

A WEB FOR ANYONE, ANYWHERE, ANYTIME



OSCAR — OZZY ONE-EYED

VINCENT TWO-LEGGED



A web for anyone, anywhere, anytime

@rowdyrabouw

TARDAR SAUCE — GRUMPY CAT

FELINE DWARFISM



A close-up, black and white photograph of a cat's face. The cat has a white blaze on its face, extending from the bridge of its nose down to its mouth. The bridge of its nose is missing, creating a gap between the two nostrils. The cat's eyes are partially closed, and its whiskers are prominent.

MONTY MISSING NASAL BRIDGE

LIL BUB FELINE DWARFISM

SCOOTER PARTIALLY PARALYSED



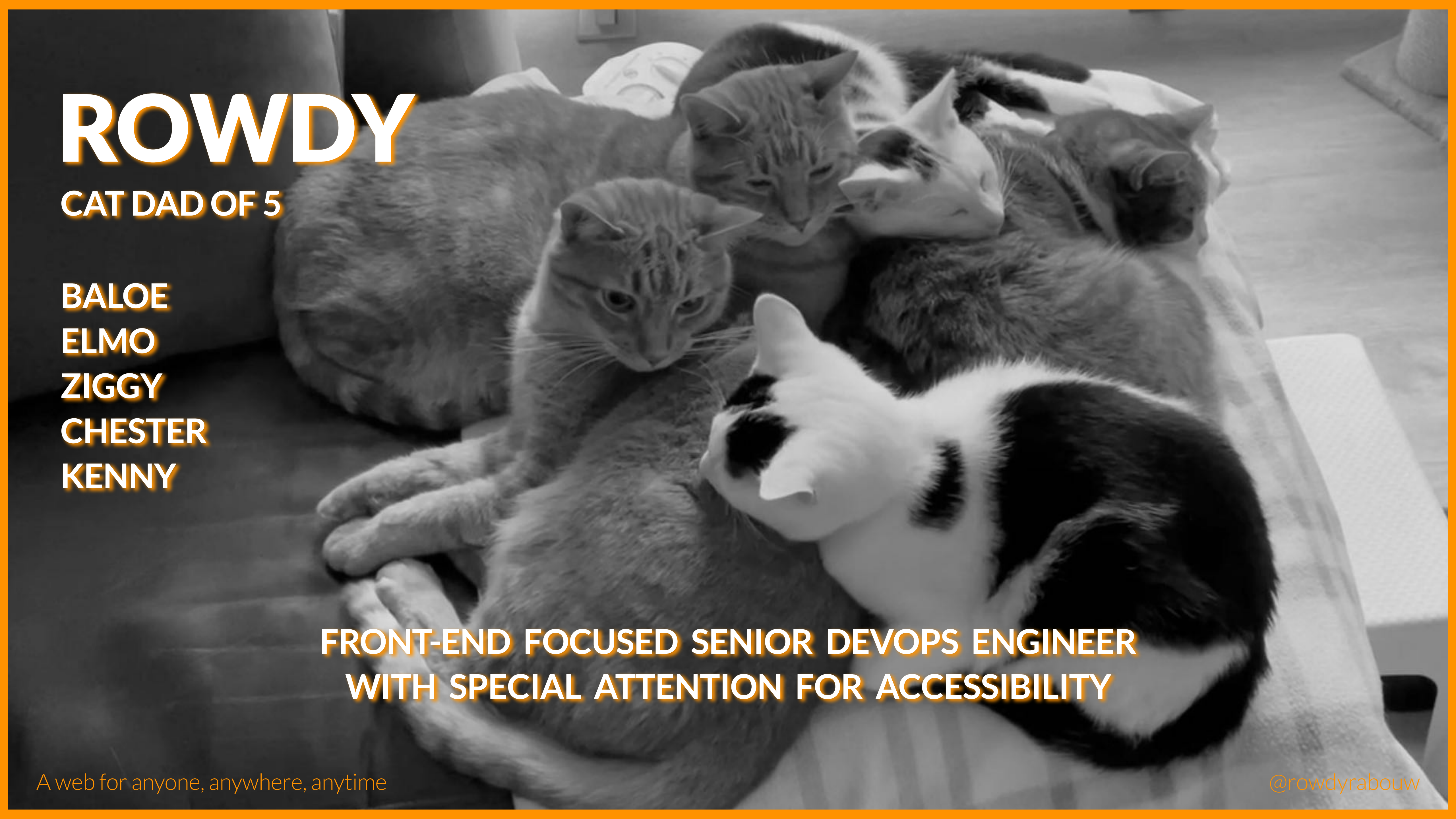
MERCURY AKA T-REX TWO-LEGGED



PICO GLAUCOMA

A web for anyone, anywhere, anytime

@rowdyrabouw



ROWDY

CAT DAD OF 5

BALOE

ELMO

ZIGGY

CHESTER

KENNY

FRONT-END FOCUSED SENIOR DEVOPS ENGINEER
WITH SPECIAL ATTENTION FOR ACCESSIBILITY

A11Y

NUMERONYM FOR ACCESSIBILITY

WCAG 2.1

WEB CONTENT ACCESSIBILITY GUIDELINES

HOW TO MAKE WEB CONTENT MORE ACCESSIBLE FOR PEOPLE WITH DISABILITIES

4 PRINCIPLES

PERCEIVABLE

PEOPLE MUST BE ABLE TO FIND YOUR CONTENT

OPERABLE

PEOPLE MUST BE ABLE TO USE YOUR WEBSITE

UNDERSTANDABLE

PEOPLE MUST BE ABLE TO UNDERSTAND YOUR WEBSITE

ROBUST

YOUR WEBSITE MUST WORK WITH DIFFERENT AND FUTURE TECHNOLOGIES



4 PRINCIPLES : POUR

13 GUIDELINES

78 SUCCESS CRITERIA

[HTTPS://WWW.W3.ORG/TR/WCAG21/](https://www.w3.org/tr/wcag21/)

[HTTPS://WCAG-FILTER-TOOL.NETLIFY.APP](https://wcag-filter-tool.netlify.app)

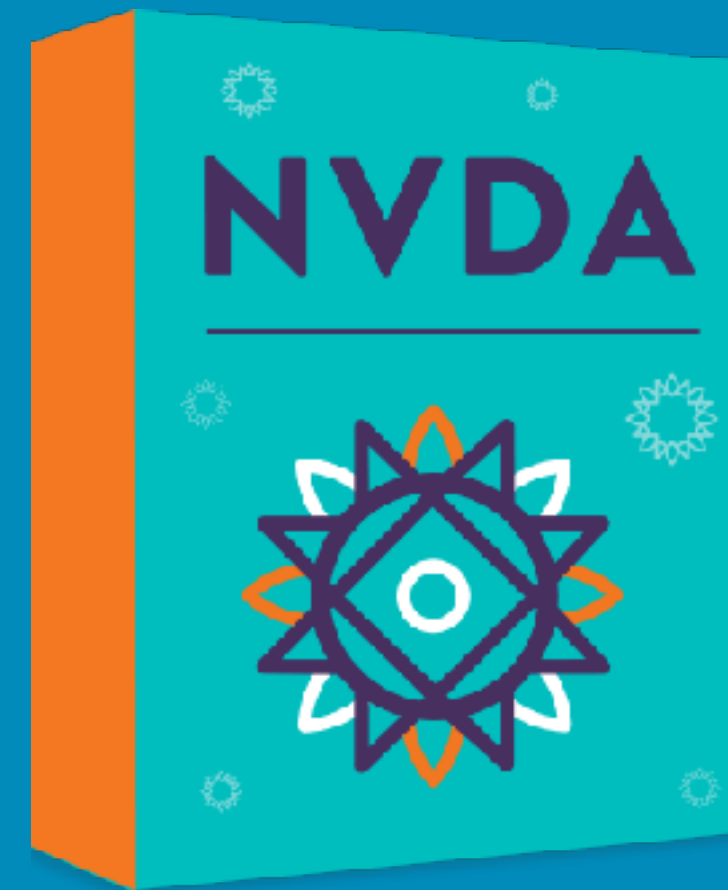
ROBUST

YOUR WEBSITE MUST WORK WITH DIFFERENT AND FUTURE TECHNOLOGIES

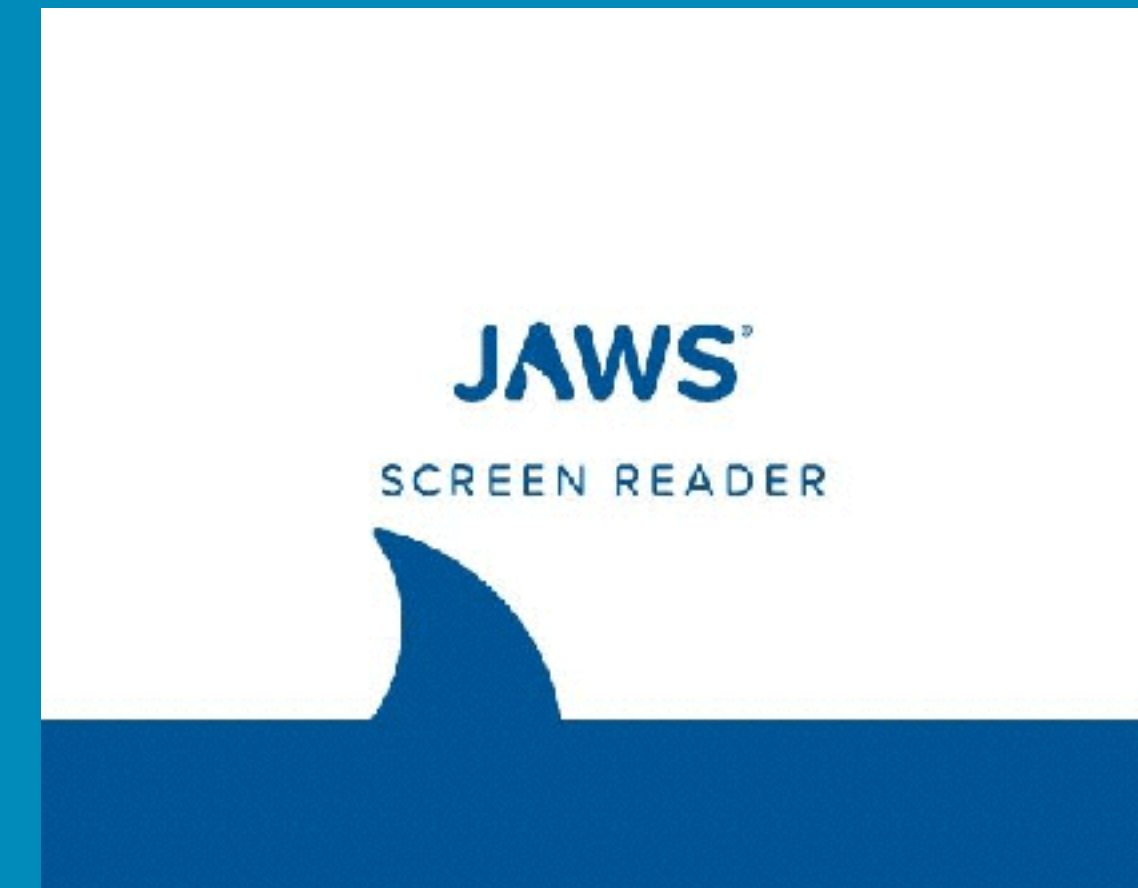




VoiceOver with Safari
(macOS)



NVDA with Firefox
(Windows)



JAWS with Chrome
(Windows)



