

INFO2180 – LECTURE 9

WEB ACCESSIBILITY



Accessibility is all around us and it is for
everyone.

Web accessibility means that
anyone, even people with
disabilities can use the Web.

ACCESSIBILITY IS ESSENTIAL FOR DEVELOPERS AND ORGANIZATIONS THAT WANT TO CREATE HIGH QUALITY WEBSITES AND WEB TOOLS, AND NOT EXCLUDE PEOPLE FROM USING THEIR PRODUCTS AND SERVICES.

**[https://www.w3.org/standards/webdesign/
accessibility](https://www.w3.org/standards/webdesign/accessibility)**

WEB ACCESSIBILITY

- ▶ Web accessibility encompasses all disabilities that affect access to the Web, including
 - ▶ visual
 - ▶ auditory
 - ▶ physical
 - ▶ speech
 - ▶ cognitive and neurological disabilities.

EXPERIENCES OF STUDENTS WITH DISABILITIES

The students in the following videos share some of their experiences with the web and accessibility.



<https://youtu.be/yx7hdQqf8IE>

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<https://www.youtube.com/watch?v=kziXJX6a7E4>

WCAG

- ▶ stands for Web Content Accessibility Guidelines
- ▶ current standard is WCAG 2.1
- ▶ it is a single shared standard for web content accessibility that meets the needs of individuals, organizations, and governments internationally.

TIPS ON DESIGNING FOR WEB ACCESSIBILITY

TIPS ON DESIGNING FOR WEB ACCESSIBILITY

- ▶ Provide Sufficient Contrast
- ▶ Don't use colour alone to convey meaning.
- ▶ Ensure that interactive elements (e.g. links) are easy to identify.
- ▶ Ensure navigation is clear and consistent
- ▶ Form elements should include labels.
- ▶ Provide feedback for interactions (e.g. form submission errors)

TIPS ON DESIGNING FOR WEB ACCESSIBILITY

- ▶ Use headings and ensure proper spacing to clearly show items are grouped together.
- ▶ Create designs for different viewport sizes (e.g. desktop and mobile)
- ▶ Ensure text is legible and readable (e.g. don't make text too small or too large).
- ▶ Include image and media alternatives in your design.
- ▶ Provide visible controls for content that starts automatically (e.g. videos, carousels, image sliders).

EXAMPLE OF GOOD AND BAD CONTRAST



Bad contrast



Good contrast

EXAMPLE OF FORM FIELDS WITH LABELS

Example: Labels and input fields associated by proximity

Add a comment

Your E-mail

☐ I am happy for you to contact me

Your Website

Comment

EXAMPLE OF FORM FIELDS WITH FEEDBACK TO SHOW ERRORS



Example: Using error list, icon, and background color to make errors stand out

Please correct the following errors:

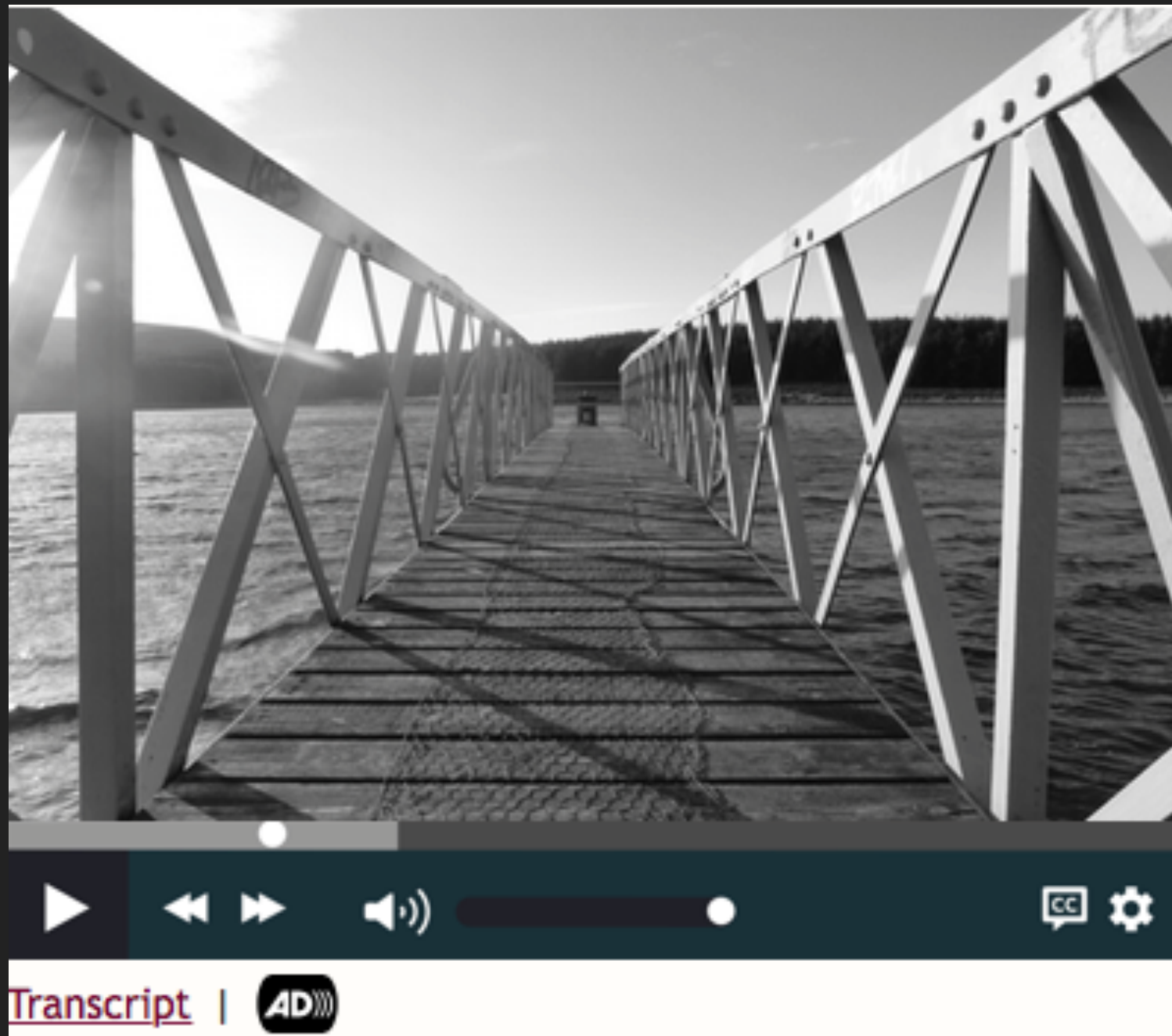
1.  [Email address is invalid](#)
2.  [A Comment is required](#)

