免费电子书

学习

Node.js

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#node.js

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1: Node.js

Node.jsI / OGoogleV8 JavaScript◦ JavaScript◦ ◦ Node.jsJavaScriptWindowsLinuxNode.js.....

v8.2.1	
V8.2.0	2017719
V8.1.4	2017711
v8.1.3	2017629
V8.1.2	2017615
v8.1.1	2017613
V8.1.0	201768
V8.0.0	2017530
V7.10.0	201752
V7.9.0	2017411
v7.8.0	2017329
v7.7.4	2017321
v7.7.3	2017314
v7.7.2	201738
v7.7.1	201732
v7.7.0	2017228
v7.6.0	2017221
V7.5.0	2017131
V7.4.0	201714
V7.3.0	20161220
v7.2.1	2016126
V7.2.0	20161122
V7.1.0	2016118

7.0.0	20161025
v6.11.0	201766
v6.10.3	201752
v6.10.2	201744
v6.10.1	2017321
v6.10.0	2017221
v6.9.5	2017131
v6.9.4	201715
v6.9.3	201715
v6.9.2	2016126
v6.9.1	20161019
v6.9.0	20161018
v6.8.1	○
v6.8.0	
v6.7.0	2016927
V6.6.0	2016914
V6.5.0	2016826
V6.4.0	2016812
v6.3.1	2016721
v6.3.0	201676
V6.2.2	2016616
V6.2.1	201662
V6.2.0	2016517
V6.1.0	201655
V6.0.0	2016426
v5.12.0	2016623

v5.11.1	201655
v5.11.0	2016421
v5.10.1	201645
V5.10	201641
V5.9	2016316
V5.8	201639
V5.7	2016223
V5.6	201629
V5.5	2016121
V5.4	201616
V5.3	20151215
V5.2	2015129
V5.1	○
V5.0	20151029
V4.4	201638
V4.3	201629
V4.2	20151012
V4.1	2015917
V4.0	2015-09-08
io.js v3.3	201592
io.js v3.2	2015825
io.js v3.1	2015819
io.js v3.0	201584
io.js v2.5	2015728
io.js v2.4	2015717
io.js v2.3	2015613

io.js v2.2	201561
io.js v2.1	2015524
io.js v2.0	201554
io.js v1.8	2015421
io.js v1.7	2015417
io.js v1.6	2015320
io.js v1.5	201536
io.js v1.4	2015227
io.js v1.3	
io.js v1.2	2015211
io.js v1.1	201523
io.js v1.0	2015114
v0.12	201629
v0.11	2013328
v0.10	2013311
V0.9	2012-07-20
V0.8	2012-06-22
V0.7	2012-01-17
V0.6	2011-11-04
V0.5	2011-08-26
V0.4	2011-08-26
V0.3	2011-08-26
V0.2	2011-08-26
V0.1	2011-08-26

Examples

Hello World HTTP

Node.js.

1337HTTP`Hello, World!`。 1337。

`http`Node.js Node.js。 `http`http.createServer()HTTP。 JavaScript。

```
const http = require('http'); // Loads the http module

http.createServer((request, response) => {

    // 1. Tell the browser everything is OK (Status code 200), and the data is in plain text
    response.writeHead(200, {
        'Content-Type': 'text/plain'
    });

    // 2. Write the announced text to the body of the page
    response.write('Hello, World!\n');

    // 3. Tell the server that all of the response headers and body have been sent
    response.end();

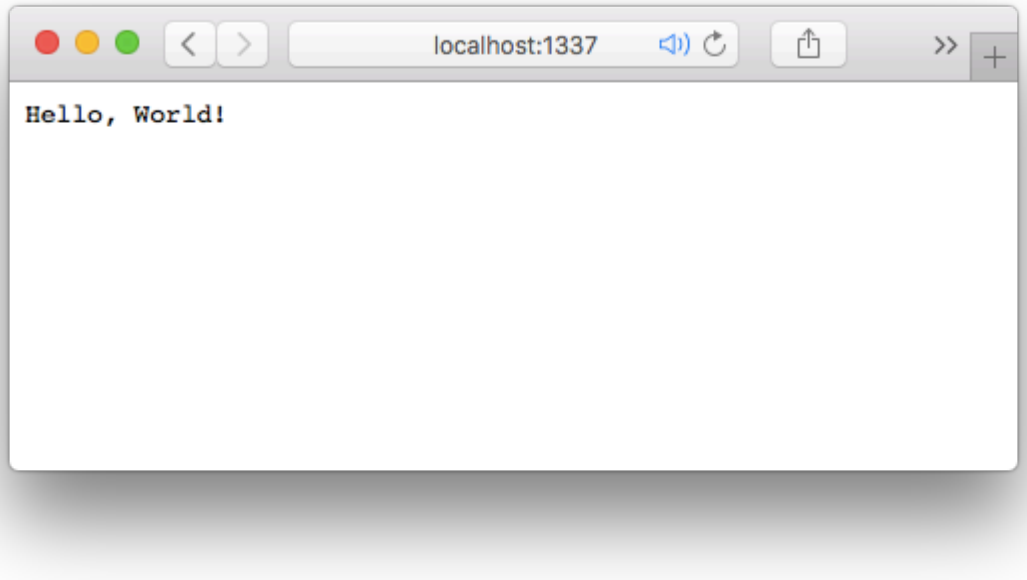
}).listen(1337); // 4. Tells the server what port to be on
```

。 `hello.js`

```
node hello.js
```

URL http// localhost1337http://127.0.0.1:1337。

“HelloWorld”。



。

Hello World

Node.js。Hello。

Unix

1. 。 。
2. `chmod 700 FILE_NAME`
3. `./APP_NAME David`

Windows1`node APP_NAME David`

```
#!/usr/bin/env node

'use strict';

/*
    The command line arguments are stored in the `process.argv` array,
    which has the following structure:
    [0] The path of the executable that started the Node.js process
    [1] The path to this application
    [2-n] the command line arguments

    Example: [ '/bin/node', '/path/to/yourscript', 'arg1', 'arg2', ... ]
    src: https://nodejs.org/api/process.html#process_process_argv
 */

// Store the first argument as username.
var username = process.argv[2];

// Check if the username hasn't been provided.
if (!username) {

    // Extract the filename
    var appName = process.argv[1].split(require('path').sep).pop();

    //  Give the user an example on how to use the app.
    console.error('Missing argument! Example: %s YOUR_NAME', appName);

    // Exit the app (success: 0, error: 1).
    // An error will stop the execution chain. For example:
    //   ./app.js && ls       -> won't execute ls
    //   ./app.js David && ls -> will execute ls
    process.exit(1);
}

// Print the message to the console.
console.log('Hello %s!', username);
```

Node.js.

Node.js.

Windows/。

Mac/。`brew install node`Homebrew `brew install node` 。 HomebrewMacintoshHomebrew。

Linux。

Node.js`node app.jsnodejs app.js app.js`。 Node`.js`。

UNIX。 shebang`#!/usr/bin/env node` 。 `chmod`。 。

Node.js`PORT`。 `process.env.PORT`。

```
http.createServer(function(request, response) {
   // your server code
}).listen(process.env.PORT);
```

```
http.createServer(function(request, response) {
  // your server code
}).listen(process.env.PORT || 3000);
```

`3000`。

NodeJS

。 npm

```
npm install -g node-inspector
```

```
node-debug app.js
```

Github https //github.com/node-inspector/node-inspector

---

node.js

```
node debug your-script.js
```

```
debugger;
```

node.js 8

```
node --inspect-brk your-script.js
```

`about://inspect`Google Chrome`about://inspect`NodeChrome DevTools。

Express3000HTTP“HelloWorld”。 ExpressWebHTTP API。

myApp ◦ myAppJavaScripthello.jshello.js ◦ npm install --save expressexpress◦ ◦

```
// Import the top-level function of express
const express = require('express');

// Creates an Express application using the top-level function
const app = express();

// Define port number as 3000
const port = 3000;

// Routes HTTP GET requests to the specified path "/" with the specified callback function
app.get('/', function(request, response) {
  response.send('Hello, World!');
});

// Make the app listen on port 3000
app.listen(port, function() {
  console.log('Server listening on http://localhost:' + port);
});
```

```
node hello.js
```

http://localhost:3000http://127.0.0.1:3000◦

ExpressWeb Apps With Express

Hello World

HTTP “”。 “”。

if (request.url === 'some/path/here') ◦

```
const http = require('http');

function index (request, response) {
    response.writeHead(200);
    response.end('Hello, World!');
}

http.createServer(function (request, response) {

    if (request.url === '/') {
        return index(request, response);
    }

    response.writeHead(404);
    response.end(http.STATUS_CODES[404]);

}).listen(1337);
```

“”。

```
var routes = {
```

```
    '/': function index (request, response) {
        response.writeHead(200);
        response.end('Hello, World!');
    },
    '/foo': function foo (request, response) {
        response.writeHead(200);
        response.end('You are now viewing "foo"');
    }
}
```

2

```
http.createServer(function (request, response) {

    if (request.url in routes) {
        return routes[request.url](request, response);
    }

    response.writeHead(404);
    response.end(http.STATUS_CODES[404]);

}).listen(1337);
```

。 404。

- HTTP Server API。

TLS

TCPTCP。

。 。 。 。 。 。

```
openssl genrsa -out private-key.pem 1024
```

CSR。 。 。 。

```
openssl req -new -key private-key.pem -out csr.pem
```

。

```
openssl x509 -req -in csr.pem -signkey private-key.pem -out public-cert.pem
```

NodeJS。 。

。 NodeJSrejectUnauthorizedfalse。 true。

TLS

```
'use strict';

var tls = require('tls');
var fs = require('fs');

const PORT = 1337;
const HOST = '127.0.0.1'

var options = {
    key: fs.readFileSync('private-key.pem'),
    cert: fs.readFileSync('public-cert.pem')
};

var server = tls.createServer(options, function(socket) {

    // Send a friendly message
    socket.write("I am the server sending you a message.");

    // Print the data that we received
    socket.on('data', function(data) {

        console.log('Received: %s [it is %d bytes long]',
            data.toString().replace(/(\n)/gm,""),
            data.length);

    });

    // Let us know when the transmission is over
    socket.on('end', function() {

        console.log('EOT (End Of Transmission)');

    });

});

// Start listening on a specific port and address
server.listen(PORT, HOST, function() {

    console.log("I'm listening at %s, on port %s", HOST, PORT);

});

// When an error occurs, show it.
server.on('error', function(error) {

    console.error(error);

    // Close the connection after the error occurred.
    server.destroy();

});
```

TLS

```
'use strict';

var tls = require('tls');
```

```
var fs = require('fs');

const PORT = 1337;
const HOST = '127.0.0.1'

// Pass the certs to the server and let it know to process even unauthorized certs.
var options = {
    key: fs.readFileSync('private-key.pem'),
    cert: fs.readFileSync('public-cert.pem'),
    rejectUnauthorized: false
};

var client = tls.connect(PORT, HOST, options, function() {

    // Check if the authorization worked
    if (client.authorized) {
        console.log("Connection authorized by a Certificate Authority.");
    } else {
        console.log("Connection not authorized: " + client.authorizationError)
    }

    // Send a friendly message
    client.write("I am the client sending you a message.");

});

client.on("data", function(data) {

    console.log('Received: %s [it is %d bytes long]',
        data.toString().replace(/(\n)/gm,""),
        data.length);

    // Close the connection after receiving the message
    client.end();

});

client.on('close', function() {

    console.log("Connection closed");

});

// When an error ocoures, show it.
client.on('error', function(error) {

    console.error(error);

    // Close the connection after the error occurred.
    client.destroy();

});
```

REPLHello World

Node.jsREPLRead-Eval-Print-Loop“ *Node shell* ”。

node ◦

```
$ node
>
```

Node shell>“Hello World”

```
$ node
> "Hello World!"
'Hello World!'
```

Node.jsJavascriptChromeV8C ++Javascript。 Node 。

Node34

```
[ 'assert',
  'buffer',
  'c/c++_addons',
  'child_process',
  'cluster',
  'console',
  'crypto',
  'deprecated_apis',
  'dns',
  'domain',
  'Events',
  'fs',
  'http',
  'https',
  'module',
  'net',
  'os',
  'path',
  'punycode',
  'querystring',
  'readline',
  'repl',
  'stream',
  'string_decoder',
  'timers',
  'tls_(ssl)',
  'tracing',
  'tty',
  'dgram',
  'url',
  'util',
  'v8',
  'vm',
  'zlib' ]
```

NodeAPI https://nodejs.org/api/all.htmlJSON https //nodejs.org/api/all.json 。

`assert`。

ECMAScript 2015ES6`TypedArray`JavaScript。 `Buffer`Node.js APITCP。

ES6`TypedArray` `Buffer`Node.js`Uin t8Array` API。

C / C ++ _

Node.js AddonsCC ++`require()`Node.jsNode.js。 Node.jsJavaScriptC / C ++。

child_process

`child_process`popen3。

Node.js。 Node.js。 。

`console`WebJavaScript。

`crypto`OpenSSLHMAC。

deprecated_apis

Node.jsAPIaAPIbAPIcAPI。

DNS

`dns`

1. 。 `dns.lookup()` 。
2. DNSDNS。 `dns` `dns.lookup()` 。

。 API。 。 。

Node.jsAPI“”Function“”。

FS

I / OPOSIX。 `require('fs')` 。 。

HTTP

Node.jsHTTP。 。 - 。

HTTPS

HTTPSTLS / SSLHTTP。 Node.js。

Node.js。 Node.js。

`net`。 。 `require('net');require('net');` 。

`os`。

`path`。

Punycode

Node.jspunycode 。

`querystring`URL。

ReadLine

`readlineprocess.stdin` 。

REPL

`repl`Read-Eval-Print-LoopREPL。

Node.js。 `stream`API。

Node.js。 HTTP`process.stdout`。

string_decoder

`string_decoder`APIUTF-8UTF-16`Buffer`。

`timer`API。 `require('timers')`API。

Node.jsWebAPIAPINode.js。

tls_SSL

`tls`OpenSSLTLSSSL。

V8。

Node.js`--trace-events-enabled`。

TTY

`ttytty.ReadStreamtty.WriteStream`。 。

DGRAM

`dgram`UDP。

`url`URL。

UTIL

`util`Node.jsAPI。 。

V8

`v8`Node.jsV8API。

API。

VM

vmV8API。 JavaScript。

vm。 。

zlib

zlibGzipDeflate / Inflate。

HTTPS Web

node.jsHTTPHTTPSWeb

1

1. mkdir conf

---

2. cd conf

---

3. ca.cnf

   wget https://raw.githubusercontent.com/anders94/https-authorized-clients/master/keys/ca.cnf

---

4. openssl req -new -x509 -days 9999 -config ca.cnf -keyout ca-key.pem -out ca-cert.pem

---

5. ca-key.pemca-cert.pem

   openssl genrsa -out key.pem 4096

---

6. server.cnf

   wget https://raw.githubusercontent.com/anders94/https-authorized-clients/master/keys/server.cnf

---

7. openssl req -new -config server.cnf -key key.pem -out csr.pem

---

8. openssl x509 -req -extfile server.cnf -days 999 -passin "pass:password" -in csr.pem -CA ca-cert.pem -CAkey ca-key.pem -CAcreateserial -out cert.pem

---

2

1. sudo cp ca-crt.pem /usr/local/share/ca-certificates/ca-crt.pem

---

2.

CA

```
sudo update-ca-certificates
```

3

`server.js`◦

Node.jsHTTPS

```
var https = require('https');
var fs = require('fs');

var httpsOptions = {
    key: fs.readFileSync('path/to/server-key.pem'),
    cert: fs.readFileSync('path/to/server-crt.pem')
};

var app = function (req, res) {
  res.writeHead(200);
  res.end("hello world\n");
}

https.createServer(httpsOptions, app).listen(4433);
```

http

```
var http = require('http');
var https = require('https');
var fs = require('fs');

var httpsOptions = {
    key: fs.readFileSync('path/to/server-key.pem'),
    cert: fs.readFileSync('path/to/server-crt.pem')
};

var app = function (req, res) {
  res.writeHead(200);
  res.end("hello world\n");
}

http.createServer(app).listen(8888);
https.createServer(httpsOptions, app).listen(4433);
```

1. `server.js`

   ```
   cd /path/to
   ```

---

2. `server.js`

   ```
   node server.js
   ```

Node.js https://riptutorial.com/zh-CN/node-js/topic/340/node-js

2: ArduinonodeJs

Node.JsArduino Uno。

Examples

Node JsserialportArduino

js

Node.jsserialportArduino。

```
npm install express --save
npm install serialport --save
```

app.js

```
const express = require('express');
const app = express();
var SerialPort = require("serialport");

var port = 3000;

var arduinoCOMPort = "COM3";

var arduinoSerialPort = new SerialPort(arduinoCOMPort, {
 baudrate: 9600
});

arduinoSerialPort.on('open',function() {
  console.log('Serial Port ' + arduinoCOMPort + ' is opened.');
});

app.get('/', function (req, res) {

    return res.send('Working');

})

app.get('/:action', function (req, res) {

   var action = req.params.action || req.param('action');

    if(action == 'led'){
        arduinoSerialPort.write("w");
        return res.send('Led light is on!');
    }
    if(action == 'off') {
        arduinoSerialPort.write("t");
        return res.send("Led light is off!");
    }

    return res.send('Action: ' + action);
```

```
});

app.listen(port, function () {
  console.log('Example app listening on port http://0.0.0.0:' + port + '!');
});
```

```
node app.js
```

Arduino

```
// the setup function runs once when you press reset or power the board
void setup() {
  // initialize digital pin LED_BUILTIN as an output.

  Serial.begin(9600); // Begen listening on port 9600 for serial

  pinMode(LED_BUILTIN, OUTPUT);

  digitalWrite(LED_BUILTIN, LOW);
}

// the loop function runs over and over again forever
void loop() {

   if(Serial.available() > 0) // Read from serial port
    {
      char ReaderFromNode; // Store current character
      ReaderFromNode = (char) Serial.read();
      convertToState(ReaderFromNode); // Convert character to state
    }
  delay(1000);
}

void convertToState(char chr) {
  if(chr=='o'){
    digitalWrite(LED_BUILTIN, HIGH);
    delay(100);
  }
  if(chr=='f'){
    digitalWrite(LED_BUILTIN, LOW);
    delay(100);
  }
}
```

1. arduino。
2.

js express serverled。

LED

```
http://0.0.0.0:3000/led
```

LED

```
http://0.0.0.0:3000/off
```

ArduinonodeJs https://riptutorial.com/zh-CN/node-js/topic/10509/arduinonodejs

3: async.js

-
- [arg1 [...]]
- ◦ **null**
- callbacknullmyResult;
- ***errresult*seq...**
- callbacknullmyResultmyCustomArgument;
- ◦ ◦
- ERR;

Examples

async.parallelItasksafterTasksCallback ◦

◦

```
function shortTimeFunction(callback) {
  setTimeout(function() {
    callback(null, 'resultOfShortTime');
  }, 200);
}

function mediumTimeFunction(callback) {
  setTimeout(function() {
    callback(null, 'resultOfMediumTime');
  }, 500);
}

function longTimeFunction(callback) {
  setTimeout(function() {
    callback(null, 'resultOfLongTime');
  }, 1000);
}

async.parallel([
    shortTimeFunction,
    mediumTimeFunction,
    longTimeFunction
  ],
  function(err, results) {
    if (err) {
      return console.error(err);
    }

    console.log(results);
  });
```

["resultOfShortTime", "resultOfMediumTime", "resultOfLongTime"] 。

async.parallel()

tasks。 。

。

```
async.parallel({
    short: shortTimeFunction,
    medium: mediumTimeFunction,
    long: longTimeFunction
  },
  function(err, results) {
    if (err) {
      return console.error(err);
    }

    console.log(results);
  });
```

{short: "resultOfShortTime", medium: "resultOfMediumTime", long: "resultOfLongTime"} 。

。 。 。

```
async.parallel({
    short: function shortTimeFunction(callback) {
      setTimeout(function() {
        callback(null, 'resultOfShortTime1', 'resultOfShortTime2');
      }, 200);
    },
    medium: function mediumTimeFunction(callback) {
      setTimeout(function() {
        callback(null, 'resultOfMediumTime1', 'resultOfMeiumTime2');
      }, 500);
    }
  },
  function(err, results) {
    if (err) {
      return console.error(err);
    }

    console.log(results);
  });
```

```
{
    short: ["resultOfShortTime1", "resultOfShortTime2"],
    medium: ["resultOfMediumTime1", "resultOfMediumTime2"]
}
```

。

async.seriestasksafterTasksCallback。 。

“”。

```
function shortTimeFunction(callback) {
  setTimeout(function() {
    callback(null, 'resultOfShortTime');
  }, 200);
}

function mediumTimeFunction(callback) {
  setTimeout(function() {
    callback(null, 'resultOfMediumTime');
  }, 500);
}

function longTimeFunction(callback) {
  setTimeout(function() {
    callback(null, 'resultOfLongTime');
  }, 1000);
}

async.series([
    mediumTimeFunction,
    shortTimeFunction,
    longTimeFunction
  ],
  function(err, results) {
    if (err) {
      return console.error(err);
    }

    console.log(results);
  });
```

`["resultOfMediumTime", "resultOfShortTime", "resultOfLongTime"]` ◦

async.series()

tasks◦ ◦

◦

```
async.series({
    short: shortTimeFunction,
    medium: mediumTimeFunction,
    long: longTimeFunction
  },
  function(err, results) {
    if (err) {
      return console.error(err);
    }

    console.log(results);
  });
```

`{short: "resultOfShortTime", medium: "resultOfMediumTime", long: "resultOfLongTime"}` ◦

async.waterfalltasksafterTasksCallback。 。 async.series 。

“”。

```
function getUserRequest(callback) {
  // We simulate the request with a timeout
  setTimeout(function() {
    var userResult = {
      name : 'Aamu'
    };

    callback(null, userResult);
  }, 500);
}

function getUserFriendsRequest(user, callback) {
  // Another request simulate with a timeout
  setTimeout(function() {
    var friendsResult = [];

    if (user.name === "Aamu"){
        friendsResult = [{
          name : 'Alice'
        }, {
          name: 'Bob'
        }];
    }

    callback(null, friendsResult);
  }, 500);
}

async.waterfall([
    getUserRequest,
    getUserFriendsRequest
  ],
  function(err, results) {
    if (err) {
      return console.error(err);
    }

    console.log(JSON.stringify(results));
  });
```

resultsfriendsResult 。

async.times

node.jsfor。 for。 **asycn.times**

```
function recursiveAction(n, callback)
{
    //do whatever want to do repeatedly
    callback(err, result);
}
async.times(5, function(n, next) {
    recursiveAction(n, function(err, result) {
```

```
        next(err, result);
    });
}, function(err, results) {
    // we should now have 5 result
});
```

◦ **async.timesSeries**

async.each

async.each ◦ ◦ ◦

```
function createUser(userName, callback)
{
    //create user in db
    callback(null)//or error based on creation
}

var arrayOfData = ['Ritu', 'Sid', 'Tom'];
async.each(arrayOfData, function(eachUserName, callback) {

    // Perform operation on each user.
    console.log('Creating user '+eachUserName);
    //Returning callback is must. Else it wont get the final callback, even if we miss to
return one callback
    createUser(eachUserName, callback);

}, function(err) {
    //If any of the user creation failed may throw error.
    if( err ) {
      // One of the iterations produced an error.
      // All processing will now stop.
      console.log('unable to create user');
    } else {
      console.log('All user created successfully');
    }
});
```

async.eachSeries

async.series

/ async.series◦ /

var async = require'async'; async.series[functioncallback{console.log'First Execute ..'; callbacknull 'userPersonalData';}functioncallback{console.log'Second Execute ..'; callbacknull 'userDependentData';}]functionerrresult{console.logresult;};

//

First Execute .. Second Execute .. ['userPersonalData''userDependentData'] //

async.js https://riptutorial.com/zh-CN/node-js/topic/3972/async-js

4: CLI

- node [options] [v8 options] [script.js | -e“script”] []

Examples

```
-v, --version
```

v0.1.3。

```
-h, --help
```

v0.1.3。 。

```
-e, --eval "script"
```

v0.5.2JavaScript。 REPL。

```
-p, --print "script"
```

v0.6.4-e。

```
-c, --check
```

v5.0.0。

```
-i, --interactive
```

v0.7.7stdinREPL。

```
-r, --require module
```

v1.6.0。

require。 。

```
--no-deprecation
```

v0.8.0。

```
--trace-deprecation
```

v0.8.0。

```
--throw-deprecation
```

v0.11.14。

```
--no-warnings
```

v6.0.0。

```
--trace-warnings
```

v6.0.0。

```
--trace-sync-io
```

v2.1.0I / O。

```
--zero-fill-buffers
```

v6.0.0BufferSlowBuffer。

```
--preserve-symlinks
```

v6.3.0。

Node.jsNode.js“”。。moduleAmoduleB

```
{appDir}
 ├── app
 │   ├── index.js
 │   └── node_modules
 │       ├── moduleA -> {appDir}/moduleA
 │       └── moduleB
 │           ├── index.js
 │           └── package.json
 └── moduleA
     ├── index.js
     └── package.json
```

--preserve-symlinksNode.js。

--preserve-symlinks。Node.js。

```
--track-heap-objects
```

v2.4.0。

```
--prof-process
```

v6.0.0v8--profProcess v8 profiler。

```
--v8-options
```

v0.1.3v8。

v8 - _。

- stack-trace-limit--stack_trace_limit。

```
--tls-cipher-list=list
```

v4.0.0TLS。 Node.js。

```
--enable-fips
```

v6.0.0FIPS。 ./configure --openssl-fipsNode.js

```
--force-fips
```

v6.0.0FIPS。 。 --enable-fips

```
--icu-data-dir=file
```

v0.11.15ICU。 NODE_ICU_DATA

```
Environment Variables

NODE_DEBUG=module[,…]
```

v0.1.32" - 。

```
NODE_PATH=path[:…]
```

v0.1.32" - 。

Windows';' - 。

```
NODE_DISABLE_COLORS=1
```

v0.3.01REPL。

```
NODE_ICU_DATA=file
```

v0.11.15 ICUIntl。 small-icu。

```
NODE_REPL_HISTORY=file
```

v5.0.0REPL。/ .node_repl_history。“”“”REPL。

CLI https://riptutorial.com/zh-CN/node-js/topic/6013/cli

5: ExpressJSRoute-Controller-Service

Examples

- - -

```
├──models
|   ├──user.model.js
├──routes
|   ├──user.route.js
├──services
|   ├──user.service.js
├──controllers
|   ├──user.controller.js
```

。

-

- API

- 。

-

。 。

- - -

user.model.js

```
var mongoose = require('mongoose')

const UserSchema  = new mongoose.Schema({
    name: String
})

const User = mongoose.model('User', UserSchema)

module.exports = User;
```

user.routes.js

```
var express = require('express');
var router = express.Router();

var UserController = require('../controllers/user.controller')
```

```
router.get('/', UserController.getUsers)

module.exports = router;
```

user.controllers.js

```
var UserService = require('../services/user.service')

exports.getUsers = async function (req, res, next) {
    // Validate request parameters, queries using express-validator

    var page = req.params.page ? req.params.page : 1;
    var limit = req.params.limit ? req.params.limit : 10;
    try {
        var users = await UserService.getUsers({}, page, limit)
        return res.status(200).json({ status: 200, data: users, message: "Succesfully Users
Retrieved" });
    } catch (e) {
        return res.status(400).json({ status: 400, message: e.message });
    }
}
```

user.services.js

```
var User = require('../models/user.model')

exports.getUsers = async function (query, page, limit) {

    try {
        var users = await User.find(query)
        return users;
    } catch (e) {
        // Log Errors
        throw Error('Error while Paginating Users')
    }
}
```

ExpressJSRoute-Controller-Service https://riptutorial.com/zh-CN/node-js/topic/10785/expressjs route-controller-service

6: HTTP

Examples

http

HTTP。

http_server.js

```
var http = require('http');

var httpPort = 80;

http.createServer(handler).listen(httpPort, start_callback);

function handler(req, res) {

    var clientIP = req.connection.remoteAddress;
    var connectUsing = req.connection.encrypted ? 'SSL' : 'HTTP';
    console.log('Request received: '+ connectUsing + ' ' + req.method + ' ' + req.url);
    console.log('Client IP: ' + clientIP);

    res.writeHead(200, "OK", {'Content-Type': 'text/plain'});
    res.write("OK");
    res.end();
    return;
}

function start_callback(){
    console.log('Start HTTP on port ' + httpPort)
}
```

http_server.js

```
node http_server.js
```

```
> Start HTTP on port 80
```

```
http://127.0.0.1:80
```

Linux

```
curl 127.0.0.1:80
```

```
ok
```

```
> Request received: HTTP GET /
> Client IP: ::ffff:127.0.0.1
```

http

http

http_client.js

```
var http = require('http');

var options = {
  hostname: '127.0.0.1',
  port: 80,
  path: '/',
  method: 'GET'
};

var req = http.request(options, function(res) {
    console.log('STATUS: ' + res.statusCode);
    console.log('HEADERS: ' + JSON.stringify(res.headers));
    res.setEncoding('utf8');
    res.on('data', function (chunk) {
        console.log('Response: ' + chunk);
    });
    res.on('end', function (chunk) {
        console.log('Response ENDED');
    });
});

req.on('error', function(e) {
    console.log('problem with request: ' + e.message);
});


req.end();
```

http_client.js

```
node http_client.js
```

```
> STATUS: 200
> HEADERS: {"content-type":"text/plain","date":"Thu, 21 Jul 2016 11:27:17
GMT","connection":"close","transfer-encoding":"chunked"}
> Response: OK
> Response ENDED
```

http。

HTTP https://riptutorial.com/zh-CN/node-js/topic/2973/http

7: Koa Framework v2

Examples

Hello World

```
const Koa = require('koa')

const app = new Koa()

app.use(async ctx => {
   ctx.body = 'Hello World'
})

app.listen(8080)
```

```
app.use(async (ctx, next) => {
  try {
    await next() // attempt to invoke the next middleware downstream
  } catch (err) {
    handleError(err, ctx) // define your own error handling function
  }
})
```

Koa Framework v2 https://riptutorial.com/zh-CN/node-js/topic/6730/koa-framework-v2

8: Lodash

LodashJavaScript。

Examples

lodash。

```
let lodash = require('lodash');

var countries = [
    {"key": "DE", "name": "Deutschland", "active": false},
    {"key": "ZA", "name": "South Africa", "active": true}
];

var filteredByFunction = lodash.filter(countries, function (country) {
    return country.key === "DE";
});
// => [{"key": "DE", "name": "Deutschland"}];

var filteredByObjectProperties = lodash.filter(countries, { "key": "DE" });
// => [{"key": "DE", "name": "Deutschland"}];

var filteredByProperties = lodash.filter(countries, ["key", "ZA"]);
// => [{"key": "ZA", "name": "South Africa"}];

var filteredByProperty = lodash.filter(countries, "active");
// => [{"key": "ZA", "name": "South Africa"}];
```

Lodash https://riptutorial.com/zh-CN/node-js/topic/9161/lodash

9: metalsmith

Examples

nodenpm`package.json`

```
npm install --save-dev metalsmith metalsmith-in-place handlebars
```

`build.js`

```
var metalsmith = require('metalsmith');
var handlebars = require('handlebars');
var inPlace = require('metalsmith-in-place');

Metalsmith(__dirname)
  .use(inPlace('handlebars'))
  .build(function(err) {
    if (err) throw err;
    console.log('Build finished!');
  });
```

`src` `srcindex.html`

```
---
title: My awesome blog
---
<h1>{{ title }}</h1>
```

`node build.jssrc` build`index.html`

```
<h1>My awesome blog</h1>
```

metalsmith https://riptutorial.com/zh-CN/node-js/topic/6111/metalsmith

10: Mongodb

- D b◦ *collection* .insertOne *document optionswwtimeoutjserializeFuntions forceServerObjectIdbypassDocumentValidation callback*
- D b◦ *collection* .insertMany *[documents] optionswwtimeoutjserializeFuntions forceServerObjectIdbypassDocumentValidation callback*
- D b◦ .find
- D b◦ *collection* .updateOne *filter update optionsupsertwwtimeoutj bypassDocumentValidation callback*
- D b◦ *collection* .updateMany *filter update optionsupsertwwtimeoutj callback*
- D b◦ *collection* .deleteOne *filter optionsupsertwwtimeoutj callback*
- D b◦ *collection* .deleteMany *filter optionsupsertwwtimeoutj callback*

	javascript
	null
w ^	
wtimeout	◦ *null*
Ĵ	*false*
UPSERT	*false*
	/*false*
serializeFunctions	*false*
forceServerObjectId	_id*false*
bypassDocumentValidation	MongoDB 3.2*false*

Examples

MongoDB

MongoDB"◦

```
const MongoClient = require('mongodb').MongoClient;
```

```
var url = 'mongodb://localhost:27017/test';

MongoClient.connect(url, function(err, db) { // MongoClient method 'connect'
    if (err) throw new Error(err);
    console.log("Connected!");
    db.close(); // Don't forget to close the connection when you are done
});
```

MongoClient`Connect()`

MongoClient.connect *url* *options* *callback*

`url`		ip / hostname
`options`		*null*
`callback`		

`callback`

- `err` - `errerr`
- `db` object - MongoDB

“myFirstDocument”**2** `greetingsfarewell`

```
const MongoClient = require('mongodb').MongoClient;

const url = 'mongodb://localhost:27017/test';

MongoClient.connect(url, function (err, db) {
  if (err) throw new Error(err);
  db.collection('myCollection').insertOne({ // Insert method 'insertOne'
    "myFirstDocument": {
      "greetings": "Hellu",
      "farewell": "Bye"
    }
  }, function (err, result) {
    if (err) throw new Error(err);
    console.log("Inserted a document into the myCollection collection!");
    db.close(); // Don't forget to close the connection when you are done
  });
});
```

`insertOne()`

db.collection *collection* .insertOne *document* *options* *callback*

`collection`		
`document`		

options		*null*
callback		

callback

- err - errerr
- result object -

'myCollection'。

```
const MongoClient = require('mongodb').MongoClient;

const url = 'mongodb://localhost:27017/test';

MongoClient.connect(url, function (err, db) {
  if (err) throw new Error(err);
  var cursor = db.collection('myCollection').find(); // Read method 'find'
  cursor.each(function (err, doc) {
    if (err) throw new Error(err);
    if (doc != null) {
      console.log(doc); // Print all documents
    } else {
      db.close(); // Don't forget to close the connection when you are done
    }
  });
});
```

---

find()

db.collection *collection* .find

collection		

{ greetings: 'Hellu' }{ greetings: 'Whut?' }

```
const MongoClient = require('mongodb').MongoClient;

const url = 'mongodb://localhost:27017/test';

MongoClient.connect(url, function (err, db) {
    if (err) throw new Error(err);
    db.collection('myCollection').updateOne({ // Update method 'updateOne'
        greetings: "Hellu" },
        { $set: { greetings: "Whut?" }},
        function (err, result) {
            if (err) throw new Error(err);
            db.close(); // Don't forget to close the connection when you are done
        });
});
```

---

updateOne()

db.collection .updateOne 。

filter		
update		
options		*null*
callback		

callback

- err -
- db object - MongoDB

{ greetings: 'Whut?' }{ greetings: 'Whut?' }

```
const MongoClient = require('mongodb').MongoClient;

const url = 'mongodb://localhost:27017/test';

MongoClient.connect(url, function (err, db) {
    if (err) throw new Error(err);
    db.collection('myCollection').deleteOne(// Delete method 'deleteOne'
        { greetings: "Whut?" },
        function (err, result) {
            if (err) throw new Error(err);
            db.close(); // Don't forget to close the connection when you are done
    });
});
```

---

deleteOne()

db.collection *collection* .deleteOne *filter options callback*

filter		
options		*null*
callback		

callback

- err -
- db object - MongoDB

“”“”。

```
const MongoClient = require('mongodb').MongoClient;

const url = 'mongodb://localhost:27017/test';
```

```
MongoClient.connect(url, function (err, db) {
    if (err) throw new Error(err);
    db.collection('myCollection').deleteMany(// MongoDB delete method 'deleteMany'
        { farewell: "okay" }, // Delete ALL documents with the property 'farewell: okay'
        function (err, result) {
            if (err) throw new Error(err);
            db.close(); // Don't forget to close the connection when you are done
    });
});
```

---

deleteMany()

db.collection *collection* .deleteMany *filter options callback*

filter		
options		*null*
callback		

callback

- err -
- db object - MongoDB

```
MongoDB.connect('mongodb://localhost:27017/databaseName', function(error, database) {
   if(error) return console.log(error);
   const collection = database.collection('collectionName');
   collection.insert({key: 'value'}, function(error, result) {
      console.log(error, result);
   });
});
```

promises

```
const MongoDB = require('mongodb');

MongoDB.connect('mongodb://localhost:27017/databaseName')
    .then(function(database) {
        const collection = database.collection('collectionName');
        return collection.insert({key: 'value'});
    })
    .then(function(result) {
        console.log(result);
    });
    ```
```

Mongodb https://riptutorial.com/zh-CN/node-js/topic/5002/mongodb
```

11: MSSQL

nodejsnpmAPI。 mssqlmssqlnodejsSQL。

mssql。 。

。

Examples

SQL。 mssql npm

sql server。

1/。 *npm init*package.json。

```
mkdir mySqlApp
//folder created
cd mwSqlApp
//change to newly created directory
npm init
//answer all the question ..
npm install
//This will complete quickly since we have not added any packages to our app.
```

2App.jssql db。

```
sudo gedit App.js
//This will create App.js file , you can use your fav. text editor :)
npm install --save mssql
//This will install the mssql package to you app
```

3mssql。

```
console.log("Hello world, This is an app to connect to sql server.");
var config = {
        "user": "myusername", //default is sa
        "password": "yourStrong(!)Password",
        "server": "localhost", // for local machine
        "database": "staging", // name of database
        "options": {
            "encrypt": true
        }
      }

sql.connect(config, err => {
    if(err){
        throw err ;
    }
    console.log("Connection Successful !");
```

```
    new sql.Request().query('select 1 as number', (err, result) => {
        //handle err
        console.dir(result)
        // This example uses callbacks strategy for getting results.
    })

});

sql.on('error', err => {
    // ... error handler
    console.log("Sql database connection error " ,err);
})
```

4sql server。

```
node App.js
// Output :
// Hello world, This is an app to connect to sql server.
// Connection Successful !
// 1
```

promisesasyncmssql

-
- /

MSSQL https://riptutorial.com/zh-CN/node-js/topic/9884/mssql

12: Mysql

Examples

◦

◦ ◦

◦ -

```
var pool  = mysql.createPool({
      connectionLimit : 10,
      host            : 'example.org',
      user            : 'bobby',
      password        : 'pass'
    });

pool.getConnection(function(err, connection){
    if(err){
        return cb(err);
    }
    connection.changeUser({database : "firm1"});
    connection.query("SELECT * from history", function(err, data){
        connection.release();
        cb(err, data);
    });
});
```

-

```
{
  connectionLimit : 10,
  host            : 'example.org',
  user            : 'bobby',
  password        : 'pass'
}
```

-

```
    connection.changeUser({database : "firm1"});
```

Mysql https://riptutorial.com/zh-CN/node-js/topic/6353/mysql

13: MySQL

MYSQLNode.js。 nodejsmysql。

Examples

SQL。 `aminadav`

```
var username = 'aminadav';
var querystring = 'SELECT name, email from users where name = ?';
connection.query(querystring, [username], function(err, rows, fields) {
  if (err) throw err;
  if (rows.length) {
    rows.forEach(function(row) {
      console.log(row.name, 'email address is', row.email);
    });
  } else {
    console.log('There were no results.');
  }
});
```

。

MySQL。 10220。 10。

```
var pool  = mysql.createPool({
  connectionLimit : 10,
  host            : 'example.org',
  user            : 'bobby',
  password        : 'pass',
  database        : 'schema'
});

for(var i=0;i<10;i++){
  pool.query('SELECT ` as example', function(err, rows, fields) {
    if (err) throw err;
    console.log(rows[0].example); //Show 1
  });
 }
```

10。

`pool`。 。 MySQL。

。

。 。

。 -

```
var pool  = mysql.createPool({
      connectionLimit : 10,
      host            : 'example.org',
      user            : 'bobby',
      password        : 'pass'
    });

pool.getConnection(function(err, connection){
    if(err){
        return cb(err);
    }
    connection.changeUser({database : "firm1"});
    connection.query("SELECT * from history", function(err, data){
        connection.release();
        cb(err, data);
    });
});
```

-

```
{
  connectionLimit : 10,
  host            : 'example.org',
  user            : 'bobby',
  password        : 'pass'
}
```

-

```
    connection.changeUser({database : "firm1"});
```

MySQL

MySQL`mysql`。 Node.jsMySQL。

```
npm install --save mysql
```

mysql。

```
const mysql      = require('mysql');
const connection = mysql.createConnection({
  host     : 'localhost',
  user     : 'me',
  password : 'secret',
  database : 'database_schema'
});

connection.connect();

// Execute some query statements
// I.e. SELECT * FROM FOO

connection.end();
```

`connection`

◦

◦ error rows◦ ◦ ◦

```
connection.query('SELECT name,email from users', function(err, rows, fields) {
  if (err) throw err;

  console.log('There are:', rows.length,' users');
  console.log('First user name is:',rows[0].name)
});
```

MySQL

```
SELECT 1;
SELECT 2;
```

pool.query◦

pool.getConnection

```
pool.getConnection(function (err, conn) {
  if (err) return callback(err);

  conn.query('SELECT 1 AS seq', function (err, rows) {
    if (err) throw err;

    conn.query('SELECT 2 AS seq', function (err, rows) {
      if (err) throw err;

      conn.release();
      callback();
    });
  });
});
```

releaseMySQL

MySQL MySQL ◦

err

```
var q = mysql.query('SELECT `name` FROM `pokedex` WHERE `id` = ?', [ 25 ], function (err,
result) {
  if (err) {
    // Table 'test.pokedex' doesn't exist
    err.query = q.sql; // SELECT `name` FROM `pokedex` WHERE `id` = 25
    callback(err);
  }
  else {
    callback(null, result);
  }
});
```

```
// db.js
```

```
const mysql = require('mysql');

const pool = mysql.createPool({
  connectionLimit : 10,
  host            : 'example.org',
  user            : 'bob',
  password        : 'secret',
  database        : 'my_db'
});

module.export = {
  getConnection: (callback) => {
    return pool.getConnection(callback);
  }
}
```

