

EXPLORER

routes.js



```
1  const fs = require('fs');
2
3  const requestHandler = (req, res) => {
4      const url = req.url;
5      const method = req.method;
6      if (url === '/') {
7          res.write('<html>');
8          res.write('<head><title>Enter Message</title></head>');
9          res.write(
10             '<body><form action="/message" method="POST"><input type="text" name="message"><button ty
11         );
12         res.write('</html>');
13         return res.end();
14     }
15     if (url === '/message' && method === 'POST') {
16         const body = [];
17         req.on('data', chunk => {
18             console.log(chunk);
19             body.push(chunk);
20         });
21     }
22 }
23
24 module.exports = requestHandler;
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

1: bash



Maximilians-MBP:nodejs-complete-guide mschwarzmueller\$ npm init

0:01:41

0:05:22

OUTLINE

002 Understanding NPM Scripts

03-debugging



Ln 8, Col 52 Spaces: 2 UTF-8 LF JavaScript Prettier



```
1  const fs = require('fs');
2
3  const requestHandler = (req, res) => {
4      const url = req.url;
5      const method = req.method;
6      if (url === '/') {
7          res.write('<html>');
8          res.write('<head><title>Enter Message</title></head>');
9          res.write(
10             '<body><form action="/message" method="POST"><input type="text" name="message"><button ty
11         );
12         res.write('</html>');
13         return res.end();
14     }
15     if (url === '/message' && method === 'POST') {
16         const body = [];
17         req.on('data', chunk => {
18             console.log(chunk);
19             body.push(chunk);
20         });
21     }
22 }
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

1: node

```
version: (1.0.0)
description: Complete Node.js Guide
entry point: (app.js)
test command:
git repository:
keywords:
author: Maximilian Schwarzmüller
license: (ISC)
```

EXPLORER

package.json x



## NODEJS-COMPLETE-GUIDE

.gitignore

app.js

message.txt

package.json

```
1  {
2    "name": "nodejs-complete-guide",
3    "version": "1.0.0",
4    "description": "Complete Node.js Guide",
5    "main": "app.js",
6    "scripts": {
7      "test": "echo \\\"Error: no test specified\\\" && exit 1",
8      "start": "node app.js" ← Special Case
9    },
10   "author": "Maximilian Schwarzmüller",
11   "license": "ISC"
12 }
13 }
```



PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

1: node

Maximilians-MBP:nodejs-complete-guide mschwarzmueller\$ npm start

```
> nodejs-complete-guide@1.0.0 start /Users/mschwarzmueller/development/teaching/udemy/nodejs-complete-guide
> node app.js
```

Some hard coded text

0:20

OUTLINE

03-debugging\* 0 0

Ln 13, Col 1 Spaces: 2 UTF-8 LF JSON Prettier



## NODEJS-COMPLETE-GUIDE

- .gitignore
- app.js
- message.txt
- package.json U
- routes.js

```
1  {
2    "name": "nodejs-complete-guide",
3    "version": "1.0.0",
4    "description": "Complete Node.js Guide",
5    "main": "app.js",
6    "scripts": {
7      "test": "echo \\\"Error: no test specified\\\" && exit 1",
8      "start": "node app.js",
9      "start-server": "node app.js"
10    },
11    "author": "Maximilian Schwarzmüller",
12    "license": "ISC"
13  }
14
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

Maximilians-MBP:nodejs-complete-guide mschwarzmueller\$ npm run start-server

```
> nodejs-complete-guide@1.0.0 start-server /Users/mschwarzmueller/development/teaching/udemy/nodejs-complete-guide
> node app.js
```

Some hard coded text



1: node

## NODEJS-COMPLETE-GUIDE

- .gitignore
- app.js
- message.txt
- package.json
- routes.js

```
1  const fs = require('fs');
2
3  const requestHandler = (req, res) => {
4      const url = req.url;
5      const method = req.method;
6      if (url === '/') {
7          res.write('<html>');
8          res.write('<head><title>Enter Message</title></head>');
9          res.write(
10             '<body><form action="/message" method="POST"><input type="text" name="message"><button ty
11         );
12         res.write('</html>');
13         return res.end();
14     }
15     if (url === '/message' && method === 'POST') {
16         const body = [];
17         req.on('data', chunk => {
18             console.log(chunk);
19             body.push(chunk);
20         });
21     }
22 }
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

