Модуль **util**

Модуль, який містить ряд корисних методів : реалізація механізму успадкування, перевірка типів даних та ін.

Встановлення:

**npm i util**

**Посилання:**

[**https://nodejs.org/api/util.html**](https://nodejs.org/api/util.html)

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|  | Загальна форма | Приклад |
| Підключення | **var** util=require(**"util"**); |  |
| Додавання предків до існуючого класу | util.**inherits**( **клас\_нащадок** , клас\_предок); | **var** util=require(**"util"**); **var** EventEmitter=require(**"events"**).EventEmitter; **var** Company=require(**"./Company"**);  util.**inherits**(Company,EventEmitter); |
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Модуль **events**

Модуль, який дозволяє створювати та здійснювати обробку власних подій.

Посилання

<https://nodejs.org/api/events.html>

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|  | Загальна форма | Приклад |
| Підключення |  | var events = require('events'); |
| Використання об’єкта EventEmitter |  | var eventEmitter = new events.EventEmitter(); |
|  | // Підключення до прослуховування події  об’єкт\_емітера . **on** ( подія, функція\_обробник );  --------------------------------------------  // Генерування події  об’єкт\_емітера . emit ( подія ) | //Assign the event handler to an event: eventEmitter.on('scream', myEventHandler);  //Fire the 'scream' event: eventEmitter.emit('scream'); |
| Передача даних при генеруванні події | // Підключення до прослуховування події  об’єкт\_емітера . **on** ( подія, функція\_обробник ( **параметр\_даних** ));  --------------------------------------------  // Генерування події  об’єкт\_емітера . emit ( подія , **дані**) | const Emitter = require("events");  let emitter = new Emitter();  let eventName = "greet";  emitter.on(eventName, **function(data)**{      console.log(data);  });    emitter.emit(eventName, **"Привет пир!"**); |
| Успадкування події | **const util = require("util");**  const EventEmitter =require("events");    function User(){  }  **util.inherits(User, EventEmitter);**    **user.on(eventName, function(data){**      console.log(data);  });    **user.emit(eventName, data);** | const util = require("util");  const EventEmitter = require("events");    function User(){  }  util.inherits(User, EventEmitter);    let eventName = "greet";  User.prototype.sayHi = function(data){      this.emit(eventName, data);  }  let user = new User();  // добавляем к объекту user обработку события "greet"  user.on(eventName, function(data){      console.log(data);  });    user.sayHi("Привіт ..."); |
| Успадкування як предка при розробці класів |  | **const EventEmitter = require("events");**    let eventName = "greet";    class User **extends EventEmitter** {      sayHi(data) {          this.emit(eventName, data);      }  }    let user = new User();  // добавляем к объекту user обработку события "greet"  user.on(eventName, function(data){      console.log(data);  });    user.sayHi("Мне нужна твоя одежда..."); |

Приклад. Клас «Клієнт» на основі EventEmitter. Додати можливість обробки події надходження повідомлення.

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| **--------------- app.js --------------------**  **var** util=require(**"util"**); **var** EventEmitter=require(**"events"**).EventEmitter; **var** Company=require(**"./Company"**);  **util.inherits(Company,EventEmitter); var** AVE= **new** Company(**"Ave"**, **"Uzhgorod, Tolstogo st."**); **var** UZHNU= **new** Company(**"UzhNU"**, **"Uzhgorod, Narodna st."**);  **AVE.on("send\_msg",(msg)=>AVE.sendMsg(msg)); UZHNU.on("send\_msg",(msg)=>UZHNU.sendMsg(msg));**   AVE.emit(**"send\_msg"**,**"Hello"**); UZHNU.emit(**"send\_msg"**,**"Hello"**); | **--------------- Company.js --------------------**  **class** Company {  constructor(title,address)  {  **this**.**Title**=title;  **this**.**Address**=address;   }  sendMsg(msg)  {  **console**.log(**`**${**this**.**Title**} **-** ${msg}**`**);  } } module.exports=Company; |
| **--------------- app.js --------------------**  **var** Company=require(**"./Company"**);  **var** AVE= **new** Company(**"Ave"**, **"Uzhgorod, Tolstogo st."**); **var** UZHNU= **new** Company(**"UzhNU"**, **"Uzhgorod, Narodna st."**);  AVE.emit(**"send\_msg"**,**"Hello"**); UZHNU.emit(**"send\_msg"**,**"Hello"**); | **--------------- Company.js --------------------**  **class** Company **extends require("events").EventEmitter**{  constructor(title,address)  {  **super**();  **this**.**Title**=title;  **this**.**Address**=address;  **this.on("send\_msg",this.sendMsg.bind(this));**   }  sendMsg(msg)  {  **console**.log(**`**${**this**.**Title**} **-** ${msg}**`**);  } } module.exports=Company; |

