Lecture 1 - HTML

Elements

The elements of the HTML are called *tags*. General form of a tag is:

```
<tag-name attribute="val" ... attribute="val" event="..functon..">
     ... text content ...
</tag-name>
```

Tags tell the broswer how the "text content" should be displayed in the web page.

Attributes specifies characteristics of the tags.

Comment : <!—..—>

Basic "Hello world" example

```
<!doctype html>
<html>
  <head>
    <title>Hello world page</title>
  </head>
  <body>
    Hello World!
  </body>
</html>
```

An HTML document has an *hierarchical structure*. The main HTML tags are:

- <!doctype html> defines that this document is an HTML5 document

- <html> - root of the html document

- <head> - contains metadata about the document, action-scripting styles and general information referenced in the whole document

- <body> - contains the actual text of the document

Global attributes

All standard HTML tags have a set of global attributes. These global attributes do not need to be specified in every HTML document, only the one that are needed.

The global attributes that all tags have are:

- *Core attributes:*

  - class – specifies a classname for the element (used with CSS)

  - id – specifies an ID for the element

  - style – specifies an inline style for the element (CSS)

  - title – specifies extra information for the element (tooltip text)

  - contenteditable – specifies if content is editable (true/false)

  - draggable – if element can be dragged and dropped (true/false)

  - hidden – if element is hidden

- *Language attributes:*

  - dir="ltr | rtl" – specifies text direction for the contents of the element

- lang – specifies a language code for the contents of the element
- translate –specify whether content should be translated if page is localized
- **Keyboard attributes:**
  - accesskey – specifies a keyboard shortcut to access the elem.
  - tabindex – specifies the taborder of the element

In HTML there are several types of tags: *metadata tags*, *section tags*, *text-level appearance tags*, *grouping tags*, *image tag*, *anchor tag*, *table tag*, *script tag* and *embeded content tags*.

Metadata tags

They usually appear inside the <head> and they specify information about the current document like the title of the document, author, the encoding of the document, keywords etc.

- **<title>** - specifies the title for the document
  - ▼ **Example**

```
<head>
  <title>My title</title>
</head>
```

- **<base>** - specifies a default URL (Uniform Resource Locator) and a default target for all the links on a page
  - <base href="..URL.." target="_blank | _parent | _self | _top | framename">
  - ▼ **Example**

```
<head>
  <base href=http://www.cs.ubbcluj.ro/~forest>
  <base target="_blank">
</head>
```

- **<link>** - defines the relationship between a document and an external resource. Attributes:
  - href - location of the linked document
  - rel - relationship between current document and linked document: *alternate, appendix, bookmark, chapter, contents, copyright, glossary, help, home, index, next, prev, section, start, stylesheet, subsection*
  - rev - relationship between linked document and current document; values the same as above
  - type – MIME type of the linked document
  - target – where the document is to be loaded
  - ▼ **Example** - for including a stylesheet

```
<link rel="stylesheet" type="text/css" href="theme.css">
```

- **<meta>** - describes information about the html document; not displayed
  - ▼ **Example**

```
<meta name="description" content="Simple html page">
<meta name="author" content="Adrian Sterca">
<meta name="keywords" content="html, www">
<meta http-equiv="Content-Type" content="text/html;charset=ISO-8859-1">
```

- **<style>** - defines style information

  ▼ *Example*

  ```
  <style type="text/css">
  h1 {color:red}
  p {color:blue}
  </style>
  ```

Section tags

They define sections of the document. The **classical** section tags in HTML are:

- **<body>** - document body which contains all the text, hyperlinks, tables, images etc

- **<head>** - head section of the document; can contain the tags: *<base>, <link>, <meta>,<script>,<style>,<title>*

- **<div>** - section in an HTML file; it groups together elements which will be formatted using the same style

- **<frameset>** - set of frames; it is mutually exclusive with <body>. Attributes:

  - cols = pixels | % | * - the number and size of columns in a frameset

  - rows = pixels | % | * - the number and size of rows in a frameset

  ▼ *Example*

  ```
  <frameset cols="25%,*,25%">
    <frame src="frame_a.htm">
    <frame src="frame_b.htm">
    <frame src="frame_c.htm">
  </frameset>
  ```

- **<frame>** - frame (window) within a frameset. Attributes:

  - frameborder = 0 | 1

  - marginheight = pixels (top and bottom margins of a frame)

  - marginwidth = pixels (left and right margins of a frame)

  - name – name of a frame

  - noresize = "noresize"

  - scrolling = "yes | no | auto"

  - src = "URL" - URL of the document to show in a frame

- **<iframe>** - inline frame that contains another document within the current document

- **<h1>,<h2>,<h3>,<h4>,<h5>,<h6>** - defines headings

  - headings = titles of sections

  - browsers automatically add an empty line before and after a heading

- **<p>** - paragraph

  - browsers automatically add an empty line before and after a paragraph

  ▼ *Example*

  ```
  <p>This is a paragraph</p>
  ```

Text-level appearance tags

These are tags useful for altering the appearance of text, making text bold, italic etc.

