap.setMyLocationEnabled(true);
                    }

                } else {
```

```
                    // permission denied, boo! Disable the
                    // functionality that depends on this permission.
                    Toast.makeText(this, "permission denied", Toast.LENGTH_LONG).show();
                }
                return;
            }

            // other 'case' lines to check for other
            // permissions this app might request
        }
    }

}
```

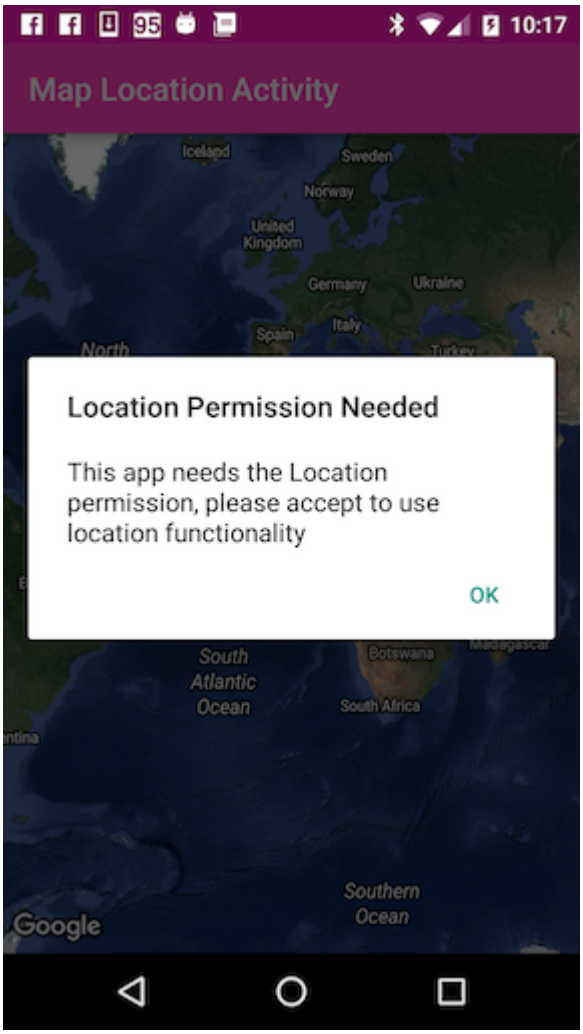
activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical" android:layout_width="match_parent"
    android:layout_height="match_parent">

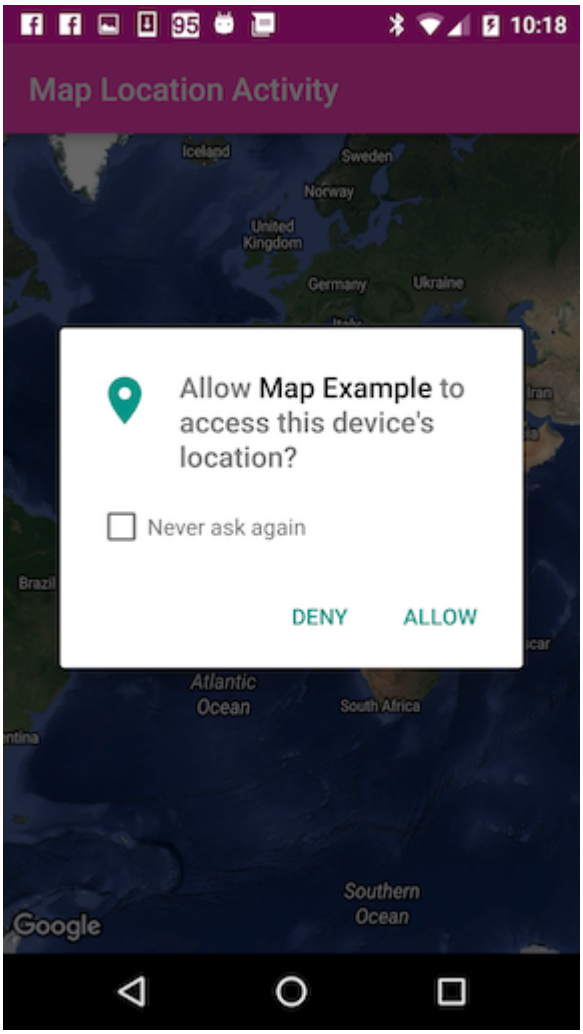
    <fragment xmlns:android="http://schemas.android.com/apk/res/android"
        xmlns:tools="http://schemas.android.com/tools"
        xmlns:map="http://schemas.android.com/apk/res-auto"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:id="@+id/map"
        tools:context="com.example.app.MapLocationActivity"
        android:name="com.google.android.gms.maps.SupportMapFragment"/>

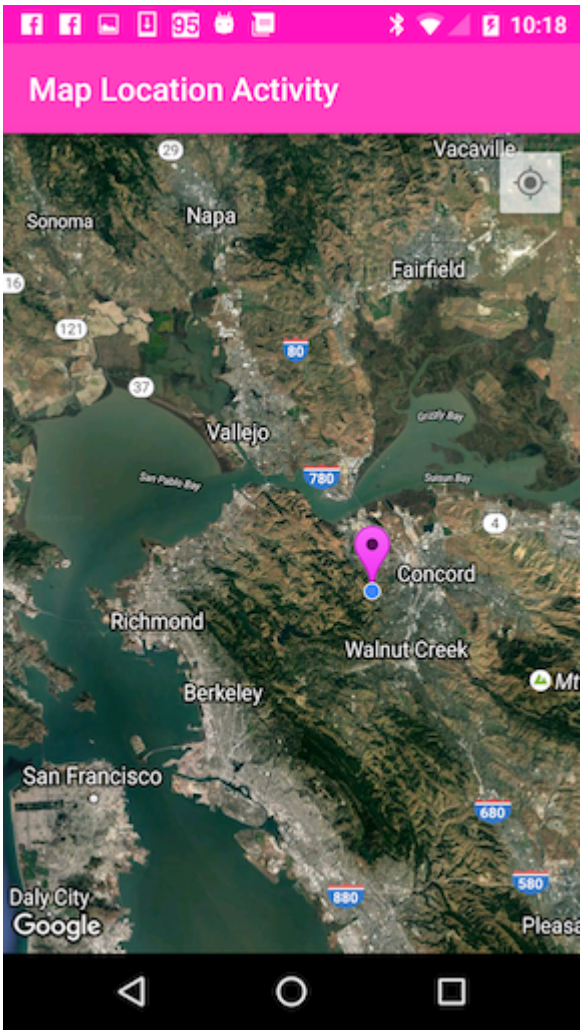
</LinearLayout>
```

MarshmallowNougatAlertDialog



`ActivityCompat.requestPermissions()`MarshmallowNougat


10:18
Map Location Activity
Iceland
Sweden
Norway
United Kingdom
Germany
Ukraine
Allow Map Example to access this device's location?
Never ask again
DENY
ALLOW
Brazil
Atlantic Ocean
South Africa
Southern Ocean
Google



SH1-Fingerprint

Google Maps APIAPI/SH1。

JDKkeytool。

/。

```
PackageInfo info;
try {
    info = getPackageManager().getPackageInfo("com.package.name",
PackageManager.GET_SIGNATURES);
    for (Signature signature : info.signatures) {
        MessageDigest md;
        md = MessageDigest.getInstance("SHA");
        md.update(signature.toByteArray());
        String hash= new String(Base64.encode(md.digest(), 0));
        Log.e("hash", hash);
    }
} catch (NameNotFoundException e1) {
    Log.e("name not found", e1.toString());
} catch (NoSuchAlgorithmException e) {
    Log.e("no such an algorithm", e.toString());
} catch (Exception e) {
    Log.e("exception", e.toString());
}
```

Google

GoogleGoogle。 `MapViewsetClickable(false)`

```
final MapView mapView = (MapView)view.findViewById(R.id.map);
mapView.setClickable(false);
```

UISettings

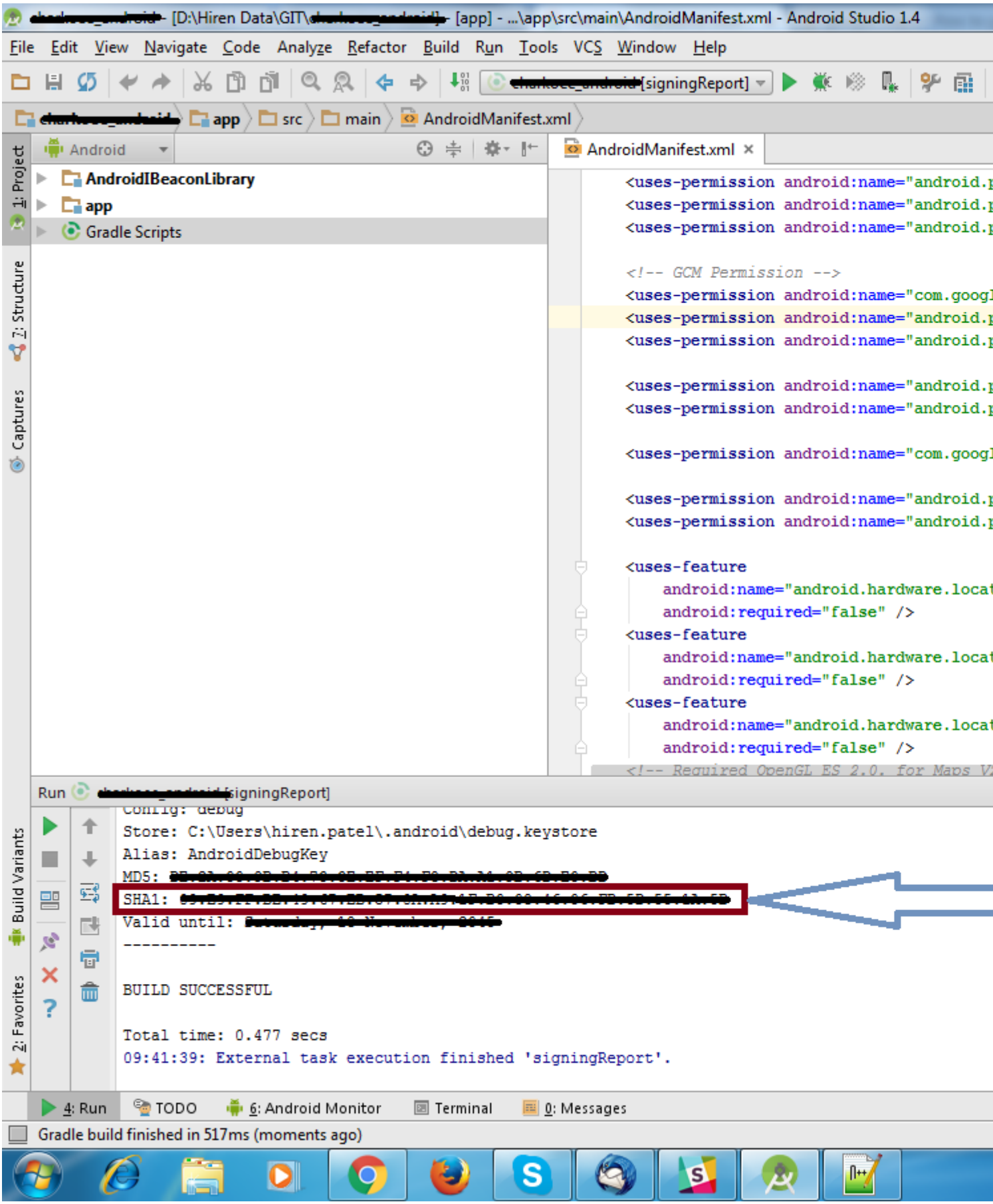
`UISettings` Google Map。

```
    mGoogleMap.setMapType(GoogleMap.MAP_TYPE_HYBRID);
    mGoogleMap.getUiSettings().setMapToolbarEnabled(true);
    mGoogleMap.getUiSettings().setZoomControlsEnabled(true);
    mGoogleMap.getUiSettings().setCompassEnabled(true);
```

SHA1

1. Android Studio
2.
3. Gradle**Gradle Bar**
4. RefreshRefresh from **Gradle Bar List** Gradle
5.

6. “”
7. android
8. signingReport**SHA1MD5**



InfoWindow“”

MarkerInfoWindow。

IDHashMapInfoWindow。

`OnInfoWindowClickListener`InfoWindowHashMap。

MarkerInfoWindowActivity。

HashMapActivityFragment

```
 //Declare HashMap to store mapping of marker to Activity
HashMap<String, String> markerMap = new HashMap<String, String>();
```

HashMapIDInfoWindow。

```
Marker markerOne = googleMap.addMarker(new MarkerOptions().position(latLng1)
        .title("Marker One")
        .snippet("This is Marker One");
String idOne = markerOne.getId();
markerMap.put(idOne, "action_one");

Marker markerTwo = googleMap.addMarker(new MarkerOptions().position(latLng2)
        .title("Marker Two")
        .snippet("This is Marker Two");
String idTwo = markerTwo.getId();
markerMap.put(idTwo, "action_two");
```

