

RECAP BLOCK TECH

EVERYTHING YOU NEED TO KNOW

SCHEDULE

Meta

I. Course

II.Examples

Content

I. JavaScript

II.Node & npm

III.HTTP & Database

IV.Git & GitHub

V. Command line

VI.Local machine

Courses

❖ Back-end

❖ Front-end

❖ Project-tech



THE GAP BY IRA GLASS

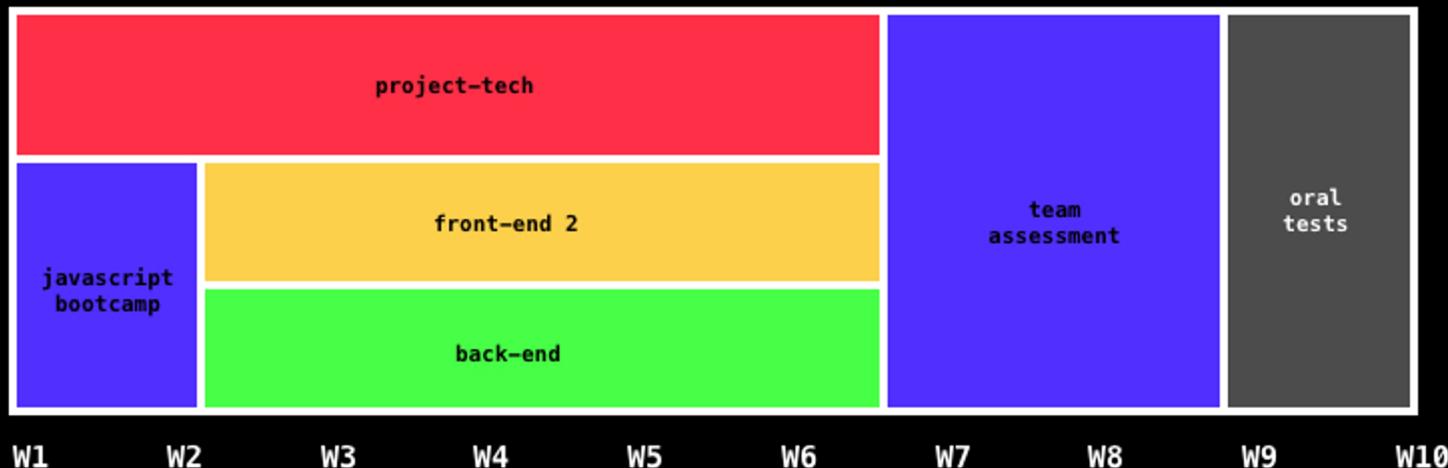
COURSE

I/V

I COURSE

SYNOPSIS

Block Tech



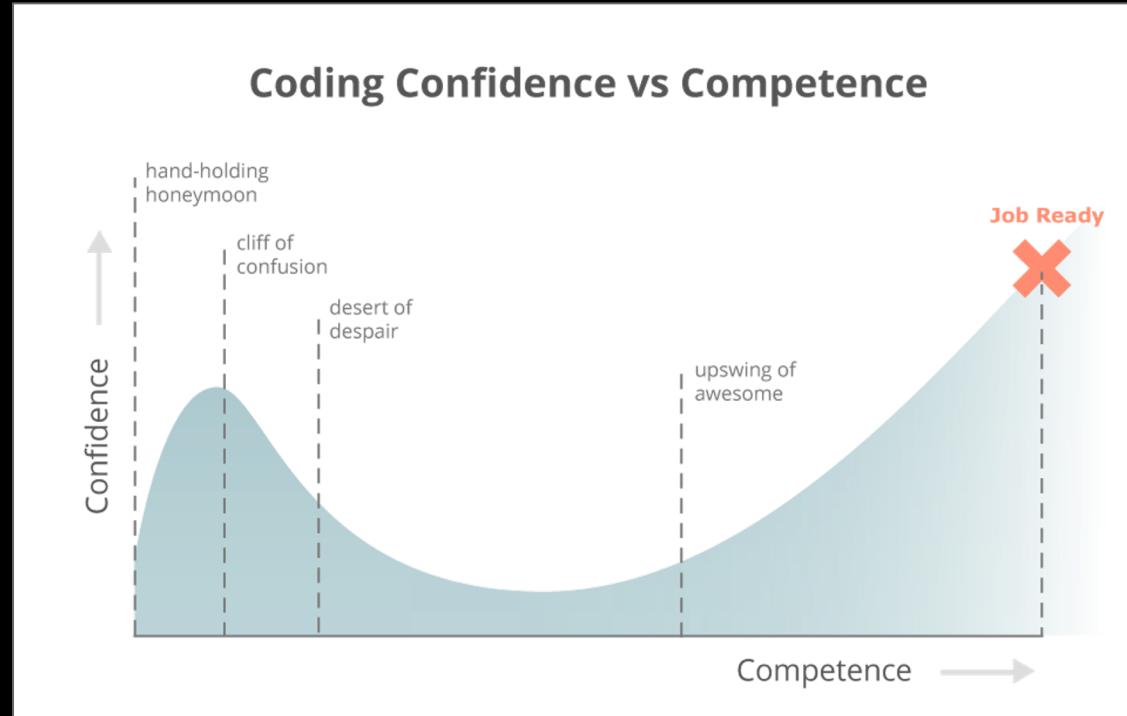
I COURSE

TIPS

- ❖ Work hard
- ❖ Few contact hours: do it yourself
- ❖ Read the manual
- ❖ Ask questions and help **each other** on Slack
- ❖ Take little steps
- ❖ Push through

More tips? See syllabus on GitHub!

