COMPSCI 111 / 111G
An introduction to practical computing

HTML5 and CSS
Essential Tags

• HTML5 requires the following tags to be in your html source file:
  – html
  – head
  – title
  – body
Block-level tags

Define the structure of a “block”
- Headings
- Paragraphs
- Lists
- Tables
- Preformatted text
• Inline tags
• Sections
• CSS stylesheets
Inline tags

Appear within the blocks
   Apply to words within paragraphs etc.

Common inline tags
   Line Breaks
   Images
   Hypertext References
Empty tags

Tags that apply at a given point
Do not format content
Only the opening tag is required.

Line breaks
<br>

Images
<img>
Line break

Breaks a line
   Same as hitting the Enter key
   Use `<br>`

```html
<p>Hello Class</p>
<p>Hello<br>Class</p>
```
Images

Pages may contain images
   But images are not plain text
   Can’t be inserted directly into HTML page

Solution
   Store the image on the internet (or locally on disk)
   Tag contains the address of the image
   Web browser loads image when required
   Only use images the browser understands
   GIF, JPG, PNG
Image tag

```html
<img>
   Insert an image at this location

src
   The source file of the image
   Attribute that specifies the file name

alt
   Attribute to specify alternate text
   Displayed if the image can’t load
   Important for people with visual impairment

<img src="filename" alt="description">
An image is inserted inline, so it is used inside a block-level element (a paragraph in this example).

```
<p>
Here is one of my holiday pictures.
<img src="Empire.jpg" alt="The Empire State Building">
It was late December and it was very cold.
</p>
```
A link to another resource on the WWW
References to other documents
Pages, images, files, sections

<a>
  Anchor tag
</a>

href
Attribute used to specify the destination of the link
URL

<a href="... url ...">link text</a>
URLs

Fully specified
  Protocol
  Host name
  Path
  File

Relative
  Omit the first parts
  Path and file
  File

/courses/compsci111/index.html
lectures/index.html
index.html
Exercise 1: What HTML5 code is required to create a hypertext reference that links to a page at the location "http://www.cs.auckland.ac.nz/courses/compsci111/". The underlined link on the page should be the text “111 home page”.

```html
<!DOCTYPE html>
<html>
<head>
<meta charset="UTF-8">
<title>Simple Page</title>
</head>
<body>
<p>
<a href="http://www.cs.auckland.ac.nz/courses/compsci111/">111 home page</a>
</p>
</body>
</html>
Validated Code

Online system to check correctness of code
Provided by W3C
http://validator.w3.org
<!DOCTYPE html>
<html>
<head>
<meta charset="UTF-8">
<title>A sample page</title>
</head>
<body>
<h1>Example</h1>
<p>This is a complete html5 web page. You can verify that all the code is correct using the <a href="http://validator.w3.org">W3C Validator</a>.</p>

<h2>Images</h2>
<p>If your code is correct, you will get this message showing that your page has validated.</p>
<p><img src="validated.png" alt="Validated html5"></p>

<p>Author: Damir Azhar<br>
Date: 19/01/15<br></p>
</body>
</html>
Example page

Example

This is a complete html5 web page. You can verify that all the code is correct using the W3C Validator.

Images

If your code is correct, you will get this message showing that your page has validated.

This document was successfully checked as HTML5!

Author: Damir Azhar
Date: 19/01/15
Sections

• `<section>` tag defines a section in a HTML5 document.
  • Can be used to split a web page into different sections.

• Is an example of a semantic element.
  • An element that clearly defines its content to both the browser and the developer.
<section> example

<!DOCTYPE html>
<html>
<head>
<meta charset="UTF-8">
<title>Section Tag Example</title>
</head>
<body>
<h1>About Me</h1>
<section>
<h2>Work</h2>
<p>Most of my work centres around COMPSCI 111 where I:</p>
<ul>
<li>Lecture</li>
<li>Run labs</li>
</ul>
</section>
<section>
<h2>Interests</h2>
<p>My interests include:</p>
<ul>
<li>Gaming</li>
<li>Reading</li>
</ul>
</section>
</body>
</html>
Styles

A style changes the way the HTML code is displayed

- Same page displayed using different styles

---

http://csszengarden.com
Defining a style

Styles are defined using rules
- Selector – determines what the rule applies to
- Property – the thing that will be changed
- Value – the value that will be used

```html
h1 { color: green; }
```

Selector

Property

Value
Grouping rules

Multiple tags that use the same rule
- h1 { font-weight: bold }
- h2 { font-weight: bold }

Same style defined for multiple selectors
- h1, h2 { font-weight: bold }
Grouping rules

Same tag using multiple rules
- h1 { color: green }
- h1 { text-align: center }

Apply multiple properties to the same selector
- h1 {
  color: green;
  text-align: center;
- }
Class selectors

Sometimes want to apply a style to specified tags
  – Most paragraphs are normal
  – Some paragraphs are quotes

Define a style that can be applied to a group of tags
  – Class selector

  .className { property: value; }

In HTML5 source code
  – Assign the tag to the class
  – Use an attribute

  <tag class="className"> ... </tag>
Example – class selector

Style defined as follows:

```
.quote
{
    text-align: center;
    font-style: italic;
}
```

HTML5 source code uses the style as follows:

```
<p class="quote">
Let's face it, the average computer user has the brain of a Spider Monkey --- Bill Gates
</p>
```
Id selectors

Sometimes want to apply a style to a single tag
  – E.g. Defining a special heading

Define a style that can be applied to a single tag
  – Id selector

    #idName { property: value; }

In HTML5 source code
  – Use an attribute to specify the id used for the tag

    <tag id="idName"> ... </tag>
Example – id selector

Style defined as follows:

```css
#footer
{
    text-align: center;
    font-style: italic;
}
```

HTML5 source code uses the style as follows:

```html
<p id="footer">
    Copyright 2015
</p>
```
Exercise 2: What is a “selector” in a CSS style?

