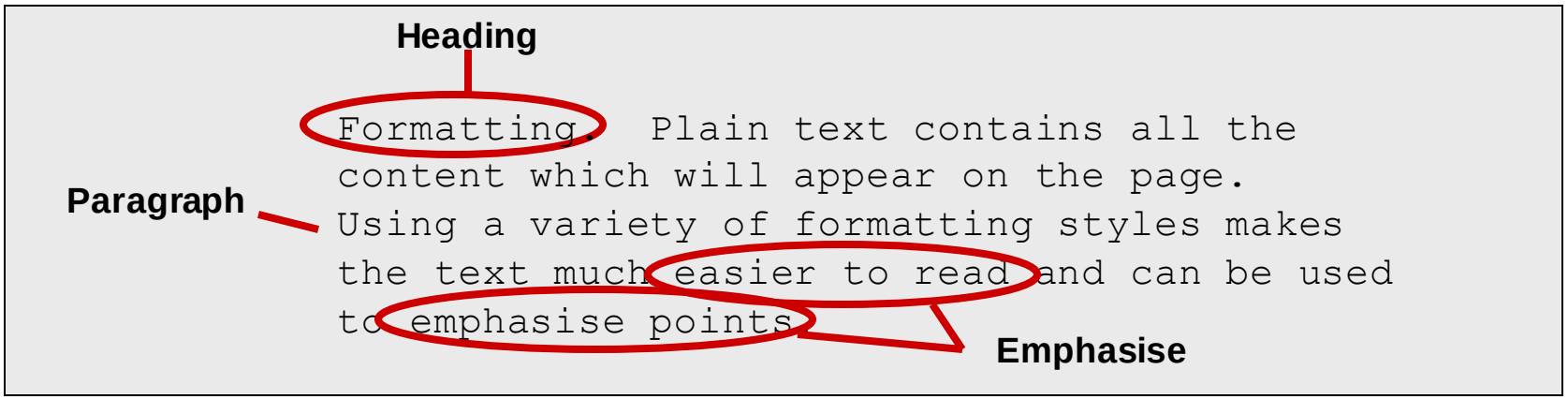
COMPSCI 111/111G SS2020

HTML5

Markup Languages



Markup Tags (HTML)

```
<H1>Formatting.</H1> Plain text contains all the
content which will appear on the page.
<P> Using a variety of formatting styles makes the text
much <EM>easier to read</EM> and can be used to
<EM>emphasise points.</EM>
```

Final Appearance

Formatting

Plain text contains all the content which will appear on the page.

Using a variety of formatting styles makes the text much *easier to read* and can be used to *emphasise points.*

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.

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

Document Type Definition

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

- **Should appear at the top of the file**

```
<!DOCTYPE html>
```

Encoding methods

- **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.

```
<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

```
<!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**

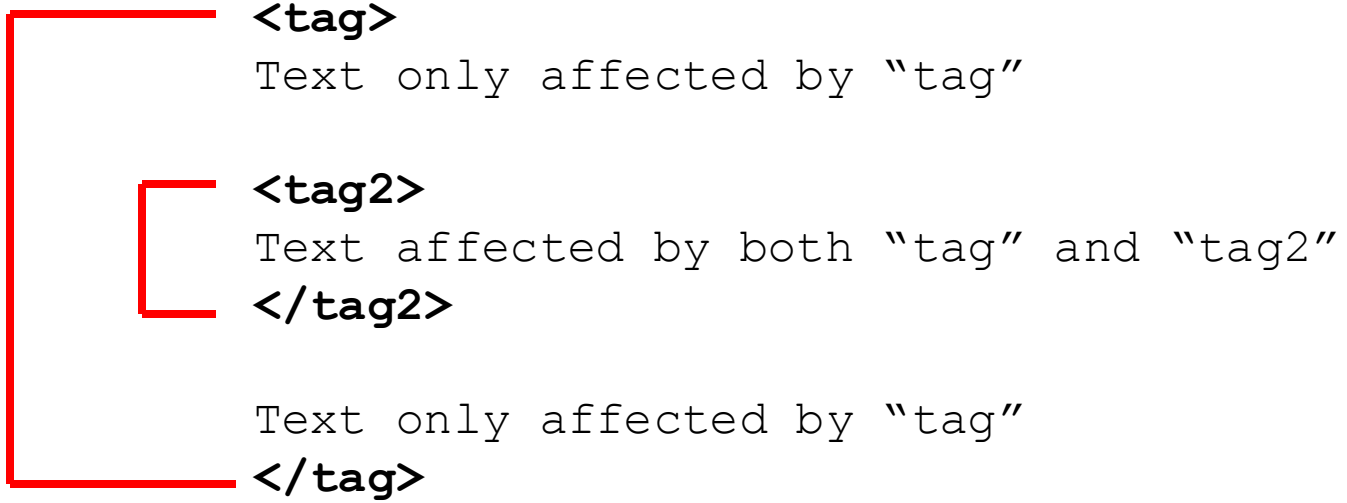
```
This word is in <span>italics</span>
```

