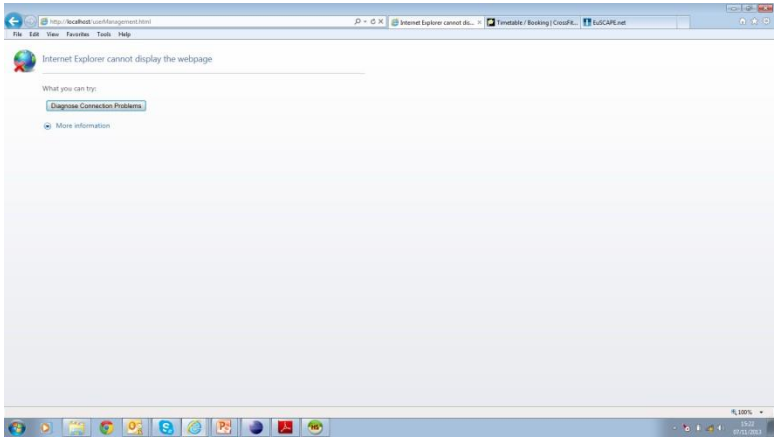
FOUNDATION OF WEB DEVELOPMENT

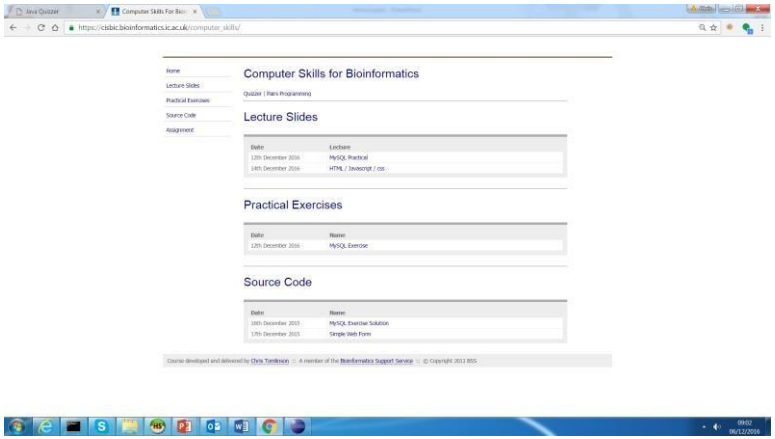
A Practical Introduction to HTML, CSS

Outline

- **Introduction**
- **HTML**
- **CSS – a brief introduction**

The Internet : What is happening?





Request (URL)
URL is decoded and the request is sent to the correct webserver

Response is a text stream in the form of a html document <html>….</html>
The web browser interprets the html and displays it

Web Server

HTML Documents

- HTML is the language of the web (Hyper Text Markup Language)
- Every internet browser can interpret and display HTML documents
- In reality HTML is just a stream of text that is formatted and displayed for you on the screen by the web browser
- HTML documents consist of a series of pairs of tags often with text and other tags in between the tags
- A tag pair has an opening tag and a closing tag
- HTML tags are contained within <> (chevrons)
- An opening tag is like this <html>
- A closing tag is like this </html>
- Tags should match (generally)
- HTML documents can be written in files with the postfix '.html'
  - i.e. page1.html

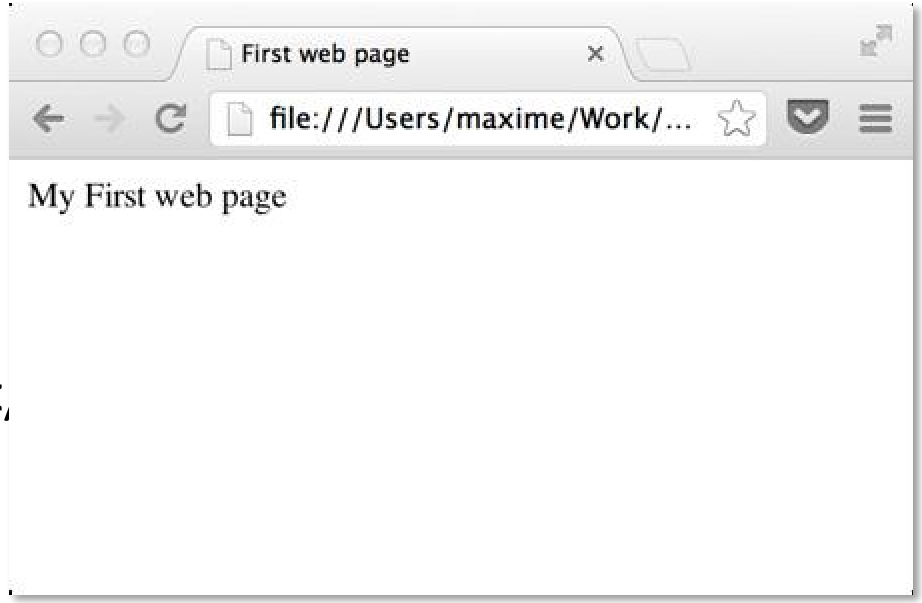
HTML Code

- Visit a web page that you like
- Right click on the page
- Select the ‘View Source’ option

