code : wap/NodeFolder at main · chinawutao1979/wap · GitHub

Exercise N1

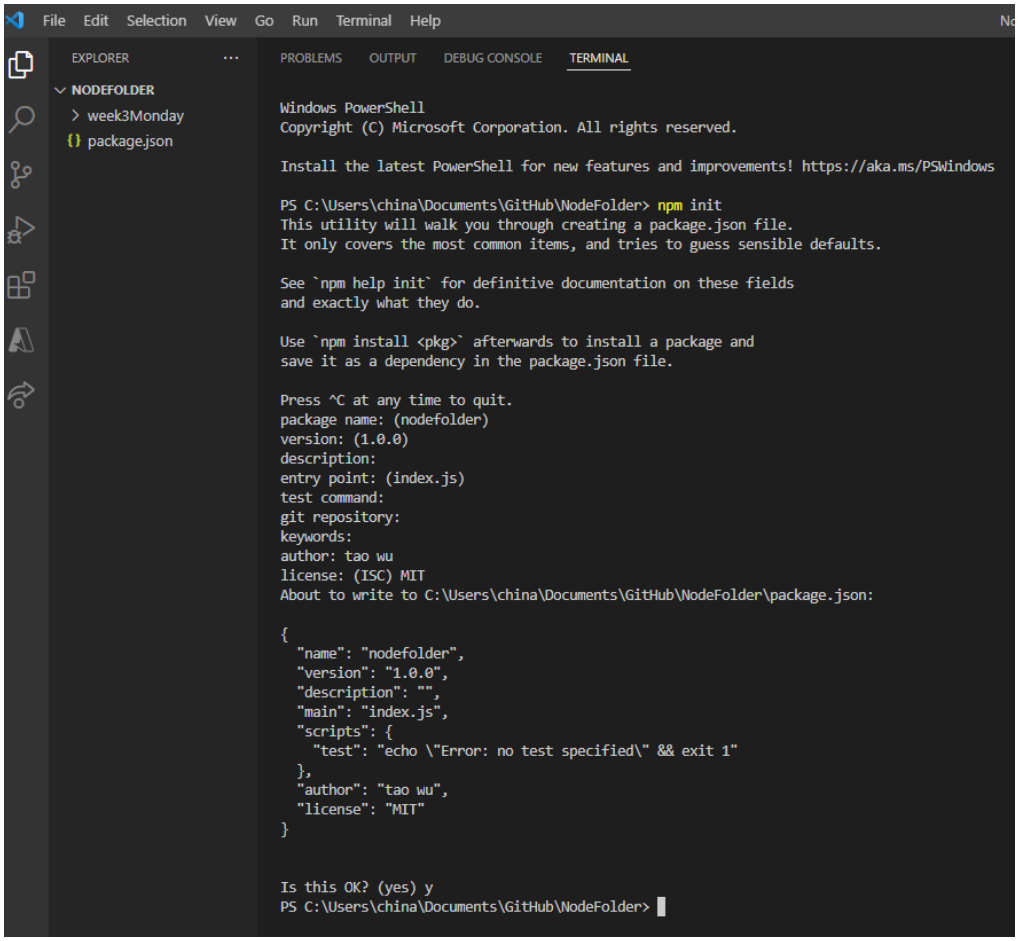
Q:

• Download Node.js from the official Node.js website
and install it: https://nodejs.org.
• Create a folder for your Node.js files (NodeFolder).
• Save the Hello World program in a file using VS Code:

```
var http = require('http');
http.createServer(function (req, res) {
res.writeHead(200,
{'Content-Type': 'text/html'});
res.end('Hello World!');
}).listen(8080);
```

Open a Command Window
• Run command:
C:NodeFolder> npm init
• Run the Hello World program:
C:NodeFolder> node HelloWorld.js
• In your Browser, enter the URL:
http://localhost:8080

A:


File Edit Selection View Go Run Terminal Help
EXPLORER
NODEFOLDER
week3Monday
package.json
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
Windows PowerShell
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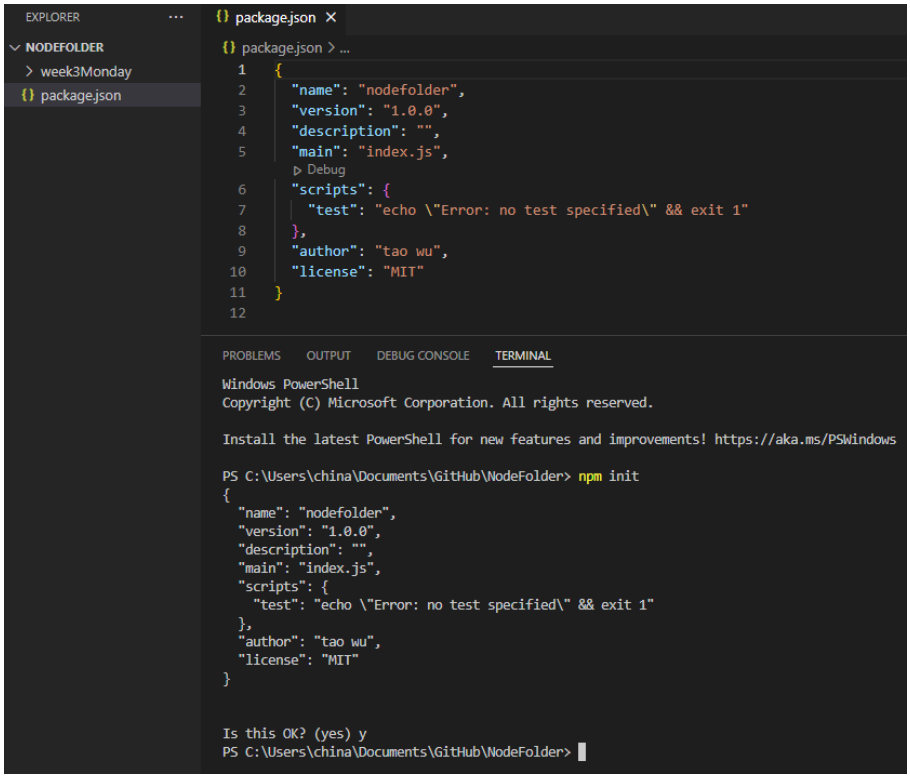
Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows
PS C:\Users\china\Documents\GitHub\NodeFolder> npm init
This utility will walk you through creating a package.json file.
It only covers the most common items, and tries to guess sensible defaults.
See `npm help init` for definitive documentation on these fields
and exactly what they do.
Use `npm install <pkg>` afterwards to install a package and
save it as a dependency in the package.json file.
Press ^C at any time to quit.
package name: (nodefolder)
version: (1.0.0)
description:
entry point: (index.js)
test command:
git repository:
keywords:
author: tao wu
license: (ISC) MIT
About to write to C:\Users\china\Documents\GitHub\NodeFolder\package.json:
{
"name": "nodefolder",
"version": "1.0.0",
"description": "",
"main": "index.js",
"scripts": {
"test": "echo \"Error: no test specified\" && exit 1"
},
"author": "tao wu",
"license": "MIT"
}
Is this OK? (yes) y
PS C:\Users\china\Documents\GitHub\NodeFolder>


EXPLORER
NODEFOLDER
week3Monday
package.json
package.json
package.json > ...
Debug
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
Windows PowerShell
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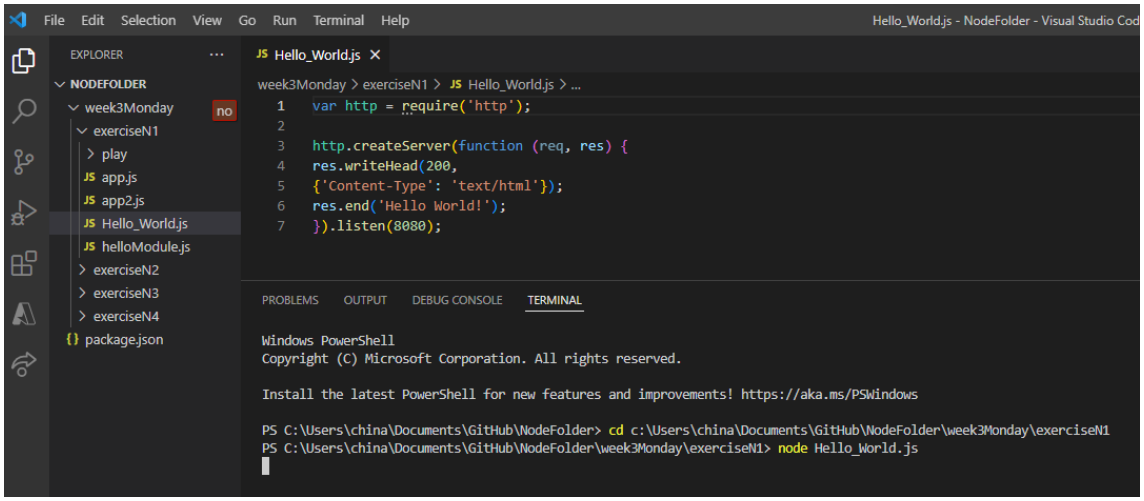
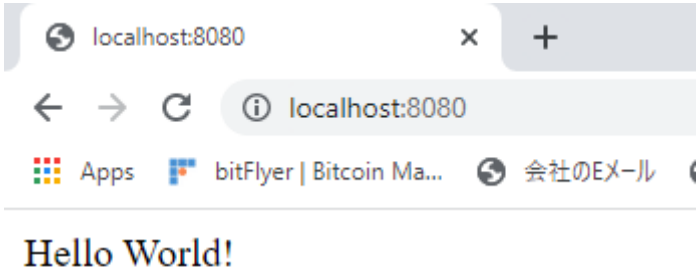
PS C:\Users\china\Documents\GitHub\NodeFolder> npm init
Is this OK? (yes) y
PS C:\Users\china\Documents\GitHub\NodeFolder>





Q:

`module.exports`

- Think of this object (`module.exports`) as a return statement.

```
// helloModule.js
var sayHi = function(){
              console.log('hi');
            }

module.exports = sayHi;
```

```
// app.js
var hello = require('./helloModule');

hello();
```

A:

app.js | helloModule.js

week3Monday > exerciseN1 > helloModule.js > ...

```
1  var sayHi = function () {
2    console.log("hi");
3  };
4
5  module.exports = sayHi;
6
```

helloModule.js | app2.js

week3Monday > exerciseN1 > app2.js > ...

```
1  var hello = require("./helloModule");
2  hello();
3
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
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PS C:\Users\china\Documents\GitHub\NodeFolder> cd c:\Users\china\Documents\GitHub\NodeFolder\week3Monday\exerciseN1
PS C:\Users\china\Documents\GitHub\NodeFolder\week3Monday\exerciseN1> node app2.js
hi
PS C:\Users\china\Documents\GitHub\NodeFolder\week3Monday\exerciseN1>
```

Q:

Create your own module

play folder

```
// play/violin.js
const play = function() { console.log("First Violin is playing!"); }
module.exports = play;
```

```
// play/clarinet.js
const play = function() { console.log("Clarinet is playing!"); }
module.exports = play;
```

```
// play/index.js
const violin = require('./violin');
const clarinet = require('./clarinet');
module.exports = { 'violin': violin, 'clarinet': clarinet };
```

```
// app.js
const play = require('./play');
play.violin();
play.clarinet();
```

