Pragmatic Accessibility.

A practical guide to build **inclusive** web apps.

by **blurbyte**

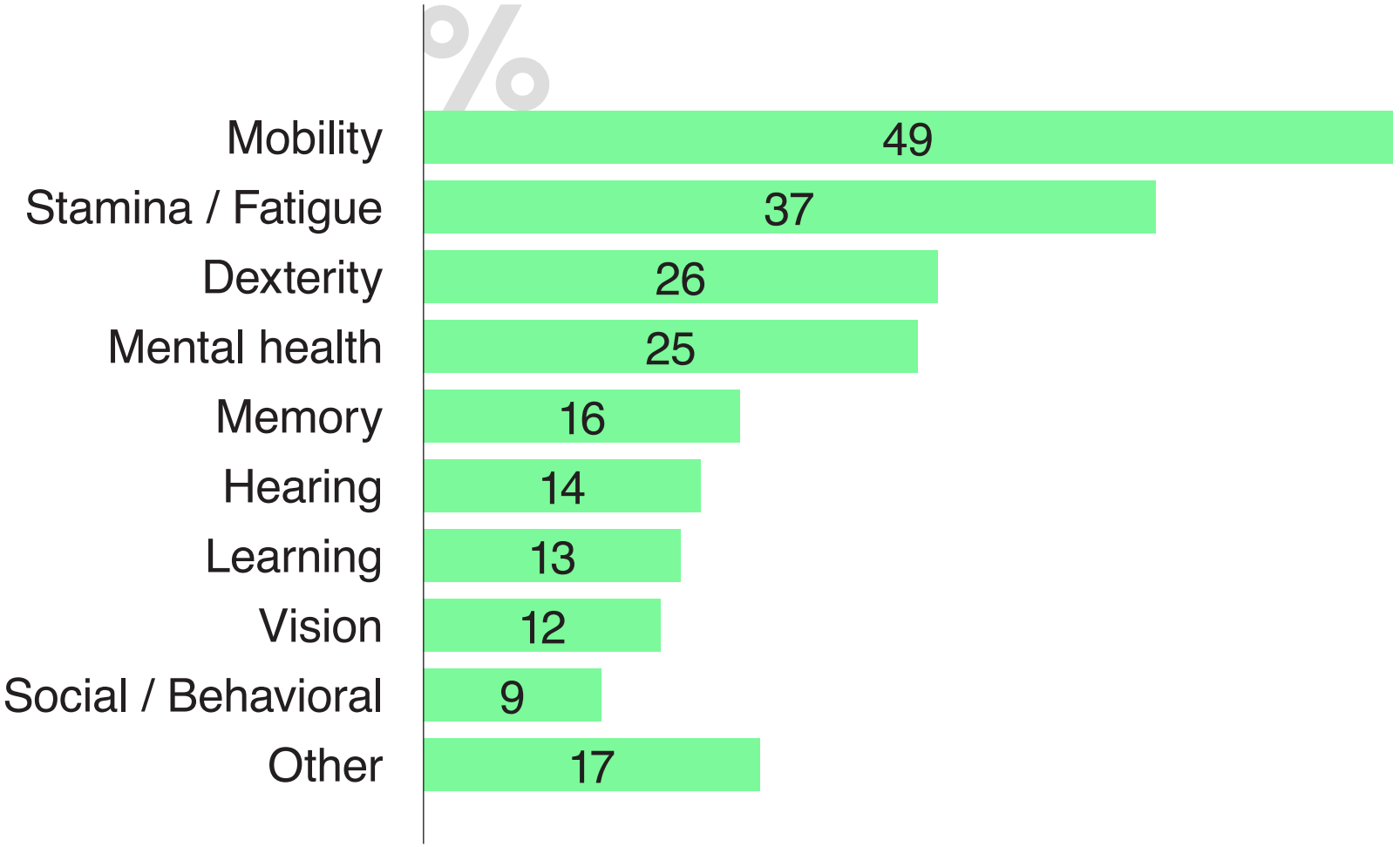
About 1 in 5 Americans have some kind of disability, and 1 in 10 have a severe disability.[1]

21% of people living in the UK reported a disability.[2]

1 Disability Status: Census 2019 Brief, US

2 Family Resources Survey 2017/18, UK

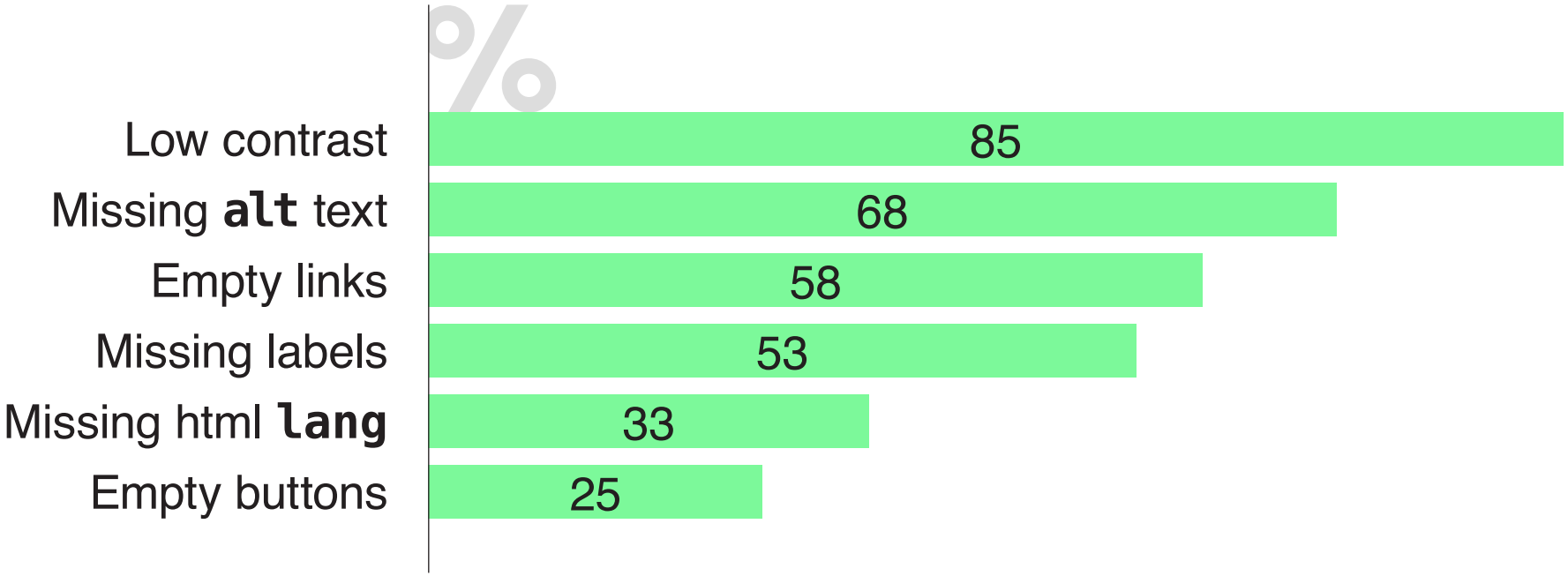
Impairment types



* Impairment types by percentage declared by disabled people in FRS 2017/18, UK

97.8% of home pages had detectable WCAG 2 failures.