1: bash

+ □ ×

Maximilians-MBP:nodejs-complete-guide mschwarzmueller\$ npm install nodemon --save-dev

SAVED AS : development dependency

↑

## NODEJS-COMPLETE-GUIDE

- .gitignore
- app.js
- message.txt
- package.json
- routes.js

```
1  const fs = require('fs');
2
3  const requestHandler = (req, res) => {
4      const url = req.url;
5      const method = req.method;
6      if (url === '/') {
7          res.write('<html>');
8          res.write('<head><title>Enter Message</title></head>');
9          res.write(
10             '<body><form action="/message" method="POST"><input type="text" name="message"><button ty
11         );
12         res.write('</html>');
13         return res.end();
14     }
15     if (url === '/message' && method === 'POST') {
16         const body = [];
17         req.on('data', chunk => {
18             console.log(chunk);
19             body.push(chunk);
20         });
21     }
22 }
```

PROBLEMS

OUTPUT

DEBUG CONSOLE

TERMINAL

1: bash



Maximilians-MBP:nodejs-complete-guide mschwarzmueller\$ npm install nodemon --save

SAVED as: Production Dependency

## NODEJS-COMPLETE-GUIDE

- .gitignore
- app.js
- message.txt
- package.json
- routes.js

```
1  const fs = require('fs');
2
3  const requestHandler = (req, res) => {
4      const url = req.url;
5      const method = req.method;
6      if (url === '/') {
7          res.write('<html>');
8          res.write('<head><title>Enter Message</title></head>');
9          res.write(
10             '<body><form action="/message" method="POST"><input type="text" name="message"><button ty
11         );
12         res.write('</html>');
13         return res.end();
14     }
15     if (url === '/message' && method === 'POST') {
16         const body = [];
17         req.on('data', chunk => {
18             console.log(chunk);
19             body.push(chunk);
20         });
21     }
22 }
```

PROBLEMS

OUTPUT

DEBUG CONSOLE

TERMINAL

1: bash

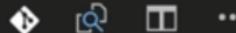


Maximilians-MBP:nodejs-complete-guide mschwarzmueller\$ npm install nodemon -g

EXPLORER

routes.js

package.json



NODEJS-COMPLETE-GUIDE

- node\_modules
- .gitignore
- app.js
- message.txt
- package-lock.json U
- package.json M
- routes.js

```
1  {
2    "name": "nodejs-complete-guide",
3    "version": "1.0.0",
4    "description": "Complete Node.js Guide",
5    "main": "app.js",
6    "scripts": {
7      "test": "echo \\\"Error: no test specified\\\" && exit 1",
8      "start": "node app.js",
9      "start-server": "node app.js"
10     },
11    "author": "Maximilian Schwarzmüller",
12    "license": "ISC",
13    "devDependencies": {
14      "nodemon": "^1.18.3"
15    }
16  }
17
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

npm WARN nodejs-complete-guide@1.0.0 No repository field.

+ nodemon@1.18.3  
added 300 packages from 151 contributors and audited 1355 packages in 10.437s  
found 0 vulnerabilities

if node modules (packages)  
are deleted:

Maximilians-MBP:nodejs-complete-guide mschwarzmueller\$ npm install

(( )) :: diffTrees: sill install generateActionsToTake

0:01:54

03-debugging\* 0 0 ▲ 0

003 Installing 3rd Party Packages

Ln 14, Col 1 Spaces: 2 UTF-8 LF JSON Prettier



EXPLORER

routes.js

package-lock.json



## NODEJS-COMPLETE-GUIDE

node\_modules

.gitignore

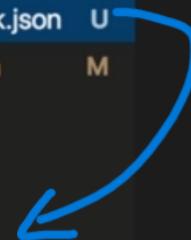
app.js

message.txt

package-lock.json U

package.json M

routes.js



stores versions  
of all the  
dependencies

```

34      }
35    },
36  },
37  "anymatch": {
38    "version": "2.0.0",
39    "resolved": "https://registry.npmjs.org/anymatch/-/anymatch-2.0.0.tgz",
40    "integrity": "sha512-5te0sQWABXHHBFP9y3skS5P3d/WfWXPv3FUpy+LorMrNYaT9pI4oLMQX7jzQ2KklNpC",
41    "dev": true,
42    "requires": {
43      "micromatch": "^3.1.4",
44      "normalize-path": "^2.1.1"
45    }
46  },
47  "arr-diff": {
48    "version": "4.0.0",
49    "resolved": "https://registry.npmjs.org/arr-diff/-/arr-diff-4.0.0.tgz",
50    "integrity": "sha1-1kYQdP6/7Hn4VI1dhoym13HxSA=",
51    "dev": true
52  },
53  "arr-flatten": {

