Testing Web Accessibility

How to find accessibility vulnerabilities in your website

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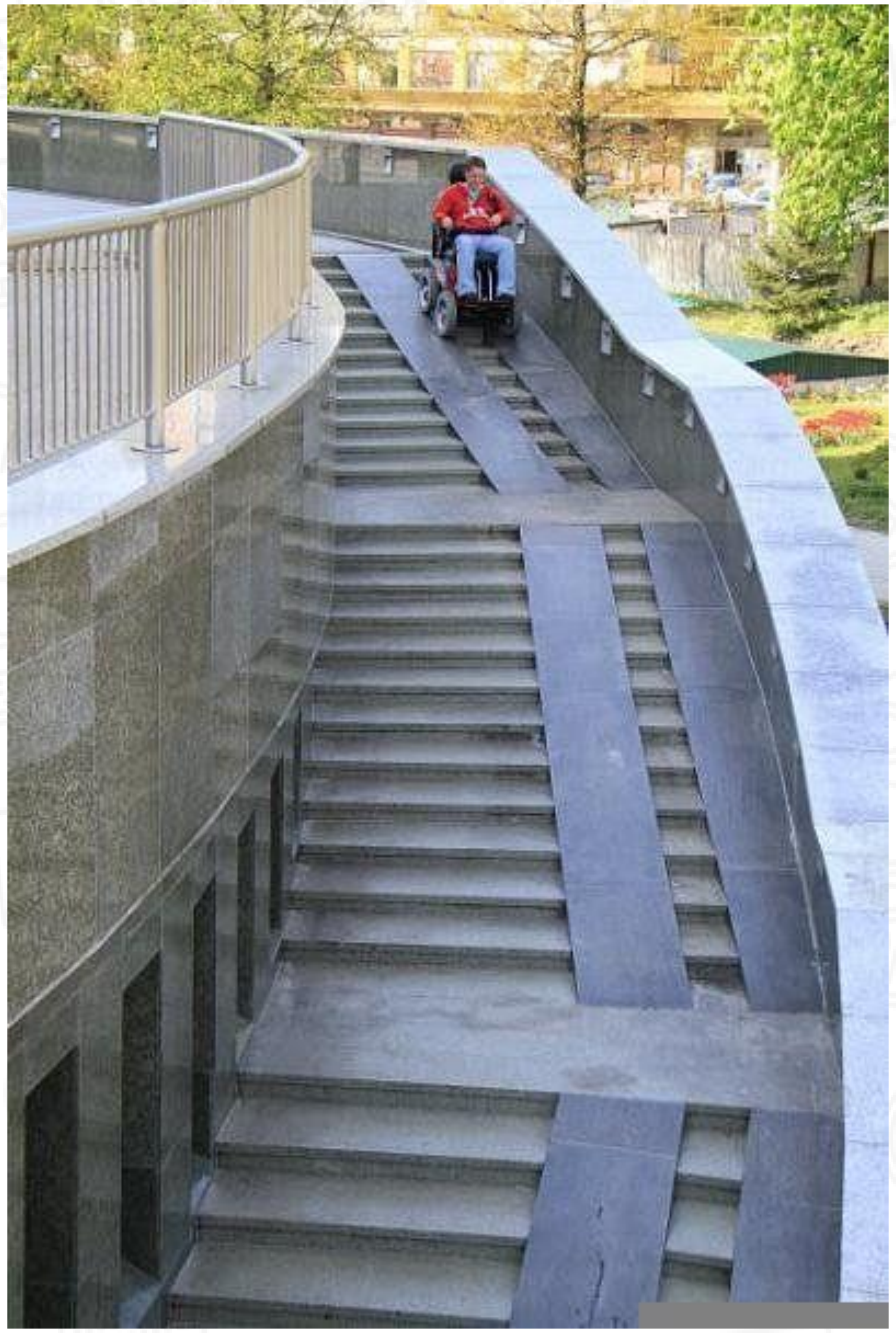
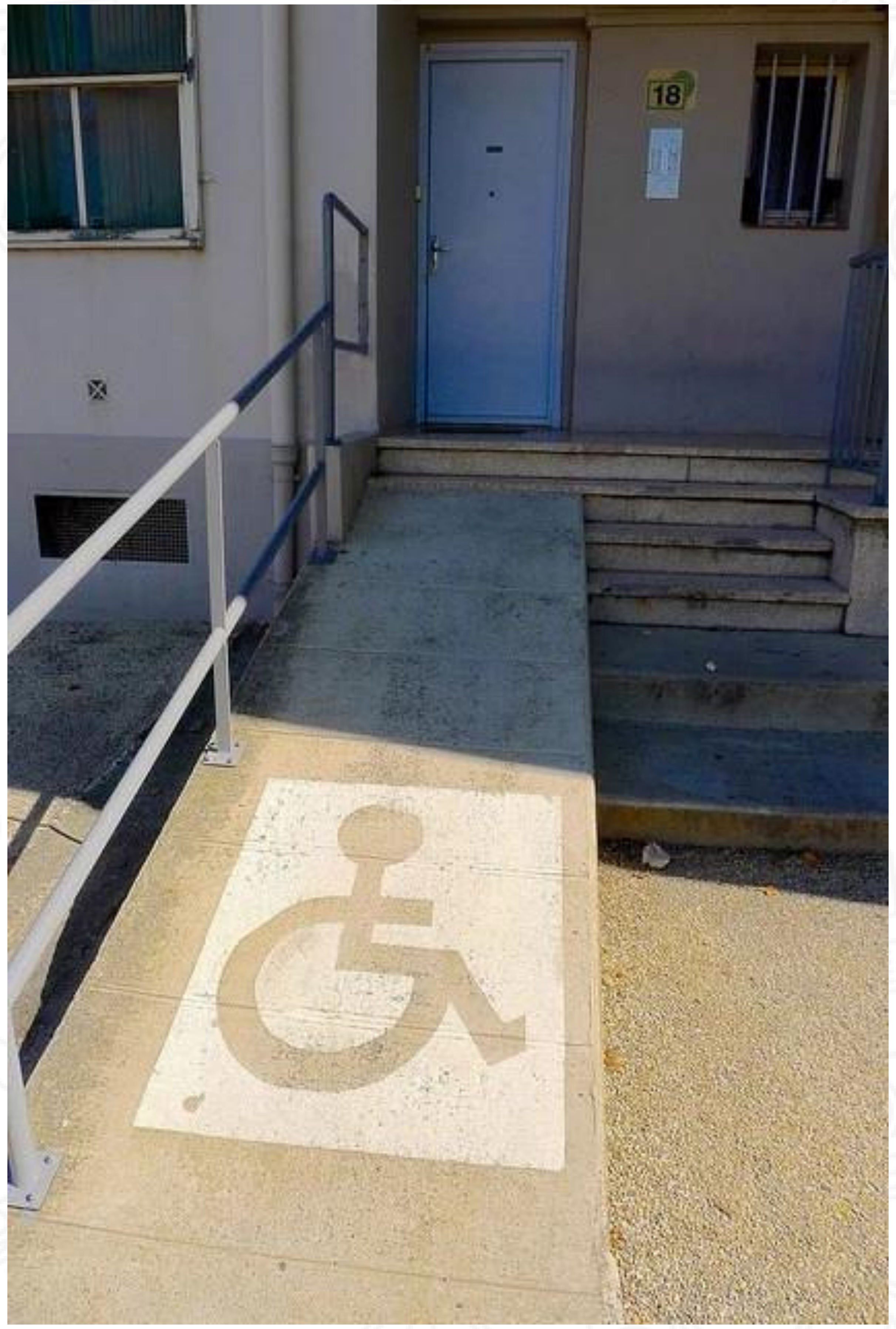
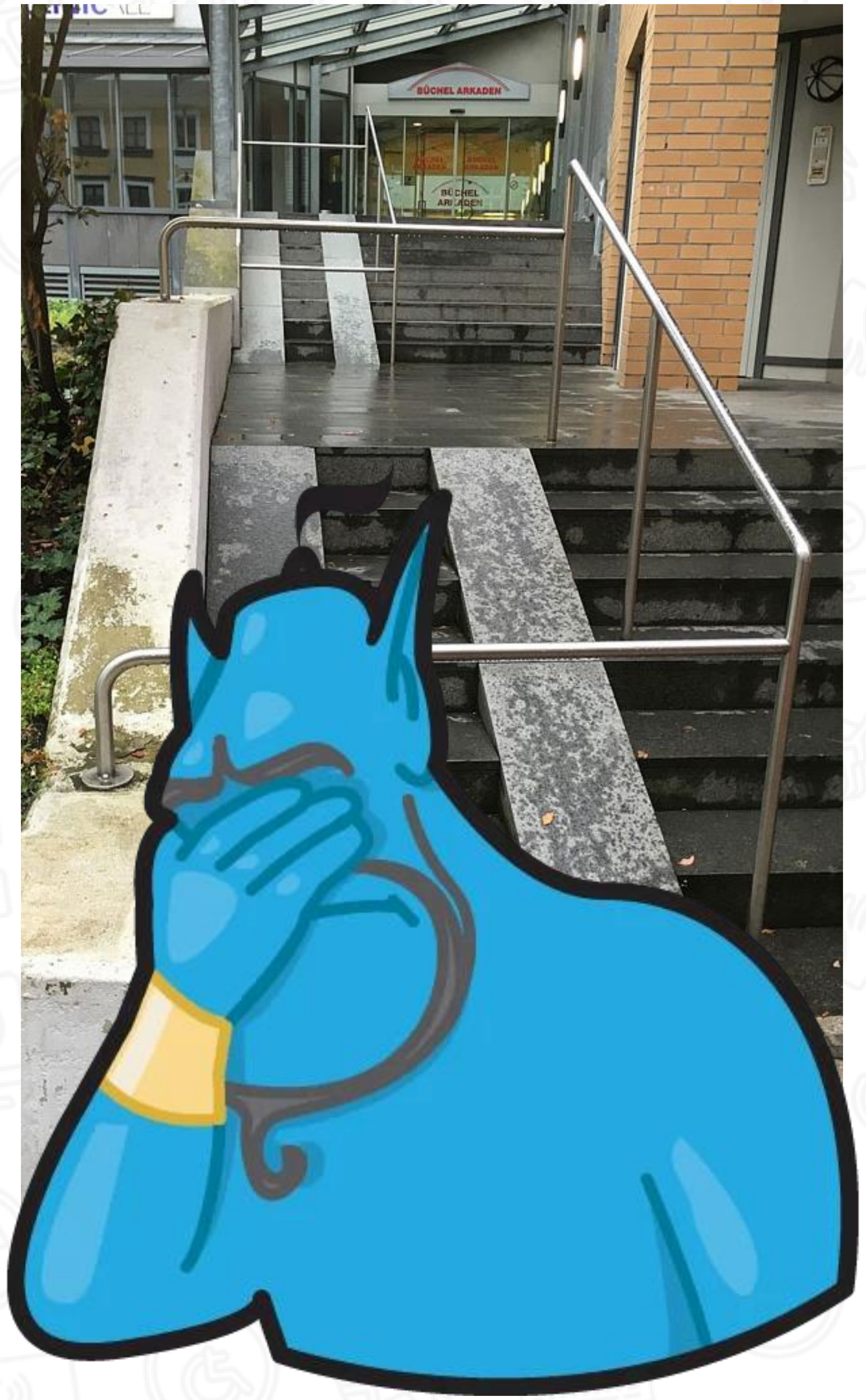
Accessibility (a11y)

Accessibility (a11y)







Accessibility (a11y)

Web Accessibility (a11y)

Web Accessibility (a11y)

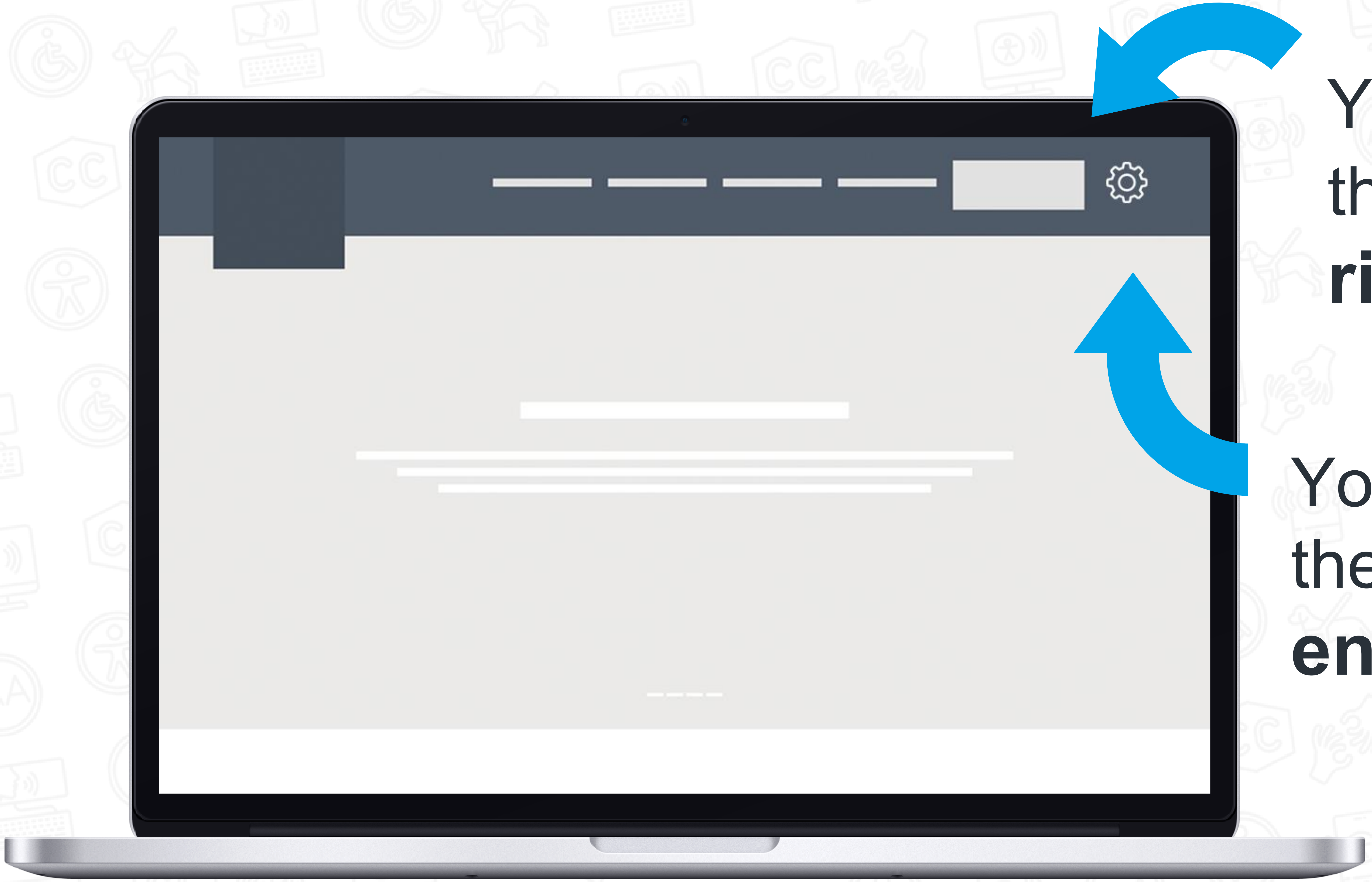
The Web is fundamentally designed to work for **all people**, whatever their hardware, software, language, location, or ability. When the Web meets this goal, it is **accessible** to people with a diverse range of hearing, movement, sight, and cognitive ability.

Accessibility is essential for developers and organizations that want to create high-quality websites and web tools, and **not exclude** people from using their products and services.

Web accessibility means that websites, tools, and technologies are designed and developed so that **people with disabilities can use them**.

Source: W3C (https://www.w3.org/WAI/fundamentals/accessibility-intro/es#what)

Web Accessibility (a11y)



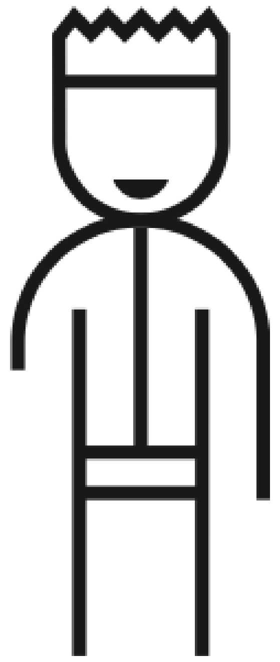
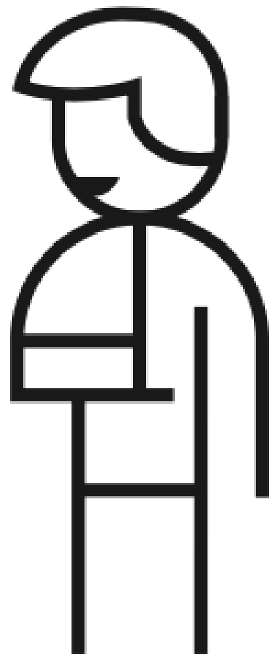
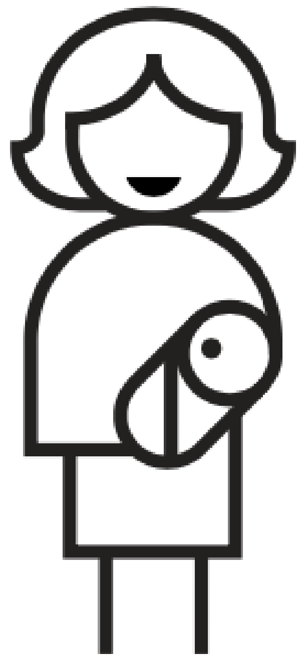
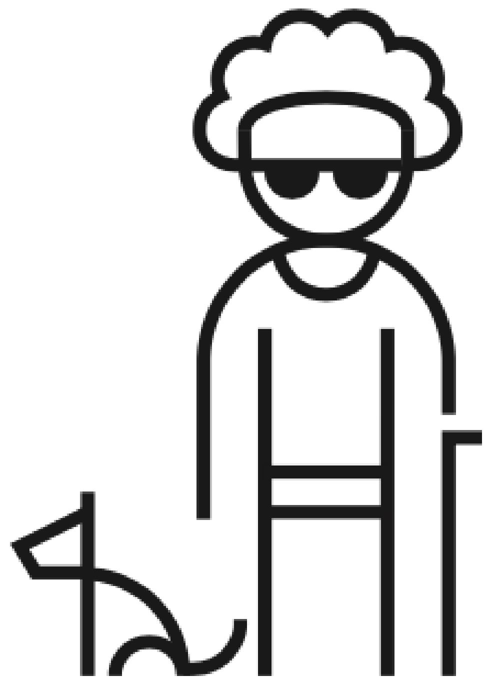
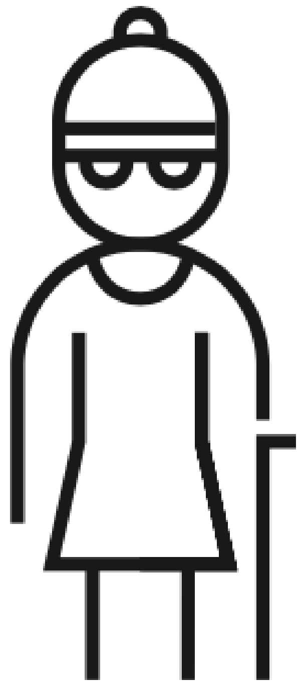
You need to click on the button in the **top right** corner.

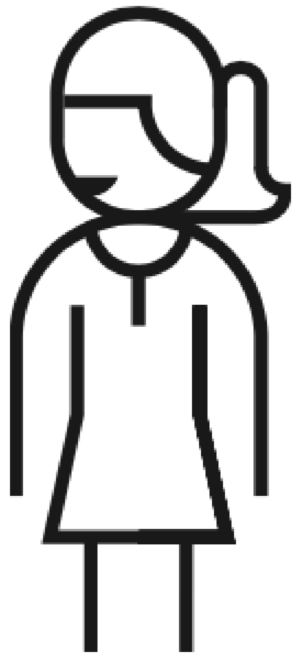
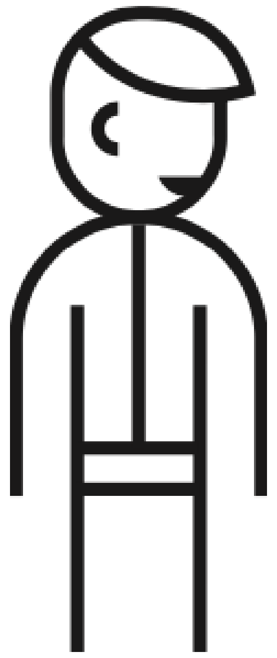
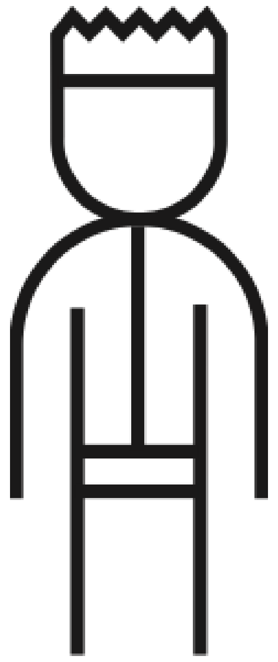
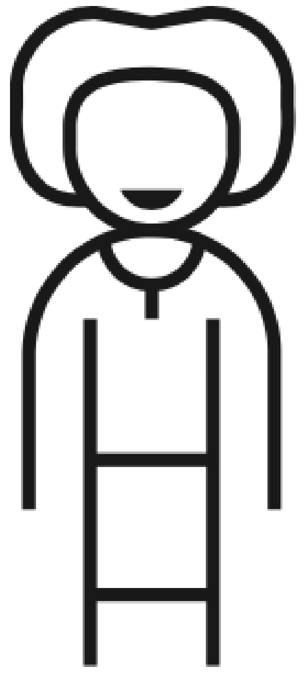
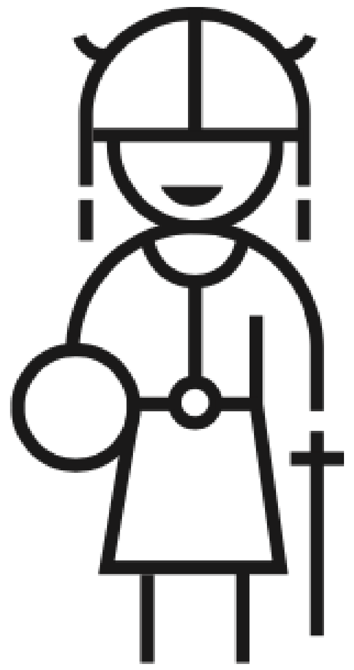
You need to click on the button with the **engine icon**.

Types of impairments

Web Accessibility != visually impaired people

Types of impairment

	Permanent	Temporary	Situational
Touch	 One arm	 Arm injury	 New parent
See	 Blind	 Cataract	 Distracted driver

	Permanent	Temporary	Situational
Hear	 Deaf	 Ear infection	 Bartender
Speak	 Non-verbal	 Laryngitis	 Heavy accent

Source: https://www.microsoft.com/design#toolkit

Web Accessibility (a11y)

2021 7.9 billion

Globally more than

2,2 million people

have a near or distance vision impairment

Source: https://www.who.int/en/news-room/fact-sheets/detail/blindness-and-visual-impairment

Testing Web Accessibility

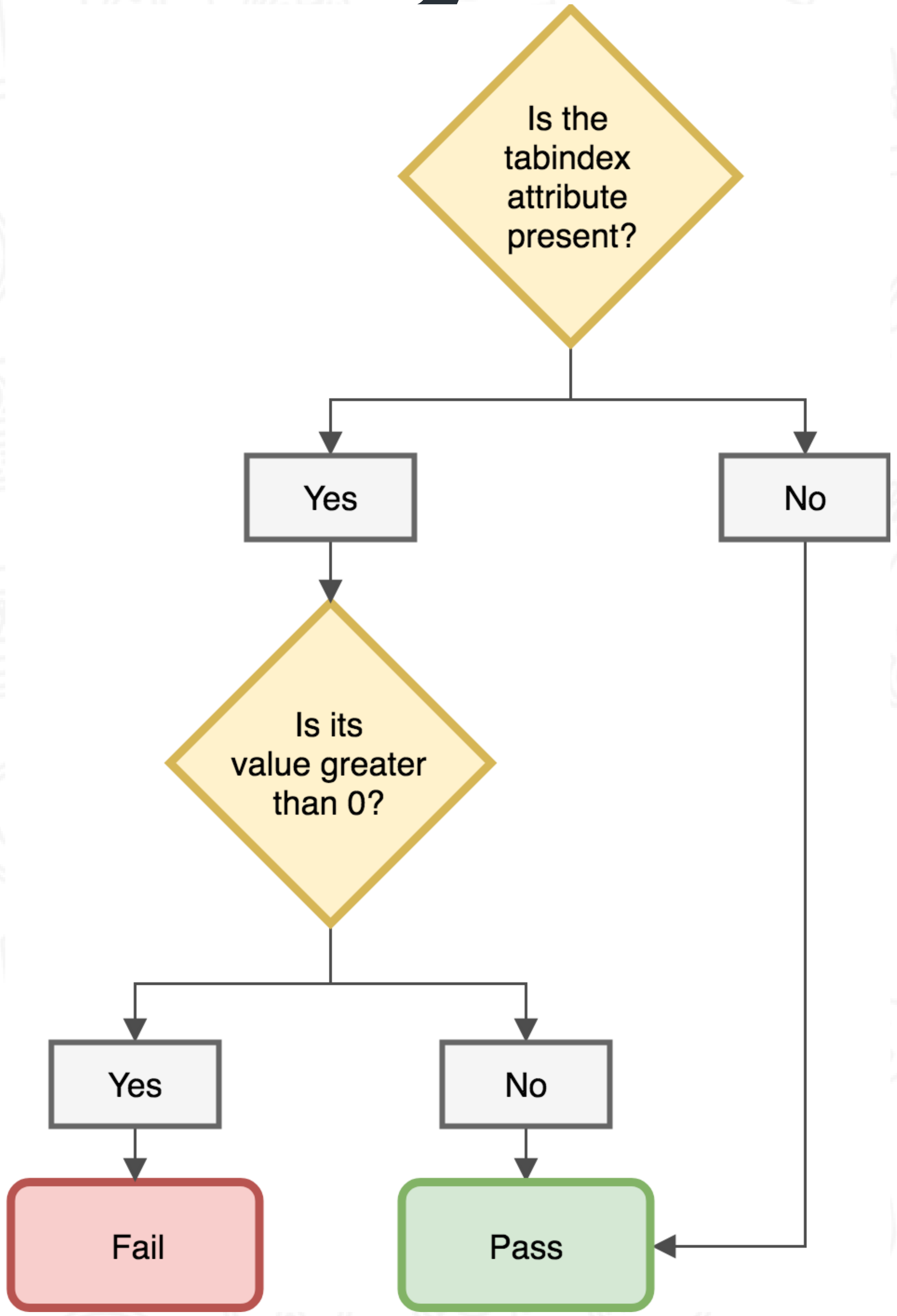
How to find accessibility vulnerabilities in your website

Testing Web Accessibility

Automated a11y tests can free up your QA team from manual testing every part of your application, but they can't automatically make your site accessible.

Use automated a11y tests as one step of a **larger testing process**.

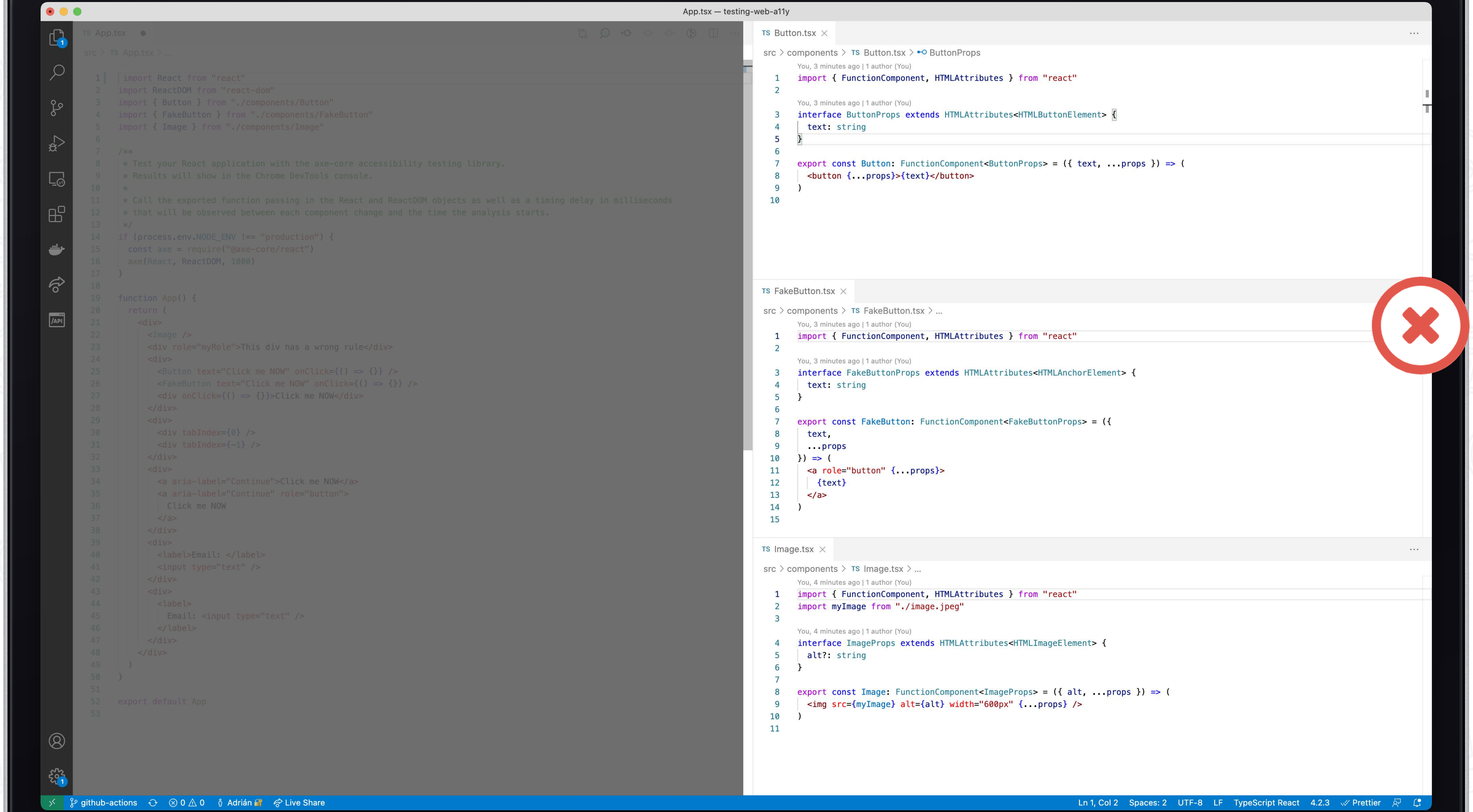
Don't forget that only **20% to 50%** of all accessibility issues can automatically be detected


Is the tabindex attribute present?
Yes
No
Is its value greater than 0?
Yes
No
Fail
Pass

Source: https://www.smashingmagazine.com/2018/09/importance-manual-accessibility-testing/

Test your code while you develop

I’ve created a simple React application with 3 small components and a bunch of errors in the HTML



App.tsx

```tsx
import React from "react"
import ReactDOM from "react-dom"
import { Button } from "./components/Button"
import { FakeButton } from "./components/FakeButton"
import { Image } from "./components/Image"

/**
 * Test your React application with the axe-core accessibility testing library.
 * Results will show in the Chrome DevTools console.
 *
 * Call the exported function passing in the React and ReactDOM objects as well as a timing delay in milliseconds
 * that will be observed between each component change and the time the analysis starts.
 */
if (process.env.NODE_ENV !== "production") {
  const axe = require("@axe-core/react")
  axe(React, ReactDOM, 1000)
}

function App() {
  return (
    <div>
      <Image />
      <div role="myRole">This div has a wrong rule</div>
      <div>
        <Button text="Click me NOW" onClick={() => {}} />
        <FakeButton text="Click me NOW" onClick={() => {}} />
        <div onClick={() => {}}>Click me NOW</div>
      </div>
      <div>
        <div tabIndex={0} />
        <div tabIndex={-1} />
      </div>
      <div>
        <a aria-label="Continue">Click me NOW</a>
        <a aria-label="Continue" role="button">
          Click me NOW
        </a>
      </div>
      <div>
        <label>Email: </label>
        <input type="text" />
      </div>
      <div>
        <label>
          Email: <input type="text" />
        </label>
      </div>
    </div>
  )
}

export default App
```

Button.tsx

```tsx
You, 3 minutes ago | 1 author (You)
import { FunctionComponent, HTMLAttributes } from "react"

You, 3 minutes ago | 1 author (You)
interface ButtonProps extends HTMLAttributes<HTMLButtonElement> {
  text: string
}

export const Button: FunctionComponent<ButtonProps> = ({ text, ...props }) => (
  <button {...props}>{text}</button>
)
```