Most common WCAG failures



* Based on WebAIM automated accessibility evaluation of “top” million web sites conducted in February 2019

Design for the needs of people with permanent, temporary, or situational disabilities.

Help users focus on core tasks and information.

Put people first.

* Adapted from https://inclusivedesignprinciples.org

The Basics.

Most common mistakes & how to fix them.

01

Accessibility evaluation tools

- available in **Chrome Dev Tools**, **Audits** tab
- a11y audits and suggestions for manual testing

- Mac's built in **screen reader**
- activated with `Cmd + F5`

- WebAIM's a11y evaluation tool
- available as a **browser extension**[1]

1 https://wave.webaim.org/extension

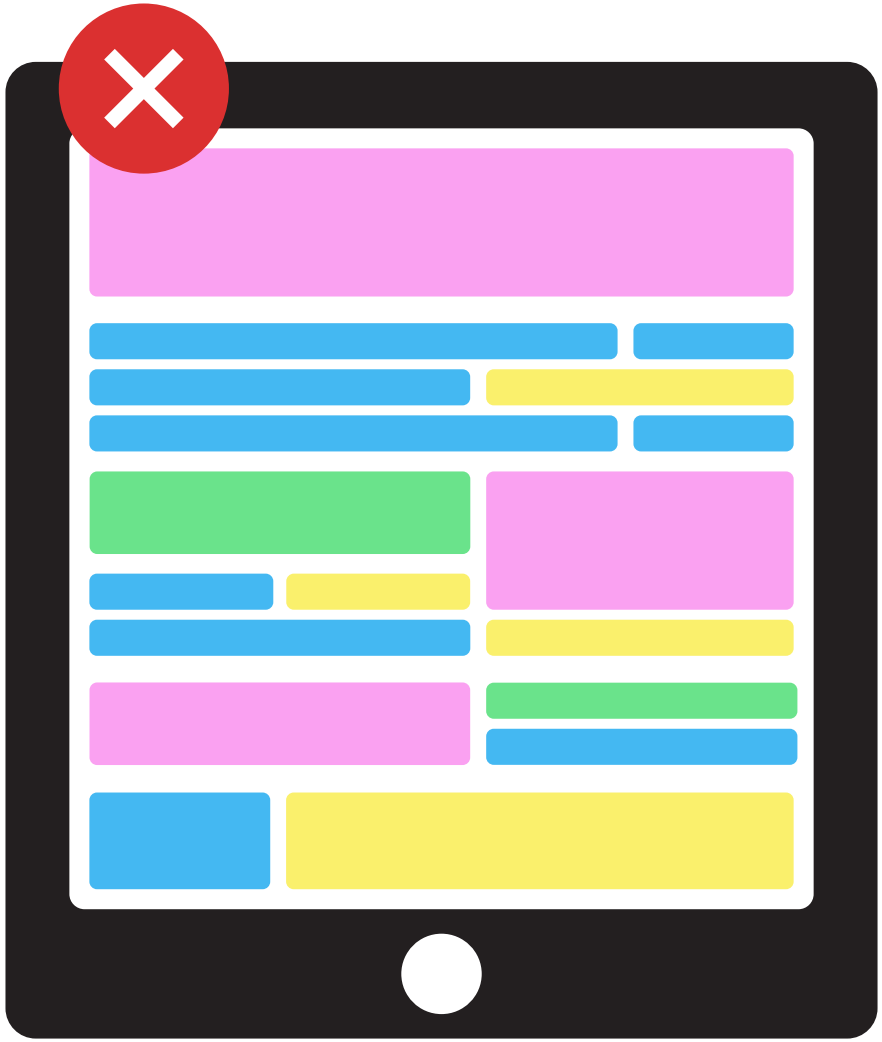
Non-semantic HTML5

```
// Some well defined React's JSX
// But is it accessible?

<App>
  <Header>
    <Logo />
  </Header>
  <Content>
    <Headline>Hello!</Headline>
    <Text>👋</Text>
  </Content>
  <Footer />
</App>
```

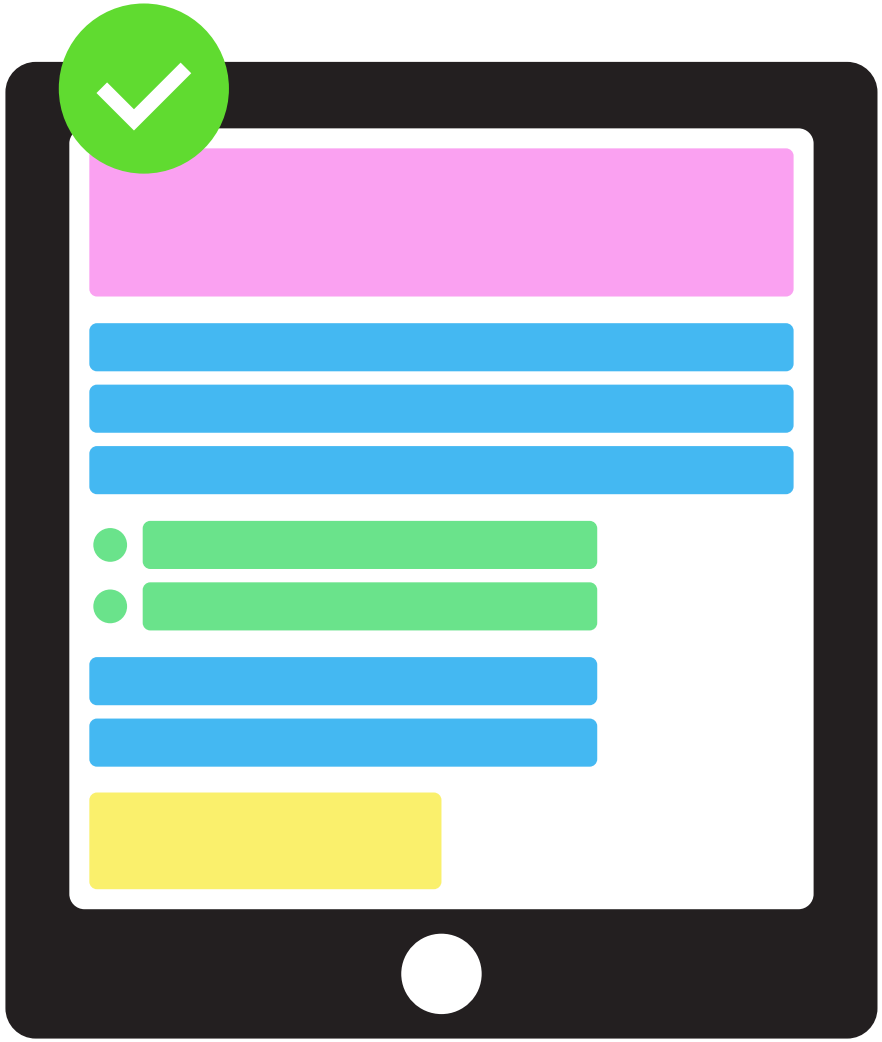
```
<div>
  <div>
    <img src="logo.png">
  </div>
  <div>
    <div>Hello!</div>
    <div>👋</div>
  </div>
  <div>
    Legal stuff
  </div>
</div>
```

```
<div>
  <header>
    <img src="logo.png">
  </header>
  <main>
    <h1>Hello!</h1>
    <p>👋</p>
  </main>
  <footer>
    Legal stuff
  </footer>
</div>
```