A:

violin.js | clarinet.js | index.js

week3Monday > exerciseN1 > play > violin.js > ...

```
1  // play/violin.js
2  const play = function() { console.log("First Violin is playing!"); }
3  module.exports = play;
```

violin.js | clarinet.js | index.js

week3Monday > exerciseN1 > play > clarinet.js > ...

```
1  // play/clarinet.js
2  const play = function() { console.log("Clarinet is playing!"); }
3  module.exports = play;
```

violin.js | clarinet.js | index.js

week3Monday > exerciseN1 > play > index.js > ...

```
1  // play/index.js
2  const violin = require('./violin');
3  const clarinet = require('./clarinet');
4  module.exports = { 'violin': violin, 'clarinet': clarinet };
```

EXPLORER

NODEFOLDER

- week3Monday
  - exerciseN1
    - play
      - clarinet.js
      - index.js
      - violin.js
    - app.js
    - app2.js
    - Hello_World.js
    - helloModule.js
  - exerciseN2
  - exerciseN3
  - exerciseN4
- package.json

violin.js | clarinet.js | index.js | app.js

week3Monday > exerciseN1 > app.js > ...

```
1  // app.js
2  const play = require('./play');
3  play.violin();
4  play.clarinet();
```

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```
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Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\Users\china\Documents\GitHub\NodeFolder> cd c:\Users\china\Documents\GitHub\NodeFolder\week3Monday\exerciseN1
PS C:\Users\china\Documents\GitHub\NodeFolder\week3Monday\exerciseN1> node app.js
First Violin is playing!
Clarinet is playing!
PS C:\Users\china\Documents\GitHub\NodeFolder\week3Monday\exerciseN1>
```

Exercise N2

Q:

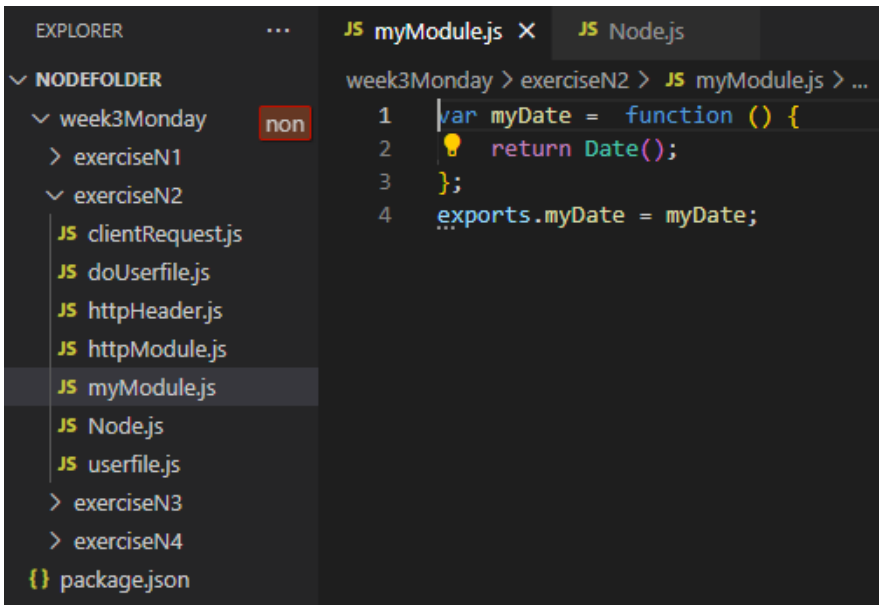
```
myDate function () {
return Date();
};
exports.myDate = myDate;
```

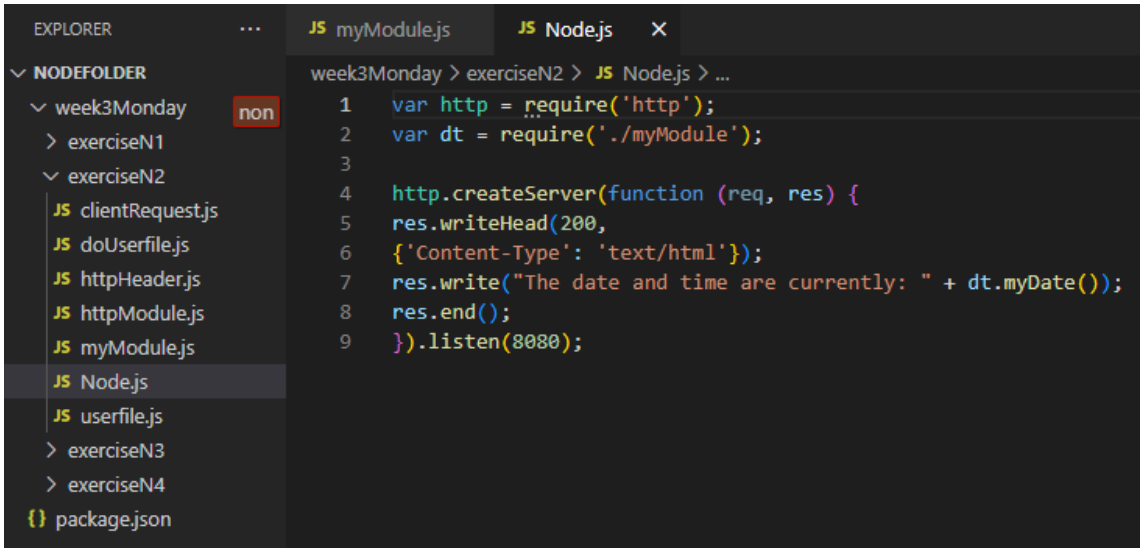
- Use the exports keyword to make properties and methods available outside the module file.
- Save this in a file called myModule.js

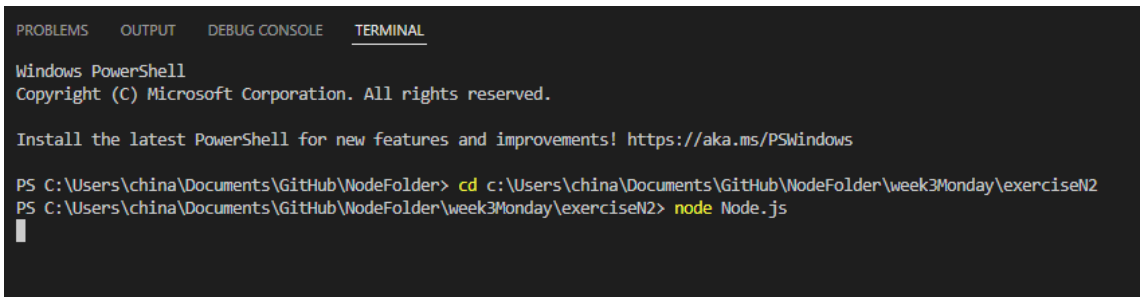
Use the module myModule in a Node.js file:

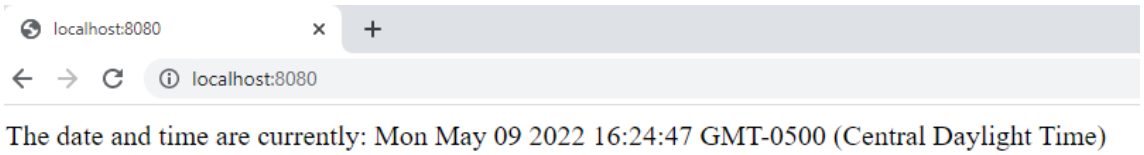
```
var http = require('http');
var dt = require('./myModule');
http.createServer(function (req, res) {
res.writeHead(200,
{'Content-Type': 'text/html'});
res.write("The date and time are
currently: " + dt.myDate());
res.end();
}).listen(8080);
```

A:









Q:

Another Module Example

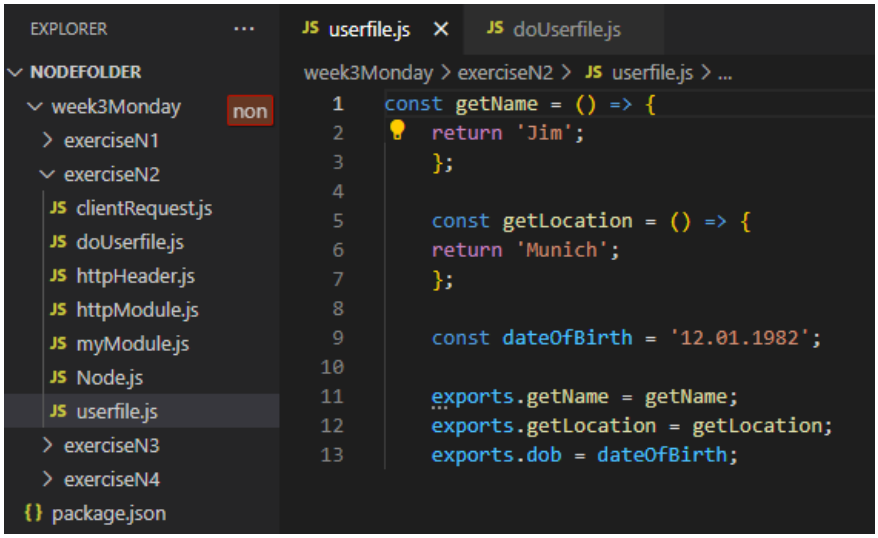
```
const getName = () => {
return 'Jim';
};
const getLocation = () => {
return 'Munich';
};
const dateOfBirth = '12.01.1982';
exports.getName = getName;
exports.getLocation = getLocation;
exports.dob = dateOfBirth;
```

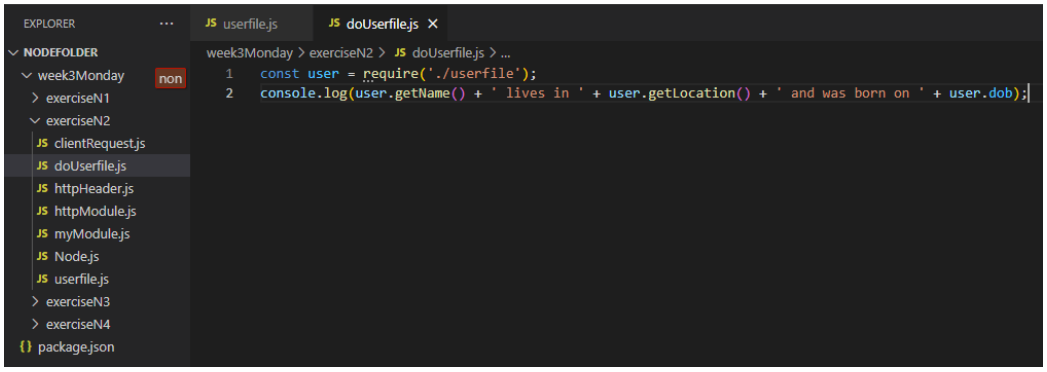
Using the New Module

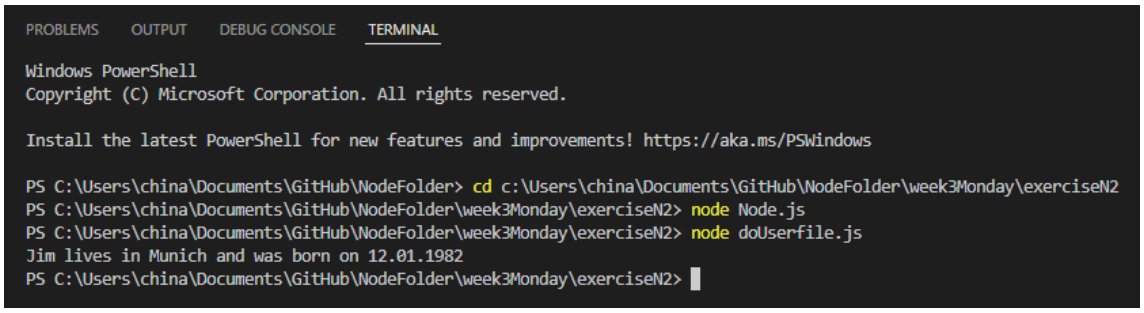
```
const user = require('./userfile');
console.log(user.getName() + ' lives
in ' + user.getLocation() + ' and was
born on ' + user.dob);
```

- **The require operation needs the file name of the module.**
- **The constant user accesses the public methods.**

A:





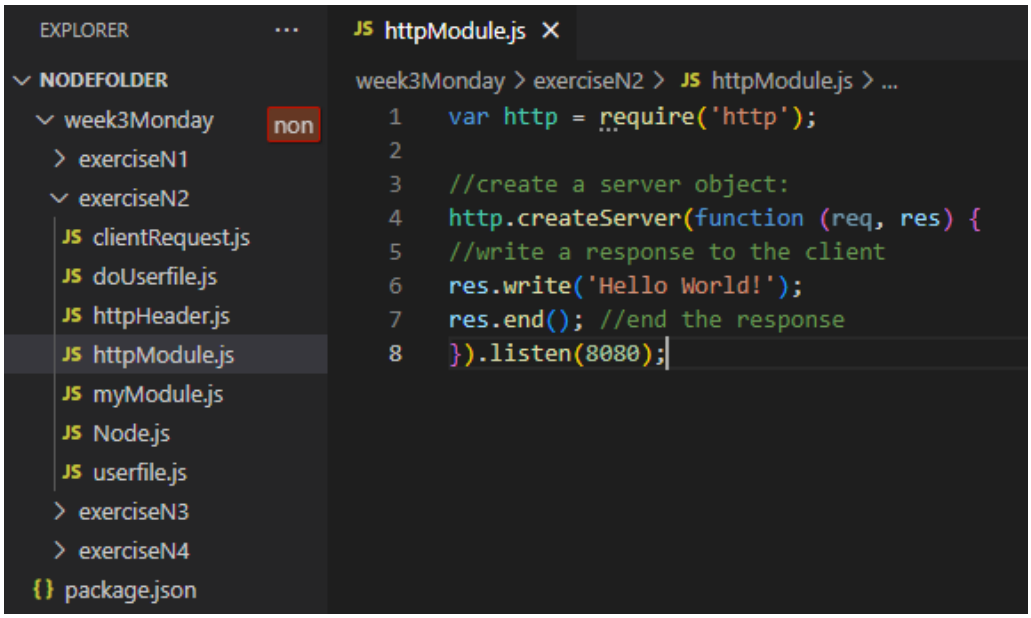


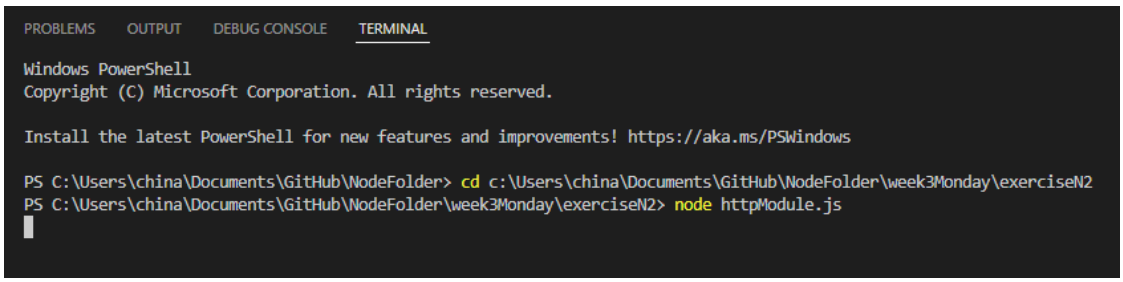
Q:

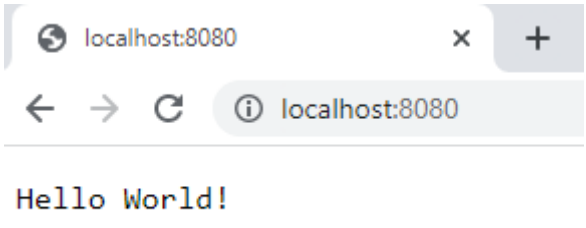
HTTP Module

