```
tt()
```

👋

Mi Electric Scooter Pro
Электросамокат Mi Pro 2
BLACK&DECKER

Danny

RACERS GROUP

bmarc2
Voxelab

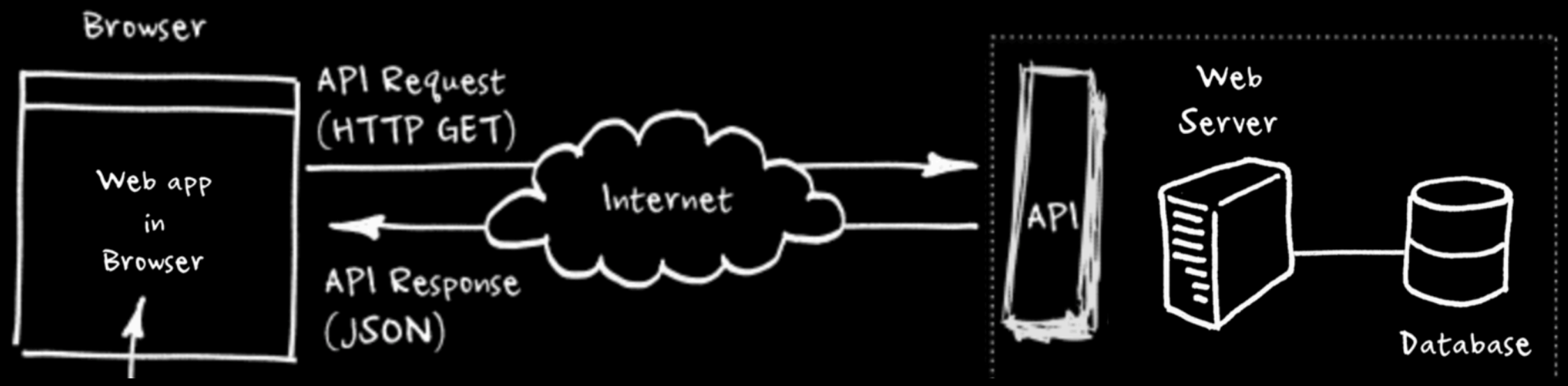
Tl;dr explain front-end *web architecture* and create a *boilerplate*

Schedule

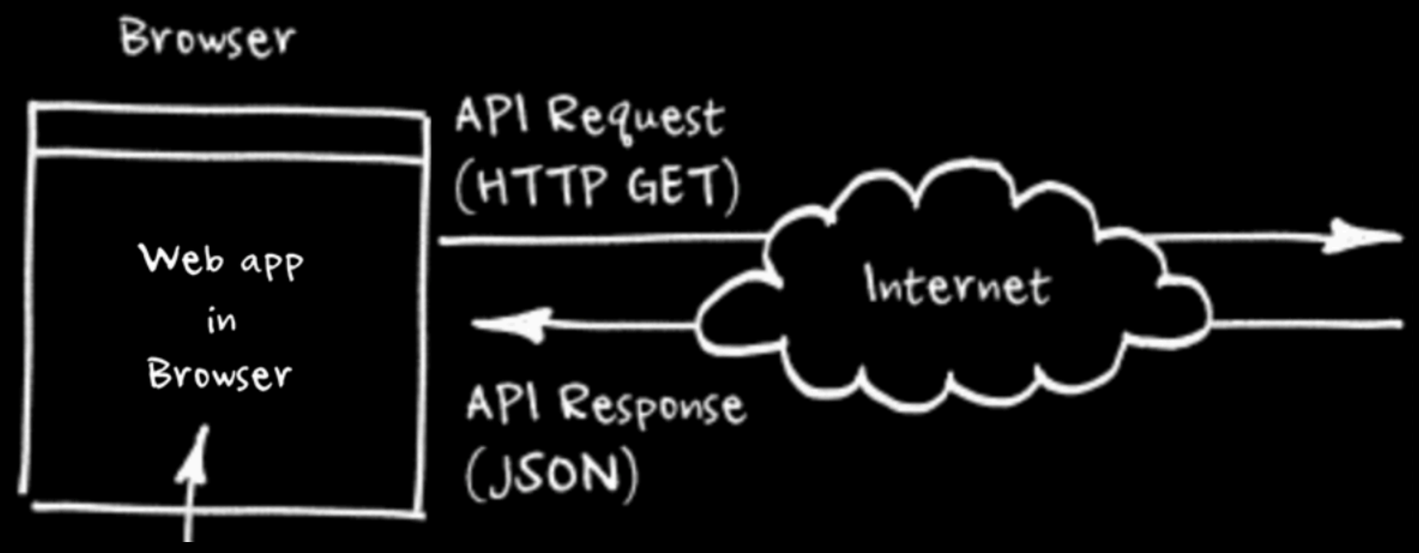
1. Web architecture
    1. Git & GitHub
    2. Bash & Terminal
    3. NPM & Node
    4. Bundlers
2. Creating a Boilerplate
3. What’s next?

Web architecture
(overview)

Web architecture



Web architecture



CANCELLED

Web architecture

Web architecture

5(!) http requests????

```
<style type="text/css" src="styles/main.css"></style>
<style type="text/css" src="styles/partials/header.css"></style>
<style type="text/css" src="styles/partials/footer.css"></style>
<style type="text/css" src="styles/modules/main.css"></style>
<style type="text/css" src="styles/main.css"></style>
```

Web architecture

```
<script src="d3.js"></script>
```

```
<script src="https://cdn.jsdelivr.net/npm/d3@7"></script>
```

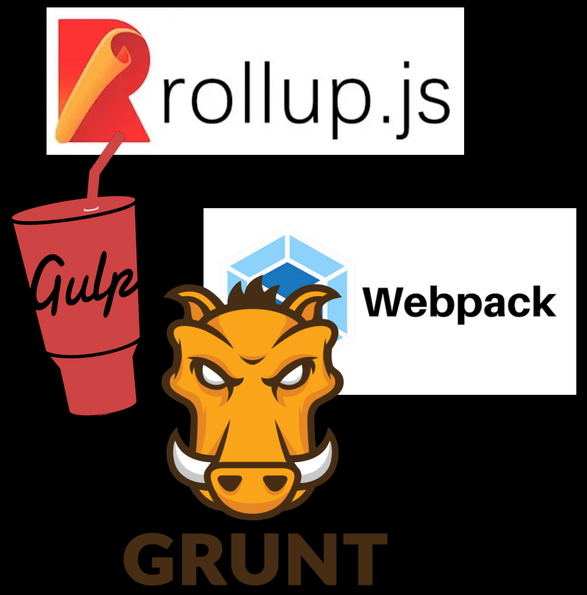
Web architecture

- What if the CDN or externally loaded library **goes down**?
- What if you want to work in HTML/CSS/JS **components**?
- What if the library gets **updated with a new major version?**
- What if you want to use additional **(library) plugins?**

