# THE LEAN WEB

A simpler, faster world-wide web

@ChrisFerdinandi

GoMakeThings.com

The web is a
MESS

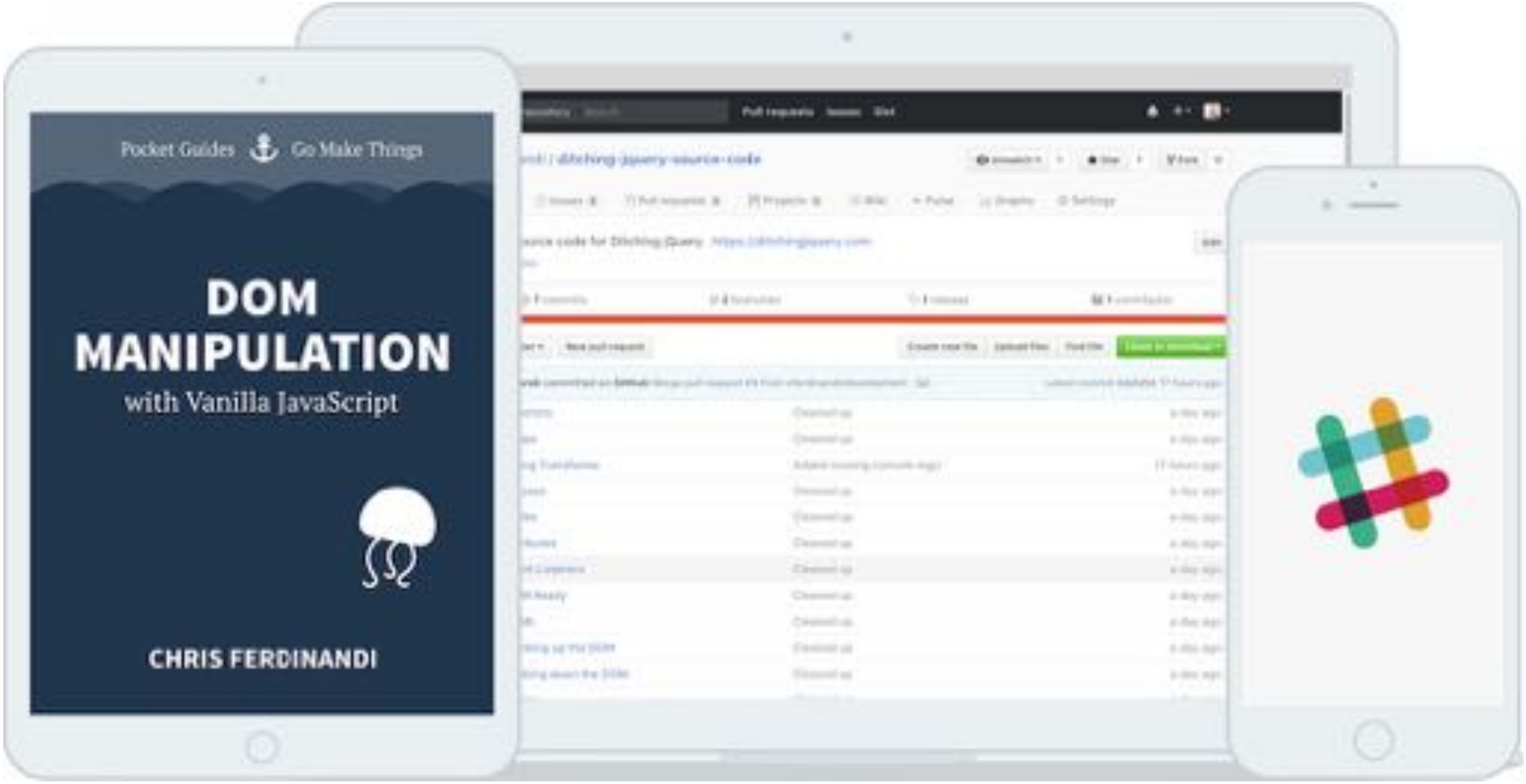
How to
fix it

OLD MAN YELLS AT CLOUD

# Modern web development is too complicated.

# Chris Ferdinandi

GoMakeThings.com




*https://vanillajsguides.com*

*https://vanillajsprojects.com*

# Vanilla JS Academy

*https://vanillajsacademy.com*

Swift.org - Welcome to Swift.

https://swift.org

Swift

ABOUT SWIFT

BLOG

DOWNLOAD

GETTING STARTED

DOCUMENTATION

SOURCE CODE

COMMUNITY

CONTRIBUTING

CONTINUOUS INTEGRATION

SOURCE COMPATIBILITY

FOCUS AREAS

ABI STABILITY

# Welcome to Swift.org

Welcome to the Swift community. Together we are working to build a programming language to empower everyone to turn their ideas into apps on any platform.

Announced in 2014, the Swift programming language has quickly become one of the fastest growing languages in history. Swift makes it easy to write software that is incredibly fast and safe by design. Our goals for Swift are ambitious: we want to make programming simple things easy, and difficult things possible.

For students, learning Swift has been a great introduction to modern programming concepts and best practices. And because it is open, their Swift skills will be able to be applied to an even broader range of platforms, from mobile devices to the desktop to the cloud.

Started from the bottom, now we here

HTML CSS WordPress

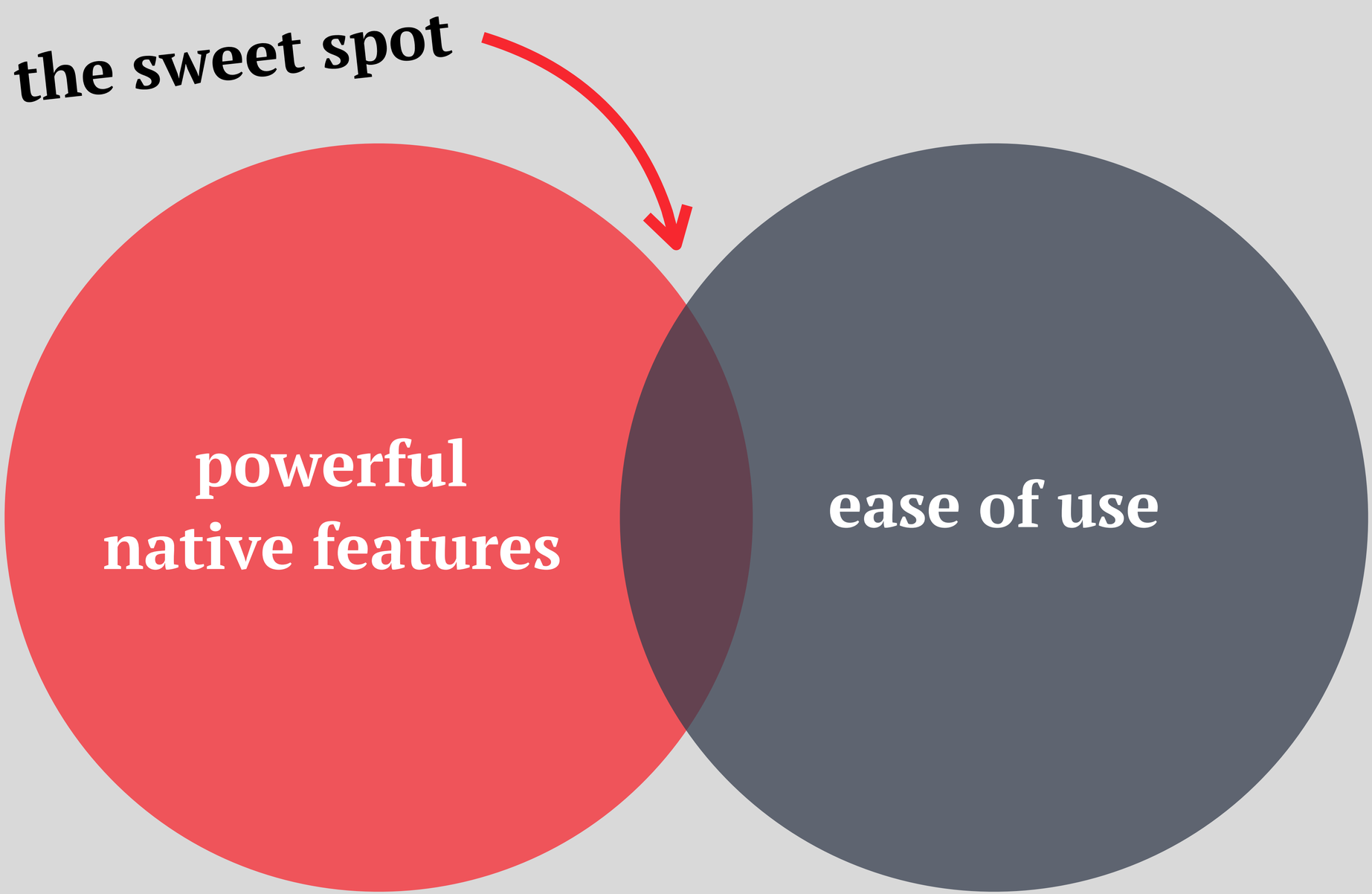
jQuery

write less, do more.

jQuery

write less, do more.

=>


the sweet spot
powerful
native features
ease of use

Daily Developer Tips | Go Make

https://gomakethings.com/articles/

⚓ Go Make Things

About Daily Tips Learn JS

# Daily Developer Tips

I send out a short email each weekday with code snippets, tools, techniques, and interesting stuff from around the web. Join 3,200+ daily subscribers.

Your email address... Get Daily Developer Tips

🚀 ***Make 2019 the year you master JavaScript!*** *My vanilla JavaScript pocket guides are short, focused, and made for beginners. You can do this!*

## January 2019

A talk about the Lean Web at Boston CSS January 8, 2019

Removing duplicates from an array with vanilla js January 7, 2019

Merging two or more arrays with vanilla JS January 4, 2019

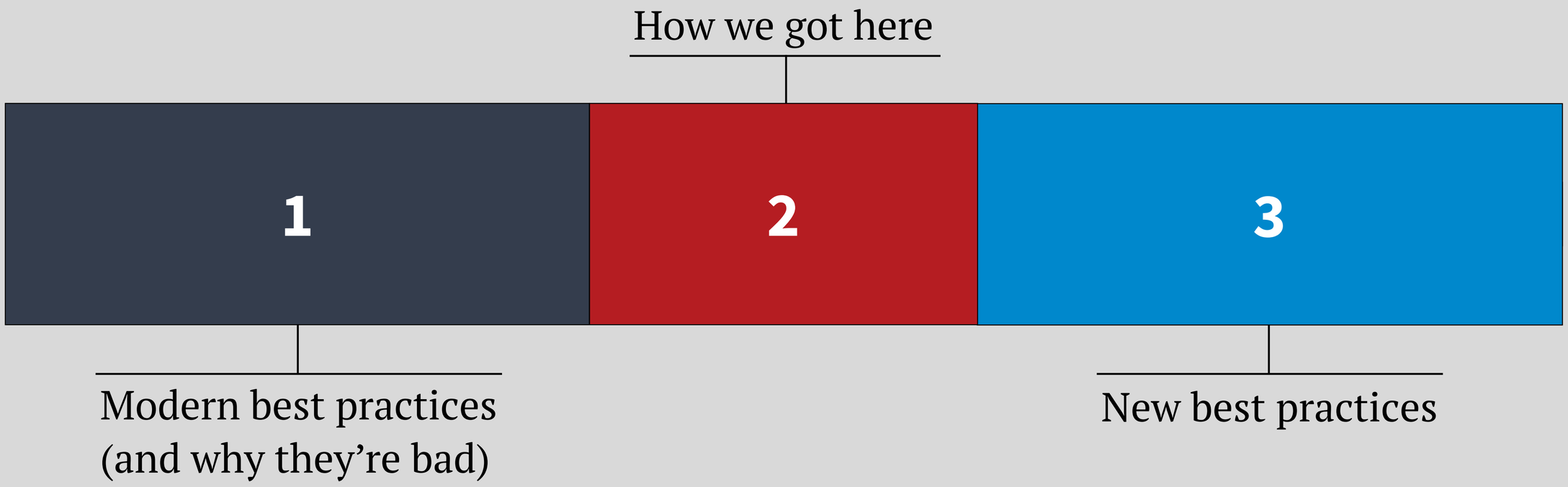
“ My biggest challenge is keeping up.

# A push for simplicity

Is there a conference for web developers that specifically caters to “lean web” (don’t use JS if not necessary etc.)?

— @ThomasFuchs

*https://twitter.com/thomasfuchs/status/925341886944038914*


How we got here
1
2
3
Modern best practices
(and why they're bad)
New best practices

1

# Modern Best Practices

(*and why they're bad*)

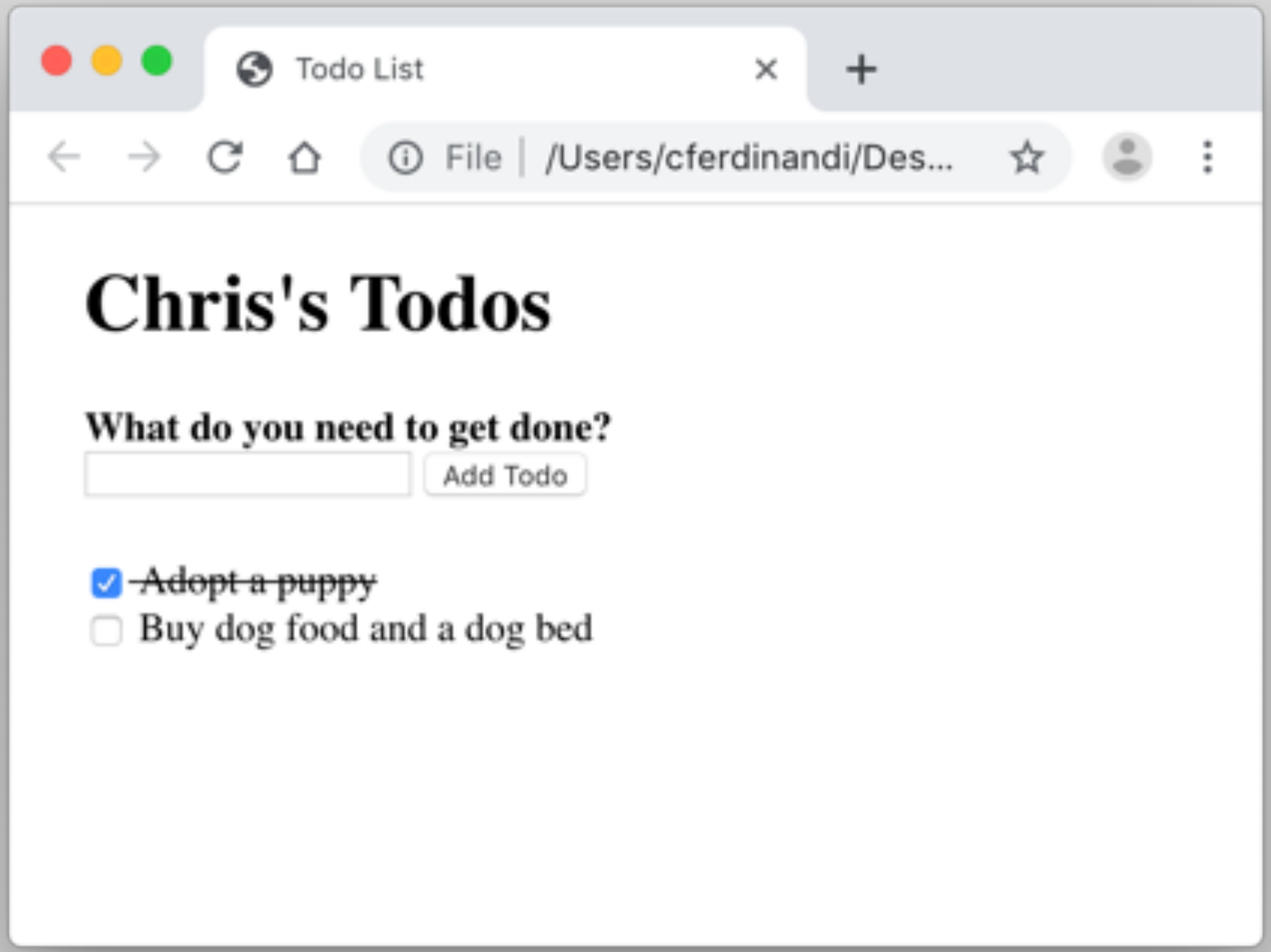
JAVASCRIPT ALL THE THINGS!