Convoluted content



- make users scan long blocks of content
- use many figures of speech and idioms
- write walls of text
- build complex and cluttered layouts

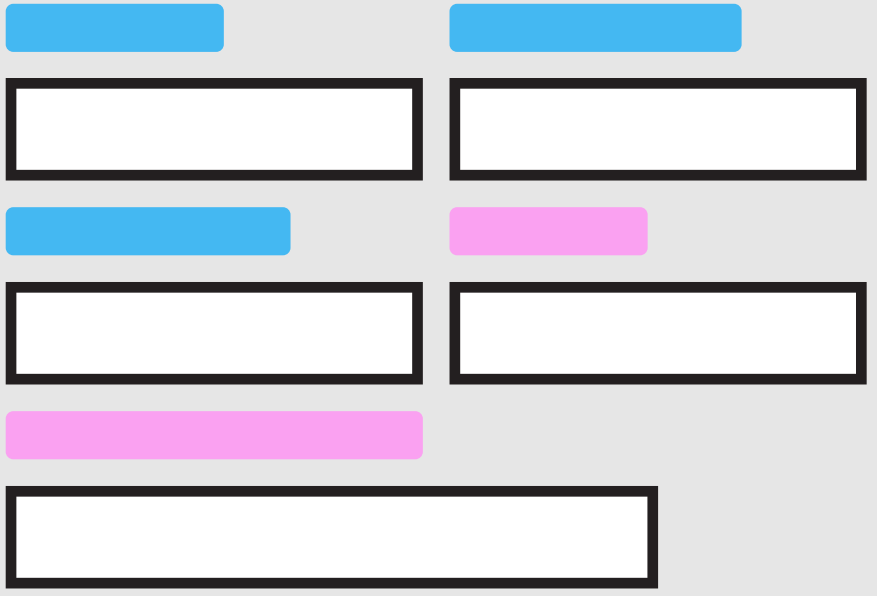


- keep content **short** and **clear**
- write in **plain English**
- use **bullets** instead of a wall of text
- build **simple** and **consistent** layouts

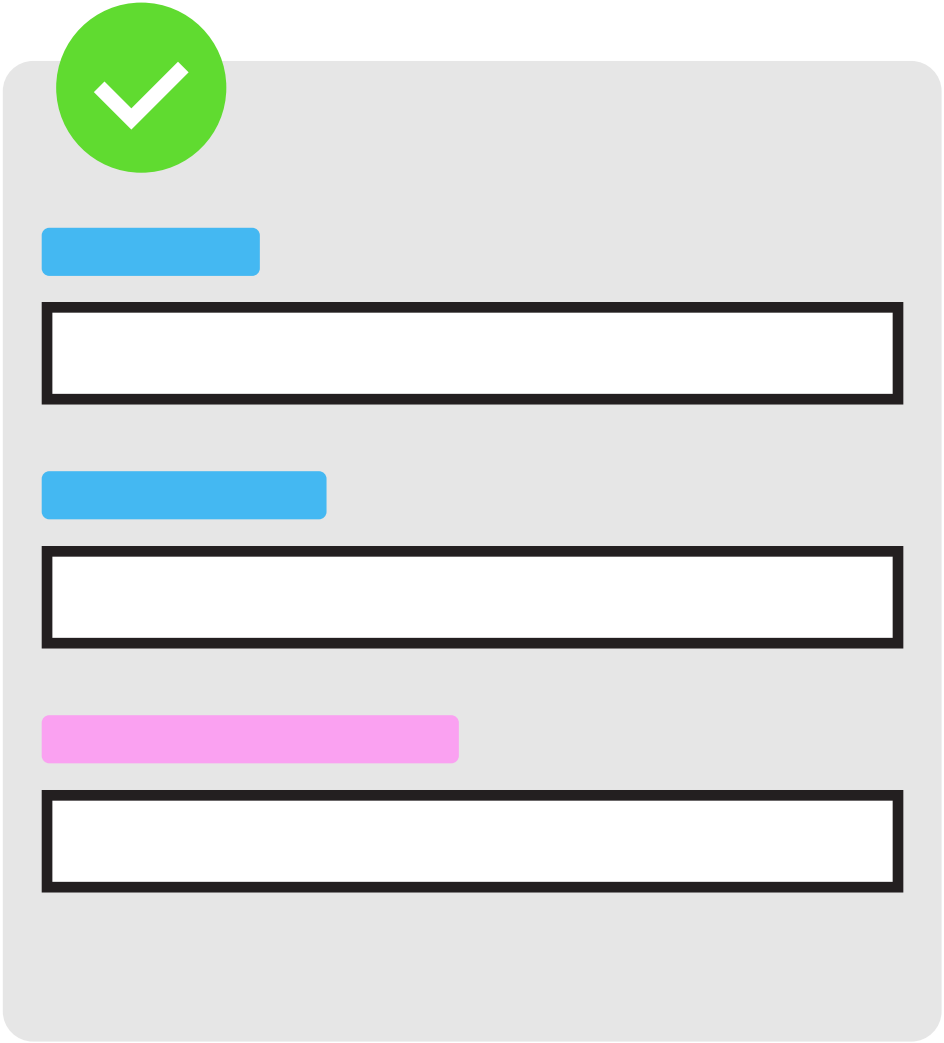
Demand precision

No

- bunch various interactions closely together
- require precise touch / cursor movements
- make complicated custom controls



