HTML Basics – Module 1

In this module we'll look in more depth at the core language of the Web – **Hyper Text Markup Language** or **'HTML'**

We'll cover the basics of HTML documents, syntax and structure and the key elements that make up a web page. There will be some exercises to become familiar with the HTML language and reinforce the concepts and we'll get our first properly structured web page up and running!

Later in the course we'll look at some more advanced HTML topics as well as new features in HTML5.

Review of Previous Module

In the previous module we took an initial look at the key technologies and processes that are used to generate a web page.

We discussed HTML, CSS and JavaScript; browsers and servers; HTTP and W3C.

Finally we created an initial HTML document and used it to display a web page in a browser. It needs some additional elements in order to be properly complete and we'll do that in the next module.

Next we will move on to look in more depth at exactly how each of these core technologies work. We'll start with HTML and then move on to CSS and JavaScript.

Review of Quiz from previous module

We'll take 10 minutes here to go through the quiz set at the ned of the previous module and deal with any questions.

HTML

HTML, which stands for **H**yper **T**ext **M**arkup **L**anguage, is the markup language for web pages.

HTML was first created in the early 90s by Tim Berners-Lee, who is generally considered to be 'the father of the Web'

It provides a means to create structured documents by defining the **elements** of a web page – such as **text**, **headings**, **paragraphs**, **lists** and **forms**.

It also allows media such as **images** and **videos** to be embedded and displayed in a web page.

Importantly, HTML allows the use of **links** to relate content between pages and sites.

HTML – History

A detailed history of the development of HTML can be found at the following URL:

http://www.w3.org/html/wg/drafts/html/master/introduction.html#history-0

HTML Documents

Each web page is represented by a single HTML document that is processed, or **rendered**, by a browser.

HTML documents are made up of a number of **HTML elements** and saved as text files.

Each element defines a specific component of a web page, such as a heading or a paragraph, and comprises one or more tags that may enclose content.

HTML documents can also include components such as **Cascading Style Sheets** (**CSS**) and **Scripts** in languages such as **JavaScript**. We'll look at these a little later in the course.

HTML Documents

When a browser opens an HTML document, it will look for HTML tags and elements in the text and use them to create the page's structure, insert content images, or create links to other pages.

Since HTML documents are just text files they can be created in even the simplest text editor.

Browsers will attempt to create a page even if there are no elements or tags defined, although the results may not be as expected.

HTML Elements

An HTML element starts with a **start tag** (opening tag)

An HTML element ends with an **end tag** (closing tag)

The element's content is everything between the start and the end tag

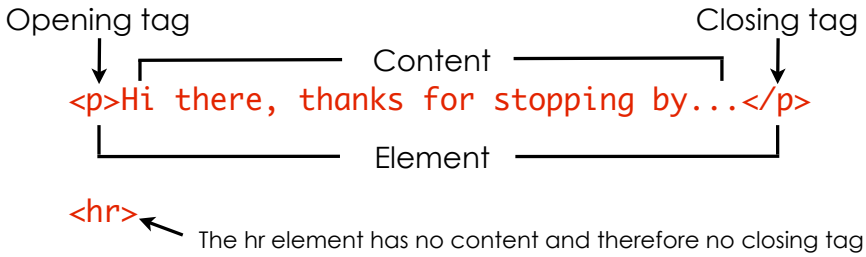
Some HTML elements have empty content

Empty elements do not have a closing tag

Most HTML elements can also have **attributes**

HTML – Example

```
<h1>Welcome to my site</h1>
```




```
<hr>
```

The hr element has no content and therefore no closing tag

```
<h2>Latest stuff...</h2>
```


HTML – Example

```
<!DOCTYPE html>
<html>
  <head>
    <title>My Web Site</title>
  </head>
  <body>
    <h1>Welcome to my site</h1>
    <p>Hi there, thanks for stopping by...</p>
  </body>
</html>
```

HTML – Indentation

When writing HTML markup the standard practice is to put opening tags on new lines and to indent any other elements that are contained within them.