InfoWindowHashMapMarkerActivity

```
 mGoogleMap.setOnInfoWindowClickListener(new GoogleMap.OnInfoWindowClickListener() {
  @Override
  public void onInfoWindowClick(Marker marker) {

    String actionId = markerMap.get(marker.getId());

    if (actionId.equals("action_one")) {
      Intent i = new Intent(MainActivity.this, ActivityOne.class);
      startActivity(i);
    } else if (actionId.equals("action_two")) {
      Intent i = new Intent(MainActivity.this, ActivityTwo.class);
      startActivity(i);
    }
  }
});
```

getActivityMainActivity.this。

mappoint *xy*Google。 `onLocationChanged` `changeOffsetCenter(location.getLatitude(),location.getLongitude());`

```
 public void changeOffsetCenter(double latitude,double longitude) {
```

```
            Point mappoint = mGoogleMap.getProjection().toScreenLocation(new LatLng(latitude,
longitude));
            mappoint.set(mappoint.x, mappoint.y-100); // change these values as you need ,
just hard coded a value if you want you can give it based on a ratio like using DisplayMetrics
as well

mGoogleMap.animateCamera(CameraUpdateFactory.newLatLng(mGoogleMap.getProjection().fromScreenLocation(ma

        }
```

AndroidGoogle Maps API v2 https://riptutorial.com/zh-CN/android/topic/170/androidgoogle-maps-api-v2

261:

URI

```
"http://www.example.com/image.png" // from Web
"file:///mnt/sdcard/image.png" // from SD card
"file:///mnt/sdcard/video.mp4" // from SD card (video thumbnail)
"content://media/external/images/media/13" // from content provider
"content://media/external/video/media/13" // from content provider (video thumbnail)
"assets://image.png" // from assets
"drawable://" + R.drawable.img // from drawables (non-9patch images)
```

Examples

1. *build.gradle*

```
compile 'com.nostra13.universalimageloader:universal-image-loader:1.9.5'
```

2. *AndroidManifest.xml*

```
<uses-permission android:name="android.permission.INTERNET" />
<uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE" />
```

3. 。

```
ImageLoaderConfiguration config = new ImageLoaderConfiguration.Builder(this)
    // ...
    .build();
ImageLoader.getInstance().init(config);
```

。

1. `ImageView ImageAware`

```
ImageLoader.getInstance().displayImage(imageUri, imageView);
```

2.
```
ImageLoader.getInstance().loadImage(imageUri, new SimpleImageLoadingListener() {
    @Override
    public void onLoadingComplete(String imageUri, View view, Bitmap loadedImage) {
        // Do whatever you want with the bitmap.
    }
});
```

3.
```
Bitmap bmp = ImageLoader.getInstance().loadImageSync(imageUri);
```

https://riptutorial.com/zh-CN/android/topic/2760/

262:

Examples

。

```
NotificationCompat.Builder mBuilder = new NotificationCompat.Builder(this)
        .setSmallIcon(R.drawable.ic_launcher) // notification icon
        .setContentTitle("Simple notification") // title
        .setContentText("Hello word") // body message
        .setAutoCancel(true); // clear notification when clicked
```

```
Intent intent = new Intent(this, MainActivity.class);
PendingIntent pi = PendingIntent.getActivity(this, 0, intent, Intent.FLAG_ACTIVITY_NEW_TASK);
mBuilder.setContentIntent(pi);
```

```
NotificationManager mNotificationManager =
(NotificationManager)getSystemService(Context.NOTIFICATION_SERVICE);
mNotificationManager.notify(0, mBuilder.build());
```

Ticker

Heads Up NotificationTicker。

```
// Tapping the Notification will open up MainActivity
Intent i = new Intent(this, MainActivity.class);

// an action to use later
// defined as an app constant:
// public static final String MESSAGE_CONSTANT = "com.example.myapp.notification";
i.setAction(MainActivity.MESSAGE_CONSTANT);
// you can use extras as well
i.putExtra("some_extra", "testValue");

i.setFlags(Intent.FLAG_ACTIVITY_REORDER_TO_FRONT | Intent.FLAG_ACTIVITY_SINGLE_TOP);
PendingIntent notificationIntent = PendingIntent.getActivity(this, 999, i,
PendingIntent.FLAG_UPDATE_CURRENT);
NotificationCompat.Builder builder = new
NotificationCompat.Builder(this.getApplicationContext());
builder.setContentIntent(notificationIntent);
builder.setAutoCancel(true);
builder.setLargeIcon(BitmapFactory.decodeResource(this.getResources(),
android.R.drawable.ic_menu_view));
builder.setSmallIcon(android.R.drawable.ic_dialog_map);
builder.setContentText("Test Message Text");
builder.setTicker("Test Ticker Text");
builder.setContentTitle("Test Message Title");

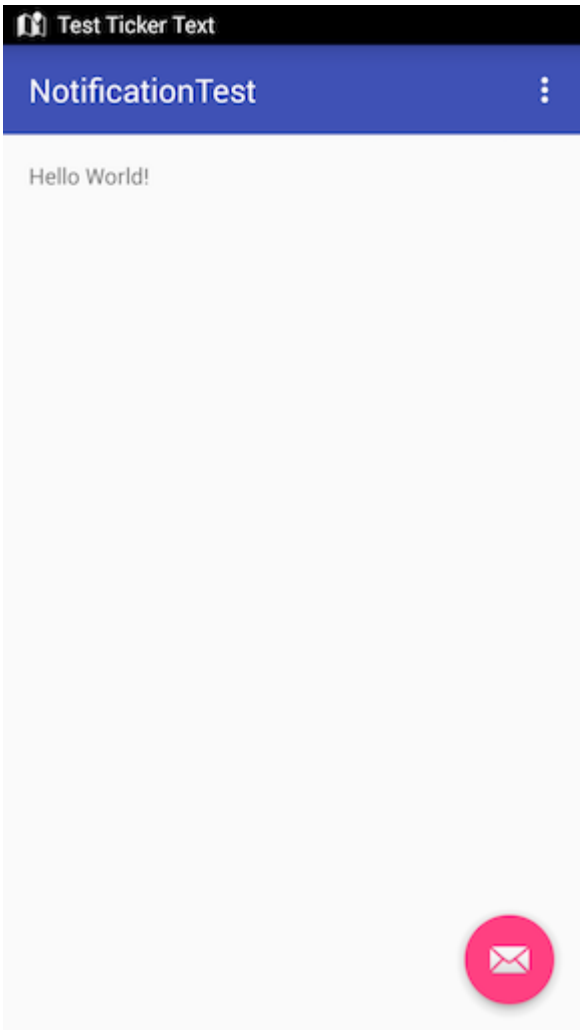
// set high priority for Heads Up Notification
builder.setPriority(NotificationCompat.PRIORITY_HIGH);
builder.setVisibility(NotificationCompat.VISIBILITY_PUBLIC);
```

```
// It won't show "Heads Up" unless it plays a sound
if (Build.VERSION.SDK_INT >= 21) builder.setVibrate(new long[0]);

NotificationManager mNotificationManager =
(NotificationManager)getSystemService(Context.NOTIFICATION_SERVICE);
mNotificationManager.notify(999, builder.build());
```

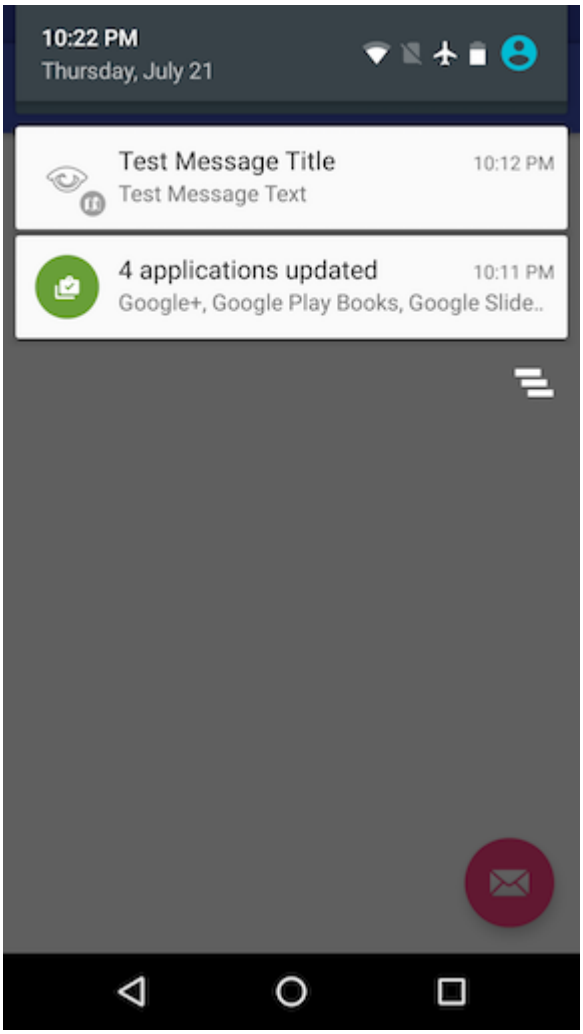
Android MarshmallowHeads Up Notification

Android KitKatTicker

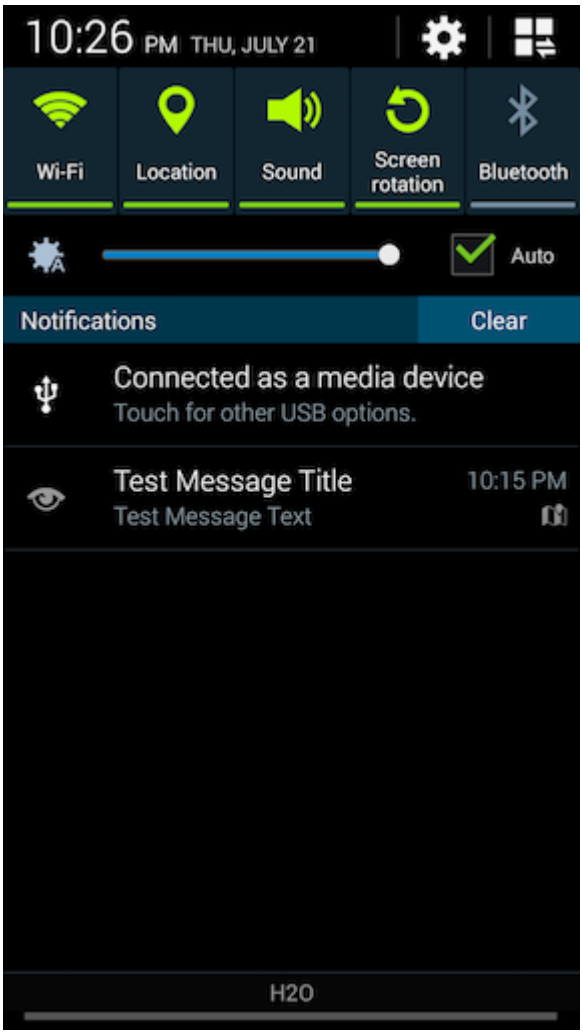


Android `Notification`。

Android 6.0 Marshmallow



Android 4.4.x KitKat




```
NotificationCompat.Builder mBuilder =

        (NotificationCompat.Builder) new NotificationCompat.Builder(context)

        .setSmallIcon(R.drawable.some_small_icon)
        .setContentTitle("Title")
        .setContentText("This is a test notification with MAX priority")
        .setPriority(Notification.PRIORITY_MAX);
```

“PRIORITY_MAX”

PRIORITY_MAX - ◦

PRIORITY_HIGH - ◦ ◦

PRIORITY_DEFAULT - ◦

PRIORITY_LOW - ◦ ◦

PRIORITY_MIN - ◦ ◦ ◦

-

Android`setTime()◦ AlarmManager`

1. **BroadcastReceiver**IntentAndroidAlarmManager ◦

Intent

```
   public class NotificationReceiver extends BroadcastReceiver {
       @Override
       public void onReceive(Context context, Intent intent) {
           // Build notification based on Intent
           Notification notification = new NotificationCompat.Builder(context)
               .setSmallIcon(R.drawable.ic_notification_small_icon)
               .setContentTitle(intent.getStringExtra("title", ""))
               .setContentText(intent.getStringExtra("text", ""))
               .build();
           // Show notification
           NotificationManager manager = (NotificationManager)
context.getSystemService(Context.NOTIFICATION_SERVICE);
           manager.notify(42, notification);
       }
   }
```

2. AndroidManifest.xml**BroadcastReceiver** AlarmManagerIntent

```
<receiver
    android:name=".NotificationReceiver"
    android:enabled="true" />
```

3. IntentBroadcastReceiverPendingIntentAlarmManager ◦ BroadcastReceiverIntent◦

```
public static void scheduleNotification(Context context, long time, String title, String
text) {
    Intent intent = new Intent(context, NotificationReceiver.class);
    intent.putExtra("title", title);
    intent.putExtra("text", text);
    PendingIntent pending = PendingIntent.getBroadcast(context, 42, intent,
PendingIntent.FLAG_UPDATE_CURRENT);
    // Schdedule notification
    AlarmManager manager = (AlarmManager)
context.getSystemService(Context.ALARM_SERVICE);
    manager.setExactAndAllowWhileIdle(AlarmManager.RTC_WAKEUP, time, pending);
}
```

42PendingIntent

4. PendingIntentAlarmManager ◦

```
public static void cancelNotification(Context context, String title, String text) {
    Intent intent = new Intent(context, NotificationReceiver.class);
    intent.putExtra("title", title);
    intent.putExtra("text", text);
    PendingIntent pending = PendingIntent.getBroadcast(context, 42, intent,
PendingIntent.FLAG_UPDATE_CURRENT);
    // Cancel notification
    AlarmManager manager = (AlarmManager)
context.getSystemService(Context.ALARM_SERVICE);
    manager.cancel(pending);
}
```

