WEEK 2

Introduction to HTML

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- Hypertext and hyperdocuments

- The Markup concept

- Evolution of HTML

- Standards and validation

- XHTML and XML

- HTML5

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- Hypertext and hyperdocuments
  - The World Wide Web is based on the principle of *hypertext*
    - first defined by Ted Nelson in 1964
    - but the concept was suggested by Vannevar Bush in 1945 (*"As We May Think"*)
    - based on *linking* of documents by associating a part of one document (such as a piece of text) with another document; this is a *hyperlink*, and any document used in this way is *hypertext*
  - Connecting documents in this way produces a set of *hyperdocuments*

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- Hypertext and hyperdocuments
  - The Web is the result of combining this concept with
    - mechanisms for identifying documents (URLs) and servers (DNS)
    - protocols for delivering them (HTTP)
    - a markup language for indicating the links (HTML)

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- Markup principles
  - A *document* is made up of some combination of <u>structural</u> elements
    - paragraphs
    - headings
    - tables
    - images
  - A *markup language* is any *<u>formal system</u>* for indicating document structure <u>within</u> the document

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- Markup principles
  - The process of 'markup' involves adding "markers" [*tags*] to indicate the various structural elements: where a paragraph break occurs, or where text 'structures' (such as a change text weight) start and finish
  - Markers (*tags*) may be singular (e.g. meta, images) or in pairs (*containers*)
  - Tags may have *attributes* defining characteristics of the structure being marked (alignment, size …)

- Markup principles
  - The 'grammar' of specific markup languages are defined in a *document type definition* (DTD)
  - A DTD defines the syntax of all allowable tags and attributes, and a 'grammar' for their sequencing and nesting

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- HTML
  - <u>H</u>yper<u>t</u>ext <u>M</u>arkup <u>L</u>anguage
  - Originally a very simple language, text-oriented system
  - Both content and markup are in text (ASCII or Unicode)
  - Each 'version' of HTML is the result of adopting a specific DTD [1.0, 2.0, 3.0, 3.2, 4.01, 5]
  - This is called "standard HTML"

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- HTML
  - Separates web material into
    - *data*
      - the actual contents of a document – text, images - that appear to the viewer
      - defined by the developer ('author') of the content
    - *structure*
      - headings, paragraphs, lists identified by *tags*
      - restricted to the tags specified in the chosen DTD
    - *format*
      - final appearance 'on screen' when the browser has rendered the content and structure
      - defined *for* the browser developer in the DTD (and by exemplar browsers).

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- 'Standard' HTML

  – If we stick to *standard* HTML we can be assured that our material will be displayed properly now *and in the future*

  – If we use non-standard HTML we are basically hoping that the browser will 'correct' our errors

  – The process of checking that we are employing only standard HTML (a specific version) is called *validation*

"Validation is a process of checking your documents against a formal Standard, such as those published by the <u>Worldwide Web Consortium (W3C)</u> for HTML and XML-derived Web document types ... It serves a similar purpose to spellchecking and proofreading for grammar and syntax, but is much more precise and reliable than any of those processes..."

("The Site Valet", http://valet.htmlhelp.com/page/why.html)

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- 'Standard' HTML
  - We can achieve standard HTML in several ways:
    - know all the 'correct' tags and attributes in a specific version of HTML, and use only those
    - use an HTML editor with a built-in validator
    - use an online validation service (the W3C validator is the best-known)

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- XML and XHTML
  - XML (e<u>X</u>tensible <u>M</u>arkup <u>L</u>anguage) is the basis for a new approach to markup which allows developers *to define their own DTD* (hence 'extensible')
  - XHTML (e<u>X</u>tensible <u>H</u>yper<u>t</u>ext <u>M</u>arkup <u>L</u>anguage) is a markup system derived using XML
  - As XHTML 1.0 is essentially identical to 'standard' HTML 4, any valid HTML document (version 3.1 or 4.1) is also in principle a valid XHTML 1.0 document

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- XHTML rules enforced
  - Must have a doctype and conform to its rules
  - Must have <html>,<head> and <body>
  - <title> comes first in <head>
  - Quote all attributes, <p align="left">
  - Nest tags properly
  - can't omit optional close tags, </p>
  - Empty tags must close,
 <hr />
  - Lowercase all tags and attribute names

