Explain the fundamentals of a scripting language (P3)

Introduction: In this criteria I will be explaining the fundamentals of JavaScript.

Characteristics of scripting languages

Nature of language (Explain more what JavaScript is)

The JavaScript is programming language that is object oriented which is when the code is broken into objects and each of the object have their own properties. This means that each of the object know what they're supposed to do which means that it knows what to interact with and what not to interact with. For event driven language they are split into events instead of objects. This means that the code which is executed when a particular event occurs. JavaScript is commonly used in web development. It is a client side scripting lanauge which means that the source code is processed by the clients web browser instead of the web server.

Types of programming

Procedural

Program procedures are set of instructions that are done in a step by step sequence given to perform a specific task. Types of steps this includes are statements, functions and commands which can take place anywhere in the program. A program which includes procedural language normally would include more than one procedure.
An example of an procedural program would be an anti – virus software on your operating system that searches for any malware on your computer. An example like anti-virus can also be altered on what it can allow meaning it will sometimes request you if you're sure about entering a website that could possible cause risk to your computer system. Anti-virus software also checks through downloadable content before it fully installs in your computer to see if it will damage your computer system in any way.

Object oriented

Object oriented programs are programs that have a language model assembled around objects. Since object oriented programming is based around objects rather then it being actions and also data over logic too. These types of programs are used for users who want to make changes to objects or to better explain subjects that you wish to manipulate in a certain way. Examples of objects that can be manipulated are buildings, properties and living animals that are presented in different categories. In comparison to procedural programming, object oriented is split up into terms called objects and have different roles for the application, also the objects are able to communicate with one another. An example of an object oriented program is C++ which is used on every application domain. C++ is used by many to write device drivers and other software applications that rely on direct manipulation of hardware. The first step required for object oriented programming would be to identify all the objects the programmers wants to manipulate and how each object relates to each other. These objects will define the data it contains.

Event driven programming

Event driven programs are when programs change events or outputs from what the user inputted into the system. Most event driven programs will rely on the user in input information and functions for programs to process and output. Event driven programming is different from other types of programming because instead of it trying to control on gathering input, it focuses on responding to an input. To summarise it could be seen as a program that only functions depending on the user. Event driven programs consist of three components. These components include the listener, the trigger and the response. The trigger is known to be something that the user interacts with and the listeners sends the information to the response component. An example of an event driven programming could impact would be inputting something that will change the way your computer system may run. An example of an event driven program is notepad. Notepad is a program that translates with codes such as “<h1>this is a heading <h1>” in a website. This example would be translated into a heading on your website using the words this is a heading. More examples on where it's used would be for graphic user interface and game programming.

Classes and objects

In object oriented programming, a class is defined as a set of instructions, blueprint or template of a method which contains properties to make a specific type of object. Object have their own behaviours and states an example would be a dog has states such as breed, name, colour and behaviours would be barking and eating. Another example what objects are, if you look around in the real world you can find objects such as humans, animals and cars. An object is an example of a class which contains real values instead of variables. The class in object oriented programming makes it what it is, the important parts about class is that it can have subclasses which can inherit some or maybe all of the classes characteristics. When it comes to subclass, the class becomes known as super class. The structure for both subclass and class are called class hierarchy. Subclasses are known to make their own variable and methods which are not part of their super class.

Methods

Each object used knows which methods it needs to carry out.

```
<script>

Hw=”Hello”

Document.write(hw.toUppercase()()

</script>
```

Here shows the output being hello and the method would be uppercase which means the whole word will be shown in uppercase.

Including scripts inside HTML

Including scripts within HTML is possible with the simple use of script tag. The tag <script> allows a browser and HTML aware that after this tag is made a scripting language will be written. Adding in </script> represents the end of the section of scripting and it indicates it to the HTML and browser and after the tag, HTML tags will now be recognised. These tags can be implemented anywhere within the HTML tags and do not need to put in after any particular tags. Here is an example on how scripts can be written on HTML.

```
<html>
<head>
</head>
<body>
<script </javascript">
document.write ("This is JavaScript inside HTML!");
</script>
</body>
</html>
```

Hiding scripts

Old browsers are not compatible with JavaScript as they cannot recognise the scripting language used and this can cause many errors as the browser would try to interpret the scripting language as HTML. There is a way around this by adding in the following code:

<script>

<!—

The script language is written here…

//--!>

</script>

Older web browser would be able to read this code above in the red text only and they will now know to ignore it as the codes are shown in red.

Security issues

JavaScript can have many security issues which can allow many threats which can hack a client's computer. This is because the code or scripting language that is executed on a user's computer is available to read and write from the clients' computer system. One common example is the use of pop ups. If a user was to visit an untrusted website, they may click something that executes a JavaScript which makes alert boxes appear in numerous loops. These hackers can also do malicious activity such as data mining which is the process of

extracting data from a client computer system. Hackers are also able to open applications such as browser windows where they can steal information however with use of HTML and JavaScript alone, the hacker will not be able to access the local file system which limits the threats or damage.

Handling events

This is where the event based side becomes important due to it relying to an event to occur which will be the start for a separate piece of code to be executed. There are 4 specific events which are shown in JavaScript which include onfocus, onblur, onload and onmouseover. When the event onfocus is triggered then it means that the user has either selected or highlighted something and onblur means that their focus has been removed from the item that is said. Onload is used when a page refreshed or loads and it is capable of performance a certain action when this event happens. The common event associated with JavaScript is the onmouseover event which is essential meaning when the mouse hovers over then a define item on the script will be executed.

Scripting language constructs

Variables are used to store and retrieve data that is from the computers RAM. Variables require unique names and they should not have the same name as other in different case letters an example would be ‘x’ and ‘X’ being seen as different things in JavaScript because JavaScript is case sensitive. There are three types of operators and these include logical operators, relational operators and arithmetic operators. Logical operators have the purpose of defining logic between two or more values and valuables. Relational operators are used to compare values between one another. These comparisons are based on true or false. Arithmetic operators are essential as they are able to create expressions for example for calculating simples sums using numbers.

Syntax

Below shows examples of syntax.