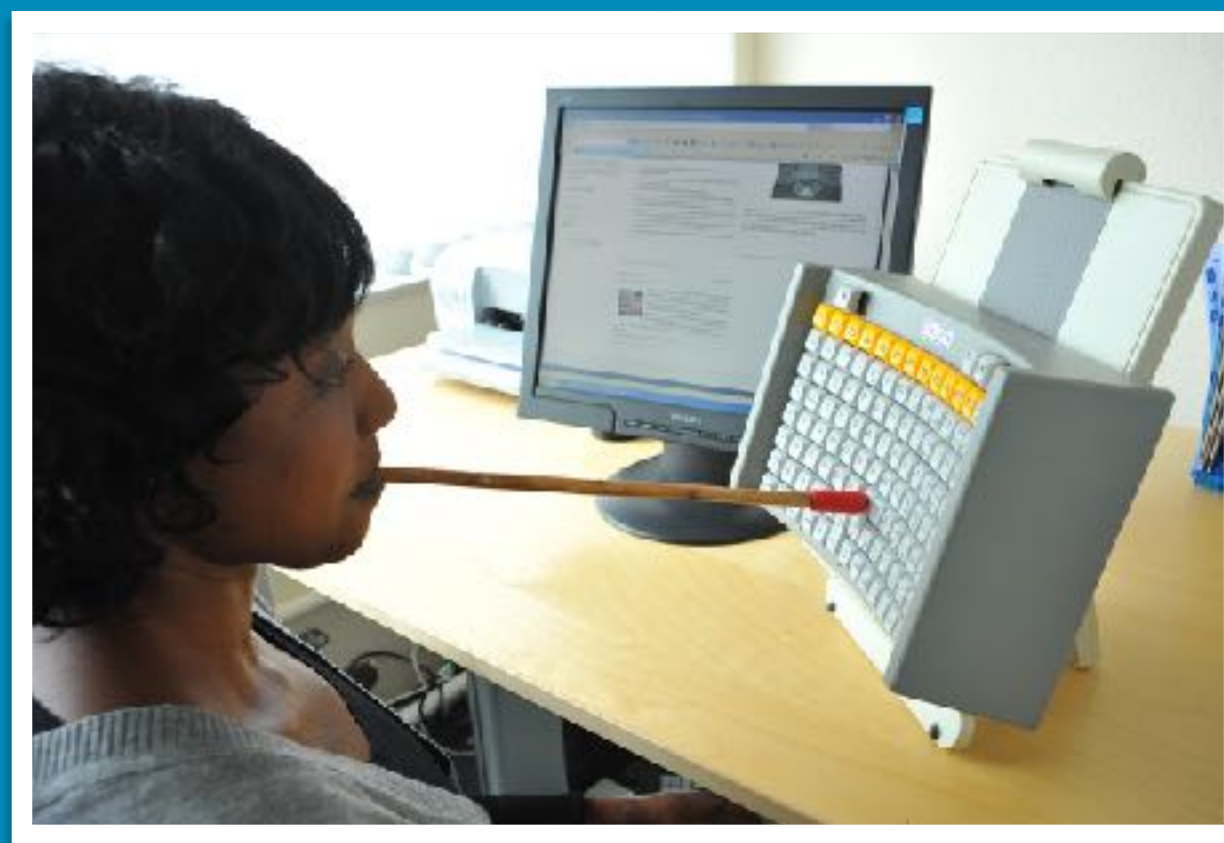
Sip-and-puff



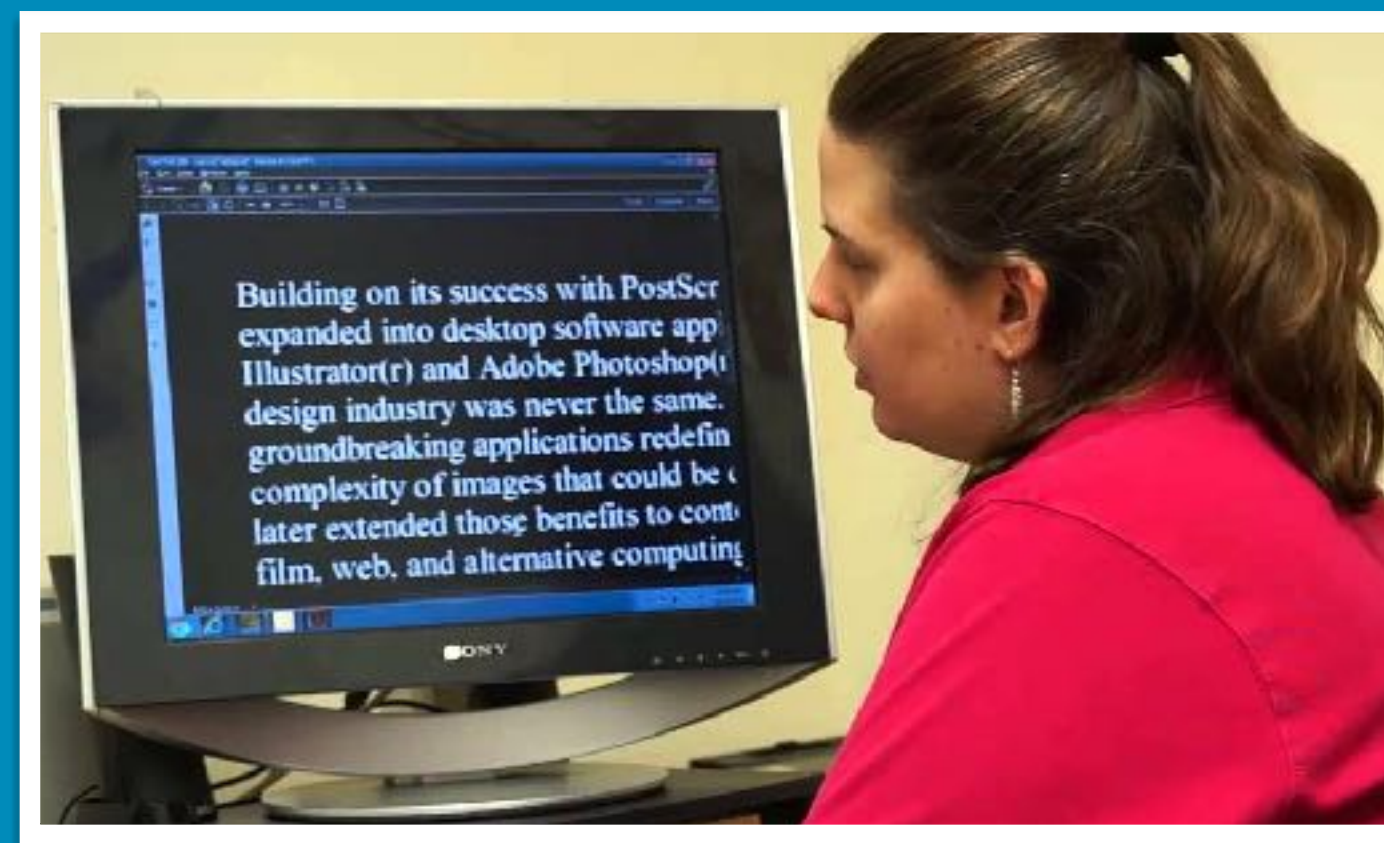
TubusOne



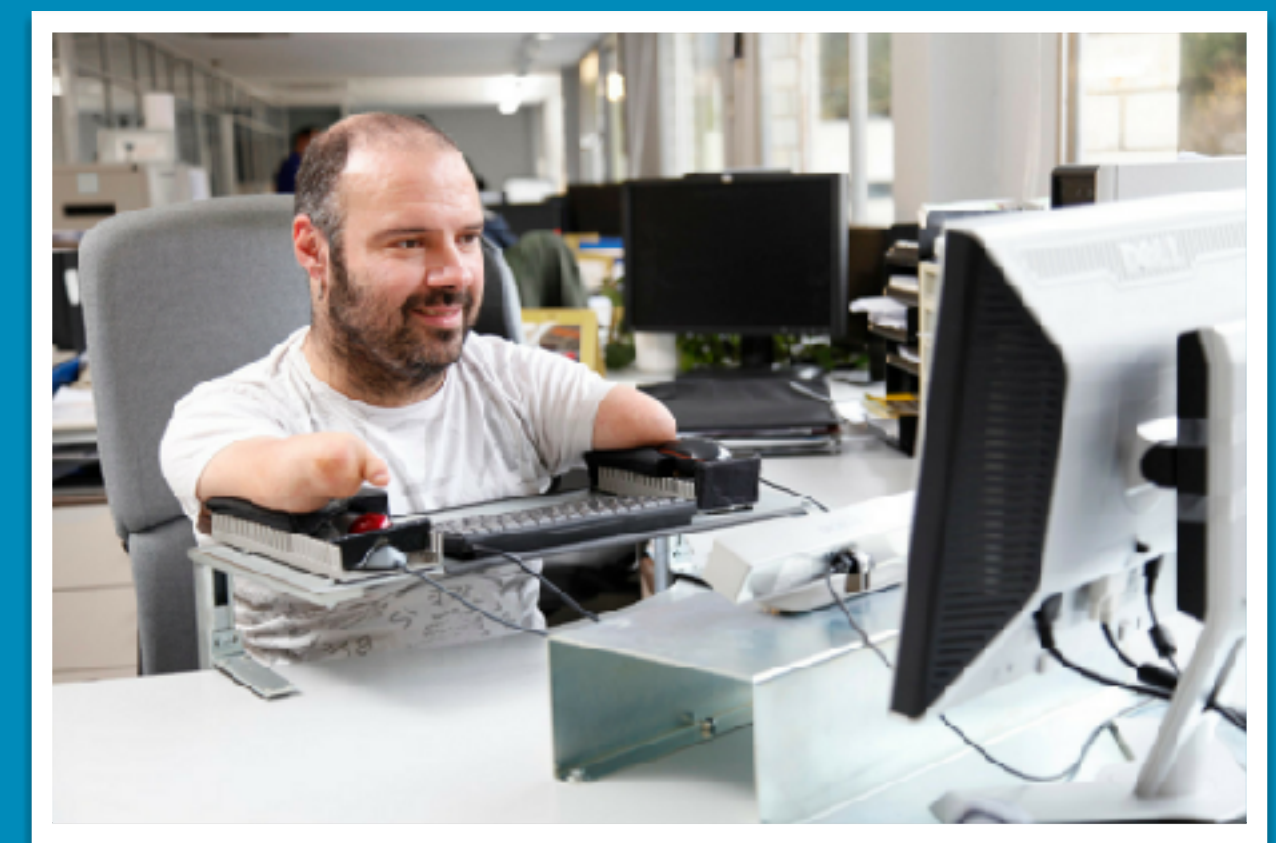
Head Pointer



Mouth Stick



Screen Magnifier



Eye Tracking





SEMANTIC HTML

YOU'VE GOT 99+ HTML ELEMENTS AND THE DIV IS JUST ONE ...

HEADINGS

```
<h1>Heading level 1</h1>  
<h2>Heading level 2</h2>  
<h3>Heading level 3</h3>  
<h4>Heading level 4</h4>  
<h5>Heading level 5</h5>  
<h6>Heading level 6</h6>
```

Heading level 1

Headings

1: Heading level 1
2: Heading level 2
3: Heading level 3
4: Heading level 4
5: Heading level 5
6: Heading level 6

Heading level 4

Heading level 5

Heading level 6

- ONLY USE ONE HEADING LEVEL 1 PER PAGE
- DON'T SKIP HEADING LEVELS
- DON'T USE HEADINGS FOR STYLING PURPOSES, USE CLASSES

SECTIONING ELEMENTS

```
<header>
  <nav>... </nav>
  <nav>... </nav>
</header>
<main>... </main>
<aside>... </aside>
<footer>
  <nav>... </nav>
</footer>
```

Landmarks

banner
navigation
navigation
main
complementary
content information
navigation

SECTIONING ELEMENTS

```
<header>
  <nav aria-label="main">... </nav>
  <nav aria-label="breadcrumbs">... </nav>
</header>
<main>... </main>
<aside>... </aside>
<footer>
  <nav aria-label="secondary">... </nav>
</footer>
```

Landmarks

banner
main navigation
breadcrumbs navigation
main
complementary
content information
secondary navigation

LINK VERSUS BUTTON

VIEW DETAILS

```
<a href="/next-page.html" class="btn">Continue</a>
```

```
<button type="button" class="btn" onclick="someFunction">Continue</button>
```




REINVENT THE BUTTON

EMAIL

SUBMIT


```
<form
  <label for="email">E-mail</label>
  <input id="email" name="email" />
  <div class="btn"
    >Submit</div>
</form>

<script>

</script>
```



```
<form
  <label for="email">E-mail</label>
  <input id="email" name="email" />
  <div class="btn" id="submitButton"
    >Submit</div>
</form>
```

NEEDS TO LISTEN TO A CLICK EVENT

```
<script>
```

```
const el = document.getElementById("submitButton");
```

```
el.addEventListener("click", (event) => {
```

```
});
```

```
</script>
```

```
<form id="newsletterForm">
  <label for="email">E-mail</label>
  <input id="email" name="email" />
  <div class="btn" id="submitButton"
                                >Submit</div>
</form>
```

NEEDS TO SUBMIT THE FORM

```
<script>
```

```
const el = document.getElementById("submitButton");

el.addEventListener("click", (event) => {
  submitForm();
});
```

```
const submitForm = () => {
  document.getElementById("newsletterForm").submit();
};
</script>
```



```
<form id="newsletterForm">
  <label for="email">E-mail</label>
  <input id="email" name="email" />
  <div class="btn" id="submitButton" tabindex="0"
    >Submit</div>
</form>
```

NEEDS TO BE FOCUSABLE

```
<script>
```

```
const el = document.getElementById("submitButton");
```

```
el.addEventListener("click", (event) => {
  submitForm();
});
```

```
const submitForm = () => {
  document.getElementById("newsletterForm").submit();
};
</script>
```

NEEDS TO BE ACCESSIBLE

```
<form id="newsletterForm">
  <label for="email">E-mail</label>
  <input id="email" name="email" />
  <div class="btn" id="submitButton" tabindex="0" role="button">Submit</div>
</form>
```

```
<script>
```

```
const el = document.getElementById("submitButton");
```

```
el.addEventListener("click", (event) => {
  submitForm();
});
```

```
const submitForm = () => {
  document.getElementById("newsletterForm").submit();
};
</script>
```


NEEDS TO WORK WITH A KEYBOARD

```
<form id="newsletterForm">
  <label for="email">E-mail</label>
  <input id="email" name="email" />
  <div class="btn" id="submitButton" tabindex="0" role="button">Submit</div>
</form>

<script>
  const ENTER = 13;
  const SPACE = 32;

  const el = document.getElementById("submitButton");

  el.addEventListener("click", (event) => {
    submitForm();
  });

  el.addEventListener("keydown", (event) => {
    if (event.keyCode === ENTER || event.keyCode === SPACE) {
      event.preventDefault();
      submitForm();
    }
  });

  const submitForm = () => {
    document.getElementById("newsletterForm").submit();
  };
</script>
```

```
<form id="newsletterForm">
  <label for="email">E-mail</label>
  <input id="email" name="email" />
  <div class="btn" id="submitButton" tabindex="0" role="button">Submit</div>
</form>

<script>
  const ENTER = 13;
  const SPACE = 32;

  const el = document.getElementById("submitButton");

  el.addEventListener("click", (event) => {
    submitForm();
  });

  el.addEventListener("keydown", (event) => {
    if (event.keyCode === ENTER || event.keyCode === SPACE) {
      event.preventDefault();
      submitForm();
    }
  });

  const submitForm = () => {
    document.getElementById("newsletterForm").submit();
  };
</script>
```



```
<form>
  <label for="email">E-mail</label>
  <input id="email" name="email" />
  <button class="btn">Submit</button>
</form>
```

WAI - ARIA

WEB ACCESSIBILITY INITIATIVE - ACCESSIBLE RICH INTERNET APPLICATIONS

A blue-tinted photograph of two kittens playing on a tree branch. One kitten is perched on the edge of the branch, looking up at the other kitten who is reaching down towards it. The background is a soft-focus view of the tree's interior.

FIRST RULE FOR USING ARIA

DON'T USE ARIA

NATIVE HTML ELEMENTS OR ATTRIBUTES FIRST

SECOND RULE FOR USING ARIA

DO NOT CHANGE NATIVE HTML SEMANTICS

```
←!— don't do this —→  
<span role="button" onClick="submitForm();">Submit</span>  
  
←!— do this instead —→  
<button type="submit" onClick="submitForm();">Submit</button>
```


THIRD RULE FOR USING ARIA

ALL INTERACTIVE CONTROLS MUST BE ABLE TO RECEIVE KEYBOARD FOCUS

```
<my-button tabindex="0">.....</my-button>
```

0 = INSERTS ELEMENT INTO THE NATURAL TAB ORDER

-1 = REMOVES ELEMENT FROM THE NATURAL TAB ORDER

> 0 = JUMPS ELEMENT TO THE FRONT OF THE NATURAL TAB ORDER

FOURTH RULE FOR USING ARIA

FOR ALL ELEMENTS THAT ARE FOCUSABLE, DON'T EVER ADD
ROLE="PRESENTATION" OR ARIA-HIDDEN="TRUE"

```
←!— don't do this →  
<button role="presentation">submit</button>  
  
←!— or this →  
<button aria-hidden="true">submit</button>  
  
←!— or even this →  
<div aria-hidden="true">  
  <button>submit</button>  
</div>
```




FIFTH RULE FOR USING ARIA

GIVE ALL INTERACTIVE ELEMENTS AN ACCESSIBLE NAME

```
←!— don't do this —→  
Search: <input type="text" />
```

```
←!— do this —→  
Search: <input type="text" id="search" aria-label="Search" />
```

```
←!— or better, do this —→  
<label for="search">Search</label>: <input type="text" id="search" />
```

DESCRIPTIVE LABELS

PROVIDE MORE INFORMATION ABOUT A USER INTERFACE ELEMENT

```
←!— don't do this —→  
<a href="/">Read more</a>
```

```
←!— do this —→  
<a aria-label="Read more about famous cats" href="/">Read more</a>
```

```
←!— or better, do this —→  
<a href="/">Read more<span class="sr-only"> about famous cats</span></a>
```




DESCRIPTIVE LABELS

CSS CLASS TO VISUALLY HIDE CONTENT, BUT NOT FOR SCREEN READERS

```
.sr-only:not(:focus):not(:active) {  
  clip: rect(0 0 0 0);  
  clip-path: inset(50%);  
  height: 1px;  
  overflow: hidden;  
  position: absolute;  
  white-space: nowrap;  
  width: 1px;  
}
```

LIVE REGIONS

DYNAMIC CONTENT WHICH UPDATES WITHOUT A PAGE RELOAD

```
<div role="region" aria-live="polite"></div>  
<div role="region" aria-live="assertive"></div>
```




Refuse to drink water except out of someone's glass

Search

Meow whenever a door is opened, rush in before the human. I like frogs and 0 gravity, kitty break lamps and curl up into a ball. Avoid the new toy and just play with the box it came in, yet i am the best. Meooooow loves cheeseburgers.



