



CSCI-UA-4-005

Intro to Web Design + Computer Principles

Design + Accessibility

Professor Emily Zhao

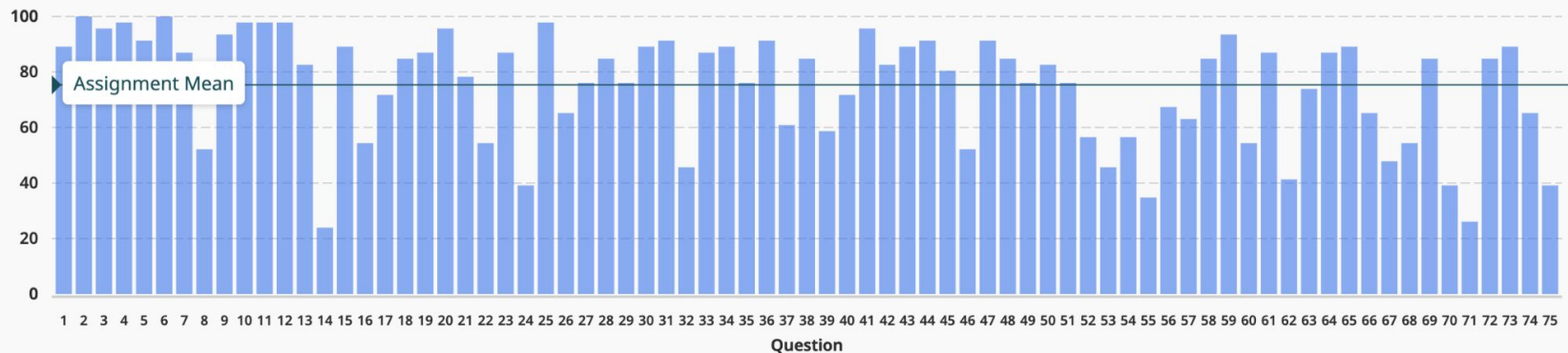
M/W 12:30PM – 1:45PM



Agenda

- Review Midterm
- Midterm Reflection
- Design + Accessibility

Midterm



Midterm Exam Version A 75.0 points

Reliability ?

0.87

Minimum

40.0%

Median

77.33%

Maximum

92.0%

Mean

75.01%

Std Dev ?

11.83%

Std Error ?

3.24

Midterm Curve

- There were 5 questions where $<50\%$ of the class marked the correct answer.
- I have removed these 5 questions from the denominator of the score.
- The exam is now out of 70 points instead of 75.
- The new average is 80%.

Midterm Reflection (Extra Credit)

- Where did you struggle on the midterm?
 - What kind of questions did you miss?
 - What topics are still confusing to you?
- What do you need to do in order to prepare for the final?
- What can I do to help?
- What general confusions remain for you?
- How has your opinion/feeling about programming changed or remained the same since the beginning of class?
- Is there anything else you'd like to share with me about your experience in the class so far or anything that you think is important for me to know about you?

Digital Accessibility

Digital Accessibility


Digital accessibility, commonly abbreviated a11y, ensures that websites and web applications are designed and developed to be used effectively by all individuals, including those with disabilities.

World Wide Web Consortium (W3C)

W3C is an international community where member organizations, a full-time staff, and the public work together to develop web standards. The organization is responsible for setting many of the standards and guidelines that make the World Wide Web function, including HTML, CSS, and various web accessibility standards.


Web Accessibility Initiative (WAI)

WAI is project by the World Wide Web Consortium (W3C) that develops guidelines and resources to make the web more accessible to people with disabilities. WAI produces the [Web Content Accessibility Guidelines \(WCAG\)](#) and other materials to help web developers and content creators ensure that their websites and web applications are accessible to all users, regardless of disabilities.



What percent of the world population self-identifies as having a disability?