- This is what the web server sends back to the browser
- The browser interprets and displays it

HTML Example Page 1

```
<! doctype html>
<html>
        <head>
                <title>First web page</
        </head>
        <body>
                My First web page
        </body>
</html>
```



Other HTML Tags

- Hyperlink tag;
  - Link Text

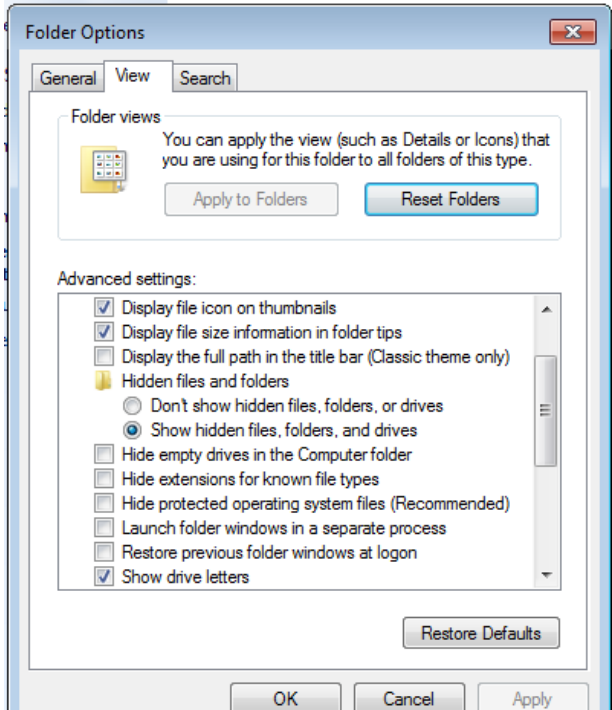
- Headings
  - <h1>Big Heading</h1>
  - <h2>Smaller Heading</h2>
  - <h3>Even Smaller Heading</h3>

- Text
  - Paragraph
  - **Bold**
  - *Italic*
  - <u>underline</u>
  -
 newline tag
  - <hr/> horizontal rule (line) across page

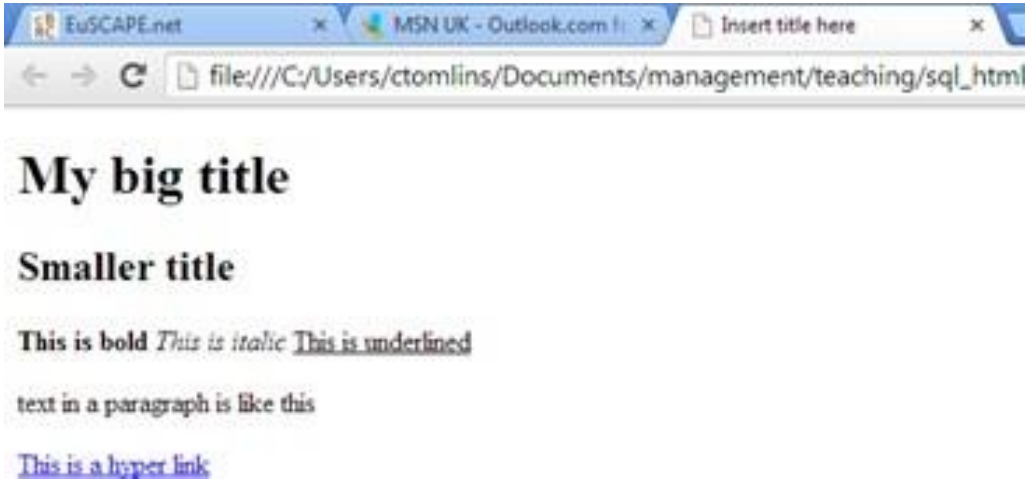
Exercise 1: Your First Web Page

- Make a new folder in your file system called web files or something like
- Make sure that file extensions are displayed so that they can be changed to .html
  - In windows; Control Panel->Appearance and Personalisation->Folder Options
  - Then un tick ‘Hide extensions for known file types’

- Make a new text file in the directory called page1
- Change the file extension so that it is called page1.html



