School of Computer Science

Web and Database Computing 2019

Lecture 17: Accessibility and Semantic Elements

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seek LIGHT

Accessibility: What & Why?

Accessibility

- We want to ensure our website is open to as many users as possible.
- Some users have disabilities/impairments that prevent them from using our web application the same as our target audience
  - Vision impairments
  - Physical impairments
  - Cognitive impairments
- Ensuring our website is usable by everyone improves user experience for **all** users.
- Also makes our website more easily understood by search engines and other automated systems.

Web Content Accessibility Guidelines

https://www.w3.org/TR/WCAG/

The W3C Web Content Accessibility Guidelines provide formal recommendations on how to ensure our websites are accessible.

Based on 4 principles:

1. **Perceivable** - Information and user interface components must be presentable to users in ways they can perceive.
2. **Operable** - User interface components and navigation must be operable.
3. **Understandable** - Information and the operation of user interface must be understandable.
4. **Robust** - Content must be robust enough that it can be interpreted reliably by a wide variety of user agents, including assistive technologies.

If any of these are not true, users with disabilities will not be able to use the Web.

Accessibility Guideline - **Perceivable**

- Text Alternatives
  - Ensure that all non-text elements on a page have some for of text alternative available
  - Use alt attribute on images and title attribute on other non-text elements.
- Media
  - Ensure that media in a page, whether visual or auditory has accessibility options available
  - Add closed captions to video and transcripts to audio.
  - Sign language or audio-only videos
- Adaptable content
  - Provide options for presenting content in different ways that may be easier for someone to use
  - Give users a choice of font-size or a simplified layout
  - Add metadata so that it be used by assistive software or converted to other formats by the user.
- Distinguishable
  - Ensure text is clear, a reasonable size, has good contrast and is well spaced.
  - Ensure colours have good contrast and are accessible to colour-blind people
  - Avoid pop-up and hover items; these can be difficult to work with

Accessibility Guideline - **Operable**

- Keyboard Accessible
  - Make all functionality available from a keyboard.
  - Use standard form controls (accessible by default), or use the tabindex attribute.
- Enough Time
  - Provide users enough time to read and use content.
  - Avoid timed interactions where possible to give users as much time as needed.
- Seizures and Physical Reactions
  - Do not design content in a way that is known to cause seizures or physical reactions.
  - Avoid high-contrast flashing content.
- Navigable
  - Provide ways to help users navigate, find content, and determine where they are.
  - Use consistent and accessible menus and breadcrumbs
- Input Modalities
  - Make it easier for users to operate functionality through various inputs beyond keyboard.
  - Allow for/expect a variety of pointer/touch-based input methods
  - Fitt's Law

Accessibility Guideline - **Understandable**

- Readable
  - Make text content readable and understandable.
  - Try to write content as explicitly as possible, minimising acronyms and implied tone.
- Predictable
  - Make Web pages appear and operate in predictable ways.
  - Try to keep your site's design consistent with standard practices
- Input Assistance
  - Help users avoid and correct mistakes.
  - Provide feedback to the user when they make a mistake.

Accessibility Guideline - **Robust**

- Compatible
  - Maximize compatibility with current and future user agents, including assistive technologies.
  - Validate!
  - Use metadata and semantic HTML

Accessibility and Design

Colours

- Poor colour choice can be offputting at best, unusable at worst.
- People with colour blindness may not be able to differentiate between normally different colours.
- Aim for a contrast ratio of 4.5:1 for small text, or 3:1 for large text (>= 24pt)
- Use a colour checker to help:
  - http://colorsafe.co/
  - https://webaim.org/resources/contrastchecker/

Fonts

- Some fonts are optimised for on-screen display (vs print).
- Sans-serif fonts generally more easily read on screens.
- Avoid blinking or moving text.

Semantic HTML

We know that different tag serve different purposes, but up until now we've mostly used them for style or functionality. Tags can also convey **meaning**.

Useful for:

- Screen reader and other accesibility software.
- Search engines
- Browsers features (printing, reader mode etc)

Example; `<b>` vs `<strong>`

- The `<b>` tag makes text bold
- The `<strong>` tag makes text bold **because the text is important**

Accesibility software uses this information to better convey meaning.
Search engines use it to understand a page's content.

HTML5 Semantic Tags

Use these instead of generic elements like `<div>` and `<span>`

```
<article>
<aside>
<details>
<figcaption>
<figure>
<footer>
<header>
<main>
<mark>
<nav>
<section>
<summary>
<time>
```

https://www.w3schools.com/html/html5_semantic_elements.asp

Example

Example of reader

HTML `<meta>` Tag

Used to convey additional information about the webpage that is not part of the page's content.

