HTML

CS 640, Lecture 6

Overview of lecture

- Big picture
- Text basics
- Forms
- Tables
- Miscellanea

HyperText Markup Language

- Disagreement about HTML's role
  - Only give the content and structure of the document, leave visualization to the browser
    - Browsers vary (graphical, text based, mobile devices)
    - User preferences vary (some people like larger fonts)
    - Environment varies (screen sizes, fonts available, etc.)
  - But authors want to control what the document looks like
- Trend towards separating content from presentation
  - Cascading Style Sheets – presentation information only
  - HTML documents contain little formatting

Current state of the standards

- W3C (World Wide Web Consortium) sets standards
- Last HTML standard 4.01 (December 1999)
- XHTML 1.0 new XML-based format
  - XML (extensible markup language) – focuses on semantics and is used as general purpose format for structured data
  - A document called DTD or XML Schema defines what tags and attributes are allowed in an XML document
- For the programming assignments (and beyond) use W3C's HTML validator service http://validator.w3.org/

Writing web pages

- There are many ways of presenting the same information in a web page
- Must balance conflicting considerations
  - Standards-compliance
  - Aesthetics for target platform
  - Performance
    - Large files take longer to download
    - Cost of running code on server
    - Cost of running code on client

Elements of web documents

- Text – browsers treat spaces, tabs and new lines in HTML source the same, wrap text
- Comments – between <!-- and --> not rendered
- Various tags
  - <tag attribute1="value" attr2="val2">text</tag>
  - For some tags the end tag not needed
    - In HTML they look like <tag> in XML <tag/>
  - All tags must obey proper nesting rules
    - Valid: ***Bold italic text*** *italic text*
    - Invalid:

A valid web page

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html>
<head>
<title>Bucky Badger's web page</title>
</head>
<body>
<h1>Welcome to Bucky's web page</h1><!-- Users don't see this comment. -->
<img src="bucky.gif" alt="A picture of Bucky" />
<p>I am Bucky, the mascot for University of Wisconsin athletics. Please visit
<a  href="http://www.uwbadgers.com/football/index.html"> the web page of our
football team</a> and
<a  href="http://www.uwbadgers.com/basketball/index.html"> the web page of
our basketball team</a>.</p>
</body>
</html>
```

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Tags controlling appearance

Content-based styles

- *emphasis*
- **strong emphasis**
- <code></code> `program code`
- <address></address> *an address*
- <cite></cite> *citation*

Physical styles

- **bold**
- *italic*
- <tt></tt> `monospaced`
- <big></big> bigger
- <small></small> smaller
- subscript
- superscript
- don't use it

Tags controlling text flow

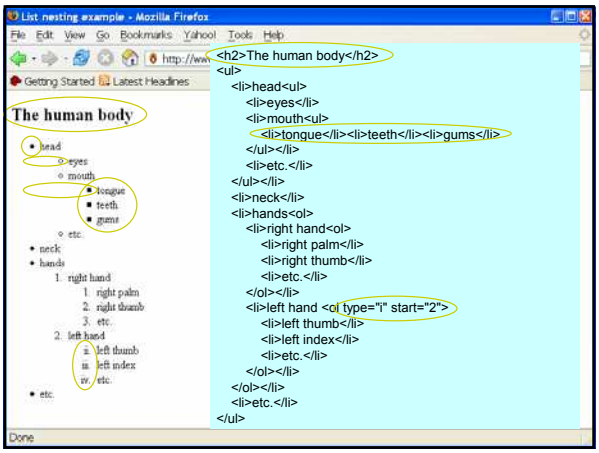
-
 introduces a line break (new line)
- defines a paragraph
  - Browser leaves empty line before paragraph
  - Closing tag often omitted
- <pre></pre> preformatted text
  - Line breaks and indentation not ignored
  - Browser uses monospaced font

Special characters

- Characters "<", ">", and "&" cannot appear in document text (confusing to browser)
  - < < > > & &
- Numeric codes can be used for these and other characters (greek letters, math, etc.)
  - < < > > & &
  - © © ® ®   non-breaking space
  - http://www.w3.org/TR/html401/sgml/entities.html

Other tags

- Headings <h1></h1> to <h6></h6>
- Lists can be nested
  - bulleted (unordered) lists
  - numbered (ordered) list
    - The "start" attribute controls the label of the first item
    - The "type" attribute (A,a,I,i,1) controls whether numbers, letters or roman numerals (upper/lower case) are used
  - list item (closing tag often omitted)



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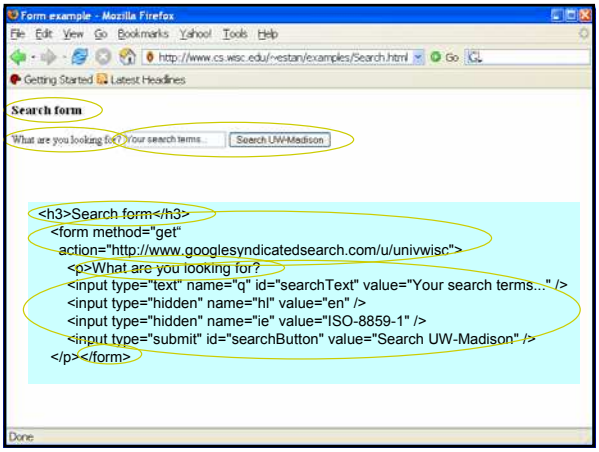
About forms

- Forms are the traditional way for users to send information to a web server
  - The user fills out fields in the browser
  - The user submits the form
  - http carries the user input to the web server
  - A server side program processes the user data
  - The server sends a reply document to the client

The <form></form> tag

- Forms use the <form></form> tag
  - The “action” attribute has to URL of the server side program processing the form
  - The “method” attribute has to be get or post
- Inside this tag there are
  - Various controls collecting data from the user
    - Text fields, check boxes, file selection controls, etc.
  - Normal text



<input> controls

- The “type” attribute determines what they do
  - “text” used for text fields
  - “submit” the button submitting the form “reset” for resetting
  - “checkbox” checkboxes the users can select
  - “radio” multiple choice radio buttons
  - “hidden” submitted but not shown to user
- The “name” attribute allows the program to distinguish between controls (e.g. age or weight?)
- The “value” attribute specifies the text on the control and/or the value sent to server

Other controls

- <textarea></textarea> used for multi-line text
  - Must use the “name” attribute
  - Has “cols” and “rows” attributes specifying size
- The <select></select> tag encloses <option> tags and gives multiple choices to user
  - The “multiple” attribute controls whether the user can check one or more options