I COURSE

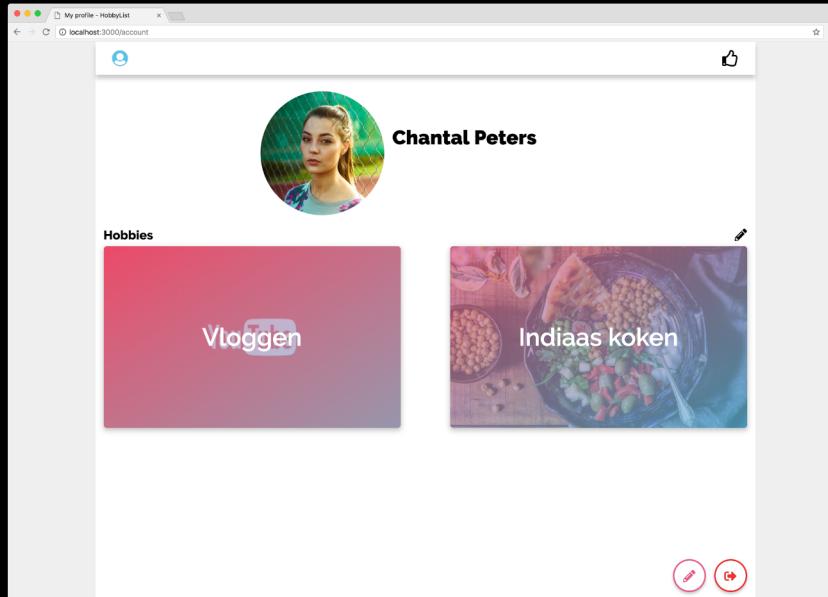


WHY LEARNING TO CODE IS SO GODDAMN HARD

EXAMPLES

I/V

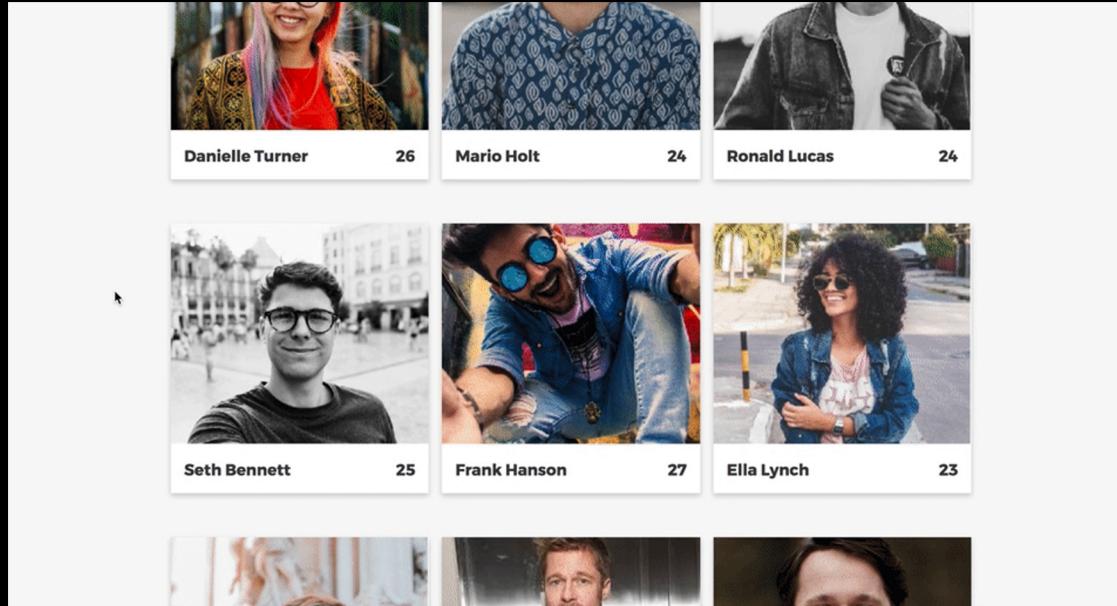
I COURSE



THEJONAHGOLD/HDATE

I COURSE

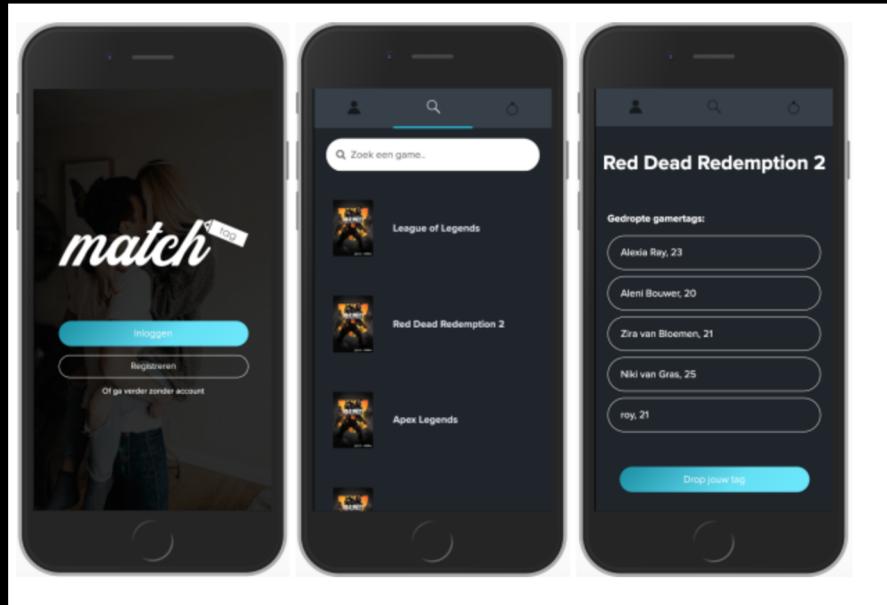
EXAMPLES



[HTTPS://GITHUB.COM/MARTIJNKEESMAAT/DATING-APP-PT](https://github.com/MartijnKeesmaat/Dating-App-PT)

I COURSE

EXAMPLES



[HTTPS://GITHUB.COM/ROWIN206/DATINGAPP](https://github.com/Rowin206/DatingApp)

I COURSE

GOALS

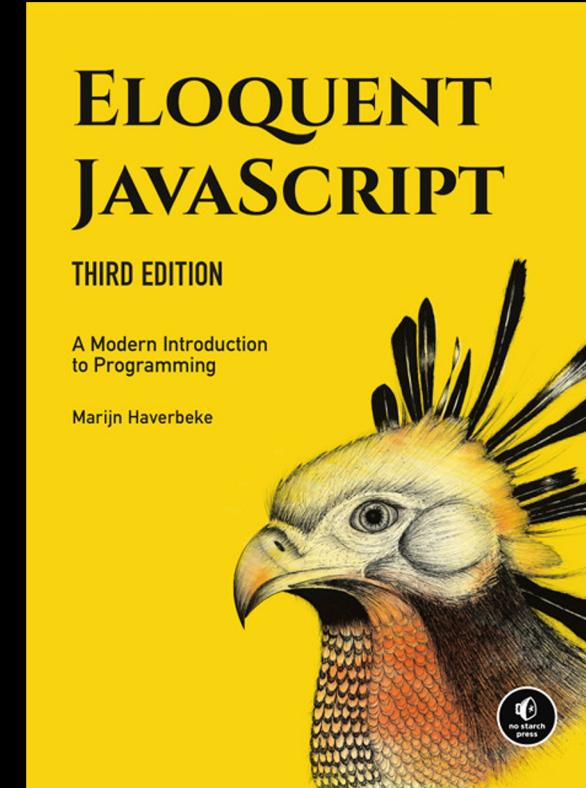
- ❖ You can build web apps with Node
- ❖ You can store data in a database
- ❖ You can use packages from npm
- ❖ You can render data server-side with templating
- ❖ You can communicate over http

JAVASCRIPT

II/V

IV BOOTCAMP

THEORY



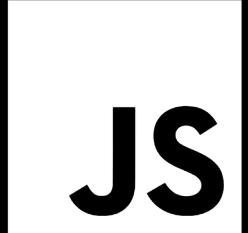
ELOQUENT JAVASCRIPT BY MARIJN HAVERBEKE

IV RECAP

ECMASCRIPT?

A standard document was written to describe the way the JavaScript language should work so that the various pieces of software that claimed to support JavaScript were actually talking about the same language.

ELOQUENT JAVASCRIPT BY MARIJN HAVERBEKE



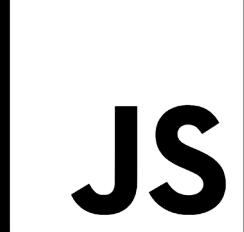
IV RECAP

VERSIONS?

Ecma International decided to switch to **annual releases** of ECMAScript..[]

Accordingly, Ecma International also started to name new editions of the ECMAScript specification based on the year they are released. **In short, ES6 and ES2015 are two different names for the same thing.**

ELOQUENT JAVASCRIPT BY MARIJN HAVERBEKE



II RECAP

```
bootcamp/index.js
```

```
var person = {  
    firstName: "John",  
    lastName: "Doe",  
    age: 50,  
    eyeColor: "blue"  
};  
  
// key > value
```

OBJECTS

JS

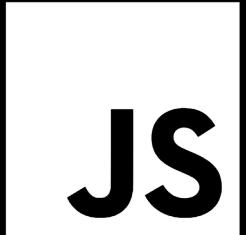
II RECAP CH4

JSON

If you want to save data in a file for later or send it to another computer over the network, you have to somehow convert these tangles of memory addresses to a description that can be stored or sent. ..[]

What we can do is *serialize* the data

ELOQUENT JAVASCRIPT BY MARIJN HAVERBEKE



II MODULES

- ❖ **Modules vs packages**
- ❖ **Commonjs vs ecmascript modules**

JS

I MODULES



folder/sum.js

```
module.exports = sum

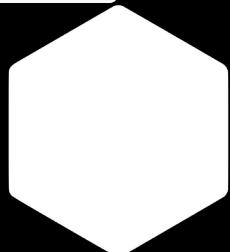
function sum() {
  var args = arguments
  var total = 0
  var index = -1
  while (++index < args.length) {
    total += args[index]
  }
  return total
}
```



