***Java Script***

JavaScript is the world's most popular programming language.

JavaScript is the programming language of the Web.

JavaScript is easy to learn.

JavaScript Can Change HTML:

* One of many JavaScript HTML methods is getElementById().
  + changes the element content (innerHTML)
    - <button type="button" onclick='document.getElementById("demo").innerHTML = "Hello JavaScript!"'>Click Me!</button>
  + changes the value of the src (source)
    - <button onclick="document.getElementById('myImage').src='pic\_bulbon.gif'">Turn on the light</button>
  + Hiding HTML elements can be done by changing the display style:
    - <button type="button" onclick="document.getElementById('demo').style.display='none / or block'">Click Me!</button>

## JavaScript Functions and Events

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

For example, a function can be called when an **event** occurs, like when the user clicks a button.

Placing scripts at the bottom of the <body> element improves the display speed, because script interpretation slows down the display.

“<script src="myScript.js"></script>”

## JavaScript Display Possibilities

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().

For debugging purposes, you can call the console.log() method in the browser to display data.

JavaScript Values

The JavaScript syntax defines two types of values:

* Fixed values
* Variable values

Fixed values are called **Literals**.

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## What are Variables?

Variables are containers for storing data (storing data values).

### **4 Ways to Declare a JavaScript Variable:**

* Using var
* Using let
* Using const
* Using nothing

## avaScript Dollar Sign $

Using the dollar sign is not very common in JavaScript, but professional programmers often use it as an alias for the main function in a JavaScript library.

## JavaScript Underscore (\_)

Using the underscore is not very common in JavaScript, but a convention among professional programmers is to use it as an alias for "private (hidden)" variables.

ariables declared with the var keyword can NOT have block scope.

Variables declared inside a { } block can be accessed from outside the block.

Exemple

{  
  let x = 2;  
}  
// x can NOT be used here

{  
  let x = 2;  
}  
// x can NOT be used here

With let, redeclaring a variable in the same block is NOT allowed:

Redeclaring a variable with let, in another block, IS allowed:

Declaring a variable with const is similar to let when it comes to **Block Scope**.

Object :🡺 const person = {firstName:"John", lastName:"Doe", age:50, eyeColor:"blue"};

# **JavaScript Functions**

* A JavaScript function is a block of code designed to perform a particular task.
* A JavaScript function is executed when "something" invokes it (calls it).
* JavaScript function is defined with the function keyword, followed by a **name**, followed by parentheses **()**.
* Function names can contain letters, digits, underscores, and dollar signs (same rules as variables).
* The parentheses may include parameter names separated by commas:  
  **(parameter1, parameter2, ...)**

Exepmle :

function myFunction(p1, p2) {  
  return p1 \* p2;   // The function returns the product of p1 and p2  
}

## Why Functions?

You can reuse code: Define the code once, and use it many times.

You can use the same code many times with different arguments, to produce different results.

Object

Exemple :

const person = {  
  firstName: "John",  
  lastName: "Doe",  
  age: 50,  
  eyeColor: "blue"  
};

const person = {  
  firstName: "John",  
  lastName : "Doe",  
  id       : 5566,  
  fullName : function() {  
    return this.firstName + " " + this.lastName;  
  }  
};

## What is this?

In JavaScript, the this keyword refers to an **object**.

**Which** object depends on how this is being invoked (used or called).

## Do Not Declare Strings, Numbers, and Booleans as Objects!

When a JavaScript variable is declared with the keyword "new", the variable is created as an object:

let text = "ABCDEFGHIJKLMNOPQRSTUVWXYZ";  
let length = text.length;

## Extracting String Parts

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

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

## avaScript String slice()

slice() extracts a part of a string and returns the extracted part in a new string.

The method takes 2 parameters: the start position, and the end position (end not included).

Exemple :

let str = "Apple, Banana, Kiwi";  
let part = str.slice(7, 13);

return 🡺 Banana

## JavaScript String substring()

substring() is similar to slice().

The difference is that start and end values less than 0 are treated as 0 in substring().

## JavaScript String substr()

substr() is similar to slice().

The difference is that the second parameter specifies the **length** of the extracted part.

## Replacing String Content

The replace() method replaces a specified value with another value in a string:

Exemple :

let text = "Please visit Microsoft!";  
let newText = text.replace("Microsoft", "W3Schools");

## Converting to Upper and Lower Case

A string is converted to upper case with toUpperCase():

A string is converted to lower case with toLowerCase():

## JavaScript String concat()

concat() joins two or more strings:

Exemple :

let text1 = "Hello";  
let text2 = "World";  
let text3 = text1.concat(" ", text2);

## JavaScript String trim()

The trim() method removes whitespace from bot

Exemple :

let text1 = "      Hello World!      ";  
let text2 = text1.trim();

## JavaScript String Padding

ECMAScript 2017 added two String methods: padStart() and padEnd() to support padding at the beginning and at the end of a string.

The padEnd() method pads a string with another string:

The padStart() method pads a string with another string:

Exemple :

let padded = text.padStart(4,"x"); 🡺 xxxxa

## JavaScript String charAt()

The charAt() method returns the character at a specified index (position) in a string:

The charCodeAt() method returns the unicode of the character at a specified index in a string:

## JavaScript String split()

A string can be converted to an array with the split() method: