CSIT884
Web Development

HTML

HTML

Objectives:

- learn the HTML language to create web site;

- understand the concept of HTML tags and attributes;

- use HTML tags to format text, add graphics, create links, display tables, lists, etc.

HTML

- is a markup language for describing web documents

    used to mark parts of documents to indicate
    how they should appear on a display

- HTML stands for **H**yper **T**ext **M**arkup **L**anguage

- HTML documents are described by **HTML tags**

- Each HTML tag describes different document content

The first HTML document

```
<html>

  <head>

    <title>Hi</title>

  </head>

  <body>

    Hello World!

  </body>

</html>
```

The first HTML document

```
<html>

   <head>

      <title>Hi</title>

   </head>

   <body>

      Hello World!

   </body>

</html>
```
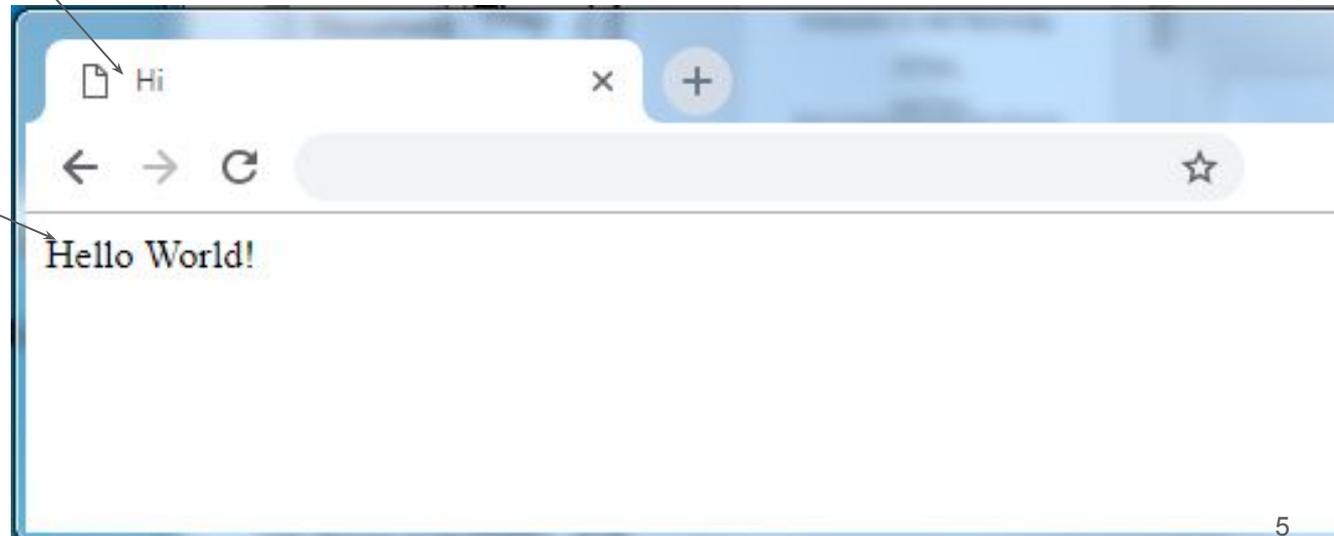
HTML document structure

```
<html>

  <head>

    <title>Hi</title>

  </head>

  <body>

    Hello World!

  </body>

</html>
```

- A HTML document starts with **<html>** and ends with **</html>**

- A HTML document has a **head** and a **body**

- The visible part of the HTML document is between **<body>** and **</body>**

HTML tags

```
<html>

  <head>

    <title>Hi</title>

  </head>

  <body>

    Hello World!

  </body>

</html>
```