```
var http = require('http');
//create a server object:
http.createServer(function (req, res) {
//write a response to the client
res.write('Hello World!');
res.end(); //end the response
}).listen(8080);
//the server object listens on port 8080
```

A:







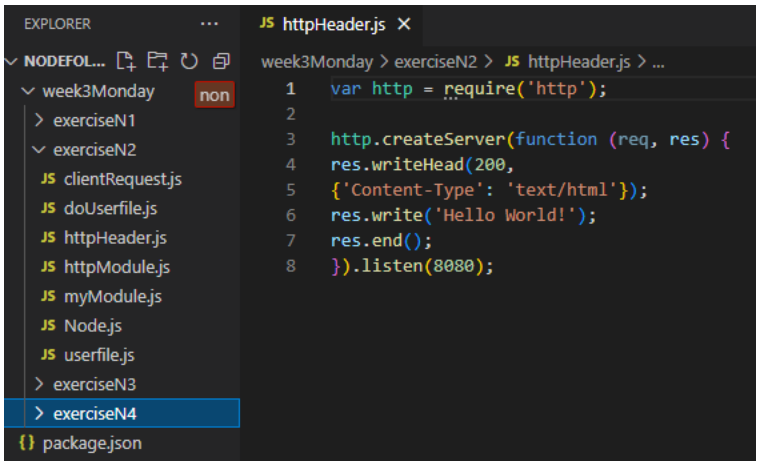
Q:

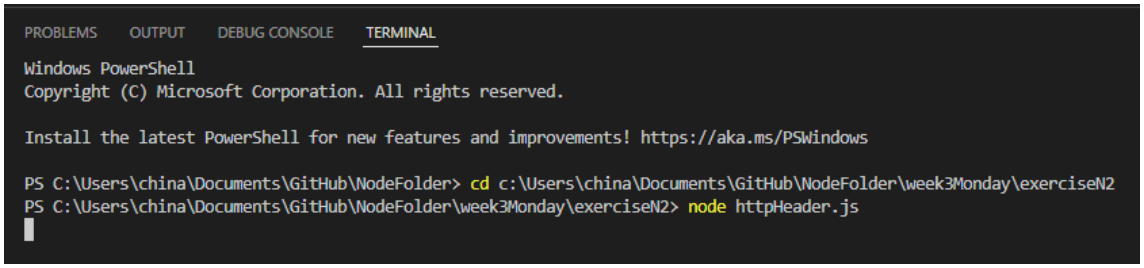
HTTP Header

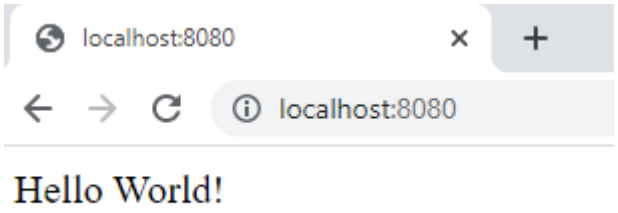
If the response from the HTTP server is supposed to be displayed as HTML, you should include an HTTP header with the correct content type:

```
var http = require('http');
http.createServer(function (req, res) {
res.writeHead(200,
{'Content-Type': 'text/html'});
res.write('Hello World!');
res.end();
}).listen(8080);
```

A:







Q:

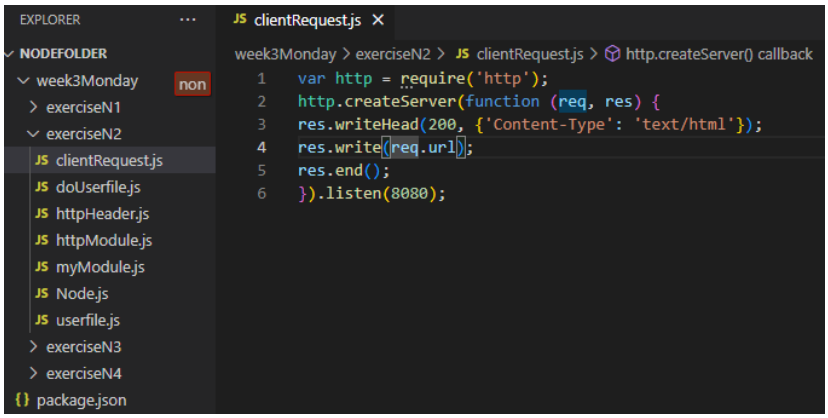
Client Request

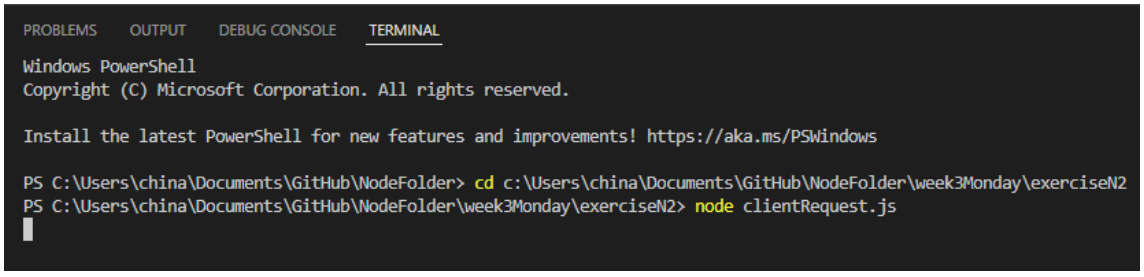
• The req argument represents the request from the client.

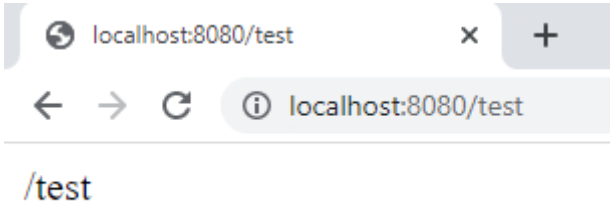
• The property url holds the part of the url that comes after the domain name.

