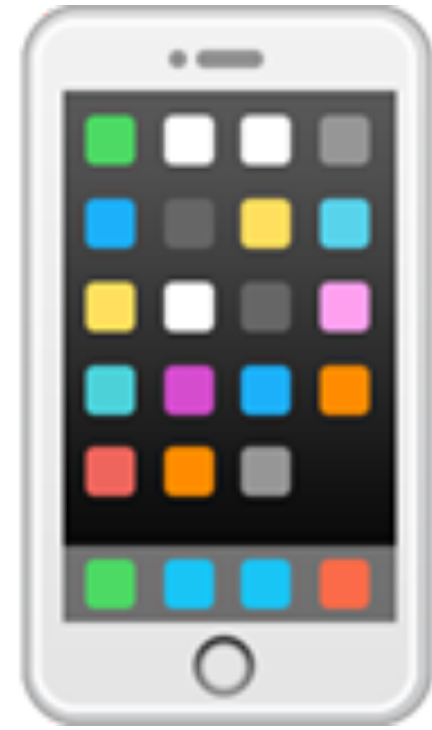


Making Single Page Apps Accessible

#LaraconAU

@jessbudd4





@jessbudd4



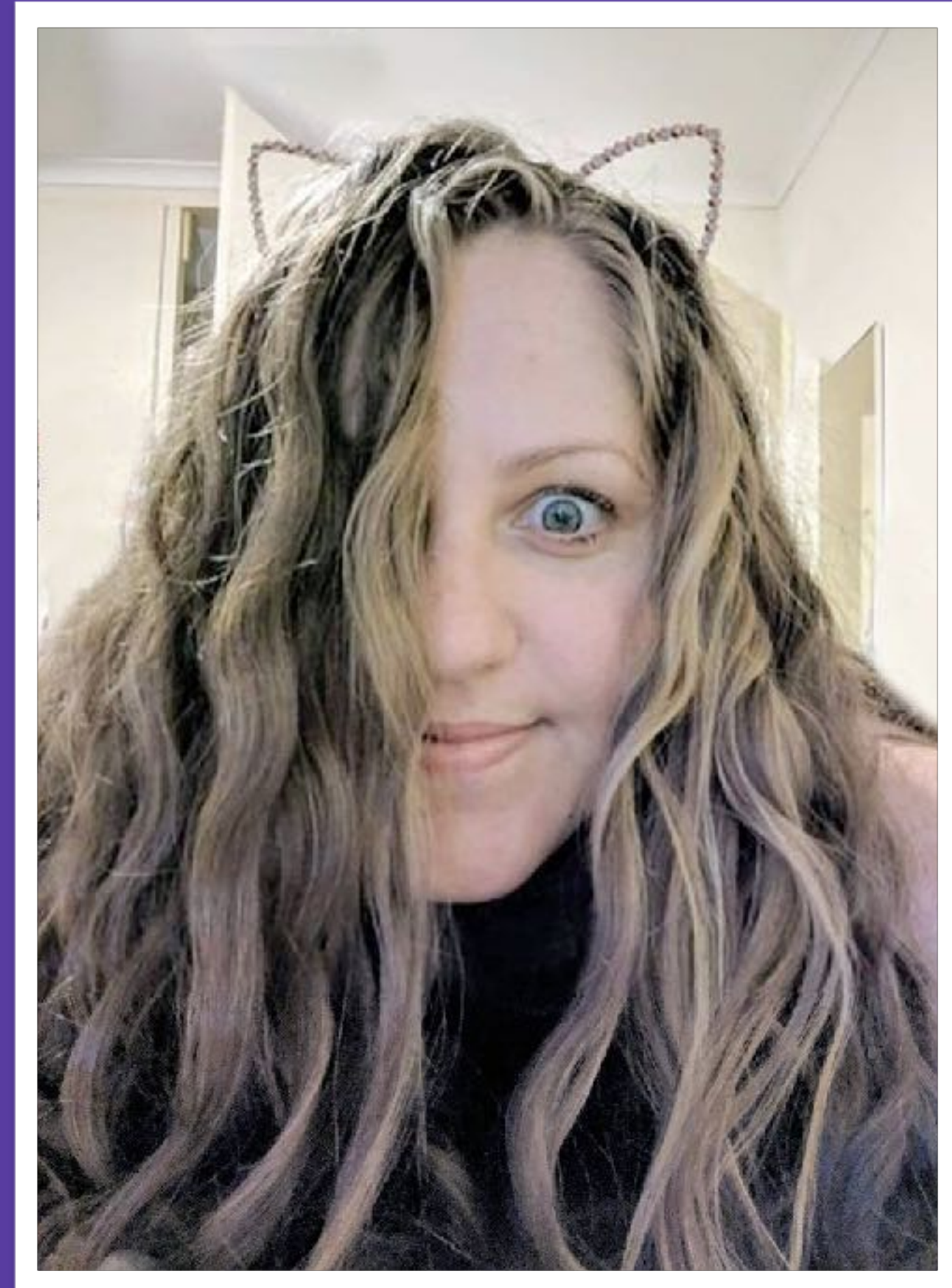


@jessbudd4

Jess Budd

Front-end Developer &
Accessibility Consultant

@jessbudd4



Are JavaScript frameworks **bad for** **accessibility?**



**Nothing in React
prevents us from
building accessible
web apps**

- Leslie Cohn-Wein, Netlify

@jessbudd4

**What is web
accessibility?**

**Removing barriers
that prevent
people with disabilities
using your website**



1 in **5**

Australians experience
some form of disability

357,000

Australians have a visual impairment

1 in 6

Australians are affected by hearing loss

Accessibility
benefits everyone





Terminal F31 Terminal F31
Terminal 001 Terminal 001
Terminal 002 Terminal 002

677-2953
674-3245
677-4055

430th Aerial Port E 15
Army Air Force E 15
430th Aerial Port E 15

6772886
3614228962

Accept OK
Cancel
Information (F11)
(Show Details)

Clear (ESC)
Transfer (Enter)
Exit
PAK 71

DALL

Shirley

677-4055





Semantic HTML



Article

[Talk](#)

Read

[View source](#)

[View history](#)

Dog

From Wikipedia, the free encyclopedia

This article is about the animal.

The **domestic dog** (*Canis lupus familiaris*) is a member of the genus *Canis* when considered a distinct species, and a subspecies of the **wolf-like canids**,^[6] and is closely related to the **extant gray wolf** and other **canids** that were first **domesticated**,^[7] with the domestic dog being the first **species** to be domesticated. Dogs exhibit a wide variety of various behaviors, sensory capabilities, and intelligence.

