Overview

- HTML vs. XHTML
- XHTML Basics
- Building Webpages on ODU-CS Systems
- Common HTML Tags
- Links
- Lists
- Images
- Fonts/Colors
- Common Mistakes
- Tables
HTML

◆ HyperText Markup Language
  » language used to format webpages
  » markup language – describes formatting rather than function
  » *not a programming language!*

◆ Online references/tutorials
  » [http://www.w3.org/MarkUp/#tutorials](http://www.w3.org/MarkUp/#tutorials)

XHTML

◆ eXtensible Hypertext Markup Language
  » successor to HTML, but is a parallel and separate standard
  » a stricter and cleaner version of HTML
  » is designed to replace HTML
  » hybrid between HTML and XML

◆ Online reference/tutorial
  » [http://www.w3schools.com/XHTML/xhtml_html.asp](http://www.w3schools.com/XHTML/xhtml_html.asp)
Why XHTML and Not HTML?

- Web browsers developed to allow sloppy HTML and forgive coding errors
  » problem for new devices like PDAs and smart phones – not as much processing power as a PC

- Browsers (think IE) were developed to support proprietary extensions to HTML
  » result: non-standard HTML pages

- HTML was not designed to format pages for multiple platforms
  » again, think PDAs and smart phones

XHTML Basics

- XHTML was designed to give a foundation for a device-independent Web
- All XHTML documents must be well-formed
  » obeys syntax rules
- XHTML documents should begin with an XML declaration:
  ```xml
  <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
  » document based on XML 1.0 standard
  » character encoding is Unicode (UTF-8) using 8 bytes per character

  first line in each XHTML document you write
XHTML Basics
Document Type Definition (DTD)

◆ Three types of XHTML
  » XHTML 1.0 Transitional
    ✤ least strict specification, allows CSS and traditional formatting instructions such as fonts
  » XHTML 1.0 Strict
    ✤ requires CSS, does not allow traditional formatting
  » XHTML 1.0 Frameset
    ✤ required for pages using XHTML framesets
◆ Version listed in the DTD (or DOCTYPE) tag
  » placed at the top of the document

```html
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
```

second line in each XHTML document you write

XHTML Basics
XML Namespace

◆ Each document begins with the `<html>` tag
◆ For XHTML, we need to specify the XML namespace (`xmlns`)
◆ The standard we'll use is given at
  [http://www.w3.org/1999/xhtml](http://www.w3.org/1999/xhtml)

```html
<html xmlns="http://www.w3.org/1999/xhtml">
```

third line in each XHTML document you write
Basic Format of an HTML Page

```xml
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
...header information goes here...
</head>
<body>
...body information goes here...
</body>
</html>
```

Getting Started
Where to Store HTML Files @ cs.odu.edu

- Create a directory called `public_html` in your home directory
  - `~/public_html/`

- Make subdirectories under `~/public_html` as needed
  - `mkdir ~/public_html/cs312`
  - `chmod 755 ~/public_html/cs312/`

- Normally, you can set subdirectories and executable files with access mode 755 and files with 644
  - `755` - **owner** (you!) can read/write/execute; **group** and **world** (everyone else) can read/execute, but not write
  - `644` - **owner** (you!) can read/write; **group** and **world** (everyone else) can read, but not write
Google Analytics

- [http://www.google.com/analytics](http://www.google.com/analytics)
  - copy and paste some code into your webpage

- Allows you to track how people find your website
  - search engine (what keywords searched for)
  - directly typed in URL
  - linked from another page

- Allows you to track what people did on your website
  - what pages visited
  - how long pages were viewed

First HTML Page