Add a comment

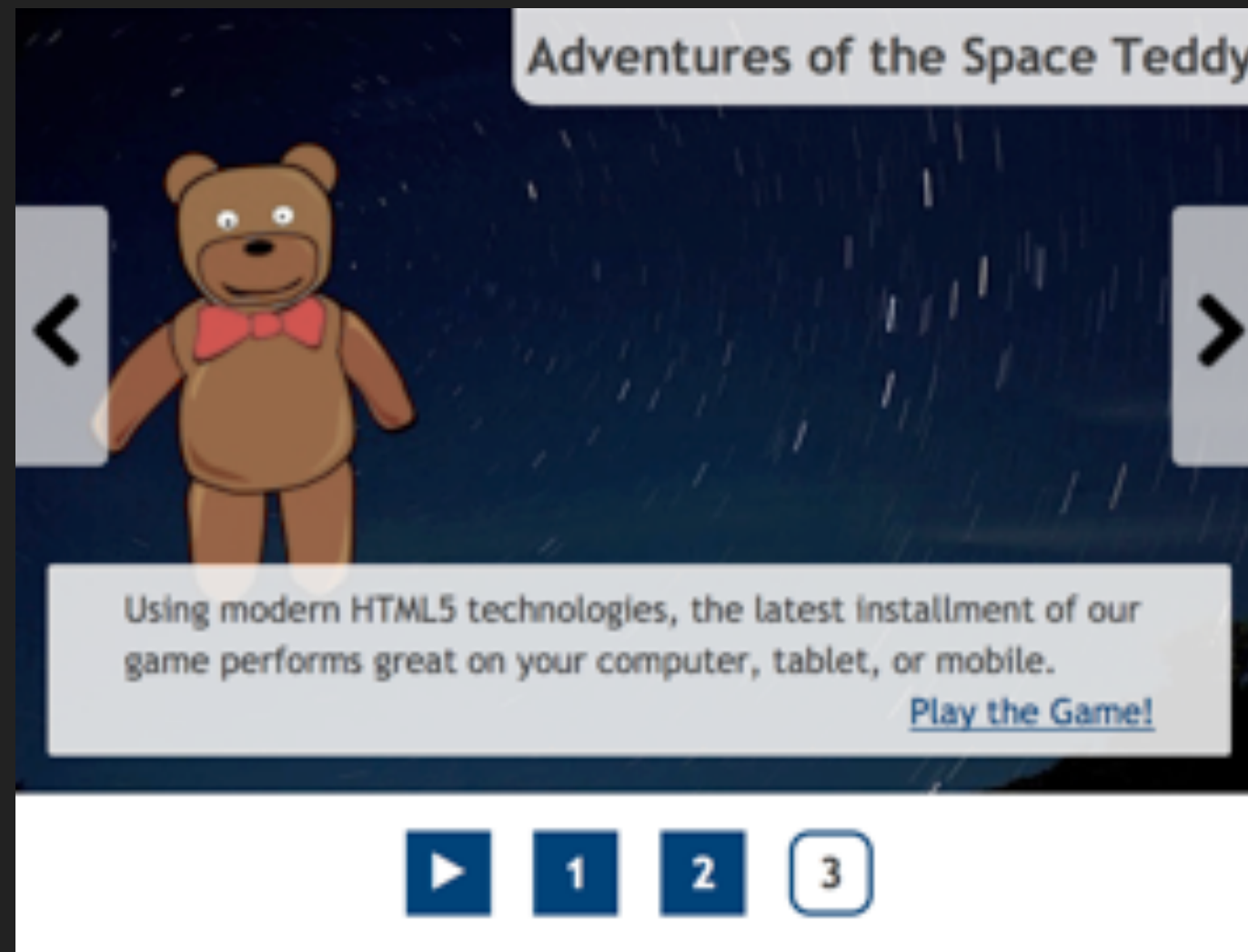
Required fields are in red and marked with an *

Name	<input type="text" value="Superbear"/>
 E-mail *	<input type="text" value="superbear@@hq.example.com"/>
Website	<input type="text"/>
 Comment *	<input type="text"/>

EXAMPLE OF MEDIA PLAYER WITH CONTROLS AND TRANSCRIPT



EXAMPLE OF CAROUSEL WITH CONTROLS



Note: the Left and right arrows to move between slides and also the pagination links and play button at the bottom.

TIPS ON WRITING FOR WEB ACCESSIBILITY

TIPS ON WRITING FOR WEB ACCESSIBILITY

- ▶ Provide informative and unique page titles.
- ▶ Use headings to convey meaning and structure.
- ▶ Make link text meaningful. (don't use "click here")
- ▶ Write meaningful text alternatives for images (e.g. use **alt** attribute)

TIPS ON WRITING FOR WEB ACCESSIBILITY

- ▶ Create captions or transcripts for video and audio respectively.
- ▶ Provide clear instructions. (e.g. for password field, tell user it should be at least 6 characters long and have at least one number)
- ▶ Keep content clear and concise.

EXAMPLE OF USING HEADINGS TO CONVEY MEANING AND STRUCTURE

Headings and Subheadings

HTML elements provide information on structural hierarchy of a document. Using elements correctly will help convey additional meaning to assistive technology. In many cases, doing so will also make your document easier to edit.

Purpose of Headings

For documents longer than three or four paragraphs, headings and subheadings are important for usability and accessibility. They help readers to determine the overall outline of a document and to navigate to specific information of interest.

Heading Levels

Headings are classified into levels from one to six. The highest level is "Level 1" and often corresponds to the title of the page or major document section. Sub-headers proceed through increasing header levels. The lower the number, the smaller and more detailed a section.

Meaning vs. Formatting

Visual readers identify headers by scanning pages for text of a larger size or a different style. Assistive technology users are not able to see these visual changes, so changing the style is not a sufficient cue.