This makes it easier for developers to read the HTML but is not actually necessary for browsers.

```
<body>
  <h1>Welcome to my site</h1>
  <p>Hi there, thanks for stopping by...</p>
</body>
```

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HTML – Indentation

As far as a browser is concerned the following two HTML documents are equivalent and it will process then exactly the same way.

```
<!DOCTYPE html>
<html>
  <head>
      <title>My Web Site</title>
  </head>
  <body>
    <h1>Welcome to my site</h1>
    <p>Hi there, thanks for stopping by...</p>
  </body>
</html>
```

```
<!DOCTYPE html><html><head><title>My Web Site</title></head><body><h1>Welcome to my site</h1><p>Hi there, thanks for stopping by...</p></body></html>
```

However, to the human eye one is certainly more readable than the other!

HTML – DOCTYPE

The **doctype declaration** should be the very first thing in an HTML document, before the opening <html> tag.

The doctype declaration is not actually an HTML tag; rather it is a statement or **declaration** used to indicate to the web browser which version of the HTML markup language the page is written in.

The doctype declaration refers to a **Document Type Definition** (**DTD**). The DTD specifies the rules for the markup language so that browsers can render content correctly.

You should always include a doctype declaration, otherwise the browser may not render the page correctly.

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HTML – DOCTYPE

```
<!DOCTYPE html>
<html>
  <head>
    <title>Title of the document</title>
  </head>
  <body>
    <h1>Title of the page</h1>
    <p>Main page content...</p>
  </body>
</html>
```

DOCTYPE – HTML 4.01 Strict

This DOCTYPE includes all HTML elements and attributes, but does NOT INCLUDE presentational or deprecated elements (like font).

Framesets are not allowed.

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01//EN"
"http://www.w3.org/TR/html4/strict.dtd">
```


DOCTYPE – HTML 4.01 Transitional

This DOCTYPE includes all HTML elements and attributes, INCLUDING presentational and deprecated elements (like font).

Framesets are not allowed.

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01
Transitional//EN" "http://www.w3.org/TR/html4/loose.dtd">
```

DOCTYPE – XHTML 1.0 Transitional

This DTD includes all HTML elements and attributes, INCLUDING presentational and deprecated elements (like font)

Framesets are not allowed

The markup must also be written as well-formed XML

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


DOCTYPE – XHTML 1.0 Strict

This DTD contains all HTML elements and attributes, but does NOT INCLUDE presentational or deprecated elements (like font).

Framesets are not allowed.

The markup must also be written as well-formed XML.

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

DOCTYPE - HTML

This DOCTYPE is the new standard for HTML 5

As you can see, its syntax is very simple.

This is now the recommended DOCTYPE for new web pages and is what we will use throughout this course.

```
<!DOCTYPE html >
```


HTML - DOCTYPE

A complete list and definitions of all recommended doctypes and doctype declarations can be found at:

http://www.w3.org/QA/2002/04/valid-dtd-list.html

HTML Elements and Tags

An HTML element is defined by an opening tag, followed by some data, or content, and then a closing tag. For example:

```
<h1>Welcome to our website</h1>
```

In the example above, **<h1>** is the **opening tag**, the text **'Welcome to our website'** is the **content** and **</h1>** is the **closing tag**.

Closing tags are similar to the opening tag except a '/' character is included at the start.

Everything from the opening <h1> to the closing </h1> is the **HTML element**.

HTML – Elements (Reminder)

```
<h1>Welcome to my site</h1>
```

Opening tag — Closing tag

Content

```
<p>Hi there, thanks for stopping by...</p>
```

Element

```
<hr>
```

The hr element has no content and therefore no closing tag

```
<h2>Latest stuff...</h2>
```

HTML Elements and Tags

Some HTML elements have no content. These elements only have a start tag.

```
<hr>
<img src="images/myphoto.jpg">
<br>
```

Shown above are three HTML elements which have no content and therefore no closing tag. In order these are an **hr** element (**horizontal rule**), a **br** element (**line break**) and an **img** element (**image**)

The image itself is referenced by using an **attribute** of the element to point to its location.

We'll look at the use of images in more detail later in the course.

