



Smart Water System Management

Phase 4 submission

Phase 4: **Development Part 2**

Topic: Smart Water System Management

Explanation

1. Head Section:

- The head section contains metadata and links to external resources.
 - Two **<title>** tags specify the page titles. You should have only one **<title>** tag.
 - **<link>** tags link to an external CSS file (style.css) and an icon (img1.img).
 - Bootstrap CSS and JavaScript are linked from a CDN for styling and interactivity.

2. JavaScript:

- The JavaScript section defines a function **updateData()** that simulates the update of sensor data (pH, conductivity, temperature) at regular intervals. This is for demonstration purposes and should be replaced with real data retrieval logic.
- The **setInterval** function calls **updateData()** every 5 seconds.
- There's also a function for displaying notifications, but it's not fully defined in the provided code.

3. CSS Styles:

- There are multiple CSS styles defined within **<style>** tags. These styles are used for styling various elements on the page. It's good practice to consolidate your CSS into one section.

4. Navbar:

- The **<nav>** element represents the navigation bar with links to different sections of the page (HOME, NOTIFICATION, REAL TIME DATA, USAGE HISTORY). The navigation bar is responsive, making it collapsible on smaller screens.

5. Header:

- The **<header>** contains the title "Smart Water System."

6. Main Content:

- The main content section contains three subsections:
 - **Sensor Data:** Displays water level, temperature, and pH level.
 - **Control Panel:** Provides buttons to start and stop the pump.
 - **Notification and Alert Example:** Allows users to trigger and view different types of notifications (success, warning, error).

7. Real-Time Data Updates:

- Displays real-time sensor data for pH, conductivity, and temperature. However, the **id** attributes should be unique on the page, and it's recommended to rename them to avoid conflicts.

8. Usage History:

- Displays a table with historical water usage data, including date and usage in gallons.

9. Historical Data Report:

- Contains historical data presented in a table. The table includes time, water flow rate (GPM), and water quality (pH) data for a specific date.

Html Code : (title.html)

```
<!DOCTYPE html>
<html>
<head>
  <title>Smart Water System </title>
  <link rel="stylesheet" type="text/css" href="style.css">
  <link rel="icon" href="./img1.png">
  <title>Notification and Alert Example</title>
  <link rel="stylesheet" type="text/css" href="style.css">
  <link
href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.2/dist/css/bootstrap.min.css"
rel="stylesheet">
  <script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.3.2/dist/js/bootstrap.bundle.min.js"></script>
  <script>
    // Function to update the data
    function updateData() {
      // Simulated data (replace with actual data retrieval logic)
      const pHValue = (Math.random() * 14).toFixed(2);
```

```

        const conductivityValue = (Math.random() * 1000).toFixed(2);
        const temperatureValue = (Math.random() * 30).toFixed(2);

        // Update the HTML elements with the new data
        document.getElementById("ph-level").textContent = pHValue;
        document.getElementById("conductivity").textContent =
conductivityValue;
        document.getElementById("temperature").textContent =
temperatureValue;
    }

    // Poll for updates every 5 seconds (adjust as needed)
    setInterval(updateData, 5000);
</script>
<style>
    table {
        width: 80%;
        border-collapse: collapse;
        margin: 20px auto;
    }
    table, th, td {
        border: 1px solid #ccc;
    }
    th, td {
        padding: 10px;
        text-align: left;
    }
    th {
        background-color: #f2f2f2;
    }
</style>
<title>Historical Data Report</title>
<style>
    /* Add your CSS styles here */
    body {
        font-family: Arial, sans-serif;
        margin: 0;
        padding: 0;
    }
    header {
        background-color: #ffffff;
        color: #ffffff;
        text-align: center;
    }
    h1 {
        font-size: 24px;
    }
    .container {