```
// app.js

const db = require('./db');

db.getConnection((err, conn) => {
  conn.query('SELECT something from sometable', (error, results, fields) => {
    // get the results
    conn.release();
  });
});
```

MySQL https://riptutorial.com/zh-CN/node-js/topic/1406/mysql

14: Node.js / Express.jsMongoDB

MEANMongoDBNoSQL。ExpressMongo。Mongoose。

http //mongoosejs.com/docs/guide.html

Examples

MongoDB

```
npm install --save mongodb
npm install --save mongoose //A simple wrapper for ease of development
```

index.jsserver.js

```
const express = require('express');
const mongodb = require('mongodb');
const mongoose = require('mongoose');
const mongoConnectString = 'http://localhost/database name';

mongoose.connect(mongoConnectString, (err) => {
  if (err) {
    console.log('Could not connect to the database');
  }
});
```

Mongoose

```
const Schema = mongoose.Schema;
const ObjectId = Schema.Types.ObjectId;

const Article = new Schema({
  title: {
    type: String,
    unique: true,
    required: [true, 'Article must have title']
  },
  author: {
    type: ObjectId,
    ref: 'User'
  }
});

module.exports = mongoose.model('Article, Article);
```

。MongoDBMongooseJSONBSON。。

`new Schema`。JSON。。。

。。

ObjectIds。“”。ObjectId。。

API。

Mongo

GET。 `./db/models/Article.js` 。

```
const express = require('express');
const Articles = require('./db/models/Article');

module.exports = function (app) {
  const routes = express.Router();

  routes.get('/articles', (req, res) => {
    Articles.find().limit(5).lean().exec((err, doc) => {
      if (doc.length > 0) {
        res.send({ data: doc });
      } else {
        res.send({ success: false, message: 'No documents retrieved' });
      }
    });
  });

app.use('/api', routes);
};
```

HTTP。

1. 。 5。
2. BSON。 。 。
3. `findfindOne doc.length`0.`find`
4. 。 。 。
5. 。

```
const app = express();
require('./path/to/this/file')(app) //
```

Node.js / Express.jsMongoDB https://riptutorial.com/zh-CN/node-js/topic/9020/node-js---express-js-mongodb

15: Node.js STDINSTDOUT

node.js。

Node.js。 requireNode.js。

Examples

process.stdinstdin。

process.stdoutstdoutWritable。

```
process.stdin.resume()
console.log('Enter the data to be displayed ');
process.stdin.on('data', function(data) { process.stdout.write(data) })
```

Node.js STDINSTDOUT https://riptutorial.com/zh-CN/node-js/topic/8961/node-js-stdinstdout-

16: Node.js v6

6LTS。ES6。。

Examples

```
function addTwo(a, b = 2) {
    return a + b;
}

addTwo(3) // Returns the result 5
```

。

```
function argumentLength(...args) {
    return args.length;
}

argumentLength(5) // returns 1
argumentLength(5, 3) //returns 2
argumentLength(5, 3, 6) //returns 3
```

...。。

```
function myFunction(x, y, z) { }
var args = [0, 1, 2];
myFunction(...args);
```

。...

ECMAScript 6。

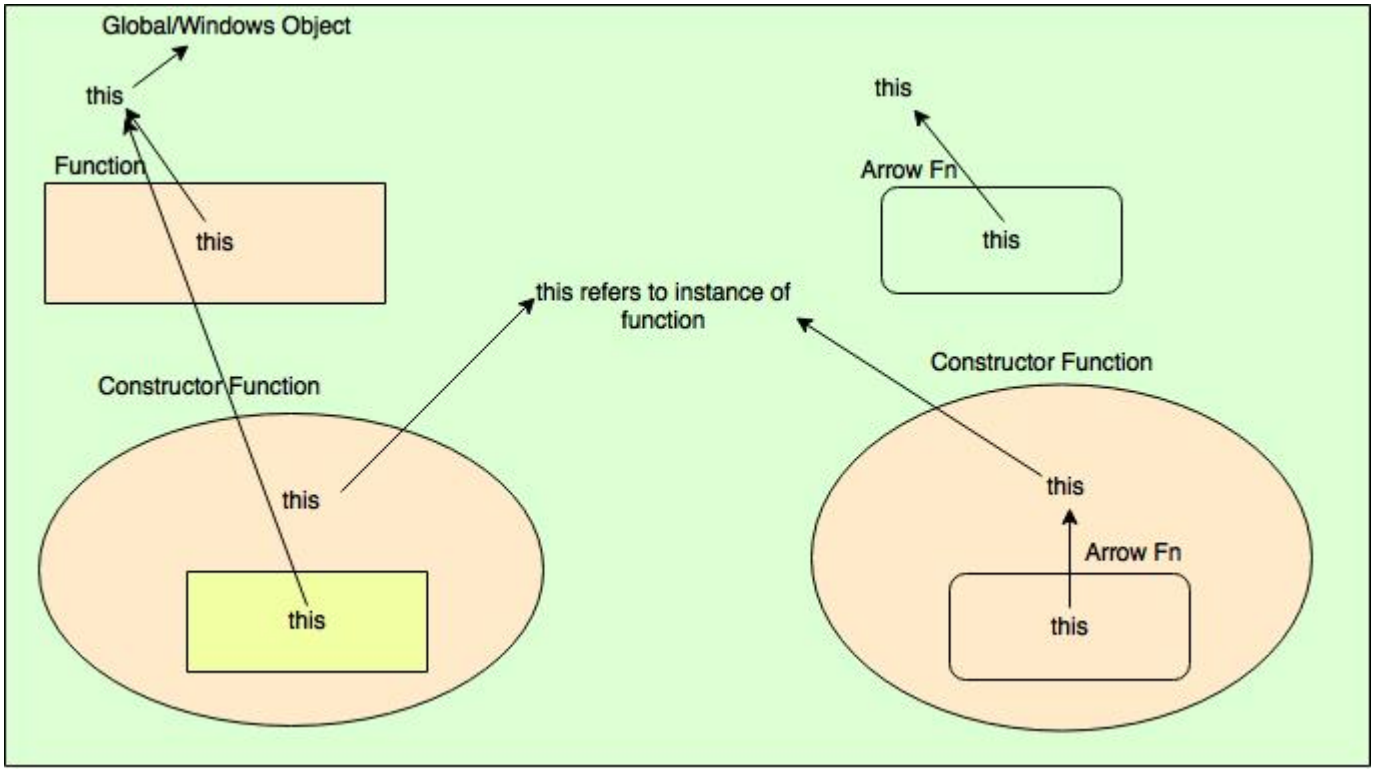
```
// traditional way of declaring and defining function
var sum = function(a,b)
{
    return a+b;
}

// Arrow Function
let sum = (a, b)=> a+b;

//Function defination using multiple lines
let checkIfEven = (a) => {
    if( a % 2 == 0 )
        return true;
    else
        return false;
}
```

“this”

。



。

```
var normalFn = function(){
   console.log(this) // refers to global/window object.
}

var arrowFn = () => console.log(this); // refers to window or global object as function is
defined in scope of global/window object

var service = {

    constructorFn : function(){

        console.log(this); //  refers to service as service object used to call method.

        var nestedFn = function(){
            console.log(this); // refers window or global object because no instance object
was used to call this method.
        }
        nestedFn();
    },

    arrowFn : function(){
        console.log(this); // refers to service as service object was used to call method.
        let fn = () => console.log(this); // refers to service object as arrow function
defined in function which is called using instance object.
        fn();
    }
}

// calling defined functions
constructorFn();
arrowFn();
```

```
service.constructorFn();
service.arrowFn();
```

。

/。

。 。

service。

- Node.Jswindows。

Node.js v6 https://riptutorial.com/zh-CN/node-js/topic/8593/node-js-v6

17: node.jsWindows

Active Directory APIS`activedirectory2adldap`。

Examples

activedirectory

GitHubNPM。

```
npm install --save activedirectory
```

```
// Initialize
var ActiveDirectory = require('activedirectory');
var config = {
    url: 'ldap://dc.domain.com',
    baseDN: 'dc=domain,dc=com'
};
var ad = new ActiveDirectory(config);
var username = 'john.smith@domain.com';
var password = 'password';
// Authenticate
ad.authenticate(username, password, function(err, auth) {
    if (err) {
        console.log('ERROR: '+JSON.stringify(err));
        return;
    }
    if (auth) {
        console.log('Authenticated!');
    }
    else {
        console.log('Authentication failed!');
    }
});
```

node.jsWindows https://riptutorial.com/zh-CN/node-js/topic/10612/node-jswindows

18: Node.jsCORS

Examples

express.jsCORS

node.jsAPIAPICORS。

。

expressserver.js

```
// Create express server
const app = express();

app.use((req, res, next) => {
    res.header('Access-Control-Allow-Origin', '*');

    // authorized headers for preflight requests
    // https://developer.mozilla.org/en-US/docs/Glossary/preflight_request
    res.header('Access-Control-Allow-Headers', 'Origin, X-Requested-With, Content-Type,
Accept');
    next();

    app.options('*', (req, res) => {
        // allowed XHR methods
        res.header('Access-Control-Allow-Methods', 'GET, PATCH, PUT, POST, DELETE, OPTIONS');
        res.send();
    });
});
```

◦ ApacheNginxCORS。

node.js CORS。

`NODE_ENV`

```
const app = express();

if (process.env.NODE_ENV === 'development') {
    // CORS settings
}
```

Node.jsCORS https://riptutorial.com/zh-CN/node-js/topic/9272/node-jscors

19: Node.JSES6

ES6ECMAScript 6ES2015JavaScript。

NodeES6https://nodejs.org/en/docs/es6/

Examples

Node ES6Babel

ES6。http://node.green/ES6

NodeJS v6。NodeJS v6ES6。。

ES6。JavaScriptBabel

BabelES6'stage-0'`import thing from 'thingvar thing = require('thing') import thing from 'thing`

'stage-0'importBabel。reactVuecommonJS0。

```
mkdir my-es6-app
cd my-es6-app
npm init
```

babel ES6stage-0

```
npm install --save-dev babel-preset-es2015 babel-preset-stage-2 babel-cli babel-register
```

`server.js`HTTP。

```
import http from 'http'

http.createServer((req, res) => {
  res.writeHead(200, {'Content-Type': 'text/plain'})
  res.end('Hello World\n')
}).listen(3000, '127.0.0.1')

console.log('Server running at http://127.0.0.1:3000/')
```

`import http from 'http'import http from 'http'`0。

`node server.js`。

.babelrc

```
{
  "presets": ["es2015", "stage-2"],
  "plugins": []
}
```

```
node src/index.js --exec babel-node
```

◦ package.json◦

```
"scripts": {
    "start": "node dist/index.js",
    "dev": "babel-node src/index.js",
    "build": "babel src -d dist",
    "postinstall": "npm run build"
  },
```

`npm install`dist`npm start`◦

`npm run dev`babel◦

nodemon `npm install nodemon --save-dev`◦

babelNodeJS◦ package.json“dev”nodemon

```
"dev": "nodemon src/index.js --exec babel-node",
```

NodeJSJS es6

JS es6es2015JSOOP◦

---

1. http://es6-features.orges6 - NodeJS
2. http://node.green
3. -

JS es6`hello world`

```
'use strict'

class Program
{
    constructor()
    {
        this.message = 'hello es6 :)';
    }

    print()
    {
        setTimeout(() =>
        {
            console.log(this.message);

            this.print();

        }, Math.random() * 1000);
    }
}
```

```
new Program().print();
```

。

..

```
'use strict'
```

js es6。 `strict`MDN - https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Strict_mode

```
class Program
```

-`class` - es6js... `function`

```
function MyClass() // class definition
{

}

var myClassObject = new MyClass(); // generating a new object with a type of MyClass
```

OOP.....

```
constructor()
{
    this.message = 'hello es6 :)';
}
```

- - “” -

```
print()
{
    setTimeout(() => // this is an 'arrow' function
    {
        console.log(this.message);

        this.print(); // here we call the 'print' method from the class template itself (a
recursion in this particular case)

    }, Math.random() * 1000);
}
```

print - -

.....

```
new Program().print();
```

```
var prog = new Program(); // define a new object of type 'Program'
```

```
prog.print(); // use the program to print itself
```

JS es6 - JS..

Node.JSES6 https://riptutorial.com/zh-CN/node-js/topic/5934/node-jses6

20: Node.jsOracle

Examples

Oracle DB

ORACLE[oracledb]。 Node.jsOracle。

```
npm install oracledb
```

ORACLE。

```
const oracledb = require('oracledb');

oracledb.getConnection(
  {
    user          : "oli",
    password      : "password",
    connectString : "ORACLE_DEV_DB_TNS_NAME"
  },
  connExecute
);
```

connectString“ORACLE_DEV_DB_TNA_NAME”tnsnames.orgoracle。

oracle[instant client installation guide]。

connExecute-Function。 。 console.log。

```
function connExecute(err, connection)
{
    if (err) {
        console.error(err.message);
        return;
    }
    sql = "select 'test' as c1, 'oracle' as c2 from dual";
    connection.execute(sql, {}, { outFormat: oracledb.OBJECT }, // or oracledb.ARRAY
        function(err, result)
        {
            if (err) {
                console.error(err.message);
                connRelease(connection);
                return;
            }
            console.log(result.metaData);
            console.log(result.rows);
            connRelease(connection);
        });
}
```

。

```
function connRelease(connection)
{
  connection.close(
    function(err) {
      if (err) {
        console.error(err.message);
      }
    });
}
```

```
[ { name: 'C1' }, { name: 'C2' } ]
[ { C1: 'test', C2: 'oracle' } ]
```

```
[ { name: 'C1' }, { name: 'C2' } ]
[ [ 'test', 'oracle' ] ]
```

ORACLE-DB

```
const oracle = require('./oracle.js');

const sql = "select 'test' as c1, 'oracle' as c2 from dual";
oracle.queryObject(sql, {}, {})
    .then(function(result) {
        console.log(result.rows[0]['C2']);
    })
    .catch(function(err) {
        next(err);
    });
```

oracle.js

```
'use strict';
const oracledb = require('oracledb');

const oracleDbRelease = function(conn) {
  conn.release(function (err) {
    if (err)
      console.log(err.message);
  });
};

function queryArray(sql, bindParams, options) {
    options.isAutoCommit = false; // we only do SELECTs

    return new Promise(function(resolve, reject) {
        oracledb.getConnection(
                  {
                    user          : "oli",
                    password      : "password",
                    connectString : "ORACLE_DEV_DB_TNA_NAME"
                })
        .then(function(connection){
            //console.log("sql log: " + sql + " params " + bindParams);
            connection.execute(sql, bindParams, options)
            .then(function(results) {
                resolve(results);
```

```
                process.nextTick(function() {
                    oracleDbRelease(connection);
                });
            })
            .catch(function(err) {
                reject(err);

                process.nextTick(function() {
                    oracleDbRelease(connection);
                        });
                });
            })
            .catch(function(err) {
                reject(err);
            });
    });
}

function queryObject(sql, bindParams, options) {
    options['outFormat'] = oracledb.OBJECT; // default is oracledb.ARRAY
    return queryArray(sql, bindParams, options);
}

module.exports = queryArray;
module.exports.queryArray = queryArray;
module.exports.queryObject = queryObject;
```

oraclequeryArrayqueryObject。

Node.jsOracle https://riptutorial.com/zh-CN/node-js/topic/8248/node-jsoracle

21: Node.JS

Examples

NodeJS

```
--debug◦  --debug=<port>--debug=<port> ◦
```

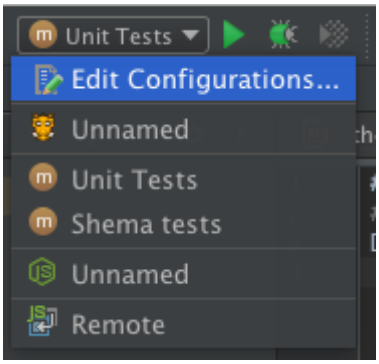
```
Debugger listening on port <port>
```

◦

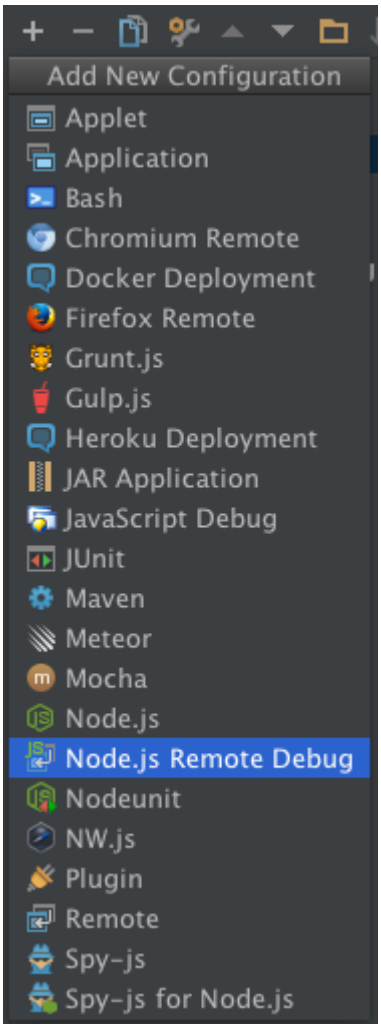
IDE◦

IntelliJ / Webstorm

1. NodeJS
2.



3. **+** > **Node.js**



4.

。

Linux

Linux

```
socat TCP-LISTEN:9958,fork TCP:127.0.0.1:5858 &
```

9958。

Node.JS https://riptutorial.com/zh-CN/node-js/topic/6335/node-js

22: Node.JSMongoDB。

mongo dbnodejsCRUD。

。

。 。

mongoose

Examples

mongomongoose。

Mongoosetootmongoose

```
npm install mongoose
```

。

```
var mongoose = require('mongoose');

//connect to the test database running on default mongod port of localhost
mongoose.connect('mongodb://localhost/test');



//Connecting with custom credentials
mongoose.connect('mongodb://USER:PASSWORD@HOST:PORT/DATABASE');


//Using Pool Size to define the number of connections opening
//Also you can use a call back function for error handling
mongoose.connect('mongodb://localhost:27017/consumers',
                 {server: { poolSize: 50 }},
                 function(err) {
                    if(err) {
                        console.log('error in this')
                        console.log(err);
                        // Do whatever to handle the error
                    } else {
                        console.log('Connected to the database');
                    }
                });
```

MongooseSchema。 。

```
var mongoose = require('mongoose');

var Schema = mongoose.Schema;

var AutoSchema = new Schema({
```

```
    name : String,
    countOf: Number,
});
// defining the document structure

// by default the collection created in the db would be the first parameter we use (or the
plural of it)
module.exports = mongoose.model('Auto', AutoSchema);

// we can over write it and define the collection name by specifying that in the third
parameters.
module.exports = mongoose.model('Auto', AutoSchema, 'collectionName');


// We can also define methods in the models.
AutoSchema.methods.speak = function () {
  var greeting = this.name
    ? "Hello this is  " + this.name+ " and I have counts of "+ this.countOf
    : "I don't have a name";
  console.log(greeting);
}
mongoose.model('Auto', AutoSchema, 'collectionName');
```

mongoose.model。

。

```
var Auto = require('models/auto')
var autoObj = new Auto({
    name: "NewName",
    countOf: 10
});
```

```
autoObj.save(function(err, insertedAuto) {
    if (err) return console.error(err);
    insertedAuto.speak();
    // output: Hello this is NewName and I have counts of 10
});
```

。 。

```
var Auto = require('models/auto')
Auto.find({}, function (err, autos) {
      if (err) return console.error(err);
       // will return a json array of all the documents in the collection
      console.log(autos);
})
```

```
Auto.find({countOf: {$gte: 5}}, function (err, autos) {
      if (err) return console.error(err);
       // will return a json array of all the documents in the collection whose count is
greater than 5
      console.log(autos);
})
```

```
Auto.find({},{name:1}, function (err, autos) {
      if (err) return console.error(err);
       // will return a json array of name field of all the documents in the collection
      console.log(autos);
})
```

。

```
Auto.findOne({name:"newName"}, function (err, auto) {
      if (err) return console.error(err);
     //will return the first object of the document whose name is "newName"
      console.log(auto);
})
```

ID。

```
Auto.findById(123, function (err, auto) {
      if (err) return console.error(err);
     //will return the first json object of the document whose id is 123
      console.log(auto);
})
```

-
- updateOne
- updateMany
- replaceOne

---

update

```
db.lights.update(
   { room: "Bedroom" },
   { status: "On" }
)
```

'lights'`room`**Bedroom** 。 `status`**On** WriteResult

```
{ "nMatched" : 1, "nUpserted" : 0, "nModified" : 1 }
```

UpdateOne

UpdateOne

```
db.countries.update(
   { country: "Sweden" },
   { capital: "Stockholm" }
)
```

“/”/ `country` ◦ `capital`**Stockholm** WriteResult

```
{ "acknowledged" : true, "matchedCount" : 1, "modifiedCount" : 1 }
```

UpdateMany

UpdateMany

```
db.food.updateMany(
   { sold: { $lt: 10 } },
   { $set: { sold: 55 } }
)
```

`sold`**55**`sold` **10** *“” ◦ WriteResult

```
{ "acknowledged" : true, "matchedCount" : a, "modifiedCount" : b }
```

a =
b =

ReplaceOne

countries3

```
{ "_id" : 1, "country" : "Sweden" }
{ "_id" : 2, "country" : "Norway" }
{ "_id" : 3, "country" : "Spain" }
```

```
{ country: "Spain" }{ country: "Finland" }
```

```
db.countries.replaceOne(
   { country: "Spain" },
   { country: "Finland" }
)
```

```
{ "acknowledged" : true, "matchedCount" : 1, "modifiedCount" : 1 }
```

```
{ "_id" : 1, "country" : "Sweden" }
{ "_id" : 2, "country" : "Norway" }
{ "_id" : 3, "country" : "Finland" }
```

mongoose◦

```
Auto.remove({_id:123}, function(err, result){
```

```
    if (err) return console.error(err);
    console.log(result); // this will specify the mongo default delete result.
});
```

Node.JSMongoDB。 https://riptutorial.com/zh-CN/node-js/topic/7505/node-jsmongodb-

23: Node.js

Examples

```
let loop = (i, max) => {
  while (i < max) i++
  return i
}

// This operation will block Node.js
// Because, it's CPU-bound
// You should be careful about this kind of code
loop(0, 1e+12)
```

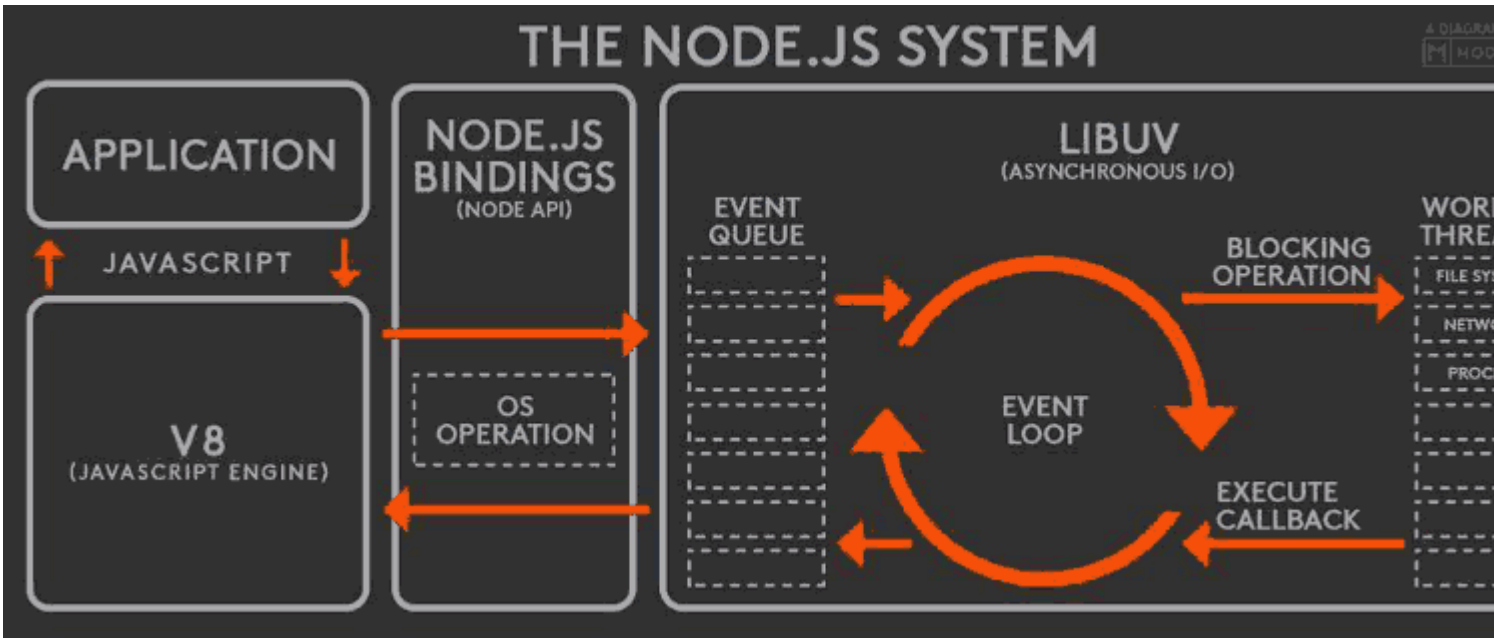
IO

```
let i = 0

const step = max => {
  while (i < max) i++
  console.log('i = %d', i)
}

const tick = max => process.nextTick(step, max)

// this will postpone tick run step's while-loop to event loop cycles
// any other IO-bound operation (like filesystem reading) can take place
// in parallel
tick(1e+6)
tick(1e+7)
console.log('this will output before all of tick operations. i = %d', i)
console.log('because tick operations will be postponed')
tick(1e+8)
```



Event LoopCPUIO。

Node.jslibuv。

- 。
- CPUNode.jsCPU。

Node.jsIOIO 。

maxSockets

```
require('http').globalAgent.maxSockets = 25

// You can change 25 to Infinity or to a different value by experimenting
```

Node.js`maxSockets = Infinity` v0.12.0 。 Node v0.12.0`maxSockets = 5` v0.11.0 。 5。 。

`http` API“ ”。 。

```
const http = require('http')
const myGloriousAgent = new http.Agent({ keepAlive: true })
myGloriousAgent.maxSockets = Infinity

http.request({ ..., agent: myGloriousAgent }, ...)
```

Socket Pooling

```
const http = require('http')
const options = {.....}

options.agent = false

const request = http.request(options)
```

- `https` API
- AWS50`Infinity`。

gzip

```
const http = require('http')
const fs   = require('fs')
const zlib = require('zlib')

http.createServer((request, response) => {
  const stream          = fs.createReadStream('index.html')
  const acceptsEncoding = request.headers['accept-encoding']

  let encoder = {
    hasEncoder     : false,
    contentEncoding: {},
    createEncoder  : () => throw 'There is no encoder'
  }

  if (!acceptsEncoding) {
    acceptsEncoding = ''
  }

  if (acceptsEncoding.match(/\bdeflate\b/)) {
    encoder = {
      hasEncoder     : true,
      contentEncoding: { 'content-encoding': 'deflate' },
      createEncoder  : zlib.createDeflate
    }
  } else if (acceptsEncoding.match(/\bgzip\b/)) {
    encoder = {
      hasEncoder     : true,
      contentEncoding: { 'content-encoding': 'gzip' },
      createEncoder  : zlib.createGzip
    }
  }

  response.writeHead(200, encoder.contentEncoding)

  if (encoder.hasEncoder) {
    stream = stream.pipe(encoder.createEncoder())
  }

  stream.pipe(response)

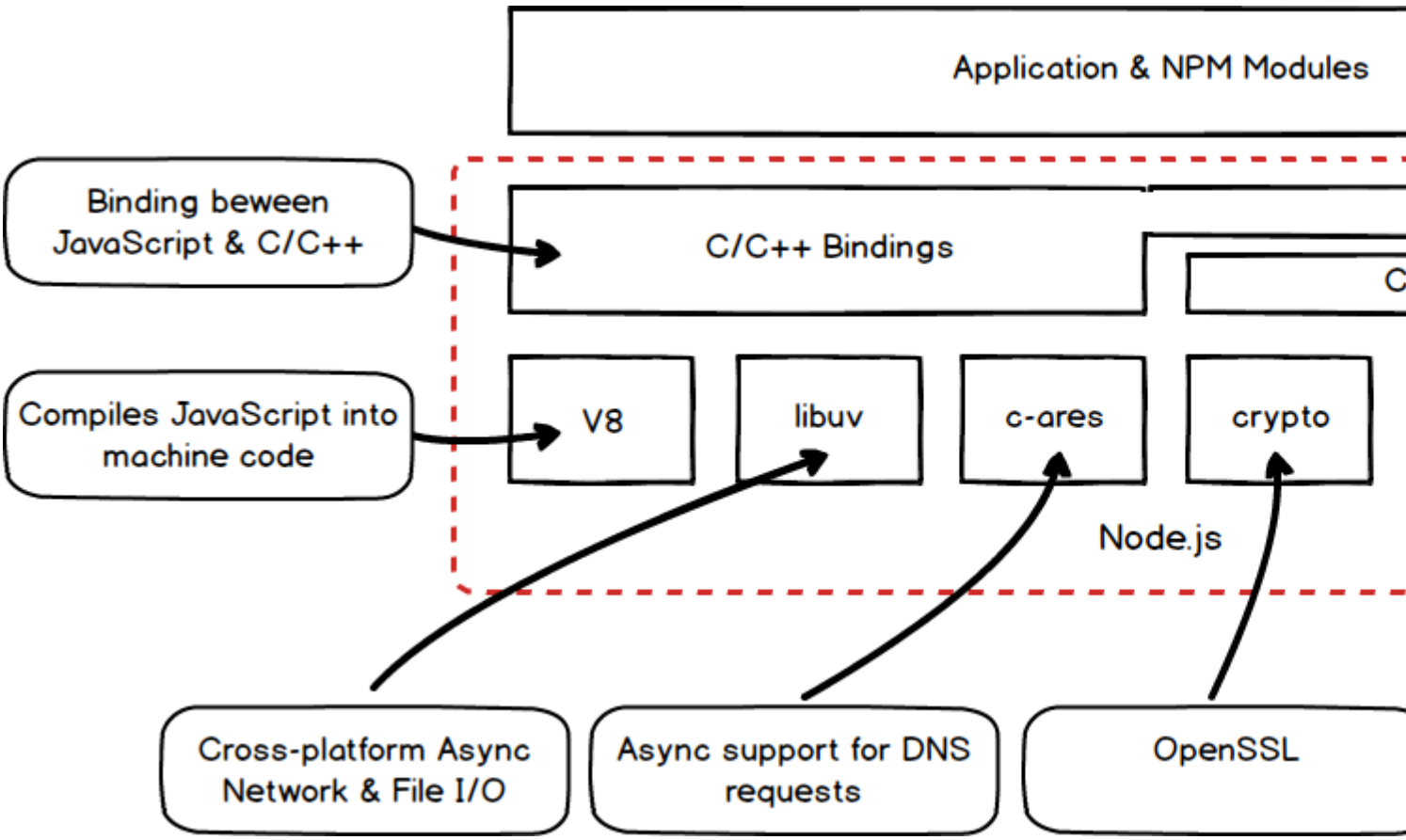
}).listen(1337)
```

Node.js https://riptutorial.com/zh-CN/node-js/topic/9410/node-js

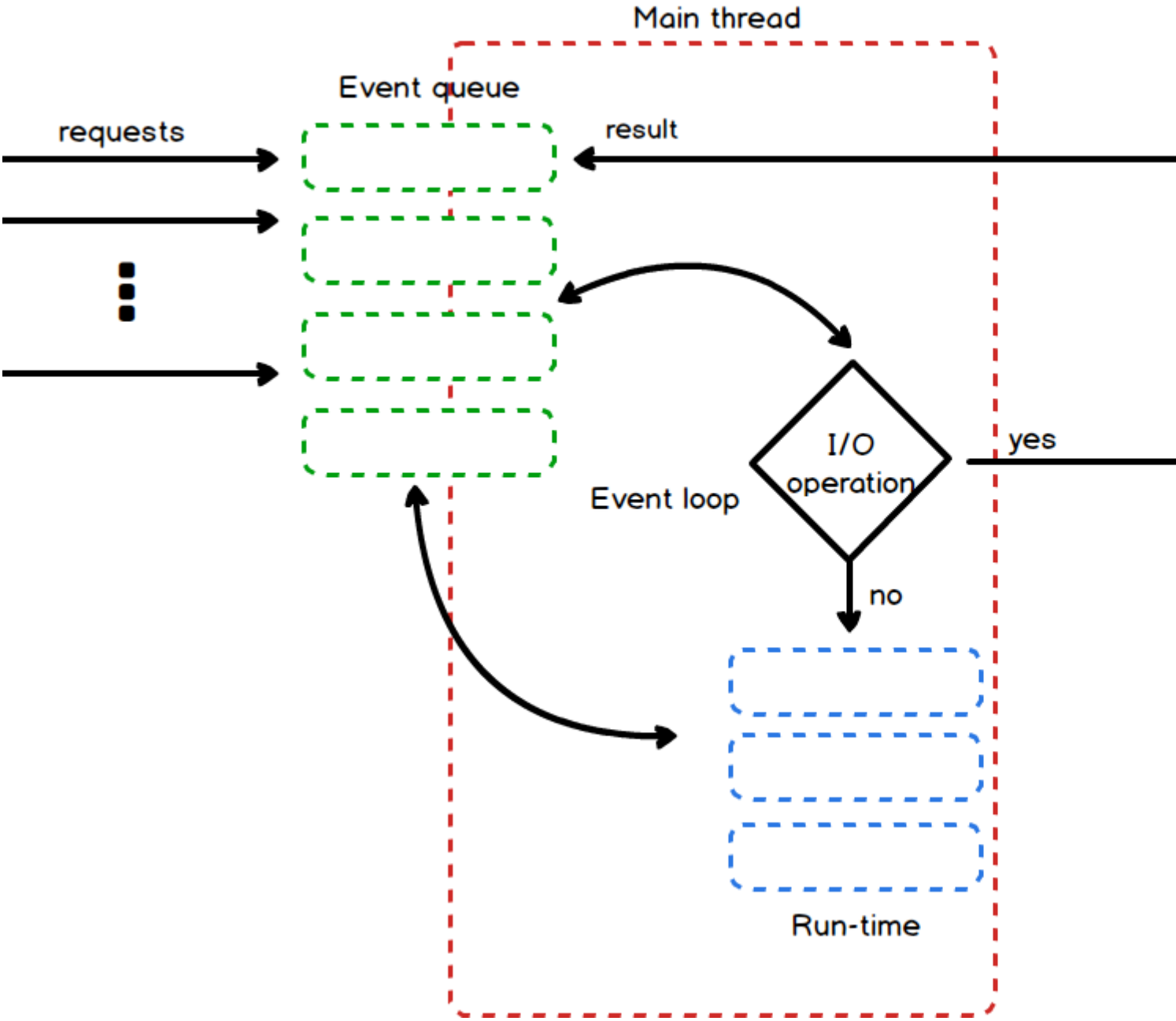
24: Node.js

Examples

Node.js -



Node.js -



Node.js https://riptutorial.com/zh-CN/node-js/topic/5892/node-js

25: Node.js

Examples

HTTP

```
const http = require('http');

console.log('Starting server...');
var config = {
    port: 80,
    contentType: 'application/json; charset=utf-8'
};
// JSON-API server on port 80

var server = http.createServer();
server.listen(config.port);
server.on('error', (err) => {
    if (err.code == 'EADDRINUSE') console.error('Port '+ config.port +' is already in use');
    else console.error(err.message);
});
server.on('request', (request, res) => {
    var remoteAddress = request.headers['x-forwarded-for'] ||
request.connection.remoteAddress; // Client address
    console.log(remoteAddress +' '+ request.method +' '+ request.url);

    var out = {};
    // Here you can change output according to `request.url`
    out.test = request.url;
    res.writeHead(200, {
        'Content-Type': config.contentType
    });
    res.end(JSON.stringify(out));
});
server.on('listening', () => {
    c.info('Server is available: http://localhost:'+ config.port);
});
```

```
const process = require('process');
const rl = require('readline').createInterface(process.stdin, process.stdout);

rl.pause();
console.log('Something long is happening here...');

var cliConfig = {
    promptPrefix: ' > '
}

/*
    Commands recognition
    BEGIN
*/
var commands = {
    eval: function(arg) { // Try typing in console: eval 2 * 10 ^ 3 + 2 ^ 4
        arg = arg.join(' ');
```

```
        try { console.log(eval(arg)); }
        catch (e) { console.log(e); }
    },
    exit: function(arg) {
        process.exit();
    }
};
rl.on('line', (str) => {
    rl.pause();
    var arg = str.trim().match(/([^"]+)|("(?:[^"\\]|\\.)+")/g); // Applying regular expression
for removing all spaces except for what between double quotes:
http://stackoverflow.com/a/14540319/2396907
    if (arg) {
        for (let n in arg) {
            arg[n] = arg[n].replace(/^\"|\"$/g, '');
        }
        var commandName = arg[0];
        var command = commands[commandName];
        if (command) {
            arg.shift();
            command(arg);
        }
        else console.log('Command "'+ commandName +'" doesn\'t exist');
    }
    rl.prompt();
});
/*
    END OF
    Commands recognition
*/

rl.setPrompt(cliConfig.promptPrefix);
rl.prompt();
```

Node.js https://riptutorial.com/zh-CN/node-js/topic/7703/node-js

26: Node.js

Examples

Node.js

-

```
    a - "Small is beautiful"
    b - "Make each program do one thing well."
```

Reactor Pattern`node.js` ◦ ◦

Node.jsI / O - libuv -

EventEmitter/

```
var events = require('events');
var eventEmitter = new events.EventEmitter();

var ringBell = function ringBell()
{
  console.log('tring tring tring');
}
eventEmitter.on('doorOpen', ringBell);

eventEmitter.emit('doorOpen');
```

Node.js https://riptutorial.com/zh-CN/node-js/topic/6274/node-js

27: Node.js

ErrorNode.js

。

Examples

messagemessage。 messageError。 messageobjectError.toString()message。

```
var err = new Error("The error message");
console.log(err.message); //prints: The error message
console.log(err);
//output
//Error: The error message
//    at ...
```

。 。 。 。

```
console.log(err);
console.log(err.stack);
```

。

```
throw new Error("Some error occurred");
```

```
var err = new Error("Some error occurred");
throw err;
```

```
throw "Some error occurred";
```

Error。

throw。

```
var a = 5;
var err = new Error("Some error message");
throw err; //this will print the error stack and node server will stop
a++; //this line will never be executed
console.log(a); //and this one also
```

```
var a = 5;
var err = new Error("Some error message");
console.log(err); //this will print the error stack
a++;
console.log(a); //this line will be executed and will print 6
```

.....

try ... catch。

```
try {
    var a = 1;
    b++; //this will cause an error because be is undefined
    console.log(b); //this line will not be executed
} catch (error) {
    console.log(error); //here we handle the error caused in the try block
}
```

try b++catchcatch。 。

```
try {
    var a = 1;
    b++;
    console.log(b);
} catch (error) {
    error.message = "b variable is undefined, so the undefined can't be incremented"
    throw error;
}
```

errormessageerror 。

trycatch

```
try {
    var a = 1;
    throw new Error("Some error message");
    console.log(a); //this line will not be executed;
} catch (error) {
    console.log(error); //will be the above thrown error
}
```

Node.js https://riptutorial.com/zh-CN/node-js/topic/8590/node-js

28: NodeJSRedis

node_redis。RedisNode.js。Pub / Sub。 。

Examples

node_redisNode.jsRedis 。npm。

```
npm install redis
```

node_redis。app.jsNode.jsRedis。

app.js

```
var redis = require('redis');
client = redis.createClient(); //creates a new client
```

redis.createClient127.0.0.16379。/

```
var client = redis.createClient(port, host);
```

。 。

```
client.on('connect', function() {
    console.log('connected');
});
```

app.js

```
var redis = require('redis');
var client = redis.createClient();

client.on('connect', function() {
    console.log('connected');
});
```

node app。Redis。

Node.jsRedisRedis。

Redis。

```
client.set('framework', 'AngularJS');
```

```
client.set(['framework', 'AngularJS']);
```

AngularJS。 。 argsclient.set()。

```
client.set('framework', 'AngularJS', function(err, reply) {
  console.log(reply);
});
```

err。

```
client.get('framework', function(err, reply) {
    console.log(reply);
});
```

client.get()Redis。 。 。

。 Redis。 hmset()

```
client.hmset('frameworks', 'javascript', 'AngularJS', 'css', 'Bootstrap', 'node', 'Express');

client.hgetall('frameworks', function(err, object) {
    console.log(object);
});
```

Redis。 hmset()。 。 hgetall()。 。

Redis。 。 Redis

```
client.hmset('frameworks', {
    'javascript': 'AngularJS',
    'css': 'Bootstrap',
    'node': 'Express'
});
```

。

/。 client.hmset()client.HMSET()。

Redis。

```
client.rpush(['frameworks', 'angularjs', 'backbone'], function(err, reply) {
    console.log(reply); //prints 2
});
```

frameworks。 。 argsrpush 。 。 lpush()rpush()。

lrange()

```
client.lrange('frameworks', 0, -1, function(err, reply) {
    console.log(reply); // ['angularjs', 'backbone']
});
```

-1lrange() 。 。

◦ ◦ ◦

```
client.sadd(['tags', 'angularjs', 'backbonejs', 'emberjs'], function(err, reply) {
    console.log(reply); // 3
});
```

sadd()◦ ◦ smembers()

```
client.smembers('tags', function(err, reply) {
    console.log(reply);
});
```

◦ ◦

Redis◦ RedishyperLogLog◦ Redis◦ Redisnode_redis◦

node_redis◦

◦ exists()

```
client.exists('key', function(err, reply) {
    if (reply === 1) {
        console.log('exists');
    } else {
        console.log('doesn\'t exist');
    }
});
```

◦ del

```
client.del('frameworks', function(err, reply) {
    console.log(reply);
});
```

```
client.set('key1', 'val1');
client.expire('key1', 30);
```

key130◦

Redis◦ incr()

