COMPSCI 111 / 111G
An introduction to practical computing

HTML5 and CSS

### Block-level tags

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

### Essential Tags

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

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**HTML5 Lecture 2**

- 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

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**Line Break**

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

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

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**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

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**Empty tags**

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

**Line breaks**
- `<br>`

**Images**
- `<img>`
Image tag

`<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">`

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Hypertext reference

A link to another resource on the WWW
References to other documents
Pages, images, files, sections

`<a>`
Anchor tag

`href`
Attribute used to specify the destination of the link

URL

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

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<img> example

An image is inserted inline, so it is used inside a block-level element (a paragraph in this example).

```html
<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>
```

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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
HTML5 Exercise

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

Example

```html
<!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>
    <img src="validated.png" alt="Validated html5">
    <p>Author: Damir Azhar<br> Date: 19/01/15</p>
</body>
</html>
```

Example page

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.

Examples of `<section>`:

```html
<head>
    <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

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

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

http://csszengarden.com
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 }

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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:

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

HTML5 source code uses the style as follows:

```html
<p id="footer">
Copyright 2015
</p>
```

CSS Exercise

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

```html
.style {
    text-align: center;
}
```

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>Example</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

```html
<style type="text/css">
    .quote { text-align: center; }
    h1 { color: green; }
</style>
```

### 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>
```

CSS Exercises

- 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

Examples

```html
<!DOCTYPE html>
<html>
<head>
  <meta charset="UTF-8">
  <link rel="stylesheet" href="mystyle.css" type="text/css">
  <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>
  <div>Images</div>
  <p>If your code is correct, you will get this message showing that your page has validated.</p>
  <img src="validated.png" alt="Validated html5">
  <footer>
    Author: Damir Asmar<br>
    Date: 19/01/15<br>
  </footer>
</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.

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

Author: Donna Asher
Date: 19/04/15

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: #e6ffee; }

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; }