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- XML and XHTML
  - Outside the Web, XML is a significant development as it allows the structure, formatting and 'handling' of many forms of data to be defined and communicated
  - It offers a completely new and flexible approach to data storage, retrieval and interchange problems (including incorporating data into web documents)

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- HTML5

  - History

HTML5 First Public Draft	2008
HTML5 Living Standard	2012
HTML5 W3C Final Recommendation	2014

  - New HTML5 elements

    - New **semantic** elements like <header>, <footer>, <article>, and <section>.

    - New form **control attributes** like number, date, time, calendar, and range.

    - New **graphic** elements: <svg> and <canvas>.

    - New **multimedia** elements: <audio> and <video>.

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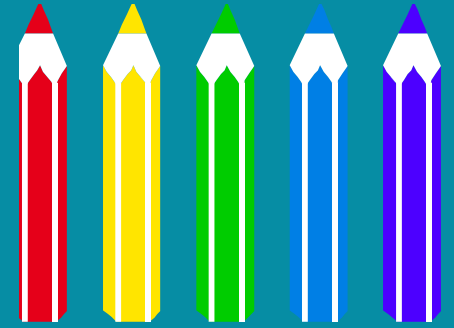**DEAKIN UNIVERSITY**

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HTML

- HyperText Markup Language

- Describes the structure of the content of a document, not its appearance

- The web browser formats the HTML i.e. it interprets the HTML and displays an image on the screen

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WRITING HTML

- Tags
  - instructions embedded in text
  - enclosed in brackets **< >**
  - start tags
  - closing tags preceded by **/**

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WRITING HTML

- Use a text editor such as NotePad
  - uses plain text
  - Word processing programs save as Text Only
- Save file with a file extension
  - .html
  - .htm
  - use simple file names
  - do not include spaces in file names

A SIMPLE HTML DOCUMENT

```html
<html>
<head>
<title>My First HTML document</title>
</head>
<body>
<p>This is where the body of the web page will appear.</p>
</body>
</html>
```

DOCTYPE
DOCUMENT TYPE DEFINITION (DTD)

- Identifies the type of HTML used by the page.

- Like a "dialect"

- Allows validation software to determine that the document is syntactically correct.

```
HTML5 -   <!DOCTYPE html>


XHTML1.0 -
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0
Strict//EN"
http://www.w3c.org/TR/xhtml1/DTD/strict.dtd>
```

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`<HTML>`

- The first page structure tag in every HTML page.
- It indicates that the file is written in the HTML language.
- All text and HTML commands should go within the beginning and end HTML tags

```
<html>
```

```
your page
```

```
</html>
```

<HEAD>

- Information about the document.
  - meta information
    - meta information is used by search engines to index pages
  - author contact information, scripts, stylesheets and comments
- Not displayed in the document.

`<TITLE>`

- Included in the `<head>` tag

- Indicates what your page is about.

- Appear in the title bar of a browser.

- Used as bookmark title and search engines.

```
<html>
<head>
<title>My First HTML Page</title>
</head>
...
```

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<BODY>

- The rest of the page is included within the `<body>` tags.

```
<html>
<head>
<title>My First HTML Page</title>
</head>
<body>
The rest of the page.
</body>
</html>
```

