INTERNSHIP REPORT

WEEK 4 DAY 4

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JavaScript Operators & Conditional Statements

Objective

To understand the different types of **JavaScript operators** and **conditional statements** (if, else, if-else, switch), how they work, and how they are used to create logic and control flow in a JavaScript program.

Topics Covered

Part 1: JavaScript Operators

Operators are **symbols** that perform operations on variables and values. They are the **building blocks of logic and computation** in programming.

Common Types of Operators

Operator Type	Examples	Description
Arithmetic	`+, -, *, /, %`	Performs basic math operations
Assignment	`=, +=, -=, *=`	Assigns and updates variable values
Comparison	`==, ===, !=, <, >`	Compares two values
Logical	`&&, ||, !`	Performs two values

Part 2: Conditional Statements

Conditional statements allow programs to make decisions based on conditions.

1. if Statement

```
let age = 20;
if (age >= 18) {
  console.log("You are eligible to vote.");
}
```

2. if-else Statement

```
let age = 16;
if (age >= 18) {
  console.log("You are eligible to vote.");
} else {
  console.log("You are not eligible to vote.");
}
```

3. if-else if-else Statement

```
let marks = 75;
if (marks >= 90) {
  console.log("Grade: A");
} else if (marks >= 80) {
  console.log("Grade: B");
} else if (marks >= 70) {
  console.log("Grade: C");
} else {
  console.log("Grade: F");
}
```

4. switch Statement

```
let day = 3;
switch (day) {
  case 1:
    console.log("Monday");
    break;
  case 2:
    console.log("Tuesday");
    break;
  case 3:
    console.log("Wednesday");
    break;
  default:
console.log("Invalid day");
}
```

Learning Outcome

1. **Understand and apply different types of operators** in JavaScript, including arithmetic, assignment, comparison, and logical operators.
2. **Perform basic mathematical and logical operations** using variables and expressions.
3. **Write and implement conditional statements** (if, else, if-else, switch) to control program flow.
4. **Build interactive programs** that make decisions based on user input or system state.
5. **Differentiate between simple and compound conditions**, and understand when to use switch over if-else.
6. **Debug and test decision-making logic** in JavaScript to ensure correct outcomes.