```
var http = require('http');
http.createServer(function (req, res) {
res.writeHead(200, {'Content-Type': 'text/html'});
res.write(req.url);
res.end();
}).listen(8080);
```

A:







Exercise N3

Q:

Run the code shown below and then enter the following in your Browser:

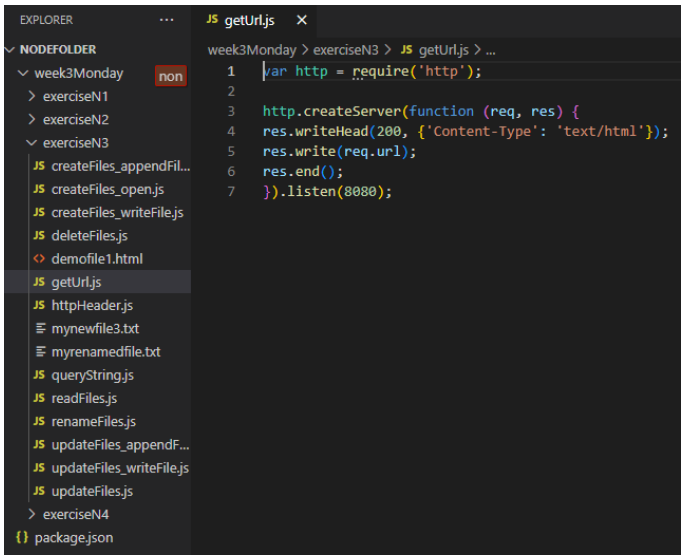
http://localhost:8080/apples

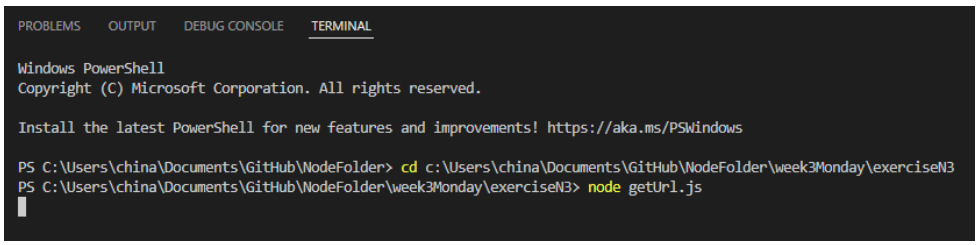
http://localhost:8080/pears

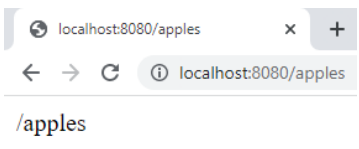
http://localhost:8080/strawberries

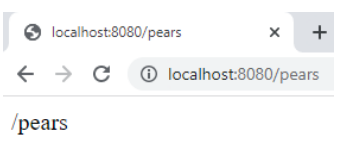
```
var http = require('http');
http.createServer(function (req, res) {
res.writeHead(200, {'Content-Type': 'text/html'});
res.write(req.url);
res.end();
}).listen(8080);
```

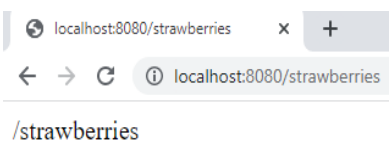
A:











Q:

Query String

The following code reads the values from the query string corresponding to the names year and month:

```
var http = require('http');
var url = require('url');
http.createServer(function (req, res) {
res.writeHead(200, {'Content-Type': 'text/html'});
var q = url.parse(req.url, true).query;
var txt = q.year + " " + q.month;
res.end(txt);
}).listen(8080);
```

A:

```
week3Monday > exerciseN3 > JS queryString.js > ...
1   var http = require('http');
2   var url = require('url');
3
4   http.createServer(function (req, res) {
5   res.writeHead(200, {'Content-Type': 'text/html'});
6   var q = url.parse(req.url, true).query;
7   var txt = q.year + " " + q.month;
8   res.end(txt);
9   }).listen(8080);
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL

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PS C:\Users\china\Documents\GitHub\NodeFolder\week3Monday\exerciseN3> node queryString.js
```

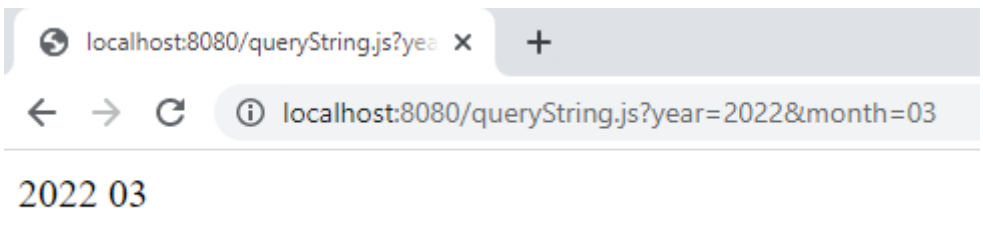

Q:

HTTP Header

If the response from the HTTP server is supposed to be displayed as HTML, you should include an HTTP header with the correct content type:

```
var http = require('http');
http.createServer(function (req, res) {
res.writeHead(200,
{'Content-Type': 'text/html'});
res.write('Hello World!');
res.end();
}).listen(8080);
```

A:

week3Monday > exerciseN3 > JS httpHeader.js > ...