Web architecture

Client-side code

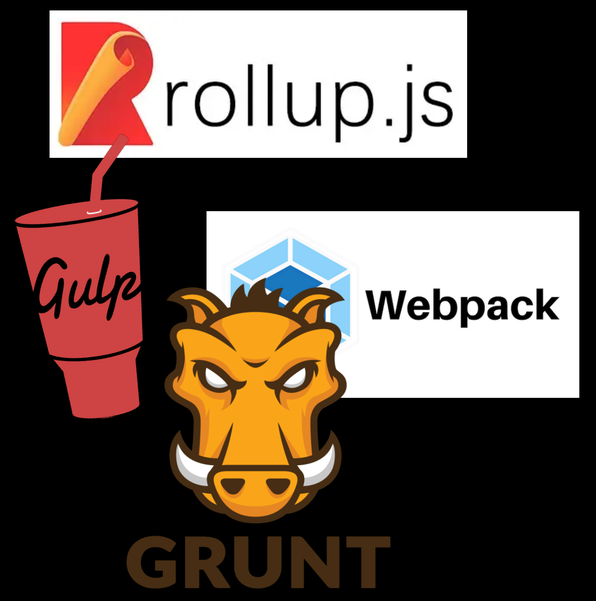
Build tools



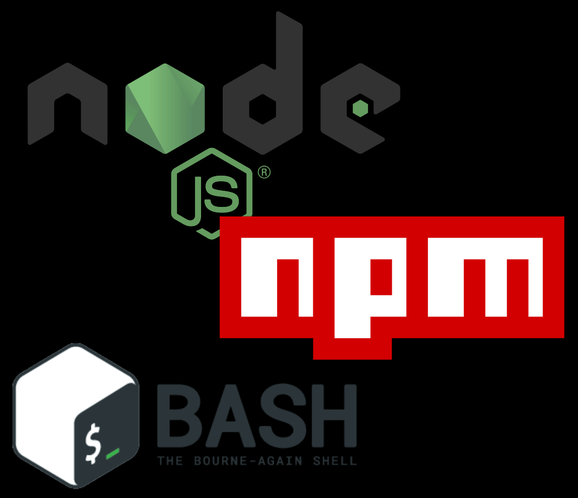
Web architecture

Client-side code

Build tools



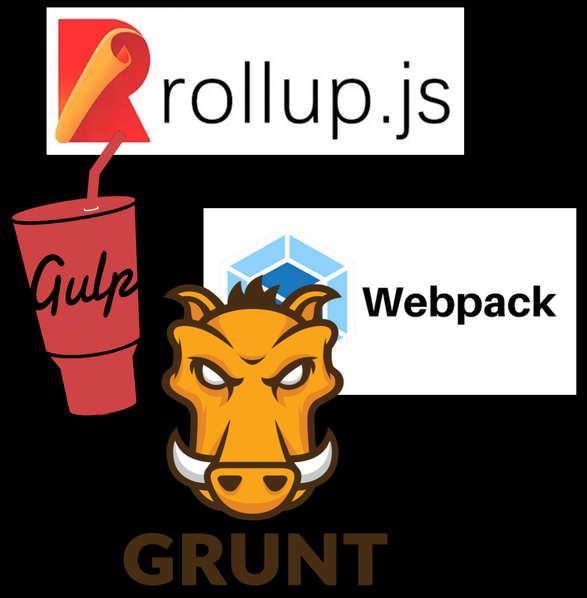
Scripting



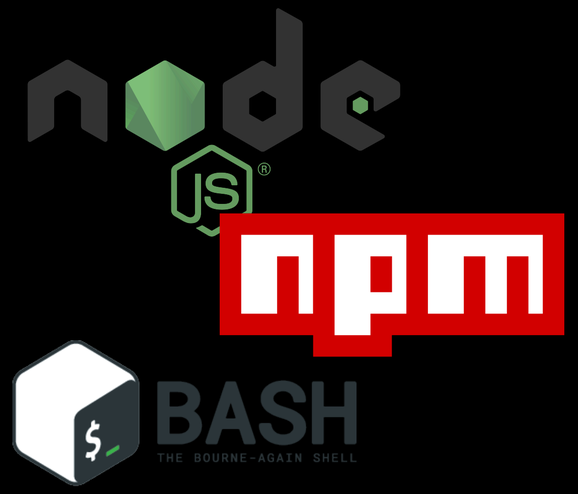
Web architecture

Client-side code

Build tools



Scripting



Web architecture

(Git & GitHub)

Git

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

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

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

	doc: fix commit guideline url	4 months ago
ark	benchmark: provide default methods for assert	11 hours ago
deps	deps: cherry-pick 9b21865822243 from V8 upstream	14 hours ago
doc	assert: use Same-value equality in deepStrictEqual	7 hours ago
lib	assert: use Same-value equality in deepStrictEqual	7 hours ago
src	module: coverity fixes for ESM C++	11 hours ago
test	assert: use Same-value equality in deepStrictEqual	7 hours ago
tools	test: fix single test runner regression	4 days ago
.editorconfig	tools: disallow trailing whitespace for markdown	10 months ago
.eslintignore	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

GitHub is a social platform around **Git**

GitHub hosts Git repositories

GitHub, Inc. github.com/new

Search GitHub | Pull requests | Issues | Marketplace | Explore

Create a new repository

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

Owner **Repository name**

wooorm /

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.

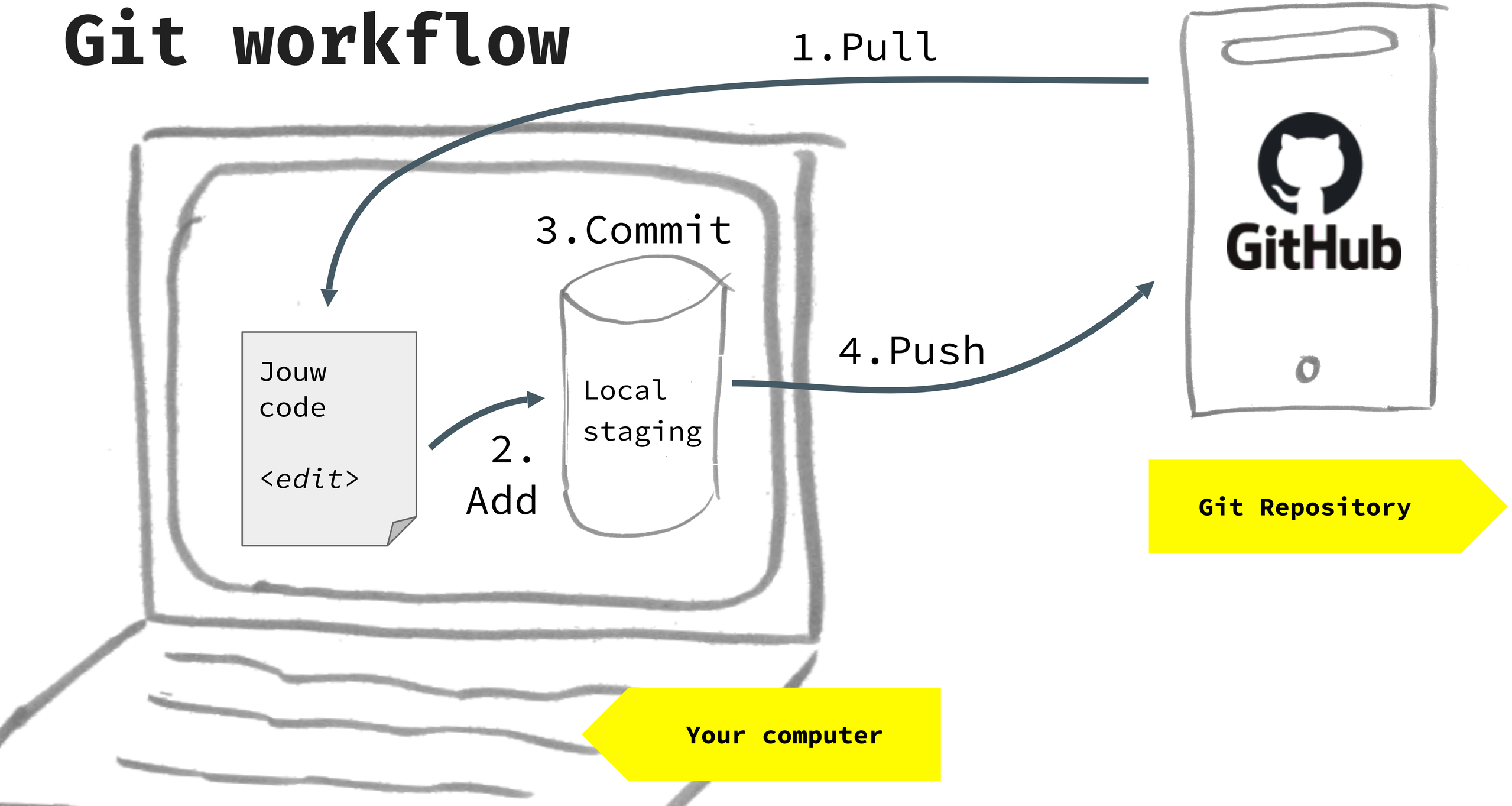
Private
You choose who can see and commit to this repository.