Key HTML Elements

There are certain HTML elements that should be included in every document/page. These include:

- The **html** element
- The **head** element
- The **title** element
- The **body** element

We'll look at each of these elements more closely on the next slides.

HTML Elements : html

The **html** element starts with an opening <html> tag and ends with a closing </html> tag.

It tells the browser that this is an HTML document.

The html element is the outermost element in an HTML document. It is also known as the **root element**.

All other elements are contained within the **html** element.

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HTML Elements : html

```
<!DOCTYPE html>
<html>
  <head>
    <title>Title of the document</title>
  </head>
  <body>
    <p>Some text here</p>
    <p>Main page content...</p>
  </body>
</html>
```

HTML Elements : head

The **head** element is a container for all the head elements. It starts with an opening <head> tag and ends with a closing </head> tag.

Other elements inside the head element are used to specify the page's title, include scripts, instruct the browser where to find style sheets, provide meta information, and more.

The head element does not contain any content that is visible as part of a web page.

The following tags can be added to the head section:

<base>, <title>, <link>, <meta>, <script> & <style>

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HTML Elements : head

```
<!DOCTYPE html>
<html>
  <head>
    <title>Title of the document</title>
  </head>
  <body>
    <h1>Title of the page</h1>
    <p>Main page content...</p>
  </body>
</html>
```

HTML Elements : title

The **title** element defines the title of the document, and is the only **required element** in the head section.

It starts with a <title> tag and ends with a </title> tag.

The title element defines the title of the document that is displayed at the top of the browser window (or tab).

It is also used as the default title when a page is added to favorites or displayed in search results.

The title element is **required** in all HTML documents.

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HTML Elements : title

```
<!DOCTYPE html>
<html>
  <head>
    <title>Title of the document</title>
  </head>
  <body>
    <h1>Title of the page</h1>
    <p>Main page content...</p>
  </body>
</html>
```

HTML Elements : body

The body element acts as a container for the visible content of an HTML document (page), such as:

- Text
- Images
- Links
- Lists
- Headings
- Tables

All other elements that make up the content of a page are contained within the body element

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HTML Elements : body

```
<!DOCTYPE html>
<html>
  <head>
    <title>Title of the document</title>
  </head>
  <body>
    <h1>Title of the page</h1>
    <p>Main page content...</p>
  </body>
</html>
```

HTML Comments

The HTML markup language allows the use of **comments** in addition to tags, content and attributes.

Comments are short pieces of text in the form of notes that can be useful for documenting the markup.

To begin a comment we use a special 'tag' as follows:

<!--

and to end the comment:

-->

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HTML Comments – Example

```
<!DOCTYPE html>

<html>

  <!-- Start of head element -->
  <head>
    <title>Title of the document</title>
  </head>

  <!-- Start of main body -->
  <body>

    <h1>Title of the page</h1>

    <p>Main page content...</p>

  </body>
```

HTML Comments

Comments are ignored by browsers and so will not appear in the page itself when rendered.

They are extremely useful for adding notes and documenting the HTML document itself, particularly if the document is very large or more then one person will be editing it.

If you create an HTML document today and then look at it again in two weeks it may well be that you have forgotten why you used a particular technique. A comment will act as a reminder – both to you and other developers.

HTML Comments ?

On the previous slide we said that comments can be extremely useful for documenting HTML markup.

Can anyone suggest any negative aspects of adding comments to an HTML document?

HTML Exercise 1

We've looked at the key HTML elements that should always be used to create a **well formed HTML document** as the basis of a web page.

Open the 'hello-world.html' document from the previous module and add the additional elements to make it into a well formed document.

Include a title element so that a title is displayed in the format:

"HTML Exercise - Hello World from Nick" (use you name)

Locate the style element inside the head element and the script element inside the body element just before the closing </body> tag.

Add a comment after the doctype declaration to make a note of your name and the date that you last edited the document.

Open the page in your browser and then add it as a bookmark.