```
1   var http = require('http');
2
3   http.createServer(function (req, res) {
4   res.writeHead(200,
5   {'Content-Type': 'text/html'});
6   res.write('Hello World!');
7   res.end();
8   }).listen(8080);
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
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PS C:\Users\china\Documents\GitHub\NodeFolder> cd c:\Users\china\Documents\GitHub\NodeFolder\week3Monday\exerciseN3
PS C:\Users\china\Documents\GitHub\NodeFolder\week3Monday\exerciseN3> node httpHeader.js
```
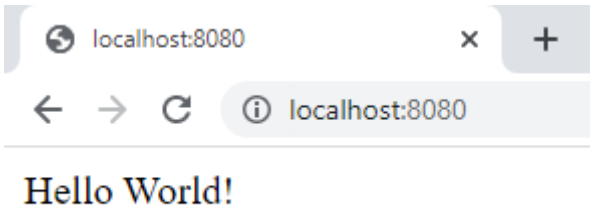



Q:

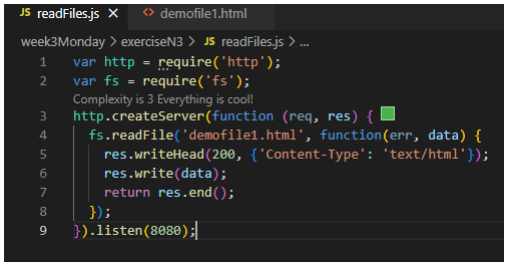
Node.js File System

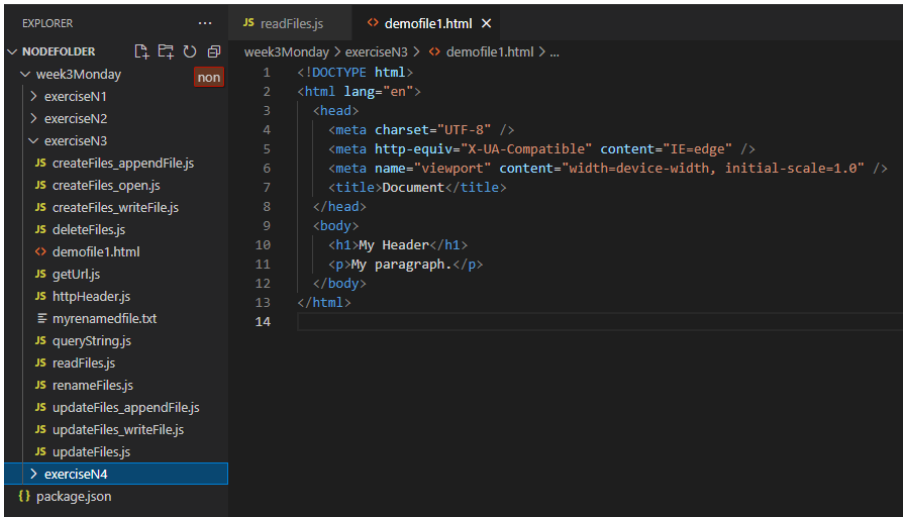
var fs = require('fs');

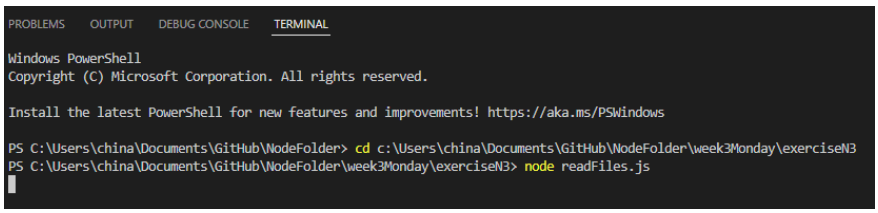
Common use for the File System module:

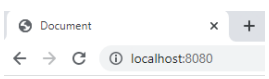
- **Read files**
- **Create files**
- **Update files**
- **Delete files**
- **Rename files**

A: Read files