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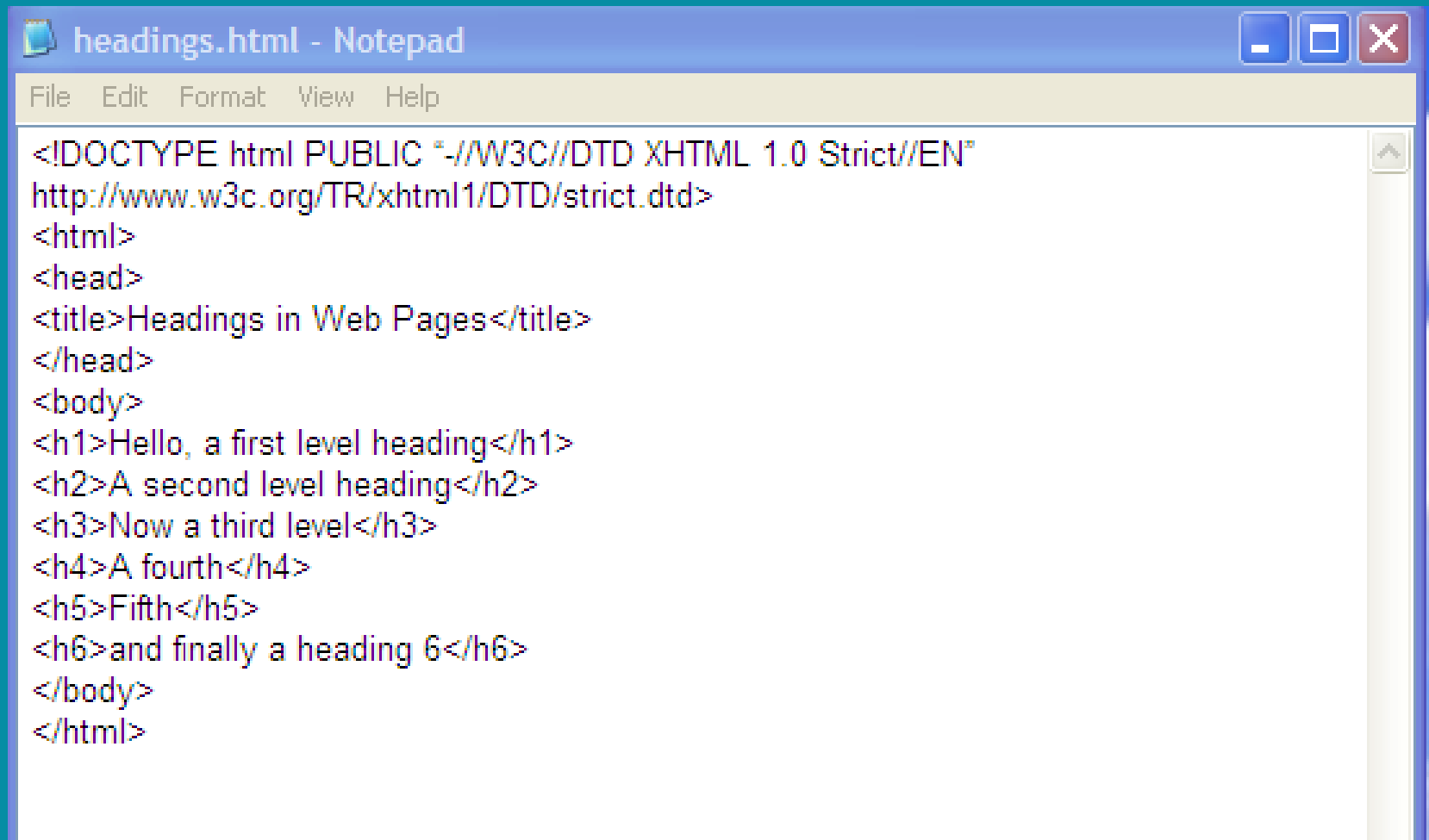**DEAKIN UNIVERSITY**

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HEADINGS

- Used to divide sections of text just like in a book or report.
- There are six levels.

```
<h1>A main heading</h1>

<h2></h2>

...

<h6></h6>
```

File   Edit   Format   View   Help

```html
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
http://www.w3c.org/TR/xhtml1/DTD/strict.dtd>
<html>
<head>
<title>Headings in Web Pages</title>
</head>
<body>
<h1>Hello, a first level heading</h1>
<h2>A second level heading</h2>
<h3>Now a third level</h3>
<h4>A fourth</h4>
<h5>Fifth</h5>
<h6>and finally a heading 6</h6>
</body>
</html>
```

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Hello, a first level heading

A second level heading

Now a third level

A fourth

Fifth

and finally a heading 6

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PARAGRAPHS

- Adds space around text

  `<p>`

  `</p>` end tag is optional but required for XHTML

LISTS

- Numbered (ordered)
- Bulleted (unordered)
- Glossary lists

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NUMBERED (ORDERED) LISTS

```
<p>My shopping list:
<ol>
<li>Cheese</li>
<li>Rice</li>
<li>Olive oil</li>
</ol>
```

My shopping list:
1. Cheese
2. Rice
3. Olive oil

`<ol>` `</ol>` two sided tags

`<li>` list items have optional closing tags

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TYPE ATTRIBUTE

An attribute contains options about the tag and should be in quotes.