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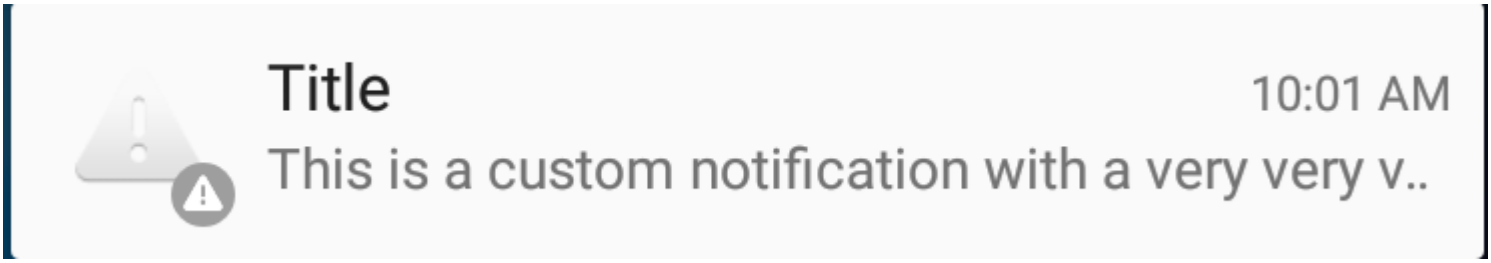

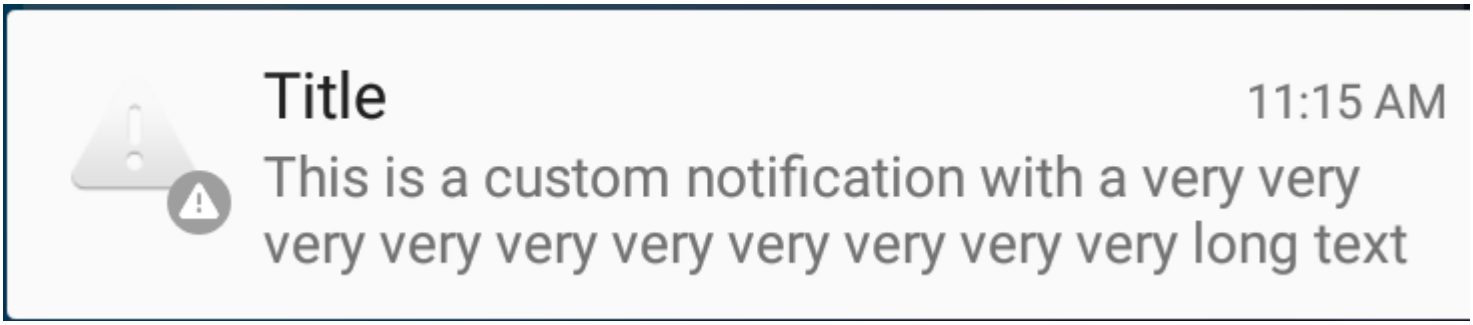


```
  private void generateNotification(Context context) {
        String message = "This is a custom notification with a very very very very very very
very very very very long text";
        Bitmap largeIcon = BitmapFactory.decodeResource(getResources(),
android.R.drawable.ic_dialog_alert);

        NotificationCompat.Builder builder = new NotificationCompat.Builder(context);

        builder.setContentTitle("Title").setContentText(message)
                .setSmallIcon(android.R.drawable.ic_dialog_alert)
                .setLargeIcon(largeIcon)
                .setAutoCancel(true)
                .setWhen(System.currentTimeMillis())
                .setStyle(new NotificationCompat.BigTextStyle().bigText(message));

        Notification notification = builder.build();
        NotificationManagerCompat notificationManager =
NotificationManagerCompat.from(context);
        notificationManager.notify(101, notification);
    }
```

“Picasso”。

```
    PendingIntent pendingIntent = PendingIntent.getActivity(context,
    uniqueIntentId, intent, PendingIntent.FLAG_CANCEL_CURRENT);

    final RemoteViews remoteViews = new RemoteViews(context.getPackageName(),
R.layout.remote_view_notification);
    remoteViews.setImageViewResource(R.id.remoteview_notification_icon,
R.mipmap.ic_navigation_favorites);
```

```
    Uri defaultSoundUri = RingtoneManager.getDefaultUri(RingtoneManager.TYPE_NOTIFICATION);
    NotificationCompat.Builder notificationBuilder =
            new NotificationCompat.Builder(context)
                    .setSmallIcon(R.mipmap.ic_navigation_favorites) //just dummy icon
                    .setContent(remoteViews) // here we apply our view
                    .setAutoCancel(true)
                    .setContentIntent(pendingIntent)
                    .setPriority(NotificationCompat.PRIORITY_DEFAULT);

    final Notification notification = notificationBuilder.build();

    if (android.os.Build.VERSION.SDK_INT >= 16) {
        notification.bigContentView = remoteViews;
    }

    NotificationManager notificationManager =
            (NotificationManager) context.getSystemService(Context.NOTIFICATION_SERVICE);

    notificationManager.notify(uniqueIntentId, notification);


    //don't forget to include picasso to your build.gradle file.
    Picasso.with(context)
            .load(avatar)
            .into(remoteViews, R.id.remoteview_notification_icon, uniqueIntentId,
notification);
```

layouts

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:background="@android:color/white"
    android:orientation="vertical">



    <ImageView
        android:id="@+id/remoteview_notification_icon"
        android:layout_width="60dp"
        android:layout_height="60dp"
        android:layout_marginRight="2dp"
        android:layout_weight="0"
        android:scaleType="centerCrop"/>
</LinearLayout>
```

```
Resources resources = context.getResources();
int width  = resources.getDimensionPixelSize(android.R.dimen.notification_large_icon_width);
int height = resources.getDimensionPixelSize(android.R.dimen.notification_large_icon_height);
```

“”

```
// Cancel older notification with same id,
NotificationManager notificationMgr =
(NotificationManager)context.getSystemService(Context.NOTIFICATION_SERVICE);
```

```
notificationMgr.cancel(CALL_NOTIFY_ID);// any constant value

// Create Pending Intent,
Intent notificationIntent = null;
PendingIntent contentIntent = null;
notificationIntent = new Intent (context, YourActivityName);
contentIntent = PendingIntent.getActivity(context, 0, notificationIntent,
PendingIntent.FLAG_UPDATE_CURRENT);

// Notification builder
builder = new NotificationCompat.Builder(context);
builder.setContentText("Ongoing Notification..");
builder.setContentTitle("ongoing notification sample");
builder.setSmallIcon(R.drawable.notification_icon);
builder.setUsesChronometer(true);
builder.setDefaults(Notification.DEFAULT_LIGHTS);
builder.setContentIntent(contentIntent);
builder.setOngoing(true);

// Add action button in the notification
Intent intent = new Intent("action.name");
PendingIntent pIntent = PendingIntent.getBroadcast(context, 1, intent, 0);
builder.addAction(R.drawable.action_button_icon, "Action button name",pIntent);

// Notify using notificationMgr
Notification finalNotification = builder.build();
notificationMgr.notify(CALL_NOTIFY_ID, finalNotification);
```

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https://riptutorial.com/zh-CN/android/topic/1347/

263: Android O.

- - 。Android O。 。

1. class NotificationUtils {} //
2. createChannel//

IMPORTANCE_MAX	
IMPORTANCE_HIGH	
IMPORTANCE_DEFAULT	
IMPORTANCE_LOW	
IMPORTANCE_MIN	
IMPORTANCE_NONE	;

Examples

- 。 。 。

```
 import android.app.Notification;
import android.app.NotificationChannel;
import android.app.NotificationManager;
import android.content.Context;
import android.content.ContextWrapper;
import android.graphics.Color;

public class NotificationUtils extends ContextWrapper {


private NotificationManager mManager;
public static final String ANDROID_CHANNEL_ID = "com.sai.ANDROID";
public static final String IOS_CHANNEL_ID = "com.sai.IOS";
public static final String ANDROID_CHANNEL_NAME = "ANDROID CHANNEL";
public static final String IOS_CHANNEL_NAME = "IOS CHANNEL";

public NotificationUtils(Context base) {
    super(base);
    createChannels();
}

public void createChannels() {

    // create android channel
    NotificationChannel androidChannel = new NotificationChannel(ANDROID_CHANNEL_ID,
            ANDROID_CHANNEL_NAME, NotificationManager.IMPORTANCE_DEFAULT);
    // Sets whether notifications posted to this channel should display notification lights
    androidChannel.enableLights(true);
```

```
    // Sets whether notification posted to this channel should vibrate.
    androidChannel.enableVibration(true);
    // Sets the notification light color for notifications posted to this channel
    androidChannel.setLightColor(Color.BLUE);
    // Sets whether notifications posted to this channel appear on the lockscreen or not
    androidChannel.setLockscreenVisibility(Notification.VISIBILITY_PRIVATE);

    getManager().createNotificationChannel(androidChannel);

    // create ios channel
    NotificationChannel iosChannel = new NotificationChannel(IOS_CHANNEL_ID,
            IOS_CHANNEL_NAME, NotificationManager.IMPORTANCE_HIGH);
    iosChannel.enableLights(true);
    iosChannel.enableVibration(true);
    iosChannel.setLightColor(Color.GRAY);
    iosChannel.setLockscreenVisibility(Notification.VISIBILITY_PUBLIC);
    getManager().createNotificationChannel(iosChannel);


  }


private NotificationManager getManager() {
    if (mManager == null) {
        mManager = (NotificationManager) getSystemService(Context.NOTIFICATION_SERVICE);
    }
    return mManager;
}}
```

NotificationChannel。。

1.
2.
3.
4. 。

NotificationManagercreateNotificationChannel。

createNotificationChannelsNotificationChannelJava。getNotificationChannels getNotificationChannelID。

IMPORTANCE_MAX	
IMPORTANCE_HIGH	
IMPORTANCE_DEFAULT	
IMPORTANCE_LOW	0
IMPORTANCE_MIN	
IMPORTANCE_NONE	;

NotificationBuilderNotificationUtils。

```
public Notification.Builder getAndroidChannelNotification(String title, String body) {
    return new Notification.Builder(getApplicationContext(), ANDROID_CHANNEL_ID)
            .setContentTitle(title)
            .setContentText(body)
            .setSmallIcon(android.R.drawable.stat_notify_more)
            .setAutoCancel(true);
}

public Notification.Builder getIosChannelNotification(String title, String body) {
    return new Notification.Builder(getApplicationContext(), IOS_CHANNEL_ID)
            .setContentTitle(title)
            .setContentText(body)
            .setSmallIcon(android.R.drawable.stat_notify_more)
            .setAutoCancel(true);
}
```

Notification.BuilderNotificationChannel。***setChannelString channelId***。

。createNotificationChannel。。ID。

```
@Override
protected void onCreate(Bundle savedInstanceState) {
    //...
    Button buttonAndroidNotifSettings = (Button)
findViewById(R.id.btn_android_notif_settings);
    buttonAndroidNotifSettings.setOnClickListener(new View.OnClickListener() {

        @Override
        public void onClick(View view) {
            Intent i = new Intent(Settings.ACTION_CHANNEL_NOTIFICATION_SETTINGS);
            i.putExtra(Settings.EXTRA_APP_PACKAGE, getPackageName());
            i.putExtra(Settings.EXTRA_CHANNEL_ID, NotificationUtils.ANDROID_CHANNEL_ID);
            startActivity(i);
        }
    });
}
```

XML

```
<!--...-->
<Button
    android:id="@+id/btn_android_notif_settings"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="Notification Settings"/>
<!--...-->
```

deleteNotificationChannel。

```
NotificationManager mNotificationManager =
        (NotificationManager) getSystemService(Context.NOTIFICATION_SERVICE);
// The id of the channel.
String id = "my_channel_01";
NotificationChannel mChannel = mNotificationManager.getNotificationChannel(id);
mNotificationManager.deleteNotificationChannel(mChannel);
```

MainActivityxml

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
        xmlns:android="http://schemas.android.com/apk/res/android"
        xmlns:app="http://schemas.android.com/apk/res-auto"
        xmlns:tools="http://schemas.android.com/tools"
        android:id="@+id/activity_main"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:orientation="vertical"
        android:layout_margin="16dp"
        tools:context="com.chikeandroid.tutsplusalerts.MainActivity">

    <LinearLayout
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:orientation="vertical">

        <TextView
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:text="Tuts+ Android Channel"
                android:layout_gravity="center_horizontal"
                android:textAppearance="@style/TextAppearance.AppCompat.Title"/>

        <EditText
                android:id="@+id/et_android_title"
                android:layout_width="match_parent"
                android:layout_height="wrap_content"
                android:hint="Title"/>

        <EditText
                android:id="@+id/et_android_author"
                android:layout_width="match_parent"
                android:layout_height="wrap_content"
                android:hint="Author"/>

        <Button
                android:id="@+id/btn_send_android"
                android:layout_width="match_parent"
                android:layout_height="wrap_content"
                android:text="Send"/>
    </LinearLayout>

    <LinearLayout
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:orientation="vertical"
            android:layout_marginTop="20dp">

        <TextView
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:text="Tuts+ IOS Channel"
                android:layout_gravity="center_horizontal"
                android:textAppearance="@style/TextAppearance.AppCompat.Title"/>
```

```
        <EditText
                android:id="@+id/et_ios_title"
                android:layout_width="match_parent"
                android:layout_height="wrap_content"
                android:hint="Title"
                />

        <EditText
                android:id="@+id/et_ios_author"
                android:layout_width="match_parent"
                android:layout_height="wrap_content"
                android:hint="Author"/>
        <Button
                android:id="@+id/btn_send_ios"
                android:layout_width="match_parent"
                android:layout_height="wrap_content"
                android:text="Send"/>
    </LinearLayout>

</LinearLayout>
```