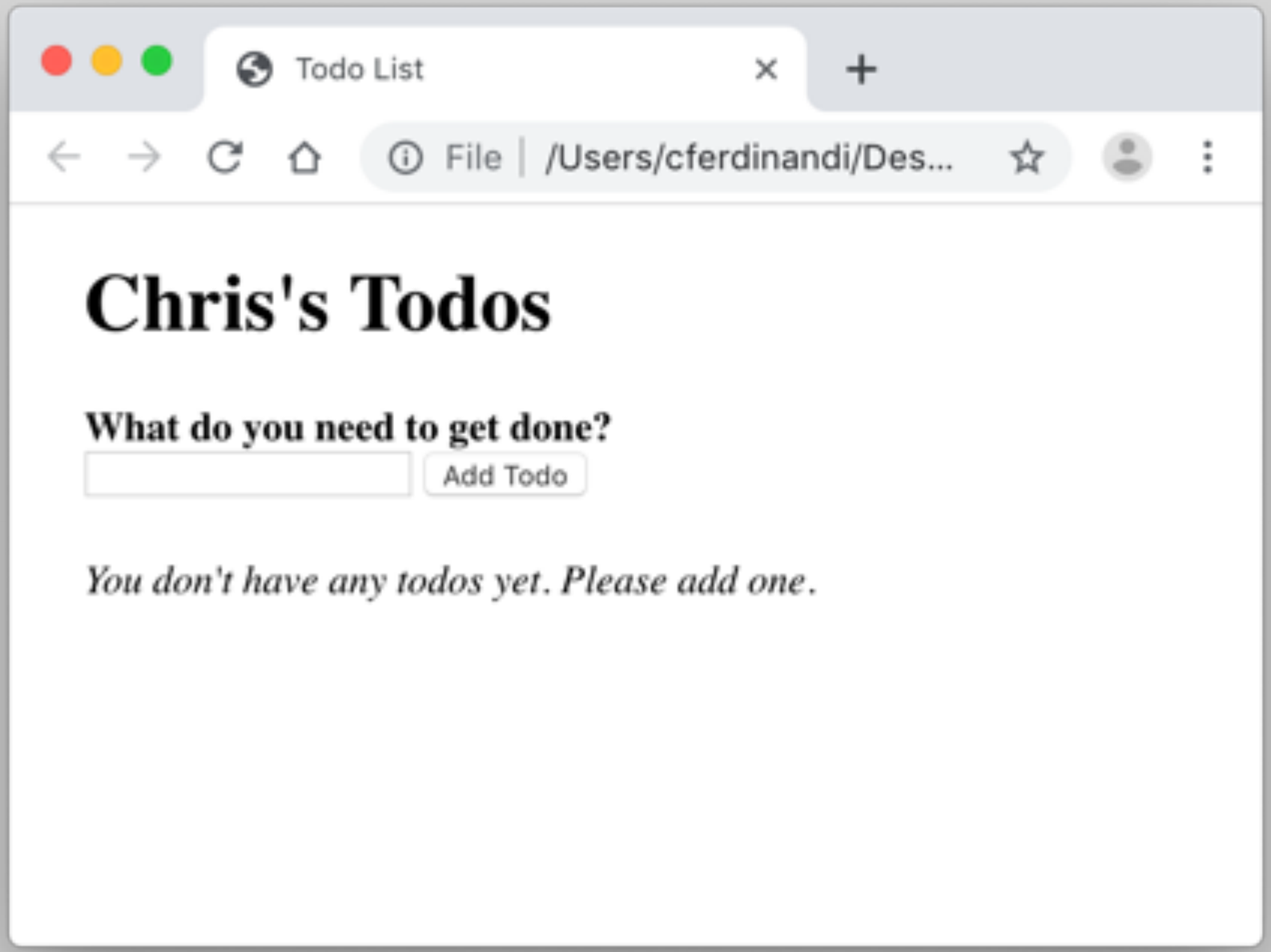
DEVELOPERS
JAVASCRIPT
WEBSITE

# Modern Best Practice

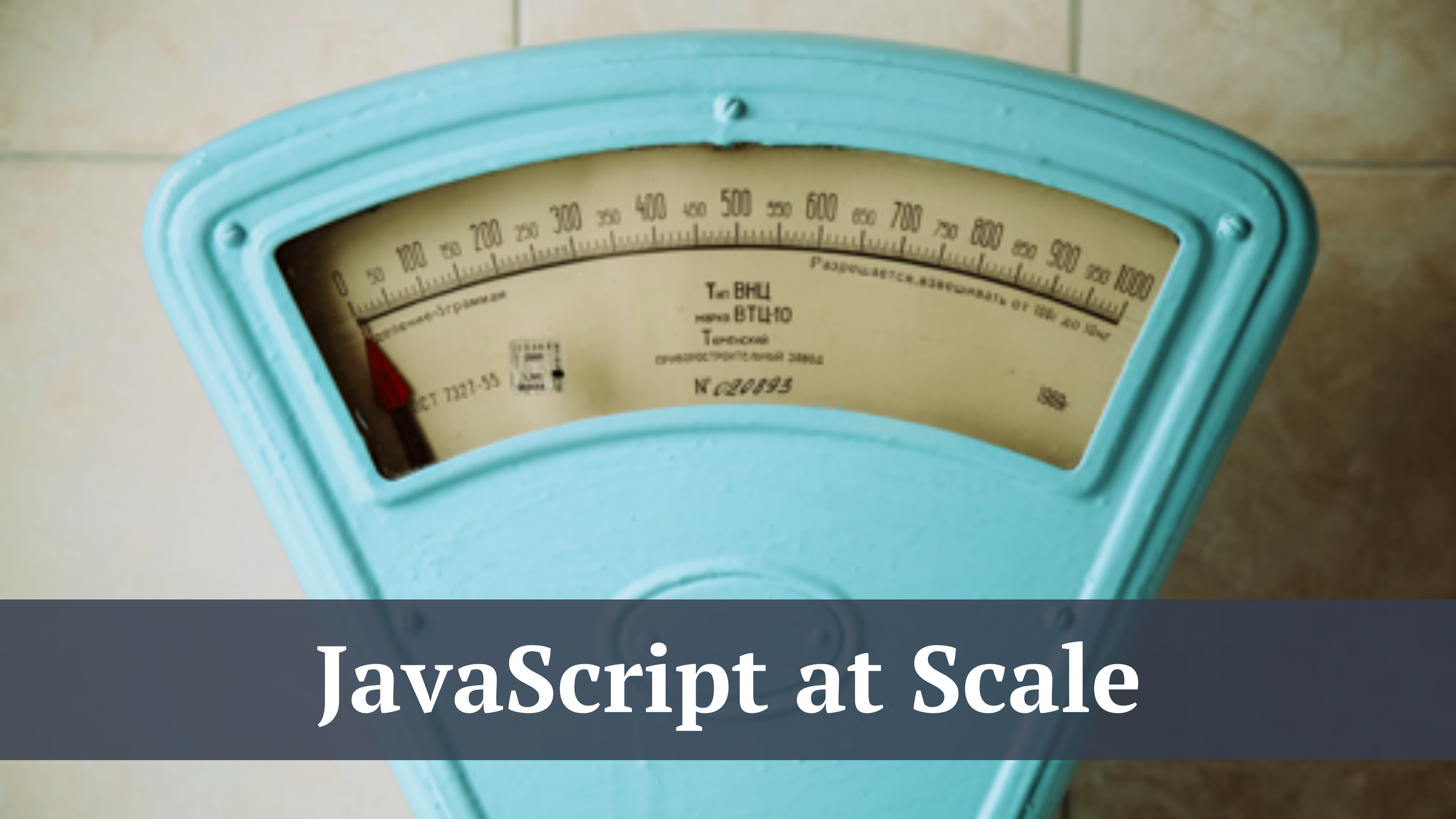
JavaScript Frameworks

```
var data = {
    todos: [
        {
            item: 'Adopt a puppy',
            completed: true
        },
        {
            item: 'Buy dog food and a dog bed',
            completed: false
        }
    ],
    username: 'Chris'
};
```


Todo List
File
/Users/cferdinandi/Des...
Chris's Todos
What do you need to get done?
Add Todo
Adopt a puppy
Buy dog food and a dog bed

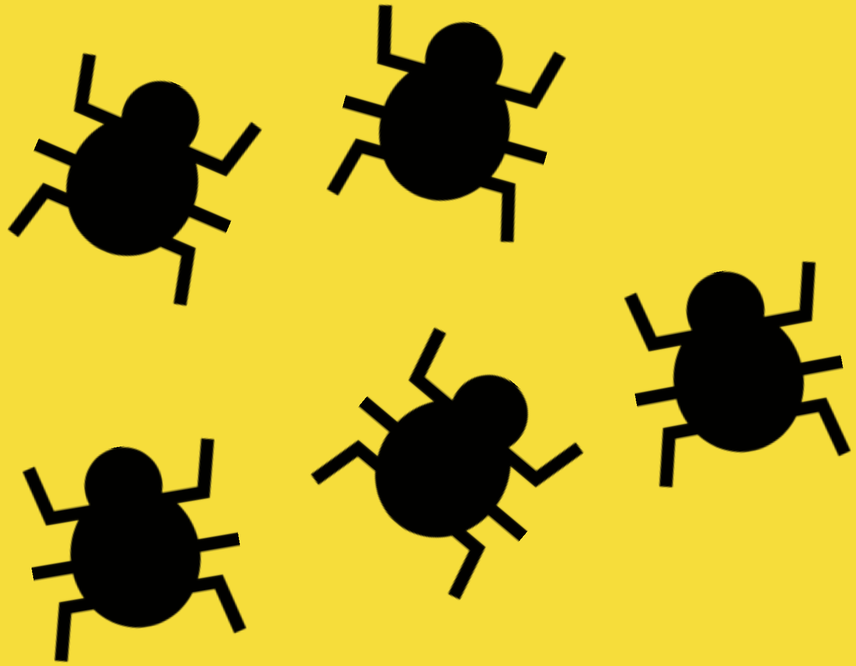

Todo List
File
/Users/cferdinandi/Des...
Chris's Todos
What do you need to get done?
Add Todo
You don't have any todos yet. Please add one.

```
if (data.todos.length > 0) {
    // create list items
} else {
    return 'You don\'t have any todos yet.
            Please add one.'
}
```



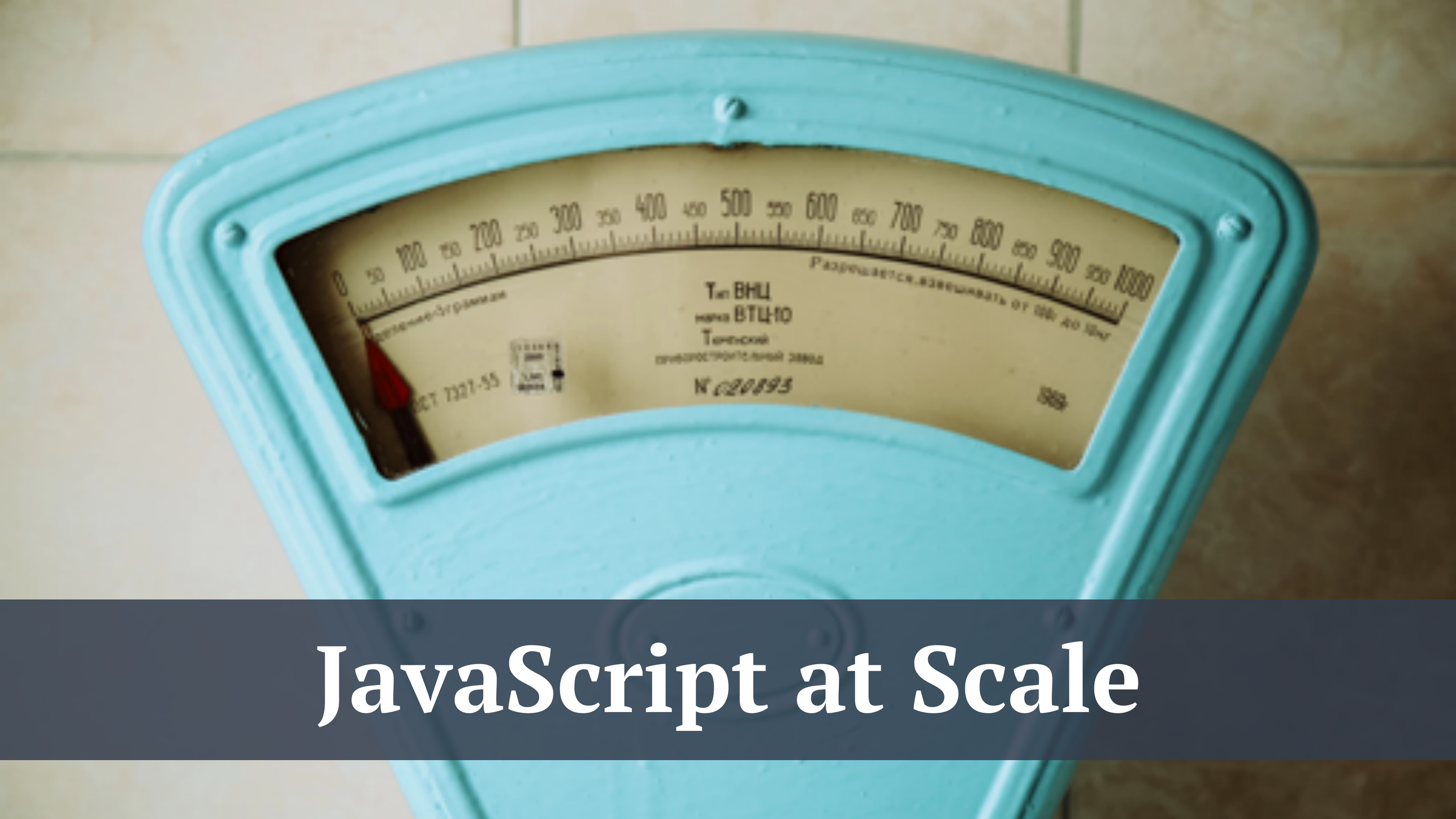

# JavaScript at Scale

# Fewer Bugs



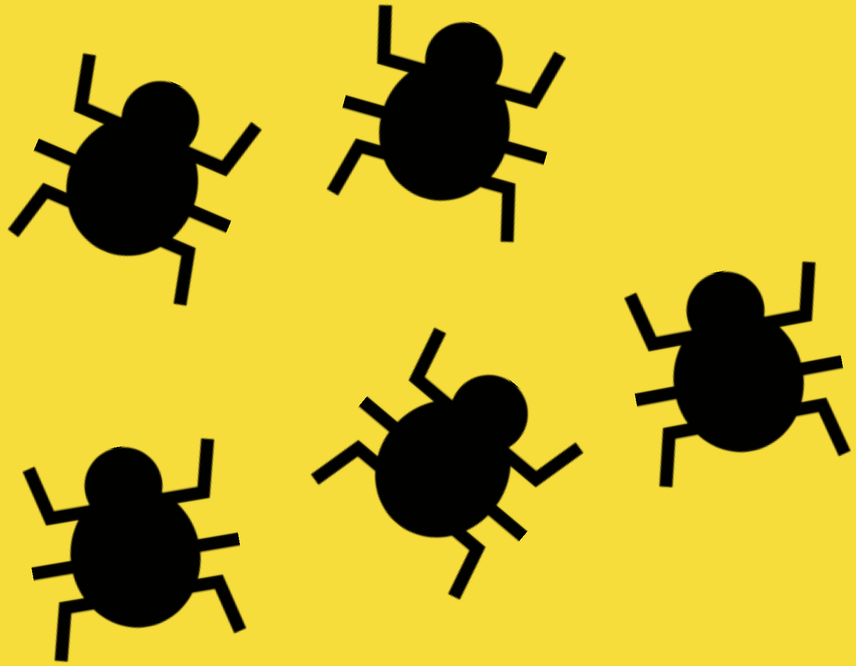
# Modern Web Problem

Performance




# JavaScript at Scale

# Fewer Bugs



Hello!

*https://medium.com/@addyosmani/the-cost-of-javascript-in-2018-7d8950fbb5d4*

Byte-for-byte, JavaScript is still the most expensive resource we send to mobile phones, because it can delay interactivity in large ways.