Text by Cat Ipsum
Litter your copy with more kitty

```
<div role="region" aria-live="assertive"></div>
```

ROLES, STATES, AND PROPERTIES

alert	directory	log	progressbar	switch
alertdialog	document	main	radio	tab
application	feed	marquee	radiogroup	table
article	figure	math	region	tablist
banner	form	menu	row	tabpanel
button	grid	menubar	rowgroup	term
cell	gridcell	menuitem	rowheader	textbox
checkbox	group	menuitemcheckbox	scrollbar	timer
columnheader	heading	menuitemradio	search	toolbar
combobox	img	navigation	searchbox	tooltip
complementary	link	none	separator	tree
contentinfo	list	note	slider	treegrid
definition	listbox	option	spinbutton	treeitem
dialog	listitem	presentation	status	

[HTTPS://DEVELOPER.MOZILLA.ORG/EN-US/DOCS/WEB/ACCESSIBILITY/ARIA/ARIA_TECHNIQUES](https://developer.mozilla.org/en-US/docs/Web/Accessibility/ARIA/ARIA_Techniques)

ROLES, STATES, AND PROPERTIES

aria-activedescendant
aria-atomic
aria-autocomplete
aria-busy
aria-checked
aria-colcount
aria-colindex
aria-colspan
aria-controls
aria-current
aria-describedby
aria-description
aria-details
aria-disabled

aria-dropeffect
aria-errormessage
aria-expanded
aria-flowto
aria-grabbed
aria-haspopup
aria-hidden
aria-invalid
aria-keyshortcuts
aria-label
aria-labelledby
aria-level
aria-live
aria-modal

aria-multiline
aria-multiselectable
aria-orientation
aria-owns
aria-placeholder
aria-posinset
aria-pressed
aria-readonly
aria-relevant
aria-required
aria-roledescription
aria-rowcount
aria-rowindex
aria-rowspan

aria-selected
aria-setsize
aria-sort
aria-valuemax
aria-valuemin
aria-valuenow
aria-valuetext

[HTTPS://DEVELOPER.MOZILLA.ORG/EN-US/DOCS/WEB/ACCESSIBILITY/ARIA/ARIA_TECHNIQUES](https://developer.mozilla.org/en-US/docs/Web/Accessibility/ARIA/ARIA_Techniques)



ARIA-LABEL

OVERRIDES ELEMENT'S NAME, REPLACING IT WITH TEXT YOU SPECIFY

```
<button>x</button>
```




ARIA-LABEL

OVERRIDES ELEMENT'S NAME, REPLACING IT WITH TEXT YOU SPECIFY

```
<button aria-label="Close">x</button>
```



ARIA-LABELLED BY

OVERRIDES ELEMENT'S NAME, REPLACING IT WITH CONTENTS OF ANOTHER ELEMENT

```
<section aria-labelledby="cats-heading">
  <h2 id="cats-heading">Famous internet cats</h2>
  <ul>
    <li>Maru</li>
    <li>Grumpy Cat</li>
    <li>Keyboard Cat</li>
    <li>...</li>
  </ul>
</section>
```




ARIA-DESCRIBEDBY

SETS ELEMENT'S DESCRIPTION TO THE CONTENTS OF ANOTHER ELEMENT

```
<form>
  <label for="username">Username</label>
  <p id="length">Username must be 6 to 15 characters.</p>
  <p id="format">Username may contain alphanumeric characters.</p>
  <input id="username" type="text" />
</form>
```



ARIA-DESCRIBEDBY

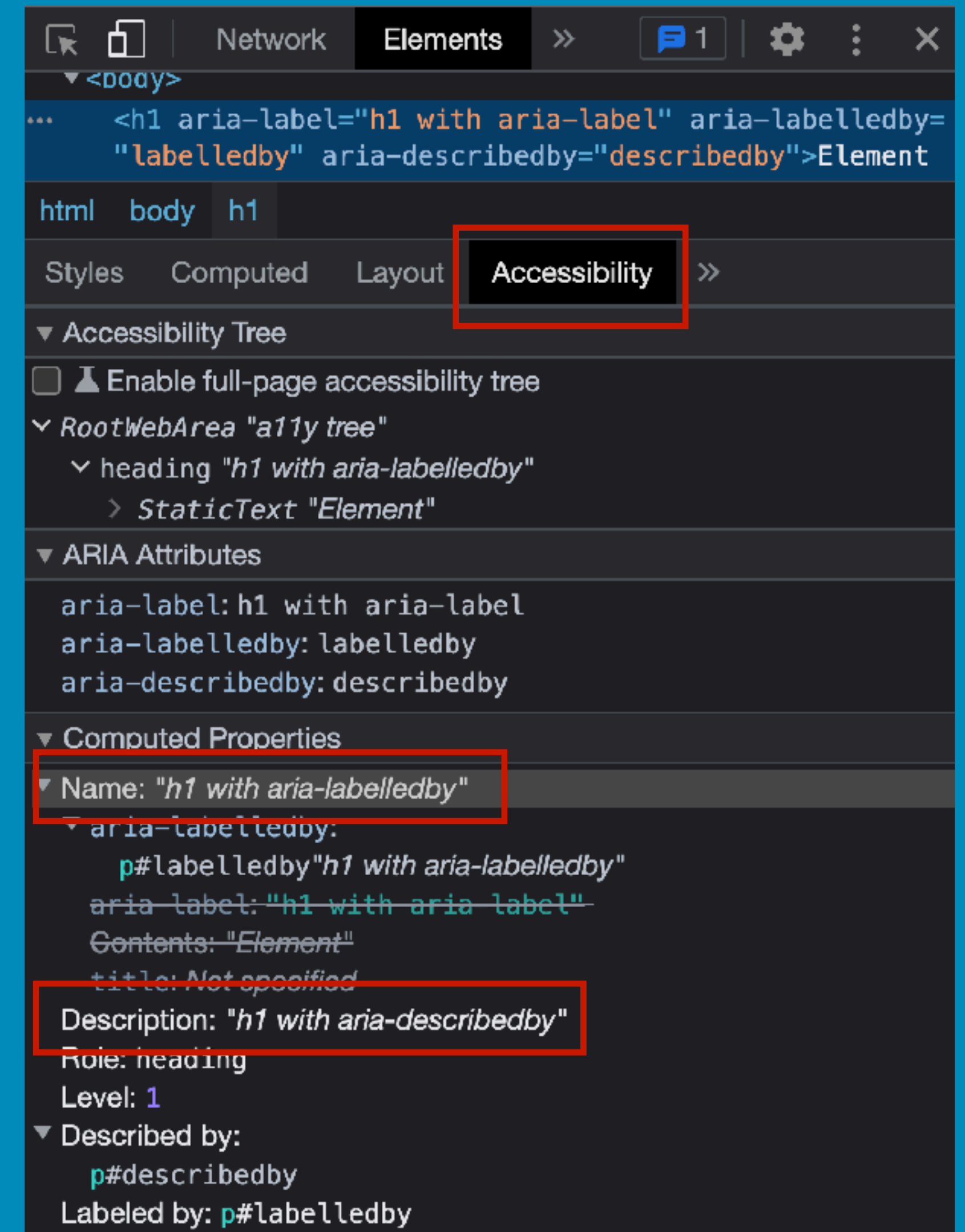
SETS ELEMENT'S DESCRIPTION TO THE CONTENTS OF ANOTHER ELEMENT

```
<form>
  <label for="username">Username</label>
  <p id="length">Username must be 6 to 15 characters.</p>
  <p id="format">Username may contain alphanumeric characters.</p>
  <input id="username" type="text" aria-describedby="length format" />
</form>
```




A11Y TREE

```
<h1 aria-label="h1 with aria-label" aria-labelledby="labelledby" aria-describedby="describedby">Element</h1>  
  
<p id="labelledby">h1 with aria-labelledby</p>  
<p id="describedby">h1 with aria-describedby</p>
```



PERCEIVABLE

PEOPLE MUST BE ABLE TO FIND YOUR CONTENT

USE OF COLOR

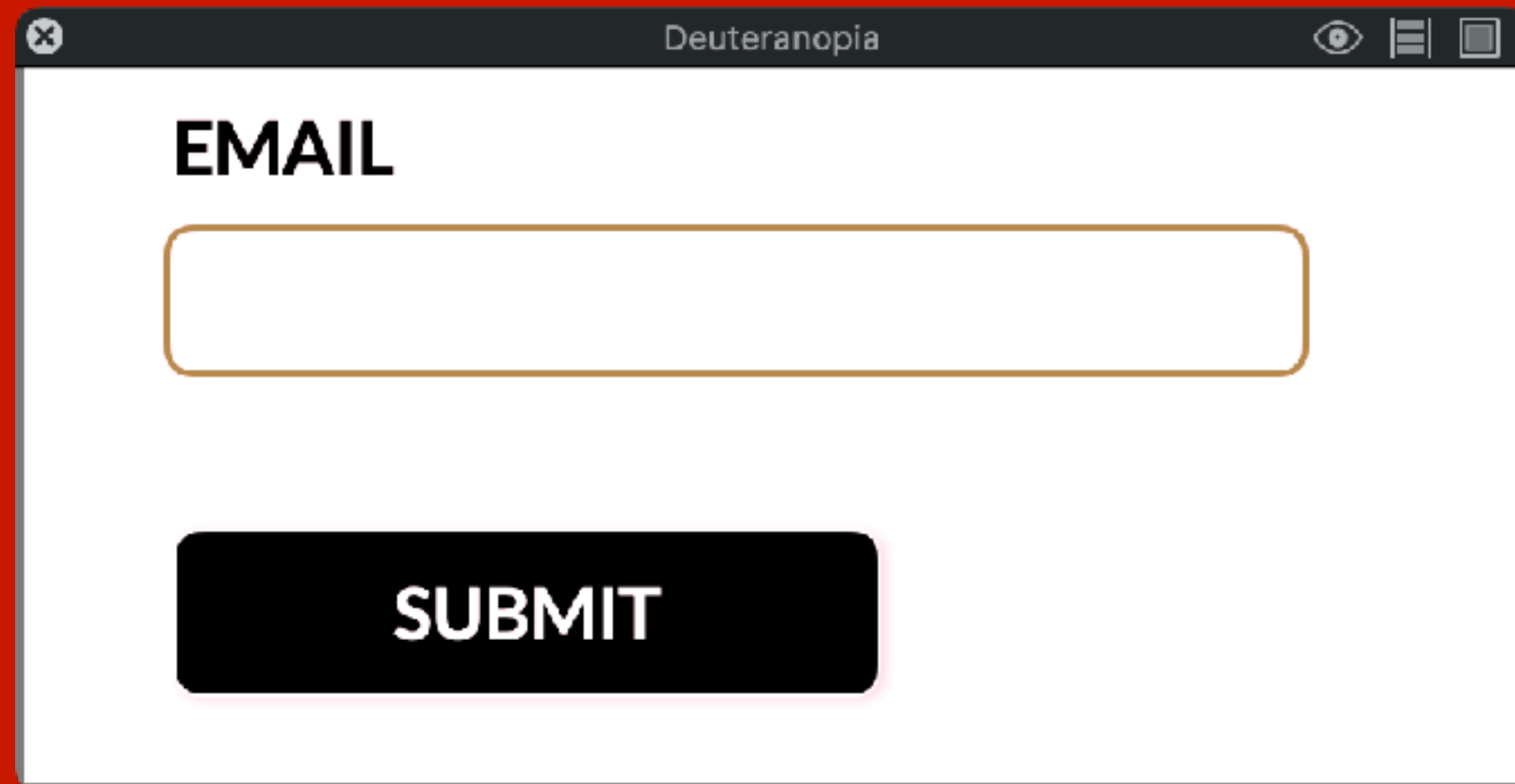
**COLOR SHOULD NOT BE SOLELY RELIED
UPON TO CONVEY INFORMATION**

DALTONISM

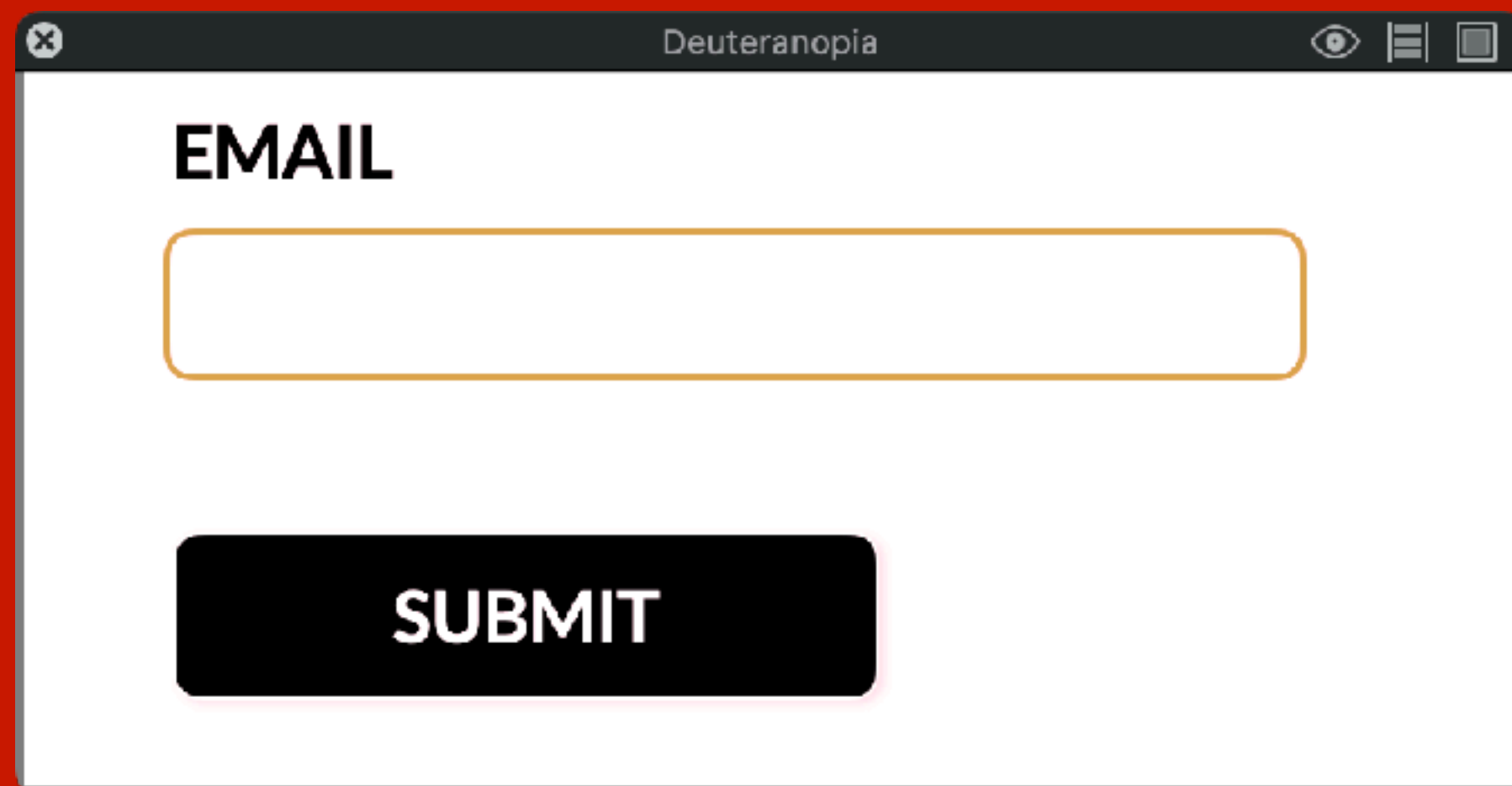
EMAIL

SUBMIT

DEUTERANOPIA

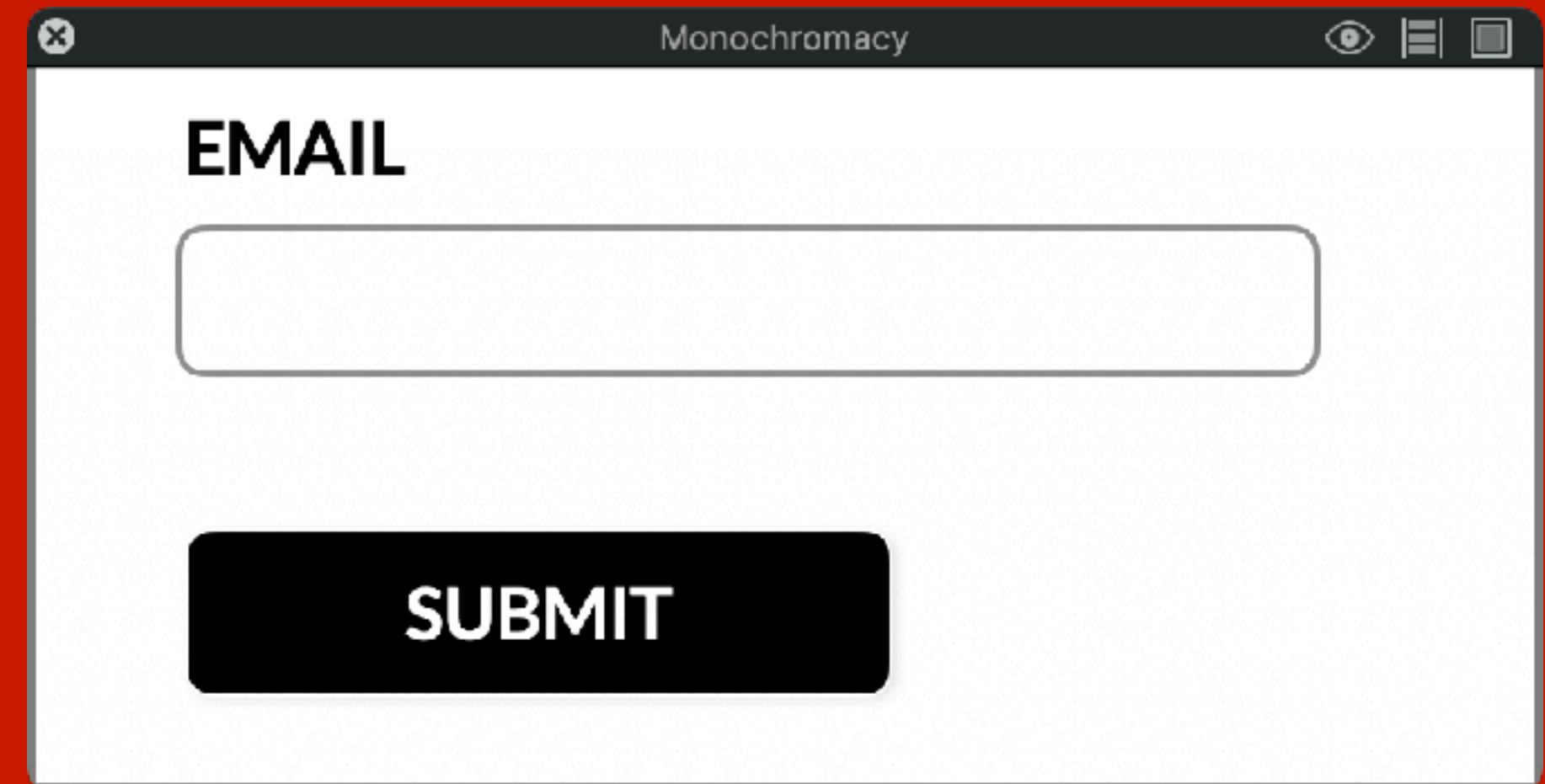


A browser window titled "Deuteranopia" showing a form with the label "EMAIL" and a text input field with a yellow border. Below the input is a black "SUBMIT" button.