Attributes

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

Nested Tags

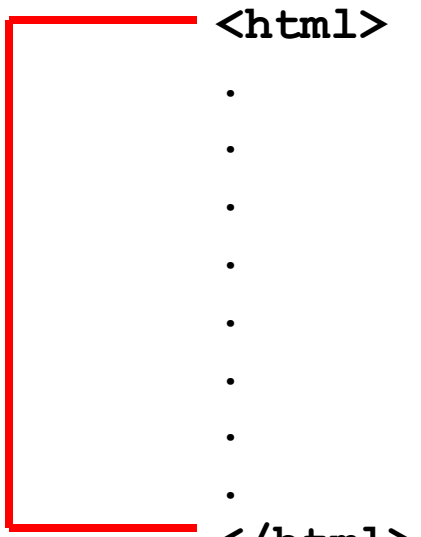
- **Tags must be correctly nested**
  - Cannot close an open tag until all the open tags that it affects are also closed



Essential tags

<html>

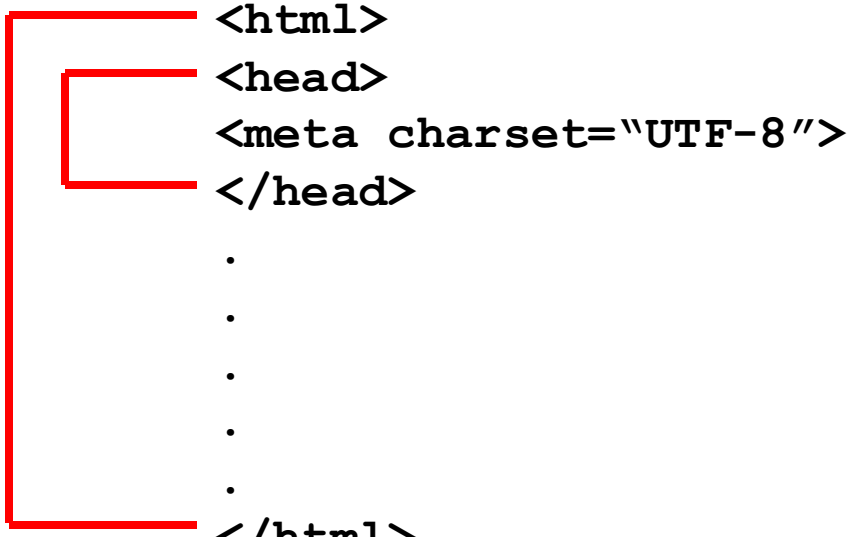
- Encloses the entire document
- Specifies that the document uses html



Essential tags

<head>

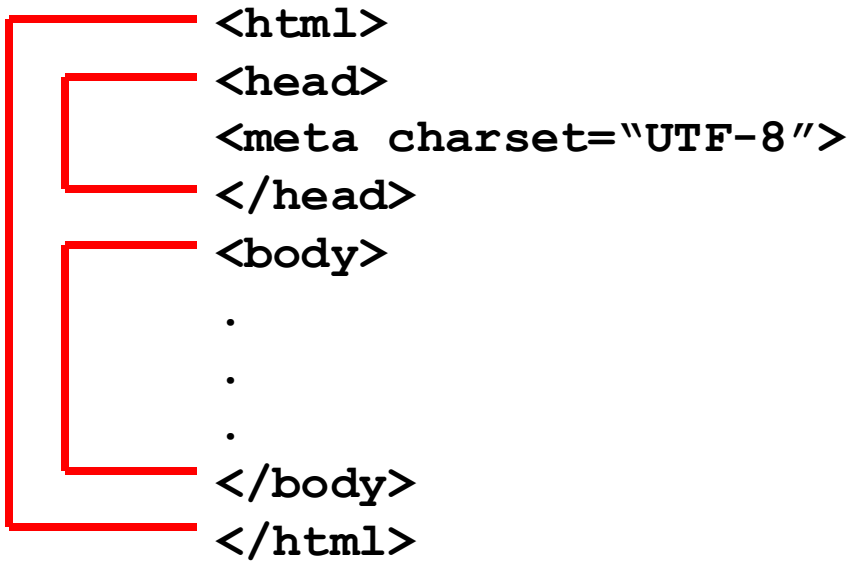
- Contains information for the browser
  - E.g. character encoding used
- Does not contain any content to be displayed on the page