Their **long association with humans** has led to a wide variety of breeds, and they are able to thrive on a wide variety of diets. Dogs vary widely in shape, size and color. They are used for **herding**, **pulling loads**, **protection**, **assisting police and military**, **companionship** and, more recently, **aiding disabled people** and **therapeutic roles**. This influence on human society has given them the

Headings

- 1: Dog
- 2: Contents
- 2: Terminology
- 2: Taxonomy
- 2: Origin
- 2: Biology
- 3: Anatomy
- 4: Size and weight
- 4: Senses
- 4: Coat
- 4: Tail
- 4: Differences from wolves
- 3: Health
- 4: Lifespan
- 3: Reproduction

For other uses, see *Dog (disambiguation)*.

Canis familiaris is part of the dog and wolfes [15] The nia for

[8] and [19] Dogs ng,



Domestic dogs
Temporal range: At least 14,200 years present^[2]

Selection of the different breeds of

Conservation status

× Headings menu

// not very accessible card component

```
<div class="product">  
  <div class="name">  
    Product name  
  </div>  
  <div class="description">  
    Description of product  
  </div>  
  <div class="button">Add to cart</div>  
</div>
```



DIVS

AS FAR AS THE EYE CAN SEE

```
// more accessible card component
```

```
<li>
```

```
  <h2>
```

```
    Product name
```

```
  </h2>
```

```
  <p>
```

```
    Description of product
```

```
  </p>
```

```
  <button>Add to cart</button>
```

```
</li>
```

```
// more accessible card component
```

```
<li>
```

```
  <h2>
```

```
    Product name
```

```
  </h2>
```

```
  <p>
```

```
    Description of product
```

```
  </p>
```

```
  <button>Add to cart</button>
```

```
</li>
```