tag
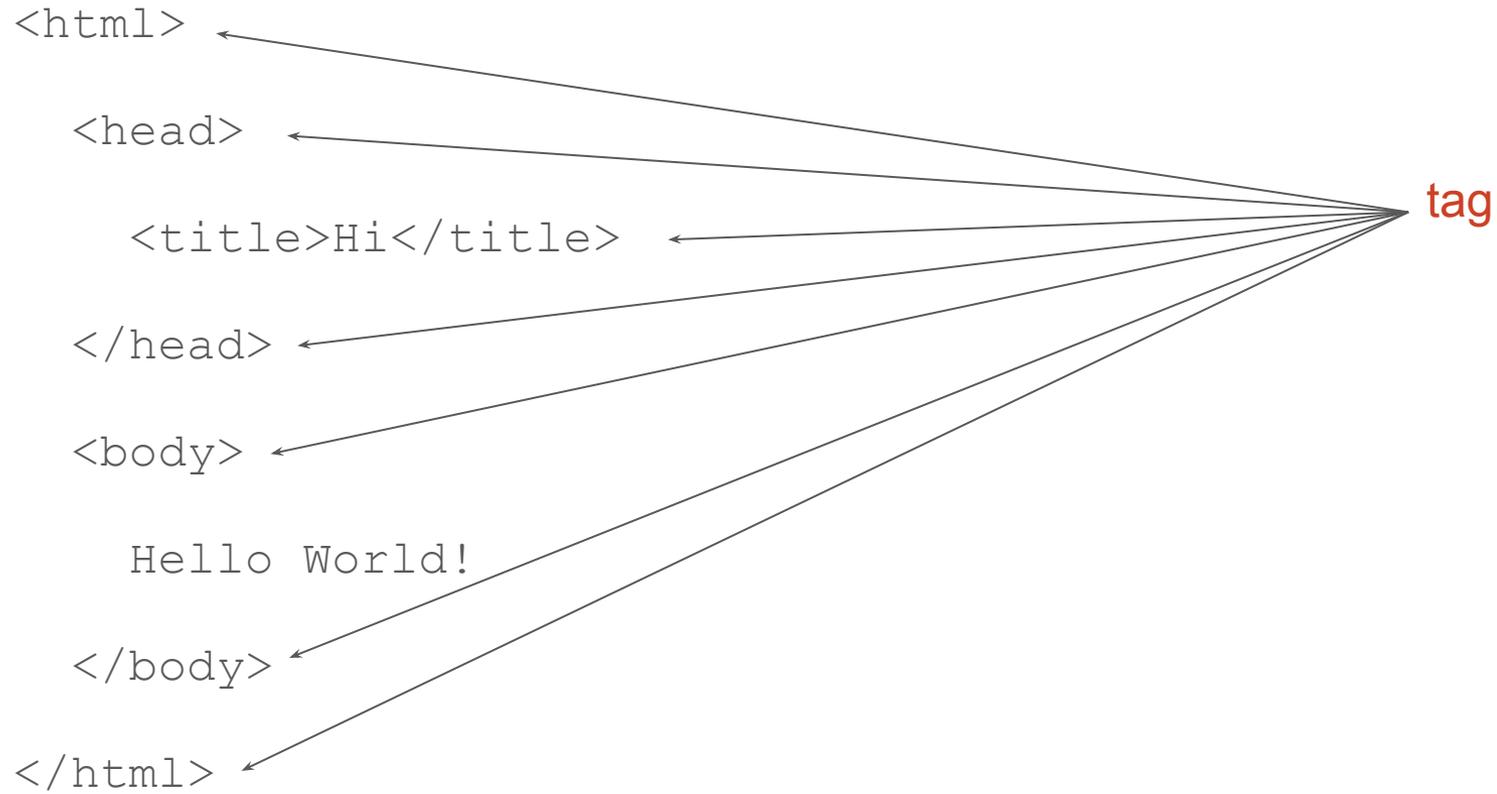
HTML tags

tags are **NOT** case sensitive

```
<html>

   <head>

      <title>Hi</title>

   </head>

   <body>

      Hello World!

   </body>

</html>
```

tag

most tag goes in pair

`<tagname>content</tagname>`

start tag

end tag

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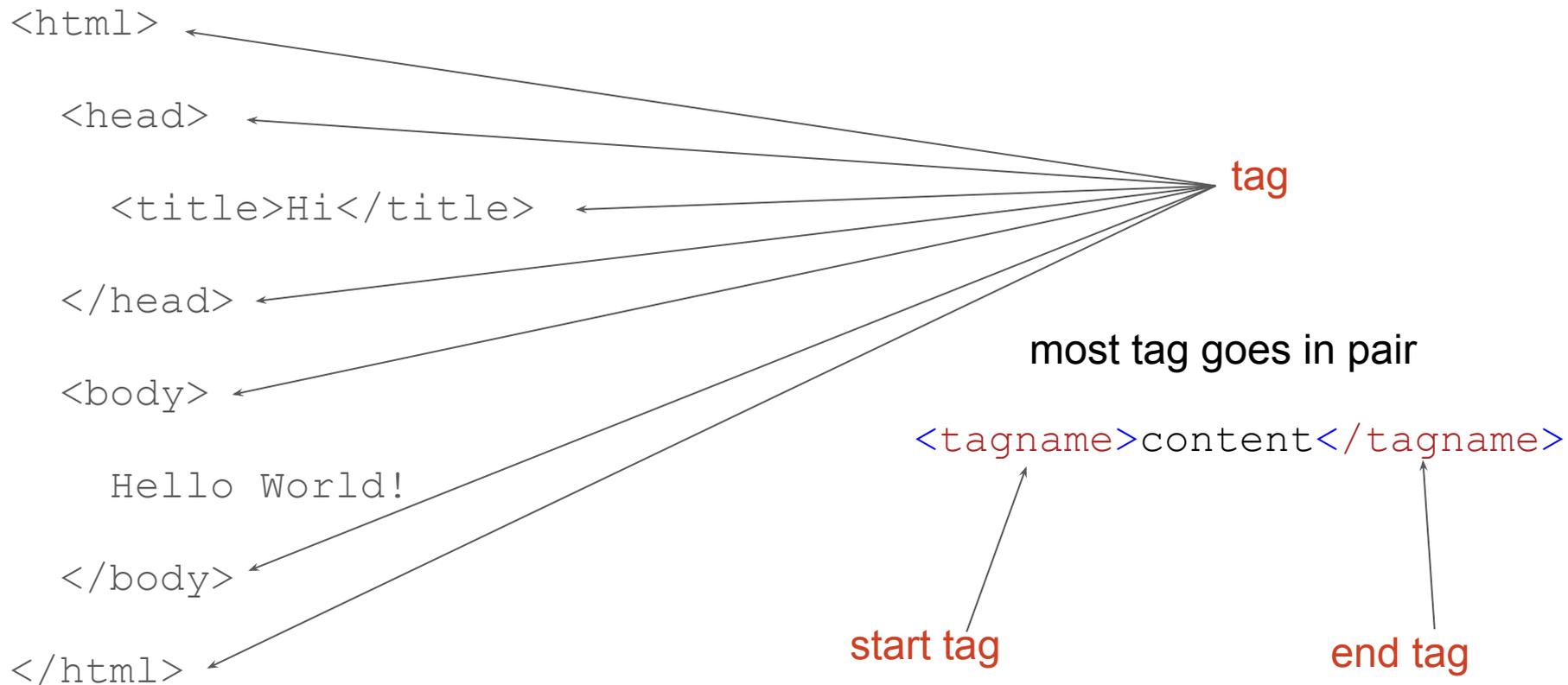
HTML tags

HTML **documents** are made up by HTML **elements**.

The HTML **element** is everything *from the start tag to the end tag*.

```
<html>

  <head>

    <title>Hi</title>

  </head>

  <body>

    Hello World!

  </body>

</html>
```

Where is the HTML element?
Where is the HEAD element?
Where is the BODY element?
Where is the TITLE element?

What elements does the HTML element contain?