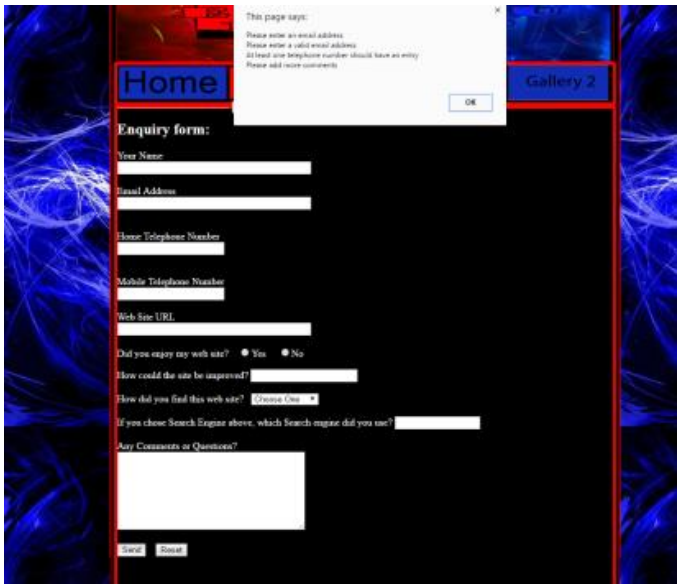
```
// Two slashes start single-line comments

var x;  // declaring a variable

x = 3 + y;  // assigning a value to the variable `x`

foo(x, y);  // calling function `foo` with parameters `x` and `y`
obj.bar(3);  // calling method `bar` of object `obj`

// A conditional statement
if (x === 0) {  // Is `x` equal to zero?
    x = 123;
}

// Defining function `baz` with parameters `a` and `b`
function baz(a, b) {
    return a + b;
}
```

The two different uses of equals signs include:

(=) This single equal sign is used to assign a value to a variable

(===) This triple equal sign is used for the purpose of comparing to values.

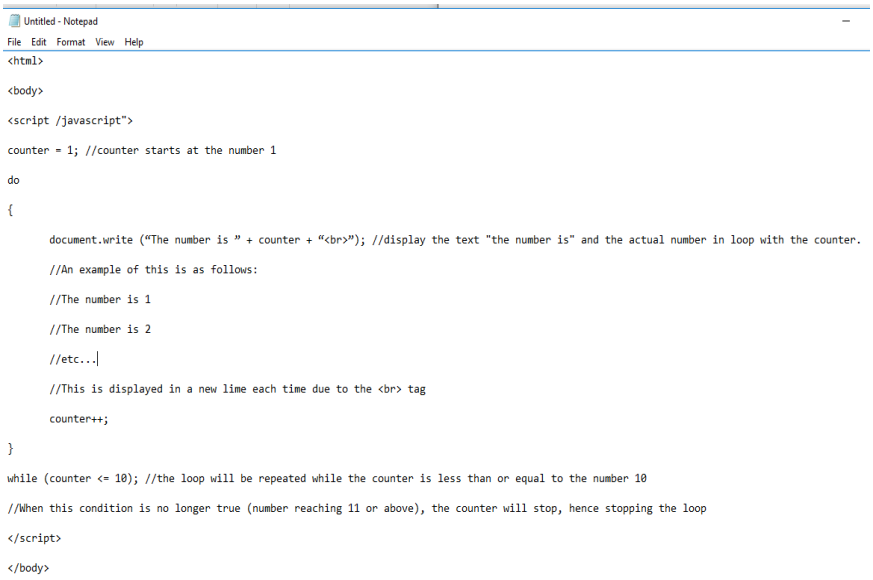
Here is an example of a syntax error used on my website



In my form an error message appears when you try to send a form when there are boxes that do not include information.

Loops

Loops allow actions work continuously and do not end until the action has been successfully perform. They usually stop based on the conditional statement.

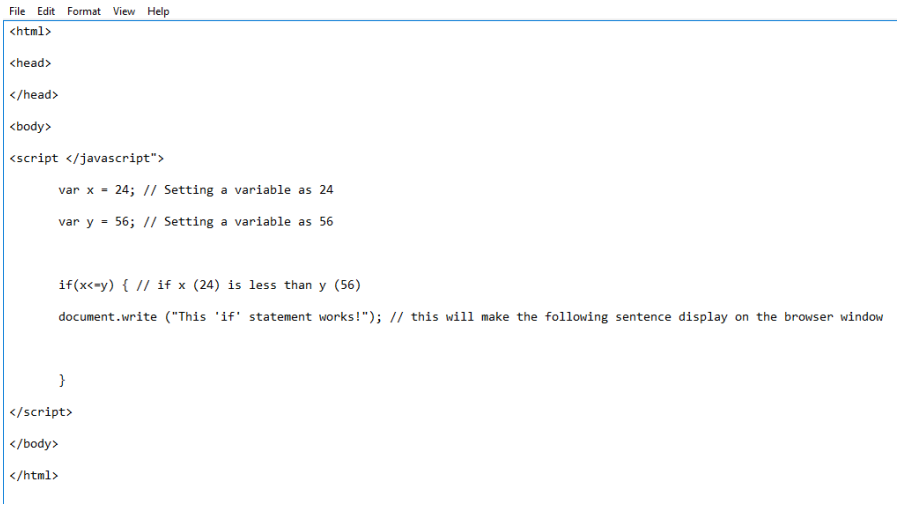


This is an example of relational operators and variables.

This example shows a "do while" loops with a conditional statement is made so that the counter is repeated while the counter number is shown to be less than or equal to 10. What this means is that until the counter reaches 10 then it will not stop displaying number and it will continue to increase by 1.

Decision making

If statement or decisions are made with a code that follows a particular set of rules when it is being executed. These statements are excused from the statement by "true" or "false".



Functions

Functions are pieces of code which is written separately or can be written within the <script> tags and be called or executed when it is program askes too. These functions are never executed until they are called. An example is shown below of a function within the script tag and also be called.

```
<html>
<head>
</head>
<body>
<script </javascript">
function characters (one, two) { // name of the function and declaring two values within the function parameter.
      document.write(one + " is better than " + two + "<br />") // a sentence in which the functions can be executed into.
}
characters ("Flash", "Savitar"); // the function is called here and the values "one" and "two" are replaced with "Flash" and "Savitar" automatically.
characters ("Spiderman", "Venon");
characters ("Green Arrow", "Prometheous");
</script>
</body>
</html>
```

Handling events

This is where the event based side becomes important due to it relying to an event to occur which will be the start for a separate piece of code to be executed. There are 4 specific events which are shown in JavaScript which include onfocus, onblur, onload and onmouseover. When the event onfocus is triggered then it means that the user has either selected or highlighted something and onblur means that their focus has been removed from the item that is said. Onload is used when a page refreshed or loads and it is capable of performance a certain action when this event happens. The common event associated with JavaScript is the onmouseover event which is essential meaning when the mouse hovers over then a define item on the script will be executed.