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

1: bash



&gt; node bin/postinstall || exit 0

npm WARN nodejs-complete-guide@1.0.0 No repository field.

added 300 packages from 151 contributors and audited 1355 packages in 3.899s  
found 0 vulnerabilities

0:08:09

OUTLINE

Maximilians-MBP:nodejs-complete-guide mschwarzmueller\$

0:00:11

03-debugging\*

003-Installing 3rd Party Packages

Ln 1, Col 1 Spaces: 2 UTF-8 LF JSON Prettier



Media Player EXPLORER

routes.js package.json

NODEJS-COMPLETE-GUIDE

- node\_modules
- .gitignore
- app.js
- message.txt
- package-lock.json
- package.json M
- routes.js

```
1  {
2      "name": "nodejs-complete-guide",
3      "version": "1.0.0",
4      "description": "Complete Node.js Guide",
5      "main": "app.js",
6      "scripts": {
7          "test": "echo \\\"Error: no test specified\\\" && exit 1",
8          "start": "nodemon app.js",
9          "start-server": "node app.js"
10     },
11     "author": "Maximilian Schwarzmüller",
12     "license": "ISC",
13     "devDependencies": {
14         "nodemon": "^1.18.3"
15     }
16 }
17
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

1: bash

```
> node bin/postinstall || exit 0

npm WARN nodejs-complete-guide@1.0.0 No repository field.

added 300 packages from 151 contributors and audited 1355 packages in 3.899s
found 0 vulnerabilities
```

OUTLINE

Maximilians-MBP:nodejs-complete-guide mschwarzmueller\$

03-debugging\* 0 0 00:43 00:53

Ln 8, Col 22 (7 selected) Spaces: 2 UTF-8 LF JSON Prettier

92°F Haze 2:58 PM 7/28/2023

Windows Taskbar icons: File, Search, Start, Task View, Taskbar settings.



I mean “locally”! npm scripts will look for the LOCAL version of the package.

app.js

message.txt

package-lock.json U

package.json M

routes.js

```
 5   "main": "app.js",
 6   "scripts": {
 7     "test": "echo \"Error: no test specified\" && exit 1",
 8     "start": "nodemon app.js",
 9     "start-server": "node app.js"
10   },
11   "author": "Maximilian Schwarzmüller",
12   "license": "ISC",
13   "devDependencies": {
14     "nodemon": "^1.18.3"
15   }
16 }
17 }
```

starting  
nodemon

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

1: node

A set of small, semi-transparent icons representing terminal operations like copy, paste, and refresh.

```
Maximilians-MBP:nodejs-complete-guide mschwarzmueller$ nodemon app.js
bash: nodemon: command not found
Maximilians-MBP:nodejs-complete-guide mschwarzmueller$ npm start
```

```
> nodejs-complete-guide@1.0.0 start /Users/mschwarzmueller/development/teaching/udemy/nodejs-complete-guide
> nodemon app.js
```

005 Using Nodemon for Autorestarts

OUTLINE



# Types of Errors

Syntax Errors

Runtime Errors

Logical Errors

EXPLORER

app.js

routes.js

... launch.json

← Debug → Add Configuration

NODEJS-COMPLETE-GUIDE

- .vscode
- ... launch.json
- node\_modules
- .gitignore
- app.js
- message.txt
- package-lock.json
- package.json
- routes.js

```

2 // Use IntelliSense to learn about possible attributes
3 // Hover to view descriptions of existing attributes.
4 // For more information, visit: https://go.microsoft.com/fwlink/?linkid=830387
5 "version": "0.2.0",
6 "configurations": [
7
8     {
9         "type": "node",
10        "request": "launch",
11        "name": "Launch Program",
12        "program": "${workspaceFolder}/app.js",
13        "restart": true,
14        "runtimeExecutable": "nodemon",
15        "console": "integratedTerminal"
16    }
17 ]
18 }
```

For Debugger to automatically  
start like nodemon

Add Configuration...

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

2: Node Debug Console