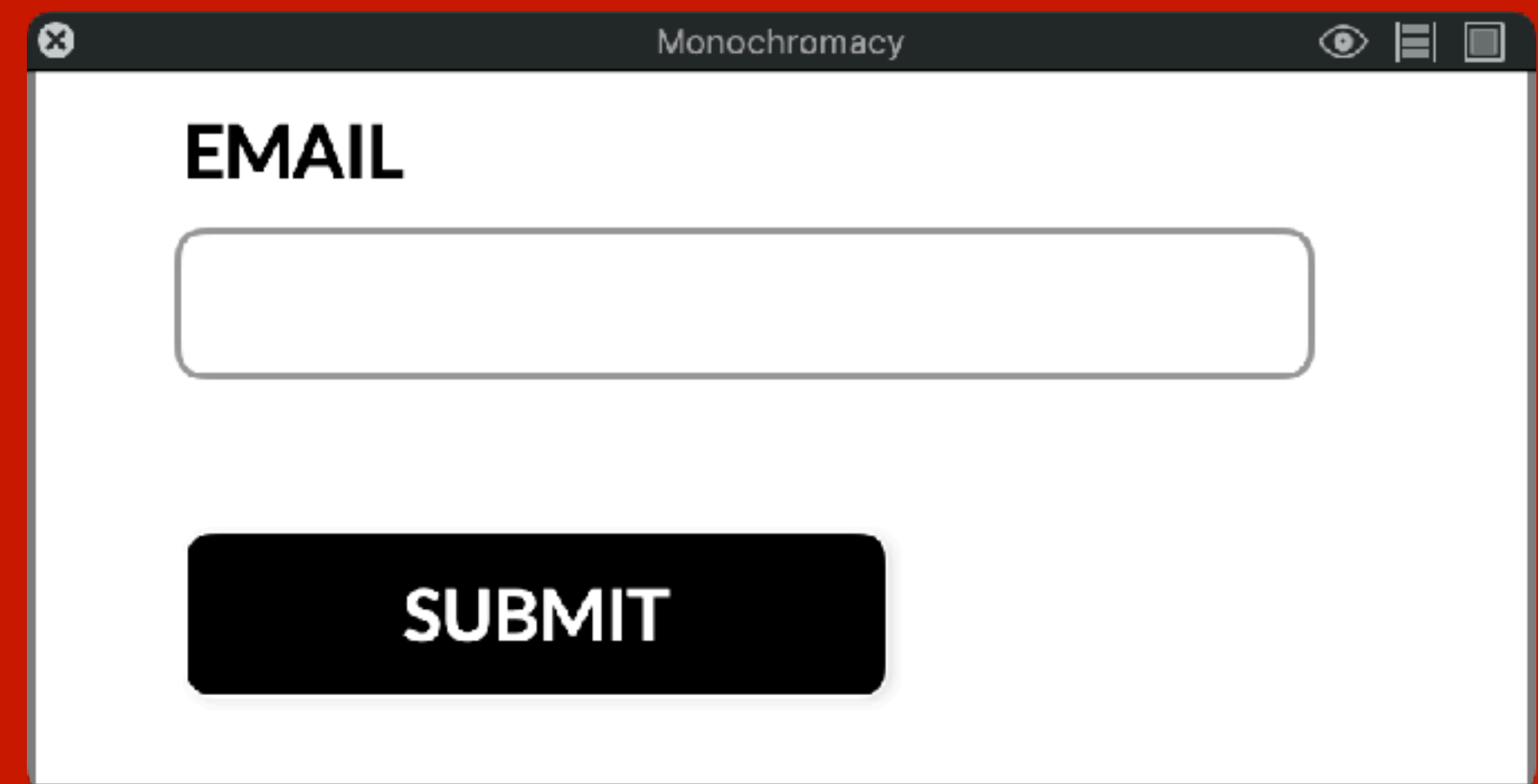


A browser window titled "Deuteranopia" showing a form with the label "EMAIL" and a text input field with a yellow border. Below the input is a black "SUBMIT" button.

MONOCHROMACY



A browser window titled "Monochromacy" showing a form with the label "EMAIL" and a text input field with a gray border. Below the input is a black "SUBMIT" button.



A browser window titled "Monochromacy" showing a form with the label "EMAIL" and a text input field with a gray border. Below the input is a black "SUBMIT" button.



DEUTERANOPIA

Deuteranopia

EMAIL

!

SUBMIT

Deuteranopia

EMAIL

✓

SUBMIT

MONOCHROMACY

Monochromacy

EMAIL

!

SUBMIT

Monochromacy

EMAIL

✓

SUBMIT

COLOR CONTRAST

**COLOR CONTRAST BETWEEN BACKGROUND AND FOREGROUND
CONTENT SHOULD BE AT A MINIMUM LEVEL TO ENSURE LEGIBILITY**



LOW CONTRAST TEXT

83,9%

The WebAIM Million

<https://webaim.org/projects/million/>

CONTRAST RATIO

CAN RANGE FROM 1 TO 21 (COMMONLY WRITTEN 1:1 TO 21:1)

TEXT SHOULD HAVE A MINIMUM RATIO OF 4.5:1

LARGE TEXT SHOULD HAVE A MINIMUM RATIO OF 3:1

18PT $\approx$ 24PX

14PT BOLD $\approx$ 18.5PX

$$(L1 + 0.05) / (L2 + 0.05)$$

L1 IS THE RELATIVE LUMINANCE OF THE LIGHTER OF THE TWO COLORS, AND
L2 IS THE RELATIVE LUMINANCE OF THE DARKER OF THE COLORS



RELATIVE LUMINANCE

RELATIVE BRIGHTNESS OF ANY POINT IN A COLORSPACE



FOR THE sRGB COLORSPACE, THE RELATIVE LUMINANCE OF A COLOR IS DEFINED AS

$$L = 0.2126 * R + 0.7152 * G + 0.0722 * B$$

WHERE **R**, **G** AND **B** ARE DEFINED AS

IF $R_{sRGB} \leq 0.04045$ THEN $R = R_{sRGB}/12.92$ ELSE $R = ((R_{sRGB} + 0.055)/1.055)^{2.4}$

IF $G_{sRGB} \leq 0.04045$ THEN $G = G_{sRGB}/12.92$ ELSE $G = ((G_{sRGB} + 0.055)/1.055)^{2.4}$

IF $B_{sRGB} \leq 0.04045$ THEN $B = B_{sRGB}/12.92$ ELSE $B = ((B_{sRGB} + 0.055)/1.055)^{2.4}$

AND **R_{sRGB}** , **G_{sRGB}** , AND **B_{sRGB}** ARE DEFINED AS

$$R_{sRGB} = R_{8BIT}/255$$

$$G_{sRGB} = G_{8BIT}/255$$

$$B_{sRGB} = B_{8BIT}/255$$



COLOR CONTRAST CHECKERS

Contrast Checker

[Home](#) > [Resources](#) > Contrast Checker

Foreground Color

#0000FF

Lightness

Background Color

#FFFFFF

Lightness

Contrast Ratio

8.59:1

Artemis Continues

h2 450.5 x 33

Color #428BCA

Font 30px "Titillium Web", "Helvetica Neue", ...

Margin 0px 0px 10px

ACCESSIBILITY

Contrast **Aa** 3.63 ✓

Name Artemis Continues

Role heading

Keyboard-focusable

COLOR SELECTION

FOREGROUND 407A6D

BACKGROUND FFFFFFFF

RATIO: 4.97

WCAG - Contrast checker

Foreground colour HEX #FCFCFC

Background colour HEX #46E662

Sample preview

example text showing contrast

WCAG 2.1 results

Contrast ratio 1.6:1

1.4.3 Contrast (Minimum) (AA)

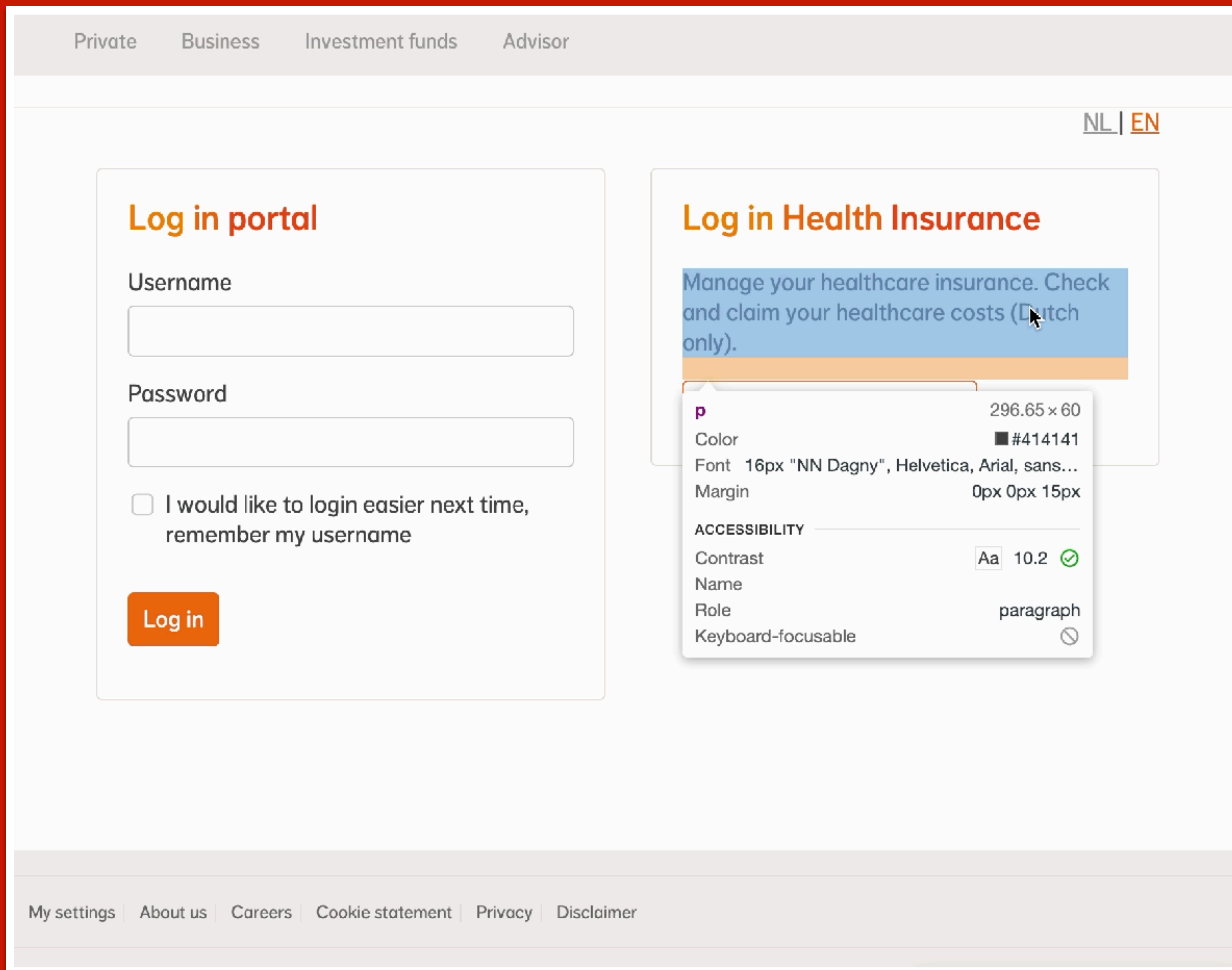
Fail (regular text) Fail (large text)

1.4.6 Contrast (Enhanced) (AAA)

Fail (regular text) Fail (large text)

1.4.11 Non-text Contrast (AA)

Fail (UI components and graphical objects)



✕ CONTRAST RATIO

BE CAREFUL WITH TEXT SHADOWS

BE CAREFUL WITH TEXT OUTLINES



ORIENTATION

**CONTENT DOES NOT RESTRICT ITS VIEW AND
OPERATION TO A SINGLE DISPLAY ORIENTATION**


```
←!— please don't do this —→  
<div id="turn">Please rotate your device!</div>  
  
<div id="container">Main contents here.</div>
```

```
/* please don't do this */  
@media only screen and (orientation:landscape) {  
  #turn { display:block; }  
  #container { display:none; }  
}  
  
@media only screen and (orientation:portrait) {  
  #turn { display:none; }  
  #container { display:block; }  
}
```



```
<h1>Find box a little too small and curl up with fur hanging out</h1>  
  
<p>Cat ipsum dolor sit amet. I dreamt about fish, yum! Give me attention  
or face my claws. Cat fur is the new black. Shred all toilet paper and  
spread around the house. Lick butt and make a weird face.</p>
```

```
/* please don't do this */  
@media only screen and (orientation:portrait) {  
  body {  
    height: 100vw;  
    transform: rotate(90deg);  
  }  
}
```


ALT TEXT

**ALL IMAGES THAT CONVEY MEANINGFUL CONTENT
SHOULD BE GIVEN SUITABLE ALTERNATIVE TEXT**



MISSING ALTERNATIVE TEXT

55,4%

The WebAIM Million

<https://webaim.org/projects/million/>



```

```




```

```






```
header {  
  background-image: url("IMG_3320.jpg");  
  background-size: cover;  
}
```


OPERABLE

PEOPLE MUST BE ABLE TO USE YOUR WEBSITE

FOCUS

VISUAL INDICATOR MUST BE SHOWN FOR CURRENTLY FOCUSED ELEMENT



I show my fluffy belly but it's a trap!

Cat ipsum dolor sit amet, waffles, meeeeuw then cats take over the world nyan fluffness ahh cucumber! Head nudges find [empty spot in cupboard](#) and sleep all day yet i dreamt about fish yum! i sits so be a nyan cat, feel great about it, be annoying 24/7, [poop rainbows](#) in litter box all day or slap owner's face at 5am until human fills food dish.

- ☒ Keyboard Cat
- ☐ Grumpy cat
- ☐ Colonel Meow

Favorite cat

lick paws



I show my fluffy belly but it's a trap!

Cat ipsum dolor sit amet, waffles, meeeeuw then cats take over the world nyan fluffness ahh cucumber! Head nudges find [empty spot in cupboard](#) and sleep all day yet i dreamt about fish yum! i sits so be a nyan cat, feel great about it, be annoying 24/7, [poop rainbows](#) in litter box all day or slap owner's face at 5am until human fills food dish.

