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LAB REPORT 4

WEB TECHNOLOGIES

JavaScript Fundamentals & DOM Manipulation



Institute of Space and Technology

Submitted to: Miss Maryam

Objectives

By the end of this lab, students will be able to:

1. **Understand** JavaScript syntax, data types, and control structures.
2. **Learn** to handle user interactions using events.
3. **Manipulate** HTML elements dynamically using the Document Object Model (DOM).

Task 1:

Basic Calculator – Create an HTML page with two input boxes and a button to show sum, difference, product, and quotient.

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <title>Basic Calculator</title>
  <style>
    body {
      background-color: #EEEEEE;
      font-family: 'Segoe UI', sans-serif;
      color: #222831;
      text-align: center;
      margin-top: 60px;
    }
    input, button {
      padding: 10px;
      margin: 5px;
      border-radius: 8px;
      border: 1px solid #00ADB5;
    }
    button {
      background-color: #00ADB5;
      color: white;
      cursor: pointer;
    }
    button:hover {
      background-color: #393E46;
    }
    #result {
      margin-top: 20px;
```

```

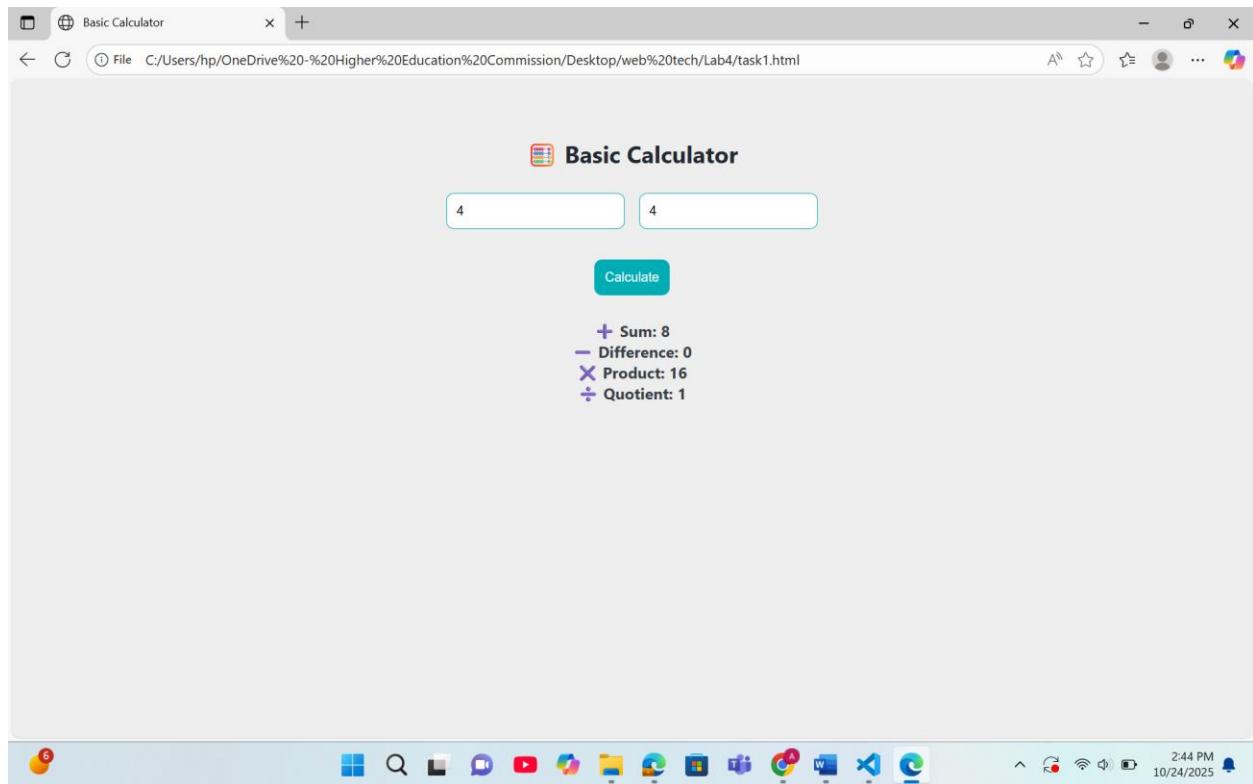
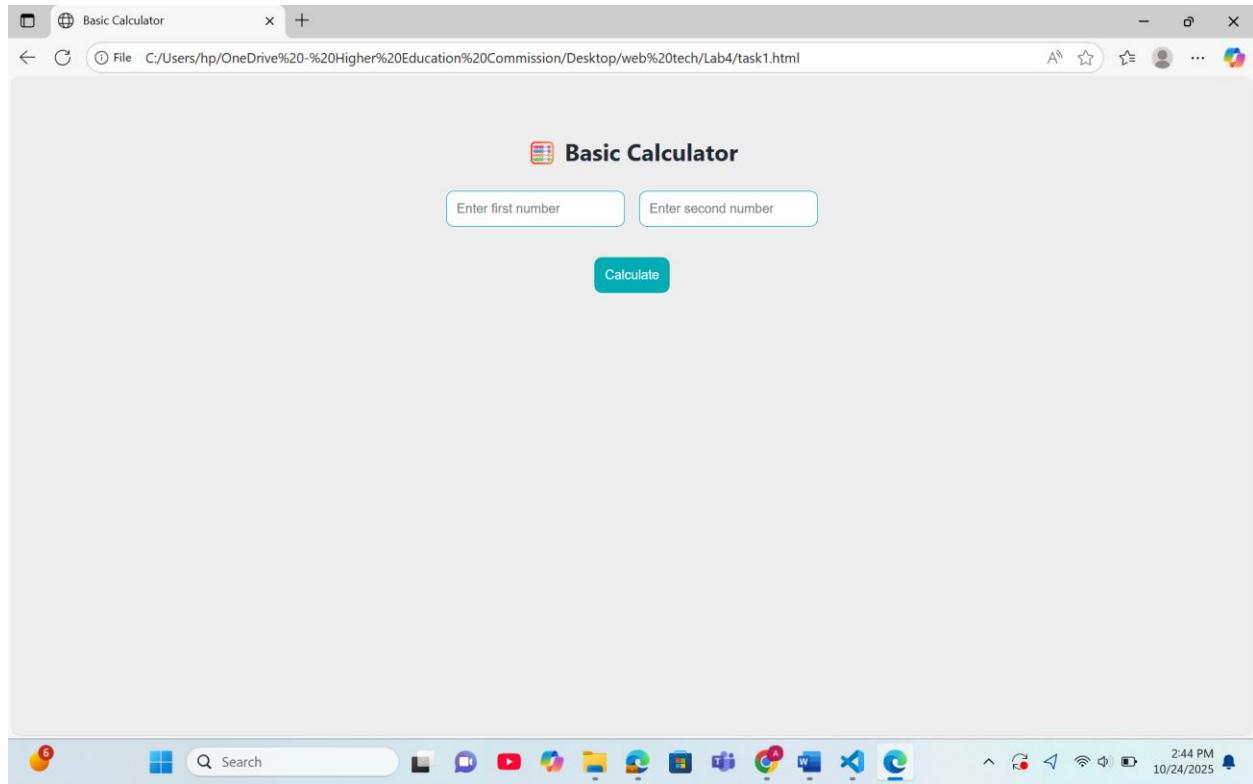
        color: #393E46;
        font-weight: bold;
    }
</style>
</head>
<body>
    <h2>▣ Basic Calculator</h2>
    <input type="number" id="num1" placeholder="Enter first number">
    <input type="number" id="num2" placeholder="Enter second number"><br><br>
    <button onclick="calculate()">Calculate</button>
    <div id="result"></div>

    <script>
        function calculate() {
            let a = parseFloat(document.getElementById('num1').value);
            let b = parseFloat(document.getElementById('num2').value);
            if (isNaN(a) || isNaN(b)) {
                document.getElementById('result').innerText = "⚠ Please enter valid
numbers!";
                return;
            }
            document.getElementById('result').innerHTML = `

                + Sum: ${a + b}<br>
                - Difference: ${a - b}<br>
                ✖ Product: ${a * b}<br>
                ÷ Quotient: ${!(b !== 0) ? (a / b) : "Cannot divide by zero"}
            `;
        }
    </script>
</body>
</html>