1. JAVA OPERATORS :

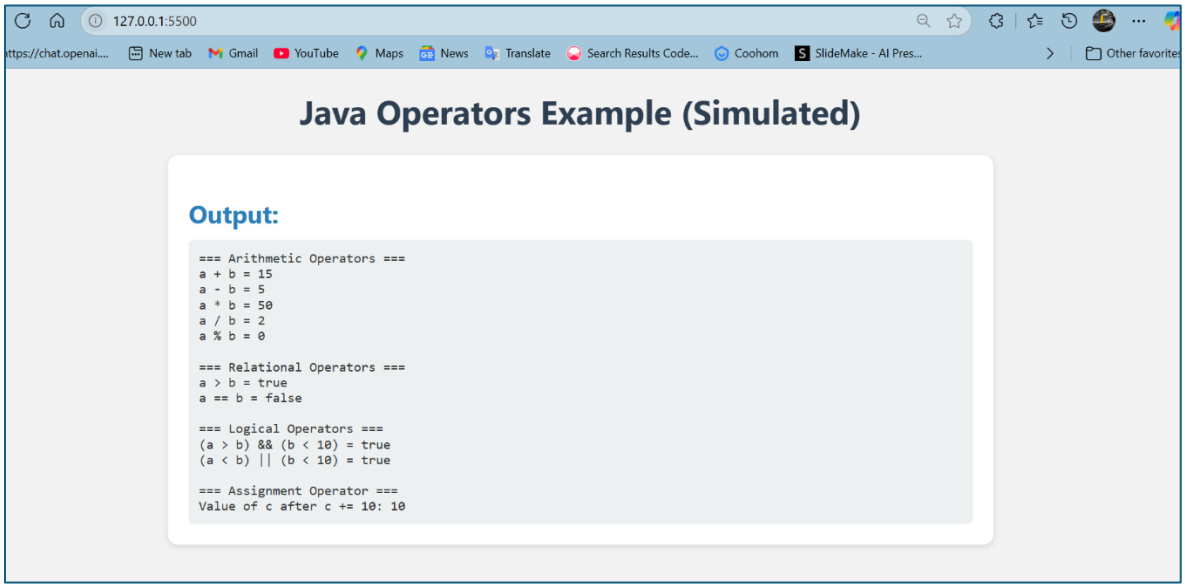
CODING

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <title>Java Operators Simulator</title>
  <style>
    body {
      font-family: Arial, sans-serif;
      background-color: #f0f4f8;
      padding: 30px;
      max-width: 800px;
      margin: auto;
      color: #333;
    }
    h1 {
      text-align: center;
      color: #2c3e50;
    }
    .section {
      background: #ffffff;
      border-radius: 10px;
      padding: 20px;
      margin-top: 20px;
```

```
      box-shadow: 0 0 10px rgba(0,0,0,0.05);
    }
    label {
      display: block;
      margin-top: 10px;
      font-weight: bold;
    }
    input[type="number"] {
      padding: 8px;
      width: 100%;
      margin-top: 5px;
      border: 1px solid #ccc;
      border-radius: 5px;
    }
    button {
      margin-top: 20px;
      padding: 10px 20px;
      background: #2980b9;
      color: white;
      border: none;
      border-radius: 5px;
      font-size: 16px;
      cursor: pointer;
    }
    button:hover {
      background: #2471a3;
    }
    .output {
      background-color: #ecf0f1;
      padding: 15px;
      border-radius: 8px;
      margin-top: 20px;
      font-family: monospace;
      white-space: pre-wrap;
    }
  </style>
</head>
<body>

  <h1>Java Operators Simulator</h1>

  <div class="section">
    <label for="a">Enter value for A:</label>
    <input type="number" id="a" value="10">
```

```
    <label for="b">Enter value for B:</label>
    <input type="number" id="b" value="5">

    <button onclick="calculate()">Run Simulation</button>

    <div class="output" id="result"></div>
  </div>

  <script>
    function calculate() {
      let a = parseInt(document.getElementById("a").value);
      let b = parseInt(document.getElementById("b").value);

      let sum = a + b;
      let difference = a - b;
      let product = a * b;
      let quotient = b !== 0 ? a / b : "Undefined (division by zero)";
      let remainder = b !== 0 ? a % b : "Undefined";

      let isGreater = a > b;
      let isEqual = a === b;

      let logicResult = (a > b) && (b < 10);
      let logicOr = (a < b) || (b < 10);

      let c = 0;
      c += 10;

      let output = `=== Arithmetic Operators ===
a + b = ${sum}
a - b = ${difference}
a * b = ${product}
a / b = ${quotient}
a % b = ${remainder}

=== Relational Operators ===
a > b = ${isGreater}
a == b = ${isEqual}

=== Logical Operators ===
(a > b) && (b < 10) = ${logicResult}
(a < b) || (b < 10) = ${logicOr}

=== Assignment Operator ===
Value of c after c += 10: ${c}`;
```

```
    document.getElementById("result").textContent = output;
  }
</script>

</body>
</html>
```



JavaScript Functionality

Inputs:

<input type="number" id="a" value="10">
<input type="number" id="b" value="5">

- The user enters two numbers — a and b.

Button:

<button onclick="calculate()">Run Simulation</button>

- When the user clicks this button, the calculate() function is triggered.

Inside calculate() Function:

let a = parseInt(document.getElementById("a").value);

let b = parseInt(document.getElementById("b").value);

- Reads user inputs and converts them to integers.

2. JAVA CONDITIONAL STATEMENT:

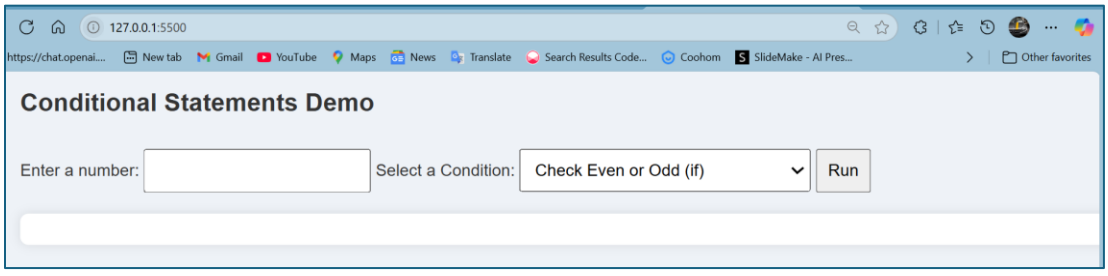
CODING

