**JAVASCRIPT**

JavaScript is the Scripting Language of the Web.

JavaScript is used in millions of Web pages to add functionality, validate forms, detect browsers, and much more.

* JavaScript was designed to add interactivity to HTML pages
* JavaScript is a scripting language
* A scripting language is a lightweight programming language
* JavaScript is usually embedded directly into HTML pages
* JavaScript is an interpreted language (means that scripts execute without preliminary compilation)
* Everyone can use JavaScript without purchasing a license

JavaScript is the most popular scripting language on the internet, and works in all major browsers, such as Internet Explorer, Firefox, Chrome, Opera, and Safari.

Java and JavaScript are two completely different languages in both concept and design!

Java (developed by Sun Microsystems) is a powerful and much more complex programming language - in the same category as C and C++.

**What can a JavaScript do?**

* **JavaScript gives HTML designers a programming tool -** HTML authors are normally not programmers, but JavaScript is a scripting language with a very simple syntax! Almost anyone can put small "snippets" of code into their HTML pages
* **JavaScript can put dynamic text into an HTML page -** A JavaScript statement like this: document.write("<h1>" + name + "</h1>") can write a variable text into an HTML page
* **JavaScript can react to events -** A JavaScript can be set to execute when something happens, like when a page has finished loading or when a user clicks on an HTML element
* **JavaScript can read and write HTML elements -** A JavaScript can read and change the content of an HTML element
* **JavaScript can be used to validate data -** A JavaScript can be used to validate form data before it is submitted to a server. This saves the server from extra processing
* **JavaScript can be used to detect the visitor's browser** - A JavaScript can be used to detect the visitor's browser, and - depending on the browser - load another page specifically designed for that browser
* **JavaScript can be used to create cookies** - A JavaScript can be used to store and retrieve information on the visitor's computer

**The HTML <Script> tag is used to insert a JavaScript into an HTML page.**

To insert a JavaScript into an HTML page, we use the <script> tag. Inside the <script> tag we use the type attribute to define the scripting language.

So, the **<script type="text/javascript"> and </script>** tells where the JavaScript starts and ends:

<Html>  
<Body>  
**<Script Type="Text/Javascript">  
document.write("Hello World!");  
</Script>**  
</Body>  
</Html>

**CONCEPTS OF JAVASCRIPT**

**JAVASCRIPT STATEMENTS**

A JavaScript statement is a command to a browser. The purpose of the command is to tell the browser what to do.

<script type="text/javascript">  
**document.write("<h1>This is a heading</h1>");  
document.write("<p>This is a paragraph.</p>");**  
</script>

**JAVASCRIPT COMMENTS**

JavaScript comments can be used to make the code more readable.Comments can be added to explain the JavaScript, or to make the code more readable.

**Single line comments start with //.**

The following example uses single line comments to explain the code:

<script type="text/javascript">  
**// Write a heading  
document.write("<h1>This is a heading</h1>");  
// Write two paragraphs:  
document.write("<p>This is a paragraph.</p>");**  
</script>

**Multi line comments start with /\* and end with \*/.**

The following example uses a multi line comment to explain the code:

<script type="text/javascript">  
**/\*  
The code below will write  
one heading and two paragraphs  
\*/  
document.write("<h1>This is a heading</h1>");  
document.write("<p>This is a paragraph.</p>");  
document.write("<p>This is another paragraph.</p>");**  
</script>

**JAVASCRIPT VARIABLES**

Variables are "containers" for storing information.A variable is a place in which to store data for manipulation within a javascript program.

A Variable can have a short name, like x, or a more descriptive name, like carname.

**Rules for JavaScript variable names:**

* Variable names are case sensitive (y and Y are two different variables)
* Variable may not begin with a digit.
* Variable names must begin with a letter or the underscore character

**Note:** Because JavaScript is case-sensitive, variable names are case-sensitive.

Here Variables Categorised Into Two Types.