Make the page below in your file using the html tags we have just seen



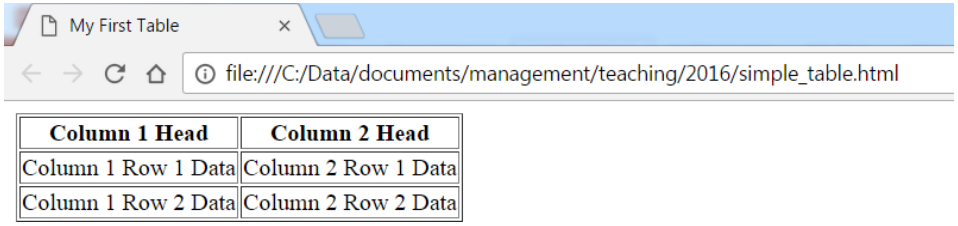
- Make the link go to the following web page (http://johnabbott.com)
- Visualise the page by opening it in a web browser
  - Internet Explorer : File->Open
  - Chrome : You can type the path in the address bar (file://C:/html/page1.html)

HTML Tables

- Tables are a very useful way of visualising information
- Tables have rows and columns
- The tags are;
  - <table></table> : outer table tags
  - <th></th> : table header row (for the first row of a table only)
  - <tr></tr> : for a normal table row
  - <td></td> for a table element

A Very Simple Table

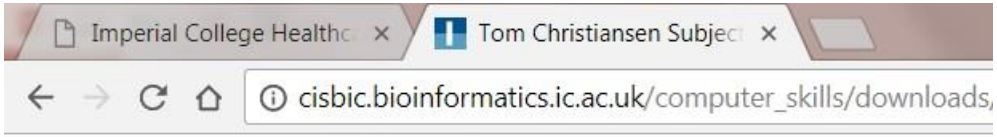
```
<!DOCTYPE html>
<html>
<head>
<meta charset="ISO-8859-1">
<title>My First Table</title>
</head>
<body>
<table border=1>
    <tr>
            <th>Column 1 Head</th>
            <th>Column 2 Head</th>
    </tr>
    <tr>
            <td>Column 1 Row 1 Data</td>
            <td>Column 2 Row 1 Data</td>
    </tr>
    <tr>
            <td>Column 1 Row 2 Data</td>
            <td>Column 2 Row 2 Data</td>
    </tr>
</table>
</body>
</html>
```



Exercise 2: Your HTML Page with a table

- (first name, last name,gender, dob, smoker, drinker, study #)
  - Make the page title the Subject's name
  - Have a heading on the page of the subject's name (inside <h1> tags)
  - Put a table in it to contain the subject's attributes
  - Table should have 7 rows and 2 columns
  - Make up data to go in the cells