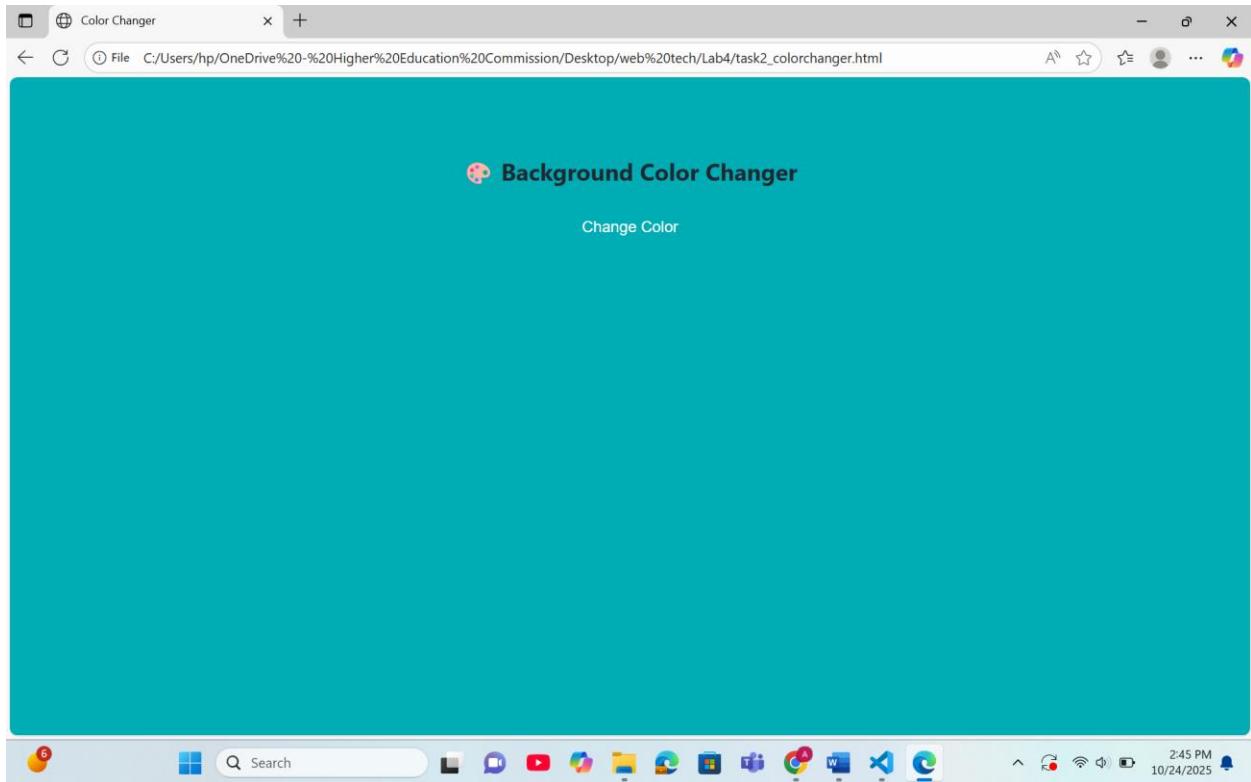
```

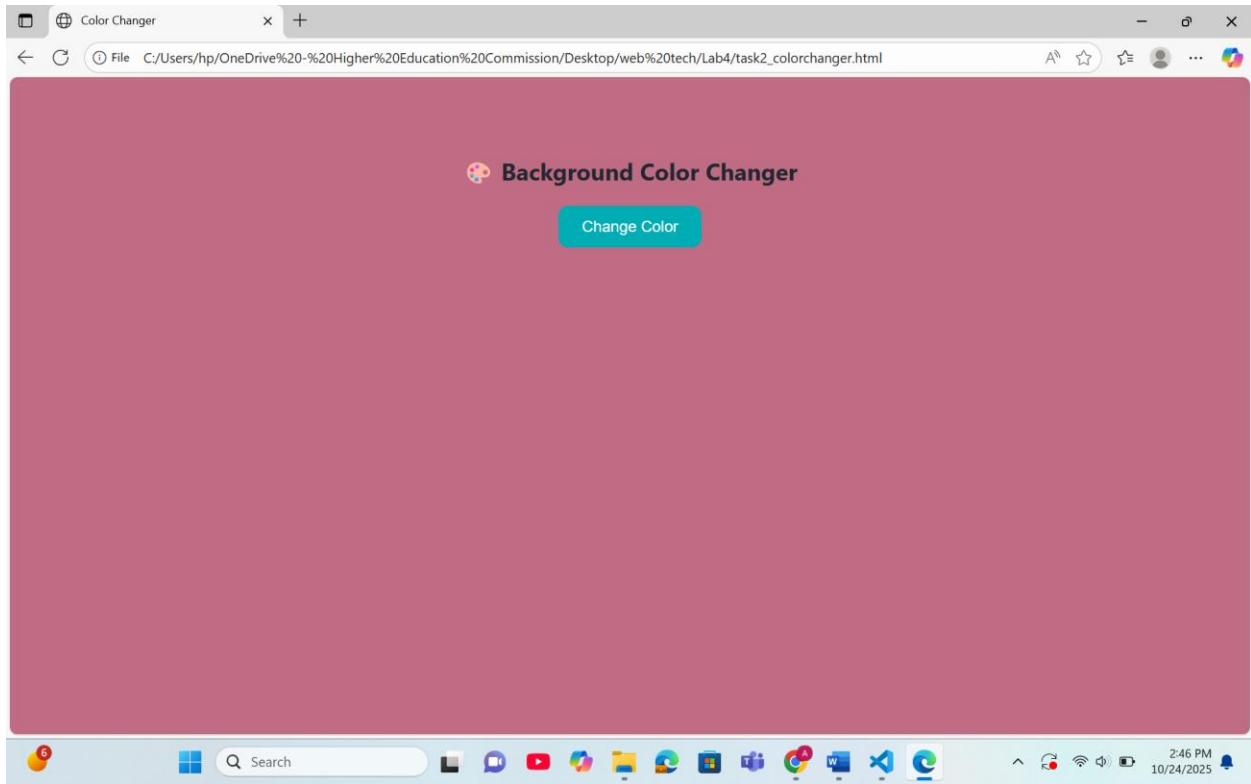
Output:



Task 2:

Color Changer – Create a button that changes the background color randomly when clicked





Task 3:

Todo List – Allow users to add and remove tasks dynamically

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <title>To-Do List</title>
  <style>
    /* ===== Color Palette =====
       Background: #f5f7fa
       Primary: #4A90E2
       Accent: #50E3C2
       Text: #333333
       Task BG: #ffffff
    ===== */
    body {
      background: linear-gradient(135deg, #dfe9f3 0%, #ffffff 100%);
      font-family: 'Poppins', sans-serif;
      color: #333333;
      text-align: center;
      margin: 0;
```

```
padding: 40px 0;
}

h2 {
  font-size: 2rem;
  color: #4A90E2;
  margin-bottom: 20px;
  letter-spacing: 1px;
}

.container {
  background: #ffffff;
  width: 340px;
  margin: 0 auto;
  padding: 25px 20px;
  border-radius: 15px;
  box-shadow: 0 8px 16px rgba(74, 144, 226, 0.15);
}

input {
  padding: 10px;
  width: 70%;
  border: 1px solid #4A90E2;
  border-radius: 10px;
  outline: none;
  transition: all 0.3s ease;
}

input:focus {