```
<!DOCTYPE html>
<html>
<head>
  <title>Conditional Statements Example</title>
  <style>
    body {
      font-family: Arial, sans-serif;
      padding: 30px;
      background-color: #eef2f7;
      color: #333;
    }
    select, input, button {
      padding: 10px;
      margin-top: 10px;
      font-size: 16px;
    }
    .output {
      margin-top: 20px;
      background: #fff;
      padding: 15px;
      border-radius: 8px;
      box-shadow: 0 0 10px rgba(0,0,0,0.1);
      white-space: pre-wrap;
    }
  </style>
</head>
<body>

  <h2>Conditional Statements Demo</h2>

  <label>Enter a number:</label>
  <input type="number" id="userInput" />

  <label>Select a Condition:</label>
  <select id="menu">
    <option value="checkEvenOdd">Check Even or Odd (if)</option>
    <option value="positiveNegative">Check Positive/Negative (if-
else)</option>
    <option value="grade">Show Grade (if-else-if)</option>
```

```
  <option value="fruit">Select Fruit (switch)</option>
</select>

<button onclick="runCondition()">Run</button>

<div class="output" id="result"></div>

<script>
  function runCondition() {
    const input = parseInt(document.getElementById("userInput").value);
    const choice = document.getElementById("menu").value;
    let output = "";

    // 1. IF statement
    if (choice === "checkEvenOdd") {
      if (input % 2 === 0) {
        output = `${input} is Even (using IF)`;
      } else {
        output = `${input} is Odd (using IF)`;
      }
    }

    // 2. IF-ELSE statement
    else if (choice === "positiveNegative") {
      if (input >= 0) {
        output = `${input} is Positive (using IF-ELSE)`;
      } else {
        output = `${input} is Negative (using IF-ELSE)`;
      }
    }

    // 3. IF-ELSE IF LADDER
    else if (choice === "grade") {
      if (input >= 90) {
        output = "Grade A";
      } else if (input >= 75) {
        output = "Grade B";
      } else if (input >= 60) {
        output = "Grade C";
      } else if (input >= 40) {
        output = "Grade D";
      } else {
        output = "Fail";
      }
    }
```

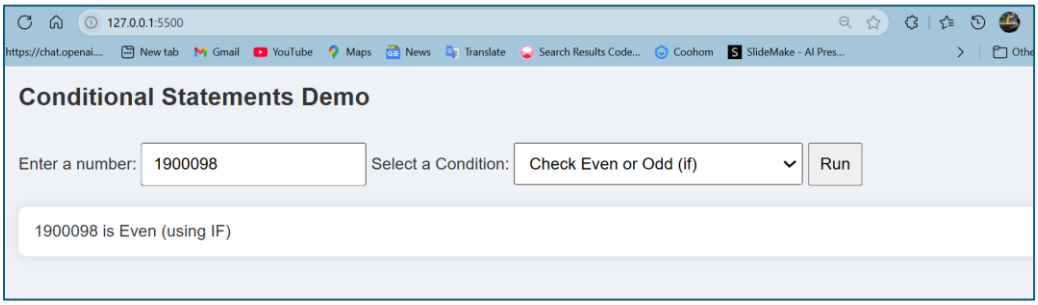
```
    // 4. SWITCH statement
    else if (choice === "fruit") {
      switch (input) {
        case 1:
          output = "You selected: Apple";
          break;
        case 2:
          output = "You selected: Banana";
          break;
        case 3:
          output = "You selected: Mango";
          break;
        default:
          output = "Invalid fruit code (Use 1, 2, or 3)";
      }
    }