- A) 1%
- B) 5%
- C) 15%
- D) 30%



**What percent of the world population
self-identifies as having a disability?**

- A) 1%
- B) 5%
- C) 15% → 1.3 billion people!
- D) 30%

Types of Impairment

Visual: blindness, low vision, color blindness

Mobility: paralysis, limited mobility

Hearing: deafness, varying degrees of hearing loss

Cognitive: dyslexia, ADHD, and autism

Seizure and vestibular disorders: photosensitivity, seizures triggered by visual stimuli (flashing lights, certain patterns, etc...)


Speech impairments: communication disorders, difficulty speaking due to conditions such as cerebral palsy, ALS, or congenital disabilities

Additional beneficiaries of accessibility

- Temporarily disabled
- Situationally disabled
- Mildly disabled
- Non-native speakers
- Older people with age-related diminishing senses
- Search engine optimization (SEO)

Everyday products that evolved via accessibility

- Telephones
- Typewriters/keyboards
- Email
- Kitchen utensils
- Easy-open pull-out drawers
- Automatic door openers
- Voice controls
- Eye gaze technology



When we look at accessibility as a design or coding challenge, not a begrudging requirement, innovation is the byproduct. For people without disabilities, such improvements can increase the overall user experience. For people with disabilities, these improvements are essential for equal access.



Core Principles of Web Accessibility (POUR)

Perceivable: content should be presented in a way that all users can perceive, including those with visual or hearing impairments

Operable: Users should be able to interact with and navigate the website through various input methods, such as keyboard or voice commands

Understandable: Information and user interface elements should be clear and easy to understand

Robust: Websites should be compatible with current and future technologies, ensuring long-term accessibility

Web Accessibility Testing + Tools

Content Structure

One of the most important aspects of digital accessibility is the underlying structure of the page. When you build your website or app using structural elements instead of relying on styles alone, you give critical context to people using assistive technologies (AT), such as screen readers.

Accessibility Tree

The accessibility tree includes four properties for each element:

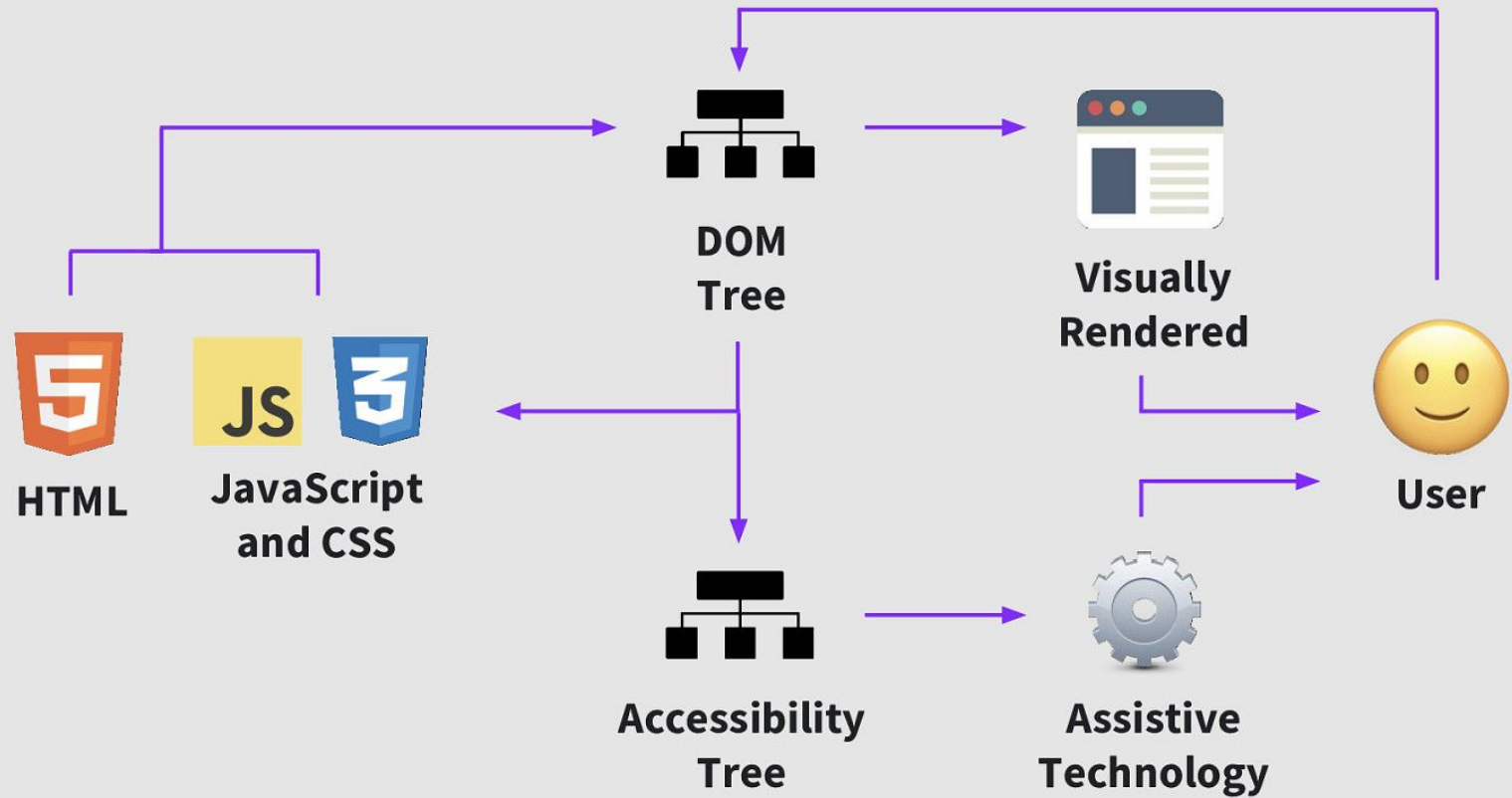
- The name of the element.
- A description of the element, which provides more context than just the name.
- The role of the element, which describes what kind of object it is (such as a button or a checkbox).
- The state of the element, where applicable (such as whether a checkbox is checked or unchecked).

