📝 Project Title:

Weather Data Visualization Dashboard using OpenWeatherMap API and Python

📄 Project Description:

This project demonstrates how to fetch live weather data from a public API (OpenWeatherMap) using Python and visualize it using Matplotlib and Seaborn. The goal is to create an interactive and informative weather dashboard that displays forecast data such as temperature and humidity for a specific city over a period of 5 days.

The project begins by integrating with the OpenWeatherMap API. After signing up on the platform and obtaining an API key, a Python script is developed to send a request to the 5-day forecast endpoint using the requests module. The response, returned in JSON format, contains weather information for every 3-hour interval over the next 5 days.

Using Python's datetime module, the script parses and processes this data to extract useful attributes like timestamp, temperature, and humidity. The extracted data is then visualized using Matplotlib and Seaborn. Two line charts are created: one for temperature trends and another for humidity levels, both plotted against time.

The dashboard is designed for clarity and readability, using labels, titles, and grid styles. Additionally, the final dashboard can be saved as a PNG image using the plt.savefig() function, making it easy to share or include in reports.

🎯 Key Objectives:

- Learn API integration using Python
- Parse and process JSON data
- Use Matplotlib and Seaborn for data visualization
- Create a clean and informative dashboard
- Export the result as a high-quality image

🔧 Tools & Technologies:

- **Python**
- **OpenWeatherMap API**
- **Matplotlib**
- **Seaborn**
- **Requests module**

✅ **Output:**

- A 2-part dashboard showing:

    o 📈 Temperature vs. Time

    o 💧 Humidity vs. Time

- Exportable as a PNG image (weather_dashboard.png)