Methods

Methods can be applied to object in order to create actions. There a different types of preset objects which have predefined methods.

The method ".write" can be used to display data on the screen. It can be fixed text for example using "document.write ("Hey there), or it can be a value or a variable, for example document.write.

The method ".click" will simulate a click, similar to a button being clicked. The example shown below will show clicking the button will automatically clicks the check box.

<script>

Function autolick()

{

Myform.box.click ();

}

</script>

<body>

<form name="myform">

Properties

Properties are like characteristic of an object in code. An example would be an input object having a type, name and value. An example is shown below.

<Input type="Red button" name="gender"

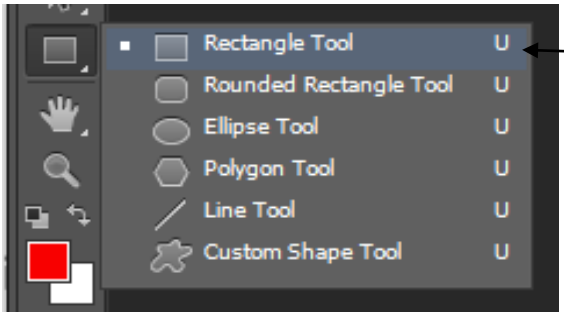
Value="male">

This type shows that the Red button which is a name which refers it as a red button and the value is what it means. The method "form.gender.value" would show results of male if it was selected. Instead of the name property, ID can also be identified in a similar way. When creating a name you can use more than one elemental using the same name several times however for ID it must be unique.

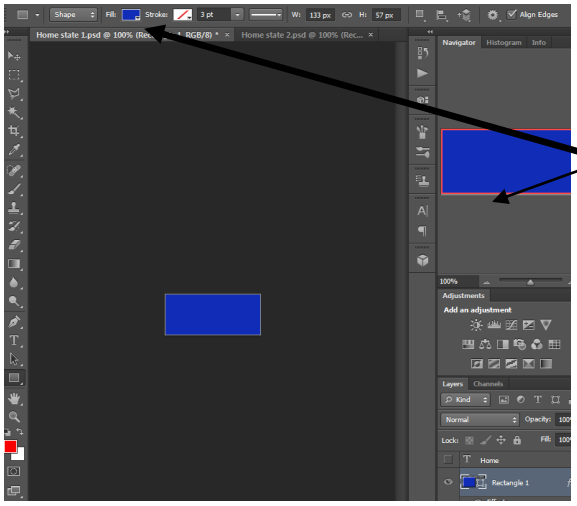
Uses of scripting languages

Creating roll over buttons

How I created my rollover buttons and what is its purpose

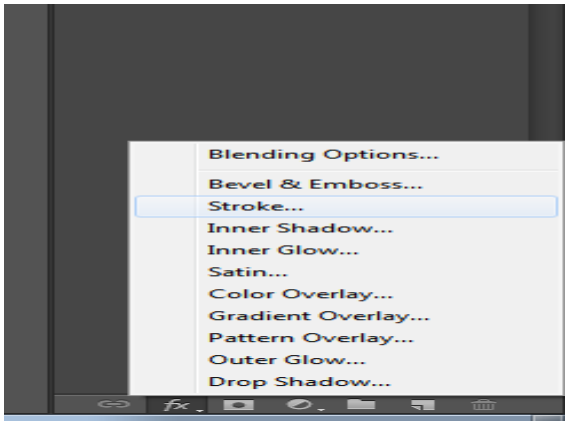


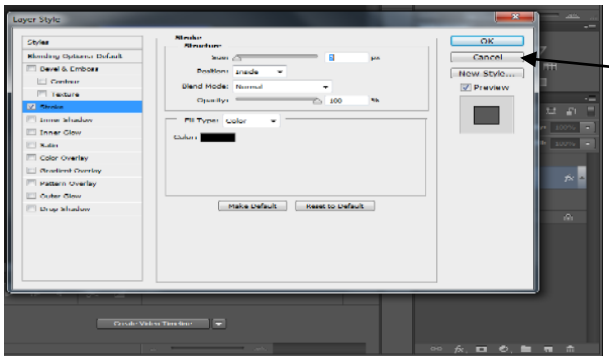
This is the creation of my navigation buttons state 1. First I used a rectangle tool which has the dimension of 133 x 57.



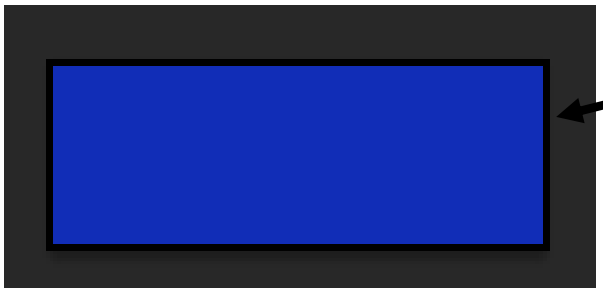
On the bottom right of the Photoshop document I clicked the stroke tools to create a black border inside the shape.

I then changed the colour of the rectangle to blue.

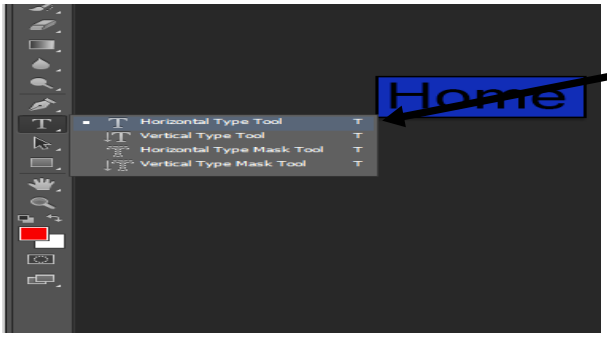




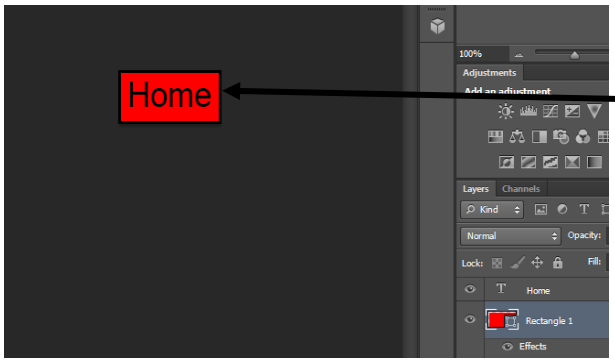
These are the stroke settings I used on the shape.



