

AIR QUALITY MONITORING

Creating a Platform to display Air quality data Using web development (HTML , CSS , Javascript).

1. Frontend Development :

- Start by designing the user interface using HTML for structure, CSS for styling, and JavaScript for interactivity.
- Create a dashboard where users can view real-time air quality data.
- Use JavaScript libraries like D3.js or Chart.js to generate interactive and visually appealing charts and graphs to display the data.

2. Backend development :

- Set up a server using technologies like Node.js, Python (with frameworks like Flask or Django), or other backend technologies.
- Create RESTful API endpoints to receive data from IoT devices and serve it to the frontend.
- Implement authentication and authorization mechanisms to ensure data security.

3. Database :

- Choose a database system (e.g., MySQL, PostgreSQL, MongoDB) to store the air quality data.
- Create a database schema that can efficiently store and retrieve the data from IoT devices.

4. IoT device integration :

- IoT devices should be programmed to send air quality data to the platform using protocols like HTTP or MQTT.
- Implement data validation and error handling in the server to ensure data integrity.

5. Real time data display:

- Use WebSocket or Server-Sent Events (SSE) to enable real-time updates of air quality data on the dashboard without the need for constant page refresh.
- Data processing and analysis:

Implement data processing algorithms to analyze and filter the incoming data for meaningful insights.

- Use backend scripts to calculate metrics, trigger alerts, or generate reports.

6. Security:

- Implement security best practices to protect against data breaches and unauthorized access.
- Use HTTPS for secure data transmission.

7. Scalability :

- Ensure that the platform can handle a growing number of IoT devices and users.
- Consider load balancing and containerization (e.g., Docker) for scalability.

8. Documentation:

- Document your code, APIs, and deployment procedures for future reference and collaboration.
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Air quality data by Using HTML and CSS

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Air Quality Dashboard</title>
  <link rel="stylesheet" href="styles.css">
</head>
<body>
  <header>
    <h1>Air Quality Dashboard</h1>
  </header>
  <main>
    <section class="data">
      <h2>Current Air Quality Data</h2>
      <p>Location: City X</p>
      <p>Air Quality Index (AQI): 85</p>
      <p>PM2.5: 12 µg/m³</p>
      <p>PM10: 20 µg/m³</p>
    </section>
  </main>
  <footer>
    <p>&copy; 2023 Your Company</p>
  </footer>
</body>
</html>
```

```
body {
  font-family: Arial, sans-serif;
  background-color: #f4f4f4;
  margin: 0;
  padding: 0;
}

.container {
  max-width: 800px;
  margin: 0 auto;
  text-align: center;
  background-color: #fff;
  box-shadow: 0 0 10px rgba(0, 0, 0, 0.2);
  padding: 20px;
}

h1 {
  color: #007BFF;
```

```

}

h2 {
  font-size: 24px;
  color: #007BFF;
}

p {
  margin: 5px 0;
}

```

Air quality data Using javascript

```

<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Air Quality Dashboard</title>
</head>
<body>
  <div id="container">
    <h1>Air Quality Dashboard</h1>
    <div id="data" class="data">
      <h2>Current Air Quality Data</h2>
      <p id="location">Location: City X</p>
      <p id="aqi">Air Quality Index (AQI): -</p>
      <p id="pm25">PM2.5: - µg/m³</p>
      <p id="pm10">PM10: - µg/m³</p>
    </div>
  </div>

  <script>
    // Simulate updating air quality data every 5 seconds (Replace with actual data source)
    setInterval(updateAirQualityData, 5000);

    function updateAirQualityData() {
      // Replace the following lines with actual data retrieval logic
      const location = "City X";
      const aqi = Math.floor(Math.random() * 150); // Simulated AQI value
      const pm25 = Math.floor(Math.random() * 50); // Simulated PM2.5 value
      const pm10 = Math.floor(Math.random() * 100); // Simulated PM10 value

      // Update the displayed data on the webpage
      document.getElementById("location").textContent = `Location: ${location}`;
    }
  </script>

```

```
document.getElementById("aqi").textContent = `Air Quality Index (AQI): ${aqi}`;  
document.getElementById("pm25").textContent = `PM2.5: ${pm25} µg/m³`;  
document.getElementById("pm10").textContent = `PM10: ${pm10} µg/m³`;  
}  
</script>  
</body>  
</html>
```