- give your designs **breathing room**
- make clickable actions **large**
- use native web controls



```
import styled from "styled-components"

// Create basic reusable hitbox
const Hitbox = styled.button`
  min-width: 6rem;
  min-height: 6rem;
  cursor: pointer;
  border: none;
  background: none;
`


// And use it like that
const CustomActionButton = styled(Hitbox)`...`
```

React

Low contrast

- design with high contrast in mind, validating color contrast with tools such as **Contrast Grid**[1]
- keep a color palette in **design tokens** to avoid mismatches in future
- size of the text matters

1 https://contrast-grid.eightshapes.com

Missing alt text


```
<img src="stickers.jpg">
```

```
<img
  src="stickers.jpg"
  alt="Set of cute Daily
       Routine stickers"
>
```

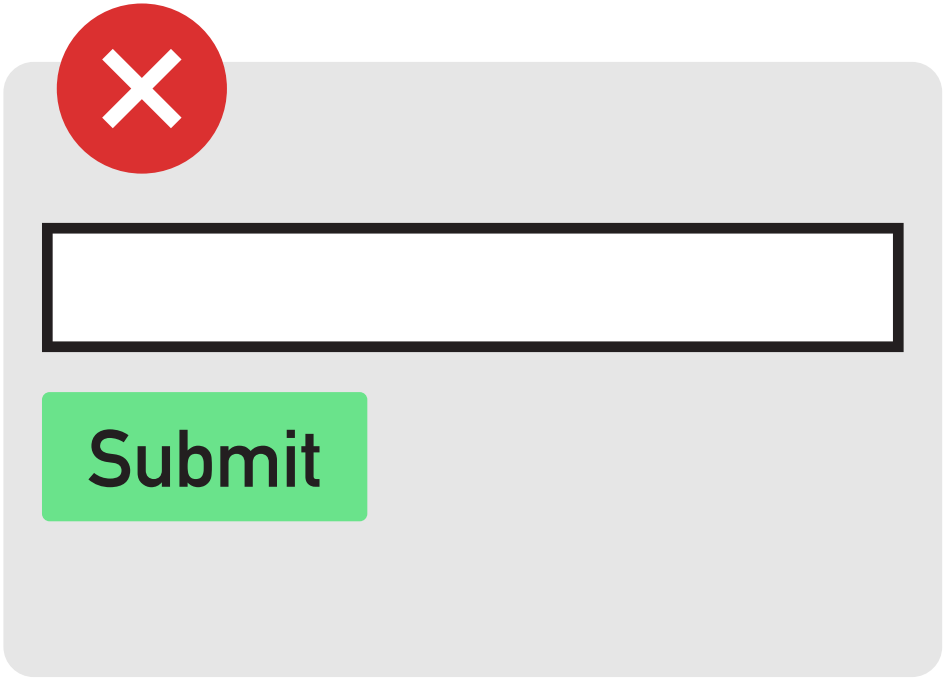
Empty links

- never bake text into image
- if can't provide **`alt`** text for image within a link