Exercise 2

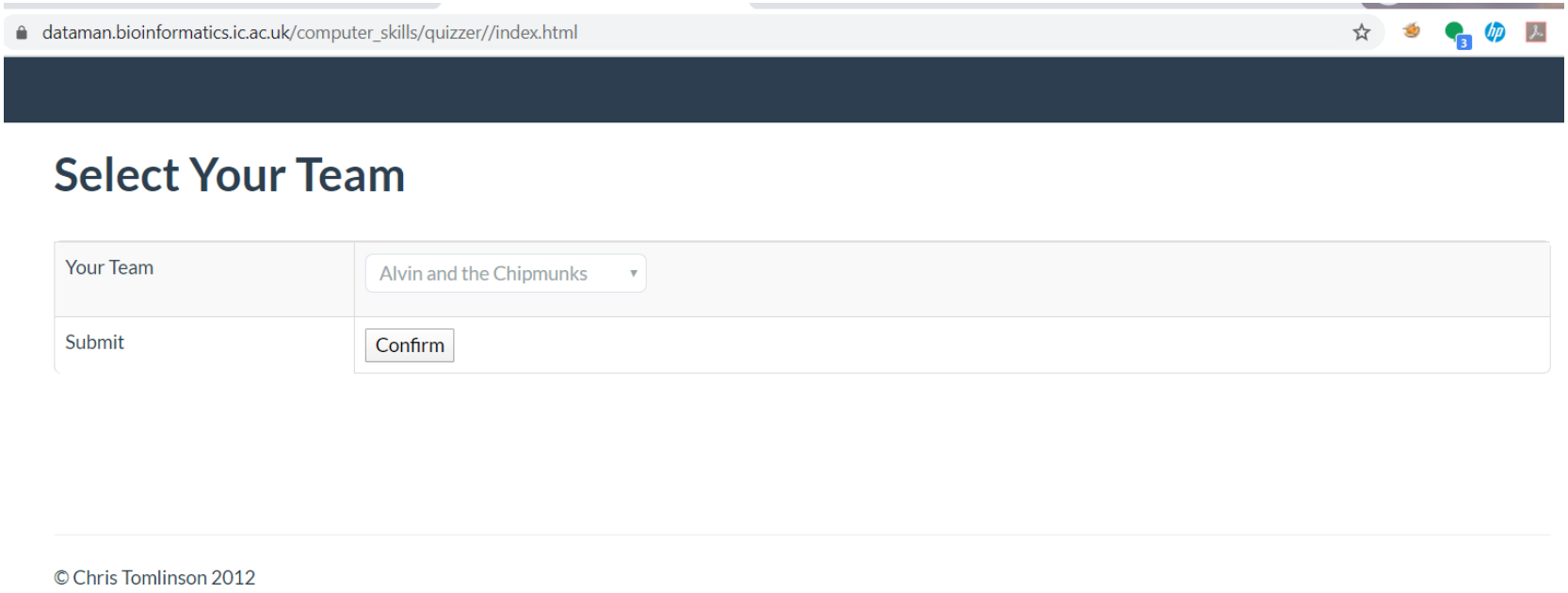


Tom Christiansen Subject Details

First Name	Thomas
Last Name	Christiansen
Gender	Male
DOB	12/01/1979
Smoker	No
Drinker	Yes
Study #	1

Sending Information via the Web

- To develop an interactive web application a web page has to be able to send information to a webserver



HTML Forms

- Information can be sent back to the server via web forms
- Web forms consist of web page components that capture information

Form Tag

- All components in a form are contained within the <FORM></FORM> tag.
- The opening form tag will usually look something like this;
  - <form action="hospitals.html" method="POST">
  - The action attribute is the address of the web page where information is sent
  - The method attribute is the type of request that is sent to the server, POST is almost always used with forms

Common Form Elements – Inside the <form></form> tags
Text

- Text Input

  ```
  <input type="text" name="username" id="username" value="ctomlins" />
  ```

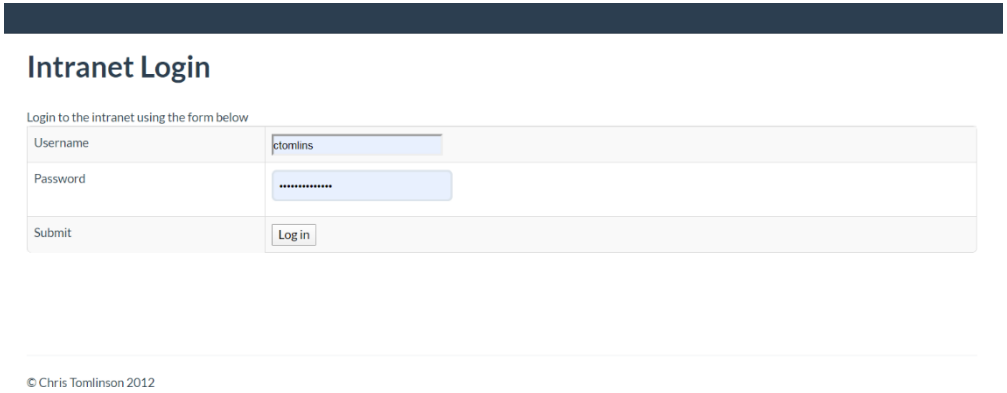
- Password Input

  ```
  <input type="password" name="pass" id="pass" value="mypasswd" />
  ```

- Text Area

  ```
  <textarea id="textareainput" name ="textareainput" rows="5" cols="30">
     Text inside the text area goes between the tags
  </textarea>"
  ```