```xml
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
  <head>
    <title>My First Web Page</title>
  </head>
  <body>
    Hello world!
  </body>
</html>
```

Validating XHTML

- W3C Validator
  » http://validator.w3.org/

- Your HTML assignments will be tested using this validator against XHTML 1.0 Transitional
  » so, validate your pages before submitting them!
  » plus, it helps with debugging if you run into problems

HTML Tags

- `<tagName>`
  » Opening tag – some type of command or formatting
- `</tagName>`
  » Closing tag – ends the formatting

- `<html>`
  » Indicates start of an HTML document
- `</html>`
  » Indicates end of the HTML document
- `<head>` and `</head>`
  » Header information (not displayed in the browser window)
- `<title>` and `</title>`
  » The title is displayed in your browser's caption (title bar)
**HTML Tags**

- The text between the `<body>` tags is the text that will be displayed in your browser.

- XHTML is case sensitive. All tags must be lowercase.

- All tags must have closing tags.

**Common Formatting Tags**

**HTML**

- **Headings** are defined with the `<h1>` to `<h6>` tags
  - `<h1>` defines the largest heading
  - `<h6>` defines the smallest heading
  - Each heading must have closing tag

- **Bold** is defined with the `<strong>` tag
  - `<strong>` closing tag

- **Italics** is defined with the `<em>` tag
  - `<em>` closing tag
HTML Paragraphs

- Paragraphs are defined with the `<p>` tag:
  `<p>This is a paragraph</p>`
  `<p>This is another paragraph</p>`
  » HTML automatically adds an extra blank line before and after a paragraph

HTML Line Breaks

- A line break in your HTML source file does not translate to a line break on the webpage.

- `<br />`
  » This tag has no closing tag (*self-contained tag*)
  » The `<br />` tag forces a line break wherever you place it
  `<p>This <br /> is a para<br />graph with line breaks</p>`
HTML Spacing

- More than one space between words has no effect in HTML

- `&nbsp;` creates a blank space

- Centering is done with the `<center>` tag
  » and `</center>` closing tag

HTML Comments

- Like good programs, complex webpages should contain comments.
  ```html
  <!-- This is a comment -->
  ```

- Like regular comments, these are not processed by the web client, but are just for the reader of the source code.
**Special Characters**

- & is a control character in HTML (ex: &nbsp;)
  - to display &, use &amp;

- Likewise, < and > have special meanings in HTML
  - to display <, use &lt;
  - to display >, use &gt;

- List of special characters
  - [http://www.coolnerds.com/HTML/htmlchar.htm](http://www.coolnerds.com/HTML/htmlchar.htm)

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**Tag Attributes**

- Attributes provide additional information to an HTML element
  - name/value pairs like this:
    ```html
    name="value"
    ```
  - Attribute values should always be enclosed in quotes

- Examples:
  - `<h1 align="center"> This is a center heading</h1>`
    - has additional information about the alignment (says the header is supposed to be centered)
  - `<body bgcolor="yellow">`
    - Makes the page background yellow

- Many HTML tag attributes will be accepted with XHTML 1.0 Transitional, but their use is deprecated
Example Time

◆ Formatting Example:
  

  » Headings
  » Paragraphs
  » Line Breaks
  » Spacing
  » Centering
  » Special Characters (&)
  » Tag Attributes (centering, background color)

In-Class Exercises

◆ What will the following HTML code produce?

<!-- ODU Football -->
<p><strong>ODU Football Schedule</strong></p>
<em>Sep 24</em> - Delaware<br/>
<em>Oct 1</em> - UMass

◆ Is the following code valid XHTML? If not, what are the errors?

<p><strong><em>ODU Basketball Schedule</em></strong></p>
11/19 – South Florida<br/>
11/20 – Kentucky or Penn State
Links
The “Real” Reason for Webpages

◆ `<a href="url">Text to be displayed</a>`
  » opens the page in the current window/tab

◆ `<a href="url" target="_blank">Text to be displayed in a new window</a>`
  » opens the page in a new window

◆ `<a href="url" title="My URL Title">Text to be displayed</a>`
  » title is displayed when mouse hovers over link in browser (browser-dependent)

Absolute vs. Relative Links

◆ *Absolute* links will take you to a page regardless of where the source anchor is located
  » Example: [http://www.espn.com](http://www.espn.com) takes you to the same place no matter where your anchor is located
  » Must include “http://” or it will be interpreted as relative

◆ *Relative* links reference something on your local site
  » Example: `<a href="myLink.html">` references some page myLink.html that exists in the same directory as the source page
More Relative Links

- You have a folder containing pages “basePage.html” and “refPage.html”, and a subfolder “myFolder”
  - The subfolder contains “mySubPage.html”

- From basePage.html, you can reference refPage.html as <a href="refPage.html">refPage.html</a>
  - And you reference mySubPage.html from basePage.html as
    <a href="myFolder/mySubPage.html">myFolder/mySubPage.html</a>

- Links Example:

Lists in HTML

- Unordered (bulleted) list
  - surrounded by the <ul> … </ul> tags
    - unordered list
  - each element surrounded by the <li> … </li> tag
    - list item

- Numbered list
  - surrounded by the <ol> … </ol> tags
    - ordered list
  - each element surrounded by the <li> … </li> tag
List Examples

