LEARNING xamarin

#xamarin

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About

Chapter 1: Getting started with xamarin

Remarks

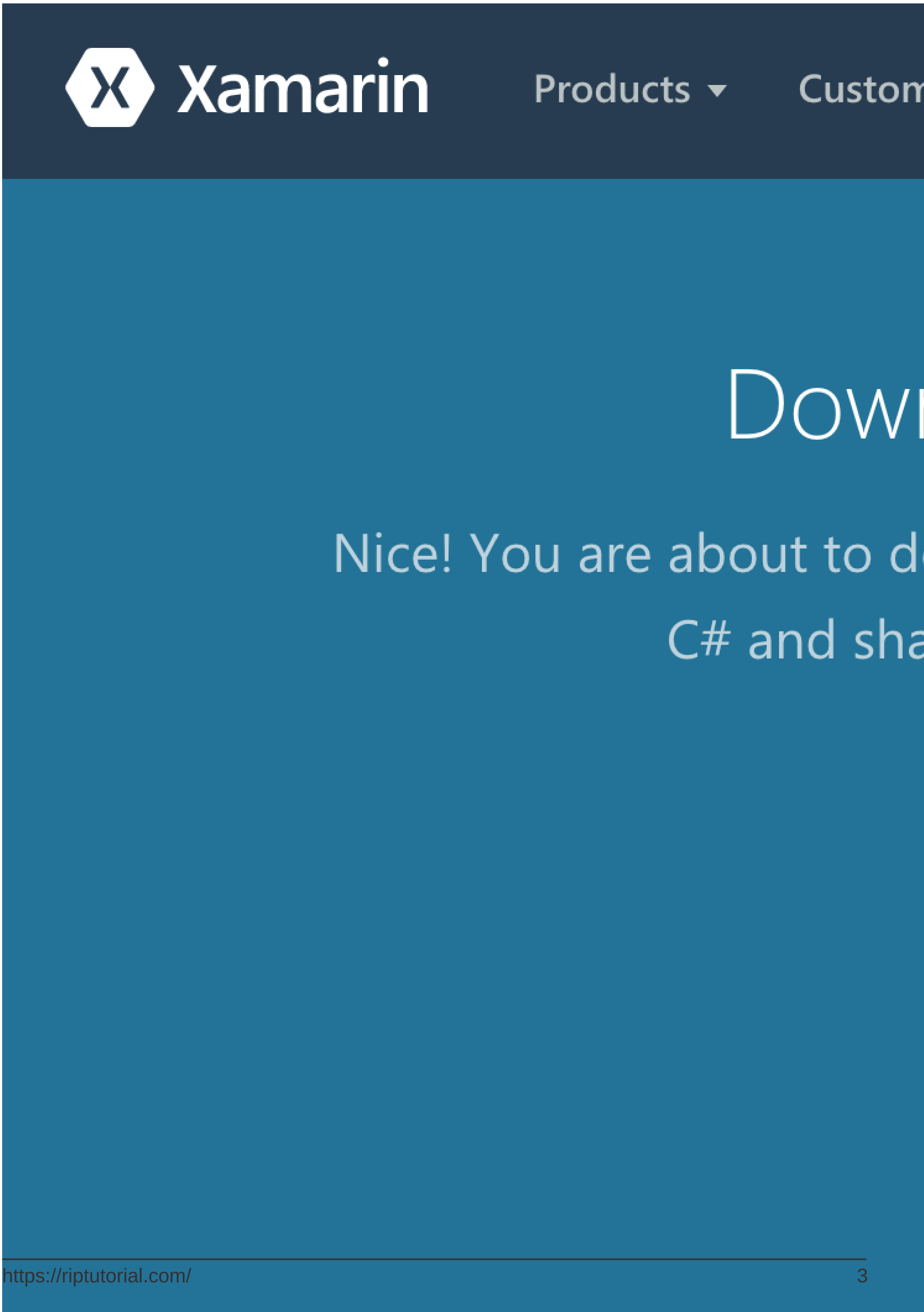
This section provides an overview of what xamarin is, and why a developer might want to use it.