FakeButton.tsx

```tsx
You, 3 minutes ago | 1 author (You)
import { FunctionComponent, HTMLAttributes } from "react"

You, 3 minutes ago | 1 author (You)
interface FakeButtonProps extends HTMLAttributes<HTMLAnchorElement> {
  text: string
}

export const FakeButton: FunctionComponent<FakeButtonProps> = ({
  text,
  ...props
}) => (
  <a role="button" {...props}>
    {text}
  </a>
)
```

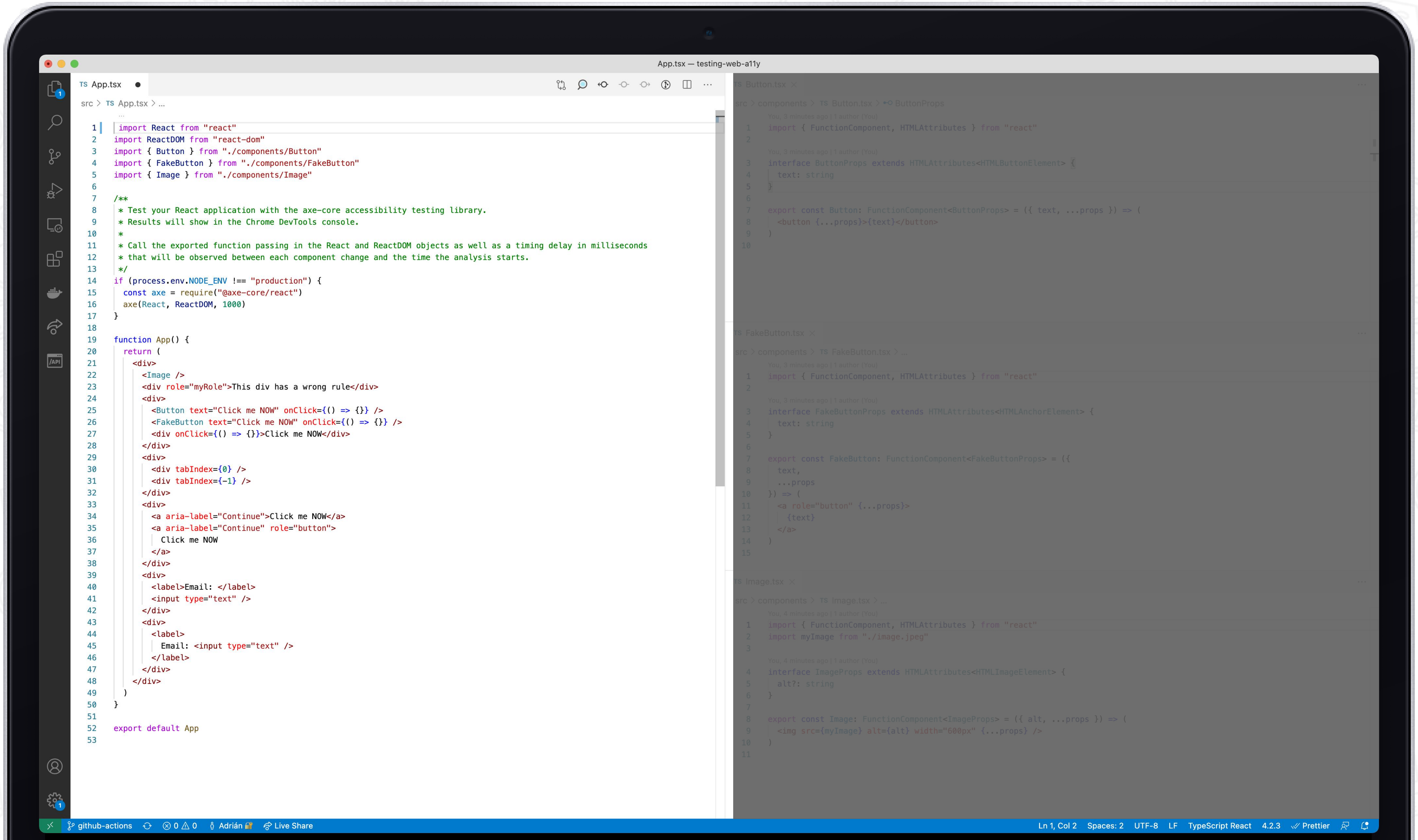
Image.tsx

```tsx
You, 4 minutes ago | 1 author (You)
import { FunctionComponent, HTMLAttributes } from "react"
import myImage from "./image.jpeg"

You, 4 minutes ago | 1 author (You)
interface ImageProps extends HTMLAttributes<HTMLImageElement> {
  alt?: string
}

export const Image: FunctionComponent<ImageProps> = ({ alt, ...props }) => (
  <img src={myImage} alt={alt} width="600px" {...props} />
)
```

I’ve created a simple React application with 3 small components and a bunch of errors in the HTML


App.tsx — testing-web-a11y
App.tsx
src > App.tsx > ...
Button.tsx
src > components > Button.tsx > ButtonProps
FakeButton.tsx
src > components > FakeButton.tsx > ...
Image.tsx
src > components > Image.tsx > ...
You, 3 minutes ago | 1 author (You)
You, 4 minutes ago | 1 author (You)
github-actions
⊗ 0 ⚠ 0
Adrián
Live Share
Ln 1, Col 2
Spaces: 2
UTF-8
LF
TypeScript React
4.2.3
Prettier

```tsx
import React from "react"
import ReactDOM from "react-dom"
import { Button } from "./components/Button"
import { FakeButton } from "./components/FakeButton"
import { Image } from "./components/Image"

/**
 * Test your React application with the axe-core accessibility testing library.
 * Results will show in the Chrome DevTools console.
 *
 * Call the exported function passing in the React and ReactDOM objects as well as a timing delay in milliseconds
 * that will be observed between each component change and the time the analysis starts.
 */
if (process.env.NODE_ENV !== "production") {
  const axe = require("@axe-core/react")
  axe(React, ReactDOM, 1000)
}

function App() {
  return (
    <div>
      <Image />
      <div role="myRole">This div has a wrong rule</div>
      <div>
        <Button text="Click me NOW" onClick={() => {}} />
        <FakeButton text="Click me NOW" onClick={() => {}} />
        <div onClick={() => {}}>Click me NOW</div>
      </div>
      <div>
        <div tabIndex={0} />
        <div tabIndex={-1} />
      </div>
      <div>
        <a aria-label="Continue">Click me NOW</a>
        <a aria-label="Continue" role="button">
          Click me NOW
        </a>
      </div>
      <div>
        <label>Email: </label>
        <input type="text" />
      </div>
      <div>
        <label>
          Email: <input type="text" />
        </label>
      </div>
    </div>
  )
}

export default App
```

```tsx
import { FunctionComponent, HTMLAttributes } from "react"

interface ButtonProps extends HTMLAttributes<HTMLButtonElement> {
  text: string
}

export const Button: FunctionComponent<ButtonProps> = ({ text, ...props }) => (
  <button {...props}>{text}</button>
)
```

```tsx
import { FunctionComponent, HTMLAttributes } from "react"

interface FakeButtonProps extends HTMLAttributes<HTMLAnchorElement> {
  text: string
}

export const FakeButton: FunctionComponent<FakeButtonProps> = ({
  text,
  ...props
}) => (
  <a role="button" {...props}>
    {text}
  </a>
)
```

```tsx
import { FunctionComponent, HTMLAttributes } from "react"
import myImage from "./image.jpeg"

interface ImageProps extends HTMLAttributes<HTMLImageElement> {
  alt?: string
}

export const Image: FunctionComponent<ImageProps> = ({ alt, ...props }) => (
  <img src={myImage} alt={alt} width="600px" {...props} />
)
```

Test your code while you develop

- @axe-core/react
  https://github.com/dequelabs/axe-core-npm/tree/develop/packages/react
  - vue-axe
    https://axe.vue-a11y.com/
  - @axe-core/webdriverjs + protractor
    https://github.com/dequelabs/axe-core-npm/tree/develop/packages/webdriverjs
- eslint-plugin-jsx-a11y
  https://github.com/evcohen/eslint-plugin-jsx-a11y

@axe-core/react

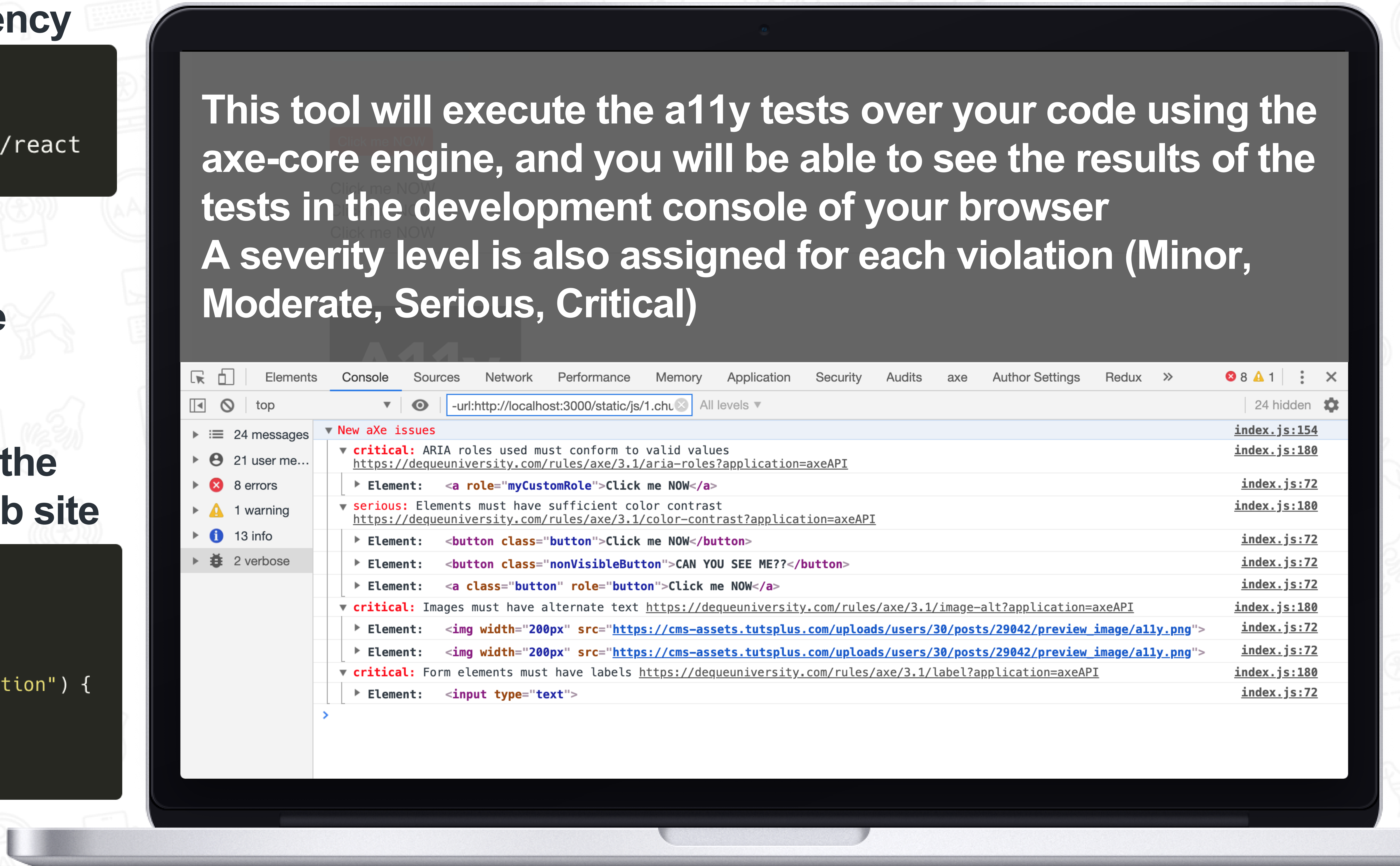
Install it as a dev dependency

```
npm install --save-dev @axe-core/react
```

Make sure you import the library only if it is a non-production environment, because you will expose the vulnerabilities of your web site

```
var React = require('react');
var ReactDOM = require('react-dom');


if (process.env.NODE_ENV !== "production") {
  var axe = require("react-axe");
  axe(React, ReactDOM, 1000);
}
```



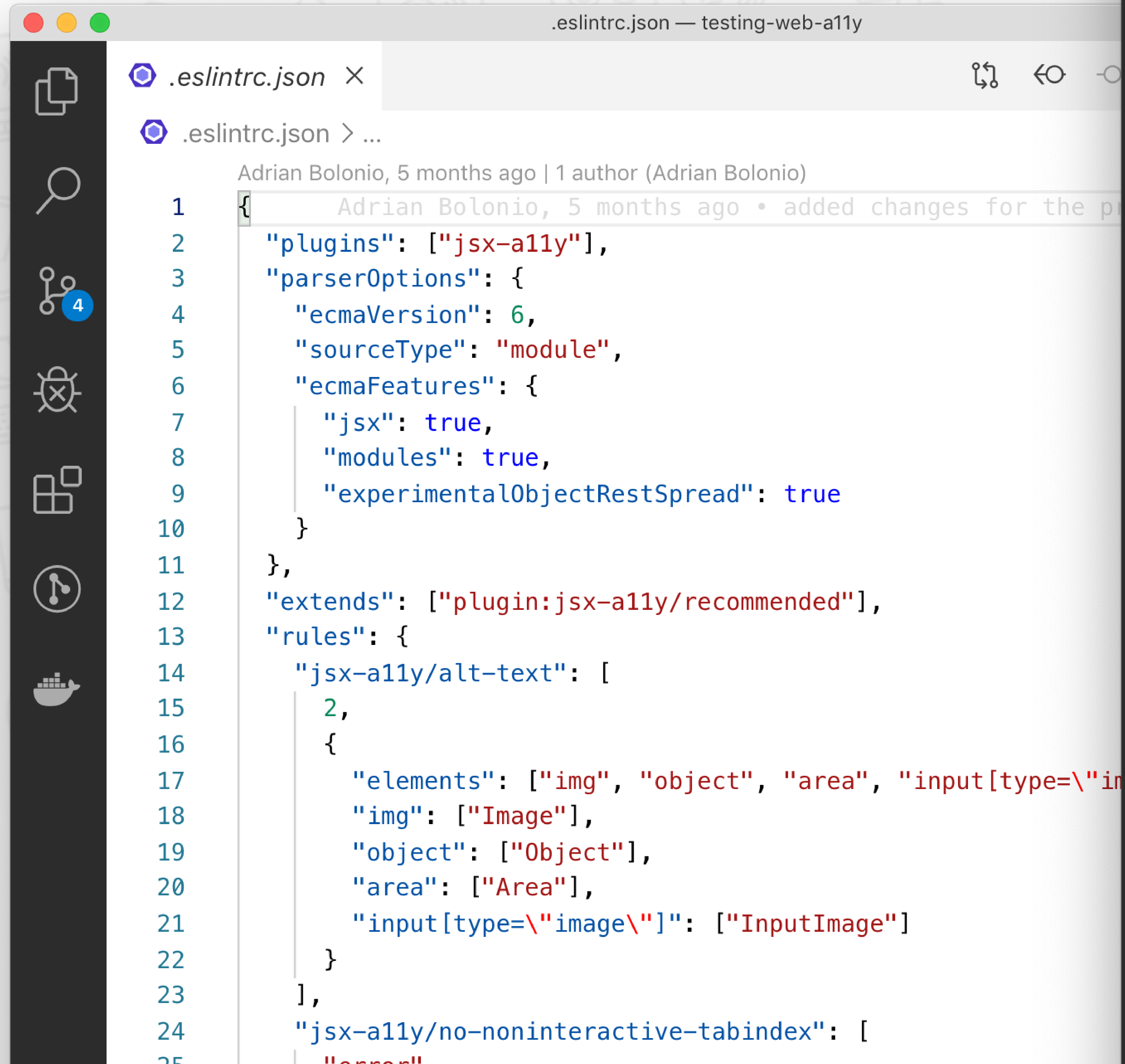
This tool will execute the a11y tests over your code using the axe-core engine, and you will be able to see the results of the tests in the development console of your browser

A severity level is also assigned for each violation (Minor, Moderate, Serious, Critical)

```
▼ New aXe issues                                                                                      index.js:154
  ▼ critical: ARIA roles used must conform to valid values                                            index.js:180
    https://dequeuniversity.com/rules/axe/3.1/aria-roles?application=axeAPI
    ▶ Element:   <a role="myCustomRole">Click me NOW</a>                                               index.js:72
  ▼ serious: Elements must have sufficient color contrast                                             index.js:180
    https://dequeuniversity.com/rules/axe/3.1/color-contrast?application=axeAPI
    ▶ Element:   <button class="button">Click me NOW</button>                                          index.js:72
    ▶ Element:   <button class="nonVisibleButton">CAN YOU SEE ME??</button>                            index.js:72
    ▶ Element:   <a class="button" role="button">Click me NOW</a>                                      index.js:72
  ▼ critical: Images must have alternate text https://dequeuniversity.com/rules/axe/3.1/image-alt?application=axeAPI   index.js:180
    ▶ Element:   <img width="200px" src="https://cms-assets.tutsplus.com/uploads/users/30/posts/29042/preview_image/a1ly.png">   index.js:72
    ▶ Element:   <img width="200px" src="https://cms-assets.tutsplus.com/uploads/users/30/posts/29042/preview_image/a1ly.png">   index.js:72
  ▼ critical: Form elements must have labels https://dequeuniversity.com/rules/axe/3.1/label?application=axeAPI        index.js:180
    ▶ Element:   <input type="text">                                                                   index.js:72
>
```

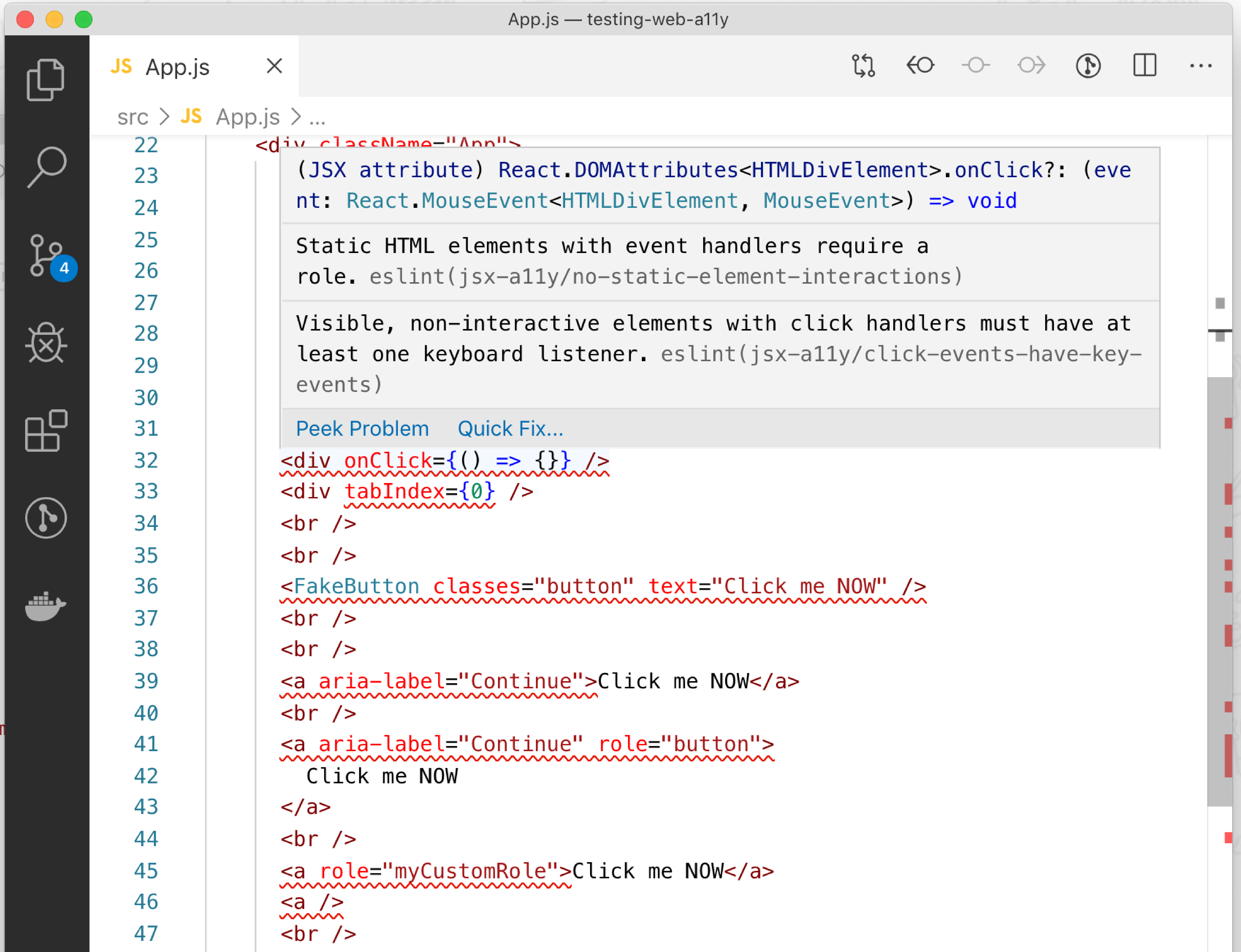
eslint-plugin-jsx-a11y

If you use eslinter, you can include the a11y rules in the .eslintrc.json file adding the eslint-plugin-jsx-a11


.eslintrc.json — testing-web-a11y
.eslintrc.json
.eslintrc.json > ...
Adrian Bolonio, 5 months ago | 1 author (Adrian Bolonio)

```
{    Adrian Bolonio, 5 months ago • added changes for the p
  "plugins": ["jsx-a11y"],
  "parserOptions": {
    "ecmaVersion": 6,
    "sourceType": "module",
    "ecmaFeatures": {
      "jsx": true,
      "modules": true,
      "experimentalObjectRestSpread": true
    }
  },
  "extends": ["plugin:jsx-a11y/recommended"],
  "rules": {
    "jsx-a11y/alt-text": [
      2,
      {
        "elements": ["img", "object", "area", "input[type=\"in
        "img": ["Image"],
        "object": ["Object"],
        "area": ["Area"],
        "input[type=\"image\"]": ["InputImage"]
      }
    ],
    "jsx-a11y/no-noninteractive-tabindex": [
      "error",
```

The linting issues will be displayed directly in the code editor



```
<div className="App">
```

(JSX attribute) React.DOMAttributes<HTMLDivElement>.onClick?: (event: React.MouseEvent<HTMLDivElement, MouseEvent>) => void

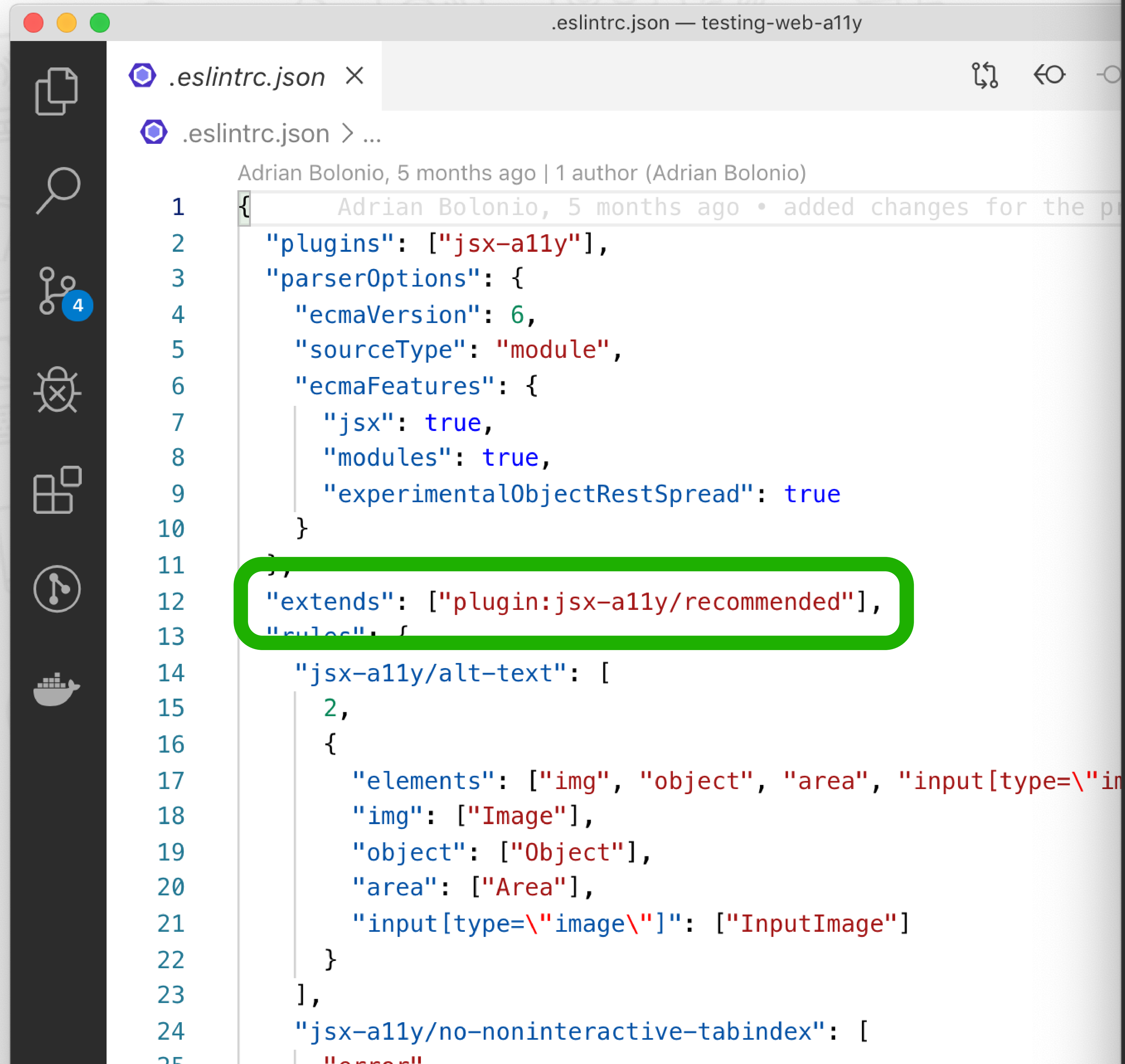
Static HTML elements with event handlers require a role. eslint(jsx-a11y/no-static-element-interactions)

Visible, non-interactive elements with click handlers must have at least one keyboard listener. eslint(jsx-a11y/click-events-have-key-events)

```
<div onClick={() => {}} />
<div tabIndex={0} />
<br />
<br />
<FakeButton classes="button" text="Click me NOW" />
<br />
<br />
<a aria-label="Continue">Click me NOW</a>
<br />
<a aria-label="Continue" role="button">
  Click me NOW
</a>
<br />
<a role="myCustomRole">Click me NOW</a>
<a />
<br />
```

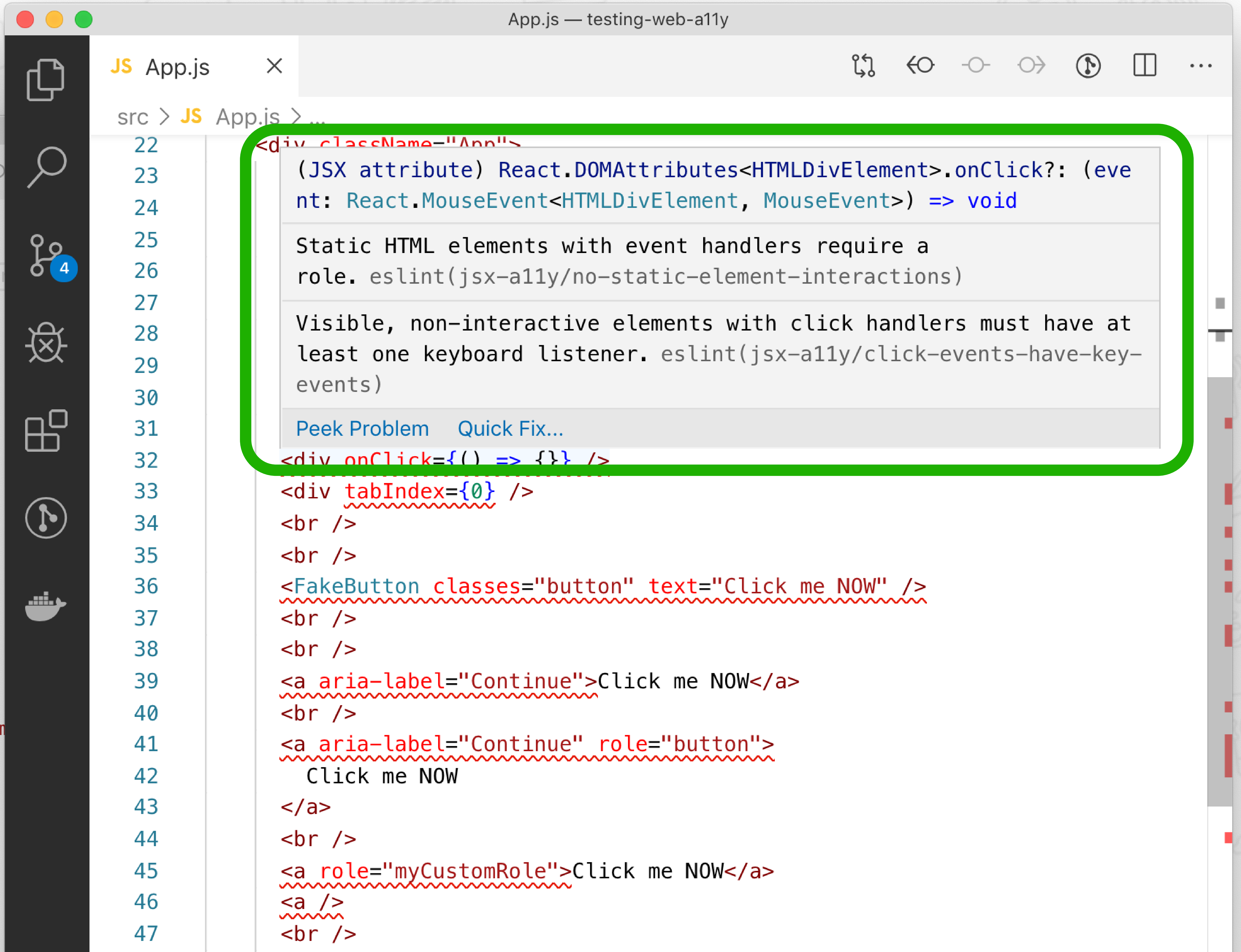
eslint-plugin-jsx-a11y

If you use eslinter, you can include the a11y rules in the .eslintrc.json file adding the eslint-plugin-jsx-a11


.eslintrc.json — testing-web-a11y
.eslintrc.json
.eslintrc.json > ...
Adrian Bolonio, 5 months ago | 1 author (Adrian Bolonio)

```
{    Adrian Bolonio, 5 months ago • added changes for the p
  "plugins": ["jsx-a11y"],
  "parserOptions": {
    "ecmaVersion": 6,
    "sourceType": "module",
    "ecmaFeatures": {
      "jsx": true,
      "modules": true,
      "experimentalObjectRestSpread": true
    }
  },
  "extends": ["plugin:jsx-a11y/recommended"],
  "rules": {
    "jsx-a11y/alt-text": [
      2,
      {
        "elements": ["img", "object", "area", "input[type=\"in
        "img": ["Image"],
        "object": ["Object"],
        "area": ["Area"],
        "input[type=\"image\"]": ["InputImage"]
      }
    ],
    "jsx-a11y/no-noninteractive-tabindex": [
      "error",
```

The linting issues will be displayed directly in the code editor



```
(JSX attribute) React.DOMAttributes<HTMLDivElement>.onClick?: (eve
nt: React.MouseEvent<HTMLDivElement, MouseEvent>) => void
```

Static HTML elements with event handlers require a role. eslint(jsx-a11y/no-static-element-interactions)

