

# What is JavaScript

JavaScript (js) is a light-weight object-oriented programming language which is used by several websites for scripting the webpages. It is an interpreted, full-fledged programming language that enables dynamic interactivity on websites when applied to an HTML document.

## History of JavaScript

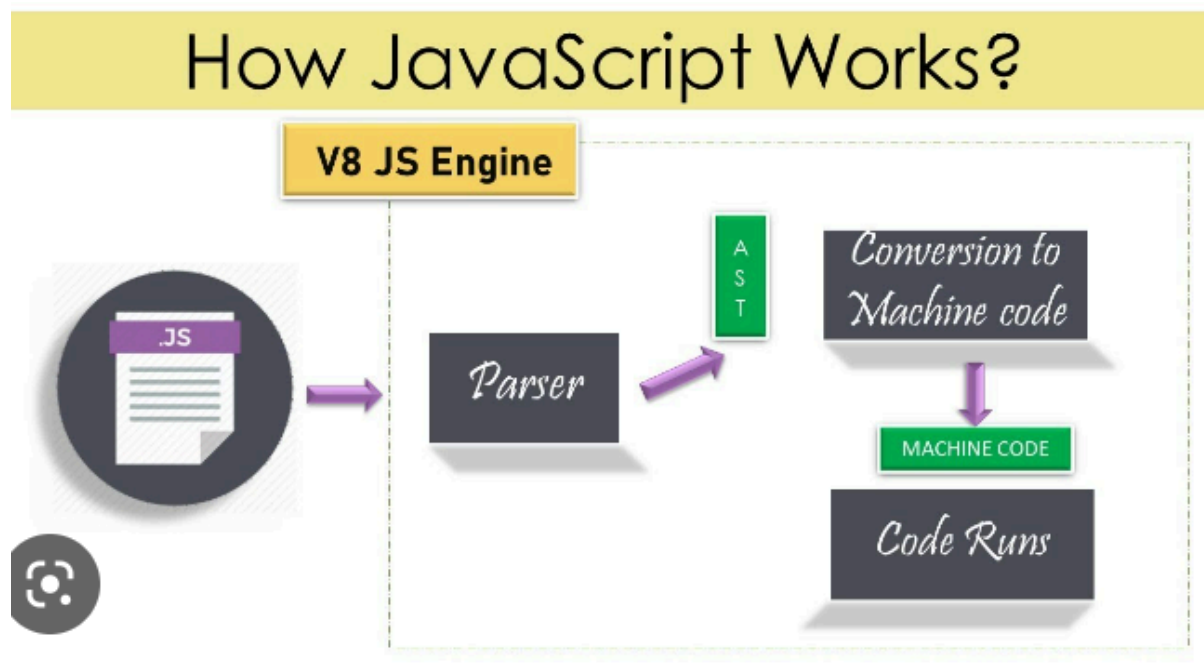
In 1993, **Mosaic**, the first popular web browser, came into existence. In the **year 1994**, **Netscape** was founded by **Marc Andreessen**. He realized that the web needed to become more dynamic. Thus, a 'glue language' was believed to be provided to HTML to make web designing easy for designers and part-time programmers. Consequently, in 1995, the company recruited **Brendan Eich** intending to implement and embed Scheme programming language to the browser. But, before Brendan could start, the company merged with **Sun Microsystems** for adding Java into its Navigator so that it could compete with Microsoft over the web technologies and platforms. Now, two languages were there: Java and the scripting language. Further, Netscape decided to give a similar name to the scripting language as Java's. It led to 'Javascript'. Finally, in May 1995, Marc Andreessen coined the first code of Javascript named '**Mocha**'. Later, the marketing team replaced the name with '**LiveScript**'. But, due to trademark reasons and certain other reasons, in December 1995, the language was finally renamed to 'JavaScript'. From then, JavaScript came into existence.

## Features of JavaScript

There are following features of JavaScript:

1. All popular web browsers support JavaScript as they provide built-in execution environments.
2. JavaScript follows the syntax and structure of the C programming language. Thus, it is a structured programming language.
3. JavaScript is a weakly typed language, where certain types are implicitly cast (depending on the operation).
4. JavaScript is an object-oriented programming language that uses prototypes rather than using classes for inheritance.
5. It is a light-weighted and interpreted language.
6. It is a case-sensitive language.
7. JavaScript is supportable in several operating systems including, Windows, macOS, etc.
8. It provides good control to the users over the web browsers.

# 1.Js Engine Working principle



- JavaScript is a client-side scripting language and one of the most efficient, commonly used scripting languages. The term .client-side scripting language means that it runs at the client-side( or on the client machine) inside the web-browsers, but one important thing to remember is that client's web-browser also needs to support the JavaScript or it must be JavaScript enabled. Nowadays, most of the modern web browsers support JavaScript and have their JavaScript engines.
- For example, Google Chrome has its own JavaScript engine called V8.
- Now let's see how the JavaScript engine handles and runs .js code.
- In this case, we have used a chrome browser

to run our program that has the "V8" JavaScript engine,

which is also used for creating the Node.js

-As we already know, JavaScript is an interpreted language that means it gets executed in line by line manner

(or which means the JavaScript engine converts the Js code line by line and runs in the same manner instead of converting the whole program once).

#### Step 1: Parser

-This is the first stage of the engine, every time we run a JavaScript program,

our code is first received by the "parser" inside the JS engine.

The parser's job is to check the JavaScript code for syntactic errors in line

by line manner because JavaScript is an interpretive scripting language, so whenever an error is detected by the parser,

it throws a kind of error and stops execution of the code.

#### Step 2: AST

-Once the parser checks all JavaScript codes and gets satisfied that there are no mistakes/errors in the code,

it creates the data structure called AST (it stands for Abstract Syntax Tree).

#### Step 3: Conversion to Machine code

-Once the Abstract Syntax Tree is created by the parser, the JavaScript engine converts the

JavaScript code into the machine code (or in the language that machine can understand).

#### Step 4: Machine code

-When the program written in the JavaScript gets converted in the machine language (or in byte code),

the converted code is sent to the system for execution, and finally, that byte code run by the

system/engine.

2.How to include JavaScript in an HTML document?

-we have to ways

a.internal

-1.inside html document create script tag and write js program

b.external

1. create html file

2.Add script tag in html document.

3.Script tag is for attaching js file.

4.use js for browser.

3.what is static page?

-A static Web page is a page that is built using HTML code and features the same presentation and content,

regardless of user identity or other factors.

4.What is dynamic page?

-Using JavaScript we can create the dynamic webpage which can perform any action according to instruction and then display it dynamically on the webpage.

5.What is single page application(modern approach)?

-A Single Page Application (SPA) is a single web page, website, or web application that works within a web browser and loads just a single document. It does not need page reloading during its usage, and most of its content remains the same while only some of it needs updating. When the content needs to be updated, the SPA does it through JavaScript APIs.

6.What is multi-page application(traditional approach)?

- As the name suggests, these are web applications that have more than one page.
- Multipage applications load their pages every time a user clicks on different links.
- MPAs are separately built multiple pages that combine together and make a website.