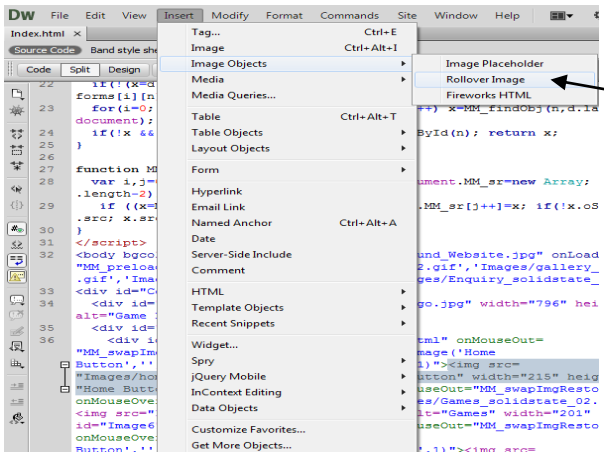
This is how my shape looks with the stroke.



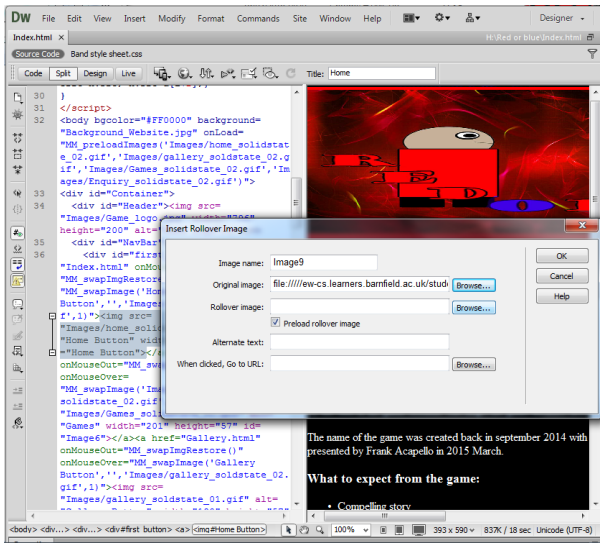
I then added text to my shape using the text tool.



For my state 2 of the button I have the exact same look of state 1 but in red.



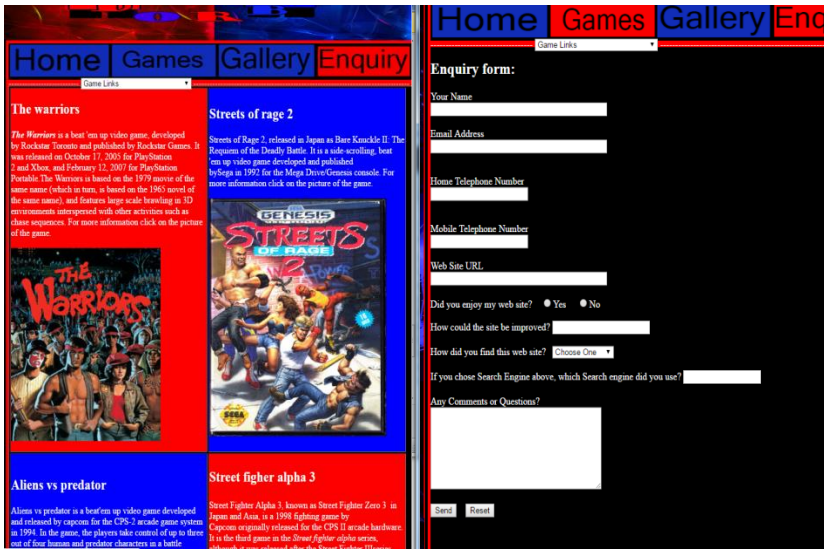
To insert my rollover buttons onto Adobe Dreamweaver, I clicked on the insert, image objects and then roll over button.



I then inputted the state 1 image and state 2 image. This allowed me in input four of a buttons in to be used on my website.

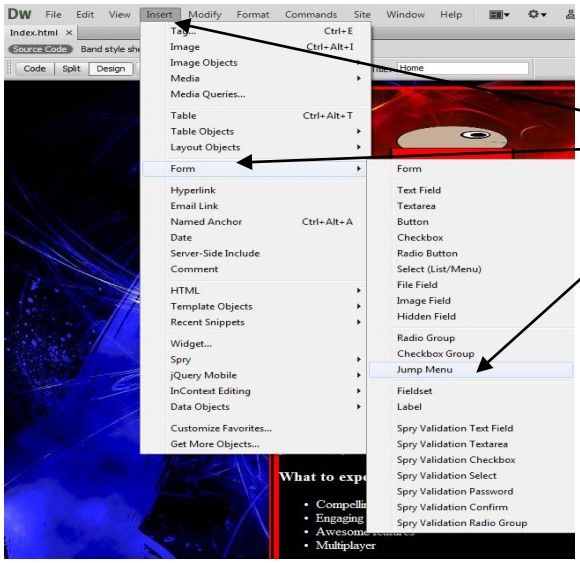
This shows that my rollover button is fully functional on my website because when you move your mouse over a button it changes colour.

JavaScript for activity

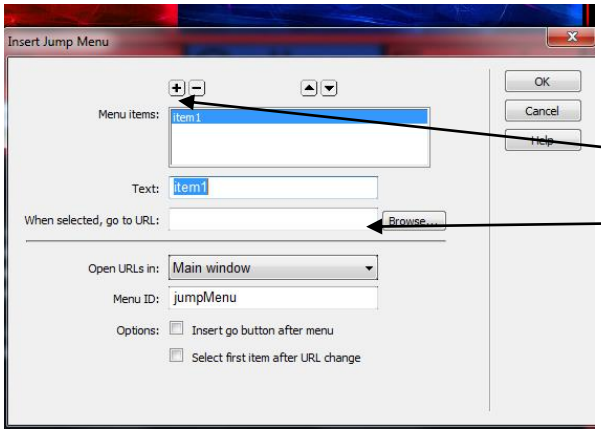


On my website I added interactivity such as moving your mouse over the tabs and it changing colour, having a dropdown menu directing you to gaming website, clicking on images directing you to another website. I also created an enquiry form for people to fill out.

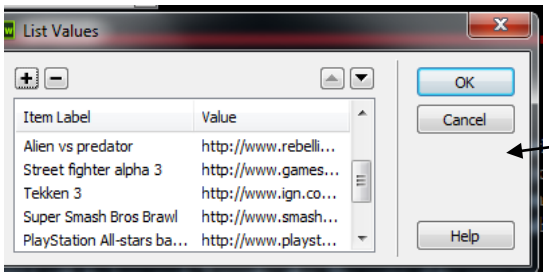
How to create a dropdown menu and what is its purpose?



To create a dropdown menu on Adobe Dreamweaver you click on insert, form then jump menu.



It should then come up with this screen. The plus sign allows you to add items to the drop down menu and you can also add in the URL that will appear after you click an item on the dropdown menu.



This shows my lists with the URL connected to it for the drop down menu.

This shows my dropdown menu on my website.

Discuss how a scripting language can improve functionality (M2)

Introduction: In this criteria I will be explaining how a script language works such as JavaScript and how it can improve functionality of web pages. I will also be showing my understanding of scripting.

How script language works and how can it improve functionality

A scripting language is usually seen as a tool which is used to add functionality upon a software program. It may not be as powerful and full programming language however it is

designed for simpler tasks such as searching database and creating interactive menus. HTML can help create however they can only create static websites not dynamic websites. Dynamic websites can be made with PHP and JavaScript for user interactions. JavaScript is essential to help aid website functionality. Scripting languages that are usually inputted into HTML are commonly used to add extra functionality to a website for example adding different menu styles or graphic displays. These types of languages are seen as client side script languages which affect the data that the user sees on the web browser.

If JavaScript is used effectively then you can add user prompts, navigation, choice confirmations and other client side calculations. By using scripting language you can make your website more interactive and actions made by the user will be responded instantly. As a developer you have more control over actions and appearance upon the webpage. The problem with this is that it does not apply to out dated web browsers.

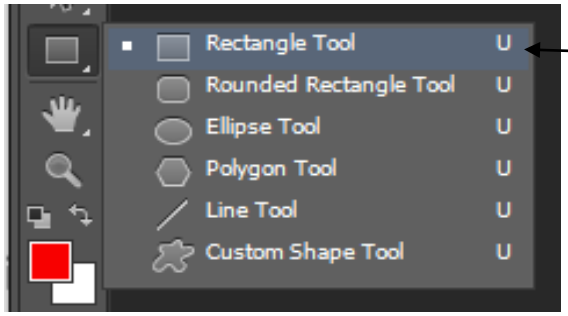
Scripting languages allow the developers to write code quicker and run it without complications. With the use of JavaScript you can also add in roll over buttons which is when the button changes state when a mouse is hovering over it. These rollover buttons are seen as dynamic.

Client/server side validation and scripting

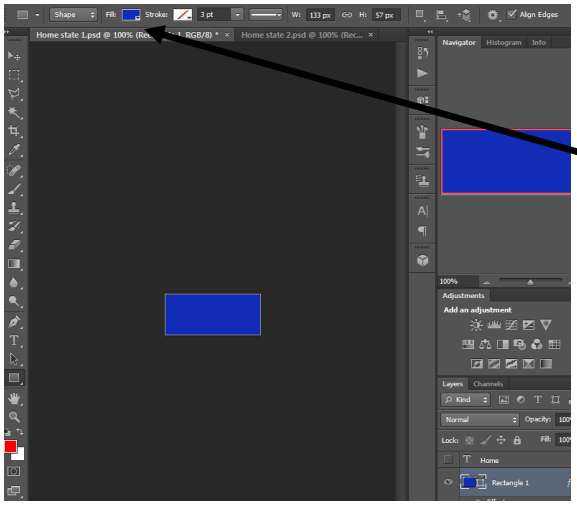
Client is the system on the browser and the JavaScript is the main client side scripting language used for web. The procedural order is the user request a web page from the server, the server finding the page and sending it to the user and then the page is played on the browser. Client side scripting is used when making web page changes once the user has arrived at the browser. It can be useful for making web pages as it is user friendly. Client side scripts rely on the users computer system as it can get really slow depending on the specs of the computer system. as faster response to the user than the server side validations and the reduction in web server loading and also the reduction in network traffic. Validation is known to be essential to web database application as it makes sure that data meets the system and user requirements. Server side validation is usually done in the middle tier script as it the most essential validation tool.

The differences between the two scripting language are quite simple as the client side code is processed by both client and browser whilst the server processes the server code. Typically WebPages that are for the client is made up of some HTML which is implemented with JavaScript or CSS. Server side code are browser independent meaning the page may look different on different web browsers.

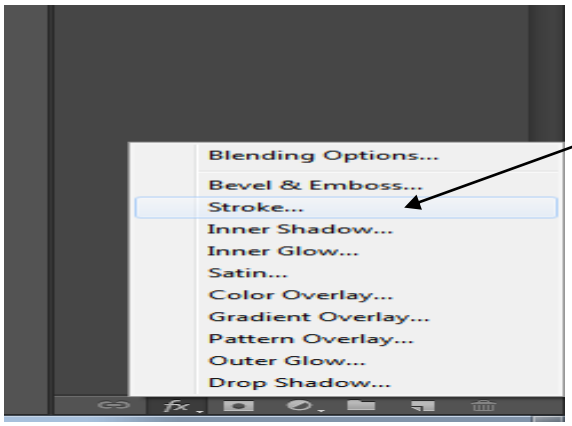
How I created my rollover buttons and what is its purpose



This is the creation of my navigation buttons state 1. First I used a rectangle tool which has the dimension of 133 x 57.



I then changed the colour of the rectangle to blue.



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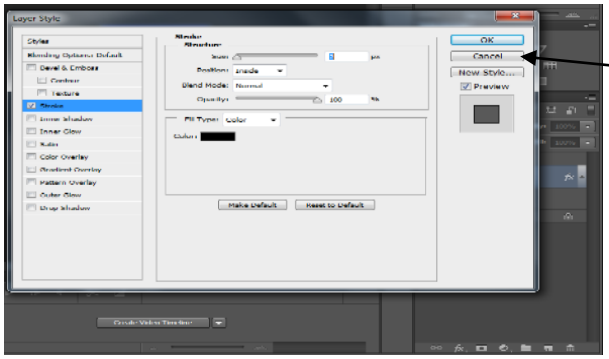

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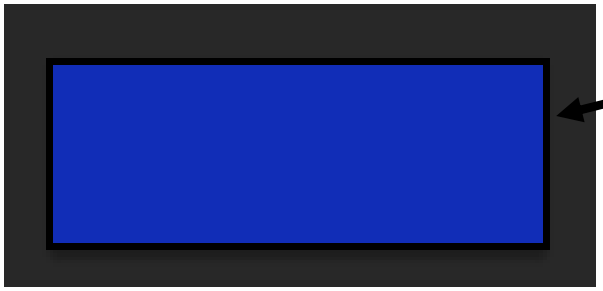

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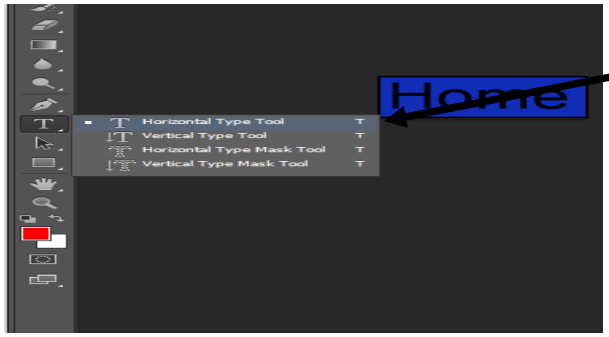
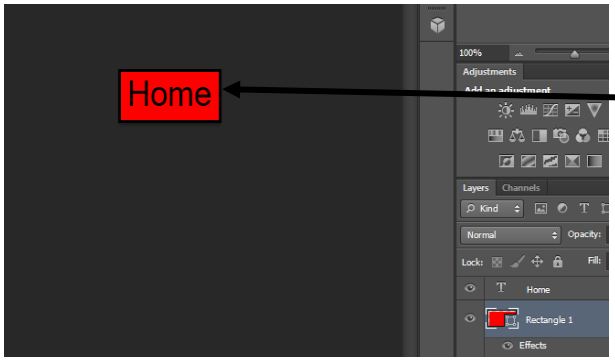


I then added text to my shape using the text tool.



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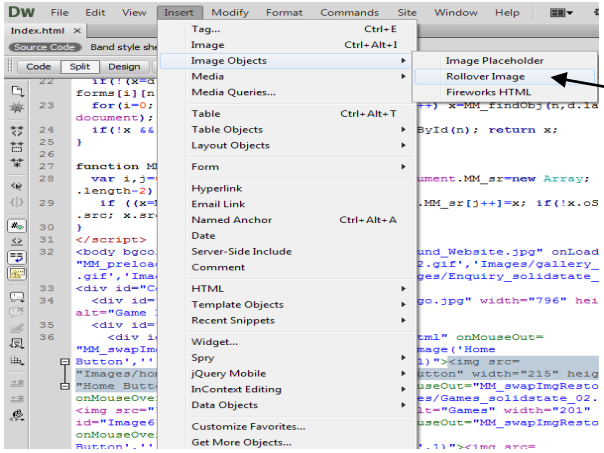

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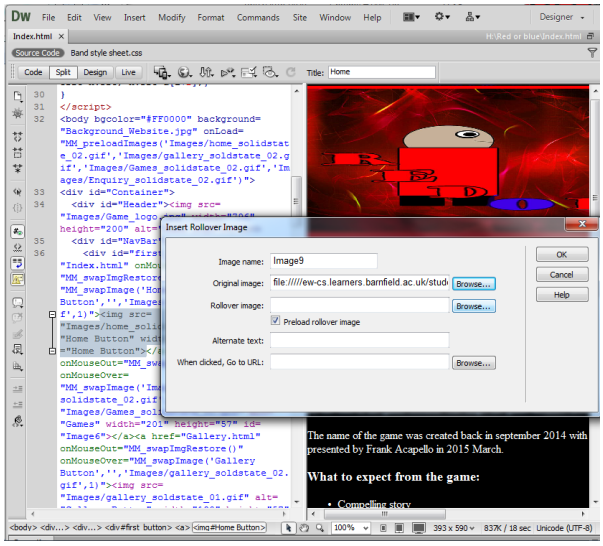

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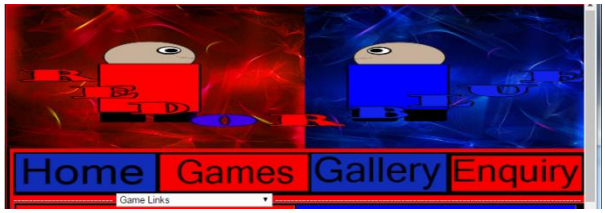
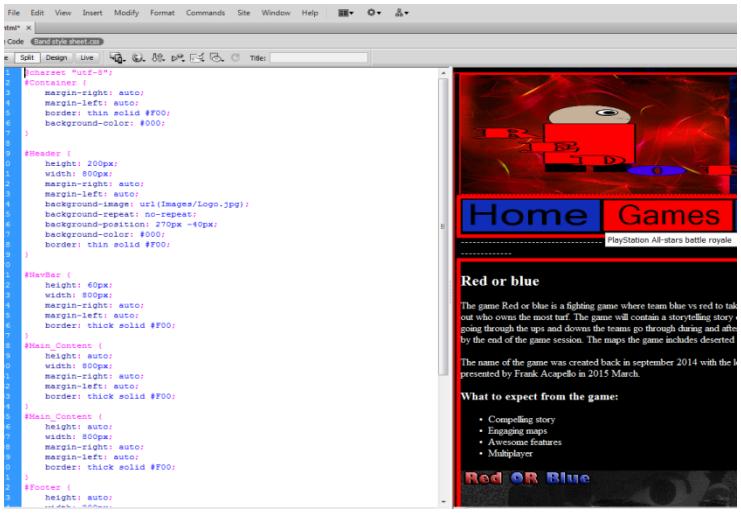
This shows that my rollover button is fully functional on my website because when you move your mouse over a button it changes colour.

Navigation buttons



My rollover buttons on my navigation bar work when you move your mouse over it and it changes state and when you click on it, it goes to your desired area of the website.

Use of external CSS

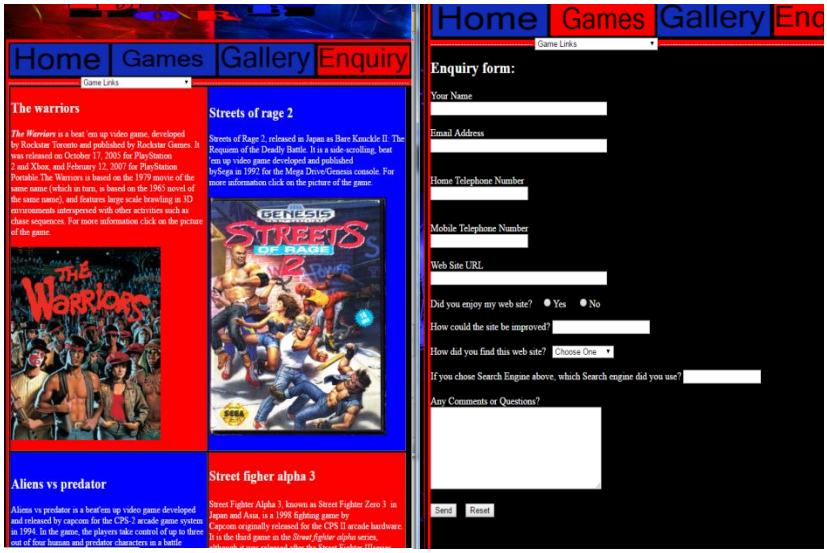


I have a band style sheet here allowing me to have a container for my website making the data more centred in the webpage.