Essential tags

<body>

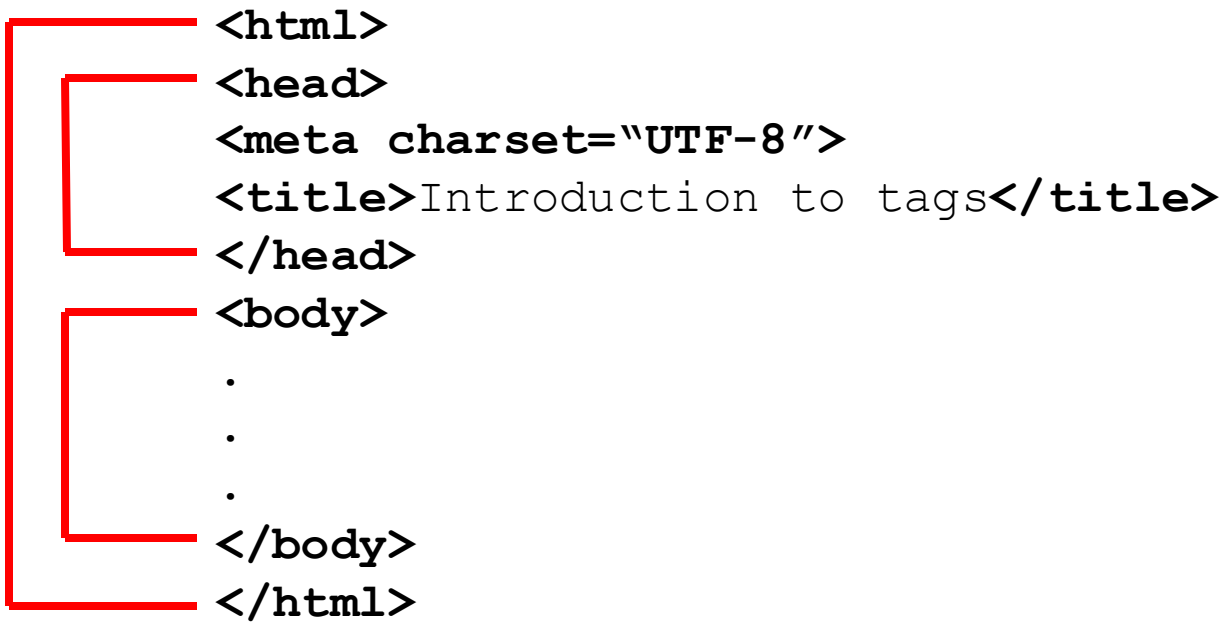
- Contains all the content that will appear on the page



