

DAY-4 Hands-On Activities – Keerthivasan R

Problem 1

Assessment Goal: Ensure learners understand responsiveness and screen adaptability.

Hands-on Tasks:

1. Add viewport meta tag to the HTML page
2. Use media queries to:
 - o Change background color on mobile screen
 - o Adjust font size for smaller screens
3. Convert navigation into vertical layout on mobile
4. Test the page using browser responsive mode

Expected Outcome:

A webpage that looks different and readable on mobile and desktop screens.

CODE:

```
<!DOCTYPE html>
<html lang="en">

<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Responsive Webpage Assessment</title>
</head>
<style>
    /* ======
Default Styles (Desktop)
===== */
    body {
        margin: 0;
        font-family: Arial, sans-serif;
        background-color: #f4f4f9;
        /* Light grey for desktop */
        color: #333;
    }

    /* Horizontal Navigation for Desktop */
    .navbar {
        display: flex;
        justify-content: center;
        background-color: #333;
        padding: 1rem;
    }

    .navbar a {
        color: white;
        text-decoration: none;
        padding: 0 15px;
        font-size: 1.2rem;
    }
}
```

```
.content {
    padding: 2rem;
    text-align: center;
}

/* Base Font Size */
h1 {
    font-size: 2.5rem;
}

p {
    font-size: 1.2rem;
}

/* =====
Mobile Styles (Media Query)
===== */
@media screen and (max-width: 768px) {

    /* 1. Change background color on mobile screen */
    body {
        background-color: #e0f7fa;
        /* Light cyan for mobile */
    }

    /* 2. Convert navigation into vertical layout */
    .navbar {
        flex-direction: column;
        align-items: center;
    }

    .navbar a {
        padding: 10px 0;
    }

    /* 3. Adjust font size for smaller screens */
    h1 {
        font-size: 1.8rem;
    }

    p {
        font-size: 1rem;
    }
}

</style>

<body>

<header>
    <nav class="navbar">
        <a href="#">Home</a>
        <a href="#">About</a>
        <a href="#">Services</a>
        <a href="#">Contact</a>
    </nav>
</header>
```

```
</nav>
</header>

<main class="content">
    <h1>Welcome to the Responsive Page</h1>
    <p>Resize the browser window or use responsive testing tools to see the layout, font size, and background color change.</p>
</main>

</body>

</html>
```

OUTPUT:

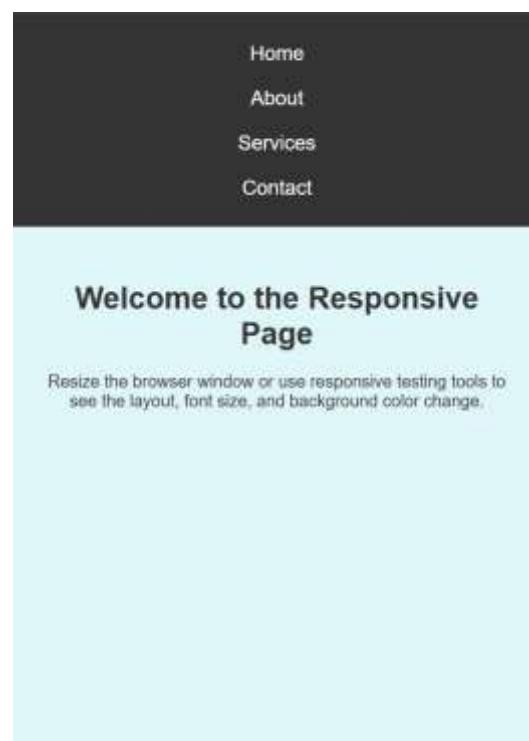
Desktop View :



Welcome to the Responsive Page

Resize the browser window or use responsive testing tools to see the layout, font size, and background color change.

Mobile View :



Problem 2: Student Grade Evaluator (Level-1)

Scenario

A school wants a simple JavaScript program to evaluate a student's performance based on marks obtained in a subject.