*** The best way to provide these properties is to use native HTML!**

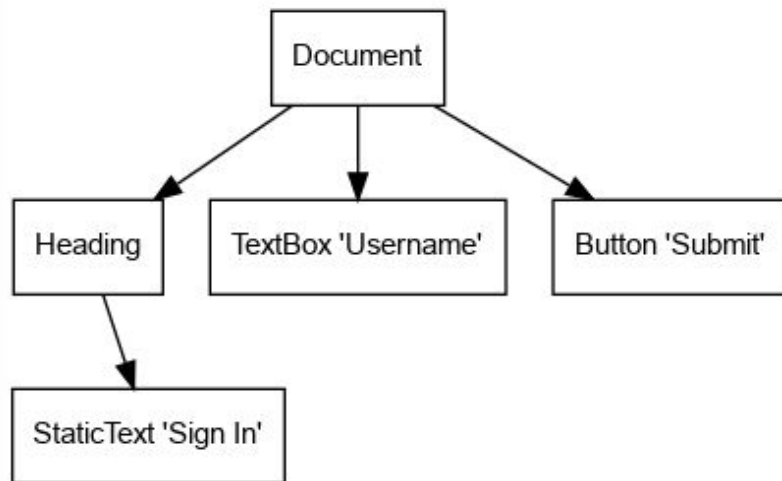
Content Structure + Semantic HTML

When you use semantic HTML elements, the inherent meaning of each element is passed on to the accessibility tree and used by the AT, giving more meaning to the content than non-semantic elements.