Self-closing tag

`<tagname></tagname>`

- Sometime we have an element with no content (**an empty element**)
- With an empty element, we can combine the start-tag and end-tag into one **self-closing tag**: `<tagname />`

- Example:

  - **`<br />`** tag defines a **line break**

  - **`<hr />`** tag defines a **horizontal line**

  - **`<img`** `src="..." alt="..."` **`/>`** tag defines an **image**

Tag attributes

```
<tagname attribute1="value1" attribute2="value2">
 ...
</tagname>
```

- HTML elements can have **attributes**

- Attributes provide **additional information** about an element

- Attributes are always specified in **the start tag**

- Attributes come in name/value pairs like: **name="value"**

Heading tags

```
<body>

<h1>Heading 1</h1>

<h2>Heading 2</h2>

<h3>Heading 3</h3>

<h6>Heading 6</h6>

Normal text...

</body>
```

Heading tags: **\<h1\>**, **\<h2\>,..., \<h6\>**

\<h1\> the most important heading

\<h6\> the least important heading

Unordered List

```
My timetable:

<ul>

  <li>MATH222: Mon 8:30-10:30 lecture</li>

  <li>CSCI204: Tue 9:30-11:30 lab</li>

  <li>ISIT206: Wed 8:30-10:30 lecture</li>

</ul>
```

My timetable:

- MATH222: Mon 8:30-10:30 lecture
- CSCI204: Tue 9:30-11:30 lab
- ISIT206: Wed 8:30-10:30 lecture

Unordered List

My timetable:

```
<ul>

  <li>MATH222: Mon 8:30-10:30 lecture</li>

  <li>CSCI204: Tue 9:30-11:30 lab</li>

  <li>ISIT206: Wed 8:30-10:30 lecture</li>

</ul>
```

My timetable:

- MATH222: Mon 8:30-10:30 lecture
- CSCI204: Tue 9:30-11:30 lab
- ISIT206: Wed 8:30-10:30 lecture

Ordered List

```
My timetable:

<ol>

  <li>MATH222: Mon 8:30-10:30 lecture</li>

  <li>CSCI204: Tue 9:30-11:30 lab</li>

  <li>ISIT206: Wed 8:30-10:30 lecture</li>

</ol>
```

My timetable:

1. MATH222: Mon 8:30-10:30 lecture
2. CSCI204: Tue 9:30-11:30 lab
3. ISIT206: Wed 8:30-10:30 lecture

Ordered List

```
My timetable:
```

```
<ol>

  <li>MATH222: Mon 8:30-10:30 lecture</li>

  <li>CSCI204: Tue 9:30-11:30 lab</li>

  <li>ISIT206: Wed 8:30-10:30 lecture</li>

</ol>
```

My timetable:

1. MATH222: Mon 8:30-10:30 lecture
2. CSCI204: Tue 9:30-11:30 lab
3. ISIT206: Wed 8:30-10:30 lecture

Description List

```
My timetable:

<dl>

  <dt>MATH222</dt>

  <dd>Mon 8:30-10:30 lecture</dd>


  <dt>CSCI204</dt>

  <dd>Tue 9:30-11:30 lab</dd>


  <dt>ISIT206</dt>

  <dd>Wed 8:30-10:30 lecture</dd>

</dl>
```

My timetable:

MATH222
    Mon 8:30-10:30 lecture

CSCI204
    Tue 9:30-11:30 lab

ISIT206
    Wed 8:30-10:30 lecture

Description List

My timetable:

<**dl**>

  <**dt**>MATH222</**dt**>

  <**dd**>Mon 8:30-10:30 lecture</**dd**>

  <**dt**>CSCI204</**dt**>

  <**dd**>Tue 9:30-11:30 lab</**dd**>

  <**dt**>ISIT206</**dt**>

  <**dd**>Wed 8:30-10:30 lecture</**dd**>

</**dl**>

Description **L**ist

Description **T**erm

Description **D**efinition

My timetable:

MATH222
    Mon 8:30-10:30 lecture

CSCI204
    Tue 9:30-11:30 lab

ISIT206
    Wed 8:30-10:30 lecture

Formatting text

`<i>`italic text`</i>` `<br />`

`<b>`bold text`</b>` `<br />`

`<mark>`highlighted text`</mark>` `<br />`

`<del>`deleted text`</del>` `<br />`

`<ins>`inserted text`</ins>`

italic text
bold text
highlighted text
~~deleted text~~
<u>inserted text</u>

Formatting text

```
<ins>My timetable:</ins>

<ul>

  <li><b>MATH222</b>: Mon 8:30-10:30 <i>lecture</i></li>

  <li><b>CSCI204</b>: Tue 9:30-11:30 <i>lab</i></li>

  <li><b>ISIT206</b>: Wed 8:30-10:30 <i>lecture</i></li>

</ul>
```

My timetable:

- **MATH222**: Mon 8:30-10:30 *lecture*
- **CSCI204**: Tue 9:30-11:30 *lab*
- **ISIT206**: Wed 8:30-10:30 *lecture*

Formatting text

```
<h1>HTML <small>Small</small> Formatting</h1>

HTML <small>Small</small> Formatting
```

Formatting text

Changing font

```
<font size="1">This is the smallest size</font>

<font size="2">smaller than the default</font>

<font size="3">This is the default font size</font>

<font size="4">larger than the default</font>

<font size="5">larger than the default</font>

<font size="6" color="red">larger than the default</font>

<font size="7" color="blue">This is the largest size</font>
```

Formatting text

```
<body>

Some math

x<sub>1</sub><sup>n</sup> +
x<sub>2</sub><sup>n</sup> =
y<sub>1</sub><sup>n</sup> +
y<sub>2</sub><sup>n</sup>

</body>
```