📌 Requirements

- Accept the student's marks as a variable
- Use if-else statements to assign grades:
 - Marks $\geq 75 \rightarrow$ Grade A
 - Marks $\geq 60 \rightarrow$ Grade B
 - Marks $\geq 40 \rightarrow$ Grade C
 - Marks $< 40 \rightarrow$ Fail

Display the grade on the web page or console

🛠️ Technical Constraints

- Use JavaScript variables (let or const)
- Use numeric data types
- Use comparison and logical operators
- No functions or arrays allowed
- Output using console.log() or document.write()

🎯 Learning Outcome

You should be able to:

- Declare and use variables
- Apply comparison operators
- Implement conditional logic using if-else
- Understand decision-making in JavaScript

CODE:

```
<!DOCTYPE html>
<html lang="en">

<head>
    <!-- Title of the webpage shown in browser tab -->
    <title>Evaluate Grade</title>

    <!-- Defines character encoding so text displays properly -->
```

```

<meta charset="UTF-8">
</head>

<body>
    <!-- Heading displayed on the webpage -->
    <h2>Student Grade Evaluator</h2>

    <script>
        // prompt() asks the user to enter marks.
        // parseInt() converts the entered value (string) into an integer number.
        let marks = parseInt(prompt("Enter the Marks:"));

        // Variable to store the grade result
        let grade;

        // If marks are 75 or above, assign Grade A
        if (marks >= 75) {
            grade = "Grade A";
        }
        // If marks are between 60 and 74, assign Grade B
        else if (marks >= 60) {
            grade = "Grade B";
        }
        // If marks are between 40 and 59, assign Grade C
        else if (marks >= 40) {
            grade = "Grade C";
        }
        // If marks are below 40, student fails
        else {
            grade = "Fail"
        }

        // console.log() prints output in browser console (for developers/testing)
        console.log("Marks: ", marks);
        console.log("Result: ", grade);

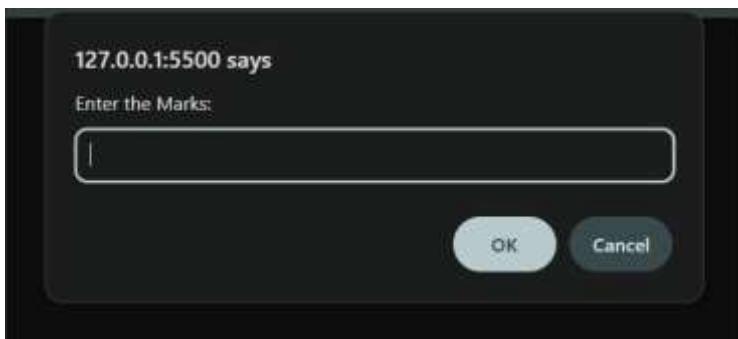
        // document.write() displays the result directly on the webpage
        document.write("Marks: " + marks + "<br>");
        document.write("Result: " + grade);
    </script>

</body>

</html>

```

OUTPUT:



Student Grade Evaluator

Marks: 70
Result: Grade B

Problem 3: Simple Discount Calculator (Level-1)

Scenario

An online store wants to apply a discount based on the total purchase amount.

📌 Requirements

- Store purchase amount in a variable
- Apply discount rules:
 - Amount \geq 5000 \rightarrow 20% discount
 - Amount \geq 3000 \rightarrow 10% discount
 - Amount $<$ 3000 \rightarrow No discount
- Calculate and display:
 - Discount amount
 - Final payable amount

🛠️ Technical Constraints

- Use arithmetic operators
- Use if–else statements
- Use only primitive data types

No user input (hardcoded values allowed)

🎯 Learning Outcome

You will be able to:

- Perform calculations using operators
- Work with expressions
- Apply conditional statements
- Build real-world logic using JavaScript basics