Instead, the headings must be semantically "tagged" so that assistive technology can identify headings. This can be presented to the user as a navigation aid.

This makes adding headings one of the most important tools for a screen reader user so that he or she can learn what is on the page. Note that tagging usually triggers a formatting change visually which can be adjusted in many documents.

Adapted from [Headings and Subheadings at Penn State](#)

EXAMPLE OF MEANINGFUL LINK TEXT

For more information on device independence,
[click here.](#)

✗ Not good

Read more [about device independence.](#)

✓ Better

TIPS ON DEVELOPING FOR WEB ACCESSIBILITY

TIPS ON DEVELOPING FOR WEB ACCESSIBILITY

- ▶ Associate a label with form fields.
- ▶ Include alternate text for images (using **alt** attribute).
- ▶ Use mark-up to convey meaning and structure (e.g. headings, lists, tables, etc.)
- ▶ Ensure that all interactive elements are keyboard accessible
- ▶ Write code that adapts to the user's technology (e.g. responsive design)

TIPS ON DEVELOPING FOR WEB ACCESSIBILITY

- ▶ Identify page language on html element with the **lang** attribute (e.g. `<html lang="en">`)
- ▶ Help users avoid and correct mistakes by providing clear instructions. (e.g. tell the user what format for a telephone number)
- ▶ Avoid CAPTCHA's where possible.
- ▶ Reflect the reading order in the code order.

EXAMPLE OF ALT ATTRIBUTE ON IMAGES

```

```

EXAMPLE OF LABELS FOR FORM FIELDS

```
<div class="form-field">  
  <label for="fullname">Full Name:</label>  
  <input type="text" name="fullname" id="fullname" />  
</div>
```

Note: The id of "fullname" matches the for attribute "fullname", this results in the two being associated with each other.

EXAMPLE OF LABELS FOR FORM FIELDS

```
<div class="form-field">  
  <label for="telephone">Telephone:</label>  
  <input type="tel" name="telephone"  
id="telephone" aria-describedby="telephoneDesc"  
>  
  <span id="telephoneDesc">Format: DDD-DDD-DDDD</  
span>  
</div>
```

Note: The `aria-describedby` attribute will be associated with the description below it with the matching `id` attribute and the screen reader will read it when a user interacts with the field.

EXAMPLE OF ADAPTING TO USER'S TECHNOLOGY

```
/* On narrow viewports, make the
navigation full width */
@media screen and (min-width: 25em) {
    #nav {
        float: none;
        width: auto;
    }
    #main {
        margin-left: 0;
    }
}
```

EXAMPLE OF ADAPTING TO USER'S TECHNOLOGY

```
/* On wider viewports, put the navigation
on the left */
@media screen and (min-width: 43em) {
    #nav {
        float: left;
        width: 24%;
    }
    #main {
        margin-left: 27%;
    }
}
```


ARIA

- ▶ stands for the Accessible Rich Internet Applications Suite
- ▶ defines a way to make Web content and Web applications more accessible to people with disabilities.
- ▶ It especially helps with dynamic content and advanced user interface controls developed with Ajax, HTML, JavaScript, and related technologies.

ARIA

- ▶ For example, if the content of a Web page changes in response to user actions or time- or event-based updates, that new content may not be available to some people, such as people who are blind or people with cognitive disabilities who use a screen reader.

ARIA

- ▶ ARIA addresses these accessibility challenges by defining how information about this functionality can be provided to assistive technology. With ARIA, an advanced Web application can be made accessible and usable to people with disabilities.

EXAMPLE OF THE ROLE ATTRIBUTE

```
<div role="banner">  
...  
</div>  
<div role="navigation">  
...  
</div>  
<div role="main">  
...  
</div>
```

The `role` attribute can also help define the structure of the document by providing landmarks.

EXAMPLE OF THE ROLE ATTRIBUTE

`<main></main>`

`<aside></aside>`

`<header></header>`

`<footer></footer>`

Some elements like the ones (there are others) above create landmarks by default.

SOME OTHER ROLES USED TO IDENTIFY WIDGETS

- ▶ **dialog, alert**
- ▶ **slider, tab, tabpanel**
- ▶ **timer, tooltip**
- ▶ and there are many more.