```
client.set('key1', 10, function() {
    client.incr('key1', function(err, reply) {
        console.log(reply); // 11
    });
});
```

incr()1.incrby()◦ decr()decrby()◦

NodeJSRedis https://riptutorial.com/zh-CN/node-js/topic/7107/nodejsredis

29: nodejs

Examples

。

auto

```
var async = require('async');

async.auto({
    get_data: function(callback) {
        console.log('in get_data');
        // async code to get some data
        callback(null, 'data', 'converted to array');
    },
    make_folder: function(callback) {
        console.log('in make_folder');
        // async code to create a directory to store a file in
        // this is run at the same time as getting the data
        callback(null, 'folder');
    },
    write_file: ['get_data', 'make_folder', function(results, callback) {
        console.log('in write_file', JSON.stringify(results));
        // once there is some data and the directory exists,
        // write the data to a file in the directory
        callback(null, 'filename');
    }],
    email_link: ['write_file', function(results, callback) {
        console.log('in email_link', JSON.stringify(results));
        // once the file is written let's email a link to it...
        // results.write_file contains the filename returned by write_file.
        callback(null, {'file':results.write_file, 'email':'user@example.com'});
    }]
}, function(err, results) {
    console.log('err = ', err);
    console.log('results = ', results);
});
```

get_data make_folder write_fileemail_link。 Async callbacknull 。

nodejs https://riptutorial.com/zh-CN/node-js/topic/8287/nodejs

30: NodeJS

Examples

`helloworld.js`

```
console.log("Hello World");
```

Node.js

```
node helloworld.js
```

NodeJS https://riptutorial.com/zh-CN/node-js/topic/7693/nodejs

31: Nodejs

Node.js。

Examples

2009

- 33 “”
- 101 npm
- 118 Ryan DahlNode.jsNode.jsJSConf 2009

2010

- ExpressNode.js Web
- Socket.io
- 428 HerokuNode.js
- 728 Ryan DahlNode.jsGoogle Tech Talk
- 820 Node.js 0.2.0

2011

- 331Node.js
- 51 npm 1.0
- 51 Ryan DahlRedditAMA
- 710 Node.js 。
    - Node.js。
- 816 LinkedInNode.js
    - LinkedIn。
- 105 Ryan DahlNode.js
- 125 Node.js
    - Curtis ChambersNode.js。

2012

- 130 Node.jsRyan DahlNode
- 625 Node.js v0.8.0 []
- 1220Node.jsHapi

2013

- 430 MEAN StackMongoDBExpressJSAngularJSNode.js
- 517 eBayNode.js
- 1115 PayPalNode.jsKraken
- 1122 Node.js
    - Wal-MartEran HammerNode.js。
- 1219Koa - Node.jsWeb

2014

- 115 TJ FontaineNode
- 1023 Node.js
    - JoyentNode.jsNode.jsNode.js。
- 1119 Flame GraphsNode.js - Netflix
- 1128 IO.js - V8 JavascriptEvented I / O.

2015

Q1

- 114 IO.js 1.0.0
- 10Febraury JoyentNode.js
    - JoyentIBMPayPalSAPLinuxNode.js
- 27Febraury IO.jsNode.js

Q2

- 414 npm Private Modules
- 528 TJ FontaineJoyent
- 513 Node.jsio.jsNode Foundation

Q3

- 82 Trace - Node.js
    - Trace。
- 813 4.01.0

Q4

- 1012 Node v4.2.0

- 128 ApigeeRisingStackNode.js
- 1289 Node Interactive
    - Node.jsNode.js

2016

Q1

- 210 Express
- 323
- 329 Google Cloud PlatformNode.js

Q2

- 426 npm210,000

Q3

- 718 CJ Silverionpm
- 81 TraceNode.js
- 915 Node Interactive

Q4

- 1011
- 1018 Node.js 6LTS

1. “Node.js”[]。 [https://blog.risingstack.com/history-of-node-js]

Nodejs https://riptutorial.com/zh-CN/node-js/topic/8653/nodejs

32: NodeJS

Examples

Web

```
var express = require('express');
var app = express();

app.get('/', function (req, res) {
  res.send('Hello World!');
});

app.listen(3000, function () {
  console.log('Example app listening on port 3000!');
});
```

```
var koa = require('koa');
var app = koa();

app.use(function *(next){
  var start = new Date;
  yield next;
  var ms = new Date - start;
  console.log('%s %s - %s', this.method, this.url, ms);
});

app.use(function *(){
  this.body = 'Hello World';
});

app.listen(3000);
```

Commander.js

```
var program = require('commander');

program
  .version('0.0.1')

program
  .command('hi')
  .description('initialize project configuration')
  .action(function(){
        console.log('Hi my Friend!!!');
});

program
  .command('bye [name]')
  .description('initialize project configuration')
  .action(function(name){
        console.log('Bye ' + name + '. It was good to see you!');
});
```

```
program
  .command('*')
  .action(function(env){
    console.log('Enter a Valid command');
    terminate(true);
});

program.parse(process.argv);
```

Vorpal.js

```
const vorpal = require('vorpal')();

vorpal
  .command('foo', 'Outputs "bar".')
  .action(function(args, callback) {
    this.log('bar');
    callback();
  });

vorpal
  .delimiter('myapp$')
  .show();
```

NodeJS https://riptutorial.com/zh-CN/node-js/topic/6042/nodejs

33: NodeJs

jsExploring the ExpressExpress Web。

Express Router。

Examples

Express Web

Express Web

Express。 。

Express Server。 NPM。

1. Projectpackage.json。 ***package.json*** {“name”“expressRouter”“version”“0.0.1”“scripts”{“start” “node Server.js”}“dependencies”{“express”“^ 4.12.3“}}
2. *npm install*express。 node_modules。
3. Express Web Server。 Projectserver.js。 ***server.js***

   var express = require“express”; var app = express;

//Router

var router = express.Router;

//。

```
router.get("/",function(req,res){
res.json({"message" : "Hello World"});
```

};

app.use “/ API”;

//

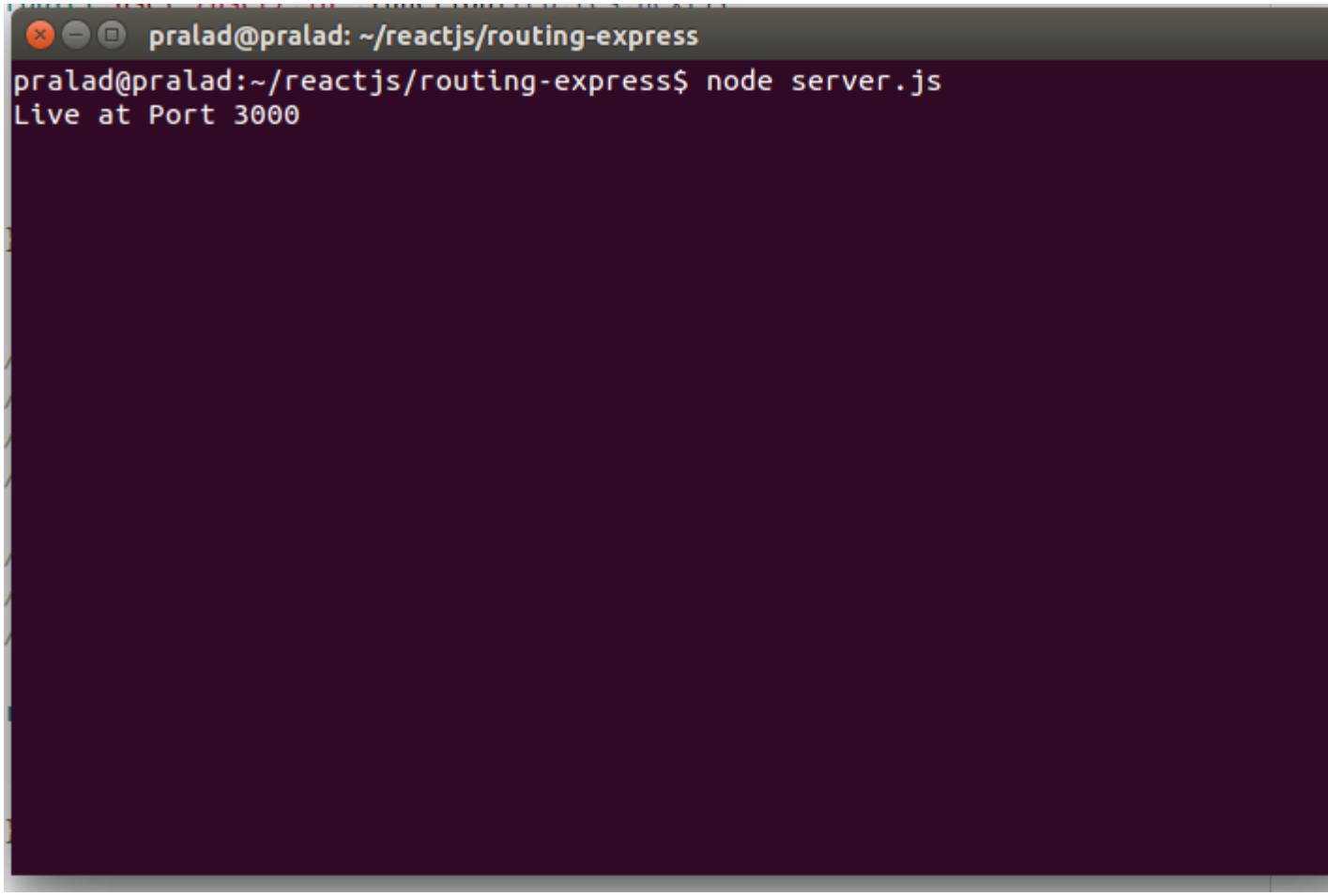
app.listen3000function{console.log“Live at Port 3000”;};

```
For more detail on setting node server you can see [here][1].
```

4. 。

   node server.js

Server。



。

5. HTTP//3000 / API /

。

Express。

GETPOST。

server.js

```
var express = require("express");
var app = express();

//Creating Router() object

var router = express.Router();

// Router middleware, mentioned it before defining routes.

router.use(function(req,res,next) {
  console.log("/" + req.method);
  next();
});

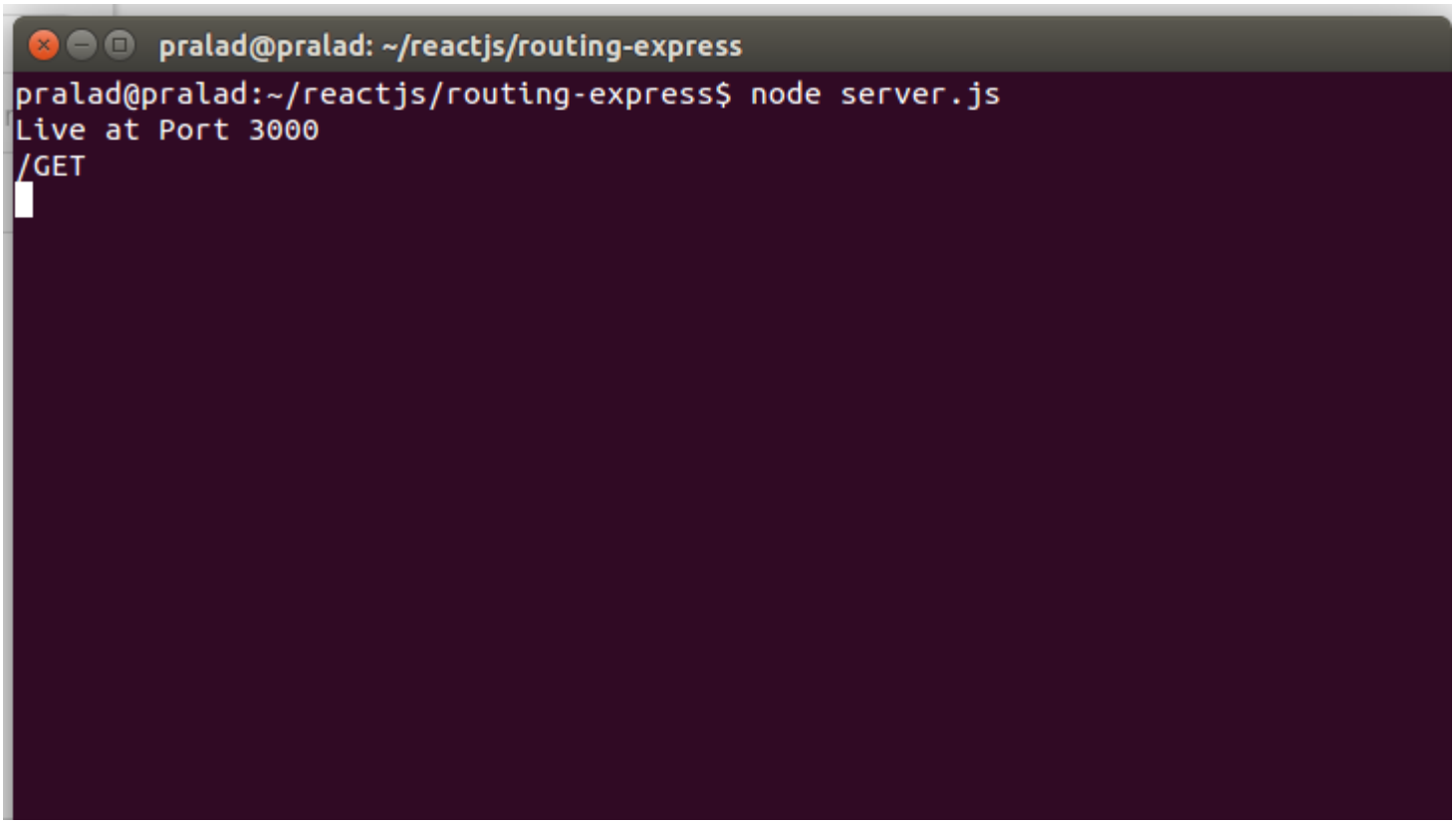
// Provide all routes here, this is for Home page.

router.get("/",function(req,res){
  res.json({"message" : "Hello World"});
});


app.use("/api",router);


app.listen(3000,function(){
  console.log("Live at Port 3000");
});
```

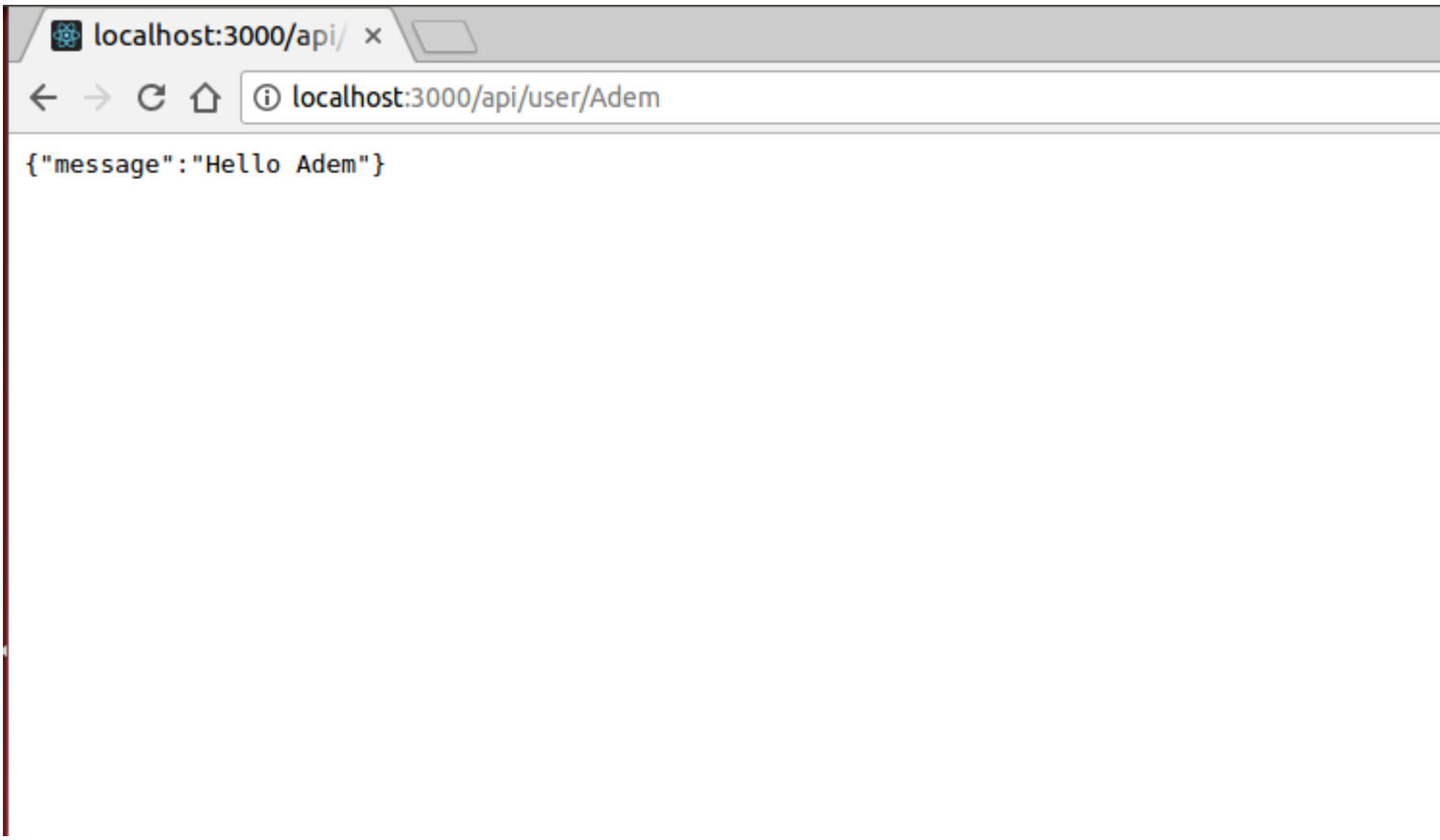
```
http://localhost:3000/api/
```



url*http://example.com/api/:name/* 。 name。 server.js

```
router.get("/user/:id",function(req,res){
  res.json({"message" : "Hello "+req.params.id});
});
```

[http// localhost3000 / api / user / Adem] [4]



。

NodeJs https://riptutorial.com/zh-CN/node-js/topic/9846/nodejs

34: NPM

npmsearch.nodejs.orgnode.js/。 Node.jsNode.js。

- npm <command><command>
  -
  -
  - apihelp
  -
  -
  -
  - C
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  - DDP
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- v

	npm publish --access=public
	npm bin -g
	npm edit connect
	npm help init
	npm init
	npm install
	npm link
	npm prune
	npm publish ./
	npm restart
	npm start
	npm start
	npm update
	npm version

Examples

npm。 jQueryAngularJSGulp.js。 `node_modulespackage.json`。 。

Npmnpm。

NPM

NPM。

NPMNode.js。 `npm -vnpm versionnpm version`

Node.jsNPM。 NPMNode.js。

```
npm install npm@latest -g
```

```
npm install <package-name>
# or
npm i <package-name>...

# e.g. to install lodash and express
npm install lodash express
```

`package.jsonnpm install`。 `npm install npm i`

```
npm install <name>@<version>

# e.g. to install version 4.11.1 of the package lodash
npm install lodash@4.11.1
```

```
npm install <name>@<version range>

# e.g. to install a version which matches "version >= 4.10.1" and "version < 4.11.1"
# of the package lodash
npm install lodash@">=4.10.1 <4.11.1"
```

```
npm install <name>@latest
```

npmjs.com`npm`。 `npm`

```
# packages distributed as a tarball
npm install <tarball file>
npm install <tarball url>
```

```
# packages available locally
npm install <local path>

# packages available as a git repository
npm install <git remote url>

# packages available on GitHub
npm install <username>/<repository>

# packages available as gist (need a package.json)
npm install gist:<gist-id>

# packages from a specific repository
npm install --registry=http://myreg.mycompany.com <package name>

# packages from a related group of packages
# See npm scope
npm install @<scope>/<name>(@<version>)

# Scoping is useful for separating private packages hosted on private registry from
# public ones by setting registry for specific scope
npm config set @mycompany:registry http://myreg.mycompany.com
npm install @mycompany/<package name>
```

node_modules◦ require()◦

package.json--save -S package.json◦ npmpackage.json◦

```
npm install --save <name> # Install dependencies
# or
npm install -S <name> # shortcut version --save
# or
npm i -S <name>
```

```
npm install --save-dev <name> # Install dependencies for development purposes
# or
npm install -D <name> # shortcut version --save-dev
# or
npm i -D <name>
```

◦ ◦ npm/usr/local/bin/<name> ◦

```
npm install --global <name>
# or
npm install -g <name>
# or
npm i -g <name>

# e.g. to install the grunt command line tool
npm install -g grunt-cli
```

```
npm list
npm list <name>
```

name。

---

npm`sudo npm install -g ...`。 。 `npm`。 Nodenvm 。

Grunt。 `devDependencies`package.json `devDependencies` 。 `--save-dev` `-D` 。

```
npm install --save-dev <name> // Install development dependencies which is not included in
production
# or
npm install -D <name>
```

`package.json`devDependencies。

/node.js

```
npm install
# or
npm i
```

npm`package.json`。

NPM

Internetnpm install。 npm

```
npm config set
```

。 URL;npm。

```
$ npm config set proxy http://<username>:<password>@<proxy-server-url>:<port>
$ npm config set https-proxy http://<username>:<password>@<proxy-server-url>:<port>
```

`username password port`。 `npm install` `npm i -g`。

```
# Set the repository for the scope "myscope"
npm config set @myscope:registry http://registry.corporation.com

# Login at a repository and associate it with the scope "myscope"
npm adduser --registry=http://registry.corporation.com --scope=@myscope

# Install a package "mylib" from the scope "myscope"
npm install @myscope/mylib
```

`@myscope`“myscope”`npm publish`。

`.npmrc`

```
@myscope:registry=http://registry.corporation.com
```

```
//registry.corporation.com/:_authToken=xxxxxxxx-xxxx-xxxx-xxxxxxxxxxxxxx
```

CIfe

```
npm uninstall <package name>
```

npmuninstall

```
npm remove <package name>
npm rm <package name>
npm r <package name>

npm unlink <package name>
npm un <package name>
```

`package.json--save -S`

```
npm uninstall --save <package name>
npm uninstall -S <package name>
```

`--save-dev-D`

```
npm uninstall --save-dev <package name>
npm uninstall -D <package name>
```

`--save-optional -O`

```
npm uninstall --save-optional <package name>
npm uninstall -O <package name>
```

`--global -g`

```
npm uninstall -g <package name>
```

◦ npm ◦

1.2.3

1. `npm version patch` => 1.2.4
2. `npm version minor` => 1.3.0
3. `npm version major` => 2.0.0

`npm version 3.1.4` => 3.1.4

npmnpmpackage.json“v”Git

```
git tag v3.1.4
```

BowernpmGit◦

`git push origin master` package.json

`git push origin v3.1.4`

`git push origin master --tags`

Node.js`package.json`。

```
npm init
```

Git。 。

`package.json`

```
npm init --yes
# or
npm init -y
```

npm`package.json` `package.json`

1. `private`true。
2. `license`“UNLICENSED”。

`package.json`

```
npm install --save <package>
```

。 if`--save-dev` `devDependencies` 。

`package.json` 。 package.jsonJSON

```
[...]
"description": "No description",
"repository": {
  "private": true
},
[...]
```

。 npmjs。

npm

```
npm login
```

```
npm adduser
```

```
npm config ls
```

```
npm publish
```

。

。 npm。

```
{
    name: "package-name",
    version: "1.0.4"
}
```

package.json

```
{
  "name": "your-package",
  "version": "1.0.0",
  "description": "",
  "main": "index.js",
  "author": "",
  "license": "ISC",
  "dependencies": {},
  "devDependencies": {},
  "scripts": {
    "echo": "echo hello!"
  }
}
```

echonpm run echo。 npm run <script name>echo above。 npmpreinstall。 npm。

npm。

```
  "scripts": {
    "test": "mocha tests",
    "start": "pm2 start index.js"
  }
```

scriptsmocha。 PATHnpm。

```
  "scripts": {
    "very-complex-command": "npm run chain-1 && npm run chain-2",
    "chain-1": "webpack",
    "chain-2": "node app.js"
  }
```

```
npm prune
```

dev--production

```
npm prune --production
```

```
npm list
```

ls lalllist。 lall。

。

```
npm list --json
```

- **json** - json
- **long** -
- **parseable** -
- **global** -
- **depth** -
- **dev** / **development** - devDependencies
- **prod** / **production** -

。

```
npm home <package name>
```

npm

npmNode.js。

Windows

```
npm install -g npm@latest
```

```
npm outdated
```

```
npm update <package name>
```

package.json

package.json

```
npm update <package name> --save
```

npm 。 semver。

`node_modules`

```
npm shrinkwrap
```

`package.json``npm-shrinkwrap.json` dependancies。

`npm install -g`“”。 。

```
npm install -g gulp-cli
```

`gulp`

◦

npm install -g/usr/bin ◦ sudo npm installsudo◦

~/.npmrcnpm◦ prefix npm prefix◦

```
prefix=~/.npm-global-modules
```

npm install -g◦ npm install --prefix ~/.npm-global-modules◦ -g ◦

```
export PATH=$PATH:~/.npm-global-modules/bin
```

npm install -g gulp-cligulp ◦

npm install -g package.json◦ node_modules/.bin ◦ npm install -g ◦ node_modules/.bin

node_modules/.bin ◦

◦ NPMnpm link ◦ npm link◦ ◦

```
NAME
       npm-link - Symlink a package folder

SYNOPSIS
         npm link (in package dir)
         npm link [<@scope>/]<pkg>[@<version>]

         alias: npm ln
```

◦

1. CD cd ../my-dep
2. npm link
3. CD
4. npm link my-depnpm link @namespace/my-dep

1. CD cd eslint-watch
2. npm link
3.
4. esw --quiet

◦ npm uninstall (-g) <pkg>npm link◦

NPM https://riptutorial.com/zh-CN/node-js/topic/482/npm

35: nvm -

URLNode Version Manager。 。 nvm GitHubnvmURL。

Examples

NVM

curl

```
curl -o- https://raw.githubusercontent.com/creationix/nvm/v0.31.3/install.sh | bash
```

wget

```
wget -qO- https://raw.githubusercontent.com/creationix/nvm/v0.31.3/install.sh | bash
```

NVM

nvm

```
command -v nvm
```

'nvm'。

Node

```
nvm ls-remote
```

```
nvm install <version>
```

```
nvm install 0.10.13
```

NVM

```
nvm ls
```

nvm ls

```
$ nvm ls
      v4.3.0
      v5.5.0
```

v5.5.0

```
nvm use v5.5.0
```

Mac OSXnvm

gitcurlwgetNode Version Manager。**Mac OSX**。

```
curl -o- https://raw.githubusercontent.com/creationix/nvm/v0.31.3/install.sh | bash
```

wget

```
wget -qO- https://raw.githubusercontent.com/creationix/nvm/v0.31.3/install.sh | bash
```

NVM

nvm`nvm`。**nvmcommand not found.bash_profile**。`touch ~/.bash_profile`。

nvmcommand

- `nano .bashrc`。

  export NVM_DIR =“/ Users / johndoe / .nvm”[- “”$ NVM_DIR / nvm.sh“] &&。 “$ NVM_DIR / nvm.sh”

- **.bashrc**
- .bashrcCTRL + O - - CTRL + X
- `nano .bash_profile`Bash
- Bash
- BashCTRL + O - - CTRL + X
- `nano .bashrc`**.bashrc**
-

  source~ / .nvm / nvm.sh

- CTRL + O - - CTRL + X
- `nvm`

```
nvm alias <name> <version>
```

unalias

```
nvm unalias <name>
```

。 `default`。

```
nvm alias default 5.0.1
```

/5.0.1。

```
nvm alias # lists all aliases created on nvm
```

shell

```
nvm ls
    v4.5.0
    v6.7.0
```

```
nvm run 4.5.0 --version or nvm exec 4.5.0 node --version
Running node v4.5.0 (npm v2.15.9)
v4.5.0
```

```
nvm run 6.7.0 --version or nvm exec 6.7.0 node --version
Running node v6.7.0 (npm v3.10.3)
v6.7.0
```

```
nvm run default --version or nvm exec default node --version
Running node v6.7.0 (npm v3.10.3)
v6.7.0
```

LTS

```
nvm install --lts
```

```
nvm use v4.5.0 or nvm use stable ( alias )
```

nvm - https://riptutorial.com/zh-CN/node-js/topic/2823/nvm----

36: N-API

N-APINodeJS。 N-API。

Examples

N-API

hellohello。 hello`printf`Hello world`1373`javascript。

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


napi_value say_hello(napi_env env, napi_callback_info info)
{
    napi_value retval;

    printf("Hello world\n");

    napi_create_number(env, 1373, &retval);

    return retval;
}

void init(napi_env env, napi_value exports, napi_value module, void* priv)
{
    napi_status status;
    napi_property_descriptor desc = {
        /*
         * String describing the key for the property, encoded as UTF8.
         */
        .utf8name = "hello",
        /*
         * Set this to make the property descriptor object's value property
         * to be a JavaScript function represented by method.
         * If this is passed in, set value, getter and setter to NULL (since these members
won't be used).
         */
        .method = say_hello,
        /*
         * A function to call when a get access of the property is performed.
         * If this is passed in, set value and method to NULL (since these members won't be
used).
         * The given function is called implicitly by the runtime when the property is
accessed
         * from JavaScript code (or if a get on the property is performed using a N-API call).
         */
        .getter = NULL,
        /*
         * A function to call when a set access of the property is performed.
         * If this is passed in, set value and method to NULL (since these members won't be
used).
         * The given function is called implicitly by the runtime when the property is set
         * from JavaScript code (or if a set on the property is performed using a N-API call).
         */
```

```
        .setter = NULL,
        /*
         * The value that's retrieved by a get access of the property if the property is a
data property.
         * If this is passed in, set getter, setter, method and data to NULL (since these
members won't be used).
         */
        .value = NULL,
        /*
         * The attributes associated with the particular property. See
napi_property_attributes.
         */
        .attributes = napi_default,
        /*
         * The callback data passed into method, getter and setter if this function is
invoked.
         */
        .data = NULL
    };
    /*
     * This method allows the efficient definition of multiple properties on a given object.
     */
    status = napi_define_properties(env, exports, 1, &desc);

    if (status != napi_ok)
        return;
}


NAPI_MODULE(hello, init)
```

N-API https://riptutorial.com/zh-CN/node-js/topic/10539/n-api

37: OAuth 2.0

Examples

RedisOAuth 2 - grant_typepassword

redisrest apioauth2

redisLinuxWindowsredis manager。

node.jsredis。

- **app.js**

```
    var express = require('express'),
  bodyParser = require('body-parser'),
  oauthserver = require('oauth2-server'); // Would be: 'oauth2-server'

var app = express();

app.use(bodyParser.urlencoded({ extended: true }));

app.use(bodyParser.json());

app.oauth = oauthserver({
  model: require('./routes/Oauth2/model'),
  grants: ['password', 'refresh_token'],
  debug: true
});

// Handle token grant requests
app.all('/oauth/token', app.oauth.grant());

app.get('/secret', app.oauth.authorise(), function (req, res) {
  // Will require a valid access_token
  res.send('Secret area');
});

app.get('/public', function (req, res) {
  // Does not require an access_token
  res.send('Public area');
});

// Error handling
app.use(app.oauth.errorHandler());

app.listen(3000);
```

- **routes / Oauth2 / model.jsOauth2**

```
 var model = module.exports,
```

```
  util = require('util'),
  redis = require('redis');

var db = redis.createClient();

var keys = {
  token: 'tokens:%s',
  client: 'clients:%s',
  refreshToken: 'refresh_tokens:%s',
  grantTypes: 'clients:%s:grant_types',
  user: 'users:%s'
};

model.getAccessToken = function (bearerToken, callback) {
  db.hgetall(util.format(keys.token, bearerToken), function (err, token) {
    if (err) return callback(err);

    if (!token) return callback();

    callback(null, {
      accessToken: token.accessToken,
      clientId: token.clientId,
      expires: token.expires ? new Date(token.expires) : null,
      userId: token.userId
    });
  });
};

model.getClient = function (clientId, clientSecret, callback) {
  db.hgetall(util.format(keys.client, clientId), function (err, client) {
    if (err) return callback(err);

    if (!client || client.clientSecret !== clientSecret) return callback();

    callback(null, {
      clientId: client.clientId,
      clientSecret: client.clientSecret
    });
  });
};

model.getRefreshToken = function (bearerToken, callback) {
  db.hgetall(util.format(keys.refreshToken, bearerToken), function (err, token) {
    if (err) return callback(err);

    if (!token) return callback();

    callback(null, {
      refreshToken: token.accessToken,
      clientId: token.clientId,
      expires: token.expires ? new Date(token.expires) : null,
      userId: token.userId
    });
  });
};

model.grantTypeAllowed = function (clientId, grantType, callback) {
  db.sismember(util.format(keys.grantTypes, clientId), grantType, callback);
};

model.saveAccessToken = function (accessToken, clientId, expires, user, callback) {
```

```
  db.hmset(util.format(keys.token, accessToken), {
    accessToken: accessToken,
    clientId: clientId,
    expires: expires ? expires.toISOString() : null,
    userId: user.id
  }, callback);
};

model.saveRefreshToken = function (refreshToken, clientId, expires, user, callback) {
  db.hmset(util.format(keys.refreshToken, refreshToken), {
    refreshToken: refreshToken,
    clientId: clientId,
    expires: expires ? expires.toISOString() : null,
    userId: user.id
  }, callback);
};

model.getUser = function (username, password, callback) {
  db.hgetall(util.format(keys.user, username), function (err, user) {
    if (err) return callback(err);

    if (!user || password !== user.password) return callback();

    callback(null, {
      id: username
    });
  });
};
```

redis

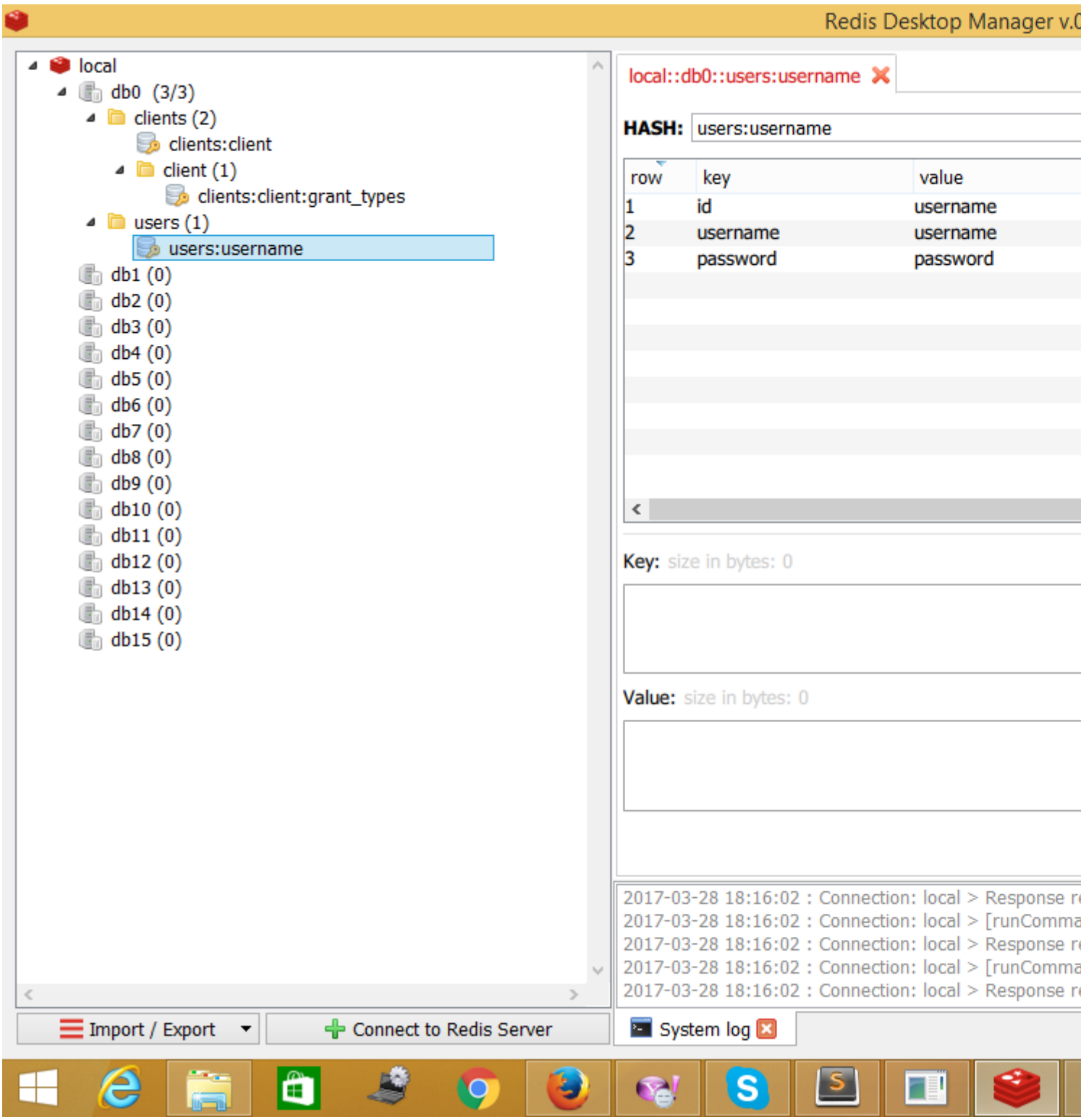
```
  #! /usr/bin/env node

var db = require('redis').createClient();

db.multi()
  .hmset('users:username', {
    id: 'username',
    username: 'username',
    password: 'password'
  })
  .hmset('clients:client', {
    clientId: 'client',
    clientSecret: 'secret'
  })//clientId + clientSecret to base 64 will generate Y2xpZW50OnNlY3JldA==
  .sadd('clients:client:grant_types', [
    'password',
    'refresh_token'
  ])
  .exec(function (errs) {
    if (errs) {
      console.error(errs[0].message);
      return process.exit(1);
    }

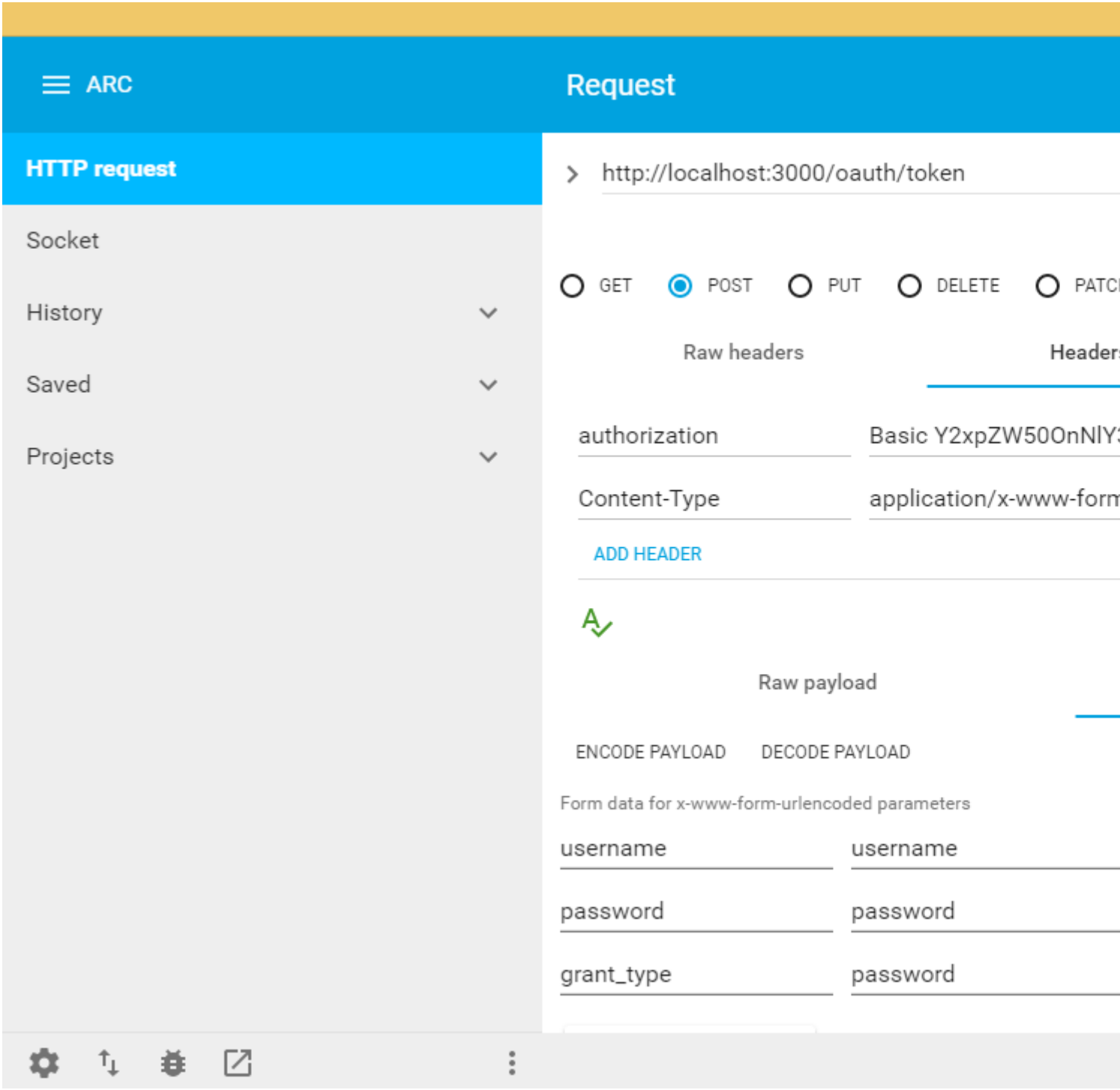
    console.log('Client and user added successfully');
    process.exit();
  });
```

redis


Redis Desktop Manager v.0
local
db0 (3/3)
clients (2)
clients:client
client (1)
clients:client:grant_types
users (1)
users:username
db1 (0)
db2 (0)
db3 (0)
db4 (0)
db5 (0)
db6 (0)
db7 (0)
db8 (0)
db9 (0)
db10 (0)
db11 (0)
db12 (0)
db13 (0)
db14 (0)
db15 (0)
local::db0::users:username
HASH: users:username
row
key
value
1
id
username
2
username
username
3
password
password
Key: size in bytes: 0
Value: size in bytes: 0
2017-03-28 18:16:02 : Connection: local > Response
2017-03-28 18:16:02 : Connection: local > [runComma
2017-03-28 18:16:02 : Connection: local > Response
2017-03-28 18:16:02 : Connection: local > [runComma
2017-03-28 18:16:02 : Connection: local > Response
Import / Export
Connect to Redis Server
System log

