In HTML, JavaScript code is inserted between <script> and </script> tags

A JavaScript function is a block of JavaScript code, that can be executed when "called".

Java Script can be used in head body or in the html file or can be attached as a seperate file as well.

JS Output

JavaScript can "display" data in different ways:

* Writing into an HTML element, using innerHTML.
* Writing into the HTML output using document.write().
* Writing into an alert box, using window.alert().
* Writing into the browser console, using console.log().

Using document.write() after an HTML document is loaded, will ****delete all existing HTML****

There are 3 ways to declare a JavaScript variable:

* Using var
* Using let
* Using const

var has function scope and let has block scope and cannot be redeclared.

const cannot be redeclared and reassigned and has block scope.

JavaScript datatypes

JavaScript has only one type of numbers.

Numbers can be written with, or without decimals

Booleans can only have two values: true or false

JavaScript objects are written with curly braces {}.

Object properties are written as name:value pairs, separated by commas

You can use the JavaScript typeof operator to find the type of a JavaScript variable

In JavaScript, a variable without a value, has the value undefined. The type is also undefined

In JavaScript null is "nothing". It is supposed to be something that doesn't exist.

In JavaScript, the data type of null is an object

The typeof operator can return one of two complex types:

* function
* object

The typeof operator returns "object" for objects, arrays, and null.

The typeof operator does not return "object" for functions.

When adding a number and a string, JavaScript will treat the number as a string.

JavaScript Objects:

JavaScript objects are containers for ****named values****called properties or methods.

Value accesed by objectname.property

HTML Event

An HTML event can be something the browser does, or something a user does.

Here are some examples of HTML events:

* An HTML web page has finished loading
* An HTML input field was changed
* An HTML button was clicked

onclick

Onmouseover

ondbclick

are some of the html event listeners that can redirect to a specific function when triggered

String Methods

The length property returns the length of a string

The indexOf gives the index of first occurence

The lastIndexOf gives the last index of occurence

They also take another parameter index to begin the search

* The search() method cannot take a second start position argument.
* The indexOf() method cannot take powerful search values (regular expressions.

There are 3 methods for extracting a part of a string:

* slice(start, end)

If a parameter is negative, the position is counted from the end of the string.

* substring(start, end)
* substr(start, length)

JS Number

Integers (numbers without a period or exponent notation) are accurate up to 15 digits.

If you add a number and a string, the result will be a string concatenation

It performs addition of numbers until a string is encountered and the directions is from left to right

Number() can be used to convert JavaScript variables to numbers

JS Arrays

JavaScript arrays are used to store multiple values in a single variable

push pop operations are used to insert and remove elements from end.

shift removes element of array from the beginning where as unshift adds an element to the beginning of the array.

The concat() method creates a new array by merging (concatenating) any number of arrays.

JS forEach

The forEach() method calls a function (a callback function) once for each array element.

Note that the function takes 3 arguments:

* The item value
* The item index
* The array itself

The map() method creates a new array by performing a function on each array element.

The map() method does not execute the function for array elements without values.

The map() method does not change the original array.

The filter() method creates a new array with array elements that passes a test.

The every() method check if all array values pass a test

JS Date

By default, JavaScript will use the browser's time zone and display a date as a full text string

JS this

The JavaScript this keyword refers to the object it belongs to.

In a method, this refers to the owner object.

Alone, this refers to the global object.

In a function, this refers to the global object.

In a function, in strict mode, this is undefined.

In an event, this refers to the element that received the event.

Methods like call(), and apply() can refer this to any object.

JS Arrow functions

Arrow functions were introduced in ES6.

These are basically short hand syntaxes of function expressions.

var variable=(paraemeters) => {logic}

JS DOM

When a web page is loaded, the browser creates a ****D****ocument ****O****bject ****M****odel of the page.

The ****HTML DOM**** model is constructed as a tree of ****Objects****

With the object model, JavaScript gets all the power it needs to create dynamic HTML:

* JavaScript can change all the HTML elements in the page
* JavaScript can change all the HTML attributes in the page
* JavaScript can change all the CSS styles in the page
* JavaScript can remove existing HTML elements and attributes
* JavaScript can add new HTML elements and attributes
* JavaScript can react to all existing HTML events in the page
* JavaScript can create new HTML events in the page

HTML DOM

In the DOM, all HTML elements are defined as ****objects****.

The programming interface is the properties and methods of each object.

A **property** is a value that you can get or set (like changing the content of an HTML element).

A **method** is an action you can do (like add or deleting an HTML element).

The most common way to access an HTML element is to use the id of the element.

The easiest way to get the content of an element is by using the innerHTML property.

The innerHTML property is useful for getting or replacing the content of HTML elements.

Finding HTML Elements

* Finding HTML elements by id
* Finding HTML elements by tag name
* Finding HTML elements by class name
* Finding HTML elements by CSS selectors
* Finding HTML elements by HTML object collections

To find all HTML elements that match a specified CSS selector (id, class names, types, attributes, values of attributes, etc), the querySelectorAll() method is used.

Changing HTML Content:

The easiest way to modify the content of an HTML element is by using the innerHTML property.

Changing Value of Attribute:

document.getElementById(*id*).*attribute = new value*

JS also can create dynamic HTML Content.

The HTML DOM allows you to execute code when an event occurs.

Events are generated by the browser when "things happen" to HTML elements:

* An element is clicked on
* The page has loaded
* Input fields are changed

JSON

* JSON stands for **J**ava**S**cript **O**bject **N**otation
* JSON is a lightweight data interchange format
* JSON is language independent **\***
* JSON is "self-describing" and easy to understand

JSON Rules

* Data is in name/value pairs
* Data is separated by commas
* Curly braces hold objects
* Square brackets hold arrays

JSON arrays are written inside square brackets.

JSON.parse converts json data to JS object.