It should also mention any large subjects within xamarin, and link out to the related topics. Since the Documentation for xamarin is new, you may need to create initial versions of those related topics.

Examples

Installing Xamarin Studio on OS X

The first step to start Xamarin development on an OS X machine, is to download and install Xamarin Studio Community version from the official website. A few fields need to be filled to download the installer as shown in the picture below.


Xamarin
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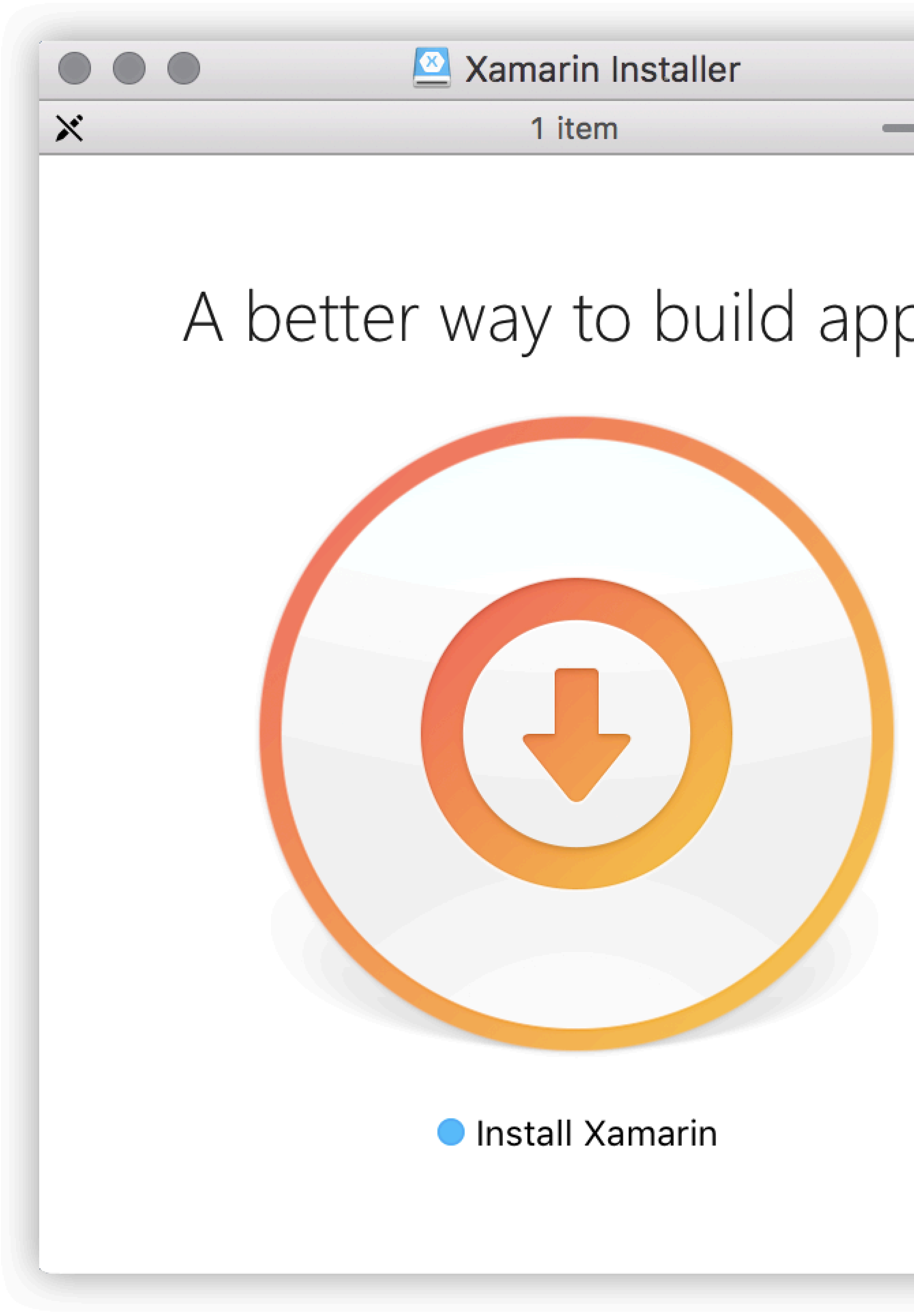
C# and sha

- The latest version of Xcode from the Mac App Store or the Apple Developer Website.
  Apple Developer Website.
- Mac OS X Yosemite (10.10) and above

Installation process

Once the prerequisites have been met, run the Xamarin Installer by double clicking the Xamarin logo.



