Lecture 3: XHTML elements and entities
**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>
**XHTML Elements**

**Element** is a structural or stylistic block that 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/> .
**XHTML 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>
  <li></li>
</ul>
```
Indenting

Nested elements should be indented

```xml
<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

```html
<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 `<br/>`

- 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!

```html
<p>Hey what's `<br/>`<br/> `<br/>` `<br/>` `<br/>` `<br/>` up?</p>
```
Inline elements: Image tag

Used to display images on web pages

Syntax:

\[ \text{<img src="url here" alt="Description" />} \]

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 \text{img} tag

Example:

\[ \text{<img src="dog.jpg" alt="This is a dog."/>} \]
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.

```html
<a href="http://www.math.ucla.edu/~virtanen"> 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

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

<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
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 id attribute to an element we want to jump to.

**Example:**

```html
<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:**

```html
<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:

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

www.w3.org has a validator

You must validate all your documents

All documents must be valid to receive full credit

<p>
  <a href="http://validator.w3.org/check?uri=referer">
    <img src="http://www.w3.org/Icons/valid-xhtml11" alt="Valid XHTML 1.1" height="31" width="88" />
  </a>
</p>

I will post a second template containing this code