

Web Accessibility Training



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WebAIM.org

Resources online at:

webaim.org/presentations/2021/olemiss

Outline

Day 1

- Overview of WCAG 2
- Brief overview of law
- WAVE
- User experience
 - Deaf & hard of hearing
 - Low vision
 - Colorblind
 - Blind (& other screen reader users)

Day 2

- User experience, contd.
 - Photosensitive epilepsy
 - Motor disabilities
 - Cognitive and learning disabilities
- Rules of ARIA use
- Advanced forms
- JavaScript
- ARIA roles, states, and properties

Is your web content currently
accessible?

WCAG 2

- Web Content Accessibility Guidelines
- Versions 1.0 (1999), 2.0 (2008), and 2.1 (2018)
- Foundation of most accessibility laws worldwide
- Principles based
 - Perceivable
 - Operable
 - Understandable
 - Robust

Principle 1 – Perceivable

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

Guideline 1.1 – Text Alternatives

Provide text alternatives for any non-text content so that it can be changed into other forms people need, such as large print, braille, speech, symbols or simpler language.

➤ [Show techniques and failures for 1.1](#)

1.1.1 Non-text Content — Level A

All non-text content that is presented to the user has a text alternative that serves the equivalent purpose, except for the situations listed below. ➤ [Show full description](#)

📘 Understanding 1.1.1

➤ [Show techniques and failures for 1.1.1](#)

↻ SHARE | ⬆️ BACK TO TOP

Guideline 1.2 – Time-based Media

Provide alternatives for time-based media.

1.2.1 Audio-only and Video-only (Prerecorded) — Level A

For prerecorded audio-only and prerecorded video-only media, the following are true, except when the audio or video is a media alternative for text and is clearly labeled as such: ➤ [Show full description](#)

📘 Understanding 1.2.1

www.w3.org/WAI/WCAG21/quickref/

Principle 1: Perceivable

Web content is made available to the senses - sight, hearing, and/or touch

Guideline 1.1 Text Alternatives

Provide text alternatives for any non-text content

Success Criteria	Recommendations
1.1.1 Non-text Content (Level A)	<ul style="list-style-type: none"> <input type="checkbox"/> All images, form image buttons, and image map hot spots have appropriate, equivalent alternative text. <input type="checkbox"/> Images that do not convey content, are decorative, or contain content that is already conveyed in text are given null alt text (alt="") or implemented as CSS backgrounds. All linked images have descriptive alternative text. <input type="checkbox"/> Equivalent alternatives to complex images are provided in context or on a separate linked page. <input type="checkbox"/> Form buttons have a descriptive value. <input type="checkbox"/> Form inputs have associated text labels. <input type="checkbox"/> Embedded multimedia is identified via accessible text. <input type="checkbox"/> Frames and iframes are appropriately titled.

Guideline 1.2 Time-based Media

Provide alternatives for time-based media

NOTE: If the audio or video is designated as an alternative to web content (e.g., an audio or sign language version of a web page, for example), then the web content itself serves as the alternative.

Success Criteria	Recommendations
1.2.1 Prerecorded Audio-only and Video-only (Level A)	<ul style="list-style-type: none"> <input type="checkbox"/> A descriptive text transcript that includes relevant auditory content is provided for non-live audio-only (audio podcasts, MP3 files, etc.). <input type="checkbox"/> A descriptive text transcript or audio description is provided for non-live video-only (e.g., video that has no audio track), unless the video is decorative.
1.2.2 Captions (Prerecorded)	<ul style="list-style-type: none"> <input type="checkbox"/> Synchronized captions are provided for non-live video (YouTube videos, etc.).

Section 508

- Applies to federal government
- Agencies may require compliance for recipients of federal funds
- To meet 508, meet WCAG 2.0 A/AA
- VPAT 2 – Voluntary Product Accessibility Template

Americans with Disabilities Act

- Pre-dates the web
- 3 Important sections – Employment, State and local governments, Public and commercial facilities
- Does not define technical standards for web accessibility
- Lawsuits, complaints, and DOJ settlements require WCAG 2.0 or 2.1 A/AA

Legal Requirements – WCAG 2.1

- European Union EN 301 549
 - New websites: September 2019
 - All websites: September 2020
- California GC § 11546.7
 - State agencies and entities
 - WCAG 2.0 “or a subsequent version”
 - July 2019

Accessibility > Compliance



WAVE

web accessibility evaluation tool

wave.webaim.org

User experience

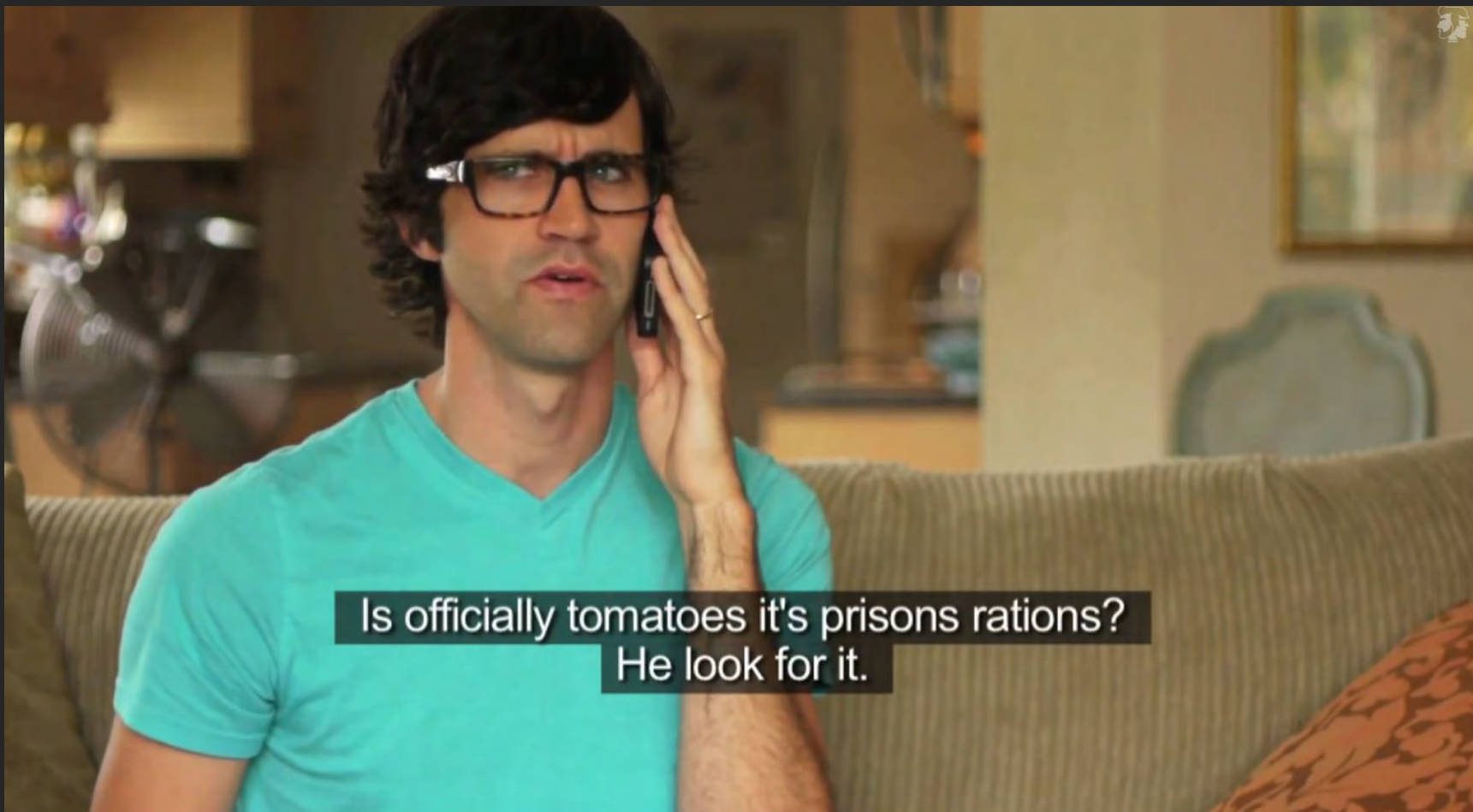
Auditory Disabilities



Captioning Methods

- Type, then sync
- Stenographer or “Shadow Speaker”
- AI voice recognition





Is officially tomatoes it's prisons rations?
He look for it.

Audio Description

Typically a narrator that describes visual content.
Sometimes called “Descriptive Video Service” (DVS).

Avoid expensive audio descriptions by ensuring
important visual content is presented audibly.



Descriptive Transcript

- Called “Alternative for Time-based Media” in WCAG
- Text that presents all important audio and visual information
- Not synchronized
- Does not have to be text-only

WCAG Requirements

Level A

- Captions
- Transcript for audio-only or video-only content
- Audio description OR transcript (if needed)

Level AA

- Audio description (if needed)
- Live audio – Captions

Level AAA

- Descriptive transcript
- Sign language
- Live audio – Transcript

Our recommendation

Level A

- Captions
- Transcript for audio-only or video-only content
- Audio description OR transcript (if needed)

Level AA

- Audio description (if needed)
- Live audio – Captions
- **Descriptive transcript**

Level AAA

- Sign language
- Live audio – Transcript

Deaf-blind

- Content accessible to users who are deaf **and** to users who are blind will generally be accessible to users who are deaf-blind.
- Descriptive transcripts provide media accessibility.



What are additional benefits of captions and transcripts?

Visual Disabilities

Assistive Technology

“Assistive technology promotes greater independence by enabling people to perform tasks that they were formerly unable to accomplish, or had great difficulty accomplishing.”

[Wikipedia](#)

Do you use a form of
assistive technology?



Low Vision

Browser Zoom

- Browser controls
 - Larger: Ctrl/command & +
 - Smaller: Ctrl/command & -
 - Reset : Ctrl/command & 0
- Zoomed content will trigger responsive breakpoints
 - Responsive design supports users with low vision who zoom page content

Quick Reference: Testing Web Content for Accessibility



Test with WAVE

- Run a report at wave.webaim.org. For very complex or non-public pages, use the WAVE Chrome or Firefox extension (wave.webaim.org/extension).
 - Watch the overview video on the WAVE homepage.
- Error icons flag known issues. Other icons identify potential problems or features. Click an icon to highlight the corresponding element and learn more using the **Reference** panel.
- Use the **Details** panel to review page issues. Click an icon to find it in the page. Uncheck icons to hide them.
- Turn off **Styles** to simplify the page view and to check the reading and navigation order.
- Click the **Code** button at the bottom of the page to see the page code with WAVE icons.

Images

- Ensure alternative text (shown in green) conveys the equivalent **content** and/or **function** of the image.
- Look for ways to replace images of text with true text.
- Content conveyed via CSS images must have a text alternative.

Headings and Regions/Landmarks

- Use the **Structure** panel in the sidebar to review.
- The main heading should usually be an `<h1>`.
- Ensure the headings and regions/landmarks reflect the page structure.
- Look for skipped heading levels (e.g., `<h2>` to `<h4>`).

Contrast

- Select the **Contrast** panel.