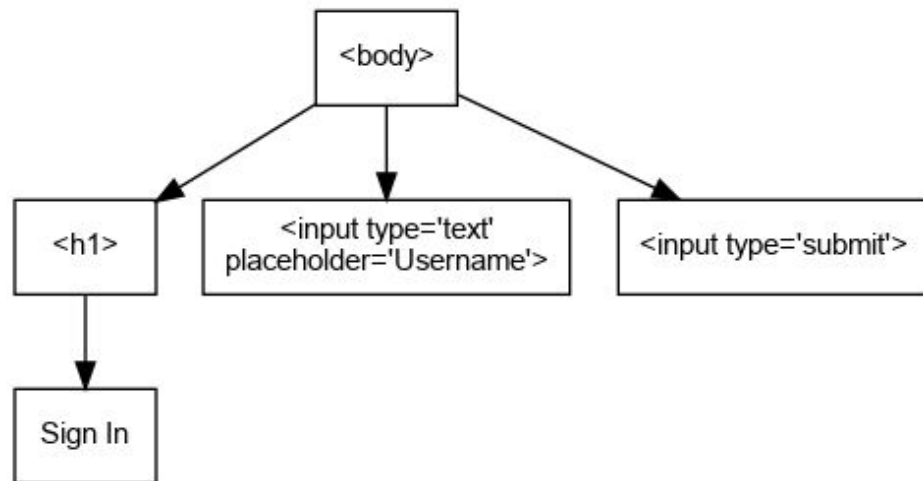
- **Landmarks:** <header>, <footer>, <nav>, <main>, <section>, <form>
- **Headings**
- **Lists**
- **Tables**
- **Alt Text**



Accessibility Tree



DOM Tree



The image features a stylized graphic on a two-toned background (light blue top, pink bottom). On the left is a white laptop icon with a blue screen. The screen displays a blue speaker icon and three horizontal blue lines representing text. To the right of the laptop is a large white speech bubble with a black outline. Inside the speech bubble, the text "VoiceOver" is written in a black, sans-serif font.

VoiceOver

Voiceover Shortcuts + Accessibility Tree Demo

Start voiceover: COMMAND+F5

VoiceOver Rotor: VO (CTRL+OPTION) + U

Headings: VO (CTRL + OPTION) + COMMAND + H

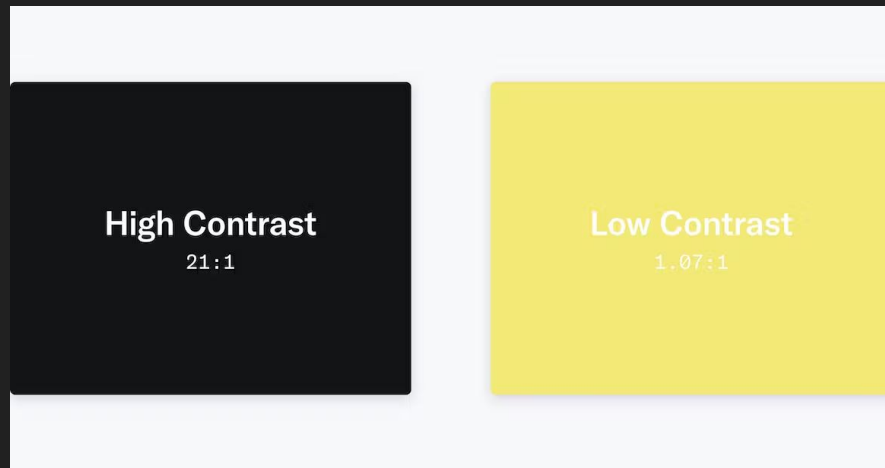
Best Practices for Accessible Design

Contrast

Provide sufficient contrast between foreground and background colors

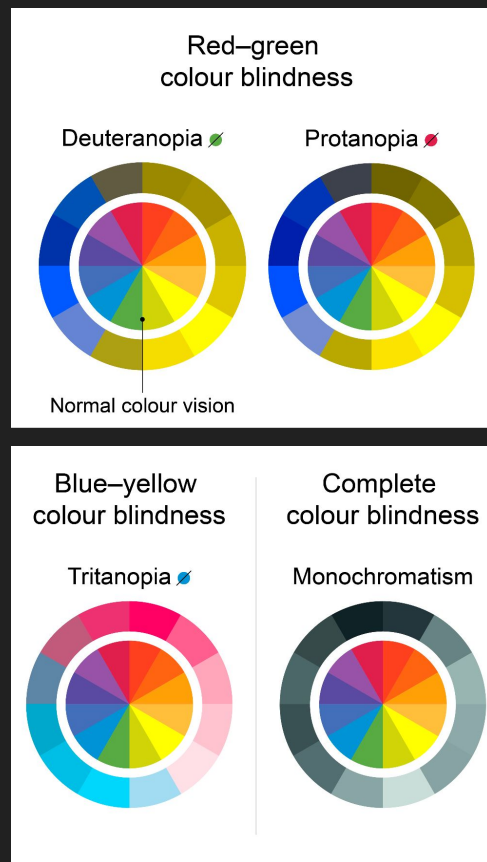
This includes:

- Text on images
- Background colors and gradients
- Buttons
- Other interactive elements

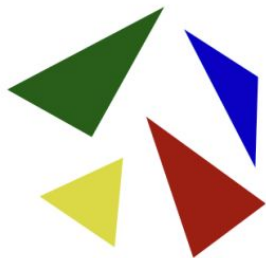


Color

- Don't use color alone to convey information
- Use asterisks to indicate required fields
- Use labels to identify areas on graphics, graphs, and charts
- Keep your color palette small (1-5) colors



✖ Color only



Which is the right-angled triangle?

- ☐ Green
- ☐ Blue
- ☐ Red
- ☐ Yellow
- ☐ Don't know

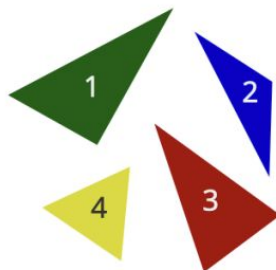
✖ Color only

Required fields are in red

Name

Email

✔ Color and number



Which is the right-angled triangle?

- ☐ Green (1)
- ☐ Blue (2)
- ☐ Red (3)
- ☐ Yellow (4)
- ☐ Don't know

✔ Color and symbol

Required fields are in red and marked with an *

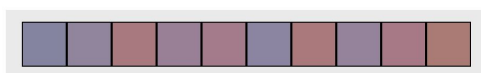
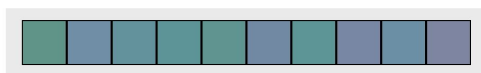
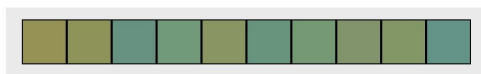
Name

Email *

Take this quiz!

<https://www.xrite.com/hue-test>

What's My Color IQ?



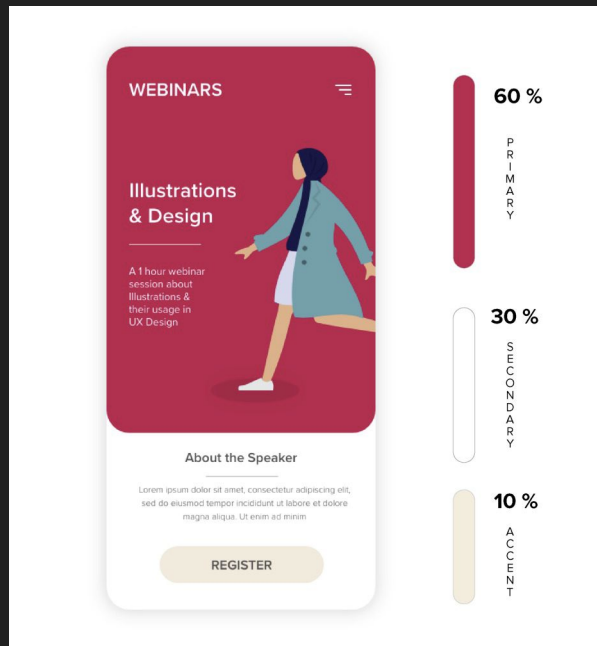
Score My Test

Follow the 60-30-10 Rule

The 60–30–10 rule is a well-known approach in various design fields for achieving the perfect color balance.

