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.

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}`;
```

```
        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>
```