---

api



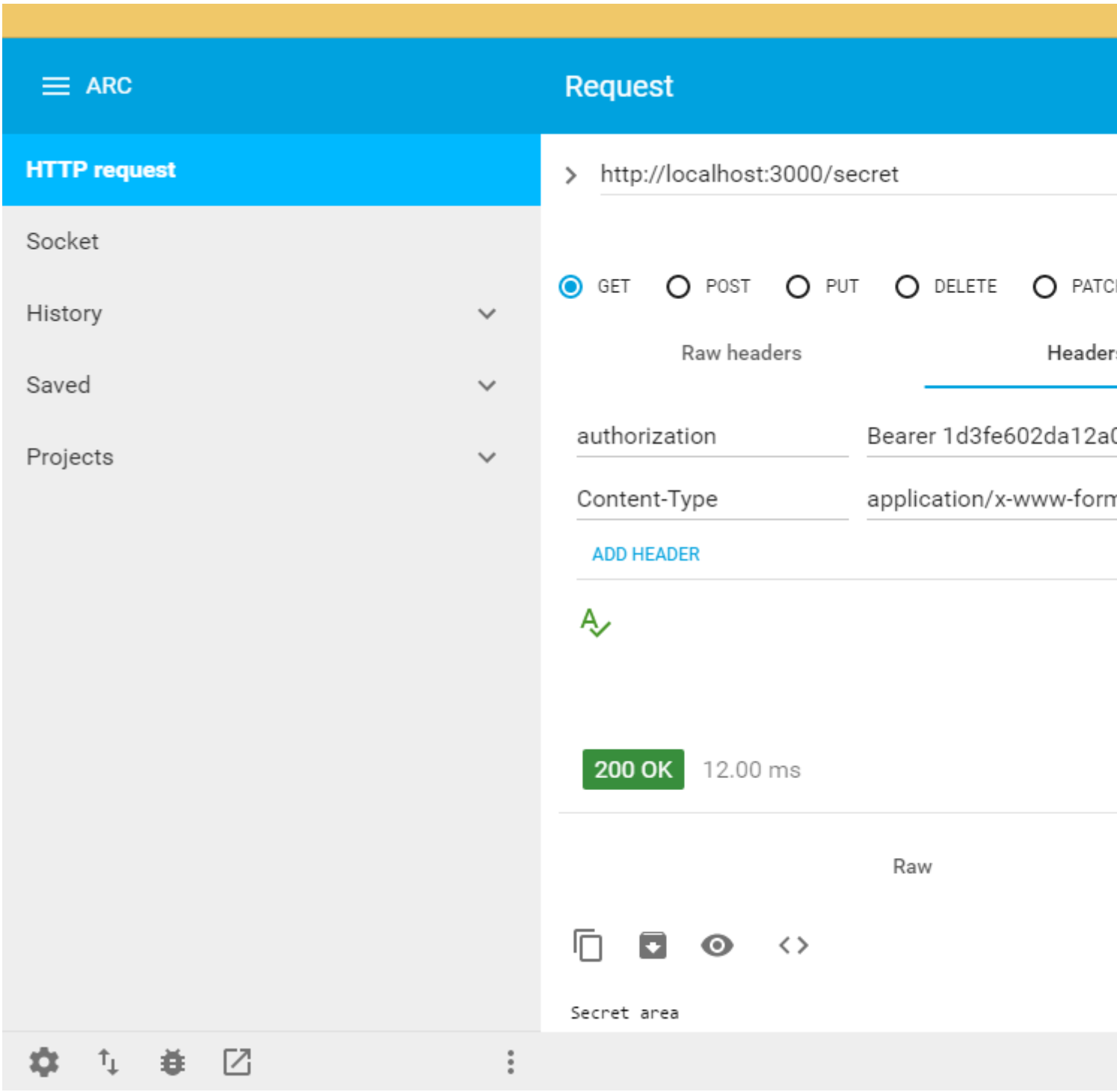
1. redis
    - clientId + secretIdbase64
2. username

    grant_typepasswodredisredis

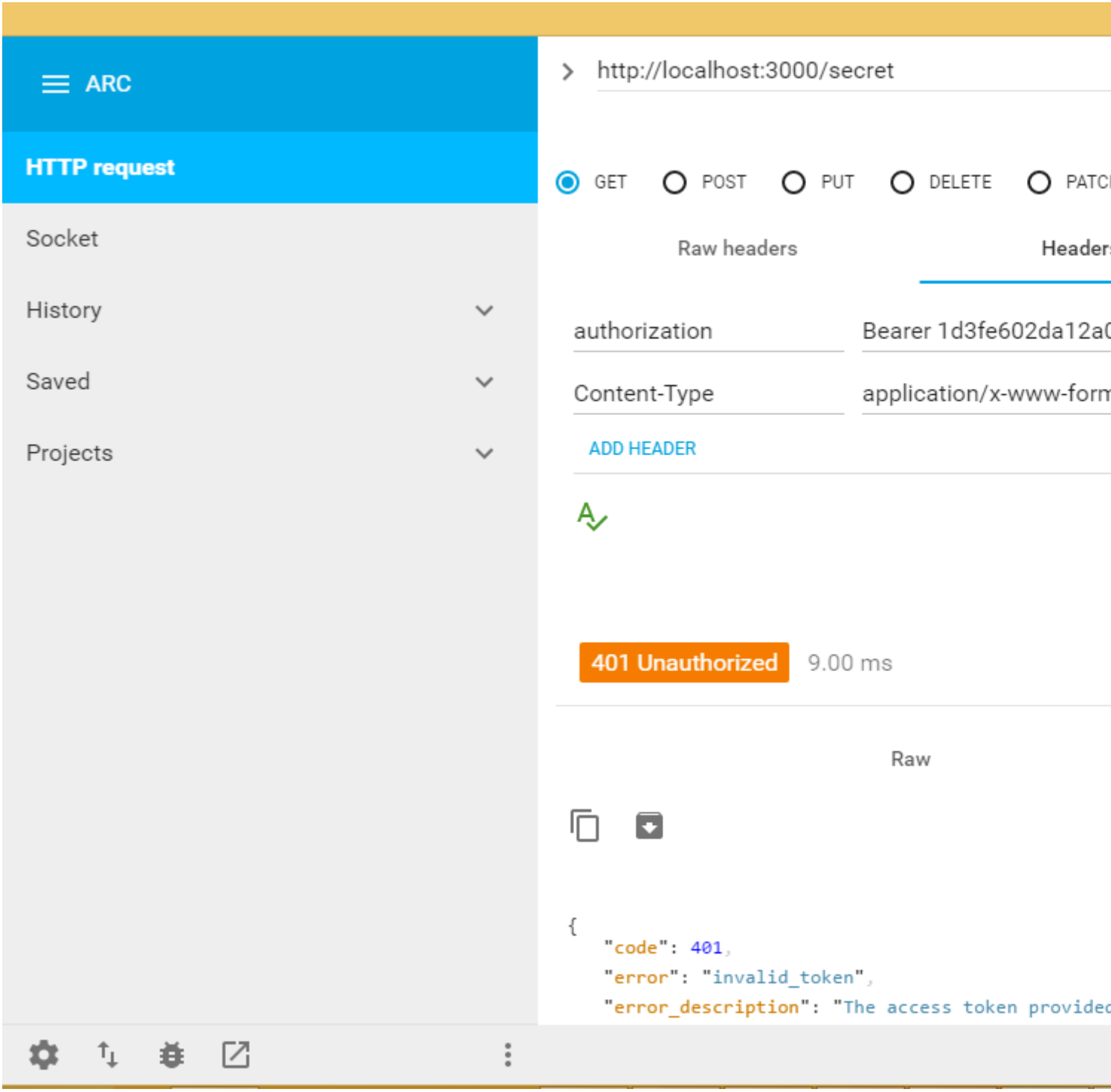
```
{
  "access_token":"1d3fe602da12a086ecb2b996fd7b7ae874120c4f",
  "token_type":"bearer", // Will be used to access api + access+token e.g. bearer
1d3fe602da12a086ecb2b996fd7b7ae874120c4f
  "expires_in":3600,
```

```
  "refresh_token":"b6ad56e5c9aba63c85d7e21b1514680bbf711450"
}
```

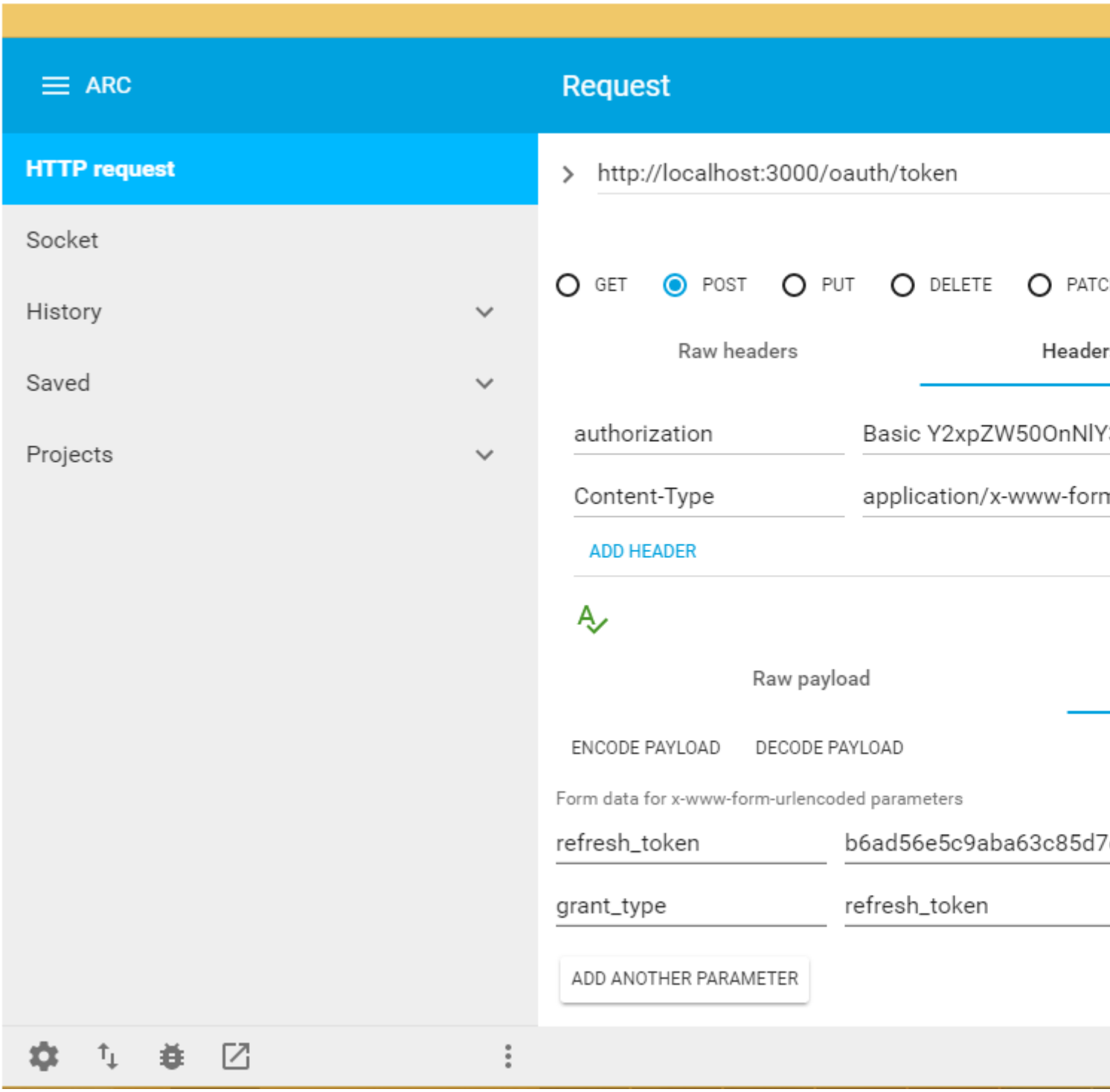
api



apiapi



redisaccess_tokenrefresh_tokenrefresh_token grant_typeoauth / tokenBasic clientId clientsecret64refresh_tokenaccess_token。



OAuth 2.0 https://riptutorial.com/zh-CN/node-js/topic/9566/oauth-2-0

38: passport.js

Passport。 。 Passport300Facebook / Google。 。

Examples

passport.jsLocalStrategy

```
var passport = require('passport');
var LocalStrategy = require('passport-local').Strategy;

passport.serializeUser(function(user, done) { //In serialize user you decide what to store in
the session. Here I'm storing the user id only.
  done(null, user.id);
});

passport.deserializeUser(function(id, done) { //Here you retrieve all the info of the user
from the session storage using the user id stored in the session earlier using serialize user.
  db.findById(id, function(err, user) {
    done(err, user);
    });
});

passport.use(new LocalStrategy(function(username, password, done) {
    db.findOne({'username':username},function(err,student){
        if(err)return done(err,{message:message});//wrong roll_number or password;
        var pass_retrieved = student.pass_word;
        bcrypt.compare(password, pass_retrieved, function(err3, correct) {
          if(err3){
            message = [{"msg": "Incorrect Password!"}];
            return done(null,false,{message:message});  // wrong password
          }
          if(correct){
              return done(null,student);
          }
        });
    });
}));

app.use(session({ secret: 'super secret' })); //to make passport remember the user on other
pages too.(Read about session store. I used express-sessions.)
app.use(passport.initialize());
app.use(passport.session());

app.post('/',passport.authenticate('local',{successRedirect:'/users' failureRedirect: '/'}),
    function(req,res,next){
});
```

passport.js https://riptutorial.com/zh-CN/node-js/topic/8812/passport-js

39: PostgreSQL

Examples

PostgreSQL

`PostgreSQL` npm。

npm

```
npm  install pg --save
```

PostgreSQL。

Database_Name = studentsHost = localhostDB_User = postgres

```
var pg = require("pg")
var connectionString = "pg://postgres:postgres@localhost:5432/students";
var client = new pg.Client(connectionString);
client.connect();
```

。

```
var queryString = "SELECT name, age FROM students " ;
var query = client.query(queryString);

query.on("row", (row, result)=> {
result.addRow(row);
});

query.on("end", function (result) {
//LOGIC
});
```

PostgreSQL https://riptutorial.com/zh-CN/node-js/topic/7706/postgresql

40: Restful API

Examples

```
Router.route('/')
  .get((req, res) => {
    Request.find((err, r) => {
      if(err){
        console.log(err)
      } else {
        res.json(r)
      }
    })
  })
  .post((req, res) => {
    const request = new Request({
      type: req.body.type,
      info: req.body.info
    });
    request.info.user = req.user._id;
    console.log("ABOUT TO SAVE REQUEST", request);
    request.save((err, r) => {
      if (err) {
        res.json({ message: 'there was an error saving your r' });
      } else {
        res.json(r);
      }
    });
  });
```

```
Router.route('/')
 .get((req, res) => {
  Request.find((err, r) => {
   if(err){
    console.log(err)
  } else {
    return next(err)
  }
})
})
.post((req, res) => {
const request = new Request({
  type: req.body.type,
  info: req.body.info
});
request.info.user = req.user._id;
console.log("ABOUT TO SAVE REQUEST", request);
request.save((err, r) => {
  if (err) {
    return next(err)
  } else {
    res.json(r);
  }
});
});
```

Restful API https://riptutorial.com/zh-CN/node-js/topic/6490/restful-api-

41: Sequelize.js

Examples

Node.jsnpm。 npmsequelize.js

```
npm install --save sequelize
```

Node.js。

MYSQLMariadb

```
npm install --save mysql
```

PostgreSQL

```
npm install --save pg pg-hstore
```

SQLite

```
 npm install --save sqlite
```

MSSQL

```
npm install --save tedious
```

Sequalize。

ES5

```
var Sequelize = require('sequelize');
var sequelize = new Sequelize('database', 'username', 'password');
```

ES6 stage-0 Babel

```
import Sequelize from 'sequelize';
const sequelize = new Sequelize('database', 'username', 'password');
```

sequelize。

```
var db = new Sequelize('database', 'username', 'password');
```

```
var database = new Sequelize('database', 'username', 'password');
```

。 APIhttp://docs.sequelizejs.com/en/v3/api/sequelize/。

sequelize;`sequelize.define(...)sequelize.import(...)` ◦ sequelize◦

1. sequelize.definemodelNameattributes [options]

◦

```
/* Initialize Sequelize */
const config = {
    username: "database username",
    password: "database password",
    database: "database name",
    host: "database's host URL",
    dialect: "mysql" // Other options are postgres, sqlite, mariadb and mssql.
}
var Sequelize = require("sequelize");
var sequelize = new Sequelize(config);

/* Define Models */
sequelize.define("MyModel", {
    name: Sequelize.STRING,
    comment: Sequelize.TEXT,
    date: {
        type: Sequelize.DATE,
        allowNull: false
    }
});
```

docletssequelize.com ◦

---

2. sequelize.import

`import`◦ Sequelizeimport

```
/* Initialize Sequelize */
// Check previous code snippet for initialization

/* Define Models */
sequelize.import("./models/my_model.js"); // The path could be relative or absolute
```

```
module.exports = function(sequelize, DataTypes) {
    return sequelize.define("MyModel", {
        name: DataTypes.STRING,
        comment: DataTypes.TEXT,
        date: {
            type: DataTypes.DATE,
            allowNull: false
        }
    });
};
```

`import`Sequelize GitHub ◦

Sequelize.js https://riptutorial.com/zh-CN/node-js/topic/7705/sequelize-js

42: Socket.io

Examples

“”。

```
npm install express
npm install socket.io
```

Node.js

```
const express = require('express');
const app = express();
const server = app.listen(3000,console.log("Socket.io Hello World server started!"));
const io = require('socket.io')(server);

io.on('connection', (socket) => {
    //console.log("Client connected!");
    socket.on('message-from-client-to-server', (msg) => {
        console.log(msg);
    })
    socket.emit('message-from-server-to-client', 'Hello World!');
});
```

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="UTF-8">
    <title>Hello World with Socket.io</title>
  </head>
  <body>
    <script src="https://cdn.socket.io/socket.io-1.4.5.js"></script>
    <script>
      var socket = io("http://localhost:3000");
      socket.on("message-from-server-to-client", function(msg) {
          document.getElementById('message').innerHTML = msg;
      });
      socket.emit('message-from-client-to-server', 'Hello World!');
    </script>
    <p>Socket.io Hello World client started!</p>
    <p id="message"></p>
  </body>
</html>
```

Socket.io https://riptutorial.com/zh-CN/node-js/topic/4261/socket-io

43: TCP

Examples

TCP

```
// Include Nodejs' net module.
const Net = require('net');
// The port on which the server is listening.
const port = 8080;

// Use net.createServer() in your code. This is just for illustration purpose.
// Create a new TCP server.
const server = new Net.Server();
// The server listens to a socket for a client to make a connection request.
// Think of a socket as an end point.
server.listen(port, function() {
    console.log(`Server listening for connection requests on socket localhost:${port}`.);
});

// When a client requests a connection with the server, the server creates a new
// socket dedicated to that client.
server.on('connection', function(socket) {
    console.log('A new connection has been established.');

    // Now that a TCP connection has been established, the server can send data to
    // the client by writing to its socket.
    socket.write('Hello, client.');

    // The server can also receive data from the client by reading from its socket.
    socket.on('data', function(chunk) {
        console.log(`Data received from client: ${chunk.toString()`.});
    });

    // When the client requests to end the TCP connection with the server, the server
    // ends the connection.
    socket.on('end', function() {
        console.log('Closing connection with the client');
    });

    // Don't forget to catch error, for your own sake.
    socket.on('error', function(err) {
        console.log(`Error: ${err}`);
    });
});
```

TCP

```
// Include Nodejs' net module.
const Net = require('net');
// The port number and hostname of the server.
const port = 8080;
const host = 'localhost';

// Create a new TCP client.
```

```
const client = new Net.Socket();
// Send a connection request to the server.
client.connect({ port: port, host: host }), function() {
    // If there is no error, the server has accepted the request and created a new
    // socket dedicated to us.
    console.log('TCP connection established with the server.');

    // The client can now send data to the server by writing to its socket.
    client.write('Hello, server.');
});

// The client can also receive data from the server by reading from its socket.
client.on('data', function(chunk) {
    console.log(`Data received from the server: ${chunk.toString()}.`);

    // Request an end to the connection after the data has been received.
    client.end();
});

client.on('end', function() {
    console.log('Requested an end to the TCP connection');
});
```

TCP https://riptutorial.com/zh-CN/node-js/topic/6545/tcp

44:

Examples

multer

- uploads ◦
- multer `npm i -S multer`

server.js

```
var express =   require("express");
var multer  =   require('multer');
var app         =   express();
var fs = require('fs');

app.get('/',function(req,res){
      res.sendFile(__dirname + "/index.html");
});

var storage =   multer.diskStorage({
  destination: function (req, file, callback) {
    fs.mkdir('./uploads', function(err) {
        if(err) {
            console.log(err.stack)
        } else {
            callback(null, './uploads');
        }
    })
  },
  filename: function (req, file, callback) {
    callback(null, file.fieldname + '-' + Date.now());
  }
});

app.post('/api/file',function(req,res){
    var upload = multer({ storage : storage}).single('userFile');
    upload(req,res,function(err) {
        if(err) {
            return res.end("Error uploading file.");
        }
        res.end("File is uploaded");
    });
});

app.listen(3000,function(){
    console.log("Working on port 3000");
});
```

index.html

```
<form id        =  "uploadForm"
     enctype    =  "multipart/form-data"
     action     =  "/api/file"
```

```
     method    =  "post"
>
<input type="file" name="userFile" />
<input type="submit" value="Upload File" name="submit">
</form>
```

Node.js

`server.jspath`

```
var path = require('path');
```

```
callback(null, file.fieldname + '-' + Date.now());
```

```
callback(null, file.fieldname + '-' + Date.now() + path.extname(file.originalname));
```

◦

◦ `var upload = multer({ storage : storage}).single('userFile');` fileFilter

```
var upload = multer({
    storage: storage,
    fileFilter: function (req, file, callback) {
        var ext = path.extname(file.originalname);
        if(ext !== '.png' && ext !== '.jpg' && ext !== '.gif' && ext !== '.jpeg') {
            return callback(new Error('Only images are allowed'))
        }
        callback(null, true)
    }
}).single('userFile');
```

`png jpg gifjpeg`

```
npm i formidable@latest
```

8080

```
var formidable = require('formidable'),
    http = require('http'),
    util = require('util');

http.createServer(function(req, res) {
  if (req.url == '/upload' && req.method.toLowerCase() == 'post') {
    // parse a file upload
    var form = new formidable.IncomingForm();

    form.parse(req, function(err, fields, files) {
      if (err)
          do-smth; // process error
```

```
      // Copy file from temporary place
      // var fs = require('fs');
      // fs.rename(file.path, <targetPath>, function (err) { ... });

      // Send result on client
      res.writeHead(200, {'content-type': 'text/plain'});
      res.write('received upload:\n\n');
      res.end(util.inspect({fields: fields, files: files}));
    });

    return;
  }

  // show a file upload form
  res.writeHead(200, {'content-type': 'text/html'});
  res.end(
    '<form action="/upload" enctype="multipart/form-data" method="post">'+
    '<input type="text" name="title"><br>'+
    '<input type="file" name="upload" multiple="multiple"><br>'+
    '<input type="submit" value="Upload">'+
    '</form>'
  );
}).listen(8080);
```

https://riptutorial.com/zh-CN/node-js/topic/4080/

45:

- console.log[data] [...]
- console.error[data] [...]
- console.time
- console.timeEnd

Examples

JavaScriptnode.js◦

`console.log console.errorconsole.time ◦ console.info ◦`

console.log

`stdout ◦`

```
console.log('Hello World');
```

```
> console.log('Hello World')
Hello World
```

console.error

`stderr ◦`

```
console.error('Oh, sorry, there is an error.');
```

```
> console.error("Oh, sorry, error");
Oh, sorry, error
```

console.timeconsole.timeEnd

`console.time◦ console.timeEndstdout◦`

```
> console.time("label");
undefined
> console.timeEnd("label");
label: 9297.320ms
```

`◦ process.stdout.write ◦ console.log◦`

◦

```
> process.stdout.write("123");process.stdout.write("456");
123456true
```

。

```
> console.log("\033[31mThis will be red");
This will be red
```

\033[0m
\033[1m
\033[4m
\033[7m

\033[30m
\033[31m
\033[32m
\033[33m
\033[34m
\033[35m
\033[36m
\033[37m

\033[40m
\033[41m
\033[42m
\033[43m
\033[44m
\033[45m
\033[46m
\033[47m

https://riptutorial.com/zh-CN/node-js/topic/5935/

46:

“”“”“” `emit()`

```
myDog.on('bark', (howLoud, howLong, howIntense) => {
  // handle the event
})
myDog.emit('bark', 'loudly', '5 seconds long', 'fiercely')
```

```
myDog.on('urinate', () => console.log('My first thought was "Oh-no"'))
myDog.on('urinate', () => console.log('My second thought was "Not my lawn :)"'))
myDog.emit('urinate')
// The console.logs will happen in the right order because they were registered in that order.
```

`prependListener()`

```
myDog.prependListener('urinate', () => console.log('This happens before my first and second
thoughts, even though it was registered after them'))
```

`once`on `prependOnceListener`prependListener ◦ ◦

```
myDog.removeAllListeners()
```

Examples

HTTP

HTTP`server.js`

```
const EventEmitter = require('events')
const serverEvents = new EventEmitter()

// Set up an HTTP server
const http = require('http')
const httpServer = http.createServer((request, response) => {
  // Handler the request...
  // Then emit an event about what happened
  serverEvents.emit('request', request.method, request.url)
});

// Expose the event emitter
module.exports = serverEvents
```

`supervisor.js`

```
const server = require('./server.js')
// Since the server exported an event emitter, we can listen to it for changes:
server.on('request', (method, url) => {
  console.log(`Got a request: ${method} ${url}`)
})
```

request。

Nodepub-sub 。 。

```
// Require events to start using them
const EventEmitter = require('events').EventEmitter;
// Dogs have events to publish, or emit
class Dog extends EventEmitter {};
class Food {};

let myDog = new Dog();

// When myDog is chewing, run the following function
myDog.on('chew', (item) => {
  if (item instanceof Food) {
    console.log('Good dog');
  } else {
    console.log(`Time to buy another ${item}`);
  }
});

myDog.emit('chew', 'shoe'); // Will result in console.log('Time to buy another shoe')
const bacon = new Food();
myDog.emit('chew', bacon); // Will result in console.log('Good dog')
```

dogpublisher / EventEmitter/。

```
myDog.on('bark', () => {
  console.log('WHO\'S AT THE DOOR?');
  // Panic
});
```

```
myDog.on('chew', takeADeepBreathe);
myDog.on('chew', calmDown);
// Undo the previous line with the next one:
myDog.removeListener('chew', calmDown);
```

```
myDog.once('chew', pet);
```

。

EventEmitter.eventNames。

```
const EventEmitter = require("events");
class MyEmitter extends EventEmitter{}

var emitter = new MyEmitter();

emitter
.on("message", function(){ //listen for message event
    console.log("a message was emitted!");
})
.on("message", function(){ //listen for message event
    console.log("this is not the right message");
```

```
})
.on("data", function(){ //listen for data event
    console.log("a data just occured!!");
});

console.log(emitter.eventNames()); //=> ["message","data"]
emitter.removeAllListeners("data");//=> removeAllListeners to data event
console.log(emitter.eventNames()); //=> ["message"]
```

RunKit

Emitter.listenerCounteventName

```
const EventEmitter = require("events");
class MyEmitter extends EventEmitter{}
var emitter = new MyEmitter();

emitter
.on("data", ()=>{ // add listener for data event
    console.log("data event emitter");
});

console.log(emitter.listenerCount("data"))    // => 1
console.log(emitter.listenerCount("message")) // => 0

emitter.on("message", function mListener(){ //add listener for message event
    console.log("message event emitted");
});
console.log(emitter.listenerCount("data"))    // => 1
console.log(emitter.listenerCount("message")) // => 1

emitter.once("data", (stuff)=>{ //add another listener for data event
    console.log(`Tell me my ${stuff}`);
})

console.log(emitter.listenerCount("data"))   // => 2
console.log(emitter.listenerCount("message"))// => 1
```

https://riptutorial.com/zh-CN/node-js/topic/1623/

47:

EventloopGUI。

Examples

。

Eventloop

```
while true:
    wait for something to happen
    react to whatever happened
```

HTTP

```
    while true:
    socket = wait for the next TCP connection
    read the HTTP request headers from (socket)
    file_contents = fetch the requested file from disk
    write the HTTP response headers to (socket)
    write the (file_contents) to (socket)
    close(socket)
```

HTTP。 。 HTTP。

。

HTTP

```
function handle_connection(socket):
    read the HTTP request headers from (socket)
    file_contents = fetch the requested file from disk
    write the HTTP response headers to (socket)
    write the (file_contents) to (socket)
    close(socket)
while true:
    socket = wait for the next TCP connection
    spawn a new thread doing handle_connection(socket)
```

HTTP。 。 Apache。

。 。 。

HTTP

```
while true:
    event = wait for the next event to happen
    if (event.type == NEW_TCP_CONNECTION):
        conn = new Connection
        conn.socket = event.socket
        start reading HTTP request headers from (conn.socket) with userdata = (conn)
    else if (event.type == FINISHED_READING_FROM_SOCKET):
        conn = event.userdata
        start fetching the requested file from disk with userdata = (conn)
    else if (event.type == FINISHED_READING_FROM_DISK):
        conn = event.userdata
        conn.file_contents = the data we fetched from disk
        conn.current_state = "writing headers"
        start writing the HTTP response headers to (conn.socket) with userdata = (conn)
    else if (event.type == FINISHED_WRITING_TO_SOCKET):
        conn = event.userdata
        if (conn.current_state == "writing headers"):
            conn.current_state = "writing file contents"
            start writing (conn.file_contents) to (conn.socket) with userdata = (conn)
        else if (conn.current_state == "writing file contents"):
            close(conn.socket)
```

。 。 。 。

Linuxpollepoll“”。recvsend“/”。

[1]。 “” []。 https //www.quora.com/How-does-an-event-loop-work

https://riptutorial.com/zh-CN/node-js/topic/8652/

48:

Examples

- SIGTERM

server.closeprocess.exit ◦

```
var http = require('http');

var server = http.createServer(function (req, res) {
  setTimeout(function () { //simulate a long request
    res.writeHead(200, {'Content-Type': 'text/plain'});
    res.end('Hello World\n');
  }, 4000);
}).listen(9090, function (err) {
  console.log('listening http://localhost:9090/');
  console.log('pid is ' + process.pid);
});

process.on('SIGTERM', function () {
  server.close(function () {
    process.exit(0);
  });
});
```

https://riptutorial.com/zh-CN/node-js/topic/5996/

49: Browserfiy“”

Examples

- file.js

file.js。

JavaScriptNodeJSURL。

```
const querystring = require('querystring');
var ref = querystring.parse("foo=bar&abc=xyz&abc=123");
```

URL。

```
const querystring = require('querystring');
```

.parseURL。 URLstr。

```
'foo=bar&abc=xyz&abc=123'
```

```
{  foo: 'bar',  abc: ['xyz', '123']   }
```

*require*Node.js。

Browserfy

Browserify*require*Node。 。

1. npm。

   npm install -g **browserify**

2. file.jsnpm

   npm install **querystring**

。

3. browserify file.jsbundle.js

   browserify file.js -o bundle.js

Browserifyfor *require*

4.

html

```
<script src="bundle.js"></script>
```

.js**file.jsbundle.js**。 。

---

file.js。 **bundle.js**

---

file.js 。 **bundle.jsbundle.jsfile.js**。

Browserfiy“” https://riptutorial.com/zh-CN/node-js/topic/7123/browserfiy--

50: Express.JSajax

Examples

AJAX

app.jsvar app = express.app()var app = express.app()

```
app.post(function(req, res, next){
    next();
});
```

index.js

```
router.get('/ajax', function(req, res){
    res.render('ajax', {title: 'An Ajax Example', quote: "AJAX is great!"});
});
router.post('/ajax', function(req, res){
    res.render('ajax', {title: 'An Ajax Example', quote: req.body.quote});
});
```

/viewsajax.jade / ajax.pugajax.ejs

Jade / PugJS

```
extends layout
script(src="http://code.jquery.com/jquery-3.1.0.min.js")
script(src="/magic.js")
h1 Quote: !{quote}
form(method="post" id="changeQuote")
    input(type='text', placeholder='Set quote of the day', name='quote')
    input(type="submit", value="Save")
```

EJS

```
<script src="http://code.jquery.com/jquery-3.1.0.min.js"></script>
<script src="/magic.js"></script>
<h1>Quote: <%=quote%> </h1>
<form method="post" id="changeQuote">
    <input type="text" placeholder="Set quote of the day" name="quote"/>
    <input type="submit" value="Save">
</form>
```

/publicmagic.js

```
$(document).ready(function(){
    $("form#changeQuote").on('submit', function(e){
        e.preventDefault();
        var data = $('input[name=quote]').val();
        $.ajax({
            type: 'post',
```

```
            url: '/ajax',
            data: data,
            dataType: 'text'
        })
        .done(function(data){
            $('h1').html(data.quote);
        });
    });
});
```

Express.JSajax https://riptutorial.com/zh-CN/node-js/topic/6738/express-jsajax

51: ExpressWeb

ExpressNode.js WebWeb。

Expressexpressjs.com 。 GitHub 。

- app.getpath [middleware]callback [callback ...]
- app.putpath [middleware]callback [callback ...]
- app.post[][...]
- app ['delete'][][...]
- app.usepath [middleware]callback [callback ...]
- app.use

path	URL。
middleware	。 callback。 。
callback	path。 callback(request, response, next) request responsenext。
request	HTTP。
response	。
next	。 。

Examples

shellnpm install express --savenpmExpress

app.jsExpressapp.getapp.get /ping

```
const express = require('express');

const app = express();

app.get('/ping', (request, response) => {
    response.send('pong');
});

app.listen(8080, 'localhost');
```

shell

```
> node app.js
```

localhost8080。 app.listenhostnameIPlocalhost。 0。

shell“pong”

```
> curl http://localhost:8080/ping
pong
```

WebURL http// localhost8080 / ping

```
const express = require('express');
const app = express();
```

```
app.get('/someUri', function (req, res, next) {})
```

HTTP。HTTP

```
// GET www.domain.com/myPath
app.get('/myPath', function (req, res, next) {})

// POST www.domain.com/myPath
app.post('/myPath', function (req, res, next) {})

// PUT www.domain.com/myPath
app.put('/myPath', function (req, res, next) {})

// DELETE www.domain.com/myPath
app.delete('/myPath', function (req, res, next) {})
```

。HTTP

```
app.all('/myPath', function (req, res, next) {})
```

```
app.use('/myPath', function (req, res, next) {})
```

```
app.use('*', function (req, res, next) {})

// * wildcard will route for all paths
```

```
app.route('/myPath')
  .get(function (req, res, next) {})
  .post(function (req, res, next) {})
  .put(function (req, res, next) {})
```

HTTP。reqresnext。

```
// GET www.domain.com/myPath
app.get('/myPath', myFunction, function (req, res, next) {})
```

```
// other.js
exports.doSomething = function(req, res, next) {/* do some stuff */};
```

```
const other = require('./other.js');
app.get('/someUri', myFunction, other.doSomething);
```

。

URLreq。 **/settings/:user_id/settings/32135?field=name**

```
// get the full path
req.originalUrl // => /settings/32135?field=name

// get the user_id param
req.params.user_id // => 32135

// get the query value of the field
req.query.field // => 'name'
```

```
req.get('Content-Type')
// "text/plain"
```

。 。

```
var app = require('express')();
var bodyParser = require('body-parser');

app.use(bodyParser.json()); // for parsing application/json
app.use(bodyParser.urlencoded({ extended: true })); // for parsing application/x-www-form-
urlencoded
```

```
PUT /settings/32135
{
  "name": "Peter"
}
```

```
req.body.name
// "Peter"
```

cookiecookie-parser

```
req.cookies.name
```

Web

```
// greet.js
const express = require('express');

module.exports = function(options = {}) { // Router factory
    const router = express.Router();

    router.get('/greet', (req, res, next) => {
        res.end(options.greeting);
    });
```

```
    return router;
};
```

```
// app.js
const express = require('express');
const greetMiddleware = require('./greet.js');

express()
    .use('/api/v1/', greetMiddleware({ greeting:'Hello world' }))
    .listen(8080);
```

。

http://<hostname>:8080/api/v1/greet Hello world

。

```
// greet.js
const express = require('express');

module.exports = function(options = {}) { // Router factory
    const router = express.Router();
    // Get controller
    const {service} = options;

    router.get('/greet', (req, res, next) => {
        res.end(
            service.createGreeting(req.query.name || 'Stranger')
        );
    });

    return router;
};
```

```
// app.js
const express = require('express');
const greetMiddleware = require('./greet.js');

class GreetingService {
    constructor(greeting = 'Hello') {
        this.greeting = greeting;
    }

    createGreeting(name) {
        return `${this.greeting}, ${name}!`;
    }
}

express()
    .use('/api/v1/service1', greetMiddleware({
        service: new GreetingService('Hello'),
    }))
    .use('/api/v1/service2', greetMiddleware({
        service: new GreetingService('Hi'),
    }))
```

```
    .listen(8080);
```

http://<hostname>:8080/api/v1/service1/greet?name=World Hello, World

http://<hostname>:8080/api/v1/service2/greet?name=WorldHi, World 。

Jade。 201512Jadepug 。

```
const express = require('express');  //Imports the express module
const app = express();  //Creates an instance of the express module

const PORT = 3000; //Randomly chosen port

app.set('view engine','jade'); //Sets jade as the View Engine / Template Engine
app.set('views','src/views'); //Sets the directory where all the views (.jade files) are
stored.

//Creates a Root Route
app.get('/',function(req, res){
    res.render('index');  //renders the index.jade file into html and returns as a response.
The render function optionally takes the data to pass to the view.
});

//Starts the Express server with a callback
app.listen(PORT, function(err) {
    if (!err) {
        console.log('Server is running at port', PORT);
    } else {
        console.log(JSON.stringify(err));
    }
});
```

Handlebars hbs ejs 。 npm install。 HandlebarshbsJadejadeEJSejs。

EJS

EJSHTML。
EJS“ <% ”“ %> ”<%=var_name%>

```
<h1><%= title %></h1>
   <ul>
<% for(var i=0; i<supplies.length; i++) { %>
    <li>
        <a href='supplies/<%= supplies[i] %>'>
            <%= supplies[i] %>
        </a>
    </li>
<% } %>
```

HTMLEJSforli forEJSfor

<%=

```
 Message:<br>
<input type="text" value="<%= message %>" name="message" required>
```

EJS。`res.render('index', {message: message});res.render('index', {message: message});` index.ejs ejs。

EJS`if while`javascript。

ExpressJSJSON API

```
var express = require('express');
var cors = require('cors'); // Use cors module for enable Cross-origin resource sharing

var app = express();
app.use(cors()); // for all routes

var port = process.env.PORT || 8080;

app.get('/', function(req, res) {
    var info = {
        'string_value': 'StackOverflow',
        'number_value': 8476
    }
    res.json(info);

    // or
    /* res.send(JSON.stringify({
        string_value: 'StackOverflow',
        number_value: 8476
    })) */

  //you can add a status code to the json response
   /* res.status(200).json(info) */
})

app.listen(port, function() {
    console.log('Node.js listening on port ' + port)
})
```

`http://localhost:8080/`

```
{
    string_value: "StackOverflow",
    number_value: 8476
}
```

ExpressWeb。

index.htmlscript.js。

“public”。

```
project root
├── server.js
```

```
├── package.json
└── public
    ├── index.html
    └── script.js
```

Express

```
const express = require('express');
const app = express();

app.use(express.static('public'));
```

index.htmlscript.js“public”URL`/public/`。 express。

```
app.use('/static', express.static('public'));
```

`/static/`。

```
app.use(express.static('public'));
app.use(express.static('images'));
app.use(express.static('files'));
```

Express。 。

Django

Express。 express-reverse

```
npm install express-reverse
```

```
var app = require('express')();
require('express-reverse')(app);
```

```
app.get('test', '/hello', function(req, res) {
  res.end('hello');
});
```

`route` Express。 `app`

```
require('./middlewares/routing')(app);
```

```
module.exports = (app) => {
    app.get('test', '/hello', function(req, res) {
      res.end('hello');
    });
};
```

。

Express`/views`“”。 “”views。

/ error.pug

```
html
  body
      h1= message
      h2= error.status
      p= error.stack
```

。 `(err, req, res, next)`(err, req, res, next)

app.js

```
// catch 404 and forward to error handler
app.use(function(req, res, next) {
    var err = new Error('Not Found');
    err.status = 404;

    //pass error to the next matching route.
    next(err);
});

// handle error, print stacktrace
app.use(function(err, req, res, next) {
    res.status(err.status || 500);

    res.render('error', {
        message: err.message,
        error: err
    });
});
```

。

Express`next`。 `next()`express。 `next(err)`。 `next('route')`。 。

`/api/foo/api/bar`。

```
app.get('/api', function(req, res, next) {
  // Both /api/foo and /api/bar will run this
  lookupMember(function(err, member) {
    if (err) return next(err);
    req.member = member;
    next();
  });
});

app.get('/api/foo', function(req, res, next) {
  // Only /api/foo will run this
  doSomethingWithMember(req.member);
});

app.get('/api/bar', function(req, res, next) {
  // Only /api/bar will run this
  doSomethingDifferentWithMember(req.member);
```

```
});
```

function(err, req, res, next)function(err, req, res, next) ◦ app.get('/foo', function(err, req, res, next) ◦

```
app.get('/foo', function(req, res, next) {
  doSomethingAsync(function(err, data) {
    if (err) return next(err);
    renderPage(data);
  });
});

// In the case that doSomethingAsync return an error, this special
// error handler middleware will be called with the error as the
// first parameter.
app.use(function(err, req, res, next) {
  renderErrorPage(err);
});
```

◦ ◦

```
app.get('/bananas', function(req, res, next) {
  getMember(function(err, member) {
    if (err) return next(err);
    // If there's no member, don't try to look
    // up data. Just go render the page now.
    if (!member) return next('route');
    // Otherwise, call the next middleware and fetch
    // the member's data.
    req.member = member;
    next();
  });
}, function(req, res, next) {
  getMemberData(req.member, function(err, data) {
    if (err) return next(err);
    // If this member has no data, don't bother
    // parsing it. Just go render the page now.
    if (!data) return next('route');
    // Otherwise, call the next middleware and parse
    // the member's data. THEN render the page.
    req.member.data = data;
    next();
  });
}, function(req, res, next) {
  req.member.parsedData = parseMemberData(req.member.data);
  next();
});

app.get('/bananas', function(req, res, next) {
  renderBananas(req.member);
});
```

◦

```
app.get('/path/:id(\\d+)', function (req, res, next) { // please note: "next" is passed
    if (req.params.id == 0) // validate param
        return next(new Error('Id is 0')); // go to first Error handler, see below
```

```
    // Catch error on sync operation
    var data;
    try {
        data = JSON.parse('/file.json');
    } catch (err) {
        return next(err);
    }

    // If some critical error then stop application
    if (!data)
        throw new Error('Smth wrong');

    // If you need send extra info to Error handler
    // then send custom error (see Appendix B)
    if (smth)
        next(new MyError('smth wrong', arg1, arg2))

    // Finish request by res.render or res.end
    res.status(200).end('OK');
});

// Be sure: order of app.use have matter
// Error handler
app.use(function(err, req, res, next)) {
    if (smth-check, e.g. req.url != 'POST')
        return next(err); // go-to Error handler 2.

    console.log(req.url, err.message);

    if (req.xhr) // if req via ajax then send json else render error-page
        res.json(err);
    else
        res.render('error.html', {error: err.message});
});

// Error handler 2
app.use(function(err, req, res, next)) {
    // do smth here e.g. check that error is MyError
    if (err instanceof MyError) {
        console.log(err.message, err.arg1, err.arg2);
    }
    ...
    res.end();
});
```

A.