Check keyboard accessibility

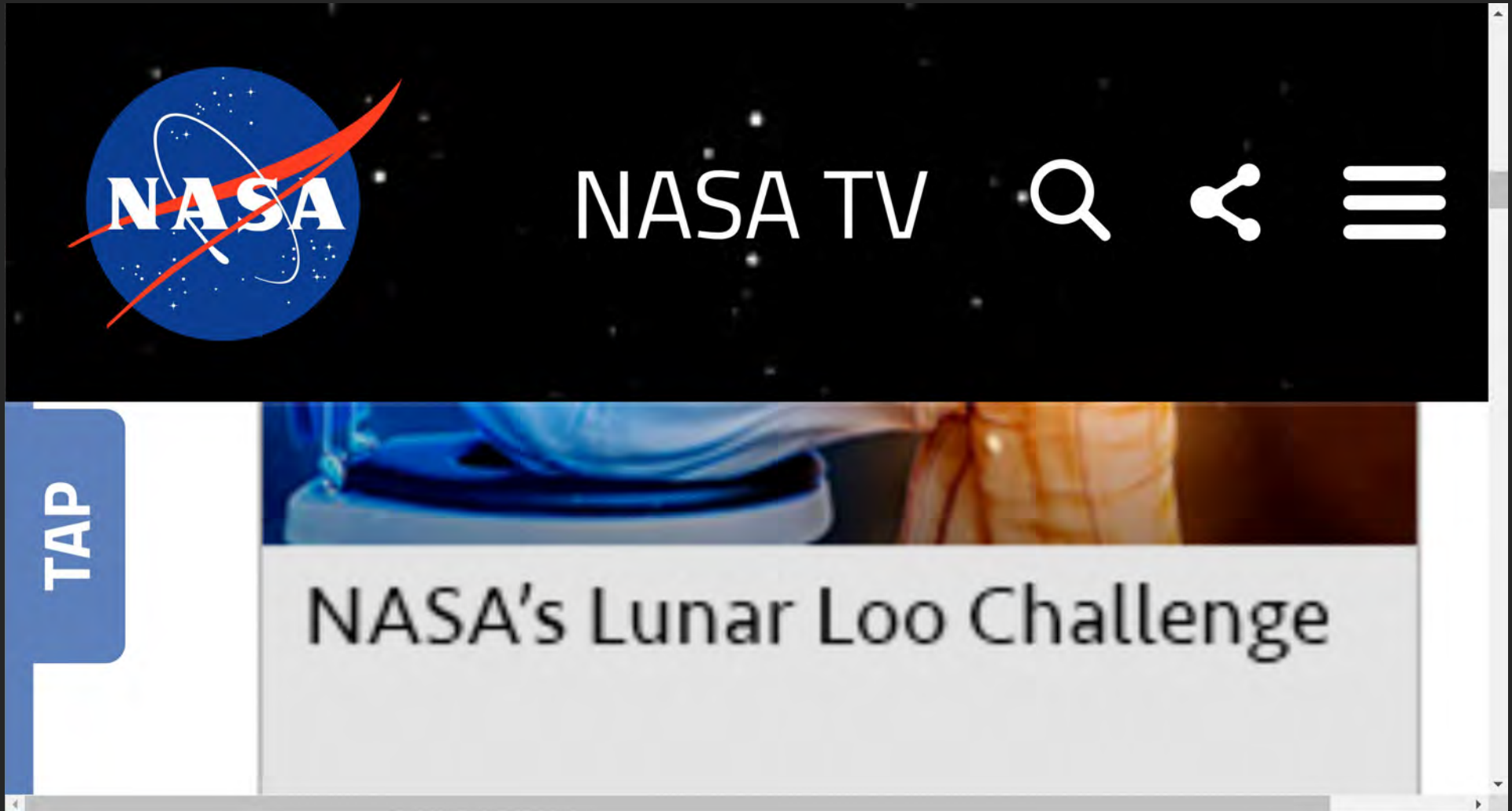
- The first time testing with Mac, press **Control + F7** to enable full keyboard accessibility.
 - In Safari, select **Preferences > Advanced > Accessibility > Press Tab to highlight each item...**
- Navigate the page using only the keyboard:
 - **Tab**: Navigate interactive elements (links, form controls, etc.)
 - **Shift + Tab**: Navigate backwards.
 - **Enter**: Activate links or buttons, submit most forms.
 - **Spacebar**: Activate checkboxes and buttons, expand a select menu, or scroll the window.
 - **Arrow keys**: Navigate radio buttons, select/dropdown menus, sliders, tab panels, tree menus, etc.
- Look for mouse-only interaction (e.g., rollover menus).
- Confirm every focusable element has a keyboard focus indicator/outline with at least 3:1 contrast.
- Ensure any “skip” links work correctly and are visible to sighted keyboard users.
- Make sure the navigation order is logical and intuitive.
- Test dialog and pop-ups. Can you navigate and close the dialog? Does focus return to a logical place?
 - Modal dialogs must maintain focus until dismissed.
 - Non-modal dialogs must close when focus is lost.
 - **Esc** should also close all dialogs and menus.

Test content scaling

- In **Chrome**, press **Ctrl/cmd** and:

webaim.org/resources/evalquickref

Browser Zoom on nasa.gov



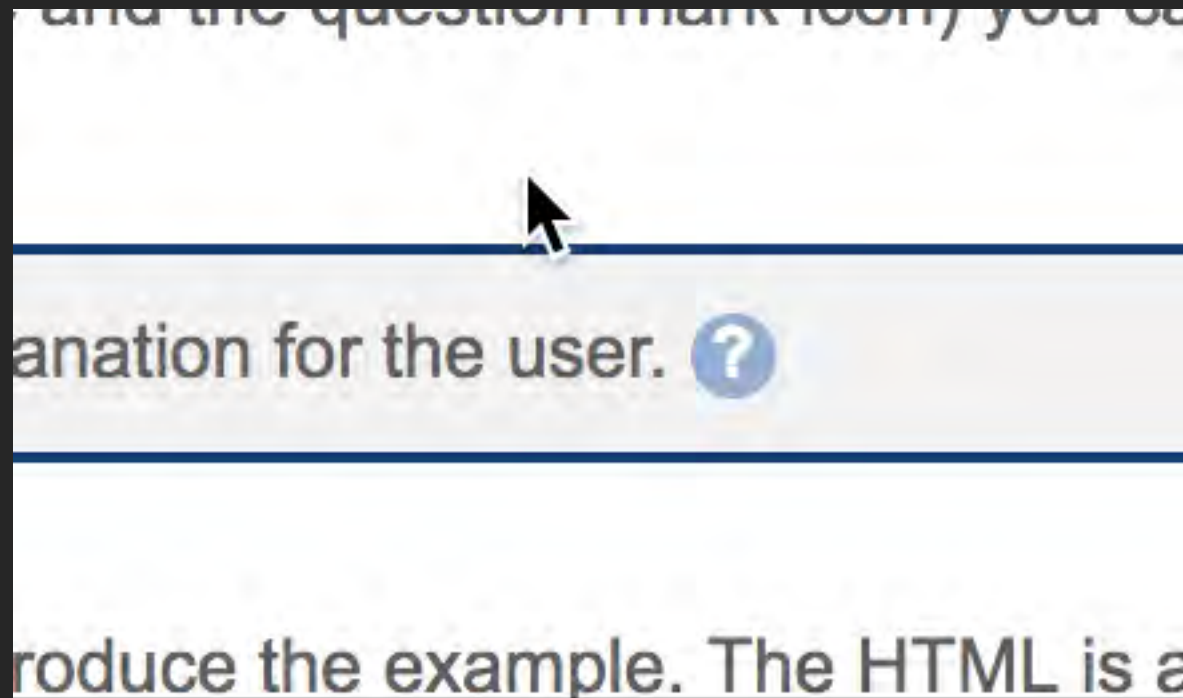
WCAG Zoom Requirements

- 1.4.4 Resize text (Level AA)
 - “Except for captions and images of text, text can be resized without assistive technology up to 200% without loss of content or functionality.”
 - Zoom to 200% is supported.
- 1.4.10 Reflow (Level AA - WCAG 2.1)
 - “Content can be presented without loss of information or functionality...” and without horizontal scrolling (except when necessary) at 400% zoom with viewport width at 1280 pixels.
- Consider text sizing
 - Perhaps to 130%-150%
 - Test in Firefox

Images of Text



Use click to trigger hover interactions



WCAG 2.1 – Content on Hover or Focus (Level AA)

Content that appears on hover and focus must be:

- “Dismissible...without moving pointer hover or keyboard focus”: Esc key dismisses
- “Hoverable”: Doesn’t disappear when moving the pointer to the new content
- “Persistent”: Visible until you move mouse away or dismiss it

Present messaging close to form controls

first name



Please enter your first name.

where do you live?

choose 



Please choose your country.

birthday

jan  1  19



Your year of birth does not appear valid.

Evaluate page zoom

Ctrl/command & +, -, 0

Provide Sufficient Contrast

[WebAIM contrast article](#)

Inverted and High Contrast

The image shows a screenshot of the Amazon Kindle Store homepage, rendered with an inverted and high-contrast color scheme. The background is black, and text and images are primarily white or light blue. The Amazon logo is at the top left, with 'Try Prime' in red. Navigation links like 'Your Amazon.com', 'Today's Deals', 'Gift Cards', 'Sell', and 'Help' are in white. A search bar is present with 'Kindle Store' entered. Below the navigation, there are links for 'Buy a Kindle', 'Kindle eBooks', 'Advanced Search', 'Daily Deals', 'Free Reading Apps', 'Kindle Singles', and 'News'. A section titled 'The World's Best-Selling E-readers' features three Kindle devices: 'Kindle' (\$69), 'Kindle Paperwhite' (\$119), and 'Kindle Paperwhite 3G' (\$189). Below this, the 'Kindle Fire HD' is highlighted with the text 'Our most affordable Kindle Fire, now in HD'. A large image of the Kindle Fire HD tablet is shown on the left. To its right, the product details for the 'Kindle Fire 7" Tablet, Now in HD' are listed, including '7" HD Display, Wi-Fi, 8GB or 16GB', a 4.5-star rating with 9,181 reviews, and a price of '\$139.00' with 'FREE Shipping Details'. Storage options for '8 GB' and '16 GB' are shown in white boxes. The 'Offer Type' section includes 'With Special Offers' and 'Without Special Offers' options, with a note about special offers on the Kindle Fire.

amazon
Try Prime

Your Amazon.com Today's Deals Gift Cards Sell Help

Shop by Department Search Kindle Store Go

Buy a Kindle Kindle eBooks Advanced Search Daily Deals Free Reading Apps Kindle Singles News

The World's Best-Selling E-readers

Compare Kindles

Kindle \$69

Kindle Paperwhite \$119

Kindle Paperwhite 3G \$189

kindle fire HD

Our most affordable Kindle Fire, now in HD

Kindle Fire 7" Tablet, Now in HD
7" HD Display, Wi-Fi, 8GB or 16GB
★★★★☆ (9,181 customer reviews)

\$139.00 FREE Shipping Details

Storage Size: 8 GB

8 GB 16 GB

Offer Type: With Special Offers

With Special Without Special Special offers and on the Kindle Fire

WCAG Contrast Formula

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

where

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

where

R, G, and B =

$$\begin{aligned} &R_{sRGB} \leq 0.03928 \text{ then } R = R_{sRGB} / 12.92 \\ &\text{else } R = ((R_{sRGB} + 0.055) / 1.055) ^ 2.4 \end{aligned}$$

where

$$R_{sRGB} \leq R_{8bit} / 255$$

21:1

21:1

Level AA Contrast Examples

4.5:1

Gray (#767676) on White

Purple (#CC21CC) on White

Red (#E30000) on Yellow (#FFFF00)

3:1 – “Large” text

≥18pt (24px)

BOLD: ≥14pt (18.67px)

“Images of text”

50 most played
songs by genre



WebAIM Contrast Checker

webaim.org/resources/contrastchecker/



I

I

AM

AM

TEXT

TEXT



I

I

AM

AM

TEXT

TEXT

Exceptions

DIANA GABALDON OUTLANDER
 THE PHANTOM TOLLBOOTH JUSTER
 KEN KESEY SOMETIMES A GREAT NOTION
 In the HEART of the SEA Nathaniel Philbrick
 BEOWULF A NEW VERSE TRANSLATION BY SEAMUS HEANEY
 LITTLE BROTHER CORY DOCTOROW
 Free Your Voice Silvia Nakrach and Valerie Carpenter
 All Creatures Great and Small James Herriot
 THE EMPEROR OF ALL MALADIES SIDDHARTHA MUKHERJEE
 CARVER WHAT WE TALK ABOUT WHEN WE TALK ABOUT LOVE
 DESERT SOLITAIRE EDWARD ABBEY
 the perks of being a wallflower STEVEN CHUBSKY
 THE GIRL WITH THE DRAGON TATTOO STIEG LARSSON
 JEANNETTE WALLS HALF BROKE HORSES
 The Stand STEPHEN KING
 Geek Love KATHERINE DUNN
 THE ILIAD HOMER
 ANGLE OF REPOSE WALLACE STEGNER
 EATERSON Bridge to Terabithia
 EDITH WHARTON The House of Mirth
 BEHOLD A PALE HORSE WILLIAM COOPER
 Revolutionary Road Richard Yates
 ASH THE DUST JOHN RANTE
 PRIDE and PREJUDICE JANE AUSTEN
 ONE HUNDRED YEARS OF SOLITUDE GABRIEL GARCIA MARQUEZ
 Jellicoe Road HARPER
 Victor Hugo Les Misérables
 SAVU BELLOW The Adventures of Augie March
 EXTREMELY LOUD & INCREDIBLY CLOSE JONATHAN SAFRAN FOER
 HALE the Goose Girl BLOOMSBURY

"Inactive"

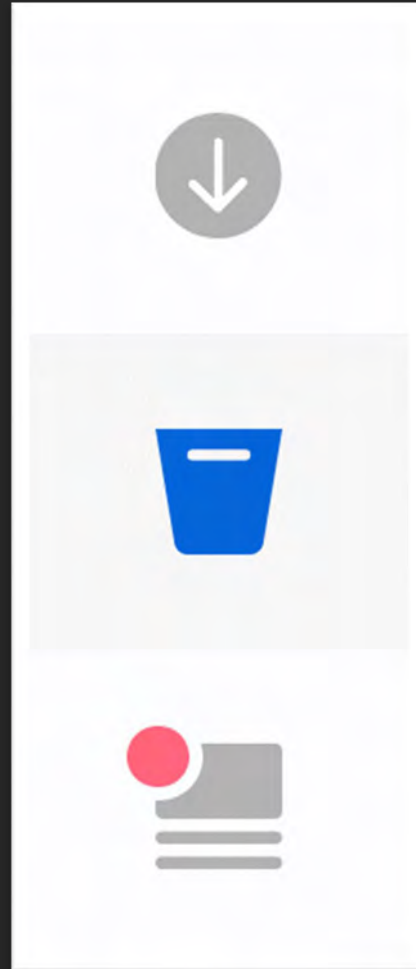
“Logotypes”

The logo for WebAIM is displayed on a white rectangular background. The word "Web" is in a grey, lowercase, sans-serif font. The word "AIM" is in a red, uppercase, sans-serif font. Below the main text, the phrase "web accessibility in mind" is written in a smaller, grey, lowercase, sans-serif font.

