Web Development with Node.js and MongoDB

Andrew Marcinkevičius

Video 1.3
Blocking Versus
Non-blocking Code

In this Video, we are going to take a look at...

- Blocking versus Non-blocking code

- The Call Stack

- CLI support

Blocking Versus Non-blocking Code

- Put water to boil

- Put tea in a cup

- Turn on the heat for the pan

- Break the eggs in the pan

- Put water in a cup

Blocking Versus Non-blocking

- Running your code is not I/O

- Calling external utility is an I/O

- Applications run on single thread

- Do one thing at a time

- Avoid CPU intensive tasks

```
▼ 🗁 code
  ▼ 🗁 1
    ▼ 🗁 1.3
        📄 01-blocking-code.js
        📄 02-hello-world.js
        📄 03-hello-arguments.js
        📄 04-hello-exit-codes.js
        📄 05-hello-pipe.js
        📄 06-hello.js
    ▶ 📁 1.4
    ▶ 📁 1.5
  ▶ 📁 2
  ▶ 📁 3
  ▶ 📁 4
  ▶ 📁 5
  ▶ 📁 6
  ▶ 📁 7
  ▶ 📁 8
      📄 export-environment-variables.sh
▶ 📁 scripts
```

01-blocking-code.js ×

```javascript
1  'use strict';
2
3  console.log('Start script');
4
5  setTimeout(function () { console.log('Timeout output'); }, 1000);
6
7  let until = new Date().getTime() + 3000;
8
9  while (new Date().getTime() < until) {
10  }
11
12  console.log('Output after 3 second loop');
13
```

```
ifdattic at ifdattic-mbp13 in ~/projects/nodejs-mongodb-video-course/code/1/1.3 on master
$ node 01-blocking-code.js
Start script
Output after 3 second loop
Timeout output


ifdattic at ifdattic-mbp13 in ~/projects/nodejs-mongodb-video-course/code/1/1.3 on master
$
```

The Call Stack

- Last-In First-Out data structure

- Helpful for debugging

- Programs crash on stack overflow

- Composed of stack frames

- Stack frame: arguments, return address, and local variables

- Avoid too many function calls

```
code
  1
    1.3
      01-blocking-code.js
      02-hello-world.js
      03-hello-arguments.js
      04-hello-exit-codes.js
      05-hello-pipe.js
      06-hello.js
    1.4
    1.5
  2
  3
  4
  5
  6
  7
  8
  export-environment-variables.sh
scripts
```

02-hello-world.js

```javascript
1  #!/usr/bin/env node
2
3  console.log('Hello World!');
4
```

```
ifdattic at ifdattic-mbp13 in ~/projects/nodejs-mongodb-video-course/code/1/1.3 on master
$ chmod u+x 02-hello-world.js

ifdattic at ifdattic-mbp13 in ~/projects/nodejs-mongodb-video-course/code/1/1.3 on master
$ ./02-hello-world.js
Hello World!

ifdattic at ifdattic-mbp13 in ~/projects/nodejs-mongodb-video-course/code/1/1.3 on master
$
```

- code
  - 1
    - 1.3
      - 01-blocking-code.js
      - 02-hello-world.js
      - 03-hello-arguments.js
      - 04-hello-exit-codes.js
      - 05-hello-pipe.js
      - 06-hello.js
    - 1.4
    - 1.5
  - 2
  - 3
  - 4
  - 5
  - 6
  - 7
  - 8
  - export-environment-variables.sh
- scripts

03-hello-arguments.js ×

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

'use strict';

console.log('Argument vector');
console.log(process.argv);

let args = process.argv.slice(2);

console.log('\nArguments after slicing');
console.log(args);

let name = args[0];

if (!name) {
    throw Error('\nYou have not given your name, bye');
}

console.log('\nHello ' + name);
```

2 Words, 2 lines, 34 characters selected   2 misspelled words   UTF-8   Unix   Spaces: 4   JavaScript (Babel)

```
ifdattic at ifdattic-mbp13 in ~/projects/nodejs-mongodb-video-course/code/1/1.3 on master [!]
$ ./03-hello-arguments.js Andrew
Argument vector
[ '/usr/local/bin/node',
  '/Users/ifdattic/projects/nodejs-mongodb-video-course/code/1/1.3/03-hello-arguments.js',
  'Andrew' ]