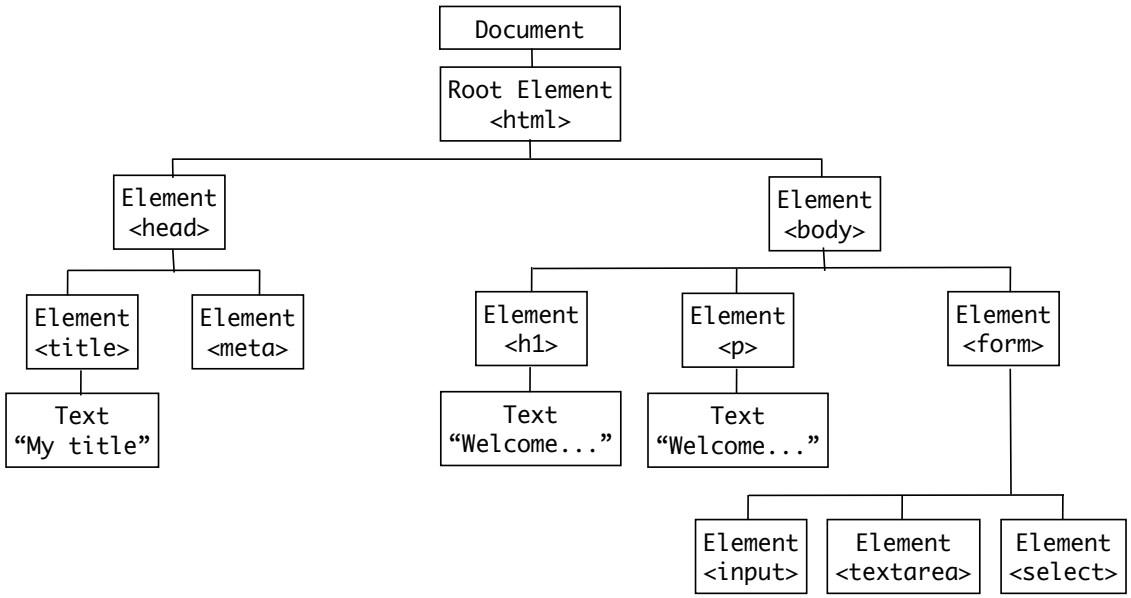
The HTML Document Object Model

The HTML Document Object Model (DOM) is a structured representation of the elements that make up an HTML document.

It defines the parent, child and sibling relationships between elements in the form of a tree (see diagram on next slide).

An understanding of the DOM is key to working with web pages, and especially in applying CSS and Javascript.

The HTML Document Object Model



Content Elements

The elements that we looked at earlier: **html**, **head**, **title** and **body** are mainly structural elements that define distinct components of a document.

The **body** element acts as a container for all the elements that make up the visible content of a page.

In the remainder of this module we'll look at some of the key elements that are used to define a page's content in the form of headings, paragraphs, lists and links.

Headings

There are 6 elements that can be used to define headings in a page:

h1, **h2**, **h3**, **h4**, **h5** and **h6**

h1 headings are the most important and h6 the least important.

Headings should appear in their order of importance in a page and there should only be one h1 heading on any page.

Headings – Examples

Example heading elements:

```
<body>
    <h1>Welcome to my Blog</h1>
    <p>Thanks for visiting my blog</p>
    <h2>Recent posts</h2>
    <p>Read my recent posts...</p>
    <h2>Recent photos</h2>
    <p>View my recent photos...</p>
</body>
```

Paragraphs – p

The **p** element is used to define paragraphs in a page.

Paragraphs are used to separate content into distinct sections or blocks.

Text that isn't contained in a paragraph or some other element may not appear as you might expect.

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Paragraphs – Examples

Example paragraph elements:

```
<body>
    <h1>Welcome to my Blog</h1>
    <p>Thanks for visiting my blog</p>
    <h2>Recent posts</h2>
    <p>Read my recent posts...</p>
    <h2>Recent photos</h2>
    <p>View my recent photos...</p>
</body>
```

Examples – Headings and Paragraphs

Lists

There are two types of lists that can be defined in an HTML document – **ordered lists** and **unordered lists**.