folder/index.js

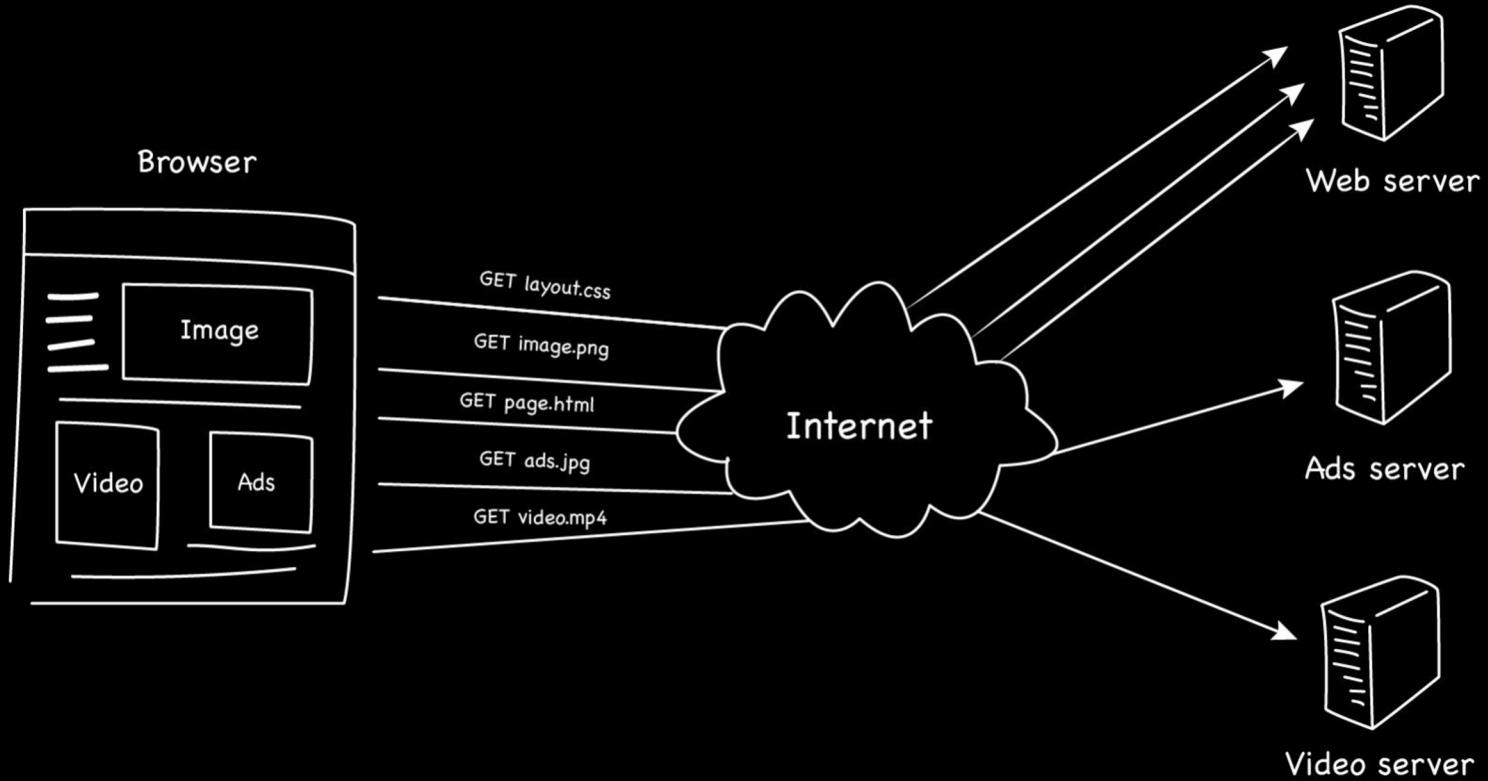
```
var sum = require('./sum.js')

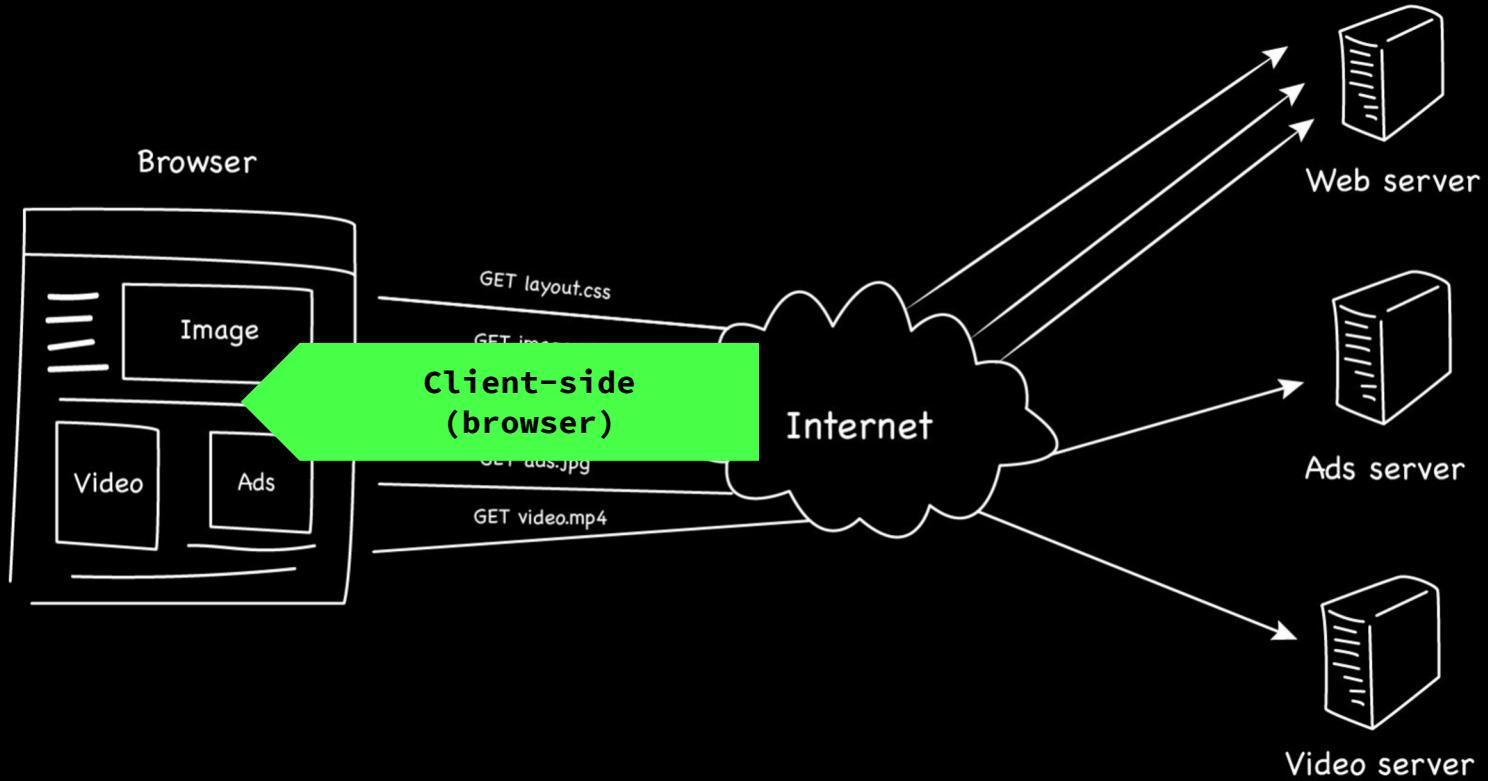
console.log(sum(1, 2, 3))
```