```

```

        max-width: 800px;
        margin: 20px auto;
        background-color: #fff;
        padding: 20px;
        border: 1px solid #ccc;
        border-radius: 5px;
    }
    table {
        width: 100%;
        border-collapse: collapse;
        margin-top: 20px;
    }
    table, th, td {
        border: 1px solid #ccc;
    }
    th, td {
        padding: 8px;
        text-align: left;
    }
    th {
        background-color: #ffffff;
        color: #000000;
    }
</style>
</head>
<body>

    <nav class="navbar navbar-expand-sm navbar-dark bg-dark">
        <div class="container-fluid">

            <button class="navbar-toggler" type="button" data-bs-
toggle="collapse" data-bs-target="#mynavbar">
                <span class="navbar-toggler-icon"></span>
            </button>
            <div class="collapse navbar-collapse" id="mynavbar">
                <ul class="navbar-nav me-auto">
                    <li class="nav-item">
                        <a class="nav-link" href="#home">HOME</a>
                    </li>
                    <li class="nav-item">
                        <a class="nav-link" href="#notification-
container">NOTIFICATION</a>
                    </li>
                    <li class="nav-item">
                        <a class="nav-link" href="#ph-level">REAL TIME DATA</a>
                    </li>
                    <li class="nav-item">
                        <a class="nav-link" href="#history">USAGE HISTORY</a>
                    </li>
                </ul>
            </div>
        </div>
    </nav>

```

```

        </li>
      </ul>
      <form class="d-flex">
        <input class="form-control me-2" type="text"
placeholder="Search">
        <button class="btn btn-primary"
type="button">Search</button>
      </form>
    </div>
  </div>
</nav>

  <header>
    <h1 class="text-black">Smart Water System </h1>

  </header>
  <main>
    <section class="sensor-data" id="home">
      <h2>Sensor Data</h2>
      <p>Water Level: <span id="water-level">70%</span></p>
      <p>Temperature: <span id="temperature">22°C</span></p>
      <p>pH Level: <span id="ph-level">7.0</span></p>
    </section>
    <section class="control-panel">
      <h2>Control Panel</h2>
      <button id="start-pump">Start Pump</button>
      <button id="stop-pump">Stop Pump</button>
    </section>
  </main>
  <div style="margin-left:270px ; margin-top: 100px;">
    <h1>Notification and Alert Example</h1>
    <button onclick="showNotification('Success!', 'Your task was completed
successfully.', 'success')">Show Success Notification</button>
    <button onclick="showNotification('Warning!', 'Please be cautious with
this action.', 'warning')">Show Warning Notification</button>
    <button onclick="showNotification('Error!', 'An error occurred. Please try
again.', 'error')">Show Error Notification</button>
    <div id="notification-container"></div>
  </div>
  <script src="script.js"></script>
  <div style="margin-left:270px ; margin-top: 100px;">
    <div>
      <h1>Real-Time Data Updates</h1>
      <p>PH Level: <span id="ph-level">7.0</span></p>
      <p>Conductivity: <span id="conductivity">500 µS/cm</span></p>
      <p>Temperature: <span id="temperature">25°C</span></p>
    </div>
  </div>

```

```
<div id="history">
  <br><br><br>
  <h1>Water Usage History</h1>
  <table>
    <thead>
      <tr>
        <th>Date</th>
        <th>Usage (gallons)</th>
      </tr>
    </thead>
    <tbody>
      <tr>
        <td>2023-10-01</td>
        <td>100</td>
      </tr>
      <tr>
        <td>2023-10-02</td>
        <td>90</td>
      </tr>
      <tr>
        <td>2023-10-03</td>
        <td>110</td>
      </tr>
      <!-- Add more rows for historical data -->
    </tbody>
  </table>
  <header>
    <div style="margin-top: 100px;">
      <h1 class="text-black">Historical Data Report</h1><br>
    </div>
    <div class="container" style="margin-left: 70px;">
      <h2>Data for Date: January 1, 2023</h2>
      <table>
        <tr>
          <th>Time</th>
          <th>Water Flow Rate (GPM)</th>
          <th>Water Quality (pH)</th>
        </tr>
        <tr>
          <td>08:00 AM</td>
          <td>5.2</td>
          <td>7.0</td>
        </tr>
        <tr>
          <td>09:00 AM</td>
          <td>4.8</td>
          <td>7.2</td>
        </tr>
      </table>
    </div>
  </div>
```

```
        <!-- Add more data rows as needed -->
    </table>
</div>
</div>
</div>
</body>
</html>
```

CSS Code : (style2.css)

```
/* Add your custom styles for notifications here */
.notification {
    position: fixed;
    top: 20px;
    right: 20px;
    padding: 10px;
    border-radius: 5px;
    color: #fff;
    font-weight: bold;
    z-index: 9999;
}

.success {
    background-color: #4CAF50;
}

.warning {
    background-color: #FFC107;
}

.error {
    background-color: #FF5722;
}
```

The provided CSS code contains custom styles for notifications, which are typically displayed to the user as feedback, alerts, or messages. Here's an explanation of the CSS rules and their purpose:

1. **.notification:**

- This is a class selector that applies styles to elements with the class "notification." In the HTML code, you would apply this class to elements that represent notifications.
- **position: fixed;** The notification is fixed in place on the screen, which means it stays in the same position even when the user scrolls the page.
- **top: 20px; right: 20px;** These properties position the notification 20 pixels from the top and 20 pixels from the right edge of the viewport, creating a top-right corner placement.
- **padding: 10px;** Adds some padding around the notification content, making it visually appealing.
- **border-radius: 5px;** Rounds the corners of the notification with a radius of 5 pixels, giving it a slightly rounded appearance.
- **color: #fff;** Sets the text color to white, making it stand out against the background.
- **font-weight: bold;** Makes the text inside the notification bold, emphasizing it.
- **z-index: 9999;** Sets a high z-index value, ensuring the notification appears on top of other elements on the page.

2. **.success, .warning, .error:**

- These are class selectors for different types of notifications: success, warning, and error.
- They define background colors for each type of notification.
 - **.success** has a green background.
 - **.warning** has a yellow background.
 - **.error** has a red background.
- The background color helps convey the severity or type of the notification.

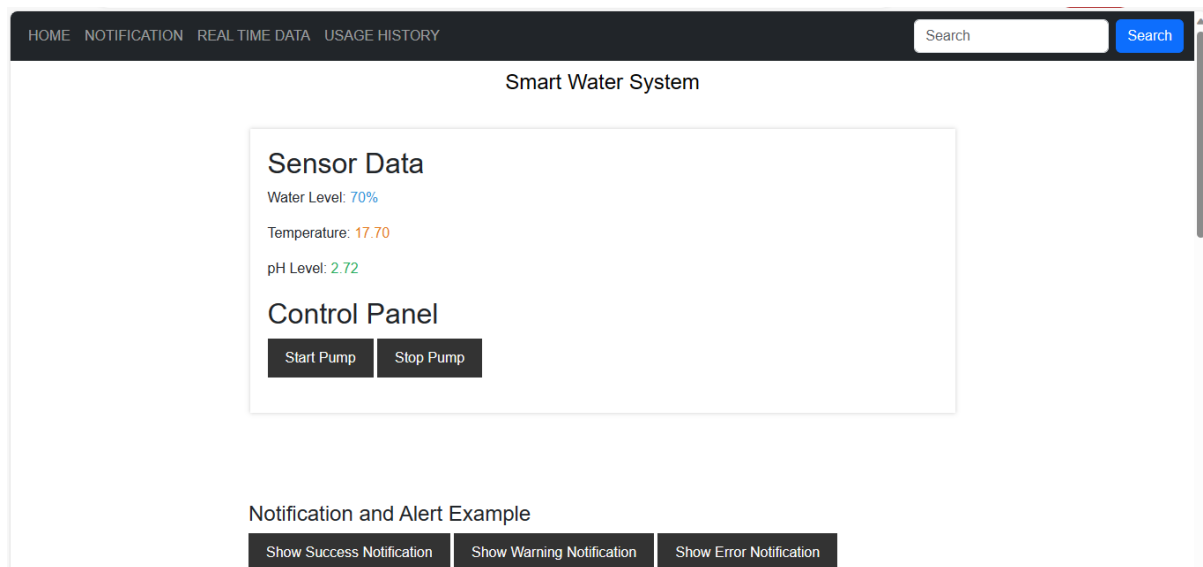
When you want to display a notification in your HTML, you would typically create an element (e.g., a `<div>`) and give it the "notification" class. Additionally, you would add one of the classes (.success, .warning, .error) to indicate the type of notification. For example:

htmlCopy code

```
<div class="notification success"> Your task was completed successfully.
</div>
```

This would create a success notification with a green background that appears fixed to the top-right corner of the screen with the specified styles from the CSS. You can customize the styles further or use JavaScript to control the appearance and behavior of notifications.

Result :



Historical Data Report

Data for Date: January 1, 2023

Time	Water Flow Rate (GPM)	Water Quality (pH)
08:00 AM	5.2	7.0
09:00 AM	4.8	7.2

Real-Time Data Updates

PH Level: 7.0

Conductivity: 997.33

Temperature: 25°C

Water Usage History

Date	Usage (gallons)
2023-10-01	100
2023-10-02	90
2023-10-03	110