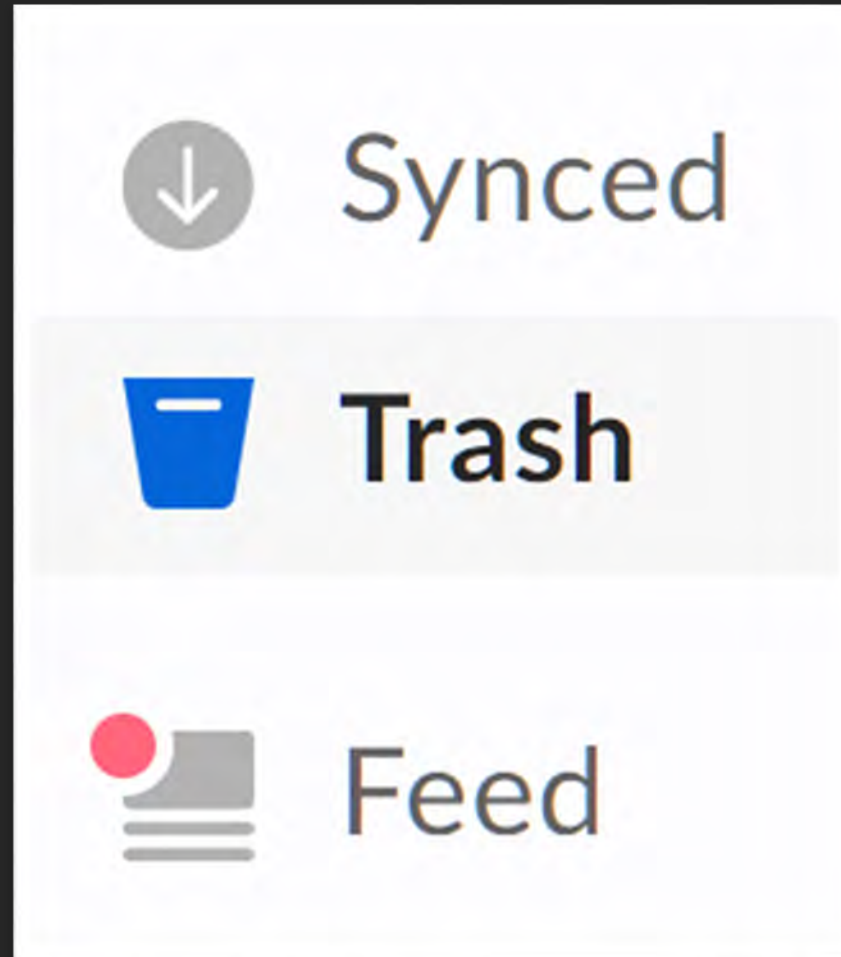
WebAIM

web accessibility in mind

WCAG 2.1 – 3:1 Contrast of “Graphical Objects”



“...required to understand”



“Against adjacent color(s)”



Add a border



3:1 Contrast of UI “Boundaries”

☐

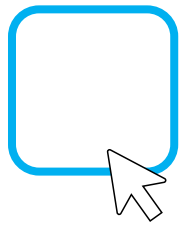
I have read and agree to the [Terms of Use](#)

WCAG 2.1 – 3:1 contrast of keyboard focus indicators



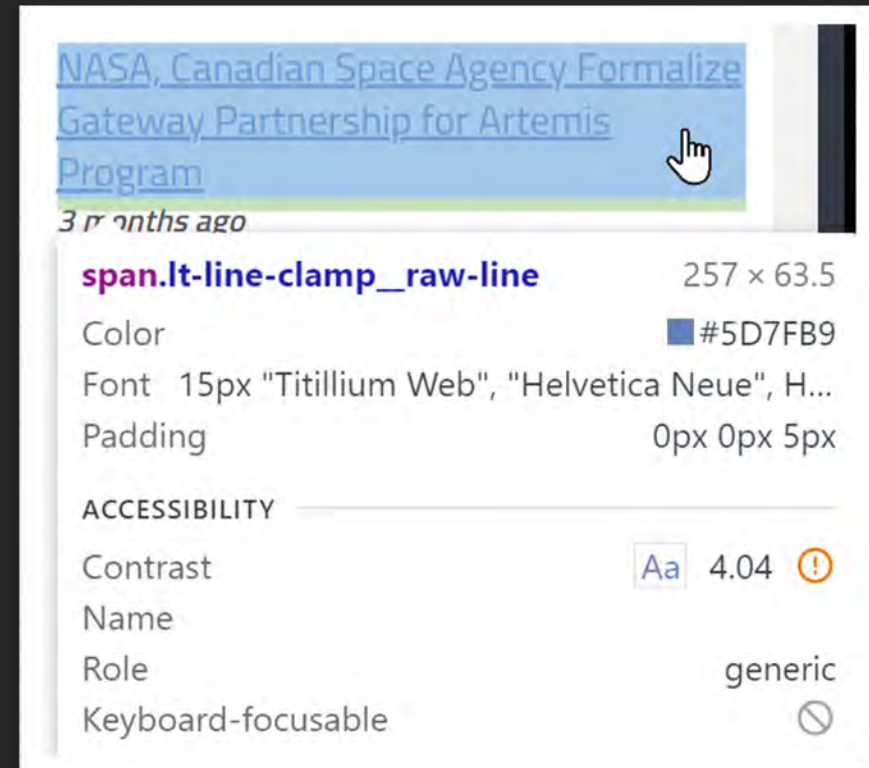
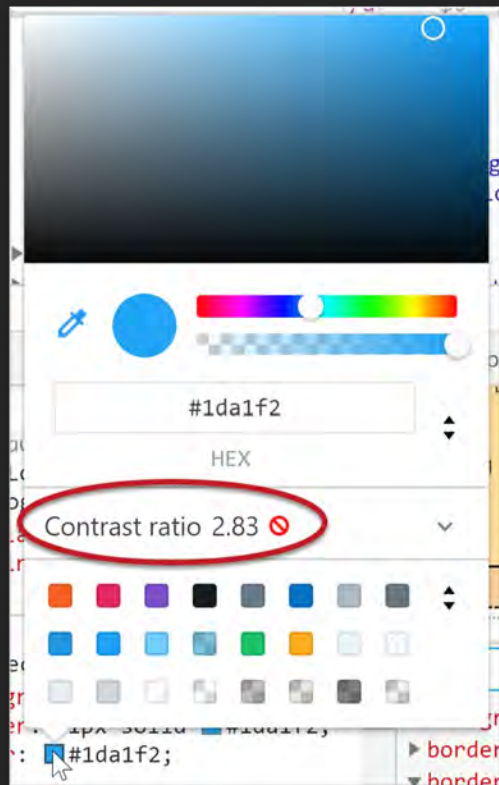
Follow your interests.

WCAG 2.1 – 3:1 contrast of UI “States”



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Chrome Developer Tools



Evaluating contrast with Chrome DevTools

Evaluate contrast

1. WAVE contrast tab – Automatically-detected text
2. ColorZilla - Images
3. Chrome DevTools - States, non-solid backgrounds

Color Blindness



WCAG 1.4.1 – Use of Color

The green mushrooms listed here are okay to eat. The red mushrooms are poisonous.

- Amanita
- Chanterelle
- Porcini
- Shiitake
- Tylopilus

WCAG 1.4.1 – Use of Color

The green mushrooms listed here are okay to eat. The red mushrooms are poisonous.

- Amanita
- Chanterelle
- Porcini
- Shiitake
- Tylopilus

1. Ensure sufficient contrast
2. Do not rely on color alone

Requirements for non-underlined links

- A 3:1 contrast ratio between link text and non-link text
- Link must present a non-color cue (typically underline) on mouse hover AND keyboard focus
 - Not possible in most electronic documents (e.g., Word and PowerPoint)

You must agree to the **Terms of Use**

You must agree to the Terms of Use

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webaim.org/resources/linkcontrastchecker

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and link becomes underlined on hover/focus.

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Screen Reader Users


- Not all screen reader users are completely blind.
- Most have low vision.
 - 45% of respondents to our low-vision survey use a screen reader.
- Some users have a reading or cognitive disability.
- Focus on structure and semantics.


Structure & Semantics




servicesarticlesresourcescommunity




[Introduction to Web Accessibility](#)

[WebAIM Training](#)




We have web accessibility in mind


Expanding the potential of the web for people with disabilities by empowering individuals and organizations to create accessible content.

[Accessibility Training](#)


Whether here in Utah or on-site at your organization, WebAIM can provide web and document training to fit your needs.

[Accessible Site Certification](#)

As a respected third party accessibility expert, WebAIM can evaluate and certify your site to established web accessibility guidelines.

[Technical Assistance](#)

Need assistance implementing accessibility? WebAIM's expert staff can provide the assistance you need.

[Evaluation and Reporting](#)

We can provide reports to help you know how accessible your site is and how to make it better.

Community

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[Newsletter](#)

[E-mail Discussion List](#)

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Main Navigation

- [Services](#)
- [Articles](#)
- [Resources](#)
- [Community](#)

Search: 

[Introduction to Web Accessibility](#)

[WebAIM Training](#)

Navigation

Header

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- [Newsletter](#)
- [E-mail Discussion List](#)
- [Twitter](#)

Main

Screen readers for testing

Desktop

- Windows
 - NVDA (free)
 - JAWS (\$1000+)
 - JAWS + IE is still common
- Mac
 - VoiceOver

Mobile

- iOS
 - VoiceOver
 - 69% of mobile
- Android
 - Talkback

WebAIM tutorials for [JAWS](#), [NVDA](#), and [VoiceOver](#), and [VoiceOver on mobile](#)

Screen Reader Demo

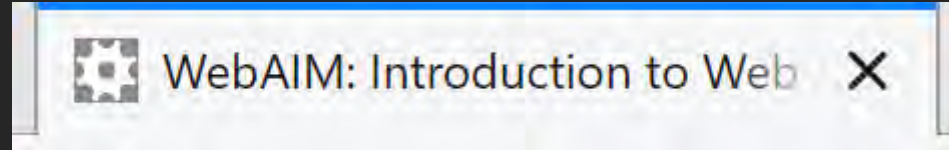
Screen reader testing

- Don't try to be an “expert”
 - 10 shortcuts to get started, 20 is about all you need
 - Screen readers read things differently and can misbehave
- Verbosity settings impact the amount and types of content that are read
- Focus on document structure, navigation, forms, and dynamic content

Headings

- The most common method for finding information on a page
 - 69% of WebAIM screen reader user survey respondents
- Headings should describe a section of content
 - Should never be empty
- Usually one `<h1>` per page
- Do not skip heading levels (e.g., `<h2>` to `<h4>`)
 - Can skip backward (e.g., `<h4>` to `<h2>`)

Page Title



```
<title>WebAIM: Introduction to  
Web Accessibility</title>
```

- Often the first thing read
- Should usually match, or be similar to, the first-level heading
- Must be descriptive
- Should be succinct

HTML Regions

- `<header>`
- `<nav>`
- `<main>`
- `<aside>`
- `<footer>`

Screen reader users can navigate by region

ARIA

Accessible Rich Internet Applications

ARIA expands the vocabulary of HTML

Rule #1 of ARIA Use

“If you can use a native HTML element or attribute...then do so.”

[Notes on Using ARIA in HTML](#)

Rule #1, simplified

If you can use HTML, then do so.

Rule #1, paraphrased

Don't use ARIA

ARIA Landmarks

- `<header>` - `role="banner"`
- `<nav>` - `role="navigation"`
- `<main>` - `role="main"`
- `<aside>` - `role="complementary"`
- `<footer>` - `role="contentinfo"`
- `??? – role="search"`

Regions/Landmarks

- We recommend HTML regions (Rule #1)
 - `<header role="banner">` is unnecessary
- “Region” / “Landmark” are generally synonymous
- All content in the page should be within a region
- More doesn’t always mean better

Evaluate title, headings, and regions/landmarks

WAVE “Structure” tab

Lists

- Numbers/`` for ordered or hierarchical lists
- Bullets/`` for unordered or parallel lists
- `<dl>` for definition/description lists
 - Name/value pairs in HTML5 (e.g., FAQ)

EASY SHORTBREAD



Ingredients

- 1 cup butter, softened
- 1/2 cup sugar
- 2 1/2 cups flour

Directions

1. Preheat the oven to 300 F.
2. Cream butter and sugar.
3. Gradually stir flour into the creamed mixture until blended.
4. Pat the dough in the bottom of an ungreased 9x13 baking pan.
5. Bake at 300 F for 30 to 40 minutes, until just lightly browned.
6. Remove from oven and pierce all over with a fork.