```
// "In Express, 404 responses are not the result of an error,
// so the error-handler middleware will not capture them."
// You can change it.
app.use(function(req, res, next) {
    next(new Error(404));
});
```

B.

```
// How to define custom error
var util = require('util');
```

```
...
function MyError(message, arg1, arg2) {
    this.message = message;
    this.arg1 = arg1;
    this.arg2 = arg2;
    Error.captureStackTrace(this, MyError);
}
util.inherits(MyError, Error);
MyError.prototype.name = 'MyError';
```

Hookreqres

app.use()""closefinish""。

```
app.use(function (req, res, next) {
    function afterResponse() {
        res.removeListener('finish', afterResponse);
        res.removeListener('close', afterResponse);

        // actions after response
    }
    res.on('finish', afterResponse);
    res.on('close', afterResponse);

    // action before request
    // eventually calling `next()`
    next();
});
...
app.use(app.router);
```

。

app.router""。

POST

app.getExpressgetapp.post。

POSTbody-parser。 POST PUT DELETE。

Body-Parserreq.body

```
var bodyParser = require('body-parser');

const express = require('express');

const app = express();

// Parses the body for POST, PUT, DELETE, etc.
app.use(bodyParser.json());

app.use(bodyParser.urlencoded({ extended: true }));
```

```
app.post('/post-data-here', function(req, res, next){

    console.log(req.body); // req.body contains the parsed body of the request.

});

app.listen(8080, 'localhost');
```

cookiecookie

cookie-parsercookie

```
var express = require('express');
var cookieParser = require('cookie-parser'); // module for parsing cookies
var app = express();
app.use(cookieParser());

app.get('/setcookie', function(req, res){
    // setting cookies
    res.cookie('username', 'john doe', { maxAge: 900000, httpOnly: true });
    return res.send('Cookie has been set');
});

app.get('/getcookie', function(req, res) {
    var username = req.cookies['username'];
    if (username) {
        return res.send(username);
    }

    return res.send('No cookie found');
});

app.listen(3000);
```

Express

Express。

```
app.use(function(req, res, next){ });    // signature
```

user。

```
var express = require('express');
var app = express();

//each request will pass through it
app.use(function(req, res, next){
    req.user = 'testuser';
    next();    // it will pass the control to next matching route
});

app.get('/', function(req, res){
    var user = req.user;
    console.log(user); // testuser
    return res.send(user);
```

```
});

app.listen(3000);
```

Express

Express。。

```
var express = require('express');
var app = express();

//GET /names/john
app.get('/names/:name', function(req, res, next){
    if (req.params.name == 'john'){
        return res.send('Valid Name');
    } else{
        next(new Error('Not valid name'));    //pass to error handler
    }
});

//error handler
app.use(function(err, req, res, next){
    console.log(err.stack);    // e.g., Not valid name
    return res.status(500).send('Internal Server Occured');
});

app.listen(3000);
```

reqres - 。

resreq。

cors。 CORS

```
app.use(cors());
```

。

Expresshello world。

- '/'
- “/”

“404”。

```
'use strict';

const port = process.env.PORT || 3000;

var app = require('express')();
    app.listen(port);

app.get('/',(req,res)=>res.send('HelloWorld!'));
```

```
app.get('/wiki',(req,res)=>res.send('This is wiki page.'));
app.use((req,res)=>res.send('404-PageNotFound'));
```

404Express。

ExpressWeb https://riptutorial.com/zh-CN/node-js/topic/483/expressweb

52: IISNodeIISNode.js Web

/

ExpressView Engine`virtualDirPath`

```
`res.render('index', { virtualDirPath: virtualDirPath });`
```

。IISNode。

- v4.x
- IIS 7.x / 8.x.
- Socket.io v1.3.x

Examples

IISNodeNode.js Web.NETIIS 7/8。 Windows`node.exe`IIS。

IISNodenode.exe`node.exe` IIS 。

IISNode.jsIISNode。

1. Node.jsIIS3264。
2. IISNodex86x64 IIS。
3. IISMicrosoft URL-Rewrite Module for IIS 。
    - Node.js。
4. Node.js`Web.config` 。
5. `iisnode.yml`Web.config`<iisnode>`IISNode。

ExpressHello World

IISIIS 7/8Node.js Web App。/Node.js。 Node.js 64。

IISNode / Node.js Web。 `Web.config`IISNode Web App。

```
- /app_root
  - package.json
  - server.js
  - Web.config
```

server.js - Express Application

```
const express = require('express');
const server = express();

// We need to get the port that IISNode passes into us
// using the PORT environment variable, if it isn't set use a default value
const port = process.env.PORT || 3000;

// Setup a route at the index of our app
server.get('/', (req, res) => {
    return res.status(200).send('Hello World');
});

server.listen(port, () => {
    console.log(`Listening on ${port}`);
});
```

Web.config

`Web.config`IIS `Web.config`URL `<rewrite><rules>`IISNode `<handler>` ◦ `<system.webServer>`◦

`iisnode.yml`Web.config`<iisnode>``<system.webServer>`IISNode◦ `Web.config`iisnode.yml `iisnode.yml` ◦ ◦

IISNode

IIS`server.js`Node.js Web App◦ IISNode `<handler><handlers>`◦

```
<handlers>
  <add name="iisnode" path="server.js" verb="*" modules="iisnode"/>
</handlers>
```

URL

IISNode.jsIISNode◦ URL`http://<host>/server.jsserver.js404` ◦ IISNode WebURL◦

```
<rewrite>
    <rules>
        <!-- First we consider whether the incoming URL matches a physical file in the /public
folder -->
        <rule name="StaticContent" patternSyntax="Wildcard">
            <action type="Rewrite" url="public/{R:0}" logRewrittenUrl="true"/>
            <conditions>
                <add input="{REQUEST_FILENAME}" matchType="IsFile" negate="true"/>
            </conditions>
            <match url="*.*"/>
        </rule>

        <!-- All other URLs are mapped to the Node.js application entry point -->
```

```
        <rule name="DynamicContent">
            <conditions>
                <add input="{REQUEST_FILENAME}" matchType="IsFile" negate="True"/>
            </conditions>
            <action type="Rewrite" url="server.js"/>
        </rule>
    </rules>
</rewrite>
```

`Web.config` 64Node.js。

IISNode.js。

IIS

IISIISNode。

IISNodeIISNode。 appSetting`Web.config<appSettings>process.env`。

`<appSettings>`

```
<appSettings>
  <add key="virtualDirPath" value="/foo" />
</appSettings>
```

Node.js`virtualDirPath`

```
console.log(process.env.virtualDirPath); // prints /foo
```

`<appSettings>`。

```
// Access the virtualDirPath appSettings and give it a default value of '/'
// in the event that it doesn't exist or isn't set
var virtualDirPath = process.env.virtualDirPath || '/';

// We also want to make sure that our virtualDirPath
// always starts with a forward slash
if (!virtualDirPath.startsWith('/', 0))
  virtualDirPath = '/' + virtualDirPath;

// Setup a route at the index of our app
server.get(virtualDirPath, (req, res) => {
    return res.status(200).send('Hello World');
});
```

virtualDirPath

```
// Public Directory
server.use(express.static(path.join(virtualDirPath, 'public')));
// Bower
server.use('/bower_components', express.static(path.join(virtualDirPath,
'bower_components')));
```

```
const express = require('express');
const server = express();

const port = process.env.PORT || 3000;

// Access the virtualDirPath appSettings and give it a default value of '/'
// in the event that it doesn't exist or isn't set
var virtualDirPath = process.env.virtualDirPath || '/';

// We also want to make sure that our virtualDirPath
// always starts with a forward slash
if (!virtualDirPath.startsWith('/', 0))
  virtualDirPath = '/' + virtualDirPath;

// Public Directory
server.use(express.static(path.join(virtualDirPath, 'public')));
// Bower
server.use('/bower_components', express.static(path.join(virtualDirPath,
'bower_components')));

// Setup a route at the index of our app
server.get(virtualDirPath, (req, res) => {
    return res.status(200).send('Hello World');
});

server.listen(port, () => {
    console.log(`Listening on ${port}`);
});
```

Socket.ioIISNode

Socket.ioIISNode/`Web.config`。

Socket.io`/socket.io`IISNodeIISIISNode。 IISNode`<handler>`<handler>。

```
<handlers>
    <add name="iisnode-socketio" path="server.js" verb="*" modules="iisnode" />
</handlers>
```

`<handlers>`URL。 `/socket.io`Socket.io。

```
<rule name="SocketIO" patternSyntax="ECMAScript">
    <match url="socket.io.+"/>
    <action type="Rewrite" url="server.js"/>
</rule>
```

IIS 8`Web.config`webSockets。 IIS 7webSocket。

```
<webSocket enabled="false" />
```

IISNodeIISNode.js Web https://riptutorial.com/zh-CN/node-js/topic/6003/iisnodeiisnode-js-web

53: Node.jsAPI

Examples

Expressapi

`Node.js` apis`Express` Web。

`GET` api。

```
var express = require('express');
var app = express();

var users =[{
        id: 1,
        name: "John Doe",
        age : 23,
        email: "john@doe.com"
    }];

// GET /api/users
app.get('/api/users', function(req, res){
    return res.json(users);    //return response as JSON
});

app.listen('3000', function(){
    console.log('Server listening on port 3000');
});
```

POST apiExpress

`ExpressPOST` api。 `GET`post`req.bodybody-parser` 。

```
var express = require('express');
var app = express();
// for parsing the body in POST request
var bodyParser = require('body-parser');

var users =[{
    id: 1,
    name: "John Doe",
    age : 23,
    email: "john@doe.com"
}];

app.use(bodyParser.urlencoded({ extended: false }));
app.use(bodyParser.json());

// GET /api/users
app.get('/api/users', function(req, res){
    return res.json(users);
});
```

```
/* POST /api/users
    {
        "user": {
           "id": 3,
            "name": "Test User",
            "age" : 20,
            "email": "test@test.com"
        }
    }
*/
app.post('/api/users', function (req, res) {
    var user = req.body.user;
    users.push(user);

    return res.send('User has been added successfully');
});

app.listen('3000', function(){
    console.log('Server listening on port 3000');
});
```

Node.jsAPI https://riptutorial.com/zh-CN/node-js/topic/5991/node-jsapi

54: Streams

Examples

StreamsTextFile

I / O。

```
var http = require('http');
var fs = require('fs');

var server = http.createServer(function (req, res) {
    fs.readFile(__dirname + '/data.txt', function (err, data) {
        res.end(data);
    });
});
server.listen(8000);
```

data.txt。 data.txt。

。

reqresfs.createReadStreamfs.readFile

```
var http = require('http');
var fs = require('fs');

var server = http.createServer(function (req, res) {
    var stream = fs.createReadStream(__dirname + '/data.txt');
    stream.pipe(res);
});
server.listen(8000);
```

.pipefs.createReadStream'data''end'。 data.txt。

“”。 。

```
var fs = require('fs')

var readable = fs.createReadStream('file1.txt')
var writable = fs.createWriteStream('file2.txt')

readable.pipe(writable) // returns writable
```

。

```
var zlib = require('zlib')

fs.createReadStream('style.css')
  .pipe(zlib.createGzip()) // The returned object, zlib.Gzip, is a duplex stream.
  .pipe(fs.createWriteStream('style.css.gz')
```

。

```
var readable = fs.createReadStream('source.css')
readable.pipe(zlib.createGzip()).pipe(fs.createWriteStream('output.css.gz'))
readable.pipe(fs.createWriteStream('output.css')
```

“”。 。

error;

```
var readable = fs.createReadStream('file3.txt')
var writable = fs.createWriteStream('file4.txt')
readable.pipe(writable)
readable.on('error', console.error)
writable.on('error', console.error)
```

/

fs

StreamNodeJs

```
    var fs = require("fs");
    var stream = require("stream").Writable;

    /*
     *  Implementing the write function in writable stream class.
     *  This is the function which will be used when other stream is piped into this
     *  writable stream.
     */
    stream.prototype._write = function(chunk, data){
        console.log(data);
    }

    var customStream = new stream();

    fs.createReadStream("am1.js").pipe(customStream);
```

。 *_write*。 NodeJs 4.xxNodeJs 6.x **ES6**。 6.JNodeJ

```
    const Writable = require('stream').Writable;

    class MyWritable extends Writable {
      constructor(options) {
        super(options);
      }

      _write(chunk, encoding, callback) {
```

```
        console.log(chunk);
      }
    }
```

Streams

```
fs.readFile(`${__dirname}/utils.js`, (err, data) => {
  if (err) {
    handleError(err);
  } else {
    console.log(data.toString());
  }
})
```

streams

```
var fileStream = fs.createReadStream(`${__dirname}/file`);
var fileContent = '';
fileStream.on('data', data => {
  fileContent += data.toString();
})

fileStream.on('end', () => {
  console.log(fileContent);
})

fileStream.on('error', err => {
  handleError(err)
})
```

。

-
-

streams 10

streams10 。

streams streams - 。

---

streams

gzip。 url

-
-
-

[] [1]S3。 。

```
var startTime = Date.now()
s3.getObject({Bucket: 'some-bucket', Key: 'tweets.gz'}, (err, data) => {
```

```
  // here, the whole file was downloaded

  zlib.gunzip(data.Body, (err, data) => {
    // here, the whole file was unzipped

    fs.writeFile(`${__dirname}/tweets.json`, data, err => {
      if (err) console.error(err)

      // here, the whole file was written to disk
      var endTime = Date.now()
      console.log(`${endTime - startTime} milliseconds`) // 1339 milliseconds
    })
  })
})

// 1339 milliseconds
```

streams

```
s3.getObject({Bucket: 'some-bucket', Key: 'tweets.gz'}).createReadStream()
  .pipe(zlib.createGunzip())
  .pipe(fs.createWriteStream(`${__dirname}/tweets.json`));

// 1204 milliseconds
```

- 80KB ◦ 71MB gzip 382MBstreams

  - 71MB20925 71MB382MB - ◦
  - streams1343435

Streams https://riptutorial.com/zh-CN/node-js/topic/2974/streams

55:

- child_process.execcommand [options] [callback]
- child_process.execFilefile [args] [options] [callback]
- child_process.forkmodulePath [args] [options]
- child_process.spawncommand [args] [options]
- child_process.execFileSyncfile [args] [options]
- child_process.execSynccommand [options]
- child_process.spawnSynccommand [args] [options]

ChildProcess。 Node.js。

Examples

child_process.spawn() 。

。 ChildProcessstdoutstderr。 stream.Readable。

ls -lh /usr 。

```
const spawn = require('child_process').spawn;
const ls = spawn('ls', ['-lh', '/usr']);

ls.stdout.on('data', (data) => {
  console.log(`stdout: ${data}`);
});

ls.stderr.on('data', (data) => {
  console.log(`stderr: ${data}`);
});

ls.on('close', (code) => {
  console.log(`child process exited with code ${code}`);
});
```

```
zip -0vr "archive" ./image.png
```

```
spawn('zip', ['-0vr', '"archive"', './image.png']);
```

shell

shellshellchild_process.exec。 cat *.js file | wc -l

```
const exec = require('child_process').exec;
exec('cat *.js file | wc -l', (err, stdout, stderr) => {
  if (err) {
    console.error(`exec error: ${err}`);
    return;
  }
```

```
  console.log(`stdout: ${stdout}`);
  console.log(`stderr: ${stderr}`);
});
```

```
child_process.exec(command[, options][, callback]);
```

commandoptionscallback。 exec

```
{
  encoding: 'utf8',
  timeout: 0,
  maxBuffer: 200*1024,
  killSignal: 'SIGTERM',
  cwd: null,
  env: null
}
```

optionsshellUNIX/bin/shWindowscmd.exe uidgid。

(err, stdout, stderr)。 errnull Errorerr.code err.signal。

stdoutstderr。 options string Buffer。

execexecSync 。 stdoutChildProcess。 。

```
const execSync = require('child_process').execSync;
const stdout = execSync('cat *.js file | wc -l');
console.log(`stdout: ${stdout}`);
```

child_process.execFile 。 child_process.execshell。

```
const execFile = require('child_process').execFile;
const child = execFile('node', ['--version'], (err, stdout, stderr) => {
  if (err) {
    throw err;
  }

  console.log(stdout);
});
```

child_process.exec

```
child_process.execFile(file[, args][, options][, callback]);
```

child_process.exec。

```
const execFileSync = require('child_process').execFileSync;
const stdout = execFileSync('node', ['--version']);
console.log(stdout);
```

https://riptutorial.com/zh-CN/node-js/topic/2726/

56: Node.JSWebSocket

Examples

WebSocket

WebSocket。

```
npm install --save ws
```

package.json

```
"dependencies": {
  "ws": "*"
},
```

WebSocket

ws

```
var ws = require('ws');
```

WebSocketWebSocket

WebSocket

```
var WebSocket = require("ws");
var ws = new WebSocket("ws://host:8080/OptionalPathName");
// Continue on with your code...
```

```
var WebSocketServer = require("ws").Server;
var ws = new WebSocketServer({port: 8080, path: "OptionalPathName"});
```

WebSocket

```
var WebSocketServer = require('ws').Server
, wss = new WebSocketServer({ port: 8080 }); // If you want to add a path as well, use path:
"PathName"

wss.on('connection', function connection(ws) {
  ws.on('message', function incoming(message) {
    console.log('received: %s', message);
  });

  ws.send('something');
});
```

Node.JSWebSocket https://riptutorial.com/zh-CN/node-js/topic/6106/node-jswebsocket

57:

Examples

1.
2.
3.

DI。

。

。

https://riptutorial.com/zh-CN/node-js/topic/7681/

58: Node.js

Examples

CSRF

CSRF/Web。

cookie - 。

`csurf`csrf。

```
var express = require('express')
var cookieParser = require('cookie-parser')    //for cookie parsing
var csrf = require('csurf')    //csrf module
var bodyParser = require('body-parser')    //for body parsing

// setup route middlewares
var csrfProtection = csrf({ cookie: true })
var parseForm = bodyParser.urlencoded({ extended: false })

// create express app
var app = express()

// parse cookies
app.use(cookieParser())

app.get('/form', csrfProtection, function(req, res) {
  // generate and pass the csrfToken to the view
  res.render('send', { csrfToken: req.csrfToken() })
})

app.post('/process', parseForm, csrfProtection, function(req, res) {
  res.send('data is being processed')
})
```

`GET /form` csrf`csrfToken`。

csrfToken`_csrf`。

`handlebar`

```
<form action="/process" method="POST">
    <input type="hidden" name="_csrf" value="{{csrfToken}}">
    Name: <input type="text" name="name">
    <button type="submit">Submit</button>
</form>
```

`jade`

```
form(action="/process" method="post")
    input(type="hidden", name="_csrf", value=csrfToken)
```

```
    span Name:
    input(type="text", name="name", required=true)
    br

    input(type="submit")
```

ejs

```
<form action="/process" method="POST">
    <input type="hidden" name="_csrf" value="<%= csrfToken %>">
    Name: <input type="text" name="name">
    <button type="submit">Submit</button>
</form>
```

Node.jsSSL / TLS

Node.jsSSL / TLSSSL / TLS。 - SSL / TLS。

Node.jsSSL / TLS。

CAca。 Node.jsca。 1_ca.crt2_ca.crt。 ca。

```
const https = require('https');
const fs = require('fs');

const options = {
  key: fs.readFileSync('privatekey.pem'),
  cert: fs.readFileSync('certificate.pem'),
  ca: [fs.readFileSync('1_ca.crt'), fs.readFileSync('2_ca.crt')]
};

https.createServer(options, (req, res) => {
  res.writeHead(200);
  res.end('hello world\n');
}).listen(8000);
```

HTTPS

Node.jsHTTPS

```
const https = require('https');
const fs = require('fs');

const httpsOptions = {
    key: fs.readFileSync('path/to/server-key.pem'),
    cert: fs.readFileSync('path/to/server-crt.pem')
};

const app = function (req, res) {
  res.writeHead(200);
  res.end("hello world\n");
}

https.createServer(httpsOptions, app).listen(4433);
```

http

```
const http = require('http');
const https = require('https');
const fs = require('fs');

const httpsOptions = {
    key: fs.readFileSync('path/to/server-key.pem'),
    cert: fs.readFileSync('path/to/server-crt.pem')
};

const app = function (req, res) {
  res.writeHead(200);
  res.end("hello world\n");
}

http.createServer(app).listen(8888);
https.createServer(httpsOptions, app).listen(4433);
```

HTTPS

node.jsHTTPHTTPSWeb

1

1. `mkdir conf`

---

2. `cd conf`

---

3. `ca.cnf`

   ```
   wget https://raw.githubusercontent.com/anders94/https-authorized-clients/master/keys/ca.cnf
   ```

---

4. `openssl req -new -x509 -days 9999 -config ca.cnf -keyout ca-key.pem -out ca-cert.pem`

---

5. `ca-key.pemca-cert.pem`

   ```
   openssl genrsa -out key.pem 4096
   ```

---

6. `server.cnf`

   ```
   wget https://raw.githubusercontent.com/anders94/https-authorized-
   clients/master/keys/server.cnf
   ```

---

7. `openssl req -new -config server.cnf -key key.pem -out csr.pem`

---

8. `openssl x509 -req -extfile server.cnf -days 999 -passin "pass:password" -in csr.pem -CA ca-cert.pem -CAkey ca-key.pem -CAcreateserial -out cert.pem`

2

1. `sudo cp ca-crt.pem /usr/local/share/ca-certificates/ca-crt.pem`

---

2. CA

   ```
   sudo update-ca-certificates
   ```

Secure express.js 3

express.js3

```
var fs = require('fs');
var http = require('http');
var https = require('https');
var privateKey  = fs.readFileSync('sslcert/server.key', 'utf8');
var certificate = fs.readFileSync('sslcert/server.crt', 'utf8');

// Define your key and cert

var credentials = {key: privateKey, cert: certificate};
var express = require('express');
var app = express();

// your express configuration here

var httpServer = http.createServer(app);
var httpsServer = https.createServer(credentials, app);

// Using port 8080 for http and 8443 for https

httpServer.listen(8080);
httpsServer.listen(8443);
```

http / https

1024sudonginxhaproxy。

Node.js https://riptutorial.com/zh-CN/node-js/topic/3473/node-js

59:

Examples

PM2

PM2nodejs。PM2。

PM2nodejs

```
npm install pm2 -g
```

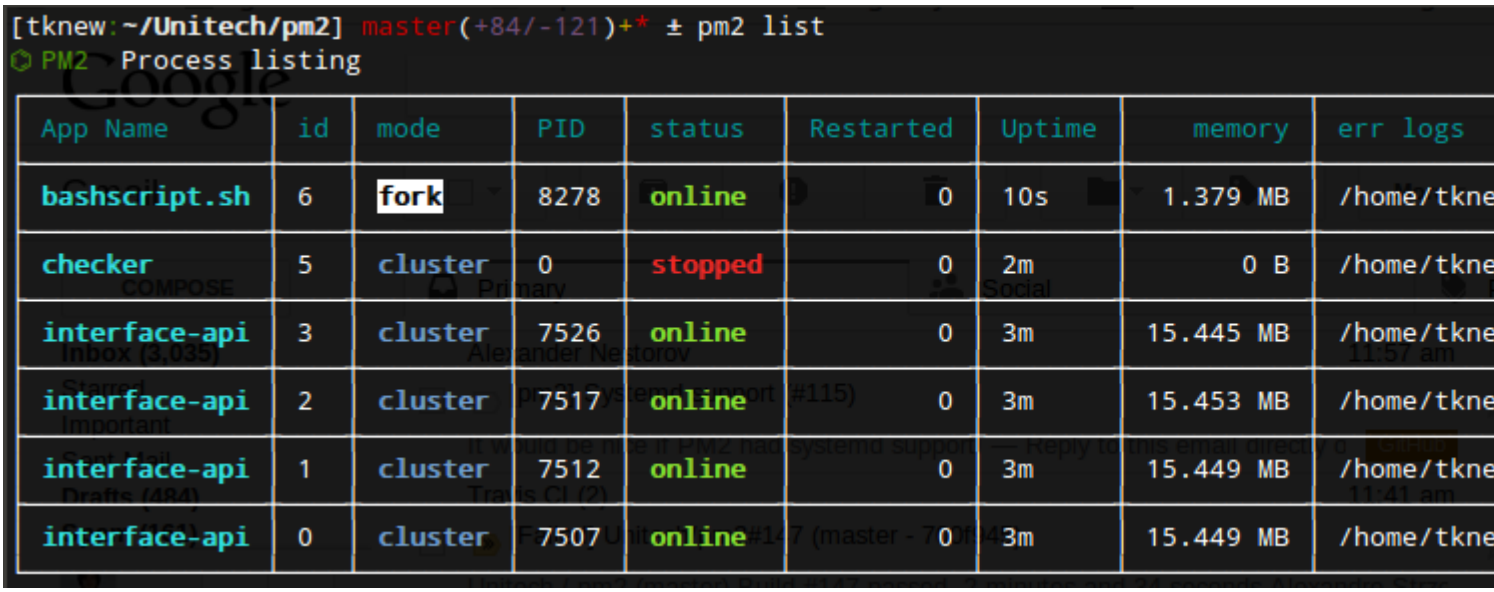
nodejspm2nodejs

```
pm2 start server.js --name "app1"
```

---

1. pm2nodejs

   ```
   pm2 list
   ```



2. nodejs

   ```
   pm2 stop <instance named>
   ```

3. nodejs

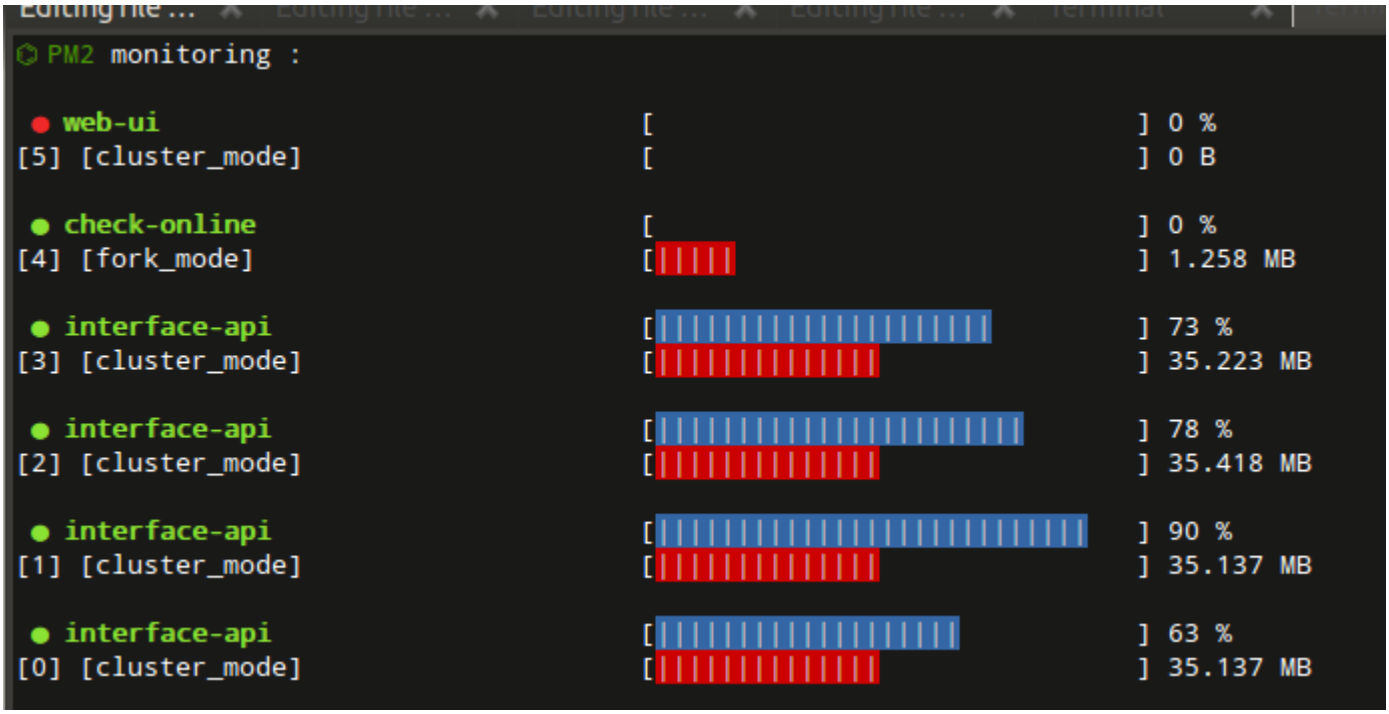
   ```
   pm2 delete <instance name>
   ```

4. nodejs

   ```
   pm2 restart <instance name>
   ```

5. nodejs

```
pm2 monit
```



6. pm2

```
pm2 kill
```

7. 0

```
pm2 reload <instance name>
```

8. `pm2 logs <instance_name>`

Forever

```
$ forever start index.js
warn:    --minUptime not set. Defaulting to: 1000ms
warn:    --spinSleepTime not set. Your script will exit if it does not stay up for at least
1000ms
info:    Forever processing file: index.js
```

Forever

```
$ forever list
info:    Forever processes running

|data: | index | uid | command          | script      |forever pid|id    | logfile
|uptime        |
|------|-------|-----|------------------|-------------|-----------|-----|---------------------
---|--------------|
|data: | [0]   |f4Kt |/usr/bin/nodejs   | src/index.js|2131       |
2146|/root/.forever/f4Kt.log | 0:0:0:11.485 |
```

```
$ forever stop 0
```

```
$ forever stop 2146

$ forever stop --uid f4Kt

$ forever stop --pidFile 2131
```

nohup

Linuxnohup。

nohup

1. cd`app.jswww`
2. `nohup nodejs app.js &`

1. `ps -ef|grep nodejs`
2. `kill -9 <the process number>`

```
npm install forever -g
cd /node/project/directory
```

```
forever start app.js
```

https://riptutorial.com/zh-CN/node-js/topic/2820/

60:

Node.jsrequire()。 。

。 。 。

Examples

require()“”“”。 Node.jshttp

```
const http = require('http');
```

npmexpress。 npm install expressnpm install express

```
const express = require('express');
```

。 lib.jslib.js

```
const mylib = require('./lib');
```

.js。 。

```
const http = require('http');

// The `http` module has the property `STATUS_CODES`
console.log(http.STATUS_CODES[404]); // outputs 'Not Found'

// Also contains `createServer()`
http.createServer(function(req, res) {
  res.writeHead(200, {'Content-Type': 'text/html'});
  res.write('<html><body>Module Test</body></html>');
  res.end();
}).listen(80);
```

hello-world.js

Nodemodule.exports。 。

world.js

```
module.exports = function(subject) {
    console.log('Hello ' + subject);
};
```

exports。

- hello-venus.jsmodule.exportsmodule.exports
- hello-jupiter.jsmodule.exportsmodule.exports

- hello-mars.js`exportsmodule.exports`

venus.js

```
function hello(subject) {
    console.log('Venus says Hello ' + subject);
}

module.exports = {
    hello: hello
};
```

jupiter.js

```
module.exports = {
    hello: function(subject) {
      console.log('Jupiter says hello ' + subject);
    },

    bye: function(subject) {
      console.log('Jupiter says goodbye ' + subject);
    }
};
```

mars.js

```
exports.hello = function(subject) {
    console.log('Mars says Hello ' + subject);
};
```

`hello`

index.js

```
// hello/index.js
module.exports = function(){
    console.log('Hej');
};
```

main.js

```
// hello/main.js
// We can include the other files we've defined by using the `require()` method
var hw = require('./hello-world.js'),
    hm = require('./hello-mars.js'),
    hv = require('./hello-venus.js'),
    hj = require('./hello-jupiter.js'),
    hu = require('./index.js');

// Because we assigned our function to the entire `module.exports` object, we
// can use it directly
hw('World!'); // outputs "Hello World!"

// In this case, we assigned our function to the `hello` property of exports, so we must
// use that here too
```

```
hm.hello('Solar System!'); // outputs "Mars says Hello Solar System!"

// The result of assigning module.exports at once is the same as in hello-world.js
hv.hello('Milky Way!'); // outputs "Venus says Hello Milky Way!"

hj.hello('Universe!'); //  outputs "Jupiter says hello Universe!"
hj.bye('Universe!'); // outputs "Jupiter says goodbye Universe!"

hu(); //output 'hej'
```

require()◦ ◦

delete◦

```
var a = require('./a');
```

```
var rpath = require.resolve('./a.js');
delete require.cache[rpath];
```

```
var a = require('./a');
```

delete◦ ◦

```
const auth = module.exports = {}
const config = require('../config')
const request = require('request')

auth.email = function (data, callback) {
  // Authenticate with an email address
}

auth.facebook = function (data, callback) {
  // Authenticate with a Facebook account
}

auth.twitter = function (data, callback) {
  // Authenticate with a Twitter account
}

auth.slack = function (data, callback) {
  // Authenticate with a Slack account
}

auth.stack_overflow = function (data, callback) {
  // Authenticate with a Stack Overflow account
}
```

```
const auth = require('./auth')

module.exports = function (req, res, next) {
  auth.facebook(req.body, function (err, user) {
    if (err) return next(err)

    req.user = user
    next()
```

```
  })
}
```

NodeJS。requireObject。Noderequire。。

myModule.js

```
console.log(123) ;
exports.var1 = 4 ;
```

index.js

```
var a=require('./myModule') ; // Output 123
var b=require('./myModule') ; // No output
console.log(a.var1) ; // Output 4
console.log(b.var1) ; // Output 4
a.var2 = 5 ;
console.log(b.var2) ; // Output 5
```

node_modules

require dnode_modules。

index.js requirefoo

```
index.js
 \- node_modules
  \- foo
   |- foo.js
   \- package.json
```

package.json。 package.jsonmain - require('your-module')require('your-module')。 mainindex.js。 require require('your-module/path/to/file')。

required node_modules。

```
my-project
\- node_modules
 |- foo   // the foo module
  \- ...
 \- baz   // the baz module
  \- node_modules
   \- bar   // the bar module
```

requirefoobarrequire('foo')

/ node_modules。 Node。

npmnpm。

.js。 *my_module*

function_one.js

```
module.exports = function() {
  return 1;
}
```

function_two.js

```
module.exports = function() {
  return 2;
}
```

index.js

```
exports.f_one = require('./function_one.js');
exports.f_two = require('./function_two.js');
```

```
var split_module = require('./my_module');
```

`./`requireNode*node_modules*。

`package.json`

```
{
    "name": "my_module",
    "main": "./your_main_entry_point.js"
}
```

“index”。

https://riptutorial.com/zh-CN/node-js/topic/547/

61: PromiseError-FirstNode.js

promises/async / await。bluebirdasCallbackQnodeify。

Examples

Bluebird

math.js

```
'use strict';

const Promise = require('bluebird');

module.exports = {

  // example of a callback-only method
  callbackSum: function(a, b, callback) {
    if (typeof a !== 'number')
      return callback(new Error('"a" must be a number'));
    if (typeof b !== 'number')
      return callback(new Error('"b" must be a number'));

    return callback(null, a + b);
  },

  // example of a promise-only method
  promiseSum: function(a, b) {
    return new Promise(function(resolve, reject) {
      if (typeof a !== 'number')
        return reject(new Error('"a" must be a number'));
      if (typeof b !== 'number')
        return reject(new Error('"b" must be a number'));
      resolve(a + b);
    });
  },

  // a method that can be used as a promise or with callbacks
  sum: function(a, b, callback) {
    return new Promise(function(resolve, reject) {
      if (typeof a !== 'number')
        return reject(new Error('"a" must be a number'));
      if (typeof b !== 'number')
        return reject(new Error('"b" must be a number'));
      resolve(a + b);
    }).asCallback(callback);
  },

};
```

index.js

```
'use strict';
```

```
const math = require('./math');


// classic callbacks

math.callbackSum(1, 3, function(err, result) {
  if (err)
    console.log('Test 1: ' + err);
  else
    console.log('Test 1: the answer is ' + result);
});

math.callbackSum(1, 'd', function(err, result) {
  if (err)
    console.log('Test 2: ' + err);
  else
    console.log('Test 2: the answer is ' + result);
});


// promises

math.promiseSum(2, 5)
.then(function(result) {
  console.log('Test 3: the answer is ' + result);
})
.catch(function(err) {
  console.log('Test 3: ' + err);
});

math.promiseSum(1)
.then(function(result) {
  console.log('Test 4: the answer is ' + result);
})
.catch(function(err) {
  console.log('Test 4: ' + err);
});


// promise/callback method used like a promise

math.sum(8, 2)
.then(function(result) {
  console.log('Test 5: the answer is ' + result);
})
.catch(function(err) {
  console.log('Test 5: ' + err);
});


// promise/callback method used with callbacks

math.sum(7, 11, function(err, result) {
  if (err)
    console.log('Test 6: ' + err);
  else
    console.log('Test 6: the answer is ' + result);
});


// promise/callback method used like a promise with async/await syntax
```

```
(async () => {

  try {
    let x = await math.sum(6, 3);
    console.log('Test 7a: ' + x);

    let y = await math.sum(4, 's');
    console.log('Test 7b: ' + y);

  } catch(err) {
    console.log(err.message);
  }

})();
```

PromiseError-FirstNode.js https://riptutorial.com/zh-CN/node-js/topic/9874/promiseerror-firstnode-js

62:

Examples

require

require.extensionsrequire()◦

XML

```
// Add .xml for require()
require.extensions['.xml'] = (module, filename) => {
    const fs = require('fs')
    const xml2js = require('xml2js')

    module.exports = (callback) => {
        // Read required file.
        fs.readFile(filename, 'utf8', (err, data) => {
            if (err) {
                callback(err)
                return
            }
            // Parse it.
            xml2js.parseString(data, (err, result) => {
                callback(null, result)
            })
        })
    }
}
```

hello.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<foo>
    <bar>baz</bar>
    <qux />
</foo>
```

require()

```
require('./hello')((err, xml) {
    if (err)
        throw err;
    console.log(err);
})
```

{ foo: { bar: ['baz'], qux: [''] } }◦

https://riptutorial.com/zh-CN/node-js/topic/6645/

63:

Examples

```
describe('Suite Name', function() {
  describe('#method()', function() {
    it('should run without an error', function() {
      expect([ 1, 2, 3 ].length).to.be.equal(3)
    })
  })
})
```

```
var expect = require("chai").expect;
describe('Suite Name', function() {
  describe('#method()', function() {
    it('should run without an error', function(done) {
      testSomething(err => {
        expect(err).to.not.be.equal(null)
        done()
      })
    })
  })
})
```

Promise

```
describe('Suite Name', function() {
  describe('#method()', function() {
    it('should run without an error', function() {
      return doSomething().then(result => {
         expect(result).to.be.equal('hello world')
      })
    })
  })
})
```

/

```
const { expect } = require('chai')

describe('Suite Name', function() {
  describe('#method()', function() {
    it('should run without an error', async function() {
      const result = await answerToTheUltimateQuestion()
      expect(result).to.be.equal(42)
    })
  })
})
```

https://riptutorial.com/zh-CN/node-js/topic/6731/

64:

Examples

CassandraDataStax`cassandra-driver`。 。

```
const cassandra = require("cassandra-driver");
const clientOptions = {
    contactPoints: ["host1", "host2"],
    keyspace: "test"
};

const client = new cassandra.Client(clientOptions);

const query = "SELECT hello FROM world WHERE name = ?";
client.execute(query, ["John"], (err, results) => {
    if (err) {
      return console.error(err);
    }

    console.log(results.rows);
});
```

https://riptutorial.com/zh-CN/node-js/topic/5949/

65: Node.js.

Examples

Mac OSXNode.js.

Mac2

```
lsbom -f -l -s -pf /var/db/receipts/org.nodejs.pkg.bom | while read f; do  sudo rm
/usr/local/${f}; done

sudo rm -rf /usr/local/lib/node /usr/local/lib/node_modules /var/db/receipts/org.nodejs.*
```

WindowsNode.js.