Visible, non-interactive elements with click handlers must have at least one keyboard listener. eslint(jsx-a11y/click-events-have-key-events)

```
<div className="App">
  <div onClick={() => {}} />
  <div tabIndex={0} />
  <br />
  <br />
  <FakeButton classes="button" text="Click me NOW" />
  <br />
  <br />
  <a aria-label="Continue">Click me NOW</a>
  <br />
  <a aria-label="Continue" role="button">
    Click me NOW
  </a>
  <br />
  <a role="myCustomRole">Click me NOW</a>
  <a />
  <br />
```

eslint-plugin-jsx-a11y

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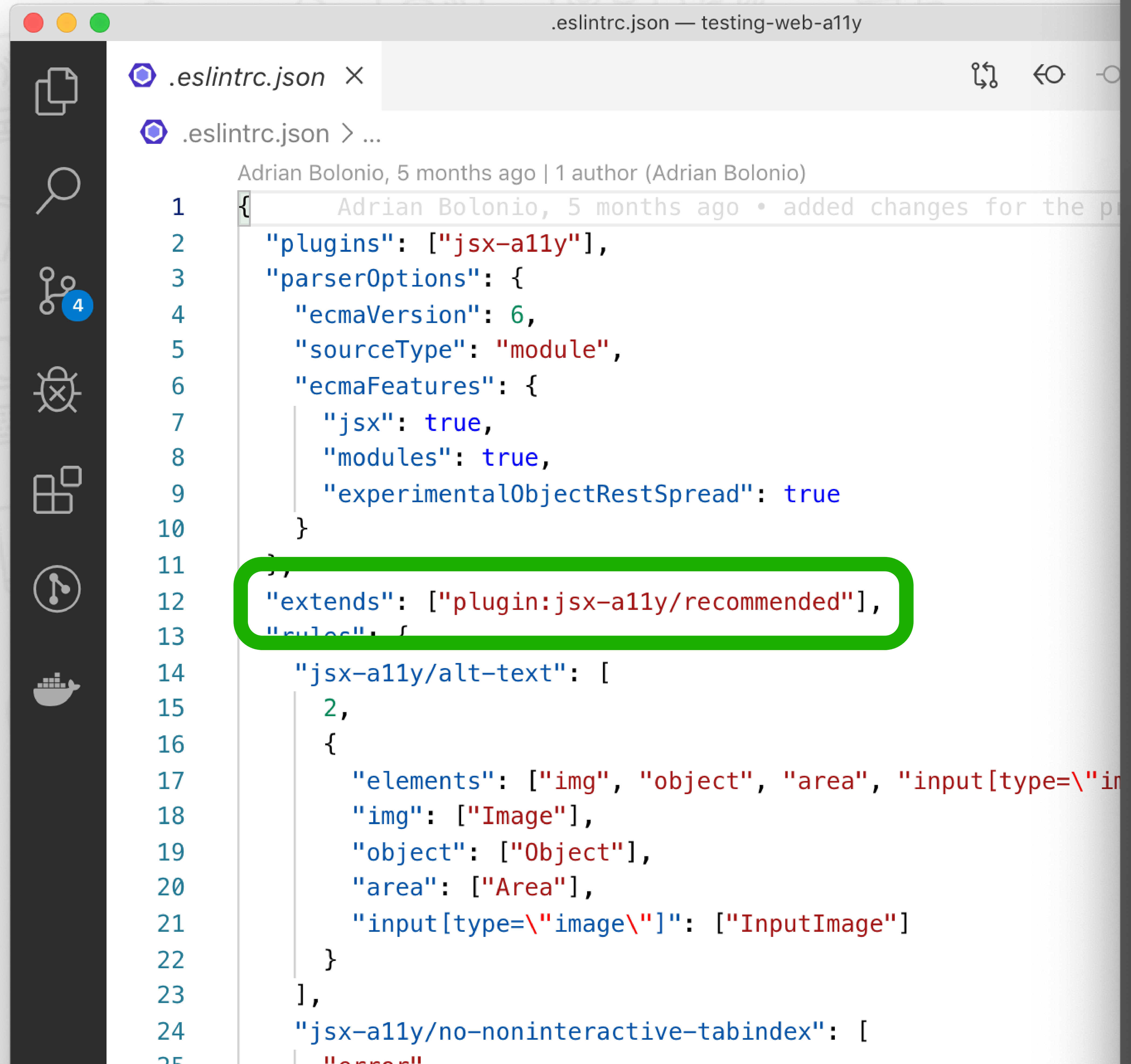
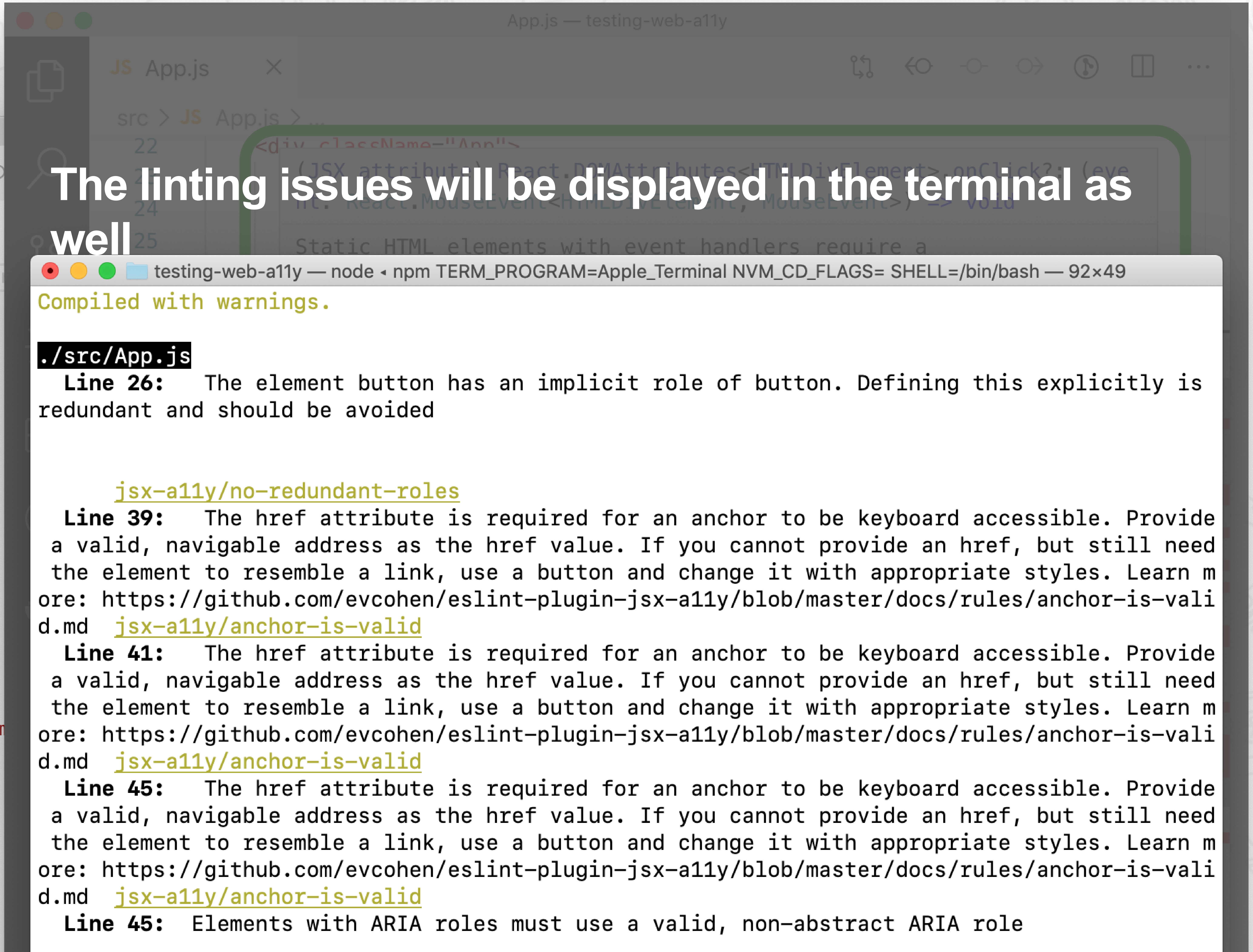

.eslintrc.json — testing-web-a11y
.eslintrc.json ×
.eslintrc.json > ...
Adrian Bolonio, 5 months ago | 1 author (Adrian Bolonio)
4

```
{    Adrian Bolonio, 5 months ago • added changes for the pr
  "plugins": ["jsx-a11y"],
  "parserOptions": {
    "ecmaVersion": 6,
    "sourceType": "module",
    "ecmaFeatures": {
      "jsx": true,
      "modules": true,
      "experimentalObjectRestSpread": true
    }
  },
  "extends": ["plugin:jsx-a11y/recommended"],
  "rules": {
    "jsx-a11y/alt-text": [
      2,
      {
        "elements": ["img", "object", "area", "input[type=\"in
        "img": ["Image"],
        "object": ["Object"],
        "area": ["Area"],
        "input[type=\"image\"]": ["InputImage"]
      }
    ],
    "jsx-a11y/no-noninteractive-tabindex": [
      "error",
```

The linting issues will be displayed directly in the code editor


App.js — testing-web-a11y
JS App.js ×
src > JS App.js > ...
testing-web-a11y — node ◂ npm TERM_PROGRAM=Apple_Terminal NVM_CD_FLAGS= SHELL=/bin/bash — 92×49

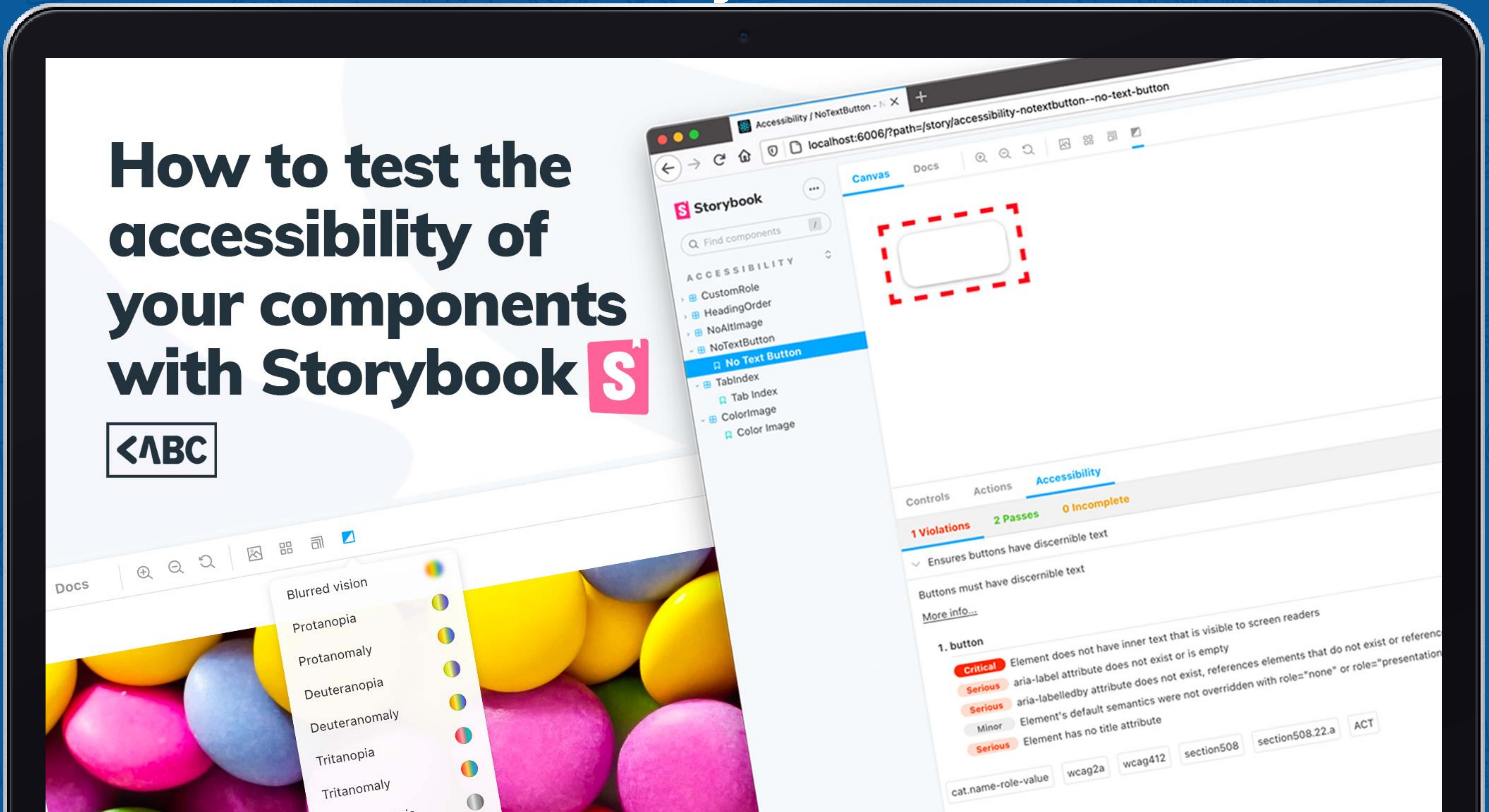
The linting issues will be displayed in the terminal as well

```
Compiled with warnings.

./src/App.js
  Line 26:    The element button has an implicit role of button. Defining this explicitly is
redundant and should be avoided


      jsx-a11y/no-redundant-roles
  Line 39:    The href attribute is required for an anchor to be keyboard accessible. Provide
 a valid, navigable address as the href value. If you cannot provide an href, but still need
 the element to resemble a link, use a button and change it with appropriate styles. Learn m
ore: https://github.com/evcohen/eslint-plugin-jsx-a11y/blob/master/docs/rules/anchor-is-vali
d.md  jsx-a11y/anchor-is-valid
  Line 41:    The href attribute is required for an anchor to be keyboard accessible. Provide
 a valid, navigable address as the href value. If you cannot provide an href, but still need
 the element to resemble a link, use a button and change it with appropriate styles. Learn m
ore: https://github.com/evcohen/eslint-plugin-jsx-a11y/blob/master/docs/rules/anchor-is-vali
d.md  jsx-a11y/anchor-is-valid
  Line 45:    The href attribute is required for an anchor to be keyboard accessible. Provide
 a valid, navigable address as the href value. If you cannot provide an href, but still need
 the element to resemble a link, use a button and change it with appropriate styles. Learn m
ore: https://github.com/evcohen/eslint-plugin-jsx-a11y/blob/master/docs/rules/anchor-is-vali
d.md  jsx-a11y/anchor-is-valid
  Line 45:   Elements with ARIA roles must use a valid, non-abstract ARIA role
```

www.adrianbolonio.com/en/accessibility-with-storybook



How to test the accessibility of your components with Storybook

<ABC

localhost:6006/?path=/story/accessibility-notextbutton--no-text-button

1 Violations 2 Passes 0 Incomplete

Ensures buttons have discernible text

Buttons must have discernible text

More info...

1. button

Critical Element does not have inner text that is visible to screen readers

Serious aria-label attribute does not exist or is empty

Serious aria-labelledby attribute does not exist, references elements that do not exist or referenc

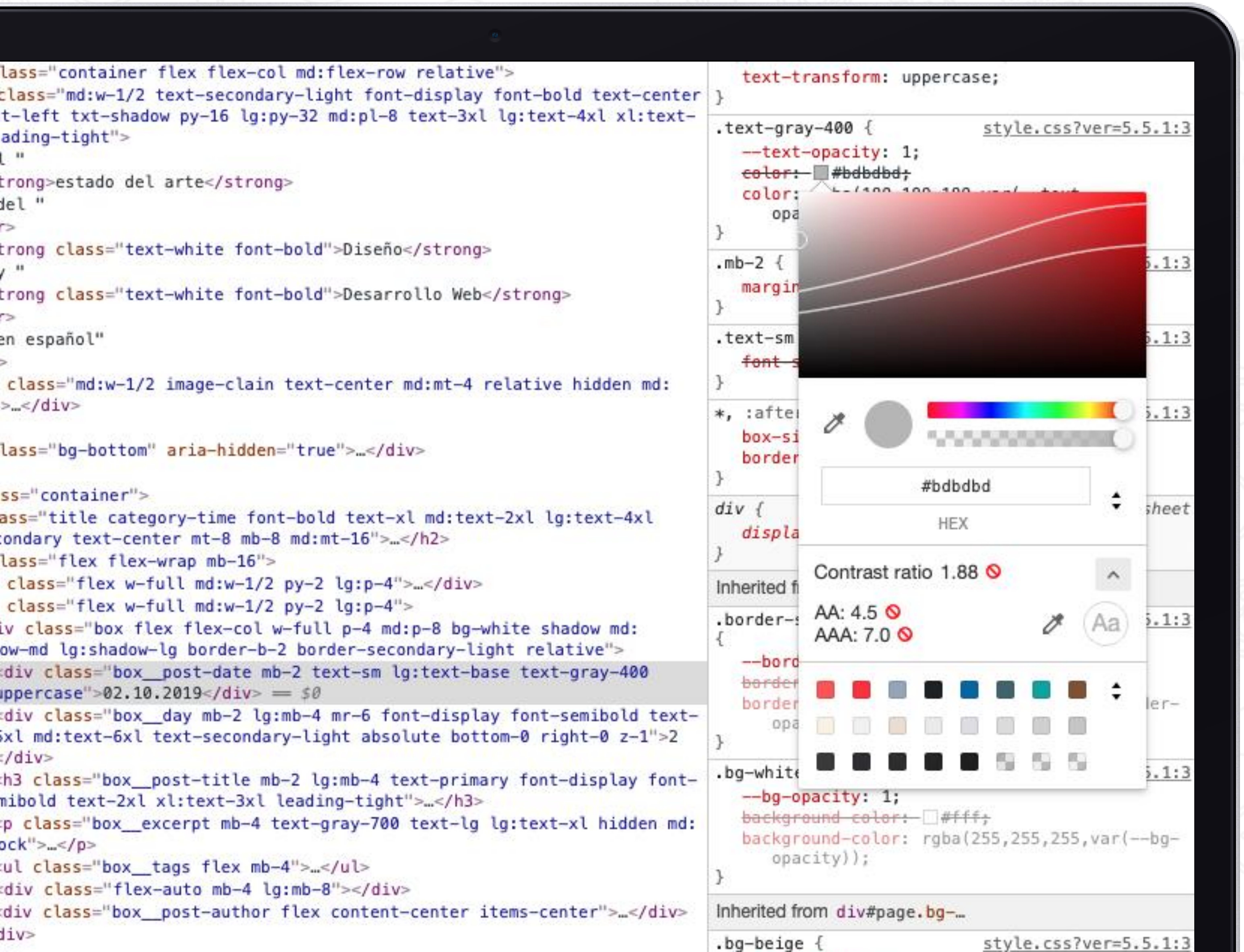
Serious Element's default semantics were not overridden with role="none" or role="presentation

Minor Element has no title attribute

cat.name-role-value wcag2a wcag412 section508 section508.22.a ACT

Use the development tools of the browser

Use the development tools of the browser



```
lass="container flex flex-col md:flex-row relative">
class="md:w-1/2 text-secondary-light font-display font-bold text-center
t-left txt-shadow py-16 lg:py-32 md:pl-8 text-3xl lg:text-4xl xl:text-
ading-tight">
l "
trong>estado del arte</strong>
del "
r>
trong class="text-white font-bold">Diseño</strong>
/ "
trong class="text-white font-bold">Desarrollo Web</strong>
r>
en español"
>
 class="md:w-1/2 image-clain text-center md:mt-4 relative hidden md:
>…</div>

lass="bg-bottom" aria-hidden="true">…</div>

ss="container">
ass="title category-time font-bold text-xl md:text-2xl lg:text-4xl
condary text-center mt-8 mb-8 md:mt-16">…</h2>
lass="flex flex-wrap mb-16">
 class="flex w-full md:w-1/2 py-2 lg:p-4">…</div>
 class="flex w-full md:w-1/2 py-2 lg:p-4">
iv class="box flex flex-col w-full p-4 md:p-8 bg-white shadow md:
ow-md lg:shadow-lg border-b-2 border-secondary-light relative">
<div class="box__post-date mb-2 text-sm lg:text-base text-gray-400
uppercase">02.10.2019</div> == $0
<div class="box__day mb-2 lg:mb-4 mr-6 font-display font-semibold text-
5xl md:text-6xl text-secondary-light absolute bottom-0 right-0 z-1">2
</div>
<h3 class="box__post-title mb-2 lg:mb-4 text-primary font-display font-
mibold text-2xl xl:text-3xl leading-tight">…</h3>
<p class="box__excerpt mb-4 text-gray-700 text-lg lg:text-xl hidden md:
ock">…</p>
<ul class="box__tags flex mb-4">…</ul>
<div class="flex-auto mb-4 lg:mb-8"></div>
<div class="box__post-author flex content-center items-center">…</div>
div>
```

```
  text-transform: uppercase;
}
.text-gray-400 {                     style.css?ver=5.5.1:3
  --text-opacity: 1;
  ~~color: #bdbdbd;~~
  color:
    opa
}
.mb-2 {                                            5.1:3
  margin
}
.text-sm                                           5.1:3
  ~~font-s~~
}
*, :after                                          5.1:3
  box-si
  border
}
div {                                              sheet
  displa
}
Inherited f
.border-s                                          5.1:3
{
  --bord
  ~~border~~
  border                                           ler-
    opa
}
.bg-white                                          5.1:3
  --bg-opacity: 1;
  ~~background-color: #fff;~~
  background-color: rgba(255,255,255,var(--bg-
    opacity));
}
Inherited from div#page.bg-…
.bg-beige {                          style.css?ver=5.5.1:3
```

#bdbdbd

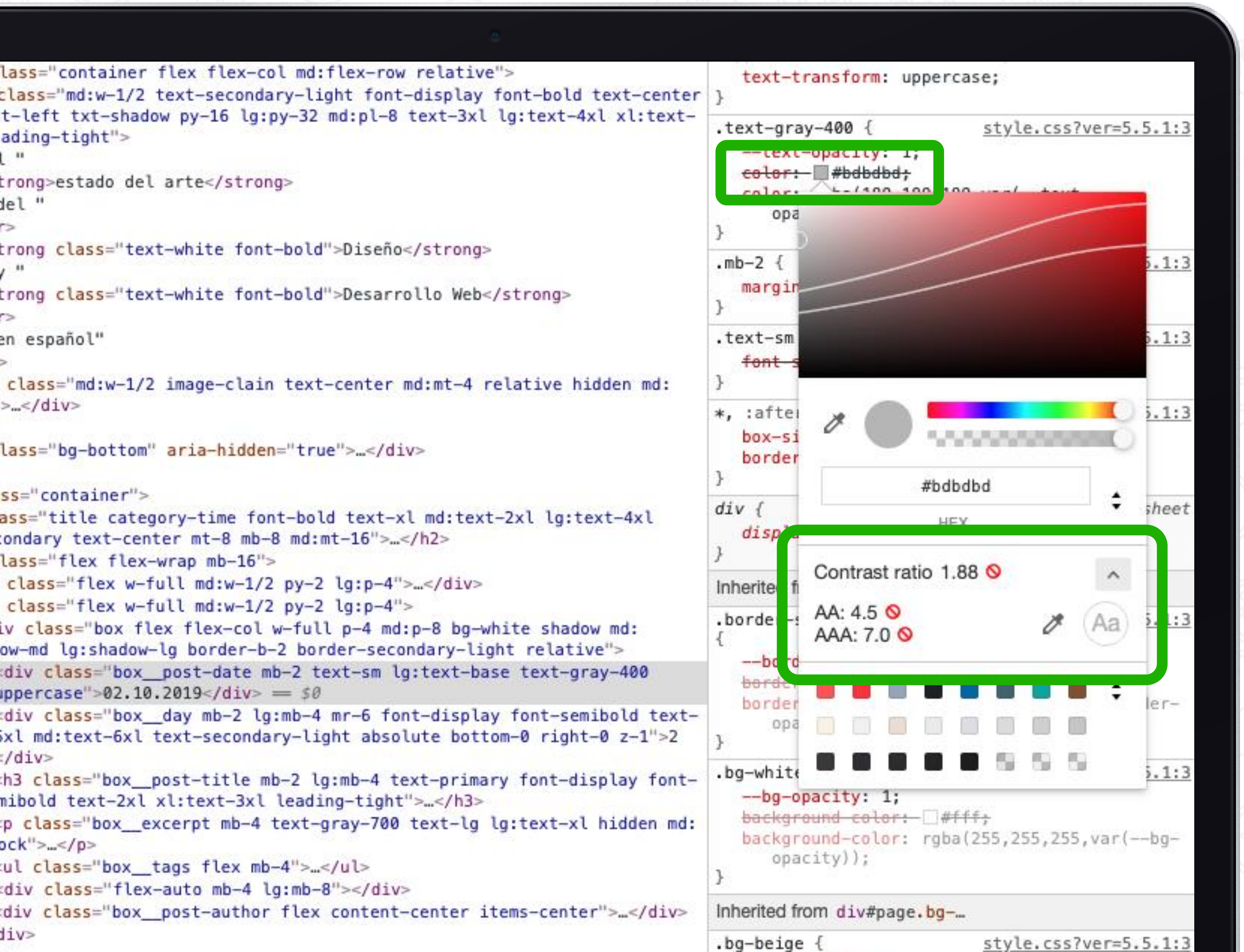
Contrast ratio 1.88 🚫

AA: 4.5 🚫
AAA: 7.0 🚫

When inspecting an HTML element and clicking on the color box in front of the **HEX code** in the CSS inspector, a floating window will appear with information about that color.

You will see the score of the contrast ratio of that color with the background where it’s placed (text, button, ... etc) and you will be able to see if it passes the **AA** and **AAA** contrast ratio tests.

Use the development tools of the browser



```
lass="container flex flex-col md:flex-row relative">
class="md:w-1/2 text-secondary-light font-display font-bold text-center
t-left txt-shadow py-16 lg:py-32 md:pl-8 text-3xl lg:text-4xl xl:text-
ading-tight">
l "
trong>estado del arte</strong>
del "
r>
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/ "
trong class="text-white font-bold">Desarrollo Web</strong>
r>
en español"
>
 class="md:w-1/2 image-clain text-center md:mt-4 relative hidden md:
>…</div>

lass="bg-bottom" aria-hidden="true">…</div>

ss="container">
ass="title category-time font-bold text-xl md:text-2xl lg:text-4xl
condary text-center mt-8 mb-8 md:mt-16">…</h2>
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 class="flex w-full md:w-1/2 py-2 lg:p-4">
iv class="box flex flex-col w-full p-4 md:p-8 bg-white shadow md:
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<div class="box__post-date mb-2 text-sm lg:text-base text-gray-400
uppercase">02.10.2019</div> == $0
<div class="box__day mb-2 lg:mb-4 mr-6 font-display font-semibold text-
5xl md:text-6xl text-secondary-light absolute bottom-0 right-0 z-1">2
</div>
<h3 class="box__post-title mb-2 lg:mb-4 text-primary font-display font-
mibold text-2xl xl:text-3xl leading-tight">…</h3>
<p class="box__excerpt mb-4 text-gray-700 text-lg lg:text-xl hidden md:
ock">…</p>
<ul class="box__tags flex mb-4">…</ul>
<div class="flex-auto mb-4 lg:mb-8"></div>
<div class="box__post-author flex content-center items-center">…</div>
div>
```

```
  text-transform: uppercase;
}
.text-gray-400 {                  style.css?ver=5.5.1:3
  --text-opacity: 1;
  color: ■ #bdbdbd;
  color:
     opa
}
.mb-2 {                                          5.1:3
  margin
}
.text-sm                                         5.1:3
  font-s
}
*, :after                                        5.1:3
  box-si
  border
}
div {                                            sheet
  disp
}
Inherited f
.border-s                                        5.1:3
{
  --bord
  borde
  border                                         der-
     opa
}
.bg-white                                        5.1:3
  --bg-opacity: 1;
  background-color: □ #fff;
  background-color: rgba(255,255,255,var(--bg-
     opacity));
}
Inherited from div#page.bg-…
.bg-beige {                       style.css?ver=5.5.1:3
```

#bdbdbd

HEX

Contrast ratio 1.88 ⃠

AA: 4.5 ⃠

AAA: 7.0 ⃠

When inspecting an HTML element and clicking on the color box in front of the **HEX code** in the CSS inspector, a floating window will appear with information about that color.

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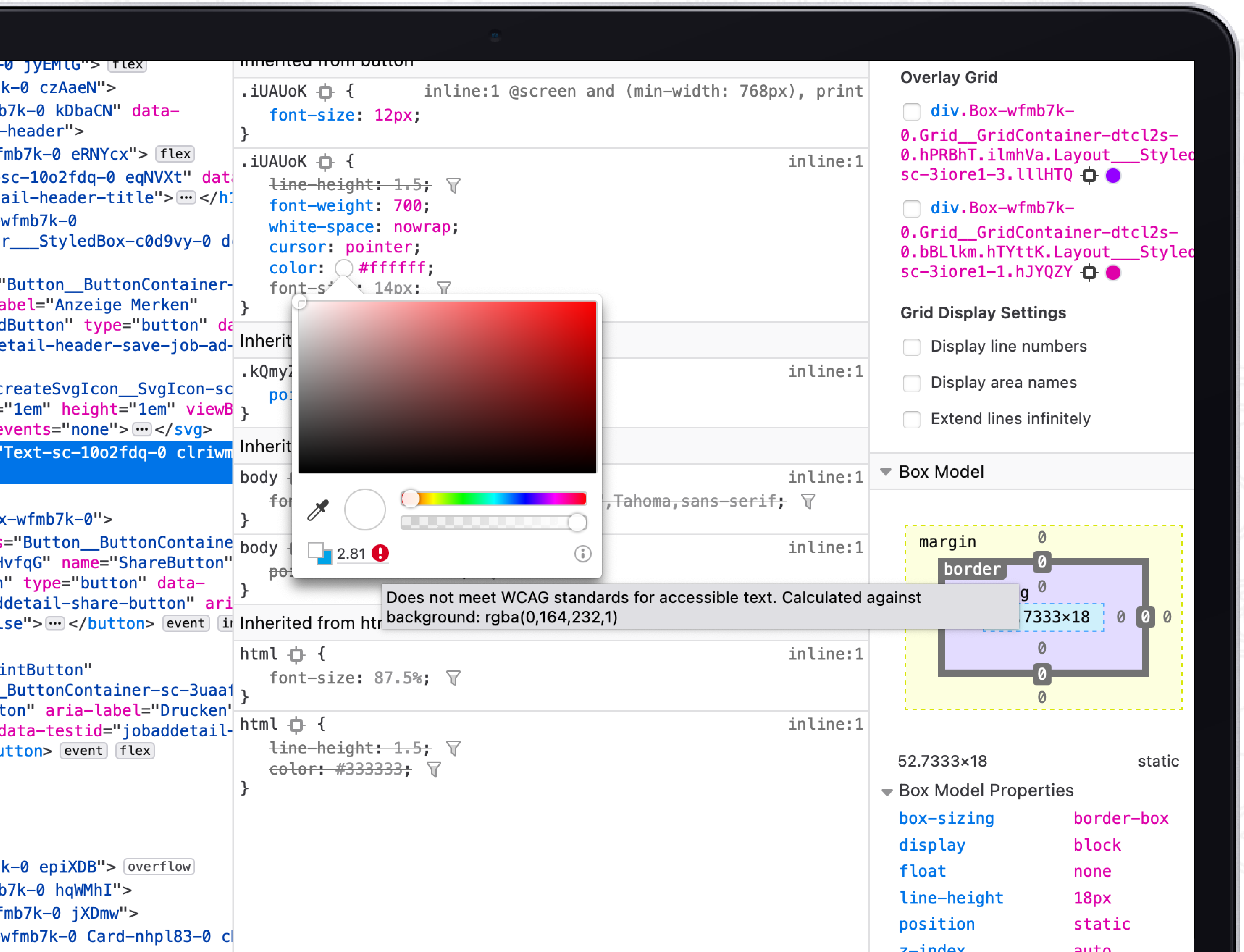
Use the development tools of the browser



```
-0 jyEMlG"> flex
k-0 czAaeN">
b7k-0 kDbaCN" data-
-header">
fmb7k-0 eRNYcx"> flex
sc-10o2fdq-0 eqNVXt" dat
ail-header-title">⋯</h
wfmb7k-0
r__StyledBox-c0d9vy-0 d
"Button__ButtonContainer-
abel="Anzeige Merken"
dButton" type="button" da
etail-header-save-job-ad-
createSvgIcon__SvgIcon-sc
="1em" height="1em" viewB
events="none">⋯</svg>
"Text-sc-10o2fdq-0 clriwm
x-wfmb7k-0">
="Button__ButtonContaine
lvfqG" name="ShareButton"
" type="button" data-
ldetail-share-button" ari
se">⋯</button> event i
intButton"
_ButtonContainer-sc-3uaa
ton" aria-label="Drucken"
data-testid="jobaddetail-
utton> event flex
k-0 epiXDB"> overflow
b7k-0 hqWMhI">
fmb7k-0 jXDmw">
wfmb7k-0 Card-nhpl83-0 c
```

```
Inherited from button
.iUAUoK {          inline:1 @screen and (min-width: 768px), print
  font-size: 12px;
}
.iUAUoK {                                                inline:1
  ~~line-height: 1.5;~~
  font-weight: 700;
  white-space: nowrap;
  cursor: pointer;
  color: ○ #ffffff;
  ~~font-s   14px;~~
}
Inherit
.kQmy                                                    inline:1
  po
}
Inherit
body                                                     inline:1
  fo                    ,Tahoma,sans-serif;
}
body                                                     inline:1
  po
}
Inherited from htr
html {                                                   inline:1
  ~~font-size: 87.5%;~~
}
html {                                                   inline:1
  ~~line-height: 1.5;~~
  ~~color: #333333;~~
}
```

2.81 !