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

Git workflow



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
rk	benchmark: provide default methods for assert	11 hours ago
deps	deps: cherry-pick 9b21865822243 from V8 upstream	14 hours ago
doc	assert: use Same-value equality in deepStrictEqual	7 hours ago
lib	assert: use Same-value equality in deepStrictEqual	7 hours ago
src	module: coverity fixes for ESM C++	11 hours ago
test	assert: use Same-value equality in deepStrictEqual	7 hours ago
tools	test: fix single test runner regression	4 days ago
.editorconfig	tools: disallow trailing whitespace for markdown	10 months ago
.eslintignore	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

Use the **web interface** for version control

Current Repository
desktop

Current Branch
esc-pr #3972

Fetch origin
Last fetched 3 minutes ago

Changes | History

Appease linter
iAmWillShepherd committed a day ago

Add event handler to dropdown com...
iAmWillShepherd and Markus Olsson...

Move escape behavior to correct co...
iAmWillShepherd and Markus Olsson...

Remove event handler from the bran...
iAmWillShepherd and Markus Olsson...

...into esc-pr
...ed a day ago

...4044 from des...
Neha Batra committed a day ago

Merge pull request #4070 from desk..
Brendan Forster committed 2 days ago

bump to beta3
Brendan Forster committed 2 days ago

Merge pull request #4057 from desk..
Brendan Forster committed 2 days ago

Merge pull request #4067 from desk..
Brendan Forster committed 2 days ago

Release to 1.1.0-beta2
Neha Batra committed 2 days ago

Use a **GUI** for version control

Add event handler to dropdown component

iAmWillShepherd and Markus Olsson committed c79e71c 1 changed file

Co-Authored-By: Markus Olsson <niik@users.noreply.github.com>

app/src/ui/t.../dropdown.tsx

```
@@ -145,6 +145,10 @@ export class ToolbarDropdown extends
 React.Component<
145 145     this.state = { clientRect: null }
146 146   }
147 147
    148 +  private get isOpen() {
    149 +    return this.props.dropdownState === 'open'
    150 +  }
    151 +
148 152   private dropdownIcon(state: DropdownState): OcticonSym
bol {
149 153     // @TODO: Remake triangle octicon in a 12px version,
150 154     // right now it's scaled badly on normal dpi monitor
s.
@@ -249,6 +253,13 @@ export class ToolbarDropdown extends
 React.Component<
249 253     }
250 254   }
251 255
    256 +  private onFoldoutKeyDown = (event:
React.KeyboardEvent<HTMLElement>) => {
    257 +    if (!event.defaultPrevented && this.isOpen &&
event.key === 'Escape') {
    258 +      event.preventDefault()
    259 +      this.props.onDropdownStateChanged('closed', 'keybo
ard')
```

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"

er (root-commit) 0ee1887] Add readme
ile changed, 1 insertion(+)
 create mode 100644 readme.md

