



# Making A11y Easy

**ConcatenateConf 2018**

Ìre Aderinokun





Why is  
Accessibility Important?

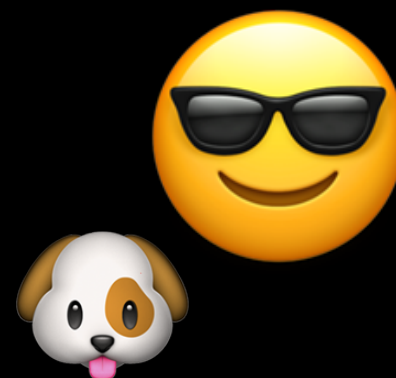
**NOT SURE IF TRICK QUESTION**





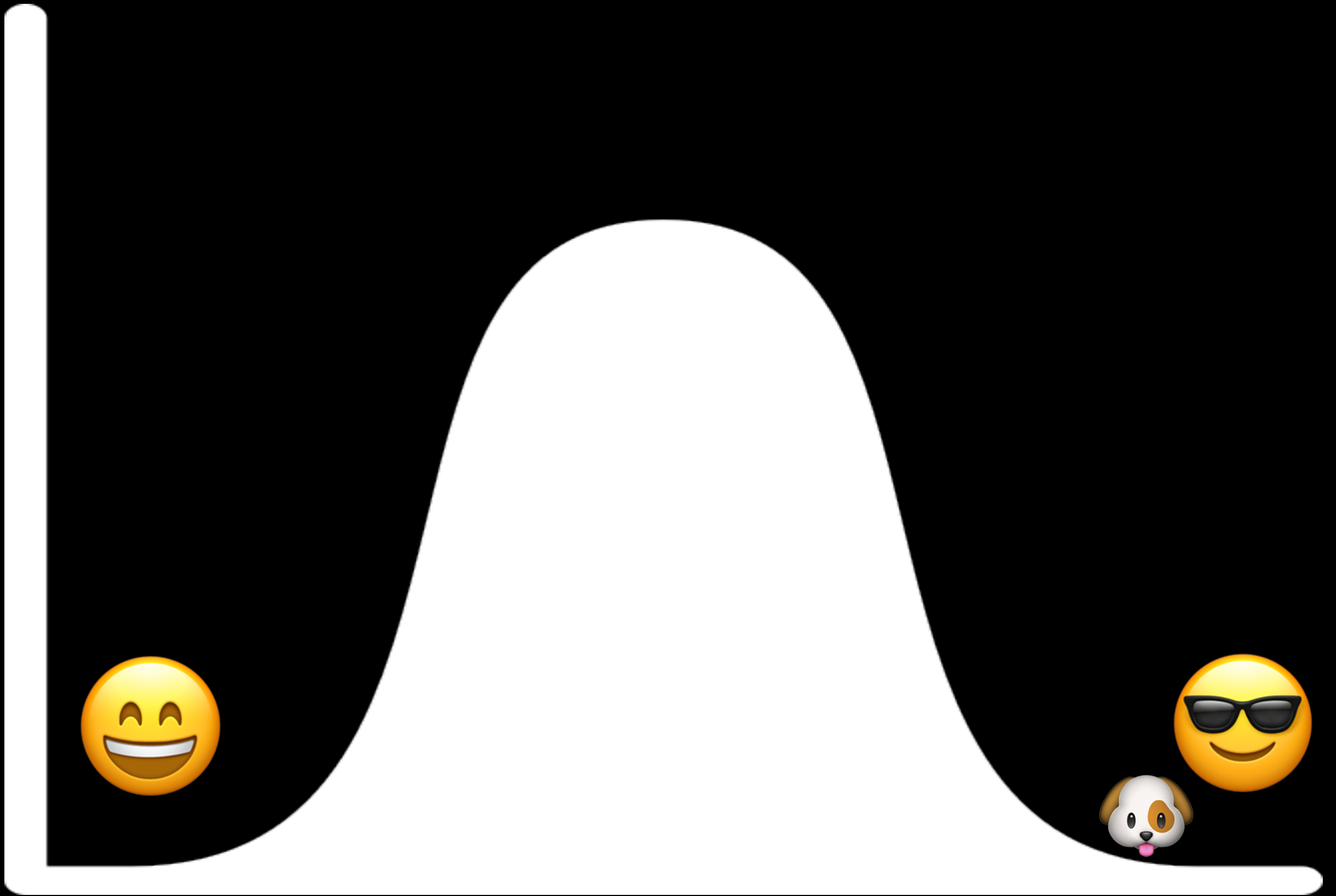
# 1. Accessible Site's are Great for Everyone





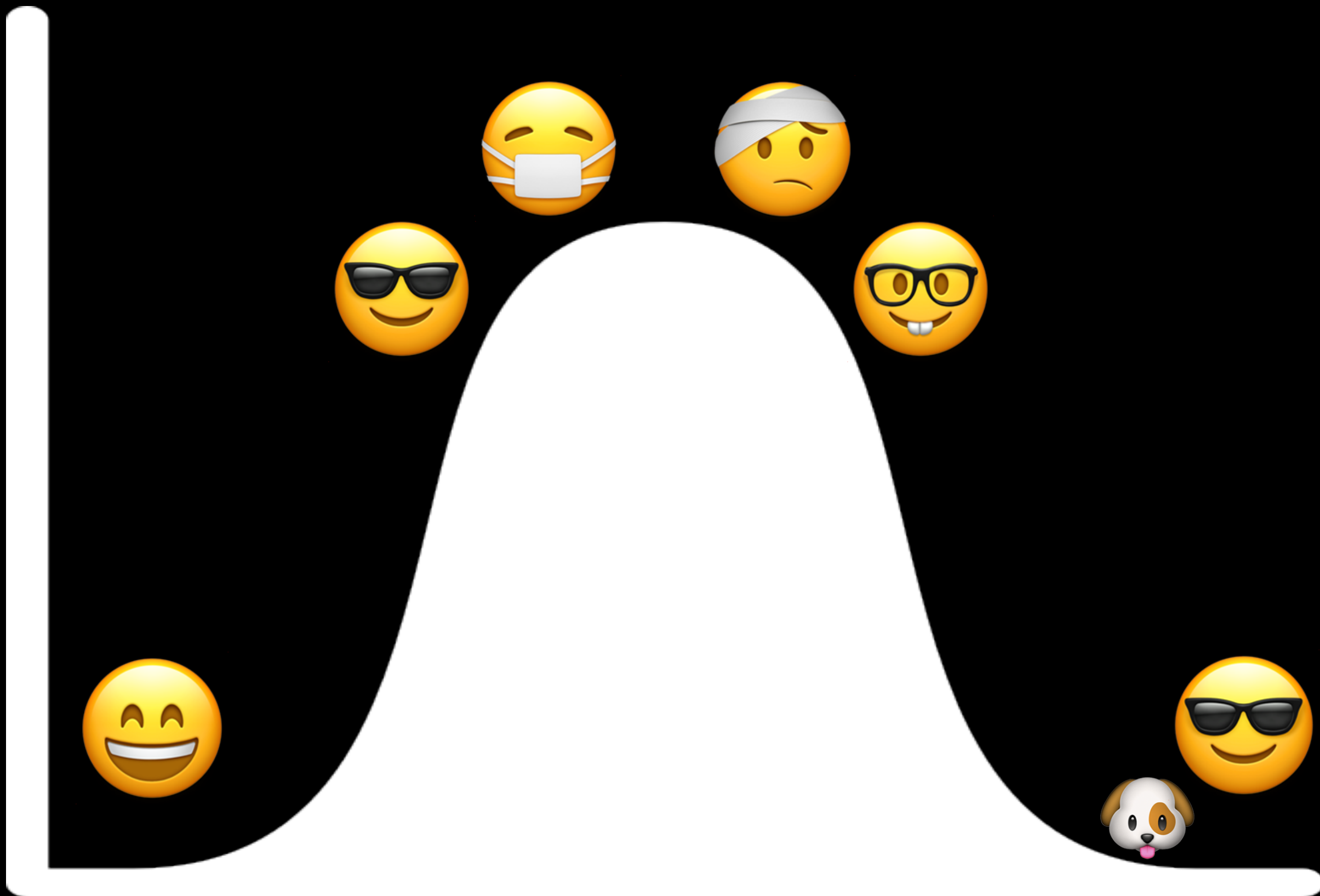
“Abled” or “Disabled”?