A selector specifies where in a web page CSS styles will be applied. Selectors are typically names of tags e.g. body, p, h1 etc. There are 2 types of user specified selectors as well; class selectors and id selectors.
Location of the styles

Three possible locations

– External style sheet
– Internal style sheet
– Inline styles
External Style Sheet

Styles are defined in a file

- Used when styles apply to more than one web page
- Entire site has a consistent visual theme

```css
.quote { text-align: center; }

h1 { color: green; }
```

Saved in a file called theme.css

Web page must be told where to find the style sheet

- `<link>` tag has 3 attributes:
  - `rel` specifies relationship between current document and linked document
  - `href` specifies location of linked document
  - `type` specifies media type of linked document
- Is an empty tag so only an opening `<link>` tag is required.

```html
<head>
<title> ... </title>
<link rel="stylesheet" href="theme.css" type="text/css">
</head>
```
Internal Style Sheet

Styles are defined in the head of the page
- Used when styles apply to only the one web page
- Keeps all the visual formatting located in the same place

```
<style type="text/css">
  - Used in the head of the document to contain styles
  - `type` attribute specifies media type of the `<style>` tag

    <head>
    <title>Example</title>

    <style type="text/css">
      .quote { text-align: center; }

      h1 { color: green; }
    </style>

    </head>
```
Inline styles

Styles are defined in the tag

– Used when style is applied only to that tag
– Can be required to override styles
– Rarely used (why would you?)

```html
<p style="text-align: center;">
This paragraph will be centred using an inline style.
</p>
```
Cascading Style Sheets

Order to apply styles

1. Browser default
2. External style sheet
3. Internal style sheet
4. Inline styles

Increasing priority

http://en.wikipedia.org/wiki/Cascading_Style_Sheets

CSS Exercises

• Exercise 3: Write a simple HTML5 page with the title “Simple CSS example”. The body of the page should contain a single paragraph with the text “Hello”. The text should have the “color” property set to “green”. An internal style sheet should be used to define an appropriate style that can be applied to the paragraph.

```html
<html>
<head>
    <meta charset="UTF-8">
    <title>Simple CSS Example</title>
    <style type="text/css">
        p {color: green;}
    </style>
</head>
<body>
    <p>Hello World</p>
</body>
</html>
```
Exercise 4: Put the following into increasing order of priority. The item at the bottom of the list should have the highest priority.

Internal Style, Browser Default, Inline Style, External Style

1. Browser default
2. External style sheet
3. Internal style sheet
4. Inline Style
<div> and <span>

Two additional tags used with CSS

- Allow a style to be applied to arbitrary group of elements

<div>
- Block-level tag
- May contain other block-level tags
- Invisible in HTML5, but can have styles applied

<span>
- Inline tag
- May contain other inline tags
- Invisible in HTML5, but can have styles applied
Examples

<!DOCTYPE html>
<html>
<head>
<meta charset="UTF-8">
<title>A sample page</title>
<link rel="stylesheet" href="mystyle.css" type="text/css">
</head>
<body>
<h1>Example</h1>
<p>This is a complete html5 web page. You can verify that all the code is correct using the <a href="http://validator.w3.org">W3C Validator</a>.</p>

<h2>Images</h2>
<p>If your code is correct, you will get this message showing that your page has validated.</p>
<p><img src="validated.png" alt="Validated html5"></p>

<p class="footer">
<span class="catName">Author:</span> Damir Azhar<br>
<span class="catName">Date:</span> 19/01/15<br>
</p>
</body>
</html>
No CSS

Example

This is a complete html5 web page. You can verify that all the code is correct using the [W3C Validator](https://validator.w3.org).

Images

If your code is correct, you will get this message showing that your page has validated.

This document was successfully checked as HTML5!

Author: Damir Azhar
Date: 19/01/15
Same page with a style sheet

body
{
font-family: sans-serif;
}

h1, h2
{
text-align: right;
background-color: black;
color: white;
}

.footer
{
border-top-width: thick;
border-top-style: solid;
font-size: small;
}

.catName
{
font-weight: bold;
}
Same page, different style sheet

body { background-color: #eefee; }

h1, h2
{
  text-align: center;
  border-bottom-color: black;
  border-bottom-style: solid;
  color: black;
  text-transform: uppercase;
}

p:first-letter
{
  font-size: x-large;
}

.footer
{
  text-align:
  right; font-size:
  small;
}
.catName { visibility: hidden; }