Some math $x_1^n + x_2^n = y_1^n + y_2^n$

www.uow.edu.au/~dong/w3/example/html/hello.html
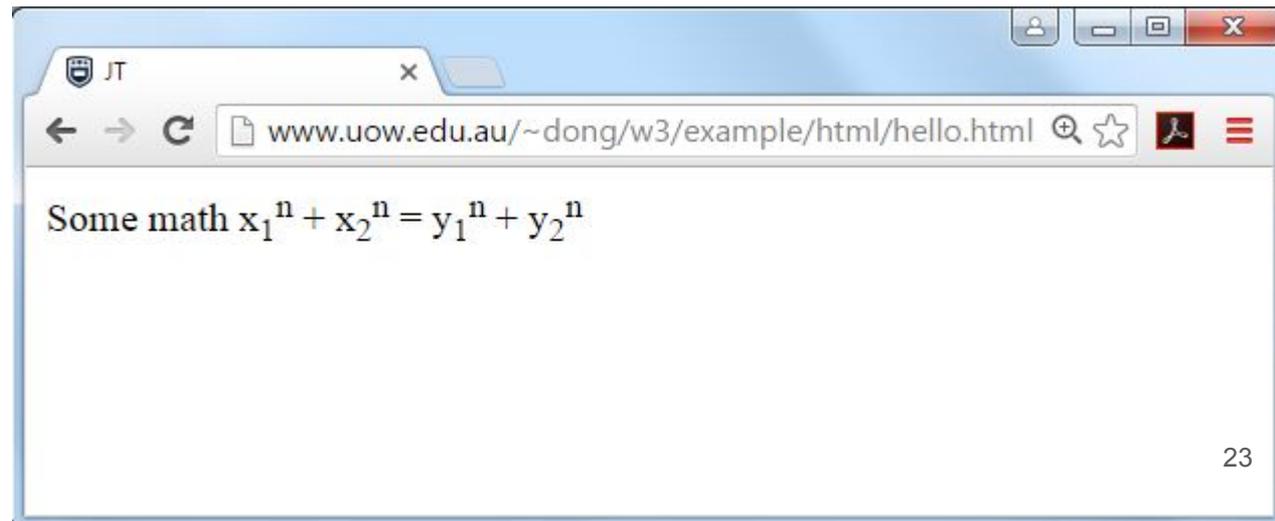
Table

```
<table border="1">
  <tr>
    <th>Username</th>
    <th>First name</th>
    <th>Last name</th>
  </tr>
  <tr>
    <td>jsmith</td>
    <td>John</td>
    <td>Smith</td>
  </tr>
  <tr>
    <td>mlee</td>
    <td>Mary</td>
    <td>Lee</td>
  </tr>
</table>
```

Username	First name	Last name
jsmith	John	Smith
mlee	Mary	Lee

Turn off the border:
`border="0"`

Username	First name	Last name
jsmith	John	Smith
mlee	Mary	Lee

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Table

```
<table border="1">
  <tr>
    <th>Username</th>
    <th>First name</th>
    <th>Last name</th>
  </tr>
  <tr>
    <td>jsmith</td>
    <td>John</td>
    <td>Smith</td>
  </tr>
  <tr>
    <td>mlee</td>
    <td>Mary</td>
    <td>Lee</td>
  </tr>
</table>
```

Table **R**ow

row 1

row 2

row 3

Username	First name	Last name
jsmith	John	Smith
mlee	Mary	Lee

Table

```
<table border="1">
  <tr>
    <th>Username</th>
    <th>First name</th>
    <th>Last name</th>
  </tr>
  <tr>
    <td>jsmith</td>
    <td>John</td>
    <td>Smith</td>
  </tr>
  <tr>
    <td>mlee</td>
    <td>Mary</td>
    <td>Lee</td>
  </tr>
</table>
```

Table **H**eader

Table **D**ata

Username	First name	Last name
jsmith	John	Smith
mlee	Mary	Lee

Table

```
<table border="1">
  <tr>
    <td>jsmith</td>
    <td>John</td>
    <td>Smith</td>
  </tr>
  <tr>
    <td>mlee</td>
    <td>Mary</td>
    <td>Lee</td>
  </tr>
</table>
```

Sometime we do not need table header

Table **D**ata

jsmith	John	Smith
mlee	Mary	Lee

Table

```
<table border="1" width="50%">
  <caption>User information</caption>
  <tr>
    <th width="20%">Username</th>
    <th width="40%">First name</th>
    <th width="40%">Last name</th>
  </tr>
  <tr>
    <td align="center">jsmith</td>
    <td align="right">John</td>
    <td align="right">Smith</td>
  </tr>
  <tr>
    <td align="center">mlee</td>
    <td align="right">Mary</td>
    <td align="right">Lee</td>
  </tr>
</table>
```

User information

Username	First name	Last name
jsmith	John	Smith
mlee	Mary	Lee

Table

```
<table border="1" width="50%">
  <caption>User information</caption>
  <tr>
    <th width="20%">Username</th>
    <th width="40%">First name</th>
    <th width="40%">Last name</th>
  </tr>
  <tr>
    <td align="center">jsmith</td>
    <td align="right">John</td>
    <td align="right">Smith</td>
  </tr>
  <tr>
    <td align="center">mlee</td>
    <td align="right">Mary</td>
    <td align="right">Lee</td>
  </tr>
</table>
```

Table caption

User information

Username	First name	Last name
jsmith	John	Smith
mlee	Mary	Lee

Table

```
<table border="1" width="50%">
  <caption>User information</caption>
  <tr>
    <th width="20%">Username</th>
    <th width="40%">First name</th>
    <th width="40%">Last name</th>
  </tr>
  <tr>
    <td align="center">jsmith</td>
    <td align="right">John</td>
    <td align="right">Smith</td>
  </tr>
  <tr>
    <td align="center">mlee</td>
    <td align="right">Mary</td>
    <td align="right">Lee</td>
  </tr>
</table>
```

Table width
within the page

Column width
within the table

User information

Username	First name	Last name
jsmith	John	Smith
mlee	Mary	Lee

Table

```
<table border="1">
  <caption>User information</caption>
  <tr>
    <th width="150px">Username</th>
    <th width="200px">First name</th>
    <th width="200px">Last name</th>
  </tr>
  <tr>
    <td align="center">jsmith</td>
    <td align="right">John</td>
    <td align="right">Smith</td>
  </tr>
  <tr>
    <td align="center">mlee</td>
    <td align="right">Mary</td>
    <td align="right">Lee</td>
  </tr>
</table>
```

Column width
using pixels

User information

Username	First name	Last name
jsmith	John	Smith
mlee	Mary	Lee

Table

```
<table border="1" width="50%">
  <caption>User information</caption>
  <tr>
    <th width="20%">Username</th>
    <th width="40%">First name</th>
    <th width="40%">Last name</th>
  </tr>
  <tr>
    <td align="center">jsmith</td>
    <td align="right">John</td>
    <td align="right">Smith</td>
  </tr>
  <tr>
    <td align="center">mlee</td>
    <td align="right">Mary</td>
    <td align="right">Lee</td>
  </tr>
</table>
```

Horizontal alignment

User information

Username	First name	Last name
jsmith	John	Smith
mlee	Mary	Lee

Table

```
<table width="50%" border="1">
  <tr>
    <td valign="middle">jsmith</td>
    <td>
     John Smith <br />
     DOB: 23/01/2000 <br />
     Course code: 875
    </td>
  </tr>
  <tr>
    <td valign="middle">mlee</td>
    <td>
     Mary Lee <br />
     DOB: 15/04/2001 <br />
     Course code: 741
    </td>
  </tr>
</table>
```