???





# Temporary and Situational Disabilities

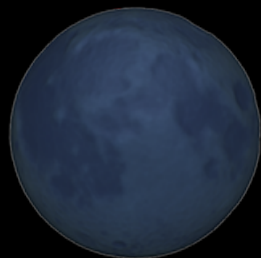
# Vision



**"Abled"**



**Temporarily Disabled**



**Situationally Disabled**



**"Disabled"**

# Hearing



**“Abled”**



**Temporarily Disabled**

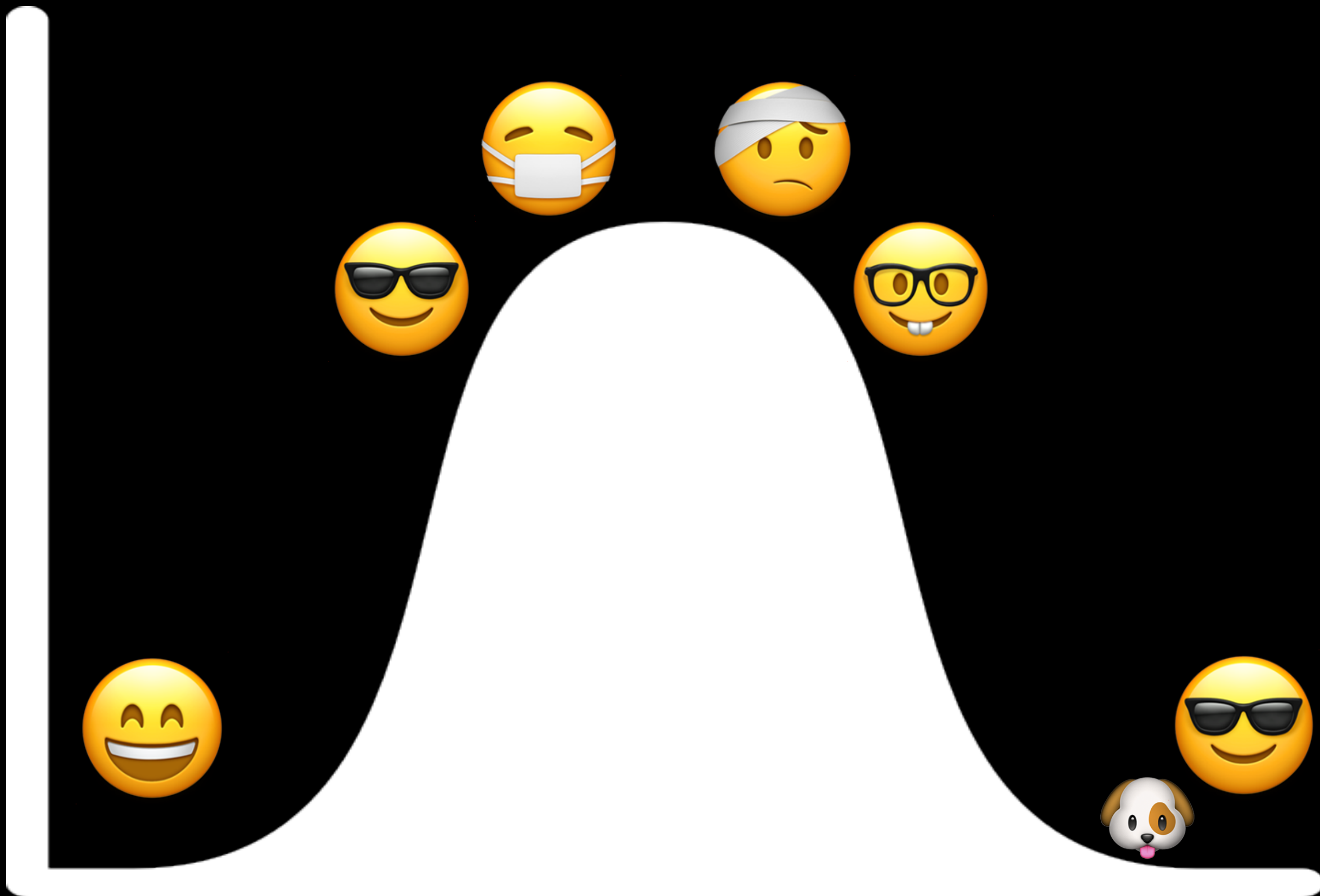


**Situationally Disabled**



**“Disabled”**



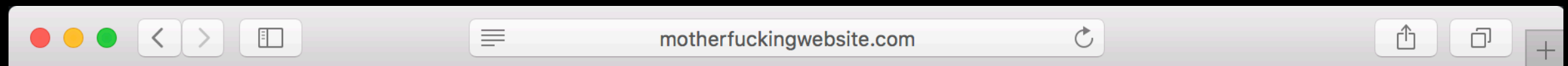


2. The web, by default,  
is Accessible





http://motherfuckingwebsite.com



# This is a motherf<sup>🤪</sup>king website.

And it's f<sup>🤪</sup>cking perfect.

## Seriously, what the f<sup>🤪</sup>ck else do you want?

You probably build websites and think your shit is special. You think your 13 megabyte parallax-ative home page is going to get you some fucking Awwward banner you can glue to the top corner of your site. You think your 40-pound jQuery file and 83 polyfills give IE7 a boner because it finally has box-shadow. Wrong, motherfucker. Let me describe your perfect-ass website:

- Shit's lightweight and loads fast
- Fits on all your shitty screens
- Looks the same in all your shitty browsers
- The motherfucker's accessible to every asshole that visits your site
- Shit's legible and gets your fucking point across (if you had one instead of just 5mb pics of hipsters drinking coffee)

## Well guess what, motherf<sup>🤪</sup>cker:

You. Are. Over-designing. Look at this shit. It's a motherfucking website. Why the fuck do you need to animate a fucking trendy-ass banner flag when I hover over that useless piece of shit? You spent hours on it and added 80 kilobytes to your fucking site, and some motherfucker jabbing at it on their iPad with fat sausage fingers will never see that shit. Not to mention blind people will never see that shit, but they don't see any of your shitty shit.

You never knew it, but this is your perfect website. Here's why.

## It's f<sup>🤪</sup>cking lightweight

This entire page weighs less than the gradient-meshed facebook logo on your fucking Wordpress site. Did you seriously load 100kb of jQuery UI just so you could animate the fucking background color of a div? You loaded all 7 fontfaces of a shitty webfont just so you could

<a>

<header>

<button>

#UseThePlatform

<main>

<footer>

<input type="password">

# Using a <button>

```
<button onClick="openModal(e)">  
  Open Modal  
</button>
```

# What you get **for free**

- **Focusable** via the keyboard or screen reader
- Clickable by **mouse**, **enter key** and **space bar**
- Accessible **name and state** provided to assistive tech
- An **interaction** is expected when clicked



Sign Up

codepen.io

×




 9
 0
 0

 Search

Elements

Node Styles Layers

```
align-items: flex-start;
text-align: center;
cursor: default;
color: buttontext;
padding-top: 2px;
padding-right: 6px;
padding-bottom: 3px;
padding-left: 6px;
border-top-width: 2px;
border-right-width: 2px;
border-bottom-width: 2px;
border-left-width: 2px;
border-top-style: outset;
border-right-style: outset;
border-bottom-style: outset;
border-left-style: outset;
border-top-color: buttonface;
border-right-color: buttonface;
border-bottom-color: buttonface;
border-left-color: buttonface;
border-image-source: initial;
border-image-slice: initial;
border-image-width: initial;
border-image-outset: initial;
border-image-repeat: initial;
background-color: buttonface;
box-sizing: border-box;
```

 `input, textarea, keygen, select, button`  
— User Agent Stylesheet

```
margin-top: 0em;  
margin-right: 0em;  
margin-bottom: 0em;  
margin-left: 0em;  
font-style: normal;  
font-weight: 400;  
font-size: 11px;  
font-family: -apple-system;  
font-variant-caps: normal;  
color: initial;
```



# Using a <div>

```
<div onClick="openModal(e)">  
  Open Modal  
</div>
```

# Extra Work

```
<div  
  tabIndex="0"  
  role="button"  
  onKeyPress="handleBtnKeyPress(e)"  
  onClick="openModal(e)">  
    Open Modal  
</div>
```

# More Extra Work

```
function handleBtnKeyPress(e) {  
  
    // Check to see if space or enter were pressed  
    if ( e.keyCode === 32 || e.keyCode === 13) {  
  
        // Open modal dialog  
        openModal(e);  
    }  
  
}
```

# Even More Extra Work

```
[role="button"] {
  align-items: flex-start;
  text-align: center;
  cursor: default;
  color: buttontext;
  background-color: buttonface;
  box-sizing: border-box;
  padding: 2px 6px 3px;
  border-width: 2px;
  border-style: outset;
  border-color: buttonface;
  border-image: initial;
  text-rendering: auto;
  letter-spacing: normal;
  word-spacing: normal;
  text-transform: none;
  text-indent: 0px;
  text-shadow: none;
  display: inline-block;
  margin: 0em;
  font: 11px system-ui;
  -webkit-appearance: button;
}
```

**YOU THINK YOU'RE DOING ME**

**YOU'RE DOING YOURSELF**



“HTML is, **by default, accessible**. As developers, it is our job to not fuck that up.”

— A Wise Person on Twitter





3. The web is for everyone







4. It doesn't have to be hard

```
<button>
```

```
  Open Modal
```

```
</button>
```

```
<div>
```

```
  Open Modal
```


```
</div>
```



How Do I Get Started  
With Accessibility?

W3C Recommendation

[\[contents\]](#)



# Web Content Accessibility Guidelines (WCAG) 2.0

## W3C Recommendation 11 December 2008

**This version:**  
<http://www.w3.org/TR/2008/REC-WCAG20-20081211/>

**Latest version:**  
<http://www.w3.org/TR/WCAG20/>

**Previous version:**  
<http://www.w3.org/TR/2008/PR-WCAG20-20081103/>

**Editors:**  
Ben Caldwell, Trace R&D Center, University of Wisconsin-Madison  
Michael Cooper, W3C  
Loretta Guarino Reid, Google, Inc.  
Gregg Vanderheiden, Trace R&D Center, University of Wisconsin-Madison

**Previous Editors:**  
Wendy Chisholm (until July 2006 while at W3C)  
John Slatin (until June 2006 while at Accessibility Institute, University of Texas at Austin)  
Jason White (until June 2005 while at University of Melbourne)

Please refer to the [errata](#) for this document, which may include normative corrections.

# Perceivable

Information and user interface components must be presentable to users in ways they can perceive

# Operable

User interface components and navigation must be operable

# Understandable

Information and the operation of user interface must be understandable

# Robust

Content must be robust enough that it can be interpreted reliably by a wide variety of user agents, including assistive technologies

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# Text Alternatives

```

```



# Contrast Ratio

<http://leaverou.github.io/contrast-ratio>

The screenshot shows a web browser window with the URL `leaverou.github.io`. The page features a large header with the words "contrast" on a black background and "ratio" on a white background. Below this, a horizontal bar displays the background color "white" and the text color `hsla(200,0%,0%,.7)`. A green circle in the center of this bar shows the contrast ratio "8.6". To the right of the bar is a "Tweet" button. Below the bar, the text "How to use" is followed by instructions: "As you type, the contrast ratio indicated will update. Hover over the circle to get more detailed information. When semi-transparent colors are involved as backgrounds, the contrast ratio will have an error margin, to account for the different colors they may be over." A button labeled "Set as background color" is also visible.

Fork me on GitHub

leaverou.github.io

contrast ratio

Tweet

Background: white 8.6 hsla(200,0%,0%,.7) Text color:

Set as background color

## How to use

As you type, the contrast ratio indicated will update. Hover over the circle to get more detailed information.

When semi-transparent colors are involved as backgrounds, the contrast ratio will have an error margin, to account for the different colors they may be over.



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Information and user interface components must be presentable to users in ways they can perceive

