PIC 40A

Lecture 3: HTML elements and entities

HTML Tags

Tags are fundamental syntactical units used to specify categories of **content**

Typical tag: <table>

This is an opening tag. Closing tag would be </table>.

Tag Attributes

- A tag can have zero or more **attributes** which
– clarify, describe or modify it

- Each attribute is indicated by a name-value pair:
-attribute is written inside the opening tag

```
<tagname att1="value1" att2 ="value2"> </tagname>
```

Example:

```
<img src="mountain.jpg" alt="A mountain" />

<a href="www.math.ucla.edu/~virtanen>My page</a>
```

HTML Elements

Element begins with an opening tag then usually has content and then a closing tag.

Syntax of an **element**: opening tag, content, closing tag

`<element_name>Some stuff</element_ name>`

Example:

`<b>`**This is bold**`</b>`

Empty elements

Not all elements have content.

`<br></br>`

This is a newline tag it is its own opening and closing tag.

Note you can short cut this as `<br/>` .

Element Nesting

- **Nested** elements are elements contained in other elements.
- Elements may or may not be able to nest
- The entire child element must be within the opening and closing tags of its parent element

Proper nesting:

```
<ul>              Parent element
    <li>
    </li>         Child element
</ul>
```

Indenting

Nested elements should be indented

```
<parent>
    <child1>
        <child2>
        </child2>
    </child1>
</parent>
```

Note on indenting

It is quite common to have opening and closing tags for one line elements on the same line

```
<h1>Headline</h1>
```

rather than

```
<h1>
    Headline
</h1>
```

HTML Elements

There are two types of elements, block and inline.

Block elements

•are the main components of doc structure
•start a new line by default
•stack up like blocks

Inline elements

• occur in the flow of text
• do not cause line breaks by default (except for the line break element `<br/>`)

Block elements: Headings `<h1>`, `<h2>` etc.

- They are used for titles for a paragraph.

- Think headline in a newspaper.

- Bold text by default

- Comes in 6 different sizes.

Example:

```
<h1>This is biggest!</h1>

<h2>Bit smaller, still big.</h2>

     .
     .
     .

<h6>This is the smallest one.</h6>
```

Block elements: Paragraphs `<p>`

- Needed since one cannot place text directly into body element

- Can contain text and inline elements

- May not contain block elements

- Ignores whitespace (newlines, tabs, spaces) except for a single space

Example:

```
<p>Type your paragraph here.</p>
```

Block elements: Horizontal Rule `<hr />`

- Draws a horizontal line to separate sections of the doc

```
<h3>Homework #4</h3>
<p>p. 16: 3,7,18,21,26</p>

<hr />

<h3>Homework #5</h3>
<p>p. 28: 15,45</p>
```

See example

Block elements: <div> tag

Used to divide the document into natural blocks

```
<div>

    <!--many different kind of related things -->

</div>
```

Used for dividing the page into large sections
-Menus
-Main text areas
-Footer

In older web documents main structure was given by tables.

with help of Cascading Style Sheets (CSS) div tags offer an alternative way to structure a web page.

Look at the source of our class page to see the <div> tag in action

Inline elements: Line break

- Creates a newline

- Useful since by default XHTML removes all non-single space whitespaces including newlines so you need this tag

- Inline element

- Can be nested with (used inside) paragraphs!

```
<p>Hey what's <br/><br/><br/><br/><br/>up?</p>
```

Inline elements: Image tag

Used to display images on web pages

Syntax:

```
<img src="url here" alt="Description" />
```

Note: img tag is self closed, cannot be put directly into body. Must be inside a <div> or a <p>

- Required attributes
- `src` (URL for image file)
- `alt` (text to be displayed if image cannot be found)

- browser loads image in place of `img` tag

Example:

```
<img src="dog.jpg" alt="This is a dog."/>
```

Image tag optional attributes

`height` value given in pixels or %

`width` value given in pixels or %

Inline elements: Links

Tag for a link is called an anchor tag.

`<a href="http://www.math.ucla.edu/~v"> My website</a>`

- Used to display hypertext links

- Links to a destination or **target**

- Doc containing anchor tag is the **source**

- Target can be a filename, URL, or refer to a **fragment** (section of a hypertext doc)

- `href` (hypertext reference) is a mandatory attribute that specifies the target

- Content can be text, image, heading, line break, and usually describes the hyperlink

Link examples

Example:
Link to a file

```
<a href="myresume.pdf>Resume</a>
```

Example:
Make an image a clickable link

```
<a href="http://mywebsite.com/photos">
<img src="http://mywebsite.com/photos/dog1.jpg" alt="Dog"/>
</a>
```

See Point Reyes (img2.html) for detailed example

Linking within a document

In long documents you might want to jump to a section within the document

A section of a document you can jump to is called a **fragment.**

To create a fragment we first add an an id attribute to an element we want to jump to.

Example:

```
<h1 id="intro">Introduction</h1>
```

To link to a fragment, give the anchor's `href` attribute a pound sign `#` followed by the `id` value of the tag beginning the fragment or section

Example:

```
<a href="#intro">Back to intro</a>
```

XHTML Character Entities

Used to express special characters that are needed in a document but either

•cannot be typed as themselves
•may not appear on a keyboard

For example:

```
       non-breaking space
&lt;        less-than <
&gt;        greater-than >
&copy;         copyright symbol ©
&reg;       registered trademark ®
```

Full reference: http://www.webstandards.org/learn/reference/charts/entities/

<meta> tag

- Metadata is information about data.
- The `<meta>` tag provides metadata about the HTML document. Metadata will not be displayed on the page, but will be machine parsable.
- Meta elements are typically used to specify page description, keywords, author of the document, last modified, and other metadata.
- The `<meta>` tag always goes inside the head element.
- The metadata can be used by browsers (how to display content or reload page), search engines (keywords), or other web services.

`<meta>` Examples

```
<meta http-equiv="Content-Type"
content="application/xhtml+xml; charset=utf-8"/>

<meta name="authors" content="Joe Bruin"/>

<meta name="description"
content="Homepage of Joe Bruin"/>

<meta name="keywords"
content="ucla, mascot, homepage" />

<meta name="copyright"
content="Copyright 2009 Joe Bruin, All Rights
Reserved"/>
```

Validating your documents

`http://validator.w3.org/` has a validator

You must validate all your documents

All documents must be valid to receive full credit.

We will try to validate documents as XHTML documents whenever possible.

Once we start using elements that belong only to HTML5 then obviously we cannot do this.

We will validate those documents as HTML5 documents.