  box-shadow: 0 0 6px #50E3C2;
}

button {
  padding: 10px 16px;
  margin-left: 6px;
  border: none;
  border-radius: 10px;
  background-color: #4A90E2;
  color: #fff;
  font-weight: 600;
  cursor: pointer;
  transition: all 0.3s ease;
}

button:hover {
```

```
background-color: #50E3C2;
transform: scale(1.05);
}

ul {
list-style-type: none;
padding: 0;
margin-top: 20px;
text-align: left;
}

li {
background: #ffffff;
margin: 8px 0;
padding: 10px 14px;
border-radius: 12px;
display: flex;
justify-content: space-between;
align-items: center;
box-shadow: 0 3px 6px rgba(0,0,0,0.05);
transition: all 0.3s ease;
}

li:hover {
transform: translateY(-3px);
box-shadow: 0 4px 10px rgba(74,144,226,0.2);
}

.delete-btn {
background-color: #ff6b6b;
border: none;
border-radius: 8px;
color: white;
padding: 6px 10px;
cursor: pointer;
transition: background-color 0.3s ease;
}

.delete-btn:hover {
background-color: #e63946;
}

.empty {
color: #777;
font-size: 0.9rem;
```

```
        margin-top: 15px;
    }
</style>
</head>
<body>
    <h2>✿ My To-Do List ✿</h2>
    <div class="container">
        <input type="text" id="taskInput" placeholder="Enter a new task...">