Does not meet WCAG standards for accessible text. Calculated against background: rgba(0,164,232,1)

Overlay Grid

□ div.Box-wfmb7k-0.Grid__GridContainer-dtcl2s-0.hPRBhT.ilmhVa.Layout___Styled sc-3iore1-3.lllHTQ

□ div.Box-wfmb7k-0.Grid__GridContainer-dtcl2s-0.bBLlkm.hTYttK.Layout___Styled sc-3iore1-1.hJYQZY

Grid Display Settings

□ Display line numbers

□ Display area names

□ Extend lines infinitely

Box Model

52.7333×18 static

Box Model Properties

box-sizing	border-box
display	block
float	none
line-height	18px
position	static
z-index	auto

When inspecting an HTML element and clicking on the color box in front of the **HEX code** in the CSS inspector, a floating window will appear with information about that color.

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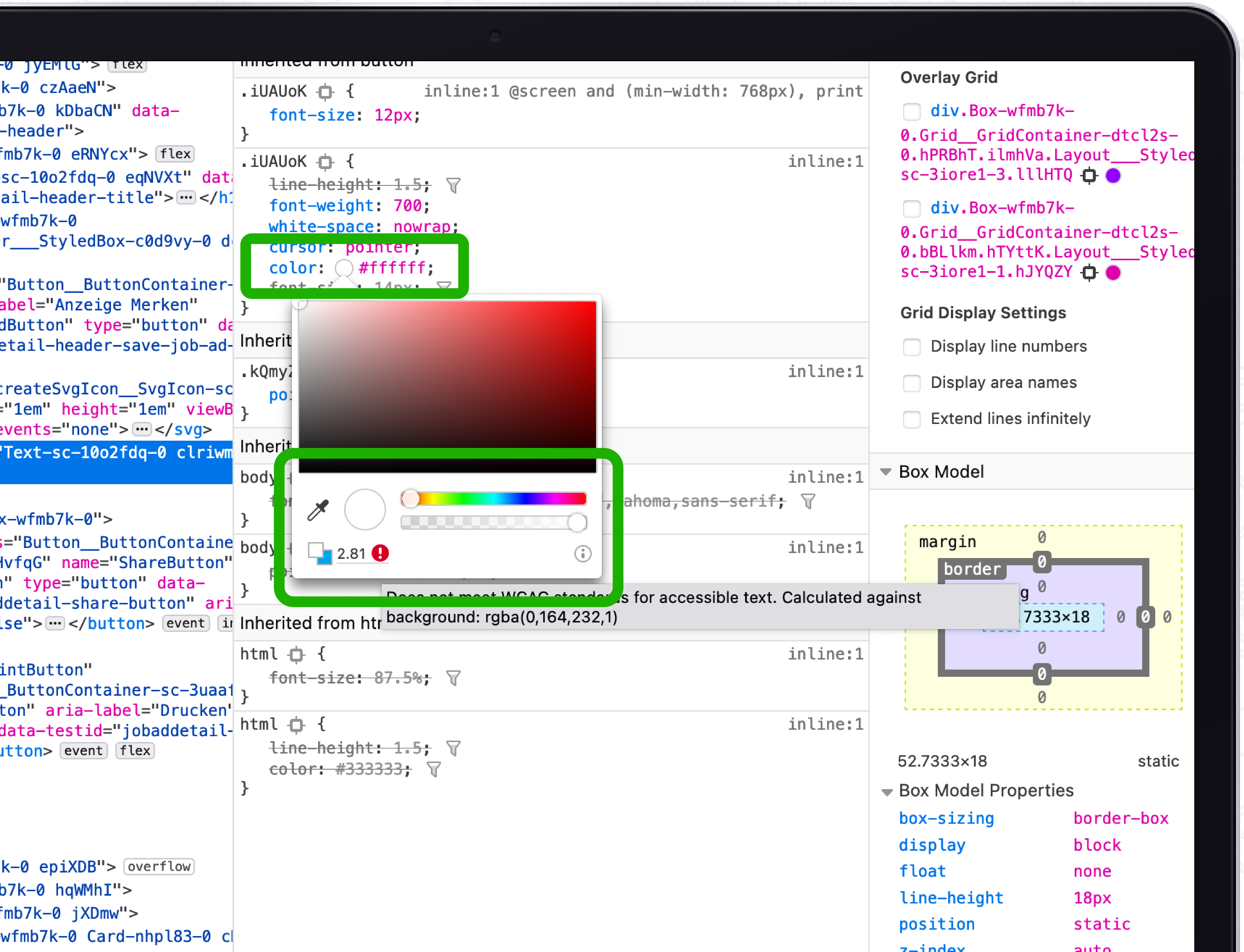
Use the development tools of the browser



```
-0 jyEMtG"> flex
k-0 czAaeN">
b7k-0 kDbaCN" data-
-header">
fmb7k-0 eRNYcx"> flex
sc-10o2fdq-0 eqNVXt" data
ail-header-title">⋯</h1
wfmb7k-0
r__StyledBox-c0d9vy-0 d
"Button__ButtonContainer-
abel="Anzeige Merken"
dButton" type="button" da
etail-header-save-job-ad-
createSvgIcon__SvgIcon-sc
="1em" height="1em" viewB
events="none">⋯</svg>
"Text-sc-10o2fdq-0 clriwm
x-wfmb7k-0">
="Button__ButtonContaine
HvfqG" name="ShareButton"
" type="button" data-
ldetail-share-button" ari
se">⋯</button> event
intButton"
_ButtonContainer-sc-3uaai
ton" aria-label="Drucken"
data-testid="jobaddetail-
utton> event flex
k-0 epiXDB"> overflow
b7k-0 hqWMhI">
fmb7k-0 jXDmw">
wfmb7k-0 Card-nhpl83-0 cl
```

```
Inherited from button
.iUAUoK {          inline:1 @screen and (min-width: 768px), print
  font-size: 12px;
}
.iUAUoK {                                                inline:1
  ~~line-height: 1.5;~~
  font-weight: 700;
  white-space: nowrap;
  cursor: pointer;
  color: ○ #ffffff;
  font-si... 14px;
}
Inherit
.kQmyZ                                                   inline:1
  po
}
Inherit
body                                                     inline:1
  ~~fo...ahoma,sans-serif;~~
}
body                                                     inline:1
  p
}
Inherited from htr
html {                                                   inline:1
  ~~font-size: 87.5%;~~
}
html {                                                   inline:1
  ~~line-height: 1.5;~~
  ~~color: #333333;~~
}
```

2.81 ❗

Does not meet WCAG standa...s for accessible text. Calculated against background: rgba(0,164,232,1)

Overlay Grid

□ div.Box-wfmb7k-0.Grid__GridContainer-dtcl2s-0.hPRBhT.ilmhVa.Layout___Stylec sc-3iore1-3.lllHTQ ●

□ div.Box-wfmb7k-0.Grid__GridContainer-dtcl2s-0.bBLlkm.hTYttK.Layout___Stylec sc-3iore1-1.hJYQZY ●

Grid Display Settings

□ Display line numbers

□ Display area names

□ Extend lines infinitely

Box Model

margin 0, border 0, padding 0, 52.7333×18, 0 0 0 0 0 0 0 0 0

52.7333×18 static

Box Model Properties

box-sizing	border-box
display	block
float	none
line-height	18px
position	static
z-index	auto

When inspecting an HTML element and clicking on the color box in front of the **HEX code** in the CSS inspector, a floating window will appear with information about that color.

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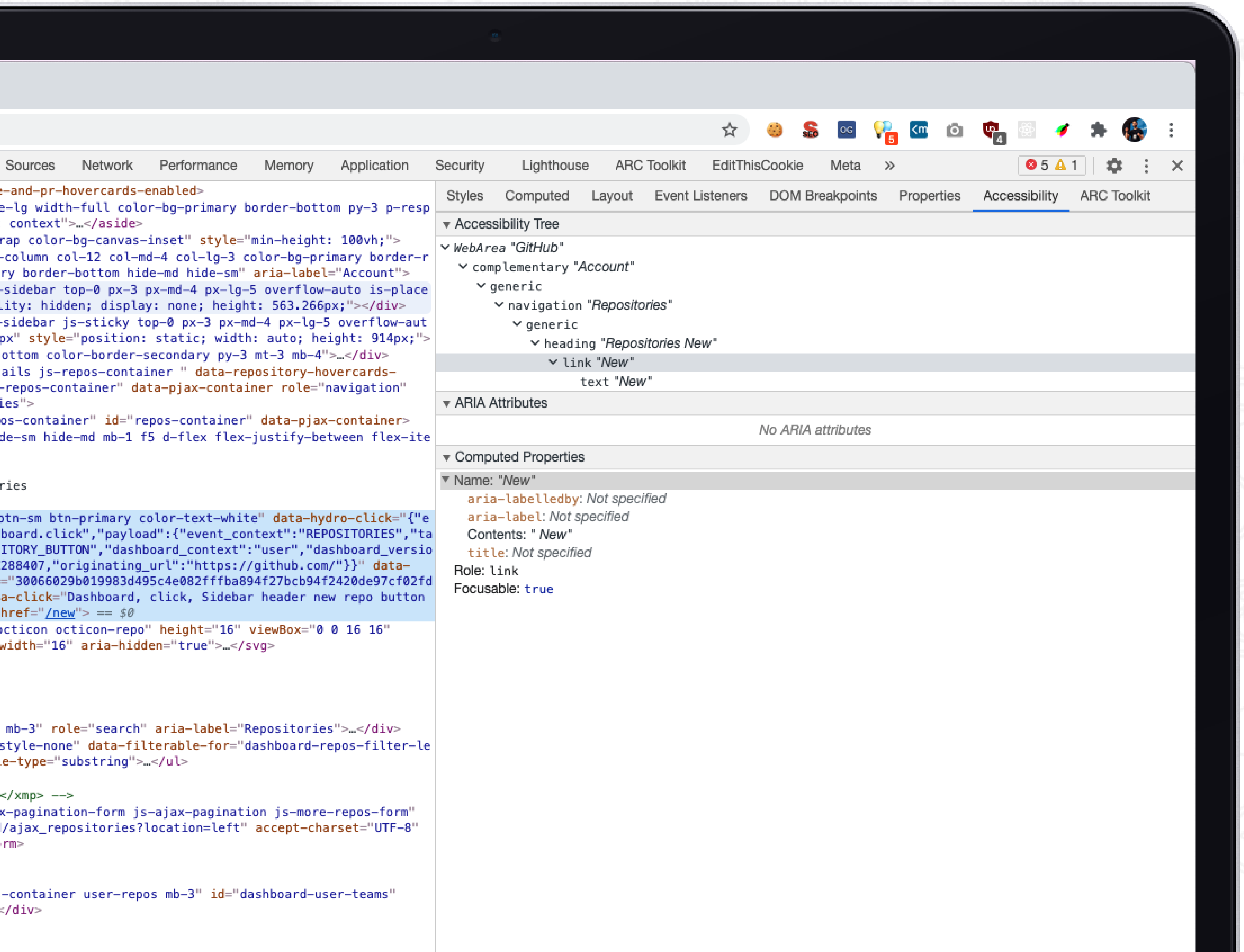


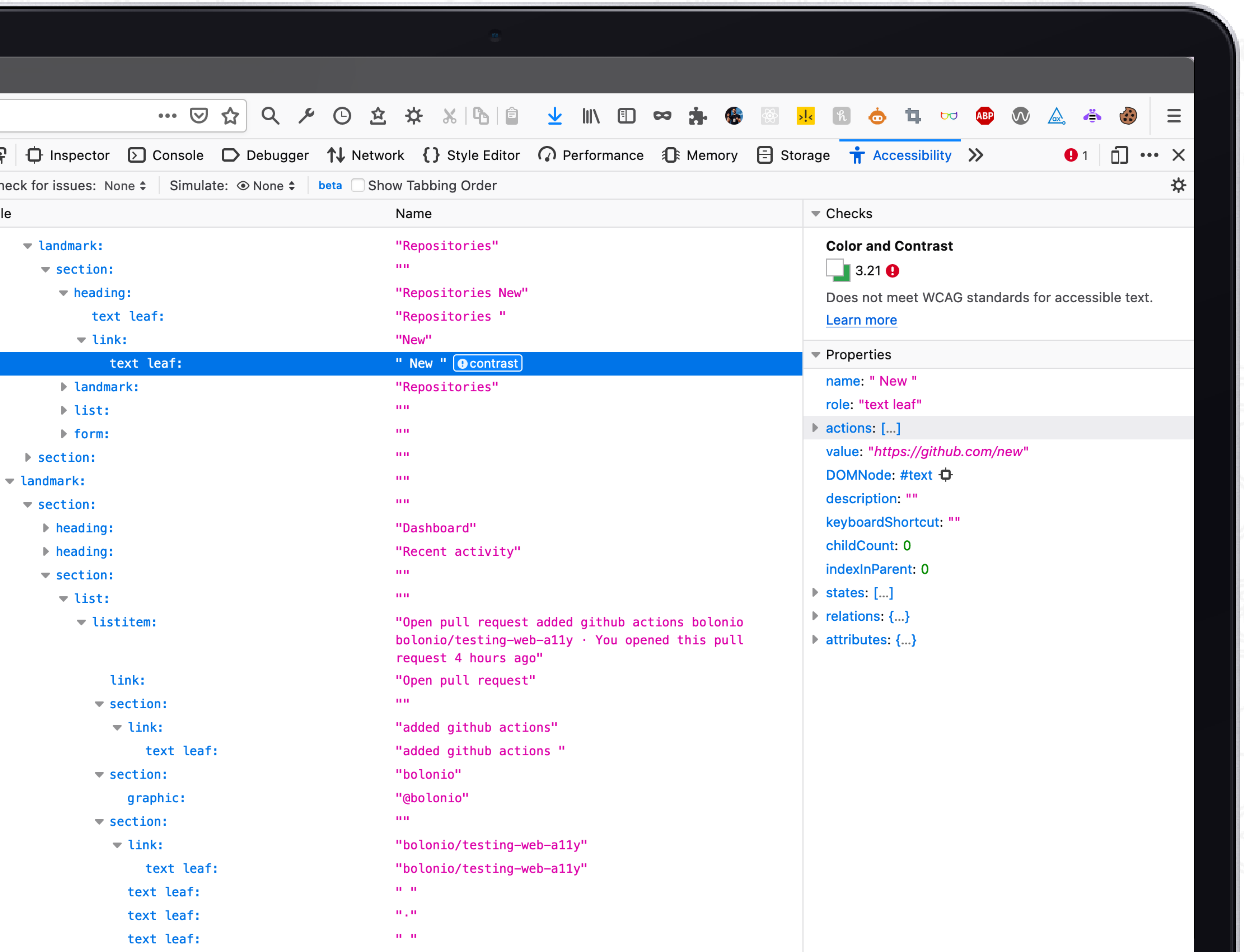
```
e-and-pr-hovercards-enabled>
e-lg width-full color-bg-primary border-bottom py-3 p-resp
 context">…</aside>
rap color-bg-canvas-inset" style="min-height: 100vh;">
-column col-12 col-md-4 col-lg-3 color-bg-primary border-r
ry border-bottom hide-md hide-sm" aria-label="Account">
-sidebar top-0 px-3 px-md-4 px-lg-5 overflow-auto is-place
lity: hidden; display: none; height: 563.266px;"></div>
-sidebar js-sticky top-0 px-3 px-md-4 px-lg-5 overflow-aut
px" style="position: static; width: auto; height: 914px;">
ottom color-border-secondary py-3 mt-3 mb-4">…</div>
ails js-repos-container " data-repository-hovercards-
-repos-container" data-pjax-container role="navigation"
ies">
os-container" id="repos-container" data-pjax-container>
de-sm hide-md mb-1 f5 d-flex flex-justify-between flex-ite


ries

otn-sm btn-primary color-text-white" data-hydro-click="{"e
board.click","payload":{"event_context":"REPOSITORIES","ta
ITORY_BUTTON","dashboard_context":"user","dashboard_versio
288407,"originating_url":"https://github.com/"}}" data-
="30066029b019983d495c4e082fffba894f27bcb94f2420de97cf02fd
a-click="Dashboard, click, Sidebar header new repo button
href="/new"> == $0
octicon octicon-repo" height="16" viewBox="0 0 16 16"
width="16" aria-hidden="true">…</svg>





 mb-3" role="search" aria-label="Repositories">…</div>
style-none" data-filterable-for="dashboard-repos-filter-le
e-type="substring">…</ul>

</xmp> -->
x-pagination-form js-ajax-pagination js-more-repos-form"
/ajax_repositories?location=left" accept-charset="UTF-8"
rm>


-container user-repos mb-3" id="dashboard-user-teams"
</div>
```

```
▼ Accessibility Tree
⌄ WebArea "GitHub"
  ⌄ complementary "Account"
    ⌄ generic
      ⌄ navigation "Repositories"
        ⌄ generic
          ⌄ heading "Repositories New"
            ⌄ link "New"
                text "New"
▼ ARIA Attributes
                    No ARIA attributes
▼ Computed Properties
▼ Name: "New"
    aria-labelledby: Not specified
    aria-label: Not specified
    Contents: " New"
    title: Not specified
  Role: link
  Focusable: true
```

The **accessibility inspector** provides a means of accessing important information exposed to assistive technologies on the current page through the accessibility tree, allowing you to check what is missing or what needs attention.

The accessibility inspector can be found in your browser's developer tools.

Use the development tools of the browser



heck for issues: None ⇕ Simulate: None ⇕ beta □ Show Tabbing Order

```
le                            Name
 ▾ landmark:                  "Repositories"
   ▾ section:                 ""
     ▾ heading:               "Repositories New"
         text leaf:           "Repositories "
       ▾ link:                "New"
           text leaf:         " New " contrast
       ▸ landmark:            "Repositories"
       ▸ list:                ""
       ▸ form:                ""
   ▸ section:                 ""
▾ landmark:                   ""
   ▾ section:                 ""
     ▸ heading:               "Dashboard"
     ▸ heading:               "Recent activity"
     ▾ section:               ""
       ▾ list:                ""
         ▾ listitem:          "Open pull request added github actions bolonio
                              bolonio/testing-web-a11y · You opened this pull
                              request 4 hours ago"
             link:            "Open pull request"
           ▾ section:         ""
             ▾ link:          "added github actions"
                 text leaf:   "added github actions "
           ▾ section:         "bolonio"
               graphic:       "@bolonio"
           ▾ section:         ""
             ▾ link:          "bolonio/testing-web-a11y"
                 text leaf:   "bolonio/testing-web-a11y"
               text leaf:     " "
               text leaf:     "."
               text leaf:     " "
```

▾ Checks

Color and Contrast

3.21

Does not meet WCAG standards for accessible text.

Learn more

▾ Properties

```
name: " New "
role: "text leaf"
▸ actions: […]
value: "https://github.com/new"
DOMNode: #text
description: ""
keyboardShortcut: ""
childCount: 0
indexInParent: 0
▸ states: […]
▸ relations: {…}
▸ attributes: {…}
```

The **accessibility inspector** provides a means of accessing important information exposed to assistive technologies on the current page through the accessibility tree, allowing you to check what is missing or what needs attention.

The accessibility inspector can be found in your browser's developer tools.

Write your own unit tests

- jest-axe

  https://github.com/nickcolley/jest-axe

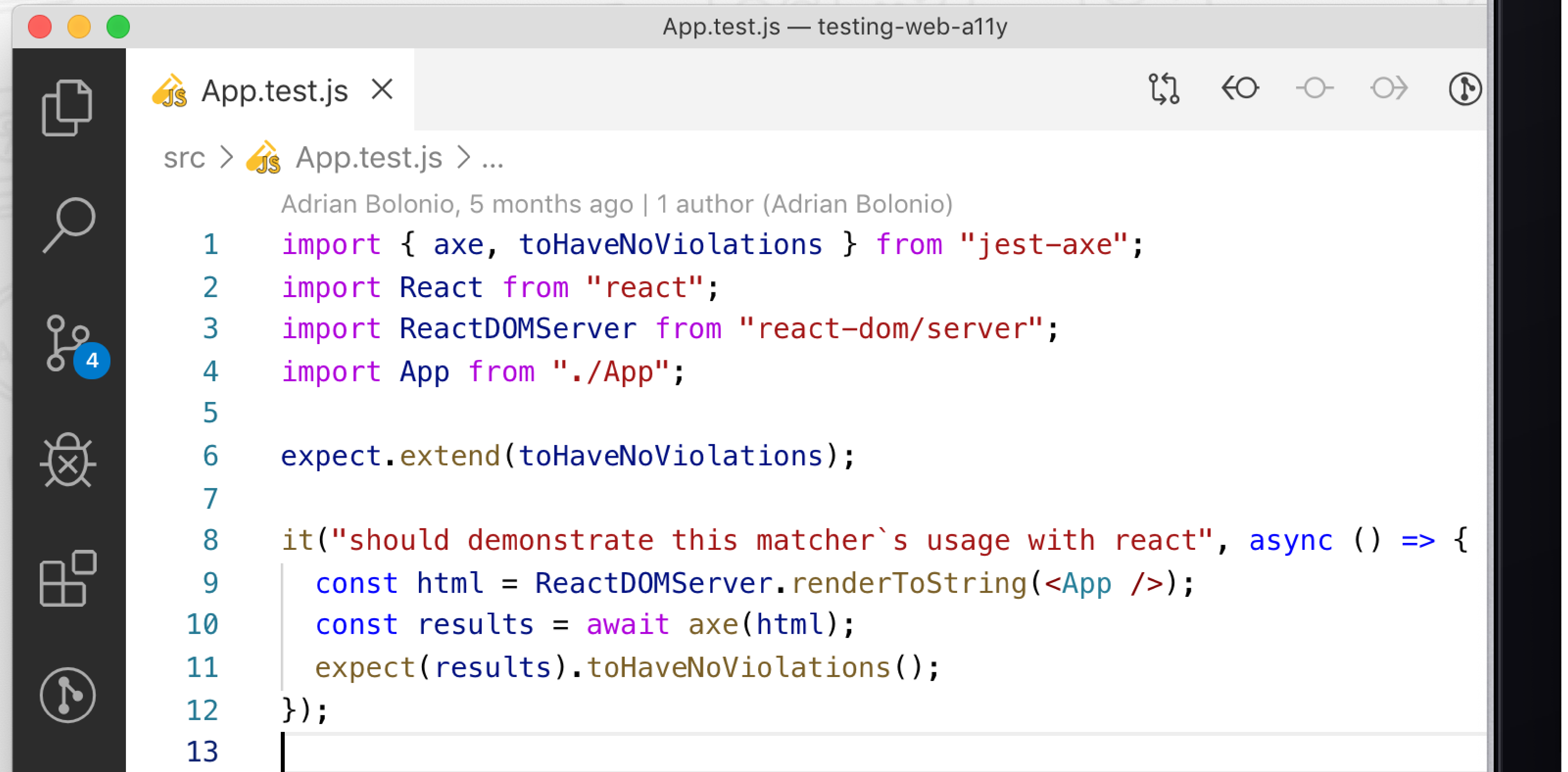
jest-axe

https://github.com/nickcolley/jest-axe

Install it as a dev dependency

```
npm install --save-dev jest-axe
```

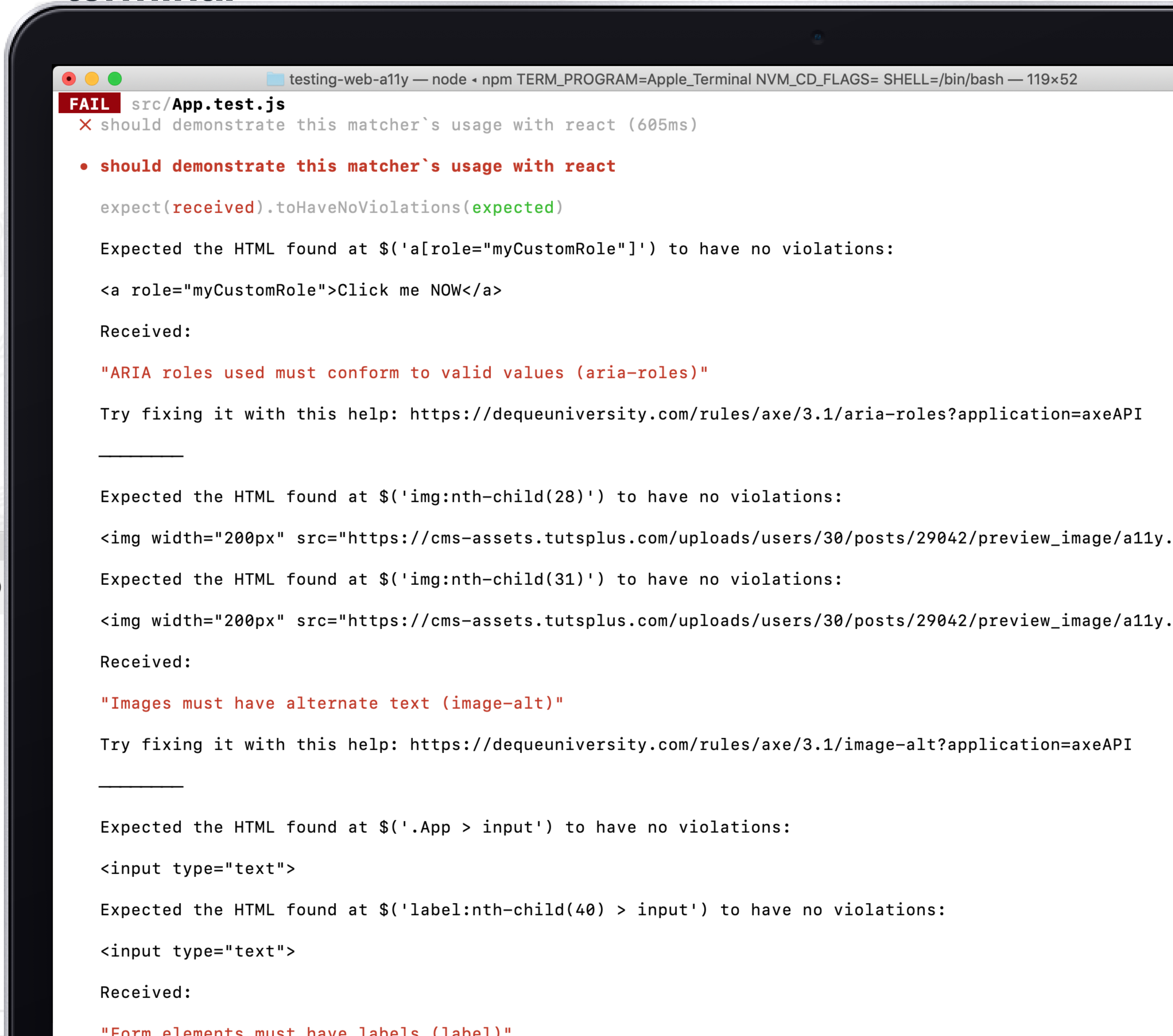
Write an accessibility test using ReactDOMServer to render the html of your application and check for violations



Adrian Bolonio, 5 months ago | 1 author (Adrian Bolonio)

```
import { axe, toHaveNoViolations } from "jest-axe";
import React from "react";
import ReactDOMServer from "react-dom/server";
import App from "./App";

expect.extend(toHaveNoViolations);

it("should demonstrate this matcher`s usage with react", async () => {
  const html = ReactDOMServer.renderToString(<App />);
  const results = await axe(html);
  expect(results).toHaveNoViolations();
});
```

The results of the test will be displayed in the terminal



testing-web-a11y — node ◂ npm TERM_PROGRAM=Apple_Terminal NVM_CD_FLAGS= SHELL=/bin/bash — 119×52

```
FAIL  src/App.test.js
  ✕ should demonstrate this matcher`s usage with react (605ms)

  ● should demonstrate this matcher`s usage with react

    expect(received).toHaveNoViolations(expected)

    Expected the HTML found at $('a[role="myCustomRole"]') to have no violations:

    <a role="myCustomRole">Click me NOW</a>

    Received:

    "ARIA roles used must conform to valid values (aria-roles)"

    Try fixing it with this help: https://dequeuniversity.com/rules/axe/3.1/aria-roles?application=axeAPI

    ________

    Expected the HTML found at $('img:nth-child(28)') to have no violations:

    <img width="200px" src="https://cms-assets.tutsplus.com/uploads/users/30/posts/29042/preview_image/a11y.

    Expected the HTML found at $('img:nth-child(31)') to have no violations:

    <img width="200px" src="https://cms-assets.tutsplus.com/uploads/users/30/posts/29042/preview_image/a11y.

    Received:

    "Images must have alternate text (image-alt)"

    Try fixing it with this help: https://dequeuniversity.com/rules/axe/3.1/image-alt?application=axeAPI

    ________

    Expected the HTML found at $('.App > input') to have no violations:

    <input type="text">

    Expected the HTML found at $('label:nth-child(40) > input') to have no violations:

    <input type="text">

    Received:

    "Form elements must have labels (label)"
```

Automate your accessibility tests

Automated a11y tests

- @axe-core/cli

  https://github.com/dequelabs/axe-core-npm/tree/develop/packages/cli

- pa11y

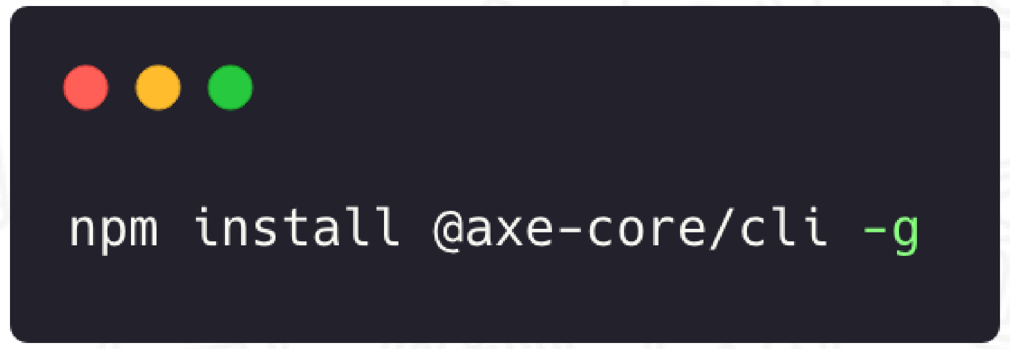
  http://pa11y.org/

- Lighthouse

  https://developers.google.com/web/tools/lighthouse/

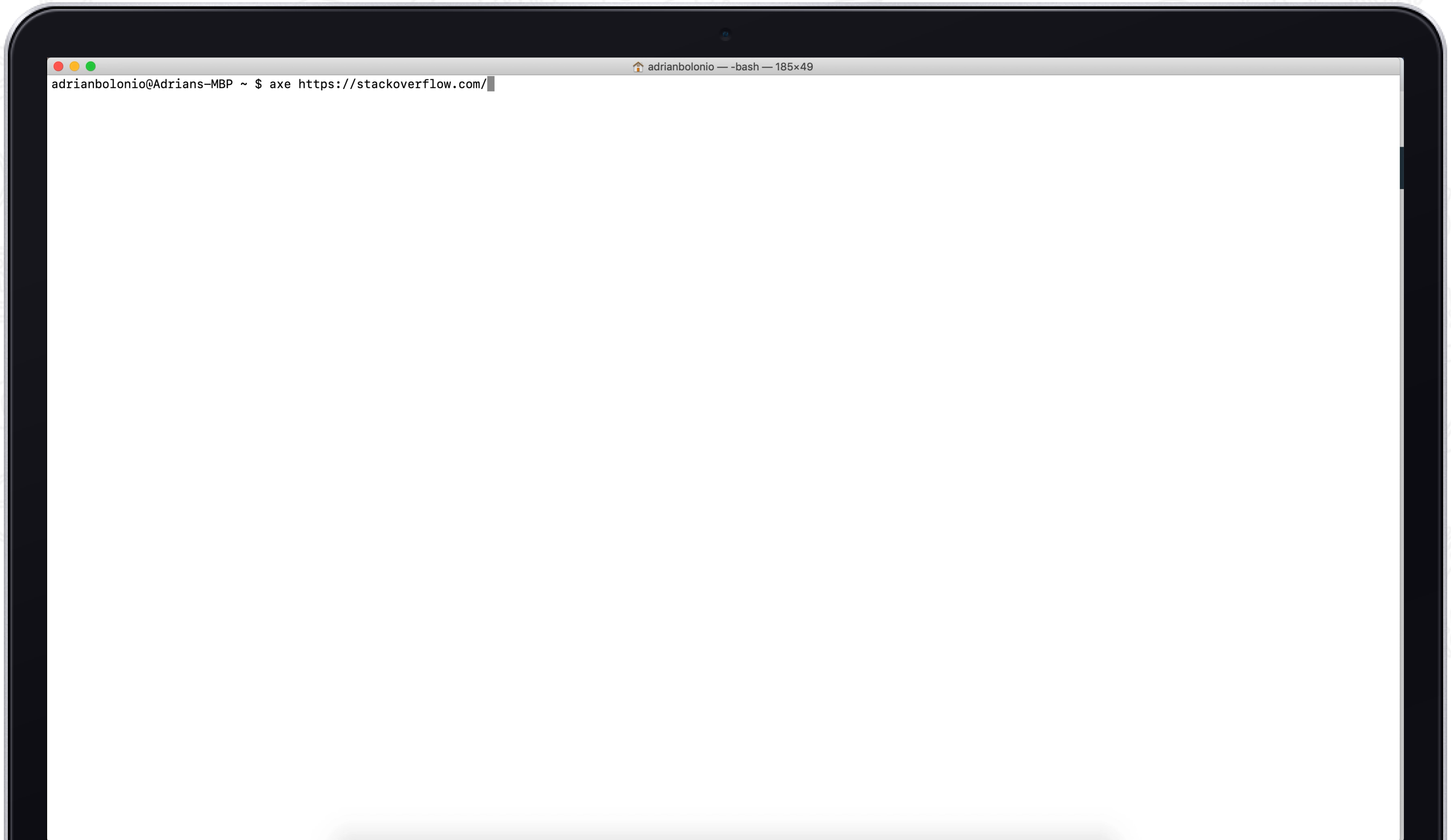
@axe-core/cli

Install it globally in your machine



```
npm install @axe-core/cli -g
```

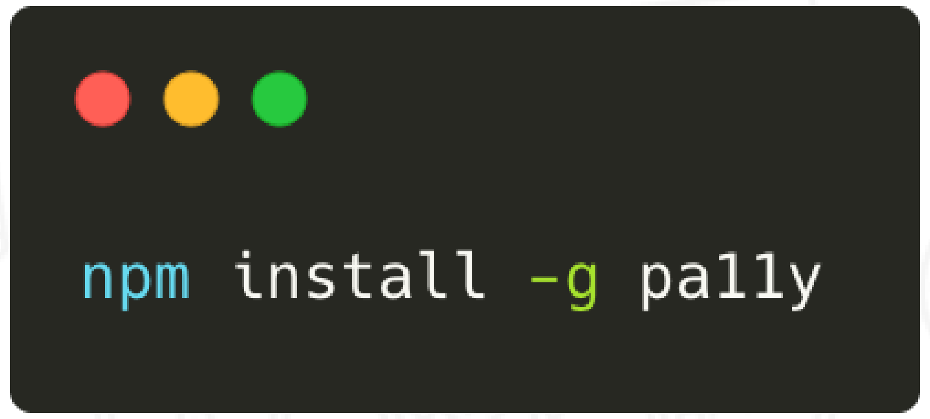
You can now run the command in your CLI, followed by the URL of the page you wish to test



```
adrianbolonio@Adrians-MBP ~ $ axe https://stackoverflow.com/
```