[examples] $
```

Use the **CLI** for version control

Git + GitHub

- We use Git as the **software that manages changes**
- We use GitHub to host and deploy / show our code
- Our code lives in a Git Repository,
  hosted online on GitHub
- Our wiki (documentation) is a separate Git Repository
  that is coupled with our code-repository

Assignment

- Install Git on your computer, if you haven’t done it
- Install GitHub Desktop (or use the terminal if you’re going hardcore) and link it to your GitHub account
- Blok Tech students: Help your fellow Tech-Trackers and make sure your existing config is still working!
- Clone your tech-track repository to your computer and commit something to your code and documentation repository!

Tutorials can be found on #tech-track at Teams!

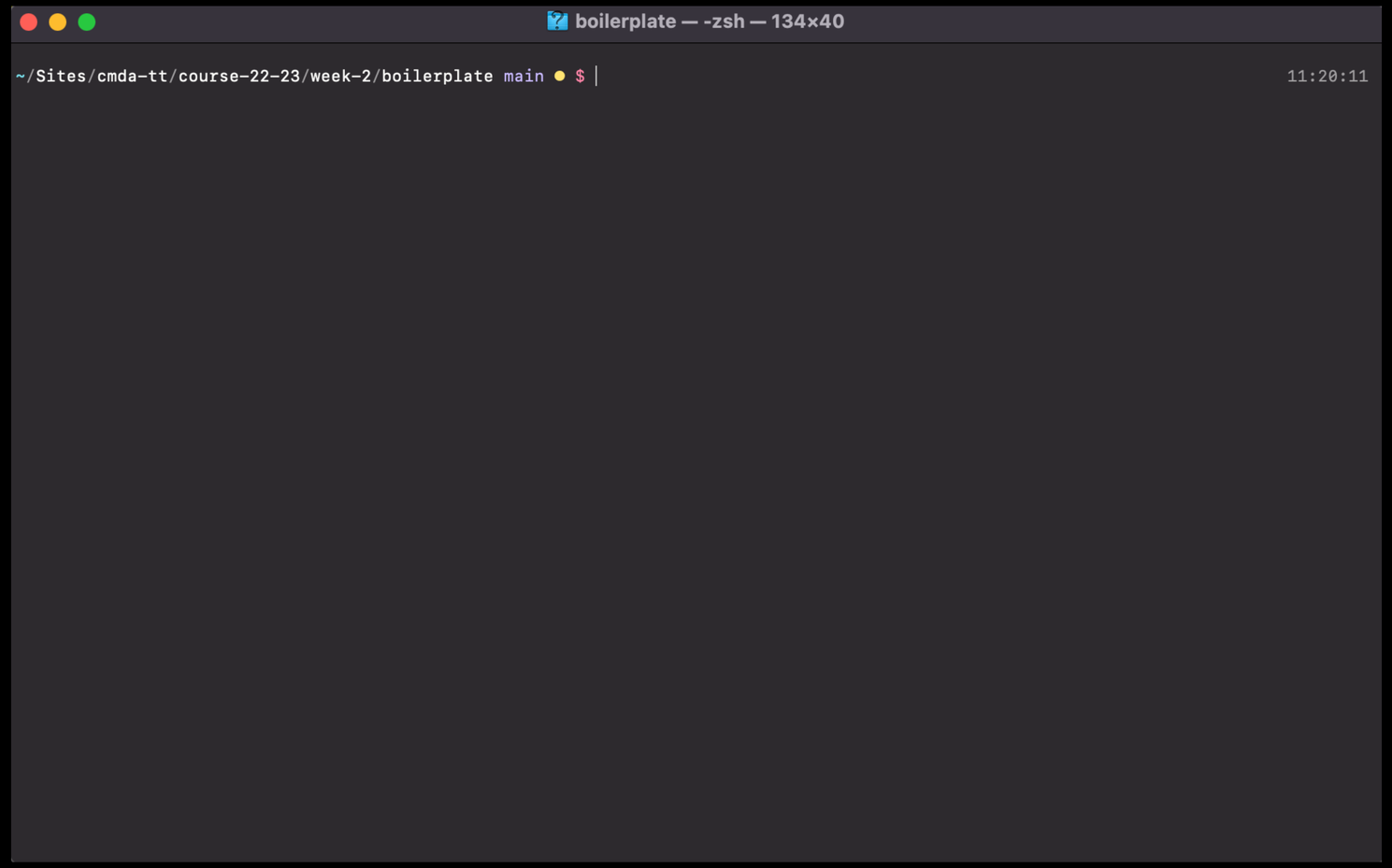
Web architecture

(The terminal)

Bash & Terminal

A command-line interface (CLI) […] 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**

Bash & Terminal



Bash & Terminal

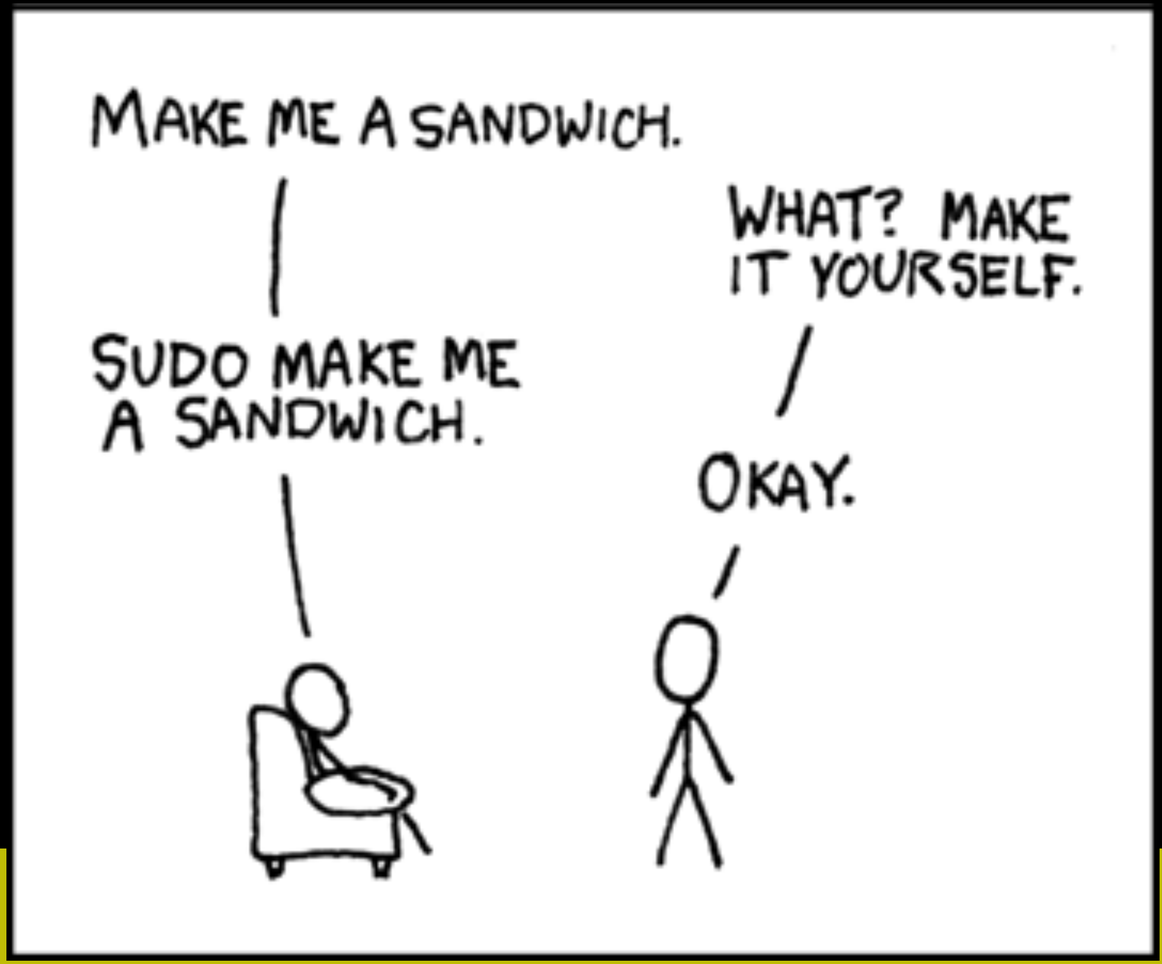
Command

Arguments

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

Prompt

Options



Note: things often are not allowed because they are dangerous.
Sudo is **very** dangerous.

Bash & Terminal

```
website on main is v0.0.1 via v19.4.0 via base
→ npm run dev

> website@0.0.1 dev
> vite dev


  VITE v4.4.11  ready in 558 ms

  →  Local:   http://localhost:5173/
  →  Network: use --host to expose
  →  press h to show help
```

```
website on main is v0.0.1 via v19.4.0 via base
→ npm install d3

added 38 packages, and audited 290 packages in 9s

46 packages are looking for funding
  run `npm fund` for details

2 low severity vulnerabilities

To address all issues, run:
  npm audit fix

Run `npm audit` for details.

website on main [!] is v0.0.1 via v19.4.0 via base
→
```

Web architecture

(NPM & Node)

NodeJS

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.

NodeJS

bash

```
[tilde] $ node index.js

Hello world!

[tilde] $
```

NodeJS

- We use NodeJS in this course for mainly two reasons:
  - To allow us to easily use NPM (more on that later…)
  - To enable us to use bundlers

NodeJS

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))
```

NodeJS

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.

The **npm** website

www.npmjs.com/package/camel-case

Neutron Polarization Manipulator

Products Pricing Documentation Community

npm

Search packages

Search

Sign Up

Sign In

Wondering what's next for npm? Check out our public roadmap! »

camel-case TS

4.1.2 • Public • Published 2 months ago

Readme | Explore BETA | 2 Dependencies | 534 Dependents | 20 Versions

ase

ownloads 36M/month | minzipped size 718 B

> Transform into a string with the separator denoted by the next word capitalized.