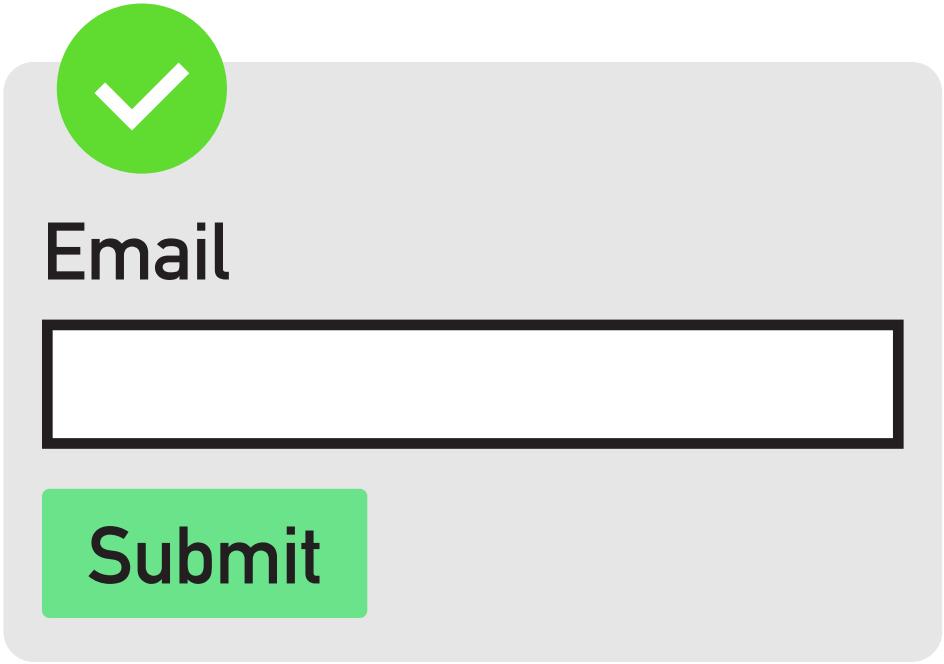
<img src="fancy-ad.jpg">

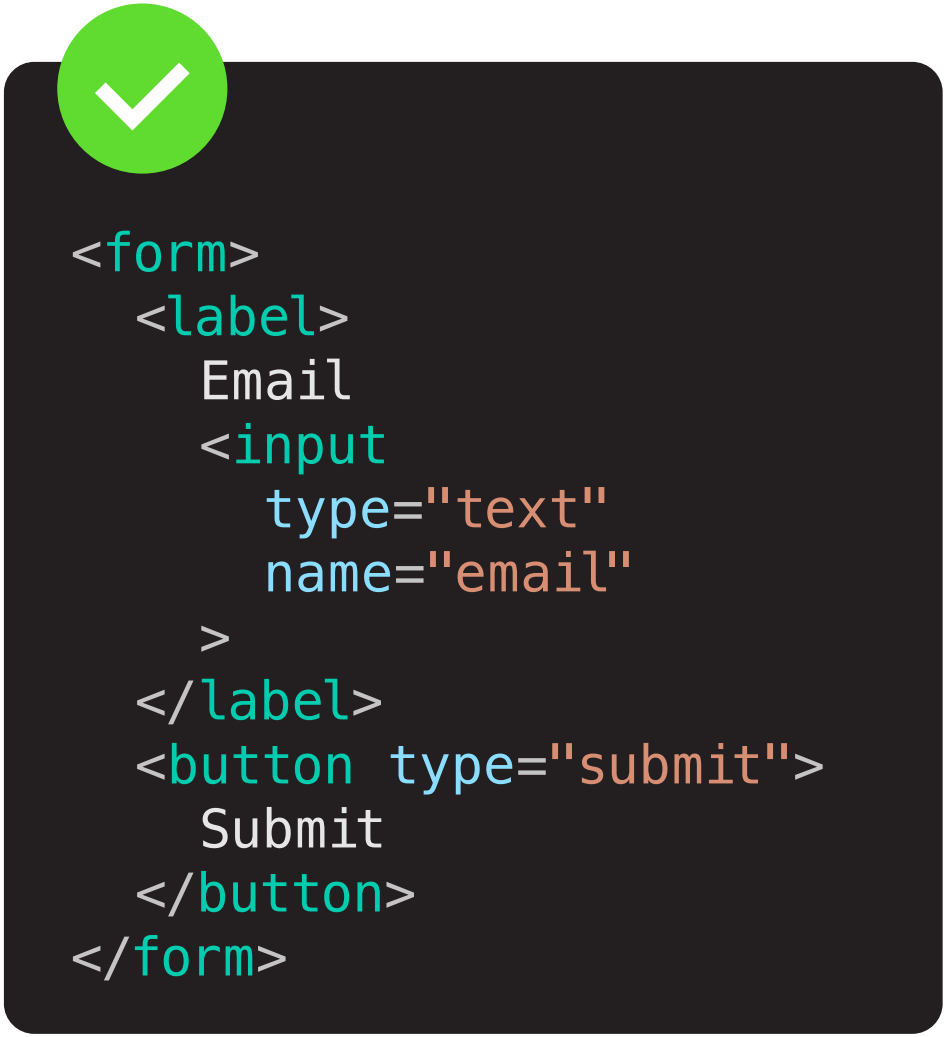
<img
src="fancy-ad.jpg"
alt="Get fancy stickers
for free!"
>

Missing form input labels




```
<form>
  <input
    type="text"
    name="email"
  >
  <button type="submit">
    Submit
  </button>
</form>
```





```
<form>
  <label>
    Email
    <input
      type="text"
      name="email"
    >
  </label>
  <button type="submit">
    Submit
  </button>
</form>
```

Missing html `lang`

```
<!DOCTYPE html>
<html>
  <head>...</head>
  <body>...</body>
</html>
```

```
<!DOCTYPE html>
<html lang="en">
  <head>...</head>
  <body>...</body>
</html>
```

Empty buttons

```
<button
  class="search__btn"
></button>
```

```
<button
  class="search__btn"
  aria-label="Search"
></button>
```

Amazing a11y

Resources worth checking:

- **WebAIM** website[1], especially **Web Accessibility for Designers**[2] and **WCAG 2 Checklist**[3]
- **Inclusive Design Principles**[4] website
- **Accessibility Posters**[5] by GOV.UK

1 https://webaim.org

2 https://webaim.org/resources/designers

3 https://webaim.org/standards/wcag/checklist

4 https://inclusivedesignprinciples.org

5 https://accessibility.blog.gov.uk/2016/09/02/dos-and-donts-on-designing-for-accessibility

Deep Dive.

Advanced a11y techniques.

02

VoiceOver primer

Most useful shortcuts for website auditing:

Cmd + F5	turn it on / off
Ctrl + Opt + Cmd + H	navigate between headings[1]
Ctrl + Opt + ← / →	move across page elements
Ctrl + Opt + Shift + ↓	start interacting with a content of a page
Ctrl + Opt + Space	simulate click on an element
Ctrl + Opt + U	*rotor* menu (full list of links, headings, etc.)
Ctrl	stop talking

1 most often used combination by real VO users after just landing on the page

Proper structure of content

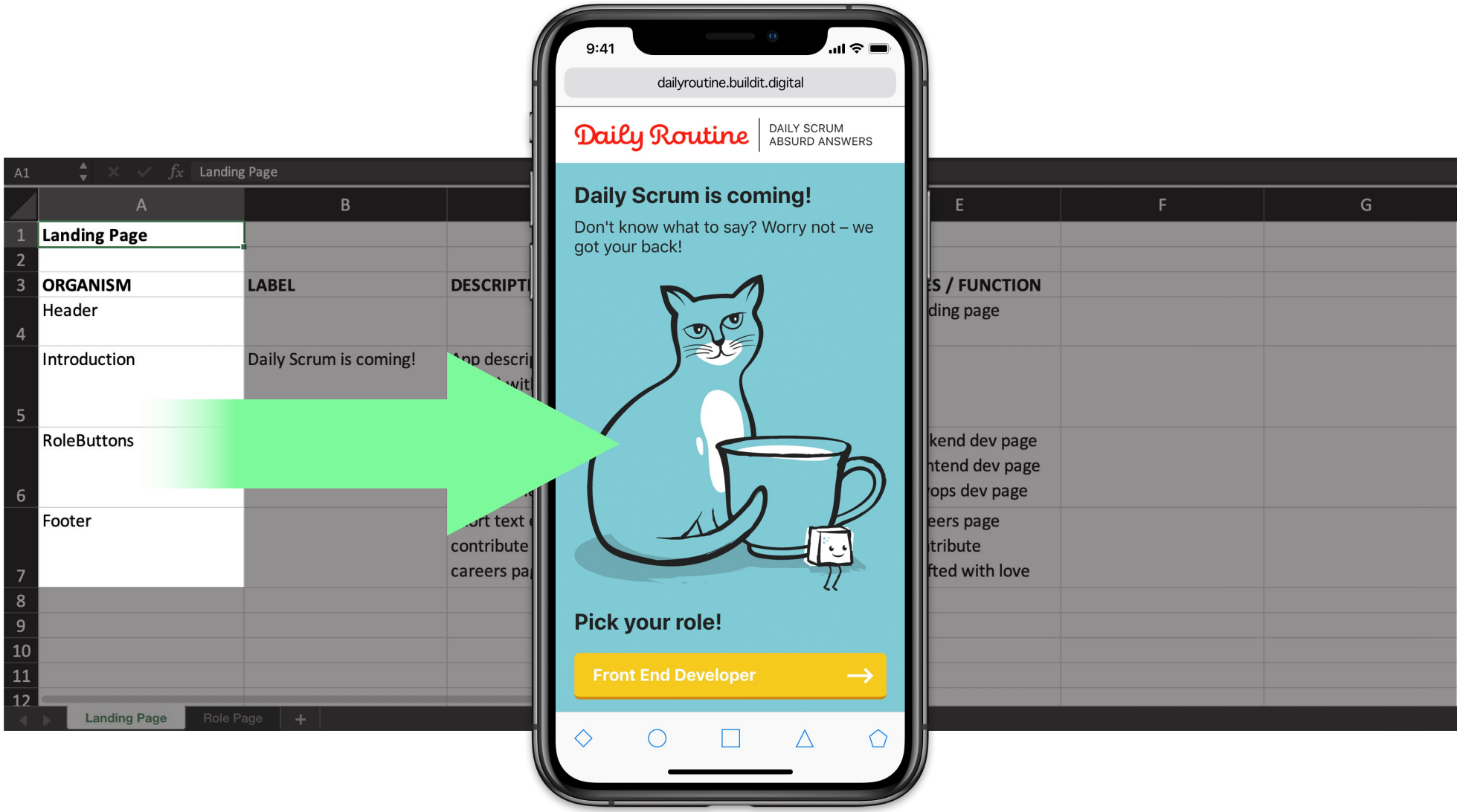
Say **NO** to wireframes. Plain text is enough. Focus on content details first.

