Internship Report – Frontend Dev

Week 4: JavaScript Basics

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Internship Domain: Front-end Intern

Task: JS - Operators, Conditions (if, else, switch), DOM Manipulation: getElementById, querySelector, innerHTML

Task Overview: (Day2)

In today's session, we were introduced to JavaScript fundamentals involving Operators, Conditional Statements, and DOM Manipulation. These concepts are crucial for adding logic and interactivity to web pages.

Content Covered:

- JavaScript Operators
- JavaScript Conditions (if, else, switch)
- DOM Manipulation: getElementById, querySelector, innerHTML

1. JavaScript Operators:

Operators are symbols that **perform actions on values**. They allow you to do calculations, assign values, compare data, and build logical expressions.

Arithmetic Operators – For calculations

Operator	Meaning	Example	Result
+	Addition	5 + 2	7
-	Subtraction	5 - 2	3
*	Multiplication	5 * 2	10
/	Division	6 / 2	3
%	Modulus (Remainder)	5 % 2	1

Assignment Operators – Assign values to variables

Operator	Meaning	Example	Result
=	Assign	x = 10	x = 10
+=	Add and assign	x += 2	x = x + 2
-=	Subtract and assign	x -= 2	x = x - 2
*=	Multiply and assign	x *= 2	x = x * 2

Comparison Operators – Compare two values (used in conditions)

Operator	Meaning	Example	Result
==	Equal (value)	5 == "5"	true
===	Strict equal (value & type)	5 === "5"	false
!=	Not equal (value)	5 != "5"	false
!==	Strict not equal	5 !== "5"	true
>	Greater than	5 > 2	true
<	Less than	5 < 2	false

Logical Operators – Combine multiple conditions

Operator	Meaning	Example	Result
&&	AND	true && true	true
`		`	OR
!	NOT (inverts)	!true	false

Example:

```
// Arithmetic Operators
    let num1 = 10;
    let num2 = 5;
    let sum = num1 + num2; // 15

// Assignment Operator
    let total = 0;
    total += sum; // total = total + sum = 15

// Comparison Operator
    let isGreater = total > 10; // true

// Logical Operator
    let hasPermission = true;
    let isLoggedIn = true;
    let canAccess = isGreater && hasPermission && isLoggedIn; // true
```

2. JavaScript Conditions:

Conditions allow code to make **decisions** based on whether a condition is true or false.

a) if / else if / else

You write JavaScript code in a .js file or inside <script> tags in an HTML file.

```
let score = 85;
if (score >= 90) {
  console.log("A+ Grade");
} else if (score >= 80) {
  console.log("A Grade");
} else {
  console.log("Keep Improving"); }
```

b) Switch Statement

Used to check for exact matches when you have many possible values.

```
let day = "Monday";
switch(day) {
  case "Monday":
    console.log("Start of the week");
    break;
  case "Friday":
    console.log("Almost weekend!");
    break;
  default:
    console.log("Midweek");}
```

3. DOM Manipulation (getElementById, querySelector, innerHTML)

A DOM (Document Object Model) allows JavaScript to **interact with** and **change HTML content**.

a) getElementById()

Select a single element with a specific id.

```
document.getElementById("title").innerHTML = "Hello!"
```

b) querySelector()

Selects the first element that matches a CSS-style selector (class, id, or tag).