Vertical alignment

jsmith	John Smith DOB: 23/01/2000 Course code: 875
mlee	Mary Lee DOB: 15/04/2001 Course code: 741

Table

```
<table width="50%" border="1">
  <tr>
    <td valign="top">jsmith</td>
    <td>
     John Smith <br />
     DOB: 23/01/2000 <br />
     Course code: 875
    </td>
  </tr>
  <tr>
    <td valign="top">mlee</td>
    <td>
     Mary Lee <br />
     DOB: 15/04/2001 <br />
     Course code: 741
    </td>
  </tr>
</table>
```

Vertical alignment

jsmith	John Smith DOB: 23/01/2000 Course code: 875
mlee	Mary Lee DOB: 15/04/2001 Course code: 741

Table

```
<table width="50%" border="1">
  <tr>
    <td valign="bottom">jsmith</td>
    <td>
     John Smith <br />
     DOB: 23/01/2000 <br />
     Course code: 875
    </td>
  </tr>
  <tr>
    <td valign="bottom">mlee</td>
    <td>
     Mary Lee <br />
     DOB: 15/04/2001 <br />
     Course code: 741
    </td>
  </tr>
</table>
```

Vertical alignment

	John Smith DOB: 23/01/2000 Course code: 875
jsmith	
	Mary Lee DOB: 15/04/2001 Course code: 741
mlee	

Table

```
<table border="1" width="40%">
  <tr>
    <td colspan="2">STUDENT DETAILS</td>
  </tr>
  <tr>
    <td width="30%">STUDENT NAME</td>
    <td>John Lee</td>
  </tr>
  <tr>
    <td>STUDENT NUMBER</td>
    <td>1234567</td>
  </tr>
  <tr>
    <td>UOW EMAIL</td>
    <td>jlee@uowmail.edu.au</td>
  </tr>
</table>
```

STUDENT DETAILS	
STUDENT NAME	John Lee
STUDENT NUMBER	1234567
UOW EMAIL	jlee@uowmail.edu.au

Table

```
<table border="1" width="50%">

  <tr>
    <td></td>
    <td>Monday</td>
    <td>Tuesday</td>
    <td>Wednesday</td>
  </tr>

  <tr>
    <td>8:30-9:30</td>
    <td rowspan="2">MATH 321 lecture</td>
    <td>INFO 104 lecture</td>
    <td>CS 222 lecture</td>
  </tr>

  <tr>
    <td>9:30-10:30</td>
    <td>CS 222 Lab</td>
    <td rowspan="2">MATH 321 tutorial</td>
  </tr>

  <tr>
    <td>10:30-11:30</td>
    <td>CS 222 lecture</td>
    <td>INFO 104 tutorial</td>
  </tr>

</table>
```

Row span

	Monday	Tuesday	Wednesday
8:30-9:30	MATH 321 lecture	INFO 104 lecture	CS 222 lecture
9:30-10:30		CS 222 Lab	MATH 321 tutorial
10:30-11:30	CS 222 lecture	INFO 104 tutorial	

Paragraph tag <p>

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

<p>Another

paragraph</p>

<p>yet       another



paragraph</p>
```

Extra spaces and **lines** will NOT be displayed in paragraph

This is a paragraph

Another paragraph

yet another paragraph
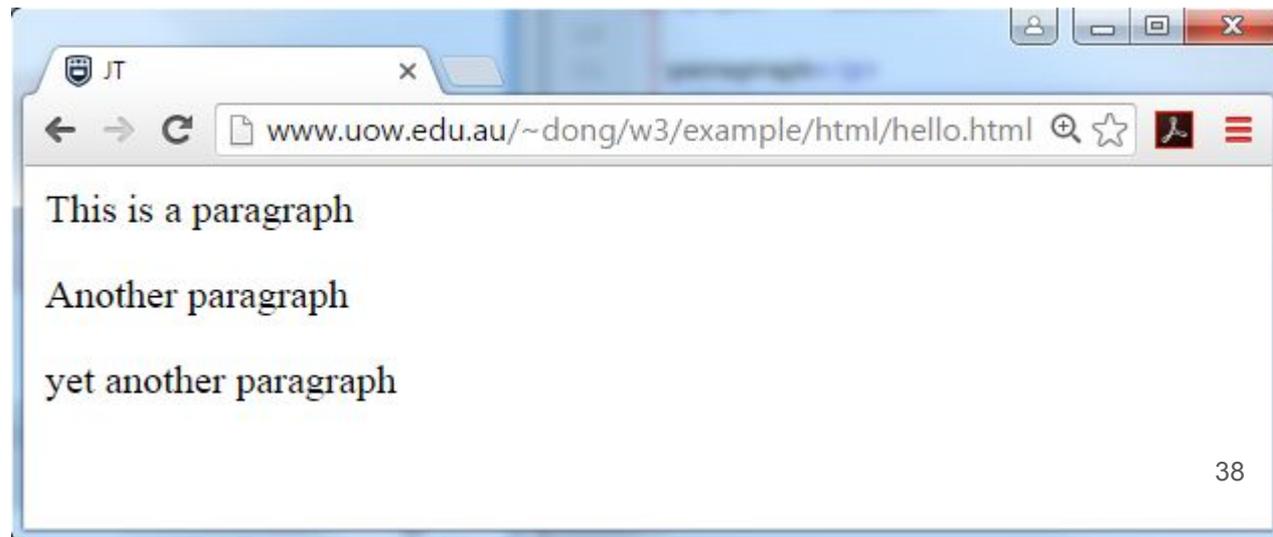
Line break

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

<p>Another <br />

paragraph</p>

<p>yet    another <br />

<br />

paragraph</p>
```