A1 Landing Page

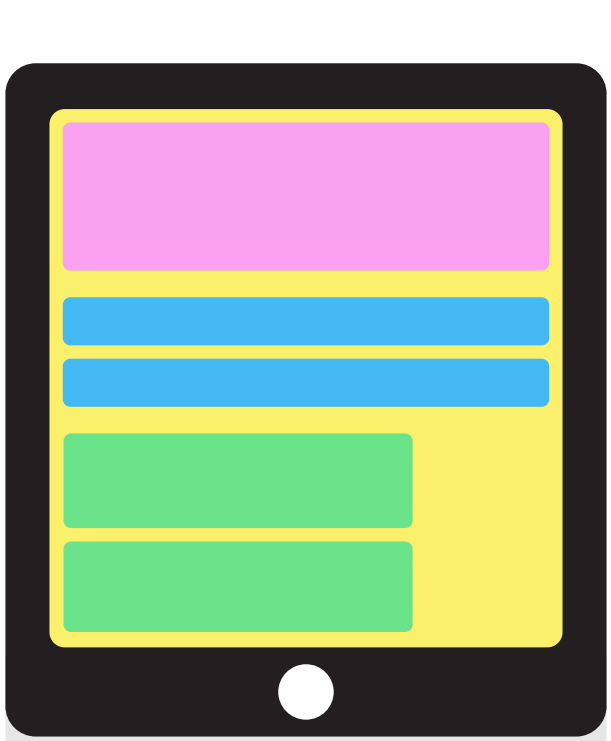
	A	B	C	D	E	F	G
1	**Landing Page**						
2							
3	**ORGANISM**	**LABEL**	**DESCRIPTION**	**CORE CONTENT**	**FEATURES / FUNCTION**		
4	Header			App logo, Tagline	Link: Landing page		
5	Introduction	Daily Scrum is coming!	App description (max 10 words) with a SugarCat image	Headline, Subtitle, Image			
6	RoleButtons	Pick your role!	Set of buttons with backend, frontend and devops roles	Headline, Buttons / Links	Link: Backend dev page Link: Frontend dev page Link: Devops dev page		
7	Footer		Short text encoraging to contribute and visit careers page	Text, Crafted With Love link	Link: Careers page Link: Contribute Link: Crafted with love		
8							
9							
10							
11							
12							

Landing Page | Role Page | +

* https://bigmedium.com/ideas/only-one-deliverable-matters.html

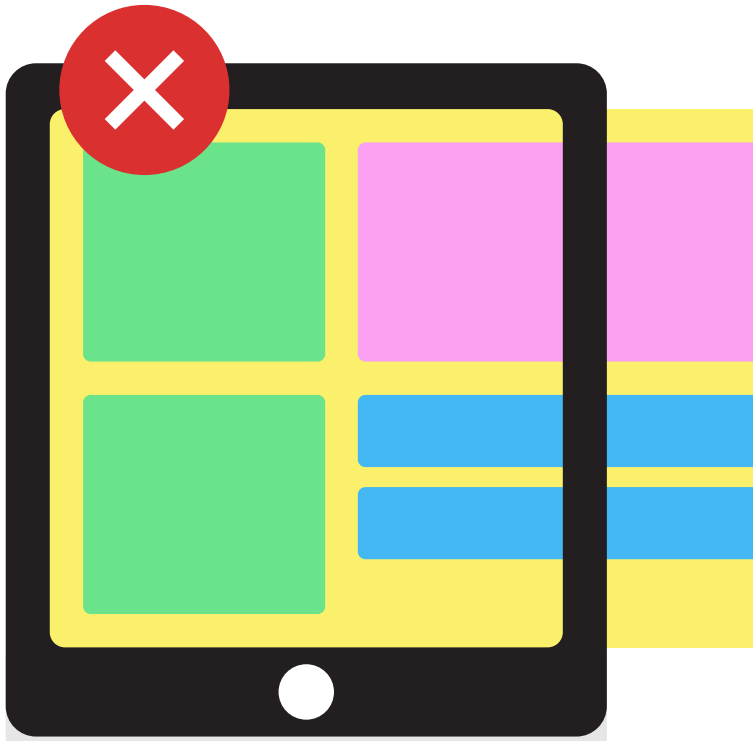

A1
Landing Page
A
B
E
F
G
1 Landing Page
3 ORGANISM
LABEL
DESCRIPT
ES / FUNCTION
4 Header
ding page
5 Introduction
Daily Scrum is coming!
6 RoleButtons
kend dev page
ntend dev page
ops dev page
7 Footer
eers page
tribute
fted with love
contribute
careers pa
Landing Page
Role Page
9:41
dailyroutine.buildit.digital
Daily Routine
DAILY SCRUM
ABSURD ANSWERS
Daily Scrum is coming!
Don't know what to say? Worry not – we got your back!
Pick your role!
Front End Developer