They were used in the initial versions of HTML, but became deprecated in subsequent versions, favouring the CSS alternatives of these tags.

- *<b>* - bold text

- *<i>* - italic text

- *<em>* - emphasized text

- *<strong>* -strong text

- *<s>* - trikethrough text

- *<u>* - underlined text

- *<del>* - deleted text

- *<sub>* and *<sup>* - subscript and superscript text

- *<pre>* - preformatted text (text is displayed exactly as is written)

- *<small>* - small text

- *<big>* - big text

Grouping tags

One type of grouping tags is definition lists which are formatted using the HTML tags: *<dl>*, *<dd>*, *<dt>*.

A definition list is just a list of terms-description pairs.

▼ *Example*

```
<dl>
  <dt>Name1</dt>
  <dd>Name1 is something1</dd>
  <dt>Name2</dt>
  <dd>Name2 is something2</dd>
  <dt>Name3</dt>
  <dd>Name3 is something3</dd>
</dl>
```

Name1
        Name1 is something1
Name2
        Name2 is something2
Name3
        Name3 is something3

Another grouping tag is ordered list defined using the tags: *<ol>*, *<li>*.

An ordered list appears in the browser as a list of numbered items. The numbers used for items are customizable through CSS rules.

▼ *Example*

```
<ol>
    <li>Ferrari</li>
    <li>Audi</li>
    <li>BMW</li>
    <li>Ford</li>
</ol>
```

```
1. Ferrari
2. Audi
3. BMW
4. Ford
```

Another grouping tag is unordered list defined using the tags: *<ul>*, *<li>*.

An unordered list is similar to an ordered list and it appears in the browser as a list of unnumbered items. Each item is preceeded by a bullet, icon, circle.

▼ *Example*

```
<ul>
    <li>Ferrari</li>
    <li>Audi</li>
    <li>BMW</li>
    <li>Ford</li>
</ul>
```

```
• Ferrari
• Audi
• BMW
• Ford
```

A fourth type of grouping tags are drop-down lists constructed using the tags: *<select>*, *<option>*.

The appear in the browser as a drop-down list of options.

▼ *Example*

```
<select>
    <option value="ferrari">Ferrari</option>
    <option value="audi">Audi</option>
    <option value="bmw">BMW</option>
    <option value="ford">Ford</option>
</select>
```

```
Ferrari ▼
Ferrari
Audi
BMW
Ford
```

Image tag

The *<img>* tag embeds an image into html document.

```
<img src="z.jpg" alt="Alternative Text">
<img src=http://www.google.com/t.jpg>
```

The src specifies the image stored locally or remote (through an URL) used.

The *required attributes* for an img tag are : *src* and *alt* (alt is for browsers that can not display images, e.g. lynx). Optional attributes are:

- align = top | bottom | middle | left | right

- border = pixels

- height = pixels | %

- width = pixels | %

- hspace = pixels

- vspace = pixels

Anchor tag

The anchor tag, **\<a\>**, is a very important tag in HTML because it links current document to another document or a section from the current document.

▼ ***Example***

```
<a href=http://www.google.com>google</a>
<a name="test">some text</a>
```

1 - links this html document to an external document (e.g. www.google.com).

2 - creates a bookmark inside the document; it is not displayed by the browser, it is invisible; this bookmark can be referenced by:

- URL_of_this_document#test

- ex: http://www.google.com/index.html#test

The attributes of an anchor tag are:

- href: the URL of the destination of the link

- name: the name of the anchor (bookmark)

- rel: relationship between the current document and the linked document

- rev: relationship between the linked document and the current document

- shape: the shape of the link (default, rect, circle, poly)

- target: where to open the linked document (_blank, _parent, _self, _top, framename)

Table Tag

The table tag displays text in rows and in table cells inside rows.

Table rows are defined with **\<tr\>** and table cells are defined using **\<td\>**.

The **\<table\>** tag defines a table. **\<th\>** defines a table header cell (bold and centered).