MainActivity.java

MainActivityEditTextAndroid。NotificationUtilsAndroidNotification.BuilderNotificationManager。

import android.app.Notification; import android.os.Bundle; import android.support.v7.app.AppCompatActivity; import android.text.TextUtils; import android.view.View; import android.widget.Button; import android.widget.EditText;

```
public class MainActivity extends AppCompatActivity {

    private NotificationUtils mNotificationUtils;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        mNotificationUtils = new NotificationUtils(this);

        final EditText editTextTitleAndroid = (EditText) findViewById(R.id.et_android_title);
        final EditText editTextAuthorAndroid = (EditText)
findViewById(R.id.et_android_author);
        Button buttonAndroid = (Button) findViewById(R.id.btn_send_android);

        buttonAndroid.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                String title = editTextTitleAndroid.getText().toString();
                String author = editTextAuthorAndroid.getText().toString();

                if(!TextUtils.isEmpty(title) && !TextUtils.isEmpty(author)) {
                    Notification.Builder nb = mNotificationUtils.
                            getAndroidChannelNotification(title, "By " + author);

                    mNotificationUtils.getManager().notify(107, nb.build());
                }
            }
        });
```

```
    }
}
```

Android O. https://riptutorial.com/zh-CN/android/topic/10018/android-o-

264:

Examples

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Fragment Fragment。

```
@Override
public boolean dispatchTouchEvent(MotionEvent ev) {
    View view = getCurrentFocus();
    if (view != null && (ev.getAction() == MotionEvent.ACTION_UP || ev.getAction() ==
MotionEvent.ACTION_MOVE) && view instanceof EditText &&
!view.getClass().getName().startsWith("android.webkit.")) {
        int scrcoords[] = new int[2];
        view.getLocationOnScreen(scrcoords);
        float x = ev.getRawX() + view.getLeft() - scrcoords[0];
        float y = ev.getRawY() + view.getTop() - scrcoords[1];
        if (x < view.getLeft() || x > view.getRight() || y < view.getTop() || y >
view.getBottom())

((InputMethodManager)this.getSystemService(Context.INPUT_METHOD_SERVICE)).hideSoftInputFromWindow((this
0);
    }
    return super.dispatchTouchEvent(ev);
}
```

。

```
// A variable to hold the last content layout hight
private int mLastContentHeight = 0;

private ViewTreeObserver.OnGlobalLayoutListener keyboardLayoutListener = new
ViewTreeObserver.OnGlobalLayoutListener() {
    @Override public void onGlobalLayout() {
        int currentContentHeight = findViewById(Window.ID_ANDROID_CONTENT).getHeight();

        if (mLastContentHeight > currentContentHeight + 100) {
            Timber.d("onGlobalLayout: Keyboard is open");
            mLastContentHeight = currentContentHeight;
        } else if (currentContentHeight > mLastContentHeight + 100) {
            Timber.d("onGlobalLayout: Keyboard is closed");
            mLastContentHeight = currentContentHeight;
        }
    }
};
```

onCreatemLastContentHeight

```
mLastContentHeight = findViewById(Window.ID_ANDROID_CONTENT).getHeight();
```

```
rootView.getViewTreeObserver().addOnGlobalLayoutListener(keyboardLayoutListener);
```

destroy

```
rootView.getViewTreeObserver().removeOnGlobalLayoutListener(keyboardLayoutListener);
```

https://riptutorial.com/zh-CN/android/topic/5606/

265:

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- o
-
- Uri uri
- IntentContext packageContextClass <> cls
- IntentString actionUri uriContext packageContextClass <> cls

Ø	
	`String`: IntentACTION_VIEW.
URI	`Uri`: IntentURI。
packageContext	`Context`:。
CLS	`Class`:intent。

-
-

Examples

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```
Intent intent = new Intent(this, MyComponent.class);
startActivity(intent);
```

。 。

```
Intent intent = new Intent("com.stackoverflow.example.VIEW");

//We need to check to see if there is an application installed that can handle this intent
if (getPackageManager().resolveActivity(intent, 0) != null){
    startActivity(intent);
}else{
    //Handle error
}
```

Android

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```
// Create the text message with a string
Intent sendIntent = new Intent();
sendIntent.setAction(Intent.ACTION_SEND);
sendIntent.putExtra(Intent.EXTRA_TEXT, textMessage);
sendIntent.setType("text/plain");

// Verify that the intent will resolve to an activity
if (sendIntent.resolveActivity(getPackageManager()) != null) {
    startActivity(sendIntent);
}
```

https://riptutorial.com/zh-CN/android/topic/5336/

266:

Realm Mobile DatabaseSQLite。 Realm Mobile DatabaseORMSQLite。

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RealmRealmObjectsRealmResultsRealm。 Realm。 Realm。

/ 。

Examples

Realm

build.gradle。

```
dependencies {
    classpath "io.realm:realm-gradle-plugin:3.1.2"
}
```

build.gradle。

```
apply plugin: 'realm-android'
```

gradleRealm

Realm2.0.0。 ApplicationActivityonCreate。

```
Realm.init(this); // added in Realm 2.0.0
Realm.setDefaultConfiguration(new RealmConfiguration.Builder().build());
```

RealmObject。

boolean byte short int long float double String Date byte[] RealmObjectRealmList<T extends RealmModel> 。

```
public class Person extends RealmObject {
    @PrimaryKey //primary key is also implicitly an @Index
                //it is required for `copyToRealmOrUpdate()` to update the object.
    private long id;

    @Index //index makes queries faster on this field
    @Required //prevents `null` value from being inserted
    private String name;

    private RealmList<Dog> dogs; //->many relationship to Dog

    private Person spouse; //->one relationship to Person
```

```
    @Ignore
    private Calendar birthday; //calendars are not supported but can be ignored

    // getters, setters
}
```

RealmObjectRealmObject。 deleteIfMigrationNeeded()RealmConfiguration.Builder。 @Required @Index@PrimaryKey。

。

0.88.0RealmObject/ getter / setter。

RealmModelRealmObject @RealmClass。

```
@RealmClass
public class Person implements RealmModel {
    // ...
}
```

person.deleteFromRealm()person.addChangeListener()RealmObject.deleteFromRealm(person) RealmObject.addChangeListener(person) 。

RealmObject RealmObject final volatiletransient。

RealmObject。 RealmObject。

RealmList

Realm。 GitHub575 。

Integer。

```
public class RealmInteger extends RealmObject {
    private int val;

    public RealmInteger() {
    }

    public RealmInteger(int val) {
        this.val = val;
    }

    // Getters and setters
}
```

RealmObject。

```
public class MainObject extends RealmObject {

    private String name;
    private RealmList<RealmInteger> ints;
```

```
    // Getters and setters
}
```

GSONRealmObject ◦

```
Type token = new TypeToken<RealmList<RealmInteger>>(){}.getType();
Gson gson = new GsonBuilder()
        .setExclusionStrategies(new ExclusionStrategy() {
            @Override
            public boolean shouldSkipField(FieldAttributes f) {
                return f.getDeclaringClass().equals(RealmObject.class);
            }

            @Override
            public boolean shouldSkipClass(Class<?> clazz) {
                return false;
            }
        })
        .registerTypeAdapter(token, new TypeAdapter<RealmList<RealmInteger>>() {

            @Override
            public void write(JsonWriter out, RealmList<RealmInteger> value) throws
IOException {
                // Empty
            }

            @Override
            public RealmList<RealmInteger> read(JsonReader in) throws IOException {
                RealmList<RealmInteger> list = new RealmList<RealmInteger>();
                in.beginArray();
                while (in.hasNext()) {
                    list.add(new RealmInteger(in.nextInt()));
                }
                in.endArray();
                return list;
            }
        })
        .create();
```

-

```
try (Realm realm = Realm.getDefaultInstance()) {
    realm.executeTransaction(new Realm.Transaction() {
            @Override
            public void execute(Realm realm) {
                //whatever Transaction that has to be done
            }
    });
    //No need to close realm in try-with-resources
}
```

Try with resourcesKITKATminSDK 19

findAll() findAllSorted() ◦

```
RealmResults<SomeObject> results = realm.where(SomeObject.class)
                                        .findAllSorted("sortField", Sort.ASCENDING);
```

sort() RealmResultsRealmResults。 sort()RealmChangeListener RealmChangeListenerRealmResults RealmResults。 RealmResultssort()。

findAllSorted()。 findAllSorted() 。

findAll()findAllSorted() findAllAsync() / findAllSortedAsync() 。

RealmResults。 looperUI。

```
RealmChangeListener<RealmResults<SomeObject>> realmChangeListener; // field variable

realmChangeListener = new RealmChangeListener<RealmResults<SomeObject>>() {
    @Override
    public void onChange(RealmResults<SomeObject> element) {
        // asyncResults are now loaded
        adapter.updateData(element);
    }
};

RealmResults<SomeObject> asyncResults = realm.where(SomeObject.class).findAllAsync();
asyncResults.addChangeListener(realmChangeListener);
```

RealmRxJava

Realm`realmResults.asObservable()`。 looperUI。

```
realmConfiguration = new RealmConfiguration.Builder(context)       //
                         .rxFactory(new RealmObservableFactory()) //
                            //...
                         .build();
```

。

```
Observable<RealmResults<SomeObject>> observable = results.asObservable();
```

isLoaded()。 filter() isLoaded()true 。

```
    Subscription subscription = RxTextView.textChanges(editText).switchMap(charSequence ->
        realm.where(SomeObject.class)
             .contains("searchField", charSequence.toString(), Case.INSENSITIVE)
             .findAllAsync()
             .asObservable())
    .filter(RealmResults::isLoaded) //
    .subscribe(objects -> adapter.updateData(objects));
```

executeTransactionAsync()RealmRealm。

```
public Subscription loadObjectsFromNetwork() {
```

```
    return objectApi.getObjects()
        .subscribeOn(Schedulers.io())
        .subscribe(response -> {
            try(Realm realmInstance = Realm.getDefaultInstance()) {
                realmInstance.executeTransaction(realm ->
realm.insertOrUpdate(response.objects));
            }
        });
}
```

Realm。 Realm。

```
// Create configuration
RealmConfiguration realmConfiguration = new RealmConfiguration.Builder(context).build();

// Obtain realm instance
Realm realm = Realm.getInstance(realmConfiguration);
// or
Realm.setDefaultConfiguration(realmConfiguration);
Realm realm = Realm.getDefaultInstance();
```

`Realm.getInstance()`。 `RealmConfiguration`Realm - `inMemory()`RealmRealm。

`Realm.getInstance()realm.close()`。

Realm 。 Realm。

```
Runnable runnable = new Runnable() {
    Realm realm = null;
    try {
        realm = Realm.getDefaultInstance();
        // ...
    } finally {
        if(realm != null) {
            realm.close();
        }
    }
};

new Thread(runnable).start(); // background thread, like `doInBackground()` of AsyncTask
```

API19

```
try(Realm realm = Realm.getDefaultInstance()) {
    // ...
}
```

。 “”。 。 。

```
public class Book extends RealmObject {

    // Primary key of this entity
    @PrimaryKey
    private long id;

    private String title;

    @Index // faster queries
    private String author;

    // Standard getters & setter
    public long getId() {
        return id;
    }

    public void setId(long id) {
        this.id = id;
    }

    public String getTitle() {
        return title;
    }

    public void setTitle(String title) {
        this.title = title;
    }

    public String getAuthor() {
        return author;
    }

    public void setAuthor(String author) {
        this.author = author;
    }
}
```

RealmObject。 `@PrimaryKey`。 null`null`。 `@Ignore`@Ignore

```
@Ignore
private String isbn;
```

Realm`copyToRealm`。 `copyToRealmOrUpdate`。 `insertOrUpdate()`。

```
// Creating an instance of the model
Book book = new Book();
book.setId(1);
book.setTitle("Walking on air");
book.setAuthor("Taylor Swift")

// Store to the database
realm.executeTransaction(new Realm.Transaction() {
    @Override
    public void execute(Realm realm) {
        realm.insertOrUpdate(book);
    }
});
```

。

```
Book book = realm.createObject(Book.class, primaryKey);
...
```

- ```
  RealmResults<Book> results = realm.where(Book.class).findAll();
  ```

- ID10

  ```
  RealmResults<Book> results = realm.where(Book.class)
                                    .greaterThan("id", 10)
                                    .findAll();
  ```

- `'Taylor Swift''%Peter%'`

  ```
  RealmResults<Book> results = realm.where(Book.class)
                                    .beginGroup()
                                        .equalTo("author", "Taylor Swift")
                                        .or()
                                        .contains("author", "Peter")
                                    .endGroup().findAll();
  ```

Taylor Swift

```
// Start of transaction
realm.executeTransaction(new Realm.Transaction() {
    @Override
    public void execute(Realm realm) {
        // First Step: Query all Taylor Swift books
        RealmResults<Book> results = ...

        // Second Step: Delete elements in Realm
        results.deleteAllFromRealm();
    }
});
```

https://riptutorial.com/zh-CN/android/topic/3187/
```

267:

Examples

argbAlphaRedGreenBlue。

RGB。

```
int yourColor = Color.parse("#ae1f67");

int red = Color.red(yourColor);
int green = Color.green(yourColor);
int blue = Color.blue(yourColor);
```

```
 int newColor = Color.rgb(red, green, blue);
```

alpha

```
 int newColor = Color.argb(alpha, red, green, blue);
```

AlphaRGB[0-225]。

https://riptutorial.com/zh-CN/android/topic/4986/

268:

VolleyAndroid HTTPGoogle。Volley。VolleyAndroid。

- RequestQueue queue = Volley.newRequestQueuecontext; //
- = new SomeKindOfRequestClassRequest.MethodString urlResponse.Listener Response.ErrorListener; //
- queue.add; //;

GoogleVolley。。。jcentermaven。

build.gradle

```
dependencies {
    ...
    compile 'com.android.volley:volley:1.0.0'
}
```

INTERNET

```
<uses-permission android:name="android.permission.INTERNET"/>
```

。

https://developer.android.com/training/volley/index.html

GitHub

https://pablobaxter.github.io/volley-docs/

Examples

GETStringRequest

```
final TextView mTextView = (TextView) findViewById(R.id.text);
...