Ordered lists will typically have a sequence number applied to each item whereas unordered lists will have bullet points or symbols.

Ordered lists are defined with a **ol** element and unordered lists with a **ul** element.

Each type of list then contains list items, which are defined with **li** elements.

Lists – Examples

Example of an ordered list:

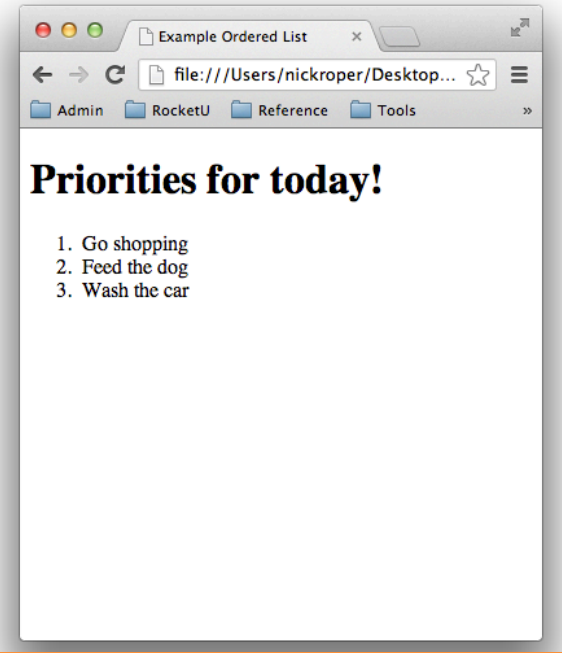
```
<body>
  <h1>Priorities for today!</h1>
  <ol>
    <li>Go shopping</li>
    <li>Feed the dog</li>
    <li>Wash the car</li>
  </ol>
</body>
```

Opening tag

List items

Closing tag

Examples – Ordered List



Lists – Examples

Example of an unordered list:

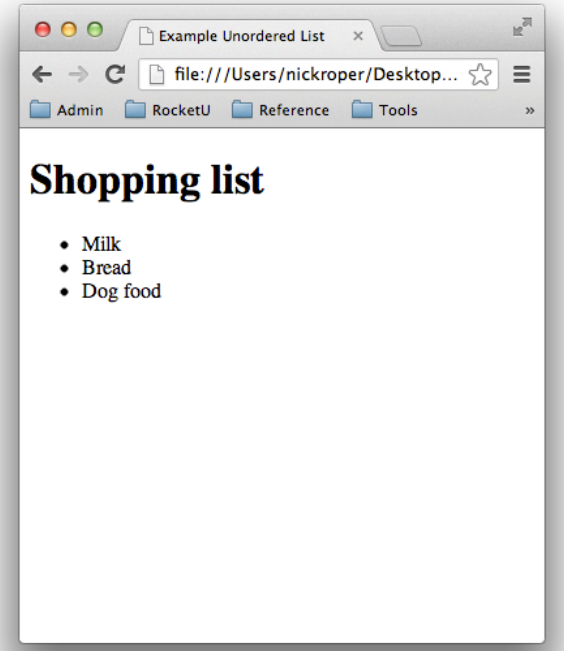
```
<body>
  <h1>Shopping list</h1>
  <ul>
    <li>Milk</li>
    <li>Bread</li>
    <li>Dog food</li>
  </ul>
</body>
```

Opening tag

List items

Closing tag

Examples – Unordered List



HTML Exercise 2

Create a new file named “html-exercise-2.html” in your rocketu folder. When loaded in a browser a web page similar to the one shown on the next slide should be displayed.

The document should be well formed HTML document.

One of the lists should be an ordered list and the other an unordered list. Use your own choices of bands and books.

Level 2 headings should be used for the titles of the lists. All heading and paragraph text should use the Verdana font-family. Colors are up to you.

A horizontal rule should be applied before the first list and after the second list.