        <button onclick="addTask()">Add</button>
        <ul id="taskList"></ul>
        <p id="emptyMsg" class="empty">No tasks yet. Add something! </p>
    </div>

    <script>
        function addTask() {
            const input = document.getElementById("taskInput");
            const task = input.value.trim();
            const list = document.getElementById("taskList");
            const msg = document.getElementById("emptyMsg");

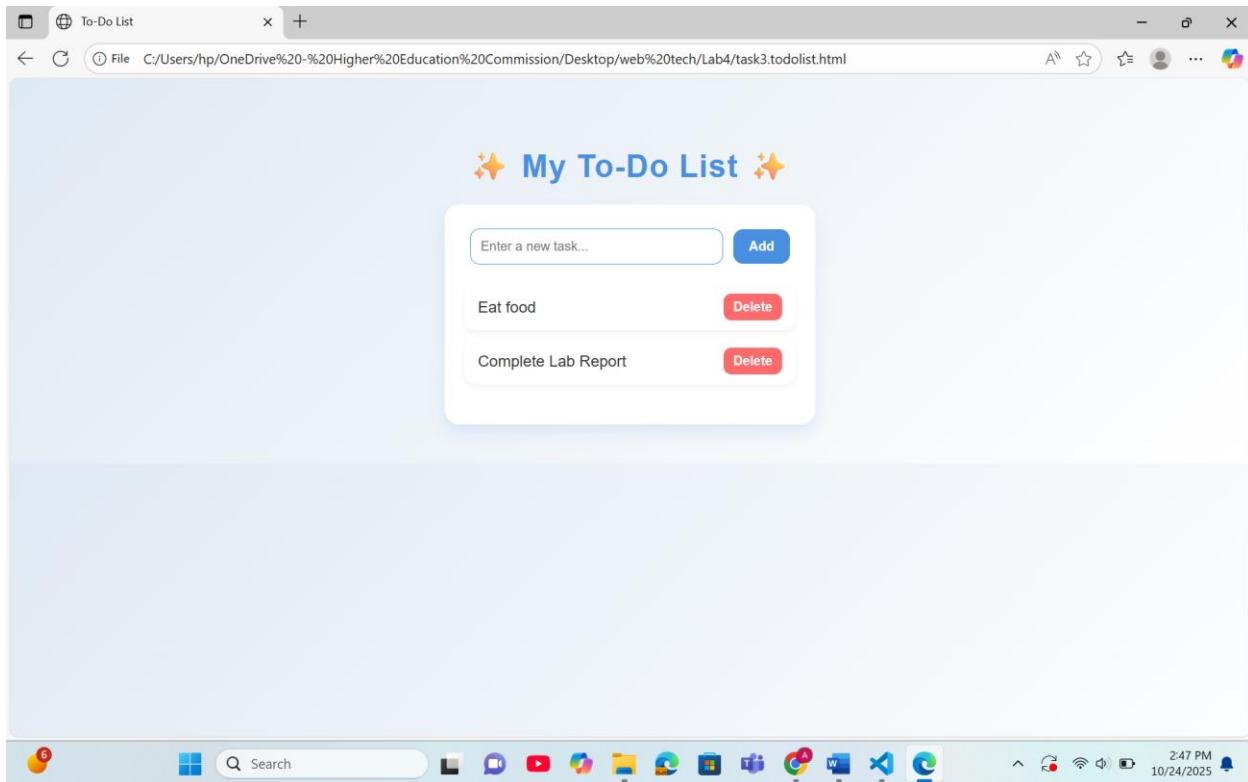
            if (!task) {
                alert("Please enter a task!");
                return;
            }

            const li = document.createElement("li");
            li.textContent = task;

            const delBtn = document.createElement("button");
            delBtn.textContent = "Delete";
            delBtn.className = "delete-btn";
            delBtn.onclick = () => {
                li.remove();
                if (list.children.length === 0) msg.style.display = "block";
            };

            li.appendChild(delBtn);
            list.appendChild(li);
            input.value = "";
            msg.style.display = "none";
        }
    </script>
</body>
</html>
```