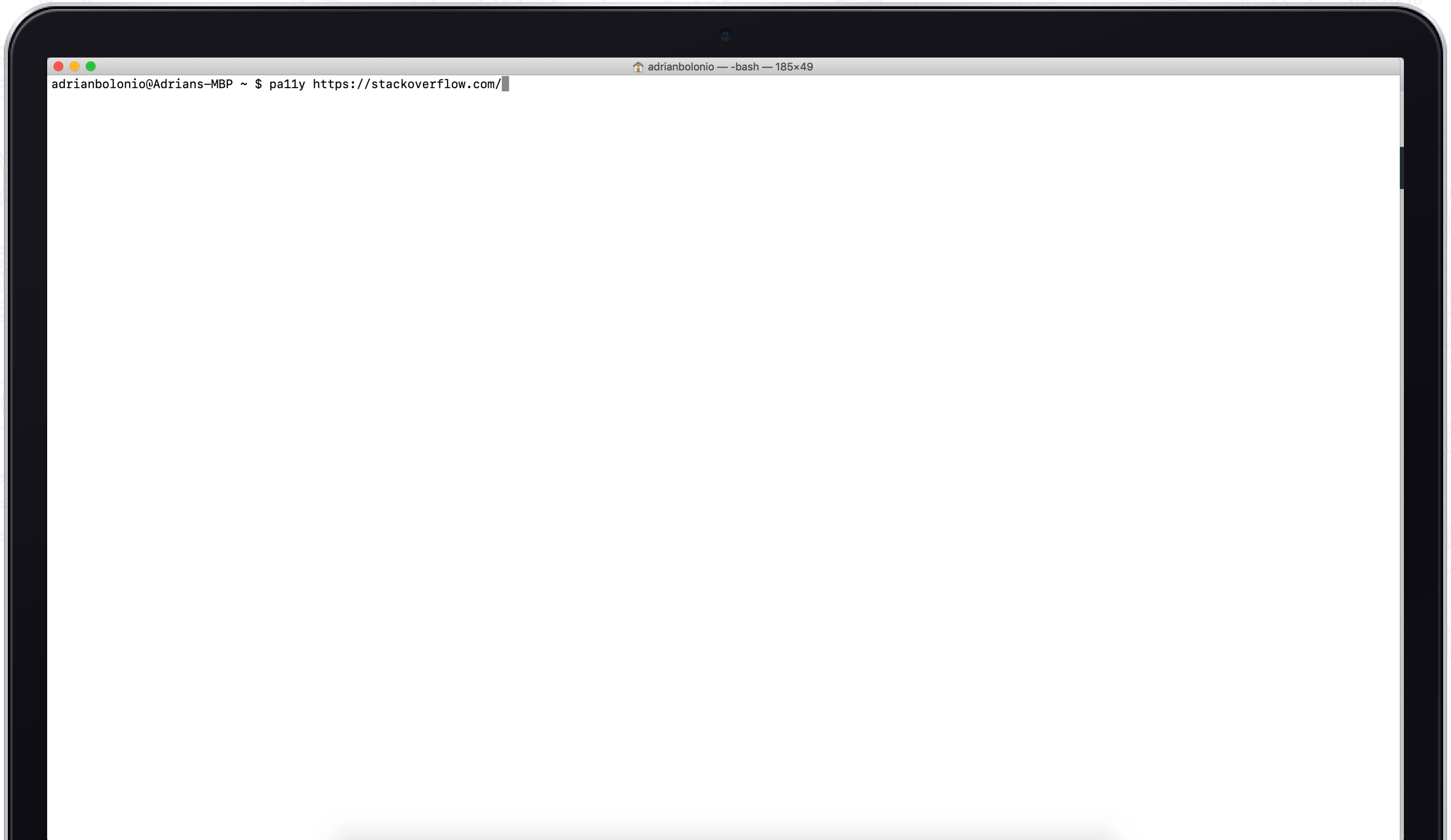
pa11y

Install it globally in your machine



```
npm install -g pa11y
```

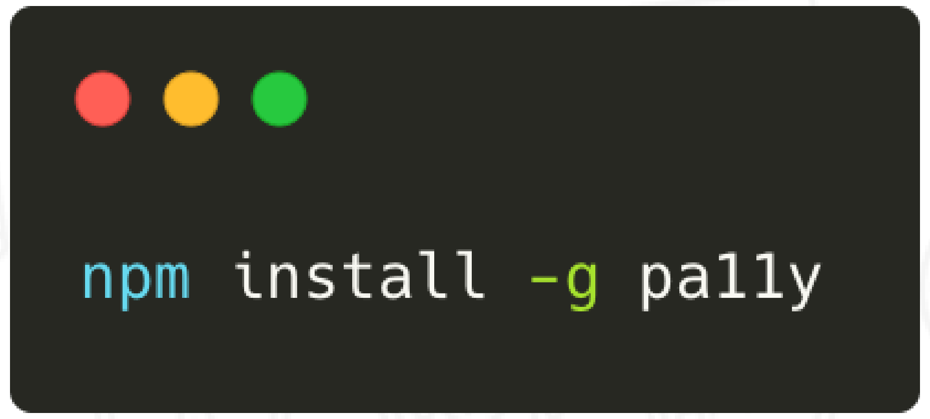
You can now run the command in your CLI, followed by the URL of the page you wish to test



```
adrianbolonio@Adrians-MBP ~ $ pa11y https://stackoverflow.com/
```

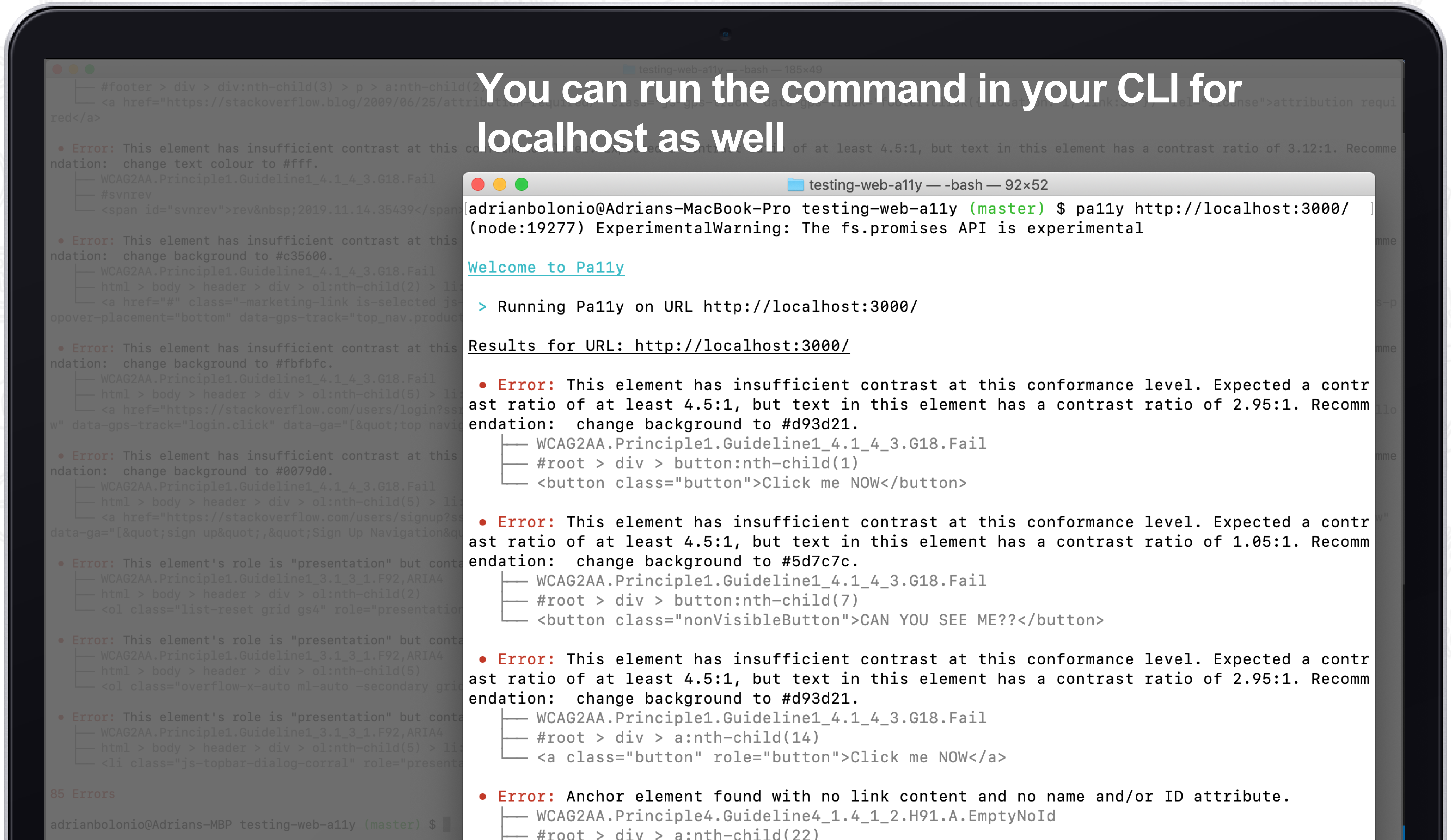
pa11y

Install it globally in your machine



```
npm install -g pa11y
```

You can now run the command in your CLI, followed by the URL of the page you wish to test



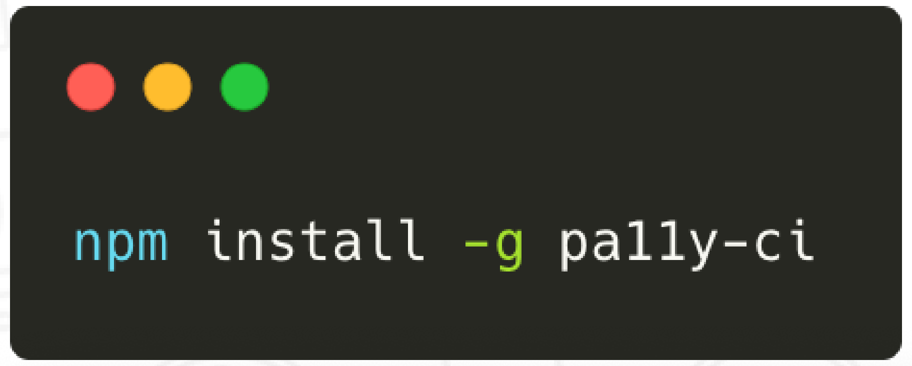
```
    ├── #footer > div > div:nth-child(3) > p > a:nth-child(2
    └── <a href="https://stackoverflow.blog/2009/06/25/attribut
red</a>

 • Error: This element has insufficient contrast at this co
ndation:  change text colour to #fff.
    ├── WCAG2AA.Principle1.Guideline1_4.1_4_3.G18.Fail
    ├── #svnrev
    └── <span id="svnrev">rev&nbsp;2019.11.14.35439</span>

 • Error: This element has insufficient contrast at this
ndation:  change background to #c35600.
    ├── WCAG2AA.Principle1.Guideline1_4.1_4_3.G18.Fail
    ├── html > body > header > div > ol:nth-child(2) > li:
    └── <a href="#" class="-marketing-link is-selected js-
opover-placement="bottom" data-gps-track="top_nav.product

 • Error: This element has insufficient contrast at this
ndation:  change background to #fbfbfc.
    ├── WCAG2AA.Principle1.Guideline1_4.1_4_3.G18.Fail
    ├── html > body > header > div > ol:nth-child(5) > li:
    └── <a href="https://stackoverflow.com/users/login?ssr
w" data-gps-track="login.click" data-ga="[&quot;top navig

 • Error: This element has insufficient contrast at this
ndation:  change background to #0079d0.
    ├── WCAG2AA.Principle1.Guideline1_4.1_4_3.G18.Fail
    ├── html > body > header > div > ol:nth-child(5) > li:
    └── <a href="https://stackoverflow.com/users/signup?ss
data-ga="[&quot;sign up&quot;,&quot;Sign Up Navigation&qu

 • Error: This element's role is "presentation" but conta
    ├── WCAG2AA.Principle1.Guideline1_3.1_3_1.F92,ARIA4
    ├── html > body > header > div > ol:nth-child(2)
    └── <ol class="list-reset grid gs4" role="presentatior

 • Error: This element's role is "presentation" but conta
    ├── WCAG2AA.Principle1.Guideline1_3.1_3_1.F92,ARIA4
    ├── html > body > header > div > ol:nth-child(5)
    └── <ol class="overflow-x-auto ml-auto -secondary grid

 • Error: This element's role is "presentation" but conta
    ├── WCAG2AA.Principle1.Guideline1_3.1_3_1.F92,ARIA4
    ├── html > body > header > div > ol:nth-child(5) > li:
    └── <li class="js-topbar-dialog-corral" role="presenta

85 Errors

adrianbolonio@Adrians-MBP testing-web-a11y (master) $
```

You can run the command in your CLI for localhost as well

```
adrianbolonio@Adrians-MacBook-Pro testing-web-a11y (master) $ pa11y http://localhost:3000/
(node:19277) ExperimentalWarning: The fs.promises API is experimental

Welcome to Pa11y

 > Running Pa11y on URL http://localhost:3000/

Results for URL: http://localhost:3000/

 • Error: This element has insufficient contrast at this conformance level. Expected a contr
ast ratio of at least 4.5:1, but text in this element has a contrast ratio of 2.95:1. Recomm
endation:  change background to #d93d21.
   ├── WCAG2AA.Principle1.Guideline1_4.1_4_3.G18.Fail
   ├── #root > div > button:nth-child(1)
   └── <button class="button">Click me NOW</button>

 • Error: This element has insufficient contrast at this conformance level. Expected a contr
ast ratio of at least 4.5:1, but text in this element has a contrast ratio of 1.05:1. Recomm
endation:  change background to #5d7c7c.
   ├── WCAG2AA.Principle1.Guideline1_4.1_4_3.G18.Fail
   ├── #root > div > button:nth-child(7)
   └── <button class="nonVisibleButton">CAN YOU SEE ME??</button>

 • Error: This element has insufficient contrast at this conformance level. Expected a contr
ast ratio of at least 4.5:1, but text in this element has a contrast ratio of 2.95:1. Recomm
endation:  change background to #d93d21.
   ├── WCAG2AA.Principle1.Guideline1_4.1_4_3.G18.Fail
   ├── #root > div > a:nth-child(14)
   └── <a class="button" role="button">Click me NOW</a>

 • Error: Anchor element found with no link content and no name and/or ID attribute.
   ├── WCAG2AA.Principle4.Guideline4_1.4_1_2.H91.A.EmptyNoId
   ├── #root > div > a:nth-child(22)
```

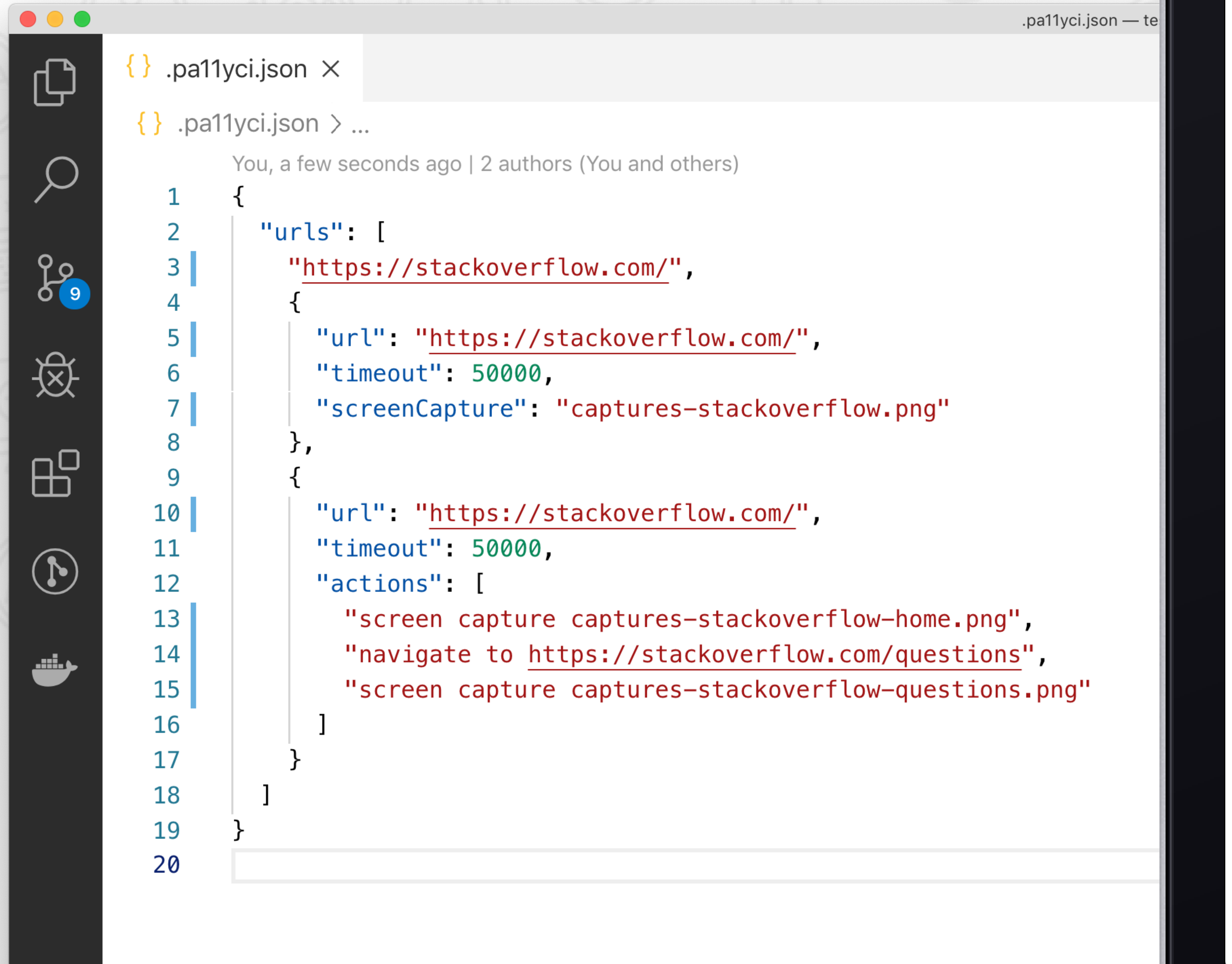
pa11y-ci

Install it globally in your machine



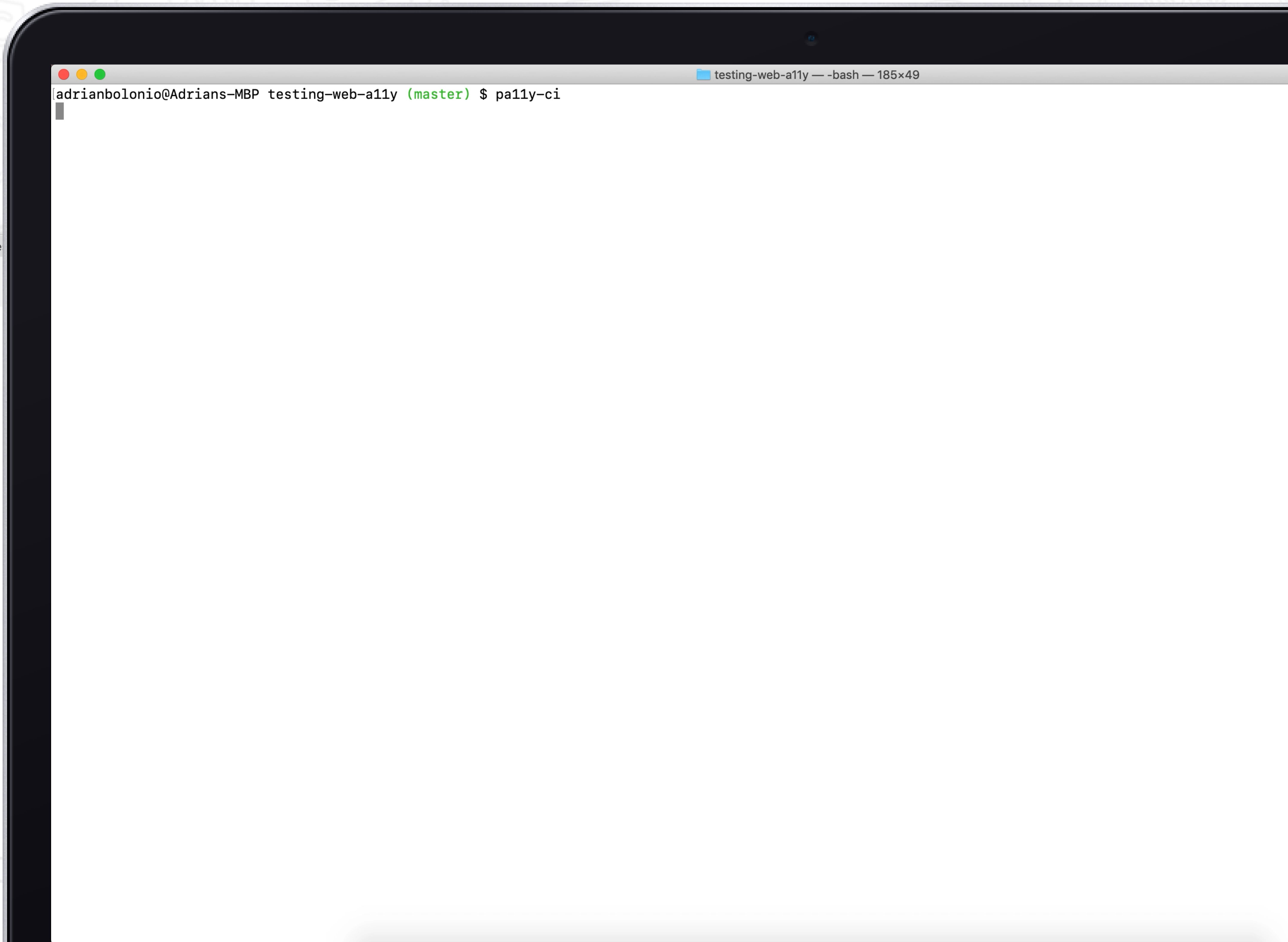
```
npm install -g pa11y-ci
```

By default, Pa11y CI looks for a config file (.json) in the current working directory. Each URL in your config file can be an object and specify pa11y configurations which override the defaults too.



You, a few seconds ago | 2 authors (You and others)

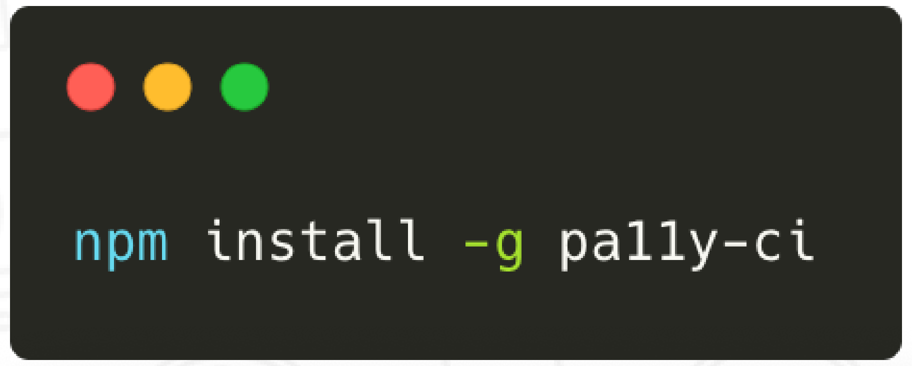
```
{
  "urls": [
    "https://stackoverflow.com/",
    {
      "url": "https://stackoverflow.com/",
      "timeout": 50000,
      "screenCapture": "captures-stackoverflow.png"
    },
    {
      "url": "https://stackoverflow.com/",
      "timeout": 50000,
      "actions": [
        "screen capture captures-stackoverflow-home.png",
        "navigate to https://stackoverflow.com/questions",
        "screen capture captures-stackoverflow-questions.png"
      ]
    }
  ]
}
```



```
adrianbolonio@Adrians-MBP testing-web-a11y (master) $ pa11y-ci
```

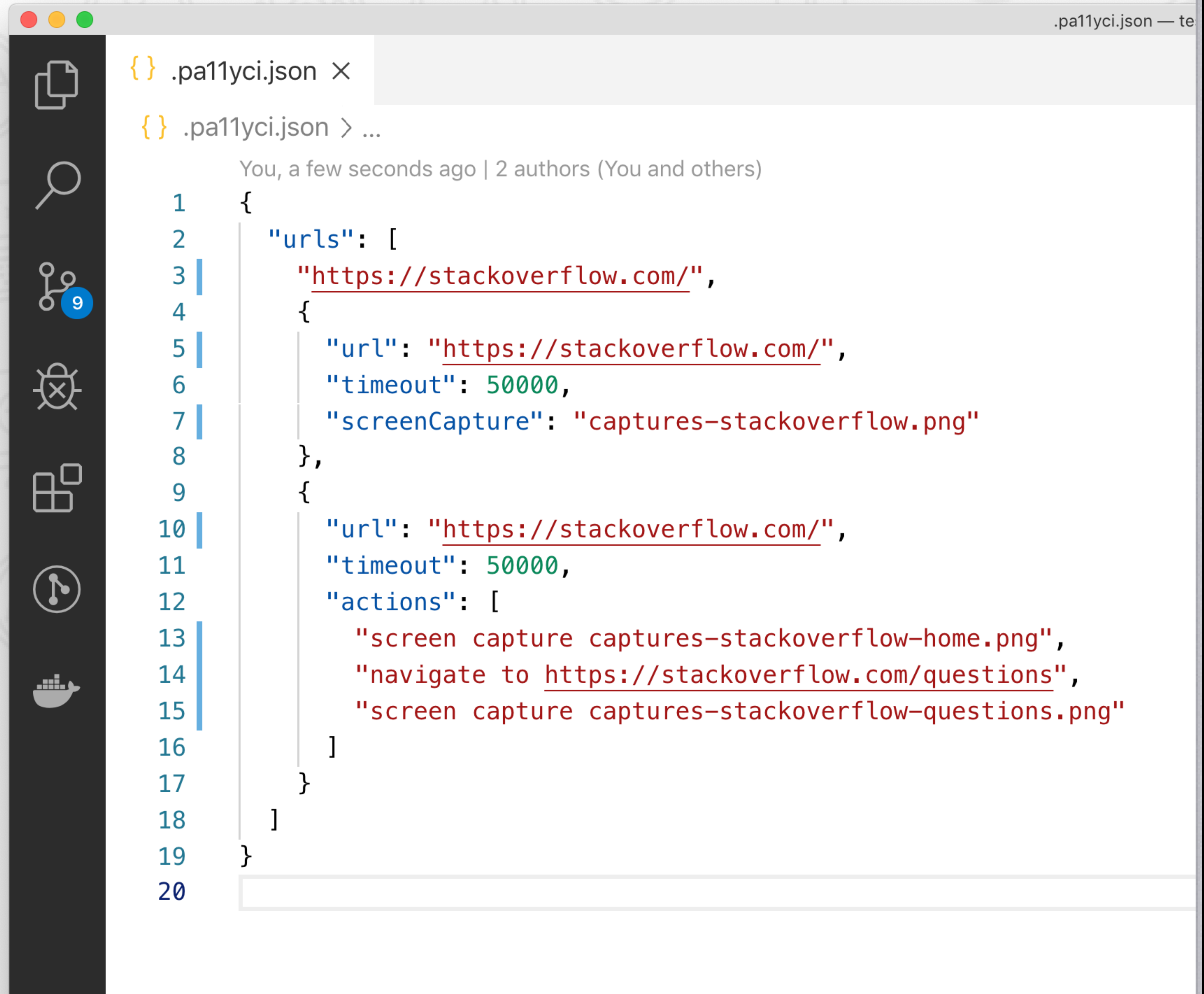
pa11y-ci

Install it globally in your machine

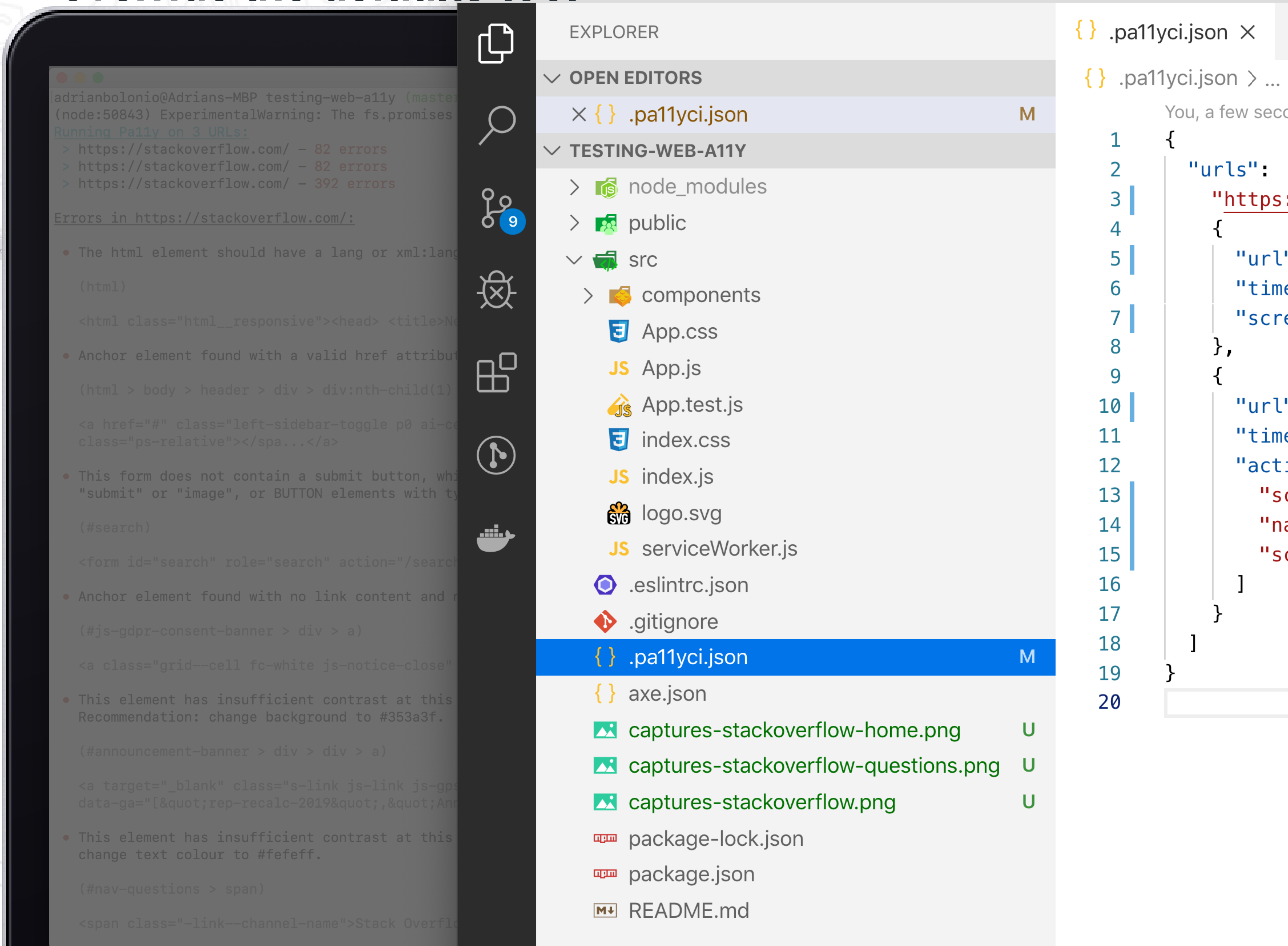


```
npm install -g pa11y-ci
```

By default, Pa11y CI looks for a config file (.json) in the current working directory. Each URL in your config file can be an object and specify pa11y configurations which override the defaults too.



