Introduction

NodeJS

What is Node.js?

What is Node.js?

- A JavaScript Runtime

- Asynchronous I/O based on event loops

- 100K lines of JS and C++ code, implementation of Node modules

- Ecosystem of packages

Installing NodeJS

(Windows)

1. Go to: http://chocolatey.org/docs/installation
2. Run: “cmd.exe” (as administrator)
3. Copy command from website
4. Run: “choco /?"
5. Run: “choco install nodes.install”
6. Close terminal
7. Open new terminal (“cmd.exe”)
8. Run: “node -v”

Installing NodeJS

(Windows alternativ)

1. Open: https://nodejs.org
2. Download: “11.x.y Current”
3. Follow instructions

What is Node?

- Based on JavaScript (originally run inside of a browser)
  - run as a process standalone on your machine
    - Application can be coded in javascript outside of the context of the browser
- Javascript had a limited feature set
  - NodeJS has extended feature set more like Java, Python or PHP
  - Write applications using the javascript syntax (e.g. manipulating the file system, query databases directly, create web servers

How does it work?

- Both Chrome and NodeJS run on Google's V8 JavaScript engine
- Open source
- Takes JavaScript code —> compiles it into machine code
- V8 engine written in C++

Lets get started

1. Open terminal (“cmd.exe”)
2. Type: “node”
3. Type: “console.log(‘Hello World’);” in the prompt

What happened?

1. Node takes your JavaScript code
2. Compiles it into machine code
3. Executes it

V8 Engine is running in the background & it’s also running in the chrome browser.

Install Chrome-Browser

1. Click on Menu (Hamburger Icon or 3 dots)
2. Click on “More Tools”
3. Select “Developer Tools”
4. Select “Console” tab
5. Type: “console.log(‘Hello World’);”

In both cases we are running the command via the V8 engine and in both cases the output is the same!

Differences

Node has functionality to manipulate the file system

vs.

JavaScript has features to manipulate the layout of the website

Differences

‘*window*’ is the global object & stores basically everything you have access to:

- Type ‘window’ in Chrome Browser
  (basically every variable you create lives inside ‘window’, e.g. css manipulation)

‘global’ is the pendant to ‘window’ in NodeJS:

- Type ‘global’ in node process

Differences

‘*document*’ in JavaScript stores the DOM:

- Type ‘*document*’ in Chrome Browser
  (you can see the elements you have in the viewport of the browser - changes here will effect the website being rendered)

‘*process*’ similar to document. It has informations about the currently running process.

- Type ‘process’ in node process

Summary

- Node uses
  - the V8 engine to compile JavaScript to machine code
  - libuv for asynchronous I/O based on event loops
- V8 is used in NodeJS and in the Chrome Browser
- ‘window’ (Browser) becomes ‘global’ (NodeJS)
- ‘document’ (Browser) becomes ‘process’ (NodeJS)

Links

The V8 Engine and Node.js

https://www.youtube.com/watch?v=PsDqH_RKvyc&t=676s