Output:



Task 4:

Counter App – Add '+' and '-' buttons to increment/decrement a number using event listeners

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <title>Counter App</title>
  <style>
    /* 🎨 Theme Colors
      Background: gradient blue-purple
      Buttons: aqua / pink shades
      Text: clean dark gray
    */
    body {
      margin: 0;
      padding: 0;
```

```
height: 100vh;
display: flex;
justify-content: center;
align-items: center;
background: linear-gradient(135deg, #a1c4fd 0%, #c2e9fb 100%);
font-family: "Poppins", sans-serif;
color: #222;
}

.container {
  text-align: center;
  background: rgba(255, 255, 255, 0.3);
  padding: 40px 30px;
  border-radius: 20px;
  box-shadow: 0 8px 20px rgba(0, 0, 0, 0.1);
  backdrop-filter: blur(10px);
  width: 280px;
}

h2 {
  font-size: 1.8rem;
  color: #34495e;
  margin-bottom: 15px;
}

#count {
  font-size: 3.5rem;
  font-weight: bold;
  color: #2c3e50;
  margin: 20px 0;
  transition: transform 0.2s ease;
}

#count.animate {
  transform: scale(1.3);
}

button {
  font-size: 22px;
  padding: 10px 20px;
  margin: 10px;
  border: none;
  border-radius: 12px;
  cursor: pointer;
  color: white;
```

```
        font-weight: 600;
        transition: all 0.3s ease;
    }

#increase {
    background-color: #00b894;
    box-shadow: 0 4px 10px rgba(0, 184, 148, 0.4);
}

#increase:hover {
    background-color: #00cec9;
    transform: scale(1.05);
}

#decrease {
    background-color: #ff7675;
    box-shadow: 0 4px 10px rgba(255, 118, 117, 0.4);
}

#decrease:hover {
    background-color: #fab1a0;
    transform: scale(1.05);
}

#reset {
    background-color: #0984e3;
    box-shadow: 0 4px 10px rgba(9, 132, 227, 0.4);
}

#reset:hover {
    background-color: #74b9ff;
    transform: scale(1.05);
}

</style>
</head>
<body>
    <div class="container">
        <h2>[12/34] Counter App</h2>
        <h1 id="count">0</h1>
        <button id="decrease">-</button>
        <button id="reset">↺</button>
        <button id="increase">+</button>
    </div>

    <script>
```

```
let count = 0;
const countDisplay = document.getElementById("count");

