**16/12/2024**

**TASK**

* Features of JavaScript

1. **Dynamically Typing Language:**JavaScript supports dynamic typing which means types of the variable are defined based on the stored value.

In JavaScript, we just have to use var or let keyword before the variable name to declare a variable without worrying about its type.

1. **Object Oriented Programming Support**

Also, in JavaScript, important principles with OOP in JavaScript are:

* 1. Object Creation Patterns (**Encapsulation**)
  2. Code Reuse patterns (**Inheritance**)
  3. Polymorphism

1. **Functional Style**

Functions in JavaScript can be used as objects and can be passed to other functions too.

Many important JavaScript concepts and features like callbacks, closures, etc. are implementations of functions only.

1. **Platform Independent or Portable**

you can write your JavaScript applications and run them on any platform or any browser without affecting the output of the Script.

1. **Prototype – based Language**

JavaScript is a prototype-based scripting Language. This means JavaScript uses prototypes instead of classes or inheritance.

In languages like Java, we create a class and then we create objects for those classes.

But in JavaScript, we define an object prototype, and then more objects can be created using this object prototype.

1. **Interpreter Language**

JavaScript is an interpreted language which means the script written inside JavaScript is processed line by line.

The JS code is interpreted by JavaScript interpreter which is a built-in component of the Web browser.

But these days many JavaScript engines in browsers like the V8 engine in Chrome use **just-in-time compilation** for JavaScript code.

1. **Single Threaded**

JavaScript doesn't support multi-threading, by default it is single-threaded, which means it can execute only a single task at a time.

But JavaScript provides some features using which you can implement parallel execution. They are:

* 1. Async processing
  2. Web workers

1. **Client – Side Validations**

When a user enters values in a form, to make sure that users enter the correct value, we must put proper validations in place, both on the client side and on the server-side.

JavaScript is used for implementing client-side validations.

1. **Backend Development**

With NodeJS, backend development can also be done using JavaScript. MERN stack is one of the most popular stacks based on JavaScript for Fullstack Development using JavaScript. ExpressJS can be used for API or REST service development. NodeJS brings in **npm** which is a package manager for JavaScript modules, hence you can use 3rd party packages too, making the backend development even more fun and easy in JavaScript.

* Difference between ‘undefined’ and ‘not defined’ in JavaScript.
  + If a variable is declared but no value has been assigned to it, then it’s value is ‘undefined’.

**Code:**

var myvar;

console.log(myvar); //Output is undefined

* + If the variable in never declared, then it shows ‘not defined’.

**Code:**

console.log(myvar1);

//Output is ReferenceError: myvar1 is not defined

* Rules for variable declaration.
  + The name should contain only alphabet and digits [0-9]
  + The name can have $ or \_
  + The name should not start with a digit.
  + No reserved keywords can be used as variable names.
* Variable naming Standards.
  + Use camelCase
  + Make it Human Readable
  + Variable name should match the cause.