Essential tags

<title>

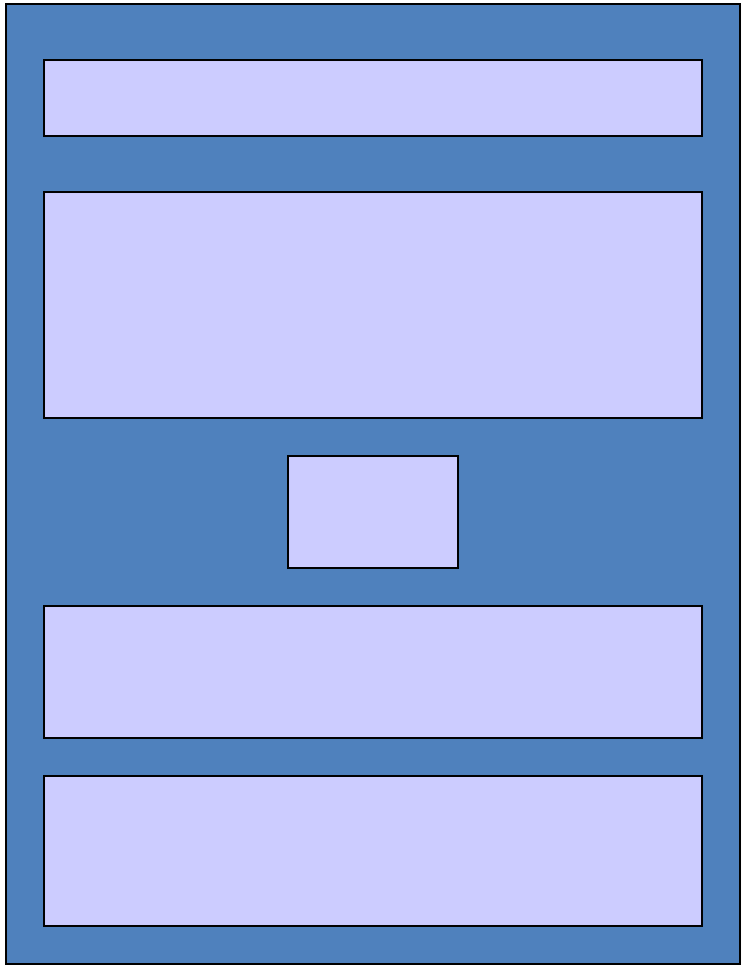
- Part of the head
- Specifies the title to be used by the browser
- Name of the window
- Used in navigation (bookmarks, history, etc.)



Block-level tags

Define the structure of a “block”

- Headings
- Paragraphs
- Lists
- Tables
- Preformatted text



Paragraphs

<p>

- Defines a paragraph of text

```
<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>
```

Exercises

Exercise 1: What does HTML stand for?

Exercise 2: What is a document type definition used for?

Exercise 3: What is "white space"?

Exercise 4: Is HTML case sensitive? What about XHTML?

Exercises

Exercise 5: Create a complete HTML document with the title "Simple page". The only text that should appear on the page is "Hello World".

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

Headings

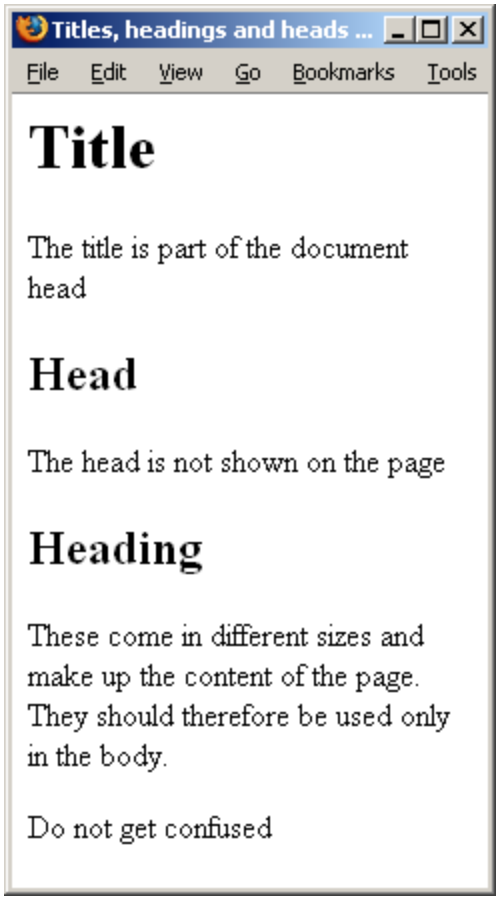
```
<html>
<head>
<meta charset="UTF-8">
<title>Introduction to tags</title>
</head>
<body>
<h1>A very simple web page</h1>
<p>It contains two paragraphs and two
headings</p>
<h2>Second section</h2>
<p>This section is less important</p>
</body>
</html>
```

Example of Head, Heading and Title

```
<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>
```

