

Modules

Understanding Modules in Node.js

 by Niranjana S



What is Node.js?

 **Open-source, Cross-platform**

JavaScript runtime environment

Key Features

Asynchronous, Event-driven, Non-Blocking I/O



Introduction to Modules

What are Modules?

Files or collections of files containing code

Types of Modules

- Built-in Modules
- Third-party Modules
- Local Modules

Third-party Modules

Community-created

Installed from npm registry

Additional Functionality

Not available in core modules

Examples

express, lodash, mongoose



Installing Third-party Modules



npm

Node Package Manager



Install express

```
npm install express
```



Install lodash

```
npm install lodash
```

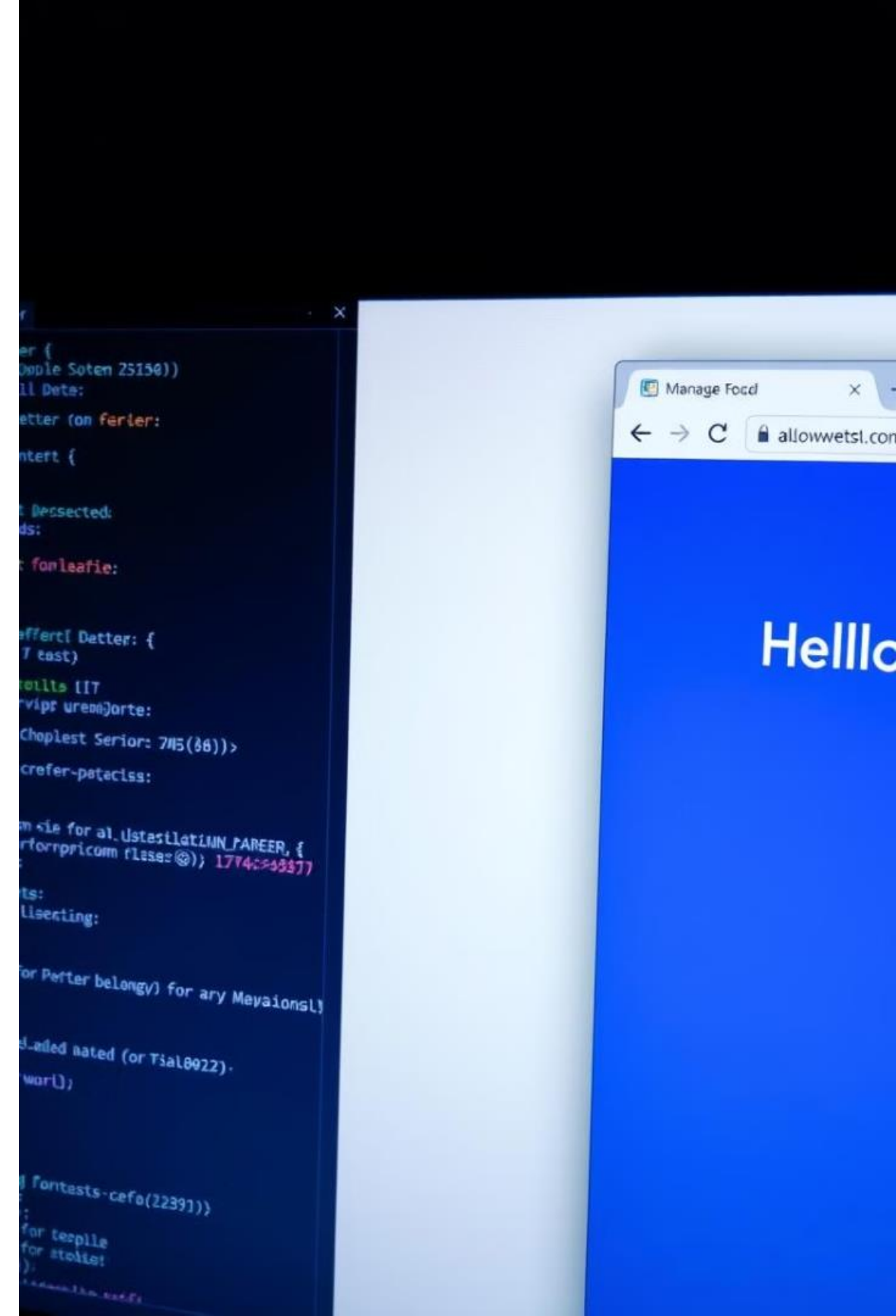
Example: Using Lodash Module

Install Lodash Module

```
npm install lodash
```

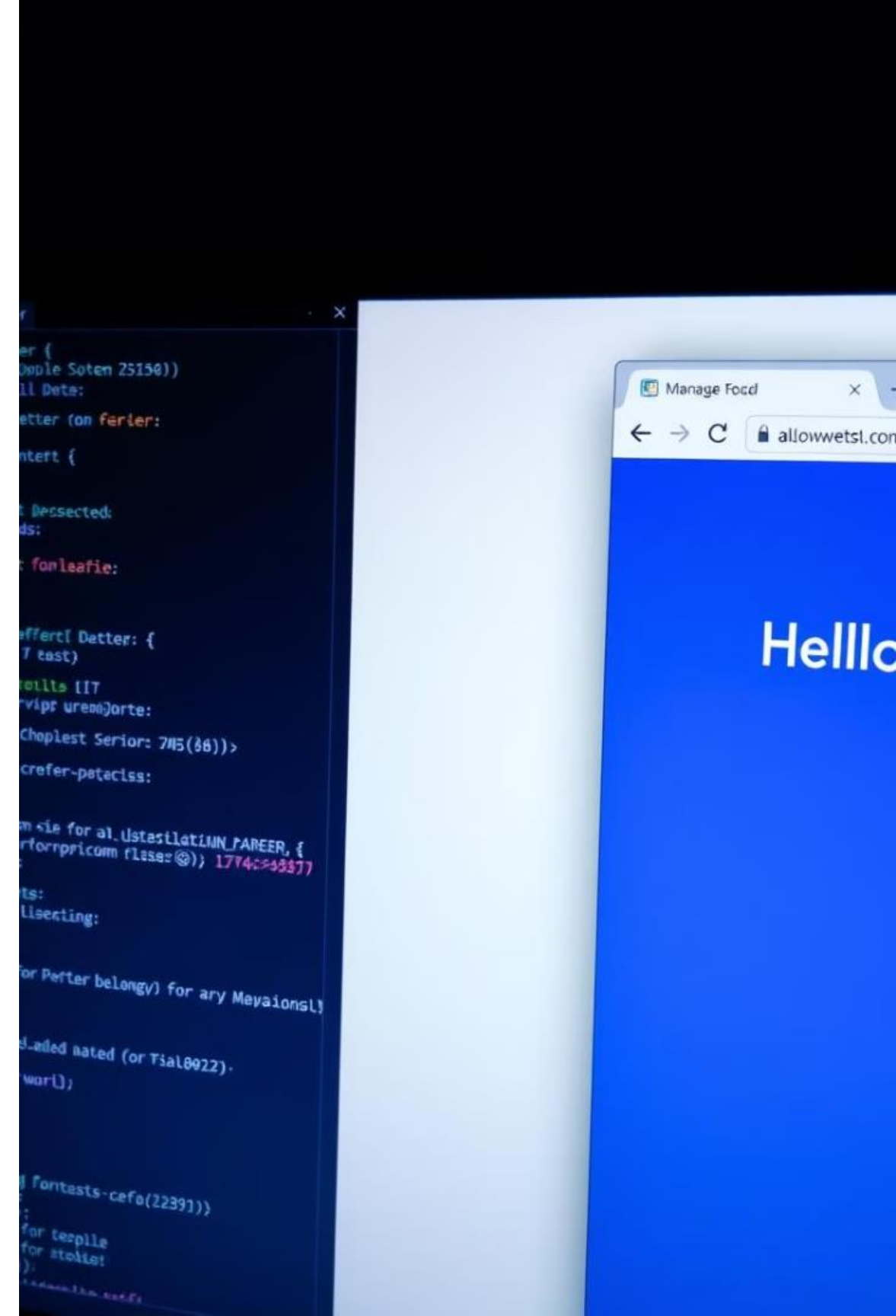
```
const _ = require('lodash');
```

```
// Example using Lodash to get a random number  
console.log(_.random(1, 100));
```