**Divs
are not
buttons**



```
<div
  tabIndex="0"
  role="button"
  onKeyUp={keyUpHandler}
  onClick={clickHandler}
  class="button">
  Add to cart
</div>
```

```
<div
  tabindex="0"
  role="button"
  onKeyUp={keyUpHandler}
  onClick={clickHandler}
  class="button">
  Add to cart
</div>
```

```
<div
  tabindex="0"
  role="button"
  onKeyUp={keyUpHandler}
  onClick={clickHandler}
  class="button">
  Add to cart
</div>
```

```
<div
  tabindex="0"
  role="button"
  onKeyUp={keyUpHandler}
  onClick={clickHandler}
  class="button">
  Add to cart
</div>
```

```
<button
  onClick={clickHandler}>
  Add to cart
</button>
```



**Give buttons
some **

Fragments for valid html

```
// not allowed  
render() {  
    return (  
        <li>Hello</li>  
        <li>World</li>  
    );  
}
```

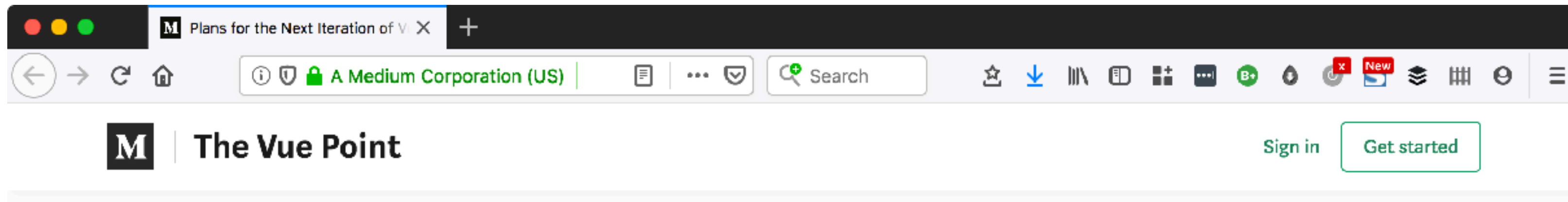


```
// not allowed  
render() {  
  return (  
    <li>Hello</li>  
    <li>World</li>  
  );  
}
```


```
// solution???  
render() {  
  return (  
    <div>  
      <li>Hello</li>  
      <li>World</li>  
    </div>  
  );  
}
```



```
// fragments syntax
render() {
  return (
    <React.fragment>
      <li>Hello</li>
      <li>World</li>
    </React.fragment>
  );
}
```



Plans for the Next Iteration of Vue.js

 Evan You [Follow](#)
Sep 30, 2018 · 9 min read

Last week at [Vue.js London](#) I gave a brief sneak peek of what's coming in the next major version of Vue. This post provides an in-depth overview of the plan.



Inputs & labels

```
// label not linked to input
```

```
<label>
```

```
    Dog breed:
```

```
</label>
```

```
<input
```

```
    type="text"
```

```
    name="breed"
```

```
>
```

// explicitly linked label to input

```
<label for="uniqueId">
```

```
  Dog breed:
```

```
</label>
```

```
<input
```

```
  id="uniqueId"
```

```
  type="text"
```

```
  name="breed"
```

```
>
```

// "for" becomes "htmlFor" in JSX

```
<label htmlFor="uniqueId">
```

```
  Dog breed:
```

```
</label>
```

```
<input
```

```
  id="uniqueId"
```

```
  type="text"
```

```
  name="breed"
```

```
>
```

**What if I can't set a
unique ID in advance?**


```
// implicitly linked label to input
```

```
<label>
```

```
  Dog breed:
```

```
  <input type="text" name="breed"/>
```

```
</label>
```

**What if the design
doesn't have labels?**

```
// label hidden with css is still announced
```

```
<label class="sr-only" for="dogBreed">
```

```
    Dog breed:
```

```
</label>
```

```
<input
```

```
    id="dogBreed"
```

```
    type="text"
```

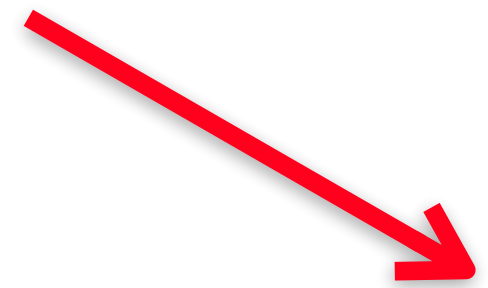
```
    name="breed"
```

```
/>
```

**Hit
Area**



Label is linked to input



Label is NOT linked to input


Page titles

Dogs are the Best - Jess Budd x +

localhost:8080/posts/dogs-are-the-best/

Dogs are the Best

If you're a dog owner, you probably already know just how awesome dogs are. They fill your life with love, loyalty, fur and plenty to smile about.