- ☒ Keyboard Cat
- ☐ Grumpy cat
- ☐ Colonel Meow

Favorite cat

lick paws

```
/* don't do this */
*:focus {
  outline: 0;
}
```




I show my fluffy belly but it's a trap!

Cat ipsum dolor sit amet, waffles, meeeeuw then cats take over the world nyan fluffness ahh cucumber! Head nudges find [empty spot in cupboard](#) and sleep all day yet i dreamt about fish yum! i sits so be a nyan cat, feel great about it, be annoying 24/7, [poop rainbows](#) in litter box all day or slap owner's face at 5am until human fills food dish.

- ☒ Keyboard Cat
- ☐ Grumpy cat
- ☐ Colonel Meow

Favorite cat

lick paws



```
/* you can do this */
*:focus {
  outline: 0;
}

/* if you also do this */
```

```
a:focus {
  color: #fff;
  box-shadow: inset 250px 0 0 0 #c02f39;
  transition: color 0.3s ease-in-out,
              box-shadow 0.3s ease-in-out;
}

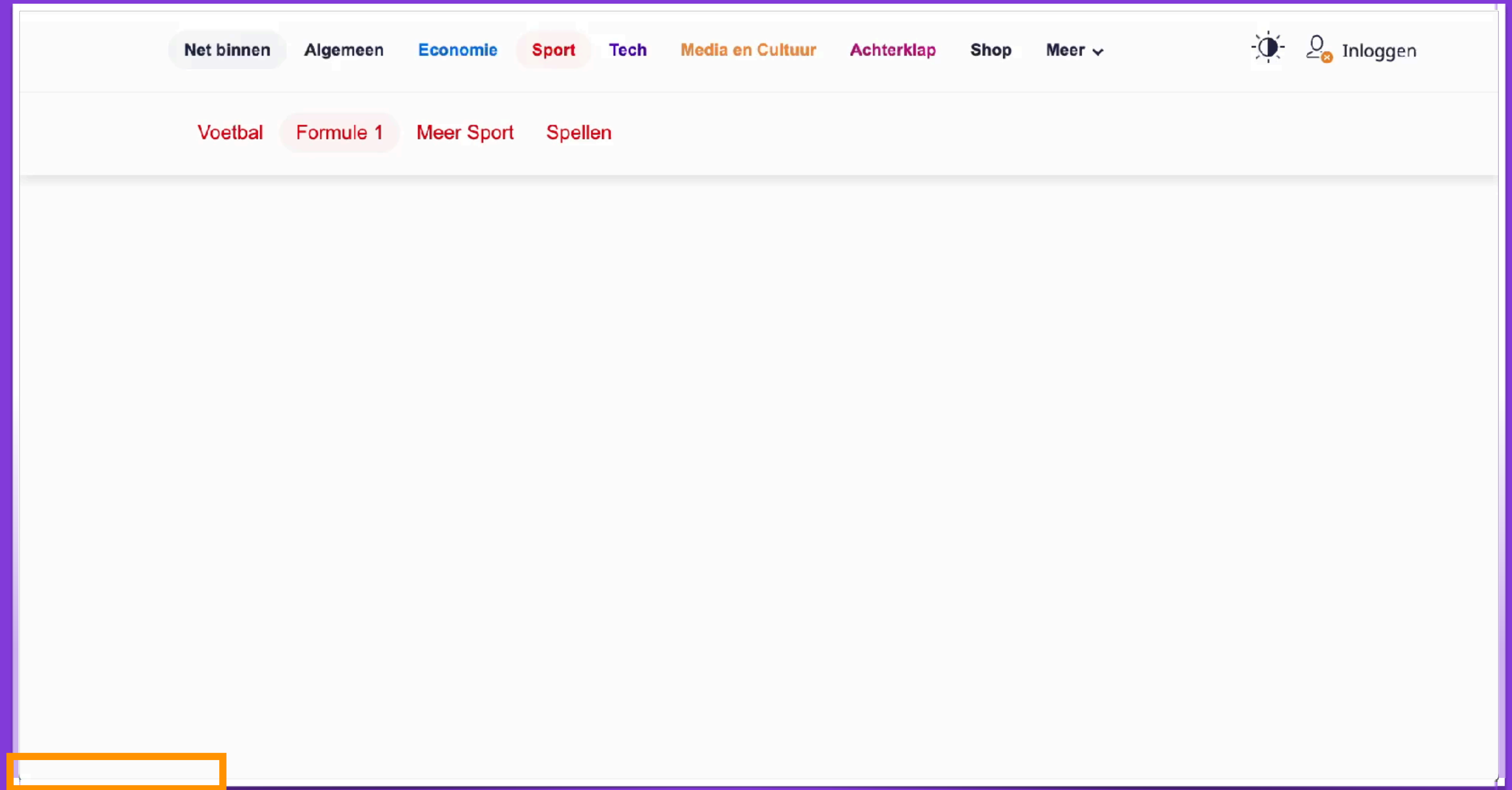
label:focus-within {
  background-color: #c02f39;
  color: #fff;
  padding-right: 0.5rem;
}

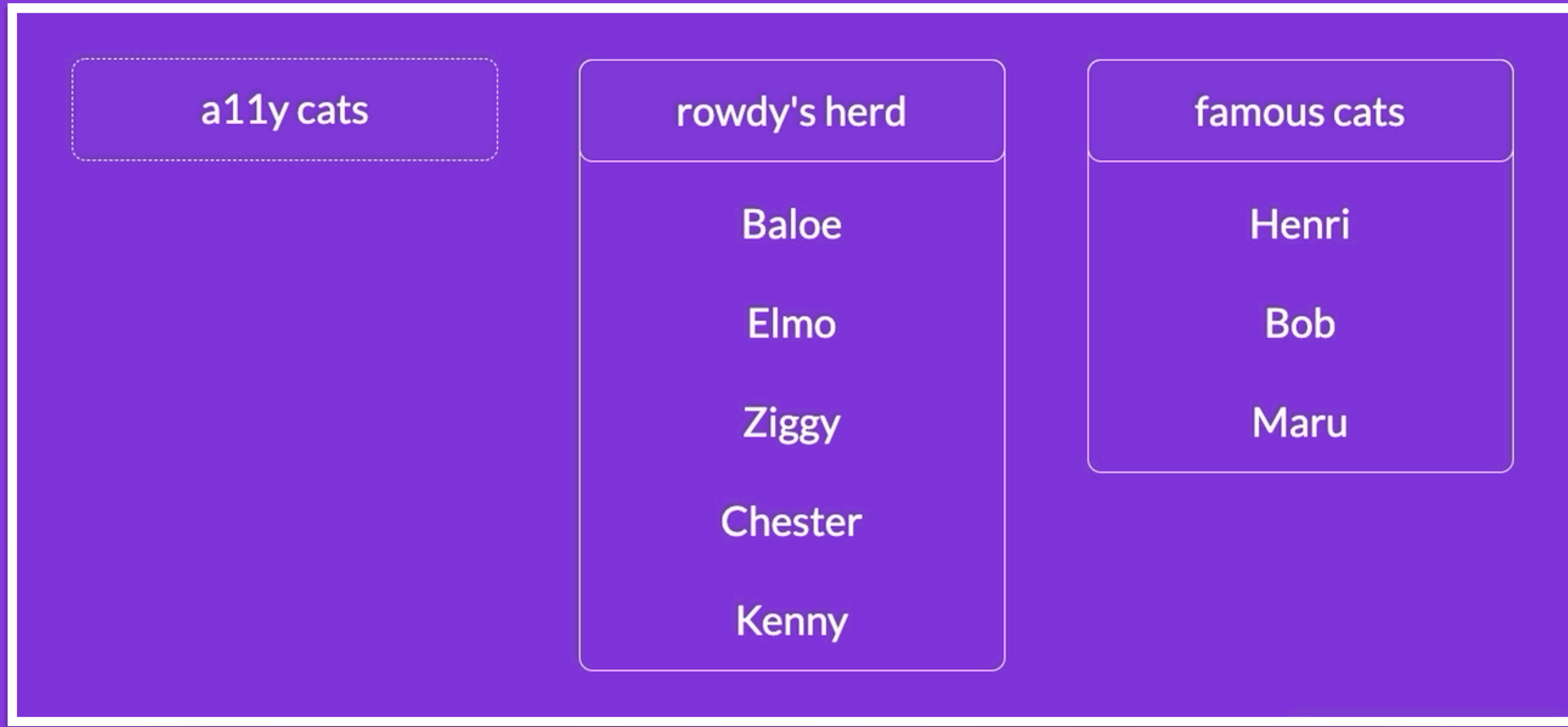
input[type="text"]:focus {
  border: 2px dashed #c02f39;
  color: #c02f39;
}

button:focus {
  background-color: #c02f39;
  color: rgb(255, 255, 255);
}
```


TABBING ORDER

ORDER OF ELEMENTS MUST BE LOGICAL








```
<nav aria-label="Main">
  <ul>
    <li>
      <a href="/" aria-current="page">a11y cats</a>
    </li>
    <li class="has-submenu">
      <a href="#" aria-haspopup="true" aria-expanded="false">rowdy's herd</a>
      <ul>
        <li>
          <a href="/baloe/">Baloe</a>
        </li>
        <li>
          <a href="/elmo/">Elmo</a>
        </li>
        <li>
          <a href="/ziggy/">Ziggy</a>
        </li>
      </ul>
    </li>
  </ul>
</nav>
```

```
<nav aria-label="Main">
  <ul>
    <li>
      <a href="/" aria-current="page">a11y cats</a>
    </li>
    <li class="has-submenu">
      <a href="#" aria-haspopup="true" aria-expanded="false">rowdy's herd</a>
      <ul>
        <li>
          <a href="/baloe/">Baloe</a>
        </li>
        <li>
          <a href="/elmo/">Elmo</a>
        </li>
        <li>
          <a href="/ziggy/">Ziggy</a>
        </li>
      </ul>
    </li>
  </ul>
</nav>
```



```
<nav aria-label="Main">
  <ul>
    <li>
      <a href="/" aria-current="page">a11y cats</a>
    </li>
    <li class="has-submenu">
      <a href="#" aria-haspopup="true" aria-expanded="false">rowdy's herd</a>
      <ul>
        <li>
          <a href="/baloe/">Baloe</a>
        </li>
        <li>
          <a href="/elmo/">Elmo</a>
        </li>
        <li>
          <a href="/ziggy/">Ziggy</a>
        </li>
      </ul>
    </li>
  </ul>
</nav>
```

```
<nav aria-label="Main">
  <ul>
    <li>
      <a href="/" aria-current="page">a11y cats</a>
    </li>
    <li class="has-submenu">
      <a href="#" aria-haspopup="true" aria-expanded="false">rowdy's herd</a>
      <ul>
        <li>
          <a href="/baloe/">Baloe</a>
        </li>
        <li>
          <a href="/elmo/">Elmo</a>
        </li>
        <li>
          <a href="/ziggy/">Ziggy</a>
        </li>
      </ul>
    </li>
  </ul>
</nav>
```



```
const resetMenu = () => {  
  document.querySelectorAll("li.has-submenu").forEach((el) => {  
    el.className = "has-submenu";  
    el.querySelector("a").setAttribute("aria-expanded", "false");  
    el.querySelector("ul").className = "hidden";  
  });  
}  
  
resetMenu();
```

```
const resetMenu = () => {  
  document.querySelectorAll("li.has-submenu").forEach((el) => {  
    el.className = "has-submenu";  
    el.querySelector("a").setAttribute("aria-expanded", "false");  
    el.querySelector("ul").className = "hidden";  
  });  
}  
  
resetMenu();
```

```
.hidden {  
  display: none;  
}
```



```
document.querySelectorAll("li.has-submenu").forEach((el) => {  
  el.querySelector("a").addEventListener("click", function (event) {  
    if (this.parentNode.className === "has-submenu") {  
      this.parentNode.className = "has-submenu open-submenu";  
      this.setAttribute("aria-expanded", "true");  
    } else {  
      this.parentNode.className = "has-submenu";  
      this.setAttribute("aria-expanded", "false");  
    }  
    this.nextElementSibling.classList.toggle("hidden");  
    event.preventDefault();  
  });  
});
```

```
document.querySelectorAll("li.has-submenu").forEach((el) => {  
  el.querySelector("a").addEventListener("click", function (event) {  
    if (this.parentNode.className === "has-submenu") {  
      this.parentNode.className = "has-submenu open-submenu";  
      this.setAttribute("aria-expanded", "true");  
    } else {  
      this.parentNode.className = "has-submenu";  
      this.setAttribute("aria-expanded", "false");  
    }  
    this.nextElementSibling.classList.toggle("hidden");  
    event.preventDefault();  
  });  
});
```



```
document.querySelectorAll("li.has-submenu").forEach((el) => {  
  el.querySelector("a").addEventListener("click", function (event) {  
    if (this.parentNode.className === "has-submenu") {  
      this.parentNode.className = "has-submenu open-submenu";  
      this.setAttribute("aria-expanded", "true");  
    } else {  
      this.parentNode.className = "has-submenu";  
      this.setAttribute("aria-expanded", "false");  
    }  
    this.nextElementSibling.classList.toggle("hidden");  
    event.preventDefault();  
  });  
});
```

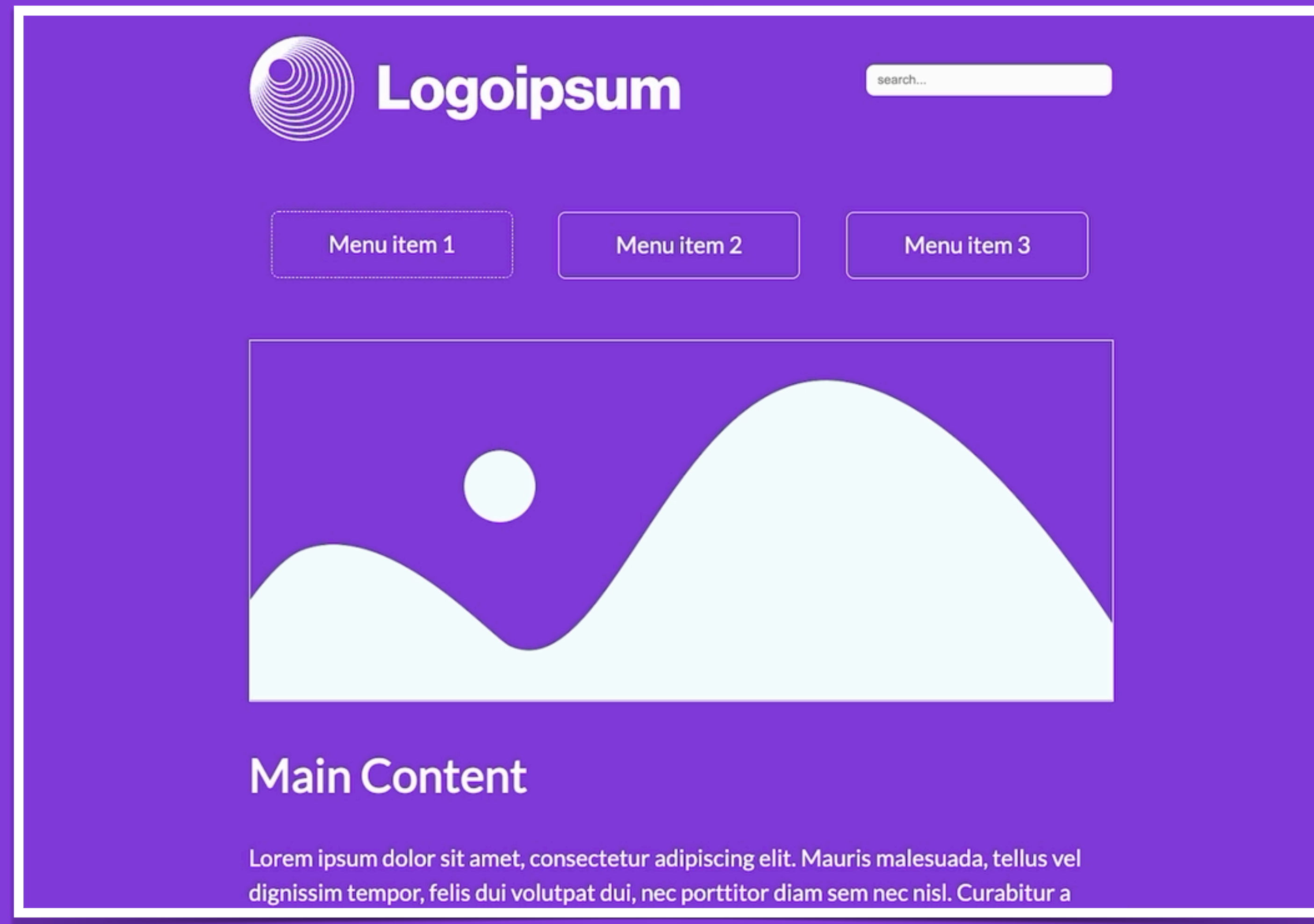
```
document.querySelectorAll("li.has-submenu").forEach((el) => {  
  el.querySelector("a").addEventListener("click", function (event) {  
    if (this.parentNode.className === "has-submenu") {  
      this.parentNode.className = "has-submenu open-submenu";  
      this.setAttribute("aria-expanded", "true");  
    } else {  
      this.parentNode.className = "has-submenu";  
      this.setAttribute("aria-expanded", "false");  
    }  
    this.nextElementSibling.classList.toggle("hidden");  
    event.preventDefault();  
  });  
});
```



```
document.addEventListener("keydown", (event) => {  
  if (event.key === "Escape") {  
    resetMenu();  
  }  
});
```