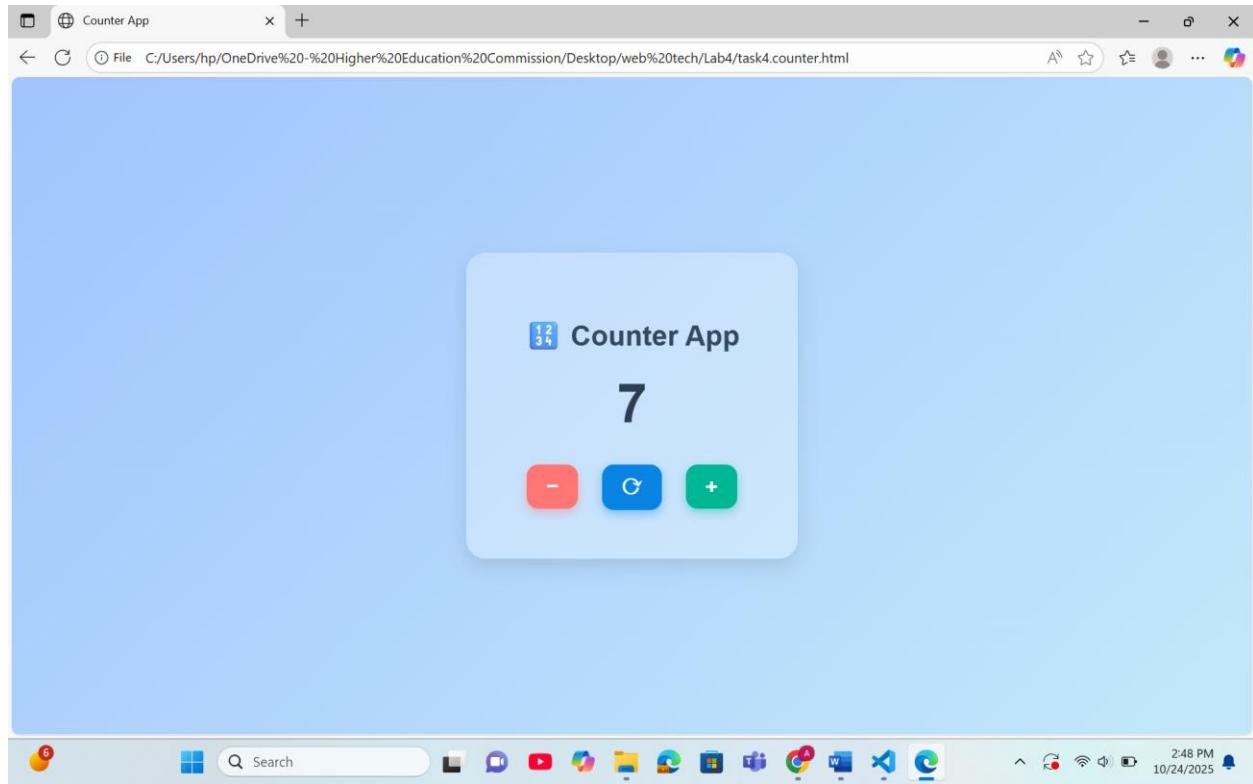
function updateDisplay() {
    countDisplay.textContent = count;
    countDisplay.classList.add("animate");
    setTimeout(() => countDisplay.classList.remove("animate"), 150);
}

document.getElementById("increase").addEventListener("click", () => {
    count++;
    updateDisplay();
});

document.getElementById("decrease").addEventListener("click", () => {
    count--;
    updateDisplay();
});

document.getElementById("reset").addEventListener("click", () => {
    count = 0;
    updateDisplay();
});
</script>
</body>
</html>
```

Output:



Task 5:

Image Toggle – Add an image and button to show/hide the image alternately.

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <title>Image Toggle</title>
  <style>
    /* 🌸 Modern Theme: soft blue & pink gradient */

    body {
      height: 100vh;
      margin: 0;
      display: flex;
      flex-direction: column;
      justify-content: center;
      align-items: center;
      background: linear-gradient(135deg, #a8edea 0%, #fed6e3 100%);
      font-family: "Poppins", sans-serif;
      color: #2c3e50;
      text-align: center;
```

```
}

h2 {
  margin-bottom: 20px;
  font-size: 1.8rem;
  color: #34495e;
}

.image-container {
  display: flex;
  justify-content: center;
  align-items: center;
  background: rgba(255, 255, 255, 0.3);
  padding: 20px;
  border-radius: 20px;
  box-shadow: 0 8px 20px rgba(0, 0, 0, 0.1);
  backdrop-filter: blur(10px);
  width: 280px;
  height: 280px; /* keeps layout stable even when image is hidden */
  transition: all 0.3s ease;
}

img {
  width: 220px;
  border-radius: 15px;
  box-shadow: 0 6px 20px rgba(0,0,0,0.25);
  transition: opacity 0.5s ease;
}

button {
  padding: 10px 22px;
  margin-top: 25px;
  border: none;
  border-radius: 12px;
  background-color: #00b894;
  color: white;
  font-weight: 600;
  cursor: pointer;
  font-size: 1rem;
  box-shadow: 0 4px 10px rgba(0,184,148,0.4);
  transition: all 0.3s ease;
}

button:hover {
  background-color: #00cec9;
```

```
        transform: scale(1.05);
    }

    .hidden {
        opacity: 0;
        visibility: hidden;
    }

```

</style>

```
</head>
<body>
    <h2>🖼 Image Toggle App</h2>

    <div class="image-container">
        <!-- ✅ use relative path instead of full C:\ path -->
        
    </div>

    <button onclick="toggleImage()">Show / Hide</button>

    <script>
        function toggleImage() {
            const img = document.getElementById("image");
            img.classList.toggle("hidden");
        }
    </script>
</body>
</html>
```

Output:

