

# INTERNSHIP REPORT

## WEEK 4 DAY 1

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## Introduction to JavaScript & How JavaScript Runs in the Browser

### Objective

To gain an understanding of JavaScript fundamentals and learn how JavaScript code is processed and executed inside a web browser.

### Introduction:

JavaScript is a powerful scripting language that brings interactivity and dynamic behavior to websites. It is one of the core technologies of the World Wide Web, alongside HTML and CSS. While HTML provides structure and CSS handles presentation, JavaScript is responsible for the logic and interactivity on a web page.

We explored the basics of JavaScript and how it works within the browser environment. We also examined how modern web browsers execute JavaScript code using their built-in JavaScript engines, which form a crucial part of the frontend development process.

### Key Learnings:

#### 1. What is JavaScript?

- A lightweight, interpreted scripting language.
- Used primarily for client-side web development.
- Allows developers to manipulate HTML and CSS dynamically.

#### 2. Features of JavaScript

- High-level, interpreted, and dynamically typed.
- Supports multiple programming paradigms (object-oriented, functional, etc.).
- Can be run both in the browser (client-side) and on the server (Node.js).

### 3. How JavaScript Runs in the Browser

- Modern browsers contain a **JavaScript engine** (e.g., Chrome uses V8).
- The browser loads the HTML → parses it into the DOM.
- When it encounters JavaScript:
  1. The engine parses the code.
  2. It compiles it into machine code.
  3. The engine executes the code, interacting with the DOM and CSSOM.
- JavaScript is **single-threaded**, but handles asynchronous tasks via the **event loop** and **callback queue**.

### 4. JavaScript Integration Methods

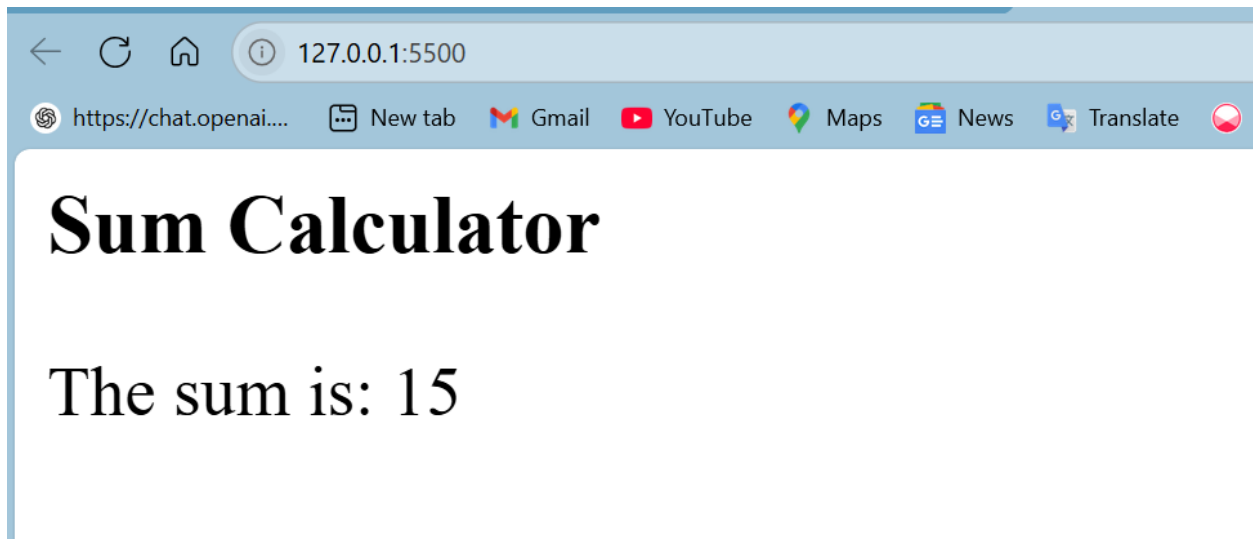
- Inline: using `<script>` tags inside HTML.
- External: linking .js files using `<script src="script.js">`.

## CODING

```
<!DOCTYPE html>
<html>
<head>
  <title>Simple Addition</title>
</head>
<body>
  <h3>Sum Calculator</h3>
  <p id="result"></p>

  <script>
    let a = 5;
    let b = 10;
    let sum = a + b;
    document.getElementById("result").innerText = "The sum is: " + sum;
  </script>
</body>
</html>
```

## Output:



```
<p id="result"></p>
```

- This is an empty paragraph with an id="result".
- JavaScript will target this element and **insert the sum** into it.

```
<script>  
  let a = 5;  
  let b = 10;  
  let sum = a + b;
```

- JavaScript begins inside the <script> tag.
- let a = 5; → defines variable a with a value of 5.
- let b = 10; → defines variable b with a value of 10.
- let sum = a + b; → calculates the sum of a and b, which is 15.

```
document.getElementById("result").innerText = "The sum is: " + sum;
```

This line:

- Selects the paragraph with id="result".
- Sets its **inner text** to: "The sum is: 15".
- This dynamically inserts the result into the web page.

## **Conclusion:**

Today's session provided a foundational understanding of JavaScript and its importance in making websites interactive. We learned how JavaScript is interpreted by browsers using engines like V8 and how it integrates with HTML using script tags. Understanding this flow is essential for creating dynamic, responsive, and user-friendly web interfaces.

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