**
** tag defines a **line break**

**
** **is an empty element (i.e. it is a tag with no content), it combines the start and end tags together**

This is a paragraph

Another
paragraph

yet another
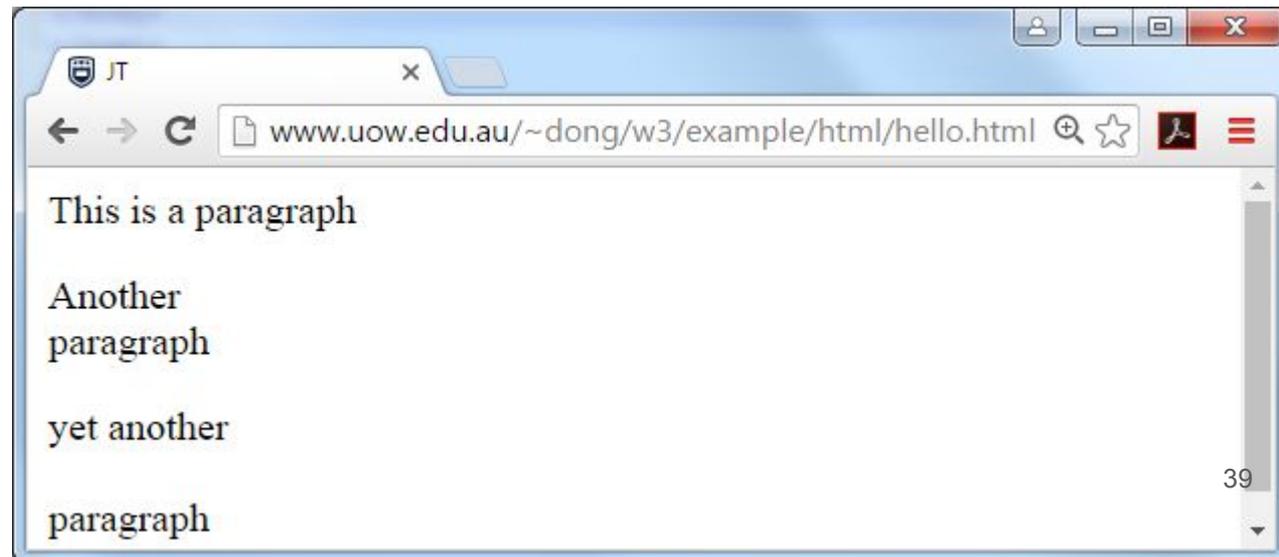
paragraph

Horizontal line <hr />

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

<p>Another <br />

paragraph</p>

<hr />

<p>yet    another <br />

<br />

paragraph</p>
```

40
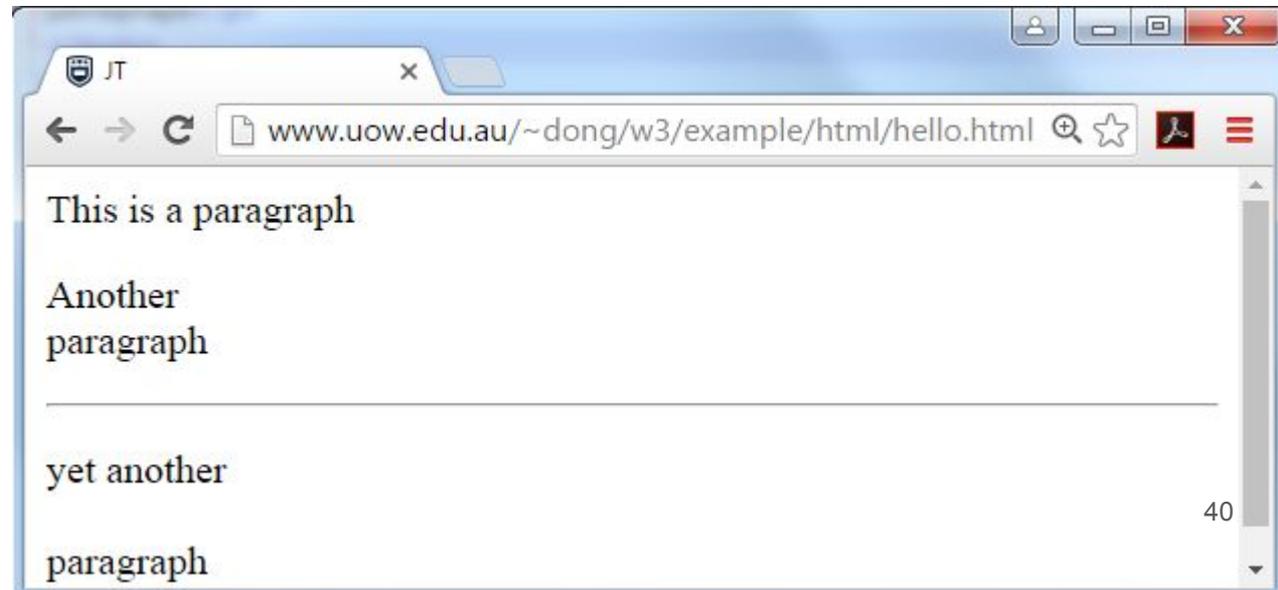
Non-breaking space

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

<p>Another <br />

paragraph</p>

<hr />

<p>yet     another <br />

<br />

paragraph</p>
```

use   for non-breaking space

this is an example of **character entities**

Character entity

- Some characters are reserved in HTML.

- Reserved characters in HTML must be replaced with character entities.

| Character	Entity	Meaning
(non-breaking space)	` `	Non-breaking space
<	`<`	Is less than
>	`>`	Is greater than
&	`&`	Ampersand
"	`"`	Double quote
'	`'`	Single quote (apostrophe)
o	`°`	Degree
©	`©`	Copyright

Character entity

```
<body>

A HTML document starts with
&lt;html&gt; and ends with
&lt;/html&gt;

</body>
```
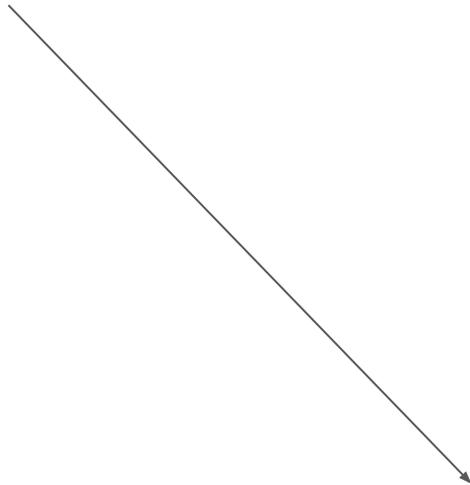
A HTML document starts with <html> and ends with </html>