WindowsNode.js“”

1. “ `Add or Remove Programs` ”。
2. `Node.js`

Windows 10

3. Node.js.
4. “”。
5. 。

Windows 7-8.1

3. Node.js。

Node.js. https://riptutorial.com/zh-CN/node-js/topic/2821/node-js-

66: Web

Examples

GCMWebGoogle Cloud Messaging System

PWA Web**NodeJSES6**

1. Node-GCM `npm install node-gcm`
2. Socket.ionpm `npm install socket.io`
3. GoogleGCM。
4. GrabeGCMID
5. GrabeGCM。
6. ```
   'use strict';

   const express = require('express');
   const app = express();
   const gcm = require('node-gcm');
   app.io = require('socket.io')();

   // [*] Configuring our GCM Channel.
   const sender = new gcm.Sender('Project Secret');
   const regTokens = [];
   let message = new gcm.Message({
       data: {
           key1: 'msg1'
       }
   });

   // [*] Configuring our static files.
   app.use(express.static('public/'));

   // [*] Configuring Routes.
   app.get('/', (req, res) => {
       res.sendFile(__dirname + '/public/index.html');
   });

   // [*] Configuring our Socket Connection.
   app.io.on('connection', socket => {
       console.log('we have a new connection ...');
       socket.on('new_user', (reg_id) => {
           // [*] Adding our user notification registration token to our list typically
   hided in a secret place.
           if (regTokens.indexOf(reg_id) === -1) {
               regTokens.push(reg_id);

               // [*] Sending our push messages
               sender.send(message, {
                   registrationTokens: regTokens
   ```
   ```

```
            }, (err, response) => {
                if (err) console.error('err', err);
                else console.log(response);
            });
        }
    })
});

module.exports = app
```

PShackSocket.ioExpress。

.json Manifest.json

```
{
    "name": "Application Name",
    "gcm_sender_id": "GCM Project ID"
}
```

ROOT。

PSManifest.json。

1. index.htmlsocket.io。
2. **index.html**
3. socket.io **new_user**index.html **WebAPI**。
4. **node-gcmService Workers`**。

NodeJS。..etc。

PS。

Web https://riptutorial.com/zh-CN/node-js/topic/6333/web

67:

“ grunt”Gruntgrunt-cli。

“ ”Gruntfile。

“ ”Grunt。

Examples

GruntJs

GruntJavaScriptlinting。

GruntCLI。

```
npm install -g grunt-cli
```

Gruntpackage.jsonGruntfile。

package.jsonnpmnpm。 gruntGruntdevDependencies。

GruntfileGruntfile.jsGrunt。

```
Example package.json:

{
  "name": "my-project-name",
  "version": "0.1.0",
  "devDependencies": {
    "grunt": "~0.4.5",
    "grunt-contrib-jshint": "~0.10.0",
    "grunt-contrib-nodeunit": "~0.4.1",
    "grunt-contrib-uglify": "~0.5.0"
  }
}
```

gruntfile

```
module.exports = function(grunt) {

  // Project configuration.
  grunt.initConfig({
    pkg: grunt.file.readJSON('package.json'),
    uglify: {
      options: {
        banner: '/*! <%= pkg.name %> <%= grunt.template.today("yyyy-mm-dd") %> */\n'
      },
      build: {
        src: 'src/<%= pkg.name %>.js',
        dest: 'build/<%= pkg.name %>.min.js'
```

```
      }
    }
  });

  // Load the plugin that provides the "uglify" task.
  grunt.loadNpmTasks('grunt-contrib-uglify');

  // Default task(s).
  grunt.registerTask('default', ['uglify']);

};
```

gruntplugins

gruntplugin。 jshint。

```
npm install grunt-contrib-jshint --save-dev
```

`--save-devpackage.jsonnpm install`。

`loadNpmTasks`gruntfile。

```
grunt.loadNpmTasks('grunt-contrib-jshint');
```

gruntfile`jshintgrunt.initConfig`。

```
grunt.initConfig({
  jshint: {
    all: ['Gruntfile.js', 'lib/**/*.js', 'test/**/*.js']
  }
});
```

。

。

```
grunt jshint
```

`jshint`。

```
grunt.registerTask('default', ['jshint']);
```

grunt。

https://riptutorial.com/zh-CN/node-js/topic/6059/

68:

Examples

```
db.notification.email.find({subject: 'promisify callback'}, (error, result) => {
   if (error) {
       console.log(error);
   }

   // normal code here
});
```

bluebirdpromisifyAll。 bluebirdpromisepromiseAsync

```
let email = bluebird.promisifyAll(db.notification.email);

email.findAsync({subject: 'promisify callback'}).then(result => {

    // normal code here
})
.catch(console.error);
```

promisify

```
let find = bluebird.promisify(db.notification.email.find);

find({locationId: 168}).then(result => {

    // normal code here
});
.catch(console.error);
```

MassiveJS。 context。

```
let find = bluebird.promisify(db.notification.email.find, { context: db.notification.email });

find({locationId: 168}).then(result => {

    // normal code here
});
.catch(console.error);
```

。 promisify

fs.exists

```
var fs = require('fs');

var existsAsync = function(path) {
  return new Promise(function(resolve, reject) {
    fs.exists(path, function(exists) {
```

```
      // exists is a boolean
      if (exists) {
        // Resolve successfully
        resolve();
      } else {
        // Reject with error
        reject(new Error('path does not exist'));
      }
    });
});

// Use as a promise now
existsAsync('/path/to/some/file').then(function() {
  console.log('file exists!');
}).catch(function(err) {
  // file does not exist
  console.error(err);
});
```

setTimeoutpromisified

```
function wait(ms) {
    return new Promise(function (resolve, reject) {
        setTimeout(resolve, ms)
    })
}
```

https://riptutorial.com/zh-CN/node-js/topic/2346/

69: node.js

Examples

node.js

node.js

。 。

。

printer.js

```
"use strict";

exports.printHelloWorld = function (){
    console.log("Hello World!!!");
}
```

animals.js

```
"use strict";

module.exports = {
    lion: function() {
        console.log("ROAARR!!!");
    }

};
```

app.js

node app.js

```
"use strict";

//require('./path/to/module.js') node which module to load
var printer = require('./printer');
var animals = require('./animals');

printer.printHelloWorld(); //prints "Hello World!!!"
animals.lion(); //prints "ROAARR!!!"
```

ES6

Node.jsV8。Node.jsJavaScript ECMA-262。

ECMAScript 2015ES6

V8Node.js。V8 - 。 。 V8。

ES6import。

fun.js.....

```
export default function say(what){
  console.log(what);
}

export function sayLoud(whoot) {
  say(whoot.toUpperCase());
}
```

...app.js。

```
import say from './fun';
say('Hello Stack Overflow!!');  // Output: Hello Stack Overflow!!
```

say() export default …

```
import { sayLoud } from './fun';
sayLoud('JS modules are awesome.'); // Output: JS MODULES ARE AWESOME.
```

。 。 importsayLoudsayLoud 。

```
import * as i from './fun';
i.say('What?'); // Output: What?
i.sayLoud('Whoot!'); // Output: WHOOT!
```

。 * as iimporti fun。

./ 。

```
import express from 'express';
```

node_modules。

ES6

ES6。

```
export function printHelloWorld() {
  console.log("Hello World!!!");
}
```

node.js https://riptutorial.com/zh-CN/node-js/topic/1173/node-js

70: Node.js

Examples

NODE_ENV =“”

NODE_ENV*“production”* 。

NODE_ENV

```
if(process.env.NODE_ENV === 'production') {
    // We are running in production mode
} else {
   // We are running in development mode
}
```

NODE_ENV*'production'*npm install*package.json*devDependencies 。 --production

```
npm install --production
```

NODE_ENV

1NODE_ENV

Windows

```
set NODE_ENV=production
```

Linuxunix

```
export NODE_ENV=production
```

NODE_ENVbashNODE_ENV NODE_ENVproduction 。

2NODE_ENV

```
NODE_ENV=production node app.js
```

NODE_ENVNODE_ENV 。

3.env

。 。

.envbash。

bashenv-cmd.env。

```
env-cmd .env node app.js
```

4cross-env

。

npmpackage.json

```
"build:deploy": "cross-env NODE_ENV=production webpack"
```

NodeJS。。PM2。PM2。

PM2

PM2

```
npm install pm2 -g
```

```
pm2 start app.js -i 0 --name "api"
```
- *i*。0CPU

PM2。pm2PM2configpm2。。

```
PM2_HOME=/etc/.pm2 pm2 start app.js
```

PM2

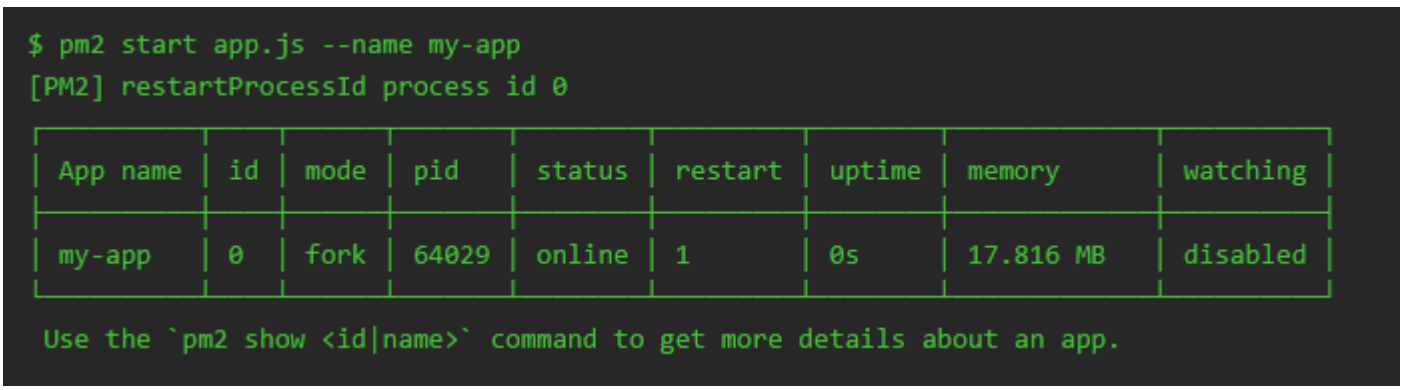
PM2Node.js。PM2。

pm2 。

```
npm install -g pm2
```

PM2.node.jsPM2.

```
pm2 start server.js --name "my-app"
```



PM2。

```
pm2 list
```

```
pm2 stop my-app
```

```
pm2 restart my-app
```

```
pm2 show my-app
```

PM2

```
pm2 delete my-app
```

nodejs。 。

pm2。

Forvever

forever。 foreverNode.js。

forever。

forever。

```
$ npm install -g forever
```

```
$ forever start server.js
```

id0。

```
$ forever restart 0
```

0id。

```
$ forever stop 0
```

restart 0id。 IDid。

https //www.npmjs.com/package/forever

/devqastaging。

。 NodeJs。

。

- dev.json

```
{
    "PORT": 3000,
    "DB": {
        "host": "localhost",
        "user": "bob",
        "password": "12345"
    }
}
```

- qa.json

```
{
    "PORT": 3001,
    "DB": {
        "host": "where_db_is_hosted",
        "user": "bob",
        "password": "54321"
    }
}
```

。

```
process.argv.forEach(function (val) {
    var arg = val.split("=");
    if (arg.length > 0) {
        if (arg[0] === 'env') {
            var env = require('./' + arg[1] + '.json');
            exports.prop = env;
        }
    }
});
```

```
node app.js env=dev
```

```
forever start app.js env=dev
```

Node.js。Node.js。

```
 var cluster = require('cluster');

    var numCPUs = require('os').cpus().length;

        if (cluster.isMaster) {
          // In real life, you'd probably use more than just 2 workers,
          // and perhaps not put the master and worker in the same file.
```

```
  //
  // You can also of course get a bit fancier about logging, and
  // implement whatever custom logic you need to prevent DoS
  // attacks and other bad behavior.
  //
  // See the options in the cluster documentation.
  //
  // The important thing is that the master does very little,
  // increasing our resilience to unexpected errors.
    console.log('your server is working on ' + numCPUs + ' cores');

     for (var i = 0; i < numCPUs; i++) {
            cluster.fork();
          }

  cluster.on('disconnect', function(worker) {
    console.error('disconnect!');
    //clearTimeout(timeout);
    cluster.fork();
  });


} else {
    require('./app.js');

}
```

Node.js https://riptutorial.com/zh-CN/node-js/topic/2975/node-js

71: RESTCRUD API

Examples

Express 3+CRUDREST API

```
var express = require("express"),
    bodyParser = require("body-parser"),
    server = express();

//body parser for parsing request body
server.use(bodyParser.json());
server.use(bodyParser.urlencoded({ extended: true }));

//temperary store for `item` in memory
var itemStore = [];

//GET all items
server.get('/item', function (req, res) {
    res.json(itemStore);
});

//GET the item with specified id
server.get('/item/:id', function (req, res) {
    res.json(itemStore[req.params.id]);
});

//POST new item
server.post('/item', function (req, res) {
    itemStore.push(req.body);
    res.json(req.body);
});

//PUT edited item in-place of item with specified id
server.put('/item/:id', function (req, res) {
    itemStore[req.params.id] = req.body
    res.json(req.body);
});

//DELETE item with specified id
server.delete('/item/:id', function (req, res) {
    itemStore.splice(req.params.id, 1)
    res.json(req.body);
});

//START SERVER
server.listen(3000, function () {
    console.log("Server running");
})
```

RESTCRUD API https://riptutorial.com/zh-CN/node-js/topic/5850/restcrud-api

72: Node.jsPOST

Node.js。

Node.js。API。

POST`request。requestdata。`

```
  request.on('data', chunk => {
    buffer += chunk;
  });
  request.on('end', () => {
    // POST request body is now available as `buffer`
  });
```

`data。`

1. `data`Buffer
2. `buffer。`

Examples

node.jsPOST

```
'use strict';

const http = require('http');

const PORT = 8080;
const server = http.createServer((request, response) => {
  let buffer = '';
  request.on('data', chunk => {
    buffer += chunk;
  });
  request.on('end', () => {
    const responseString = `Received string ${buffer}`;
    console.log(`Responding with: ${responseString}`);
    response.writeHead(200, "Content-Type: text/plain");
    response.end(responseString);
  });
}).listen(PORT, () => {
  console.log(`Listening on ${PORT}`);
});
```

Node.jsPOST https://riptutorial.com/zh-CN/node-js/topic/5676/node-jspost

73:

Node.js。Node。

Node.js。I / O。。

。

Examples

cluster。

。。RamEvent Loop。

/ API。。RedisCookie。

```
// runs in each instance
var cluster = require('cluster');
var numCPUs = require('os').cpus().length;

console.log('I am always called');

if (cluster.isMaster) {
    // runs only once (within the master);
    console.log('I am the master, launching workers!');
    for(var i = 0; i < numCPUs; i++) cluster.fork();

} else {
    // runs in each fork
    console.log('I am a fork!');

    // here one could start, as an example, a web server

}

console.log('I am always called as well');
```

。forks child_processforks。

。

../ parent.js

```
var child_process = require('child_process');
console.log('[Parent]', 'initalize');

var child1 = child_process.fork(__dirname + '/child');
child1.on('message', function(msg) {
    console.log('[Parent]', 'Answer from child: ', msg);
});

// one can send as many messages as one want
```

```
child1.send('Hello'); // Hello to you too :)
child1.send('Hello'); // Hello to you too :)

// one can also have multiple children
var child2 = child_process.fork(__dirname + '/child');
```

../child.js

```
// here would one initialize this child
// this will be executed only once
console.log('[Child]', 'initalize');

// here one listens for new tasks from the parent
process.on('message', function(messageFromParent) {

    //do some intense work here
    console.log('[Child]', 'Child doing some intense work');

    if(messageFromParent == 'Hello') process.send('Hello to you too :)');
    else process.send('what?');

})
```

“”“”“”。

。 。

https://riptutorial.com/zh-CN/node-js/topic/10592/

74:

Examples

NodeNPM`/usr/local/lib/node_modules` ◦ shellNPM`/usr/local/lib/node_modules/express`sax

```
$ npm install -g express
```

◦

◦ Npm`node_modules/home/user/apps/my_appnode_modules /home/user/apps/my_app/node_modules /home/user/apps/my_app/node_modules`

`node_module`Node`node_modules`◦ Node.`/node_modules/myModule.js`

```
var myModule = require('myModule.js');
```

Node..`/node_modules/myModule.js`◦ ◦

`.js.js`◦

```
var myModule = require('./myModuleDir');
```

Node◦ Node◦ `package.json`◦ `package.json`index.jsNode.`/myModuleDir/index.js` `./myModuleDir/index.js` ◦

◦

https://riptutorial.com/zh-CN/node-js/topic/7738/

75: Node.js.

Examples

UbuntuNode.js.

apt

```
sudo apt-get update
sudo apt-get install nodejs
sudo apt-get install npm
sudo ln -s /usr/bin/nodejs /usr/bin/node

# the node & npm versions in apt are outdated. This is how you can update them:
sudo npm install -g npm
sudo npm install -g n
sudo n stable # (or lts, or a specific version)
```

nodesourceLTS 6.x

```
curl -sL https://deb.nodesource.com/setup_6.x | sudo -E bash -
apt-get install -y nodejs
```

npmsudoEACCES

```
mkdir ~/.npm-global
echo "export PATH=~/.npm-global/bin:$PATH" >> ~/.profile
source ~/.profile
npm config set prefix '~/.npm-global'
```

WindowsNode.js.

Node.js。

`node.exe`Windows `.msi` `npm` Node.js。

Chocolatey 。

```
# choco install nodejs.install
```

choco 。

nvm

nvmbashNode.js。

nvm

```
$ curl -o- https://raw.githubusercontent.com/creationix/nvm/v0.31.3/install.sh | bash
```

Windowsnvm-windows。 GithHubnvm-windows。

nvm“nvm on”。 nvm。

nvm。

Node

```
$ nvm install node
```

/Node

```
$ nvm install 6
$ nvm install 4.2
```

```
$ nvm ls-remote
```

```
$ nvm use 5
```

Node

```
$ nvm alias default 4.2
```

```
$ nvm ls
```

.nvmrc。 。

```
$ echo "4.2" > .nvmrc
$ nvm use
Found '/path/to/project/.nvmrc' with version <4.2>
Now using node v4.2 (npm v3.7.3)
```

nvmNode`sudo`home。 `npm i -g http-server`。

APTSourceNode.js

```
sudo apt-get install build-essential
sudo apt-get install python

[optional]
sudo apt-get install git
```

```
cd ~
git clone https://github.com/nodejs/node.git
```

LTS Node.js6.10.2

```
cd ~
wget https://nodejs.org/dist/v6.3.0/node-v6.10.2.tar.gz
tar -xzvf node-v6.10.2.tar.gz
```

```
cd ~/node-v6.10.2
```

```
./configure
make
sudo make install
```

MacNode.js.

HomebrewNode.js.

brew

```
brew update
```

◦

```
brew doctor
```

Node.js

```
brew install node
```

Node.js

```
node -v
```

MacPorts

Macportsnode.js.

```
sudo port selfupdate
```

nodejsnpm

```
sudo port install nodejs npm
```

nodeCLInode。

```
node -v
```

MacOS X Installer

Node.js。Node.jsNodeLTS。NodeLTSMacintosh Installer。

NodeJS。.pkg。

.pkg ofcourse。Node.jsnpm“Installation Type“customizecustomize。。

---

terminal wikihow。node --version。Node

```
$ node --version
v7.2.1
```

v7.2.1Node.jscommand not found: node。

Raspberry PINode.js.

v6.x

```
curl -sL https://deb.nodesource.com/setup_6.x | sudo -E bash -
```

apt

```
sudo apt-get install -y nodejs
```

nvm Node.jssudo npm install ...。Fish Shell fish“*OS XLinuxshell*”bashshell。Oh My Fish omf Fish shell。

Fishshell。

nvm

```
curl -o- https://raw.githubusercontent.com/creationix/nvm/v0.31.4/install.sh | bash
```

```
curl -L https://github.com/oh-my-fish/oh-my-fish/raw/master/bin/install | fish
```

。。

Oh My Fishplugin-nvm

Oh My Fishplugin-nvmFish shellnvm

```
omf install nvm
```

Node.js.

`nvm` ◦ Node.js◦

- Node `nvm install node`
- 6.3.1 `nvm install 6.3.1`
- `nvm ls` `nvm ls`
- 4.3.1 `nvm use 4.3.1`

Node.js`sudo` ◦

CentosRHELFedoraNode.js.

-
- `clang`clang++ 3.4 ^`gcc`g++ 4.8 ^
- Python 2.62.7
- GNU Make 3.81 ^

Node.js v6.x LTS

```
git clone -b v6.x https://github.com/nodejs/node.git
```

Node.js v7.x

```
git clone -b v7.x https://github.com/nodejs/node.git
```

```
cd node
./configure
make -jX
su -c make install
```

X -

[]

```
cd
rm -rf node
```

nNode.js.

n◦

```
curl -L https://git.io/n-install | bash
```

n ◦

n latest

n stable

LTS

```
n lts
```

```
n <version>
```

```
n 4.4.7
```

。

n。 Enter。

Node.js. https://riptutorial.com/zh-CN/node-js/topic/1294/node-js-

76: -

Examples

/ w ExpressjQueryJade

```
//'client.jade'

//a button is placed down; similar in HTML
button(type='button', id='send_by_button') Modify data

    #modify Lorem ipsum Sender

    //loading jQuery; it can be done from an online source as well
    script(src='./js/jquery-2.2.0.min.js')

    //AJAX request using jQuery
    script
        $(function () {
            $('#send_by_button').click(function (e) {
                e.preventDefault();

                //test: the text within brackets should appear when clicking on said button
                //window.alert('You clicked on me.  - jQuery');

                //a variable and a JSON initialized in the code
                var predeclared = "Katamori";
                var data = {
                    Title: "Name_SenderTest",
                    Nick: predeclared,
                    FirstName: "Zoltan",
                    Surname: "Schmidt"
                };

                //an AJAX request with given parameters
                $.ajax({
                    type: 'POST',
                    data: JSON.stringify(data),
                    contentType: 'application/json',
                    url: 'http://localhost:7776/domaintest',

                    //on success, received data is used as 'data' function input
                    success: function (data) {
                        window.alert('Request sent; data received.');

                        var jsonstr = JSON.stringify(data);
                        var jsonobj = JSON.parse(jsonstr);

                        //if the 'nick' member of the JSON does not equal to the predeclared
string (as it was initialized), then the backend script was executed, meaning that
communication has been established
                        if(data.Nick != predeclared){
                            document.getElementById("modify").innerHTML = "JSON changed!\n" +
jsonstr;
                        };

                    }
```

```
                });
            });
            });

//'domaintest_route.js'

var express = require('express');
var router = express.Router();

//an Express router listening to GET requests - in this case, it's empty, meaning that nothing
is displayed when you reach 'localhost/domaintest'
router.get('/', function(req, res, next) {
});

//same for POST requests - notice, how the AJAX request above was defined as POST
router.post('/', function(req, res) {
    res.setHeader('Content-Type', 'application/json');

    //content generated here
    var some_json = {
        Title: "Test",
        Item: "Crate"
    };

    var result = JSON.stringify(some_json);

    //content got 'client.jade'
    var sent_data = req.body;
    sent_data.Nick = "ttony33";

    res.send(sent_data);

});


module.exports = router;
```

// https //gist.github.com/Katamori/5c9850f02e4baf6e9896

- https://riptutorial.com/zh-CN/node-js/topic/6222/---

77: node.js

WebNode。 init。

Examples

Node.jssystemd

systemdLinux init。 Nodesystemd`service`。

。 Debian`/etc/systemd/system/node.service`

```
[Unit]
Description=My super nodejs app

[Service]
# set the working directory to have consistent relative paths
WorkingDirectory=/var/www/app

# start the server file (file is relative to WorkingDirectory here)
ExecStart=/usr/bin/node serverCluster.js

# if process crashes, always try to restart
Restart=always

# let 500ms between the crash and the restart
RestartSec=500ms

# send log tot syslog here (it doesn't compete with other log config in the app itself)
StandardOutput=syslog
StandardError=syslog

# nodejs process name in syslog
SyslogIdentifier=nodejs

# user and group starting the app
User=www-data
Group=www-data

# set the environement (dev, prod…)
Environment=NODE_ENV=production


[Install]
# start node at multi user system level (= sysVinit runlevel 3)
WantedBy=multi-user.target
```

```
service node start
service node stop
service node restart
```

systemd `systemctl enable node` 。

。

node.js https://riptutorial.com/zh-CN/node-js/topic/9258/node-js

78:

Examples

fs

VOD。。

```
var movie = path.resolve('./public/' + req.params.filename);

        fs.stat(movie, function (err, stats) {

            var range = req.headers.range;

            if (!range) {

                return res.sendStatus(416);

            }

            //Chunk logic here
            var positions = range.replace(/bytes=/, "").split("-");
            var start = parseInt(positions[0], 10);
            var total = stats.size;
            var end = positions[1] ? parseInt(positions[1], 10) : total - 1;
            var chunksize = (end - start) + 1;

            res.writeHead(206, {

                'Transfer-Encoding': 'chunked',

                "Content-Range": "bytes " + start + "-" + end + "/" + total,

                "Accept-Ranges": "bytes",

                "Content-Length": chunksize,

                "Content-Type": mime.lookup(req.params.filename)

            });

            var stream = fs.createReadStream(movie, { start: start, end: end, autoClose: true
})

                .on('end', function () {

                    console.log('Stream Done');

                })

                .on("error", function (err) {

                    res.end(err);

                })
```

```
                .pipe(res, { end: true });

        });
```

。 。 。

.pipenode.js。

fluent-ffmpeg

flent-ffmpeg.mp4.flv

res.contentType 'FLV';

```
    var pathToMovie = './public/' + req.params.filename;

    var proc = ffmpeg(pathToMovie)

        .preset('flashvideo')

        .on('end', function () {

            console.log('Stream Done');

        })

        .on('error', function (err) {

            console.log('an error happened: ' + err.message);

            res.send(err.message);

        })

        .pipe(res, { end: true });
```

https://riptutorial.com/zh-CN/node-js/topic/6994/

79: angular.jsNode.jsexpress.js

AngularJS。

Examples

。

```
mkdir our_project
cd our_project
```

。

```
npm install -g express express-generator
```

LinuxMac**sudo**nodejs**root**。

```
express
```

```
bin/
public/
routes/
views/
app.js
package.json
```

npmhttp// localhost3000AngularJS 。

ExpressNodejs Express。 **Express** http// localhost3000 / home。

```
FILE: routes/index.js
var express = require('express');
var router = express.Router();

/* GET home page. */
router.get('/', function(req, res, next) {
  res.render('index', { title: 'Express' });
});

module.exports = router;
```

http// localhost3000titleExpress**JSON** 。 viewsindex.jade

```
extends layout
block content
    h1= title
    p Welcome to #{title}
```

Express 。 **.jade** **JadePug**。

PugExpress。

Pug

```
npm install --save pug
```

Pug**package.json** 。 **app.js**

```
var app = express();
// view engine setup
app.set('views', path.join(__dirname, 'views'));
app.set('view engine', 'pug');
```

。 **npm start**。

AngularJS

AngularJSJavascript **MVW** Model-View-Whatever**SPA** Simple Page ApplicationAngularJS**v1.6.4**
。

AngularJS**public / javascripts**cssjavacript。 **app.js**。 **ng-app.js**javascriptsAngularJS。 AngularJS **views / layout.pug**

```
doctype html
html(ng-app='first-app')
  head
    title= title
    link(rel='stylesheet', href='/stylesheets/style.css')
  body(ng-controller='indexController')
    block content

  script(type='text-javascript', src='javascripts/angular.min.js')
  script(type='text-javascript', src='javascripts/ng-app.js')
```

AngularJS**ng-app.js**AngularJS**ng-app**AngularJS。
ng-app.js

```
angular.module('first-app', [])
       .controller('indexController', ['$scope', indexController]);

function indexController($scope) {
    $scope.name = 'sigfried';
}
```

AngularJS GoogleStackOverflow。

AngularJSindex.pug

```
extends layout
block content
  div(ng-controller='indexController')
    h1= title
    p Welcome {{name}}
    input(type='text' ng-model='name')
```

AngularJS

```
$scope.name = 'sigfried';
```

{{name}} AngularJS。

npm starthttp// localhost3000AngularJS。

angular.jsNode.jsexpress.js https://riptutorial.com/zh-CN/node-js/topic/9757/angular-jsnode-js-express-js-

80: Node.jsECMAScript 2015ES6

Examples

const / let

`var` `const` / `let`。

```
{
  var x = 1 // will escape the scope
  let y = 2 // bound to lexical scope
  const z = 3 // bound to lexical scope, constant
}

console.log(x) // 1
console.log(y) // ReferenceError: y is not defined
console.log(z) // ReferenceError: z is not defined
```

RunKit

“this”。

```
performSomething(result => {
  this.someVariable = result
})
```

VS

```
performSomething(function(result) {
  this.someVariable = result
}.bind(this))
```

3,57

```
let nums = [3, 5, 7]
let squares = nums.map(function (n) {
  return n * n
})
console.log(squares)
```

RunKit

`.map` `function` arrow `=>`

```
let nums = [3, 5, 7]
let squares = nums.map((n) => {
  return n * n
})
console.log(squares)
```

RunKit

◦ return◦

```
let nums = [3, 5, 7]
let squares = nums.map(n => n * n)
console.log(squares)
```

RunKit

```
    let [x,y, ...nums] = [0, 1, 2, 3, 4, 5, 6];
console.log(x, y, nums);

let {a, b, ...props} = {a:1, b:2, c:3, d:{e:4}}
console.log(a, b, props);

let dog = {name: 'fido', age: 3};
let {name:n, age} = dog;
console.log(n, age);
```

```
/* @flow */

function product(a: number, b: number){
  return a * b;
}

const b = 3;
let c = [1,2,3,,{}];
let d = 3;

import request from 'request';

request('http://dev.markitondemand.com/MODApis/Api/v2/Quote/json?symbol=AAPL', (err, res,
payload)=>{
  payload = JSON.parse(payload);
  let {LastPrice} = payload;
  console.log(LastPrice);
});
```

ES6

```
class Mammel {
  constructor(legs){
    this.legs = legs;
  }
  eat(){
    console.log('eating...');
  }
  static count(){
    console.log('static count...');
  }
}

class Dog extends Mammel{
  constructor(name, legs){
    super(legs);
```

```
    this.name = name;
  }
  sleep(){
    super.eat();
    console.log('sleeping');
  }
}

let d = new Dog('fido', 4);
d.sleep();
d.eat();
console.log('d', d);
```

Node.jsECMAScript 2015ES6 https://riptutorial.com/zh-CN/node-js/topic/6732/node-jsecmascript-2015-es6-

81:

nodejs。 nodejsv8。

chrome devtoolschrome inspector。

bebugdevtools。 devtools。

node-inspector。

Examples

1 npmnode-inspector

```
$ npm install -g node-inspector
```

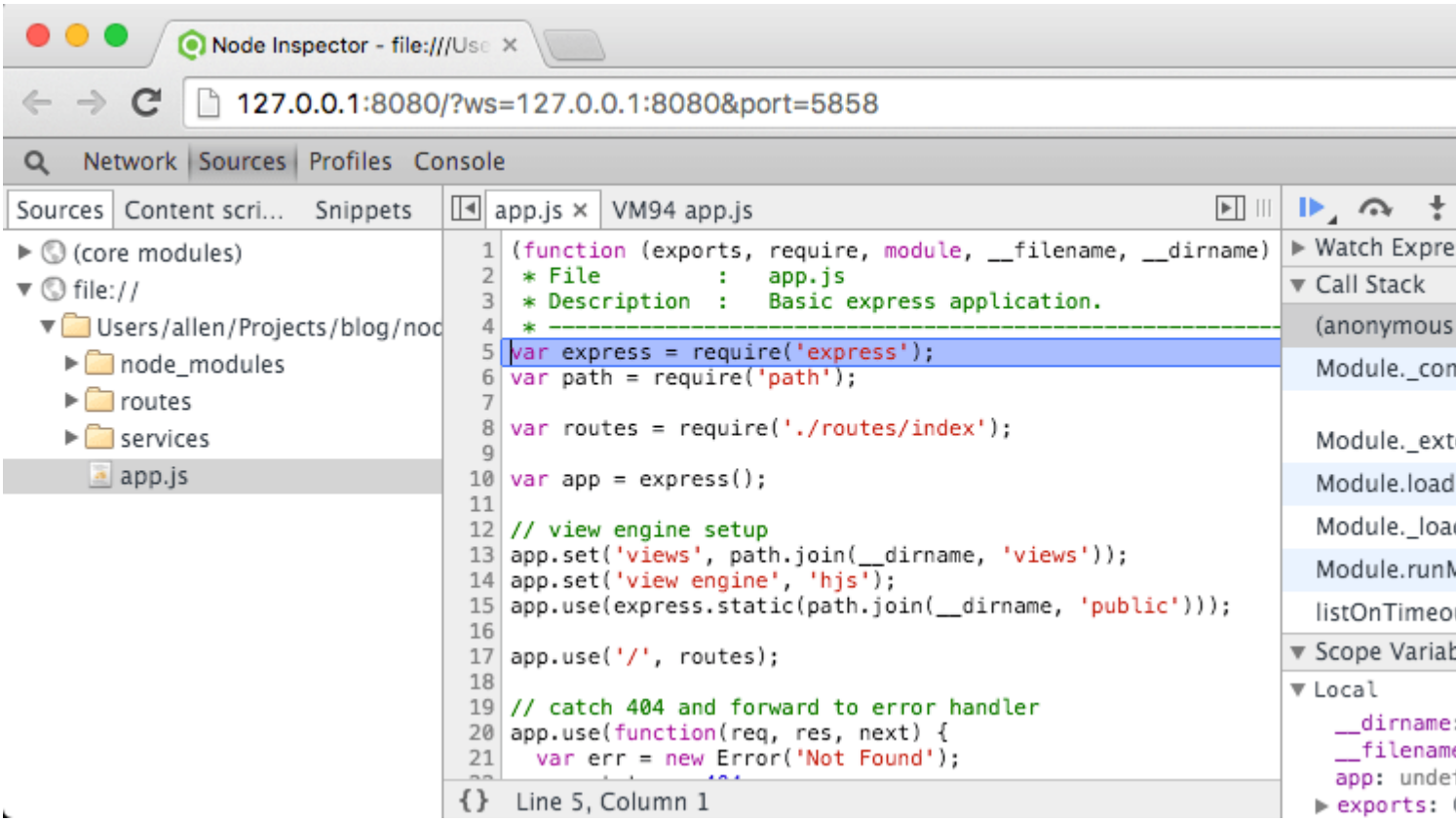
2 node-inspector

```
$ node-inspector
```

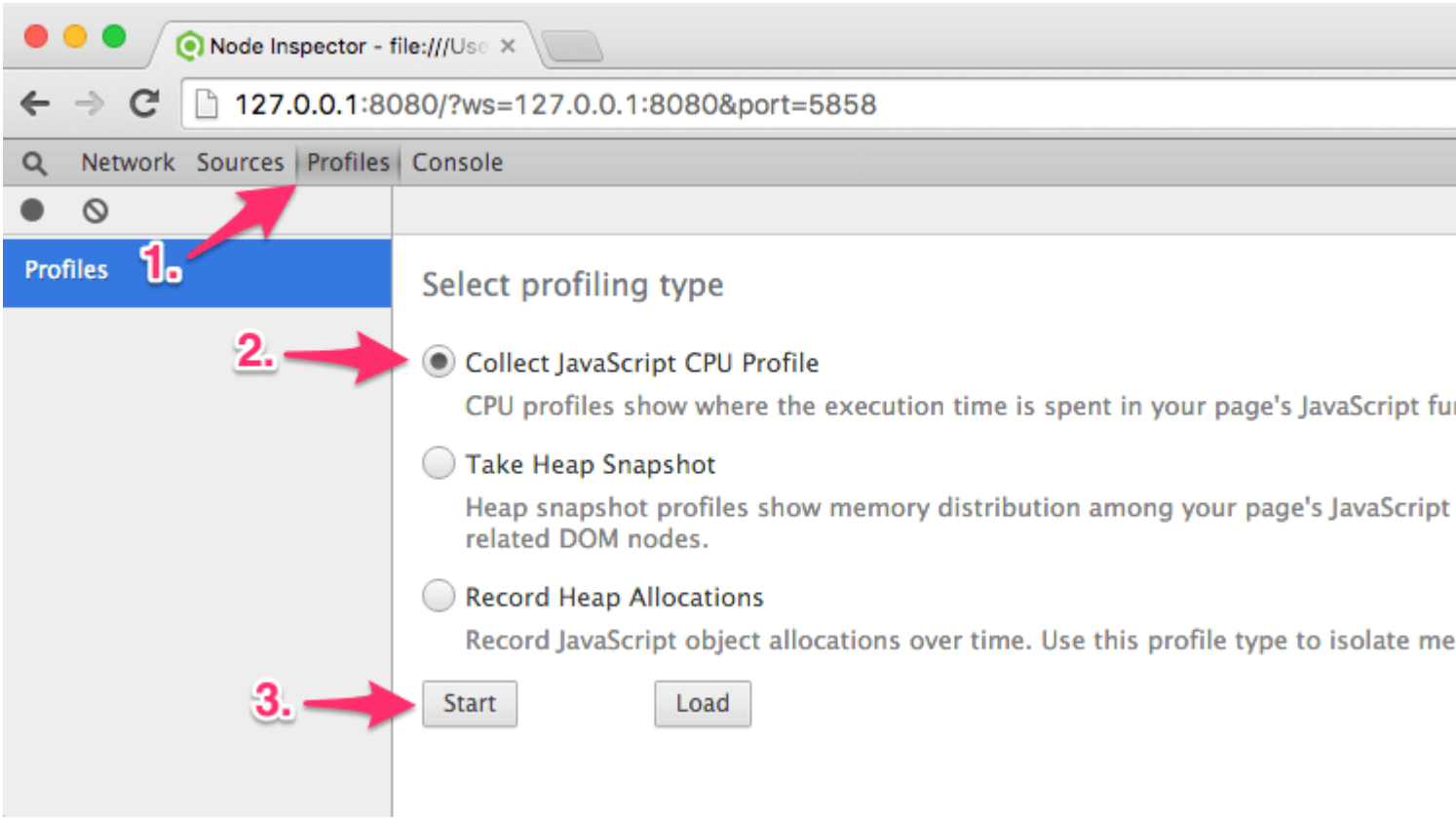
3

```
$ node --debug-brk your/short/node/script.js
```

4 Chromehttp://127.0.0.1:8080/?port=5858 。 nodejschrom-dev。 debug break。


Node Inspector - file:///Use
127.0.0.1:8080/?ws=127.0.0.1:8080&port=5858
Network
Sources
Profiles
Console
Sources
Content scri...
Snippets
app.js
VM94 app.js
(core modules)
file://
Users/allen/Projects/blog/noc
node_modules
routes
services
app.js
(function (exports, require, module, __filename, __dirname)
* File : app.js
* Description : Basic express application.
var express = require('express');
var path = require('path');
var routes = require('./routes/index');
var app = express();
// view engine setup
app.set('views', path.join(__dirname, 'views'));
app.set('view engine', 'hjs');
app.use(express.static(path.join(__dirname, 'public')));
app.use('/', routes);
// catch 404 and forward to error handler
app.use(function(req, res, next) {
var err = new Error('Not Found');
Line 5, Column 1
Watch Expre
Call Stack
(anonymous
Module._con
Module._ext
Module.load
Module._loa
Module.runM
listOnTimeo
Scope Variab
Local
__dirname
__filename
app: undef
exports:

5 。 。


Node Inspector - file:///Use
127.0.0.1:8080/?ws=127.0.0.1:8080&port=5858
Network
Sources
Profiles
Console
Profiles
1.
2.
3.
Select profiling type
Collect JavaScript CPU Profile
CPU profiles show where the execution time is spent in your page's JavaScript fu
Take Heap Snapshot
Heap snapshot profiles show memory distribution among your page's JavaScript
related DOM nodes.
Record Heap Allocations
Record JavaScript object allocations over time. Use this profile type to isolate me
Start
Load

6 CPU/。

- CPU

- Chrome CPU

https://riptutorial.com/zh-CN/node-js/topic/9347/

82:

Examples

Node.Js

Node.js3/

1. -
2. `callback`
3. eventEmitter `emit`

try-catch。...try / catch。。
try-catchtry-catch。*promises*。

```
// ** Example - 1  **
function doSomeSynchronousOperation(req, res) {
    if(req.body.username === ''){
        throw new Error('User Name cannot be empty');
    }
    return true;
}

// calling the method above
try {
    // synchronous code
    doSomeSynchronousOperation(req, res)
catch(e) {
    //exception handled here
    console.log(e.message);
}

// ** Example - 2 **
function doSomeAsynchronousOperation(req, res, cb) {
    // imitating async operation
    return setTimeout(function(){
        cb(null, []);
    },1000);
}

try {
    // asynchronous code
    doSomeAsynchronousOperation(req, res, function(err, rs){
        throw new Error("async operation exception");
    })
} catch(e) {
     // Exception will not get handled here
     console.log(e.message);
}
// The exception is unhandled and hence will cause application to break
```

Node.js。。

。

```
function doSomeAsynchronousOperation(req, res, callback) {
   setTimeout(function(){
        return callback(new Error('User Name cannot be empty'));
   }, 1000);
   return true;
}

doSomeAsynchronousOperation(req, res, function(err, result) {
   if (err) {
       //exception handled here
       console.log(err.message);
   }

   //do some stuff with valid data
});
```

EventEmitter。

```
const EventEmitter = require('events');

function doSomeAsynchronousOperation(req, res) {
    let myEvent = new EventEmitter();

    // runs asynchronously
    setTimeout(function(){
        myEvent.emit('error', new Error('User Name cannot be empty'));
    }, 1000);

    return myEvent;
}

// Invoke the function
let event = doSomeAsynchronousOperation(req, res);

event.on('error', function(err) {
    console.log(err);
});

event.on('done', function(result) {
    console.log(result); // true
});
```

Node.js。

node.js。

-

```
process.on('uncaughtException', function (err) {
  console.log(err);
});
```

- 。
- db。

“uncaughtException” 。 。

- CLI

```
npm install forever -g
```

-

```
forever start app.js
```

。

-

```
process.on('uncaughtException', function (err) {
    console.log(err);

    // some logging mechanisam
    // ....

    process.exit(1); // terminates process
});
```

。

。

Promise。

```
const p = new Promise(function (resolve, reject) {
    reject(new Error('Oops'));
});

// anything that is `reject`ed inside a promise will be available through catch
// while a promise is rejected, `.then` will not be called
p
    .then(() => {
        console.log("won't be called");
    })
    .catch(e => {
        console.log(e.message); // output: Oops
    })
    // once the error is caught, execution flow resumes
    .then(() => {
        console.log('hello!'); // output: hello!
    });
```