There should be no script element in this document

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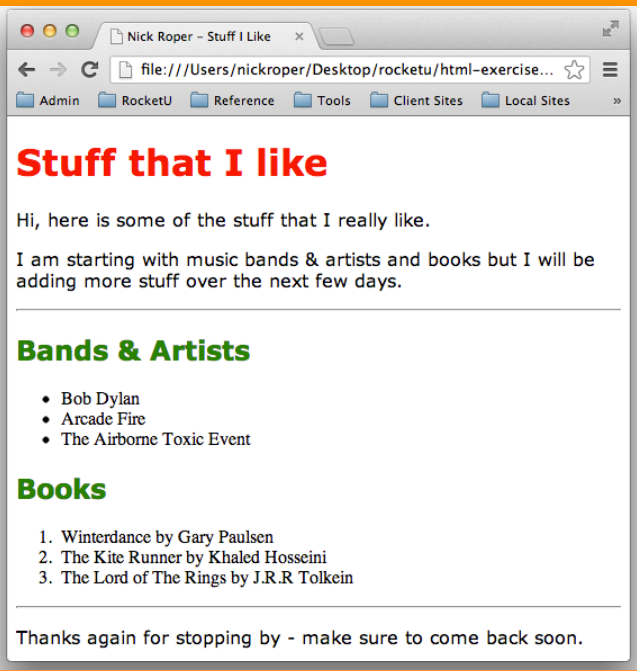
HTML Exercise 2



Links

One of the key features of the Web is the ability to use text, menus and images as clickable links to other pages and sites.

Links are defined with **anchor** elements that comprise **a** tags and **href** attributes.

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

The element's content, in this case the text "Contact us" becomes the clickable link and will submit a request for the page or address specified by the href attribute value.

The clickable content could also be an image.

Links – Examples

Example of links in paragraph text:

```
<body>
  <h1>Some news web pages</h1>
  <p>To check the latest news in the UK you can visit
     <a href="http://www.bbc.co.uk">The BBC website</a>
     or for US news try <a href="http://www.cnn.com"> the
     CNN site</a>.
  <p>
 </body>
```

Links – Absolute URLs

In the previous example we used a link like this:

```
<a href="http://www.bbc.co.uk">The BBC website</a>
```

The href **attribute** in the opening <a> tag is used to specify the **URL** for the link.

In this example we used an **absolute URL** – which means that we provided the full address of the site to be visited.

Absolute URLs are always used when we want the link to go to another website and should start with **http://** otherwise the browser may get confused.

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Links – Examples

Alternate example of links in paragraph text:

```
<body>
  <h1>Check out our pages!</h1>
  <p>Hi there, we have some new pages on our website
     including <a href="latest.html">our latest news</a>
     and <a href="tips.html"> a tips and tricks page</a>.
  <p>
 </body>
```

Links - Relative URLs

In the second example we used a link like this:

```
<a href="latest.html">our latest news</a>
```

This time we only included the name of the HTML document, and not the http://www... etc.

By doing this we are specifying a link to a document on the same website.

The browser now treats this as a **relative URL**, which means that it will look for the page in a location that is **relative** to the page that contains the link.

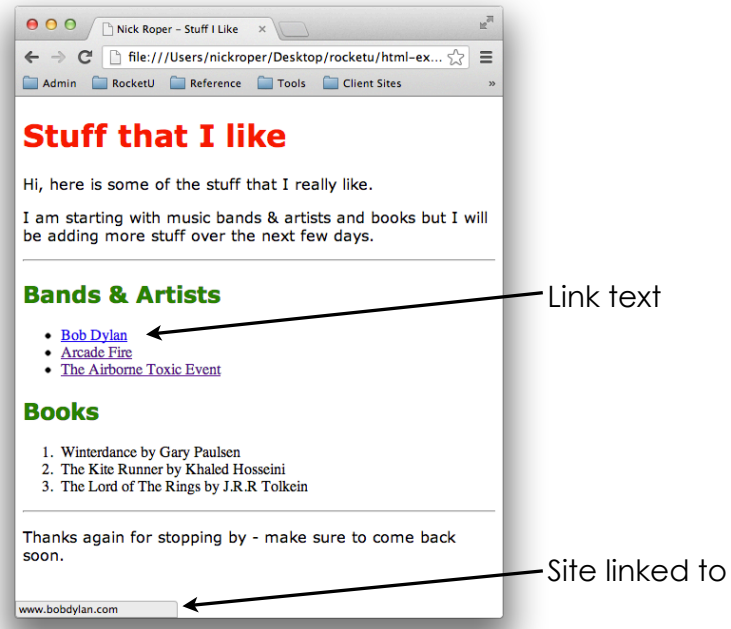
HTML Exercise 3

Copy your file named "html-exercise-2.html" and use it to create a new file "html-exercise-3.html".