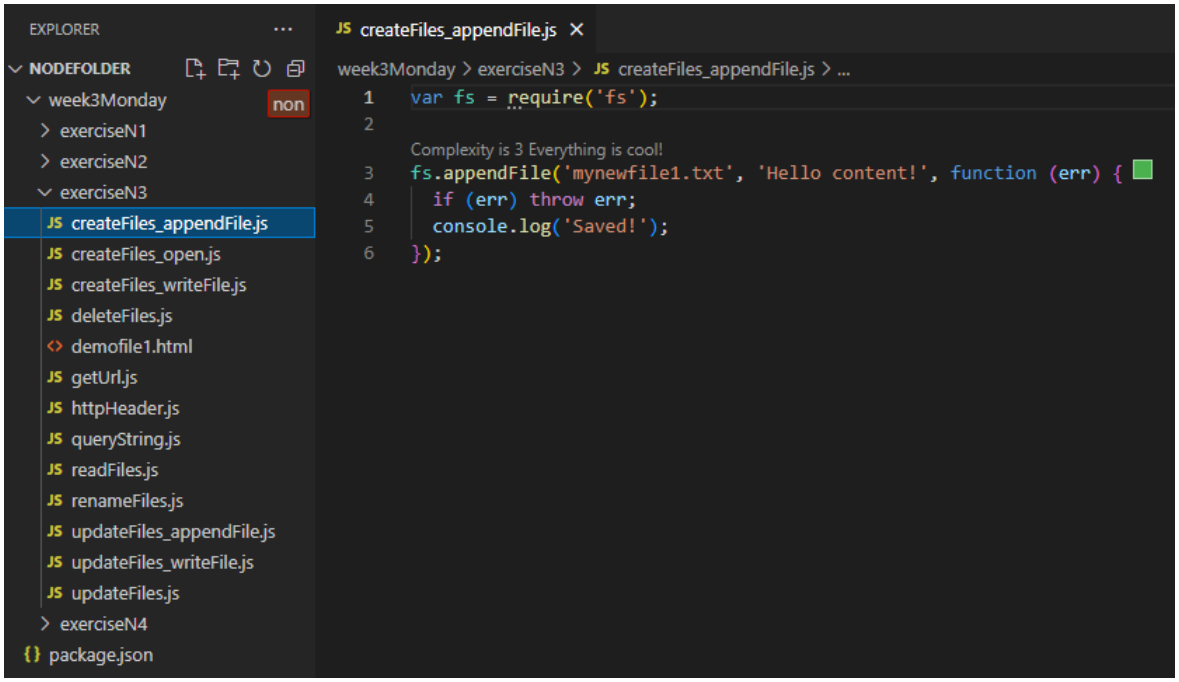


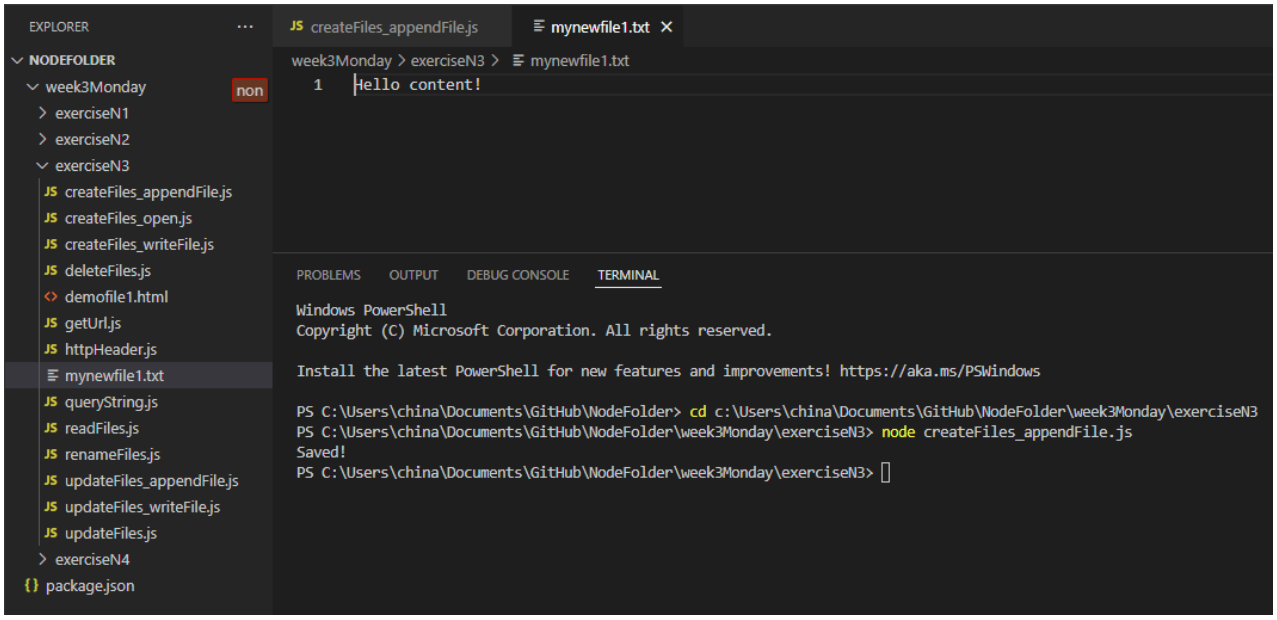


My Header

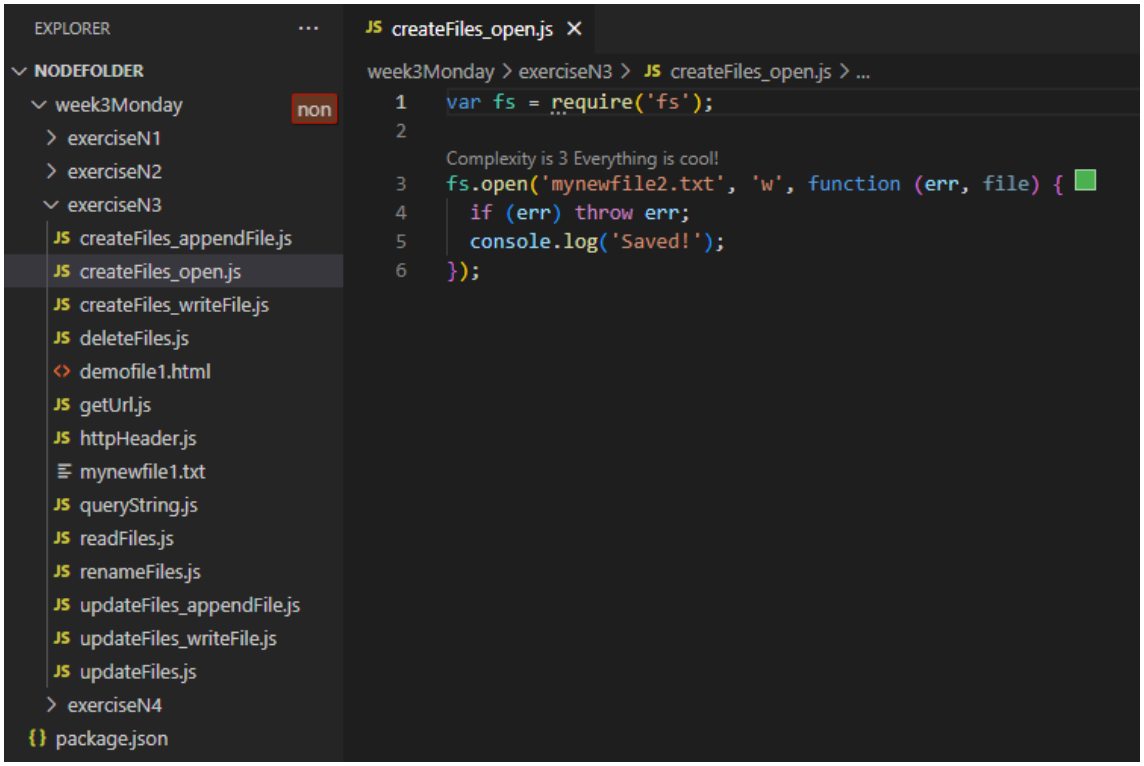
My paragraph.

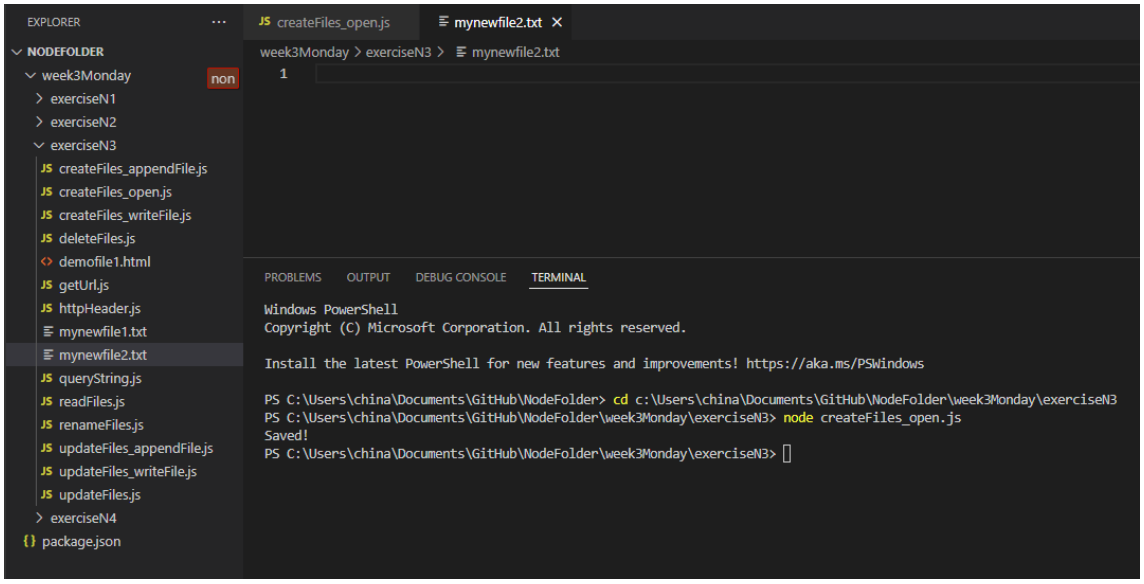
Create files –appendFile



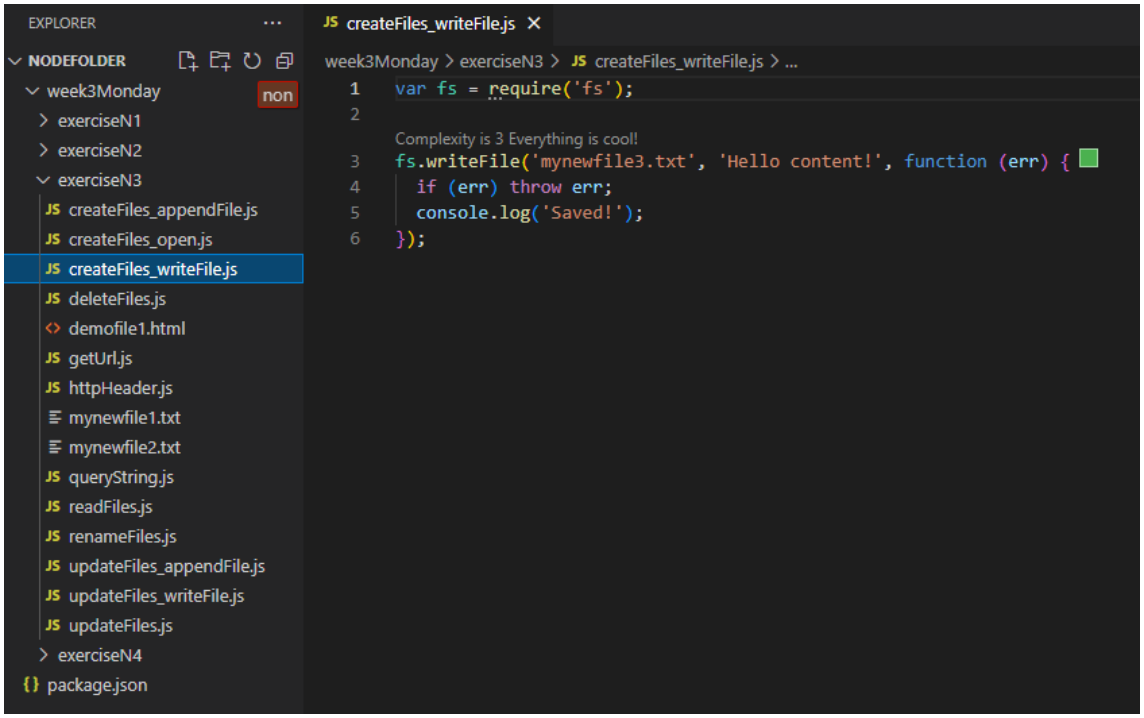


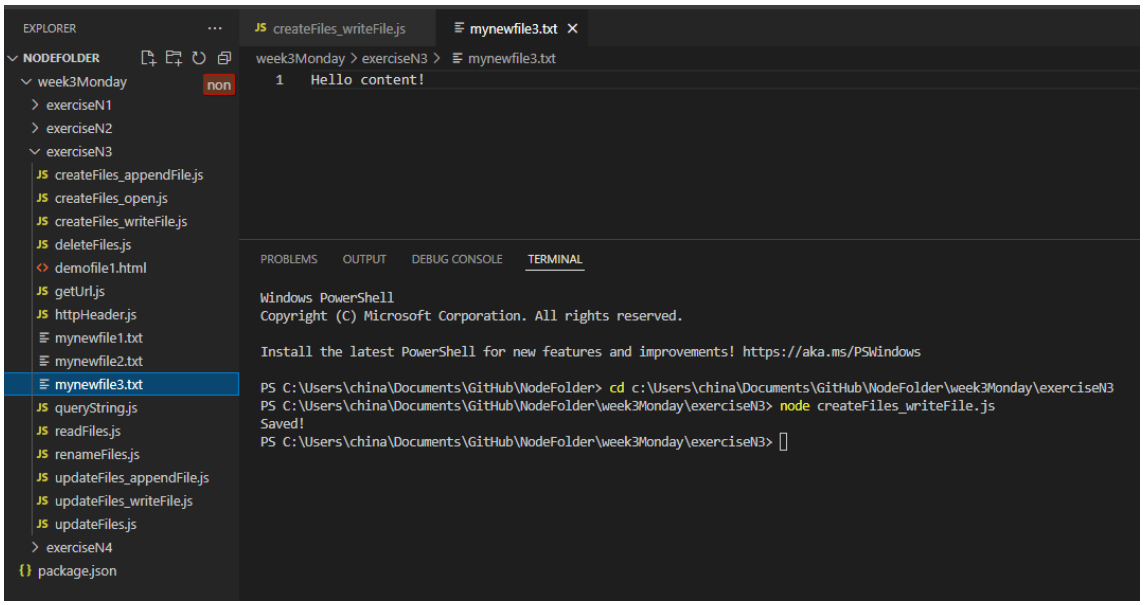
Create files –open



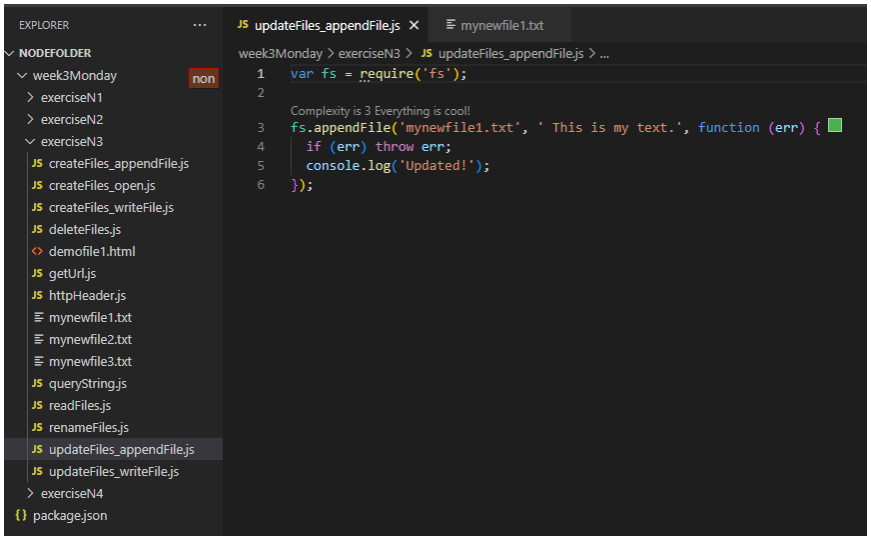


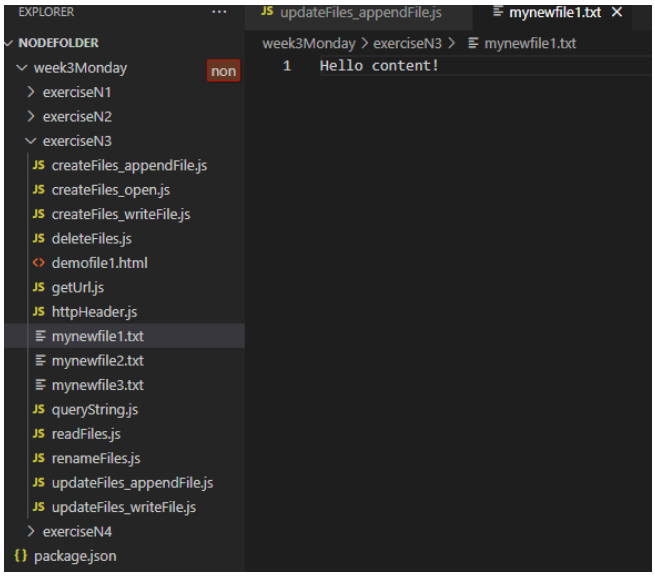
Create files –writeFile

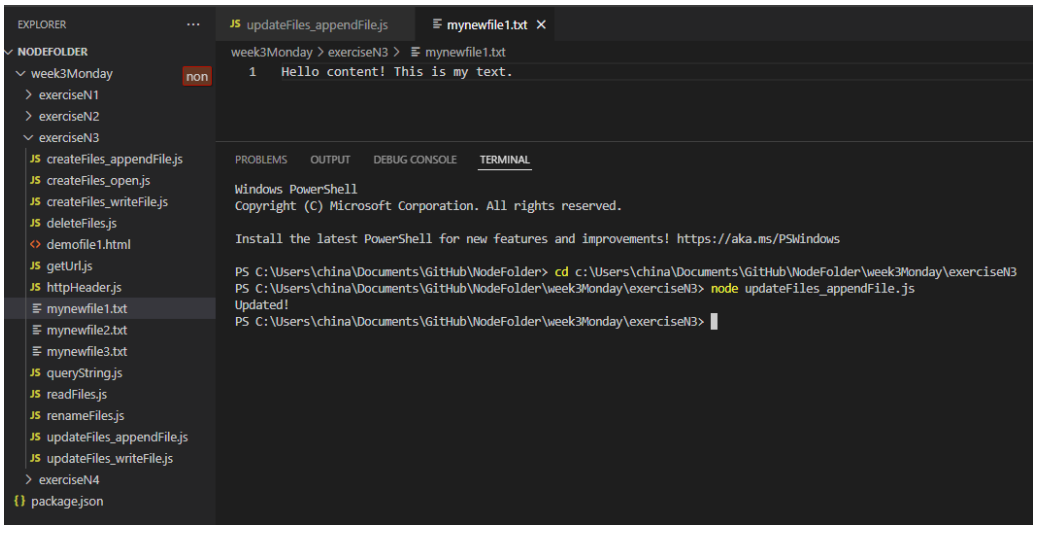




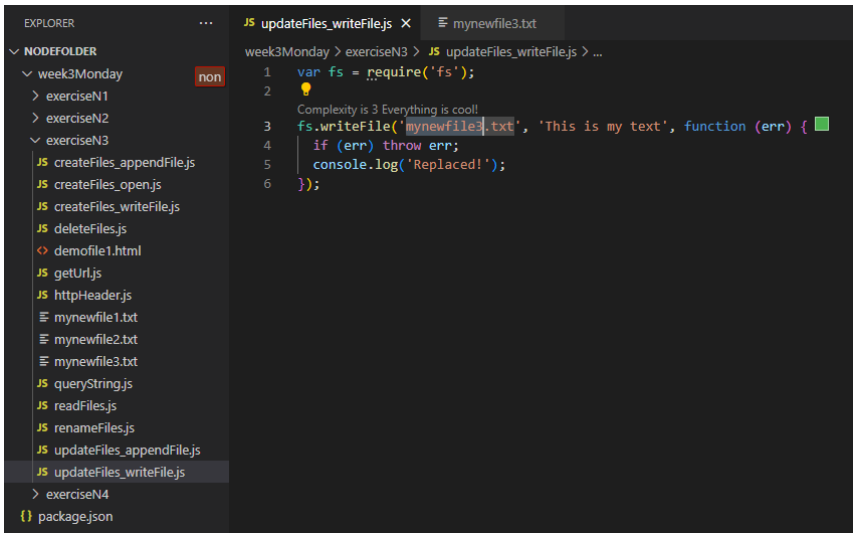
Update files –appendFile

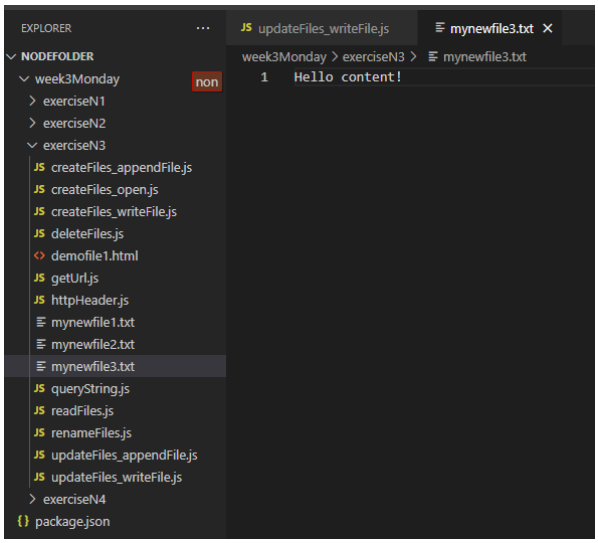


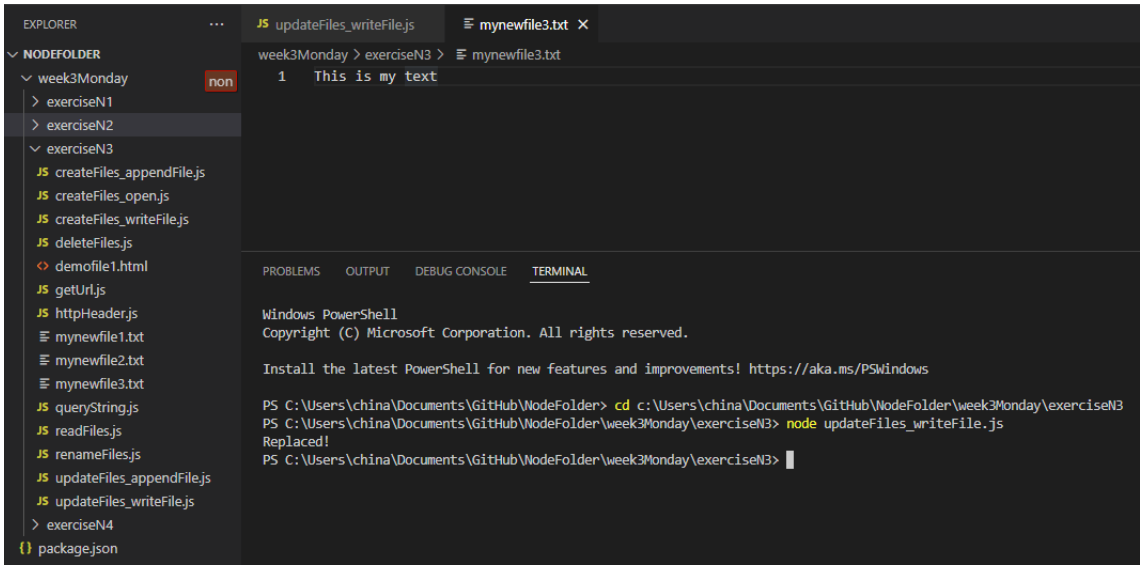




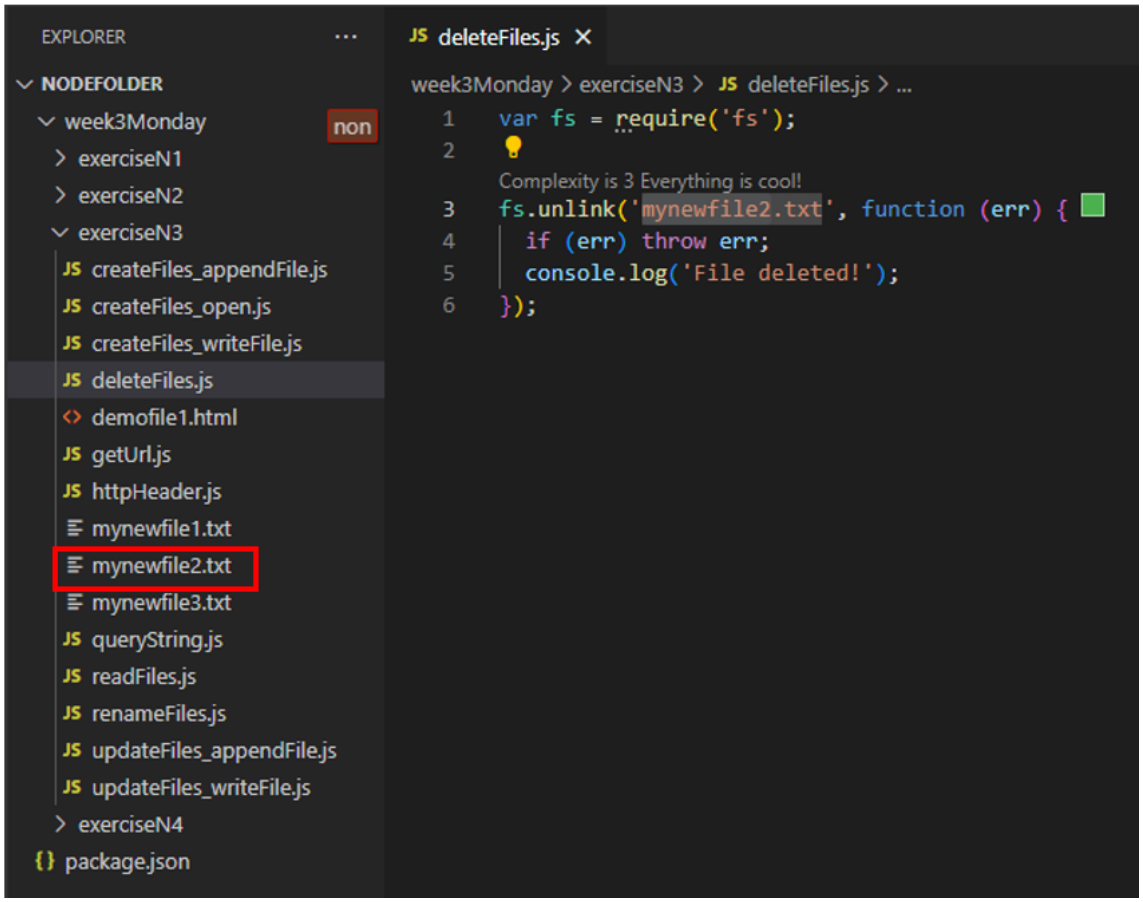
Update files –writeFile

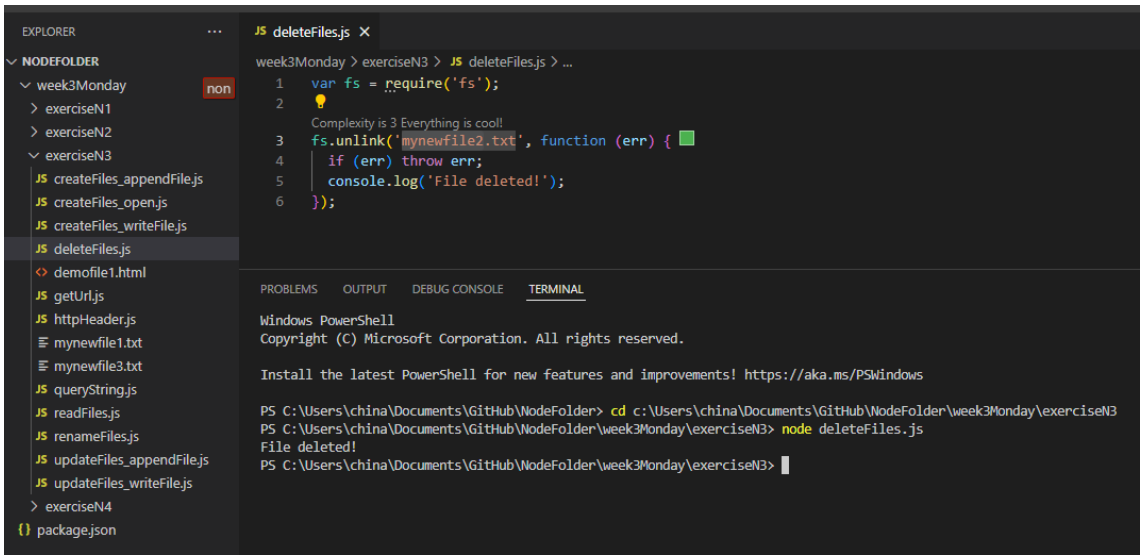




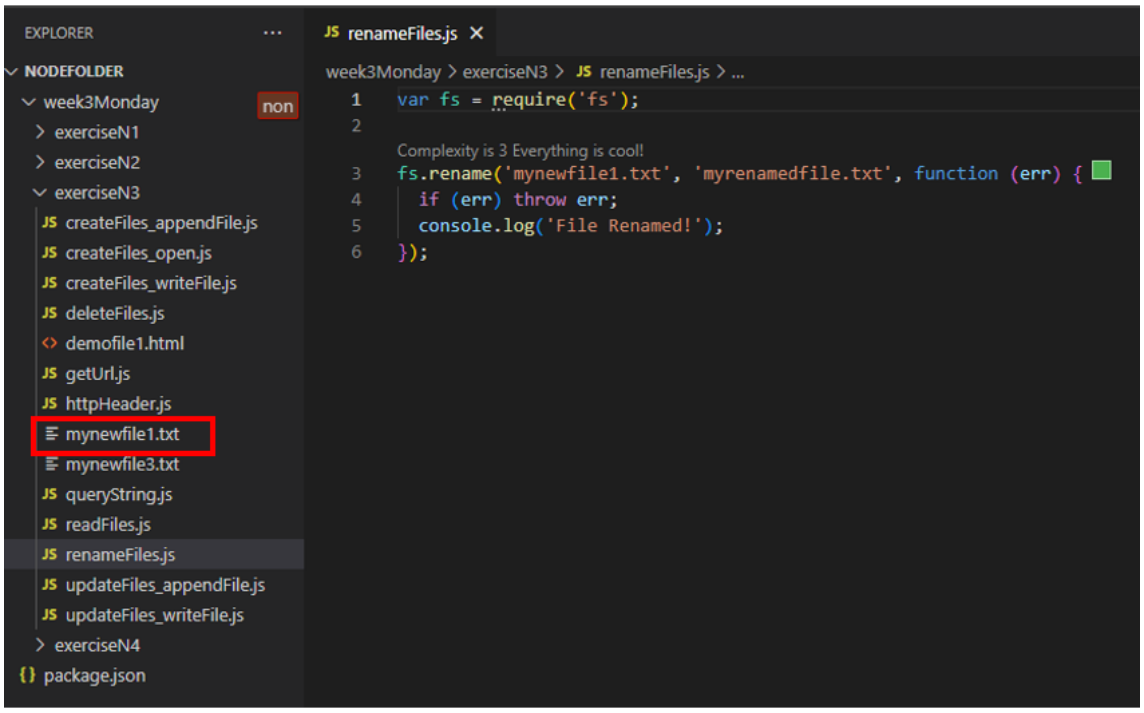


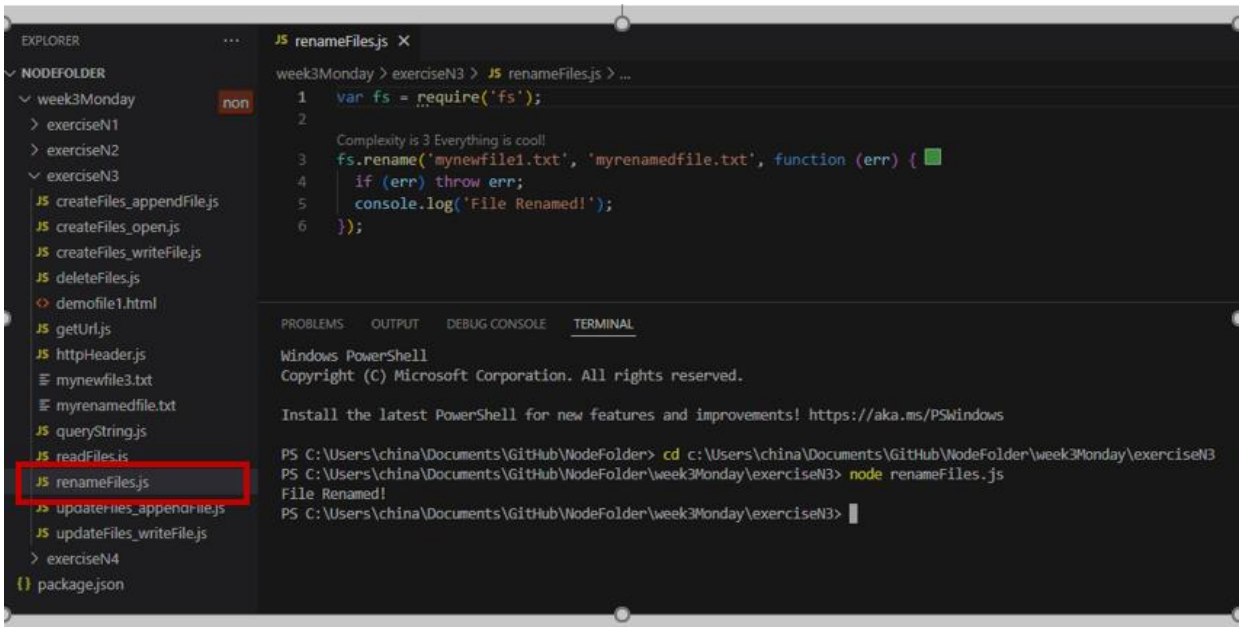
Delete files





Rename files





Exercise N4: Simple Adder

Q:

Opening HTML page
(SimpleAdder.html)