// Instantiate the RequestQueue.
RequestQueue queue = Volley.newRequestQueue(this);
String url ="http://www.google.com";

// Request a string response from the provided URL.
StringRequest stringRequest = new StringRequest(Request.Method.GET, url,
            new Response.Listener<String>() {
    @Override
    public void onResponse(String response) {
        // Display the first 500 characters of the response string.
```

```
        mTextView.setText("Response is: "+ response.substring(0,500));
    }
}, new Response.ErrorListener() {
    @Override
    public void onErrorResponse(VolleyError error) {
        mTextView.setText("That didn't work!");
    }
});
// Add the request to the RequestQueue.
queue.add(stringRequest);
```

```
// assume a Request and RequestQueue have already been initialized somewhere above

public static final String TAG = "SomeTag";

// Set the tag on the request.
request.setTag(TAG);

// Add the request to the RequestQueue.
mRequestQueue.add(request);

// To cancel this specific request
request.cancel();

// ... then, in some future life cycle event, for example in onStop()
// To cancel all requests with the specified tag in RequestQueue
mRequestQueue.cancelAll(TAG);
```

NetworkImageView

Volley NetworkImageViewImageView◦ ◦ XMLNetworkImageView◦

~/res/xmlattrx.xml

```
<resources>
    <declare-styleable name="MoreNetworkImageView">
        <attr name="defaultImageResId" format="reference"/>
        <attr name="errorImageResId" format="reference"/>
    </declare-styleable>
</resources>
```

```
package my.namespace;

import android.content.Context;
import android.content.res.TypedArray;
import android.support.annotation.NonNull;
import android.util.AttributeSet;

import com.android.volley.toolbox.NetworkImageView;

public class MoreNetworkImageView extends NetworkImageView {
    public MoreNetworkImageView(@NonNull final Context context) {
        super(context);
    }

    public MoreNetworkImageView(@NonNull final Context context, @NonNull final AttributeSet
attrs) {
```

```
        this(context, attrs, 0);
    }

    public MoreNetworkImageView(@NonNull final Context context, @NonNull final AttributeSet
attrs, final int defStyle) {
        super(context, attrs, defStyle);

        final TypedArray attributes = context.obtainStyledAttributes(attrs,
R.styleable.MoreNetworkImageView, defStyle, 0);

        // load defaultImageResId from XML
        int defaultImageResId =
attributes.getResourceId(R.styleable.MoreNetworkImageView_defaultImageResId, 0);
        if (defaultImageResId > 0) {
            setDefaultImageResId(defaultImageResId);
        }

        // load errorImageResId from XML
        int errorImageResId =
attributes.getResourceId(R.styleable.MoreNetworkImageView_errorImageResId, 0);
        if (errorImageResId > 0) {
            setErrorImageResId(errorImageResId);
        }
    }
}
```

```
<?xml version="1.0" encoding="utf-8"?>
<android.support.v7.widget.CardView
  xmlns:android="http://schemas.android.com/apk/res/android"
  xmlns:app="http://schemas.android.com/apk/res-auto"
  xmlns:tools="http://schemas.android.com/tools"
  android:layout_width="wrap_content"
  android:layout_height="fill_parent">

  <my.namespace.MoreNetworkImageView
    android:layout_width="64dp"
    android:layout_height="64dp"
    app:errorImageResId="@drawable/error_img"
    app:defaultImageResId="@drawable/default_img"
    tools:defaultImageResId="@drawable/editor_only_default_img"/>
    <!--
      Note: The "tools:" prefix does NOT work for custom attributes in Android Studio 2.1 and
      older at least, so in this example the defaultImageResId would show "default_img" in the

      editor, not the "editor_only_default_img" drawable even though it should if it was
      supported as an editor-only override correctly like standard Android properties.
    -->

</android.support.v7.widget.CardView>
```

JSON

```
final TextView mTxtDisplay = (TextView) findViewById(R.id.txtDisplay);
ImageView mImageView;
String url = "http://ip.jsontest.com/";

final JsonObjectRequest jsObjRequest = new JsonObjectRequest
        (Request.Method.GET, url, null, new Response.Listener<JSONObject>() {
```

```
    @Override
    public void onResponse(JSONObject response) {
        mTxtDisplay.setText("Response: " + response.toString());
    }
}, new Response.ErrorListener() {
    @Override
    public void onErrorResponse(VolleyError error) {
        // ...
    }
});

requestQueue.add(jsObjRequest);
```

[]

。

Request.classgetHeaders()

```
new JsonObjectRequest(REQUEST_METHOD, REQUEST_URL, REQUEST_BODY, RESP_LISTENER, ERR_LISTENER)
{
    @Override
    public Map<String, String> getHeaders() throws AuthFailureError {
        HashMap<String, String> customHeaders = new Hashmap<>();

        customHeaders.put("KEY_0", "VALUE_0");
        ...
        customHeaders.put("KEY_N", "VALUE_N");

        return customHeaders;
    }
};
```

- REQUEST_METHOD - Request.Method.*。
- REQUEST_URL - 。
- REQUEST_BODY - POST-BodyJSONObject null。
- RESP_LISTENER - Response.Listener<?>onResponse(T data)。
- ERR_LISTENER - Response.ErrorListeneronErrorResponse(VolleyError e)。

```
public class MyCustomRequest extends Request {
    ...
    @Override
    public Map<String, String> getHeaders() throws AuthFailureError {
        HashMap<String, String> customHeaders = new Hashmap<>();

        customHeaders.put("KEY_0", "VALUE_0");
        ...
        customHeaders.put("KEY_N", "VALUE_N");

        return customHeaders;
    }
    ...
}
```

```
public class VolleyErrorHelper {
```

```
        /**
         * Returns appropriate message which is to be displayed to the user
         * against the specified error object.
         *
         * @param error
         * @param context
         * @return
         */

        public static String getMessage (Object error , Context context){
            if(error instanceof TimeoutError){
                return context.getResources().getString(R.string.timeout);
            }else if (isServerProblem(error)){
                return handleServerError(error ,context);

            }else if(isNetworkProblem(error)){
                return context.getResources().getString(R.string.nointernet);
            }
            return context.getResources().getString(R.string.generic_error);

        }

        private static String handleServerError(Object error, Context context) {

            VolleyError er = (VolleyError)error;
            NetworkResponse response = er.networkResponse;
            if(response != null){
                switch (response.statusCode){

                    case 404:
                    case 422:
                    case 401:
                        try {
                            // server might return error like this { "error": "Some error
occured" }
                            // Use "Gson" to parse the result
                            HashMap<String, String> result = new Gson().fromJson(new
String(response.data),
                                    new TypeToken<Map<String, String>>() {
                                    }.getType());

                            if (result != null && result.containsKey("error")) {
                                return result.get("error");
                            }

                        } catch (Exception e) {
                            e.printStackTrace();
                        }
                        // invalid request
                        return ((VolleyError) error).getMessage();

                    default:
                        return context.getResources().getString(R.string.timeout);
                }
            }

            return context.getResources().getString(R.string.generic_error);
        }

        private static boolean isServerProblem(Object error) {
            return (error instanceof ServerError || error instanceof AuthFailureError);
```

```
        }

        private static boolean isNetworkProblem (Object error){
            return (error instanceof NetworkError || error instanceof NoConnectionError);
        }
```

POSTStringRequest

AndroidPOST

```
// User input data.
String email = "my@email.com";
String password = "123";

// Our server URL for handling POST requests.
String URL = "http://my.server.com/login.php";

// When we create a StringRequest (or a JSONRequest) for sending
// data with Volley, we specify the Request Method as POST, and
// the URL that will be receiving our data.
StringRequest stringRequest =
    new StringRequest(Request.Method.POST, URL,
    new Response.Listener<String>() {
        @Override
        public void onResponse(String response) {
            // At this point, Volley has sent the data to your URL
            // and has a response back from it. I'm going to assume
            // that the server sends an "OK" string.
            if (response.equals("OK")) {
                // Do login stuff.
            } else {
                // So the server didn't return an "OK" response.
                // Depending on what you did to handle errors on your
                // server, you can decide what action to take here.
            }
        }
    },
    new Response.ErrorListener() {
        @Override
        public void onErrorResponse(VolleyError error) {
            // This is when errors related to Volley happen.
            // It's up to you what to do if that should happen, but
            // it's usually not a good idea to be too clear as to
            // what happened here to your users.
        }
    }) {
        @Override
        protected Map<String, String> getParams() throws AuthFailureError {
            // Here is where we tell Volley what it should send in
            // our POST request. For this example, we want to send
            // both the email and the password.

            // We will need key ids for our data, so our server can know
            // what is what.
            String key_email = "email";
            String key_password = "password";

            Map<String, String> map = new HashMap<String, String>();
            // map.put(key, value);
```

```
            map.put(key_email, email);
            map.put(key_password, password);
            return map;
        }
    };

    // This is a policy that we need to specify to tell Volley, what
    // to do if it gets a timeout, how many times to retry, etc.
    stringRequest.setRetryPolicy(new RetryPolicy() {
            @Override
            public int getCurrentTimeout() {
                // Here goes the timeout.
                // The number is in milliseconds, 5000 is usually enough,
                // but you can up or low that number to fit your needs.
                return 50000;
            }
            @Override
            public int getCurrentRetryCount() {
                // The maximum number of attempts.
                // Again, the number can be anything you need.
                return 50000;
            }
            @Override
            public void retry(VolleyError error) throws VolleyError {
                // Here you could check if the retry count has gotten
                // to the maximum number, and if so, send a VolleyError
                // message or similar. For the sake of the example, I'll
                // show a Toast.
                Toast.makeText(getContext(), error.toString(), Toast.LENGTH_LONG).show();
            }
    });

    // And finally, we create a Volley Queue. For this example, I'm using
    // getContext(), because I was working with a Fragment. But context could
    // be "this", "getContext()", etc.
    RequestQueue requestQueue = Volley.newRequestQueue(getContext());
    requestQueue.add(stringRequest);

} else {
    // If, for example, the user inputs an email that is not currently
    // on your remote DB, here's where we can inform the user.
    Toast.makeText(getContext(), "Wrong email", Toast.LENGTH_LONG).show();
}
```

VolleyHTTP

app-level build.gradlegradle

```
compile 'com.android.volley:volley:1.0.0'
```

android.permission.INTERNET。

Volley RequestQueue

```
public class InitApplication extends Application {

private RequestQueue queue;
private static InitApplication sInstance;
```

```
private static final String TAG = InitApplication.class.getSimpleName();


@Override
public void onCreate() {
    super.onCreate();

    sInstance = this;

    Stetho.initializeWithDefaults(this);

}

public static synchronized InitApplication getInstance() {
    return sInstance;
}

public <T> void addToQueue(Request<T> req, String tag) {
    req.setTag(TextUtils.isEmpty(tag) ? TAG : tag);
    getQueue().add(req);
}

public <T> void addToQueue(Request<T> req) {
    req.setTag(TAG);
    getQueue().add(req);
}

public void cancelPendingRequests(Object tag) {
    if (queue != null) {
        queue.cancelAll(tag);
    }
}

public RequestQueue getQueue() {
    if (queue == null) {
        queue = Volley.newRequestQueue(getApplicationContext());
        return queue;
    }
    return queue;
}
}
```

getInstancevolley`InitApplication.getInstance().addToQueue(request);`
`InitApplication.getInstance().addToQueue(request);`

JsonObject

```
JsonObjectRequest myRequest = new JsonObjectRequest(Method.GET,
        url, null,
        new Response.Listener<JSONObject>() {

            @Override
            public void onResponse(JSONObject response) {
                Log.d(TAG, response.toString());
            }
        }, new Response.ErrorListener() {

            @Override
            public void onErrorResponse(VolleyError error) {
```

```
                Log.d(TAG, "Error: " + error.getMessage());
            }
});

myRequest.setRetryPolicy(new DefaultRetryPolicy(
        MY_SOCKET_TIMEOUT_MS,
        DefaultRetryPolicy.DEFAULT_MAX_RETRIES,
        DefaultRetryPolicy.DEFAULT_BACKOFF_MULT));
```

Volley`RetryPolicy` ◦ ◦

Volley`RetryPolicy` ◦ Volley5◦ `RetryPolicy`◦

- `initialTimeoutMs` - ◦
- `maxNumRetries` - ◦
- `backoffMultiplier` - ◦

json

```
private final String PROTOCOL_CONTENT_TYPE = String.format("application/json; charset=%s",
PROTOCOL_CHARSET);

    public BooleanRequest(int method, String url, String requestBody,
Response.Listener<Boolean> listener, Response.ErrorListener errorListener) {
        super(method, url, errorListener);
        this.mListener = listener;
        this.mErrorListener = errorListener;
        this.mRequestBody = requestBody;
    }