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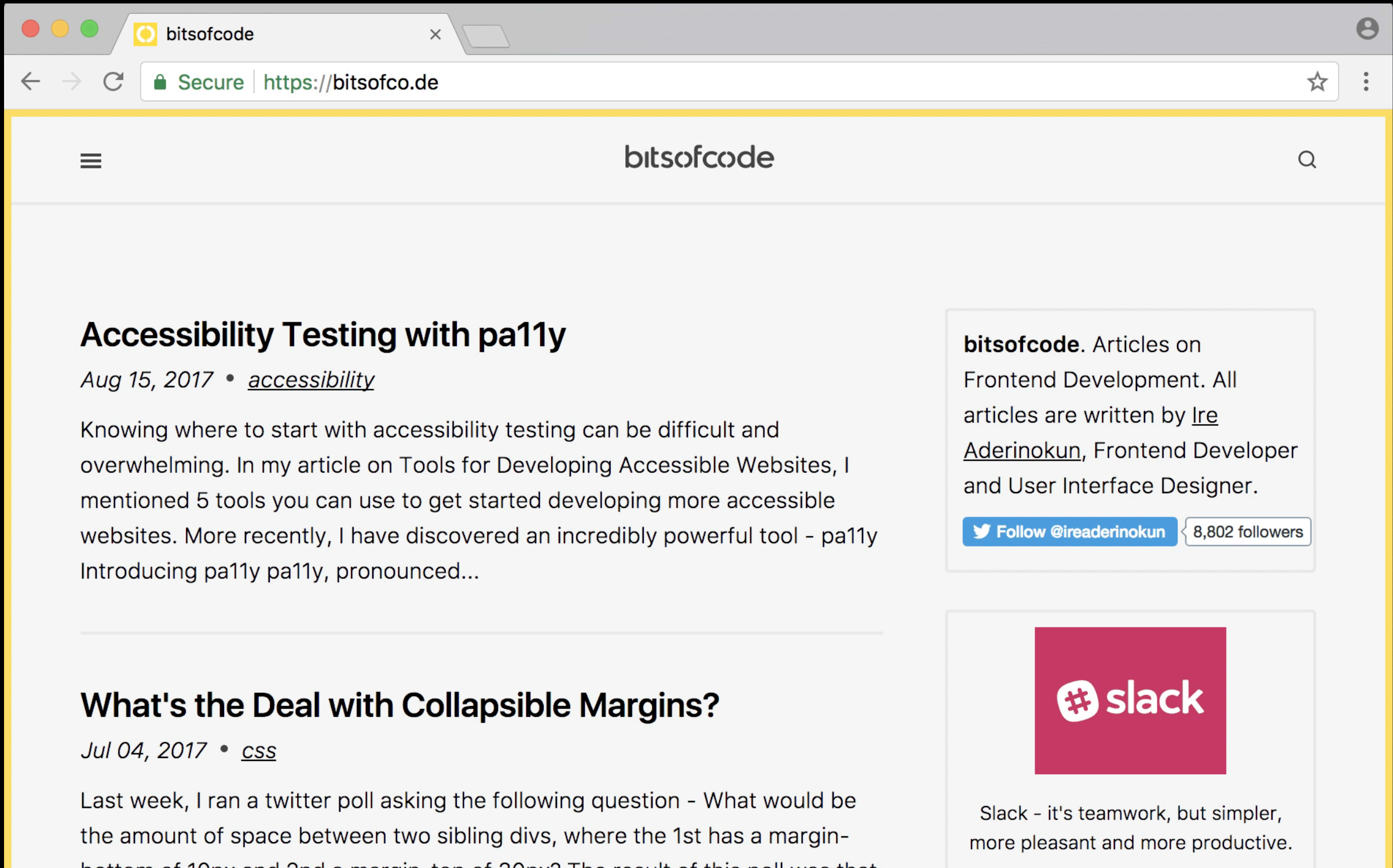
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# Keyboard Accessible



The screenshot shows a web browser window with the URL <https://bitsofco.de>. The website has a header with the 'bitsofcode' logo and a search icon. The main content area features two articles. The first article, 'Accessibility Testing with pa11y', is dated August 15, 2017, and is categorized under 'accessibility'. The second article, 'What's the Deal with Collapsible Margins?', is dated July 04, 2017, and is categorized under 'css'. A sidebar on the right contains a bio for 'bitsofcode' and a 'Follow @ireaderinokun' button with 8,802 followers. Below this is a Slack logo and a description of Slack as a teamwork tool.

**Accessibility Testing with pa11y**  
Aug 15, 2017 • [accessibility](#)


Knowing where to start with accessibility testing can be difficult and overwhelming. In my article on Tools for Developing Accessible Websites, I mentioned 5 tools you can use to get started developing more accessible websites. More recently, I have discovered an incredibly powerful tool - pa11y. Introducing pa11y pa11y, pronounced...

**What's the Deal with Collapsible Margins?**  
Jul 04, 2017 • [css](#)

Last week, I ran a twitter poll asking the following question - What would be the amount of space between two sibling divs, where the 1st has a margin-bottom of 10px and 2nd a margin-top of 20px? The result of this poll was that

**bitsofcode.** Articles on Frontend Development. All articles are written by [Ire Aderinokun](#), Frontend Developer and User Interface Designer.

[Follow @ireaderinokun](#) 8,802 followers

 **slack**

Slack - it's teamwork, but simpler, more pleasant and more productive.

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# Specify Language

```
<html lang="en">
```









# Provide Instructions

accounts.google.com

Create your Google Account

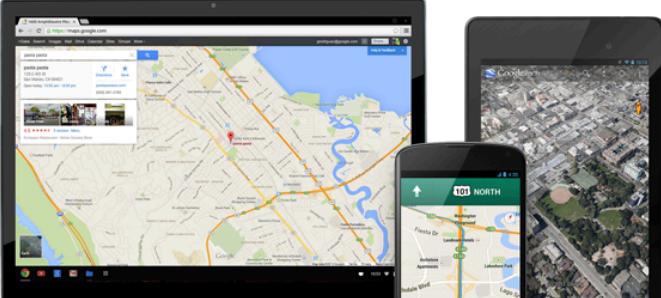
One account is all you need

One free account gets you into everything Google.



Take it all with you

Switch between devices, and pick up where you left off



Name

First

Last

Choose your username

@gmail.com

Create a password

.

⌵

Confirm your password

Birthday

Month

Day

Year

Gender

I am...

⌵

Mobile phone

Password strength: Too short

Use at least 8 characters. Don't use a password from another site, or something too obvious like your pet's name. [Why?](#)

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# Write Valid Code

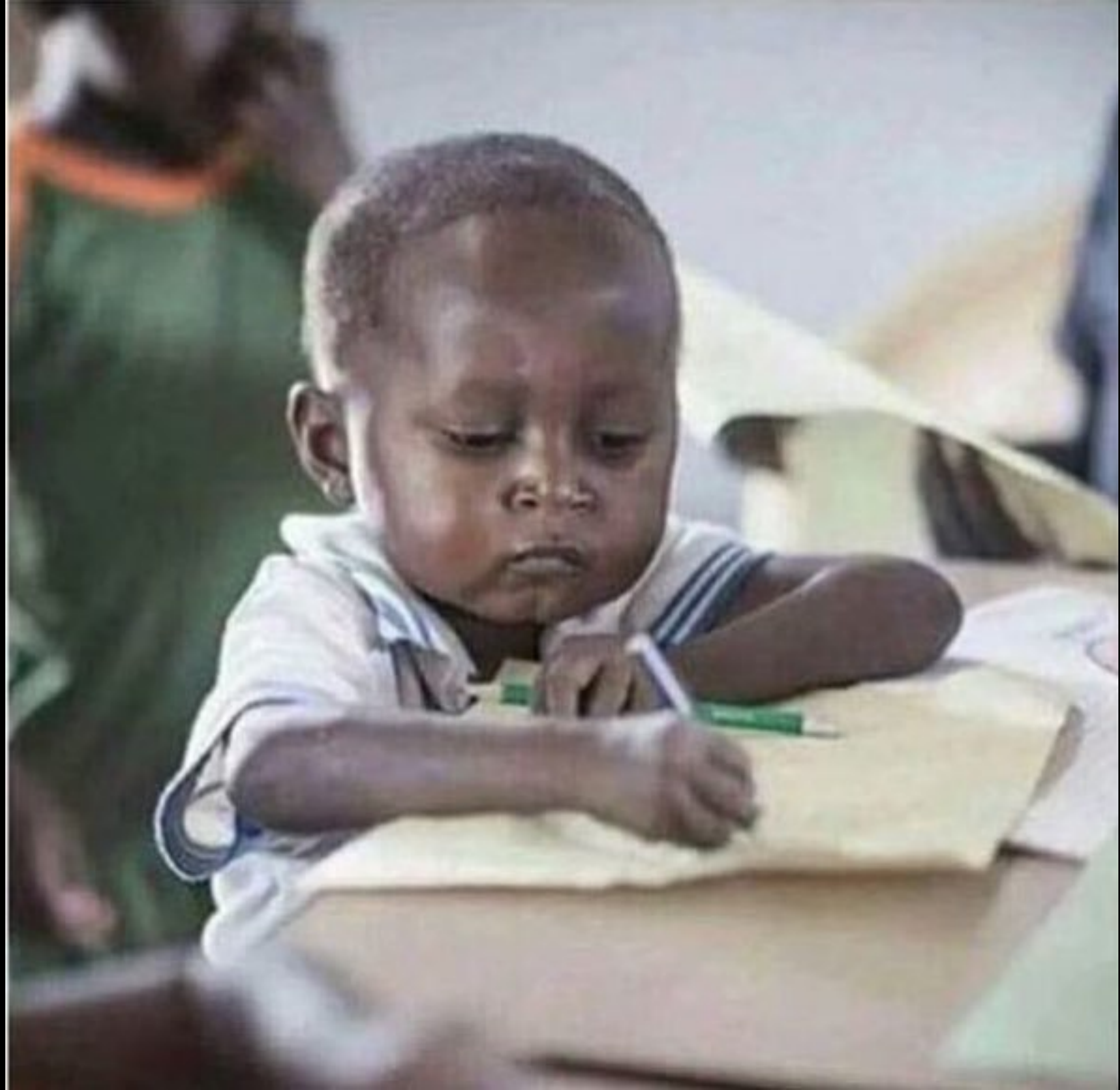
```
<!doctype html>
<html lang="en">
  <head>
    <meta charset="UTF-8">
    <title>My Web Page</title>
  </head>
  <body>
    <h1>My Web Page</h1>
  </body>
</html>
```