SOME OTHER ARIA ATTRIBUTES

- ▶ **aria-labelledby** and **aria-describedby**
- ▶ **aria-required**, **aria-checked**, **aria-selected**
- ▶ **aria-haspopup**
- ▶ **aria-dropeffect**, **aria-dragged**
- ▶ and there are many more.

SCREEN READERS

- ▶ VoiceOver (Mac) - <http://www.apple.com/accessibility/osx/voiceover/>
- ▶ NVDA (Windows) - <http://www.nvaccess.org/>
- ▶ JAWS - <http://www.freedomscientific.com/Products/Blindness/JAWS>
- ▶ ChromeVox - <http://www.chromevox.com/>

EXAMPLE OF A SCREEN READER BEING USED ON A WEBSITE

Navigation: SECTIONS, SEARCH, U.S. INTERNATIONAL 中文, SUBSCRIBE NOW, LOG IN, Settings icon.

Shop: MARC JACOBS.COM, DAISY DREAM

The New York Times

Thursday, July 31, 2014 | Today's Paper | Weather

WORLD U.S. NEW YORK OPINION BUSINESS TECHNOLOGY SCIENCE HEALTH SPORTS ARTS FASHION & STYLE VIDEO All Sections

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U.S. Attorney Warns Cuomo on Ethics Investigation

By SUSANNE CRAIG, THOMAS KAPLAN and WILLIAM K. RASHBAUM

The letter from the prosecutor investigating Gov. Andrew M. Cuomo's cancellation of his own anticorruption commission came after members of the panel publicly defended the governor's handling of the commission.

144 Comments

Netanyahu Vows to Continue Destroying Gaza Tunnels

By ISABEL KERSHNER and FARES AKRAM 6:10 AM ET



Medical staff last week at a treatment center in Sierra Leone. Tommy Trenchard/Reuters

Sierra Leone to Impose Ebola Quarantines

By ADAM NOSSITER and ALAN COWELL 5:41 AM ET

The country, one of three battling the worst known outbreak of the disease, declared a public health emergency on Thursday that calls for the deployment of security forces.

- Coverage of the Ebola Outbreak in West Africa

The Opinion Pages

OP-ED CONTRIBUTOR

The F.D.A.'s Blatant Failure on Food

By RUTH REICHL

Who will stop the rise of antibiotic-resistant superbugs?

MORE IN OPINION

- Blow: Age of Identity
- Collins: None Dare Call It Impeachment

HIGH TIME

What Science Says About Marijuana

By THE EDITORIAL BOARD

While marijuana is not harmless, it is less dangerous to human health than alcohol and tobacco.

- Kristof: Our Blind Spot About Guns
- Op-Ed: Britain's Crime of Complicity

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- Recalling the Horror of the Flight 17 Crash Site
- What to Read to Understand Gaza

MARKETS » At 11:29 AM ET

https://www.youtube.com/watch?v=xpP_Km5L46E

WEB ACCESSIBILITY PERSPECTIVES



<https://www.youtube.com/watch?v=3f31oufqFSM>

Web Accessibility

“Essential for some, useful for all”

RESOURCES

- ▶ Web Accessibility Initiative - <https://www.w3.org/WAI/>
- ▶ Web Accessibility Intro - <https://www.w3.org/WAI/fundamentals/accessibility-intro/>
- ▶ W3C Accessibility - <https://www.w3.org/standards/webdesign/accessibility>
- ▶ Tips for Getting Started with Web Accessibility - <https://www.w3.org/WAI/design-develop/>
- ▶ Web Accessibility Perspectives Videos - <https://www.w3.org/WAI/perspective-videos/>
- ▶ The Business Case for Digital Accessibility - <https://www.w3.org/WAI/business-case/>

RESOURCES

- ▶ The A11Y Project - <http://a11yproject.com/>
- ▶ WebAIM - <http://webaim.org/>
- ▶ Section 508 - <http://www.section508.gov/content/learn>
- ▶ Contrast Checker - <http://webaim.org/resources/contrastchecker/>
- ▶ ARIA - <https://www.w3.org/WAI/intro/aria>
- ▶ A11Y Style Guide - <http://a11y-style-guide.com/style-guide/>