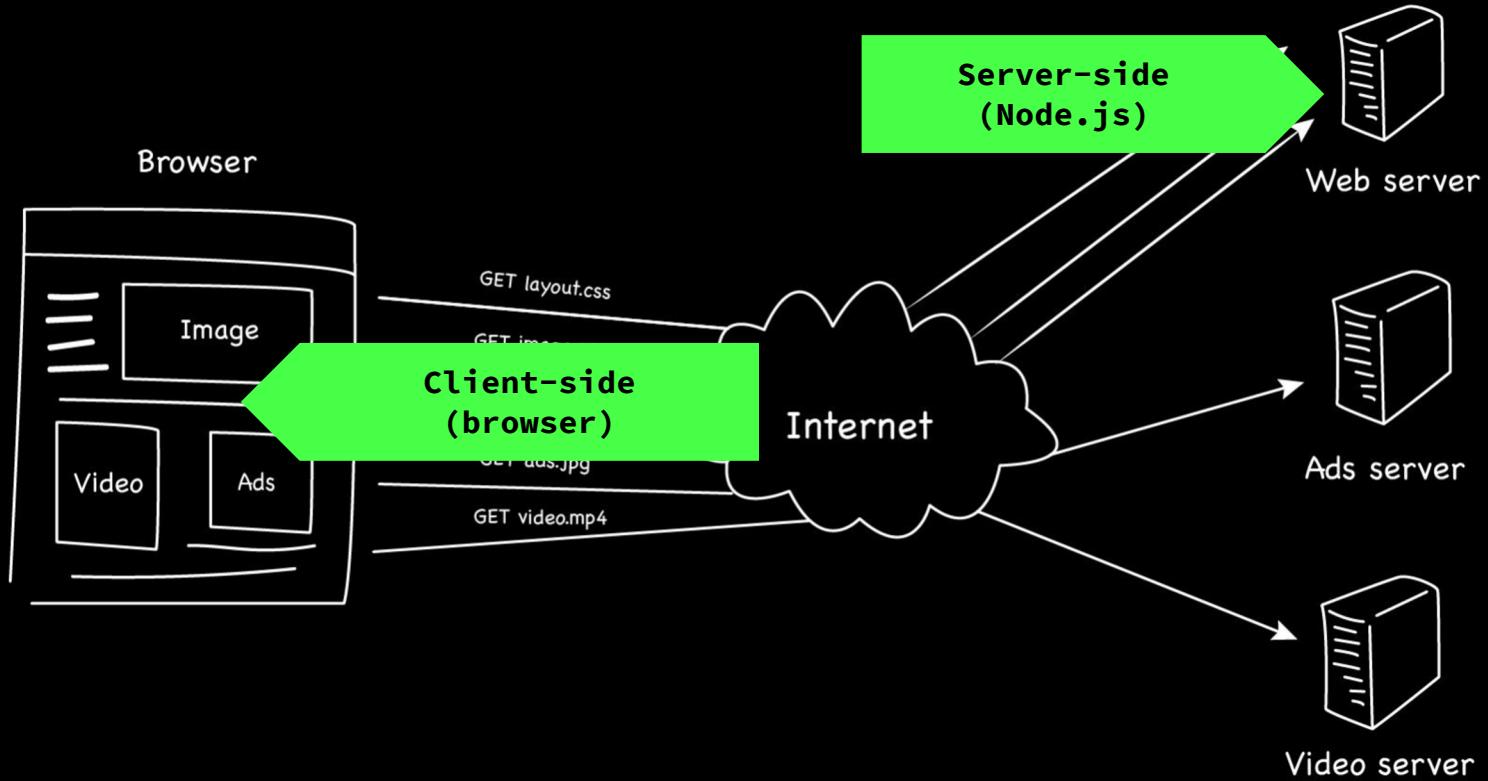


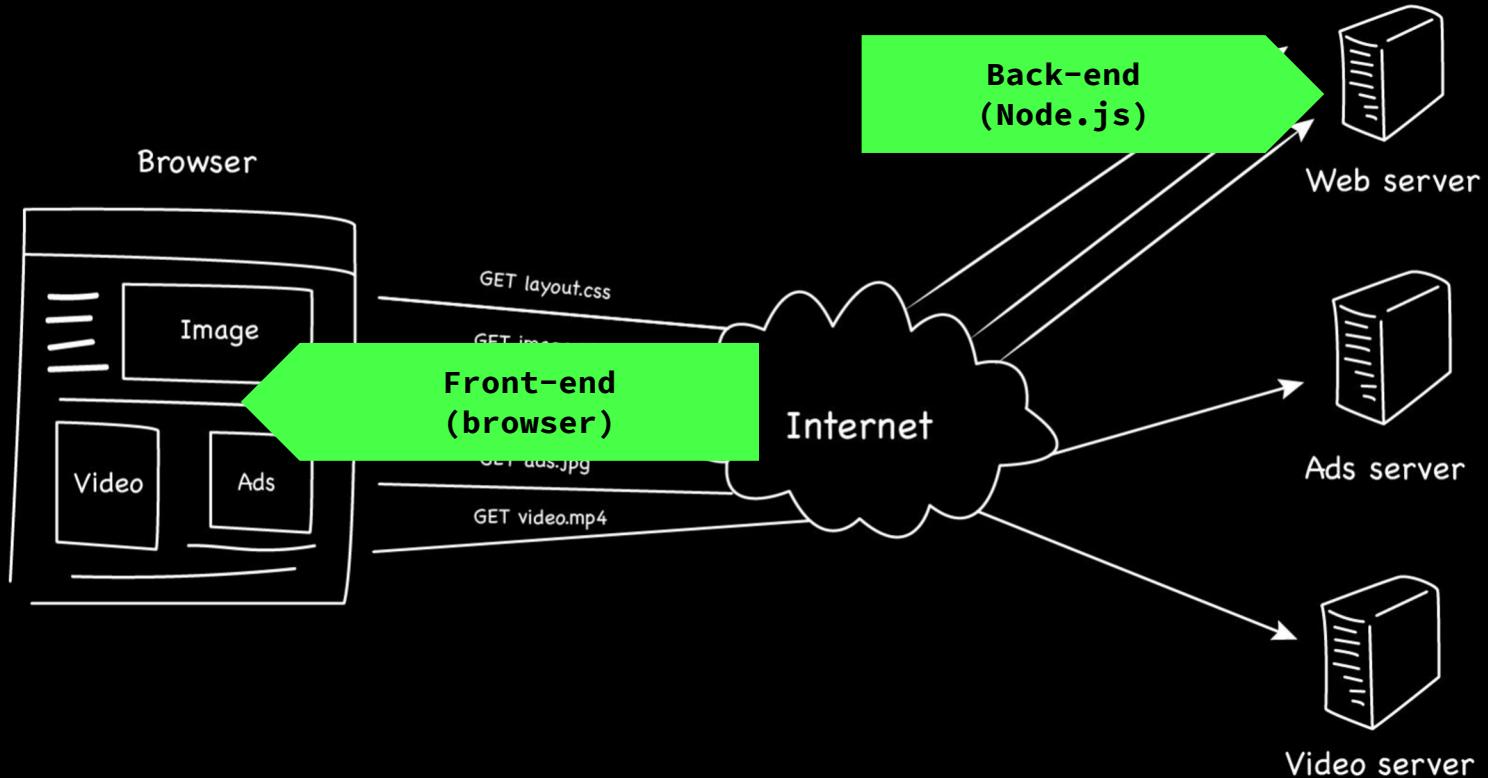
NODE & NPM

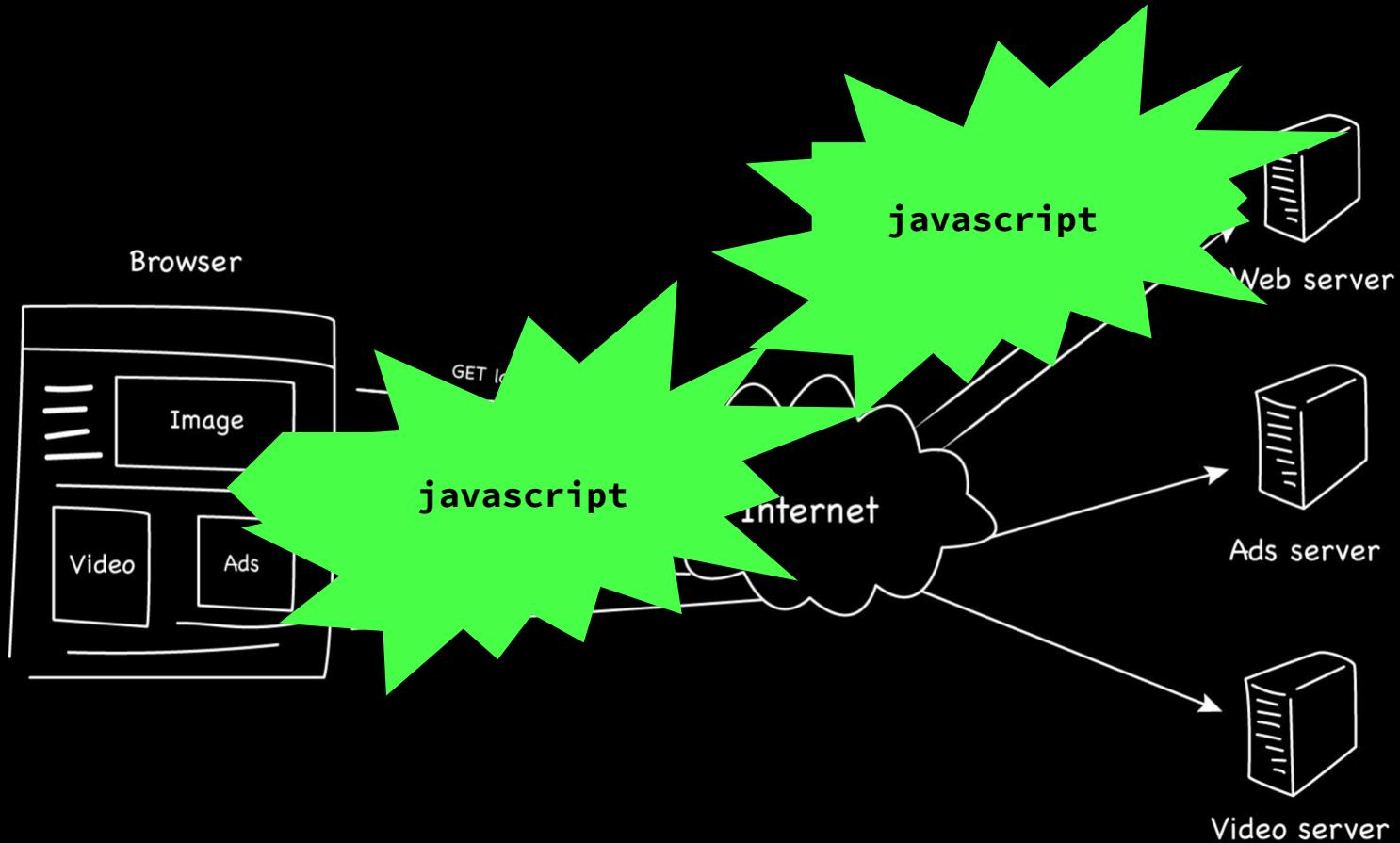
I/V









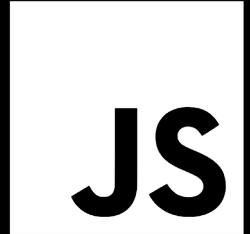


II NODE

JAVASCRIPT?

JavaScript (JS) is a lightweight interpreted or JIT-compiled programming language with first-class functions. While it is most well-known as the scripting language for Web pages, many non-browser environments also use it, such as Node.js, Apache CouchDB and Adobe Acrobat.

developer.mozilla.org



II NODE

JAVASCRIPT?

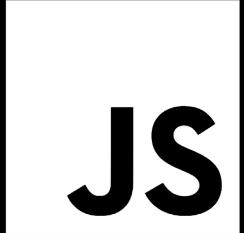
JavaScript (JS)

Instructions are executed
directly, not compiled

interpreted

or JIT-compiled programming language with first-class functions. While it is most well-known as the scripting language for Web pages, many non-browser environments also use it, such as Node.js, Apache CouchDB and Adobe Acrobat.

developer.mozilla.org



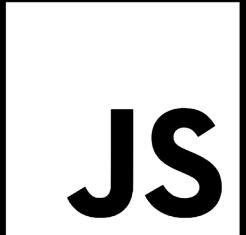
II NODE

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Just-in-time compiling:
compiling at runtime

developer.mozilla.org



II NODE

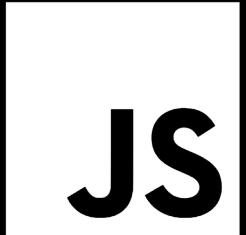
JAVASCRIPT?

JavaScript (JS) is a lightweight interpreted or JIT-compiled programming language with first-class functions.

Functions are treated like any other variable (such as, they can be returned)

known as the scripting language for Web pages, many non-browser environments also use it, such as Node.js, Apache CouchDB and Adobe Acrobat.

developer.mozilla.org



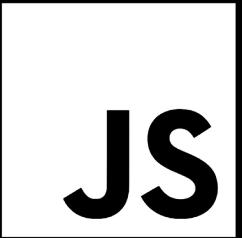
II NODE

JAVASCRIPT?