`<ol type="a">`

- "1" Arabic numerals
- "a" lowercase letters
- "A" uppercase letters
- "i" lowercase Roman
- "I" uppercase Roman

My shopping list:
  a. Cheese

  b. Rice

  c. Olive oil

START ATTRIBUTE

An attribute contains options about the tag.

`<ol start="4">`

My vegetable list:

4. Carrots

5. Tomatoes

6. Lettuce

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BULLETED (UNORDERED) LISTS

`<p>`My shopping list:

`<ul>`

`<li>`Cheese `</li>`

`<li>`Rice `</li>`

`<li>`Olive oil `</li>`

`</ul>`

My shopping list:

- Cheese
- Rice
- Olive oil

Remember: the `</li>` is still optional in HTML but should be used to conform with XHTML.

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TYPE ATTRIBUTE

An attribute contains options about the tag.

`<ul type="square">`

- "circle"
- "disc"
- "square"

My shopping list:

- Cheese
- Rice
- Olive oil

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GLOSSARY LISTS
`<DL>`

- Two parts
  - the term `<dt>`
  - its definition `<dd>`

`<dl>` is a two sided tag `</dl>`

`</dt>` and `</dd>` are optional closing tags in HTML

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File Edit Format View Help

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
http://www.w3c.org/TR/xhtml1/DTD/strict.dtd>
<html>
<head>
<title>A Definition List</title>
</head>
<body>
<h1>My Shopping List</h1>
<dl>
        <dt>Cheese</dt>
        <dd>A yellowy substance usually made from the milk of an animal such as the cow, sheep or
        goat. Australia, particularly, Victoria and Tasmania have excellent cheeses.</dd>
        <dt>Rice</dt>
        <dd>A grain grown in wet surroundings. Staple food in many countries.</dd>
        <dt>Olive Oil</dt>
        <dd>A popular oil in mediterranean countries. Considered a good oil because of the low rate of
        heart disease in Mediterranean countries. </dd>
</dl>
</body>
</html>
```

My Shopping List

Cheese

    A yellowy substance usually made from the milk of an animal such as the cow, sheep or goat. Australia, particularly, Victoria and Tasmania have excellent cheeses.

Rice

    A grain grown in wet surroundings. Staple food in many countries.

Olive Oil

    A popular oil in mediterranean countries. Considered a good oil because of the low rate of heart disease in Mediterranean countries.

NESTED LISTS

```
<h1>Apples</h1>
<ol>
<li>Green
    <ul>
    <li>Granny</li>
    <li>Golden Delicious</li>
    </ul>
</li>
<li>Red
    <ul>
    <li>Jonathon</li>
    <li>Delicious</li>
    </ul>
</li>
</ol>
```

Apples

1. Green
   - Granny
   - Golden Delicious
2. Red
   - Jonathon
   - Delicious

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COMMENTS

```
<!-- This is a comment and it will not
appear on the web page unless the page
source is viewed. -->
```

LINKS

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<A> … </A>

- Anchor - creates a link from the current page to another part of the page, a new page, a different web site, an email address.

```
My shopping list:

<a href="cheeses.html">cheeses</a>
```

My shopping list: <u>cheeses</u>

LINKING TO REMOTE FILES

`My shopping list:`

`<a href="http://www.kraft.com.au">cheeses</a>`

My shopping list: <u>cheeses</u>

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Cheeses

`<a name="toppage"><h1>Cheeses</h1></a>`

This is a very long web page with sub headings. At the end of each paragraph I will have a link to the top of the page.

xxxxxxxxxxxxxxxxxxxxxxxxx

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxx

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

Top of page

`<a href="#toppage">Top of page</a>`

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MAILTO:

Send mail to

`<a href="mailto:atuls@deakin.edu.au">Atul</a>`

Send mail to <u>Atul</u>

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