— Addy Osmani

*https://medium.com/@addyosmani/the-cost-of-javascript-in-2018-7d8950fbb5d4*

One
Less
JPG

# JavaScript blocks rendering

**Which has a better**
**First Meaningful Paint time?**

① a raw 8.5MB HTML file with the full text of every single one of my 27,506 tweets
② a client rendered React site with exactly one tweet on it

*https://twitter.com/zachleat/status/1169998370041208832*

(Spoiler: @___lighthouse reports 8.5MB of HTML wins by about 200ms)

— @zachleat

*https://twitter.com/zachleat/status/1169998370041208832*

# Modern Best Practice

## Package Managers & Module Bundlers

# Dependency Management

# Tree Shaking

# Modern Web Problem

High Setup & Maintenance Cost

DEPENDENCIES
DEPENDENCIES EVERYWHERE

# npm install | npm run

My workflow today: 15 minutes of writing code that works and does what I want. 2 hours of trying to appease the static type gods.

— @KyleShevlin

*https://twitter.com/kyleshevlin/status/1095093908038549505*

That depressing realization that the thing you're slogging through in a modern JS framework could have taken you 10 minutes in jQuery.

— @brad_frost

*https://twitter.com/brad_frost/status/1097908466935652352*

ah webpack, javascript –– turning a 1 hour project setup into an 8 hour affair

— @sodevious

*https://twitter.com/sodevious/status/1126300690530357253*

I made the mistake last year on my team to push one of the apps we were developing from just using JQuery/ Vanilla JS to use Angular because I assumed it would make our lives easier. It did not, it just added complexity.

— @Eldorian

*https://twitter.com/Eldorian/status/1139555399160303616*

# Modern Best Practice

CSS-in-JS

# Team-Based CSS

```
.callout {
    background-color: slategray;
    font-size: 2em;
};


<div class="callout">
    👋 Hi there!
</div>
```

```
var callout = {
    backgroundColor: 'slategray',
    fontSize: '2em'
};

<div class={callout}>
    👋 Hi there!
</div>
```

```
<div class="jzrps nibae lupp mihax">
    👋 Hi there!
</div>
```

“Legacy site downloads ~630 KB CSS…

PWA incrementally generates ~30 KB CSS…”

— @necolas

*https://twitter.com/necolas/status/1058949372837122048*

```
<div class="jzrps nibae lupp mihax">
    👋 Hi there!
</div>
```

# Modern Web Problem

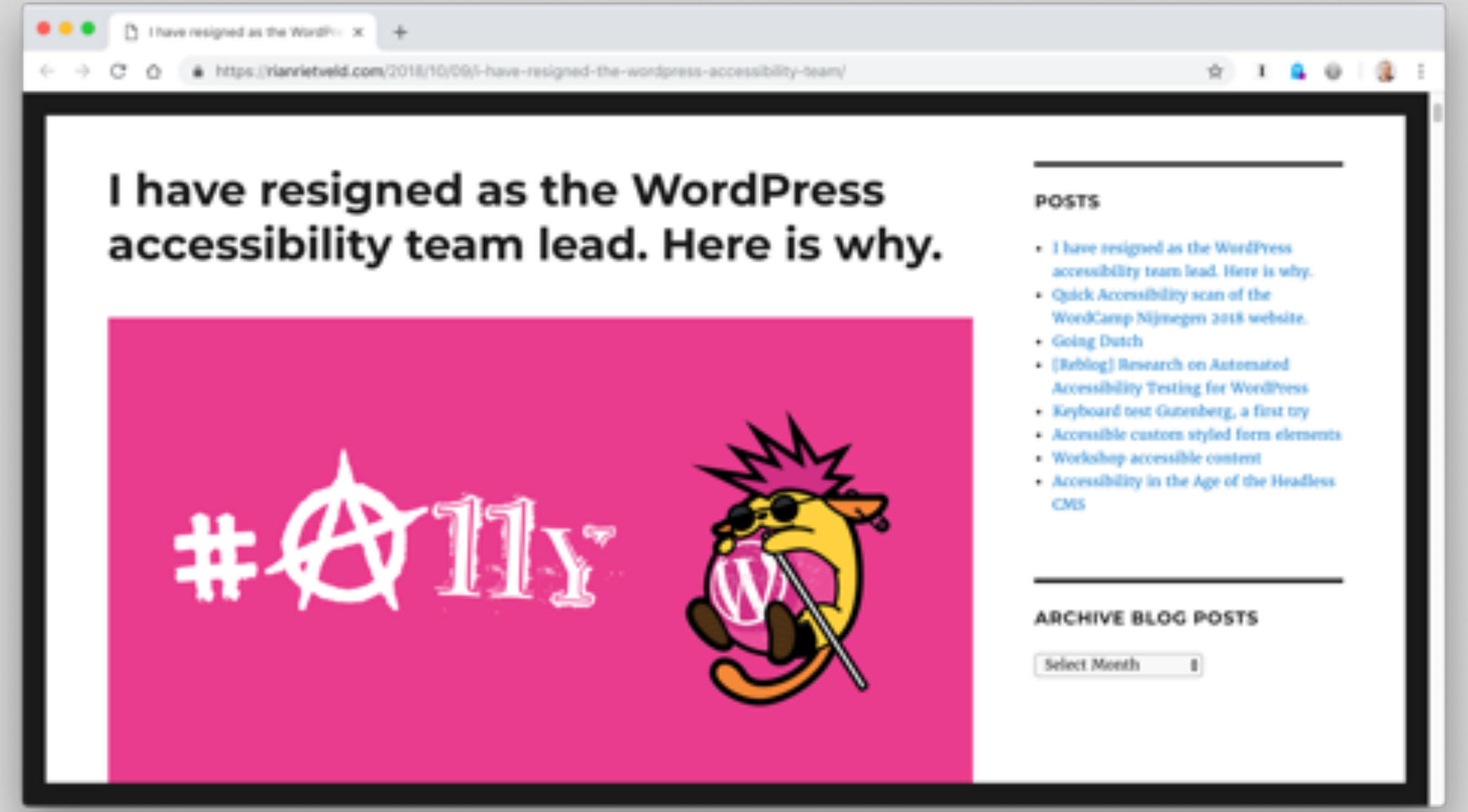
Gatekeeping

Here’s a straw-man composite from several recent conversations: These tools let us move faster. Because we can iterate faster we’re delivering better experiences.

— Alex Russell

*https://infrequently.org/2018/09/the-developer-experience-bait-and-switch/*

Complex tools create
barriers to entry




*https://rianrietveld.com/2018/10/09/i-have-resigned-the-wordpress-accessibility-team/*

# 329

page accessibility audit

*https://wpcampus.org/2019/05/gutenberg-audit-results/*

# 34

page executive summary

*https://wpcampus.org/2019/05/gutenberg-audit-results/*

# 91

accessibility-related bugs

*https://wpcampus.org/2019/05/gutenberg-audit-results/*

Here’s a straw-man composite from several recent conversations: These tools let us move faster. Because we can iterate faster we’re delivering better experiences.

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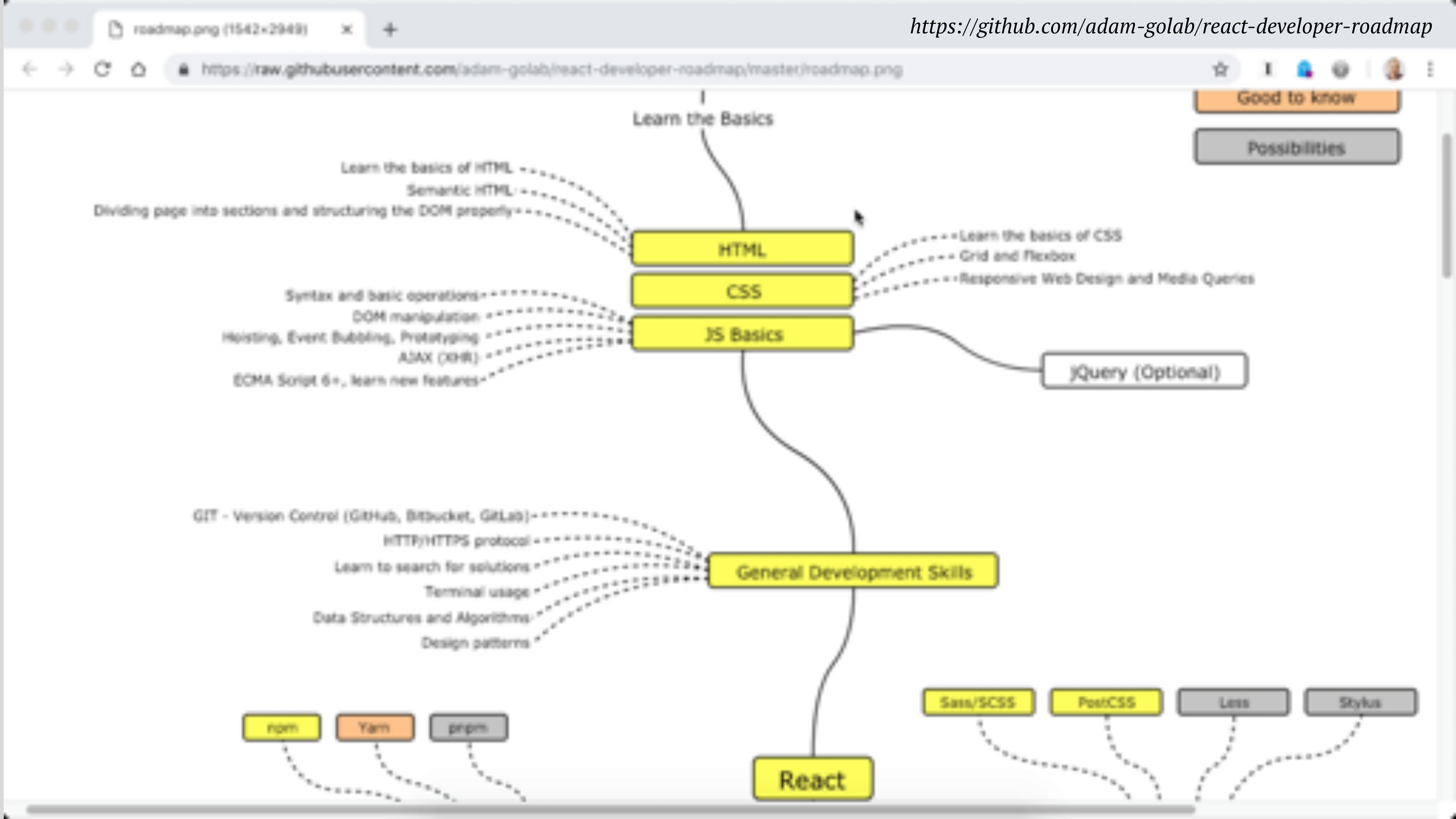
*https://infrequently.org/2018/09/the-developer-experience-bait-and-switch/*