```html
<ul>
  <li>first list item</li>
  <li>second list item</li>
</ul>

<ol>
  <li>first item</li>
  <li>second item</li>
</ol>
```

OrderedList Attributes

◆ *type* attribute for ordered lists
  » 1 – numerals (default)
  » A – uppercase letters
  » a – lowercase letters
  » I – Roman numerals
  » i – lowercase Roman numerals

```html
<ol type="A">
  <li>first item</li>
  <li>second item</li>
</ol>
```

A. first item
B. second item
Nested Lists

- Using `<ul>` … `</ul>` or `<ol>` … `</ol>` inside a list creates a level of indentation

```html
<ul>
  <li>first item
    <ol>
      <li>first subitem</li>
      <li>second subitem</li>
    </ol>
  </li>
</ul>
```

Note that the `<ol>` is part of the first list item

Definition Lists

- Surrounded by `<dl>` … `</dl>` tags
  - “title” is surrounded by `<dt>`…`</dt>` tags
  - “definition” is surrounded by `<dd>`…`</dd>` tags

- Example:
  ```html
  <dl>
    <dt>URL</dt>
    <dd>Uniform Resource Locator</dd>
  </dl>
  ```

- Lists Example:
  ```html
  ```
In-Class Exercises

◆ What will the following HTML code produce?

```html
<h1>ODU Football Schedule</h1>
<ul>
<li>Sep 24 - <a href="http://www.udel.edu">Delaware</a></li>
<li>Oct 1 - UMass</li>
</ul>

◆ Is the following code valid XHTML? If not, what are the errors?

```html
<h1>ODU Basketball Schedule</h1>
11/19 - <a href="http://www.southflorida.edu">S. Florida</a>
<br />12/01 - <a href="www.uky.edu">Kentucky</a>
```

Adding Images

◆ Use self-contained `<img />` tag
◆ `src` and `alt` are required attributes
  » `src` – location of image file
  » `alt` – alternate text (if image can't be displayed)

◆ Example:

```html
<img src="url" alt="picture" />
```
◆ Setting the size:

```html
<img src="pic.jpg" alt="picture" width="144" height="50" />
```
Adding Images

◆ Setting a background picture:
  <body background="background.jpg">

◆ Image as link:
  <a href="lastpage.html">
  <img border="0" src="buttonnext.gif" alt="next"
       width="65" height="38" />
  </a>

More on Images

◆ Image location URLs can be absolute or relative, just like other URLs

◆ Images can be located anywhere text can
Aligning Images

◆ An image can be aligned either to the left or to the right of a page margin. Text will wrap around them.
  
  `<img align="right" src="url" alt="link" />

◆ Images can also be enclosed in `<center>` tags to center them on the page.


