

WEBTECHNOLOGIES

INTRODUCTION TO NODE.JS

WHAT IS JAVASCRIPT?

- Dynamically typed programming language
- First version in 1995
 - Netscape Browser
- Supports
 - Object-orienteded Programming
 - Functional Programming

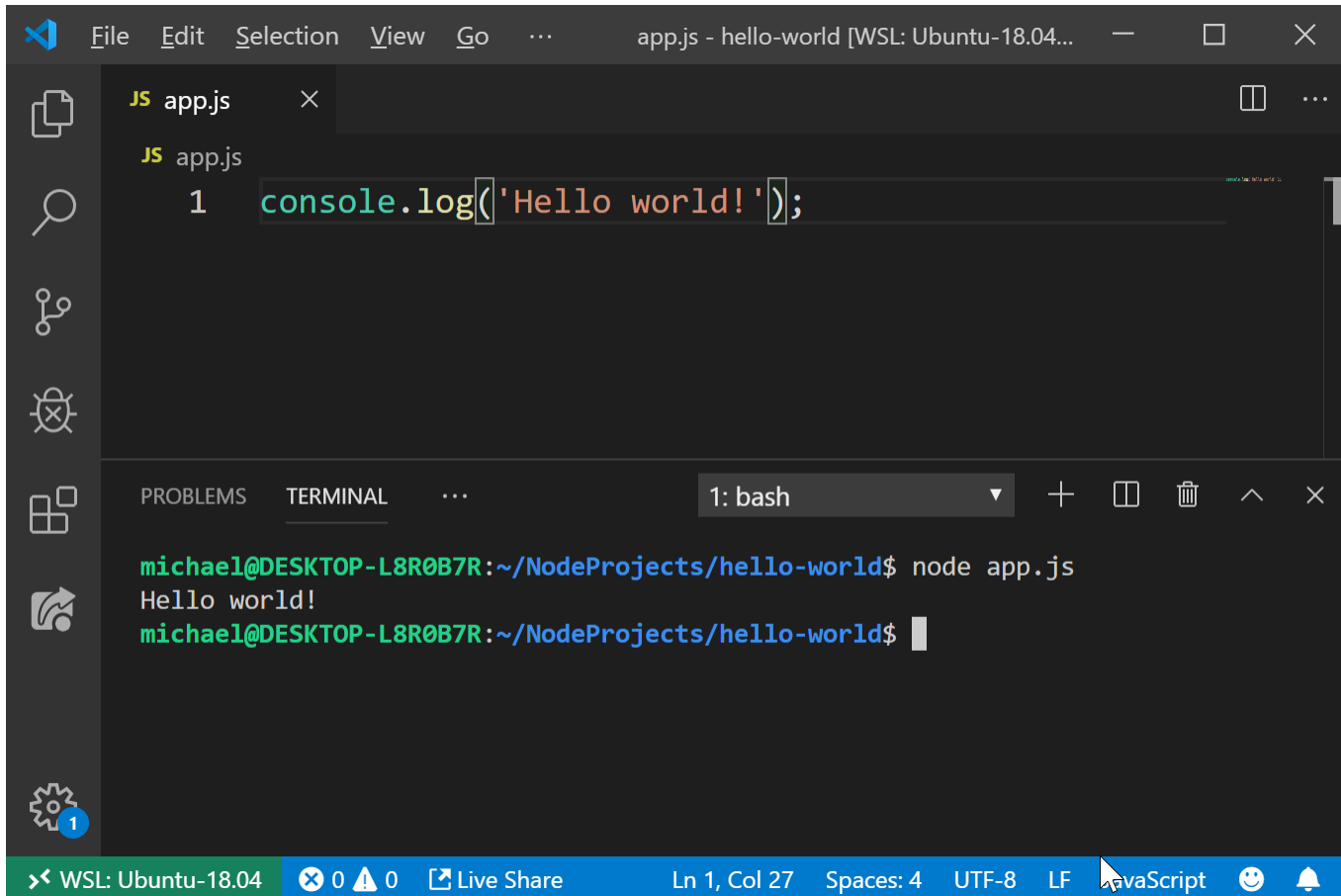
JAVASCRIPT ENGINES

- Execute JavaScript code
 - Spider-Monkey (Firefox)
 - V8 (Chrome, Edge)
- Translation to machine code
 - Former: Interpreter
 - Nowadays: JIT-Compiler

WHAT IS NODE.JS?

- JavaScript runtime
 - Execute JavaScript outside of a browser
- Main components
 - [V8 JavaScript-Engine](#)
 - [API](#)
 - HTTP requests, file access, ...

HELLO WORLD!



The image shows a Visual Studio Code editor window titled "app.js - hello-world [WSL: Ubuntu-18.04...". The editor displays a single line of JavaScript code in a file named "app.js":

```
1 console.log('Hello world!');
```

Below the editor, the "TERMINAL" panel is active, showing a bash shell prompt. The user has executed the command `node app.js`, and the output is "Hello world!".

```
michael@DESKTOP-L8R0B7R:~/NodeProjects/hello-world$ node app.js
Hello world!
michael@DESKTOP-L8R0B7R:~/NodeProjects/hello-world$
```

The status bar at the bottom indicates the file is encoded in UTF-8, uses LF line endings, and is a JavaScript file. It also shows 0 errors and 0 warnings.

NODE.JS APPLICATIONS

- Console applications
 - e.g. [Angular CLI](#)
- Web applications
 - e.g. Netflix
- Desktop applications
 - with Electron framework (Node.js + Chromium)
 - e.g. [Visual Studio Code](#)

NODE.JS FEATURES

- Single-Threaded
 - Whole JavaScript-Application runs in one thread
- Non-Blocking I/O
 - Thread isn't blocked e.g. during file access
- Therefore Node.js is ...
 - well suited for I/O-intensive applications
 - not well suited for CPU-intensive applications

NODE.JS FEATURES

- Fast
 - Written in C / C++
 - Uses Chrome V8
- Full support of ES 2015 (ES 6)

WHAT IS ES?

- ECMAScript
 - Basis of JavaScript
 - Standardized by [ECMA International](#)
- ES is constantly adjusted
 - New language features added
 - Yearly updates since 2015

NODE.JS INSTALLATION

- On nodejs.org you find two versions
- Long-term support (LTS)
 - Stable version for production applications
- Current
 - Version with latest Features