Here are just a few more of the amazing and adorable reasons why dogs are the best pets in the world:

```
// page title appears in browser tab
<head>
  <meta charset="utf-8">
  <title>Dogs Are The Best</title>
  <link rel="stylesheet" href="style.css">
</head>
```

```
// code executes when component mounts  
// same as the mounted hook in Vue  
componentDidMount() {  
    document.title = 'Heckin' Good Doggo';  
}
```



```
// update page title on routing  
componentDidMount() {  
  document.title = 'Heckin' Good Doggo';  
}
```



Inbox - x

Sent Mi x

Spam (x

Bin - jb x

New Tab x



Search Google or type a URL



New Pets!



New goodies!



WISE FLUFFERNUTTER

Visible focus styles

Default browser styles

Safari: The quick brown fox jumps over the lazy dog

Firefox: The quick brown fox jumps over the lazy dog

Chrome: The quick brown fox jumps over the lazy dog



WHERE THE HELL AM I?

FREE 2-DAY on orders over \$49

NEW MOOSEJAW FLEECE For Fall

10% BACK on all full priced orders

What are you looking for?



Sign In / Create Account

BRANDS JACKETS CLOTHING FOOTWEAR HIKE & CAMP CLIMB BIKE SNOW & MORE... SALE

Men's Clothing

- Hoodies
- Pants
- Shirts & Tops
- Shorts
- Sweaters
- Sweatshirts & Pullovers
- Tees & Tank Tops

Men's Underwear

- Base Layers
- Boxers & Briefs
- Socks

Women's Clothing

- Dresses & Skirts
- Hoodies
- Pants
- Shirts & Tops
- Shorts
- Sweaters
- Sweatshirts & Pullovers
- Tees & Tank Tops

Women's Underwear

- Base Layers
- Briefs
- Socks
- Sports Bras

Kids' Clothing

- Base Layers
- Hoodies
- Pants
- Shirts
- Shorts
- Sweatshirts
- Socks

Accessories

- Belts
- Gloves & Mittens
- Hats
- Scarves & Gaiters
- Sunglasses
- Watches

By Activity

- Activewear
- Casual
- Hiking & Climbing
- Swimwear
- Yoga

Moosejaw Clothing

- Hats & Scarves
- Hoodies
- Long Sleeve Shirts
- Sweatshirts & Pullovers
- Tees

Top Clothing Brands

- Arc'teryx
- Columbia
- Moosejaw
- Patagonia
- The North Face



- Shop ALL Clothing
- Clothing on SALE
- Knowledge Center

NEW Moosejaw Fleece - Fall into Fleece with New Jackets and Pullovers from Moosejaw

THE NORTH FACE

RAVEN


```
/* don't just remove */
*:focus {
    outline: none;
}
```



```
/* replace with something! */
*:focus {
    /* branded focus styles here */
    border: 2px dotted currentColor;
}
```




```
/* extend hover styles */  
.button:hover,  
.button:focus {  
    border: 5px solid #33ffdb;  
}
```



button:hover



button:focus

Focus management

Single page applications use silent routing

home

blog

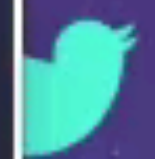
speaking

about

Recent Posts

- [The Many Dog Breeds](#)
- [Why Everyone Should Own a Dog](#)
- [Caring For Your Dog](#)
- [Dogs Are The Best](#)

× Why Everyone Should Own a Dog, link list 4 items



ions by Undraw

**Move focus to
new content**

TabIndex Explained

```
tabindex="0" // makes element focusable in tab/DOM order  
tabindex="-1" // makes elements focusable by scripting only  
tabindex="5" // Danger Will Robinson!  
  
// tabindex becomes tabIndex (camelCase) in JSX
```

