CS120

Introduction to Web Site Development

Lecture 3 - Images, Audio, Video

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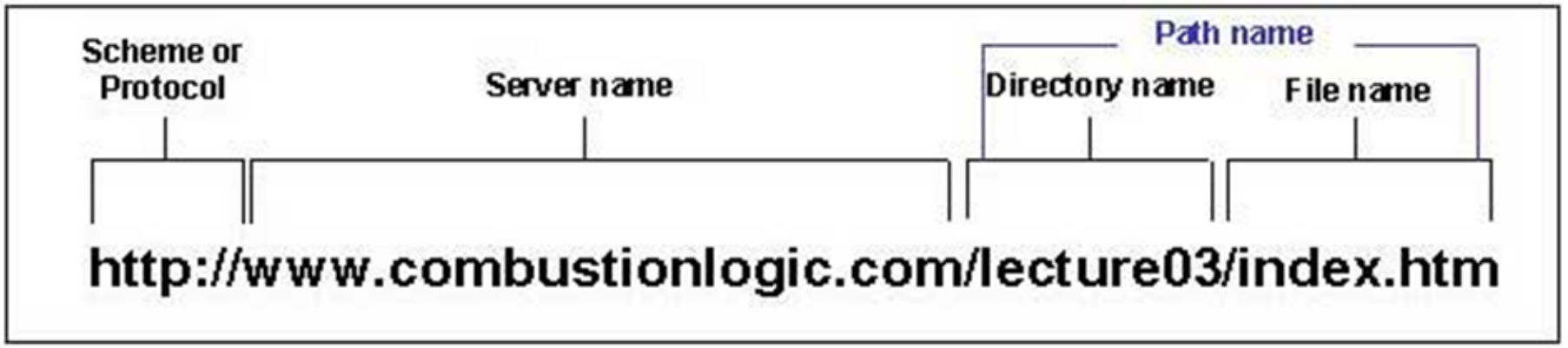
(Based on slides by John Hurley)

URL Format


Scheme or Protocol
Server name
Path name
Directory name
File name
http://www.combustionlogic.com/lecture03/index.htm

Filenames

- **DO NOT** put spaces in your filenames – this will confuse a web server
- Avoid using capital letters in filenames
  - UNIX is case-sensitive, although some web servers are configured to ignore case
  - Windows is not case-sensitive, so you may encounter a very confusing situation

index.html

If a path shows no filename, server will look for index.htm or index.html in the directory indicated.

Absolute URLs

Full URL, including protocol, hostname, path and filename (optional)

- `<a href="http://www.yahoo.com">Yahoo</a>`

Relative URLs

A URL that is relative to a base URL

Plain filename finds that file in the current directory

./ = current directory

../ = parent directory

/ = replaces everything from hostname onwards

// = replaces entire path, back to the protocol

Slashes

- Windows uses backslashes in paths, eg
  - `C:\users\gkondas\documents\document.docx`
- UNIX uses forward slashes, eg:
  - `cs120s100/public_html/mydocument.html`
- Forward slashes will work in relative paths in html, even if the file is on your Windows machine:
  - `<img src = “images/godzilla.jpg” />`
- If you use backslashes in your relative paths, they will work on your Windows HD but NOT on the Linux server

Linking to Location

- In your destination document, define a location to link to using the ID attribute
  - Example:
    - `<p id="security">This is a paragraph with an ID.</p>`
- In your source document, define a hyperlink to the destination document, appending an #id to the URL
  - Example:
    - `<a href="http://www.site.com/index.html#security">Security Link</a>`
  - If you are linking to a location in the same page, just set the href to # followed by the id:
    - `<a href = "#origins">Origins</a>`

Images

- A 2D array of pixels
  - Bitmaps (Map of bits)
  - Pixmaps (Map of pixels)
- Images tend to be quite large so compressed formats are quite common, especially on the web
- Some compression techniques include
  - Color reduction
  - Frequency analysis

Web-Friendly Images

- Joint Photographic Experts Group (JPEG)
  - JPG, JPEG, JP2 extensions
  - Variable loss format
- Graphic Interchange Format (GIF)
  - GIF extension
  - Lossless format
- Portable Network Graphic (PNG)
  - PNG extension
  - Lossless format

The IMG Element (Basics)

- The img element can be used almost anywhere
- For example:
  - Within body and li elements
  - Within p