```
<form action =
"http://localhost:8080/add.js">
<div>Enter two numbers
<input type = "text" name="first"/><br/>
<input type = "text" name="second"/><br/>
<input type="submit" value="Click"/>
</div>
</form>
```

Module to Perform Addition
addmod.js

```
exports.add = function (req,res,vals) {
var sum = parseInt(vals.first) + parseInt(vals.second);
res.writeHead(200, {'Content-Type': 'text/html'});
res.write("<!DOCTYPE html>");
res.write("<html>");
res.write("<head><meta charset=¥"utf-8¥"/>");
res.write("<title>Calculator Web Site</title>");
res.write("</head>");
res.write("<body>");
res.write("<p>The sum is: ");
res.write(String(sum));
res.write("</p>");
res.write("</body>");
res.write("</html>");
return res.end();
};
```

Web Server for the Adder
AdderWebServer.js

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

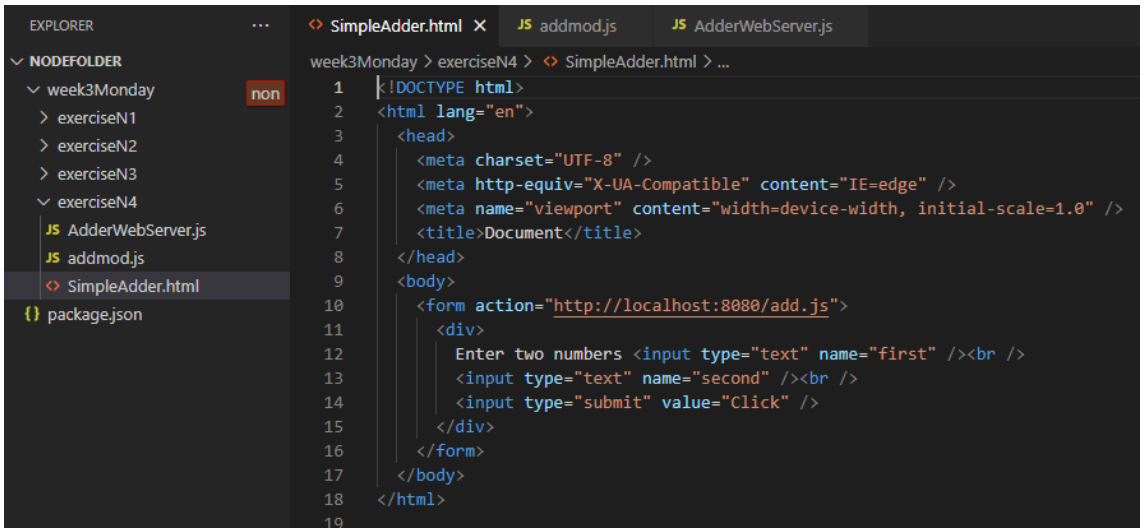
```
var fs = require('fs');
var addmod = require('./addmod.js');