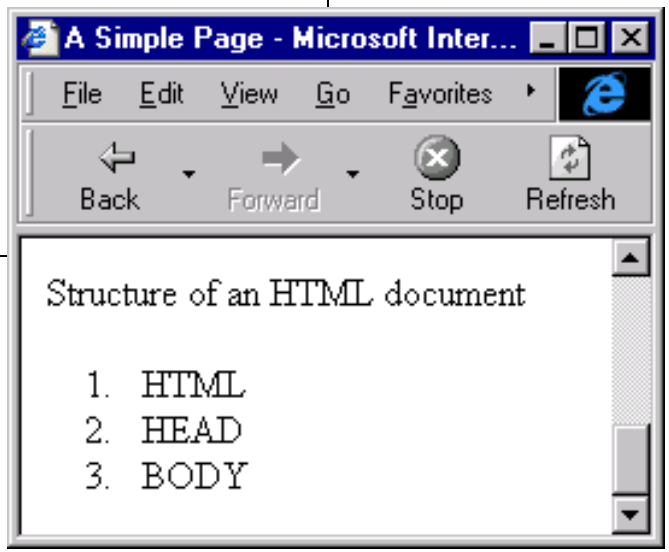


Ordered Lists

Ordered Lists

- Automatically numbered
- ** … ** Contains the entire list
- ** … ** Used for each list item

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

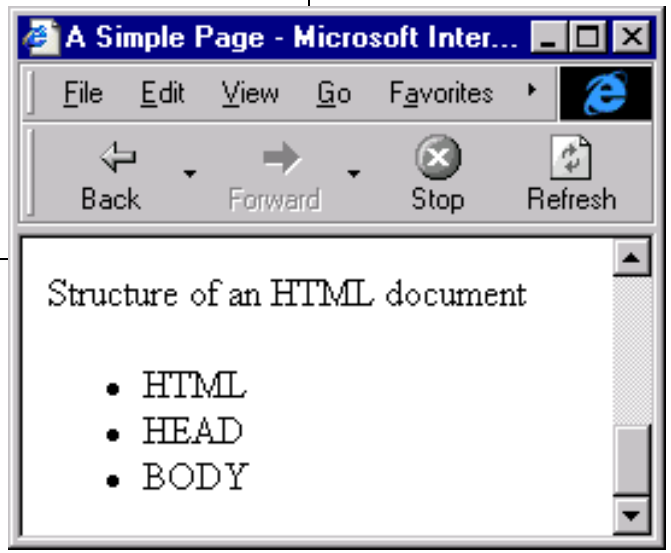


Unordered Lists

Unordered Lists

- Bullet Points
- **
** … **
** Contains the entire list
- **
** … **
** Used for each list item

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

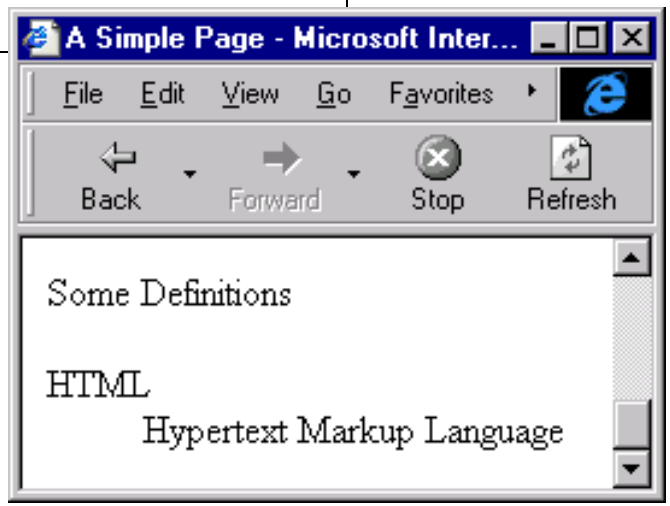


Definition Lists

Terms and explanations

- **<dl> … </dl>** Contains the entire list
- **<dt> … </dt>** A definition term
- **<dd> … </dd>** A definition description

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



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.