CODE:

```
<!DOCTYPE html>
<html lang="en">

<head>
    <!-- Title displayed in the browser tab -->
    <title>Discount Calculator</title>

    <!-- Defines character encoding -->
    <meta charset="UTF-8">
</head>

<body>
    <!-- Heading shown on the webpage -->
```

```
<h2>Simple Discount Calculator</h2>

<script>
    // prompt() asks user to enter purchase amount.
    // parseInt() converts the entered string value into a number.
    let amt = parseInt(prompt("Enter the Purchase amt: "));

    // Variable to store calculated discount (initially 0)
    let discount = 0;

    // Variable to store final amount after discount
    let finalamt = 0;

    // -----
    // Discount Calculation Logic
    // -----

    // If amount is 5000 or more → 20% discount
    if (amt >= 5000) {
        discount = amt * 0.20;
    }
    // If amount is 3000 or more but less than 5000 → 10% discount
    else if (amt >= 3000) {
        discount = amt * 0.10;
    }
    // If amount is less than 3000 → no discount
    else {
        discount = 0;
    }

    // -----
    // Final Amount Calculation
    // -----

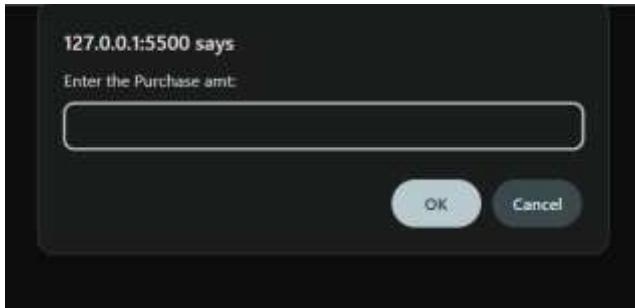
    // Subtract discount from original amount
    finalamt = amt - discount;

    // -----
    // Display Results on Webpage
    // -----

    // document.write() prints output directly to the webpage
    document.write("Purchase amount: ₹" + amt + "<br>");
    document.write("Discount: ₹" + discount + "<br>");
    document.write("Final amt to pay: ₹" + finalamt);
</script>

</body>
</html>
```

OUTPUT:



Simple Discount Calculator

Purchase amount: ₹5000

Discount: ₹1000

Final amt to pay: ₹4000

Problem 4: Traffic Signal Simulator (Level-2)

Scenario

A traffic control system needs a JavaScript program that displays instructions based on traffic signal color.

❖ Requirements

- Store signal color in a variable ("red", "yellow", "green")
- Use a **switch statement** to display:
 - Red → Stop
 - Yellow → Get Ready
 - Green → Go

Handle invalid signal input gracefully

🛠 Technical Constraints

- Must use switch-case
- Use string data types
- Use console.log() for output
- No if-else allowed

🎯 Learning Outcome

Learners should be able to:

- Use switch statements effectively
- Compare string values
- Handle multiple conditions cleanly
- Understand control flow alternatives

CODE:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <!-- Title shown in browser tab -->
    <title>Traffic Signal Simulator</title>

    <!-- Character encoding for proper text display -->
    <meta charset="UTF-8">
</head>
<body>

<script>
    // prompt() asks the user to enter a signal color.
    // The entered value is stored in the variable 'signal'.
    let signal = prompt("Enter the signal value: ");

    // switch statement is used when we want to compare
    // one variable with multiple fixed values.
    switch (signal) {

        // If user enters "red"
        case "red":
            // Print "Stop" in the browser console
            console.log("Stop");
            break; // Stops further checking once matched

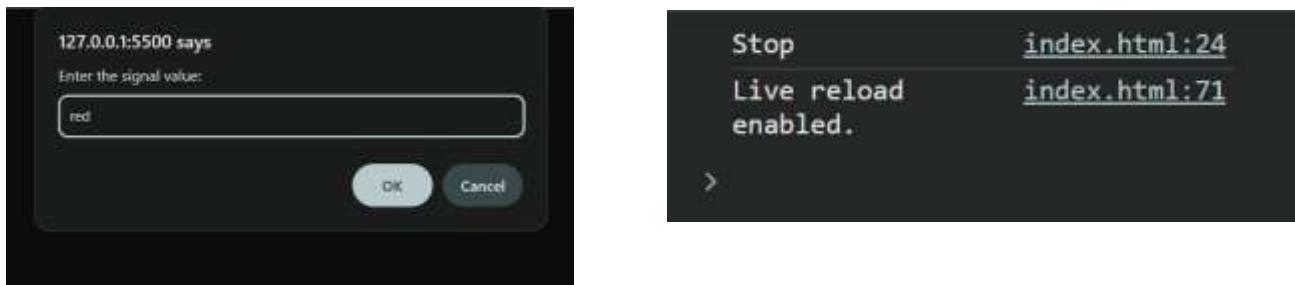
        // If user enters "yellow"
        case "yellow":
            console.log("Get Ready");
            break;