。 eslintlinting`catch`。

8。

https://riptutorial.com/zh-CN/node-js/topic/2819/

83: /

Async / await promise-chaining `.then().then().then()`。

`await`promise`async`promiseasync。

node.js 8Async / await`--harmony-async-await`7。

Examples

Try-Catch

async / awaittry-catch。

```
const myFunc = async (req, res) => {
  try {
    const result = await somePromise();
  } catch (err) {
    // handle errors here
  }
});
```

Expresspromise-mysql

```
router.get('/flags/:id', async (req, res) => {

  try {

    const connection = await pool.createConnection();

    try {
      const sql = `SELECT f.id, f.width, f.height, f.code, f.filename
                   FROM flags f
                   WHERE f.id = ?
                   LIMIT 1`;
      const flags = await connection.query(sql, req.params.id);
      if (flags.length === 0)
        return res.status(404).send({ message: 'flag not found' });

      return res.send({ flags[0] });

    } finally {
      pool.releaseConnection(connection);
    }

  } catch (err) {
    // handle errors here
  }
});
```

PromisesAsync / Await

```
function myAsyncFunction() {
    return aFunctionThatReturnsAPromise()
           // doSomething is a sync function
           .then(result => doSomething(result))
           .catch(handleError);
}
```

Async / Await

```
async function myAsyncFunction() {
  let result;

  try {
      result = await aFunctionThatReturnsAPromise();
  } catch (error) {
      handleError(error);
  }

  // doSomething is a sync function
  return doSomething(result);
}
```

`async`write `return new Promise((resolve, reject) => {...}` ◦

`awaitthen`◦

GIF

GIF

```
const getTemperature = (callback) => {
  http.get('www.temperature.com/current', (res) => {
    callback(res.data.temperature)
  })
}

const getAirPollution = (callback) => {
  http.get('www.pollution.com/current', (res) => {
    callback(res.data.pollution)
  });
}

getTemperature(function(temp) {
  getAirPollution(function(pollution) {
    console.log(`the temp is ${temp} and the pollution is ${pollution}.`)
    // The temp is 27 and the pollution is 0.5.
  })
})
```

promises◦

```
const getTemperature = () => {
  return new Promise((resolve, reject) => {
    http.get('www.temperature.com/current', (res) => {
      resolve(res.data.temperature)
    })
```

```
  })
}

const getAirPollution = () => {
  return new Promise((resolve, reject) => {
    http.get('www.pollution.com/current', (res) => {
      resolve(res.data.pollution)
    })
  })
}

getTemperature()
.then(temp => console.log(`the temp is ${temp}`))
.then(() => getAirPollution())
.then(pollution => console.log(`and the pollution is ${pollution}`))
// the temp is 32
// and the pollution is 0.5
```

◦ async / await◦ ◦

```
const temp = await getTemperature()
const pollution = await getAirPollution()
```

promiseawait◦

```
try{
    await User.findByIdAndUpdate(user._id, {
        $push: {
            tokens: token
        }
    }).exec()
}catch(e){
    handleError(e)
}
```

/ https://riptutorial.com/zh-CN/node-js/topic/6729/-

84:

Node。 。

- doSomething[args]function[argsCB]{/ ** /};
- doSomething[args][argsCB]=> {/ ** /};

Examples

JavaScript

JavaScript。 JavaScript 。

。

。 。

```
// a function that uses a callback named `cb` as a parameter
function getSyncMessage(cb) {
    cb("Hello World!");
}

console.log("Before getSyncMessage call");
// calling a function and sending in a callback function as an argument.
getSyncMessage(function(message) {
    console.log(message);
});
console.log("After getSyncMessage call");
```

```
> Before getSyncMessage call
> Hello World!
> After getSyncMessage call
```

。 。 6`Before getSyncMessage call`。 8`getSyncMessage`getSyncMessagecb。 3`getSyncMessagecb` `message` “Hello World”。 9`Hello World!`。 callstack 10411。

- 。 。
- 。
- 。 8`messagestatement` `msg` `jellybean`。 。

。

JavaScriptNode.jsAPI 。

JavaScript

-
- setTimeout
- setInterval
- fetch API
-

promises。

。

```
// a function that uses a callback named `cb` as a parameter
function getAsyncMessage(cb) {
    setTimeout(function () { cb("Hello World!") }, 1000);
}

console.log("Before getSyncMessage call");
// calling a function and sending in a callback function as an argument.
getAsyncMessage(function(message) {
    console.log(message);
});
console.log("After getSyncMessage call");
```

```
> Before getSyncMessage call
> After getSyncMessage call
// pauses for 1000 ms with no output
> Hello World!
```

6“getSyncMessage”。 8param `cb`getAsyncMessage。 3setTimeout300。 `setTimeout`100010004111 setTimeout3`getAsyncMessagesmessage`“Hello World”9。

Node.js

NodeJS`errdata` 。 。

```
const fs = require("fs");

fs.readFile("./test.txt", "utf8", function(err, data) {
    if(err) {
        // handle the error
    } else {
        // process the file text given with data
    }
});
```

。

。 elseifelse。

`errdata`。

4.x

```
// this code snippet was on http://expressjs.com/en/4x/api.html
const express = require('express');
const app = express();

// this app.get method takes a url route to watch for and a callback
// to call whenever that route is requested by a user.
app.get('/', function(req, res){
  res.send('hello world');
});

app.listen(3000);
```

◦ params reqres◦

JavaScriptJavaScript◦

```
setTimeout(function() {
    console.log("A");
}, 1000);

setTimeout(function() {
    console.log("B");
}, 0);

getDataFromDatabase(function(err, data) {
    console.log("C");
    setTimeout(function() {
        console.log("D");
    }, 1000);
});

console.log("E");
```

EBAD ◦ C◦

setTimeoutgetDataFromDatabase◦ E *setTimeout*

1. EsetTimeout
2. B0
3. A1000
4. DD1000A ◦
5. C◦ A◦

◦ try catch ◦

```
try {
    setTimeout(function() {
        throw new Error("I'm an uncaught error and will stop the server!");
    }, 100);
}
catch (ex) {
    console.error("This error will not be work in an asynchronous situation: " + ex);
}
```

V0.8

Node.JS。

```
process.on("UncaughtException", function(err, data) {
    if (err) {
        // error handling
    }
});
```

V0.8

。 。 。

```
var domain = require("domain");
var d1 = domain.create();
var d2 = domain.create();

d1.run(function() {
    d2.add(setTimeout(function() {
        throw new Error("error on the timer of domain 2");
    }, 0));
});

d1.on("error", function(err) {
    console.log("error at domain 1: " + err);
});

d2.on("error", function(err) {
    console.log("error at domain 2: " + err);
});
```

。 ES6。

```
const fs = require('fs');
let filename = `${__dirname}/myfile.txt`;

fs.exists(filename, exists => {
    if (exists) {
        fs.stat(filename, (err, stats) => {
            if (err) {
                throw err;
            }
            if (stats.isFile()) {
                fs.readFile(filename, null, (err, data) => {
                    if (err) {
                        throw err;
                    }
                    console.log(data);
                });
            }
            else {
                throw new Error("This location contains not a file");
            }
        });
```

```
    }
    else {
        throw new Error("404: file not found");
    }
});
```

“”

2。 。 2 。

asyncnpm。 。

V6.0.0

Promise。 JavaScriptpromisesthen。 ""。 “”“”。 。 “”“”“”。 newpromisenew Promise(function (resolve, reject) {}) 。

Promiseresolvereject。 “”“”。 “”“”。 reject resolve 。

timeoutPromise。

```
function timeout (ms) {
  return new Promise(function (resolve, reject) {
    setTimeout(function () {
      resolve("It was resolved!");
    }, ms)
  });
}

timeout(1000).then(function (dataFromPromise) {
  // logs "It was resolved!"
  console.log(dataFromPromise);
})

console.log("waiting...");
```

```
waiting...
// << pauses for one second>>
It was resolved!
```

Promise。 setTimeoutmsms=1000 。 setTimeout。 then/Promise。 catch/promise"。

'.....'。 setTimeout“It was resolved”resolve。 then。

setTimeoutpromise。

JavaScriptPromisespromises。

https://riptutorial.com/zh-CN/node-js/topic/8813/

85:

Examples

Node

Node。

“”。 jQuery。

1. 。
2. ID。
3. ID。

```
    project
    |   package.json
    |   index.html
    |
    ├──js
    |      main.js
    |      jquery-1.12.0.min.js
    |
    └──srv
        |    app.js
        ├── models
        |      task.js
        └── tasks
              data-processor.js
```

app.js

```
var express     = require('express');
var app         = express();
var http        = require('http').Server(app);
var mongoose    = require('mongoose');
var bodyParser  = require('body-parser');

var childProcess= require('child_process');

var Task        = require('./models/task');

app.use(bodyParser.urlencoded({ extended: true }));
app.use(bodyParser.json());

app.use(express.static(__dirname + '/../'));

app.get('/', function(request, response){
    response.render('index.html');
});

//route for the request itself
app.post('/long-running-request', function(request, response){
    //create new task item for status tracking
```

```
    var t = new Task({ status: 'Starting ...' });

    t.save(function(err, task){
        //create new instance of node for running separate task in another thread
        taskProcessor = childProcess.fork('./srv/tasks/data-processor.js');

        //process the messages comming from the task processor
        taskProcessor.on('message', function(msg){
            task.status = msg.status;
            task.save();
        }.bind(this));

        //remove previously openned node instance when we finished
        taskProcessor.on('close', function(msg){
            this.kill();
        });

        //send some params to our separate task
        var params = {
            message: 'Hello from main thread'
        };

        taskProcessor.send(params);
        response.status(200).json(task);
    });
});

//route to check is the request is finished the calculations
app.post('/is-ready', function(request, response){
    Task
        .findById(request.body.id)
        .exec(function(err, task){
            response.status(200).json(task);
        });
});

mongoose.connect('mongodb://localhost/test');
http.listen('1234');
```

task.js

```
var mongoose    = require('mongoose');

var taskSchema = mongoose.Schema({
    status: {
        type: String
    }
});

mongoose.model('Task', taskSchema);

module.exports  = mongoose.model('Task');
```

processor.js

```
process.on('message', function(msg){
    init = function(){
        processData(msg.message);
    }.bind(this)();
```

```
    function processData(message){
        //send status update to the main app
        process.send({ status: 'We have started processing your data.' });

        //long calculations ..
        setTimeout(function(){
            process.send({ status: 'Done!' });

            //notify node, that we are done with this task
            process.disconnect();
        }, 5000);
    }
});

process.on('uncaughtException',function(err){
    console.log("Error happened: " + err.message + "\n" + err.stack + ".\n");
    console.log("Gracefully finish the routine.");
});
```

index.html

```
<!DOCTYPE html>
<html>
    <head>
        <script src="./js/jquery-1.12.0.min.js"></script>
        <script src="./js/main.js"></script>
    </head>
    <body>
        <p>Example of processing long-running node requests.</p>
        <button id="go" type="button">Run</button>

        <br />

        <p>Log:</p>
        <textarea id="log" rows="20" cols="50"></textarea>
    </body>
</html>
```

main.js

```
$(document).on('ready', function(){

    $('#go').on('click', function(e){
        //clear log
        $("#log").val('');

        $.post("/long-running-request", {some_params: 'params' })
            .done(function(task){
                $("#log").val( $("#log").val() + '\n' + task.status);

                //function for tracking the status of the task
                function updateStatus(){
                    $.post("/is-ready", {id: task._id })
                        .done(function(response){
                            $("#log").val( $("#log").val() + '\n' + response.status);

                            if(response.status != 'Done!'){
                                checkTaskTimeout = setTimeout(updateStatus, 500);
```

```
                            }
                        });
                }

                //start checking the task
                var checkTaskTimeout = setTimeout(updateStatus, 100);
            });
    });
});
```

package.json

```
{
  "name": "nodeProcessor",
  "dependencies": {
    "body-parser": "^1.15.2",
    "express": "^4.14.0",
    "html": "0.0.10",
    "mongoose": "^4.5.5"
  }
}
```

。 。

https://riptutorial.com/zh-CN/node-js/topic/6325/

86:

◦ **NodeJSbcrypt-NodeJS**◦

Examples

`passport.initialize()` **Passport** ◦ `passport.session()`◦

`passport.serialize()passport.deserializeUser()`◦ **Passport**

```
const express = require('express');
const session = require('express-session');
const passport = require('passport');
const cookieParser = require('cookie-parser');
const app = express();

// Required to read cookies
app.use(cookieParser());

passport.serializeUser(function(user, next) {
    // Serialize the user in the session
    next(null, user);
});

passport.deserializeUser(function(user, next) {
    // Use the previously serialized user
        next(null, user);
});

// Configuring express-session middleware
app.use(session({
    secret: 'The cake is a lie',
    resave: true,
    saveUninitialized: true
}));

// Initializing passport
app.use(passport.initialize());
app.use(passport.session());

// Starting express server on port 3000
app.listen(3000);
```

◦

Node.js◦

```
const passport = require('passport');
const LocalStrategy = require('passport-local').Strategy;

// A named strategy is used since two local strategy are used :
// one for the registration and the other to sign-in
passport.use('localSignup', new LocalStrategy({
    // Overriding defaults expected parameters,
```

```
    // which are 'username' and 'password'
    usernameField: 'email',
    passwordField: 'password',
    passReqToCallback: true // allows us to pass back the entire request to the callback    .
},
function(req, email, password, next) {
    // Check in database if user is already registered
    findUserByEmail(email, function(user) {
        // If email already exists, abort registration process and
        // pass 'false' to the callback
        if (user) return next(null, false);
        // Else, we create the user
        else {
            // Password must be hashed !
            let newUser = createUser(email, password);

            newUser.save(function() {
                // Pass the user to the callback
                return next(null, newUser);
            });
        }
    });
});
```

```
const passport = require('passport');
const LocalStrategy = require('passport-local').Strategy;

passport.use('localSignin', new LocalStrategy({
    usernameField : 'email',
    passwordField : 'password',
},
function(email, password, next) {
    // Find the user
    findUserByEmail(email, function(user) {
        // If user is not found, abort signing in process
        // Custom messages can be provided in the verify callback
        // to give the user more details concerning the failed authentication
        if (!user)
            return next(null, false, {message: 'This e-mail address is not associated with any
account.'});
        // Else, we check if password is valid
        else {
            // If password is not correct, abort signing in process
            if (!isPasswordValid(password)) return next(null, false);
            // Else, pass the user to callback
            else return next(null, user);
        }
    });
});
```

```
// ...
app.use(passport.initialize());
app.use(passport.session());

// Sign-in route
// Passport strategies are middlewares
app.post('/login', passport.authenticate('localSignin', {
    successRedirect: '/me',
    failureRedirect: '/login'
```

```
});

// Sign-up route
app.post('/register', passport.authenticate('localSignup', {
    successRedirect: '/',
    failureRedirect: '/signup'
});

// Call req.logout() to log out
app.get('/logout', function(req, res) {
    req.logout();
    res.redirect('/');
});

app.listen(3000);
```

Facebook

passport-facebookFacebook。。

```
const passport = require('passport');
const FacebookStrategy = require('passport-facebook').Strategy;

// Strategy is named 'facebook' by default
passport.use({
    clientID: 'yourclientid',
    clientSecret: 'yourclientsecret',
    callbackURL: '/auth/facebook/callback'
},
// Facebook will send a token and user's profile
function(token, refreshToken, profile, next) {
    // Check in database if user is already registered
    findUserByFacebookId(profile.id, function(user) {
        // If user exists, returns his data to callback
        if (user) return next(null, user);
        // Else, we create the user
        else {
            let newUser = createUserFromFacebook(profile, token);

            newUser.save(function() {
                // Pass the user to the callback
                return next(null, newUser);
            });
        }
    });
});
```

```
// ...
app.use(passport.initialize());
app.use(passport.session());

// Authentication route
app.get('/auth/facebook', passport.authenticate('facebook', {
    // Ask Facebook for more permissions
    scope : 'email'
}));

// Called after Facebook has authenticated the user
```

```
app.get('/auth/facebook/callback',
    passport.authenticate('facebook', {
        successRedirect : '/me',
        failureRedirect : '/'
}));


//...

app.listen(3000);
```

-

routes / index.js

`user`userSchema

```
router.post('/login', function(req, res, next) {
    if (!req.body.username || !req.body.password) {
        return res.status(400).json({
            message: 'Please fill out all fields'
        });
    }

    passport.authenticate('local', function(err, user, info) {
        if (err) {
            console.log("ERROR : " + err);
            return next(err);
        }

        if(user) (
            console.log("User Exists!")
            //All the data of the user can be accessed by user.x
            res.json({"success" : true});
            return;
        } else {
            res.json({"success" : false});
            console.log("Error" + errorResponse());
            return;
        }
    })(req, res, next);
});
```

Google Passport

npm**passport-google-oauth20**

passport.jsgoogle.jsconfig。app.js

```
var express = require('express');
var session = require('express-session');
var passport = require('./config/passport'); // path where the passport file placed
var app = express();
passport(app);
```

//

configpassport.js

```
var passport = require  ('passport'),
google = require('./google'),
User = require('./../model/user'); // User is the  mongoose model

module.exports = function(app){
  app.use(passport.initialize());
  app.use(passport.session());
  passport.serializeUser(function(user, done){
      done(null, user);
  });
  passport.deserializeUser(function (user, done) {
     done(null, user);
  });
  google();
};
```

google.js

```
var passport = require('passport'),
GoogleStrategy = require('passport-google-oauth20').Strategy,
User = require('./../model/user');
module.exports = function () {
passport.use(new GoogleStrategy({
        clientID: 'CLIENT ID',
        clientSecret: 'CLIENT SECRET',
        callbackURL: "http://localhost:3000/auth/google/callback"
    },
    function(accessToken, refreshToken, profile, cb) {
        User.findOne({ googleId : profile.id }, function (err, user) {
            if(err){
                return cb(err, false, {message : err});
            }else {
                if (user != '' && user != null) {
                    return cb(null, user, {message : "User "});
                } else {
                    var username  = profile.displayName.split(' ');
                    var userData = new User({
                        name : profile.displayName,
                        username : username[0],
                        password : username[0],
                        facebookId : '',
                        googleId : profile.id,
                    });
                    // send email to user just in case required to send the newly created
                    // credentails to user for future login without using google login
                    userData.save(function (err, newuser) {
                        if (err) {
                            return cb(null, false, {message : err + " !!! Please try again"});
                        }else{
                            return cb(null, newuser);
                        }
                    });
                }
            }
        });
```

```
        }
    ));
};
```

DBgoogleIdDB。

https://riptutorial.com/zh-CN/node-js/topic/7666/

87:

WebPush.jsSoneSignalWeb /。

Javascript。Notification APIChromeSafariFirefoxIE 9+。

Socket.ioExpress。

/	
node.js /	Node.js
Socket.io	Socket.IO。。
Push.js	
OneSignal	
	FirebaseGoogle。

Examples

Push.js。

```
$ npm install push.js --save
```

CDN

```
<script src="./push.min.js"></script> <!-- CDN link -->
```

。

```
Push.create('Hello World!')
```

Socket.io 。

```
var app = require('express')();
var server = require('http').Server(app);
var io = require('socket.io')(server);

server.listen(80);

app.get('/', function (req, res) {
  res.sendfile(__dirname + '/index.html');
});

io.on('connection', function (socket) {
```

```
  socket.emit('pushNotification', { success: true, msg: 'hello' });

});
```

- Socket.io CDN*index.html*

```
<script src="../socket.io.js"></script> <!-- CDN link -->
<script>
  var socket = io.connect('http://localhost');
  socket.on('pushNotification', function (data) {
    console.log(data);
    Push.create("Hello world!", {
        body: data.msg, //this should print "hello"
        icon: '/icon.png',
        timeout: 4000,
        onClick: function () {
            window.focus();
            this.close();
        }
    });
  });
</script>
```

AndroidFirebase Push.js

AppleOneSignal。

https://riptutorial.com/zh-CN/node-js/topic/10892/

88: HTML

- response.sendFilefileNameoptionsfunctionerr{};

Examples

HTML

Express`index.html / /page1page1.html`。

```
project root
|    server.js
|____views
     |    index.html
     |    page1.html
```

server.js

```
var express = require('express');
var path = require('path');
var app = express();

// deliver index.html if no file is requested
app.get("/", function (request, response) {
  response.sendFile(path.join(__dirname, 'views/index.html'));
});

// deliver page1.html if page1 is requested
app.get('/page1', function(request, response) {
    response.sendFile(path.join(__dirname, 'views', 'page1.html', function(error) {
        if (error) {
            // do something in case of error
            console.log(err);
            response.end(JSON.stringify({error:"page not found"}));
        }
    });
});

app.listen(8080);
```

`sendFile()`。 HTML PugMustacheEJS。

HTML https://riptutorial.com/zh-CN/node-js/topic/6538/html

89: MongoDBMongoose

Examples

mongodb `mongod --dbpath data/`

package.json

```
"dependencies": {
    "mongoose": "^4.5.5",
}
```

server.jsECMA 6

```
import mongoose from 'mongoose';

mongoose.connect('mongodb://localhost:27017/stackoverflow-example');
const db = mongoose.connection;
db.on('error', console.error.bind(console, 'DB connection error!'));
```

server.jsECMA 5.1

```
var mongoose = require('mongoose');

mongoose.connect('mongodb://localhost:27017/stackoverflow-example');
var db = mongoose.connection;
db.on('error', console.error.bind(console, 'DB connection error!'));
```

app / models / user.jsECMA 6

```
import mongoose from 'mongoose';

const userSchema = new mongoose.Schema({
    name: String,
    password: String
});

const User = mongoose.model('User', userSchema);

export default User;
```

app / model / user.jsECMA 5.1

```
var mongoose = require('mongoose');

var userSchema = new mongoose.Schema({
    name: String,
    password: String
});

var User = mongoose.model('User', userSchema);
```

```
module.exports = User
```

ECMA 6

```
const user = new User({
   name: 'Stack',
   password: 'Overflow',
   }) ;

user.save((err) => {
    if (err) throw err;

    console.log('User saved!');
});
```

ECMA5.1

```
var user = new User({
   name: 'Stack',
   password: 'Overflow',
   }) ;

user.save(function (err) {
    if (err) throw err;

    console.log('User saved!');
});
```

ECMA6

```
User.findOne({
    name: 'stack'
}, (err, user) => {
    if (err) throw err;

    if (!user) {
        console.log('No user was found');
    } else {
        console.log('User was found');
    }
});
```

ECMA5.1

```
User.findOne({
    name: 'stack'
}, function (err, user) {
    if (err) throw err;

    if (!user) {
        console.log('No user was found');
    } else {
        console.log('User was found');
    }
});
```

MongoDBMongoose https://riptutorial.com/zh-CN/node-js/topic/6411/-mongodbmongoose-

90: I / O.

Node.jsI / O`fs.readFile` `fs.readFileSync` 。 Node。

。 。

。

Examples

writeFilewriteFileSync

```
var fs = require('fs');

// Save the string "Hello world!" in a file called "hello.txt" in
// the directory "/tmp" using the default encoding (utf8).
// This operation will be completed in background and the callback
// will be called when it is either done or failed.
fs.writeFile('/tmp/hello.txt', 'Hello world!', function(err) {
  // If an error occurred, show it and return
  if(err) return console.error(err);
  // Successfully wrote to the file!
});

// Save binary data to a file called "binary.txt" in the current
// directory. Again, the operation will be completed in background.
var buffer = new Buffer([ 0x48, 0x65, 0x6c, 0x6c, 0x6f ]);
fs.writeFile('binary.txt', buffer, function(err) {
  // If an error occurred, show it and return
  if(err) return console.error(err);
  // Successfully wrote binary contents to the file!
});
```

`fs.writeFileSyncfs.writeFile`。 node.js。

node.js。 。

```
// Write a string to another file and set the file mode to 0755
try {
  fs.writeFileSync('sync.txt', 'anni', { mode: 0o755 });
} catch(err) {
  // An error occurred
  console.error(err);
}
```

filesystem

```
const fs = require('fs');
```

`/tmphello.txt` 。

```
fs.readFile('/tmp/hello.txt', { encoding: 'utf8' }, (err, content) => {
  // If an error occurred, output it and return
  if(err) return console.error(err);

  // No error occurred, content is a string
  console.log(content);
});
```

`binary.txt` ◦ 'encoding' - Node.js

```
fs.readFile('binary', (err, binaryContent) => {
  // If an error occurred, output it and return
  if(err) return console.error(err);

  // No error occurred, content is a Buffer, output it in
  // hexadecimal representation.
  console.log(content.toString('hex'));
});
```

◦ `__dirname__filename`

```
fs.readFile(path.resolve(__dirname, 'someFile'), (err, binaryContent) => {
  //Rest of Function
}
```

readdirreaddirSync

```
const fs = require('fs');

// Read the contents of the directory /usr/local/bin asynchronously.
// The callback will be invoked once the operation has either completed
// or failed.
fs.readdir('/usr/local/bin', (err, files) => {
  // On error, show it and return
  if(err) return console.error(err);

  // files is an array containing the names of all entries
  // in the directory, excluding '.' (the directory itself)
  // and '..' (the parent directory).

  // Display directory entries
  console.log(files.join(' '));
});
```

`readdirSync`◦ IO◦

```
let files;

try {
  files = fs.readdirSync('/var/tmp');
} catch(err) {
  // An error occurred
  console.error(err);
}
```

```
const fs = require('fs');

// Iterate through all items obtained via
// 'yield' statements
// A callback is passed to the generator function because it is required by
// the 'readdir' method
function run(gen) {
  var iter = gen((err, data) => {
    if (err) { iter.throw(err); }

    return iter.next(data);
  });

  iter.next();
}

const dirPath = '/usr/local/bin';

// Execute the generator function
run(function* (resume) {
  // Emit the list of files in the directory from the generator
  var contents = yield fs.readdir(dirPath, resume);
  console.log(contents);
});
```

```
const fs = require('fs');
```

`fs.readFileSyncfs.readFile`。 node.js。

`encodingBuffer` 。

```
// Read a string from another file synchronously
let content;
try {
  content = fs.readFileSync('sync.txt', { encoding: 'utf8' });
} catch(err) {
  // An error occurred
  console.error(err);
}
```

unlinkunlinkSync

```
var fs = require('fs');

fs.unlink('/path/to/file.txt', function(err) {
  if (err) throw err;

  console.log('file deleted');
});
```

**

```
var fs = require('fs');
```

```
fs.unlinkSync('/path/to/file.txt');
console.log('file deleted');
```

*。

fs.readFile()Stream。 。

```
const fs = require('fs');

// Store file data chunks in this array
let chunks = [];
// We can use this variable to store the final data
let fileBuffer;

// Read file into stream.Readable
let fileStream = fs.createReadStream('text.txt');

// An error occurred with the stream
fileStream.once('error', (err) => {
    // Be sure to handle this properly!
    console.error(err);
});

// File is done being read
fileStream.once('end', () => {
    // create the final data Buffer from data chunks;
    fileBuffer = Buffer.concat(chunks);

    // Of course, you can do anything else you need to here, like emit an event!
});

// Data is flushed from fileStream in chunks,
// this callback will be executed for each chunk
fileStream.on('data', (chunk) => {
    chunks.push(chunk); // push data chunk to array

    // We can perform actions on the partial data we have so far!
});
```

fs.access()。 fs.access。

fsfs.constants

- fs.constants.F_OK - //
- fs.constants.R_OK -
- fs.constants.W_OK -
- fs.constants.X_OK - Windowsfs.constants.F_OK

```
var fs = require('fs');
var path = '/path/to/check';

// checks execute permission
fs.access(path, fs.constants.X_OK, (err) => {
    if (err) {
        console.log("%s doesn't exist", path);
```

```
    } else {
        console.log('can execute %s', path);
    }
});
// Check if we have read/write permissions
// When specifying multiple permission modes
// each mode is separated by a pipe : `|`
fs.access(path, fs.constants.R_OK | fs.constants.W_OK, (err) => {
    if (err) {
        console.log("%s doesn't exist", path);
    } else {
        console.log('can read/write %s', path);
    }
});
```

`fs.accessfs.accessSync` ◦ `fs.accessSync` try / catch◦

```
// Check write permission
try {
    fs.accessSync(path, fs.constants.W_OK);
    console.log('can write %s', path);
}
catch (err) {
    console.log("%s doesn't exist", path);
}
```

Node

1. `fs.stat()`
2.

◦ `fs.mkdir()fs.mkdirSync()EEXIST` ◦ `EPERM` ◦

`fs.mkdir()`

```
var fs = require('fs');

function mkdir (dirPath, callback) {
  fs.mkdir(dirPath, (err) => {
    callback(err && err.code !== 'EEXIST' ? err : null);
  });
}

mkdir('./existingDir', (err) => {

  if (err)
    return console.error(err.code);

  // Do something with `./existingDir` here

});
```

`fs.mkdirSync()`

```
function mkdirSync (dirPath) {
```

```
  try {
    fs.mkdirSync(dirPath);
  } catch(e) {
    if ( e.code !== 'EEXIST' ) throw e;
  }
}

mkdirSync('./existing-dir');
// Do something with `./existing-dir` now
```

```
var fs = require('fs');

fs.stat('path/to/file', function(err) {
    if (!err) {
        console.log('file or directory exists');
    }
    else if (err.code === 'ENOENT') {
        console.log('file or directory does not exist');
    }
});
```

try/catch◦

```
var fs = require('fs');

try {
    fs.statSync('path/to/file');
    console.log('file or directory exists');
}
catch (err) {
  if (err.code === 'ENOENT') {
    console.log('file or directory does not exist');
  }
}
```

createReadStream()createWriteStream()◦

```
//Require the file System module
var fs = require('fs');

/*
  Create readable stream to file in current directory (__dirname) named 'node.txt'
  Use utf8 encoding
  Read the data in 16-kilobyte chunks
*/
var readable = fs.createReadStream(__dirname + '/node.txt', { encoding: 'utf8', highWaterMark:
16 * 1024 });

// create writable stream
var writable = fs.createWriteStream(__dirname + '/nodeCopy.txt');

// Write each chunk of data to the writable stream
readable.on('data', function(chunk) {
    writable.write(chunk);
});
```

stream`pipe()`

```
// require the file system module
var fs = require('fs');

/*
    Create readable stream to file in current directory named 'node.txt'
    Use utf8 encoding
    Read the data in 16-kilobyte chunks
*/
var readable = fs.createReadStream(__dirname + '/node.txt', { encoding: 'utf8', highWaterMark:
16 * 1024 });

// create writable stream
var writable = fs.createWriteStream(__dirname + '/nodePipe.txt');

// use pipe to copy readable to writable
readable.pipe(writable);
```

◦ `emailindex.txtname index.txt`RegExp `replace(/email/gim, 'name')`

```
var fs = require('fs');

fs.readFile('index.txt', 'utf-8', function(err, data) {
    if (err) throw err;

    var newValue = data.replace(/email/gim, 'name');

    fs.writeFile('index.txt', newValue, 'utf-8', function(err, data) {
        if (err) throw err;
        console.log('Done!');
    })
})
```

app.js

```
const readline = require('readline');
const fs = require('fs');

var file = 'path.to.file';
var linesCount = 0;
var rl = readline.createInterface({
    input: fs.createReadStream(file),
    output: process.stdout,
    terminal: false
});
rl.on('line', function (line) {
    linesCount++; // on each linebreak, add +1 to 'linesCount'
});
rl.on('close', function () {
    console.log(linesCount); // print the result when the 'close' event is called
});
```

app.js

```
const readline = require('readline');
const fs = require('fs');

var file = 'path.to.file';
var rl = readline.createInterface({
    input: fs.createReadStream(file),
    output: process.stdout,
    terminal: false
});

rl.on('line', function (line) {
    console.log(line) // print the content of the line on each linebreak
});
```

I / O. https://riptutorial.com/zh-CN/node-js/topic/489/i---o-

91: Node.js。

Examples

PM2。

`ecosystem.json`

```
{
    "name": "app-name",
    "script": "server",
    "exec_mode": "cluster",
    "instances": 0,
    "wait_ready": true
    "listen_timeout": 10000,
    "kill_timeout": 5000,
}
```

```
wait_ready
```

listenprocess.send'ready';

```
listen_timeout
```

。

```
kill_timeout
```

SIGKLL。

`server.js`

```
const http = require('http');
const express = require('express');

const app = express();
const server = http.Server(app);
const port = 80;

server.listen(port, function() {
    process.send('ready');
});

process.on('SIGINT', function() {
    server.close(function() {
        process.exit(0);
    });
});
```

DB ///。 PM2。 `wait_ready: true` 。 PM2。 `process.send('ready');`。

PM2/。

SIGINT。 1.6sSIGKILL。 SIGINT。

Node.js。 https://riptutorial.com/zh-CN/node-js/topic/9752/node-js-

92:

Examples

Nunjucks

◦ jinja2Twigphp◦

- http://mozilla.github.io/nunjucks/

- `npm i nunjucks`

Express◦

app.js

```
var express = require ('express');
var nunjucks  = require('nunjucks');

var app = express();
app.use(express.static('/public'));

// Apply nunjucks and add custom filter and function (for example).
var env = nunjucks.configure(['views/'], { // set folders with templates
    autoescape: true,
    express: app
});
env.addFilter('myFilter', function(obj, arg1, arg2) {
    console.log('myFilter', obj, arg1, arg2);
    // Do smth with obj
    return obj;
});
env.addGlobal('myFunc', function(obj, arg1) {
    console.log('myFunc', obj, arg1);
    // Do smth with obj
    return obj;
});

app.get('/', function(req, res){
    res.render('index.html', {title: 'Main page'});
});

app.get('/foo', function(req, res){
    res.locals.smthVar = 'This is Sparta!';
    res.render('foo.html', {title: 'Foo page'});
});

app.listen(3000, function() {
    console.log('Example app listening on port 3000...');
});
```

/views/index.html

```
<html>
```

```
<head>
    <title>Nunjucks example</title>
</head>
<body>
{% block content %}
{{title}}
{% endblock %}
</body>
</html>
```

/views/foo.html

```
{% extends "index.html" %}

{# This is comment #}
{% block content %}
    <h1>{{title}}</h1>
    {# apply custom function and next build-in and custom filters #}
    {{ myFunc(smthVar) | lower | myFilter(5, 'abc') }}
{% endblock %}
```

https://riptutorial.com/zh-CN/node-js/topic/5885/

93:

Examples

MongooseMongoDB

Mongoose

```
npm install mongoose
```

`server.js`

```
var mongoose = require('mongoose');
var Schema = mongoose.Schema;
```

```
var schemaName = new Schema({
    request: String,
    time: Number
}, {
    collection: 'collectionName'
});
```

```
var Model = mongoose.model('Model', schemaName);
mongoose.connect('mongodb://localhost:27017/dbName');
```

MongoDB`server.js``node server.js`

`mongoose.connection``open` `error` ◦

```
var db = mongoose.connection;
db.on('error', console.error.bind(console, 'connection error:'));
db.once('open', function() {
  // we're connected!
});
```

MongooseExpress.jsMongoDB

```
npm install express cors mongoose
```

`server.js`Express.jsMongoDB

```
var express = require('express');
var cors = require('cors'); // We will use CORS to enable cross origin domain requests.
var mongoose = require('mongoose');
var Schema = mongoose.Schema;
```

```
var app = express();

var schemaName = new Schema({
    request: String,
    time: Number
}, {
    collection: 'collectionName'
});

var Model = mongoose.model('Model', schemaName);
mongoose.connect('mongodb://localhost:27017/dbName');

var port = process.env.PORT || 8080;
app.listen(port, function() {
    console.log('Node.js listening on port ' + port);
});
```

Express.js

```
app.get('/save/:query', cors(), function(req, res) {
    var query = req.params.query;

    var savedata = new Model({
        'request': query,
        'time': Math.floor(Date.now() / 1000) // Time of save the data in unix timestamp
format
    }).save(function(err, result) {
        if (err) throw err;

        if(result) {
            res.json(result)
        }
    })
})
```

`query`HTTP`<query>`MongoDB

```
var savedata = new Model({
    'request': query,
    //...
```

MongoDB。JSON。

```
//...
}).save(function(err, result) {
    if (err) throw err;

    if(result) {
        res.json(result)
    }
})
//...
```

MongoDB`node server.jsserver.js`。

URL

```
http://localhost:8080/save/<query>
```

<query>◦

```
http://localhost:8080/save/JavaScript%20is%20Awesome
```

JSON

```
{
    __v: 0,
    request: "JavaScript is Awesome",
    time: 1469411348,
    _id: "57957014b93bc8640f2c78c4"
}
```

MongooseExpress.jsMongoDB

```
npm install express cors mongoose
```

server.jsExpress.jsMongoDB

```
var express = require('express');
var cors = require('cors'); // We will use CORS to enable cross origin domain requests.
var mongoose = require('mongoose');
var Schema = mongoose.Schema;

var app = express();

var schemaName = new Schema({
    request: String,
    time: Number
}, {
    collection: 'collectionName'
});

var Model = mongoose.model('Model', schemaName);
mongoose.connect('mongodb://localhost:27017/dbName');

var port = process.env.PORT || 8080;
app.listen(port, function() {
    console.log('Node.js listening on port ' + port);
});
```

Express.js

```
app.get('/find/:query', cors(), function(req, res) {
    var query = req.params.query;
```

```
    Model.find({
        'request': query
    }, function(err, result) {
        if (err) throw err;
        if (result) {
            res.json(result)
        } else {
            res.send(JSON.stringify({
                error : 'Error'
            }))
        }
    })
})
```

```
{
        "_id" : ObjectId("578abe97522ad414b8eeb55a"),
        "request" : "JavaScript is Awesome",
        "time" : 1468710551
}
{
        "_id" : ObjectId("578abe9b522ad414b8eeb55b"),
        "request" : "JavaScript is Awesome",
        "time" : 1468710555
}
{
        "_id" : ObjectId("578abea0522ad414b8eeb55c"),
        "request" : "JavaScript is Awesome",
        "time" : 1468710560
}
```

`"request""JavaScript is Awesome"`◦

MongoDB`server.jsnode server.js`

URL

```
http://localhost:8080/find/<query>
```

`<query>`◦

```
http://localhost:8080/find/JavaScript%20is%20Awesome
```

```
[{
    _id: "578abe97522ad414b8eeb55a",
    request: "JavaScript is Awesome",
    time: 1468710551,
    __v: 0
},
{
    _id: "578abe9b522ad414b8eeb55b",
    request: "JavaScript is Awesome",
    time: 1468710555,
    __v: 0
},
```

```
{
    _id: "578abea0522ad414b8eeb55c",
    request: "JavaScript is Awesome",
    time: 1468710560,
    __v: 0
}]
```

MongooseExpress.js$ textMongoDB

```
npm install express cors mongoose
```

`server.js`Express.jsMongoDB

```
var express = require('express');
var cors = require('cors'); // We will use CORS to enable cross origin domain requests.
var mongoose = require('mongoose');
var Schema = mongoose.Schema;

var app = express();

var schemaName = new Schema({
    request: String,
    time: Number
}, {
    collection: 'collectionName'
});

var Model = mongoose.model('Model', schemaName);
mongoose.connect('mongodb://localhost:27017/dbName');

var port = process.env.PORT || 8080;
app.listen(port, function() {
    console.log('Node.js listening on port ' + port);
});
```

Express.js

```
app.get('/find/:query', cors(), function(req, res) {
    var query = req.params.query;

    Model.find({
        'request': query
    }, function(err, result) {
        if (err) throw err;
        if (result) {
            res.json(result)
        } else {
            res.send(JSON.stringify({
                error : 'Error'
            }))
        }
    })
})
```

```
{
        "_id" : ObjectId("578abe97522ad414b8eeb55a"),
        "request" : "JavaScript is Awesome",
        "time" : 1468710551
}
{
        "_id" : ObjectId("578abe9b522ad414b8eeb55b"),
        "request" : "JavaScript is Awesome",
        "time" : 1468710555
}
{
        "_id" : ObjectId("578abea0522ad414b8eeb55c"),
        "request" : "JavaScript is Awesome",
        "time" : 1468710560
}
```

"request""JavaScript"◦

"request" ◦ server.js

```
schemaName.index({ request: 'text' });
```

```
    Model.find({
        'request': query
    }, function(err, result) {
```

```
Model.find({
    $text: {
        $search: query
    }
}, function(err, result) {
```

$text$search MongoDBcollection collectionName◦

URL

```
http://localhost:8080/find/<query>
```

<query>◦

```
http://localhost:8080/find/JavaScript
```

```
[{
    _id: "578abe97522ad414b8eeb55a",
    request: "JavaScript is Awesome",
    time: 1468710551,
    __v: 0
},
{
    _id: "578abe9b522ad414b8eeb55b",
    request: "JavaScript is Awesome",
```

```
    time: 1468710555,
    __v: 0
},
{
    _id: "578abea0522ad414b8eeb55c",
    request: "JavaScript is Awesome",
    time: 1468710560,
    __v: 0
}]
```

。

MongoDB。Mongoose。。

```
var strConnection = 'mongodb://localhost:27017/dbName';
var db = mongoose.createConnection(strConnection)
```

```
var Schema = require('mongoose').Schema;
var usersSchema = new Schema({
    username: {
        type: String,
        required: true,
        unique: true
    },
    email: {
        type: String,
        required: true
    },
    password: {
        type: String,
        required: true
    },
    created: {
        type: Date,
        default: Date.now
    }
});

var usersModel = db.model('users', usersSchema);
module.exports = usersModel;
```

mongoose。

_ID

_id。ObjectIdMongoDB。_id。

```
var usersSchema = new Schema({
    username: {
        type: String,
        required: true,
        unique: true
    }, {
        _id: false
});
```

__vversionKey

versionKeyMongoose。。。

```
var usersSchema = new Schema({
    username: {
        type: String,
        required: true,
        unique: true
    }, {
    versionKey: false
});
```

Mongoose。

```
usersSchema.index({username: 1 });
usersSchema.index({email: 1 });
```

。。

```
usersSchema.index({username: 1, email: 1 });
```

mongooseensureIndexensureIndex'index'。

MongoDBensureIndex3.0.0createIndex。

autoIndexfalseconfig.autoIndexfalse。

```
usersSchema.set('autoIndex', false);
```

Mongoose

Mongoose`find()`。

```
doc.find({'some.value':5},function(err,docs){
    //returns array docs
});

doc.findOne({'some.value':5},function(err,doc){
    //returns document doc
});

doc.findById(obj._id,function(err,doc){
    //returns document doc
});
```

promisesmongodb

```
npm install express cors mongoose
```

`server.js`Express.jsMongoDB

```
var express = require('express');
var cors = require('cors'); // We will use CORS to enable cross origin domain requests.
var mongoose = require('mongoose');
var Schema = mongoose.Schema;

var app = express();

var schemaName = new Schema({
    request: String,
    time: Number
}, {
    collection: 'collectionName'
});

var Model = mongoose.model('Model', schemaName);
mongoose.connect('mongodb://localhost:27017/dbName');

var port = process.env.PORT || 8080;
app.listen(port, function() {
    console.log('Node.js listening on port ' + port);
});

app.use(function(err, req, res, next) {
  console.error(err.stack);
  res.status(500).send('Something broke!');
});

app.use(function(req, res, next) {
  res.status(404).send('Sorry cant find that!');
});
```

Express.js

```
app.get('/find/:query', cors(), function(req, res, next) {
    var query = req.params.query;

    Model.find({
        'request': query
    })
    .exec() //remember to add exec, queries have a .then attribute but aren't promises
    .then(function(result) {
        if (result) {
            res.json(result)
        } else {
            next() //pass to 404 handler
        }
    })
    .catch(next) //pass to error handler
})
```

```
{
        "_id" : ObjectId("578abe97522ad414b8eeb55a"),
        "request" : "JavaScript is Awesome",
        "time" : 1468710551
}
{
```

```
        "_id" : ObjectId("578abe9b522ad414b8eeb55b"),
        "request" : "JavaScript is Awesome",
        "time" : 1468710555
}
{
        "_id" : ObjectId("578abea0522ad414b8eeb55c"),
        "request" : "JavaScript is Awesome",
        "time" : 1468710560
}
```

`"request""JavaScript is Awesome"`◦

MongoDB`server.js``node server.js`

URL

```
http://localhost:8080/find/<query>
```

`<query>`◦

```
http://localhost:8080/find/JavaScript%20is%20Awesome
```

```
[{
    _id: "578abe97522ad414b8eeb55a",
    request: "JavaScript is Awesome",
    time: 1468710551,
    __v: 0
},
{
    _id: "578abe9b522ad414b8eeb55b",
    request: "JavaScript is Awesome",
    time: 1468710555,
    __v: 0
},
{
    _id: "578abea0522ad414b8eeb55c",
    request: "JavaScript is Awesome",
    time: 1468710560,
    __v: 0
}]
```

https://riptutorial.com/zh-CN/node-js/topic/3486/

94: - REST

- LoopbackREST

Examples

Web

```
//□□□□□iTunes□□□
{
  "□□":□{
    "□□":□"□□",
    "□□□":□"□□",
    "debug":□□□□
    "□□":□{
      "useQuerystring":□true□
      "□□":□10000□
      "□□":□{
        "□□":□"application / json"□
        "content-type":□"application / json"
      }
    }□
    "□□":□[
      {
        "□□":□{
          "□□":□"GET"□
          "url":□"https://itunes.apple.com/search"□
          "□□":□{
            "term":□"{keyword}"□
            "country":□"{country = IN}"□
            "media":□"{itemType = music}"□
            "limit":□"{limit = 10}"□
            "□□":□"□"
          }
        }□
        "□□":□ {
          "□□":□[
            "□□□":□
            "□□":□
            "□□□□":□
            "□□"
          ]
        }
      }□
      {
        "□□":□{
          "□□":□"GET"□
          "url":□"https://itunes.apple.com/lookup"□
          "□□":□{
            "id":□"{id}"
          }
        }□
        "□□":□ {
          "findById":□[
            "ID"
          ]
```

```
            }
          }
        ]
    }
}
```

- REST https://riptutorial.com/zh-CN/node-js/topic/9234/---rest

95:

Examples

process.env。

```
{
  TERM: 'xterm-256color',
  SHELL: '/usr/local/bin/bash',
  USER: 'maciej',
  PATH: '~/.bin/:/usr/bin:/bin:/usr/sbin:/sbin:/usr/local/bin',
  PWD: '/Users/maciej',
  EDITOR: 'vim',
  SHLVL: '1',
  HOME: '/Users/maciej',
  LOGNAME: 'maciej',
  _: '/usr/local/bin/node'
}
```

```
process.env.HOME // '/Users/maciej'
```

FOOfoobar

```
process.env.FOO // 'foobar'
```

process.argv

process.argv。 node JavaScript。 。

index.js

```
var sum = 0;
for (i = 2; i < process.argv.length; i++) {
    sum += Number(process.argv[i]);
}

console.log(sum);
```

```
node index.js 2 5 6 7
```

20

for forfor (i = 2; i < process.argv.length; i++)2process.argv ['path/to/node.exe', 'path/to/js/file', ...]