Baking Terms

Softened butter

Butter left at room temperature for approximately 20 minutes.

Cream butter and sugar

Mix butter and sugar together until it is light and fluffy.



Forms

Use the Correct Input Type

Select from the following to make group reservations.

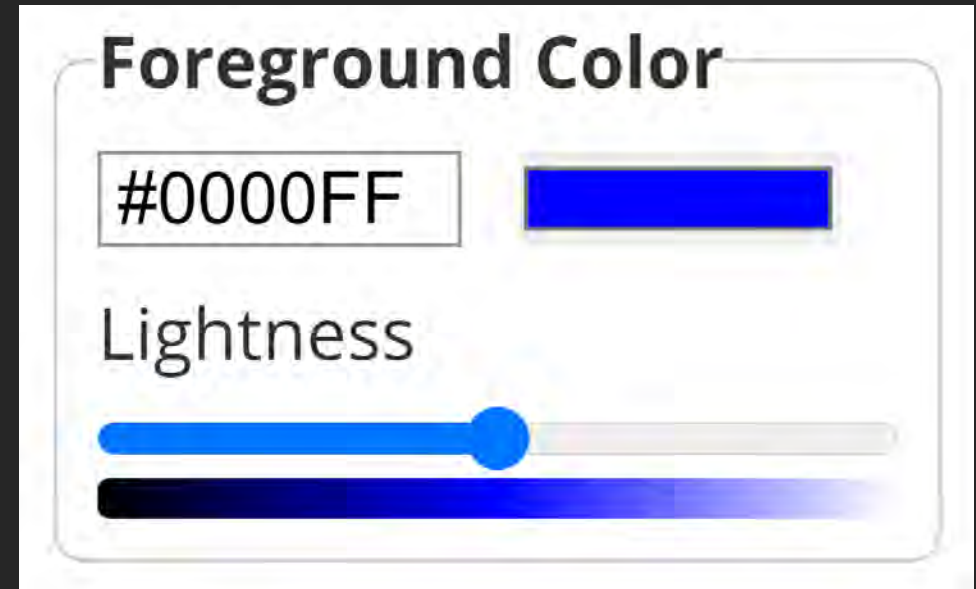
☐ **School Group**

☐ **Tour Operator**

☐ **Other Group**

HTML5 Input Types

- `<input type="date|email|range|color">` and many others.
- The browser can (or, in some cases, hopefully will) provide a natively accessible control/interface.
- Mobile devices often present custom keyboards
 - e.g., @ key for `type="email"`.



[e.g., WebAIM contrast checker](#)

Form Labels

First Name:

```
<label for="fname">First Name:</label>  
<input type="text" id="fname"...>
```

Text boxes, text areas, select menus, checkboxes,
radio buttons, and HTML5 input types.

Implicit Form Labels

```
<label>First Name:  
<input type="text"></label>
```

<fieldset> and <legend>

Choose a shipping method:

☐ Overnight

☐ Two day

☐ Ground

```
<fieldset>
```

```
  <legend>Choose a shipping method:</legend>
```

```
  <input id="overnight" type="radio"...>
```

```
  <label for="overnight">Overnight</label>
```

```
  ...
```

```
</fieldset>
```

Evaluate forms and labels

Tables

Data tables

Class Schedule

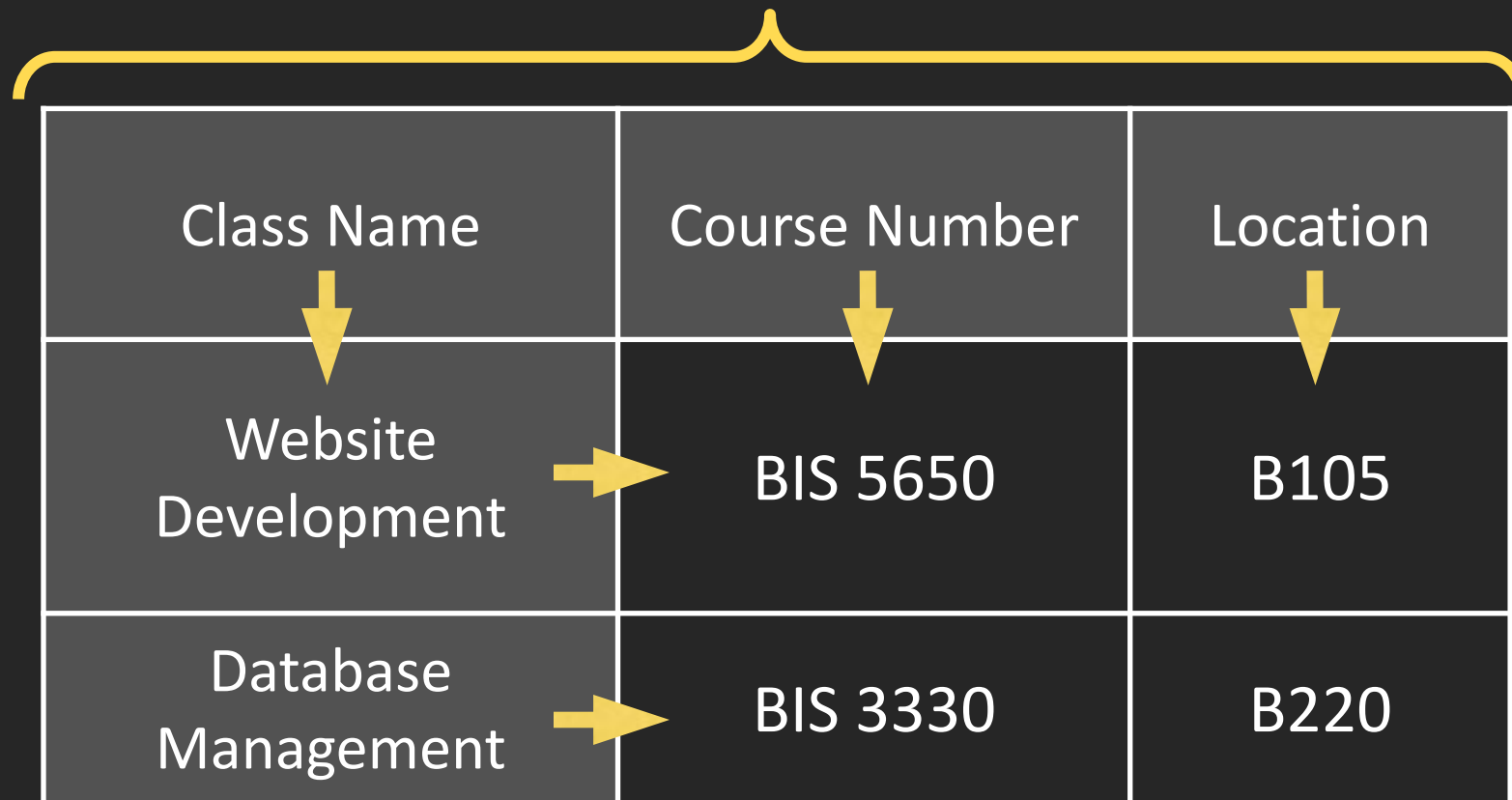
Class Name	Course Number	Location
Advanced Website Development	BIS 5650	B105
Database Management	BIS 3330	B220

Data tables

```
<table>
<caption>Class Schedule</caption>
<tr>
  <th scope="col">Class Name</th>
  <th scope="col">Course Number</th>
  <th scope="col">Location</th>
</tr>
<tr>
  <th scope="row">Advanced Website Development</th>
  <td>BIS 5650</td>
  <td>B105</td>
</tr>
...
```

Structure for screen readers

Class Schedule



Class Name	Course Number	Location
Website Development	BIS 5650	B105
Database Management	BIS 3330	B220

[Table example](#)

Fall Semester		
Class Name	Course Number	Location
Advanced Website Development	BIS 5650	B105
Database Management	BIS 3330	B220

Fall Semester

Class Name	Course Number	Location
Advanced Website Development	BIS 5650	B105
Database Management	BIS 3330	B220

Fall Semester		
Class Name	Course Number	Location
Advanced Website Development	BIS 5650	B105
Database Management	BIS 3330	B220
Winter Semester		
Class Name	Course Number	Location
Advanced Website Development	BIS 5650	B105
Database Management	BIS 3330	B220

Fall Semester		
Class Name	Course Number	Location
Advanced Website Development	BIS 5650	B105
Database Management	BIS 3330	B220
Winter Semester		
Class Name	Course Number	Location
Advanced Website Development	BIS 5650	B105
Database Management	BIS 3330	B220

The diagram illustrates course prerequisites using yellow arrows. In the Fall Semester section, a vertical arrow points from 'Advanced Website Development' to 'Database Management'. In the Winter Semester section, four vertical arrows point from 'Advanced Website Development' to 'BIS 5650', 'BIS 3330', and 'BIS 5650' (repeated), and another vertical arrow points from 'BIS 5650' to 'BIS 3330'. A horizontal arrow points from 'Database Management' to 'BIS 3330'.

Fall Semester

Class Name	Course Number	Location
Advanced Website Development	BIS 5650	B105
Database Management	BIS 3330	B220

Winter Semester

Class Name	Course Number	Location
Advanced Website Development	BIS 5650	B105
Database Management	BIS 3330	B220

Layout Tables

Heat wave linked to temperatures



After three years of effort city scientists now agree that the primary cause of the 2003 heatwave was hot air from our

[MORE ►►](#)

Man Gets Nine Months in Violin Case



Mayor: These kinds of crimes need more creative, effective punishments. For example, we could require compulsory

[MORE ►►](#)




Lack of brains hinders research



Brain donations: huge drop off in brain donations due to the great 'success' of 'Slow Traffic, Safe Streets' policy

[MORE ►►](#)

Incorrect reading order

C Heat wave linked to temperatures	C Man Gets Nine Months in Violin Case	C Lack of brains hinders research
		
After three years of effort city scientists now agree that the primary cause of the 2003 heatwave was hot air from our MORE ➡	Mayor: These kinds of crimes need more creative, effective punishments. For example, we could require compulsory MORE ➡	Brain donations: huge drop off in brain donations due to the great 'success' of 'Slow Traffic, Safe Streets' policy MORE ➡

Simplify table structure

Heat wave linked to temperatures



After three years of effort city scientists now agree that the primary cause of the 2003 heatwave was hot air from our

[MORE](#) ➡

Man Gets Nine Months in Violin Case



Mayor: These kinds of crimes need more creative, effective punishments. For example, we could require compulsory

[MORE](#) ➡

Lack of brains hinders research



Brain donations: huge drop off in brain donations due to the great 'success' of 'Slow Traffic, Safe Streets' policy

[MORE](#) ➡

Use <table role="presentation">

**C Heat wave
linked to
temperatures**



After three years of effort city scientists now agree that the primary cause of the 2003 heatwave was hot air from our

MORE ►►

**C Man Gets Nine
Months in
Violin Case**



Mayor: These kinds of crimes need more creative, effective punishments. For example, we could require compulsory

MORE ►►

**C Lack of brains
hinders
research**



Brain donations: huge drop off in brain donations due to the great 'success' of 'Slow Traffic, Safe Streets' policy

MORE ►►

Language

“Most people today can hardly conceive of life without the internet. Some have argued that no other single invention has been more revolutionary since Gutenberg's printing press in the 1400s. Now, at the click of a mouse, the world can be “at your fingertips”—that is, if you can use a mouse... and see the screen... and hear the audio—in other words, if you don't have a disability of any kind.”



Language of Page (Level A)

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

Language of Parts (Level AA)

`<option>Japanese</option>`

vs.

`<option lang="ja">日本語</option>`

Evaluate language

Spanish – lang="es"

Alternative Text

Alternative Text

- Read by screen readers
- Alternative to images if they are disabled or not supported
- Used by search engines

What is **equivalent** alternative text?

CONTENT and **FUNCTION**

VERY RARELY Description

Alternative Text

Should...

- be equivalent.
- be succinct.
- NOT be redundant.
- NOT use the phrases "image of ..." or "graphic of ..." to describe the image.