Installation

```
npm install camel-case --save
```

Usage

```
import { camelCase } from "camel-case";

camelCase("string"); //=> "string"
```

Install

```
> npm i camel-case
```

Weekly Downloads

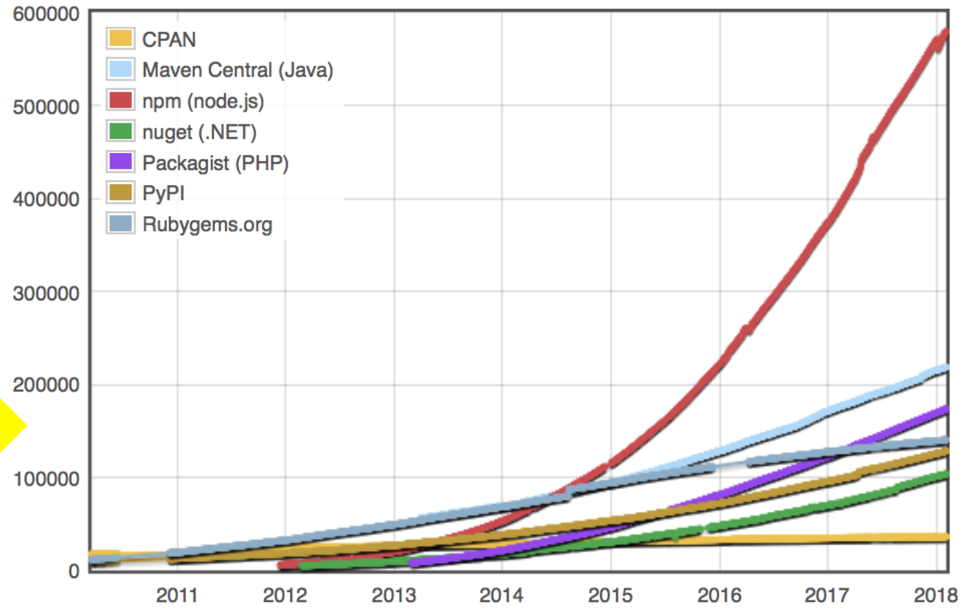
10,314,181

Version	License
4.1.2	MIT
Unpacked Size	**Total Files**
14.3 kB	15
Issues	**Pull Requests**
11	0

Homepage

www.modulecounts.com

Module Counts



Include

- [ ] Clojars (Clojure)
- [x] CPAN
- [ ] CPAN (search)
- [ ] CRAN (R)
- [ ] Crates.io (Rust)
- [ ] Drupal (php)
- [ ] DUB (dlang)
- [ ] Gopm (go)
- [ ] Hackage (Haskell)
- [ ] Hex.pm (Elixir/Erlang)
- [ ] Julia
- [ ] LuaRocks (Lua)
- [x] Maven Central (Java)
- [ ] MELPA (Emacs)
- [ ] Nimble (Nim)
- [x] npm (node.js)
- [x] nuget (.NET)
- [x] Packagist (PHP)
- [ ] Pear (PHP)
- [ ] Perl 6 Ecosystem (perl 6)
- [x] PyPI
- [x] Rubygems.org
- [ ] Vim Scripts

time period ◉ all time ○ last year ○ last 90 days ○ last 30 days ○ last 7 days

	Jan 26	Jan 27	Jan 28	Jan 29	Jan 30	Jan 31	Feb 1	Avg Growth
Clojars (Clojure)	20942	20947	20952	20957	20969	20976	20984	7/day

npm is huge

NodeJS

bash

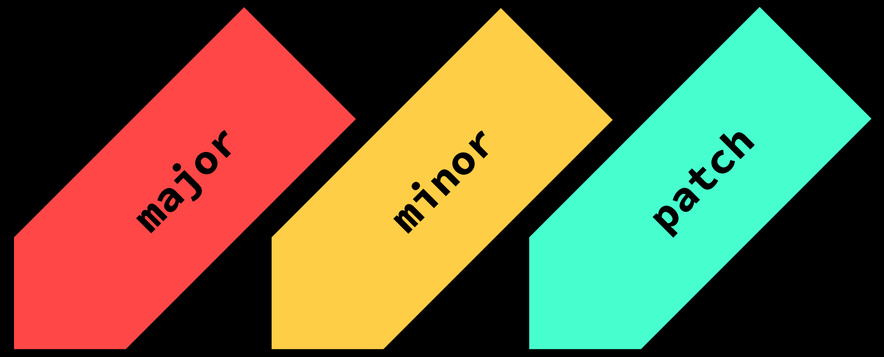
```bash
$ npm install repeat-string

+ repeat-string@1.6.1
updated 1 package in 0.916s

$
```

Dependencies are used in the project itself

package.json

```json
{
  …
  "dependencies": {
    "repeat-string": "^1.6.1"
  },
  "devDependencies": {
    "standard": "^10.0.3",
    "tape": "^4.8.0",
    …
  },
  …
```

NodeJS



"version": "2.5.1"

NPM

NPM is a database of JavaScript modules, some for back-end, others for front-end.

D3 (the library we'll be using next week) is hosted here as well for example.

Assignment

- Install Node using the Node Version Manager (most reliable way) on Mac, use the installer on the NodeJS website for Windows.
- Verify the installation, this also goes for blok-tech alumni, use the commands: `node -v` and `npm -v`

Maybe a small break?

Web architecture
(Bundlers)

Bundlers

Build tools are additional tooling you can use in your project and are mostly used for ***automating* tasks or *transforming* code.**

preprocessors, bundlers, postprocessor, compiling #buzzword #buzzword, ai, machine learning, charizard

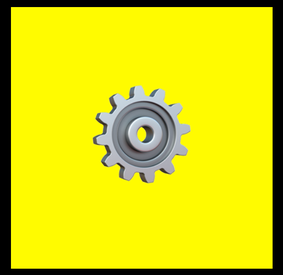
example

build

```
// Input

css/
├── typography.scss
├── layout.scss
└── colors.scss
```