- Used for data like page description, keywords, author, last modified.
- This metadata can be used by browsers, search engines, accesibility software, or other web services.

```
<!-- Define keywords for search engines -->
<meta name="keywords" content="Accesibility and Semantic Elements">

<!-- Define a description of your web page -->
<meta name="description" content="Your last WDC lecture before break">

<!-- Define the author of a page -->
<meta name="author" content="Ian Knight">
```

CSS Frameworks

For easy consistent design

What are CSS frameworks?

Building a website's style from the group-up is hard!

- We can use templates, but they don't often fit our website without looking like ... templates

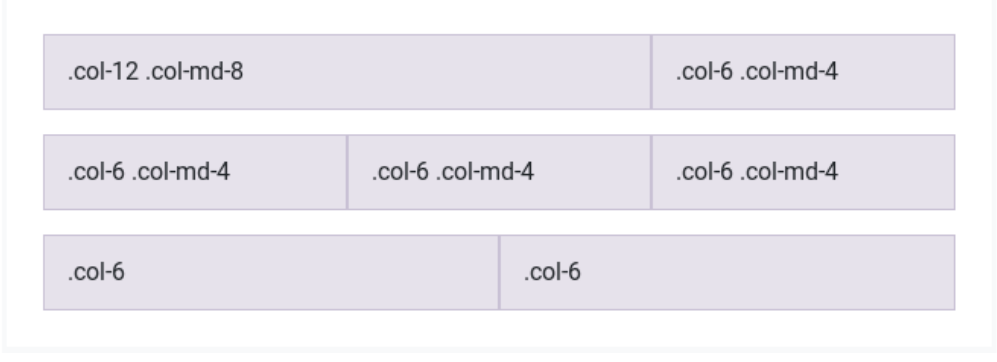
What are CSS frameworks?

CSS frameworks provide a consistent style set that we can customise while still building our design from scratch.

- They can be added easily with a script or link tag:

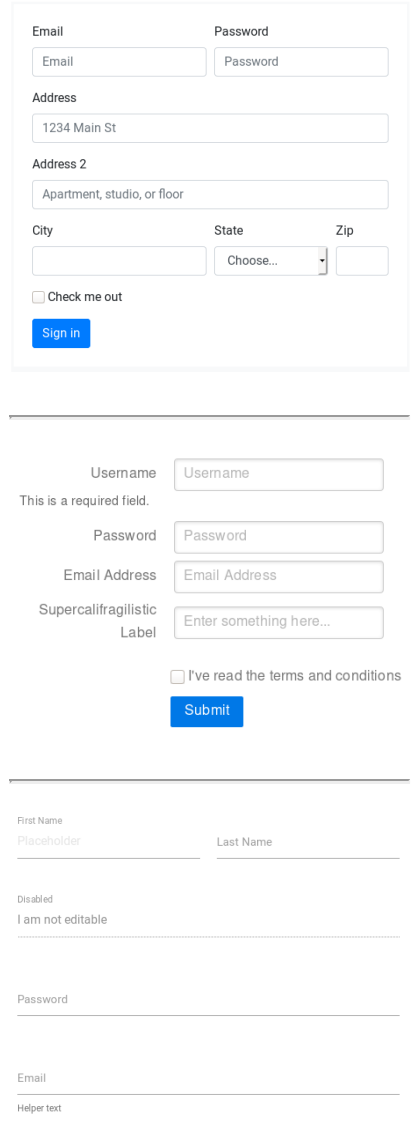
```
<link rel="stylesheet" href="stylesheets/bootstrap.min.css">
```

- They provide a solid base for building the rest of your site.
- They usually provide a grid mechanism for aligning elements on your page.



Common Frameworks

- Bootstrap
  - Developed by Twitter; very commonly used
  - Includes animations and some JavaScript components
  - https://getbootstrap.com/
- Pure
  - Yahoo's CSS library
  - Simple and lightweight
  - **Recommend**
  - https://purecss.io/
- Foundation
  - Gaining popularity
  - https://foundation.zurb.com/sites/docs/index.html
- Materialize
  - Based on Google's Material Design
  - https://materializecss.com/



Using in your group project

If you use a CSS framework in your group project, we still expect to see substancial CSS

Quiz!

Today's Quiz is available in MyUni until Sunday, *Questions and all*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What's happening

Due:

- Prac Exercise 5 now available, Fri week 7.
- Prac Exercise 6 coming soon.

Next week:

- Have a great break!

Further learning:

- Start on your group project