JavaScript (JS) is a lightweight interpreted or JIT-compiled programming language with first-class functions. While it is most well-known as the scripting language for Web pages, many non-browser environments also use it, such as **Node.js**, **Apache CouchDB** and **Adobe Acrobat**.



developer.mozilla.org



II NODE

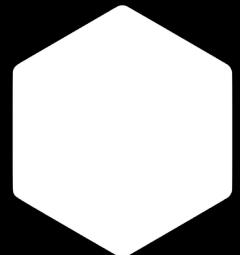
JAVASCRIPT ON A COMPUTER

- ❖ Lots of developers know JavaScript
- ❖ JavaScript is fast
- ❖ JavaScript is built to be event-based and non-blocking

II NODE

NODE?

Node.js is an open-source, cross-platform [...] run-time environment for executing JavaScript code server-side. [...] Node enables JavaScript to be used for server-side scripting, and runs scripts server-side to produce dynamic web page content before the page is sent to the user's web browser.



II NODE



~/index.js

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

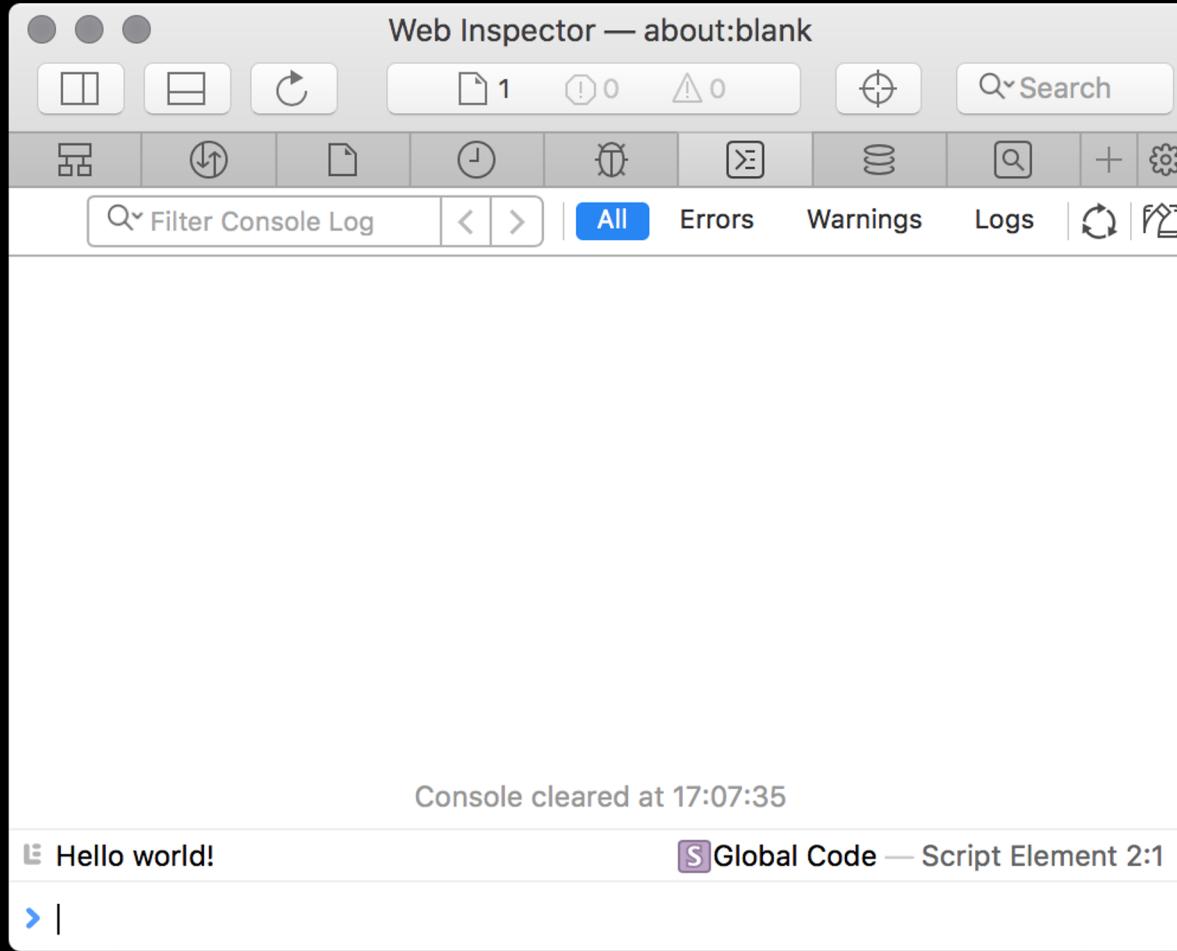


~/index.html

```
<script src=index.js></script>
```

HELLO
WORLD

II NODE



HELLO WORLD

II NODE



bash

```
[tilde] $ node index.js
```

```
Hello world!
```

```
[tilde] $
```

HELLO
WORLD

II NODE

STDLIB

In the **Browser** you get JS and...

- ❖ `Console` (`console.log`, ...)
- ❖ `Timers` (`setTimeout`, ...)
- ❖ `window`
- ❖ `document` (DOM)
- ❖ `XMLHttpRequest` (or `fetch`)
- ❖ `<script>`
- ❖ `Canvas / WebGL`
- ❖ ...

In **Node.js** you get JS and...

- ❖ `Console` (`console.log`, ...)
- ❖ `Timers` (`setTimeout`, ...)
- ❖ `global`
- ❖ `File System` (`fs`)
- ❖ `http`
- ❖ `require / module`
- ❖ `Buffer`
- ❖ ...

IV NODE PRINCIPLES

REQUIRE
EXPORTS



folder/sum.js

```
module.exports = sum

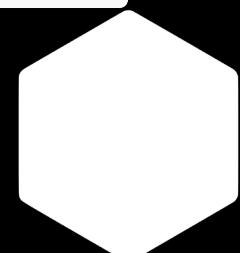
function sum() {
  var args = arguments
  var total = 0
  var index = -1
  while (++index < args.length) {
    total += args[index]
  }
  return total
}
```



folder/index.js

```
var sum = require('./sum.js')

console.log(sum(1, 2, 3))
```



IV NODE PRINCIPLES



index.js

```
var cc = require('camel-case')

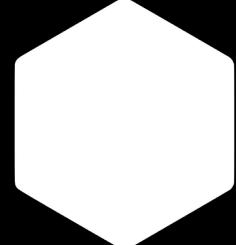
console.log(cc('some-thing'))
```



bash

```
[backend] $ node index.js
someThing
[backend] $
```

REQUIRE
PACKAGES



IV NODE PRINCIPLES

REQUIRE
PACKAGES



index.js

```
var cc = require('camel-case')  
  
console.log(cc('some-thing'))
```

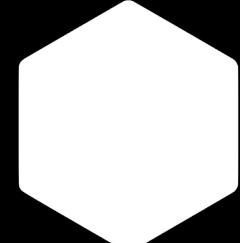


bash

But where does **camel-case** come from?

someThing

[backend] \$

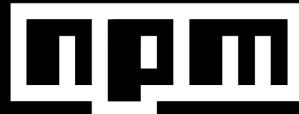


V NPM

?

npm is a package manager for the JavaScript programming language. It is the default package manager for [...] Node.js. It consists of a command line client, also called npm, and an online database of [...] packages, called the npm registry.

[wikipedia.org](https://en.wikipedia.org)



V NPM

?

The screenshot shows the homepage of the npm website (www.npmjs.com). The page features a red header bar with the text "Nutty Penguin Music" and navigation links for "npm Enterprise", "features", "pricing", "documentation", and "support". A search bar with the placeholder "find packages" is centered below the header. To the right of the search bar is a user profile for "Greetings, woorm" with a small profile picture. On the far left, a large green arrow points from the text "The npm website" towards the main content area.

Popular libraries

- lodash
- request
- chalk
- async
- express
- bluebird
- react
- commander
- debug
- moment
- underscore
- react-dom

Discover packages

- IoT
- mobile
- front end
- backend
- robotics
- css
- testing
- cli
- documentation
- math
- coverage
- frameworks

By the numbers

Packages: **633,854**

Downloads · Last Day: **730,041,960**

Downloads · Last Week: **3,900,889,830**

Downloads · Last Month: **15,768,068,215**

Recently updated packages



V NPM



bash

```
[backend] $ npm install express  
+ express@4.16.2  
added 48 packages in 4.476s  
[backend] $
```

INSTALL

VI PACKA

camel-case/package.json

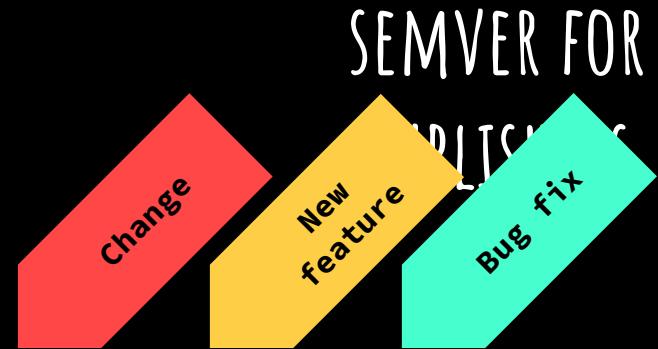
```
{  
  "name": "camel-case",  
  "version": "3.0.0",  
  "description": "Camel case a string",  
  "license": "MIT",  
  "repository": "blakeembrey/camel-case",  
  "author": "Blake Embrey <hello@blakeembrey.com>",  
  "keywords": [ "camel", "case", /* ... */ ],  
  "files": [ /* ... */ ],  
  "dependencies": {  
    "no-case": "^2.2.0",  
    "upper-case": "^1.1.1",  
  },  
  /* ... */  
}
```

PACKAGE.JSON



VI PACKAGES

"version": "2.5.1"



HTTP & DATABASE

III/V

I HTTP

?