Arguments after slicing
[ 'Andrew' ]

Hello Andrew

ifdattic at ifdattic-mbp13 in ~/projects/nodejs-mongodb-video-course/code/1/1.3 on master [!]
$
```

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

'use strict';

let error = true;

if (error) {
    console.log('Error occurred');
    console.log('Exiting with code higher than 0');

    process.exit(1);
}

process.exit(0);
```

FOLDERS

- code
  - 1
    - 1.3
      - 01-blocking-code.js
      - 02-hello-world.js
      - 03-hello-arguments.js
      - 04-hello-exit-codes.js
      - 05-hello-pipe.js
      - 06-hello.js
    - 1.4
    - 1.5
  - 2
  - 3
  - 4
  - 5
  - 6
  - 7
  - 8
  - export-environment-variables.sh
- scripts

```
ifdattic at ifdattic-mbp13 in ~/projects/nodejs-mongodb-video-course/code/1/1.3 on master [!]
$ ./04-hello-exit-codes.js
Error occurred
Exiting with code higher than 0


ifdattic at ifdattic-mbp13 in ~/projects/nodejs-mongodb-video-course/code/1/1.3 on master [!]
$
```

▼ 🗁 code
  ▼ 🗁 1
    ▼ 🗁 1.3
        📄 01-blocking-code.js
        📄 02-hello-world.js
        📄 03-hello-arguments.js
        📄 04-hello-exit-codes.js
        📄 05-hello-pipe.js
        📄 06-hello.js
    ▶ 🗀 1.4
    ▶ 🗀 1.5
  ▶ 🗀 2
  ▶ 🗀 3
  ▶ 🗀 4
  ▶ 🗀 5
  ▶ 🗀 6
  ▶ 🗀 7
  ▶ 🗀 8
    📄 export-environment-variables.sh
▶ 🗀 scripts

05-hello-pipe.js   ×

```javascript
1  #!/usr/bin/env node
2
3  process.stdin.on('data', function (data) {
4      process.stdout.write('Hello ' + data);
5  });
6
```

4 Words, Line 1, Column 1   2 misspelled words   UTF-8   Unix   Spaces: 4 ∨   JavaScript (Babel)

05-hello-pipe.js ✕

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

process.stdin.on('data', function (data) {
    process.stdout.write('Hello ' + data);
});
```

4 Words, Line 1, Column 1   2 misspelled words   UTF-8   Unix   Spaces: 4   JavaScript (Babel)

```
ifdattic at ifdattic-mbp13 in ~/projects/nodejs-mongodb-video-course/code/1/1.3 on master [!]
$ echo 'Andrew' | ./05-hello-pipe.js
Hello Andrew

ifdattic at ifdattic-mbp13 in ~/projects/nodejs-mongodb-video-course/code/1/1.3 on master [!]
$
```

- ▼ 🗁 code
  - ▼ 🗁 1
    - ▼ 🗁 1.3
      - 📄 01-blocking-code.js
      - 📄 02-hello-world.js
      - 📄 03-hello-arguments.js
      - 📄 04-hello-exit-codes.js
      - 📄 05-hello-pipe.js
      - 📄 06-hello.js
    - ▶ 📁 1.4
    - ▶ 📁 1.5
  - ▶ 📁 2
  - ▶ 📁 3
  - ▶ 📁 4
  - ▶ 📁 5
  - ▶ 📁 6
  - ▶ 📁 7
  - ▶ 📁 8
  - 📄 export-environment-variables.sh
- ▶ 📁 scripts

06-hello.js ✕

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

'use strict';

let readline = require('readline').createInterface({
    input: process.stdin,
    output: process.stdout
});

readline.question('What is your name? ', function (answer) {
    console.log('Hello ' + answer);

    readline.close();
});
```

```
ifdattic at ifdattic-mbp13 in ~/projects/nodejs-mongodb-video-course/code/1/1.3 on master [!]
$ ./06-hello.js
What is your name? Andrew
Hello Andrew


ifdattic at ifdattic-mbp13 in ~/projects/nodejs-mongodb-video-course/code/1/1.3 on master [!]
$ 
```

Next Video

Setting Up Your Environment