1. Get API Key

Sign up at OpenWeatherMap and get an API key.

---

2. Project Setup

Create a new project folder:
sh
```
mkdir weather-app
cd weather-app
```

1.

Initialize a TypeScript project:
sh
```
npm init -y
npm install typescript ts-node webpack webpack-cli --save-dev
```

2.

Install dependencies:
sh
```
npm install axios dotenv
```

3.

Create `tsconfig.json`:
json
```
{
  "compilerOptions": {
    "target": "ES6",
    "module": "CommonJS",
    "strict": true,
    "esModuleInterop": true
  }
}
```

3. Create Files

- **index.html** (UI)
- **style.css** (Styling)
- **script.ts** (Logic)

4. HTML Structure (index.html)

html
```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width,
initial-scale=1.0">
    <title>Weather App</title>
    <link rel="stylesheet" href="style.css">
</head>
<body>
    <div class="container">
        <h1>Weather App</h1>
        <input type="text" id="cityInput" placeholder="Enter city
name">
        <button id="fetchWeather">Get Weather</button>
        <div id="weatherData"></div>
    </div>
    <script src="dist/bundle.js"></script>
</body>
</html>
```

5. CSS Styling (`style.css`)

css
```css
body {
    font-family: Arial, sans-serif;
    text-align: center;
    background-color: #f4f4f4;
}

.container {
    margin-top: 50px;
}

input {
    padding: 10px;
    width: 200px;
}

button {
    padding: 10px;
    margin-left: 10px;
}

#weatherData {
    margin-top: 20px;
}
```

---

6. TypeScript Logic (`script.ts`)

typescript
```typescript
import axios from "axios";

// Define API response type
interface WeatherResponse {
    main: {
        temp: number;
        humidity: number;
```

```typescript
  };
  weather: { description: string }[];
  name: string;
}

// Select DOM elements
const cityInput = document.getElementById("cityInput") as
HTMLInputElement;
const fetchWeatherBtn = document.getElementById("fetchWeather") as
HTMLButtonElement;
const weatherDataDiv = document.getElementById("weatherData") as
HTMLDivElement;

// API Key & URL
const API_KEY = "YOUR_API_KEY";
const API_URL = "https://api.openweathermap.org/data/2.5/weather";

// Fetch Weather Data
const getWeather = async (city: string): Promise<void> => {
    try {
        const response = await
axios.get<WeatherResponse>(`${API_URL}?q=${city}&units=metric&appid=${
API_KEY}`);
        displayWeather(response.data);
    } catch (error) {
        weatherDataDiv.innerHTML = `<p style="color:red;">City not
found. Please try again.</p>`;
    }
};

// Display Weather Data
const displayWeather = (data: WeatherResponse) => {
    weatherDataDiv.innerHTML = `
        <h2>Weather in ${data.name}</h2>
        <p>Temperature: ${data.main.temp}°C</p>
        <p>Humidity: ${data.main.humidity}%</p>
        <p>Condition: ${data.weather[0].description}</p>
    `;
```

```javascript
};

// Event Listener
fetchWeatherBtn.addEventListener("click", () => {
    const city = cityInput.value.trim();
    if (city) {
        getWeather(city);
    } else {
        weatherDataDiv.innerHTML = `<p style="color:red;">Please enter
a city name.</p>`;
    }
});
```