▼ ***Example***

```
<table border="1">
<tr>
  <th>Professor</th>
  <th>Course</th>
  <th>Year of study</th>
</tr>
<tr>
  <td>John Boyd</td>
  <td>Operating Systems</td>
  <td>2</td>
</tr>
<tr>
  <td rowspan="2">Frank Black</td>
  <td>Web Programming</td>
  <td>3</td>
</tr>
<tr>
  <td>Computer Networks</td>
  <td>3</td>
</tr>
```

```
  <tr>
    <td>Jack O'Neil</td>
    <td>Satellite Communications</td>
    <td>3</td>
  </tr>
  </table>
```

Professor	Course	Year of study
John Boyd	Operating Systems	2
Frank Black	Web Programming	3
	Computer Networks	3
Jack O'Neil	Satellite Communications	3

The list of attributes:

- for <table>: border (pixels), cellpading (pixels), cellspacing (pixels), frame, rules, summary (text), width (pixels,%)

- for <th> and <td>: abbr (text), align (left,right,center,justify,char), axis, bgcolor - deprecated, char (character), charoff (number), colspan (number), headers, rowspan (number), height – deprecated, width – deprecated, scope (row,rowgroup,col,colgroup), valign (top,middle,bottom,baseline)

- for <tr>: align, bgcolor - deprecated, char, charoff, valign

Script Tag

The *<script>* tag is used for inserting action scripting into the current HTML document. Javascript adds interactivity to the current website.

▼ *Example*

```
<script type="text/javascript">
  ... javascript code ...
</script>
```

The list of attributes of the <script> tag are:

- src: URL of the script

- defer: execution of the script should be delayed until the page has loaded

- charset: specifies encoding used in an external file

Embedded content tags

The *<object>* tag includs objects like images, audio, video, Java applets, ActiveX, pdf, flash.

▼ *Example*

```
<object classid="clsid:F08DF954-8592-11D1-B16A-00C0F0283628" id="Slider1" width="100" height="50">
    <param name="BorderStyle" value="1" />
    <param name="MousePointer" value="0" />
    <param name="Enabled" value="1" />
    <param name="Min" value="0" />
    <param name="Max" value="10" />
</object>
```

Other tags are *
* which moves to the beginning next line and *<hr>* which draws a horizontal row

New structural tags in HTML 5

HTML 5 assumes that <div> should be used as the last resort, if no other structural element is suitable.

The new structural elements introduced by HTML 5 are :

- ***<main>*** - main content of the <body> of the document
    - includes content that is unique to that document and excludes data that is repeated across a set of documents (e.g. header, footer, navigational links, copyright)
    - no sectioning element. There should be one visible main element in the document
- ***<section> -*** generic section of a document. It groups thematic content
    - ▼ ***Example***

```
<section>
  <p>Web programming studies html, css and js</p>
  <p>Tim Berners-Lee invented the www</p>
</section>
<section>
  <p>Operating systems are essential software for computers</p>
  <p>OS example: Unix, Linux, MacOS</p>
</section>
```

- ***<article>*** - complete, or self-contained, composition in a document
    - ▼ ***Example***

```
<article>
  HTML 5 was standardized in late 2014. It includes new structural-semantic elements like 'article' and 'section'
  ...
</article>
```

- ***<aside>*** - content that is not in the main flow of the document
- ***<footer>*** and ***<header>*** - contain text that should appear as header and respectively, footer on all documents from a website
    - ▼ ***Example***

```
<header>
  Welcome to the page of A. Sterca.
</header>

<footer>
  <a href="../">Back to index...</a>
</footer>
```

- ***<nav>*** - section with navigational links
    - ▼ ***Example***

```
<nav>
  <a href="#">Home</a>
  <a href="#">Users</a>
  <a href="#">Actions</a>
</nav>
```

- ***<svg>*** - render vector graphics
    - ▼ ***Example***

```
<svg width="200" height="250">
  <rect x="10" y="10" width="30" height="30" stroke="black" fill="transparent" stroke-width="5"/>
</svg>
```

- **<audio>** and **<video>** - adding video and audio content

  ▼ **Example**

  ```
  <video width="320" height="240" controls>
      <source src="movie.mp4" type="video/mp4">
      <source src="movie.ogg" type="video/ogg">
   </video>
  ```

- **<figure>** and **<figurecaption>** - adding figures

  ▼ **Example**

  ```
  <figure>
    <img src="bubbles-work.jpg">  <figcaption>Bubbles at work</figcaption>
  </figure>
  ```