Use React Refs

```
class PageHeading extends React.Component {
  constructor(props) {
    super(props);
    this.content = React.createRef(); // Create Ref
  }
  componentDidMount() {
    this.content.focus(); // Move focus to ref
  }
  render() {
    return (
      <h1 tabindex="-1" ref={this.content}> // Reference
        Doggos, Puppies and Floofers
      </h1>
    );
  }
}
```



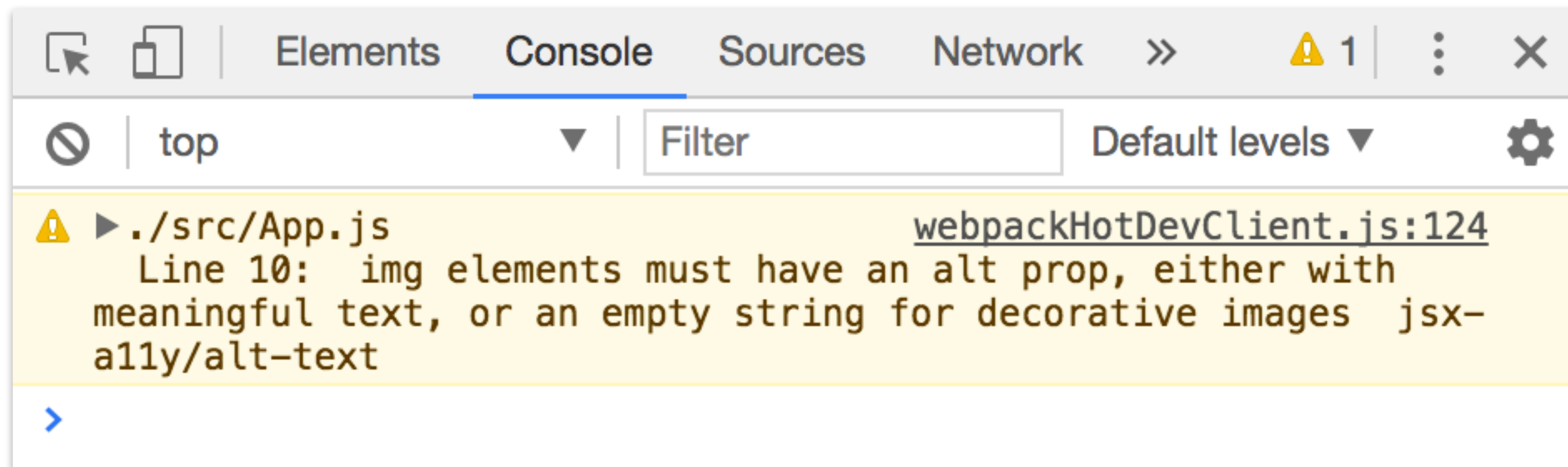
```
class PageHeading extends React.Component {
  constructor(props) {
    super(props);
    this.content = React.createRef(); // Create Ref
  }
  componentDidMount() {
    this.content.focus(); // Move focus to ref
  }
  render() {
    return (
      <h1 tabindex="-1" ref={this.content}> // Reference
        Doggos, Puppies and Floofers
      </h1>
    );
  }
}
```

```
class PageHeading extends React.Component {
  constructor(props) {
    super(props);
    this.content = React.createRef(); // Create Ref
  }
  componentDidMount() {
    this.content.focus(); // Move focus to ref
  }
  render() {
    return (
      <h1 tabindex="-1" ref={this.content}> // Reference
        Doggos, Puppies and Floofers
      </h1>
    );
  }
}
```

```
// update page title  
// and move users focus  
componentDidMount() {  
    document.title = 'Doggos be happy';  
    this.content.focus();  
}
```

Tooling & Testing

eslint-plugin-jsx-a11y



```
top | Filter | Default levels | ⚙️  
⚠️ ▶ ./src/App.js | webpackHotDevClient.js:124  
  Line 10:  img elements must have an alt prop, either with  
            meaningful text, or an empty string for decorative images  jsx-  
            a11y/alt-text  
>
```