**OPERATORS**

## **Arithmetic Operators:**Arithmetic operators are used to perform arithmetic between variables and/or values.

|  |  |
| --- | --- |
| **Operator** | **Description** |
| + | Addition |
| - | Subtraction |
| \* | Multiplication |
| / | Division |
| % | Modulus (division remainder) |
| ++ | Increment |
| -- | Decrement |

**Assignment Operators:** Assignment operators are used to assign values to JavaScript variables.

Given that **x=10** and **y=5**, the table below explains the assignment operators:

|  |  |
| --- | --- |
| **Operator** | **Example** |
| = | x=y |
| += | x+=y |
| -= | x-=y |
| \*= | x\*=y |
| /= | x/=y |
| %= | x%=y |

Comparison and Logical operators are used to test for true or false.

**Comparison Operators:** Comparison operators are used in logical statements to determine equality or difference between variables or values.

Given that **x=5**, the table below explains the comparison operators:

|  |  |
| --- | --- |
| **Operator** | **Description** |
| == | is equal to |
| === | is exactly equal to (value and type) |
| != | is not equal |
| > | is greater than |
| < | is less than |
| >= | is greater than or equal to |
| <= | is less than or equal to |

## **Logical Operators:**Logical operators are used to determine the logic between variables or values.Given that **x=6 and y=3**, the table below explains the logical operators:

|  |  |
| --- | --- |
| **Operator** | **Description** |
| && | and |
| || | or |
| ! | not |

## **Conditional Operator:** JavaScript also contains a conditional operator that assigns a value to a variable based on some condition.

variablename=(condition)? value1:value2

greeting= (visitor=="PRES")?"Dear President ":"Dear ";

If the variable **visitor** has the value of "PRES", then the variable **greeting** will be assigned the value "Dear President” else it will be assigned "Dear".

**CONDITIONAL STATEMENTS**

Conditional statements are used to perform different actions based on different conditions.

In JavaScript we have the following conditional statements:

* **if statement** - use this statement to execute some code only if a specified condition is true
* **if...else statement** - use this statement to execute some code if the condition is true and another code if the condition is false
* **if...else if....else statement** - use this statement to select one of many blocks of code to be executed
* **Switch statement** - use this statement to select one of many blocks of code to be executed.

**JAVASCRIPT POPUP BOXES**

JavaScript has three kinds of popup boxes: Alert box, Confirm box, and Prompt box.

## **Alert Box:** An alert box is often used if you want to make sure information comes through to the user.

## When an alert box pops up, the user will have to click "OK" to proceed.

## **Confirm Box:** A confirms box is often used if you want the user to verify or accept something.

When a confirm box pops up, the user will have to click either "OK" or "Cancel" to proceed.

If the user clicks "OK", the box returns true. If the user clicks "Cancel", the box returns false.

## **Prompt Box:** A prompt box is often used if you want the user to input a value before entering a page.

When a prompt box pops up, the user will have to click either "OK" or "Cancel" to proceed after entering an input value.

If the user clicks "OK" the box returns the input value. If the user clicks "Cancel" the box returns null.

**JAVASCRIPT LOOPS**

Loops execute a block of code a specified number of times, or while a specified condition is true

Often when you write code, you want the same block of code to run over and over again in a row. Instead of adding several almost equal lines in a script we can use loops to perform a task like this.

In JavaScript, there are two different kinds of loops:

* **for** - loops through a block of code a specified number of times
* **while** - loops through a block of code while a specified condition is true

The for loop is used when you know in advance how many times the script should run.

**For (var=startvalue;var<=endvalue;var=var+increment)  
{  
*code to be executed*  
}**

## **The while Loop**

The while loop loops through a block of code while a specified condition is true.

**while (var<=endvalue)  
  {  
*code to be executed*  
  }**

## **The do...while Loop**

The do...while loop is a variant of the while loop. This loop will execute the block of code ONCE, and then it will repeat the loop as long as the specified condition is true.

**do  
  {  
*code to be executed* }  
while (var<=endvalue);**

**JAVASCRIPT FUNCTIONS**

A function is a piece of javascript code that can be executed once or many tines by the javascript application. A function will be executed by an event or by a call to the function.

To keep the browser from executing a script when the page loads, you can put your script into a function.

A function contains code that will be executed by an event or by a call to the function.

You may call a function from anywhere within a page (or even from other pages if the function is embedded in an external .js file).

Functions can be defined both in the <head> and in the <body> section of a document. However, to assure that a function is read/loaded by the browser before it is called, it could be wise to put functions in the <head> section.

**How to Define a Function:**

**function *functionname*(*var1,var2,...,varX*)  
{  
*some code*  
}**