**Introduction to JavaScript**

1. JavaScript (JS) is a high-level, interpreted scripting language which is used for client-side web development.
2. It enables dynamic interactivity on web pages, manipulates content in real-time, and supports event driven, asynchronous, and object-oriented programming paradigms.
3. JavaScript executes in web browsers (client-side) and via platforms like Node.js (server-side).
4. Features of JavaScript -

### Dynamic Typing

* + 1. In JavaScript, you **don’t need to declare the data type** of a variable in advance.
    2. The JavaScript engine decides the data type at **runtime**.

### Platform Independent

* + 1. JavaScript is a platform-independent language, or we can say it is portable, which means you can simply write the script once and run it anywhere and anytime.
    2. With the use of JavaScript, you can write your code for web applications and run them on any platform or any browser without any issues with the output of JavaScript.

### Interpreted Language

* + 1. JavaScript was a purely **interpreted language** that means the code executed line by line by the browser.
    2. JavaScript Engine like v8 (used in chrome and nodejs ) use

### Just-In-Time Compiler (JIT)

* + - 1. java/c++ -----> compile > run
      2. JavaScript -------------------> run
      3. Code is interpreted at first and compiled to machine code for faster performance
    1. JavaScript Engine -
       1. Chrome - v8
       2. Edge - chakra
       3. Firfox - spidermonkey
       4. Safari - JavaScriptCore

### Single-Threaded

* + - * 1. JavaScript is single-threaded by default; it does not support multi-threading, which means it only executes a single task at a time.
        2. A thread is a smallest unit of a process that the operating system can schedule for execution block of code
        3. Event loop handles the async task (multi stack task) in the background.
        4. JavaScript has some features that you can use to implement parallel execution. They are as follows:

### Asynchronous processing (with callbacks, promises, async/await)

### Client-side validation

* + - * 1. JavaScript is frequently used to **validate form inputs directly in the browser** — ensuring users submit correct information.

### Backend Development

* + - * 1. By using JavaScript, backend development can also be done with Node.js. MERN stack is one of the most popular stacks based on JavaScript for full-stack development using JavaScript.

**History**

## In 1995 Brendan Eich invented the JavaScript Language.

1. The company behind JavaScript is **Netscape Communication**

**Standardization (1997)**

1. JavaScript was standardized under the name **ECMAScript (ES)**
2. The full form of **ECMA, as in ECMAScript, is European Computer Manufacturers Association.**
3. First version was ECMAScript 1 - ES1
4. Current Version - ES14

**ClientSide vs ServerSide**

1. ServerSide scripting is done at the backend where the source code is hidden on the client side(Browser) and the ClientSide scripting is done at the front end which users can access or manipulate them on Browser.
2. ClientSide scripting works faster than ServerSide Scripting.
3. ClientSide scripting is less secure than ServerSide scripting because users has the access of client side script.
4. ServerSide script is run on remote local server and ClientSide script is run on local computer.

**JavaScript Program to Print**

There are three ways to print 'Hello, World!'.

* + document.write()
    - A document.write() is a function you can use when you want to print the content to the HTML document.
  + alert()
    - In JavaScript, the [alert() method](https://www.tpointtech.com/javascript-alert) is used to display an alert box over the current window with the speciﬁed message.
  + console.log()
    - In JavaScript, the [console.log](https://www.tpointtech.com/javascript-console-log-method) is a function that is used to log messages on the web console.