```
<select name=pets>
  <option>Dog
  <option value=Cat>Cat
  <option selected>Fish
</select
```

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About tables

- Their original role was to display tables
- Their most prevalent use is for controlling the placement of visual elements on the page
  - http://www.cs.wisc.edu, http://www.google.com
  - Frames control placement too – don’t use them
- The table is a collection of rows
- The rows are collections of cells
- Cells on the same row/column are aligned
- Cells can contain anything (even other tables)

The <table></table> tag

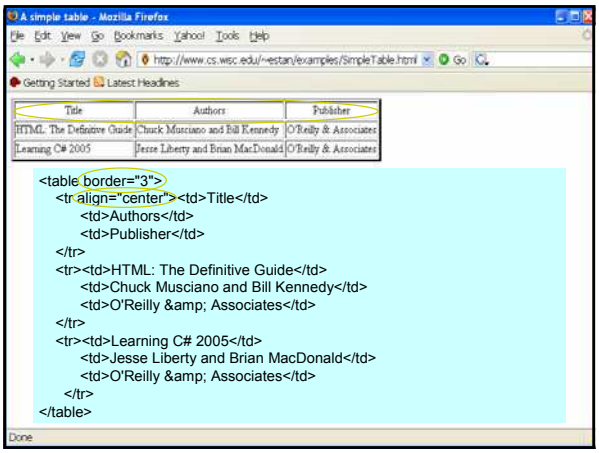
- Defines a table
- The “border” attribute defines the width of the lines used to draw the table (in pixels)
  - Defaults to 0 which means no lines are drawn
- The “width” attribute controls table width
  - By default it is in pixels
  - It can be given as a percentage of the window
  - If not specified, the table is only as wide as needed to display cell contents

The <tr></tr> tag

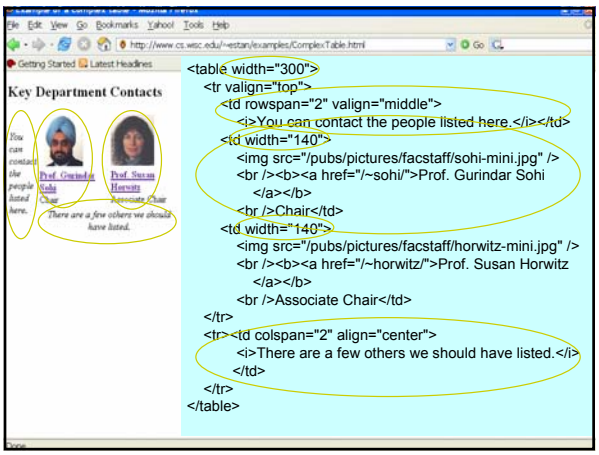
- Defines a table row
  - The “align” attribute controls horizontal alignment of text in cells – can be “left”, “right”, “center”
  - The “valign” attribute controls vertical alignment of text in cells – can be “top”, “bottom”, “middle”
  - The “nowrap” attribute instructs the browser not to wrap the text from within the cells

The <td></td> tag

- Defines a table cell
  - Has “align”, “valign” and “nowrap” attributes
  - “width” can be given as percentage of table width
  - “height” gives minimum height for cell
  - “colspan” allows a cell to span multiple columns
  - “rowspan” allows a cell to span multiple rows




```
<table border="3">
   <tr align="center"><td>Title</td>
        <td>Authors</td>
        <td>Publisher</td>
   </tr>
   <tr><td>HTML: The Definitive Guide</td>
        <td>Chuck Musciano and Bill Kennedy</td>
        <td>O'Reilly &amp; Associates</td>
   </tr>
   <tr><td>Learning C# 2005</td>
        <td>Jesse Liberty and Brian MacDonald</td>
        <td>O'Reilly &amp; Associates</td>
    </tr>
</table>
```




```
<table width="300">
   <tr valign="top">
        <td rowspan="2" valign="middle">
             <i>You can contact the people listed here.</i></td>
        <td width="140">
             <img src="/pubs/pictures/facstaff/sohi-mini.jpg" />
             <br /><b><a href="/~sohi/">Prof. Gurindar Sohi
                  </a></b>
             <br />Chair</td>
        <td width="140">
             <img src="/pubs/pictures/facstaff/horwitz-mini.jpg" />
             <br /><b><a href="/~horwitz/">Prof. Susan Horwitz
                  </a></b>
             <br />Associate Chair</td>
   </tr>
   <tr><td colspan="2" align="center">
             <i>There are a few others we should have listed.</i>
             </td>
   </tr>
</table>
```

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The <img> tag

- Used for including images
  - Common formats: jpeg, gif, png
- Important attributes
  - src gives the URL of the image
  - alt specifies a text for non-graphical browsers
    - Graphical browsers display it if image not available
  - width and height specify image size
    - Browsers stretch or compress image to desired size
    - Default unit pixels, can use % for width

Other things about images

- Parts of an image can be transparent
- Images can be links to other documents
  - With image maps the target depends on the position within the image the user clicked on
- Simple animations possible with gif images
- With CSS (or the deprecated background attribute of the body tag) an image can be used as background (for the full document)

Anchors and URLs

- URLs can point to a specific fragment of a document
  - http://server/document.html#fragmentname
  - text
  - Almost all tags have the id attribute <h1 id="frn">text</h1>
- URLs can be relative
  - Makes it easy to move a group of hyperlinked documents
  - Base URL = URL of the document (http://srv/dir/doc.html)
  - The parts not in the relative URL taken from base URL
    - otherdoc.html → http://srv/dir/otherdoc.html
    - http:/otherdir/doc.html → http://srv/otherdir/doc.html
    - ftp:subdir/file.txt → ftp://srv/dir/subdir/file.txt