

Software Accessibility Guidelines and Testing

05-499/899 Fall 2024

Celebrating Accessibility

<https://cmu-05-499.github.io>

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Administrivia

- HW3 due Tuesday, Sept 24, 11:59pm.
- Please welcome Tara May from Aspiritech at noon.

An Oversimplification of the Web

- Content (Text, media)
- Adjectives (Markup, Tags, Properties, Attributes)
- Scripts (Generate and manipulate Content and Attributes)

W3C and WAI

World Wide Web Consortium (W3C)

- <https://www.w3.org/>

Develops International Standards for the World Wide Web Including the devices and services that enable the web as we know it

Web Accessibility Initiative

- <https://www.w3.org/WAI/>

Provides guidance and tools for making the web more accessible for people with disabilities

*Most of the guidelines focus on visual, audio, and keyboard access

However, ongoing work is being conducted to develop standards that incorporate a broader set of technologies and abilities.

Web Content Accessibility Guidelines (WCAG)

- WCAG is primarily intended for:
 - Web content developers (page authors, site designers, etc.)
 - Web authoring tool developers
 - Web accessibility evaluation tool developers
 - Others who want or need a standard for web accessibility, including for mobile accessibility
- <https://www.w3.org/WAI/standards-guidelines/wcag/>
- Guidelines are for static web pages.

W3C Accessibility Principles - POUR

- **P**erceivable
- **O**perable
- **U**nderstandable
- **R**obust

Perceivable

- Provide **text alternatives** for non-text content.
- Provide **captions and other alternatives** for multimedia.
- Create content that can be **presented in different ways**, including by assistive technologies, without losing meaning.
- Make it easier for users to **see and hear content**.

Operable

- Make all functionality available from a **keyboard**.
- Give users **enough time** to read and use content.
- Do not use content that causes **seizures** or physical reactions.
- Help users **navigate and find content**.
- Make it easier to use **inputs other than keyboard**.

Understandable

- Make text **readable and understandable**.
- Make content appear and operate in **predictable** ways.
- Help users **avoid and correct mistakes**.

Robust

- Maximize **compatibility** with current and future user tools.

How do you conform to WCAG?

- Success criteria: A (lowest), AA, AAA (highest)
- Check them all out here!
 - <https://www.w3.org/WAI/WCAG22/quickref/?versions=2.2&levels=aaa>
- Question? Must every site conform to AAA WCAG?

WAI-ARIA

- WAI-ARIA, the Accessible Rich Internet Applications Suite, ... helps screen readers handle dynamic content and advanced user interface controls developed with HTML, JavaScript, and related technologies.
 - From [WAI-ARIA Overview | Web Accessibility Initiative \(WAI\) | W3C](#)
- Roles
 - Document roles: banner, contentinfo, form, main, navigation, search
 - Widget roles: alert, button, checkbox, link, menuitem, tab, tabpanel
- Properties
 - Drag and drop, Live Region, Relationship, Widget

The first rule of ARIA: Don't write ARIA.

Use native HTML at all times.

Use web frameworks that already have ARIA support.

Discussion of Readings

- Discussion Leader: Eryn Ma
 1. A Primer to Web Accessibility for Designers | by Nicholas Kramer
 2. WCAG 2.2 Standard
 3. WAI-ARIA Standard
 4. Authoring Tool Accessibility Guidelines (ATAG) 2.0 Standard

WCAG 3.0 is coming!

- <https://www.w3.org/TR/wcag-3.0/>
- Supersedes but does not replace WCAG 2.2
- Unifies all prior standards into a single document.
 - Applies to content on desktops, laptops, tablets, mobile devices, wearables, web of things.
 - Static, dynamic, interactive, and streaming content.
 - Visual and audible media, virtual and augmented reality
 - Browsers, CMSs, authoring tools, testing tools

Aspiritech

- <https://aspiritech.org>
- CEO: Tara May
- Aspiritech is a mission-driven social enterprise that employs autistic adults in tech services. One of our primary business lines is accessibility. We work with clients ranging from Fortune 500 companies to small start-ups to help them test their websites and software to ensure accessibility for disabled users. We aim for accessibility to go well beyond legal compliance to true usability for all. We believe access to digital information in 2024 is access to the world and a fundamental human right.
- The students who join us on this project will work with us to help both external clients and internal products be truly accessible to all.

Participation Activity

- Pair up with a neighbor and write your names on a piece of paper.
- Recall the WCAG POUR principles.
- For each lettered issue, invent a design that meets WCAG principles.
 - A. Passwords may be difficult for people with impaired working memory.
 - B. Complex language may be difficult for people with language disabilities.
 - C. Metaphors or non-literal text may be difficult for people who prefer clear, literal language.
 - D. Percentages may be difficult for people with dyscalculia.
- Share your thoughts with the class.
- Turn in your paper at the end of class.

1. Perceivable

2. Operable

3. Understandable

4. Robust

Some Useful Links

- [World Wide Web Consortium \(W3C\)](#)
- [Web Accessibility Initiative \(WAI\) | W3C](#)
- [WebAIM: Web Accessibility In Mind](#)
- [The WebAIM Million - An annual accessibility analysis of the top 1,000,000 home pages](#)
- [WAVE Web Accessibility Evaluation Tool](#)
- [Testing with assistive technologies](#)