https://github.com/adam-golab/react-developer-roadmap

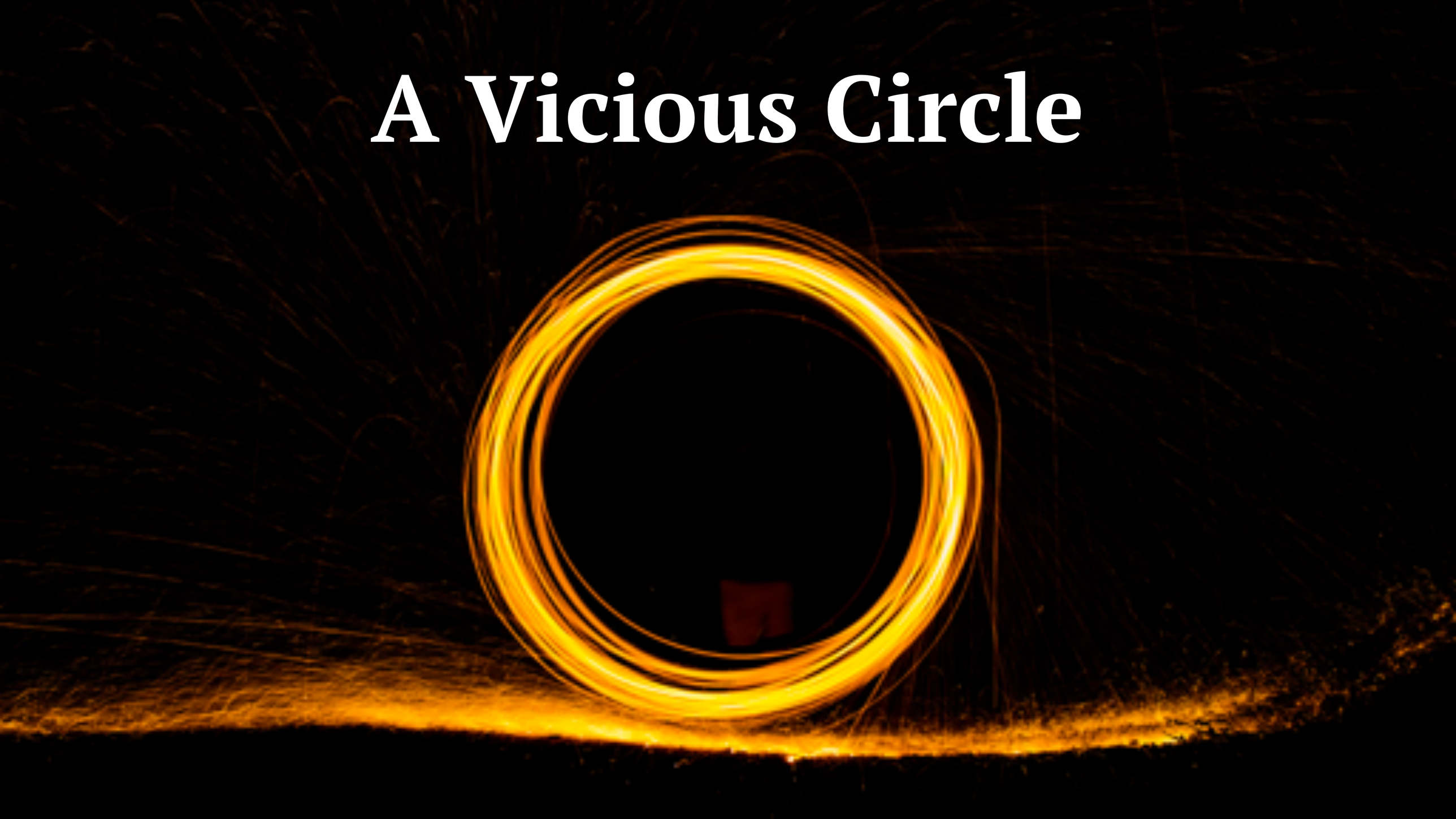


# Modern Best Practice

## Single Page Apps (SPAs)

WRECK-IT RALPH
I'M GONNA WRECK IT!
DISNEY.COM/WRECKITRALPH
© Disney

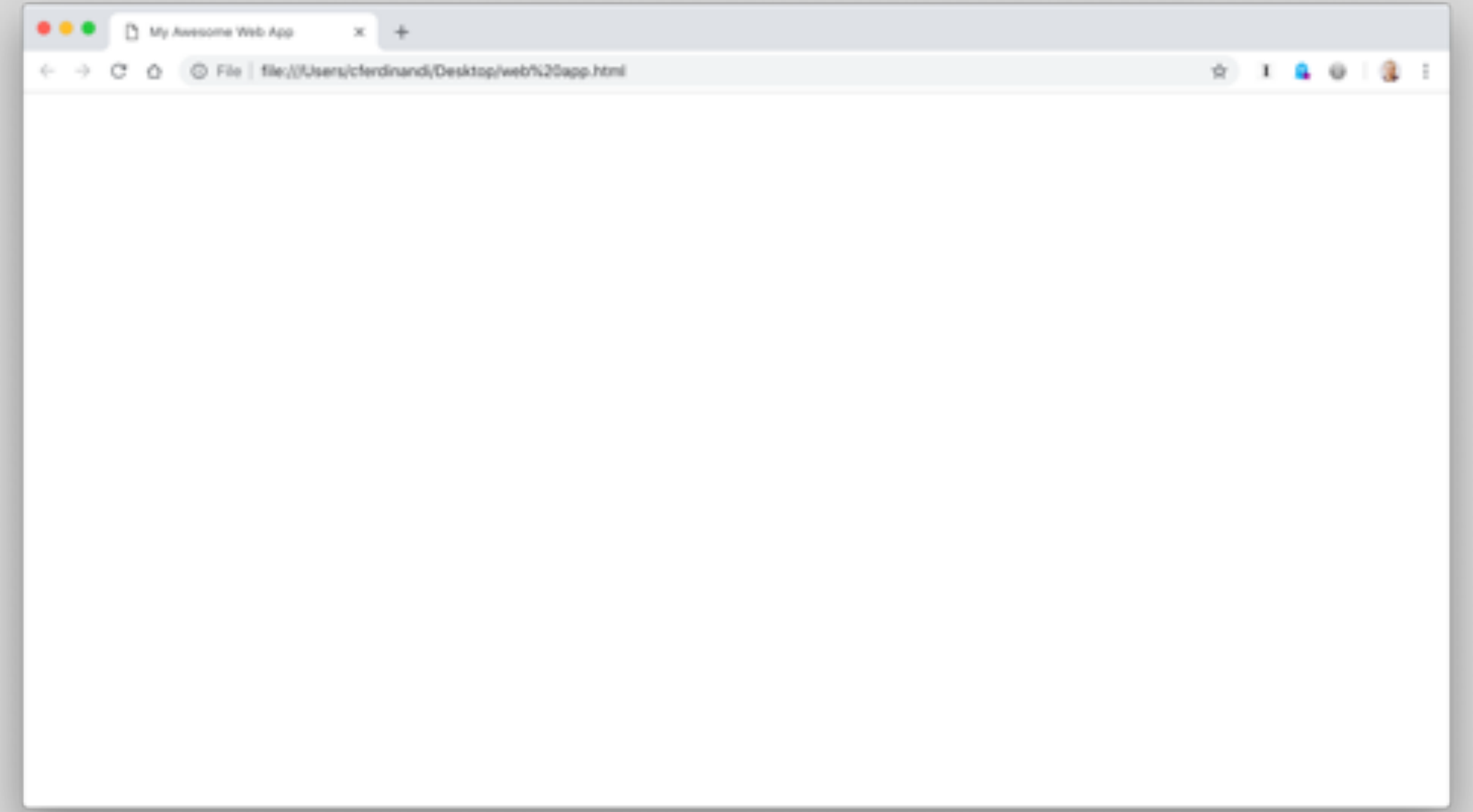
# A Vicious Circle



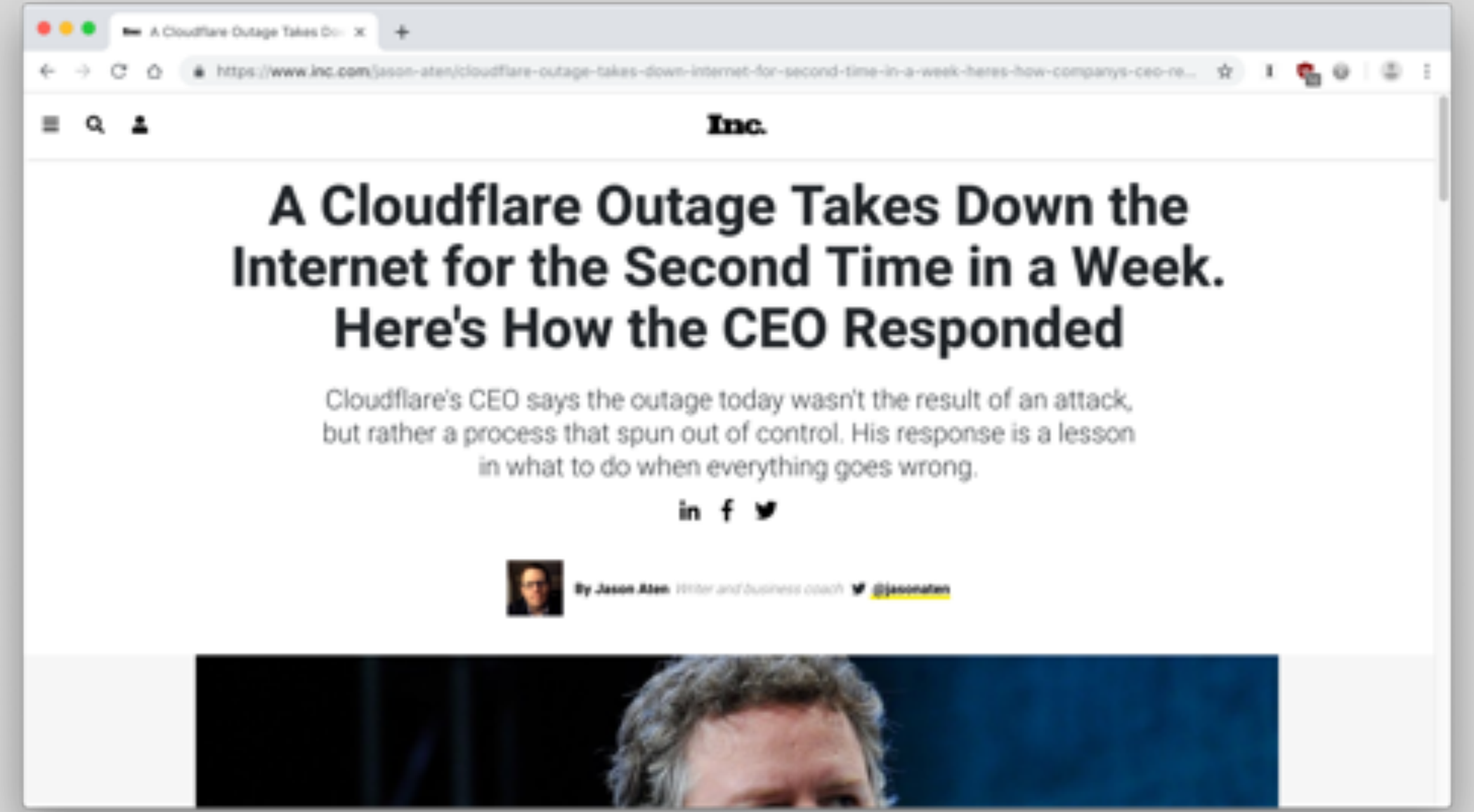
# Modern Web Problem

Fragility

FUTURE MAN
hulu
ORIGINALS


My Awesome Web App
File
file:///Users/cferdinandi/Desktop/web%20app.html

# People don’t (usually) browse the web with JS disabled



Inc.

# A Cloudflare Outage Takes Down the Internet for the Second Time in a Week. Here's How the CEO Responded

Cloudflare's CEO says the outage today wasn't the result of an attack, but rather a process that spun out of control. His response is a lesson in what to do when everything goes wrong.

By Jason Aten Writer and business coach @jasonaten

*https://www.inc.com/jason-aten/cloudflare-outage-takes-down-internet-for-second-time-in-a-week-heres-how-companys-ceo-responded.html*

# Firewalls & Ad Blockers

# Files Timeout

# 13 million

requests for JavaScript timeout on Buzzfeed

*https://twitter.com/philhawksworth/status/990890920672456707*

# Lost Connectivity

# Bugs

~~<dvi></dvi>~~

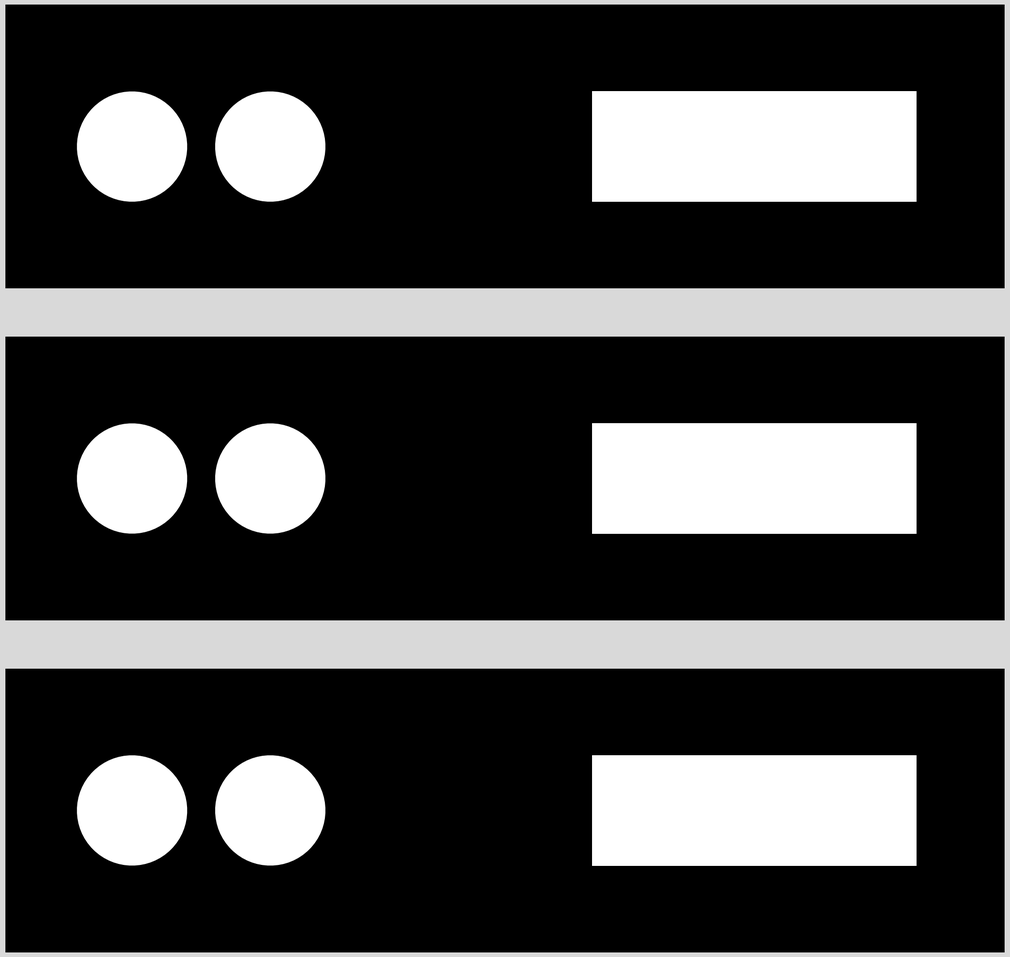
```
.hero {
    bg-color: #f7f7f7;
    width: 100%;
}
```

```
var doubleIt = function (num) {
    return nmu * 2;
};
```

2

# How did we get here?

LOL_



(modem dials)

Bookmarks Location: http://www.geocities.com/Yosemite/1450/

OFFICIAL WEBRING SITE

[ Skip | Next 5 | Random ]

NEXT

# Welcome to Jesse´s Skiing page

WARNING WARNING WARNING

This page is

UNDER CONSTRUCTION

to be the best ski site on the web

timehop

# HeY n WeLcOmE 2

# Abe's Page

since 1995

cOOl LiNkS

Timehop Web Page

aBoUt AbE

Geocities (MaKe Ur OwN WEBSIGHT!!)

eNjOy Ur StAY

Bookmarks Location: http://www.geocities.com/Hollywood/2979/

# Doom Level Design With DEUS

## Table of Contents


1. Getting Started
   - Introduction
   - Software/Hardware Requirements
2. What Editor to Choose?
   - Understanding the Editor
   - Understanding the Construction Features
3. Building a New Level

# The Web Platform

Copy of Explore example

File Edit View Insert Format Data Tools Add-ons Help Last edit was 2 minutes ago

Comments Share

Edition

| Edition | Year | Host Country | Winner | Runner up | Average attendance | Teams | Matches | Goals scored | Average goals |
|---|---|---|---|---|---|---|---|---|---|
| 1930 World Cup Uruguay | 1930 | Uruguay | Uruguay | Argentina | 32,808 | 13 | 18 | 70 | 3.9 |
| 1934 World Cup Italy | 1934 | Italy | Italy | Czechoslovakia | 21,353 | 16 | 17 | 70 | 4.1 |
| 1938 World Cup France | 1938 | France | Italy | Hungary | 20,872 | 15 | 18 | 84 | 4.7 |
| 1950 World Cup Brazil | 1950 | Brazil | Uruguay | Brazil | 47,511 | 13 | 22 | 88 | 4 |
| 1954 World Cup Switzerland | 1954 | Switzerland | Germany | Hungary | 29,562 | 16 | 26 | 140 | 5.4 |
| 1958 World Cup Sweden | 1958 | Sweden | Brazil | Sweden | 23,423 | 16 | 35 | 126 | 3.6 |
| 1962 World Cup Chile | 1962 | Chile | Brazil | Czechoslovakia | 27,912 | 16 | 32 | 89 | 2.8 |
| 1966 World Cup England | 1966 | England | England | Germany | 48,848 | 16 | 32 | 89 | 2.8 |
| 1970 World Cup Mexico | 1970 | Mexico | Brazil | Italy | 50,124 | 16 | 32 | 95 | 3 |
| 1974 World Cup Germany | 1974 | Germany | Germany | Netherlands | 49,099 | 16 | 38 | 97 | 2.6 |
| 1978 World Cup Argentina | 1978 | Argentina | Argentina | Netherlands | 40,679 | 16 | 38 | 102 | 2.7 |
| 1982 World Cup Spain | 1982 | Spain | Italy | Germany | 40,572 | 24 | 52 | 146 | 2.8 |
| 1986 World Cup Mexico | 1986 | Mexico | Argentina | Germany | 46,039 | 24 | 52 | 132 | 2.5 |
| 1990 World Cup Italy | 1990 | Italy | Germany | Argentina | 48,389 | 24 | 52 | 115 | 2.2 |
| 1994 World Cup United States | 1994 | United States | Brazil | Italy | 68,991 | 24 | 52 | 141 | 2.7 |
| 1998 World Cup France | 1998 | France | France | Brazil | 43,517 | 32 | 64 | 171 | 2.7 |
| 2002 World Cup Korea & Japan | 2002 | Korea & Japan | Brazil | Germany | 42,269 | 32 | 64 | 161 | 2.5 |
| 2006 World Cup Germany | 2006 | Germany | Italy | France | 52,491 | 32 | 64 | 147 | 2.3 |
| 2010 World Cup South Africa | 2010 | South Africa | Spain | Netherlands | 49,670 | 32 | 64 | 145 | 2.3 |
| 2014 World Cup Brazil | 2014 | Brazil | Germany | Argentina | 53,592 | 32 | 64 | 171 | 2.7 |