# Label Elements

```
<label for="username">  
  Username  
</label>
```

```
<input name="username" id="username"  
  type="text">
```

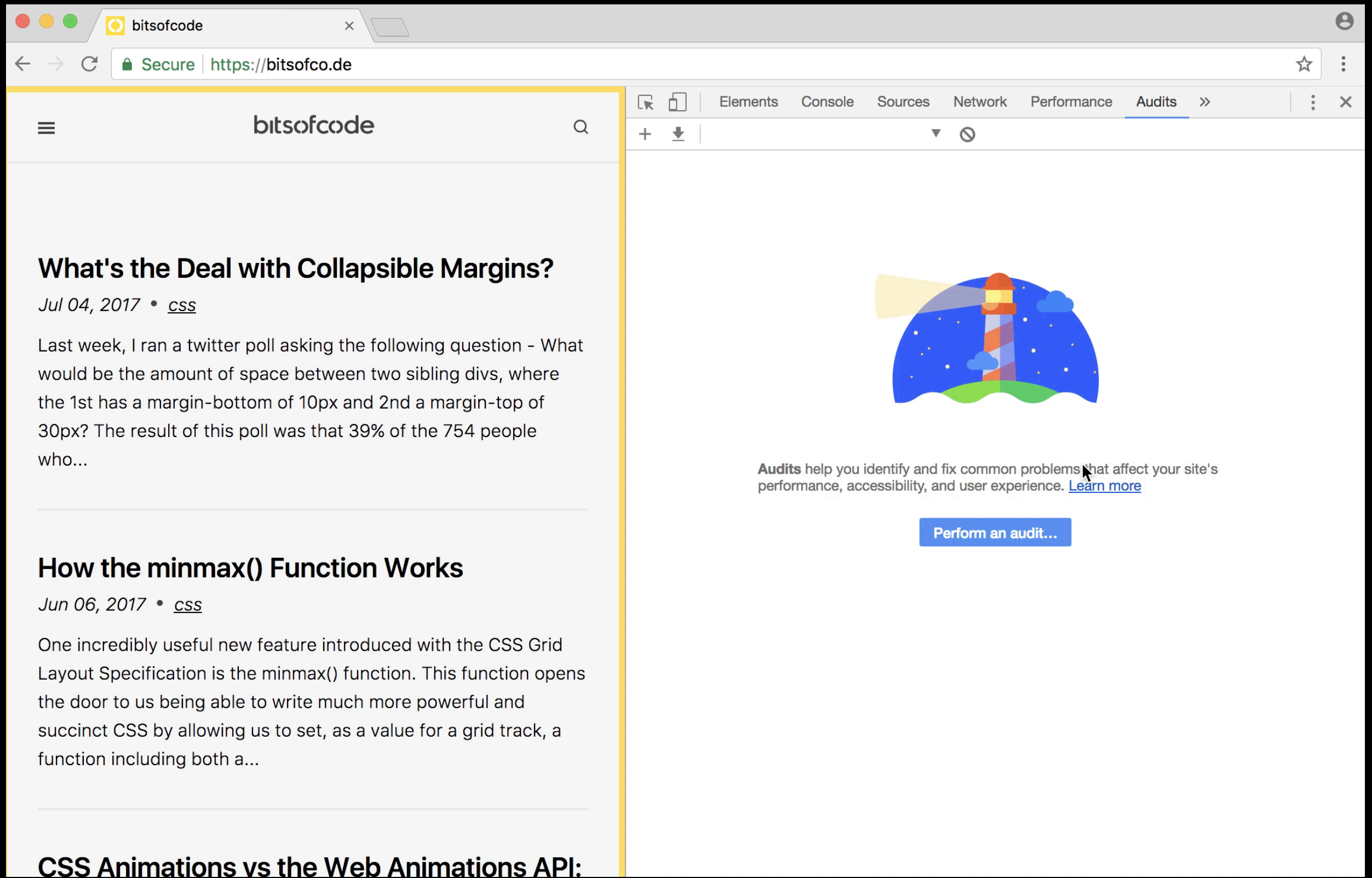
```
<button aria-label="Cancel">  
  X  
</button>
```





Lighthouse

## Chrome Developer Tools > Audits > Perform an Audit



The screenshot shows a web browser window with the address bar displaying `https://bitsofco.de`. The page content includes two article previews:

- What's the Deal with Collapsible Margins?**  
Jul 04, 2017 • [css](#)  
Last week, I ran a twitter poll asking the following question - What would be the amount of space between two sibling divs, where the 1st has a margin-bottom of 10px and 2nd a margin-top of 30px? The result of this poll was that 39% of the 754 people who...
- How the minmax() Function Works**  
Jun 06, 2017 • [css](#)  
One incredibly useful new feature introduced with the CSS Grid Layout Specification is the `minmax()` function. This function opens the door to us being able to write much more powerful and succinct CSS by allowing us to set, as a value for a grid track, a function including both a...