    @Override
    protected Response<Boolean> parseNetworkResponse(NetworkResponse response) {
        Boolean parsed;
        try {
            parsed = Boolean.valueOf(new String(response.data,
HttpHeaderParser.parseCharset(response.headers)));
        } catch (UnsupportedEncodingException e) {
            parsed = Boolean.valueOf(new String(response.data));
        }
        return Response.success(parsed, HttpHeaderParser.parseCacheHeaders(response));
    }

    @Override
    protected VolleyError parseNetworkError(VolleyError volleyError) {
        return super.parseNetworkError(volleyError);
    }

    @Override
    protected void deliverResponse(Boolean response) {
        mListener.onResponse(response);
    }

    @Override
    public void deliverError(VolleyError error) {
        mErrorListener.onErrorResponse(error);
    }
```

```
    @Override
    public String getBodyContentType() {
        return PROTOCOL_CONTENT_TYPE;
    }

    @Override
    public byte[] getBody() throws AuthFailureError {
        try {
            return mRequestBody == null ? null : mRequestBody.getBytes(PROTOCOL_CHARSET);
        } catch (UnsupportedEncodingException uee) {
            VolleyLog.wtf("Unsupported Encoding while trying to get the bytes of %s using %s",
                    mRequestBody, PROTOCOL_CHARSET);
            return null;
        }
    }
}
```

```
try {
        JSONObject jsonBody;
        jsonBody = new JSONObject();
        jsonBody.put("Title", "Android Demo");
        jsonBody.put("Author", "BNK");
        jsonBody.put("Date", "2015/08/28");
        String requestBody = jsonBody.toString();
        BooleanRequest booleanRequest = new BooleanRequest(0, url, requestBody, new
Response.Listener<Boolean>() {
            @Override
            public void onResponse(Boolean response) {
                Toast.makeText(mContext, String.valueOf(response), Toast.LENGTH_SHORT).show();
            }
        }, new Response.ErrorListener() {
            @Override
            public void onErrorResponse(VolleyError error) {
                Toast.makeText(mContext, error.toString(), Toast.LENGTH_SHORT).show();
            }
        });
        // Add the request to the RequestQueue.
        queue.add(booleanRequest);
    } catch (JSONException e) {
        e.printStackTrace();
    }
```

JSONArray

volleyPOSTJSONArray◦ JSON◦

JSONRequest.classgetBody()◦ null

```
JSONArray requestBody = new JSONArray();

new JsonObjectRequest(Request.Method.POST, REQUEST_URL, null, RESP_LISTENER, ERR_LISTENER) {
    @Override
    public byte[] getBody() {
        try {
            return requestBody.toString().getBytes(PROTOCOL_CHARSET);
        } catch (UnsupportedEncodingException uee) {
            // error handling
```