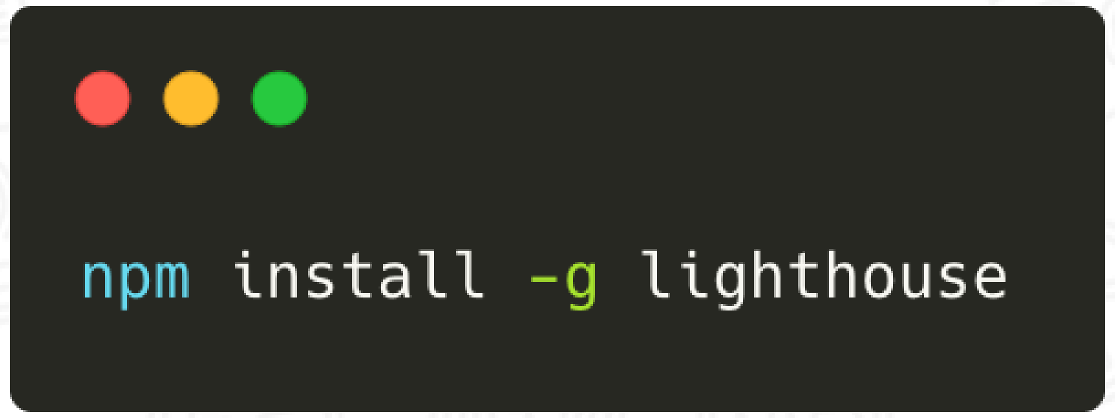
```json
{
  "urls": [
    "https://stackoverflow.com/",
    {
      "url": "https://stackoverflow.com/",
      "timeout": 50000,
      "screenCapture": "captures-stackoverflow.png"
    },
    {
      "url": "https://stackoverflow.com/",
      "timeout": 50000,
      "actions": [
        "screen capture captures-stackoverflow-home.png",
        "navigate to https://stackoverflow.com/questions",
        "screen capture captures-stackoverflow-questions.png"
      ]
    }
  ]
}
```



```
adrianbolonio@Adrians-MBP testing-web-a11y (maste
(node:50843) ExperimentalWarning: The fs.promises
Running Pa11y on 3 URLs:
 > https://stackoverflow.com/ - 82 errors
 > https://stackoverflow.com/ - 82 errors
 > https://stackoverflow.com/ - 392 errors

Errors in https://stackoverflow.com/:

 • The html element should have a lang or xml:lang

   (html)

   <html class="html__responsive"><head> <title>Ne

 • Anchor element found with a valid href attribut

   (html > body > header > div > div:nth-child(1)

   <a href="#" class="left-sidebar-toggle p0 ai-ce
   class="ps-relative"></spa...</a>

 • This form does not contain a submit button, whi
   "submit" or "image", or BUTTON elements with ty

   (#search)

   <form id="search" role="search" action="/search

 • Anchor element found with no link content and r

   (#js-gdpr-consent-banner > div > a)

   <a class="grid--cell fc-white js-notice-close"

 • This element has insufficient contrast at this
   Recommendation: change background to #353a3f.

   (#announcement-banner > div > div > a)

   <a target="_blank" class="s-link js-link js-gps
   data-ga="[&quot;rep-recalc-2019&quot;,&quot;Ann

 • This element has insufficient contrast at this
   change text colour to #fefeff.

   (#nav-questions > span)

   <span class="-link--channel-name">Stack Overflo
```

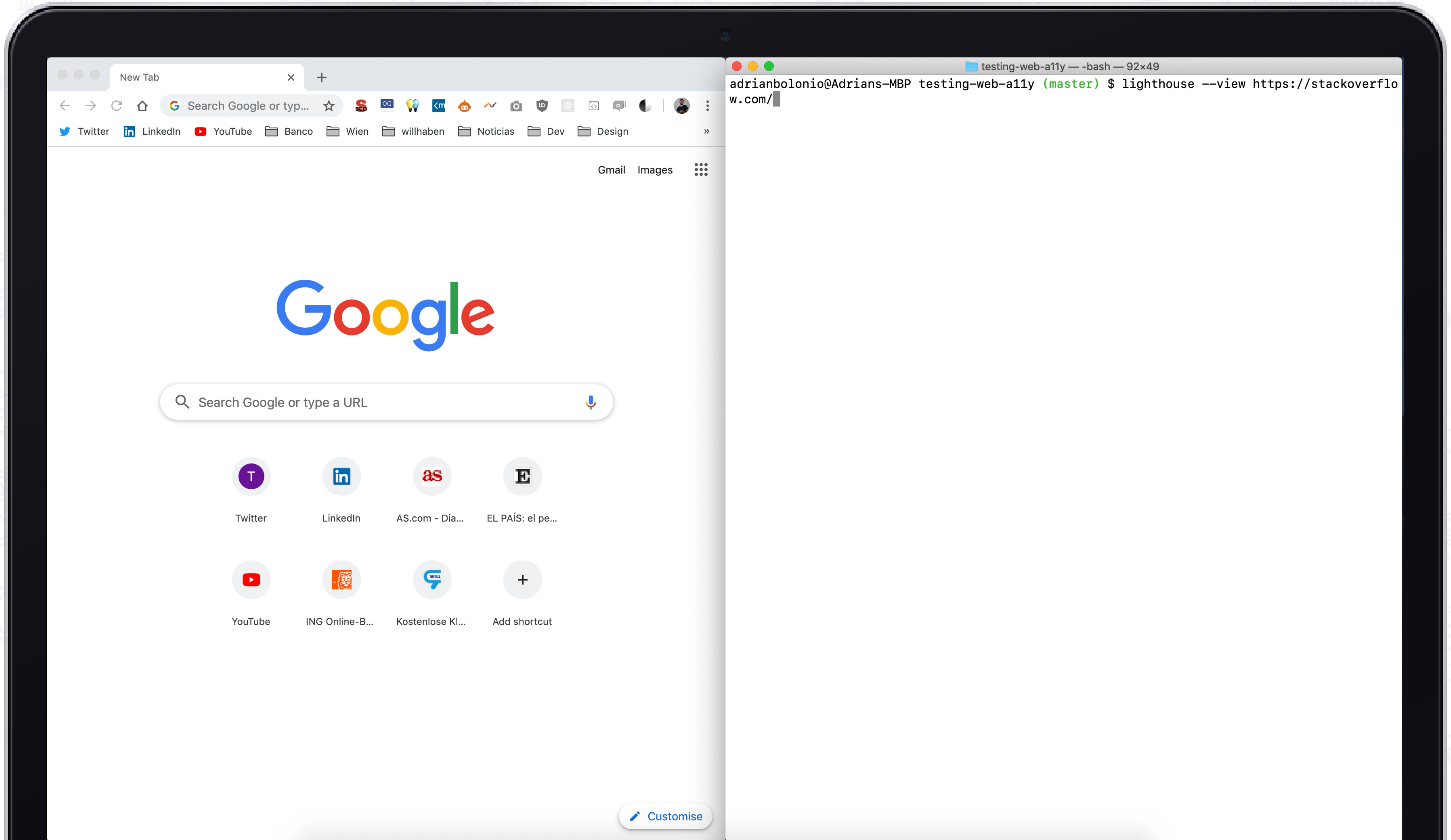
Lighthouse

Install it globally in your machine



```
npm install -g lighthouse
```

You can now run the lighthouse command in the terminal (with --view) and it will immediately open the generated html report.



```
adrianbolonio@Adrians-MBP testing-web-a11y (master) $ lighthouse --view https://stackoverflo
w.com/
```

Automating the accessibility tests of your source code with GitHub Actions

GitHub Actions

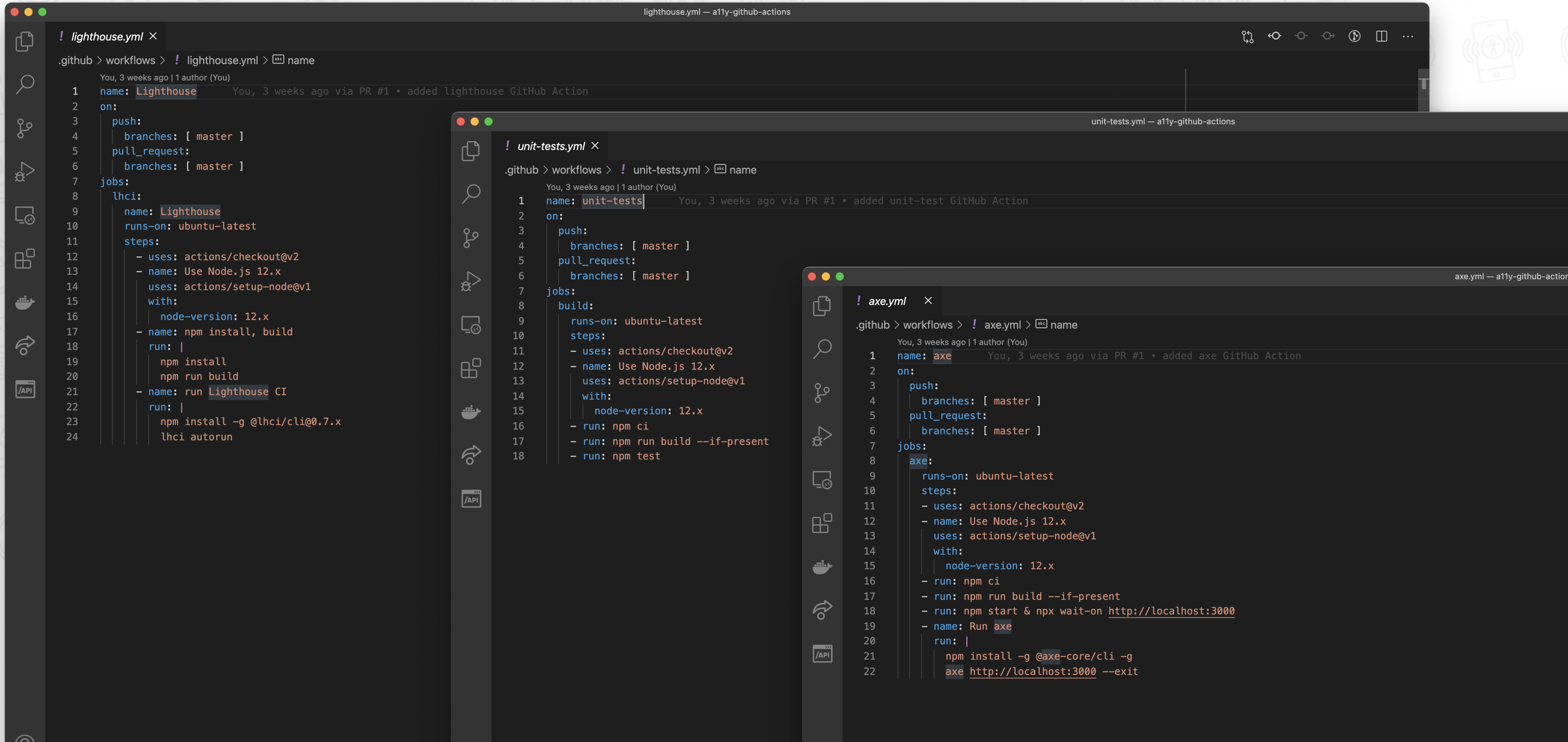
GitHub Actions allow you to automate, customize, and execute your software development workflows right in your repository with GitHub Actions.

With GitHub Actions you could execute a series of statements and commands after a specific event has occurred, simply put, it’s your own **pipeline CI / CD** directly in your repository.

Github defines a **workflow** as a configurable automated process made up of one or more jobs.

The workflow configuration to define events, tasks, and steps to be executed in GitHub Actions are defined using **YAML** files that must be located in the **.github/workflows** folder.

GitHub Actions



lighthouse.yml — a11y-github-actions

.github > workflows > lighthouse.yml > name

You, 3 weeks ago | 1 author (You)

You, 3 weeks ago via PR #1 • added lighthouse GitHub Action

```yaml
name: Lighthouse
on:
  push:
    branches: [ master ]
  pull_request:
    branches: [ master ]
jobs:
  lhci:
    name: Lighthouse
    runs-on: ubuntu-latest
    steps:
      - uses: actions/checkout@v2
      - name: Use Node.js 12.x
        uses: actions/setup-node@v1
        with:
          node-version: 12.x
      - name: npm install, build
        run: |
          npm install
          npm run build
      - name: run Lighthouse CI
        run: |
          npm install -g @lhci/cli@0.7.x
          lhci autorun
```

unit-tests.yml — a11y-github-actions

.github > workflows > unit-tests.yml > name

You, 3 weeks ago | 1 author (You)

You, 3 weeks ago via PR #1 • added unit-test GitHub Action

```yaml
name: unit-tests
on:
  push:
    branches: [ master ]
  pull_request:
    branches: [ master ]
jobs:
  build:
    runs-on: ubuntu-latest
    steps:
    - uses: actions/checkout@v2
    - name: Use Node.js 12.x
      uses: actions/setup-node@v1
      with:
        node-version: 12.x
    - run: npm ci
    - run: npm run build --if-present
    - run: npm test
```

axe.yml — a11y-github-actio

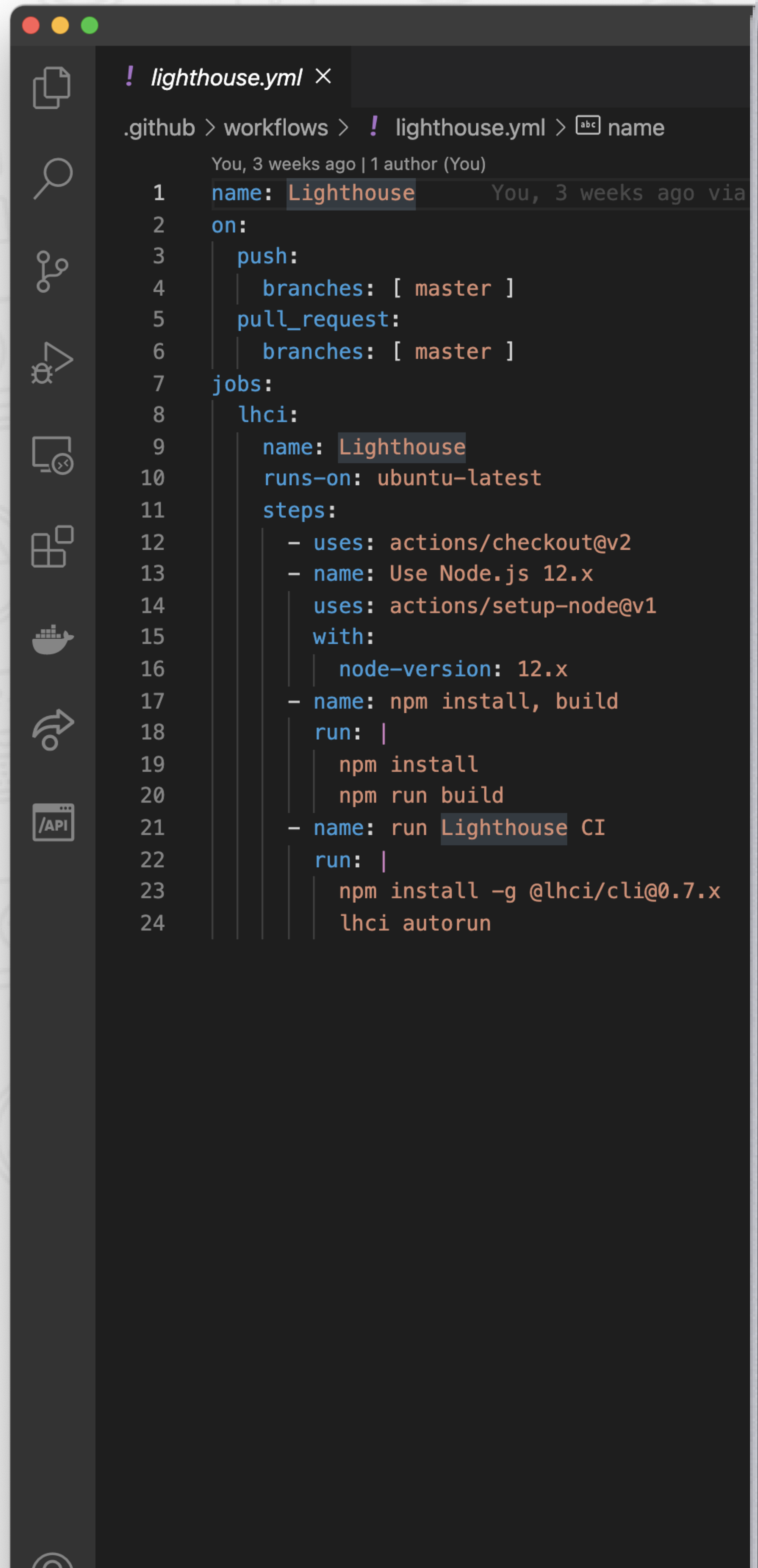
.github > workflows > axe.yml > name

You, 3 weeks ago | 1 author (You)

You, 3 weeks ago via PR #1 • added axe GitHub Action

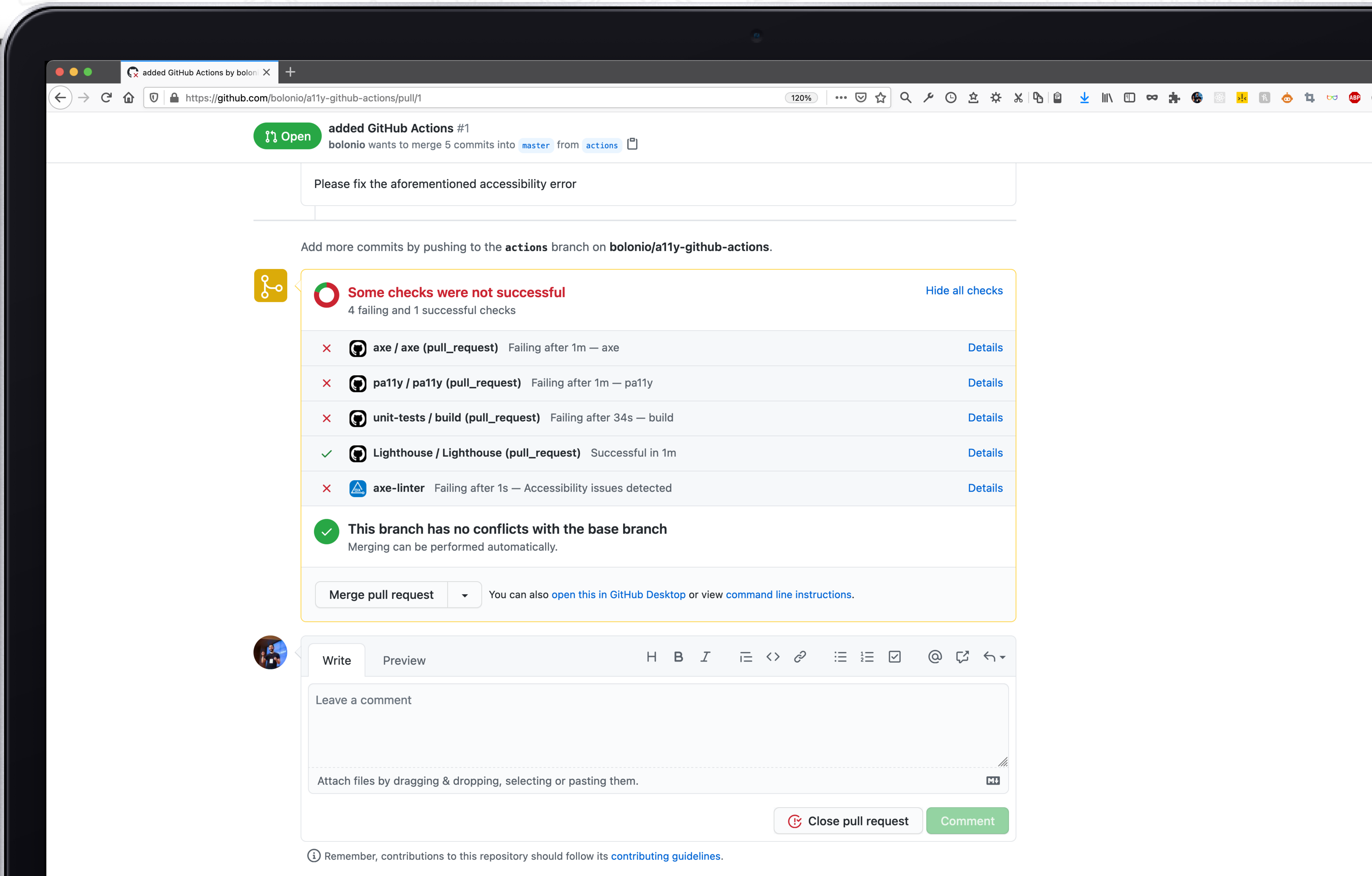
```yaml
name: axe
on:
  push:
    branches: [ master ]
  pull_request:
    branches: [ master ]
jobs:
  axe:
    runs-on: ubuntu-latest
    steps:
    - uses: actions/checkout@v2
    - name: Use Node.js 12.x
      uses: actions/setup-node@v1
      with:
        node-version: 12.x
    - run: npm ci
    - run: npm run build --if-present
    - run: npm start & npx wait-on http://localhost:3000
    - name: Run axe
      run: |
        npm install -g @axe-core/cli -g
        axe http://localhost:3000 --exit
```

GitHub Actions



lighthouse.yml
.github > workflows > lighthouse.yml > name
You, 3 weeks ago | 1 author (You)

```yaml
name: Lighthouse          You, 3 weeks ago via
on:
  push:
    branches: [ master ]
  pull_request:
    branches: [ master ]
jobs:
  lhci:
    name: Lighthouse
    runs-on: ubuntu-latest
    steps:
      - uses: actions/checkout@v2
      - name: Use Node.js 12.x
        uses: actions/setup-node@v1
        with:
          node-version: 12.x
      - name: npm install, build
        run: |
          npm install
          npm run build
      - name: run Lighthouse CI
        run: |
          npm install -g @lhci/cli@0.7.x
          lhci autorun
```



added GitHub Actions by bolon
https://github.com/bolonio/a11y-github-actions/pull/1
120%

Open **added GitHub Actions** #1

bolonio wants to merge 5 commits into `master` from `actions`

Please fix the aforementioned accessibility error

Add more commits by pushing to the **actions** branch on **bolonio/a11y-github-actions**.

Some checks were not successful
4 failing and 1 successful checks

Hide all checks

✗	**axe / axe (pull_request)** Failing after 1m — axe	Details
✗	**pa11y / pa11y (pull_request)** Failing after 1m — pa11y	Details
✗	**unit-tests / build (pull_request)** Failing after 34s — build	Details
✓	**Lighthouse / Lighthouse (pull_request)** Successful in 1m	Details
✗	**axe-linter** Failing after 1s — Accessibility issues detected	Details

This branch has no conflicts with the base branch
Merging can be performed automatically.

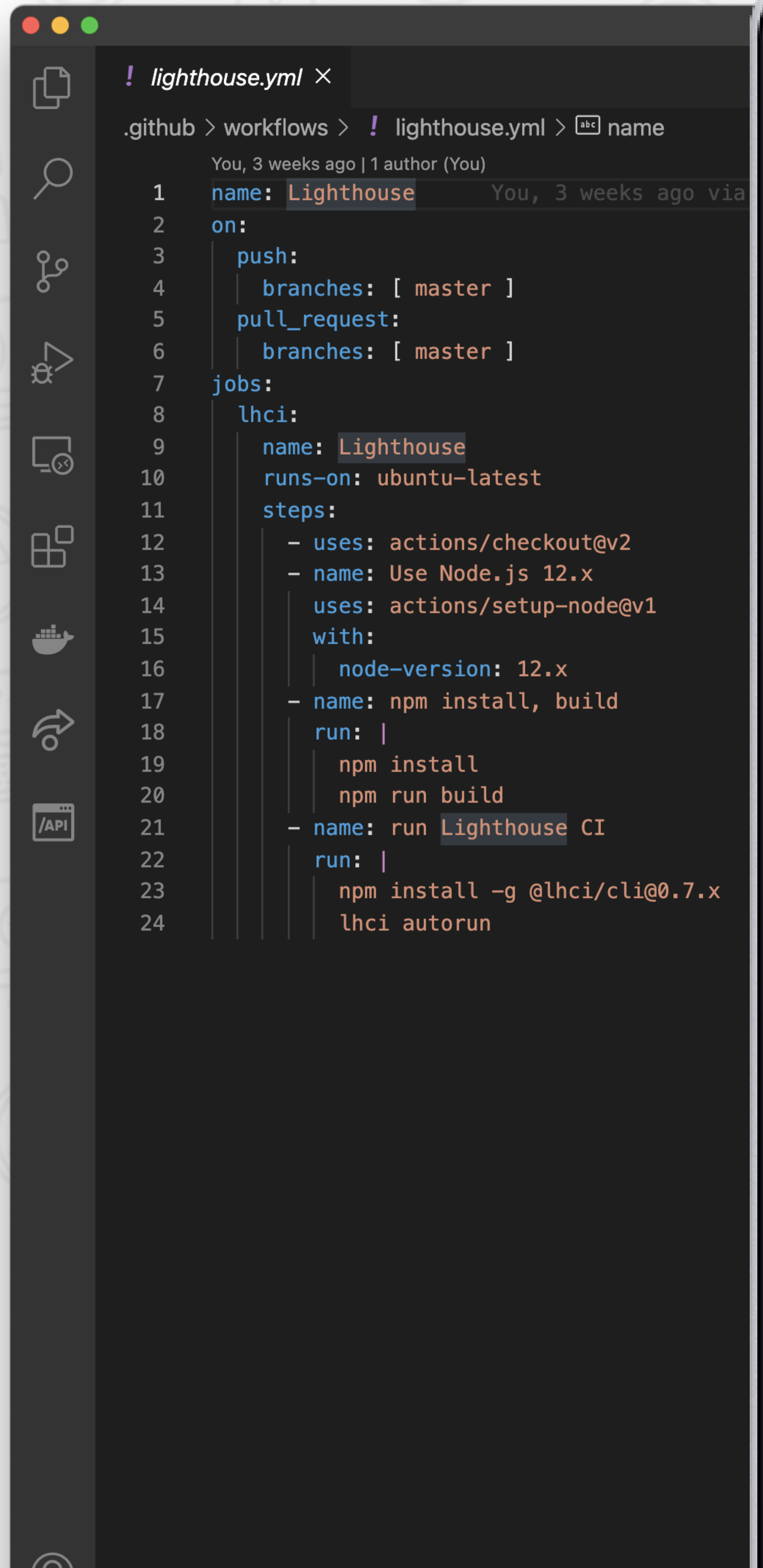
Merge pull request ▾ You can also open this in GitHub Desktop or view command line instructions.

Leave a comment

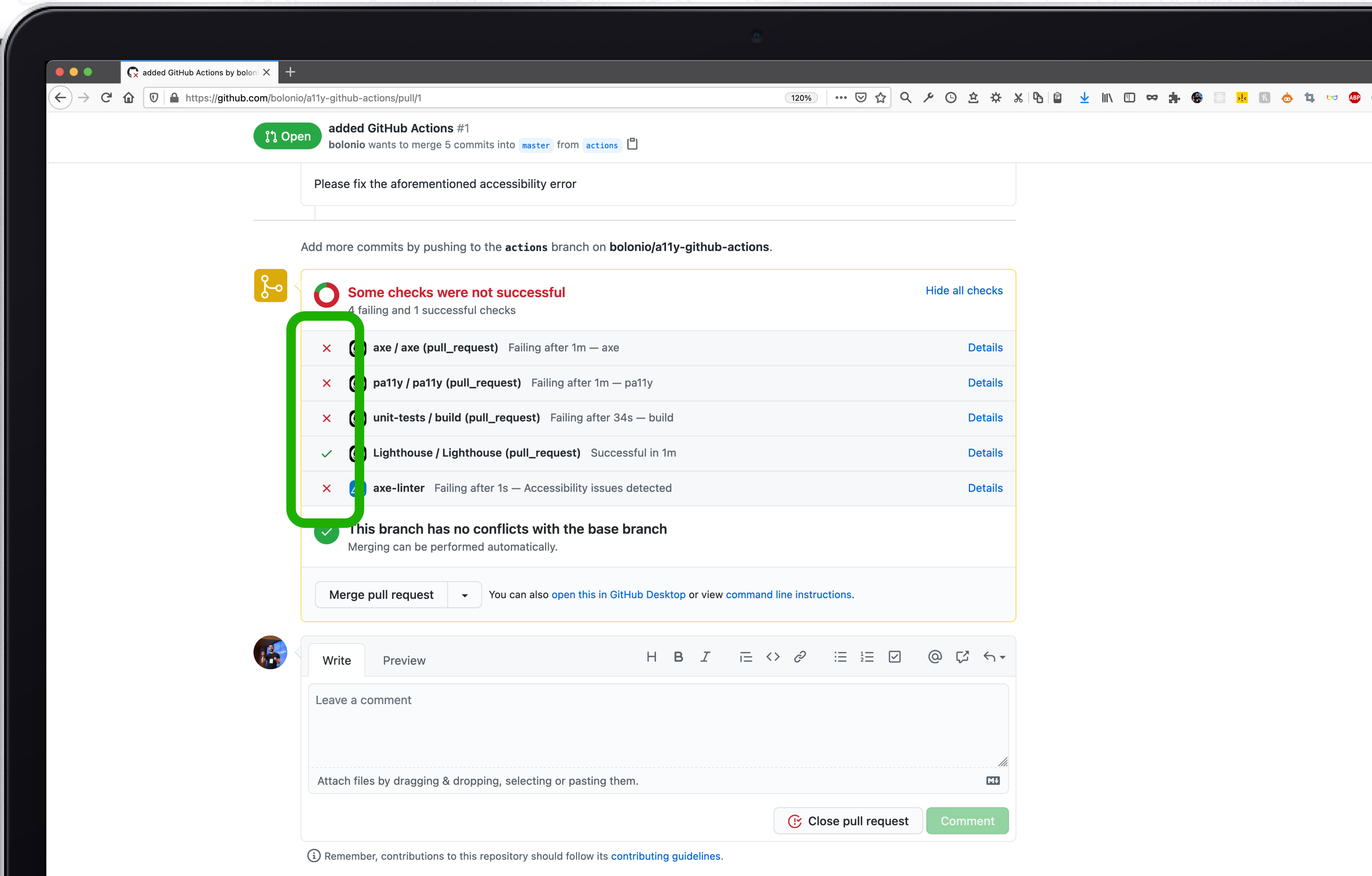
Attach files by dragging & dropping, selecting or pasting them.

Remember, contributions to this repository should follow its contributing guidelines.

GitHub Actions


lighthouse.yml
.github > workflows > lighthouse.yml > name
You, 3 weeks ago | 1 author (You)
You, 3 weeks ago via

```yaml
name: Lighthouse
on:
  push:
    branches: [ master ]
  pull_request:
    branches: [ master ]
jobs:
  lhci:
    name: Lighthouse
    runs-on: ubuntu-latest
    steps:
      - uses: actions/checkout@v2
      - name: Use Node.js 12.x
        uses: actions/setup-node@v1
        with:
          node-version: 12.x
      - name: npm install, build
        run: |
          npm install
          npm run build
      - name: run Lighthouse CI
        run: |
          npm install -g @lhci/cli@0.7.x
          lhci autorun
```


added GitHub Actions by bolon
https://github.com/bolonio/a11y-github-actions/pull/1
120%

Open **added GitHub Actions** #1

bolonio wants to merge 5 commits into `master` from `actions`

Please fix the aforementioned accessibility error

Add more commits by pushing to the **actions** branch on **bolonio/a11y-github-actions**.