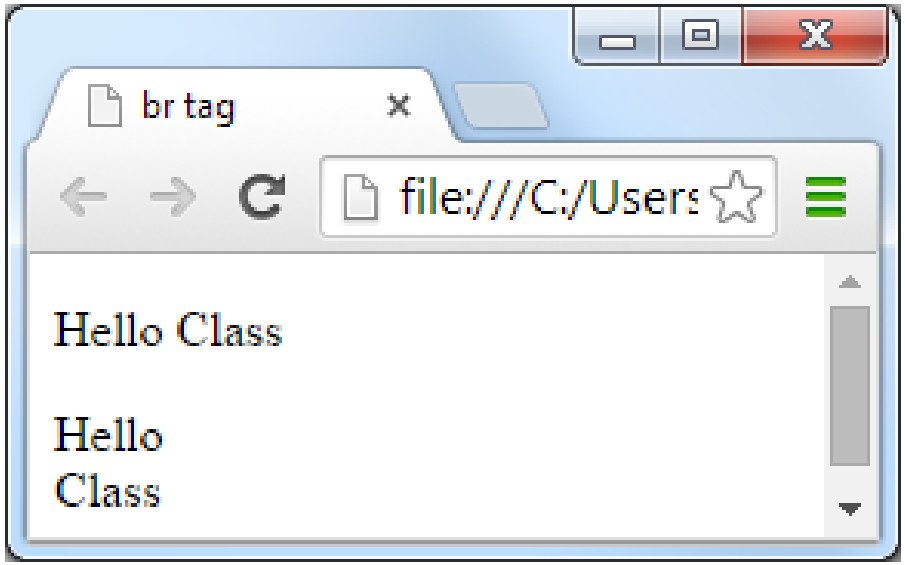
- **Line breaks**
  - `<br>`

- **Images**
  - `<img>`

Line break

- **Breaks a line**
  - Same as hitting the Enter key
  - Use **
**

```
<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

`<img>`

- Insert an image at this location

`src`

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

`alt`

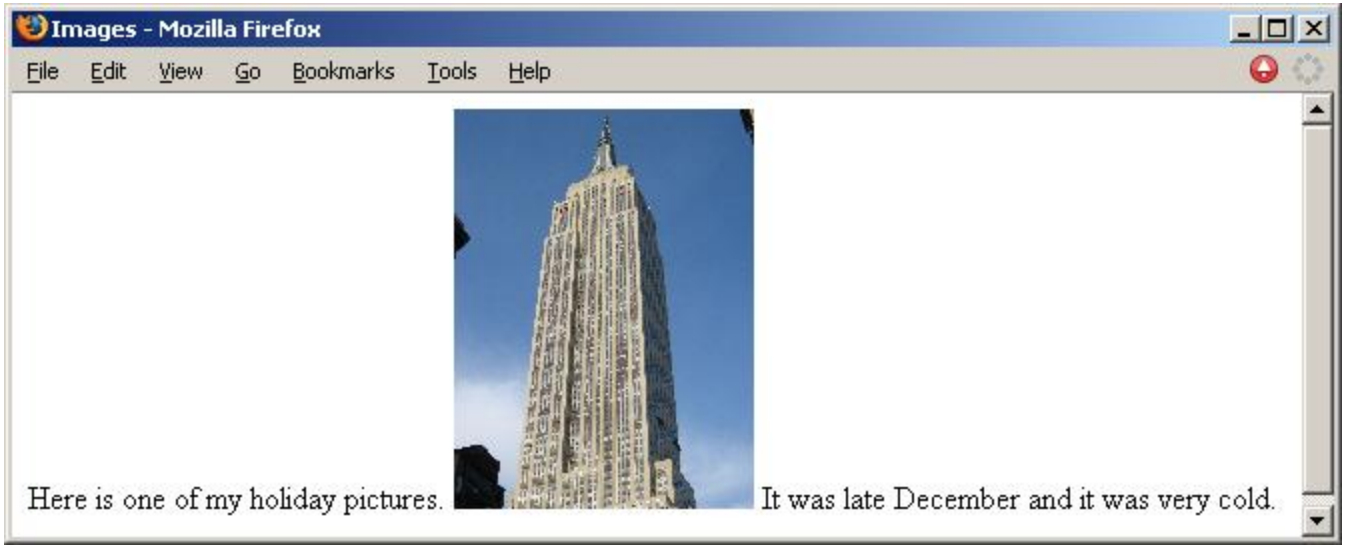
- Attribute to specify alternate text
- Displayed if the image can't load
- Important for people with visual impairment

```
<img src="filename" alt="description">
```

<img> example

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>
```



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 …">text appearing</a>
```

URLs

Fully specified

- Protocol
- Host name
- Path
- File

Relative

- Omit the first parts
- Path and file
- File

```
http://www.cs.auckland.ac.nz/courses/compsci111/index.html
/couses/compsci111/index.html
lectures/index.html
index.html
```

Exercise

Exercise 6: What HTML 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".

Validated Code

- **Online system to check correctness of code**
  - Provided by W3C
  - http://validator.w3.org

Example source code

```
<!DOCTYPE html>

<html lang="en">

<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, then you can include an image to
show that the page is validated.</p>
<p>Date: 4 Feb 2020</p>
<p><img src="valid-html5.png" alt="Validated xhtml logo"></p>

</body>

</html>
```

Example page