Number(process.argv[i])process.argv

/devqastaging。

◦ NodeJs◦

◦

- dev.json

```
{
    PORT : 3000,
    DB : {
        host : "localhost",
        user : "bob",
        password : "12345"
    }
}
```

- qa.json

```
{
        PORT : 3001,
        DB : {
            host : "where_db_is_hosted",
            user : "bob",
            password : "54321"
        }
}
```

◦

environment.js

```
process.argv.forEach(function (val, index, array) {
    var arg = val.split("=");
    if (arg.length > 0) {
        if (arg[0] === 'env') {
            var env = require('./' + arg[1] + '.json');
            module.exports = env;
        }
    }
});
```

```
node app.js env=dev
```

```
forever start app.js env=dev
```

```
 var env= require("environment.js");
```

“”

-

```
npm install properties-reader --save
```

- **env**

```
mkdir env
```

- **environments.js**

```
process.argv.forEach(function (val, index, array) {
    var arg = val.split("=");
    if (arg.length > 0) {
        if (arg[0] === 'env') {
            var env = require('./env/' + arg[1] + '.properties');
            module.exports = env;
        }
    }
});
```

- **development.properties**

```
# Dev properties
[main]
# Application port to run the node server
app.port=8080

[database]
# Database connection to mysql
mysql.host=localhost
mysql.port=2500
...
```

-

```
var enviorment = require('./environments');
var PropertiesReader = require('properties-reader');
var properties = new PropertiesReader(enviorment);

var someVal = properties.get('main.app.port');
```

-

```
npm start env=development
```

```
npm start env=production
```

https://riptutorial.com/zh-CN/node-js/topic/2340/

96: package.json

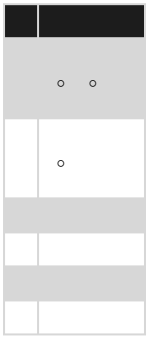
package.json

```
npm init
```

。

Examples

```
{
    "name": "my-project",
    "version": "0.0.1",
    "description": "This is a project.",
    "author": "Someone <someone@example.com>",
    "contributors": [{
        "name": "Someone Else",
        "email": "else@example.com"
    }],
    "keywords": ["improves", "searching"]
}
```



“dependencies”{“module-name”“0.1.0”}

- 0.1.0◦
- ^0.1.00.2.0 1.0.0
- 0.1.x~0.1.00.1.4 0.2.01.0.0 ◦
- *◦
- **git repository** git repomastertarball◦ #sha #tag#branch
  - **GitHub** user/projectuser/project#v1.0.0
  - **url** git://gitlab.com/user/project.gitgit://gitlab.com/user/project.git#develop
- file:../lib/project

package.jsonnpm install ◦

devDependencies

```
"devDependencies": {
```

```
    "module-name": "0.1.0"
}
```

ext。“npm install”dev-dependencies。

。

```
{
  "scripts": {
    "pretest": "scripts/pretest.js",
    "test": "scripts/test.js",
    "posttest": "scripts/posttest.js"
  }
}
```

```
$ npm run-script test
$ npm run test
$ npm test
$ npm t
```

---

prepublish	。
	。
	。
postinstall	。
	。
postuninstall	。
preversion	。
postversion	。
	`npm test`
prestopstoppoststop	`npm stop`
	`npm start`
prerestartrestartpostrestart	`npm restart`

```
{
  "scripts": {
```

```
    "preci": "scripts/preci.js",
    "ci": "scripts/ci.js",
    "postci": "scripts/postci.js"
  }
}
```

```
$ npm run-script ci
$ npm run ci
```

。

npm`repository bugshomepage`

```
{
  "main": "server.js",
  "repository" :  {
    "type": "git",
    "url": "git+https://github.com/<accountname>/<repositoryname>.git"
  },
  "bugs": {
    "url": "https://github.com/<accountname>/<repositoryname>/issues"
  },
  "homepage": "https://github.com/<accountname>/<repositoryname>#readme",
  "files": [
    "server.js", // source files
    "README.md", // additional files
    "lib" // folder with all included files
  ]
}
```

。 。
Bugtrackergithub
npm install <packagename>npm install <packagename>

package.json

`package.json`npm install`npm`。

`package.json`npm init 。

`package.json`

```
npm init --yes
# or
npm init -y
```

`package.json`

```
npm install {package name} --save
```

```
 npm i -S {package name}
```

NPM`-S--save-D--save-dev`。

;`--save-dev--save` devDependencies。

`package.json`

```
{
  "name": "module-name",
  "version": "10.3.1",
  "description": "An example module to illustrate the usage of a package.json",
  "author": "Your Name <your.name@example.org>",
  "contributors": [{
    "name": "Foo Bar",
    "email": "foo.bar@example.com"
  }],
  "bin": {
    "module-name": "./bin/module-name"
  },
  "scripts": {
    "test": "vows --spec --isolate",
    "start": "node index.js",
    "predeploy": "echo About to deploy",
    "postdeploy": "echo Deployed",
    "prepublish": "coffee --bare --compile --output lib/foo src/foo/*.coffee"
  },
  "main": "lib/foo.js",
  "repository": {
    "type": "git",
    "url": "https://github.com/username/repo"
  },
  "bugs": {
    "url": "https://github.com/username/issues"
  },
  "keywords": [
    "example"
  ],
  "dependencies": {
    "express": "4.2.x"
  },
  "devDependencies": {
    "assume": "<1.0.0 || >=2.3.1 <2.4.5 || >=2.5.2 <3.0.0"
  },
  "peerDependencies": {
    "moment": ">2.0.0"
  },
  "preferGlobal": true,
  "private": true,
  "publishConfig": {
    "registry": "https://your-private-hosted-npm.registry.domain.com"
  },
  "subdomain": "foobar",
  "analyze": true,
  "license": "MIT",
  "files": [
```

```
    "lib/foo.js"
  ]
}
```

```
name
```

。 。

1. 214。
2. 。
3. 。

```
version
```

Semantic Versioning semver。 MAJOR.MINOR.PATCH

1. APIMAJOR
2. MINOR
3. PATCH

```
description
```

。 。

```
author
```

。

```
bin
```

。 。

CLI。

```
script
```

npm。 npm。 `npm run {command name}npm run-script {command name}`。

。 `mocha./node-modules/.bin/mocha` 。

```
main
```

。 `require('{module name}')`。

。 HTTP。 `exports.init = function () {...}` 。

```
keywords
```

◦ ◦

```
devDependencies
```

◦ NODE_ENV=production◦ npm install --dev

```
peerDependencies
```

peerDependencies◦ moment-timezone moment require("moment")

```
preferGlobal
```

npm install -g {module-name}npm install -g {module-name} ◦ CLI◦

◦

```
publishConfig
```

publishConfig◦ npm◦

publishConfignpmnpm◦ npmURL◦

```
files
```

◦ ◦ ◦ ◦ .npmignore◦

package.json https://riptutorial.com/zh-CN/node-js/topic/1515/package-json

97: ReadLine

- const readline = require'readline'
- readline.close
- readline.pause
- readline.prompt[preserveCursor]
- readline.question
- readline.resume
- readline.setPrompt
- readline.writedata [key]
- readline.clearLinestreamdir
- readline.clearScreenDown
- readline.createInterface
- readline.cursorTostreamxy
- readline.emitKeypressEventsstream [interface]
- readline.moveCursorstreamdxdy

Examples

```
const fs = require('fs');
const readline = require('readline');

const rl = readline.createInterface({
    input: fs.createReadStream('text.txt')
});

// Each new line emits an event - every time the stream receives \r, \n, or \r\n
rl.on('line', (line) => {
    console.log(line);
});

rl.on('close', () => {
    console.log('Done reading file');
});
```

CLI

```
const readline = require('readline');

const rl = readline.createInterface({
    input: process.stdin,
    output: process.stdout
});

rl.question('What is your name?', (name) => {
    console.log(`Hello ${name}!`);

    rl.close();
});
```

ReadLine https://riptutorial.com/zh-CN/node-js/topic/1431/readline

98:

YarnNode.jsnpm。 Yarnnpm。

Examples

Yarn。

```
brew update
brew install yarn
```

MacPorts

```
sudo port install yarn
```

PATH

shell `.profile` `.bashrc` `.zshrc`

```
export PATH="$PATH:`yarn global bin`"
```

Node.js。

YarnYarn`.msi` 。

```
choco install yarn
```

Linux

Debian / Ubuntu

Node.js

```
curl -sL https://deb.nodesource.com/setup_6.x | sudo -E bash -
sudo apt-get install -y nodejs
```

YarnPkg

```
curl -sS https://dl.yarnpkg.com/debian/pubkey.gpg | sudo apt-key add -
```

```
echo "deb https://dl.yarnpkg.com/debian/ stable main" | sudo tee
/etc/apt/sources.list.d/yarn.list
```

```
sudo apt-get update && sudo apt-get install yarn
```

CentOS / Fedora / RHEL

Node.js.

```
curl --silent --location https://rpm.nodesource.com/setup_6.x | bash -
```

```
sudo wget https://dl.yarnpkg.com/rpm/yarn.repo -O /etc/yum.repos.d/yarn.repo
sudo yum install yarn
```

AUR。

yaourt

```
yaourt -S yarn
```

```
sudo eopkg install yarn
```

shell `.profile .bashrc .zshrc`

```
export PATH="$PATH:`yarn global bin`"
```

Shell

```
curl -o- -L https://yarnpkg.com/install.sh | bash
```

```
curl -o- -L https://yarnpkg.com/install.sh | bash -s -- --version [version]
```

```
cd /opt
wget https://yarnpkg.com/latest.tar.gz
tar zvxf latest.tar.gz
```

NPM

npm

```
npm install -g yarn
```

Yarn

```
yarn --version
```

yarn initpackage.json◦ npm initnpm init◦

yarn init

```
mkdir my-package && cd my-package
yarn init
```

CLI

```
question name (my-package): my-package
question version (1.0.0):
question description: A test package
question entry point (index.js):
question repository url:
question author: StackOverflow Documentation
question license (MIT):
success Saved package.json
  Done in 27.31s.
```

package.json

```
{
  "name": "my-package",
  "version": "1.0.0",
  "description": "A test package",
  "main": "index.js",
  "author": "StackOverflow Documentation",
  "license": "MIT"
}
```

◦ yarn add [package-name]

ExpressJS

yarn add express

package.jsondependenciesExpressJS

```
"dependencies": {
    "express": "^4.15.2"
}
```

Yarn

Yarnnpm◦ npmYarn◦

yarn add package ◦

yarn add package@version

◦

`yarn add package@tag` ◦

https://riptutorial.com/zh-CN/node-js/topic/9441/

99:

- const cluster = require“cluster”
- cluster.fork
- cluster.isMaster
- cluster.isWorker
- cluster.schedulingPolicy
- cluster.setupMaster
- cluster.settings
- cluster.worker //worker
- cluster.workers //master

`cluster.fork()fork()`C。

Node.js

Examples

`cluster.js`

```
const cluster = require('cluster');
const http = require('http');
const numCPUs = require('os').cpus().length;

if (cluster.isMaster) {
  // Fork workers.
  for (let i = 0; i < numCPUs; i++) {
    cluster.fork();
  }

  cluster.on('exit', (worker, code, signal) => {
    console.log(`worker ${worker.process.pid} died`);
  });
} else {
  // Workers can share any TCP connection
  // In this case it is an HTTP server
  require('./server.js')();
}
```

`server.js`

```
const http = require('http');

function startServer() {
    const server = http.createServer((req, res) => {
      res.writeHead(200);
      res.end('Hello Http');
    });

    server.listen(3000);
}
```

```
if(!module.parent) {
    // Start server if file is run directly
    startServer();
} else {
    // Export server, if file is referenced via cluster
    module.exports = startServer;
}
```

Webworker。CPU。Node.jsCPUNode.js。8000。Round-Robin。

`Node.js`。Node.js。

`cluster`。

worker。

```
const cluster = require('cluster');
const http = require('http');
const numCPUs = require('os').cpus().length; //number of CPUS

if (cluster.isMaster) {
  // Fork workers.
  for (var i = 0; i < numCPUs; i++) {
    cluster.fork();    //creating child process
  }

  //on exit of cluster
  cluster.on('exit', (worker, code, signal) => {
      if (signal) {
        console.log(`worker was killed by signal: ${signal}`);
      } else if (code !== 0) {
        console.log(`worker exited with error code: ${code}`);
      } else {
        console.log('worker success!');
      }
  });
} else {
  // Workers can share any TCP connection
  // In this case it is an HTTP server
  http.createServer((req, res) => {
    res.writeHead(200);
    res.end('hello world\n');
  }).listen(3000);
}
```

https://riptutorial.com/zh-CN/node-js/topic/2817/

100:

Examples

nodemon

nodemon。

nodemon

`npm install -g nodemon npm i -g nodemon`

nodemon

`npm install --save-dev nodemon npm i -D nodemon`

nodemon

`nodemon entry.js nodemon entry`

`node entry.js node entry` 。

nodemonnpm。

package.json

```
  "scripts": {
    "start": "nodemon entry.js -devmode -something 1"
  }
```

`npm start` 。

Browsersync

Browsersync。 NPM 。

BrowsersyncNode.jsNPM。 Node.jsSO。

Browsersync

```
$ npm install browser-sync -D
```

`node_modules`Browsersync。

`-g-D`。

Windows

WindowsBrowsersyncVisual StudioBrowsersync。 Visual Studio

```
$ npm install browser-sync --msvs_version=2013 -D
```

Visual Studio2013。

JavaScript

```
$ browser-sync start --proxy "myproject.dev" --files "**/*.js"
```

`myproject.dev`Web。 Browsersync。

BrowsersyncGrunt.jsGulp.js。

Grunt.js

Grunt.js

```
$ npm install grunt-browser-sync -D
```

`gruntfile.js`

```
grunt.loadNpmTasks('grunt-browser-sync');
```

Gulp.js

BrowsersyncCommonJSGulp.js。

```
var browserSync = require('browser-sync').create();
```

Browsersync API。

API

Browsersync API https //browsersync.io/docs/api

https://riptutorial.com/zh-CN/node-js/topic/1743/

101:

。ps10。 TIA。

Examples

node.js/。 。 。

index.js -。

```
//Import Libraries
var express = require('express'),
    session = require('express-session'),
    mongoose = require('mongoose'),
    request = require('request');

//Import custom modules
var userRoutes = require('./app/routes/userRoutes');
var config = require('./app/config/config');

//Connect to Mongo DB
mongoose.connect(config.getDBString());

//Create a new Express application and Configure it
var app = express();

//Configure Routes
app.use(config.API_PATH, userRoutes());

//Start the server
app.listen(config.PORT);
console.log('Server started at - '+ config.URL+ ":" +config.PORT);
```

config.js -。

```
var config = {
VERSION: 1,
BUILD: 1,
URL: 'http://127.0.0.1',
API_PATH : '/api',
PORT : process.env.PORT || 8080,
DB : {
    //MongoDB configuration
    HOST : 'localhost',
    PORT : '27017',
    DATABASE : 'db'
},

/*
 * Get DB Connection String for connecting to MongoDB database
 */
getDBString : function(){
    return 'mongodb://'+ this.DB.HOST +':'+ this.DB.PORT +'/'+ this.DB.DATABASE;
},
```

```
/*
 * Get the http URL
 */
getHTTPUrl : function(){
    return 'http://' + this.URL + ":" + this.PORT;
}

module.exports = config;
```

user.js -

```
var mongoose = require('mongoose');
var Schema = mongoose.Schema;

//Schema for User
var UserSchema = new Schema({
    name: {
        type: String,
    //    required: true
    },
    email: {
        type: String
    },
    password: {
        type: String,
        //required: true
    },
    dob: {
        type: Date,
        //required: true
    },
    gender: {
        type: String, // Male/Female
    //    required: true
    }
});

//Define the model for User
var User;
if(mongoose.models.User)
    User = mongoose.model('User');
else
    User = mongoose.model('User', UserSchema);

//Export the User Model
module.exports = User;
```

userController - signUp

```
var User = require('../models/user');
var crypto = require('crypto');

//Controller for User
var UserController = {

    //Create a User
    create: function(req, res){
        var repassword = req.body.repassword;
```

```
        var password = req.body.password;
        var userEmail = req.body.email;

        //Check if the email address already exists
        User.find({"email": userEmail}, function(err, usr){
            if(usr.length > 0){
                //Email Exists

                res.json('Email already exists');
                return;
            }
            else
            {
                //New Email

                //Check for same passwords
                if(password != repassword){
                    res.json('Passwords does not match');
                    return;
                }

                //Generate Password hash based on sha1
                var shasum = crypto.createHash('sha1');
                shasum.update(req.body.password);
                var passwordHash = shasum.digest('hex');

                //Create User
                var user = new User();
                user.name = req.body.name;
                user.email = req.body.email;
                user.password = passwordHash;
                user.dob = Date.parse(req.body.dob) || "";
                user.gender = req.body.gender;

                //Validate the User
                user.validate(function(err){
                    if(err){
                        res.json(err);
                        return;
                    }else{
                        //Finally save the User
                        user.save(function(err){
                            if(err)
                            {
                                res.json(err);
                                return;
                            }

                            //Remove Password before sending User details
                            user.password = undefined;
                            res.json(user);
                            return;
                        });
                    }
                });
             }
        });
    }

}
```

```
module.exports = UserController;
```

userRoutes.js - userController

```
var express = require('express');
var UserController = require('../controllers/userController');

//Routes for User
var UserRoutes = function(app)
{
    var router = express.Router();

router.route('/users')
    .post(UserController.create);

return router;

}

module.exports = UserRoutes;
```

node.js。

https://riptutorial.com/zh-CN/node-js/topic/6489/

102: jscsv

CSV。 csv。 。

Examples

FSCSV

fsAPI 。 fsreadFiledata.csvcsv。

data.csv。

```
'use strict'

const fs = require('fs');

fs.readFile('data.csv', 'utf8', function (err, data) {
  var dataArray = data.split(/\r?\n/);
  console.log(dataArray);
});
```

。

jscsv https://riptutorial.com/zh-CN/node-js/topic/9162/jscsv

103: JS

nodejs

Examples

i18njs app

json。 vanilla node.jsexpressrestifyresreqapp.use。 apptemplates__'...'。 webtranslateit jsonjson。

。 。

+ i18n-node + cookieParser

```
// usual requirements
var express = require('express'),
    i18n = require('i18n'),
    app = module.exports = express();

i18n.configure({
  // setup some locales - other locales default to en silently
  locales: ['en', 'ru', 'de'],

  // sets a custom cookie name to parse locale settings from
  cookie: 'yourcookiename',

  // where to store json files - defaults to './locales'
  directory: __dirname + '/locales'
});

app.configure(function () {
  // you will need to use cookieParser to expose cookies to req.cookies
  app.use(express.cookieParser());

  // i18n init parses req for language headers, cookies, etc.
  app.use(i18n.init);

});

// serving homepage
app.get('/', function (req, res) {
  res.send(res.__('Hello World'));
});

// starting server
if (!module.parent) {
  app.listen(3000);
}
```

JS https://riptutorial.com/zh-CN/node-js/topic/9594/js

104:

Node

Express

ALL-IN-ONE UNITY。

/。

CORS。

Examples

```
var http = require('http');
var fs = require('fs');
var path = require('path');

http.createServer(function (request, response) {
console.log('request ', request.url);

var filePath = '.' + request.url;
if (filePath == './')
    filePath = './index.html';

var extname = String(path.extname(filePath)).toLowerCase();
var contentType = 'text/html';
var mimeTypes = {
    '.html': 'text/html',
    '.js': 'text/javascript',
    '.css': 'text/css',
    '.json': 'application/json',
    '.png': 'image/png',
    '.jpg': 'image/jpg',
    '.gif': 'image/gif',
    '.wav': 'audio/wav',
    '.mp4': 'video/mp4',
    '.woff': 'application/font-woff',
    '.ttf': 'applilcation/font-ttf',
    '.eot': 'application/vnd.ms-fontobject',
    '.otf': 'application/font-otf',
    '.svg': 'application/image/svg+xml'
};

contentType = mimeTypes[extname] || 'application/octect-stream';

fs.readFile(filePath, function(error, content) {
    if (error) {
        if(error.code == 'ENOENT'){
            fs.readFile('./404.html', function(error, content) {
                response.writeHead(200, { 'Content-Type': contentType });
                response.end(content, 'utf-8');
            });
        }
        else {
```

```
            response.writeHead(500);
            response.end('Sorry, check with the site admin for error: '+error.code+' ..\n');
            response.end();
        }
    }
    else {
        response.writeHead(200, { 'Content-Type': contentType });
        response.end(content, 'utf-8');
    }
 });

}).listen(8125);
console.log('Server running at http://127.0.0.1:8125/');
```

CORS

```
// Website you wish to allow to connect to
response.setHeader('Access-Control-Allow-Origin', '*');

// Request methods you wish to allow
response.setHeader('Access-Control-Allow-Methods', 'GET, POST, OPTIONS, PUT, PATCH, DELETE');

// Request headers you wish to allow
response.setHeader('Access-Control-Allow-Headers', 'X-Requested-With,content-type');

// Set to true if you need the website to include cookies in the requests sent
// to the API (e.g. in case you use sessions)
response.setHeader('Access-Control-Allow-Credentials', true);
```

https://riptutorial.com/zh-CN/node-js/topic/5910/

105:

Examples

nodebackPromises

```
const Promise = require('bluebird'),
      fs = require('fs')

Promise.promisifyAll(fs)

// now you can use promise based methods on 'fs' with the Async suffix
fs.readFileAsync('file.txt').then(contents => {
  console.log(contents)
}).catch(err => {
  console.error('error reading', err)
})
```

```
Promise.resolve([ 1, 2, 3 ]).map(el => {
   return Promise.resolve(el * el) // return some async operation in real world
})
```

```
Promise.resolve([ 1, 2, 3 ]).filter(el => {
  return Promise.resolve(el % 2 === 0) // return some async operation in real world
}).then(console.log)
```

```
Promise.resolve([ 1, 2, 3 ]).reduce((prev, curr) => {
  return Promise.resolve(prev + curr) // return some async operation in real world
}).then(console.log)
```

```
const promiseReturningFunction = Promise.coroutine(function* (file) {
  const data = yield fs.readFileAsync(file) // this returns a Promise and resolves to the file
contents

  return data.toString().toUpperCase()
})

promiseReturningFunction('file.txt').then(console.log)
```

Promise.using

```
function somethingThatReturnsADisposableResource() {
  return getSomeResourceAsync(...).disposer(resource => {
    resource.dispose()
  })
}

Promise.using(somethingThatReturnsADisposableResource(), resource => {
  // use the resource here, the disposer will automatically close it when Promise.using exits
})
```

```
Promise.resolve([1, 2, 3])
  .mapSeries(el => Promise.resolve(el * el)) // in real world, use Promise returning async
function
  .then(console.log)
```

https://riptutorial.com/zh-CN/node-js/topic/6728/

106:

NodeJS`require()`。

NodeJS。 。 `require()require`。

- module.exports = {testFunctiontestFunction};
- var test_file = require'./ testFile.js'; //`testFile`
- test_file.testFunctionour_data; //`testFiletestFunction`

`require()`Java。 `.export`“`require`”。 `.export`。

Examples

RequireNode`getter`。 `analysis.js`

```
function analyzeWeather(weather_data) {
  console.log('Weather information for ' + weather_data.time + ': ');
  console.log('Rainfall: ' + weather_data.precip);
  console.log('Temperature: ' + weather_data.temp);
  //More weather_data analysis/printing...
}
```

`analyzeWeather(weather_data)`。 。 Node。

`export`。

```
module.exports = {
  analyzeWeather: analyzeWeather
}
function analyzeWeather(weather_data) {
  console.log('Weather information for ' + weather_data.time + ': ');
  console.log('Rainfall: ' + weather_data.precip);
  console.log('Temperature: ' + weather_data.temp);
  //More weather_data analysis/printing...
}
```

`module.exports`。 `require()`。

`require`。 `var``const`。 `analyze.jshandleWeather.js`

```
const analysis = require('./analysis.js');

weather_data = {
  time: '01/01/2001',
  precip: 0.75,
  temp: 78,
  //More weather data...
};
analysis.analyzeWeather(weather_data);
```

require()analysis.js。 require。

NPM

NPMrequire。 getWeather.jsNPMrequire 。 NPM git install request 。 getWeather.js

```
var https = require('request');

//Construct your url variable...
https.get(url, function(error, response, body) {
  if (error) {
    console.log(error);
  } else {
    console.log('Response => ' + response);
    console.log('Body => ' + body);
  }
});
```

require 'Srequest。 requestget 。 HTTP GET 。

https://riptutorial.com/zh-CN/node-js/topic/10742/--

107:

Examples

```
const options = require("commander");

options
  .option("-v, --verbose", "Be verbose");

options
  .command("convert")
  .alias("c")
  .description("Converts input file to output file")
  .option("-i, --in-file <file_name>", "Input file")
  .option("-o, --out-file <file_name>", "Output file")
  .action(doConvert);

options.parse(process.argv);

if (!options.args.length) options.help();

function doConvert(options){
    //do something with options.inFile and options.outFile
};
```

```
const options = require("commander");

options
  .option("-v, --verbose")
  .parse(process.argv);

if (options.verbose){
  console.log("Let's make some noise!");
}
```

https://riptutorial.com/zh-CN/node-js/topic/6174/

108: Node.js

Examples

node.js

Node.js。

```
node debug filename.js
```

debugDemo.jsNode.js

```
'use strict';

function addTwoNumber(a, b){
// function returns the sum of the two numbers
debugger
  return a + b;
}

var result = addTwoNumber(5, 9);
console.log(result);
```

debugger。

1.

```
cont, c - Continue execution
next, n - Step next
step, s - Step in
out, o - Step out
```

2.

```
setBreakpoint(), sb() - Set breakpoint on current line
setBreakpoint(line), sb(line) - Set breakpoint on specific line
```

```
node debug debugDemo.js
```

◦ process.exit()

```
ankuranand:~/workspace/nodejs/nodejsDebugging $ node debug debugDemo.js
< Debugger listening on port 5858
debug> . ok
break in debugDemo.js:3
  1 // A Demo Code Showing the basic capabilities of the nodejs  debugging module
  2
> 3 'use strict';
  4
  5 function addTwoNumber(a, b){
debug> n
break in debugDemo.js:11
  9 }
 10
>11 let result = addTwoNumber(5, 9);
 12 console.log(result);
 13
debug> c
break in debugDemo.js:7
  5 function addTwoNumber(a, b){
  6 // function returns the sum of the two numbers
> 7 debugger
  8   return a + b;
  9 }
debug> c
< 14
debug> process.exit()
ankuranand:~/workspace/nodejs/nodejsDebugging $
```

`watch(expression)` `restart`。

`repl`。 repl。 。 `Ctrl+C`。

---

v6.3.0

node v8node-inspector。

URL

```
node --inspect server.js
```

```
npm install -g node-inspector
```

node-debug

```
node-debug filename.js
```

Chrome

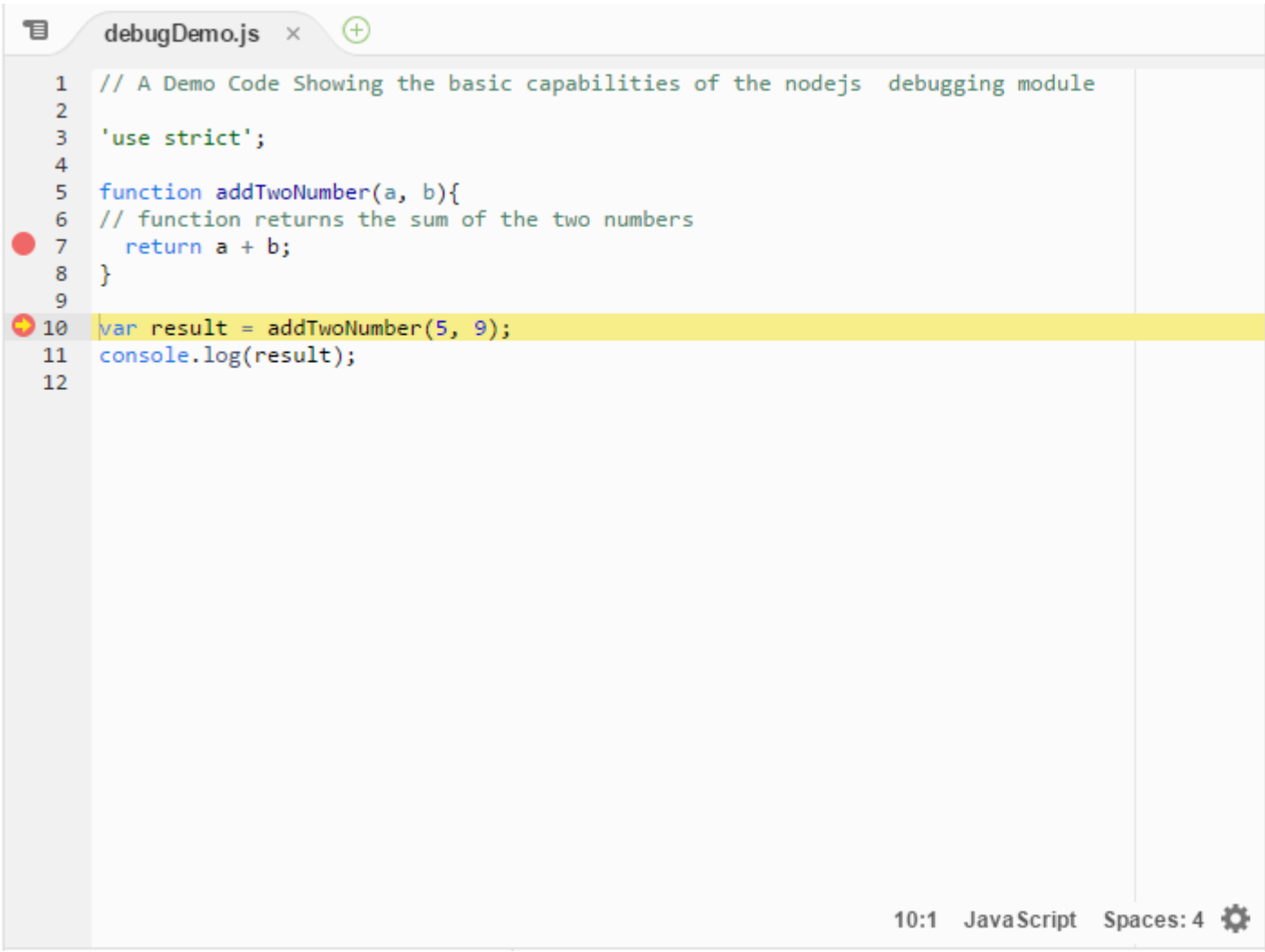
```
http://localhost:8080/debug?port=5858
```

8080。

0.0.0.0:8080。EACCES。

。

```
$node-inspector --web-port=6500
```



Node.js https://riptutorial.com/zh-CN/node-js/topic/5900/node-js

109: Mongodb

MongoDB。 MongoDBNoSQLJSON。

https://www.mongodb.com/

- MongoClient.connect'mongodb//127.0.0.127017 / crud'functionerrdb{// do womething here};

Examples

Node.JSmongoDB

```
MongoClient.connect('mongodb://localhost:27017/myNewDB',function (err,db) {
    if(err)
        console.log("Unable to connect DB. Error: " + err)
    else
        console.log('Connected to DB');

    db.close();
});
```

myNewDB。

mongoDBNode.JS

```
  var MongoClient = require('mongodb').MongoClient;

    //connection with mongoDB
    MongoClient.connect("mongodb://localhost:27017/MyDb", function (err, db) {
          //check the connection
 if(err){
           console.log("connection failed.");
}else{
                    console.log("successfully connected to mongoDB.");
    });
```

Mongodb https://riptutorial.com/zh-CN/node-js/topic/6280/mongodb

110:

Examples

GitHub。npm

$ npm install --save async

Bower

$ bower

```
var async = require("async");
async.parallel([
    function(callback) { ... },
    function(callback) { ... }
], function(err, results) {
    // optional callback
});
```

Async.js。 Async。

Async。 。

Async。 。 。 。 NodeAsync。

https://github.com/caolan/async。npm

$ npm install --save async

Bower

$ bower

Async

```
var fs = require('fs');
var async = require('async');

var myFile = '/tmp/test';

async.waterfall([
    function(callback) {
        fs.readFile(myFile, 'utf8', callback);
    },
    function(txt, callback) {
        txt = txt + '\nAppended something!';
        fs.writeFile(myFile, txt, callback);
    }
], function (err, result) {
    if(err) return console.log(err);
```

```
    console.log('Appended text!');
});
```

https://riptutorial.com/zh-CN/node-js/topic/10045/

111:

nodejs。arc'。MVC。APICRUD

browserifyvue.js。mvcpublicmvc。。

Examples

nodejsMVCAPI

- 。
- 。config。

```
|-- Config
       |-- config.json
       |-- appConfig
           |-- pets.config
           |-- payment.config
```

- /。*2webapp*。*src*。

  webapp。。

- App.js / index.jsnodejs。。*dto*API。

  ```
  |-- server
       |-- dto
           |-- pet.js
           |-- payment.js
       |-- controller
           |-- PetsController.js
           |-- PaymentController.js
       |-- App.js
  ```

- webapp*publicmvc*。browserfiywebappMVC*mvc*。

  | - webapp | - public | - mvc

- csssaasHTML。

```
|-- public
    |-- build  // will contianed minified scripts(mvc)
    |-- images
        |-- mouse.jpg
        |-- cat.jpg
    |-- styles
        |-- style.css
    |-- views
        |-- petStore.html
        |-- paymentGateway.html
```

```
        |-- header.html
        |-- footer.html
    |-- index.html
```

- *mvc* UI*utils*。 index.jsshell.js。

```
  |-- mvc
      |-- controllers
          |-- Dashborad.js
          |-- Help.js
          |-- Login.js
      |-- utils
      |-- index.js
```

below.And*browserify*MVC。 ***express.usesatic'public'*** api。

```
|-- node_modules
|-- src
    |-- server
        |-- controller
        |-- App.js   // node app
    |-- webapp
        |-- public
            |-- styles
            |-- images
            |-- index.html
        |-- mvc
            |-- controller
            |-- shell.js  // mvc shell
|-- config
|-- Readme.md
|-- .gitignore
|-- package.json
```

https://riptutorial.com/zh-CN/node-js/topic/9935/

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72	Node.jsPOST	Manas Jayanth
73		arcs
74		RamenChef, umesh
75	Node.js.	Alister Norris, Aminadav, Anh Cao, asherbar, Batsu, Buzut, Chance Snow, Chezzwizz, Dmitriy Borisov, Florian Hämmerle, GilZ, guleria, hexacyanide, HungryCoder, Inanc Gumus, Jacek Labuda, John Vincent Jardin, Josh, KahWee Teng, Maciej Rostański, mmhyamin, Naing Lin Aung, NuSkooler, Shabin Hashim, Siddharth Srivastva, Sveratum, tandrewnichols, user2314737, user6939352, V1P3R, victorkohl
76	-	Zoltán Schmidt
77	node.js	Buzut
78		Beshoy Hanna
79	angular.jsNode.js express.js	sigfried
80	Node.jsECMAScript 2015ES6	David Xu, Florian Hämmerle, Osama Bari
81		damitj07
82		KlwntSingh, Nivesh, riyadhalnur, sBanda, sjmarshy, topheman
83	/	Cami Rodriguez, Cody G., cyanbeam, Dave, David Xu, Dom Vinyard, m_callens, Manuel, nomanbinhussein, Toni Villena
84		Ala Eddine JEBALI, cyanbeam, Florian Hämmerle, H. Pauwelyn, John, Marek Skiba, Native Coder, omgimanerd, slowdeath007
85		Antenka, SteveLacy
86		Ankit Rana, Community, Léo Martin, M. A. Cordeiro, Rupali Pemare, shikhar bansal
87		Mario Rozic
88	HTML	Himani Agrawal, RamenChef, user2314737
89	MongoDBMongoose	zurfyx
90	I / O.	4444, Accepted Answer, Aeolingamenfel, Christophe Marois,

		Craig Ayre, DrakaSAN, Duly Kinsky, Florian Hämmerle, gnerkus, Harshal Bhamare, hexacyanide, jakerella, Julien CROUZET, Louis Barranqueiro, midnightsyntax, Mikhail, peteb, Shiven, still_learning, Tim Jones, Tropic, Vsevolod Goloviznin, Zanon
91	Node.js。	gentlejo
92		Aikon Mogwai
93		Alex Logan, manuerumx, Mikhail, Naeem Shaikh, Qiong Wu, Simplans, Will
94	- REST	Roopesh
95		Chris, Freddie Coleman, KlwntSingh, Louis Barranqueiro, Mikhail, sBanda
96	package.json	Ankur Anand, Asaf Manassen, Chance Snow, efeder, Eric Smekens, Florian Hämmerle, Jaylem Chaudhari, Kornel, lauriys , mezzode, OzW, RamenChef, Robbie, Shabin Hashim, Simplans, SteveLacy, Sven 31415, Tomás Cañibano, user6939352, V1P3R, victorkohl
97	ReadLine	4444, Craig Ayre, Florian Hämmerle, peteb
98		Andrew Brooke, skiilaa
99		Benjamin, Florian Hämmerle, Kid Binary, MayorMonty, Mukesh Sharma, riyadhalnur, Vsevolod Goloviznin
100		ch4nd4n, Dean Rather, Jonas S, Joshua Kleveter, Nivesh, Sanketh Katta, zurfyx
101		Ajitej Kaushik, RamenChef
102	jscsv	aisflat439
103	JS	Osama Bari
104		Hasan A Yousef, Taylor Ackley
105		David Xu
106		Philip Cornelius Glover
107		yrtimiD
108	Node.js	4444, Alister Norris, Ankur Anand, H. Pauwelyn, Matthew Shanley

109	Mongodb	FabianCook, Nainesh Raval, Shriganesh Kolhe
110		tyehia
111		damitj07