→

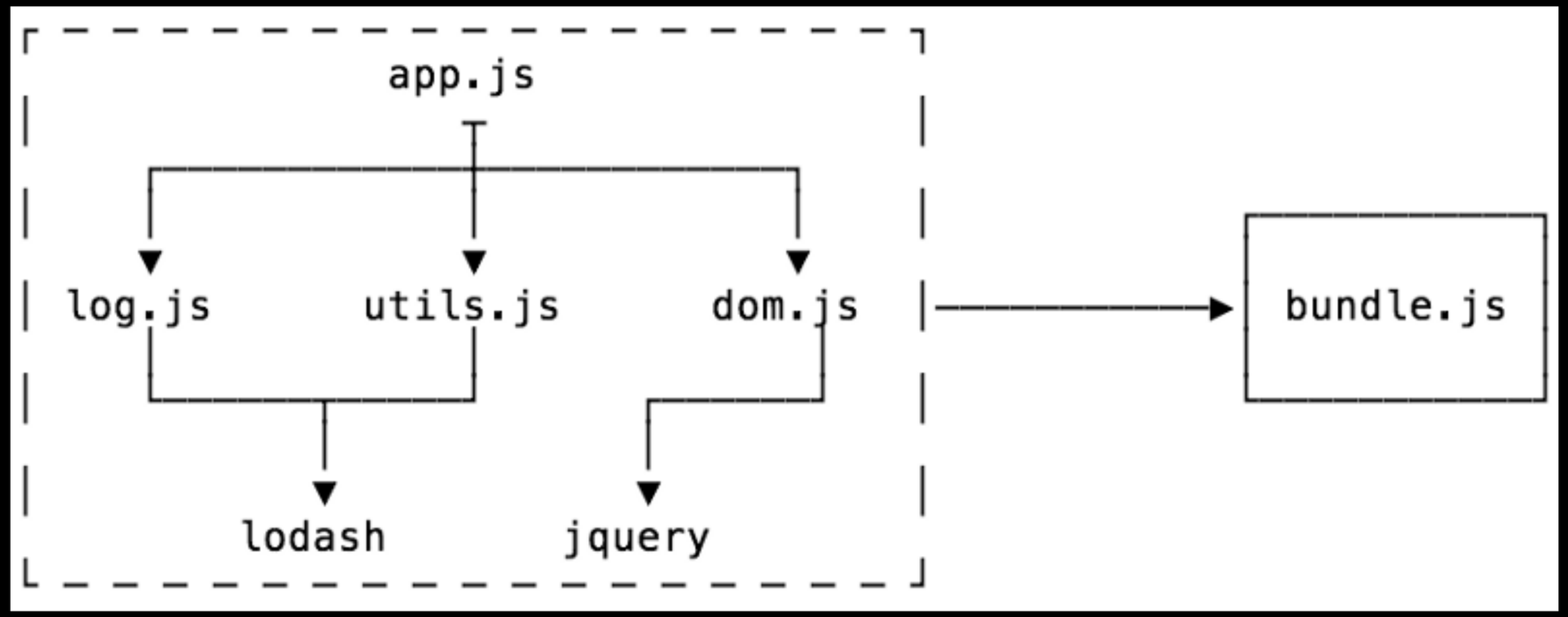
```
// Build
```



→

```
// Output

css/
└── style.css
```

Bundlers



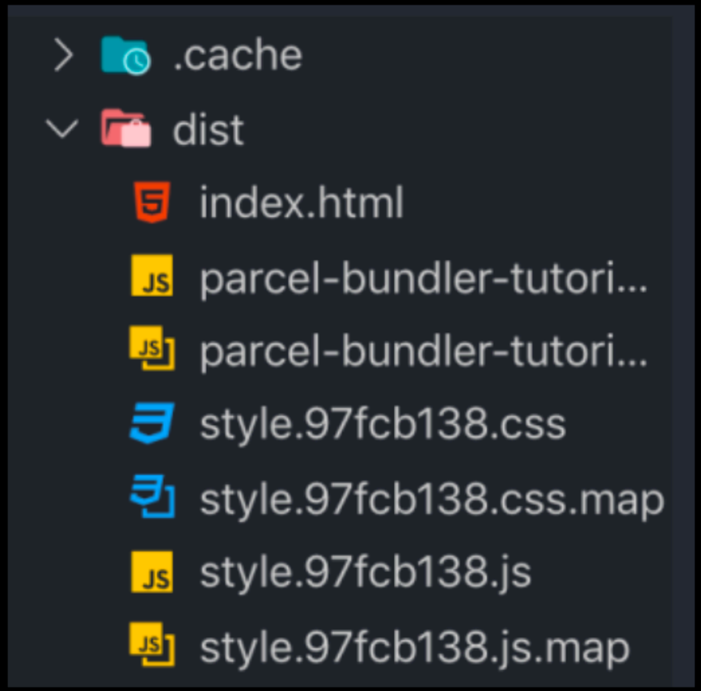
Bundlers

- Bundle HTML (components into complete markup)
- Bundle CSS (post/preprocess)
- Bundle (client-side) JavaScript components

- Use task runners to automate many more…

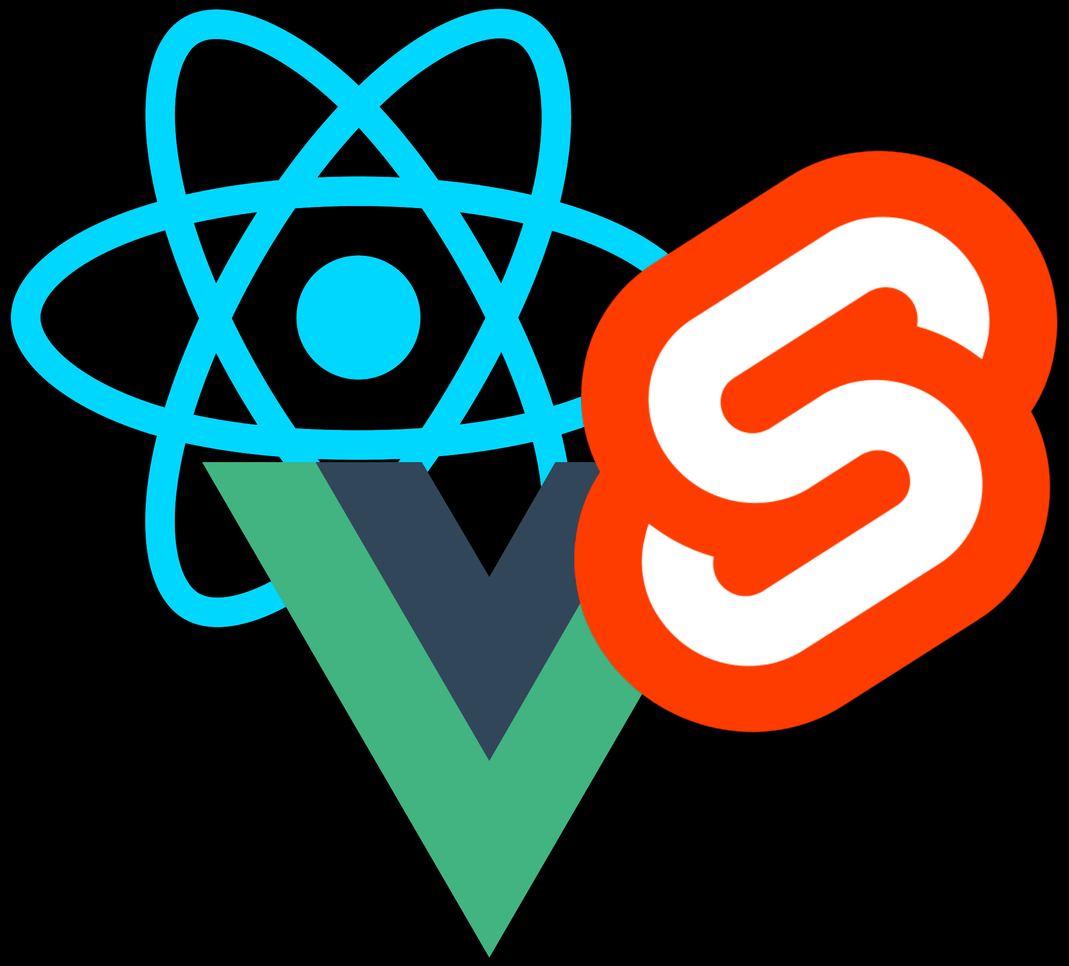
Bundlers

```
✨ Built in 444ms.

dist/parcel-bundler-tutorial.8bdf8f45.js        1.48 KB    241ms
dist/style.134bbd53.css.map                       779 B      5ms
dist/parcel-bundler-tutorial.8bdf8f45.js.map      756 B      2ms
dist/index.html                                   639 B      5ms
dist/style.134bbd53.css                           337 B     13ms
```



