Beyond Text with CSS & HTML

PGCertInfoTech

Programming with Web Technologies

Auckland
ICT Graduate School

Today emphasis on media elements:

- Images
- Audio
- Video
- Plug-in formats

PLUS:

- Hyperlinks

Images in HTML <img>

<img> element has the **src** attribute:

```
<img src="http://www.waikato.ac.nz/images/coa_red.gif"/>
```

<img> element also has height and width attributes

Images in HTML <img>

```
<img src="http://www.waikato.ac.nz/images/coa_red.gif"/
height="30"/>
```


```
<img src="http://www.waikato.ac.nz/images/coa_red.gif"/
width="80"/>
```


```
<img src="http://www.waikato.ac.nz/images/coa_red.gif"/
height="100" width="100"/>
```

Images in HTML <img>

- What if the image file isn't available, or the user is visually impaired (using a screen reader)?
- The **alt** attribute provides a textual description
- The **alt** attribute is **required** for strict validation

```
<img src="http://www.waikato.ac.nz/images/coa_red.gif"/>
<img src="http://www.waikato.ac.nz/images/coat_red.gif" alt="University of Waikato logo"/>
```

University of Waikato logo

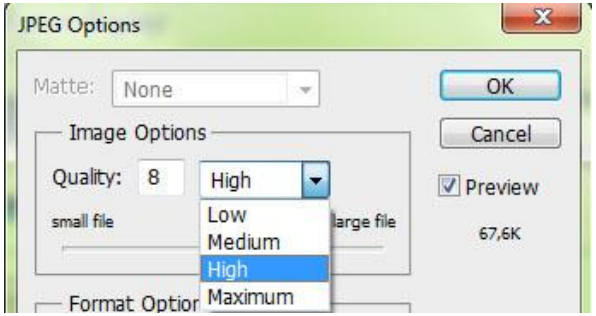
Images in HTML <img>

- Note that we don't have
  - <img></img>
- The necessary information for an image element is provided as attributes
  - there is no content other than the image itself
- There is nothing to go between the start and end tags
  - So we use /> to indicate the end of the element

```
<img src="http://www.waikato.ac.nz/images/coa_red.gif"/>
<img src="http://www.waikato.ac.nz/images/coat_red.gif" alt="University of Waikato logo"/>
```

Images

- Browsers usually support: GIFs, PNGs, JPEGs/JPGs, (also BMP, ICO)
  - But **not**: TIFFs, JPEG 2000, DjVu, …
- JPEGS
  - Lossy format
    - quality settings in software
  - Choose JPEGs for photos and photo-like images
- GIFs & PNGs
  - Loss-less formats, PNG usually produces smaller file sizes
  - Choose GIFs or PNGs for flat colour, graphic text, simple logos and screenshots (choose PNG if transparency is needed)
  - GIFs can also be animated, PNG animation (APNG, MNG) is not supported by browsers, so simple image animation on the Web has to be GIF
- Sizing
  - Check aspect ratio (width : height)



THE UNIVERSITY OF WAIKATO
Te Whare Wānanga o Waikato

Images in HTML

`<img>` element

- Key Attributes
  - `src` URL to image file
  - `title` text to describe the image
    - Mouseover text
  - `alt` (**alt**ernative) text for when the image is not available
    - IE (incorrectly) used as mouseover text
  - `width`, `height` the traditional way to specify image dimensions (must be `px` in HTML 5)
  - `style` you can also specify height and width via inline CSS
    `style="width: 100px; height: 150px"`