Can be presented two ways

- In the **alt attribute** of the img element.
``
- In the **context** or surroundings of the image itself.



```
<a href="minivans.html">  
    <br>  
    Minivans  
</a>
```




```
<a href="minivans.html">  
    <br>  
    Minivans  
</a>
```

Empty vs. Missing alt attribute

- Empty alt (`alt=""`) definitively states:
 - The image is decorative, or
 - Alternative text is nearby
- Missing alt is ambiguous
 - Screen readers will probably treat it the same as `alt=""`.
- Modern content tools (e.g., WordPress and Word) should have a way to identify decorative images.

Images that are the only thing
within a link must **ALWAYS**
have alternative text

...and image map hot-spots and image buttons too.

Image Link



Text Link

```
<a href="minivans.html">  
</a>  
<br>  
<a href="minivans.html">Minivans</a>
```

Download the Employment Application



```
<a href="app.pdf">Download the  
Employment Application  
</a>
```

Download the Employment Application

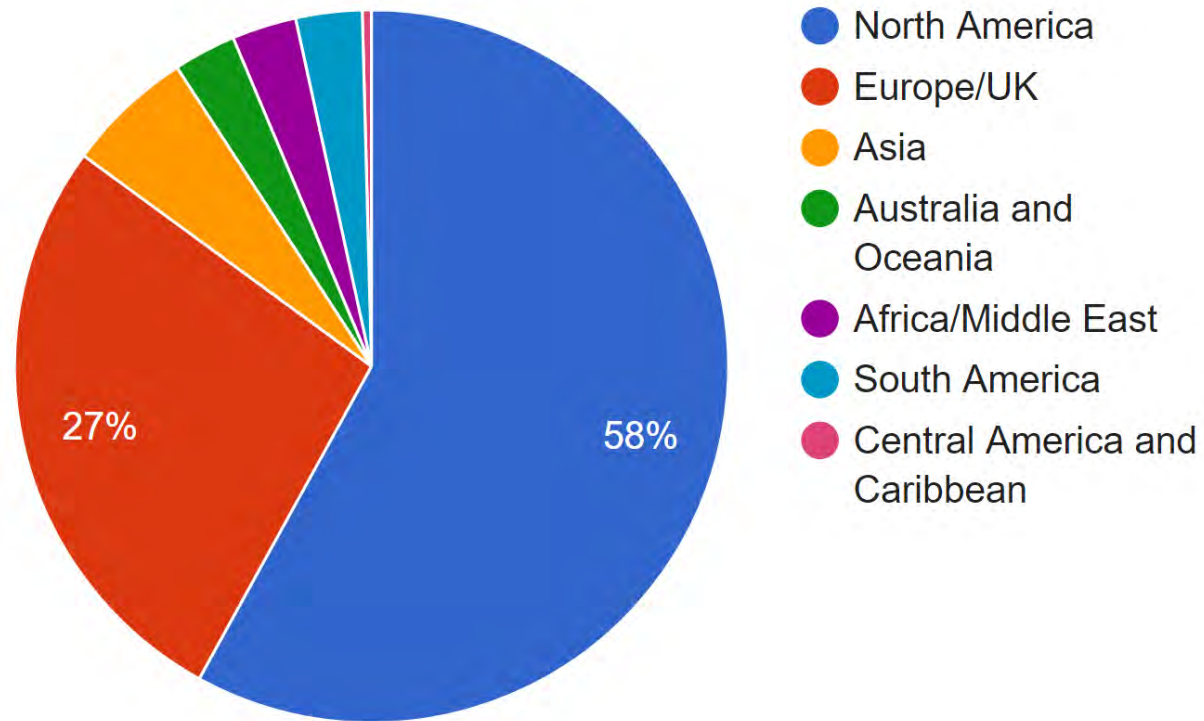


```
<a href="app.pdf">Download the  
Employment Application  
</a>
```



alt="students studying
under a tree"???

Complex Images



Complex Images

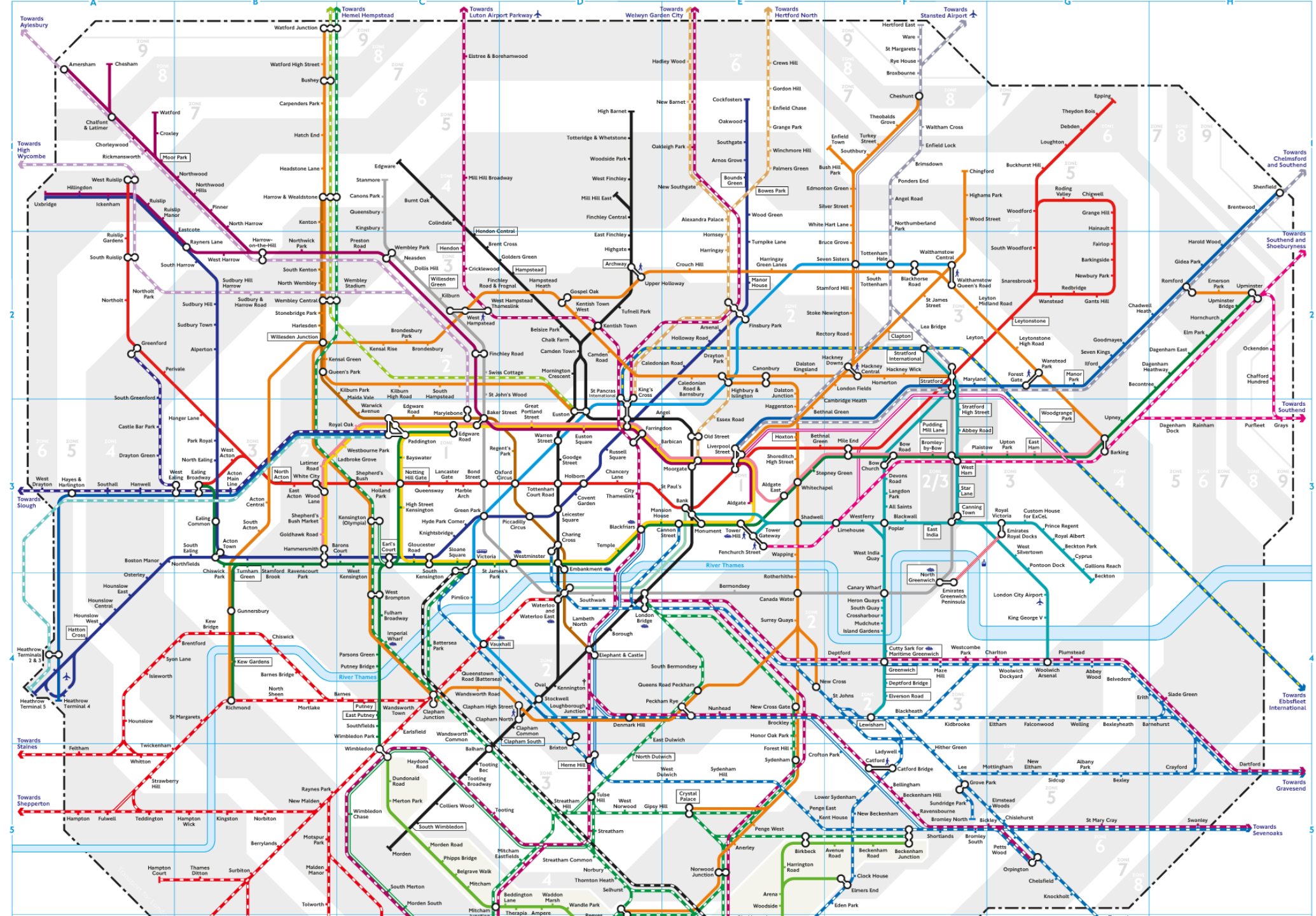
- Provide the alternative in context *OR*
- Provide a link to a page that contains the longer description
- Avoid `longdesc`—support is poor, and it has been dropped from HTML.
- The main image should still have some alt text!

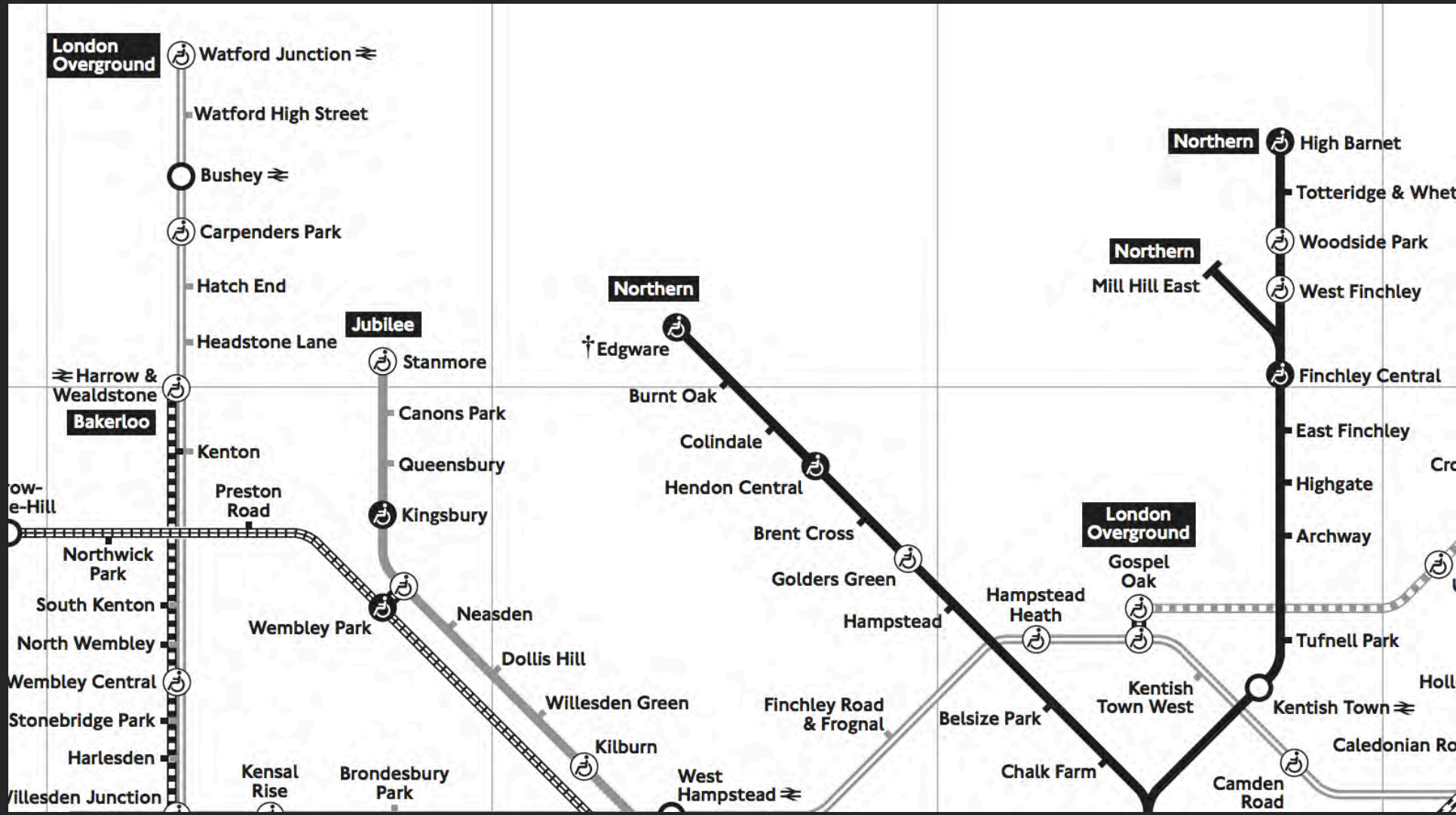
London's Rail & Tube services

Key to lines and symbols

- Bakerloo
 - Central
 - Circle
 - District
 - Hammersmith & City
 - Jubilee
 - Metropolitan
 - Northern
 - Piccadilly
 - Victoria
 - Waterloo & City
 - DLR
 - London Overground
 - London Trams
 - TfL Rail
 - Emirates Air Line cable car
- limited service
- Chiltern Railways
 - c2c
 - Gatwick Express
 - Great Northern
 - Great Western Railway
 - Greater Anglia
 - Heathrow Express
 - Southern
 - Southeastern
 - Southeastern high speed
 - South Western Railway
 - Thameslink
 - West Midlands Trains
- peak hours only
- peak hours or limited service
- peak hours only
- peak hours only

- London Trams fare zone
- Stratford
- Station in both fare zones
- Interchange stations
- Street level transfer between stations
- Airport
- Riverboat services
- Victoria Coach Station








Plan a journey

Plan a journey

Heathrow Airport Terminal 4 Paddington Leaving: now [change time](#) >[Hide preferences](#) <

Plan my journey

My Journeys

Recents

Heathrow Airport Terminal 4 to
Piccadilly Circus, London, UK > Add favourites[Turn off / clear](#)

Public transport

 Cycling Walking

Travel by

[select all](#) | [deselect all](#)

Bus



National Rail



London Overground



River Bus



Emirates Air Line



Tube



DLR



TfL Rail



Tram



Coach



Show me



The fastest routes



Routes with fewest changes



Routes with least walking



Access options

No accessibility requirement



Use escalators, not stairs



Use stairs, not escalators



Step-free to platform only



Full step-free access



Evaluate alternative text

Photosensitive Epilepsy



Caution with flashing/strobing content

- 3 times per second or greater
- Size, brightness, and red threshold
- Annoying rule

Cognitive/Learning Disabilities

- Largest disability group. Larger than all the others put together.
- Because users vary greatly, we will focus on general recommendations.