The Chrome Developer Tools panel is open, showing the 'Audits' tab. It features a lighthouse icon and the text: 'Audits help you identify and fix common problems that affect your site's performance, accessibility, and user experience. [Learn more](#)'. Below this is a blue button labeled 'Perform an audit...'.



pa11y



```
npm install -g pa11y
```

```
pa11y example.com
```

```
client100:4912 iaderinokun$ pa11y bitsofco.de
```

Welcome to Pa11y

- > PhantomJS browser created
- > Testing the page "http://bitsofco.de"

#### Results for bitsofco.de:

- **Notice:** Check that the title element describes the document.
  - └─ WCAG2AA.Principle2.Guideline2\_4.2\_4\_2.H25.2
  - └─ html > head > title
  - └─ <title>bitsofcode</title>
- **Notice:** Check that a change of context does not occur when this input field receives focus.
  - └─ WCAG2AA.Principle3.Guideline3\_2.3\_2\_1.G107
  - └─ html > body > header > div > button
  - └─ <button type="button" class="anchorButton no-btn site\_\_nav\_\_open"> <span class="sr-on...</button>
- **Warning:** This element is absolutely positioned and the background color can not be determined. Ensure the contrast ratio between the text and all covered parts of the background are at least 4.5:1.
  - └─ WCAG2AA.Principle1.Guideline1\_4.1\_4\_3.G18.Abs
  - └─ html > body > header > div > button > span
  - └─ <span class="sr-only">Open Site Navigation</span>
- **Notice:** Check that the link text combined with programmatically determined link context identifies the purpose of the link.
  - └─ WCAG2AA.Principle2.Guideline2\_4.2\_4\_4.H77,H78,H79,H80,H81
  - └─ html > body > header > div > h1 > a
  - └─ <a href="/" class="no-ul"> <span class="s...</a>

4 Errors

11 Warnings

45 Notices

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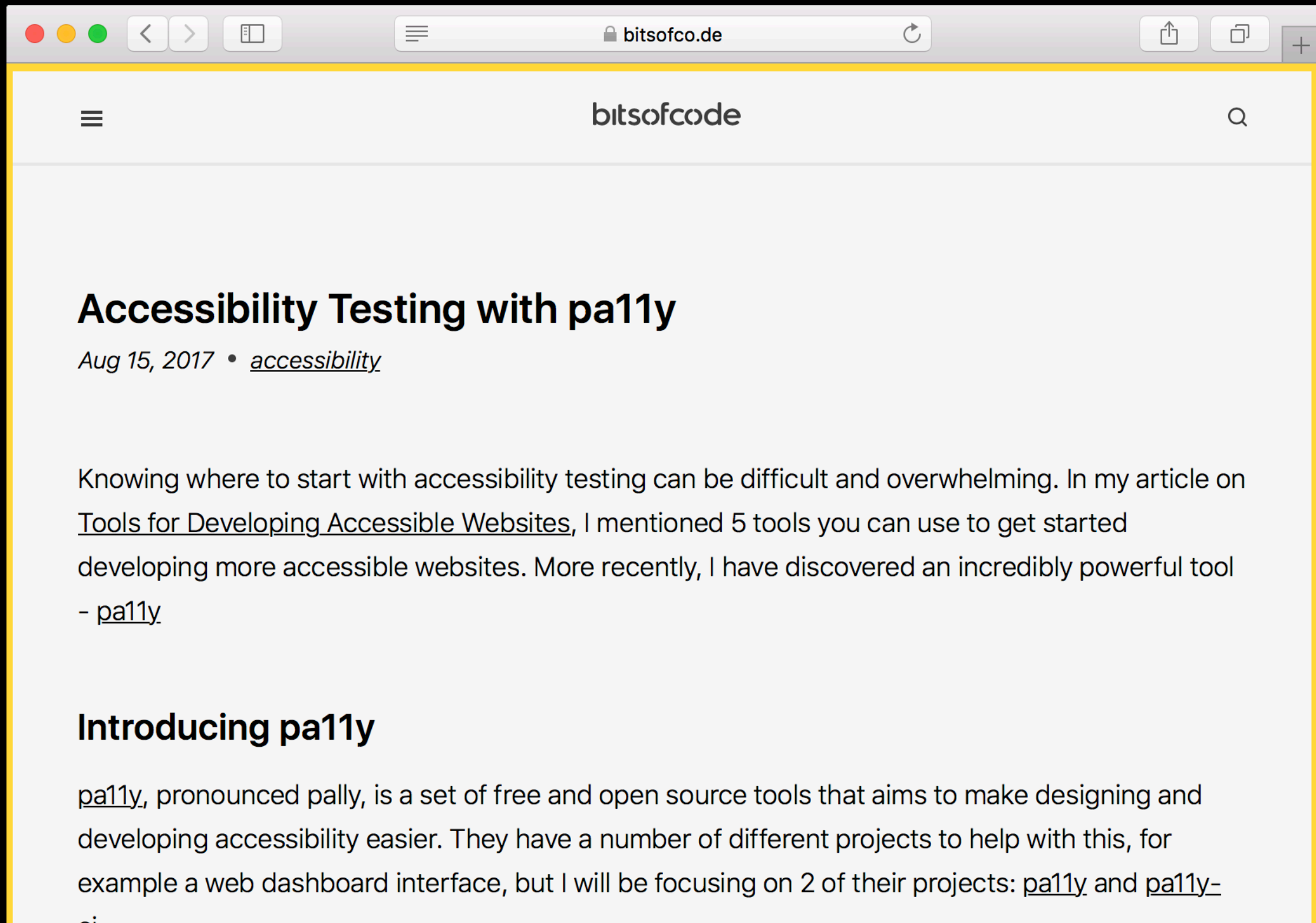
45 Notices

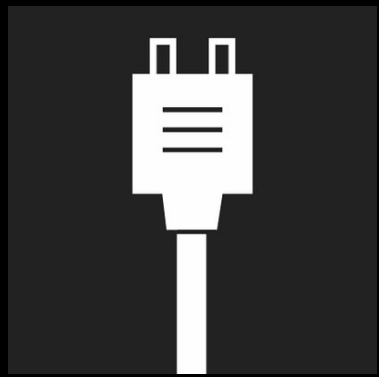


- **Notice:** Check that a change of context does not occur when this input field receives focus.
  - └─ WCAG2AA.Principle3.Guideline3\_2.3\_2\_1.G107
  - └─ #mce-FNAME
  - └─ `<input type="text" value="" name="FNAME" class="" id="mce-FNAME" placeholder="First Name">`
- **Notice:** Check that a change of context does not occur when this input field receives focus.
  - └─ WCAG2AA.Principle3.Guideline3\_2.3\_2\_1.G107
  - └─ #mc-embedded-subscribe
  - └─ `<input type="submit" value="Subscribe" name="subscribe" id="mc-embedded-subscribe" class="button">`
- **Error:** This text input element does not have a name available to an accessibility API. Valid names are: label element, title attribute.
  - └─ WCAG2AA.Principle4.Guideline4\_1.4\_1\_2.H91.InputText.Name
  - └─ #mc\_embed\_signup\_scroll > div > div:nth-child(5) > input
  - └─ `<input type="text" name="b_282459d63a019df7bb8ca2e92_7c802d4eab" tabindex="-1" value="">`
- **Error:** This form field should be labelled in some way. Use the label element (either with a "for" attribute or wrapped around the form field), or "title", "aria-label" or "aria-labelledby" attributes as appropriate.
  - └─ WCAG2AA.Principle1.Guideline1\_3.1\_3\_1.F68
  - └─ #mc\_embed\_signup\_scroll > div > div:nth-child(5) > input
  - └─ `<input type="text" name="b_282459d63a019df7bb8ca2e92_7c802d4eab" tabindex="-1" value="">`
- **Notice:** Check that a change of context does not occur when this input field receives focus.
  - └─ WCAG2AA.Principle3.Guideline3\_2.3\_2\_1.G107
  - └─ #mc\_embed\_signup\_scroll > div > div:nth-child(5) > input
  - └─ `<input type="text" name="b_282459d63a019df7bb8ca2e92_7c802d4eab" tabindex="-1" value="">`