Block quotations <blockquote>

```
<p>normal paragraph</p>

<blockquote>

<p>a paragraph in blockquote</p>

<p>another paragraph in blockquote</p>

</blockquote>

see the difference?
```
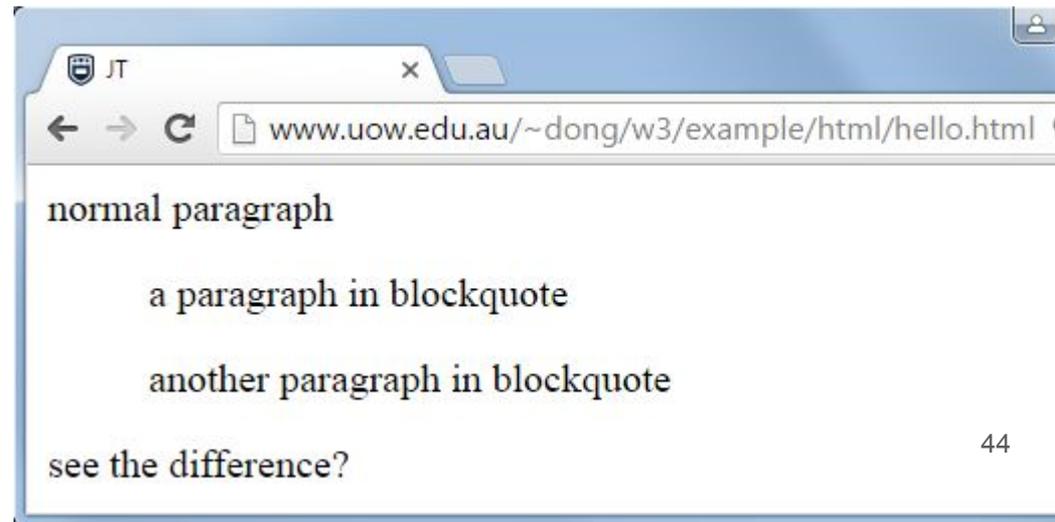
Preformatted text <pre>

```
<pre>

Mary

    had   a

        little

            lamb

</pre>
```

pre element is shown in monospace

it preserves the character and line spacing

```
Mary
   had  a
     little
       lamb
```

Computer code

```
<pre>

<code>

a = 0;

b = 3;

c = 2;

sum = a + b + c;

</code>

</pre>
```



```
a = 0;
b = 3;
c = 2;
sum = a + b + c;
```
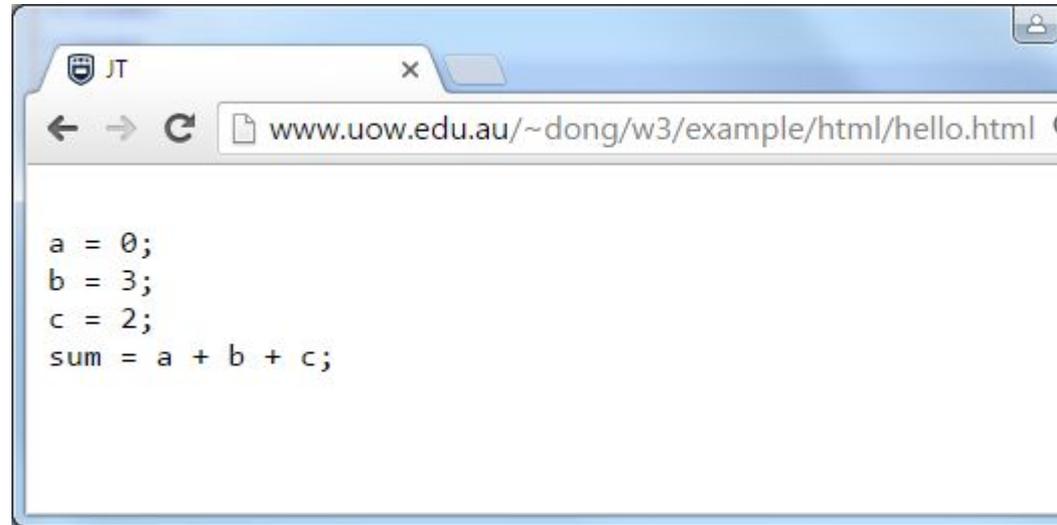
what would happen if we use <code> … </code> without <pre> ?

Computer code

If you want to include special characters such as
< > & " '
within **pre** *tags, they should be substituted by character entities so that they are not subject to special interpretation by the browser.*

```
<pre>
<code>
#include &lt;iostream&gt;

void main( ) {
    cout &lt;&lt; &quot;Hello World!&quot; &lt;&lt; endl;
}
</code>
</pre>
```

```
#include <iostream>

void main( ) {
    cout << "Hello World!" << endl;
}
```

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Image

```
<img src="uow-logo.png" height="300" width="200"

alt="logo of UOW" />
```

Attribute	Description
src	URL of an image, for example src="uow-logo.png" src="**images/**uow-logo.png" src="**http://**www.mycom.au/staff.png"
alt	alternate text for an image
height width	optional. Specifies height, width for image in pixels, or in percentage

Image alt

```
<img src="uow-logo.png" height="300" width="200"

alt="logo of UOW" />
```

- If a browser cannot find an image, it will display the `alt` text.

- Sometimes, to save bandwidth, user can disable image display, in this case, the `alt` text will be display.

- A screen reader is a software program that can read what is displayed on a screen which is very useful to people who are blind or visually impaired. Screen readers can read the `alt` text.

Image src

The URL of an image can be
- an **absolute** URL points to another website
- or a **relative** URL points to an image file within a website

Absolute URL

`src="`**`http://`**`www.mycom.au/staff.png"`

Relative URL

`src="uow-logo.png"` : the image file is in the same directory as the current html file

`src="`**`images/`**`uow-logo.png"` : the image file is in the subdirectory called **`images`** located at the same directory as the current html file

`src="`**`images/logo/`**`uow-logo.png"`

`src="`**`/../f1/`**`bird.png"`

Link

```
<a href="http://www.uow.edu.au" target="_blank">Visit UOW</a>


<a href="contact.html">Contact us</a>



<a href="http://www.uow.edu.au" target="_blank">

<img src="uow-logo.png" alt="visit UOW"/>

</a>
```

Link

`<a `**`href`**`="http://www.uow.edu.au" `**`target`**`="_blank">Visit UOW</a>`

The **href** in this example is an **absolute** URL.