Use of metatags

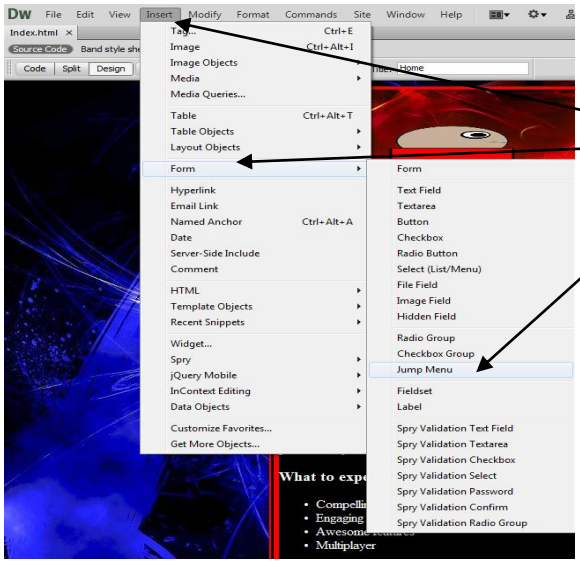
I inputted Meta tags into the website so when users are surfing the internet they are more likely to come across this site through their search engines.

JavaScript for activity

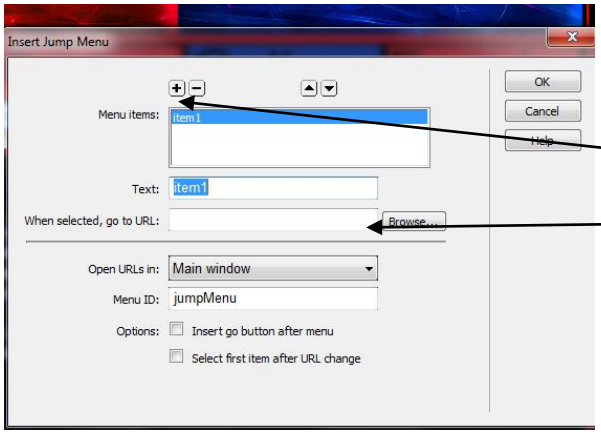


On my website I added interactivity such as moving your mouse over the tabs and it changing colour, having a dropdown menu directing you to gaming website, clicking on images directing you to another website. I also created an enquiry form for people to fill out.

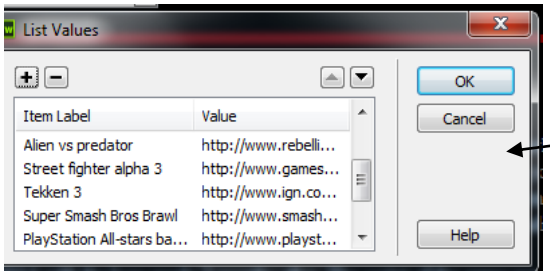
How to create a dropdown menu and what is its purpose?



To create a dropdown menu on Adobe Dreamweaver you click on insert, form then jump menu.



It should then come up with this screen. The plus sign allows you to add items to the drop down menu and you can also add in the URL that will appear after you click an item on the dropdown menu.



This shows my lists with the URL connected to it for the drop down menu.

This shows my dropdown menu on my website.

Explore how web pages using scripts are implemented in different browsers (D1)

Introduction: In this criteria I will be explaining how JavaScript is displayed in different browsers. I will also include steps to improve compatibility.

Classes and objects

In object oriented programming, a class is defined as a set of instructions, blueprint or template of a method which contains properties to make a specific type of object. Object have their own behaviours and states an example would be a dog has states such as breed, name, colour and behaviours would be barking and eating. Another example what objects are, if you look around in the real world you can find objects such as humans, animals and cars. An object is an example of a class which contains real values instead of variables. The class in object oriented programming makes it what it is, the important parts about class is that it can have subclasses which can inherit some or maybe all of the classes characteristics. When it comes to subclass, the class becomes known as super class. The structure for both subclass and class are called class hierarchy. Subclasses are known to make their own variable and methods which are not part of their super class.

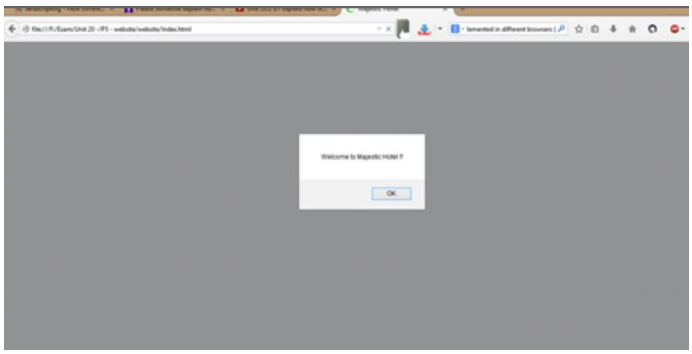
Object detection

There are ways that will allow your website to know what browser is and what version it is that the user is running. The way that the detection is done is by adding in a certain code which makes website compatible with the users browser

```
<script type="text/javascript">
if (window.screen) //detect support for the Screen property (also an
object)
var screenWidth=screen.availWidth

if (document.getElementById) //detect support for document.getElementById()
method
var divobj=document.getElementById("test")
</script>
```