<https://bitsofco.de/pa11y>

<https://github.com/ireade/bitsofcode-pa11y>





*Inclusive components*

Notifications

Cards

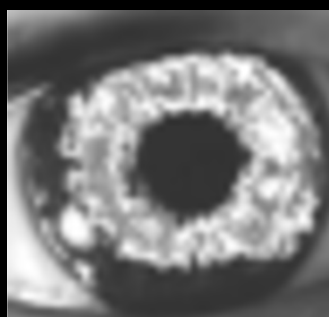
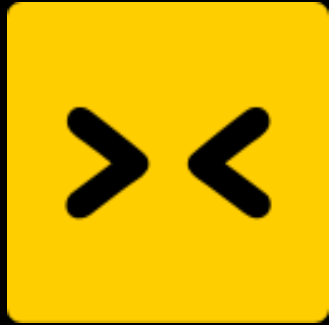
Data Tables

# Re-usable components

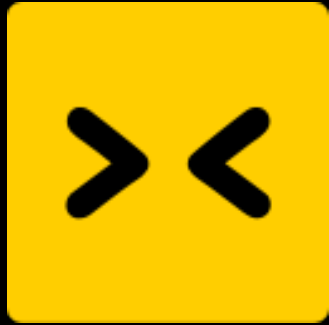
Content Slider

Tabs

Tooltips & Toggletips

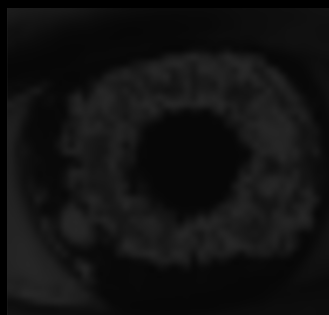


# Chrome Extensions



Alix

<https://github.com/ireade/alix>

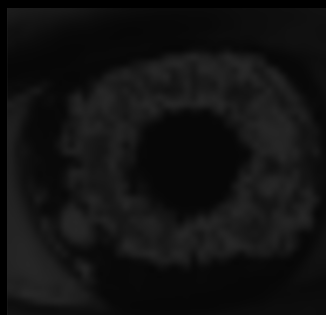


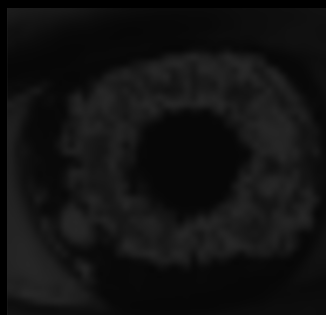




# Accessibility Developer Tools

<https://chrome.google.com/webstore/detail/accessibility-developer-t/fpkknkljclfencbdbgkenhalefipecmb>



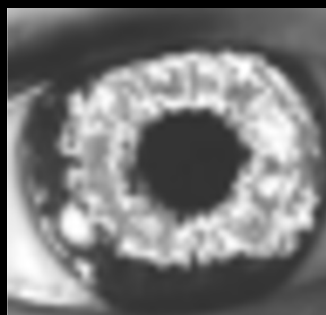


# HTML5 Outliner

<https://chrome.google.com/webstore/detail/html5-outliner/afoibpobokebhgfnknfnndkgemglggomo/reviews>



<https://accessgarage.wordpress.com/2013/02/09/458/>



No Coffee



# User Research

<https://www.youtube.com/watch?v=d3VuWAdBq9g>

Browser interface showing the YouTube video player. The address bar displays `youtube.com`. The YouTube logo and search bar are visible. The video content shows a woman working at a desk with multiple monitors in an office setting. The video player controls at the bottom indicate the video is at 0:00 / 1:58.

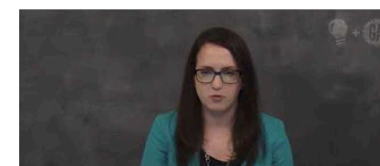
## Web Usability Testing - Moderated and Un-moderated Testing

581 views

3 likes 0 comments SHARE

Up next

AUTOPLAY ☐



### Tools for Entrepreneurs: Do Your First Usability Test

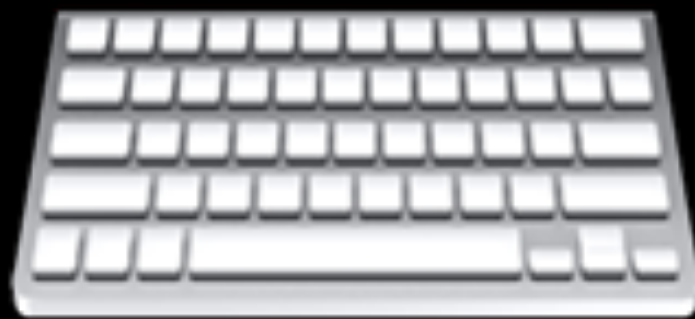
Google for Entrepreneurs ✓

7.2K views



Test it Yourself!