If user clicks on this link, `http://www.uow.edu.au` will be opened in a new tab

target	description
_blank	open the link in a new window or tab
_self	open the link in the same frame (this is default)

Link

`<a `**`href`**`="contact.html">Contact us</a>`

The **href** in this example is a **relative** URL.

It is similar to the `src` attribute of the `img` tag:

`href``="contact.html"`

`href``="assignment/a1.html"`

`href``="../handout/note5.html"`

Link

```
<a href="http://www.uow.edu.au" target="_blank">

<img src="uow-logo.png" alt="visit UOW"/>

</a>
```

Within the link tag **<a href...> **, we can put any text or image.

In the above example, it displays an image as a link to the address
`http://www.uow.edu.au`

Link - target within document

Within the html document we can use the attribute **id** to mark a specific location

```
<a href="#Proofs">1 Proofs</a>
<a href="#See_also">2 See also</a>
<a href="#Notes">3 Notes</a>
<a href="#References">4 References</a>
<a href="#External_links">5 External links</a>

<h3 id="Proofs">Proofs</h3>
…

<h3 id="See_also">See also</h3>
…

<h3 id="Notes">Notes</h3>
…

<h3 id="References">References</h3>
…

<h3 id="External_links">External links</h3>
…
```


Euler's theorem

Contents
1 Proofs
2 See also
3 Notes
4 References
5 External links

Proofs

● ● ● ●

See also

● ● ● ●

Notes

● ● ● ●

References

● ● ● ●

External links

● ● ● ●

Link - target within document

Within the html document we can use the attribute **id** to mark a specific location

```
<a href="#Proofs">1 Proofs</a>
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<a href="#References">4 References</a>
<a href="#External_links">5 External links</a>

<h3 id="Proofs">Proofs</h3>
…
```

The id value must be unique and must contain at least one character.
The id value must not contain any space characters.

Link - target within document

We can create a link to a specific location within a html page

For example:

```
<a href="https://en.wikipedia.org/wiki/Euler%27s_theorem#Proofs">
Proof of the Euler theorem</a>
```

index.html

- index.html is a default page for a directory

- For security reason, it is better to have index.html for every directory

- It stops people from knowing the content and structure of your website

Example: If the directory abc has an index.html then when we go to
http://the-web-address/abc

it automatically displays the page http://the-web-address/abc/**index.html**

Comments

```
<body>

<!-- this is

a long comment

it will not be displayed on the web page

-->


</body>
```

XHTML

- XHTML stands for E**X**tensible **H**yper**T**ext **M**arkup **L**anguage

- XHTML is stricter than HTML

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">

<html xmlns="http://www.w3.org/1999/xhtml">
<head>
  <title></title>
</head>
<body>

</body>
</html>
```

DOCTYPE and **xmlns** are mandatory
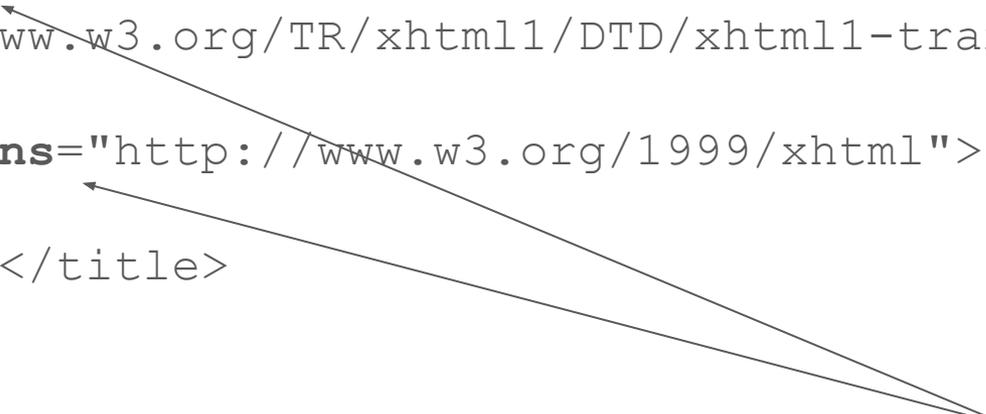
XHTML

- XHTML is stricter than HTML

elements must be properly nested:

`<b><i>bold and italic - not nested correctly</b></i>`

It should be like this:
`<b><i>bold and italic - not nested correctly</i></b>`

XHTML

- XHTML is stricter than HTML

elements must always be closed:

```
<p>paragraph not closed
break not closed <br>
horizontal line not closed <hr>
image not closed <img src="logo.png" alt="UOW logo">
```

It should be like this:
```
<p>paragraph not closed</p>
break not closed <br />
horizontal line not closed <hr />
image not closed <img src="logo.png" alt="UOW logo" />
```

XHTML

- XHTML is stricter than HTML

elements must be in lower case:

```
<HEAD>
<TITLE>Web Technologies</TITLE>
<HEAD>
```

It should be like this:
```
<head>
<title>Web Technologies</title>
<head>
```

XHTML

- XHTML is stricter than HTML

attribute names must be in lower case:

```
<img SRC="logo.png" ALT="UOW logo" />
```

It should be like this:
```
<img src="logo.png" alt="UOW logo" />
```

XHTML

- XHTML is stricter than HTML

attribute values must be quoted:

```
<img src=logo.png alt=UOW logo />
```

It should be like this:
```
<img src="logo.png" alt="UOW logo" />
```

XHTML

- XHTML is stricter than HTML

attribute minimization is not allowed:

```
<input type="checkbox" name="subscribe" value="eletter"
checked />
```

It should be like this:
```
<input type="checkbox" name="subscribe" value="eletter"
checked="checked" />
```

HTML5

- version 5 of the HTML standard

- introduces new tags

```
<header> <footer> <article> <section>
<svg> <canvas> <audio> <video> …
```

- introduces new APIs
  - Drag and Drop
  - Local Storage
  - Geolocation
  - ….

References

- `http://www.w3schools.com/html`

- `http://developer.mozilla.org/en-US/docs/Web/HTML`