The IMG Element (Syntax)

Description

- Marks embedded image content
- Link to external image (outside your site) with similar syntax to anchor element
- Self-closing tag
- Example
  - `<p>Watch out, Godzilla is coming! </p>`
  - `<img src = "images/godzilla.jpg" alt = "godzilla" />`

The IMG Element (Attributes)

Required Attributes

- **src**: URL to specify location of image
- **alt**: Alternative text (called fallback content)
  - Most browsers will display fine without alt, but it is required by the specs for html
  - Alt is what blind people will hear when using a screen reader

The IMG Element (Attributes)

- **src** includes the url of the location of the image file. Usually this is a relative path
- A src attribute like

```
src = “c:\users\gkondas\pictures\mypicture.jpg”
```

DOES NOT WORK on a remote server, because it is pointing to a document locally on your hard drive.

The IMG Element (Attributes)

If the relative path is different on the server that on your hard drive, your file will work locally but not on the server. I recommend you set up a directory structure on your HD corresponds to the one you set up on the server.

If your file will be at public_html/labs/myfile.html

And uses an image at public_html/labs/images/mypic.jpg

The relative path is images/mypic.jpg

The IMG Element (Optional Attributes)

Optional Attributes

- **usemap**: Associates an img with a map
- **title**: Associates an img with a tool tip
- **width** in px or %

  with %, image will scale when you change the window size
- **height** in px

  combining height and width distorts aspect ratio

Figure

Used to associate a figure (often an image) with a caption

```
<figure>
   <img width = “50%" src = "godzilla.jpg" />
   <figcaption>
         Watch out!
   </figcaption>
</figure>
```

Images and Hyperlinks

The img element can be a child of the a element

Example:

```
<p>Click the picture to learn more about Godzilla</p>
<a href="http://en.wikipedia.org/wiki/Godzilla">
    <img src="images/godzilla.jpg" />
</a>
```

Imagemap

- Image that contains links. Clicking on different parts of the image directs the browser to different links

- Example: http://www.mediawiki.org/wiki/Extension:ImageMap

The MAP Element (Basics)

- The map element defines an image map
  - An image map is a set of clickable regions (areas) on an image that can be associated with hyperlinks
- Contains zero or more area elements

The MAP Element (Syntax)

Description

Used to define an image map.

Example

```
<map name="thismap"></map>
```

The MAP Element (Attributes)

Required Attributes

- **name**: Associates a map element with a named identifier. This named identifier is used by the img element to associate it with a particular map. Names are referenced by img using hash-name references (# sign followed by the named identifier)
- Example:
  - ```
    <map name="thismap"></map>
    <img src="image.jpg" usemap="#thismap" />
    ```
    ```

The AREA Element (Basics)

The area element specifies a region of an image that is associated with some text, a hyperlink, or a dead area

- **Text**: alt (fallback) text
- **Hyperlink**: area has a hyperlink (href) attribute
- **Dead Area**: area with no href or alt text

The AREA Element (Syntax)

- Description
  - Marks a clickable region of an image map.
  - Self-Closing Tag

- Example
  - `<AREA shape="circle" coords="170, 100, 50" href="http://www.yahoo.com" alt="Yahoo!" />`

  - If you change the size of the image, the coordinates won’t be correct!

The AREA Element (Attributes)

Attributes

- **href**: Specify a hyperlink to go to when an area is clicked on
- **alt**: Alternative (fallback) text
- **shape**: Shape of area (circ, poly, or rect)
- **coords**: List of image coordinates

Associating Maps to Images

How to associate an image with a map

- Give the map a name attribute
- The **map MUST precede the img** element in the file
- Use the usemap attribute of the img element
- Reference the name using a hash name reference. **Don’t forget the hash.**

Example

```
<map name=“thismap">
   <area shape="circle" coords="170, 100,50"
    href="http://www.yahoo.com" alt="Yahoo!" />
</map>
<img src="image.jpg" usemap="#thismap" />
```

How To Get Coordinates

- Commercial html editors have imagemap editors, Free ones usually don't
- GIMP (free alternative to Adobe Photoshop)
- MS Paint
- There is an online image map creator http://www.mobilefish.com/services/image_map/image_map.php
  - This generator is limited: picture file can not exceed 100K.

- Copy and paste the map code it outputs into your document. You will need to change the src attribute in the image tag to match the path on the server, and you will probably also need to add file:// to the beginning of the path to the file.

Dead Space

- Dead space consists of areas of an imagemap that are not linked to any URL.
- You can set all dead space to point to a particular url by putting the image inside an anchor element.

HTML5 Video

New in HTML5, may not be supported by all browsers.