        // If user enters "green"
        case "green":
            console.log("Go");
            break;

        // If input does not match any case above
        default:
            console.log("Invalid Signal Value.");
    }
</script>

</body>
</html>
```

OUTPUT:



Problem 5: Number Analysis Tool (Level-2)

Scenario

A utility program is required to analyze numbers and provide insights such as positivity, parity, and range.

❖ Requirements

- Store a number in a variable
- Use **conditional (ternary) operator** to check:
 - Positive or Negative
 - Use **if-else** to check:
 - Even or Odd
 - Use a **loop** to print all numbers from 1 to the given number

❖ Technical Constraints

- Store a number in a variable
- Use conditional (ternary) operator to check:
 - Positive or Negative
 - Use if-else to check:
 - Even or Odd
 - Use a loop to print all numbers from 1 to the given number

🎯 Learning Outcome

You will be able to:

- Combine multiple control flow techniques
- Use loops for iteration
- Apply conditional operators
- Build multi-step logical programs

CODE:

```
<!DOCTYPE html>
<html lang="en">

<head>
    <!-- Character encoding -->
    <meta charset="UTF-8">

    <!-- Makes page responsive on mobile devices -->
    <meta name="viewport" content="width=device-width, initial-scale=1.0">

    <!-- Title shown in browser tab -->
    <title>Number Analysis Tool</title>
</head>

<body>
    <!-- Page heading -->
    <h2>Number Analysis Tool</h2>

    <script>
        // prompt() asks user to enter a number
        // parseInt() converts the string input into an integer
        let n = parseInt(prompt("Enter the number : "));

        // Ternary operator is a short form of if-else
        // It checks whether the number is positive or negative
        let type = (n >= 0) ? "positive" : "negative";

        // Variable to store even/odd result
        let parity;

        // If number is negative, we mark it invalid for parity check
        if (n < 0) {
            parity = "Invalid number";
        }
        // If remainder when divided by 2 is 0 → Even
        else if (n % 2 === 0) {
            parity = "Even";
        }
        // Otherwise → Odd
        else {
            parity = "Odd";
        }

        // Display numbers from 1 to n
        document.write("Numbers from 1 to " + n + ":<br>");

        // for loop runs from 1 up to n
        // i++ increases value by 1 each time
        for (let i = 1; i <= n; i++) {
            document.write(i + " ");
        }

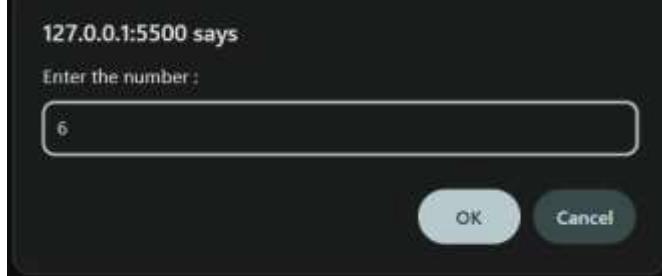
        // Add spacing
```

```
document.write("<br><br>");

// Display final results
document.write("Number: " + n + "<br>");
document.write("Type: " + type + "<br>");
document.write("Parity: " + parity);
</script>

</body>
</html>
```

OUTPUT:



Number Analysis Tool

Numbers from 1 to 6:
1 2 3 4 5 6

Number: 6
Type: positive
Parity: Even