TABBING ORDER

MAKE IT EASY TO SKIP SEGMENTS



```
<body>
  <a href="#main-content" class="skip-link">Skip to main content</a>
  <header>
    <main id="main-content">
      <h1>Main Content</h1>
```

A diagram consisting of a vertical dashed line with a white arrowhead pointing downwards. It originates from the `href="#main-content"` attribute in the first code block and points to the `id="main-content"` attribute in the second code block, illustrating the relationship between the link and the target content.



```
.skip-link {  
  position: absolute;  
  left: 50px;  
  z-index: 10;  
  outline: none;  
  border: 4px dashed #823ad9;  
  border-radius: 0.5em;  
  background-color: #fff;  
  padding: 0.5rem 1rem;  
  color: #823ad9;  
  font-size: 1.25rem;  
  text-transform: uppercase;  
  text-decoration: none;  
  transform: translateY(-200%);  
  transition: transform 0.3s;  
}  
  
.skip-link:focus {  
  transform: translateY(0%);  
}
```

UNDERSTANDABLE

PEOPLE MUST BE ABLE TO UNDERSTAND YOUR WEBSITE

FORMS



MISSING FORM INPUT LABELS

46,1%

The WebAIM Million
<https://webaim.org/projects/million/>



```
←!— please don't do this →  
<form>  
  <input name="email" placeholder="E-mail" />  
  <button class="btn">Submit</button>  
</form>
```

```
←!— do this →  
<form>  
  <label for="email">E-mail</label>  
  <input id="email" name="email" />  
  <button class="btn">Submit</button>  
</form>
```

PLACEHOLDER ATTRIBUTE

DATE OF BIRTH

DD-MM-YYYY

- HARD TO READ
- HARD TO REMEMBER



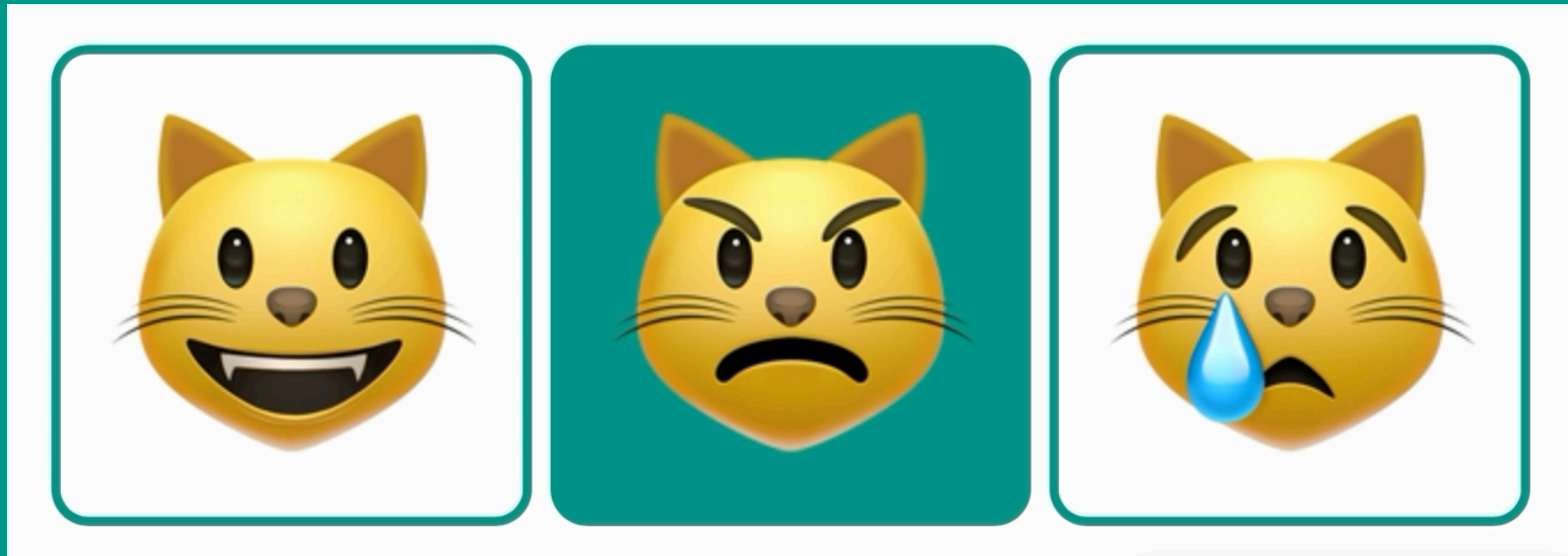
PLACEHOLDER ATTRIBUTE

DATE OF BIRTH

Format: DD-MM-YYYY



CUSTOM RADIOS



```
<div>
  <input id="happy" name="emoji" type="radio" />
  <label for="happy">
    <span aria-hidden="true">😺</span>
    <span class="sr-only">Happy</span>
  </label>
</div>
<div>
  <input id="angry" name="emoji" type="radio" />
  <label for="angry">
    <span aria-hidden="true">😡</span>
    <span class="sr-only">Angry</span>
  </label>
</div>
<div>
  <input id="sad" name="emoji" type="radio" />
  <label for="sad">
    <span aria-hidden="true">😭</span>
    <span class="sr-only">Sad</span>
  </label>
</div>
```



```
input {
  opacity: 0;
  width: 0;
}

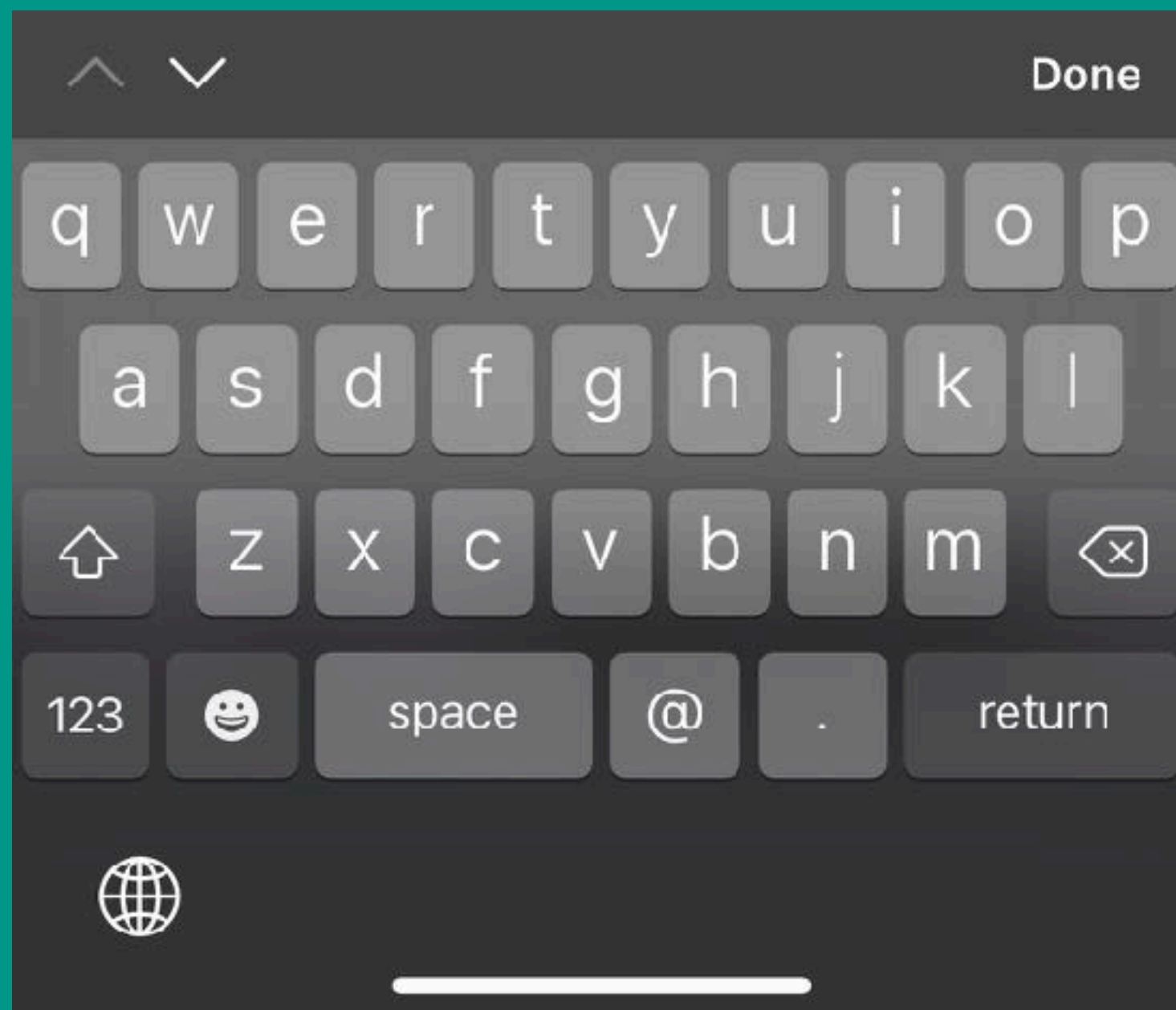
label {
  display: grid;
  justify-content: center;
  align-content: bottom;
  height: 100px;
  width: 100px;
  background-color: #fff;
  font-size: 5rem;
  border: 2px solid #009688;
  border-radius: 8px;
  cursor: pointer;
}

input:checked + label {
  background-color: #009688;
}
```



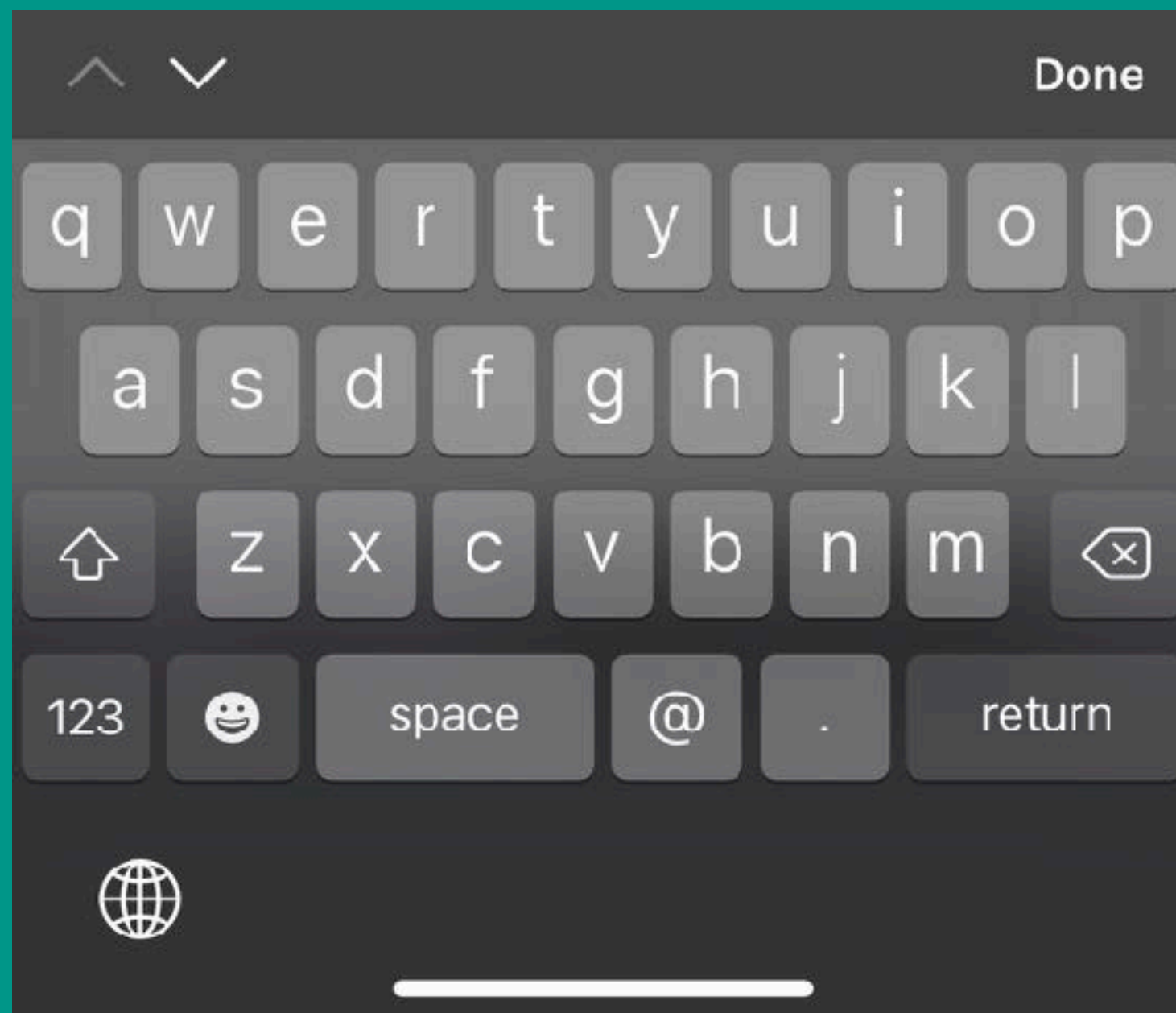
INPUT TYPES

```
<input type="email">
```

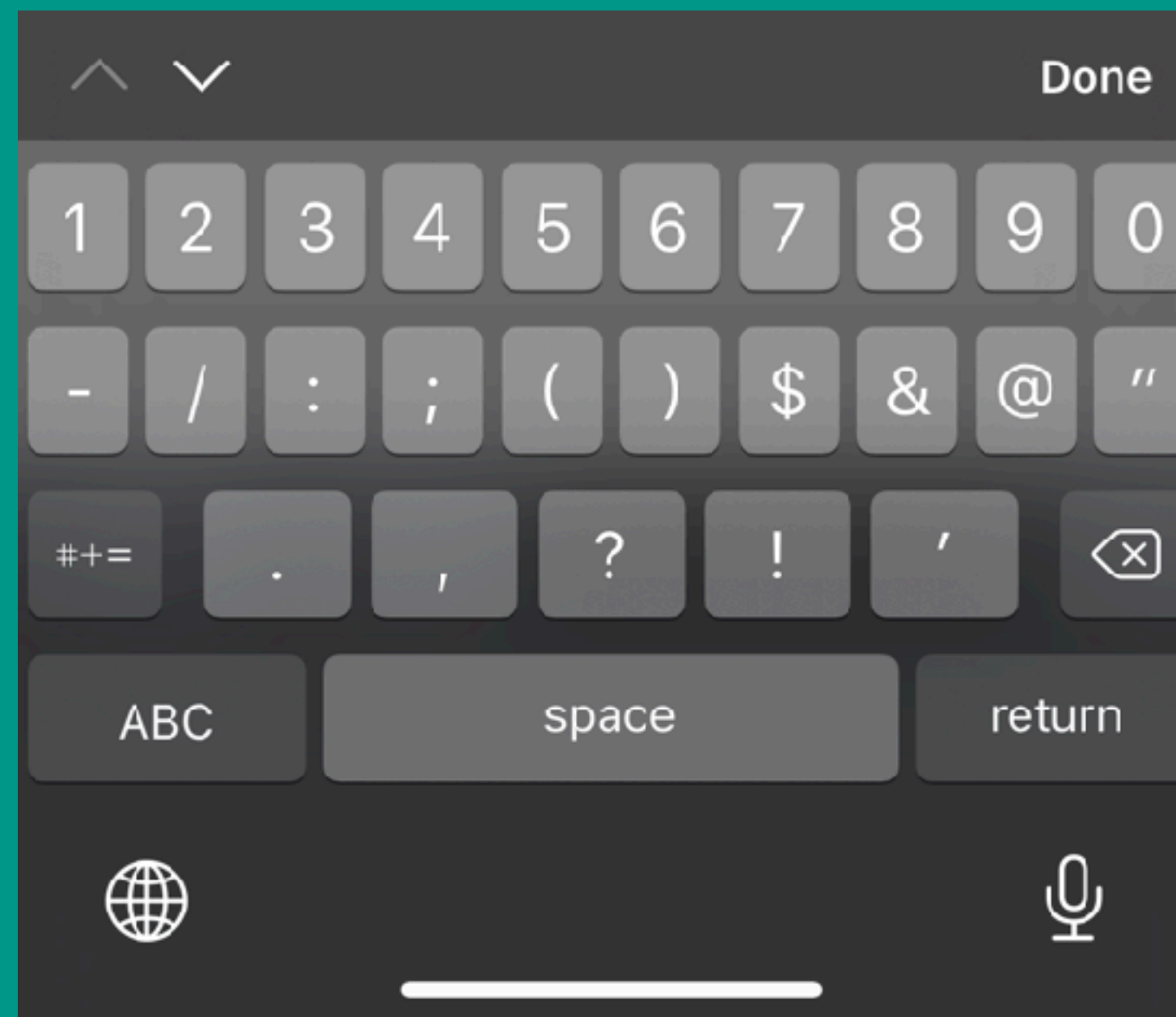


INPUT TYPES

```
<input type="email">
```

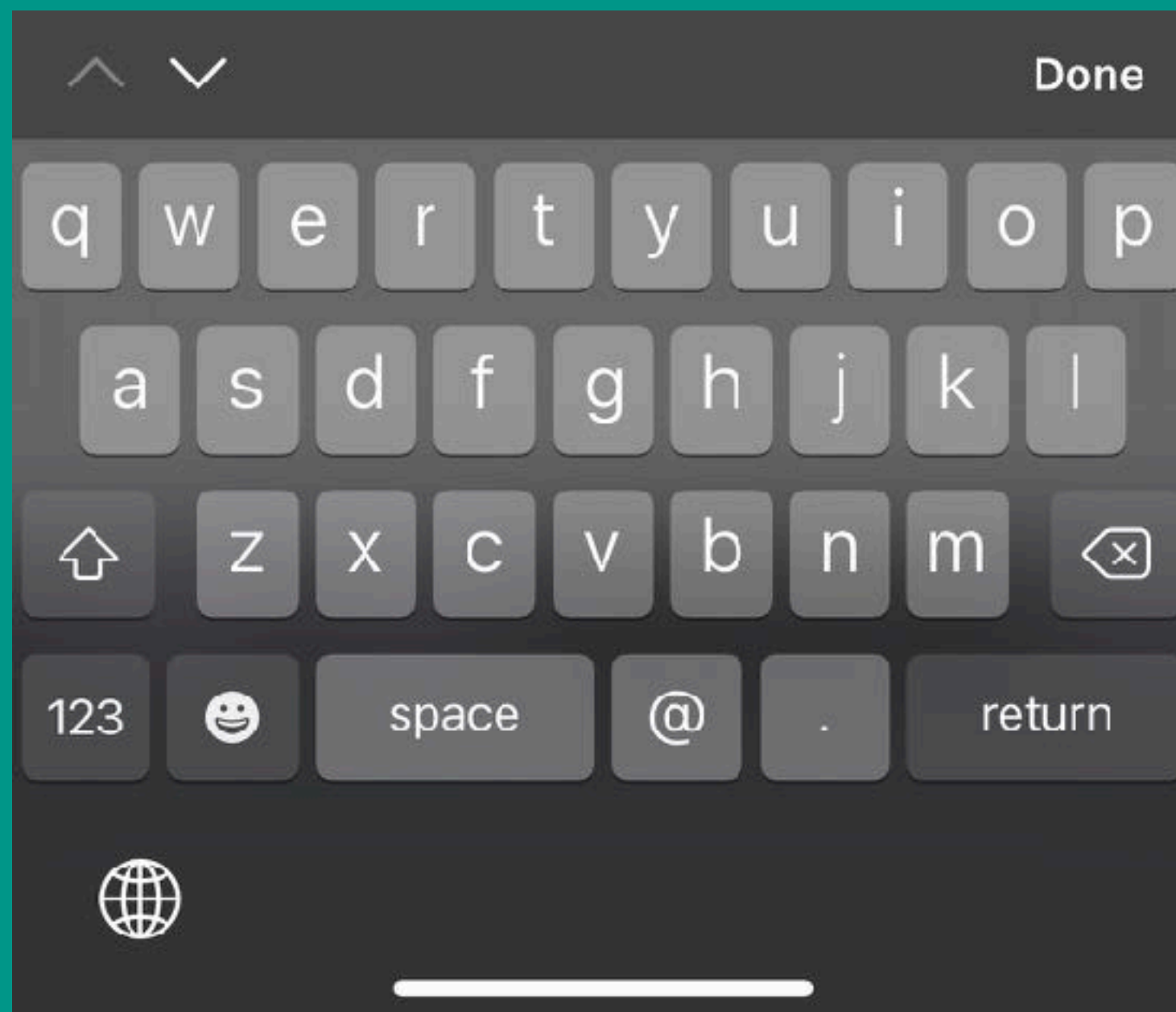


```
<input type="number">
```

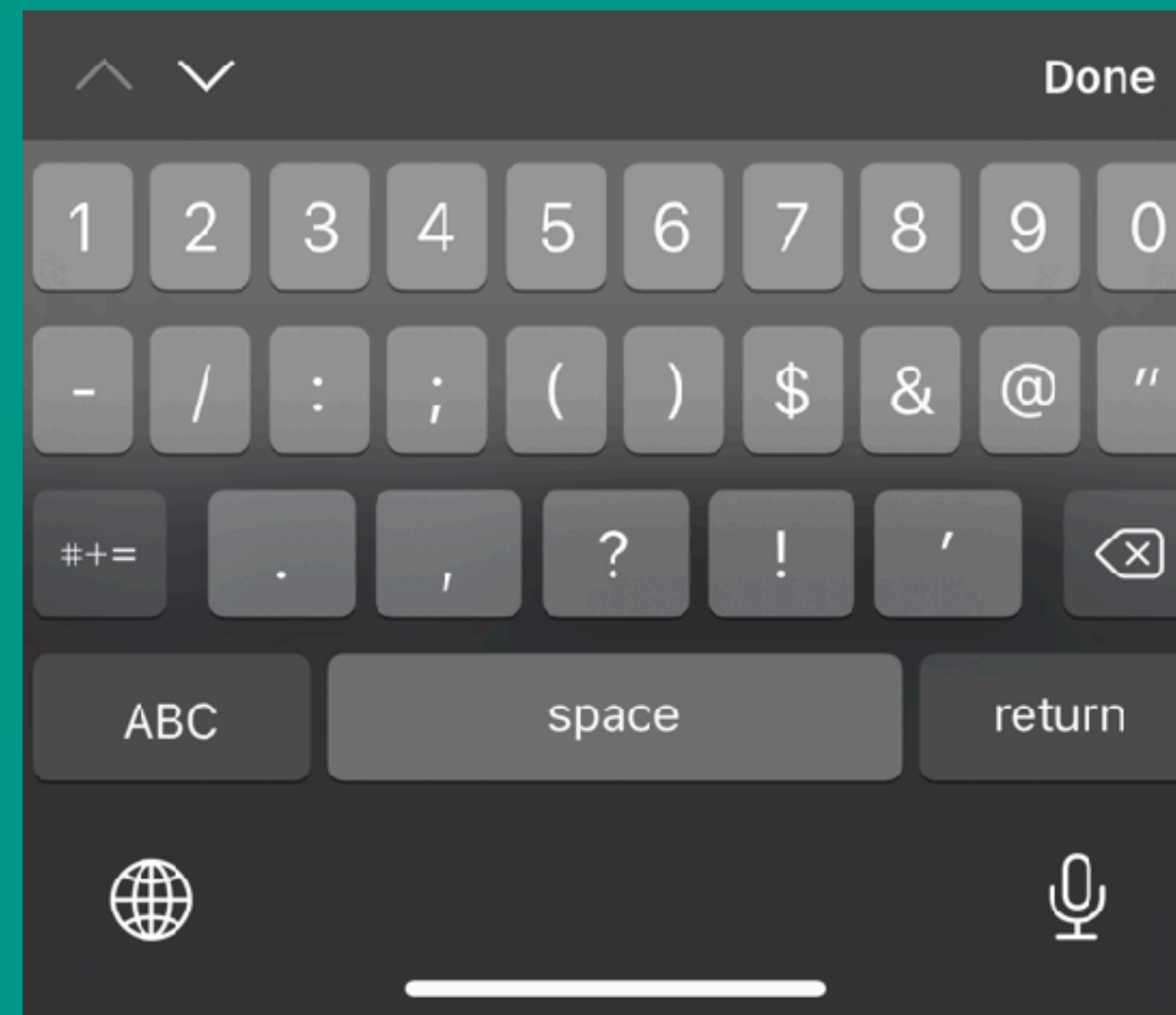


INPUT TYPES

```
<input type="email">
```



```
<input type="number">
```

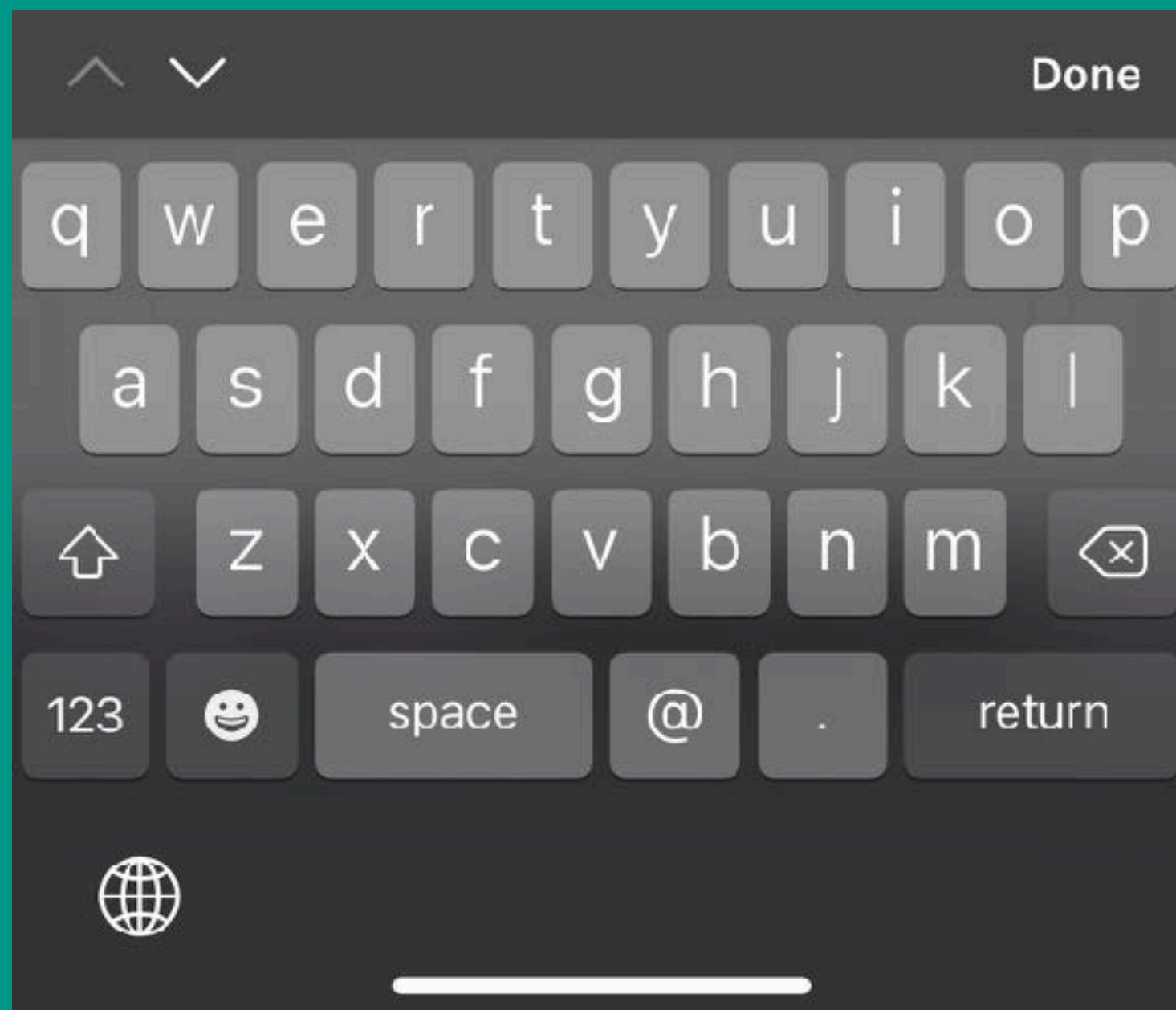


- SUBOPTIMAL KEYBOARD
- CONFUSING ARROWS
- INCONSISTENT BEHAVIOUR

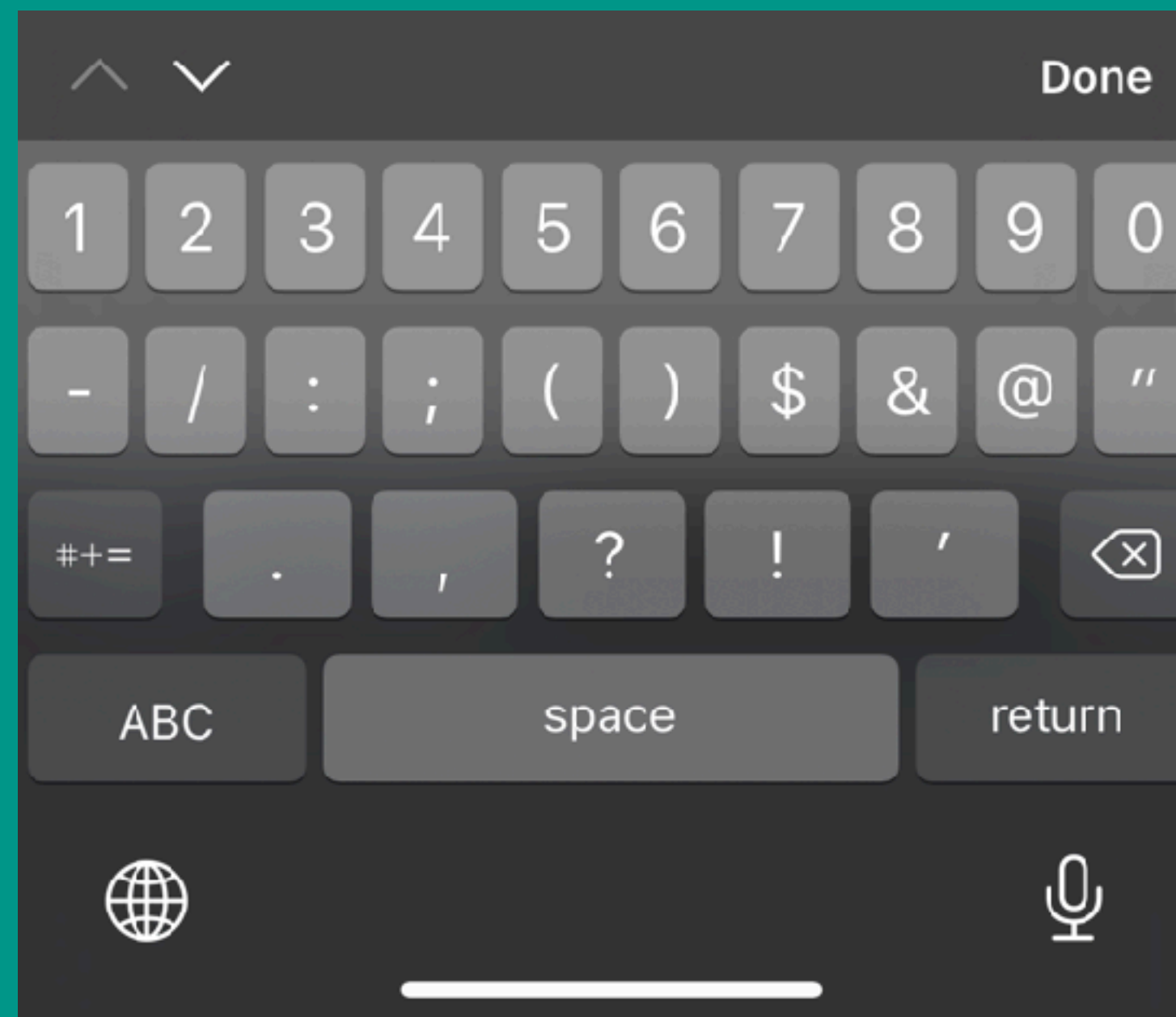


INPUT TYPES

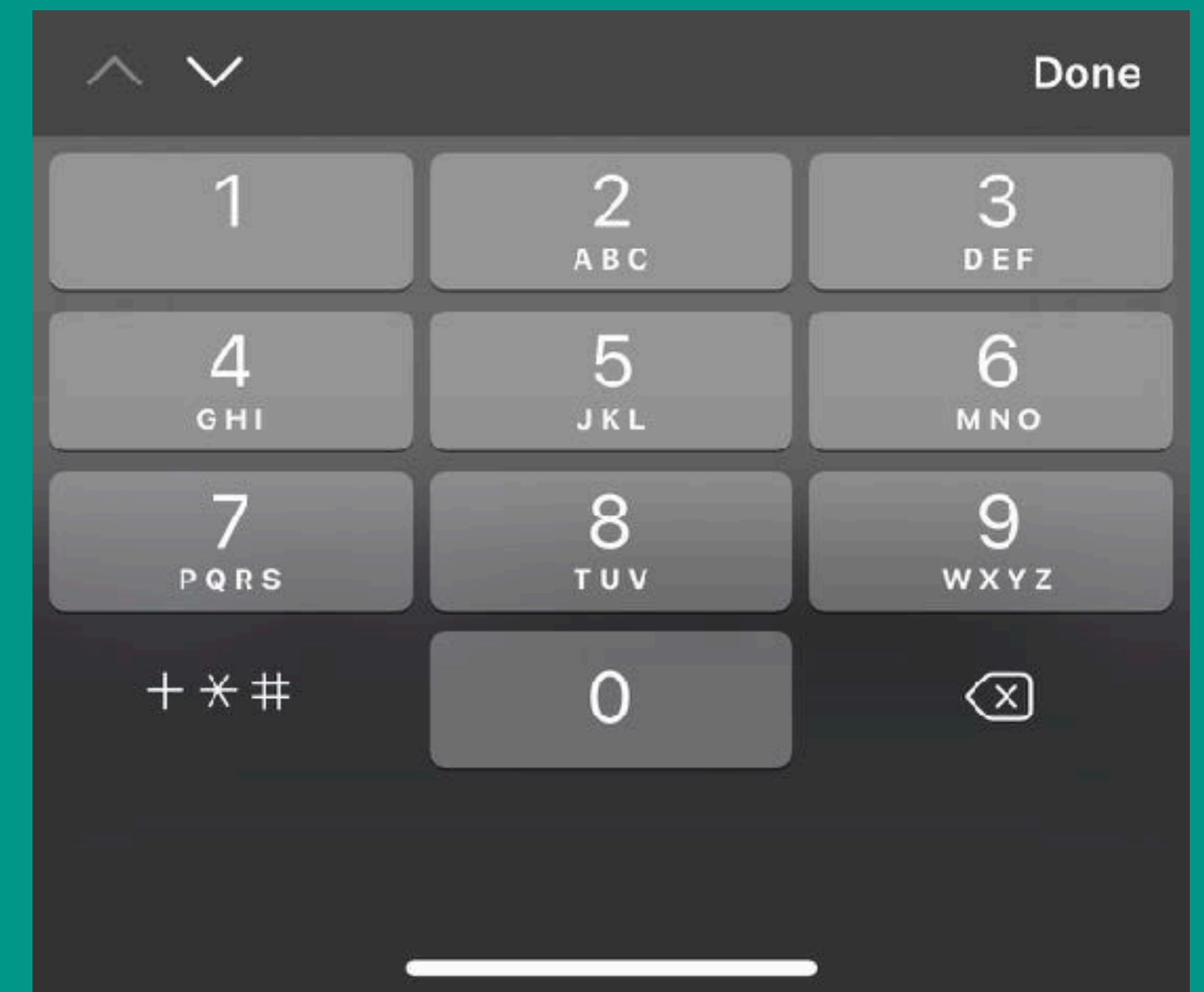
```
<input type="email">
```



```
<input type="number">
```



```
<input type="tel">
```



ERROR MESSAGES

PHONE NUMBER

01-23456789



Please enter a valid phone number

- WHAT'S WRONG?

ERROR MESSAGES

PHONE NUMBER

01-23456789



Please only enter digits



ERROR MESSAGES

PHONE NUMBER

0123456789



HTML5 FORM VALIDATION



Please fill in this field.

Fill out this field

Vul dit veld in.



Please lengthen this text to 2 characters or more (you are currently using 1 character).

Use at least 2 characters

Gebruik minstens 2 tekens (u gebruikt nu 1 tekens).



Name

Country

Email

Submit

There are 3 errors found in the information you submitted.

1. [Name is required.](#)
2. [Country can only contain letters.](#)
3. [Email format is incorrect.](#)

Name



Name is required.

Country



Country can only contain letters.

Email



Email format is incorrect.

Submit



CONSTRAINT VALIDATION API

A web for anyone, anywhere, anytime

@rowdyrabouw


```
<form id="signup" action="/" novalidate>
  <div id="errors" role="alert" aria-live="assertive" aria-atomic="true"></div>
  <div>
    <label for="name">Name</label>
    <input id="name" type="text" minlength="2" required />
    <p id="name-error-required" class="error hidden">Name is required.</p>
    <p id="name-error-length" class="error hidden">Name must be at least 2 characters.</p>
  </div>
  <div>
    <label for="country">Country</label>
    <input id="country" type="text" pattern="[a-zA-Z]" />
    <p id="country-error-pattern" class="error hidden">Country can only contain letters.</p>
  </div>
  <div>
    <label for="email">Email</label>
    <input id="email" type="email" required />
    <p id="email-error-required" class="error hidden">Email is required.</p>
    <p id="email-error-type" class="error hidden">Email format is incorrect.</p>
  </div>
  <div>
    <button type="submit">Submit</button>
  </div>
</form>
```

```
<form id="signup" action="/" novalidate>
  <div id="errors" role="alert" aria-live="assertive" aria-atomic="true"></div>
  <div>
    <label for="name">Name</label>
    <input id="name" type="text" minlength="2" required />
    <p id="name-error-required" class="error hidden">Name is required.</p>
    <p id="name-error-length" class="error hidden">Name must be at least 2 characters.</p>
  </div>
  <div>
    <label for="country">Country</label>
    <input id="country" type="text" pattern="[a-zA-Z]" />
    <p id="country-error-pattern" class="error hidden">Country can only contain letters.</p>
  </div>
  <div>
    <label for="email">Email</label>
    <input id="email" type="email" required />
    <p id="email-error-required" class="error hidden">Email is required.</p>
    <p id="email-error-type" class="error hidden">Email format is incorrect.</p>
  </div>
  <div>
    <button type="submit">Submit</button>
  </div>
</form>
```

```
<form id="signup" action="/" novalidate>
  <div id="errors" role="alert" aria-live="assertive" aria-atomic="true"></div>
  <div>
    <label for="name">Name</label>
    <input id="name" type="text" minlength="2" required />
    <p id="name-error-required" class="error hidden">Name is required.</p>
    <p id="name-error-length" class="error hidden">Name must be at least 2 characters.</p>
  </div>
  <div>
    <label for="country">Country</label>
    <input id="country" type="text" pattern="[a-zA-Z]" />
    <p id="country-error-pattern" class="error hidden">Country can only contain letters.</p>
  </div>
  <div>
    <label for="email">Email</label>
    <input id="email" type="email" required />
    <p id="email-error-required" class="error hidden">Email is required.</p>
    <p id="email-error-type" class="error hidden">Email format is incorrect.</p>
  </div>
  <div>
    <button type="submit">Submit</button>
  </div>
</form>
```



```
<form id="signup" action="/" novalidate>
  <div id="errors" role="alert" aria-live="assertive" aria-atomic="true"></div>
  <div>
    <label for="name">Name</label>
    <input id="name" type="text" minlength="2" required />
    <p id="name-error-required" class="error hidden">Name is required.</p>
    <p id="name-error-length" class="error hidden">Name must be at least 2 characters.</p>
  </div>
  <div>
    <label for="country">Country</label>
    <input id="country" type="text" pattern="[a-zA-Z]" />
    <p id="country-error-pattern" class="error hidden">Country can only contain letters.</p>
  </div>
  <div>
    <label for="email">Email</label>
    <input id="email" type="email" required />
    <p id="email-error-required" class="error hidden">Email is required.</p>
    <p id="email-error-type" class="error hidden">Email format is incorrect.</p>
  </div>
  <div>
    <button type="submit">Submit</button>
  </div>
</form>
```

```
.hidden {  
  display: none;  
}  
  
input ~ img {  
  display: none;  
  margin-left: 0.5rem;  
  height: 20px;  
}  
  
p.error {  
  color: #c71700;  
}  
  
input.error {  
  color: #c71700;  