World Cup

Explore

ANSWERS

Ask a question about your data

Distribution of Winner

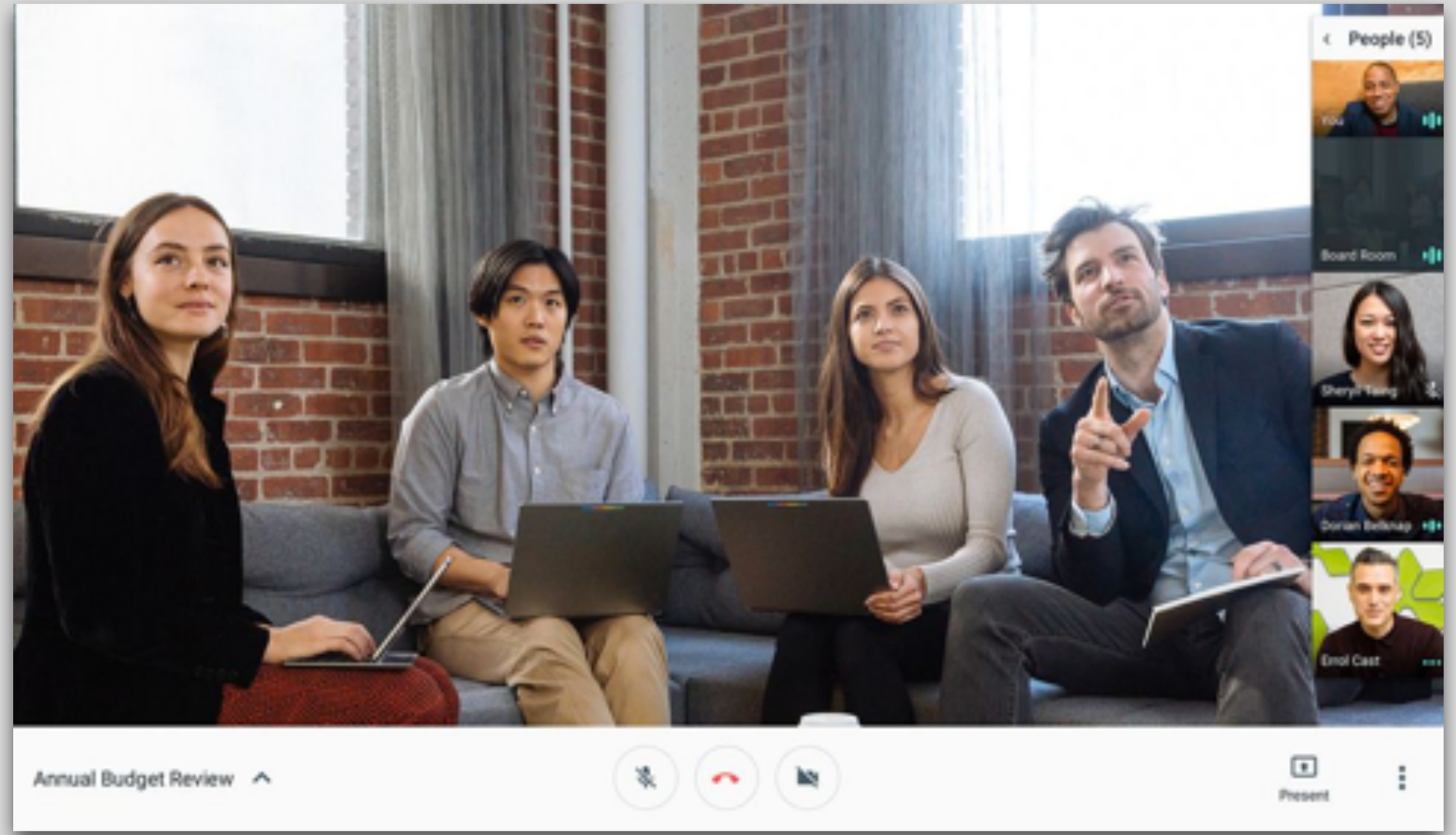
Correlation between Teams and Matches

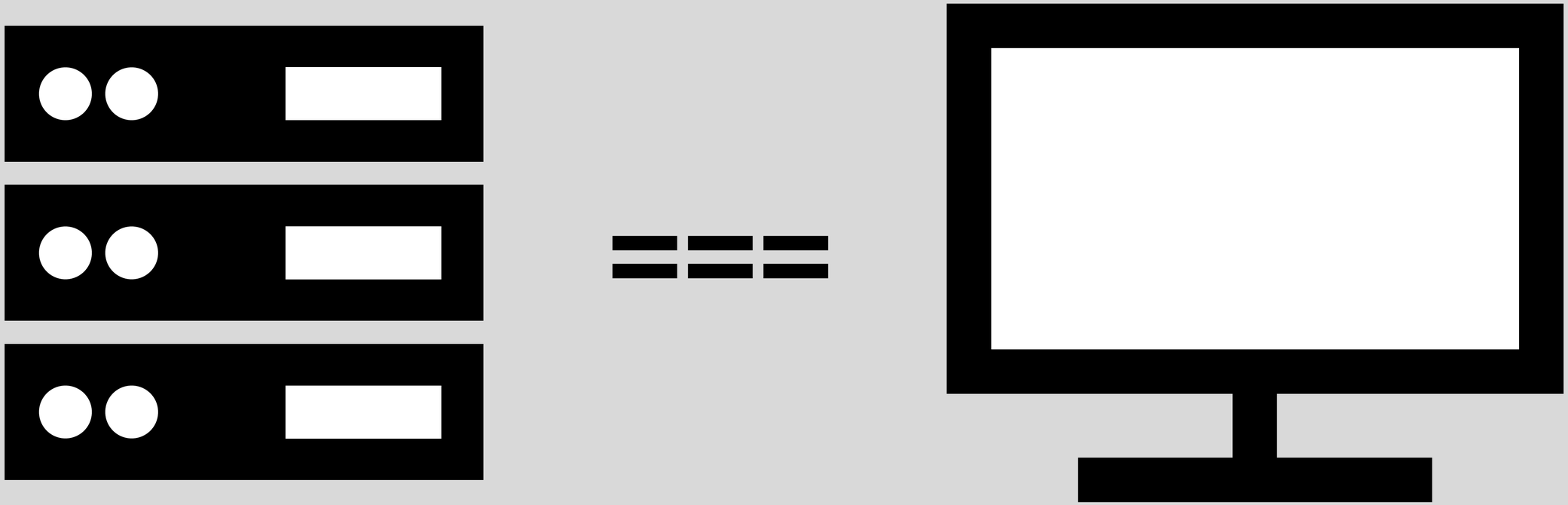
Average of Teams

FORMATTING

Alternating colors for A1:J21 EDIT

ANALYSIS

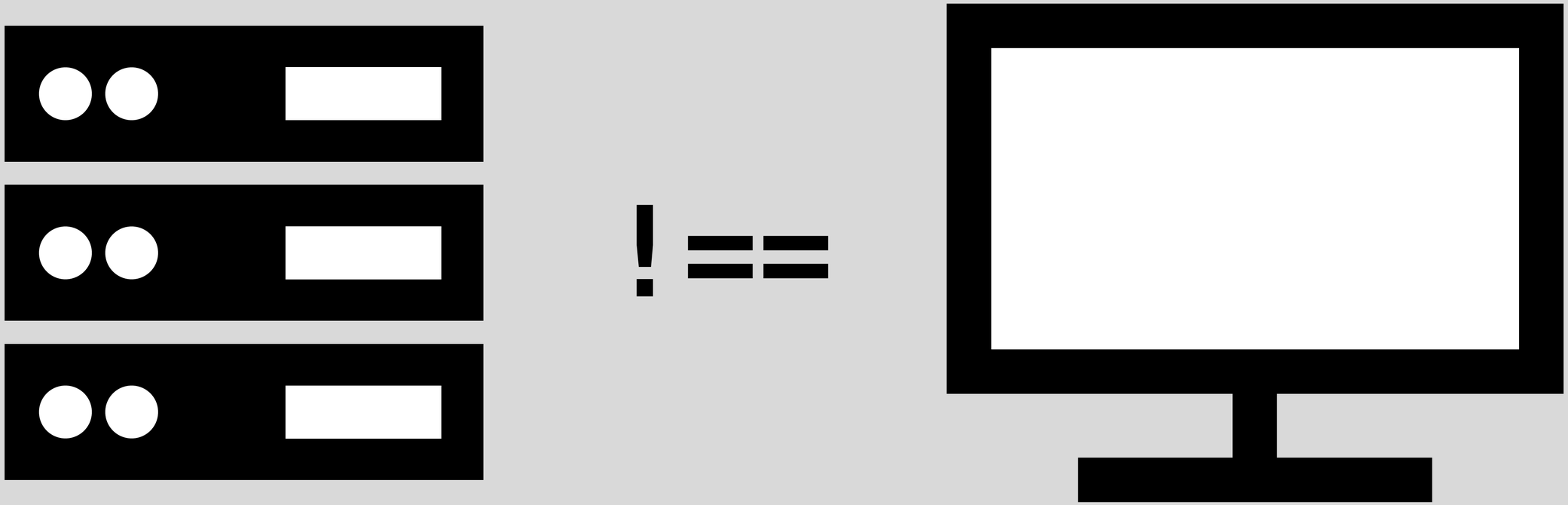

People (5)
You
Board Room
Sheryl Yang
Dorian Belknap
Emil Cast
Annual Budget Review
Present



“ I build apps, not websites.

“ Vanilla JS doesn’t scale.

“ CSS isn’t a *real* programming language.



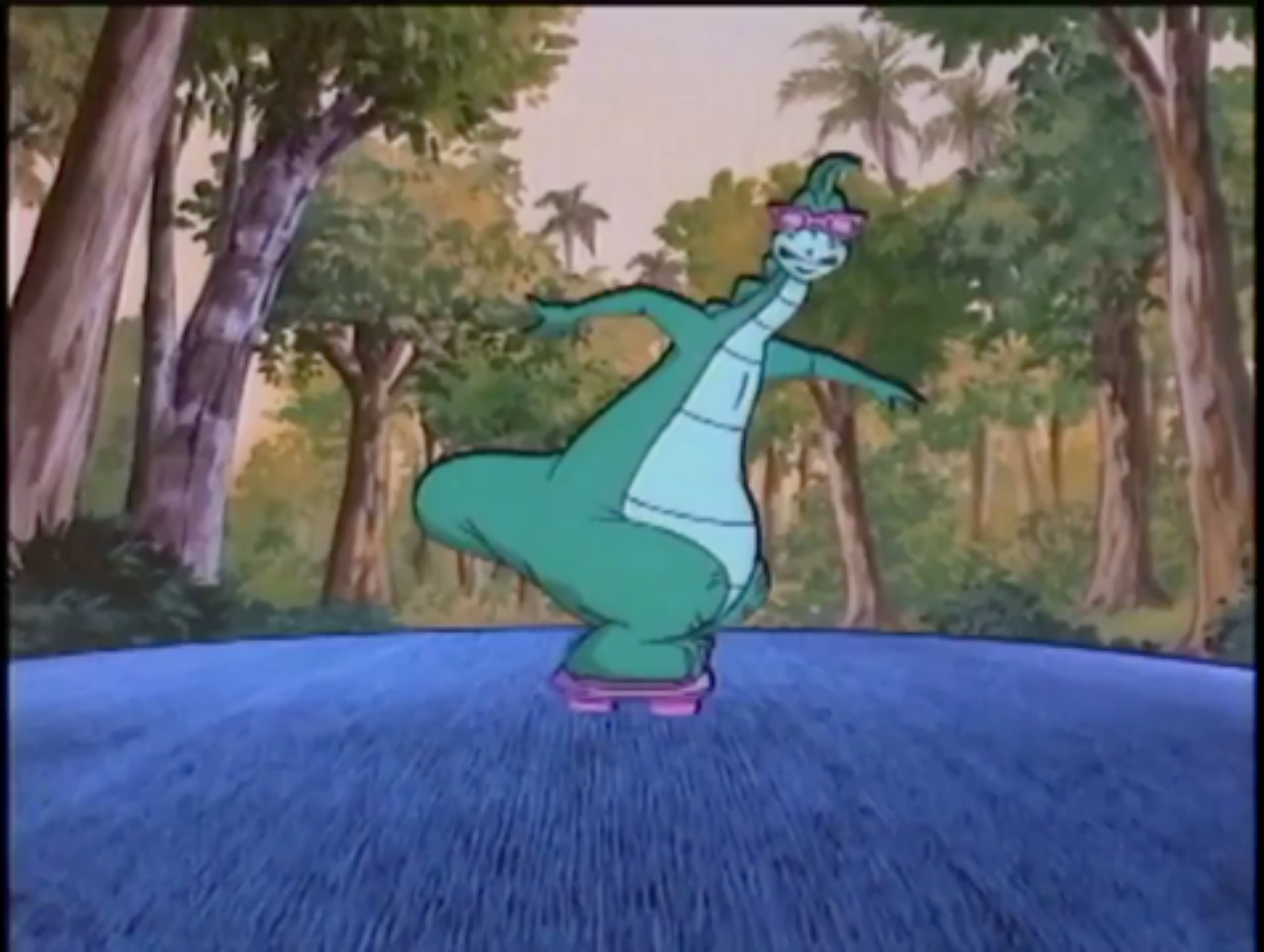
*Source: www.lukew.com*

=*(

3

# Lean Web Principles

# Become a dev dinosaur



# Lean Web Principle

Embrace the Platform

VANILLA JAVASCRIPT
Zero Additives!

```
// jQuery
$('#app').addClass('awesome')

// Vanilla JS
document.querySelector('#app')
    .classList.add('awesome');
```

```
// JSX
var name = 'Josh Perez';
var element = <h1>Hello, {name}</h1>;

ReactDOM.render(
    element,
    document.getElementById('root')
);
```

```
// Vanilla JS
var name = 'Josh Perez';
var element = `<h1>Hello, ${name}</h1>`;

document.getElementById('root')
    .innerHTML = element;
```

HTML > JavaScript

```html
<details>
    <summary>The toggle</summary>
    The content.
</details>
```

# HTML Accordions

The toggle

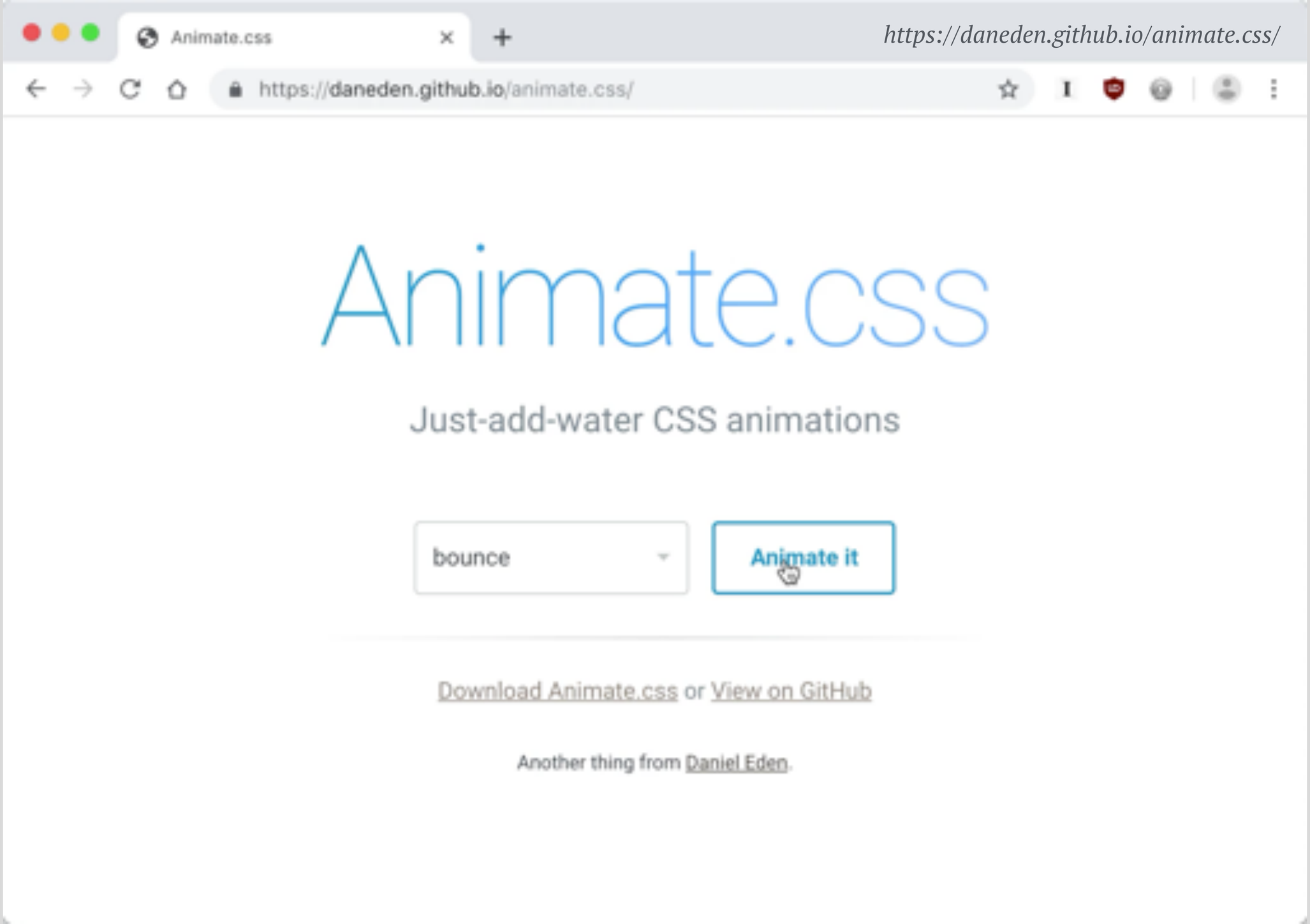
```html
<label for="states">Who's the best wizard?</label>
<input type="text" id="wizards" name="wizards" list="wizards-list">

<datalist id="wizards-list">
    <option>Harry Potter</option>
    <option>Hermione</option>
    <option>Dumbledore</option>
    <option>Merlin</option>
    <option>Gandalf</option>
</datalist>
```

# HTML Autocomplete

Who's the best wizard?