Some checks were not successful

4 failing and 1 successful checks

Hide all checks

✗	**axe / axe (pull_request)**	Failing after 1m — axe	Details
✗	**pa11y / pa11y (pull_request)**	Failing after 1m — pa11y	Details
✗	**unit-tests / build (pull_request)**	Failing after 34s — build	Details
✓	**Lighthouse / Lighthouse (pull_request)**	Successful in 1m	Details
✗	**axe-linter**	Failing after 1s — Accessibility issues detected	Details

This branch has no conflicts with the base branch

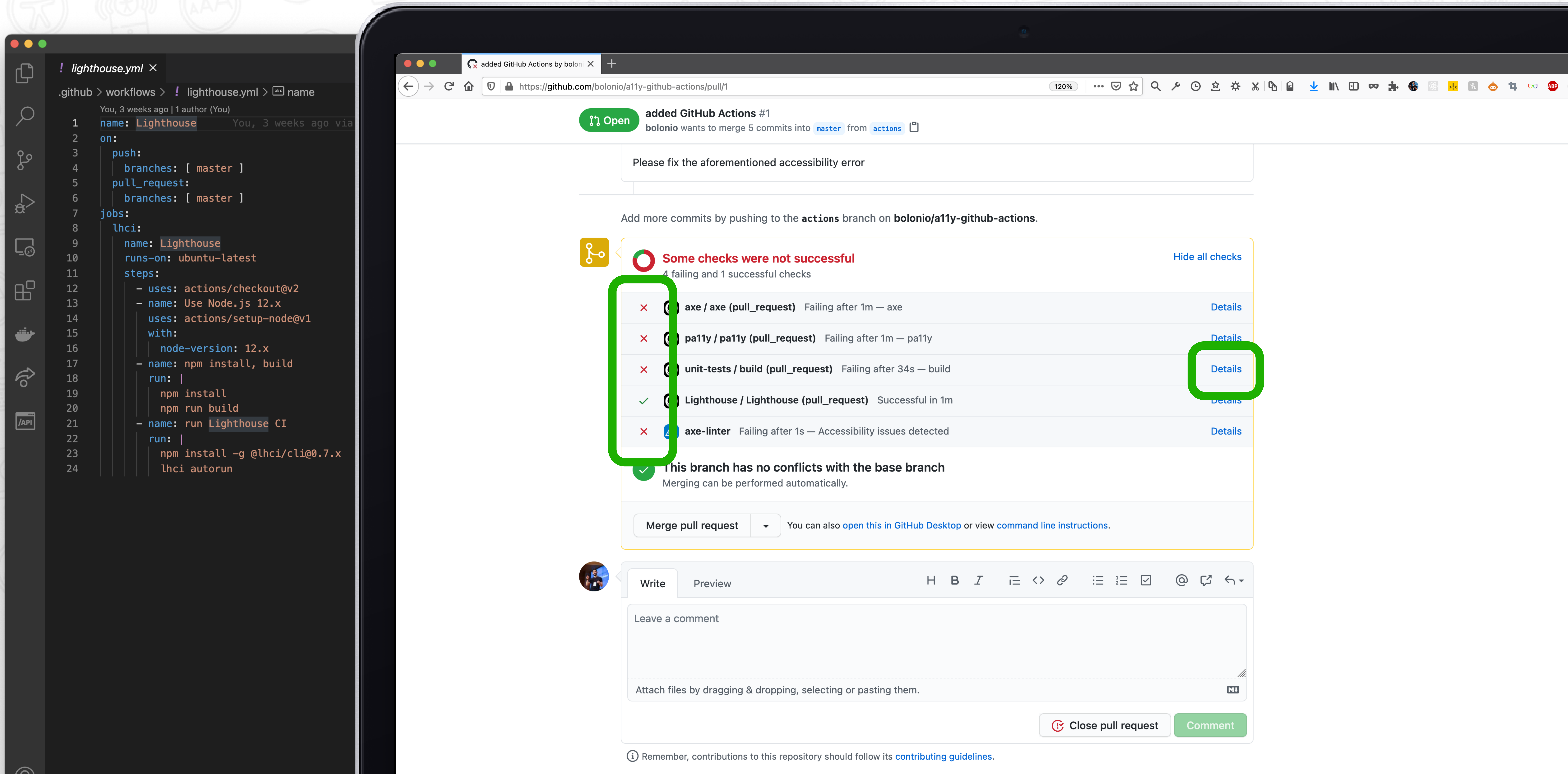
Merging can be performed automatically.

Merge pull request | You can also open this in GitHub Desktop or view command line instructions.

Write
Preview
Leave a comment
Attach files by dragging & dropping, selecting or pasting them.
Close pull request
Comment

Remember, contributions to this repository should follow its contributing guidelines.

GitHub Actions



lighthouse.yml

.github > workflows > lighthouse.yml > name

You, 3 weeks ago | 1 author (You)

```yaml
name: Lighthouse
on:
  push:
    branches: [ master ]
  pull_request:
    branches: [ master ]
jobs:
  lhci:
    name: Lighthouse
    runs-on: ubuntu-latest
    steps:
      - uses: actions/checkout@v2
      - name: Use Node.js 12.x
        uses: actions/setup-node@v1
        with:
          node-version: 12.x
      - name: npm install, build
        run: |
          npm install
          npm run build
      - name: run Lighthouse CI
        run: |
          npm install -g @lhci/cli@0.7.x
          lhci autorun
```

https://github.com/bolonio/a11y-github-actions/pull/1

Open **added GitHub Actions** #1

bolonio wants to merge 5 commits into `master` from `actions`

Please fix the aforementioned accessibility error

Add more commits by pushing to the **actions** branch on **bolonio/a11y-github-actions**.

Some checks were not successful

4 failing and 1 successful checks

Hide all checks

✗ **axe / axe (pull_request)** Failing after 1m — axe — Details

✗ **pa11y / pa11y (pull_request)** Failing after 1m — pa11y — Details

✗ **unit-tests / build (pull_request)** Failing after 34s — build — Details

✓ **Lighthouse / Lighthouse (pull_request)** Successful in 1m — Details

✗ **axe-linter** Failing after 1s — Accessibility issues detected — Details

This branch has no conflicts with the base branch

Merging can be performed automatically.

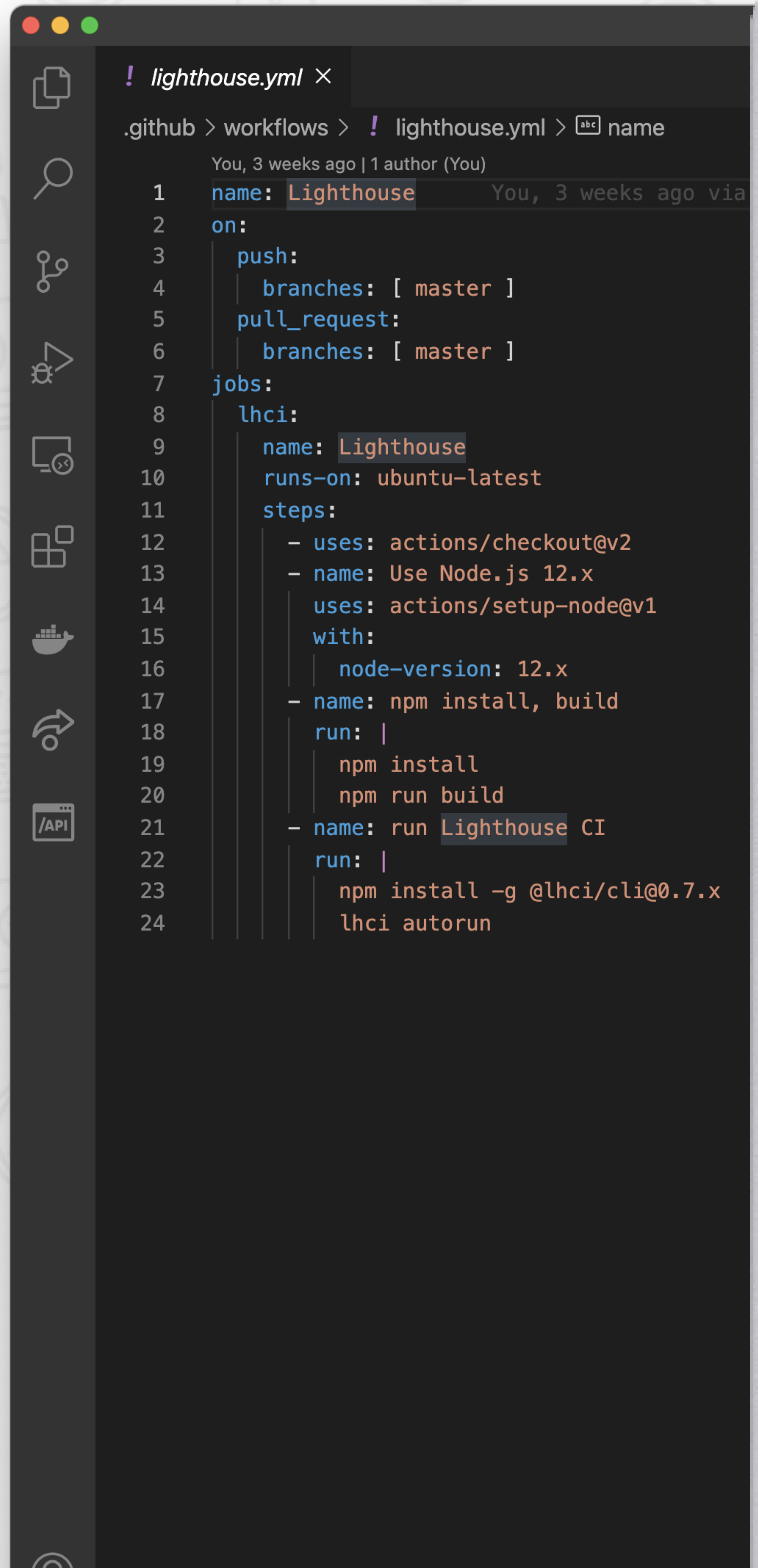
Merge pull request

You can also open this in GitHub Desktop or view command line instructions.

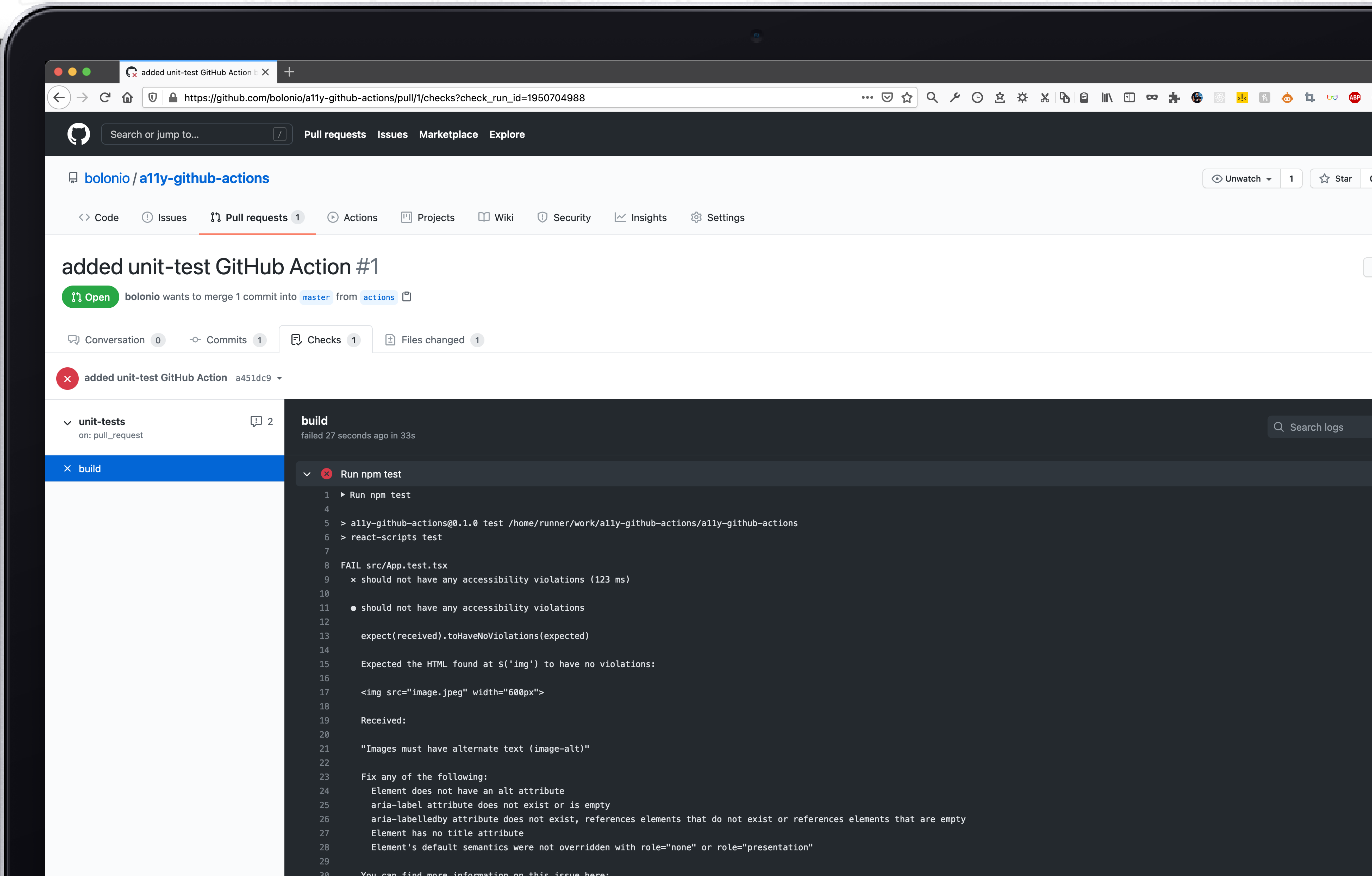
Write
Preview
Leave a comment
Attach files by dragging & dropping, selecting or pasting them.
Close pull request
Comment

Remember, contributions to this repository should follow its contributing guidelines.

GitHub Actions


lighthouse.yml
.github > workflows > lighthouse.yml > name
You, 3 weeks ago | 1 author (You)
You, 3 weeks ago via

```yaml
name: Lighthouse
on:
  push:
    branches: [ master ]
  pull_request:
    branches: [ master ]
jobs:
  lhci:
    name: Lighthouse
    runs-on: ubuntu-latest
    steps:
      - uses: actions/checkout@v2
      - name: Use Node.js 12.x
        uses: actions/setup-node@v1
        with:
          node-version: 12.x
      - name: npm install, build
        run: |
          npm install
          npm run build
      - name: run Lighthouse CI
        run: |
          npm install -g @lhci/cli@0.7.x
          lhci autorun
```


added unit-test GitHub Action
https://github.com/bolonio/a11y-github-actions/pull/1/checks?check_run_id=1950704988
Search or jump to...
Pull requests
Issues
Marketplace
Explore
bolonio / a11y-github-actions
Unwatch 1
Star
Code
Issues
Pull requests 1
Actions
Projects
Wiki
Security
Insights
Settings

added unit-test GitHub Action #1

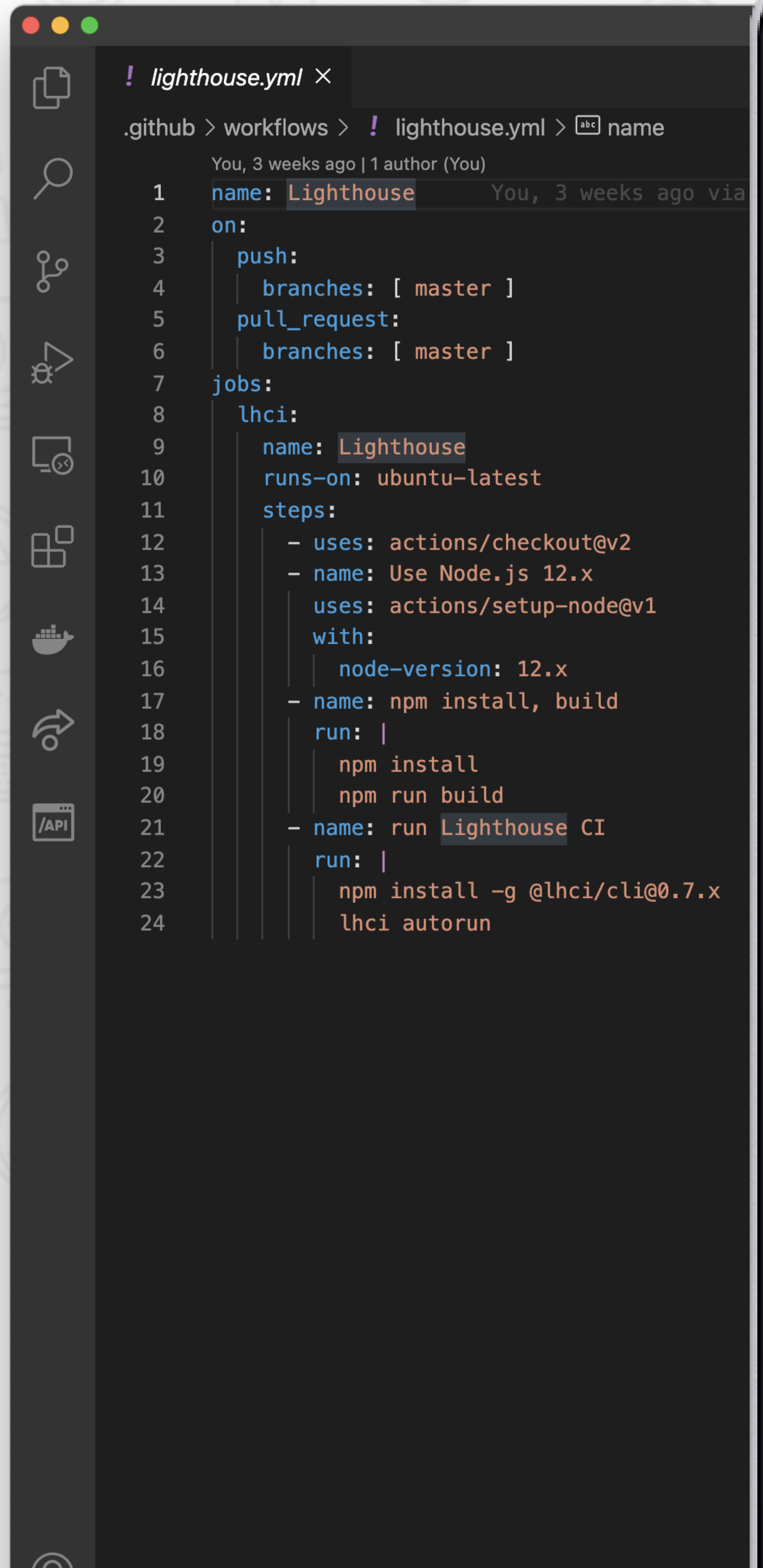
Open bolonio wants to merge 1 commit into `master` from `actions`

build
failed 27 seconds ago in 33s

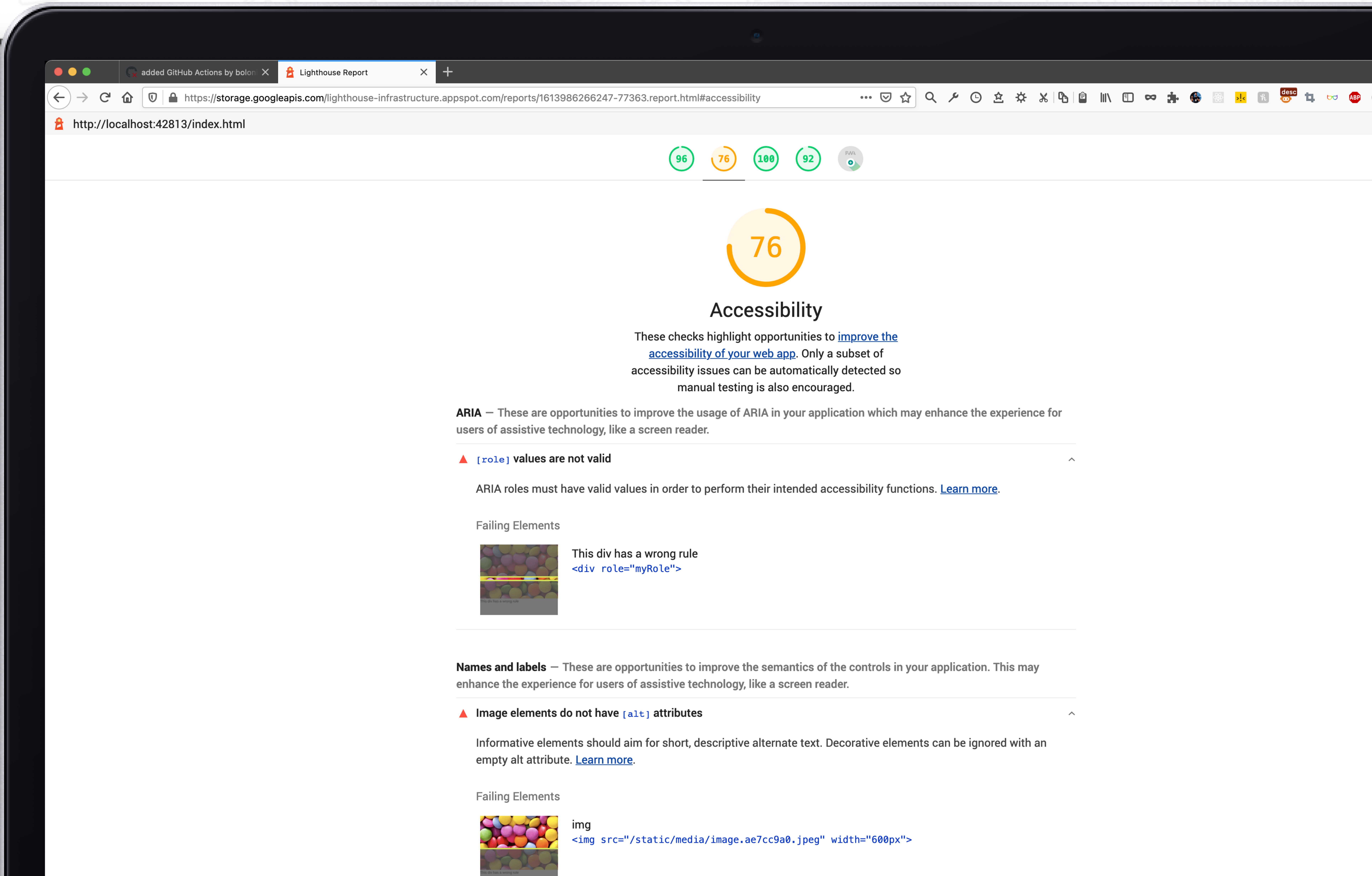
Run npm test

```
▸ Run npm test

> a11y-github-actions@0.1.0 test /home/runner/work/a11y-github-actions/a11y-github-actions
> react-scripts test

FAIL src/App.test.tsx
  × should not have any accessibility violations (123 ms)

  ● should not have any accessibility violations

    expect(received).toHaveNoViolations(expected)

    Expected the HTML found at $('img') to have no violations:

    <img src="image.jpeg" width="600px">

    Received:

    "Images must have alternate text (image-alt)"

    Fix any of the following:
      Element does not have an alt attribute
      aria-label attribute does not exist or is empty
      aria-labelledby attribute does not exist, references elements that do not exist or references elements that are empty
      Element has no title attribute
      Element's default semantics were not overridden with role="none" or role="presentation"

    You can find more information on this issue here:
```

GitHub Actions


! lighthouse.yml ×
.github > workflows > ! lighthouse.yml > name
You, 3 weeks ago | 1 author (You)

```yaml
name: Lighthouse                    You, 3 weeks ago via
on:
  push:
    branches: [ master ]
  pull_request:
    branches: [ master ]
jobs:
  lhci:
    name: Lighthouse
    runs-on: ubuntu-latest
    steps:
      - uses: actions/checkout@v2
      - name: Use Node.js 12.x
        uses: actions/setup-node@v1
        with:
          node-version: 12.x
      - name: npm install, build
        run: |
          npm install
          npm run build
      - name: run Lighthouse CI
        run: |
          npm install -g @lhci/cli@0.7.x
          lhci autorun
```


added GitHub Actions by bolon
Lighthouse Report
https://storage.googleapis.com/lighthouse-infrastructure.appspot.com/reports/1613986266247-77363.report.html#accessibility
http://localhost:42813/index.html
96
76
100
92

76

Accessibility

These checks highlight opportunities to improve the accessibility of your web app. Only a subset of accessibility issues can be automatically detected so manual testing is also encouraged.

ARIA — These are opportunities to improve the usage of ARIA in your application which may enhance the experience for users of assistive technology, like a screen reader.

▲ `[role]` values are not valid

ARIA roles must have valid values in order to perform their intended accessibility functions. Learn more.

Failing Elements

This div has a wrong rule
`<div role="myRole">`

Names and labels — These are opportunities to improve the semantics of the controls in your application. This may enhance the experience for users of assistive technology, like a screen reader.

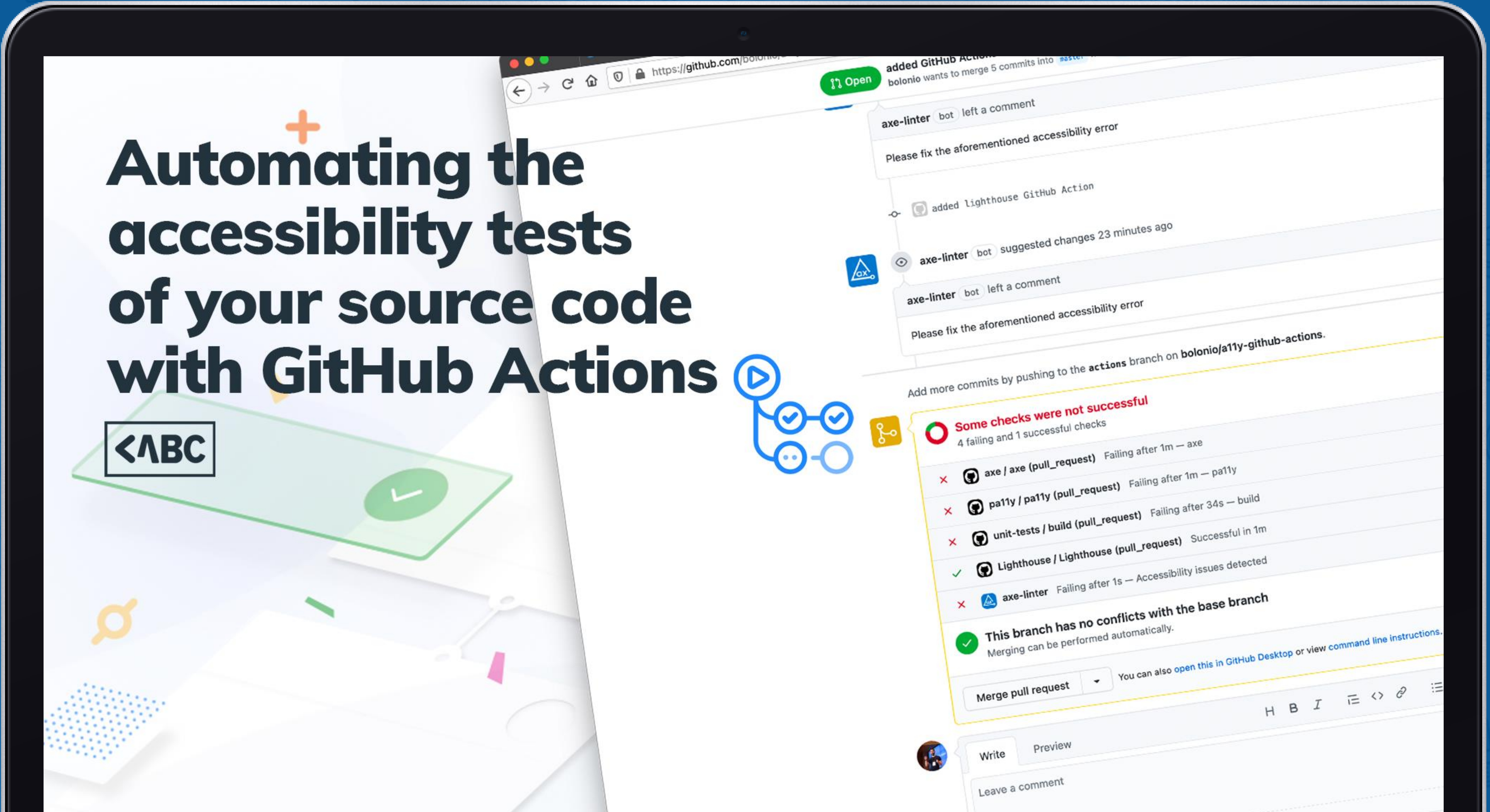
▲ Image elements do not have `[alt]` attributes

Informative elements should aim for short, descriptive alternate text. Decorative elements can be ignored with an empty alt attribute. Learn more.

Failing Elements

img
`<img src="/static/media/image.ae7cc9a0.jpeg" width="600px">`

www.adrianbolonio.com/en/accessibility-github-actions



Automating the accessibility tests of your source code with GitHub Actions

<ABC

https://github.com/bolonio/

Open

added GitHub Action

bolonio wants to merge 5 commits into master

axe-linter bot left a comment

Please fix the aforementioned accessibility error

added lighthouse GitHub Action

axe-linter bot suggested changes 23 minutes ago

axe-linter bot left a comment

Please fix the aforementioned accessibility error

Add more commits by pushing to the **actions** branch on **bolonio/a11y-github-actions**.

Some checks were not successful

4 failing and 1 successful checks

× axe / axe (pull_request) Failing after 1m — axe

× pa11y / pa11y (pull_request) Failing after 1m — pa11y

× unit-tests / build (pull_request) Failing after 34s — build

✓ Lighthouse / Lighthouse (pull_request) Successful in 1m

× axe-linter Failing after 1s — Accessibility issues detected

This branch has no conflicts with the base branch

Merging can be performed automatically.

Merge pull request

You can also open this in GitHub Desktop or view command line instructions.

Do manual tests and simulation tests

Screen Readers

Screen readers are software programs that allow blind or visually impaired users to read the text that is displayed on the computer screen with a speech synthesizer.