```
<video src="sample.mp4" poster="images/godzilla.jpg"
width = "70%" controls = "controls" >
This is fallback content to display if the browser
does not support the video element.
</video>
```

If a browser supports <video>, it will ignore the text. If not, it will ignore the element tags. If it does this, it will end up displaying the content as if there were no tags.

HTML5 Audio

Another new HTML5 element. Works well in at least IE and Chrome.

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

Optional:

autoplay = "true" (**DON'T**)

The BDO Element

- Description:
  - Controls the direction of text
  - Overrides the DIR attribute
  - Used to put right to left text in a document that generally used a left-to-right alphabet
- Comments:
  - Start Tag: Required
  - End Tag: Required
  - Self-Closing Tag: Forbidden
- Example:
  - `<bdo dir=“rtl">Madam, I’m Adam</bdo>`

BDO Example

```
<body>
   <p>
      Madam, I'm Adam.
   </p>
   <p>
      <bdo dir="rtl">Madam, I'm Adam.</bdo> </p>
</body>
```

The Dir Attribute

Description

- Controls the direction of the *flow of content*. Use for creating right-to-left flow in documents using right-to-left alphabets

Values

- RTL (right-to-left)
- LTR (left-to-right) is only necessary when you want some content in an rtl element to revert to ltr

Dir Example

```
<!DOCTYPE html>
<html dir = "rtl">
     <head>
          <meta charset="utf-8" />
          <title>Lab 2</title>
     </head>
     <body>
          <img src = "images/godzilla.jpg" width = "25%"/>
          <p>
               The Smog Monster is coming!  Only Godzilla can save us  now!
          </p>
          <p>
               <bdo dir="rtl">The Smog Monster is coming!  Only Godzilla can save us now!</bdo>
          </p>
     </body>
</html>
```

Metadata

- Data about the page
- Used by browsers, other applications that parse your documents.
- Certain meta elements may help with search engine ranking
- Also helps browsers and other applications parse your document
- Use <meta> element in head

Metadata

- Search engine ranking algorithms are proprietary, but some meta elements are thought to improve your document’s visibility
- <meta name="description" content=“lab assignment for cs120“ />
- <meta name = “keywords” content = “exciting, dynamic, useful, educational />

UNIX commands

- It is easy to find lists of basic UNIX commands online. One useful one is at http://kb.iu.edu/data/afsk.html

- You will need to use the UNIX commands cd, ls, put, mkdir, mv, and chmod.

- Note that, to go up a directory hierarchy one level, use cd .. with a space before the dots (confusingly similar to DOS!). In other words, if you are in directory1/directory2 and type cd .., you will end up in directory1.

Directory Permissions

- For this week's lab, you will need to create a new directory within public_html
- You will need to set the permissions for this directory so that all users (that is, anyone on the internet) can execute. In this case, the directory will be called labs.
- You can set the execute permission for the directory from it's parent directory, which in this case is public_html, like this:
  - chmod a+x labs
- Note that this is the same way you set permissions for a regular file
- Permissions for public_html are the same, but they are already set up this way

Uploading to CS1 Server

If you will be using your own computer for lab work, get SFTP client software. The lab machines already have the PSFTP client.

Uploading to CS1 Server

Use PSFTP or other FTP software to upload the recipe file to cs1:

- Open your FTP client software. If you put PSFTP on a flash drive, navigate to the .exe file and double click
- Log on to cs1 by typing the following: open cs1.calstatela.edu
- Use username and password you received
- Navigate to public_html directory using cd commands
- Upload the file by typing:
  - put *[path]* recipe.html
    where [path] is the path on your local system to the directory where you stored resume.html.
    Example:
    put c:\users\gabor\documents\cs120\resume.html
  - Make sure the path contains NO SPACES

Uploading to CS1 Server

- Make sure the file is on cs1 by typing: **ls** *(lowercase L, not i)*
- Set the permissions for the file to allow the public to read it with the command:

  chmod a+r resume.html

  (Notice the permissions on the left of the file now should have changed)

  See http://www.zzee.com/solutions/unix-permissions.shtml for a guide to UNIX permissions