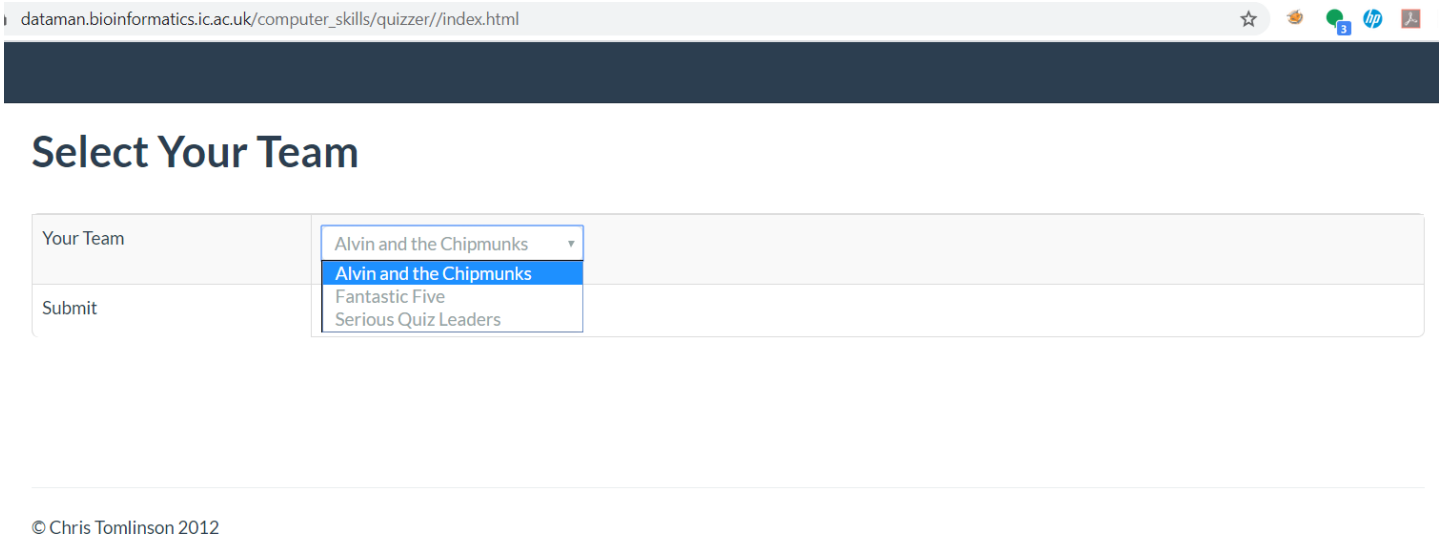
Login Form



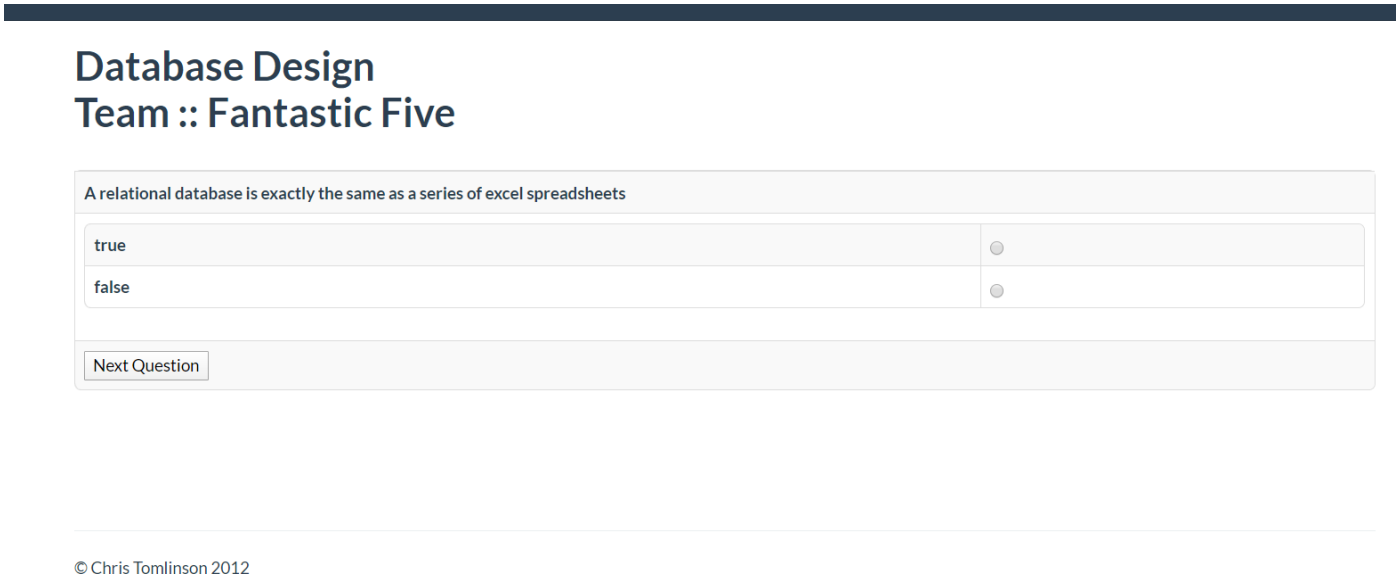

```
<FORM ACTION=login.html METHOD=POST>
<TR>
<TD >Username</TD>
<TD >
        <INPUT NAME="username" ID="username" TYPE="EDIT" SIZE=50 MAXLENGTH=50 VALUE="">
</TD>
</TR>
<TR>
<TD >Password</TD>
<TD >
        <INPUT NAME="password" ID="password" TYPE="PASSWORD" SIZE=50 MAXLENGTH=50 VALUE="">
</TD>
</TR>
<TR><TD >Submit</TD>
<TD >
        <INPUT NAME="submit" TYPE="SUBMIT" VALUE="Log in">
</TD>
</TR>
</FORM>
```