Voice Over

Narrator

Orca

Talkback

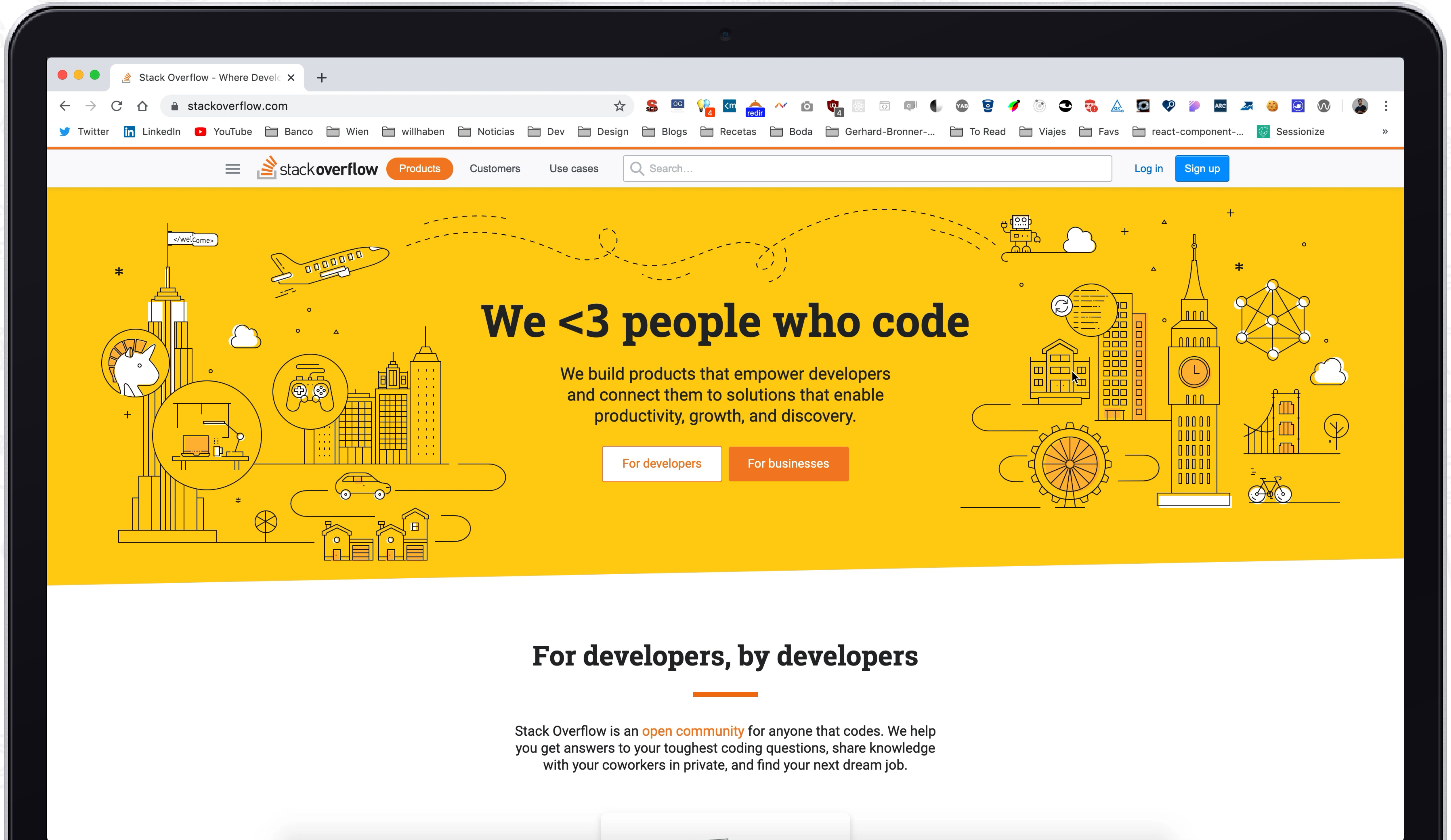
Other commercial screen readers: **NVDA, JAWS**

Testing a11y manually

- axe chrome extension https://www.deque.com/axe/
- ARC Toolkit https://www.paciellogroup.com/toolkit/
- Accessibility Insights https://accessibilityinsights.io/
- WAVE https://wave.webaim.org/

axe chrome extension

https://www.deque.com/axe/



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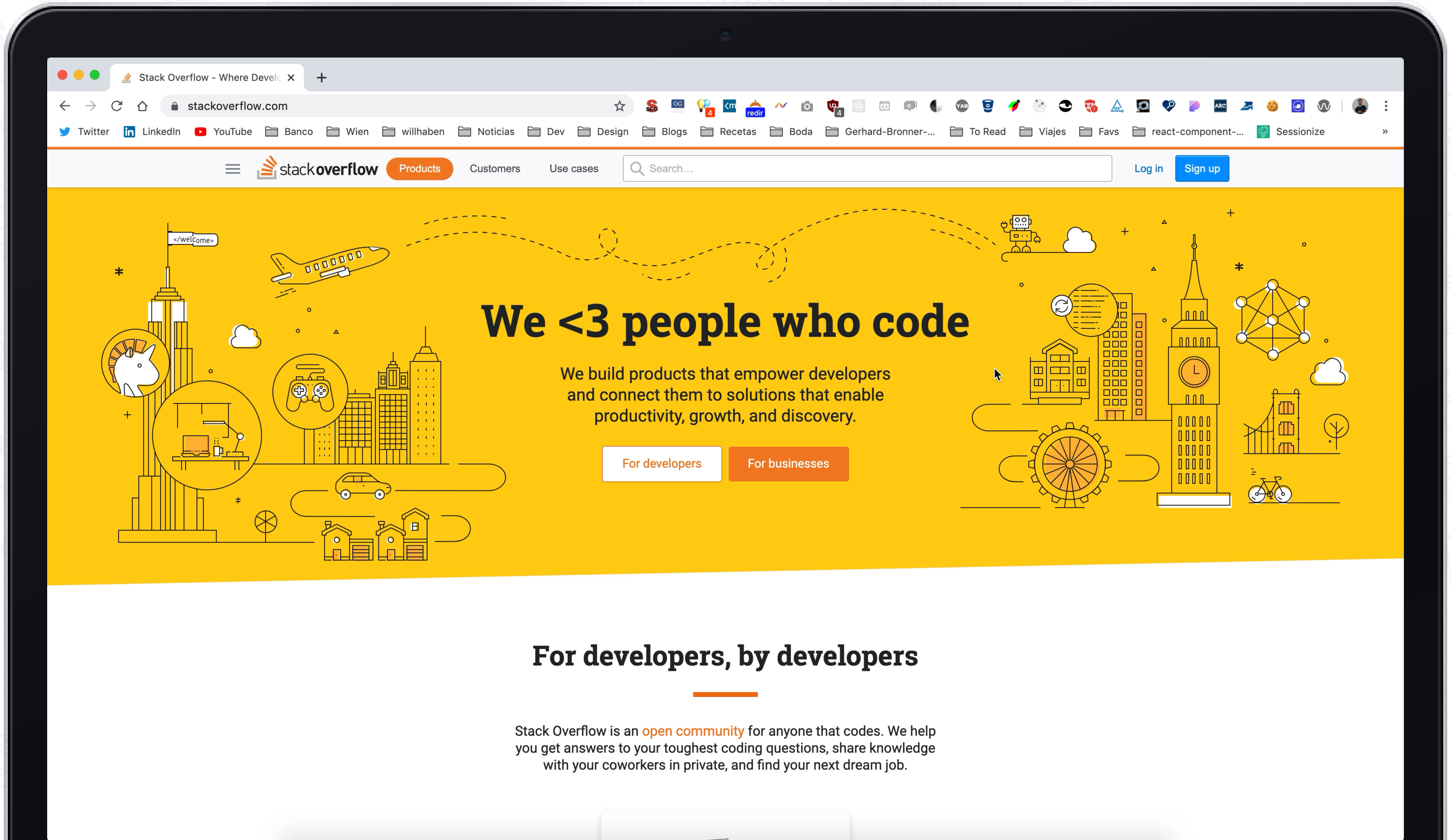
We build products that empower developers and connect them to solutions that enable productivity, growth, and discovery.

For developers, by developers

Stack Overflow is an open community for anyone that codes. We help you get answers to your toughest coding questions, share knowledge with your coworkers in private, and find your next dream job.

ARC Toolkit

https://www.paciellogroup.com/toolkit/



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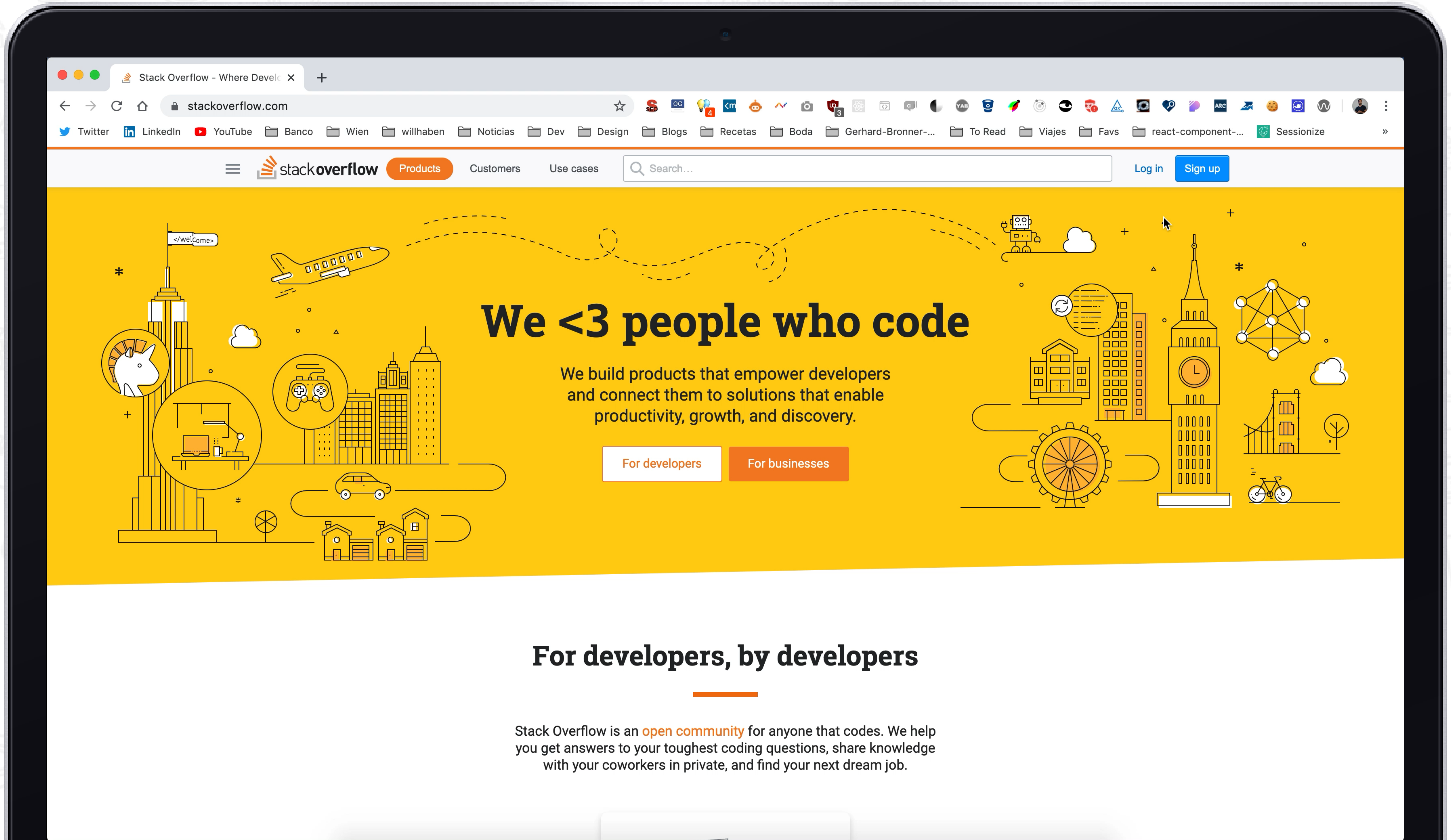
Accessibility Insights

https://accessibilityinsights.io/



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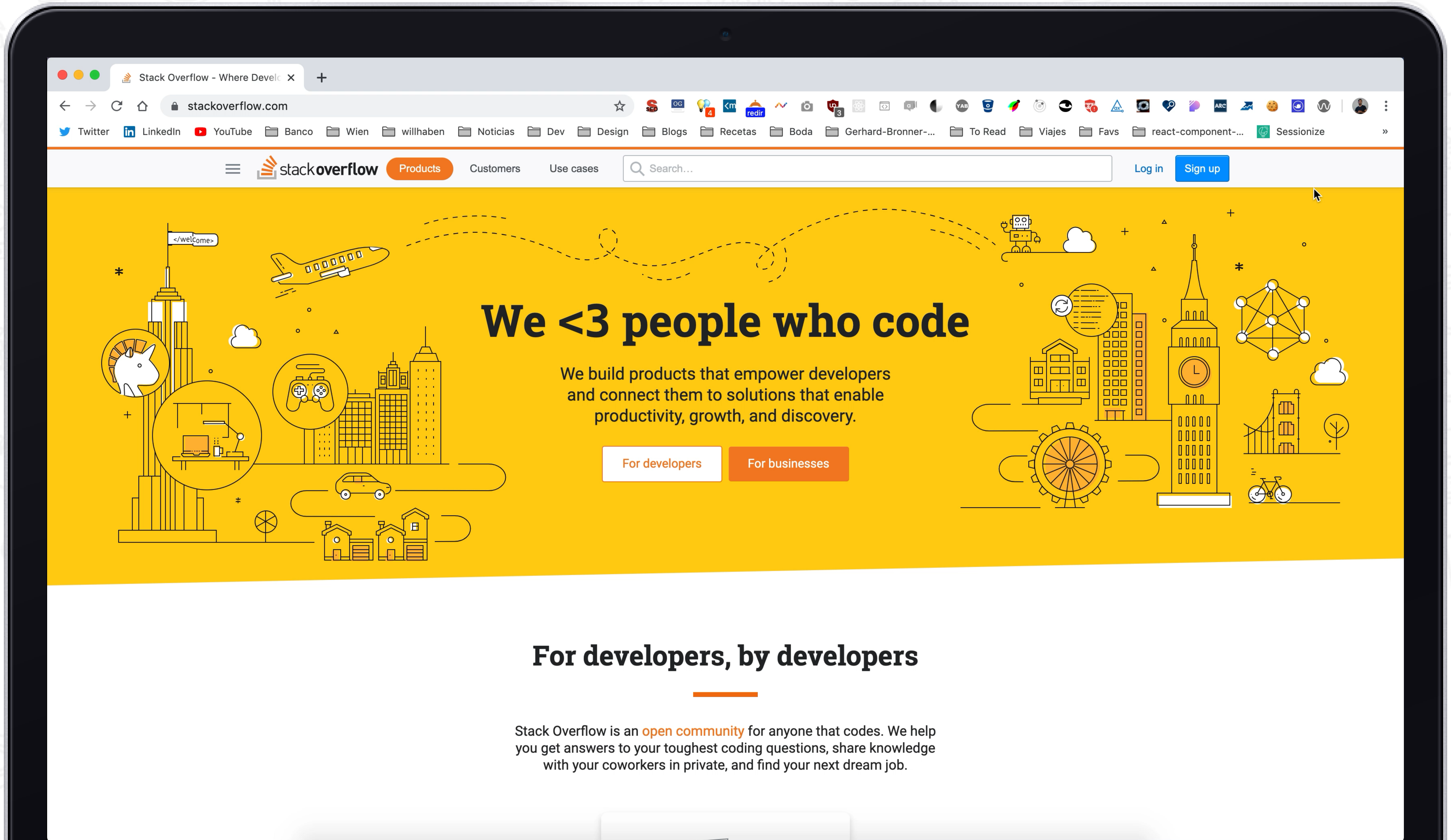
WAVE (web accessibility evaluation tool)

https://wave.webaim.org/



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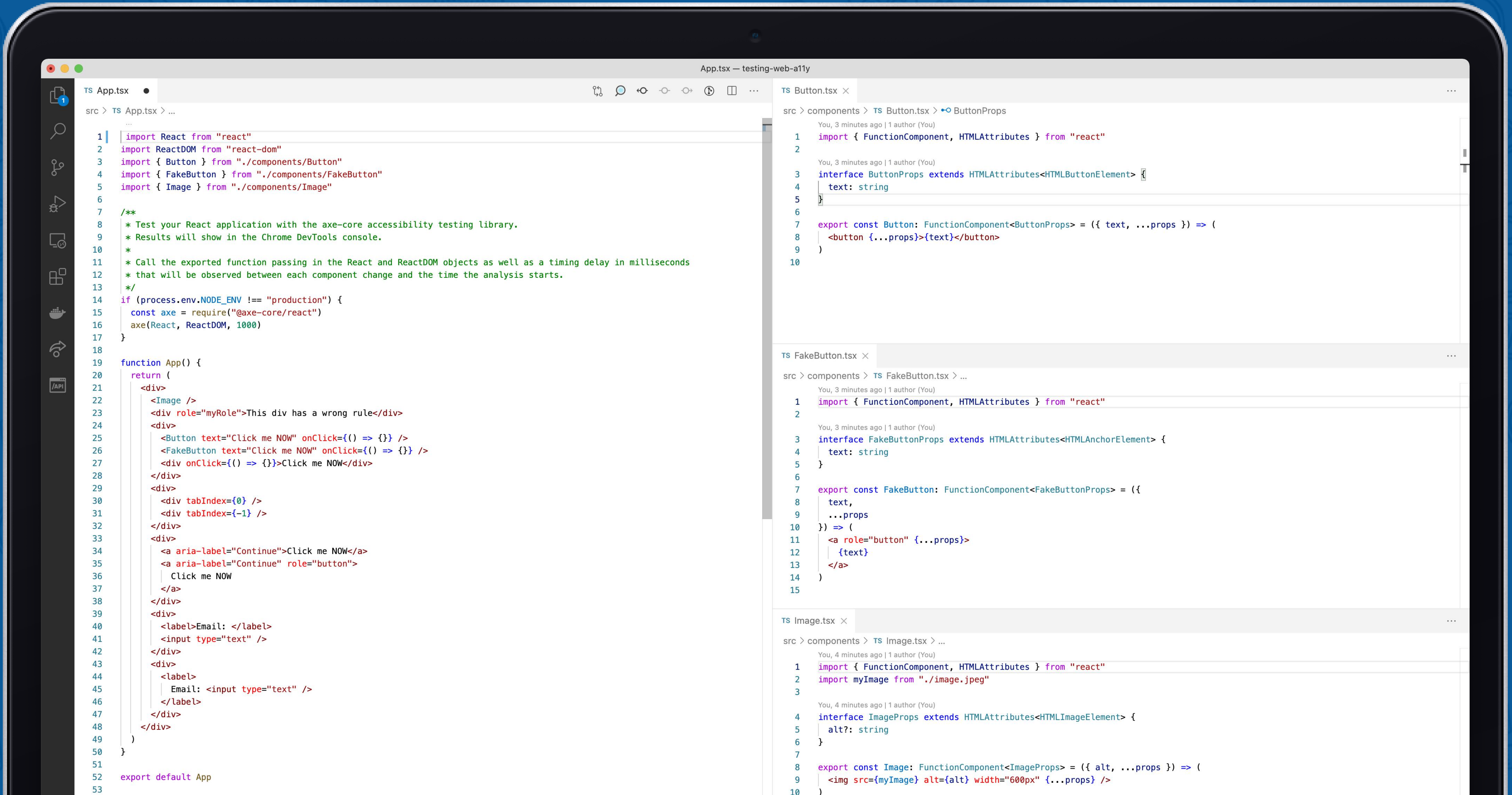
Testing Web Accessibility

1. Test your code while you develop
2. Use the browser development tools
3. Automate your accessibility tests
4. Do manual tests and simulation tests

https://github.com/bolonio/testing-web-a11y


App.tsx — testing-web-a11y
App.tsx
src > App.tsx > ...
Button.tsx
src > components > Button.tsx > ButtonProps
FakeButton.tsx
src > components > FakeButton.tsx > ...
Image.tsx
src > components > Image.tsx > ...
You, 3 minutes ago | 1 author (You)
You, 4 minutes ago | 1 author (You)

```tsx
import React from "react"
import ReactDOM from "react-dom"
import { Button } from "./components/Button"
import { FakeButton } from "./components/FakeButton"
import { Image } from "./components/Image"

/**
 * Test your React application with the axe-core accessibility testing library.
 * Results will show in the Chrome DevTools console.
 *
 * Call the exported function passing in the React and ReactDOM objects as well as a timing delay in milliseconds
 * that will be observed between each component change and the time the analysis starts.
 */
if (process.env.NODE_ENV !== "production") {
  const axe = require("@axe-core/react")
  axe(React, ReactDOM, 1000)
}

function App() {
  return (
    <div>
      <Image />
      <div role="myRole">This div has a wrong rule</div>
      <div>
        <Button text="Click me NOW" onClick={() => {}} />
        <FakeButton text="Click me NOW" onClick={() => {}} />
        <div onClick={() => {}}>Click me NOW</div>
      </div>
      <div>
        <div tabIndex={0} />
        <div tabIndex={-1} />
      </div>
      <div>
        <a aria-label="Continue">Click me NOW</a>
        <a aria-label="Continue" role="button">
          Click me NOW
        </a>
      </div>
      <div>
        <label>Email: </label>
        <input type="text" />
      </div>
      <div>
        <label>
          Email: <input type="text" />
        </label>
      </div>
    </div>
  )
}

export default App

```

```tsx
import { FunctionComponent, HTMLAttributes } from "react"

interface ButtonProps extends HTMLAttributes<HTMLButtonElement> {
  text: string
}

export const Button: FunctionComponent<ButtonProps> = ({ text, ...props }) => (
  <button {...props}>{text}</button>
)

```

```tsx
import { FunctionComponent, HTMLAttributes } from "react"

interface FakeButtonProps extends HTMLAttributes<HTMLAnchorElement> {
  text: string
}

export const FakeButton: FunctionComponent<FakeButtonProps> = ({
  text,
  ...props
}) => (
  <a role="button" {...props}>
    {text}
  </a>
)

```

```tsx
import { FunctionComponent, HTMLAttributes } from "react"
import myImage from "./image.jpeg"

interface ImageProps extends HTMLAttributes<HTMLImageElement> {
  alt?: string
}

export const Image: FunctionComponent<ImageProps> = ({ alt, ...props }) => (
  <img src={myImage} alt={alt} width="600px" {...props} />
)
```

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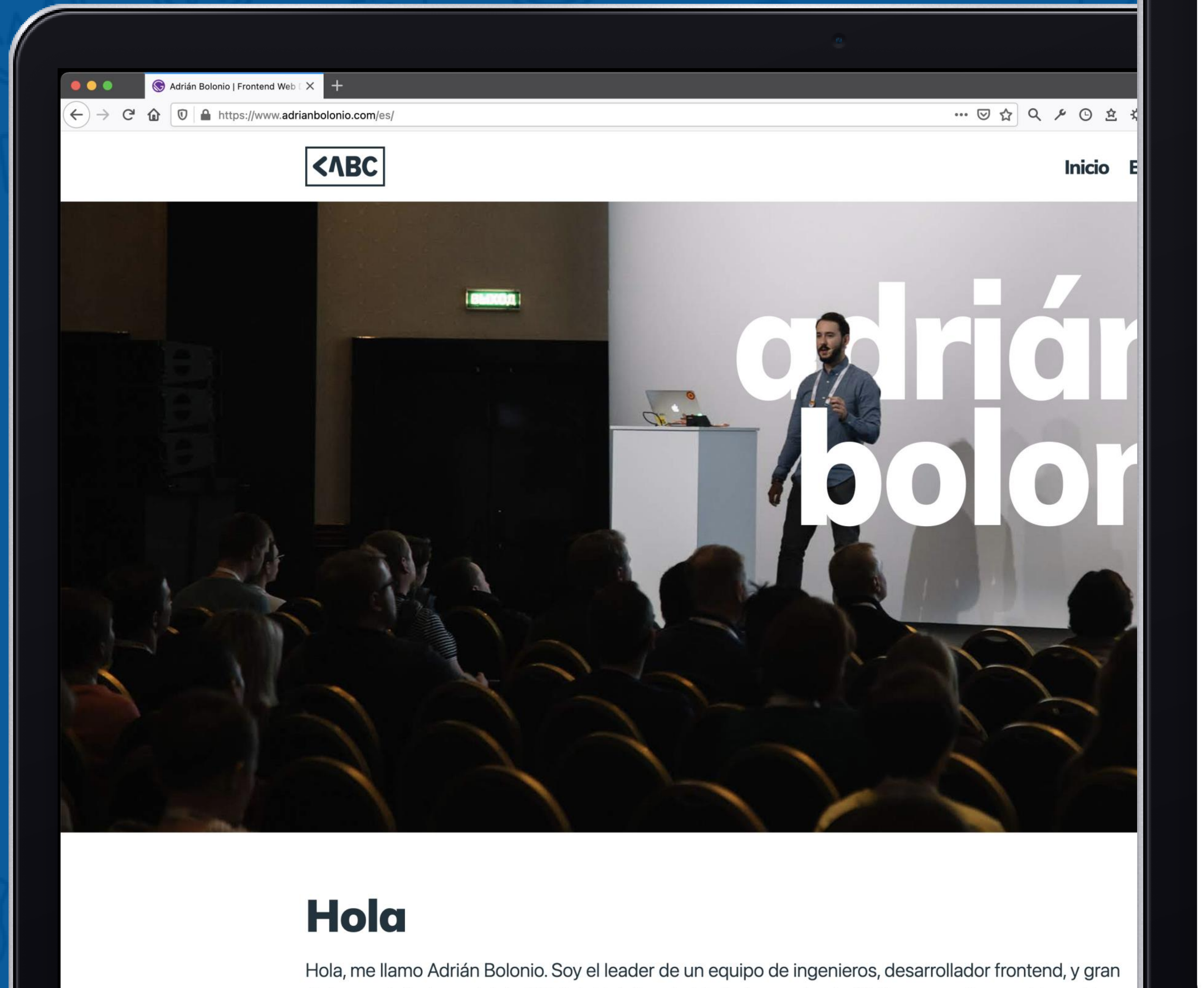
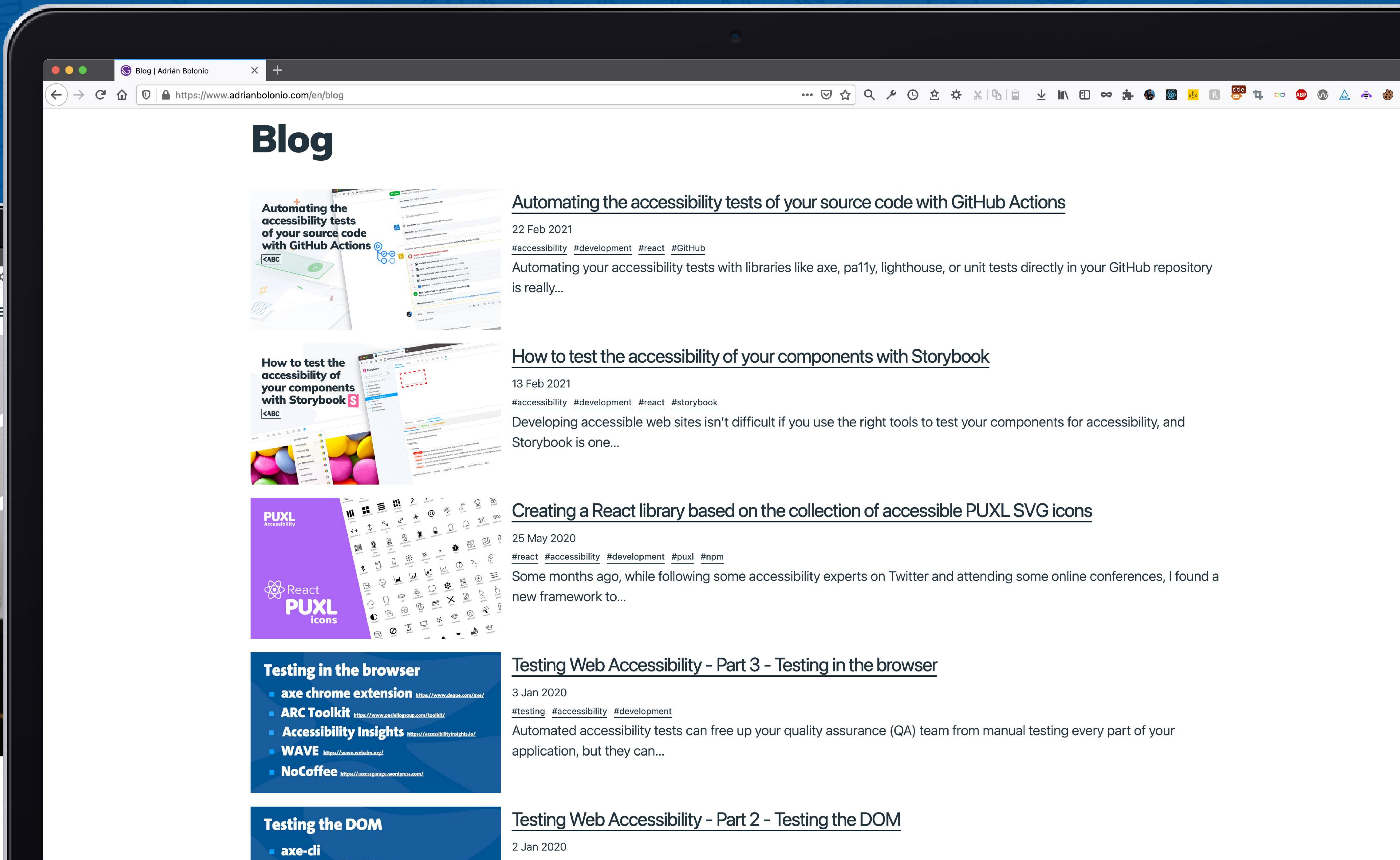

Adrián Bolonio | Frontend Web
https://www.adrianbolonio.com/es/
<ABC
Inicio
adrián
bolon

Hola

Hola, me llamo Adrián Bolonio. Soy el leader de un equipo de ingenieros, desarrollador frontend, y gran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https://www.adrianbolonio.com/en/blog
Automating the accessibility tests of your source code with GitHub Actions
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<ABC
PUXL
Accessibility
React
PUXL
icons
Testing in the browser
axe chrome extension https://www.deque.com/axe/
ARC Toolkit https://www.paciellogroup.com/toolkit/
Accessibility Insights https://accessibilityinsights.io/
WAVE https://wave.webaim.org/
NoCoffee https://accessgarage.wordpress.com/
Testing the DOM
axe-cli

Blog

Automating the accessibility tests of your source code with GitHub Actions

22 Feb 2021

#accessibility #development #react #GitHub

Automating your accessibility tests with libraries like axe, pa11y, lighthouse, or unit tests directly in your GitHub repository is really...

How to test the accessibility of your components with Storybook

13 Feb 2021

#accessibility #development #react #storybook

Developing accessible web sites isn't difficult if you use the right tools to test your components for accessibility, and Storybook is one...

Creating a React library based on the collection of accessible PUXL SVG icons

25 May 2020

#react #accessibility #development #puxl #npm

Some months ago, while following some accessibility experts on Twitter and attending some online conferences, I found a new framework to...

Testing Web Accessibility - Part 3 - Testing in the browser

3 Jan 2020

#testing #accessibility #development

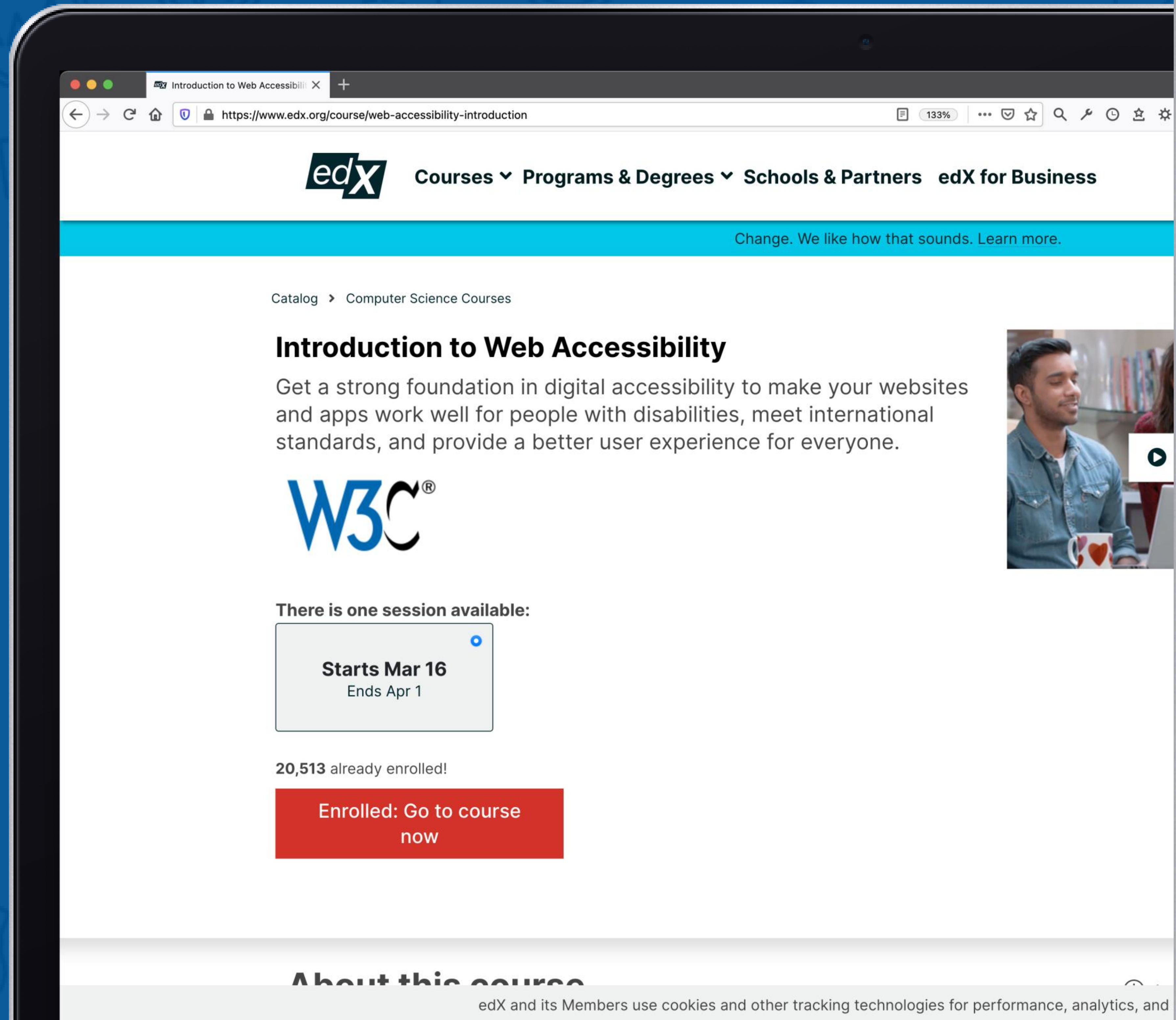
Automated accessibility tests can free up your quality assurance (QA) team from manual testing every part of your application, but they can...

Testing Web Accessibility - Part 2 - Testing the DOM

2 Jan 2020

Introduction to Web Accessibility

https://www.edx.org/course/web-accessibility-introduction



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Introduction to Web Accessibility

Get a strong foundation in digital accessibility to make your websites and apps work well for people with disabilities, meet international standards, and provide a better user experience for everyone.

There is one session available:

○ Starts Mar 16
Ends Apr 1

20,513 already enrolled!

Enrolled: Go to course now

About this course

edX and its Members use cookies and other tracking technologies for performance, analytics, and

“It’s not just about disabled users being able to access your website, it’s about everyone being able to access your website.”

- Trenton Moss

Accessibility is NOT a feature

Thanks

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