```
            return null;
        }
    }
};
```

- REQUEST_URL - ◦
- RESP_LISTENER - Response.Listener<?>onResponse(T data)◦
- ERR_LISTENER - Response.ErrorListeneronErrorResponse(VolleyError e)◦

https://riptutorial.com/zh-CN/android/topic/2800/

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23	Android	Zoe
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28	AudioManager	honk, Nicolai Weitkemper
29	AudioTrack	Ayush Bansal
30	AutoCompleteTextView	Harish Gyanani, Jon Adams, Ricardo Vieira, Vivek Mishra
31	BottomNavigationView	Abdul Wasae, Daniel Nugent, Gabriele Mariotti, guik, Pankaj Kumar, Pratik Butani, Priyank Patel, RamenChef, rciovati, Stephen Leppik, sud007
32	Camera 2 API	ChemicalFlash, devnull69, RamenChef, webo80
33	CardView	Carlos, Dan, Er. Kaushik Kajavadara, Gabriele Mariotti, Kaushik, Nougat Lover, RamenChef, S.R, Sneh Pandya, Somesh Kumar, Stephen Leppik, sud007, WarrenFaith, Yury Fedorov
34	CleverTap	Jordan, judepereira
35	ConstraintLayout	Adarsh Ashok, Bryan, Daniel Nugent, Darish, Florent Spahiu, Gabriele Mariotti, KorolevSM, Marcola, MathaN, Pratik Butani, RamenChef, Samvid Mistry, Sneh Pandya, Stephen Leppik, Yury Fedorov, Zarul Izham
36	CoordinatorLayout Behaviors	Adarsh Ashok, Gabriele Mariotti, honk, RamenChef, Stephen Leppik
37	DayNightAppCompat v23.2 / API 14+	Ishita Sinha
38	ExoPlayer	Hamed Gh
39	FASTJSON	KeLiuyue
40	FileIOAndroid	h22, sun-solar-arrow

41	FileProvider	Joost Verbraeken, pedros
42	Firebase	Gabriele Mariotti, shikhar bansal, Shubham Shukla, Zarul Izham
43	Firebase	Aawaz Gyawali, drulabs, Gabriele Mariotti, honk, Md. Ali Hossain, RamenChef, Sneh Pandya, Stephen Leppik, yennsarah, Zarul Izham
44	Firebase	AndiGeeky, Gabriele Mariotti, honk, RamenChef, Stephen Leppik, Zarul Izham
45	Firebase	shalini, tynn
46	FloatingActionButton	Ahmad Aghazadeh, Charuක, Daniel Nugent, Gabriele Mariotti, mattfred, RamenChef, Shinil M S, Stephen Leppik
47	Genymotion for android	Atef Hares, Harish Gyanani
48	Google Awareness API	Dus, honk, Willie Chalmers III
49	Google Drive API	Christlin Joseph, honk
50	Google Play	dakshbhatt21, Daniel Nugent, reVerse
51	Gradle for Android	4444, Aaron He, Abdul Wasae, abhi, Abhishek Jain, Ahmad Aghazadeh, Alex T., AndroidMechanic, AndroidRuntimeException, Anirudh Sharma, Ankit Sharma, Arpit Patel, auval, Bartek Lipinski, Ben, Brenden Kromhout, bwegs, cascal, cdeange, Charuක, ChemicalFlash, cricket_007, Daniel Nugent, enrico.bacis, Eugen Martynov, Fabio, Floern, Florent Spahiu, Gabriele Mariotti, hankide, Ibrahim, Ichthyocentaurs, Irfan, jgm, k3b, Kevin Crain, kevinpelgrims, Matt, mshukla, N J, Pavel Strelchenko, Pavneet_Singh, R. Zagórski, RamenChef, rciovati, Reaz Murshed, rekire, Revanth Gopi, Sneh Pandya, sun-solar-arrow, ThomasThiebaud, ɬolɐəz əɥɬ qoq, Vlonjat Gashi, Yassie, yuku, Yury Fedorov
52	GreenDAO	Allan Pereira, Carl Poole, Grundy, MiguelHincapieC, R. Zagórski, RamenChef, Stephen Leppik
53	GreenRobot EventBus	CaseyB, Daniel Nugent, Hamed Momeni, RamenChef
54	GSON	AndroidRuntimeException, baozi, cdeange, Code_Life, cricket_007, Daniel Nugent, DanielDiSu, devnull69, Duan Bressan, Gabriele Mariotti, Ginandi, Graham Smith, Harish Gyanani, L. Swifter, Mauker, Oleksandr, Prownage, Rucha Bhatt, Sneh Pandya, Tim Kranen, Vincent D., Yury

		Fedorov
55	HttpURLConnection	Aleks G, Daniel Nugent, Duan Bressan, honk, KDeogharkar, marshmallow, Shantanu Paul, Simone Carletti
56	ImageView	Ahmad Aghazadeh, Ali Sherafat, Chip, Daniel Nugent, DanielDiSu, Dinesh, Gabriele Mariotti, Harish Gyanani, kit, lax1089, Pratik Butani, Squidward, Sup
57	IntentService	Anax, Daniel Nugent, honk, JonasCz, TRINADH KOYA, Yashaswi Maharshi
58	JCodec	Adhikari Bishwash
59	Leakcanary	Rakshit Nawani, tynn
60	Library Dagger 2	Er. Kaushik Kajavadara, honk
61	LruCache	Daniel Nugent, honk, LordSidious, RamenChef, Stephen Leppik
62	MediaSession	Disk Crasher, honk, KuroObi, RamenChef
63	MediaStore	Daniel Nugent, honk, RamenChef, Uttam Panchasara
64	MultidexDex	Adarsh Ashok, Ben, bigbaldy, cdeange, Daniel Nugent, Gabriele Mariotti, Mike, Pongpat, R. Zagórski, Shirane85
65	MVP	Atif Farrukh, Harish Gyanani, honk, Jon Adams, Magesh Pandian, N J, zmingchun
66	MVVM	Daniel W., RamenChef, Stephen Leppik
67	NavigationView	Adam Lear, akshay, Charuᔕ, Daniel Nugent, Gabriele Mariotti, Kedar Tendolkar, petrumo, RamenChef, rekire, SANAT, Sevle, Stephen Leppik, sud007
68	OkHttp	A-Droid Tech, Daniel Nugent, Gabriele Mariotti, Gubbel, noob, Rohit Arya, Vucko, Zarul Izham
69	OpenGL ES 2.0+	MarGenDo
70	PackageManager	FredMaggiowski, Hi I'm Frogatto, Muthukrishnan Rajendran, Piyush, Squidward
71	Parcelable	Alex Sullivan, Andrei T, HoseinIT, Nick Cardoso
72	Ping ICMP	Carl Poole
73	PorterDuff	Adarsh Ashok, AndroidMechanic, Knossos, PhilLab, S.D.,

		Vasily Kabunov
74	ProGuard -	activesince93, Aman Anguralla, Anirudh Sharma, auval, Daniel Nugent, EKN, Ibrahim, J j, Jon Adams, Lewis McGeary, Lukas Abfalterer, Max, Nikita Shaposhnik, R. Zagórski, Ricardo Vieira
75	Project SDK	Arnav M., Ranveer, Tanis.7x
76	RecyclerView	Abhishek Jain, Abilash, Adinia, Ahmad Aghazadeh, Akash Patel, Alex Bonel, Alok Omkar, anatoli, Andrii Abramov, AndroidMechanic, Anirudh Sharma, BalaramNayak, Barend, Bartek Lipinski, Bryan, cascal, Charu꩜, Chirag SolankI, Daniel Nugent, Fahad Al-malki, Felix Edelmann, FromTheSeventhSky, Gabriele Mariotti, GensaGames, humazed, Ironman, Jacob, jgm, Joel Mathew, Jon Adams, Joshua, Kayvan N, keineantwort, Kevin DiTraglia, Knossos , kyp, MathaN, MidasLefko, MKJParekh, mklimek, Pablo Baxter, Patrick Dattilio, Piyush, raktale, RamenChef, rciovati, Reaz Murshed, Rohan Arora, Sagar Chavada, Sanket Berde, Sasank Sunkavalli, Sneh Pandya, Stephen Leppik, sukumar, Sunday G Akinsete, thetonrifles, Tot Zam , Uttam Panchasara, V. Kalyuzhnyu, Vasily Kabunov, Xaver Kapeller, Yasin Kaçmaz, Yura Ivanov, Yury Fedorov, Zilk
77	RecyclerView onClickListeners	abhishesh, Braj Bhushan Singh, Bryan, FromTheSeventhSky, fuwaneko, Gabriele Mariotti, honk, RamenChef, Smit.Satodia, Stephen Leppik
78	RecyclerView	Muhammad Younas
79	RecyclerView LayoutManagers	4444, BalaramNayak, Felix Edelmann, Gabriele Mariotti, Kayvan N, MidasLefko, RamenChef, Stephen Leppik
80	RecyclerView	Barend, David Medenjak, Gabriele Mariotti, Muthukrishnan Rajendran, Peter Gordon, RamenChef, Stephen Leppik, Yasin Kaçmaz
81	Retrofit2	Adarsh Ashok, Adnan, Anderson K, AndroidMechanic, AndyRoid, aquib23, arcticwhite, CaseyB, Cassio Landim, Dan, Daniel Nugent, DanielDiSu, devnull69, Dhaval Solanki, FiN, Greg T, Kamran Ahmed, KATHYxx, Kaushik, mrtuovinen, NashHorn, Omar Al Halabi, param, Pavneet_Singh, Pinaki Acharya, R. Zagórski, RamenChef, SKen, Sneh Pandya, Stephen Leppik, xdk78, Zarul Izham
82	RoboGuice	AndroidRuntimeException, Lewis McGeary, Rajesh

83	Robolectric	Blundell, g4s8
84	SharedPreferences	Abhishek Jain, Ahmad Aghazadeh, akshay, AndroidMechanic, Anggrayudi H, antonio, Ashish Ranjan, Blackbelt, Blundering Philosopher, Buddy, Dalija Prasnikar, Damian Kozlak, Dan Hulme, Daniel Nugent, FisheyLP, Gabriele Mariotti, gbansal, Greg T, IncrediApp, Jon Adams, JonasCz, jonathan3087, Jordan, Kayvan N, LordSidious, Makille, Max McKinney, Pawel Cala, Piyush, rajan ks, rekire, Rohit Arya, Sándor Mátyás Márton, Shinil M S, ShivBuyya, Suchi Gupta, TanTN, TheLittleNaruto, Trevor Clarke, user1506104, Vasily Kabunov, vipsy, Vishva Dave, Volodymyr Buberenko, xmoex, Yury Fedorov
85	ShortcutManager	g4s8, Sukrit Kumar
86	SpannableString	S.R
87	SQLite	Abhishek Jain, AndroidMechanic, ankit dassor, Ashwani Kumar, astuter, CL., dakshbhatt21, Damian Kozlak, Daniel Nugent, falvojr, Gabriele Mariotti, Gorg, H. Pauwelyn, Ilya Blokh, Jitesh Dalsaniya, JJ86, John Slegers, Lazy Ninja, Leos Literak, Lewis McGeary, Lucas Paolillo, Mauker, McSullivan D'Ander, MIkka Marmik, MPhil, Robin Dijkhof, Scott W, Uriel Carrillo, Vasily Kabunov, WMios, Xaver Kapeller, Yury Fedorov
88	SyncAdapter	Bhargavi Yamanuri
89	TabLayout	Daniel Nugent, Willie Chalmers III
90	TensorFlow	Pratik Butani
91	TextInputLayout	Adarsh Ashok, BrickTop, Gabriele Mariotti, Hi I'm Frogatto, RamenChef, Shashanth, Sneh Pandya, Stephen Leppik
92	TransitionDrawable	S.R, Yogesh Umesh Vaity
93	Twitter API	Mahmoud Ibrahim
94	Typedef@ IntDef@ StringDef	Gabriele Mariotti, hardik m, mmBs, Pongpat
95	UI	Daniel Nugent, Dinesh Choudhary, Floern, Lewis McGeary, orelzion, R. Zagórski, Sergey Glotov
96	VectorDrawable AnimatedVectorDrawable	Ahmad Aghazadeh, Aleksandar Stefanović, gaara87, honk, Lewis McGeary, RamenChef, Stephen Leppik
97	VideoView	iravul, Sashabrava

98	ViewFlipper	Anita Kunjir, Daniel Nugent, honk
99	ViewPager	Adarsh Ashok, Adrián Pérez, Daniel Nugent, Gabriele Mariotti, Moustachauve, RamenChef, RediOne1, Rucha Bhatt, Sneh Pandya, Stephen Leppik, Usman, ZeroOne
100	VirtualBoxAndroid-x86	Daniel Nugent, Enrique de Miguel
101	Wi-Fi	4444, AndroidMechanic, Daniel Nugent, gus27
102	XMPP	4444, RamenChef, Saveen
103	Xposed	Medusalix
104	YouTubeAPI	abhishesh, Giannis, honk, MashukKhan, Zarul Izham, Zeeshan Shabbir
105		Will Evers
106	。	Shekhar
107	Android	EpicPandaForce, honk, mnoronha
108	Toast MessageSingleton	Emad, Ishan Fernando
109		alanv, Aleksandar Stefanović, cdeange, Daniel Nugent, DanielDiSu, Gabriele Mariotti, Hiren Patel, Ishita Sinha, Jason Robinson, Laurel, noob, Piyush, R. Zagórski, RamenChef, Tot Zam, Vlonjat Gashi
110	ProGuardAndroid	Ayush Bansal, Daniel Nugent, Ghanshyam Sharma, Pratik Butani
111	VideoView	Chip
112		Lokesh Desai
113		Roberto Betancourt
114		RamenChef, reflective_mind
115	ADB	Ahmad Aghazadeh, fyfyone Google, Laurel, Xaver Kapeller
116	Android	AndroidMechanic, electroid, Fabio, Gubbel, Harish Gyanani, honk, Jinesh Francis, mpkuth, RamenChef, USKMobility
117	ContentValuesSQLite	Adil Saiyad, emecas, honk
118	EspressoUI	Daniel Nugent, Gabriele Mariotti, Jason Robinson, Michael Vescovo, Milad Faridnia, N J, RamenChef, Víctor Albertos

119	Gradle.aarApache Archiva	Marian Klühspies
120	JUnitAndroid	abhi, Andre Perkins, AndroidMechanic, Eugen Martynov, honk, Lewis McGeary, N J, Namnodorel, Patrick Dattilio, Rolf ツ
121	KotlinAndroid	Gian Patrick Quintana, Govinda Paliwal, Oknesif, Zarul Izham
122	RxJavaRetrofit2	Anand Singh, gaara87, GurpreetSK95, Lukas, mrtuovinen, R. Zagórski, Zarul Izham
123	SurfaceView	davidgiga1993
124	UIAutomatorUI	Timo Bähr
125		Arpit Gandhi, mnoronha
126	Android	Beto Caldas, honk, Neeraj
127		abhishesh, AesSedai101, Alex Gittemeier, antonio, astuter, Buddy, Damian Kozlak, Gabe Sechan, Greg T, Jeeter, Lewis McGeary, M D P, Nick Cardoso, PhilLab, Simone Carletti, THelper, ThomasThiebaud, Xaver Kapeller
128		privatestaticint
129		noongiya95
130		Abhishek Jain, Anand Singh, auval, Ben, cascal, CodeHarmonics, commonSenseCode, Daniel Nugent, david.schreiber, Disk Crasher, Gabriele Mariotti, geniushkg , honk, Kingfisher Phuoc, Leos Literak, Mikael Ohlson, Mohammod Hossain, mrtuovinen, Oren, RamenChef, Risch, Saveen, ɬolɐəz əɥɬ qoq
131		Andrew Siplas, cdeange, Daniel Nugent, Dinesh Choudhary, Lewis McGeary, RamenChef
132	/	Vishal Puri
133		A.A., brainless, Daniel Nugent, Diti, Douglas Drumond, Fabian Tamp, Gabriele Mariotti, Hiren Patel, Mr.7, Ruben Pirotte, Saeed-rz, shaonAshraf, Squidward
134	AndroidROM	honk, Pradumn Kumar Mahanta
135	Windows	honk, mnoronha, NitZRobotKoder, Rupali, Sujith Niraikulathan

136		honk, Kiran Benny Joseph, Zoe
137		AndroidMechanic, Barend, Bartek Lipinski, Charuka, Daniel Nugent, Dinesh, g4s8, Harish Gyanani, Hiren Patel, Joel Gritter, Jon Adams, Omar Al Halabi, PcAF, R. Zagórski, rciovati, Sneh Pandya, Sujith Niraikulathan, Suragch, TR4Android, Yury Fedorov
138	AlertDialog	krunal patel, Thomas Easo
139		Aryan, Bartek Lipinski, Blundering Philosopher, Brenden Kromhout, Charuka, Daniel Nugent, Eixx, Hiren Patel, Lewis McGeary, Piyush, TR4Android, Uriel Carrillo, Yury Fedorov
140	2	Aurasphere, Cabezas, David Medenjak, EpicPandaForce, honk, mattfred, Tomik
141	Play	Carlos Borau, Fabio, mnoronha, Zoe
142		alanv, B001, Daniel Nugent, Greg T, Hiren Patel, Jinesh Francis, Nick Cardoso, TR4Android
143		Atif Farrukh, honk, RamenChef, Stephen Leppik
144	I18NL10N	Ankur Aggarwal
145		Hiren Patel, mnoronha
146	Android App	Gabriele Mariotti, M M
147	Android Studio	AndroidMechanic, Daniel Nugent, ridsatrio, Zoe
148	AndroidCling	Shinil M S
149	Android	N-JOY, tynn, Xiaozou
150	AndroidORMLite	Manos
151	androidZip	Adnan
152	Android	Arth Tilva, Daniel Nugent, mnoronha
153	AndroidRetrolambda◦	anatoli, Md. Ali Hossain
154		Amit Vaghela, Andrew Brooke, AnV, Daniel Nugent, Gabriele Mariotti, Nickan B, Uttam Panchasara
155		Alex Chengalan, Aryan, BadCash, Daniel Nugent, Hiren Patel, Mahmoud Ibrahim, MidasLefko, Pablo Baxter,

		RamenChef, Stephen Leppik
156		Adil Saiyad, honk
157		Alexander Oprisnik, Daniel Nugent, honk, Nilesh Singh, Zarul Izham
158		Daniel Nugent, Floern, Hasif Seyd, Lewis McGeary, Mike Scamell, Muhammed Refaat, Sweeper, Tomik, TR4Android
159		Doron Yakovlev-Golani, Harsh Sharma, mnoronha, Tanis.7x
160		honk, Zoe
161		Adhikari Bishwash
162		gus27, tynn
163	SparseArray	honk, Robert Banyai
164		honk, Jaggs