Example: Using Express

```
const express = require('express');
const app = express();
app.get('/', (req, res) => {
  res.send('Hello, Express!');
});
app.listen(3000, () => {
  console.log('Server is running on port 3000');
});
```



Local Modules

Custom Modules

Created by the developer

Exporting

Use `module.exports`

Importing

Use `require()`

Example: Creating and Using a Local Module

File 1: greetings.js

```
// greetings.js
module.exports = {
  sayHello: function(name) {
    return `Hello, ${name}!`;
  }
};
```

File 2: app.js

```
// app.js
const greetings = require('./greetings');
console.log(greetings.sayHello('Node.js'));
```

Built-in Modules

Core Modules

Available without installation

Functionality

Files, events, streams, networking
networking

Examples

fs, http, path, os



```

3      friense-daream((: mnoul) {
4
5          for EOFISE UNALERREL: {
6              writ a fost-figorse iarefosciale )) )
7              prades ({ tisle mo, cronell);
8              prectisr finounl: -34;
9              resitur (l = 101.9;
10             freadater jisle 11997, ohpreaning, world);
11             rreadesimpfarltog: l)
12         }
13     }

```

Example: fs Module

```
const fs = require('fs');
fs.readFile('example.txt', 'utf8', (err, data) => {
  if (err) throw err;
  console.log(data);
});
fs.writeFile('output.txt', 'Hello, Node.js!', (err) => {
  if (err) throw err;
  console.log('File written successfully!');
});
```

Example: Event Module

```
11 interictule (laxivoWop)>
12 http (iteform=ltapey>
13   server (im-Javascript: lacto>
14     intr(lection freme Masic WebSerts>
15     heter (cpe:
16       application=lactis)>
17       ronlersted_sonplbote nit(NetattaM5w))
18       certace: ("wiigla" mos">
19         feeding=llsidi):
20         Pcntabe: SkcioWag, (hattCaMew");
21         rreolce: "potdoctiveteristire.lnieVaw");
22         prcatterUpth hallveerarte (Nulifacte holp, cinplateie
23         for (tite=lapla")
24         for (tarte-oartime Intere" (inlsLaw">
25         for (http.cenrlint assserifle reaping.fower, betitioe"
26           http (iwalle prdnecesasion oge">
27           http (cavithe Duceerurie (viacllaw)>
28       )
29       wlate (nfatsveriole script: (>
30       rpdereile: Inbic 'semminu">
31       cree (derballcoplacion the Date "imp!Howe).
32     )
33   >
```

```
const EventEmitter = require('events');
```

```
// Create an instance of EventEmitter
```

```
const eventEmitter = new EventEmitter();
```

```
// Create a listener for the 'greet' event
```

```
eventEmitter.on('greet', () => {
```

```
  console.log('Hello, Event Module!');
```

```
});
```

```
// Trigger the 'greet' event
```

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

Example: OS Module

```
const os = require('os');  
// Get the system's architecture  
console.log('Architecture:', os.arch());  
// Get the system's total memory  
console.log('Total Memory:', os.totalmem());  
// Get the system's free memory  
console.log('Free Memory:', os.freemem());  
// Get the hostname of the operating system  
console.log('Hostname:', os.hostname());
```

Example: http Module

```
const http = require('http');
const server = http.createServer((req, res) => {
  res.writeHead(200, { 'Content-Type': 'text/plain' });
  res.end('Hello, Node.js!');
});
server.listen(3000, () => {
  console.log('Server is listening on port 3000');
});
```