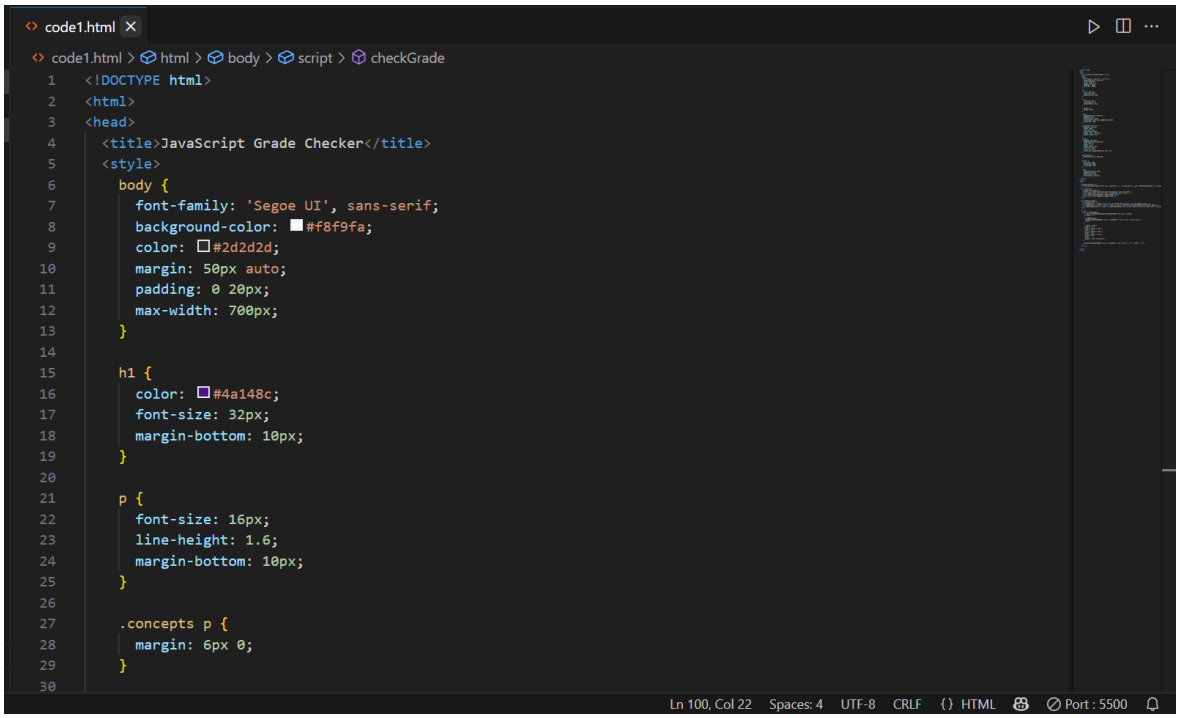
```
document.querySelector(".para").innerHTML = "Updated text!";
```

c) innerHTML

Used to get or set the content inside an element.

```
let heading = document.getElementById("title");
console.log(heading.innerHTML); // Get content
heading.innerHTML = "New Content"; // Set new content
```

Practice Code:



code1.html

```
<html>
<head>
  <style>
    .box {
      background-color: #ffffff;
      padding: 10px;
      border-radius: 10px;
      box-shadow: 0 4px 12px rgba(0,0,0,0.05);
      margin-top: 10px;
    }

    input[type="number"] {
      padding: 8px 12px;
      width: 150px;
      font-size: 16px;
      margin-right: 10px;
      border: 1px solid #ccc;
      border-radius: 6px;
    }

    button {
      padding: 10px 20px;
      background-color: #6a1b9a;
      color: white;
      border: none;
      border-radius: 6px;
      font-size: 16px;
      cursor: pointer;
      transition: background-color 0.3s ease;
    }
```

code1.html

```
    }
    button:hover {
      background-color: #4a148c;
    }

    #result {
      font-size: 18px;
      margin-top: 20px;
      font-weight: 500;
    }

    code {
      background-color: #eee;
      padding: 2px 6px;
      border-radius: 4px;
      font-family: monospace;
    }
  </style>
</head>
<body>

  <h1>Grade Checker</h1>
  <p>This page demonstrates how to use <b>operators</b>, <b>conditions</b>, and <b>DOM manipulation</b> in JavaScript

  <div class="box">
    <h2>Check Your Grade</h2>
    <p>Enter your marks below and click the button to see your grade:</p>
```

code1.html

```
<html>
<body>
  <div class="box">
    <h2>Check Your Grade</h2>
    <p>Enter your marks below and click the button to see your grade:</p>
    <input type="number" id="marksInput" placeholder="Enter marks" />
    <button onclick="checkGrade()">Check Grade</button>
    <p id="result">Your grade will appear here.</p>
  </div>

  <div class="concepts">
    <h2>Concepts Used</h2>
    <p><b>Operators:</b> Used <code>=</code> to assign and <code>>=</code> to compare values.</p>
    <p><b>Conditions:</b> Used <code>if / else if</code> to determine the grade based on the input marks.</p>
    <p><b>DOM Manipulation:</b> Used <code>getElementById</code> to get input and show the result with <code>innerHTM
  </div>

  <script>
    function checkGrade() {
      let marks = parseInt(document.getElementById("marksInput").value);
      let grade = "";

      if (isNaN(marks)) {
        document.getElementById("result").innerHTML = "Please enter a valid number.";
        return;
      }

      if (marks >= 90) {
        grade = "A+";
```

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code1.html

```
<html>
<body>
  <script>
    function checkGrade() {
      if (isNaN(marks)) {
        document.getElementById("result").innerHTML = "Please enter a valid number.";
        return;
      }

      if (marks >= 90) {
        grade = "A+";
      } else if (marks >= 80) {
        grade = "A";
      } else if (marks >= 70) {
        grade = "B";
      } else if (marks >= 60) {
        grade = "C";
      } else {
        grade = "Needs Improvement";
      }

      document.getElementById("result").innerHTML = "Your Grade is: <b>" + grade + "</b>";
    }
  </script>

</body>
</html>
```