Aspect Ratio Error

- Setting height & width to the wrong aspect ratio

Native image:
Width 280
Height 420
280 / 420 = 0.66

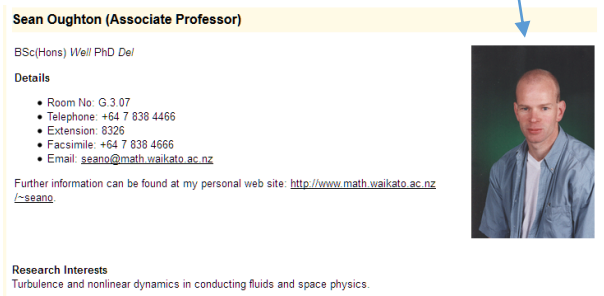
Location:	http://www.math.waikato.ac.nz/Staff/photos/so.gif
Type:	GIF Image
Size:	75.59 KB (77,403 bytes)
Dimensions:	280px × 420px

This photo is slightly distorted

```
<img src="http://www.math.waikato.ac.nz/Staff/photos/so.gif"
     alt="image of staff member" height="234"
     width="150" />
```

HTML image:
Width 150
Height 234
150 / 234 = 0.64

156 / 234 = 0.66



Often happens in database-driven websites which expect all images to be the same dimensions

Thumbnails

- HTML and CSS allow image resizing
- Situation:
  - you have an image on a destination page
  - You have a summary listing page with small images
- Either:
  - Create a small thumbnail image for the listing page

  or
  - Use the large image and resize to create the small image
    - **But note, for large images this is painful**
    - Makes the listing page much bigger and slower

Multimedia: Audio and Video

As of HTML5, audio and video support natively supported:

- <audio>
- <video>

Shares some similarities with the <img> element …

But differences also:

- Time-based
- Patent encumbered codecs

Multimedia: Audio

In its simplest form:

```
<audio src="audiofile.mp3" controls="controls"></audio>
```

Giving:

Things to note:

- Needs closing tag (so different to <img>)
- Without the `controls` attribute, nothing appears
- How controls are displayed, browser dependent
- *Older* forms of HTML allowed attributes without any value. The following is still permissible:
  - `<audio src="audiofile.mp3" controls></audio>`

  But the XML way of doing things if preferred:
  - `controls="controls"`

Multimedia: Video

Similar for Video. In its simplest form:

```
<video src="videofile.mp4" controls="controls"
       width="640" height="480"></video>
```

Giving:

(note the `width` and `height` attributes)

Things to note:

- Needs closing tag
- Without the `controls` (or `autoplay`), nothing appears
- How controls are displayed, browser dependent

Multimedia: Audio and Video

Alternative <source> form:

```
<audio controls="controls">
  <source src="myaudio.mp3" type="audio/mpeg" />
</audio>

<video controls="controls" width="640" height="480">
  <source src="myvideo.mp4" type="video/mp4" />
</video>
```

Despite similarity in filename extensions, note:

- MP3: **Audio Layer III** of MPEG-1 and MPEG-2
- MP4: Full Audio Video carrier format for **MPEG-4**

Audio and Video: Complications

Support not guaranteed (prior to HTML5)

- Use the fact that non-recognized tags are ignored, thus:

```
<audio controls="controls" src="audiofile.mp3">
  Your browser does not support the audio element.
</audio>
```

generates the appropriate message in older browsers

- Similarly for <video>

Audio and Video: Codecs

Not all browsers across the operating systems support the same audio and video formats

- Use a sequence of <source> elements:

```
<audio controls="controls">
 <source src="myaudio.ogg" type="audio/ogg" />
 <source src="myaudio.mp3" type="audio/mpeg" />
    Your browser does not support the audio element.
</audio>
```

HTML5 <video> element defined to try each <source> element in turn

- Uses the first <source> element it can handle

- Similarly for <video>

Multimedia: Patents

Variability of codec support in browsers result of patents (and "politics" to some extent):

Audio:

- MP3 Support fairly widespread in browsers now

Video:

- Video codec support more variable than audio

Multimedia: Audio attributes

<audio> attributes:

Attribute	***Value***	***Description***
autoplay	autoplay	Specifies that the audio will start playing as soon as it is ready
controls	controls	Specifies that audio controls should be displayed (such as a play/pause button etc)
loop	loop	Specifies that the audio will start over again, every time it is finished
muted	muted	Specifies that the audio output should be muted
preload	auto metadata none	Specifies if and how the author thinks the audio should be loaded when the page loads
src	URL	Specifies the URL of the audio file

http://www.w3schools.com/tags/tag_video.asp

Multimedia: Video attributes

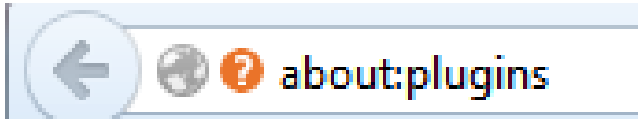
<video> attributes:

Attribute	***Value***	***Description***
autoplay	autoplay	Specifies that the video will start playing as soon as it is ready
controls	controls	Specifies that video controls should be displayed (such as a play/pause button etc).
height	pixels	Sets the height of the video player
loop	loop	Specifies that the video will start over again, every time it is finished
muted	muted	Specifies that the audio output of the video should be muted
poster	URL	Specifies an image to be shown while the video is downloading, or until the user hits the play button
preload	auto, metadata none	Specifies if and how the author thinks the video should be loaded when the page loads
src	URL	Specifies the URL of the video file
width	pixels	Sets the width of the video player

http://www.w3schools.com/tags/tag_video.asp

For other media types…

- Process the content natively (HTML, CSS, PNG, …)
- Use a *Plug-in* (Flash, Applet (for Java), QuickTime, PDF, …), or
- Pass the content to a *Helper Application* (Word, PDF, …)
  - Or offer to download the content
- Browser-dependent
  - recently added native PDF viewing

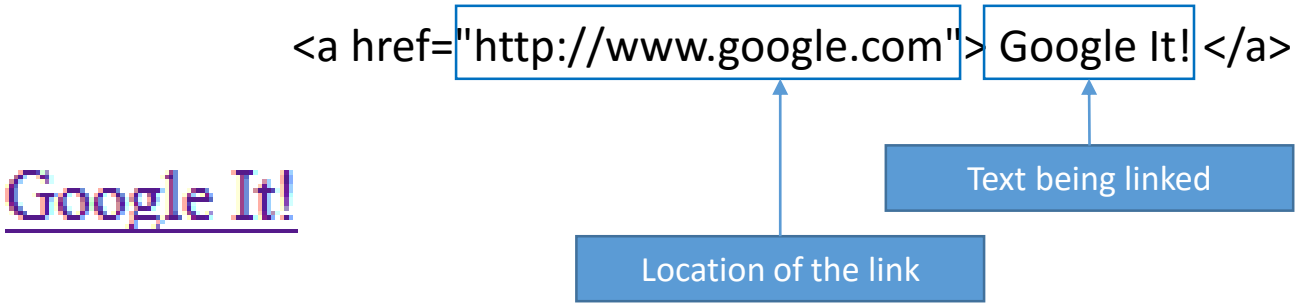


Plug-ins

- Given a separate rectangular viewport on the page
- Separate from HTML & CSS
  - Separate from JavaScript but there are communication paths
- (Generally) no *View Source* option
- (Typically) provide multimedia and processing language additions to the Web
- *Flash* has (had?) vector graphics, better typography, ActionScript language for interactivity, …
  - Until recently the "open" Web didn't provide these facilities well

Anchor element <a>

- The hyper (hyperlink) in the HyperText Markup Language
- The <a> tag is used to create hyperlinks (links) to go from one page to another
- We need to specify two things
  - What text is being linked
  - What is the location of the link (where does it go after clicking)



Anchor element <a>

- The content appears between <a> and
- Elements have an **href** attribute that holds the URL

```
<p>Here is the  <a
href="https://en.wikipedia.org/wiki/The_quick_brown_fox_jumps_over_the_lazy_dog">
Wikipedia article</a> on The quick brown fox jumps over the lazy
<a href="http://www.dog.com">dog<a/>.</p>
```

Here is the Wikipedia article on The quick brown fox jumps over the lazy dog.

- An <img /> element can be hyperlinked too