CSS > JavaScript

*https://daneden.github.io/animate.css/*



README.md

# Smooth Scroll

A lightweight script to animate scrolling to anchor links. Smooth Scroll works great with Gumshoe.

View the Demo on CodePen →

Getting Started | Scroll Speed | Easing Options | API | What's new? | Known Issues | Browser Compatibility | License

***Quick aside:*** *you might not need this library. There's a native CSS way to handle smooth scrolling that might fit your needs.*

---

**Want to learn how to write your own vanilla JS plugins? Check out my Vanilla JS Pocket Guides or join the Vanilla JS Academy and level-up as a web developer. 🚀**

---

## Getting Started

Compiled and production-ready code can be found in the `dist` directory. The `src` directory contains development code.

### 1. Include Smooth Scroll on your site.

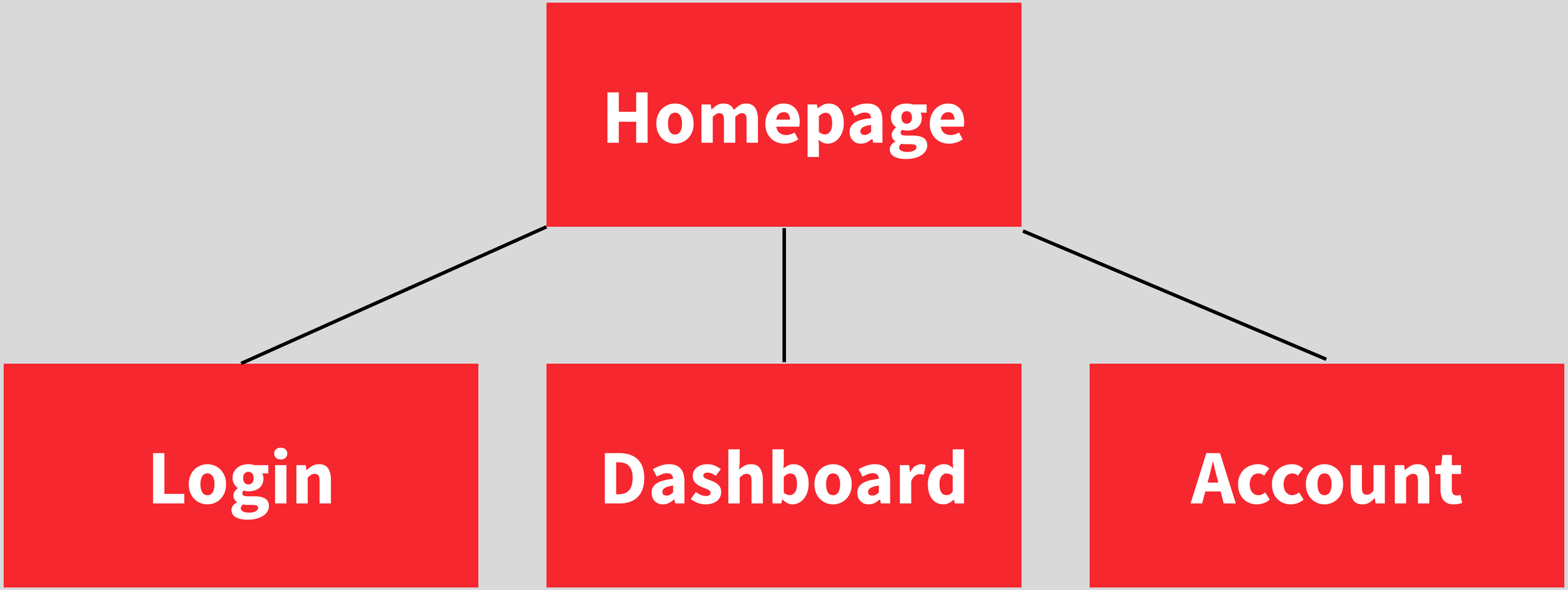
*https://github.com/cferdinandi/smooth-scroll*

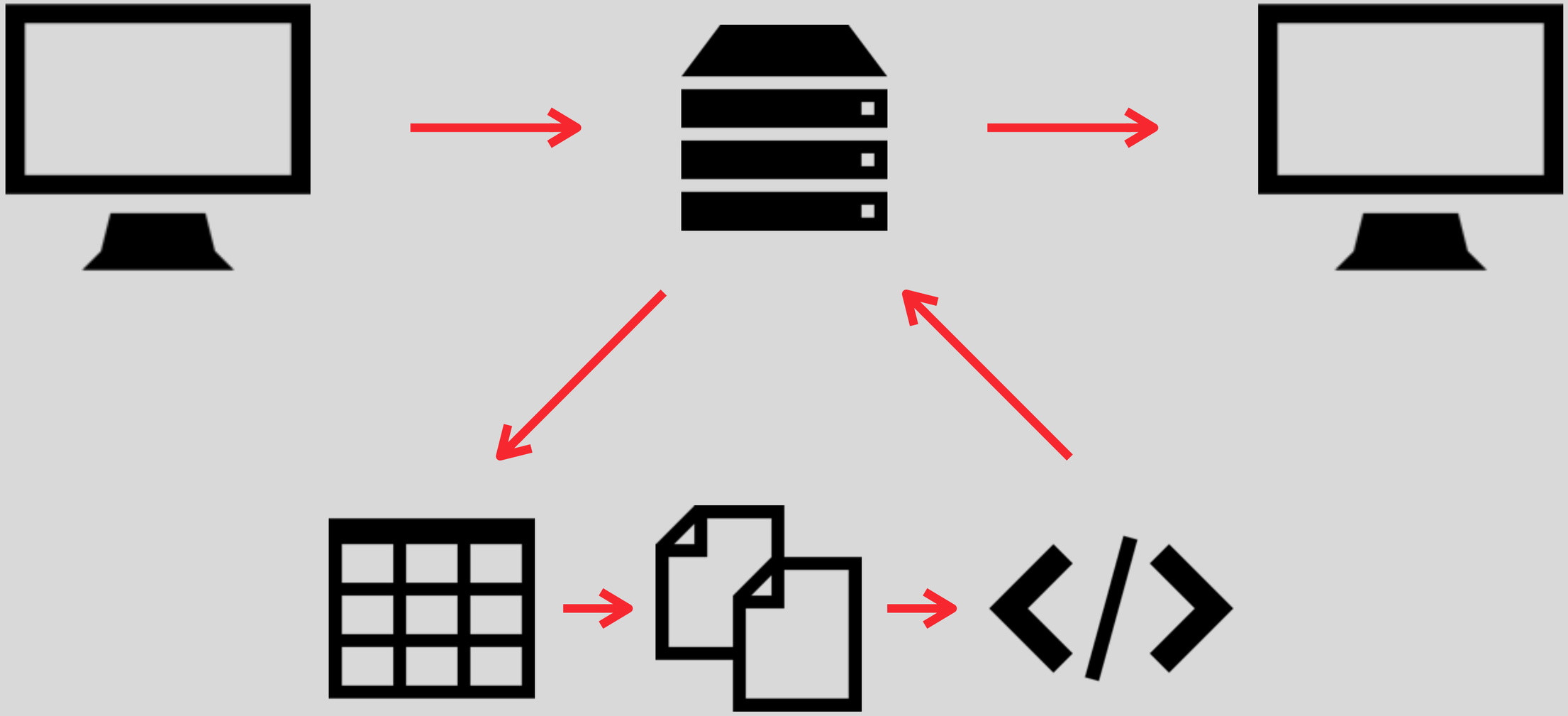
```
1  html {
2      scroll-behavior: smooth;
3  }
4
5  @media screen and (
6      prefers-reduced-motion: reduce
7  ) {
8      html {
9          scroll-behavior: auto;
10     }
11 }
```

# Smooth Scrolling

Go to the middle
Go to the bottom

# JavaScript routing is complicated


Homepage
Login
Dashboard
Account



GMT Courses

https://courses.gomakethings.com

GMT Courses

Dashboard Account Logout

# Dashboard

**Don't see something you purchased on this list?** Click here to refresh your list of purchases.

## Vanilla JS Academy

- May 2019
- Winter 2019
- Fall 2018
- May 2018

## Pocket Guides

1. DOM Manipulation
2. Strings and Numbers

https://courses.gomakethings.com/academy/may-2019/

jekyll

HUGO

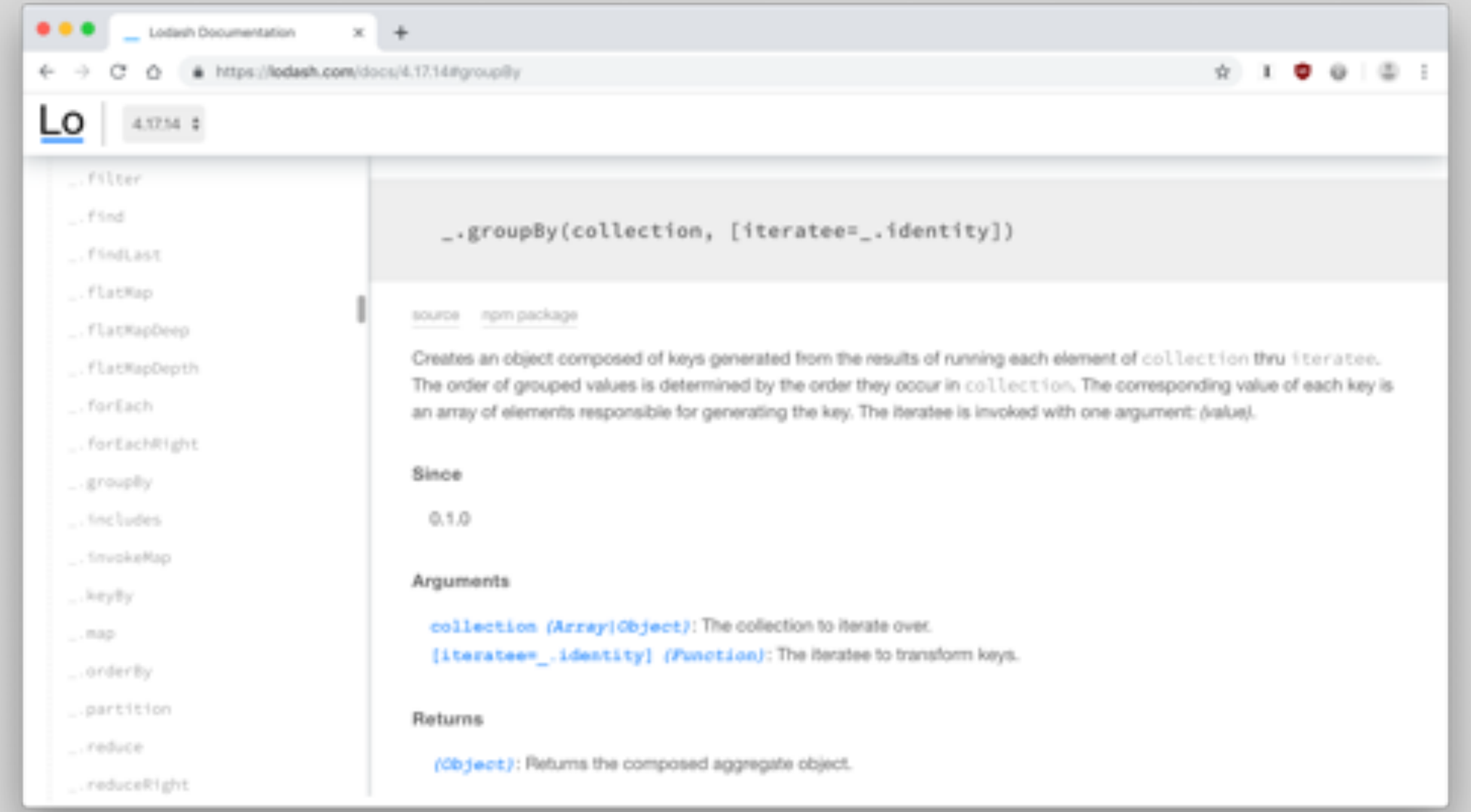
11ty

# What about persistent data?

```
var saveData = function (data) {
    sessionStorage.setItem(
        'myData',
        JSON.stringify(data)
    );
};

var getData = function () {
    var saved = sessionStorage.getItem('myData');
    if (saved) {
        return JSON.parse(saved);
    }
    return {};
};
```

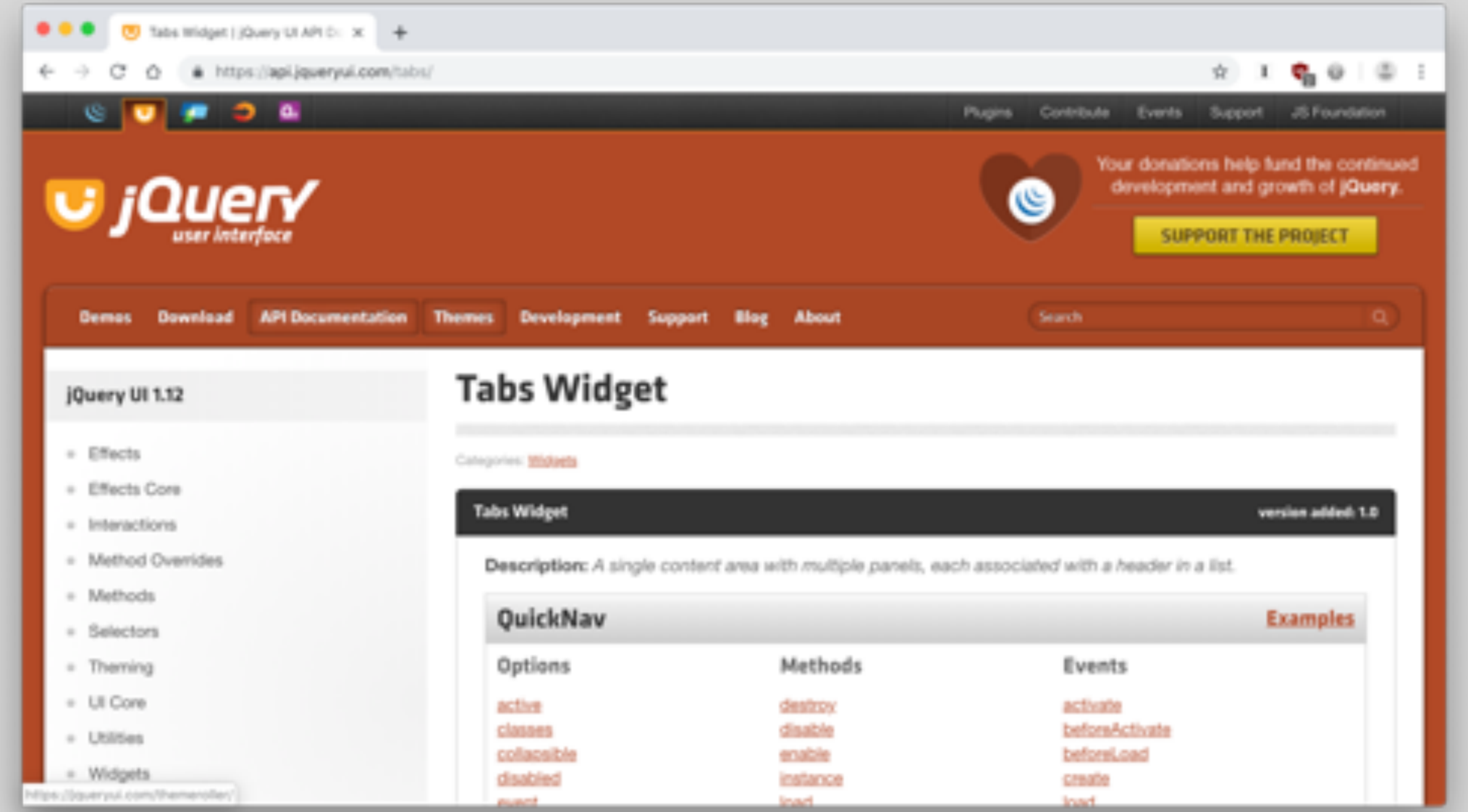
# Lean Web Principle

Small & Modular




*https://lodash.com/docs/4.17.14#groupBy*

```
var groupBy = function (arr, criteria) {
    return arr.reduce(function (obj, item) {

        // Check if the criteria is a function to
        // run on the item or a property of it
        var key = typeof criteria ===
            'function' ? criteria(item) : item[criteria];

        // If the key doesn't exist yet, create it
        if (!obj.hasOwnProperty(key)) {
            obj[key] = [];
        }

        // Push the value to the object
        obj[key].push(item);

        // Return the object to the next item in the loop
        return obj;

    }, {});
};
```




*https://api.jqueryui.com/tabs/*

README.md

# Tabby

Lightweight, accessible vanilla JS toggle tabs.