165		Ahmad Aghazadeh, Carlos Vázquez Losada, hello_world, Makille, R. Zagórski, Redman
166		xDragonZ
167	SharedPreferences	Christlin Joseph
168	RangeSeekBar	Romu Dizzy
169		Ab_, adalPaRi, Aleks G, alexey polusov, Brenden Kromhout, Daniel Nugent, Ichigo Kurosaki, Jaymes Bearden, JJ86, Lewis McGeary, M D P, Mochamad Taufik Hidayat, Rajesh, RamenChef, Ravi Rupareliya, RediOne1, Sanket Berde, ShivBuyya, Yojimbo, Zoe
170	FuseViewAndroid	Tudor Luca
171	OpenCVAndroid Studio	MashukKhan, RamenChef, ssimm
172	Maven	Farid
173	Android	1SStorm
174		AndroidRuntimeException, Charuක, Daniel Nugent, Gabriele Mariotti, Harsh Pandey, Jinesh Francis, Lithimlin, marshmallow, Mike Scamell, miss C, Mochamad Taufik Hidayat, Patrick Dattilio, Piyush, RamenChef, Rasoul Miri, Rosário Pereira Fernandes, Sneh Pandya, Stephen Leppik

		, Zarul Izham
175		4444, Alex Ershov, Daniel Nugent, Don Chakkappan, Imdad, nenofite, sun-solar-arrow
176		tynn
177		Ajit Singh, Charuක, Ekin, Gabriele Mariotti, Ishita Sinha, Jason Bourne, Madhukar Hebbar, pRaNaY
178		Dalija Prasnikar, Gabriele Mariotti, Harsh Sharma, Kayvan N, TR4Android
179		a.ch., Adarsh Ashok, Adinia, AesSedai101, Ahmad Aghazadeh, Aleksandar Stefanović, ankit dassor, Aurasphere, Bartek Lipinski, Björn Kechel, bjrne, Brenden Kromhout, Charuක, Dan Hulme, Daniel Nugent, devnull69, Floern, Gabriele Mariotti, Gaurav Jindal, Gurgen Hakobyan , Infinite Recursion, Kaushik NP, Knossos, Lewis McGeary, Michael Spitsin, MiguelHincapieC, Mr.7, Nepster, Patrick Dattilio, Phan Van Linh, Rajesh, rciovati, rekire, Sir SC, Sneh Pandya, Talha Mir, ThomasThiebaud, Tim Kranen, Trilarion, ubuntudroid, Vasily Kabunov, Yury Fedorov
180	AccountManager	gaara87, systemovich
181		0x0000eWan, Adarsh Ashok, anupam_kamble, Daniel Nugent, g4s8, Hiren Patel, Ichthyocentaurs, Jon Adams, Joscandreu, Kirill Kulakov, Lazy Ninja, Leo.Han, Medusalix , param, Phil, Rajesh, Squidward, W0rmH0le
182		Hussein El Feky, Pro Mode, Zoe
183		Daniel Nugent, Gabriele Mariotti, Magesh Pandian, MiguelHincapieC, RamenChef, Stephen Leppik, sud007, Zarul Izham
184		AndroidMechanic, Anonsage, Daniel Nugent, Vishwesh Jainkuniya
185		Gokhan Arik
186		honk, Jonas Köritz
187		4444, Abdallah Alaraby, Abdullah, abhi, Abhishek Jain, AER, ahmadalibaloch, Akshit Soota, Alex Logan, Andrew Brooke, Andrew Fernandes, AndroidMechanic, AndroidRuntimeException, Anirudh Sharma, Anish Mittal, antonio, Apoorv Parmar, auval, Avinash R, Bartek Lipinski,

		Blundering Philosopher, bpoiss, cascal, Charuක, Clinton Yeboah, Code.IT, Cold Fire, dakshbhatt21, Dalija Prasnikar , Daniel Käfer, Daniel Nugent, Daniel Stradowski, DanielDiSu, Dave Thomas, David G., Devid Farinelli, devnull69, DoNot, DVarga, Eixx, EKN, Erik Minarini, faranjit , Floern, fracz, Franck Dernoncourt, g4s8, Gabriele Mariotti , GingerHead, granmirupa, Harish Gyanani, Hi I'm Frogatto , Ibrahim, iliketocode, insomniac, Irfan, Irfan Raza, Ironman , Ivan Wooll, Jarrod Dixon, jasonlam604, Jean Vitor, jhoanna, JSON C11, Justcurious, kann, Karan Nagpal, Kayvan N, Lee, leodev, Lewis McGeary, MalhotraUrmil, Mark Ormesher, MathaN, Mauker, Max, mnoronha, Mr. Sajid Shaikh, Muhammed Refaat, muratgu, N J, Nick Cardoso, niknetniko, noɥʎdʎzɐɹƆ, Oren, Paresh Mayani, Parsania Hardik, Paul Lammertsma, Pavneet_Singh, penkzhou, Peter Mortensen, Phan Van Linh, Piyush, R. Zagórski, Radouane ROUFID, Rajesh, RamenChef, rap-2-h, rciovati, Reaz Murshed, RediOne1, rekire, reVerse, russjr08, Ryan Hilbert, sabadow, Saveen, Simon, Simplans , SoroushA, spaceplane, Stelian Matei, Stephane Mathis, Stephen Leppik, sukumar, tainy, theFunkyEngineer, ThomasThiebaud, ɹolɐəz əɥɹ qoq, Tyler Sebastian, vasili111, Vasily Kabunov, Vinay , Vivek Mishra, Xaver Kapeller, younes zeboudj, Yury Fedorov, Zoe
188		mpkuth
189		Daniel Nugent, Fabio, honk, NitZRobotKoder, RamenChef, Rosário Pereira Fernandes, Rupali
190		Aleksandar Stefanović, BlitzKraig, Carlos Borau, Community, Daniel Nugent, Gabriele Mariotti, James_Parsons, Jordi Castilla, Mauro Frezza, Michael Spitsin, Muhammed Refaat, Nick Cardoso, Nougat Lover, r3flss ExlUtr, RamenChef, Ricardo Vieira, sun-solar-arrow, webo80
191		cdeange, Zerntrino
192		Ayush Bansal, Daniel Nugent, honk, Onik, sushant kumar, W0rmH0le
193		appersiano, Brenden Kromhout, Daniel Nugent, RediOne1
194		Daniel Nugent, Dmide, Hiren Patel, RamenChef, Stephen Leppik, sud007
195		Eduardo, Guilherme Torres Castro, kalan, mpkuth, Onur,

		ppeterka
196	/	honk, HoseinIT, Robert
197		Ahmad Aghazadeh, astuter, Avinash R, Bryan Bryce, Caique Oliveira, Daniel Nugent, David Argyle Thacker, Fabian Mizieliński, gaara87, Gabriele Mariotti, Guillaume Imbert, H. Pauwelyn, Iulian Popescu, Jon Adams, Lauri Koskela, Long Ranger, MidasLefko, RamenChef, Ravi Rupareliya, Razan, rciovati, Rule, Segun Famisa, Stephen Leppik, Tanis.7x, Vlonjat Gashi, yennsarah
198	Google	AndiGeeky, RamenChef, Tot Zam
199	TTS	Ahmad Aghazadeh, honk, Jordan, Lukas, nibarius, Peter Taylor, RamenChef, Stephen Leppik
200		EmmanuelMess, k3b, Ricardo Vieira, y.feizi
201		adalPaRi, Brenden Kromhout, Daniel Nugent, Harish Gyanani, Ironman, Milad Nouri, RediOne1, Rohan Arora
202		Burhanuddin Rashid, Mukesh Kumar Swami, Muthukrishnan Rajendran
203	Google	Egek92, RamenChef, ReverseCold, Stephen Leppik, Zarul Izham
204		shadygoneinsane
205		iDevRoids
206		adao7000, AndroidMechanic, Apoorv Parmar, BadCash, B-GangsteR, Daniel Nugent, g4s8, Hiren Patel, JonasCz, Lazai, Lucas Paolillo, Michael Spitsin, Nougat Lover, rakeshdas, Vinícius Barros
207		Akash Patel, Aleksandar Stefanović, Alex Chengalan, AndroidMechanic, Anirudh Sharma, ankit dassor, Bartek Lipinski, Bulwinkel, cascal, Charuක, dakshbhatt21, Dan Hulme, Daniel Nugent, dev.mi, Eixx, fyfyone Google, Gabriele Mariotti, Gal Yedidovich, Guillermo García, honk, Ibrahim, Ichigo Kurosaki, Ishita Sinha, Jaiprakash Soni, jlynch630, Jon Adams, Lewis McGeary, Lucas Paolillo, Machado, mahmoud moustafa, Marina K., MathaN, Max, Menasheh, mmBs, mpkuth, N J, Nikita Kurtin, noongiya95, oshurmamadov, pavel163, Piyush, Pravin Sonawane, Rajesh, RamenChef, rciovati, Reaz Murshed, RediOne1, ridsatrio, Sagar Chavada, Sanoop, sat, Saveen, Shashanth

		, Simo, SimplyProgrammer, Sneh Pandya, Stephen Leppik, sud007, sudo, sukumar, Uttam Panchasara, Vasily Kabunov, vguzzi, Vivek Mishra, Willie Chalmers III, X3Btel, Xaver Kapeller, Yasin Kaçmaz, Yury Fedorov
208	QR	FlyingPumba
209		KeLiuyue
210		Jon Adams, mnoronha, RamenChef, SoroushA
211		Beena, Daniel Nugent, gaara87, Greg T, Michele, RamenChef, Suresh Kumar
212	Internet	AndiGeeky, Bill, Daniel Nugent, gbansal, Ichigo Kurosaki, Jon Adams, sukumar, TameHog, Yousha Aleayoub
213		sukumar, Suresh Kumar
214		ben75, Daniel Nugent, Gabriele Mariotti, GensaGames, R. Zagórski, rekire, SuperBiasedMan
215		Ahmad Aghazadeh, Dan Hulme, fyfyone Google, honk, rekire, Rubin Nellikunnathu, ThomasThiebaud
216		astuter, Brenden Kromhout, Daniel Nugent, Gabriele Mariotti, Ichthyocentaurs, LoungeKatt, Milad Nouri, once2go, oshurmamadov, Piyush, pRaNaY, Pro Mode, RamenChef, Rucha Bhatt, Sanket Berde, Shinil M S, Ufkoku, VISHWANATH N P, vrbsm, y.feizi
217		krishan
218		anoo_radha, Apoorv Parmar, Brenden Kromhout, Code.IT, Daniel Nugent, Floern, g4s8, Gunhan, H. Pauwelyn, HDehghani, Hiren Patel, Jacob Malachowski, johnrao07, Jordan, monK_, Nicolai Weitkemper, pRaNaY, RediOne1, SMR, Venner, Yury Fedorov, Zeeshan Shabbir
219		Pablo Baxter
220		Nicolas Maltais
221		John Snow, Jon Adams, kit, mayojava, Menasheh
222		Chirag SolankI, Daniel Nugent, Gabriele Mariotti, Malek Hijazi, RamenChef, Stephen Leppik
223		Anand Singh, AndroidMechanic, AndroidRuntimeException , antonio, Chol, Daniel Nugent, Daniele Segato, Gabriele

		Mariotti, Ilya Krol, Lewis McGeary, Lucas Paolillo, Mauker, Max, mhenryk, Milad Nouri, RamenChef, Ramzy Hassan, Ravi Rupareliya, Reaz Murshed, Rohit Arya, Rucha Bhatt, Sam Judd, Sneh Pandya, Stephen Leppik, sukumar, Vlonjat Gashi, ZeroOne
224		Albert, AndiGeeky, AndroidMechanic, Chintan Soni, Cows quack, Daniel Nugent, Egek92, Gabriele Mariotti, krunal patel, Leo, Omar Aflak, ppeterka, RamenChef, Saeed-rz, Sanket Berde, shahharshil46, Sneh Pandya, Stephen Leppik, sukumar
225		Adam Ratzman, adao7000, Aida Isay, Amit, Andrew Brooke, AndroidMechanic, Avijit Karmakar, Bartek Lipinski, cdeange, Charuಌ, Daniel Nugent, Erik Ghonyan, Gabriele Mariotti, Lewis McGeary, LordSidious, Lukas, mpkuth, MrSalmon, RamenChef, Rohit Arya, Sammy T, saurav, SoroushA, sukumar, Vicky, Vucko
226		Adarsh Ashok, A-Droid Tech, Ahmad Aghazadeh, Amit, Anish Mittal, auval, Ben P., Chirag Jain, cricket_007, Damian Kozlak, Daniel Nugent, Erfan Mowlaei, Erik Minarini, g4s8, Gabriele Mariotti, Hi I'm Frogatto, Hiren Patel, jgm, Jordan, K_7, Makille, Nandagopal T, Narayan Acharya, Parsania Hardik, Phan Van Linh, RamenChef, Stephen Leppik
227		Abdellah, Alex Sullivan, Andrei Ancuța, AndroidMechanic, AndroidRuntimeException, astuter, FiN, H. Pauwelyn, Joaquin Iurchuk, Jordan, Max, mmBs, Nougat Lover, Paresh Mayani, RamenChef, ridsatrio, Rucha Bhatt, Sir SC , Stephen Leppik, StuStirling, Thibstars, Tot Zam, Volodymyr Buberenko, ZeroOne
228	。	Pedro Varela
229		Hiren Patel, honk, iravul, Nicolas Maltais
230	AsyncTask	Ahmad Aghazadeh, Aiyaz Parmar, AndroidMechanic, Ashish Rathee, Brenden Kromhout, Carlos Borau, Daniel Nugent, devnull69, Dima Rostopira, Disk Crasher, Fabian Tamp, faranjit, Freddie Coleman, FredMaggiowski, Freek Nortier, Gabriele Mariotti, Hi I'm Frogatto, Hiren Patel, Ichigo Kurosaki, Jeeter, Joel Prada, Joost Verbraeken, JoxTraex, k3b, Leos Literak, marshmallow, MathaN, Michael Spitsin, Mike Laren, Mina Samy, Mohammed Farhan, Nick Cardoso, Nilanchala Panigrahy, Piyush, Raman, RamenChef, rciovati, Rohit Arya, Shashanth,

		SOFe, sudo, TameHog, Tejas Pawar, user1506104, Vasily Kabunov, vipsy, Zilk
231	EditText	Daniel Nugent, Gabriele Mariotti, Kaushik NP, Muthukrishnan Rajendran, Rubin Nellikunnathu, Yousha Aleayoub
232	renderScript	Ankit Popli, Dalija Prasnikar, Froyo, honk, Rucha Bhatt, Xaver Kapeller
233	SensorManager	honk, Simon, TDG
234	TextView	Beena, Daniel Nugent, Eyad Mhanna, gaara87, Gabriele Mariotti, Hiren Patel, honk, keno, Michele, Sohail Zahid, Sujith Niraikulathan, sun-solar-arrow
235	WebView	Amod Gokhale, Daniel Nugent, g4s8, j2ko, jasonlam604, JonasCz, Mohammad Yahia, ppeterka, Prakash Bala, shtolik, Squidward, Sukrit Kumar, sukumar
236		Ahmad Aghazadeh, carvaq, Daniel Nugent, Hiren Patel, johnrao07, RediOne1, Squidward, Yasin Kaçmaz
237	Drawables	Priyank Patel, ShahiM
238	/PTTLWP	JensV
239		Pratik Butani
240		Daniel Nugent, PRIYA PARASHAR, RamenChef
241	UI - Android	Atif Farrukh, Daniel Nugent, Gabriele Mariotti, honk, Jon Adams, originx
242	TextViews	honk, Priyank Patel
243		Daniel Nugent, Erik Ghonyan, Gabriele Mariotti, Hiren Patel, honk, kit, Nougat Lover, Simon Schubert, Stanojkovic, Sujith Niraikulathan
244		Blundell
245		Adil Saiyad, honk
246		mnoronha, stkent
247		Bhargavi Yamanuri, Chip, Daniel Nugent, Hi I'm Frogatto, honk, Iman Hamidi
248	LE API	antonio, Jon Adams, Lukas, Myon, Pavel Durov, R. Zagórski, Reaz Murshed, V-PTR, WMios

249		chandsie, g4s8, jefry jacky, Marcus Becker, RamenChef, Stephen Leppik
250		Yvette Colomb
251	Logcat	Adam Ratzman, akshay, Alexander Mironov, alexey polusov, Anand Singh, AndroidMechanic, astuter, auval, Daniel Nugent, Eugen Martynov, faranjit, FromTheSeventhSky, gattsbr, Jeeter, Jon Adams, Laurel, LaurentY, Manan Sharma, Mario Lenci, Piyush, pRaNaY, Pratik Butani, rekire, russt, Sujith Niraikulathan, TDG, thiagolr, Yury Fedorov, Zachary David Saunders
252		Daniel Nugent, Hiren Patel, Talha, W3hri
253		Adhikari Bishwash, honk, Steve.P
254		Hitesh Sahu, honk, RamenChef, Stephen Leppik
255	Android	jagapathi
256		biddulph.r, Brenden Kromhout, Charuක, Dalija Prasnikar, Daniel Nugent, Floern, Gabriele Mariotti, Graham Smith, Harish Gyanani, honk, KDeogharkar, Menasheh, Nick Cardoso, Noise Generator, Piyush, R. Zagórski, reVerse, Tanis.7x, ThomasThiebaud, Vivek Mishra, Xavier
257		Gabriele Mariotti, Hiren Patel, mpkuth, Sanoop, shtolik
258	AndroidFacebook SDK	Akeshwar Jha, AndiGeeky, Community, Daniel Nugent, honk, Zarul Izham
259	AndroidGoogle Maps API v2	AL., AndroidMechanic, antonio, Aryan, BadCash, Charuක, CptEric, Daniel Nugent, Hiren Patel, jgm, Mina Samy, narko, Onik, Pablo Baxter, RamenChef, Stephen Leppik, stkent, sukumar, Suresh Kumar, Vasily Kabunov
260		Greg T, honk, Jon Adams, priyankvex, Stephen Leppik
261		alexey polusov, bricklore, Da-Jin C, Daniel Nugent, Dus, gbansal, Jeeter, piotrek1543, RediOne1, Rupali, TR4Android, weston
262	Android O.	Lokesh Desai
263		Hiren Patel, Kayvan N
264		Blundering Philosopher, Daniel Nugent, mnoronha, Pratik Butani, SoroushA

265		bdash, Dan, EpicPandaForce, Hi I'm Frogatto, iurysza, null pointer, RamenChef, Stephen Leppik, sukumar
266		Carlos Borau, Dalija Prasnikar, Daniel Nugent, Erfan Mowlaei, Jon Adams, N J, Sujith Niraikulathan
267		2943, Ankur Aggarwal, Endzeit, Harsh Dalwadi, herrmartell , honk, Jon Adams, Pablo Baxter, RamenChef, Rubin Nellikunnathu, Rucha Bhatt, sameera lakshitha, Stephen Leppik, VISHWANATH N P