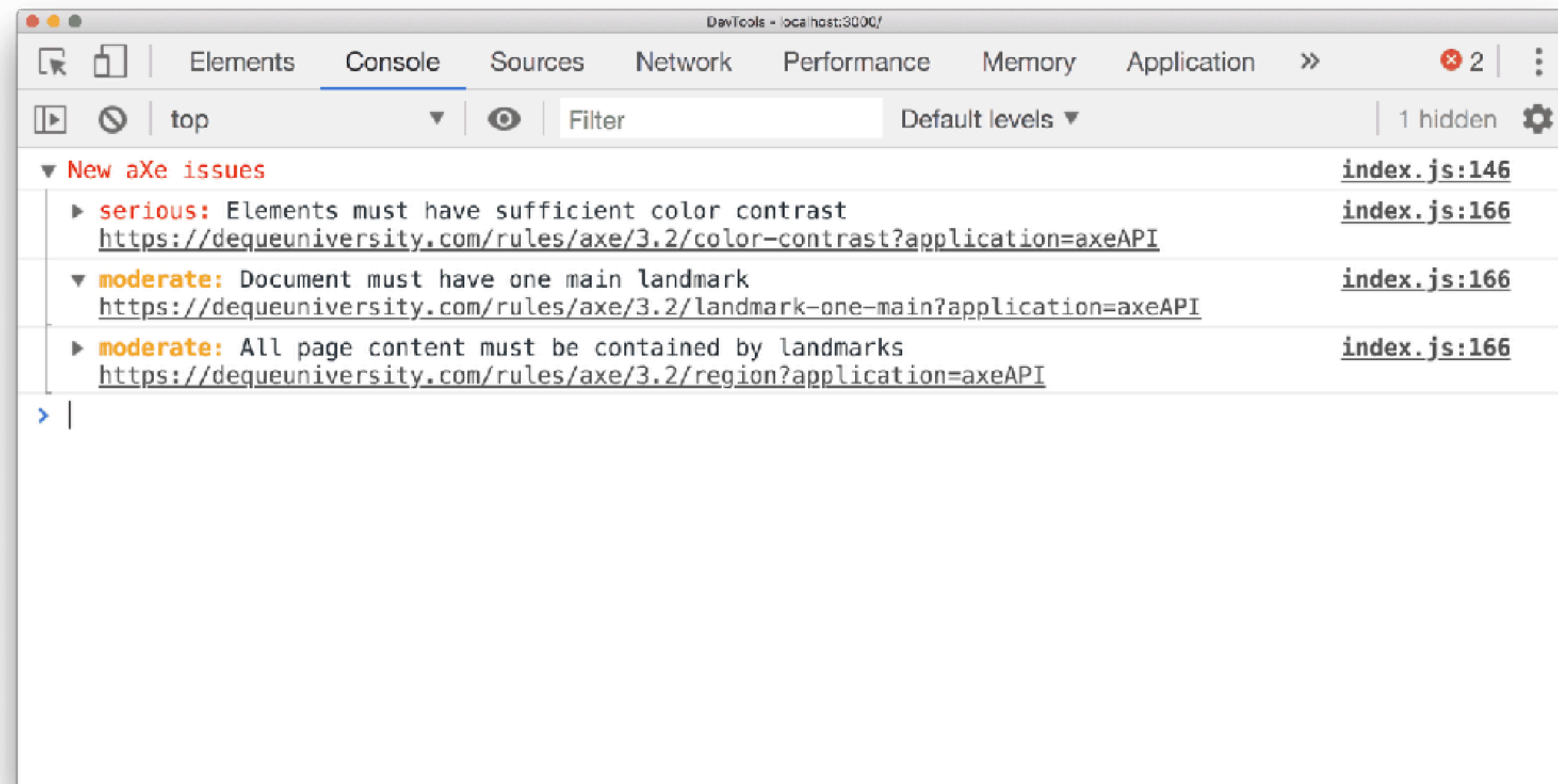


eslint-plugin-jsx-a11y

eslint-plugin-vue-a11y

@jessbudd4

Axe-core

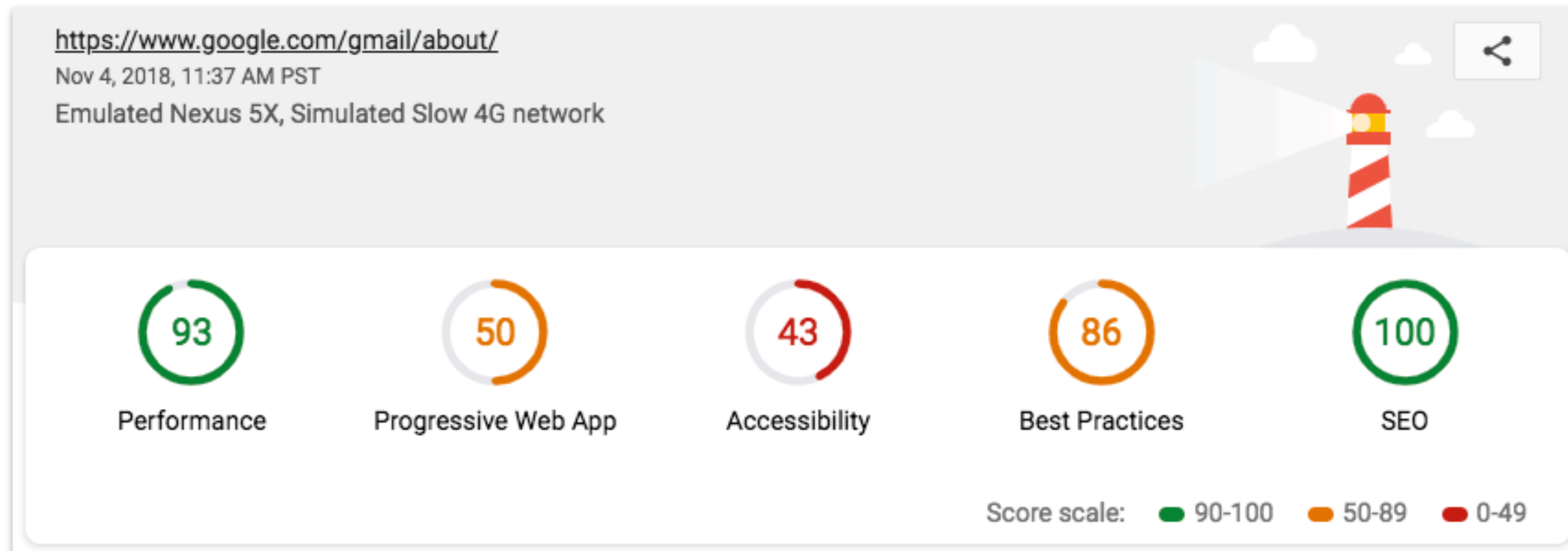


react-axe

vue-axe

@jessbudd4

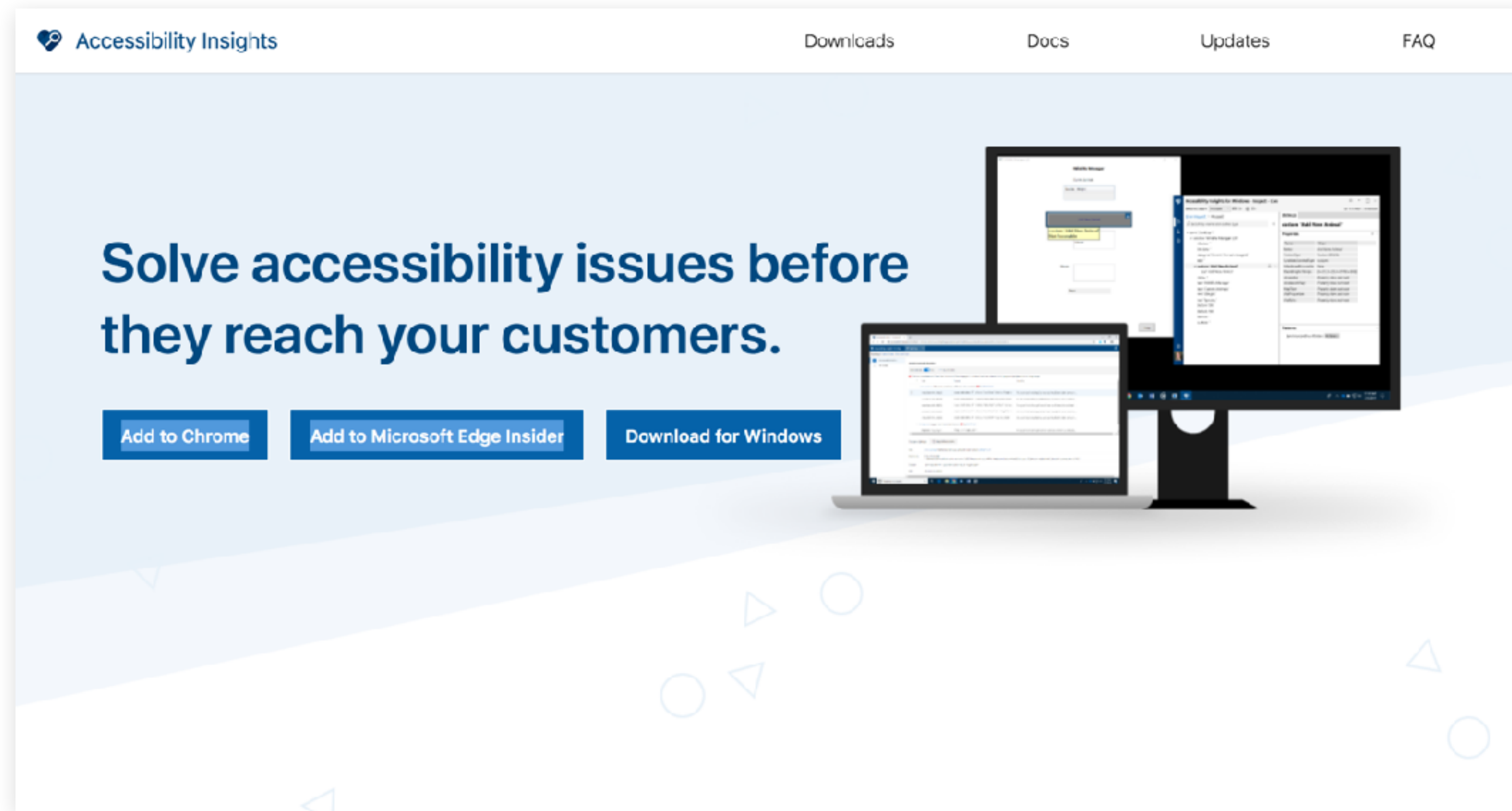
Google Lighthouse



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

@jessbudd4

Accessibility Insights



<https://accessibilityinsights.io/>

@jessbudd4

MAN
UEL

MAT
UZO
VIC

Blog

About me

TIL

beta

Building the most inaccessible site possible with a perfect Lighthouse score

posted on May 31, 2019

Disclaimer: This post is not about lighthouse, other testing tools perform similarly. It's about us developers and our responsibility to not blindly rely on automatic testing.