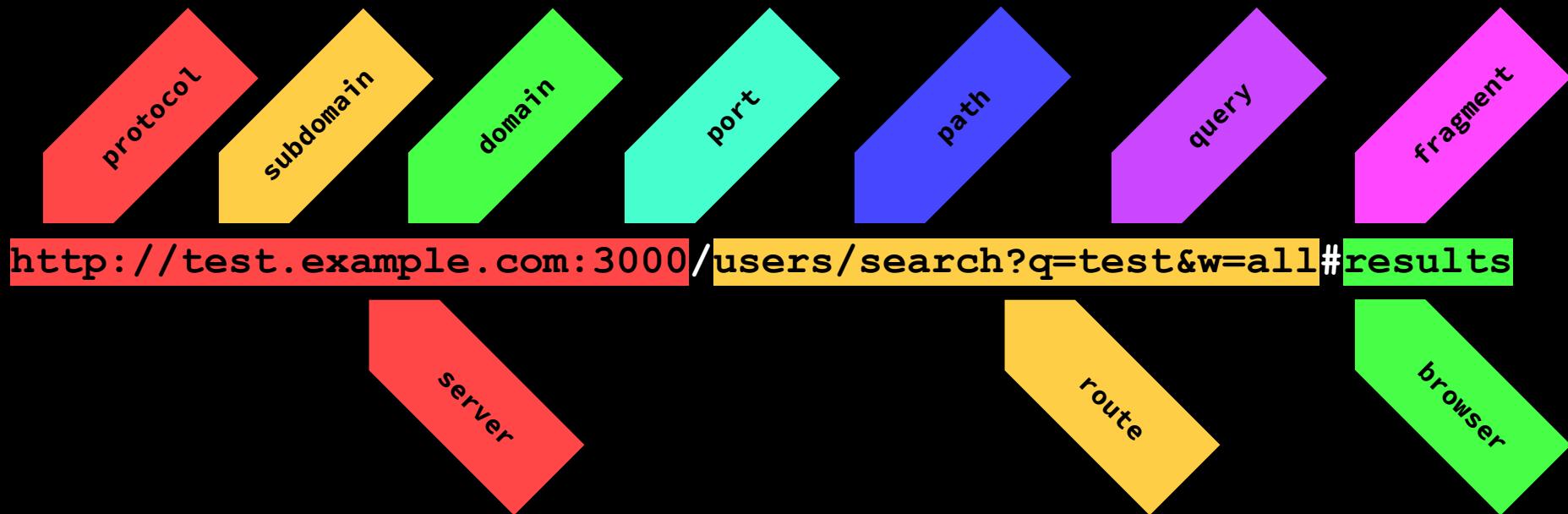
The Hypertext Transfer Protocol (HTTP) is an application protocol for distributed, collaborative, and hypermedia information systems. [...]

Hypertext is structured text that uses logical links (hyperlinks) between nodes containing text.

[wikipedia.org](https://en.wikipedia.org)

I HTTP

URL?



I HTTP

REQUEST
RESPONSE

Client (request)

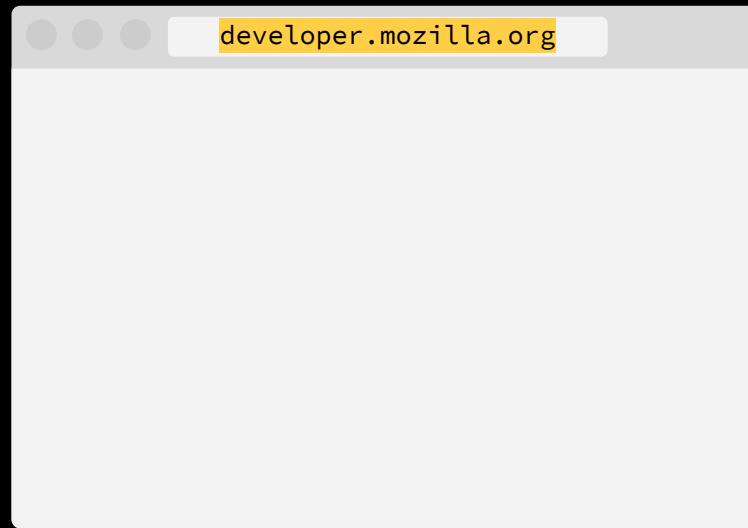
- ❖ Also know as user-agent: acts for the user
- ❖ Often a web browser
- ❖ Client ask for something: the request

Server (response)

- ❖ Connected machine waiting for requests
- ❖ Can be one machine, multiple machines, or multiple servers per machine
- ❖ Server sends something back: the response

I HTTP

REQUEST



I HTTP

RESPONSE



I HTTP

REQUEST

GET / HTTP/1.1

Host: developer.mozilla.org

Accept-Language: fr

I HTTP

RESPONSE

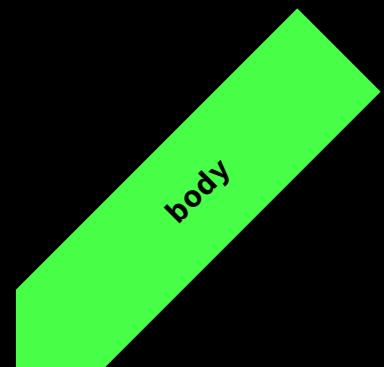
HTTP/1.1 200 OK

Date: Mon, 19 Feb 2018 15:40:02 GMT

Last-Modified: Tue, 13 Feb 2018 20:18:22 GMT

Content-Length: 29769

Content-Type: text/html



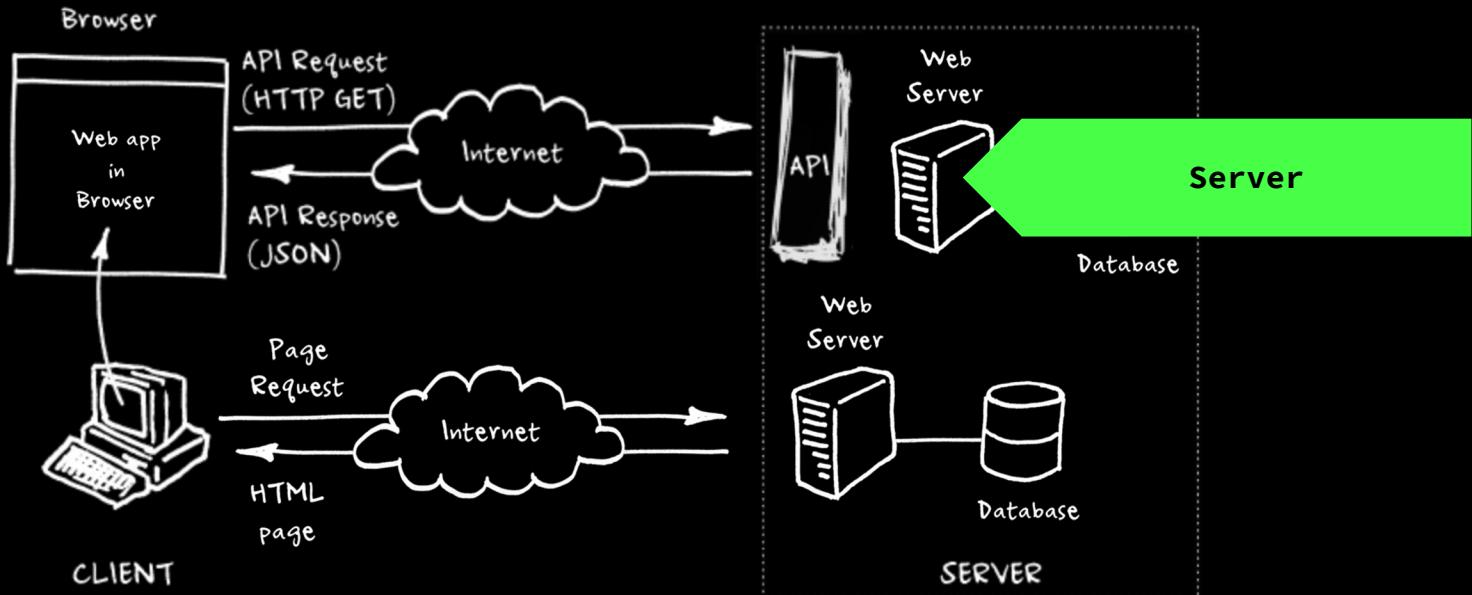
```
<!DOCTYPE html... (here comes the 29769 bytes of the requested  
web page)
```