Form Elements – Selectors
Pull Down List

```
<SELECT NAME=team_id ID=team_id>
        <OPTION VALUE=1>Alvin and the Chipmunks</OPTION>
        <OPTION VALUE=2>Fantastic Five</OPTION>
        <OPTION VALUE=3>Serious Quiz Leaders</OPTION>
</SELECT>
```



Form Elements : Radio Buttons



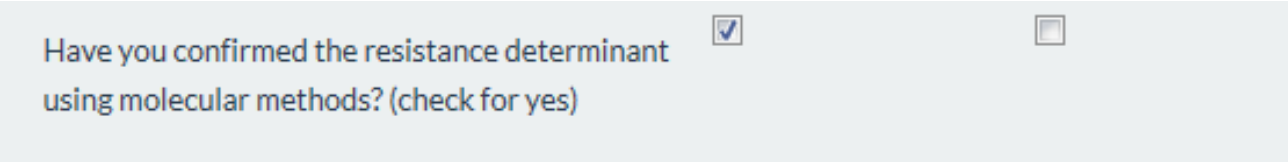
<INPUT NAME="qChoice" id="qChoice_1" TYPE="RADIO" VALUE="true" >

<INPUT NAME="qChoice" id="qChoice_2" TYPE="RADIO" VALUE="false" >

Form Elements : Checkbox

<input id="molec_conf_1" name="molec_conf_1" type="CHECKBOX" value="1" checked>

<input id="molec_conf_2" name="molec_conf_2" type="CHECKBOX" value="1">

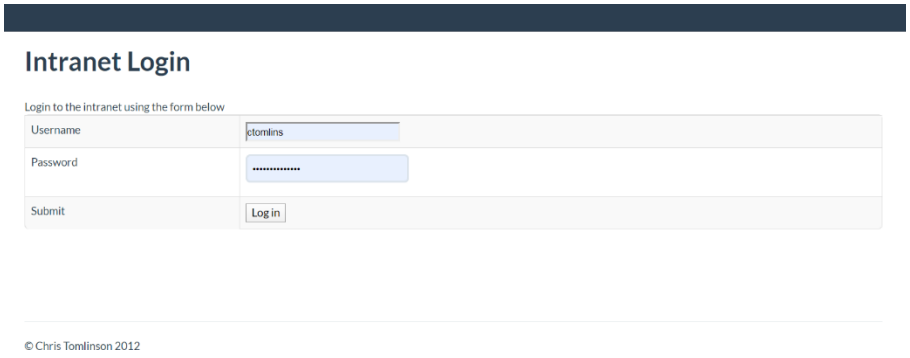


Form Elements : Submit Button

- Pressing the submit button on a web form sends the information in it to the server
- The http address that the information is sent to is taken from the ACTION attribute of the form tag

Form Elements : Submit Button

```
<FORM ACTION=login.html METHOD=POST>
<TR>
<TD WIDTH = 25% ALIGN=left VALIGN=top BGCOLOR=#ffffff COLSPAN=1>Username</TD>
<TD WIDTH = 75% ALIGN=left VALIGN=top BGCOLOR=#ffffff COLSPAN=1>
        <INPUT NAME="username" ID="username" TYPE="EDIT" SIZE=50 MAXLENGTH=50 VALUE="">
</TD>
</TR>
<TR>
<TD WIDTH = 25% ALIGN=left VALIGN=top BGCOLOR=#ffffff COLSPAN=1>Password</TD>
<TD WIDTH = 75% ALIGN=left VALIGN=top BGCOLOR=#ffffff COLSPAN=1>
        <INPUT NAME="password" ID="password" TYPE="PASSWORD" SIZE=50 MAXLENGTH=50 VALUE="">
</TD>
</TR>
<TR><TD WIDTH = 25% ALIGN=left VALIGN=top BGCOLOR=#ffffff COLSPAN=1>Submit</TD>
<TD WIDTH = 75% ALIGN=left VALIGN=top BGCOLOR=#ffffff COLSPAN=1>
        <INPUT NAME="submit" TYPE="SUBMIT" VALUE="Log in">
</TD>
</TR>
</FORM>
```