OS X Gatekeeper may show a dialog asking you for a confirmation to open the downloaded appli https://riptutorial.com/xamarin/topic/899/getting-started-with-xamarin

Chapter 2: Code Sharing Between Projects

Examples

The Bridge Pattern

The Bridge pattern is one of the most basic Inversion of Control design patterns. For Xamarin, this pattern is used to reference platform-dependent code from a platform-independent context. For example: using Android's AlertDialog from a Portable Class Library or Xamarin Forms. Neither of those contexts knows what an AlertDialog object is, so you must wrap it in a box for them to use.

```
// Define a common interface for the behavior you want in your common project (Forms/Other
PCL)
public interface IPlatformReporter
{
    string GetPlatform();
}


// In Android/iOS/Win implement the interface on a class
public class DroidReporter : IPlatformReporter
{
    public string GetPlatform()
    {
        return "Android";
    }
}


public class IosReporter : IPlatformReporter
{
    public string GetPlatform()
    {
        return "iOS";
    }
}


// In your common project (Forms/Other PCL), create a common class to wrap the native
implementations
public class PlatformReporter : IPlatformReporter
{
    // A function to get your native implemenation
    public static func<IPlatformReporter> GetReporter;

    // Your native implementation
    private IPlatformReporter _reporter;

    // Constructor accepts native class and stores it
    public PlatformReporter(IPlatformReporter reporter)
    {
        _reporter = GetReporter();
    }

    // Implement interface behavior by deferring to native class
    public string GetPlatform()
    {
        return _reporter.GetPlatform();
    }
}


// In your native code (probably MainActivity/AppDelegate), you just supply a function that
returns your native implementation
public class MainActivity : Activity
{
    protected override void OnCreate(Bundle bundle)
    {
        base.OnCreate(bundle);
        SetContentView(Resource.Layout.activity_main);

        PlatformReporter.GetReporter = () => { return new DroidReporter(); };
    }
}


public partial class AppDelegate : UIApplicationDelegate
{
    UIWindow window;

    public override bool FinishedLaunching(UIApplication app, NSDictionary options)
    {
        window = new UIWindow(UIScreen.MainScreen.Bounds);
        window.RootViewController = new UIViewController();
        window.MakeKeyAndVisible();

        PlatformReporter.GetReporter = () => { return new IosReporter(); };

        return true;
    }
}


// When you want to use your native implementation in your common code, just do as follows:
public void SomeFuncWhoCares()
{
    // Some code here...

    var reporter = new PlatformReporter();
    string platform = reporter.GetPlatform();

    // Some more code here...
}
```

