# CS1115/CS5002

# Web Development 1

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## Design-for-all

Can **everyone** access your web content?

## Web sites should work…

- …no matter who is visiting them
  - people with visual, auditory, physical, speech, cognitive, and neurological disabilities
  - people whose capabilities are modified by a medical condition
  - people of different ages
  - people with different first languages
  - things other than people (e.g. search engine crawlers)
- …no matter when and where they are visiting them
  - whether stationary or on the move
  - no matter the environmental conditions (bright/dark, quiet/noisy)
  - no matter where in the world (developed/developing, rural/urban, …)
- …no matter what network connection, device or client software they are using
  - connections of different bandwidths and speeds (cable, wireless, mobile, …)
  - different screens (resolution, dimensions, colour)
  - different I/O modalities (keyboard/ mouse/ stylus/ touchpad/ touchscreen/ speech for input; screen/ print/ speech/ etc. for output)
  - different Web browsers, different versions of browsers, different OS
- …now and in the future

## Simple advice

Don't assume anything!

## Web accessibility: reasons to care

- The legal argument
  - There is national and international law
  - Sometimes this whole area is referred to as Section 508 compliance —a reference to the relevant US law
- The business argument
  - Directly and indirectly, it may bring more customers
- The moral argument
  - Simply, it's the right thing to do

## Assistive technologies

**Assistive technologies**: any piece of equipment or software that increases or maintains the capabilities of people with disabilities, e.g.

- screen readers, e.g. Apple VoiceOver, JAWS, NVDA
- braille displays, e.g. Orbit Reader 20
- screen magnifiers
- user stylesheets
- head and mouth wands
- eye tracking devices
- voice recognition
- literacy support software such as read&write
- ...

## The Web Accessibility Initiative

- The Web Accessibility Initiative (WAI) publishes the Web Content Accessibility Guidelines (WCAG)
  - Recommendations for making content accessible to a wider range of people with disabilities
  - Three levels of compliance: A, AA, AAA
- You can even automatically validate for WAI compliance, e.g.: http://www.cynthiasays.com/
  —but this is no substitute for testing with real users

# The most important things you can do are also the easiest

- Spell-check
- Check grammar
- Check punctuation
- Give the content a logical order
- Use the right HTML markup
- Validate

**Question:** Who or what benefits?

# Include ARIA roles

- WAI-ARIA (*Accessible Rich Internet Applications*) defines ways of making web content more accessible
- **ARIA roles** (a list)
  - ARIA roles are similar to HTML attributes
  - They suggest the *purpose* of an element in a web page, for use by assistive technologies such as screen readers
  - You may have only one role per element
- E.g.
  - `role="presentation"`: for an element whose content is completely presentational
  - `role="complementary"`: for an element that is complementary to the main content
- HTML5 has made many ARAI roles redundant, e.g. `role="complementary"`, `role="navigation"`

# Use the right kind of markup

- E.g.
  - good: use `<h1>` for headings
  - bad: use `<p id="heading">` for headings and make them big and bold in CSS
- E.g.
  - good: using `tables` for tables of data
  - bad: using `tables` for layout

**Question:** Who or what benefits?

# Use more explanatory table markup

- Tables are for tabular data
- Give your tables a `<caption>`
- The `th` tag has one more attribute to improve accessibility: the `scope` attribute (with values `col` and `row`)
- If your table is large, consider using CSS for a hover effect on rows or zebra striping

**Question:** Who or what benefits?
**Question:** Why are hover effects to be used with care?

## Example of good table markup

Results for October

| Team | Played | Won | Lost | Drawn |
|---|---|---|---|---|
| Rovers | 10 | 5 | 2 | 3 |
| Wanderers | 7 | 1 | 0 | 6 |

```
<table>
    <caption>
        Results for October
    </caption>
    <tr>
        <th scope="col">Team</th>
        <th scope="col">Played</th>
        <th scope="col">Won</th>
        <th scope="col">Lost</th>
        <th scope="col">Drawn</th>
    </tr>
    <tr>
        <th scope="row">Rovers</th>
        <td>10</td>
        <td>5</td>
        <td>2</td>
        <td>3</td>
    </tr>
    <tr>
        <th scope="row">Wanderers</th>
        <td>7</td>
        <td>1</td>
        <td>0</td>
        <td>6</td>
    </tr>
</table>
```

## Check the reading level

- Readability check, e.g. the Gunning Fog Index for which there is a calculator
- If understanding your text requires more than a lower secondary level education, either rewrite it or provide a simpler alternative

**Question:** Who or what benefits?

## Be consistent

- Use external stylesheets
- Use a consistent navigation scheme
  - permanent navigation on each page
  - same way of presenting local navigation on each page

**Question:** Who or what benefits?

## Use descriptive link text

- Good link text should indicate the nature of the target, e.g.:
  - good: More information about wombats
  - bad: Click here!
- Good link text should be consistent if repeated on the same page
- Avoid pop-ups and links that open in new windows

**Question:** Who or what benefits?

## Use colour intelligently

- Ensure proper contrast between foreground and background colours
- Avoid certain combinations
- Ensure information is not conveyed through colour alone

**Question:** Who or what benefits?

## Give text alternatives for all visual content

- Use the `alt` attribute for `img` elements, and make sure the alt-text is descriptive ("fulfills the same function as the image"), not just a title
- For video and audio, HTML5 allows you to provide one or more `<track>` elements, e.g.
  - `kind="subtitles"`: e.g. translation of the dialogue
  - `kind="captions"`: e.g. transcription of the soundtrack
  - `kind="descriptions"`: e.g. textual description of what's on screen

  (But this is not well supported by browsers yet)

**Question:** Who or what benefits?