Logical, linear layout



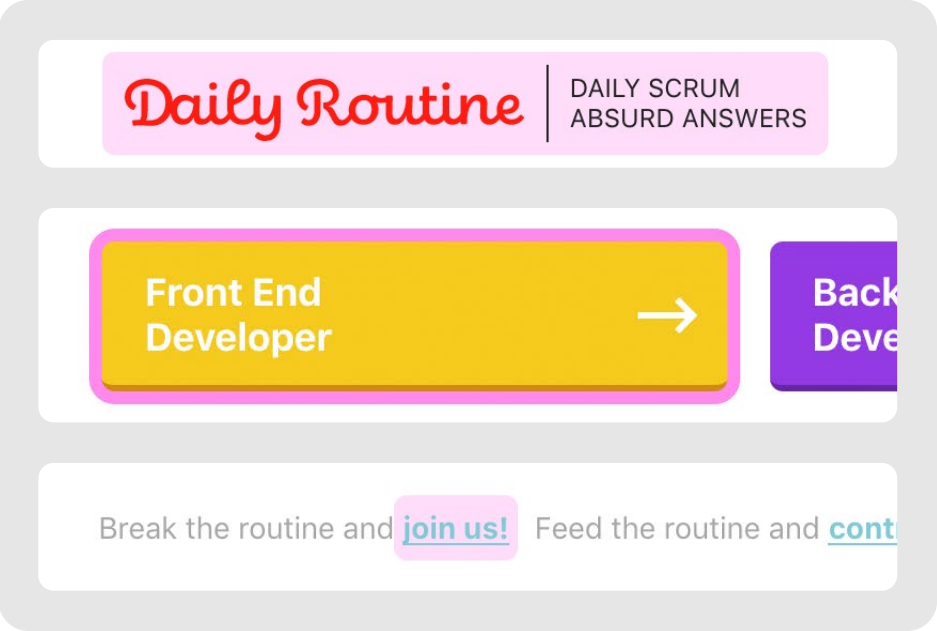
100% magnification

150% magnification



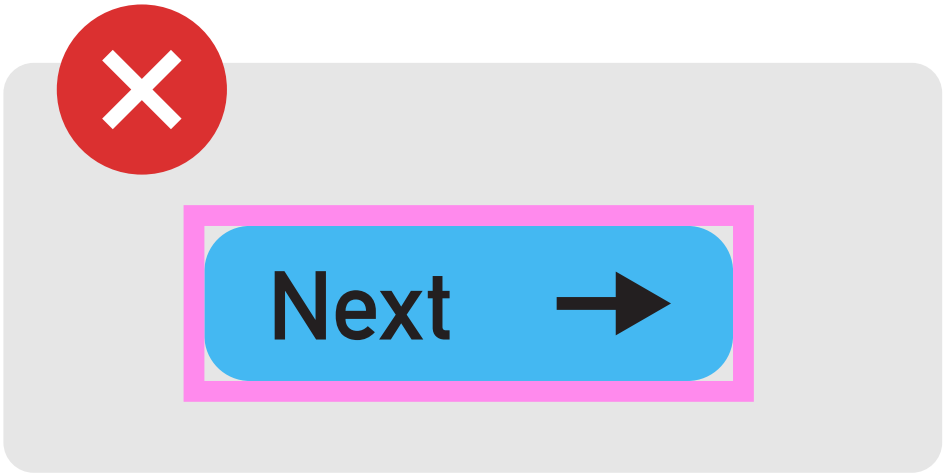
150% magnification

Importance of *focus*

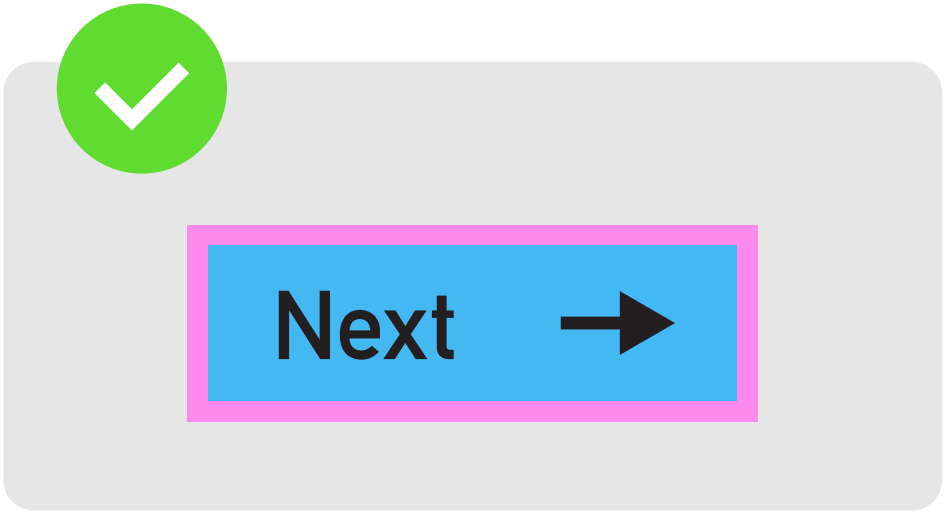


- to *focus* next element press a `Tab`
- to *focus* previous element use `Shift + Tab`
- focus state is **crucial** for keyboard navigation
- keep the focus style consistent
- remember about correct order of CSS selectors: **L**ink–**V**isited–**H**over–**F**ocus–**A**ctive

```css
button:focus {
  outline: 0;
}
```

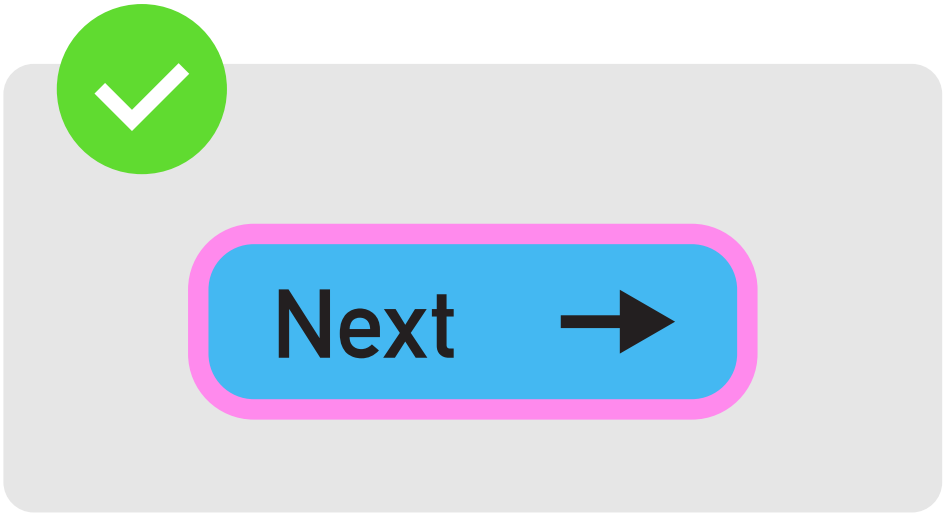


- **don’t remove default outline** if you are not planning to introduce custom style
- it is possible to style **`outline`** and it’s valid option for **rectangular elements**



- alternatively use simple **`border`** if it is not used by other states like *hover*
- **`outline`** is still preferred since it changes the silhouette of an element

```css
button:focus {
  outline:
    4px solid #ff8aed;
  outline-offset: 0;
}
```



- use **box-shadow** to simulate outline for elements with rounded corners
- it's heavy to compute so use it sparingly

```css
button:focus {
  outline: 0;
  box-shadow:
    0 0 0 4px #ff8aed;
}
```

A little issue with :focus

- in most cases show focus styles only **when navigating with keyboard**[1]
- **`:focus-visible`** comes to the rescue, unfortunately it's experimental feature hidden behind flag in most browsers[2]
- nice polyfill is available to install with **`npm i -S focus-visible`**
- sadly there is no similar alternative for **`:focus-within`**