Miscellaneous Tags

◆ In the `<head>` section
  
  » Meta data for search engines
  
  » `<meta name="keywords" content="database, computer science, internet">
  
  » `<meta content="Dr. Michele Weigle" name="author">
Common Mistakes

- Missing an opening tag or closing tag
- Crossing pairs of opening and closing tags
- Typing < as >, or vice versa
- Missing a closing double quote for some parameter value
- Forgetting to set permissions on newly created files and directories
  » chmod 644 filename
  » chmod 755 directory_name

HTML Tables

- Allow neat information organization in columns and rows, presented in cells
- Border and divider lines are optional and in choices of width in pixels
- May have colored background
  » for cells or whole table
- If size is based on pixel count, then a table’s shape is unchanged no matter how the browser is resized.
Table Cells

◆ Each item in a table is placed into a cell

◆ A cell’s width specified by either
  » number of pixels
  » percentage of the table width

◆ If not specified, a cell’s dimension is dynamically determined based on the content in the cell
  » all items in the same column are of the same width
  » the widest item determines the column width
  » an item is as narrow as it is allowed to be

◆ A cell’s height is determined in the same way as width

Table Cells

◆ When improperly specified, different browsers may treat the table in different ways
  » to interpret and display in their respective best possible ways

◆ When either or both of the width and height are specified, resizing the font by user may cause display problems

◆ Unless specified, final cell dimensions are generally based on the data in the entire table
Features of Table Cells

- Individual colored background
- Individual content alignment
- Allow better controlled image display in a page
  » Example: row of pictures with captions in row below

Specifying Tables in HTML

- Tables are defined with the <table> tag
- Rows are defined with <tr>
- Cells are defined with <td>
- Headings are defined with <th>
Table Example

<table border="1">
<tr>
<td>row 1, cell 1</td>
<td>row 1, cell 2</td>
</tr>
<tr>
<td>row 2, cell 1</td>
<td>row 2, cell 2</td>
</tr>
</table>


Example with Headings

<table border="1">
<tr>
<th>Heading</th>
<th>Another Heading</th>
</tr>
<tr>
<td>row 1, cell 1</td>
<td>row 1, cell 2</td>
</tr>
<tr>
<td>row 2, cell 1</td>
<td>row 2, cell 2</td>
</tr>
</table>
Blank Cell

<table border="1">
<tr>
<td>row 1, cell 1</td>
<td>row 1, cell 2</td>
</tr>
<tr>
<td>row 2, cell 1</td>
<td></td>
</tr>
</table>

Note: Some browsers will display the empty cell differently if it contains &nbsp; rather than nothing (or just spaces).

Table Attributes

◆ border
  » default is no border (or border = "0")

◆ cellspacing
  » amount of space between the contents of the cell and the cell wall, default is 1

◆ cellspacing
  » defines the space between cells, default is usually 2

◆ width
  » width of table defined in pixels (width="300") or percentage of the browser window (width="75%")
  » if defined in percentage, resizing window resizes the table

Multiple Rows/Columns

◆ colspan
  » defines a cell to be a certain number of columns across

◆ rowspan
  » defines a cell to be a certain number of rows high

◆ Both are defined as attributes of the cell
  » either in <td> or <th>

Color, Captions, and Cell Width

◆ bgcolor
  » can be used as attribute for <table> or <td>

◆ caption
  » specified by <caption> … </caption> tags inside the table
  » must right after <table> in XHTML
  » can use align attribute (bottom, top, left, right)

◆ cell width / height
  » attribute of <td> and <th>
  » either in pixels or percentage of table width

Nested Tables

◆ Tables within tables

◆ Any cell can be another table

```
<table border="1">
  <tr>
    <td>cell 1</td>
    <td>cell 2</td>
  </tr>
  <tr>
    <td>
      <table>
        <tr>
          <td>subcell 1</td>
          <td>subcell 2</td>
        </tr>
        <tr>
          <td>subcell 3</td>
          <td>subcell 4</td>
        </tr>
      </table>
    </td>
    <td>cell 3</td>
  </tr>
</table>
```

In-Class Exercise

◆ Write the HTML needed to create the following table:

```
<table>
<thead>
<tr>
<th>Date</th>
<th>Opponent</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oct 23</td>
<td>Georgia State</td>
<td>3:30pm</td>
</tr>
<tr>
<td>Oct 30</td>
<td>at Hampton</td>
<td>1pm</td>
</tr>
</tbody>
</table>
```
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- Lists
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- Common Mistakes
- Tables

Next: Images, Colors, and Image Maps