http.createServer(function (req, res) {
var q = url.parse(req.url, true);
var filename = "." + q.pathname;
if (q.pathname=="/add.js")
addmod.add(req,res,q.query)
else
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 not included
res.write(data);
return res.end();
});
}).listen(8080);};
```

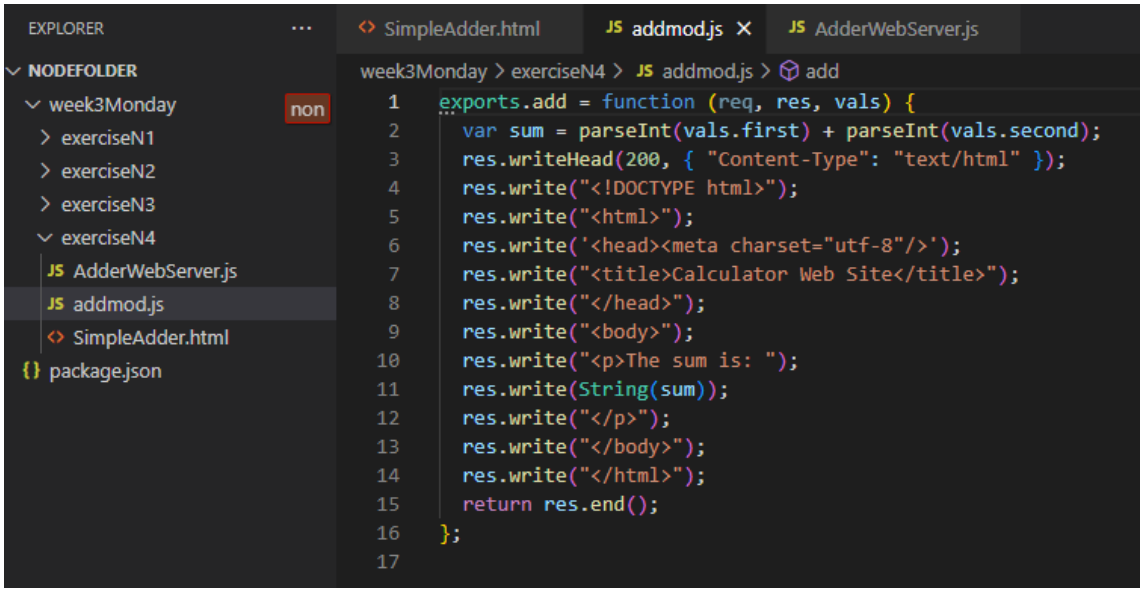
Run the Simple Adder

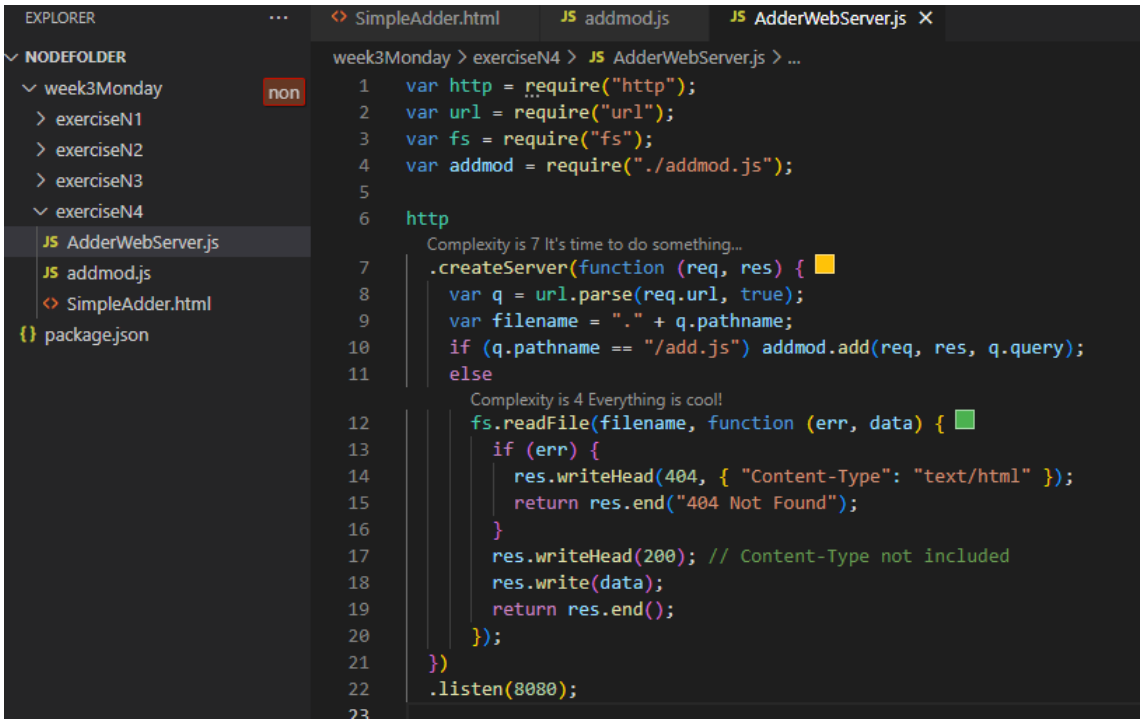
- To run the Simple Adder website, use the following URL:

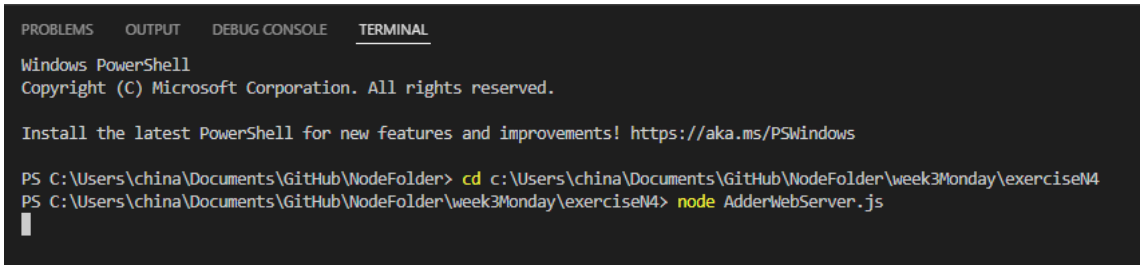
http://localhost:8080/SimpleAdder.html

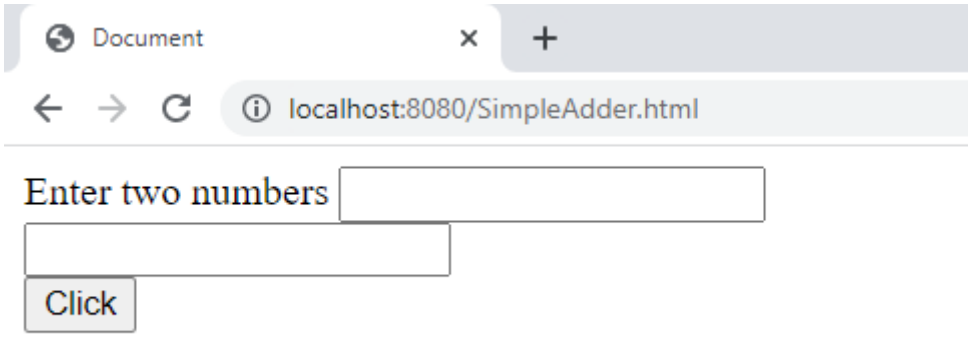
A:

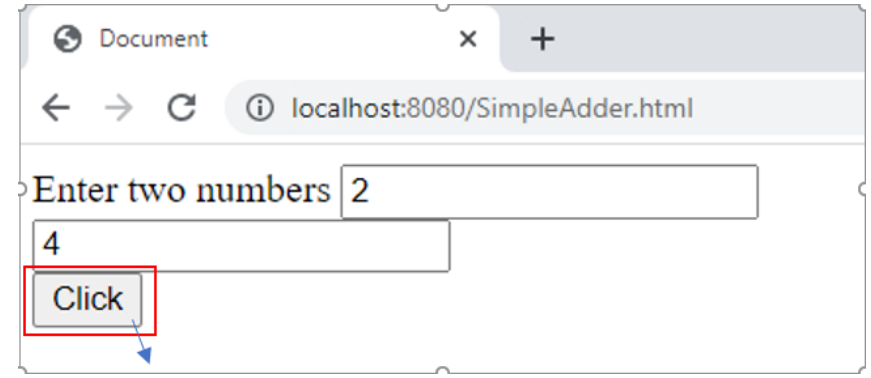


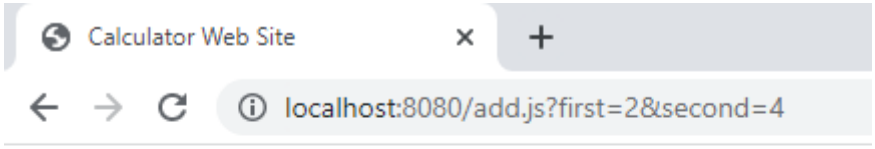

EXPLORER
NODEFOLDER
week3Monday
exerciseN1
exerciseN2
exerciseN3
exerciseN4
AdderWebServer.js
addmod.js
SimpleAdder.html
package.json
SimpleAdder.html
addmod.js
AdderWebServer.js
week3Monday > exerciseN4 > addmod.js > add
exports.add = function (req, res, vals) {
var sum = parseInt(vals.first) + parseInt(vals.second);
res.writeHead(200, { "Content-Type": "text/html" });
res.write("<!DOCTYPE html>");
res.write("<html>");
res.write('<head><meta charset="utf-8"/>');
res.write("<title>Calculator Web Site</title>");
res.write("</head>");
res.write("<body>");
res.write(" The sum is: ");
res.write(String(sum));
res.write(" ");
res.write("</body>");
res.write("</html>");
return res.end();
};


EXPLORER
NODEFOLDER
week3Monday
exerciseN1
exerciseN2
exerciseN3
exerciseN4
AdderWebServer.js
addmod.js
SimpleAdder.html
package.json
SimpleAdder.html
addmod.js
AdderWebServer.js
week3Monday > exerciseN4 > AdderWebServer.js > ...
var http = require("http");
var url = require("url");
var fs = require("fs");
var addmod = require("./addmod.js");
http
Complexity is 7 It's time to do something...
.createServer(function (req, res) {
var q = url.parse(req.url, true);
var filename = "." + q.pathname;
if (q.pathname == "/add.js") addmod.add(req, res, q.query);
else
Complexity is 4 Everything is cool!
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 not included
res.write(data);
return res.end();
});
})
.listen(8080);


PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.
Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows
PS C:\Users\china\Documents\GitHub\NodeFolder> cd c:\Users\china\Documents\GitHub\NodeFolder\week3Monday\exerciseN4
PS C:\Users\china\Documents\GitHub\NodeFolder\week3Monday\exerciseN4> node AdderWebServer.js


Document
localhost:8080/SimpleAdder.html
Enter two numbers
Click


Document
localhost:8080/SimpleAdder.html
Enter two numbers 2
4
Click


Calculator Web Site
localhost:8080/add.js?first=2&second=4

The sum is: 6