Introduction to JavaScript

What is JavaScript ?

JavaScript is a *lightweight, cross-platform*, *single-threaded,* and *interpreted compiled* programming language. It is also known as the scripting language for webpages. It is well-known for the development of web pages, and many non-browser environments also use it.

JavaScript is a **weakly typed language** **(dynamically typed)**. JavaScript can be used for **Client-side** developments as well as **Server-side** developments. JavaScript is both an imperative and declarative type of language. JavaScript contains a standard library of objects, like **Array**, **Date**, and **Math**, and a core set of language elements like **operators**, **control structures**, and **statements**.

- **Client-side:** It supplies objects to control a browser and its Document Object Model (DOM). Like if client-side extensions allow an application to place elements on an HTML form and respond to user events such as **mouse clicks**, **form input**, and **page navigation**. Useful libraries for the client side are **AngularJS**, **ReactJS**, **VueJS,** and so many others.
- **Server-side:** It supplies objects relevant to running JavaScript on a server. For if the server-side extensions allow an application to communicate with a database, and provide continuity of information from one invocation to another of the application, or perform file manipulations on a server. The useful framework which is the most famous these days is **node.js**.

- **Imperative language** – In this type of language we are mostly concerned about how it is to be done. It simply controls the flow of computation. The procedural programming approach, object, oriented approach comes under this as async await we are thinking about what is to be done further after the async call.
- **Declarative programming** – In this type of language we are concerned about how it is to be done, basically here logical computation requires. Her main goal is to describe the desired result without direct dictation on how to get it as the arrow function does.

How to Link JavaScript File in HTML ?

JavaScript can be added to HTML file in two ways:

- **Internal JS:** We can add JavaScript directly to our HTML file by writing the code inside the <script> tag. The <script> tag can either be placed inside the <head> or the <body> tag according to the requirement.
- **External JS:** We can write JavaScript code in another files having an extension.js and then link this file inside the <head> tag of the HTML file in which we want to add this code.

Syntax:

```
<script>
   // JavaScript Code
</script>
```

```
<!DOCTYPE html>
<html lang="en">
```

```
<head>
        <title>
                Basic Example to Describe JavaScript
        </title>
</head>

<body>

        <!-- JavaScript code can be embedded inside
                head section or body section -->
        <script>
                console.log("Welcome to GeeksforGeeks");
        </script>
</body>

</html>
```

Output: The output will display on the console.

```
Welcome to GeeksforGeeks
```

JavaScript

JavaScript Syntax is used to define the set of rules to construct a JavaScript code.

Syntax:

```
console.log("Basic Print method in JavaScript");
```

JavaScript syntax refers to the set of rules that determines how JavaScript programs are constructed:

```
// Variable declaration
let c, d, e;

// Assign value to the variable
c = 5;

// Computer value of variables
```

```
d = c;
e = c/d;
```

JavaScript Variables

A JavaScript variable is the simple name of the storage location where data is stored. There are two types of variables in JavaScript which are listed below:

- **Local variables:** Declare a variable inside of a block or function.
- **Global variables:** Declare a variable outside function or with a window object.

Example: This example shows the use of Javascript variables.

```
// Declare a variable and initialize it
// Global variable declaration
let Name = "Apple";

// Function definition
function MyFunction() {

        // Local variable declaration
        let num = 45;

        // Display the value of Global variable
        console.log(Name);

        // Display the value of local variable
        console.log(num);
}

// Function call
MyFunction();
```

Output:

```
Apple
45
```

JavaScript Operators

JavaScript operators are symbols that are used to compute the value or in other words, we can perform operations on operands. Arithmetic operators (+, -, *, /) are used to compute the value, and Assignment operators (=, +=, %=) are used to assign the values to variables.

Example: This example shows the use of javascript operators.

```
// Variable Declarations
let x, y, sum;

// Assign value to the variables
x = 3;
y = 23;

// Use arithmetic operator to
// add two numbers
sum = x + y;

console.log(sum);
```

Output:

```
26
```

JavaScript Expression

Expression is the combination of values, operators, and variables. It is used to compute the values.

Example: This example shows a JavaScript expression.

```
// Variable Declarations
let x, num, sum;


// Assign value to the variables
x = 20;
y = 30
```

```
// Expression to divide a number
num = x / 2;

// Expression to add two numbers
sum = x + y;

console.log(num + "<br>" + sum);
```

Output:

```
10
50
```