Environmental Monitoring

Phase 4: Development Part 2

Environment information platform:

- use HTML, CSS, java Script to build a web-based user interface to visualize the environmental data.
- Map Integration: If needed, integrate maps to display sensor locations.
- Real-time Data Updates: Implement real-time data updates on the front-end to display the latest environmental information.
- User Accounts: Allow users to create accounts and customize their monitoring preferences.
- Filtering and Alerts: Enable users to set filters and receive alerts for specific environmental conditions.

Mobile Apps:

- Create native iOS and Android apps that connect to the same real-time environmental data.
- Allow users to see the condition of the environment at different places.
- Add features like turn-by-turn navigation, saving favorite locations, leaving reviews, reporting issues, etc.
- Implement push notifications to alert users when they are near an environmental location that meets their saved criteria (e.g., preferred temperature range or air quality).
- Use geolocation to show their current location on the map.

HTML

```
<!DOCTYPE html>
<html>
<head>
  <link rel="stylesheet" type="text/css" href="styles.css">
</head>
<body>
  <div id="map"></div>
```

```
    <div id="filters">
        <label for="minTemperature">Min Temperature:</label>
        <input type="number" id="minTemperature">
        <label for="maxHumidity">Max Humidity:</label>
        <input type="number" id="maxHumidity">
        <button id="filterButton">Filter</button>
    </div>
    <div id="environmentalDetails"></div>
    <script src="script.js"></script>
</body>
</html>
```

CSS code:

```
/* Define a primary color scheme for the app */
body {
    background-color: #f0f0f0; /* Background color */
    font-family: Arial, sans-serif;
    color: #333; /* Text color */
}

/* Header styles */
header {
    background-color: #007BFF; /* Header background color */
    color: #fff; /* Header text color */
    padding: 10px;
    text-align: center;
}
```

```
/* Navigation menu styles */
nav {
    background-color: #333; /* Navigation background color */
    color: #fff; /* Navigation text color */
    text-align: center;
    padding: 10px;
}

/* Main content container */
.container {
    max-width: 1200px;
    margin: 0 auto;
    padding: 20px;
}

/* Button styles */
.button {
    background-color: #007BFF; /* Button background color */
    color: #fff; /* Button text color */
    padding: 10px 20px;
    border: none;
    border-radius: 5px;
    cursor: pointer;
}
```

```
/* Form input styles */
input[type="text"], input[type="number"] {
    width: 100%;
    padding: 10px;
    margin: 5px 0;
    border: 1px solid #ccc;
    border-radius: 5px;
}

/* Map styles */
#map {
    width: 100%;
    height: 300px;
    margin-top: 20px;
}

/* Chart styles (you can use specific charting libraries) */
.chart {
    width: 100%;
    max-width: 800px;
    margin: 20px auto;
}

/* Custom styles for specific elements based on your design requirements */
/* For example, you can style charts, data tables, reviews, and more. */
```

```
/* Responsive design for smaller screens (media queries) */
@media (max-width: 768px) {
  /* Adjust styles for smaller screens here */
  body {
    font-size: 16px;
  }
  .container {
    padding: 10px;
  }
  /* Adjust other styles as needed for responsiveness */
}
```

JAVA script:

```
// Simulated environmental data - Replace with real-time sensor data.
const environmentalData = [
  {
    id: 1,
    location: { lat: 40.7128, lng: -74.0060 },
    temperature: 25,
    humidity: 60,
    pollution: "Low",
  },
  // Add more environmental data here.
];

const map = new google.maps.Map(document.getElementById('map'), {
  zoom: 12,
```

```
    center: { lat: 40.7128, lng: -74.0060 }, // Default map center
});

const markers = [];

environmentalData.forEach(data => {
    const marker = new google.maps.Marker({
        position: data.location,
        map: map,
        title: Monitoring Station #${data.id},
    });
    markers.push(marker);

    marker.addListener('click', () => {
        displayEnvironmentalDetails(data);
    });
});

function displayEnvironmentalDetails(data) {
    const detailsDiv = document.getElementById('environmentalDetails');
    detailsDiv.innerHTML = `
        <h2>Environmental Data</h2>
        <p>Temperature: ${data.temperature}°C</p>
        <p>Humidity: ${data.humidity}%</p>
        <p>Pollution: ${data.pollution}</p>
    `;
```

```
}


document.getElementById('filterButton').addEventListener('click', () => {
    // Add code to filter environmental data based on user criteria.
    // Update markers and details accordingly.
});
```

Conclusion:

Environmental monitoring plays a critical role in our efforts to understand and mitigate the impact of human activities and natural processes on our environment. Whether it's tracking air quality, weather conditions, pollution levels, or other environmental parameters, monitoring initiatives and technologies provide valuable data for informed decision-making.

This project created a real time monitoring of the environment with a website displaying the locations and efficiently guided the people.