DATABASES

IV / VI

GRAND SCHEME

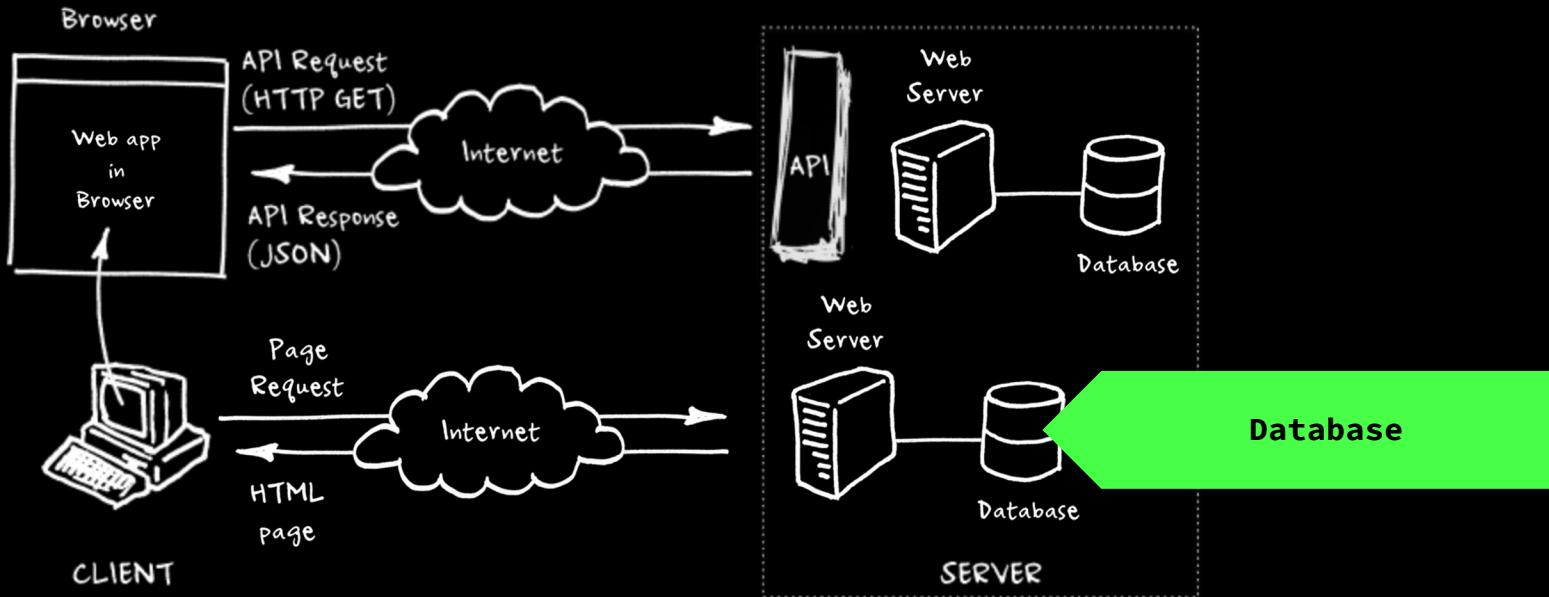
DB



<http://www.robert-drummond.com/2013/05/08/how-to-build-a-restful-web-api-on-a-raspberry-pi-in-javascript-2/>

GRAND SCHEME

DB



<http://www.robert-drummond.com/2013/05/08/how-to-build-a-restful-web-api-on-a-raspberry-pi-in-javascript-2/>

SQL

DATABASE

character

person

movie

tables: collections of related data

| id | title | plot | description |
|-----------|--------------------------|---|--|
| 1 | Evil Dead | Five friends travel to a cabin in the woods, where they... | Five friends head to a remote cabin, where the discovery of a... |
| 2 | The Shawshank Redemption | Two imprisoned men bond over a number of years, finding solace... | Andy Dufresne is a young and successful banker whose life... |
| 3 | The Godfather | The aging patriarch of an organized crime dynasty transfers... | The story begins as Don Vito Corleone, the head of a New York... |

II MONGODB

?

MongoDB (from **humongous**) is a free and open-source cross-platform document-oriented database program. Classified as a NoSQL database program, MongoDB uses JSON-like documents with schemas. MongoDB is developed by MongoDB Inc. [...]

IV DEPLOY

The screenshot shows a web browser window displaying the Heroku Dev Center. The title bar reads "Getting Started on Heroku with Node.js". The main content area features a purple header with the Heroku logo and navigation links for "Get Started", "Documentation", and "Changelog". Below the header, the title "Getting Started on Heroku with Node.js" is displayed in large, bold, purple text. To the left, a sidebar lists ten steps: "Introduction", "Set up", "Prepare the app", "Deploy the app", "View logs", "Define a Procfile", "Scale the app", "Declare app dependencies", "Run the app locally", "Push local changes", and "Provision add-ons". The "Introduction" step is highlighted with a blue vertical bar. The main content area contains the following text:

This tutorial will have you deploying a Node.js app to Heroku in minutes. Hang on for a few more minutes to learn how to get the most out of the Heroku platform.

The tutorial assumes that you have a free [Heroku account](#), and that you have [Node.js](#) and [npm](#) installed locally.

[View as single page](#) [I'm ready to start](#)

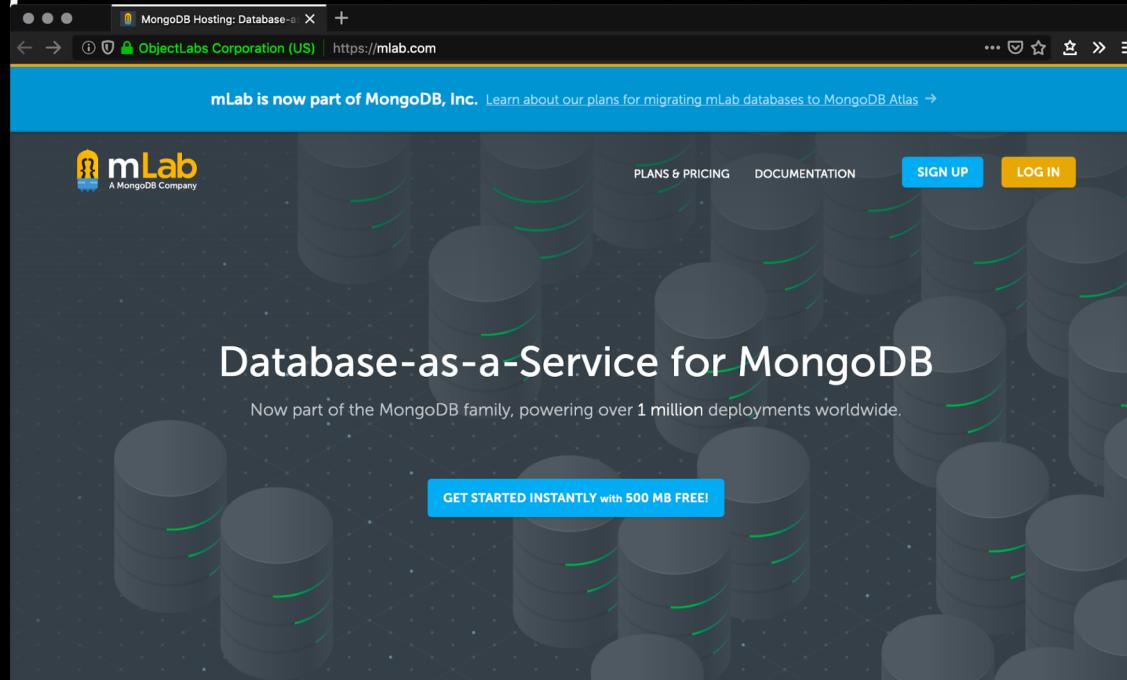
([Log in](#) to save and track your progress)

HEROKU



IV DEPLOY

MLAB



GIT & GITHUB

V/IV

II G

GitHub, Inc. github.com/nodejs/node

This repository Search Pull requests Issues Marketplace Explore

nodejs / node Watch 2,406 Unstar 39,275 Fork 7,939

Code Issues 584 Pull requests 202

Node.js JavaScript runtime 🎉🐢🚀🌟 <https://nodejs.org>

18,833 commits 128 branches 443 releases 1,519 contributors

Branch: master New pull request Create new file Upload files Find file Clone or download

assert: use Same-value equality in deepStrictEqual ... Latest commit b0d3bec 28 days ago

doc: fix commit guideline url 4 months ago

benchmark: provide default methods for assert 11 hours ago

deps: cherry-pick 9b21865822243 from V8 upstream 14 hours ago

assert: use Same-value equality in deepStrictEqual 7 hours ago

assert: use Same-value equality in deepStrictEqual 7 hours ago

module: coverity fixes for ESM C++ 11 hours ago

assert: use Same-value equality in deepStrictEqual 7 hours ago

test: fix single test runner regression 4 days ago

tools: disallow trailing whitespace for markdown 10 months ago

.editorconfig test: remove disabled tests directory 2 months ago

.eslintrc.yaml module: Allow runMain to be ESM 9 days ago

.gitattributes src: limit .gitattributes eol to vcbuild.bat 3 years ago

deps doc lib src test tools .editorconfig .eslintrc.yaml .gitattributes

II G

GitHub hosts Git
repositories

Create a new repository

A repository contains all the files for your project, including the revision history.