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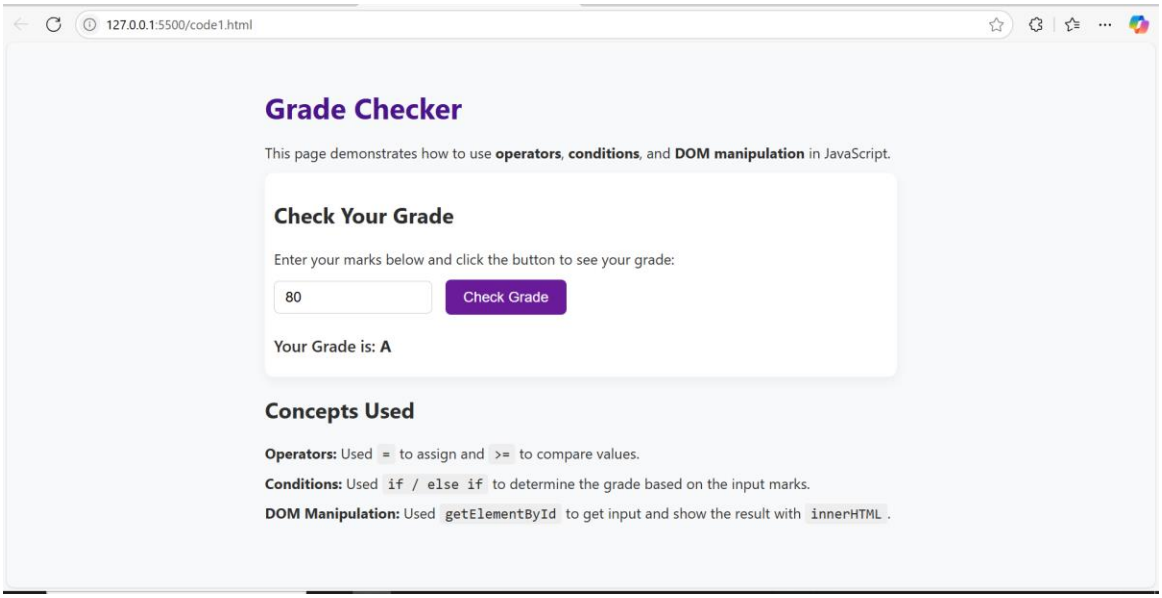

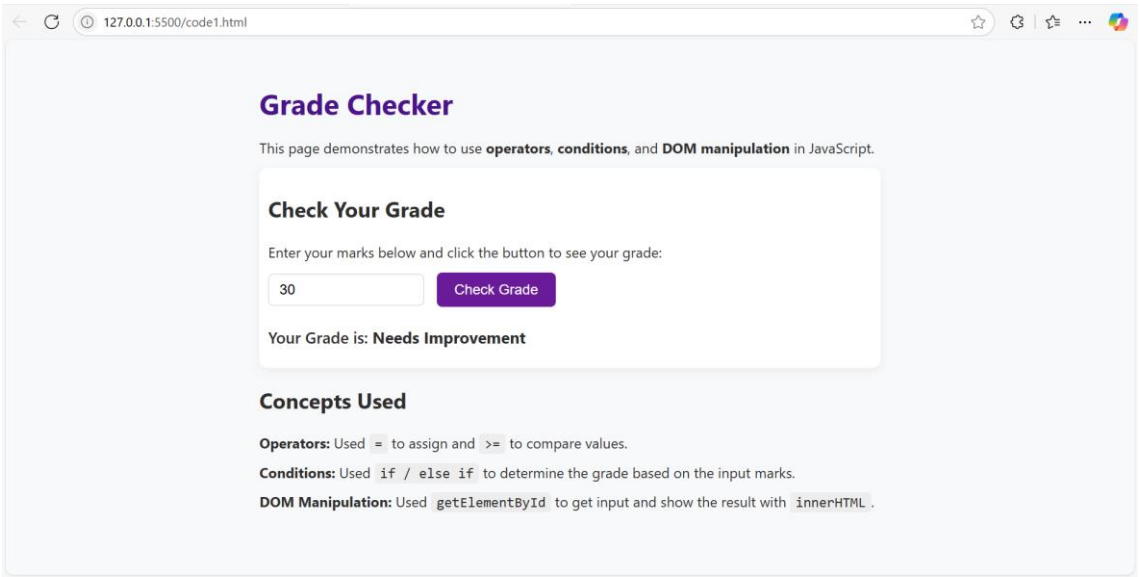

Conclusion:

Today's session built a strong foundation in JavaScript by introducing **operators, conditional logic**, and **DOM manipulation methods**. These concepts are essential for making web pages interactive and responsive.