```

[nodemon] restarting due to changes...
[nodemon] starting `node --inspect-brk=22676 app.js`
Debugger listening on ws://127.0.0.1:22676/899853c6-3e0d-48ae-9aec-cc2b7cafec59
For help, see: https://nodejs.org/en/docs/inspector

```

0:05:38

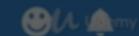
0:00:43

012 Restarting the Debugger Automatically After Editing o...aiting ↵ before starting...

OUTLINE

03-debugging\* □ 0 ▲ 0 ► Launch Program (nodejs-complete-guide)

Ln 15, Col 44 (31 selected) Spaces: 4 UTF-8 LF JSON with Comments Prettier



Code File Edit Selection View Go Debug Tasks Window Help

routes.js

```
19     console.log(chunk);
20     body.push(chunk);
21 });
22 return req.on('end', () => {
23     const parsedBody = Buffer.concat(body).toString();
24     const message = parsedBody.split('=')[1];
25     fs.writeFile('message.txt', message, err => {
26         res.statusCode = 302;
27         res.setHeader('Location', '/');
28         return res.end();
29     });
30 });
31 }
32 res.setHeader('Content-Type', 'text/html');
33 res.write('<html>');
34 res.write('<head><title>My First Page</title></head>');
35 res.write('<body><h1>Hello from my Node.js Server!</h1></body>');
36 res.write('</html>');
37 res.end();
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

2: Node Debug Console

```
[nodemon] watching: *.*
[nodemon] starting `node --inspect-brk=29203 app.js`
Debugger listening on ws://127.0.0.1:29203/11b36738-17ee-45eb-a45d-0c18f1e36cae
For help, see: https://nodejs.org/en/docs/inspector
Debugger attached.
Some hard coded text
```

0:00:33 0:00:53

014 Changing Variables in the Debug Console

OUTLINE

03-debugging 0 ▲ 0 Launch Program (nodejs-complete-guide)

Ln 24, Col 34 Spaces: 2 UTF-8 LF JavaScript Prettier

DEBUG



La



routes.js



# Double click on the value you want to edit!

parsedBody: "message=Te...

```
23  const parsedBody = Buffer.concat(body).toString();
24  const message = parsedBody.split('=')[1];
25  fs.writeFile('message.txt', message, err => {
26    res.statusCode = 302;
27    res.setHeader('Location', '/');
28    return res.end();
29  });
30  });
31 }
32 res.setHeader('Content-Type', 'text/html');
33 res.write('<html>');
34 res.write('<head><title>My First Page</title></head>');
35 res.write('<body><h1>Hello from my Node.js Server!</h1></body>');
36 res.write('</html>');
37 res.end();
```

Can change the variable & it'll also affect the RUNTIME

WATCH

message: undefined

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

2: Node Debug Console



```
[nodemon] watching: *.*
[nodemon] starting `node --inspect-brk=29203 app.js`
Debugger listening on ws://127.0.0.1:29203/11b36738-17ee-45eb-a45d-0c18f1e36cae
For help, see: https://nodejs.org/en/docs/inspector
```

CALL STACK PAUSED ON BRE...

BREAKPOINTS

All Exceptions

0:00:44

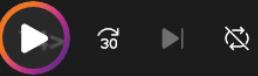
Uncaught Exceptions

routes.js 24

LOADED SCRIPTS

03-debugging 0 ▲ 0 Launch Program (nodejs-complete-guide)

Ln 24, Col 34 Spaces: 2 UTF-8 LF JavaScript Prettier



# Module Summary

## npm

- npm stands for “Node Package Manager” and it allows you to manage your Node project and its dependencies
- You can initialize a project with `npm init`
- npm scripts can be defined in the `package.json` to give you “shortcuts” to common tasks/ commands

## Types of Errors

- Syntax, runtime and logical errors can break your app
- Syntax and runtime errors throw (helpful) error messages (with line numbers!)
- Logical errors can be fixed with testing and the help of the debugger

## 3rd Party Packages

- Node projects typically don’t just use core modules and custom code but also third-party packages
- You install them via npm
- You can differentiate between production dependencies (`--save`), development dependencies (`--save-dev`) and global dependencies (`-g`)

## Debugging

- Use the VS Code Node debugger to step into your code and go through it step by step
- Analyze variable values at runtime
- Look into (and manipulate) variables at runtime
- Set breakpoints cleverly (i.e. respect the async/ event-driven nature)