COMPSCI 111 / 111G
Mastering Cyberspace:
An introduction to practical computing

HTML5

Markup Languages

- **Markup**
  - Indicates the formatting that should be used to display the page

- **Markup Language**
  - A markup language consists of special tags which are placed in the text
  - Specifies how to format the text

- **Hypertext Markup Language (HTML)**
  - Used to format web pages
  - Contains hypertext information (links)
  - Written in ASCII / Unicode
  - Embedded format codes (tags)

Browser Wars

- **HTML 1.0**
  - Tim Berners Lee (1993)

- **Browsers added extra features**
  - Internet Explorer had unique tags
  - Netscape Navigator had unique tags

- **Major problem**
  - What tags should a publisher use?
  - How can this problem be resolved?

http://en.wikipedia.org/wiki/Browser_wars
Development of HTML

- **HTML 2.0**
  - Internet Engineering Task Force standard (1995)

- **HTML 3.2 / HTML 4.0**
  - W3 Consortium recommendation (1997)

- **HTML 4.01**
  - W3C recommendation (1999)

- **XHTML 1.0**
  - W3C recommendation (2000)

- **HTML5**
  - Fifth revision of HTML standard. Standardized October 2014.


Document Type Definition

- Defines which standard is being used for the page
  - We use HTML5

- Should appear at the top of the file

  ```html
  <!DOCTYPE html>
  ```

Encodings

- Different character sets used to encode the page
  - ASCII
  - UTF-8
  - Unicode

- Need to tell the browser which encoding is used
  - Located in the `<head>` of the document.

  ```html
  <meta charset="UTF-8">
  ```

Use at the start of every file

- Copy and paste the code exactly as it appears
  - Will be provided in tests and exams

  ```html
  <!DOCTYPE html>
  <html>
  <head>
  <meta charset="UTF-8">
  </head>
  ```
HTML Source Code

- **Code used by the browser to display the page**
  - White space is ignored

- **Comments**
  - Ignored by the browser
  - Allow you to document your code
  - <!-- Put your comment here -->

- **Layout**
  - Use tidy layout where possible
  - Make code easy to understand
  - Make code easy to maintain/modify
  - Use whitespace and comments to help

Overview of tags

- **Markup achieved with “tags”**
  - Enclosed with angle brackets < ... >
  - Use lower case
  - Most come in pairs <tag> ... </tag>

- **Tag usually applies to text between start and end tag**

This word is in `<span>italics</span>`

Attributes

- **Some tags require additional information**
  - Properties or attributes of the tag
  - `<tag property="value"> </tag>`

Nested Tags

- **Tags must be correctly nested**
  - Cannot close an open tag until all the open tags that it affects are also closed

```html
<tag>
  Text only affected by “tag”
</tag>

<tag2>
  Text affected by both “tag” and “tag2”
</tag2>

Text only affected by “tag”
</tag>
```
Essential tags

<html>
   <head>
      <meta charset="UTF-8">
   </head>
   <body>
   </body>
</html>

- Encloses the entire document
- Specifies that the document uses html

<head>
   - Contains information for the browser
     - E.g. character encoding used
     - Does not contain any content to be displayed on the page
</head>

<title>
   - Part of the head
   - Specifies the title to be used by the browser
   - Name of the window
   - Used in navigation (bookmarks, history, etc.)
</title>

<body>
   - Contains all the content that will appear on the page
</body>
HTML5 Exercise

Exercise 1: What does HTML stand for?
• Hypertext Markup Language

Exercise 2: What is a document type definition used for?
• Defines which standard is being used for the webpage

Exercise 3: What is “white space”?
• Characters or series of white space characters that define horizontal or vertical spaces

Paragraphs
<p>
– Defines a paragraph of text

```html
<html>
<head>
<meta charset="UTF-8">
<title>Introduction to tags</title>
</head>
<body>
<p>This is a very simple web page</p>
<p>It contains two different paragraphs of text.</p>
</body>
</html>
```

Block-level tags

Define the structure of a “block”
– Headings
– Paragraphs
– Lists
– Tables
– Preformatted text

HTML5 Exercise

• Exercise 4: Create a complete HTML5 document with the title “Simple page”. The only text that should appear on the page is “Hello World”.

```html
<!DOCTYPE html>
<html>
<head>
<meta charset="UTF-8">
<title>Simple Page</title>
</head>
<body>
<p>Hello World</p>
</body>
</html>
```
Headings

Six levels of headings

- `<h1>` First level heading
- `<h2>` Second level heading
- `<h3>` Third level heading
- `<h4>` Fourth level heading
- `<h5>` Fifth level heading
- `<h6>` Sixth level heading

Example of Head, Heading and Title

```html
<html>
<head>
  <meta charset="UTF-8">
  <title>Titles, headings and heads</title>
</head>
<body>
  <h1>Title</h1>
  <p>The title is part of the document head</p>
  <h2>Head</h2>
  <p>The head is not shown on the page</p>
  <h2>Heading</h2>
  <p>These come in different sizes and make up the content of the page. They should therefore be used only in the body.</p>
  <p>Do not get confused</p>
</body>
</html>
```

Ordered Lists

- Automatically numbered
- `<ol>` Contains the entire list
- `<li>` Used for each list item

```html
<p>Structure of an HTML document</p>
<ol>
  <li>HTML</li>
  <li>HEAD</li>
  <li>BODY</li>
</ol>
```
Unordered Lists

- Bullet Points
- `<ul>` ... `</ul>` Contains the entire list
- `<li>` ... `</li>` Used for each list item

```
<p>Structure of an HTML document</p>
<ul>
  <li>HTML</li>
  <li>HEAD</li>
  <li>BODY</li>
</ul>
```

Description Lists

- Terms and explanations
  - `<dl>` ... `</dl>` Contains the entire list
  - `<dt>` ... `</dt>` Defines a term in a description list
  - `<dd>` ... `</dd>` Is used to describe a term in a description list

```
<p>Some definitions</p>
<dl>
  <dt>HTML</dt>
  <dd>Hypertext Markup Language</dd>
</dl>
```

Tables

- Used to format tables of information
- By default, there are no borders shown

```
<table>
  <tr>
    <td>...</td>
  </tr>
</table>
```

Tags required to format Tables

- `<table>` ... `</table>` Surrounds the entire table
- `<tr>` ... `</tr>` Identifies a row in the table
- `<td>` ... `</td>` Each element/cell of data in the row

```
<tr>
  <td>...</td>
  <td>...</td>
  <td>...</td>
</tr>
```
A simple table example

Exercise 1: Write a fragment of HTML5 code that will generate a table with 2 rows and 1 column. The text in the first row should be “first row” and the text in the second row should be “second row”.

```html
<html>
<head>
    <meta charset="UTF-8">
    <title>Simple Table</title>
</head>
<body>
    <p>What follows is a simple table:</p>
    <table>
        <tr>
            <td>One Row</td><td>Two Columns</td>
        </tr>
    </table>
</body>
</html>
```