  border-color: #c71700;  
}  
  
input.error ~ img {  
  display: inline-block;  
}
```

```
<form id="signup" action="/" novalidate>
  <div id="errors" role="alert" aria-live="assertive" aria-atomic="true"></div>
  <div>
    <label for="name">Name</label>
    <input id="name" type="text" minlength="2" required />
    <p id="name-error-required" class="error hidden">Name is required.</p>
    <p id="name-error-length" class="error hidden">Name must be at least 2 characters.</p>
  </div>
  <div>
    <label for="country">Country</label>
    <input id="country" type="text" pattern="[a-zA-Z]" />
    <p id="country-error-pattern" class="error hidden">Country can only contain letters.</p>
  </div>
  <div>
    <label for="email">Email</label>
    <input id="email" type="email" required />
    <p id="email-error-required" class="error hidden">Email is required.</p>
    <p id="email-error-type" class="error hidden">Email format is incorrect.</p>
  </div>
  <div>
    <button type="submit">Submit</button>
  </div>
</form>
```



```
const form = document.querySelector("#signup");

form.addEventListener("submit", (event) => {
  if (!form.checkValidity()) {
    document.querySelectorAll('[id*="-error-"]').forEach((el) => {
      el.classList.add("hidden");
    });

    ...
  }
});
```

```
// check each element
const errors = [];
Array.from(form.elements).forEach((el) => {
  el.classList.remove("error");
  el.removeAttribute("aria-invalid");
  if (!el.checkValidity()) {
    el.classList.add("error");
    if (el.validity.tooShort) {
      errors.push({ id: el.id, type: "length" });
    }
    if (el.validity.valueMissing) {
      errors.push({ id: el.id, type: "required" });
    }
    if (el.validity.patternMismatch) {
      errors.push({ id: el.id, type: "pattern" });
    }
    if (el.validity.typeMismatch) {
      errors.push({ id: el.id, type: "type" });
    }
  }
});
```

```
const ValidityState = {
  badInput: false,
  customError: false,
  patternMismatch: false,
  rangeOverflow: false,
  rangeUnderflow: false,
  stepMismatch: false,
  tooLong: false,
  tooShort: false,
  typeMismatch: false,
  valid: false,
  valueMissing: false,
};
```

```

// build error summary
let errorText = `<p>There `;
if (errors.length === 1) {
  errorText += `is 1 error`;
} else {
  errorText += `are ${errors.length} errors`;
}
errorText += ` found in the information you submitted.</p><ol>`;

errors.forEach((error) => {
  errorText += `<li><a href="#${error.id}>` +
    form.querySelector(`#${error.id}-error-${error.type}`).textContent + `</a></li>`;

  form.querySelector(`#${error.id}`).setAttribute("aria-invalid", true);
  form.querySelector(`#${error.id}-error-${error.type}`).classList.remove("hidden");
});
errorText += `</ol>`;

```




```
const form = document.querySelector("#signup");

form.addEventListener("submit", (event) => {
  if (!form.checkValidity()) {

    ...

    setTimeout(() => {
      document.querySelector("#errors").innerHTML = errorText;
    }, 500);

    event.preventDefault();
    event.stopPropagation();
  }
});
```

LEGIBILITY

⊗ PEOPLE WITH MINIMAL EDUCATION, DYSLEXIA OR INTELLECTUAL DISABILITIES

DO NOT USE DIFFICULT WORDS OR METAPHORS

KEEP SENTENCES SHORT

USE POSITIVE SENTENCES AND ACTIVE LANGUAGE

USE A FONT THAT IS EASY TO READ

DO NOT PUT TEXT TOO CLOSE TOGETHER

A serif font is harder to read.

LANG ATTRIBUTE

SPECIFIES THE NATURAL LANGUAGE OF THE CONTENT



MISSING DOCUMENT LANGUAGE

22,3%

The WebAIM Million

<https://webaim.org/projects/million/>

```
<!DOCTYPE html>  
<html lang="en">  
  <head>
```

- SCREEN READERS
- SEARCH ENGINES



Un sourire coûte moins cher que l'électricité, mais donne autant de lumière.

```
<blockquote>Un sourire coûte moins cher que  
l'électricité, mais donne autant de lumière.</blockquote>
```

```
<!--
```

```
  A smile costs less than electricity, but gives as  
  much light. — Abbé Pierre
```

```
-->
```



Un sourire coûte moins cher que l'électricité, mais donne autant de lumière.

```
<blockquote lang="fr">Un sourire coûte moins cher que  
l'électricité, mais donne autant de lumière.</blockquote>
```

```
<!--
```

```
A smile costs less than electricity, but gives as  
much light. — Abbé Pierre
```

```
-->
```



من طلب العلى سهر الليالي

<blockquote lang="ar">من طلب العلى سهر الليالي</blockquote>

←!—

He who desires the top must sit up many nights
aka The road to success is paved with hard work
— Arabic proverb

→



من طلب العلى سهر الليالي

```
@font-face {  
  font-family: "cairo-regular";  
  src: url("/assets/fonts/cairo.woff") format("woff");  
}  
  
:lang(ar) {  
  font-family: "cairo", serif;  
  direction: rtl;  
}
```

I18N

USE THE LANG ATTRIBUTE FOR INTERNATIONALIZATION



Vue I18n

```
<!DOCTYPE html>
<html lang="de">
  <head>
```

```
import Vue from "vue";
import VueI18n from "vue-i18n";

import en from "./en.json";
import de from "./de.json";

Vue.use(VueI18n);

const languages = { en, de };

// get the language from the html lang attribute
// if the attribute is not set or doesn't exist
// the fallbackLocale will be used
const language = document.documentElement.lang || undefined;

let options = {
  locale: language,
  fallbackLocale: "en",
  languages,
};

export const i18n = new VueI18n(options);
```


ACCESSIBILITY ISN'T EXTRA STEPS, IT'S STEPS YOU'VE MISSED



NICK TILLEM



**WHEN IT COMES TO ACCESSIBILITY,
I RATHER SEE IMPERFECT
THAN INDIFFERENT**



PETER VAN GRIEKEN