Edit the document to turn the text of the lists items into links.

Search the web for a relevant page for each item in your lists and then use the URLs to make the text for each item a clickable link.

HTML Exercise 3



HTML Attributes

As we've already seen, HTML elements can have **attributes** that are used to specify additional information about the element.

An element's attributes are specified inside the opening tag.

```
<p class="intro" >This course is about...</p>
```

Attributes have a name and a value, separated by a "=" character.

In the example above the attribute's name is **class** and its value is **"intro".**

Values are usually enclosed in quotes.

HTML Attributes

Some attributes can be applied to all elements whereas others are only used with specific elements.

The **class** attribute can be used with all elements:

```
<h1 class="news">latest news!</h1>
<p class="intro">...</p>
<br class="clear" />
```

The **href** attribute is only used with elements that define links:

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


HTML Attributes

We'll discuss various attributes as we look at different elements, but some of the most commonly used attributes are listed below:

- **id** – a unique identifier for an element
- **class** – a class or category of an element
- **href** – the URL for a link
- **src** – the location of a resource such as an image
- **type** – the type of an element, such as a form field

An element may have multiple attributes

```
<p class="blog" id="intro">This course is about...</p>
```

HTML Exercise 4

Copy “html-exercise-3.html” and use it to create a new file “html-exercise-4.html”.

Edit the document to add attributes to the following elements.

The first paragraph should have a class attribute with a value of “intro”

The final paragraph should have a class attribute with a value of “thanks”

Save and load the page in your browser - has anything changed?

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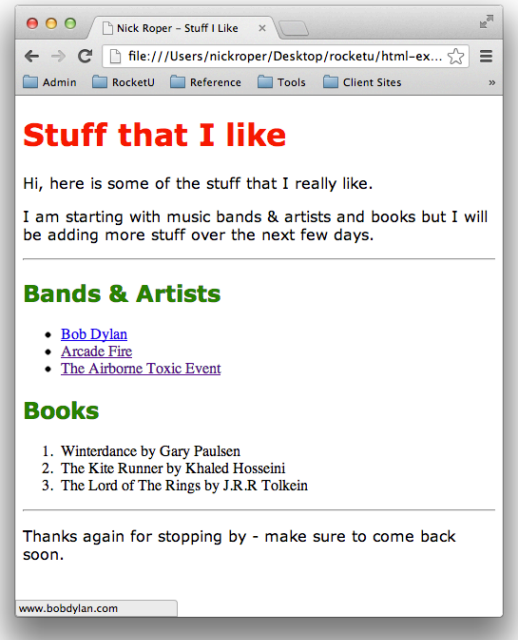
HTML Exercise 4



Module Summary

This module focussed on the key concepts of HTML.

First we looked at the use of **Doctypes** in **HTML documents** to make sure that the browser interprets the markup correctly.

Then discussed how the majority of HTML elements are made up of **tags** and **content**, but that some elements don't have content or closing tags. We also took an initial look at the **Document Object Model**, or **DOM**.

We covered the key **structural elements** of HTML and also some of the most common **content elements**, such as **headings**, **paragraphs**, **lists** and **links**.

Finally we took an initial look at HTML element **attributes**.

HTML – Lab 1

Now that we've completed the first HTML module we're going to start on a lab.

The lab will build over the next modules as we look more at CSS and additional HTML concepts.

Your instructor will explain the initial lab now and then a Lab Specification Document will be available on Basecamp for you to work from. This will also include details of how to submit your completed lab work.

Questions

Do you have any questions before we move on to the next module

Don’t worry, if you think of something later then just ask!