Google's built-in testing tool Lighthouse judges the accessibility of our websites with a score between 0 and 100. It's laudable to try to get a high grading, but a score of 100 doesn't mean that the site is perfectly accessible. To prove that I carried out a little experiment.

It's always nice to see when people post their Lighthouse scores on social media to highlight how well they've optimised their own or their client's website. It shows that they care about the quality of what they build.



**Automated
testing is just
the first step**

- Manuel Matuzovic

@jessbudd4

A close-up photograph of a person's hand typing on a white, minimalist keyboard. The keyboard is positioned on a light-colored surface. In the background, a white mouse is visible, and the edge of a laptop with an Apple logo is partially seen on the left. A purple rectangular box with the word "Keyboard" in white text is overlaid on the left side of the image.

Keyboard

What to look for

- ☑ Can I see where focus is?
- ☑ Does the tab order make sense?
- ☑ Can I access all required elements?
- ☑ Can I use advanced components?
- ☑ Does my focus move when needed?

A man in a light blue shirt is wearing large black headphones and talking on a mobile phone. He is looking towards the right of the frame. In the foreground, there is a laptop and a tablet displaying a spreadsheet. The background is a blurred office environment with windows and other people.

Screenreader

Voiceover (macOS)

NVDA (Windows)

Takeaways

- ✓ Use Semantic HTML
- ✓ Link form labels with inputs
- ✓ Update page titles on routing
- ✓ Manage keyboard focus
- ✓ Use tooling & test your apps

**Go forth and
make the web
a better place**

Thanks!

Slides at bit.ly/laracon19

@jessbudd4