1 https://github.com/WICG/focus-visible/blob/HEAD/explainer.md

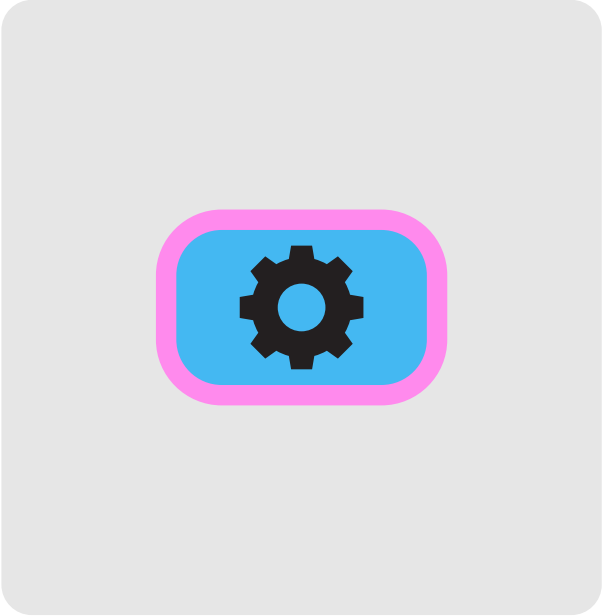
2 https://developer.mozilla.org/en-US/docs/Web/CSS/:focus-visible#Browser_compatibility

```
// Import polyfill in the root of an app (index.js)
import "focus-visible/dist/focus-visible"

// Just use .focus-visible wherever you would
// normally use :focus, for example:
import styled from "styled-components"

const Hitbox = styled.button`
  ...

  &.focus-visible {
    outline: 4px solid #ff8aed;
  }
`
```

```
import styled from "styled-components"

// :focus-within could be used to give a meaningful
// focus styles to group of inputs

// Unfortunately there is no equivalent of :focus-visible
const RadioButtonsWrapper = styled.div`
  ...

  &:focus-within {
    outline: 4px solid #ff8aed;
  }
`
```

Guiding screenreaders with WAI-ARIA

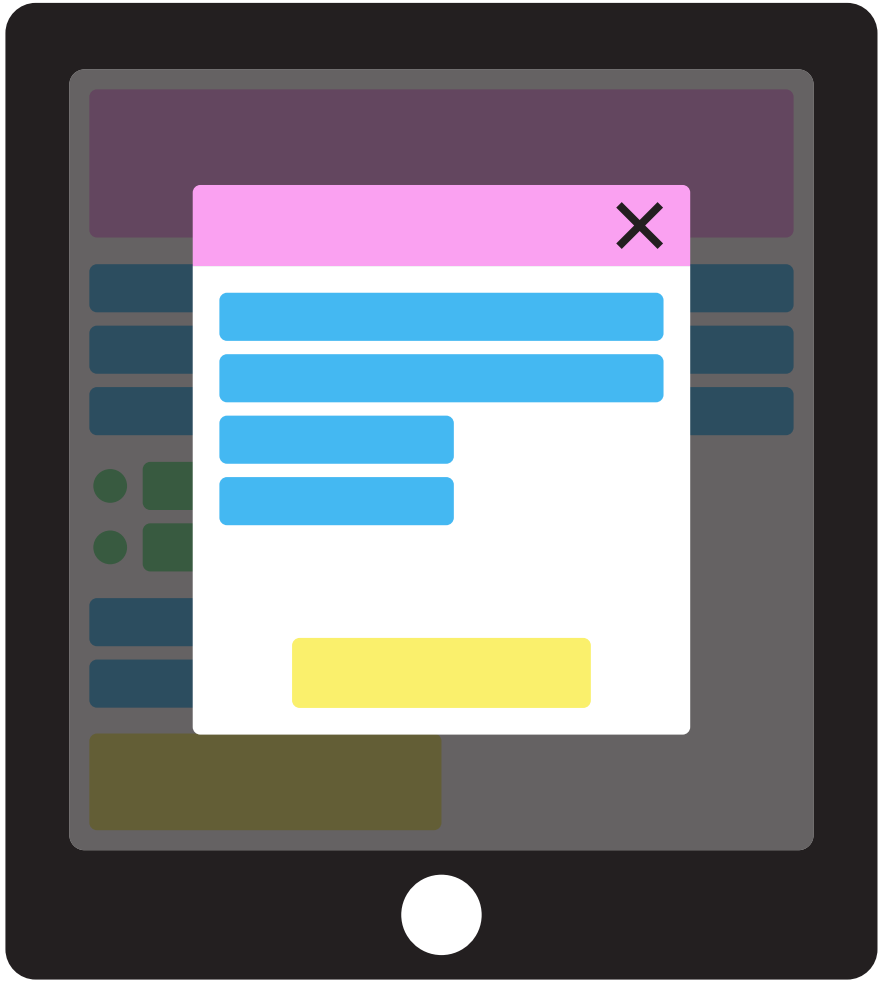
```
function SugarCatArtwork() {
  return (
    <svg
      ...
      role="img"
      aria-labelledby="sugar-cat-char"
    >
      <title id="sugar-cat-char">
        Sugar cat
      </title>
      ...
    </svg>
  )
}
```



```jsx
import Hitbox from "../Hitbox"

function SettingsButton({ onClick }) {
  return (
    <Hitbox
      aria-label="Open settings"
      onClick={onClick}
    >
      ...
    </Hitbox>
  )
}
```

React

It’s a trap



- in most situations users don’t want to tab-out of modal
- sometimes it is required to *lock* user intention and focus
- no need to implement it on your own, just install handy library
  `npm i -S react-focus-lock`

```jsx
import FocusLock from "react-focus-lock"

function Modal({ onClose }) {
  return (
    <FocusLock autoFocus={false}>
      <Header>
        <Headline>Settings</Headline>
        <CloseButton onClick={onClose} />
      </Header>
      ...
    </FocusLock>
  )
}
```

React

Awesome a11y libraries

Some handy libraries worth checking:

- **focus-visible** – **`:focus-visible`** polyfill[1]
- **react-focus-lock** – useful for modals or other focused tasks[2]
- **react-focus-on** – locks focus, disables page scroll and hides rest of the page from screen readers[3]
- **lighthousebot** – make Lighthouse audits part of your CI/CD pipeline[4]

1 https://github.com/WICG/focus-visible

2 https://github.com/theKashey/react-focus-lock

3 https://github.com/theKashey/react-focus-on

4 https://github.com/GoogleChromeLabs/lighthousebot

Thanks
Dziękuję
Grazie
Obrigado
Danke
תודה
谢谢