View the Demo on CodePen →

Getting Started | Styling | Keyboard Navigation | API | What's New | Browser Compatibility | License

**Want to learn how to write your own vanilla JS plugins? Check out my Vanilla JS Pocket Guides or join the Vanilla JS Academy and level-up as a web developer. 🚀**

## Getting Started

Compiled and production-ready code can be found in the `dist` directory. The `src` directory contains development code.

### 1. Include Tabby on your site.

There are two versions of Tabby: the standalone version, and one that comes preloaded with polyfills for the `closest()` and `matches()` methods, which are only supported in newer browsers.

*https://github.com/cferdinandi/tabby*

Svelte • Cybernetically enhanc

hyperHTML Documentation

https://viperhtml.js.org/hyperhtml/documentation/

Documentation

Home

HYPERHTML

- Introduction
  - what is hyperHTML
  - under the hood
  - performance
- Essentials
  - installing
  - HTML highlights
  - hyper(HTML)
  - bind VS wire
  - wire types
  - wire ids
  - self closing tags

## Introduction

### What is hyperHTML?

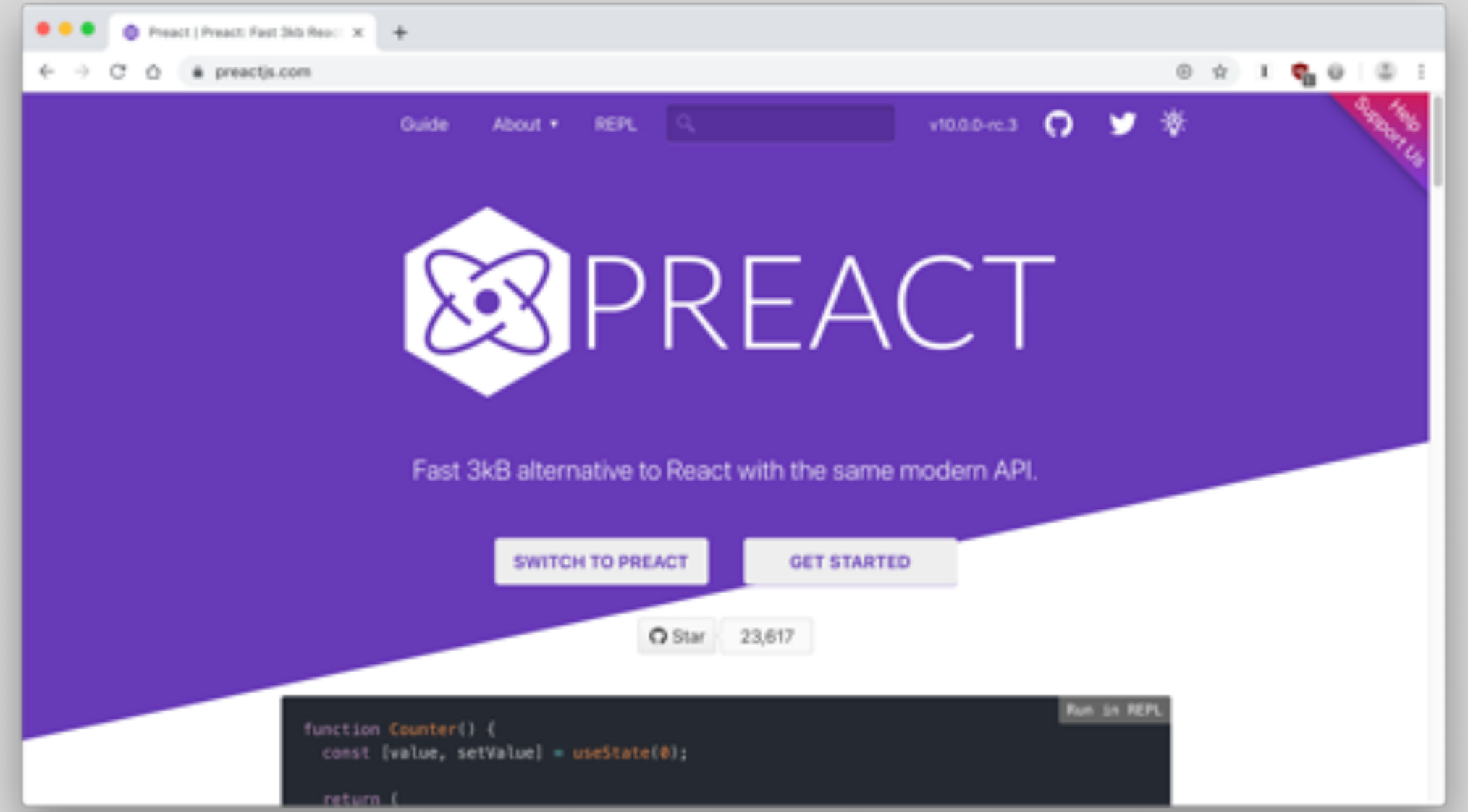
hyperHTML is a DOM & ECMAScript standard compliant, zero-dependency, fully cross-platform library suitable for **declarative** and **reactive** Web Applications.

There is nothing new to learn with hyperHTML other than standard JavaScript, HTML, or CSS.

Its core features are built on top of template literals, where every interpolation is addressed once, as a unique DOM operation, and updated at lightning-speed when needed. Check out the most basic hyperHTML example below, where only the date related content node will change each second.

```
function tick(render) {
  // implicit invoke through template literals
  render`
    <div>
      <h1 id=${page.id}>Hello, world!</h1>
      <!-- dynamic content defined via interpolations -->
      <h2>It is ${new Date().toLocaleTimeString()}.</h2>
    </div>
  `;
}
```

*https://viperhtml.js.org/hyperhtml/documentation/*




*https://preactjs.com/*

README.md

# Reef

A lightweight library for creating reactive, state-based components and UI. Reef is a simpler alternative to React, Vue, and other large frameworks.

Getting Started | State Management | Advanced Components | Demos | What's New? | Browser Compatibility | License

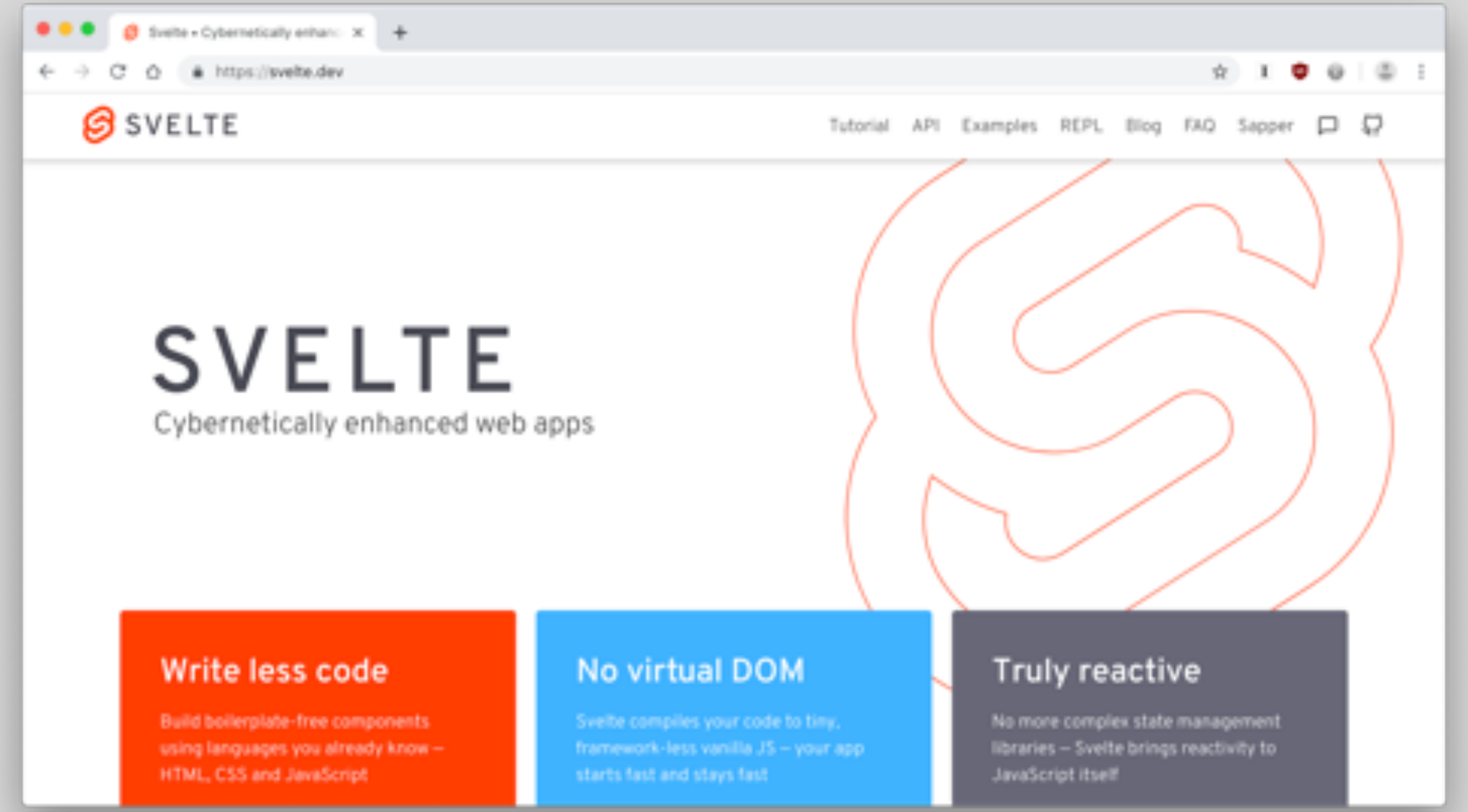
**Features:**

- Weighs just 2.5kb (minified and gzipped) with zero dependencies.
- Simple templating with JavaScript strings or template literals.
- Load it with a `<script>` element—no command line or transpiling required.
- Updates only the parts of the DOM that have changed. Keep those form fields in focus!
- Automatically encodes markup in your data to protect you from cross-site scripting (XSS) attacks.
- Work with native JavaScript methods and browser APIs instead of custom methods and pseudo-languages.
- Supported all the way back to IE9.

Ditch that bloated framework, and make web development fun and simple again!

**Want to learn how to write your own vanilla JS plugins? Check out my Vanilla JS Pocket Guides or join the Vanilla JS Academy and level-up as a web developer. 🚀**

*https://svelte.dev/*




*https://svelte.dev/*

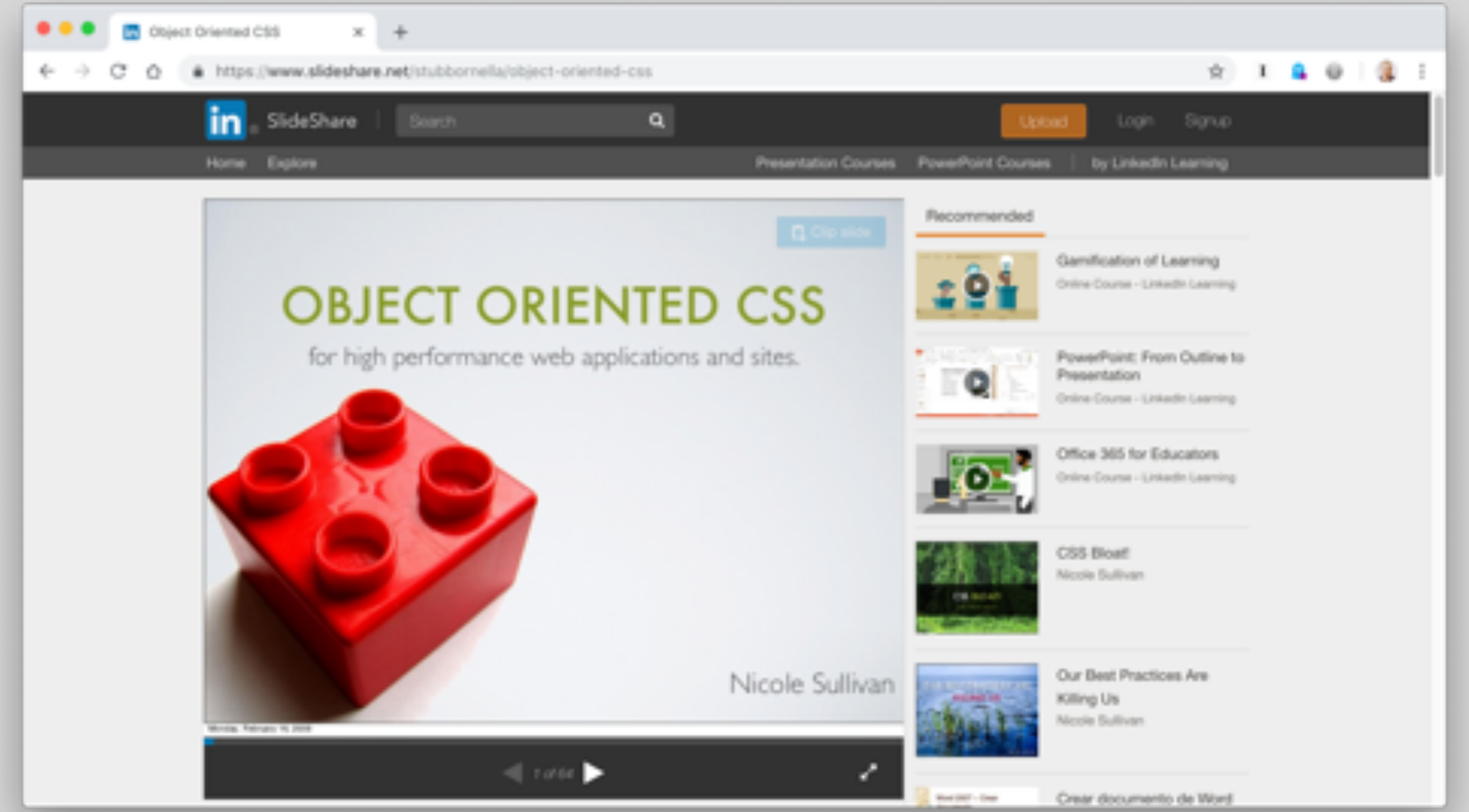
```
var callout = {
    backgroundColor: 'slategray',
    fontSize: '2em'
};

<div class={callout}>
    👋 Hi there!
</div>
```

```
<div class="jzrps nibae lupp mihax">
    👋 Hi there!
</div>
```

# Object-Oriented CSS

*Legos for front end developers*

```
.bg-gray {
    background-color: slategray;
};

.text-large {
    font-size: 2em;
}


<div class="bg-gray text-large">
    👋 Hi there!
</div>
```




