

First Steps w/ Node.js & React

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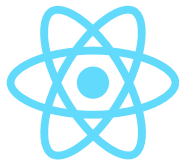


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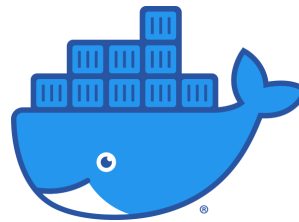
Node.js



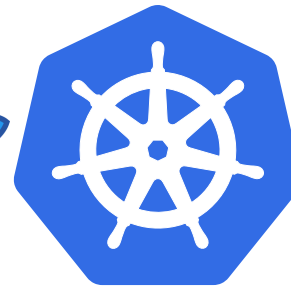
React



Webpack



Docker



Kubernetes



AWS

Node.js

What is Node.js

Ryan Dahl, circa 2009

JavaScript outside the Browser.

- V8 Engine (Google)
- Event Loop (libuv)
- APIs (stream, os, fs, net, http, crypto, ...)

Asynchronous event-driven runtime with non-blocking I/O.

In the Beginning

- 1995: First version of JavaScript (Netscape)
- 1996: LiveWire, the first JS server-side runtime (Netspace)
- 1997: ECMAScript 1
- 1999: ECMAScript 2
- 2000: **Internet Explorer** dominates the Browser Wars
- 2006: jQuery

The plain, old, boring JavaScript...

Breaking free of the Browser

- 2008: Google Chrome and the V8 Engine
- 2009: **Node.js**
- 2009: ECMAScript 5
"use strict", json, getters/setters, array/object methods
- 2012: **Google Chrome** dominates the Browser Wars
- 2012-NOW: Express, Lodash, Webpack, React, Vue.js, Babel
and thousand more packages are born...
- 2015: ECMAScript 6 (the big one)
let, const, arrow functions, default parameters, spread operator, destructuring assignment, modules, classes, promises, symbols, iterators, generators, more built-in methods and types, ...
- 2016-9: ECMAScript 7-10
await/async, exponentiation operator, spread operator for objects, promise finally, regex updates, more built-in methods, ...
- 2019: NPM hits **1 million packages**

Hello World

```
setTimeout(function() {  
  console.log('world');  
}, 500);  
  
console.log('hello');
```

- A single thread, asynchronous execution
- Callbacks are scheduled to run later (on the event loop)

Compare to Java

```
System.out.println("hello");  
Thread.sleep(500);  
System.out.println("world");
```

Node Modules (CommonJS)

```
// 'main.js'
const someModule = require('./some-module');
someModule.someFunction();

// 'some-module.js'
module.exports = {
  someFunction: function() { }
}
```

- Node.js uses this format from the beginning.

New Module (ES6)

```
// 'main.js'
import * as someModule from './some-module';
import { someFunction } from './some-module';
someModule.someFunction();
someFunction();

// 'some-module.js'
export function someFunction() { }
```

- This is the "new" standard for modules (ECMAScript 6).
- We will use this format on React and use Babel to convert.

Demos

Install Node.js (LTS 12.15.0)

<https://nodejs.org/en/>
<https://nodejs.org/en/download/package-manager/>

MacOS

Download the Installer or using Brew:

```
brew install node
```

Linux Debian (NodeSource Binaries):

```
curl -sL https://rpm.nodesource.com/setup_12.x | sudo bash -  
sudo apt-get install -y nodejs
```

Windows

Download the Installer or using Chocolatey:

```
choco install nodejs.install
```

Download the Files

```
git clone https://github.com/goncalomb/talk-intro-nodejs-react.git
```

If you don't have git installed. Just download the ZIP from:

<https://github.com/goncalomb/talk-intro-nodejs-react>

After this talk, go home and install git.

React

What is React

Originally created by Facebook

- Library for User Interfaces
- Declarative
- Reusable Components

React Elements

```
const el = document.createElement('a');
el.setAttribute('href', 'https://www.google.com/');
el.style.fontSize = '2em';
el.innerText = 'Google';
document.body.appendChild(el);
```

```
const el = React.createElement('a', {
  href: 'https://www.google.com/',
  style: {
    fontSize: '2em'
  }
}, 'Google');
ReactDOM.render(el, document.body);
```

Demo

JSX

```
const el = React.createElement('a', {  
  href: 'https://www.google.com/',  
  style: {  
    fontSize: '2em'  
  }  
}, 'Google');
```

```
const el = (  
  <a href='https://www.google.com/' style={{ fontSize: '2em' }}>  
    Google  
  </a>  
)
```

Components

```
function MyComponent(props) {  
  return (  
    <div>  
      <p>{props.name} ({props.age})</p>  
    </div>  
  );  
};  
ReactDOM.render(<MyComponent name="John" age={45} />, document.body);
```

Demo

Let's Play

```
cd message-board  
npm install  
npm start
```

See the 'TODO.md' file.

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Questions?

- These slides are made with React?
- Can React run on the Server?
- Do you know about the P3 CPU?

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