The Service Locator Pattern

The Service Locator design pattern is very nearly dependency injection. Like the Bridge Pattern, this pattern can be used to reference platform-dependent code from a platform-independent context. Most interestingly, this pattern relies on the singleton pattern -- everything you put into the service locator will be a defacto singleton.

```
// Define a service locator class in your common project
public class ServiceLocator {
    // A dictionary to map common interfaces to native implementations
    private Dictionary<object, object> _services;

    // A static instance of our locator (this guy is a singleton)
    private static ServiceLocator _instance;

    // A private constructor to enforce the singleton
    private ServiceLocator() {
        _services = new Dictionary<object, object>();
    }

    // A Singleton access method
    public static ServiceLocator GetInstance() {
        if(_instance == null) {
            _instance = new ServiceLocator();
        }

        return _instance;
    }

    // A method for native projects to register their native implementations against the
common interfaces
    public static void Register(object type, object implementation) {
        _services?.Add(type, implementation);
    }

    // A method to get the implementation for a given interface
    public static T Resolve<T>() {
        try {
            return (T) _services[typeof(T)];
        } catch {
            throw new ApplicationException($"Failed to resolve type: {typeof(T).FullName}");
        }
    }


//For each native implementation, you must create an interface, and the native classes
implementing that interface
public interface IA {
    int DoAThing();
}


public interface IB {
    bool IsMagnificent();
}


public class IosA : IA {
    public int DoAThing() {
        return 5;
    }
}


public class DroidA : IA {
    public int DoAThing() {
        return 42;
    }
}
```

```
// You get the idea...


// Then in your native initialization, you have to register your classes to their interfaces
like so:
public class MainActivity : Activity
{
    protected override void OnCreate(Bundle bundle)
    {
        base.OnCreate(bundle);
        SetContentView(Resource.Layout.activity_main);

        var locator = ServiceLocator.GetInstance();
        locator.Register(typeof(IA), new DroidA());
        locator.Register(typeof(IB), new DroidB());
    }
}


public partial class AppDelegate : UIApplicationDelegate
{
    UIWindow window;

    public override bool FinishedLaunching(UIApplication app, NSDictionary options)
    {
        window = new UIWindow(UIScreen.MainScreen.Bounds);
        window.RootViewController = new UIViewController();
        window.MakeKeyAndVisible();

        var locator = ServiceLocator.GetInstance();
        locator.Register(typeof(IA), new IosA());
        locator.Register(typeof(IB), new IosB());

        return true;
    }
}


// Finally, to use your native implementations from non-native code, do as follows:
public void SomeMethodUsingNativeCodeFromNonNativeContext() {
     // Some boring code here


     // Grabbing our native implementations for the current platform
     var locator = ServiceLocator.GetInstance();
     IA myIA = locator.Resolve<IA>();
     IB myIB = locator.Resolve<IB>();


    // Method goes on to use our fancy native classes
}
```

Read Code Sharing Between Projects online: https://riptutorial.com/xamarin/topic/6183/code-sharing-between-projects

Chapter 3: Object validation by Annotations

Introduction

mvc.net introduces data anotations for model validation. This can also be done in Xamarin

Examples

Simple example

Add nuget package `System.ComponentModel.Annotations`

Define a class:

```
public class BankAccount
{

   public enum AccountType
   {
       Saving,
       Current
   }

   [Required(ErrorMessage="First Name Required")]
   [MaxLength(15,ErrorMessage="First Name should not more than 1`5 character")]
   [MinLength(3,ErrorMessage="First Name should be more than 3 character")]
   public string AccountHolderFirstName { get; set; }

   [Required(ErrorMessage="Last Name Required")]
   [MaxLength(15,ErrorMessage="Last Name should not more than 1`5 character")]
   [MinLength(3,ErrorMessage="Last Name should be more than 3 character")]
   public string AccountHolderLastName { get; set; }

   [Required]
   [RegularExpression("^[0-9]+$", ErrorMessage = "Only Number allowed in AccountNumber")]
   public string AccountNumber { get; set; }

   public AccountType AcType { get; set; }
}
```

Define a validator:

```
public class GenericValidator
{
    public static bool TryValidate(object obj, out ICollection<ValidationResult> results)
    {
        var context = new ValidationContext(obj, serviceProvider: null, items: null);
        results = new List<ValidationResult>();
        return Validator.TryValidateObject(
            obj, context, results,
            validateAllProperties: true
        );
    }
}
```

use the validator:

```
var bankAccount = new BankAccount();
ICollection<ValidationResult> lstvalidationResult;

bool valid = GenericValidator.TryValidate(bankAccount, out lstvalidationResult);
if (!valid)
{
    foreach (ValidationResult res in lstvalidationResult)
    {
        Console.WriteLine(res.MemberNames +":"+ res.ErrorMessage);
    }

}
Console.ReadLine();
```

Output generated:

```
First Name Required
Last Name Required
The AccountNumber field is required.
```

Read Object validation by Annotations online: https://riptutorial.com/xamarin/topic/9720/object-validation--by-annotations

Credits

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