JavaScript google chrome

JavaScript on Firefox



JavaScript on internet explorer

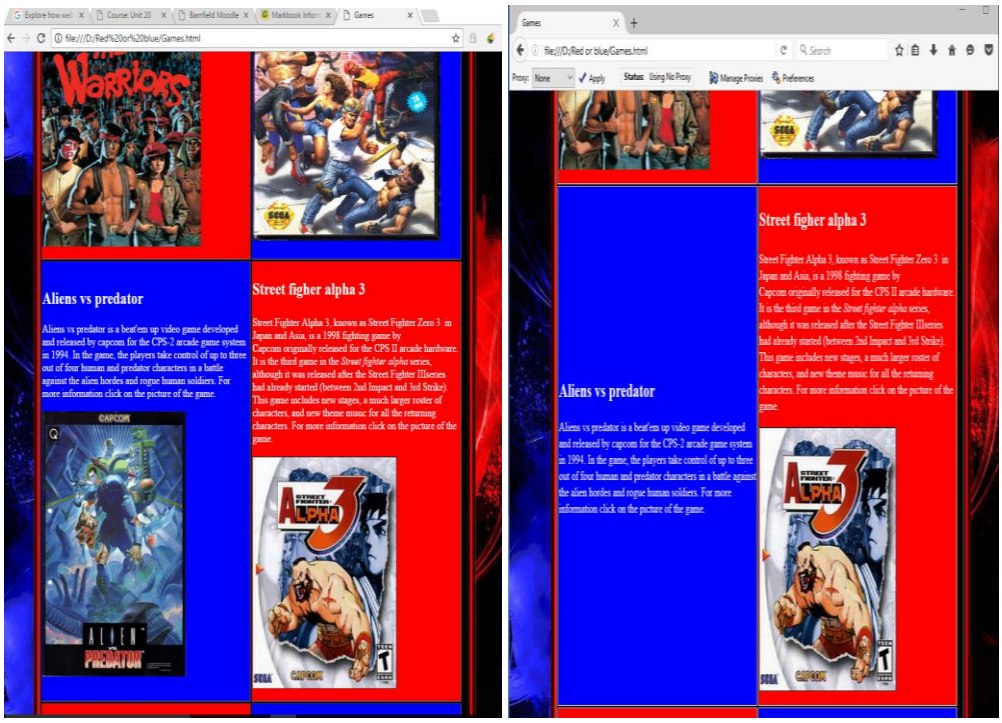
Browser detection code

```
<script type="text/javascript">

  $(function() {

    // detect browser properties
    $("#detect_browser").click(function() {
      alert(JSON.stringify(bowser, null, '    '));
    });

    // detect browser version
    $("#detect_version").click(function() {
      alert(bowser.version);
    });

  });

</script>
```

This is the code used to tell any type of browser what to do.

Separate style sheets for different browsers

All browsers work differently so different style sheets are usually made for them to work for its purpose. If you were to use a style sheet designed for google chrome it may not look the same on other browsers.



As you can see above, this is my website shown on Google Chrome and Firefox. I designed my website particularly for google chrome so things end up missing on Firefox. For example above my text isn't aligned properly and images with links are missing. For me to solve this issue I would need to create an entirely different style sheet for each browser to prevent problems and issues with compatibility.

Adding comments

It is always important to add comments into your coding as you might forget what the coding placed is about. It helps keep track of every code that is placed.

```
"Games" width="159" height="57" id=
"Image6"></a><a href="Gallery.html"
onMouseOut="MM_swapImgRestore()"
onMouseOver="MM_swapImage('Gallery
Button','','Images/gallery_soldstate_0
2.gif',1)"><img src=
"Images/gallery_soldstate_01.gif" alt=
"Gallery Button" width="149" height=
"57" id="Gallery Button" /></a><a href
="Enquiry.html" onMouseOut=
"MM_swapImgRestore()" onMouseOver=
"MM_swapImage('Image7','','Images/Enqu
iry_solidstate_02.gif',1)"><img src=
"Images/Enquiry_solidstate_01.gif" alt
="Enquiry" width="160" height="59" id=
"Image7"></a><a href="Gallery_2.html"
onMouseOut="MM_swapImgRestore()"
onMouseOver="MM_swapImage('Gallery
2','','Images/Gallery2_solidstate_02.g
if',1)"><img src=
"Images/Gallery2_solidstate_01.gif"
width="148" height="59" id="Gallery 2"
 /></a></div>

-------------------------------------
    <!-- This is my Navbar div -->
```

As you can see when I have ended with a section I included a comment which reminds me what the code above is related too.

METATAG

Metatag is a tag which is used as a coding statement for HTML. It is used to describe a part of webpages content. Metatag is helpful for users because it helps users find the right information quicker. Meta tag is usually placed around the top of a HTML, in a webpage it is part of the heading. The reason why Meta tags are used is to help people find your website through keywords from Meta tags.

Meta information

```
128  What to expect from the game:
129
130
131
132  Compelling story
133
134  Engaging maps
135
136  Awesome features
137
138  Multiplayer" />
139  <meta name="author" content="metatags generator">
140  <meta name="robots" content="index, follow" />
141  <meta name="revisit-after" content="3 month" />
142  <title>Red or blue</title>
143  <!-- Red or blue --><cmt>
144
145
146  </style>
```

Here I included meta information on my website.

Adding indentation

```
      <button type="button" onClick=
"document.getElementById('demo').innerHTML=Date()">
click me to display Date and Time.</button>

<p id="demo"> </p>
    </h2>
    <p>The game Red or blue is a fighting game where
 team blue vs red to taking over territories around
the realm of the underworld
to find out who owns the most turf. The game will
contain a storytelling story of either blue or red
depending on your choice and you will be going
through the ups and downs the teams go through
during and after the battle. This game consits of
who has the most members by the end of the game
session. The maps the game includes deserted grave
yards, mansions, alleyways, warfields and stadiums.
</p>
    <p>The name of the game was created back in
september 2014 with the logo made 2 months after.
The script of the game was presented by Frank
Acapello in 2015 March.</p>
  <h3>  <p>What to expect from the game:</p> </h3>
  <ul>
      <li>Compelling story</li>
      <li>Engaging maps</li>
      <li>Awesome features</li>
      <li>Multiplayer</li>

    </ul>
```

Indentation helps makes the code much clearer and readable and make the code look much simpler as it is much more spaced out.

Adding appropriate tags accordingly

```
"Gallery Button" width="149" height="57" id="Gallery
 Button" /></a><a href="Enquiry.html" onMouseOut=
"MM_swapImgRestore()" onMouseOver=
"MM_swapImage('Image7','','Images/Enquiry_solidstate
_02.gif',1)"><img src=
"Images/Enquiry_solidstate_01.gif" alt="Enquiry"
width="160" height="59" id="Image7"></a><a href=
"Gallery_2.html" onMouseOut="MM_swapImgRestore()"
onMouseOver="MM_swapImage('Gallery
2','','Images/Gallery2_solidstate_02.gif',1)"><img
src="Images/Gallery2_solidstate_01.gif" width="148"
height="59" id="Gallery 2" /></a></div>
    ------------------------------------    <!--
This is my Navbar div -->
```

Here I named each code with a tag to help identify what the code is about as it may not be very clear.