URL

## The Built-in URL Module

The URL module splits up a web address into readable parts.

To include the URL module, use the require() method:

var url = require('url');

Parse an address with the url.parse() method, and it will return a URL object with each part of the address as properties:

### Example

Split a web address into readable parts:

var url = require('url');  
var adr = 'http://localhost:8080/default.htm?year=2017&month=february';  
var q = url.parse(adr, true);  
  
console.log(q.host); //returns 'localhost:8080'  
console.log(q.pathname); //returns '/default.htm'  
console.log(q.search); //returns '?year=2017&month=february'  
  
var qdata = q.query; //returns an object: { year: 2017, month: 'february' }  
console.log(qdata.month); //returns 'february'

[Run example »](https://www.w3schools.com/nodejs/shownodejs_cmd.asp?filename=demo_url)

## Node.js File Server

Now we know how to parse the query string, and in the previous chapter we learned how to make Node.js behave as a file server. Let us combine the two, and serve the file requested by the client.

Create two html files and save them in the same folder as your node.js files.

summer.html

<!DOCTYPE html>  
<html>  
<body>  
<h1>Summer</h1>  
<p>I love the sun!</p>  
</body>  
</html>

winter.html

<!DOCTYPE html>  
<html>  
<body>  
<h1>Winter</h1>  
<p>I love the snow!</p>  
</body>  
</html>

Create a Node.js file that opens the requested file and returns the content to the client. If anything goes wrong, throw a 404 error:

demo\_fileserver.js:

var http = require('http');  
var url = require('url');  
var fs = require('fs');  
  
http.createServer(function (req, res) {  
  var q = url.parse(req.url, true);  
  var filename = "." + q.pathname;  
  fs.readFile(filename, function(err, data) {  
    if (err) {  
      res.writeHead(404, {'Content-Type': 'text/html'});  
      return res.end("404 Not Found");  
    }    
    res.writeHead(200, {'Content-Type': 'text/html'});  
    res.write(data);  
    return res.end();  
  });  
}).listen(8080);

Remember to initiate the file:

Initiate demo\_fileserver.js:

C:\Users\Your Name>node demo\_fileserver.js

If you have followed the same steps on your computer, you should see two different results when opening these two addresses:

<http://localhost:8080/summer.html>

Will produce this result:

# Summer

I love the sun!

<http://localhost:8080/winter.html>

Will produce this result:

# Winter

I love the snow!

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# Node.js Upload Files

[❮ Previous](https://www.w3schools.com/nodejs/nodejs_events.asp)[Next ❯](https://www.w3schools.com/nodejs/nodejs_email.asp)

## The Formidable Module

There is a very good module for working with file uploads, called "Formidable".

The Formidable module can be downloaded and installed using NPM:

C:\Users\Your Name>npm install formidable

After you have downloaded the Formidable module, you can include the module in any application:

var formidable = require('formidable');

## Upload Files

Now you are ready to make a web page in Node.js that lets the user upload files to your computer:

## Step 1: Create an Upload Form

Create a Node.js file that writes an HTML form, with an upload field:

### Example

This code will produce an HTML form:

var http = require('http');  
  
http.createServer(function (req, res) {  
  res.writeHead(200, {'Content-Type': 'text/html'});  
  res.write('<form action="fileupload" method="post" enctype="multipart/form-data">');  
  res.write('<input type="file" name="filetoupload"><br>');  
  res.write('<input type="submit">');  
  res.write('</form>');  
  return res.end();  
}).listen(8080);

## Step 2: Parse the Uploaded File

Include the Formidable module to be able to parse the uploaded file once it reaches the server.