*https://www.slideshare.net/stubbornella/object-oriented-css*

# Lean Web Principle

The Web is for Everyone

# The Web Platform

```
if (!Array.prototype.forEach) {
  Array.prototype.forEach =
    function (callback, thisArg) {
      thisArg = thisArg || window;
        for (var i = 0; i < this.length; i++) {
            callback.call(thisArg, this[i], i, this);
        }
    };
}
```

```
if (!Array.prototype.forEach) {
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        }
    };
}
```
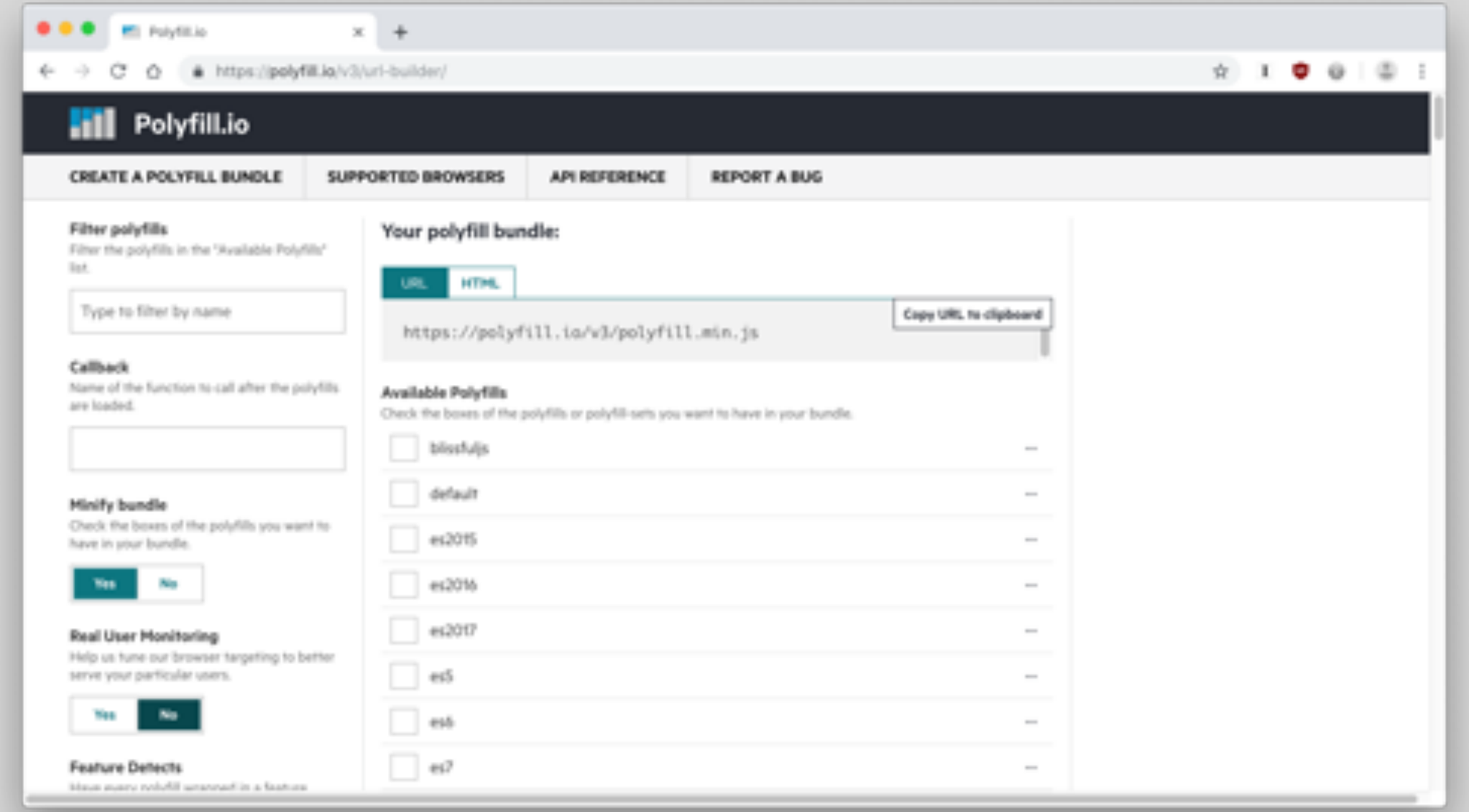




*https://polyfill.io*

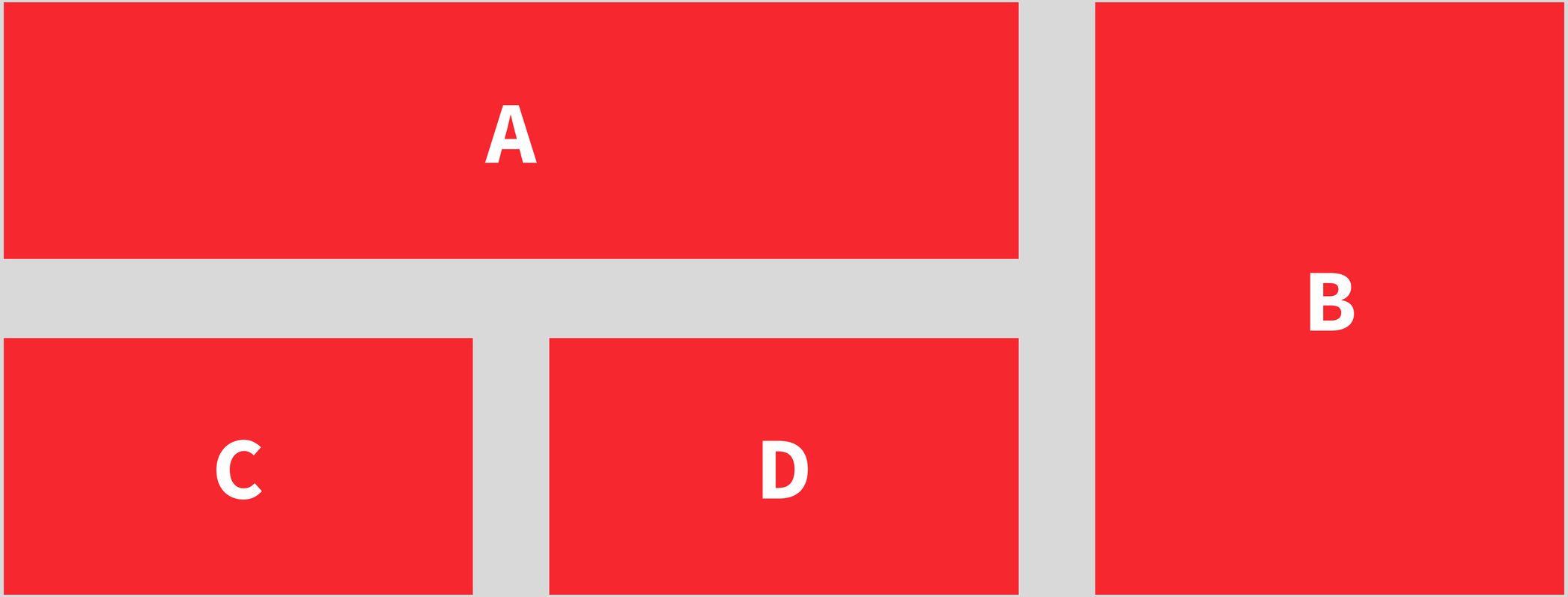
# Build in layers

*(Progressive Enhancement)*

View my projects on GitHub

## My Latest Projects on GitHub

- Smooth Scroll
- Reef
- AtomicJS
- Bouncer


A
B
C
D

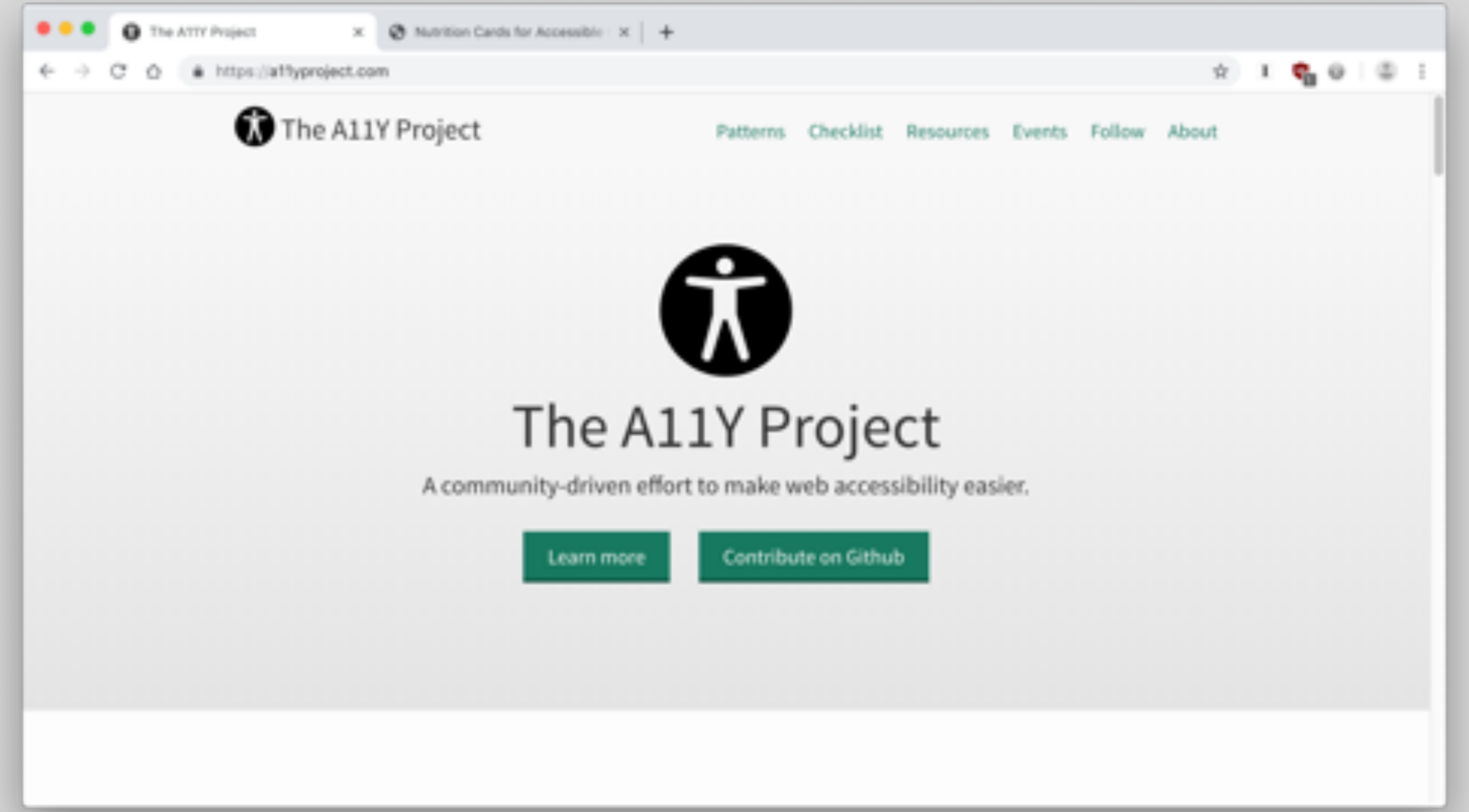
A

B

C

D

# Inclusive Design



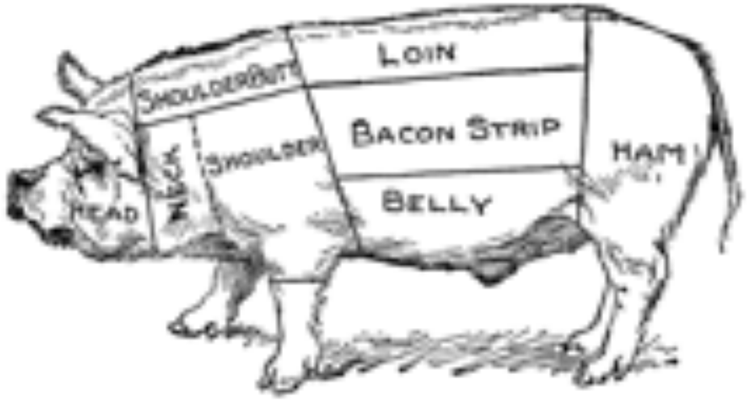

*https://a11yproject.com/*

The A11Y Project | Nutrition Cards for Accessibl

https://davatron5000.github.io/a11y-nutrition-cards/

# Nutrition Cards for Accessible Components

A11Y Nutrition Cards is an attempt to digest and simplify the accessibility expectations when it comes to component authoring. Based on the WAI ARIA Authoring Practices Guide.




- Accordion
- Button
- Disclosure (Show/Hide)
- Menu & Menu Button
- Tabs
- Tooltip

Component Name

## Accordion

Focus Expectations

- Headers should have visible keyboard focus state

Keyboard Expectations

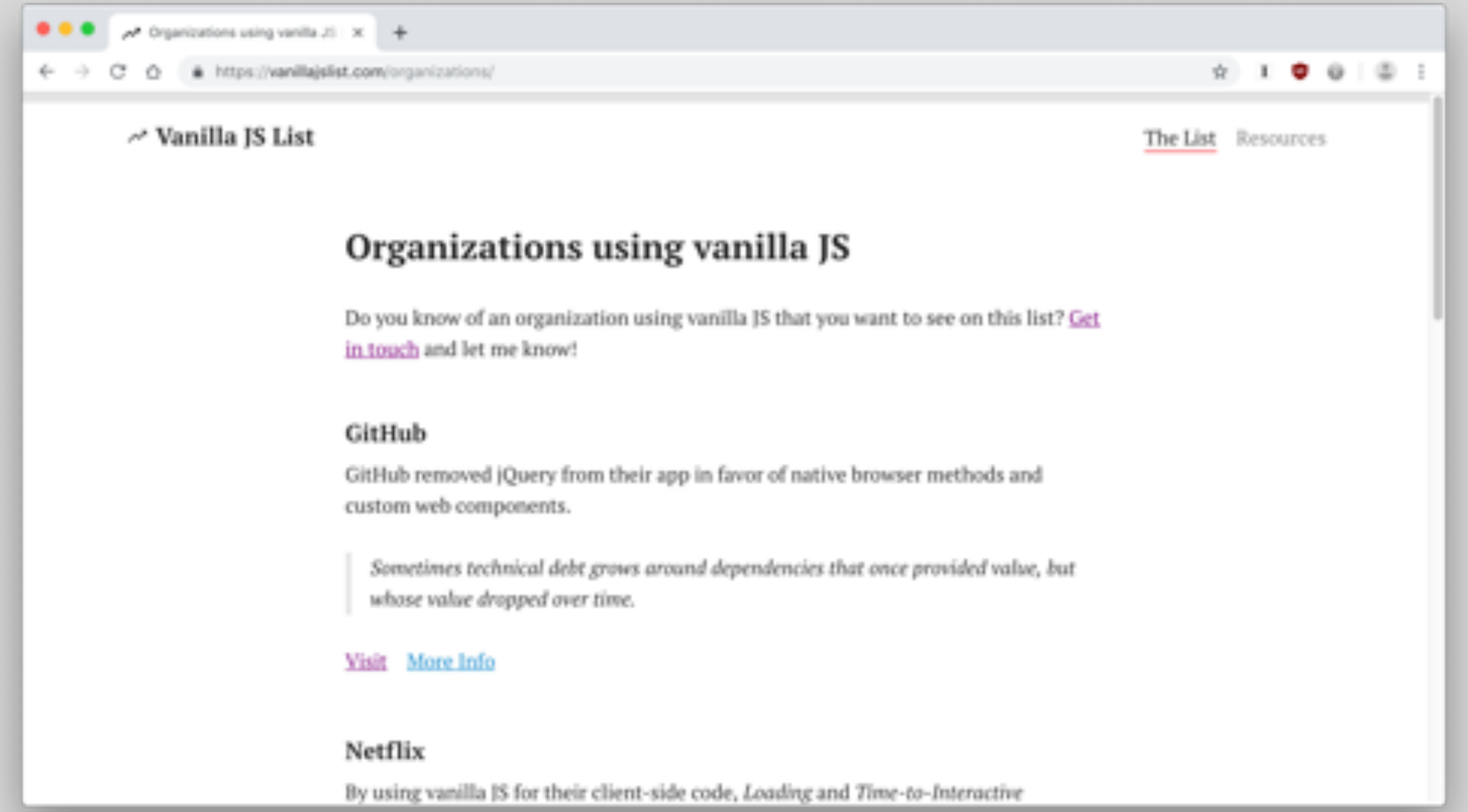
- Enter or Space = Expands/Collapses Panel
- Tab = Move to next focusable element
- Shift + Tab = Move to previous focusable element
- ↑ ↓ = Cycle headers when header focused

*https://davatron5000.github.io/a11y-nutrition-cards/*

Just
xD SAY
NO

# Do any companies actually use Lean Web principles?

*(yes they do!)*




*https://vanillajslist.com*

# GitHub

*https://githubengineering.com/removing-jquery-from-github-frontend/*

Build websites like its 2005.

— Keith Cirkel

# Netflix

*https://medium.com/dev-channel/a-netflix-web-performance-case-study-c0bcde26a9d9*

# MeetSpace

*https://www.smashingmagazine.com/2017/05/why-no-framework/*

4

# Wrapping Up

# Lean Web Principles

1. Embrace the Platform
2. Small & Modular
3. The Web is for Everyone

# Become a dev dinosaur

# A simpler, faster world wide web

Daily Developer Tips | Go Mak

https://gomakethings.com/articles/

Go Make Things

About Daily Tips Learn JS

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