Bundlers

Bundlers !=



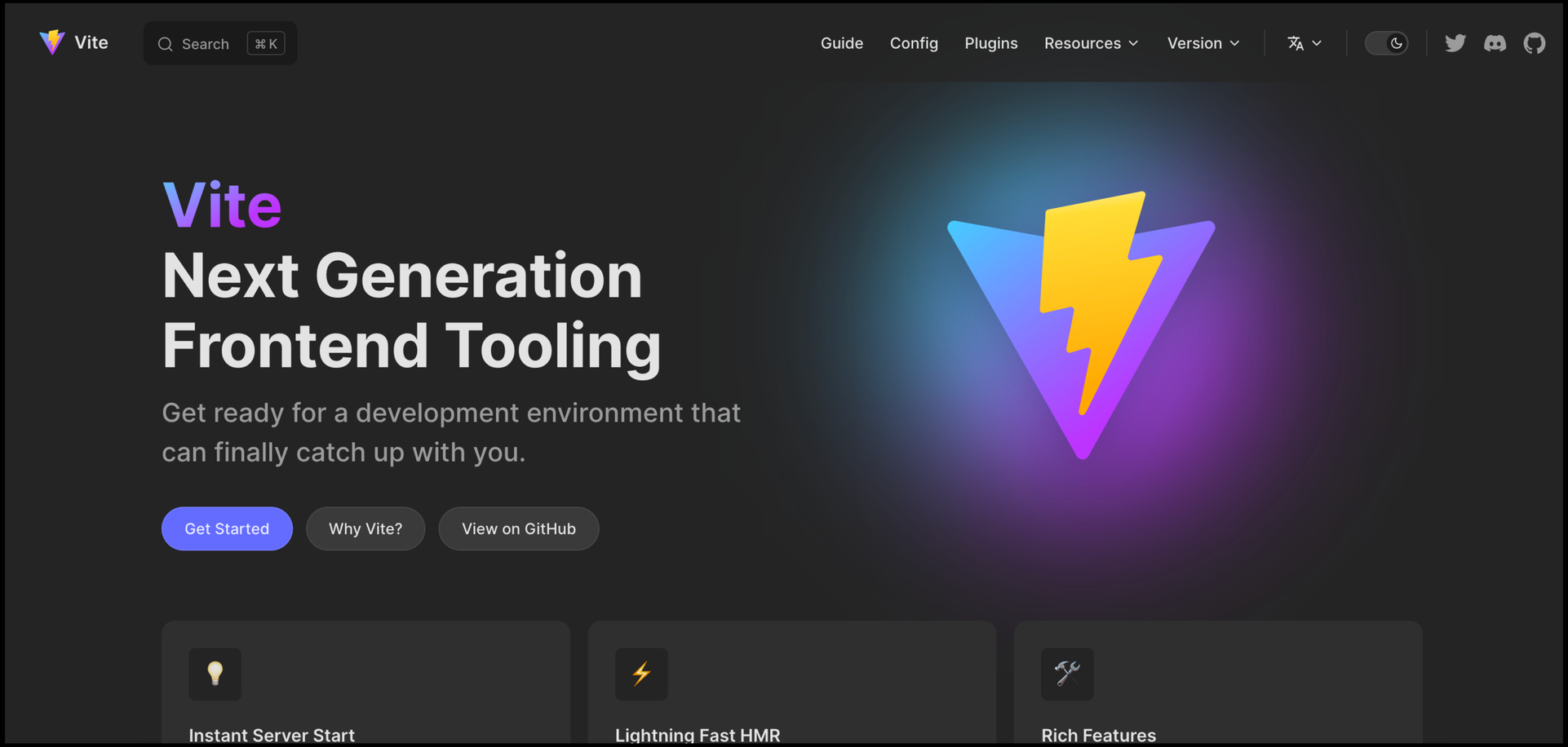
Bundlers

We used to have a lot of separate tools and libraries that were connected using task runners, Gulp, Grunt, Webpack

bla bla bla, etc…

But now:

Bundlers



All-in-one toolkits (runtimes)

Bundlers

Announcing Biome

Biome

TOOLCHAIN OF THE WEB

Emanuele Stoppa & Biome Core Team

August 29, 2023

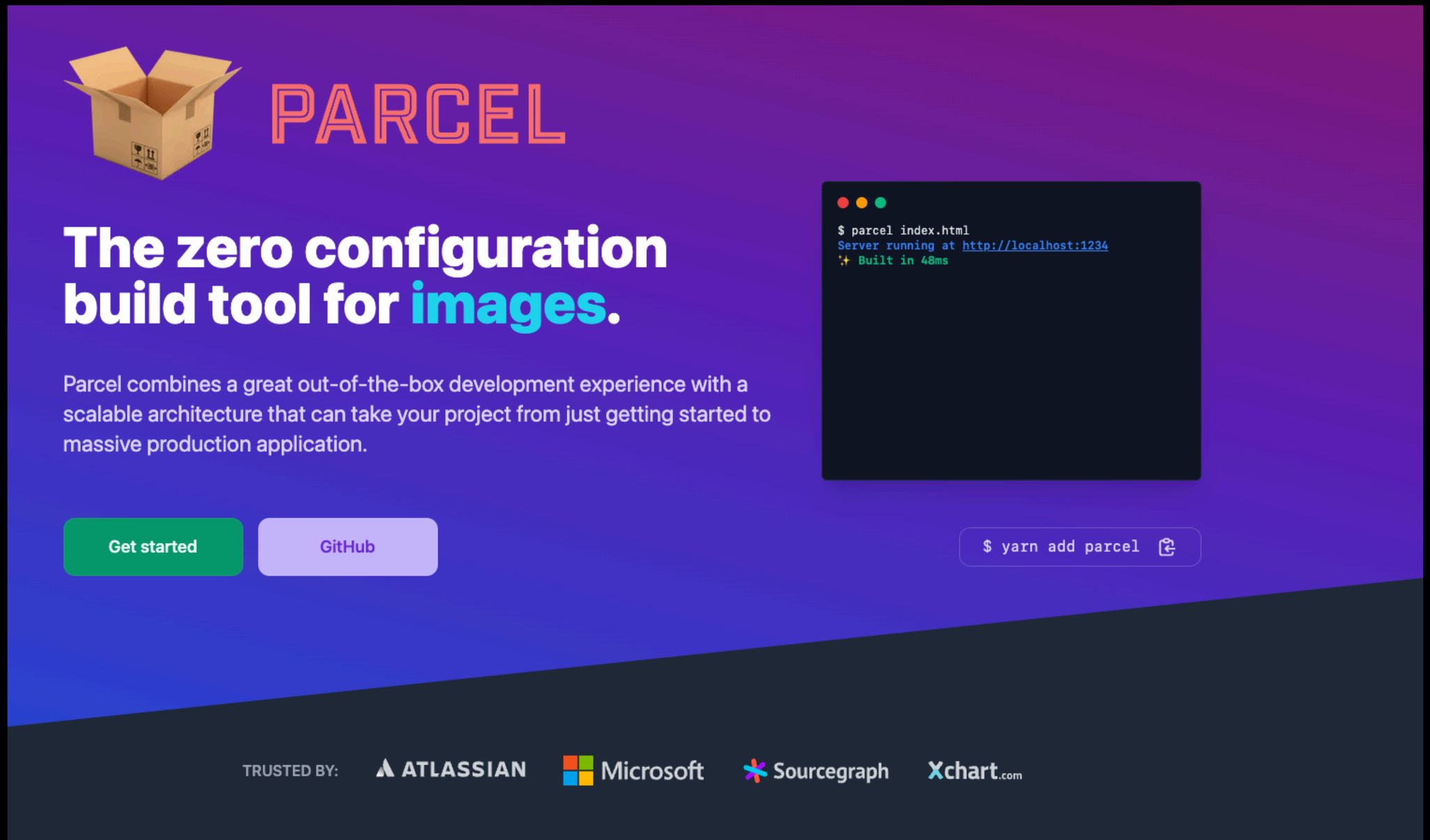
We are happy to announce Biome, *toolchain of the web*.