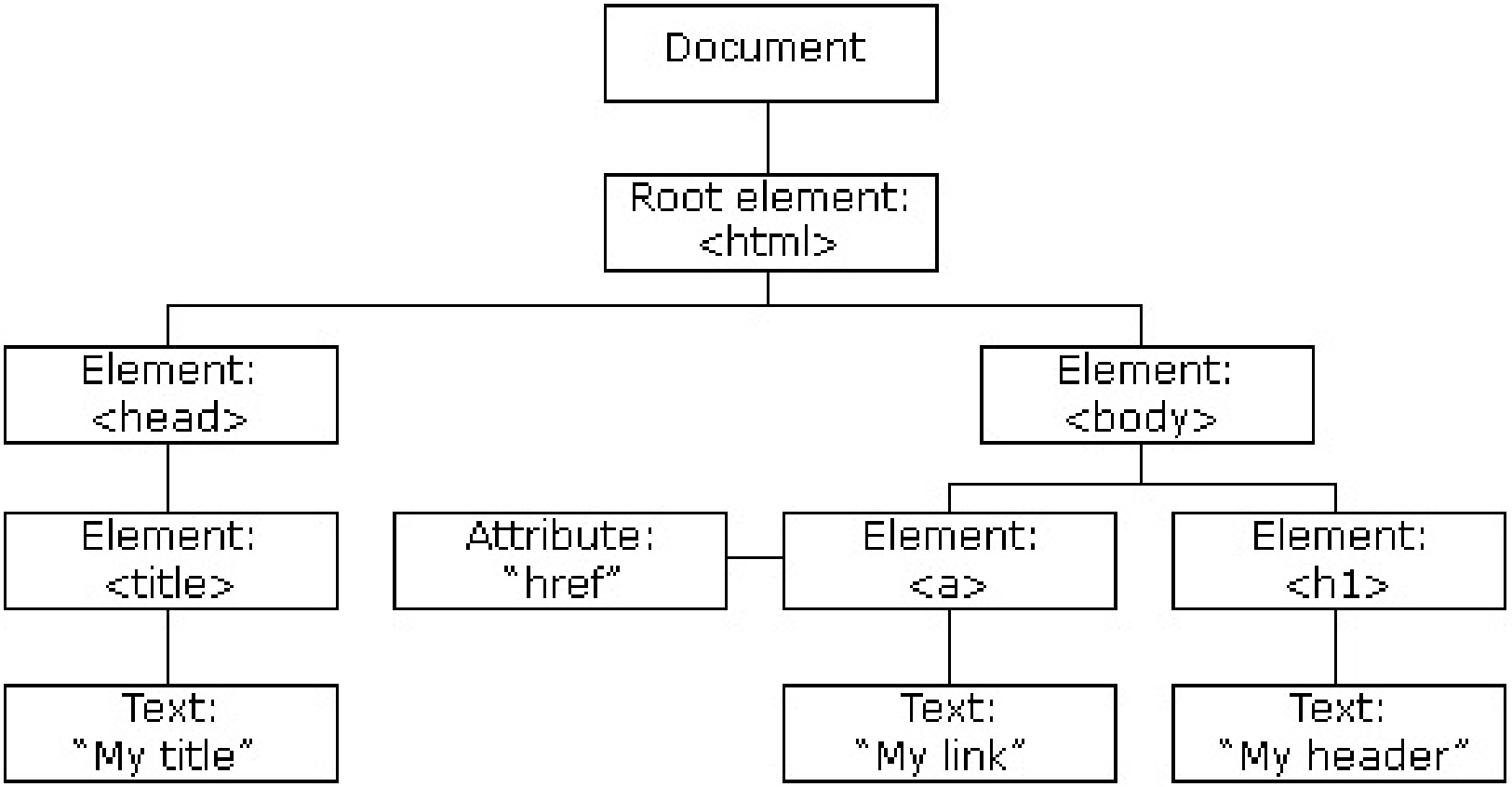
Exercise 3: Make a Web Form

- Make a new page that contains a Web Form formatted using a html table. The table should have 7 rows and 2 Columns. In the first column should be the name of the item and in the second column the form component. The form will be for collecting information about patients and should contain the following items;
  - Make form method = POST, set ACTION = https://dataman.bioinformatics.ic.ac.uk/computer_skills/quizzer/subject.html
  - First name, Last Name (set id and name attributes = first_name, last_name)
  - Male or Female (radio buttons, id and name = gender, values Male = 1 Female =0)
  - Smoker (check box, id and name = ‘smoker’, value 1)
  - Drinker (check box, id and name = ‘drinker’, value 1)
  - Experimental Study (id and name = study_id pull down menu with 5 options Study 1…5, value 1…5)
  - A submit button

HTML Summary

- HTML is a syntax for formatting internet content
- Page content is placed inside nested html tags that contain formatting information for the browser
- Html forms allow a developer to make interactive web content, with information being sent back to the web server

HTML Page Structure
Document Object Model (DOM)