    document.getElementById("result").textContent = output;
  }
</script>

</body>
</html>
```

❖ **Enter a number in the input box.**

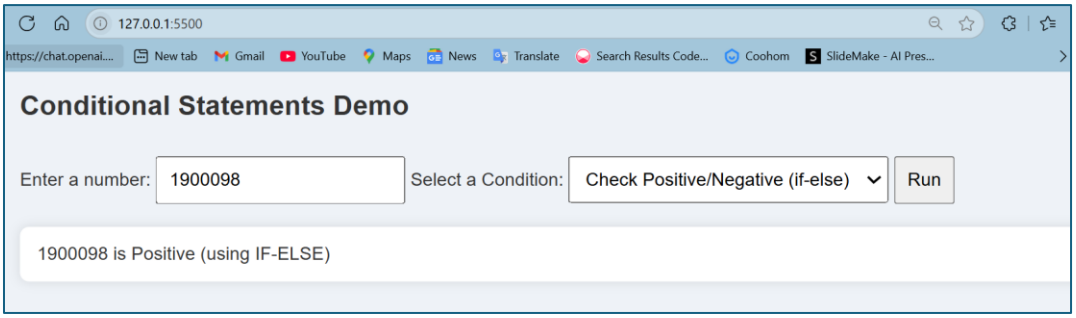


❖ **Choose a condition from the dropdown:**

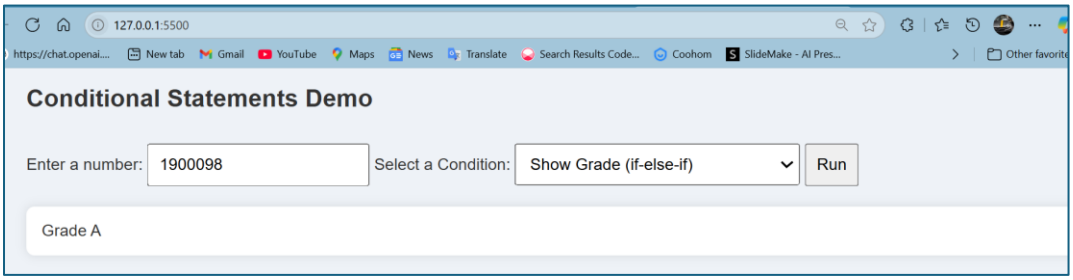
- **Check Even/Odd**



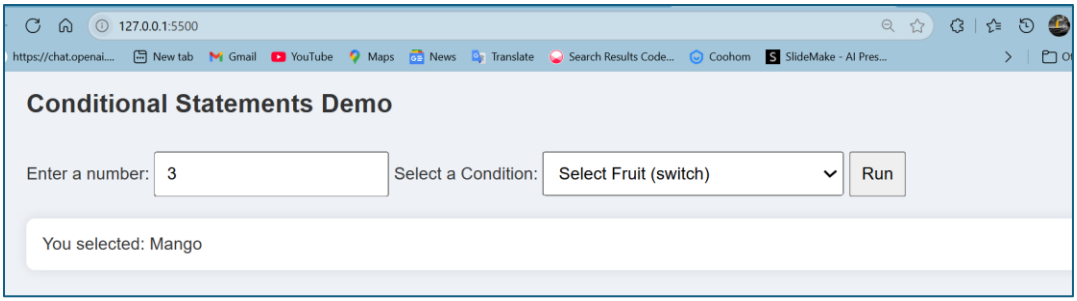
- **Check Positive/Negative**



- **Show Grade (based on marks)**



- **Select Fruit (1=Apple, 2=Banana, 3=Mango)**



❖ **So all the above result their.**

CONCUSLION:

I explored how JavaScript operators and conditional statements form the logical core of programming. Operators help manipulate data, while conditionals guide how the program behaves based on different inputs. Through practical simulations, I implemented logic using arithmetic, comparison, and logical operators. I also used if, if-else, if-else-if, and switch statements to build interactive and dynamic applications. This learning has improved my understanding of decision-making processes in frontend development and laid the foundation for writing smarter, more responsive web applications.