Accessible content is more “Understandable”

- Captions
- Contrast
- Color use
- Headings
- Page title
- Lists
- Descriptive links
- Predictable forms with clear labels
- Simple tables
- Alternative text (possibly)
- Alternatives to complex images/maps

Make Content “Understandable”

- Be careful with movement and other distractions
- Focus on important content
- Be consistent
- Plain language
 - “readable to users with a lower secondary reading level” (WCAG AAA)
 - Write for your audience

There must be a mechanism for the user to
pause, stop, or hide...

- Moving, blinking, or scrolling information that:
 1. starts automatically,
 2. lasts more than five seconds,
 3. *and* is presented in parallel with other content.
- Common failures:
 - Carousels
 - Auto-playing media
 - Animating ads

Legible Text

- Small text negatively impacts readability
 - WCAG has no text size guidelines
- Avoid long line lengths
 - Consider line height/spacing
- Choose legible fonts
 - Web fonts and embedded fonts are OK

WCAG 2.1 - Text Spacing (Level AA)

“No loss of content or functionality occurs” when the user increases spacing between:

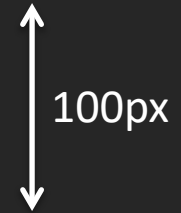
- Paragraphs: $2 \times$ font size
- Lines: $1.5 \times$ font size
- Words: 16% font size
- Letters: 12% font size

Evaluate text spacing

Add text spacing bookmarklet

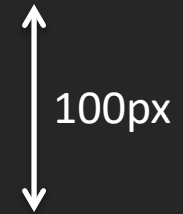
Avoid CSS height

I am some text in a div
that has a pixel height



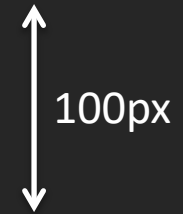
Avoid CSS height

I am some text in a
div that has a pixel
height



Use CSS `min-height`

I am some text in a
div that has a pixel
min-height



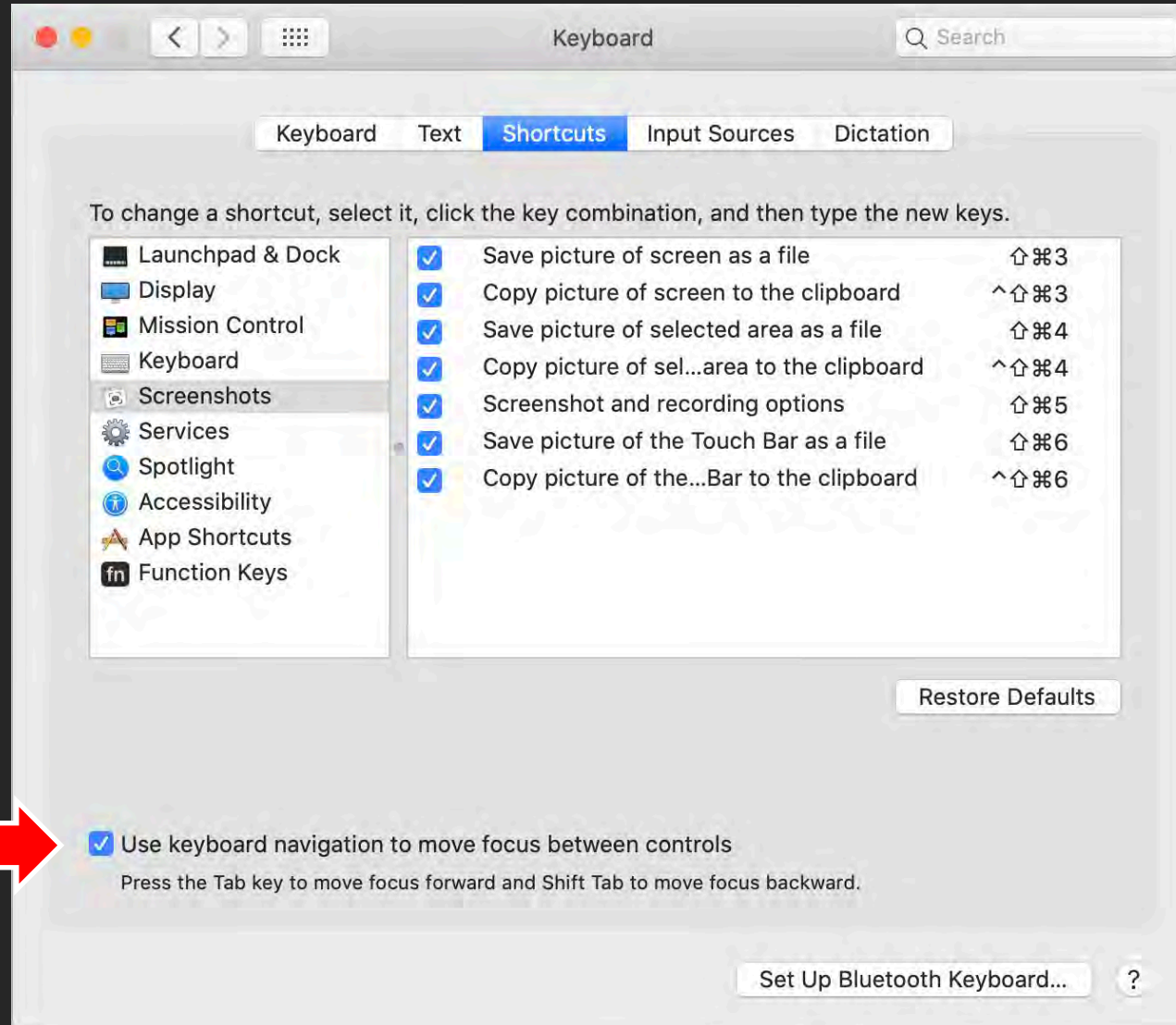
Motor disabilities

- Content and functionality should be accessible to mouse users and keyboard users
- Lack of fine motor control
- Repetition and fatigue
- Control over timing or moving elements

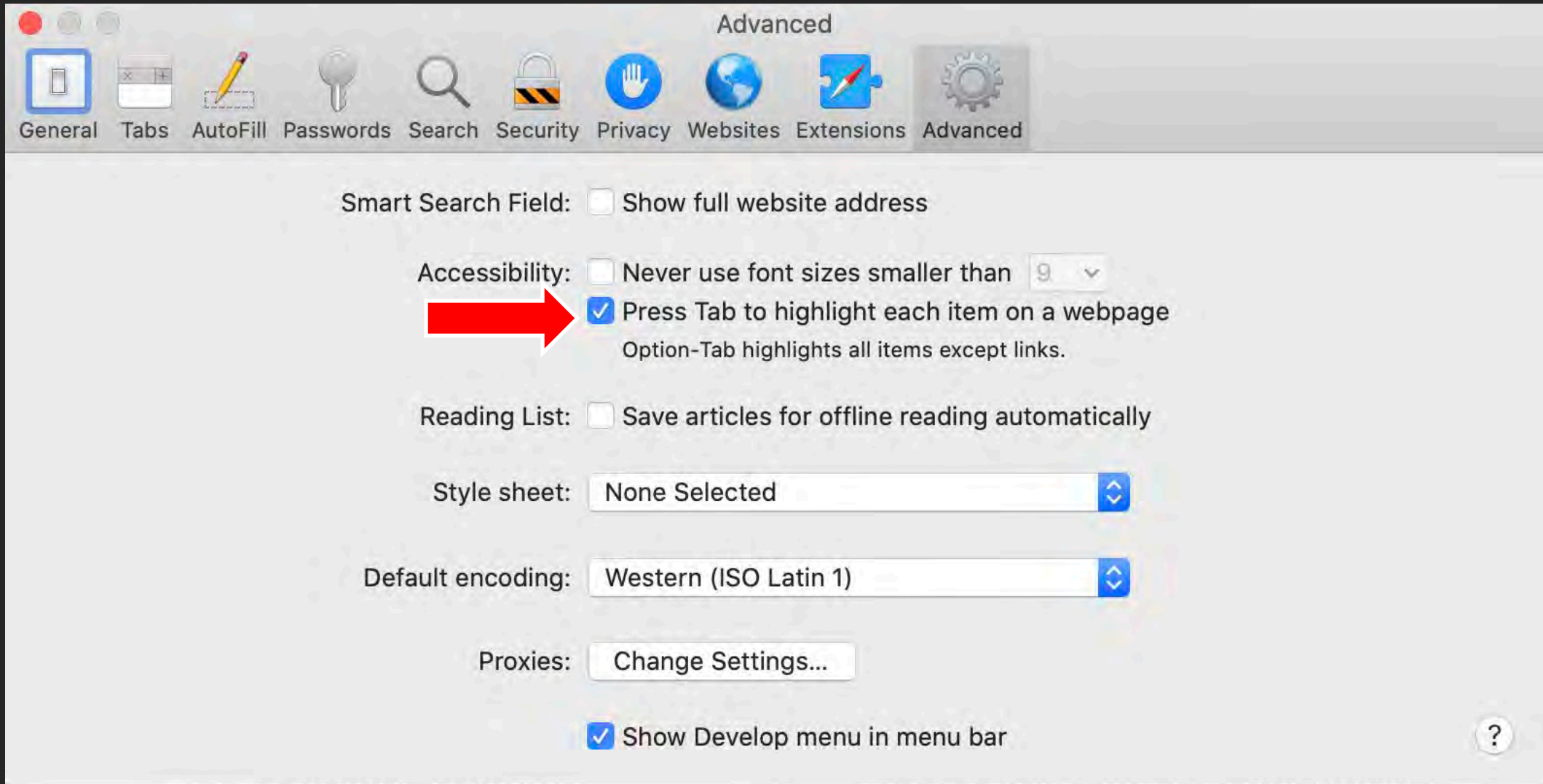
Standard keystrokes

- Navigate links, form controls, etc.: Tab, Shift + Tab
- Link: Enter
- Button: Enter or Spacebar
- Checkbox: Spacebar
- Radio buttons: ↑/↓ and ←/→
- Select menu: ↑/↓, Letters, Spacebar to expand
- Close: Esc
- Spacebar: Scrolls the page unless focused on a control
- Other widgets: use standard keyboard interaction patterns

Some tweaking required on Mac

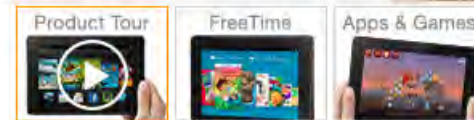


Safari Keyboard Settings



kindle fire HD

Our most affordable Kindle Fire, now in HD



See 1 customer image
Share your own customer images

learn more 17 of 17 x

\$139.00

Prime
Exclusive digital benefits with Amazon Prime

Storage Size: 8 GB

8 GB

16 GB

Offer Type: With Special Offers

With Special Offers

Without Special Offers

Special offers and sponsored screensavers display on the Kindle Fire lock screen. [Learn more](#)

In Stock.

Ships from and sold by **Amazon Digital Services**.
Important information about using outside the U.S.

Want it tomorrow, Feb. 19? Order within **7 hrs 50 mins** and choose **One-Day Shipping** at checkout. [Details](#)

We want you to know...

[Learn more](#) about design decisions and feature changes to help make an informed purchase

Our most affordable Kindle Fire—now with a stunning HD display, faster processor, and longer battery life

- Experience movies, TV, and games, and more on a stunning HD display (216 ppi / 1280x800)
- Fast 1.5GHz dual-core processor—apps launch quickly, games and videos play smoothly
- Create profiles and set time limits for children with Kindle FreeTime. Easy-to-use parental controls let everyone enjoy, worry-free
- Ultra-fast web browsing over built-in Wi-Fi, plus updated e-mail and calendar support for Gmail, Outlook, and more
- Instant access to over 100,000 apps and games in the Amazon Appstore, including a new paid app for free every day
- **Prime** In addition to Free Two-Day Shipping, Prime members can stream tens of thousands of Prime Instant Video titles at no additional cost, over half of which can be downloaded to the latest generation of Kindle Fire tablets. [Learn more](#)

Meaningful link text

- [Click here](#)
- [Click here](#) to log in
- [Click here to log in](#)
- [Log in](#)

Other principles

- Ensure links & buttons have descriptive text (or alternative text). They must never be empty.
- Ensure adequate spacing between clickable elements
- Make sure clickable items look clickable
(and vice versa)



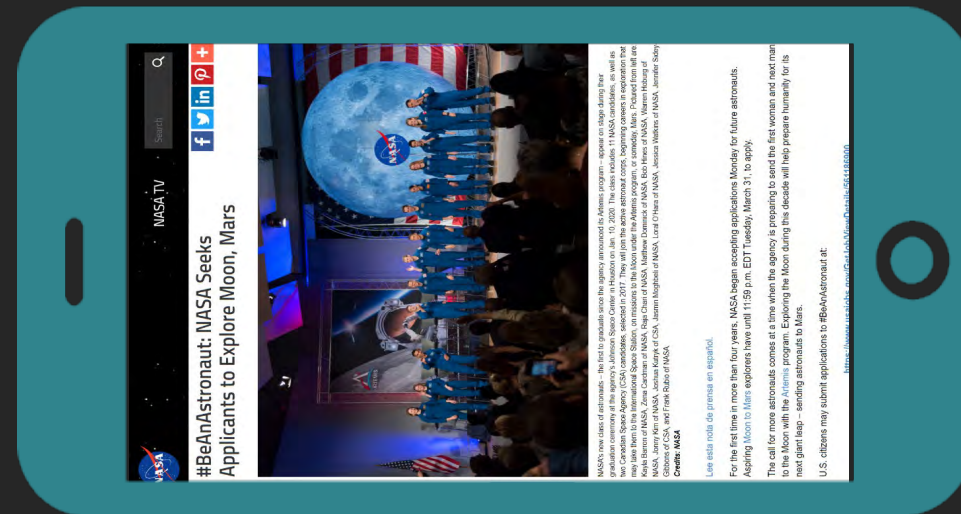
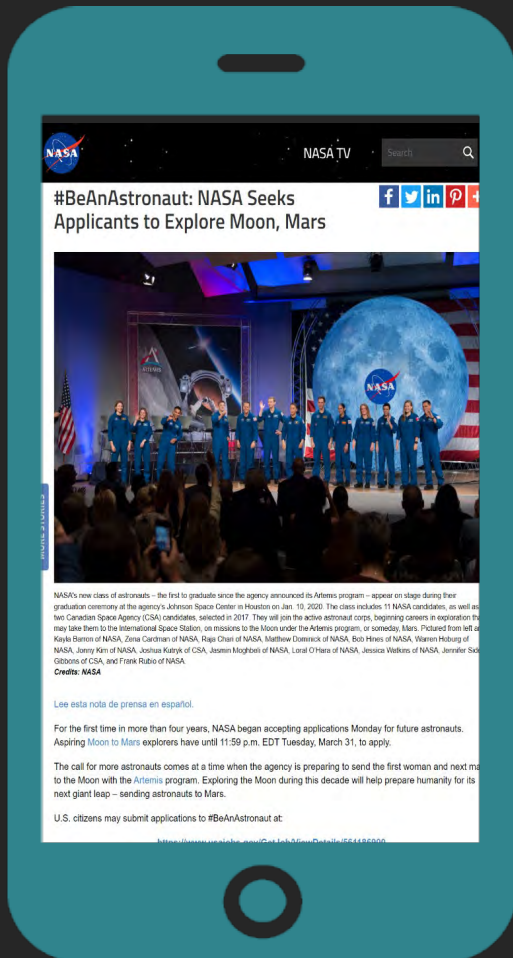
!= Touch Only

Evaluate keyboard accessibility

- Navigate the site using only the keyboard (Tab, Shift + Tab, Enter, Space, arrow keys, Esc). Is all functionality available?
- Is navigation order logical?
- Is a visible keyboard focus indicator/outline present?
- How about responsive layouts?

WCAG 2.1 - Mobile

1.3.4 (AA) – Don't lock orientation



2.1.4 (A) – Disable or remap single key shortcuts

**Keyboard
shortcuts:**

[Learn more](#)



Keyboard shortcuts off



Keyboard shortcuts on

New to 2.1 – Guideline 2.5 Input Modalities

- 2.5.1 (A) – Don't rely on multipoint or path-based gestures (e.g., swipe to navigate)
 - WCAG 2.2 proposes “dragging” functionality have single click/touch alternative
- 2.5.2 (A) – Pointer functionality can be canceled (e.g., no down-event to trigger)
- 2.5.3 (A) – “Label in Name”
- 2.5.4 (A) – Don't rely on device motion (e.g., shake, tilt, or pan)
- 2.5.5 (AAA) – $\geq 44 \times 44$ -pixel clickable targets
- 2.5.6 (AAA) – Don't restrict input type (e.g., touch-only)

WCAG 2 “Label” and “Name”

WCAG requires an accessible “label” (2.4.6, 3.3.2) and “name” (1.1.1)

- The **Label** is visually presented
- The **Name** is presented to assistive technology
 - Also called “accessible name”
 - May be visually hidden

What is the WCAG “Label”?



What is the WCAG “Name”?



```
<a href="page2.php"...>  
  <img alt="Next"...>  
</a>
```

“Label” and “Name” are often the same

Code	Label	Name
<code>Log in</code>	<u>Log in</u>	“Log in”
<code><label>First Name: <input type=“text”> </label></code>	First Name: <input type="text"/>	“First Name:”
<code><button>Activate </button></code>	Activate	“Activate”

2.5.3 – Label in Name (Level A)

“For user interface components with labels that include text or images of text, the name contains the text presented.”

Label not in Name – Fails 2.5.3



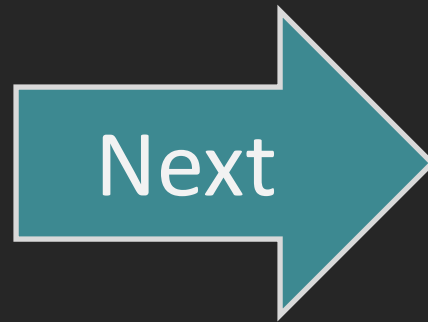
```
<a href="page2.php"...>  
    <img alt="Continue"...>  
</a>
```

Label *in* Name – Passes 2.5.3



```
<a href="page2.php"...>  
    <img alt="Next Page"...>  
</a>
```

Better solution



```
<a href="page2.php"...>  
    <img alt="Next"...>  
</a>
```

Two principles of accessible names

1. An element can only have one accessible name.
2. To be sure of the name, you must test with a screen reader or inspect the HTML.

Hiding Content

- Hide from everyone:
 - `display:none`
 - `visibility:hidden`
 - HTML `hidden` attribute
- Ensure hidden elements are not navigable
 - Hide them with `display:none` or ensure they become visible when they receive focus
- Avoid 0 pixels, same color as background, etc.

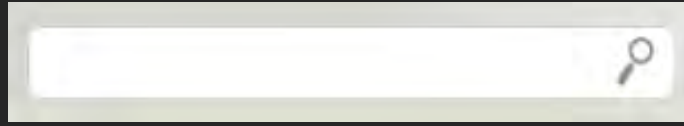
Visually Hiding Content

- Position off-screen left with CSS for screen readers

```
.sr-only {  
    position: absolute;  
    left: -10000px;  
    top: auto;  
    width: 1px;  
    height: 1px;  
    overflow: hidden;  
}
```

Can also use CSS clip and/or clip-path

Hidden <label>



```
<label class="sr-only" for="s">  
  Search Terms</label>  
<input type="text" id="s">
```

Do not remove the keyboard focus
indicators from links

Avoid

```
a {outline:0;}
```

or

```
a {outline:none;}
```

WCAG AA Failure

“Skip” links

```
<a href="#maincontent">Skip to  
main content</a>
```

...

```
<main id="maincontent">...
```

WCAG 2.4.1 (Level A): A mechanism is available to bypass blocks of content that are repeated on multiple Web pages.

Hidden “Skip” links

```
a#skip {  
    position:absolute;  
    left:-10000px;  
    top:auto;  
    width:1px;  
    height:1px;  
    overflow:hidden;  
}
```

```
a#skip:focus {  
    position:static;  
    width:auto;  
    height:auto;  
}
```

Don't use `display:none` on the link

Rule #1 of ARIA Use

If you can use HTML, then do so.

Rule #2

Do not change native semantics,
unless you really have to.

```
<div role="navigation">  
  <ul>...</ul>  
</div>
```

instead of

```
<ul role="navigation">
```

ARIA does not change functionality; it only changes the roles/properties presented to screen reader users

Rule #3

All interactive ARIA controls must be usable with the keyboard.

Design Patterns

WAI ARIA Authoring Practices

Rule #4

Do not use

`role="presentation"` or
`aria-hidden="true"` on visible,
focusable elements.

Rule #5

All interactive elements must have an
accessible name

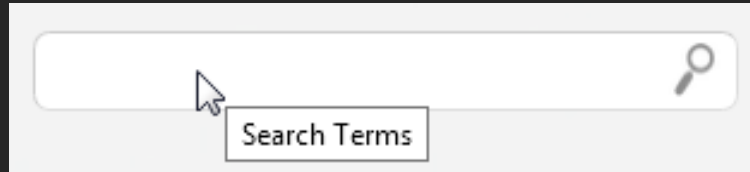
Accessible Name Computation

Form <label>

First Name:

```
<label for="fname">First Name:</label>  
<input type="text" id="fname"...>
```

title attribute (if no <label>)

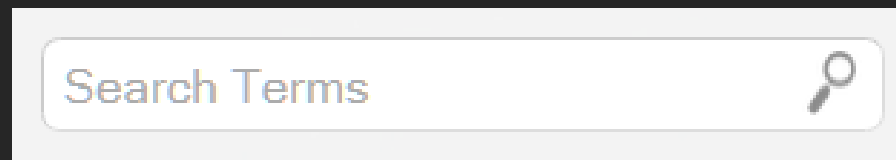


```
<input title="Search Terms"...>
```

title attribute

- Advisory information only
- Should be read for:
 - Form controls missing labels
 - Frames and iframes (iframe title is optional)
 - `<abbr>/<acronym>...usually`
 - Typically best to avoid `<abbr>` and `<acronym>`
- May or may not be read in other places (links, images, etc.)
- Not accessible to keyboard users, touch screen users, etc.

placeholder attribute (if no title or <label>)

A rectangular search input field with a light gray border and a white background. Inside the field, the text "Search Terms" is displayed in a light gray font. To the right of the text is a small, dark gray magnifying glass icon.

```
<input placeholder="Search Terms"...>
```

Placeholder is read by a screen reader (accessible name),
but is not a suitable “label”

name@example.com



password

confirm password

first name

last name

birthday

< Add debit or credit card

First name

Last name



Card number

Expires

MM/YY

CSC

3 digits



Billing address

[Add](#)

< Add debit or credit card

Smith

John



Card number



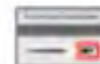
Expires

CSC

1/22




3 digits



Enter a valid expiration
date

Add

`<label>` 
First Name:

```
<label for="fname">First name:</label>
```

```
<input type="text" id="fname">
```

1:1 relationship between `<label>` and a form control.

First Name:

 `aria-labelledby`

```
<span id="fnamelabel">First name:</span>
```

```
<input type="text"  
aria-labelledby="fnamelabel">
```




```
<label for="fname" id="fnamelabel">  
First name:</label>
```

```
<input type="text" id="fname"  
aria-labelledby="fnamelabel">
```

Unnecessary markup (Rule #1 of ARIA),
but label will only be read once.

One label for multiple controls

`id="name1label"`



Name	Age	Weight
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>

```
<input type="text" name="name1"  
aria-labelledby="name1label">
```


Multiple labels for multiple controls

`id="officenum"`

`id="cyndi"`

Name	Office Number	Phone
Cyndi	<input type="text"/>	<input type="text"/>
Jared	<input type="text"/>	<input type="text"/>
Jonathan	<input type="text"/>	<input type="text"/>

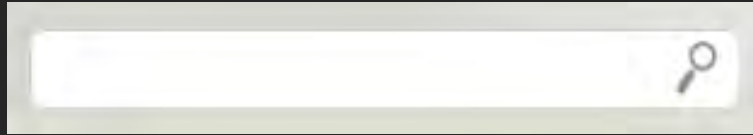
```
<input type="text" name="office1"
aria-labelledby="cyndi officenum">
```

Form values as labels for other inputs

Name	Office Number	Phone
<input type="text" value="Cyndi"/>	<input type="text"/>	<input type="text"/>
<input type="text" value="Jared"/>	<input type="text"/>	<input type="text"/>
<input type="text" value="Jonathan"/>	<input type="text"/>	<input type="text"/>

```
<input type="text" name="office1"  
aria-labelledby="name1 officenum">
```

aria-label



```
<input aria-label="Search Terms"...>
```

ARIA *labels* override default accessible *names*

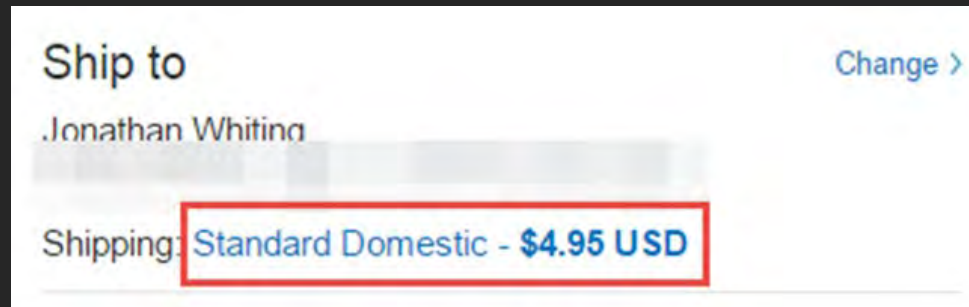
WCAG Label → First Name:

Accessible Name

```
<label for="fname">First Name:</label>  
<input type="text" id="fname"...  
aria-label="Your Name">
```

The diagram illustrates the difference between WCAG labels and accessible names. A green arrow points from 'WCAG Label' to the text 'First Name:' in the UI. Another green arrow points from 'Accessible Name' to the **aria-label** attribute in the HTML code. The HTML code shows a label for an input field, but the accessible name is overridden by the **aria-label** attribute.

...and not just in forms



```
<a... aria-label="Change shipping  
method">Standard Domestic - $4.95 USD</a>
```

Also applies to alternative text, button text, etc.

 cannot have an accessible name

[Download the Employment Application](#) 

```
<a href="app.pdf">Download the Employment Application  
<span class="PDFlink" aria-label="PDF"></span>  
</a>
```

Neither can <div>, <p>, <i>, etc.

Three possible solutions

Download the Employment Application

1. `Download the Employment Application(PDF)`
2. `Download the Employment Application`
3. `Download the Employment Application`

CSS generated content



```
<i class="pdf"></i>
```

```
.pdf::after {  
  font-family: FontAwesome;  
  content: "\f1c1";  
}
```

CSS generated content will be read in modern screen readers that understand the generated content.

CSS generated content



```
<i class="pdf" role="img" aria-label="PDF"></i>
```

or

```
<button aria-label="PDF"><i class="pdf"></i></button>
```

Scalable Vector Graphics (SVG)

1. ``
2. `<svg role="img" aria-labelledby="title">
 <title id="title">Sales increased 10%
 from 2010 to 2015</title>
 ...</svg>`
3. `<svg role="img" aria-label="Sales increased 10%
 from 2010 to 2015">
 ...</svg>`

Use `role="presentation"` if the SVG is decorative (or `alt=""` for ``).

aria-describedby

Username:

Must be 8-15 characters

```
<label for="user">Username:</label>
```

```
<input type="text" id="user"
```

```
aria-describedby="usernameetails">
```

```
<p id="usernameetails">Must be 8-15 characters</p>
```

Evaluate accessible name and description with Chrome DevTools

ARIA and HTML labels and descriptions

- Are read as a stream of text. Users cannot easily navigate or explore the referenced content
 - Semantics (lists, links, etc.) are removed from referenced content.
- aria-label is not automatically translated (e.g., Google Translate)

Username:

Must:

- *be at least 14 characters in length*
- *contain at least 4 vowels*
- *contain one medieval rune of alien origin*

Username:

Must meet [these requirements](#)

Hidden ARIA and HTML labels and descriptions

- `<label>` hidden with CSS `display:none` or `hidden` **will not** be read by screen readers.
- Elements hidden with `display:none` or `hidden`, but referenced by `aria-labelledby` or `aria-describedby` **WILL** be read.

```
<label for="user">Username:</label>
```

```
<input type="text" id="user"  
aria-describedby="usernameerror">
```

```
<p id="usernameerror"  
style="display:none">This username is already  
taken. Please try again.</p>
```

aria-required

Username:*

```
<label for="username">Username:</label>*  
<input type="text" id="username"  
aria-required="true">
```

A screen reader indicates the field is required...
and that's all.

HTML required

Username: *

 Please fill out this field.

```
<label for="username">Username:</label>*  
<input type="text" id="username" required>
```

Semantics are the same, but validation messaging is provided

Pay with debit or credit card

We don't share your financial details with the merchant.

United States



Card number

Expires

MM



YY



CSC

3 digits



First name

Last name

Email



Mobile



Phone number

Billing address

Street address

Apt., ste., bldg., etc. (optional)

City

State



ZIP

aria-invalid

Password:

```
<label for="password">Password:</label>  
<input type="password" id="password"  
aria-invalid="true"...>
```

A screen reader indicates the field is invalid or broken...
and that's all.

Use ARIA attributes to control styling:

```
[aria-invalid=true] {  
  border: 2px solid red;  
  background-image: url("error.png");  
}
```

Form Validation and Error Recovery

- Avoid
 - Collecting unnecessary information
 - Forcing users to provide formatting unless necessary
- Identify
 - Let the users know there is an error
 - Direct users to errors
 - Describe the error
- Suggest
 - How to fix it
- Prevent
 - Important changes (e.g., Financial) are reversible/checked/confirmed
- WCAG 4.1.3 requires “status messages” to be accessible.

Form Validation Types

- Alert, then focus
- Errors at the top
- Inline errors

Alert, then focus

First Name:

Last Name:

Email Address:

webaim.org says

First Name is required.

OK

Errors at the top

There was a problem with the form.

- [Please enter Your Name.](#)
- [Please enter Your E-mail Address.](#)

Inline Errors

Username

spiderman

Username not available

Password

.....

Must have more than 8 characters
Must have at least one number
Must have upper & lowercase letters

Evaluate form error feedback

Use links/buttons appropriately

- Links open a new page or jump to another location within the existing page
- Buttons submit form data or perform an in-page function

Ensure Interactive Elements are Links or Form Controls

Tabindex of 1 or greater

- `tabindex="1+"` defines an explicit tab order
- Never use positive tabindex values!
- If the default tab order is not logical, fix your source code order.

TabIndex of 0 or -1

- `tabindex="0"` allows things besides links and form controls to receive keyboard focus.
- `tabindex="-1"` allows things besides links and form controls to receive programmatic focus (by scripting, links, etc.)

```
<div onclick="submitForm()">  
  Search</div>
```

```
<div onclick="submitForm()" "  
  tabindex="0">  
  Search</div>
```

Check for Enter (13) and Space (32) key presses

```
if (event.keyCode==13 || event.keyCode==32)
{
    doStuff();
}
```

```
function allYClick(event) {
    if(event.type === 'click') {
        return true;
    }
    else if(event.type === 'keypress') {
        var code = event.charCode || event.keyCode;
        if(code === 32) {
            event.preventDefault(); // don't scroll the page
        }
        if((code === 32) || (code === 13)) {
            return true;
        }
    }
    else {
        return false;
    }
}

$('#fake-button').on('click keypress', function(event) {
    if(allYClick(event) === true) {
        // do magic javascript stuff
    }
});
```


Just Use A Button

```
<div onclick="submitForm()" "  
  tabindex="0">  
  Search</div>
```

```
<a href="#" onclick="submitForm()">  
  Search</a>
```

```
<a href="#" onclick="submitForm()"
    role="button">
    Search</a>
```

Just Use A Button

```
<button onclick="submitForm()">  
  Search</button>
```

`tabindex="-1"`

- Allows non-focusable elements to receive programmatic focus (by scripting, links, etc.)
- Necessary for focusing dialog boxes, error messages, etc.
- Also used to manage keyboard focus in some widgets (e.g., a tree menu or tab panel)
- **WARNING:** This removes the element from the default tab order.

Tab Panels

The behavior of the Tab Panels on the AHA Workspace are the correct implementation for tabs

UAT

SUPPLIER

SOURCING

REPORT

Documents

SUPPLIER 362

FORM 4

SCORECARD 18

ACTION PLAN 1

All 362

Registered 154

Invited 101

Approved 96

Rejected 6

Identified 3

Disqualified 1

Waitlisted 1

Legal Company Name

DUNS Number

Organization entity

Created By

Primary Contact Name

Primary Contact Email

Search

CHRISTUS St.Vincent St. Michaels F

AirCon Savers Inc.

Technology Partners LLC

Mr Clean Inc

Technology Partners Corp

Prospective Inc

Full Board Inc

Will's Lawn Care

WeWork Hard Corp

test

Corporate Services + (2) more

Corporate Services + (2) more

Business Technology + (2) more

Corporate Services + (2) more

Corporate Services + (2) more

Corporate Services + (2) more

Corporate Services + (2) more

Corporate Services + (2) more

Corporate Services + (2) more

Advocacy + (2) more

Greg Setser

Greg Setser

Sally Smart

Greg Setser

Greg Setser

Greg Setser

Greg Setser

Greg Setser

Greg Setser

AHA Admin

Tiffany Taylor

Steve Cooley

Gary Jones

Daniel Cleaner

Sally Jones

Pete Prospect

Phillip Board

Will Weeder

Jen Brown

abhinandan patil

ahageptest+tiffstreats@

ahageptest+airconsaver

ahageptest+garyjones@

ahageptest+mrclean@g

ahageptest+techpartne

ahageptest+prospective

ahageptest+fullboard@

ahageptest+willlawncar

ahageptest+weworkhan

abhinandan.patil@gep.c

Rows Per Page: 10

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Tab

Panel

- Additional resources:
- <https://www.youtube.com/watch?v=OOAsU9SUooA>
 - <https://www.w3.org/wiki/TabPanel>

`role="dialog"`
w/ `aria-labelledby`

`tabindex="-1"` then set focus
to dialog (or focus a control or
element inside the dialog)

Maintains keyboard
focus if modal

Button with
`aria-haspopup="dialog"`



Returns
focus when
dismissed

Closes with
ESC key

Dialog focus management

- Currently requires scripted focus detection and re-focus, or `tabindex="-1"` and `aria-hidden`

- Future:

```
<div inert>  
  page content  
</div>  
<dialog modal>  
  dialog content  
</dialog>
```

ARIA Roles

- Avoid duplicating default roles:
`<button role="button">`
- ARIA roles override HTML native roles, but do NOT change functionality.
- Be very careful! You can destroy accessibility by adding one attribute.



`<input type="checkbox" role="radio">`

ARIA states and properties

- Elements can have more than one `aria-` attribute.
- ARIA states and properties should not override HTML properties if there's a conflict.
- Be very careful!



```
<input type="checkbox" aria-checked="false">
```

Differentiating regions/landmarks

```
<div role="navigation" aria-label="Main navigation">  
  <nav aria-label="Page navigation">
```

Generic regions/landmarks

```
<div role="region" aria-labelledby="filterheading">  
  <h2 id="filterheading">Filters</h2>  
  ...  
</div>
```

Generic regions must have an accessible name.

More ARIA

```
<button aria-expanded="false">Details</button>  
webaim.org/presentations/2021/examples/disclosure.htm
```

```
<button aria-pressed="true">Toggle Highlights</button>  
webaim.org/presentations/2021/examples/ariapressed.htm
```

```
<a aria-current="page | step | location | date | time | true">
```

Windows screen reader modes

- Reading / Virtual Cursor / Document
- Forms / Application

The current mode determines whether the screen reader or the browser handles most keyboard commands

Some ARIA roles (tree, slider, grid, tabpanel, menu, etc.) trigger forms/application mode.

You must ensure the user is aware and that the proper keyboard interactions are implemented.

Test with AND without a Windows screen reader.

Navigation menus are not application menus!

Navigation tabs (links) are not application tabs!

Data tables are not grids!

etc.

These trigger application mode and thus disable standard keyboard navigation.

Live Regions / Alerts

`aria-live=assertive` - read now

`aria-live=polite` - read at a pause

`aria-live=off` - read when the user encounters it

`aria-busy`

`aria-atomic` - read the entire region (true) or only what has changed (false)

`aria-relevant` - If `aria-atomic=false`, read additions, removals, text, or all

`aria-controls`

Special live regions: `alert` (important), `status` (not important), `timer` (always changing), `marquee` (same as `aria-live="polite"`), and `log` (updates added to the bottom)

Live Regions / Alerts

- Element must be present in the DOM when the page loads, then updated dynamically.
- Some highly dynamic content updates simply cannot be made accessible using ARIA
- Often best to have one messaging element, rather than multiple live regions
- Give users control over content updates

Single Page Applications

- Ensure good document structure
 - Use structural elements (`<main>` or `role="region"`)
- Update page titles to reflect content/state
- Test keyboard navigation
- Ensure only visible elements are navigable
- Set `focus()` when necessary
 - `$('#main').attr("tabIndex", -1).focus();`
- Use live regions for messaging, if necessary

ARIA

With great power comes great responsibility!

Thank You!

webaim.org

- E-mail discussion list
- Monthly newsletter
- Tutorials, articles, and resources
- Blog