# Go Keyboard-Only

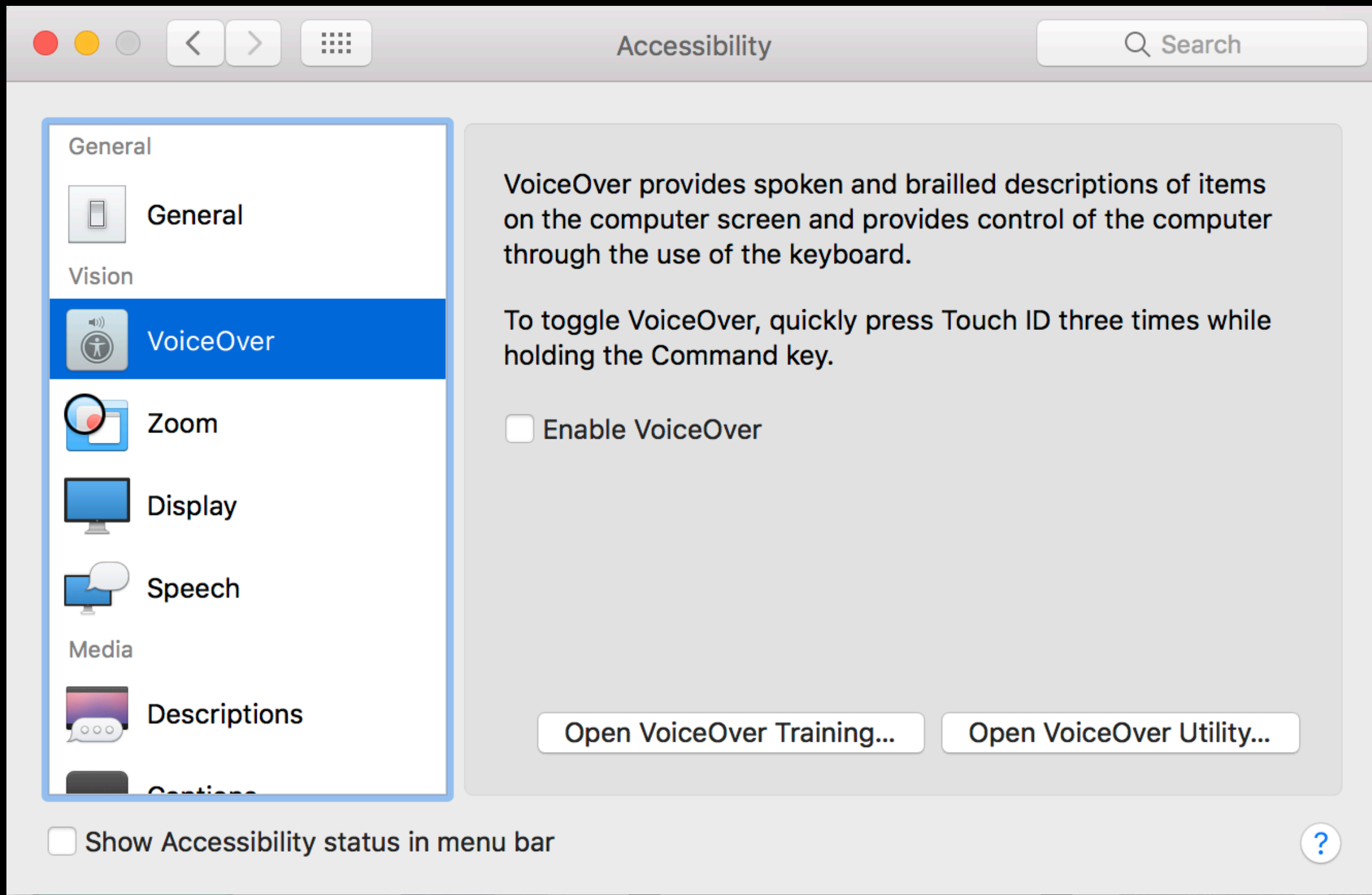




# Try a Screen Reader



System Preferences > Accessibility > VoiceOver > “Enable VoiceOver”



<https://www.chromevox.com>

CHROMEBOOKS

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FEB 9, 2017

# The new, improved ChromeVox screen reader

WRITTEN BY

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David Tseng  
LEAD ENGINEER , CHROMEVOX

---

Laura Palmaro  
PROGRAM MANAGER, CHROME & CHROME OS ACCESSIBILITY

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How Can I Make  
Accessibility Easy?



Make Accessibility a  
First Class Citizen

# Make Accessibility Everyone's Job





# Accessibility Guidelines

Making work accessible creates a better experience across the board. Use this checklist to help build accessibility into your process no matter your role or stage in a project.

## The Checklist

**Check** the boxes of the guidelines that apply to your project

**Preview and copy** the checklist to your clipboard

**Paste** the checklist into a document, Slack, Trello—or however else your team organizes projects

# Designers

- ☐ Make sure there is enough contrast between text and its background color

**According to the WCAG**, the contrast ratio between text and the text's background should be at least 4.5 to 1. If your font is at least 24 px or 19 px bold, the minimum drops to 3 to 1 (though, worth noting that this is a little fuzzy because numbered sizes aren't always reflective of the visual size type). Be especially careful of text over images.

Source: **Salesforce UX**

- ☐ Don't indicate important information using color alone

There should be another indicator (such as icons to accompany color coding, or an underline on linked text) so that people who cannot easily distinguish colors will be able to understand and use your content.

Source: **UCLA**

- ☐ Pair values of colors together (not only hues) to increase contrast

When you strip out the color information from two hues and compare the values, there may not be much difference. Pairing different values creates contrast.

Source: **UCLA**

- ☐ Don't rely on sensory characteristics as the sole indicator for understanding and operating content



# Engineers

## ☐ Use the correct HTML element for your content

HTML elements communicate to the browser what kind of content they contain and how the browser should render or treat that content. The **accessibility tree** is built off of assumptions about the elements and their structure. This is the browser feature which powers screen readers. Choosing the correct element for the current context is a simple way to create a good foundation for your experiences.

Source: **WebAIM**

## ☐ Support keyboard navigation

Browsers support tabbing through link, form, button elements. This is an easy way to move around the page, but it's very easy to accidentally hinder this functionality: by relying on CSS to move elements around instead of actually reordering the HTML; hiding elements from tab flow, either by faking buttons (with Javascript) in lieu of using button elements or disabling tab via `tabindex="-1"`; and hiding form elements (on a tabbed interface) but not removing them from the tab flow (so that hidden form elements can be focused).

Source: **WebAIM**

## ☐ Understand and use HTML landmarks

People who use assistive devices may not want to peruse your content linearly, preferring to use an outline view (generated from markup) to find the relevant content for their current needs. These landmarks, like main and form and navigation help describe specific areas that a user might want to seek out and can save them a lot of time.





# Project Managers

- ☐ Familiarize yourself with the work associated with making content accessible

We have guidelines for **design**, **engineering**, and **QA** testing. Read through the requirements, and be aware of the checks and standards that QA will be looking out for in your products.

- ☐ Build in time for accessibility during project planning and sprint planning

Accessibility is not a checklist item that only needs to be considered in some projects, or at the end of a process. These practices should be woven into every step of a project and role in a team. Make sure you are accounting for that while planning projects and sprints.

- ☐ When sharing good work done by your team, praise efforts to increase accessibility

We all like to hear our work recognized. In addition to celebrating beautiful designs, elegant code, fast turnarounds, stellar experiences—draw attention to and praise the work done by your team to make content more accessible. Talk up high contrast, a smooth keyboard navigation system, or clear copy and hierarchy.

- ☐ The tools and products that you create should make accessible



# Quality Assurance

- ☐ Run through each page with the WAVE Chrome Extension.

This tool is not perfect, however, will provide a good basis for accessibility errors.

- ☐ Users should be able to navigate through content using their keyboard.

Remember to look out for: Accessing navigation and drop down menus, users should be able to tab through an entire page and not get trapped in any elements, this is a common issue for modals, focus states on selectable elements -- links, buttons, etc.

- ☐ Users should be able to navigate content using a screen reader.

Apple's built in Voice Over works well for this, and includes a built in tutorial on how to use it.

- ☐ The general architecture and hierarchy of the content should make sense.

Headers should exist, clickable elements should be clearly indicated, and the user should be able to navigate through. If you are viewing content with poor lighting or from a distance, text should be readable. If you could foresee users having trouble seeing or comprehending content, that's a sound indicator that something is off.

- ☐ Charts and images should all have alt-text so that users with



# Editorial

## ☐ Write good alt text for your images

Non-sighted users often make use of a talking browser to “read” the web. These specialized browsers convert text to speech so that a user can hear the words on a site. When a talking browser lands on an image, it looks for alt text that it can read aloud; if it finds none, it will often just say “image,” leaving the user in the dark as to what the image is and how it matters to the story.

Describe all of the elements that explain what’s happening in the image, rather than just setting the alt text to be something like, “photograph”

If you have to use an image of text, be sure to describe the design if relevant, as well as all of the words in the image. (Ex: Whiteboard drawing of the quote “This is a quote”)

Source: [\*\*WebAim: The Basics of Good Alt Text\*\*](#)

## ☐ Editorial Engineers: think about how custom experiences can be made accessible

For instance, SVGs are often used as icons on interactive elements in sites. When this is the case, the SVG should have a title or embedded text (that is visually hidden but available to assistive tech) to ensure that the information of the icon is available programmatically.

Sometimes you don’t have time or resources to make certain components into a custom experience. In those cases, consider creating an additional screen reader-friendly experience, or at the very least, describe the experience to users in alt text.



Accessibility is only  
hard when you do it  
last





“Accessibility doesn't have to be perfect, it just needs to be a little bit better than yesterday.”

— Leonie Watson





Thank You!

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