Owner Repository name

Great repository names are short and memorable. Need inspiration? How about [probable-happiness](#).

Description (optional)

 **Public**
Anyone can see this repository. You choose who can commit.

 **Private**
You choose who can see and commit to this repository.

Initialize this repository with a README
This will let you immediately clone the repository to your computer. Skip this step if you're importing an existing repository.

Add .gitignore: **None** Add a license: **None** ⓘ

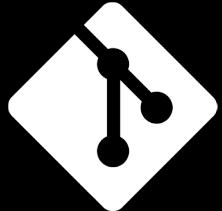
Create repository

III GIT

?

Git is a version control system for tracking changes in computer files and coordinating work on those files among multiple people.

[wikipedia.org](https://en.wikipedia.org)



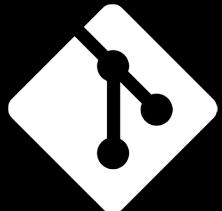
III GIT

?

Git is a **version control** system for tracking changes in computer files and coordinating work on those files among multiple people.

Collaborate, track,
roll back

[wikipedia.org](https://en.wikipedia.org)



II GITHUB



bash

```
[examples] $ git init
```

```
Initialized empty Git repository in  
/Users/tilde/projects/oss/examples/.git/
```

```
[examples] $ echo "Hello World!" > readme.md
```

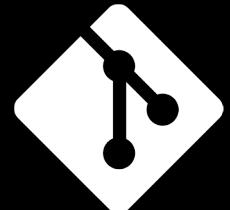
```
[examples] $ git add --all
```

```
[examples] $ git commit --message "Add readme"
```

```
[master (root-commit) 0ee1887] Add readme  
1 file changed, 1 insertion(+)  
create mode 100644 readme.md
```

```
[examples] $
```

Git is version
control for code



IV MARK

```
# Level 1 heading  
## Level 2 heading  
### Level 3 heading  
##### Level 5 heading  
##### Level 6 heading
```

A normal paragraph

- ★ An
- ★ Unordered
- ★ List

1. An
2. Ordered
3. List

~/example.md

HEADING
&
LIST



IV MA

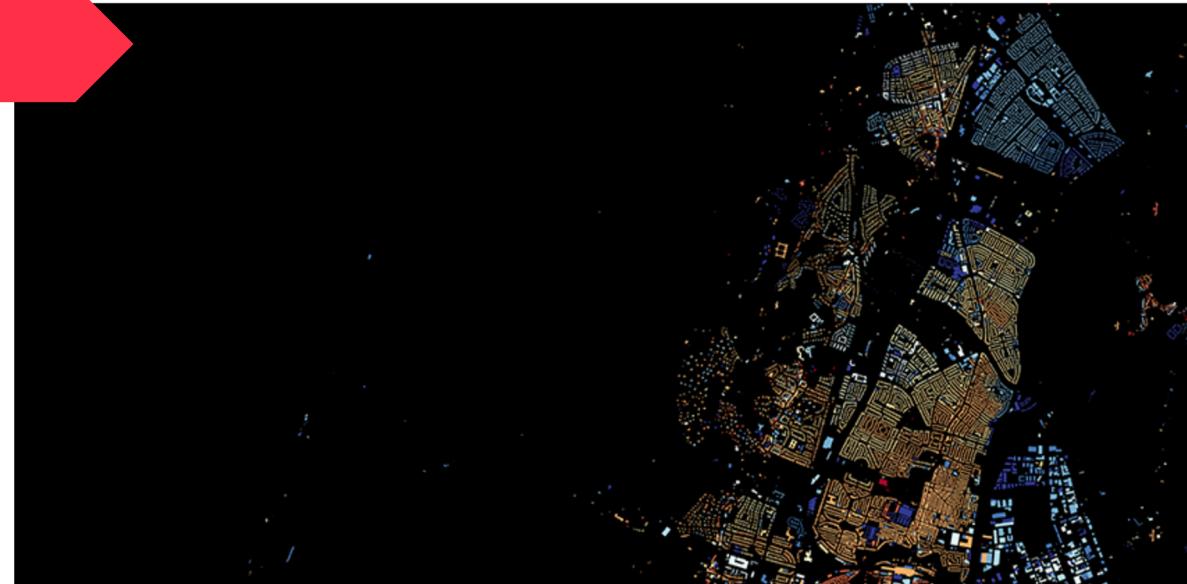
Buildings by year of construction

View map on <http://code.waag.org/buildings>.

Map showing all 9,866,539 [buildings](#) in the Netherlands, shaded according to year of construction.

Data from [BAG](#), via [CitySDK](#). Map made with [TileMill](#) by [Bert Spaan, Waag Society](#), inspired by [BKLYNR](#).

readme.md



CLI

V/IV

II (LI

?

A command-line **interface** [Alternative to GUI and the like] ns of interacting with a computer program where the user [...] issues commands to the program in the form of successive lines of text [...]. A program which handles the interface is called a [...] shell

II [LI

?

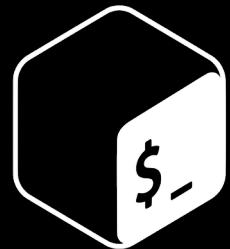
A command-line interface [...] is a means of interacting with a computer program where the user [...] issues commands to the program in the form of successive lines of text [...]. A program which handles the interface is called a [] shell.

Note: Servers often have a CLI (not a GUI).
To control a server you need elementary knowledge of CLIs.

II (LI

BASH

[~] \$ rm -f foo.txt

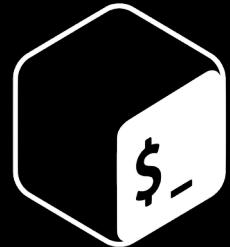


II CLI

BASH

```
[ ~ ] $ rm -f foo.txt
```

Prompt

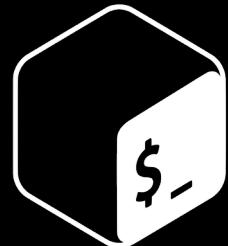


II CLI

BASH

[~] \$ **rm** -f foo.txt

Command

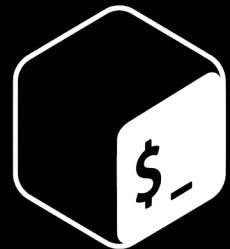


II CLI

BASH

```
[ ~ ] $ rm -f foo.txt
```

options



II CLI

BASH

```
[~]$ rm -f foo.txt
```

Arguments



LOCAL MACHINE

V/IV



karinliu — bash — 80x24

Last login: Sat Feb 10 16:56:29 on ttys000

Welcome Karin! 🌱

Weather report: Seoul, South Korea

Overcast
.---. -10--4 °C
.-(.). ↘ 19 km/h
(___.___.__) 18 km
0.0 mm

[🌱 karinliu\$ ls -a

| | | |
|---------------------|-------------------|----------------------|
| . | .config | Creative Cloud Files |
| .. | .cups | Desktop |
| .CFUserTextEncoding | .dropbox | Documents |
| .DS_Store | .git | Downloads |
| .Trash | .gitconfig | Dropbox |
| .adobe | .jssc | Library |
| .android | .lessht | Movies |
| .atom | .npm | Music |
| .bash_history | .oracle_jre_usage | Pictures |
| .bash_sessions | .profile | Public |
| .bashrc | .putty | VirtualBox VMs |
| .bashrc.save | .viminfo | |
| .bashrc.save.1 | Applications | |

[🌱 karinliu\$

[Karinliu/karinliu-dotfiles](https://github.com/karinliu/karinliu-dotfiles)

```
● ● ● 1. jonah@Jonahs-MacBook-Pro: ~/projects/dotfiles (zsh)
Last login: Sun Feb 11 10:46:29 on ttys000
< Hey Jonah, how you doin'? >
-----
\ ^__^
 \ >--\_____
    (__)\       )\/\
        ||----w |
        ||     ||

10:47:26 in ~
z /Users/jonah/projects/dotfiles

10:47:34 in dotfiles on ↵ master

```

[theonejonahgold/dotfiles](https://github.com/theonejonahgold/dotfiles)

III EXTENSIONS

?

The features that Visual Studio Code includes **out-of-the-box** are just the start. VS Code extensions let you add languages, debuggers, and tools to your **installation to support your development workflow.**

<https://code.visualstudio.com/docs/editor/extension-gallery>

COLOR THEMES

EXTENSIONS

The screenshot shows the 'Color Themes' extension interface on color-themes.com. It displays four color themes side-by-side:

- Taramacun**: A dark theme with purple text.
- Monokai Sublime Text 3**: A dark theme with cyan text.
- Relax Your Eyes**: A light theme with blue text.
- Obsidian**: A dark theme with cyan text.

Each theme is shown in a separate tab-like window with its name at the top and a preview of the Java code below. The preview includes annotations like 'CONSTANT' and 'Demo'.

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EXIT ;