Biome is the **official** fork of Rome and it will continue to be Rome's legacy.

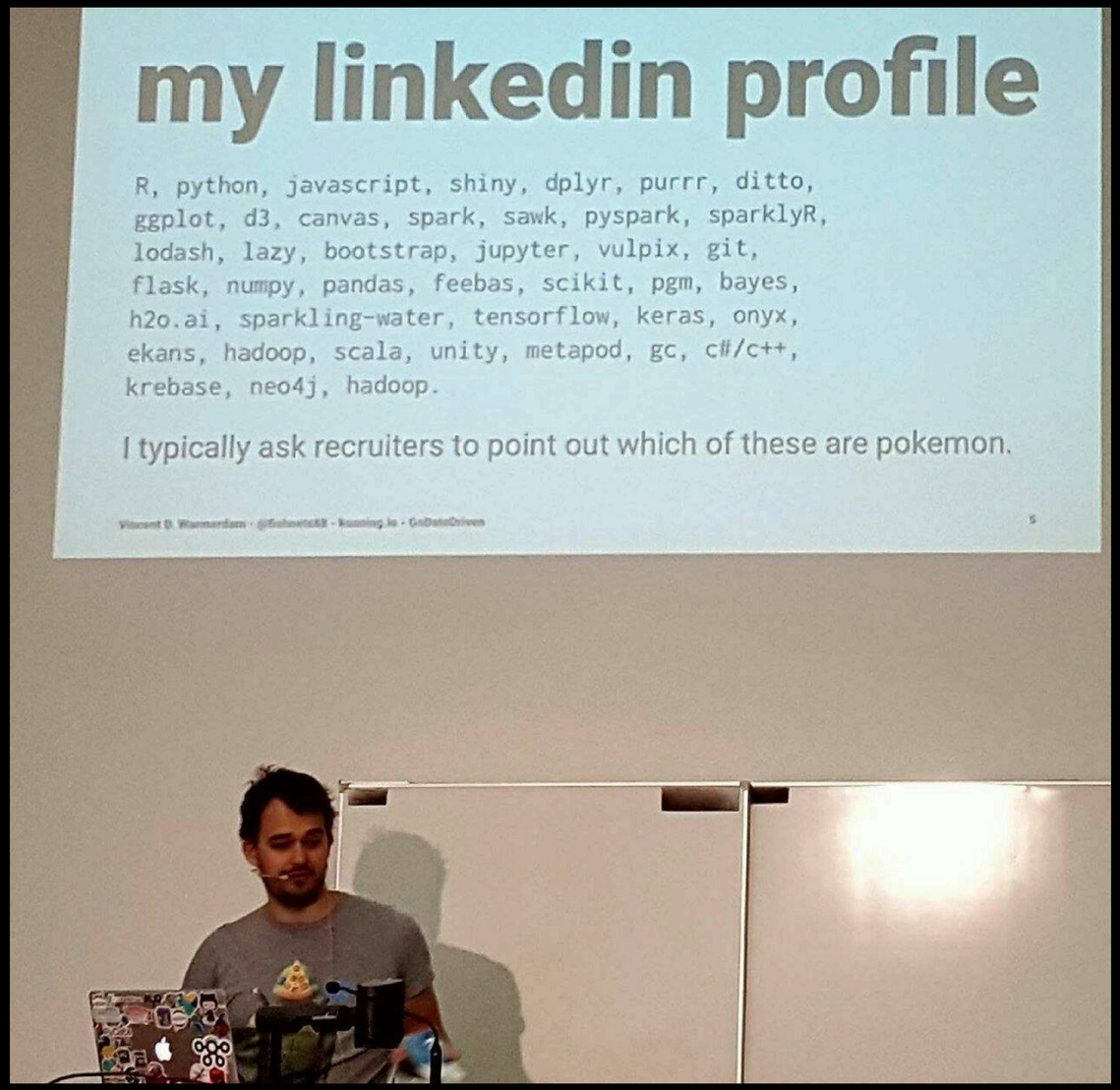
Biome is **led and maintained** by the same people that maintained Rome so far.

Follow us:

Bundlers


PARCEL
The zero configuration build tool for images.
Parcel combines a great out-of-the-box development experience with a scalable architecture that can take your project from just getting started to massive production application.
Get started
GitHub
$ parcel index.html
Server running at http://localhost:1234
✨ Built in 48ms
$ yarn add parcel
TRUSTED BY:
ATLASSIAN
Microsoft
Sourcegraph
Xchart.com

Bundlers


my linkedin profile
R, python, javascript, shiny, dplyr, purrr, ditto,
ggplot, d3, canvas, spark, sawk, pyspark, sparklyR,
lodash, lazy, bootstrap, jupyter, vulpix, git,
flask, numpy, pandas, feebas, scikit, pgm, bayes,
h2o.ai, sparkling-water, tensorflow, keras, onyx,
ekans, hadoop, scala, unity, metapod, gc, c#/c++,
krebase, neo4j, hadoop.
I typically ask recruiters to point out which of these are pokemon.

Bundlers

These runtimes use the **command line** and are often downloadable from **NPM** and uses the **Node.JS ecosystem** to automatically perform some magical tasks for us, such as:

- Hosting a live server for us to see code (HMR)
- Automatically bundle node_modules and our own modules into a single file
- Minify assets, minify requests and optimise code
- Easily integrate frameworks like React/Vue/Svelte

Creating a Boilerplate

What’s next?

What’s next?

- Check the SCHEDULE.md file for the planning
- Make sure to do your homework for tomorrow!
- We’ll meet Wednesday again for a guest lecture

Please note: (sketch) notes are
mandatory deliverables in your documentation!

Uncaught SyntaxError
Unexpected end of input