When the file is uploaded and parsed, it gets placed on a temporary folder on your computer.

### Example

The file will be uploaded, and placed on a temporary folder:

var http = require('http');  
**var formidable = require('formidable');**  
http.createServer(function (req, res) {  
**if (req.url == '/fileupload') {  
    var form = new formidable.IncomingForm();  
    form.parse(req, function (err, fields, files) {  
      res.write('File uploaded');  
      res.end();  
    });**  } else {  
    res.writeHead(200, {'Content-Type': 'text/html'});  
    res.write('<form action="fileupload" method="post" enctype="multipart/form-data">');  
    res.write('<input type="file" name="filetoupload"><br>');  
    res.write('<input type="submit">');  
    res.write('</form>');  
    return res.end();  
  }  
}).listen(8080);

## Step 3: Save the File

When a file is successfully uploaded to the server, it is placed on a temporary folder.

The path to this directory can be found in the "files" object, passed as the third argument in the parse() method's callback function.

To move the file to the folder of your choice, use the File System module, and rename the file:

### Example

Include the fs module, and move the file to the current folder:

var http = require('http');  
var formidable = require('formidable');  
**var fs = require('fs');**  
http.createServer(function (req, res) {  
  if (req.url == '/fileupload') {  
    var form = new formidable.IncomingForm();  
    form.parse(req, function (err, fields, files) {  
**var oldpath = files.filetoupload.path;  
      var newpath = 'C:/Users/Your Name/' + files.filetoupload.name;  
      fs.rename(oldpath, newpath, function (err) {  
        if (err) throw err;  
        res.write('File uploaded and moved!');  
        res.end();  
      });** });  
  } else {  
    res.writeHead(200, {'Content-Type': 'text/html'});  
    res.write('<form action="fileupload" method="post" enctype="multipart/form-data">');  
    res.write('<input type="file" name="filetoupload"><br>');  
    res.write('<input type="submit">');  
    res.write('</form>');  
    return res.end();  
  }  
}).listen(8080);

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# Node.js Send an Email

[❮ Previous](https://www.w3schools.com/nodejs/nodejs_uploadfiles.asp)[Next ❯](https://www.w3schools.com/nodejs/nodejs_mysql.asp)

## The Nodemailer Module

The Nodemailer module makes it easy to send emails from your computer.

The Nodemailer module can be downloaded and installed using npm:

C:\Users\Your Name>npm install nodemailer

After you have downloaded the Nodemailer module, you can include the module in any application:

var nodemailer = require('nodemailer');

## Send an Email

Now you are ready to send emails from your server.

Use the username and password from your selected email provider to send an email. This tutorial will show you how to use your Gmail account to send an email:

### Example

var nodemailer = require('nodemailer');  
  
var transporter = nodemailer.createTransport({  
  service: 'gmail',  
  auth: {  
    user: 'youremail@gmail.com',  
    pass: 'yourpassword'  
  }  
});  
  
var mailOptions = {  
  from: 'youremail@gmail.com',  
  to: 'myfriend@yahoo.com',  
  subject: 'Sending Email using Node.js',  
  text: 'That was easy!'  
};  
  
transporter.sendMail(mailOptions, function(error, info){  
  if (error) {  
    console.log(error);  
  } else {  
    console.log('Email sent: ' + info.response);  
  }  
});

And that's it! Now your server is able to send emails.

## Multiple Receivers

To send an email to more than one receiver, add them to the "to" property of the mailOptions object, separated by commas:

### Example

Send email to more than one address:

var mailOptions = {  
  from: 'youremail@gmail.com',  
**to:**'***myfriend@yahoo.com*, *myotherfriend@yahoo.com*',**  subject: 'Sending Email using Node.js',  
  text: 'That was easy!'  
}

## Send HTML

To send HTML formatted text in your email, use the "html" property instead of the "text" property:

### Example

Send email containing HTML:

var mailOptions = {  
  from: 'youremail@gmail.com',  
  to: 'myfriend@yahoo.com',  
  subject: 'Sending Email using Node.js',  
**html: '<h1>Welcome</h1><p>That was easy!</p>'**}

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