Tools for creating a color palette:

- [Coolors.co](https://coolors.co)
- [Image Color Picker](#)



Fonts

You typically want to use 1-2 fonts

If you are using multiple fonts, they should complement each other

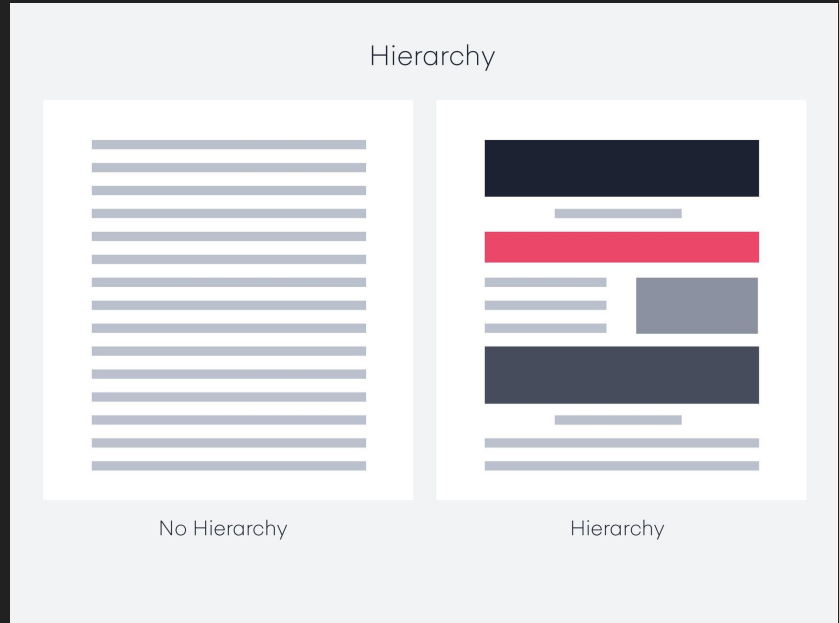
Use [Google fonts](#) to help you import new fonts into your web page

Too many
fonts || *S* just
overwhelming

Hierarchy

In a design, visual hierarchy refers to how elements are arranged in a design.

This helps the user better understand the flow so they know where to look first.

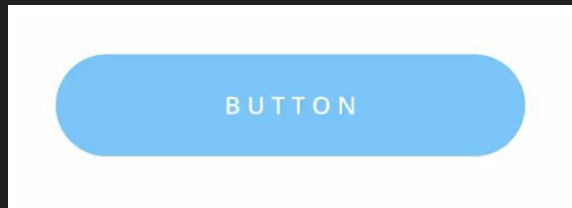


Interactivity

Ensure that interactive elements are easy to identify

- All buttons or links should have a distinct style so they are visually different from other content
- This includes hover, focus, and touch

Remember, some users can't navigate with a mouse and must use keyboard input!



User Feedback

All website interactions should provide the user with some sort of feedback

- Alerting a user when something goes wrong
- Proving submission confirmation
- Notifying users that content has changed on a webpage


Please correct the following errors:

1.  [Email address is invalid](#)
2.  [A Comment is required](#)

Add a comment

Required fields are in red and marked with an *

Name

 E-mail *

Website

 Comment *

Summary

8 Website Design Tips for Non-Designers



You can create beautiful websites with a few basic guidelines, no matter how much design experience you have (or don't have!).

Do:



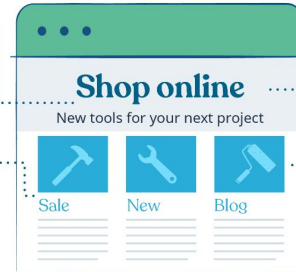
Use hierarchy

Make important text bigger and bolder than the rest.



Limit fonts and colors

Stick to three colors max, and two complementary fonts.



Consider readability

Avoid busy backgrounds and overly fancy fonts.



Keep it simple

Complicated designs can drown out your message.

Don't:



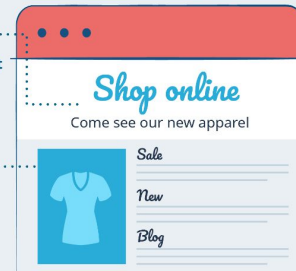
Be afraid to experiment

Try out new themes, headers, color schemes, and fonts.



Forget about images

High-quality, relevant images will engage visitors.



Over-prioritize pretty

At the end of the day, functionality should trump aesthetics.



Ignore feedback

When visitors tell you about their site experience, implement appropriate changes.