More HTML : the tag

- The div tag is used to define divisions or sections in a web page
- They are often used in conjunction with JavaScript and/or Cascading Style Sheets (css)
- For instance the following

```
<div style="color:#0000FF">
<h3>This is a heading</h3>
<p>This is a paragraph.</p>
</div>
```

will output the text inside the div in blue (by evaluating the style attribute)

: more info

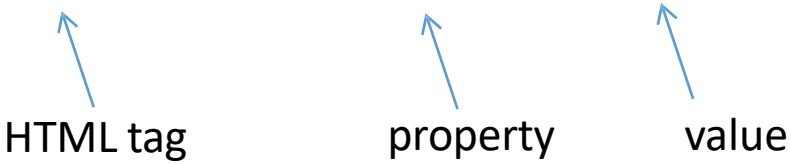
- In order to make a link between a div tag and JavaScript (or css) the div tag needs to be given an id
  - ……..
- You can then reference the div in your JavaScript
- This way of referencing page components by ID is also valid for all other elements in the Document Object Model (i.e. anything that is in your web page)

Cascading Style Sheets (css)

- css was introduced as a way of separating web page presentation from the logic of the page
- css directives define the look and feel of a web page and are solely to do with presentation
- css commands can be applied to a page in three ways;
  - In line as a part of HTML tags
  - Inside a page defined inside a <style></style> tag
  - In a separate file that a web page accesses

css syntax

```
p {color:red;text-align:center;}
```




```
/*This is a comment*/
p
{
text-align:center;
/*This is another comment*/
color:black;
font-family:arial;
}
```

Inline CSS

- Inside a tag the style property is added and css directives are added inside quotes
- The format of the css is <property>:<value>
- More than one css property can be separated by a semicolon
- We have already seen an example of this;

```
<div style="color:#0000FF">
<h3>This is a heading</h3>
<p>This is a paragraph.</p>
</div>
```

- Text within the div will be displayed in blue

Css: Using a Style Tag

```
<!doctype html>
<html>
<head>

<style type="text/css">
        h2 {color: purple;}
</style>
</head>

<body>
<h2>title 2<h2>
<p>
Lorem ipsum dolor sit amet, consectetur adipisicing elit,
sed do eiusmod tempor incididunt ut labore et dolore
magna aliqua. Ut enim ad minim veniam, quis nostrud
exercitation ullamco laboris nisi ut aliquip ex ea commodo
consequat. Duis aute irure dolor in reprehenderit in
voluptate velit esse cillum dolore eu fugiat nulla pariatur.
Excepteur sint occaecat cupidatat non proident, sunt in
culpa qui officia deserunt mollit anim id est laborum.
```

Css : Using an included File

- It is a good idea to completely separate the css from the HTML by putting the css code in a separate file.

Course web page Header HTML

```
<HEAD>

<TITLE>Computer Skills for Bioinformatics</TITLE>

<LINK media=all
href="https://dataman.bioinformatics.ic.ac.uk/computer_skills/css/style.css"
type=text/css rel=stylesheet>

</HEAD>
```

Exercise 4 : Apply css styling to your form

- Download the style.css file from the web and store it in the same directory as your form
- https://dataman.bioinformatics.ic.ac.uk/computer_skills/css/style.css
- Have a look at the file and the css directives in it
- Apply it to your web form (exercise 3) by copying the link line in the head section from the java course html into your webform html head section
- Then put your form inside a div tag like this;
  -
    - Your form html
  -

Css : apply a style to an id

- In the css file you will have seen many items like this;

```
#content {
        MARGIN-LEFT: 180px; WIDTH: 720px; MARGIN-RIGHT: 100px
}
```

- This will apply the css to the section of the html with the id content

```
<div id="content">
        elements in here have css style content applied to them
</div>
```

css : apply style to an id (2)

- This code in the style.css file will apply the css to elements within the <P></P> tags within a div with the id footer

```
#footer P {
        PADDING-RIGHT: 5px; PADDING-LEFT: 5px; PADDING-BOTTOM: 5px; COLOR: #000077; PADDING-TOP: 5px; FONT-SIZE: 12px; MARGIN: 0px auto; WIDTH: 1200px; COLOR: #666; LINE-HEIGHT: 1.6em; FONT-FAMILY: Lucida Grande, Tahoma, Arial, Helvetica, sans-serif;
}
```

css : apply a style to more than one element

- The values of id attributes have to be unique by their nature
- If you want to apply a style to more than one element then you can use the class attribute of a tag
- …
- <table class="data-table"> … </table>

css : apply style using class

- These correspond to the .data-table directives at the bottom of the css file;
- So whenever data-table is included as a class attribute the css rules are applied
- This can be applied to many elements on a page

Exercise 9 : Apply a CSS class to your form table

- Apply the data-table rules to the table containing the form (exercise 3) by including class="data-table" in the table tag