**Weather DashBoard Link**

<https://weather-dashboard-escindia.streamlit.app/>

**Guide Lines:**

1. make sure python is installed. check by doing python -v

2. then install this command: pip install -r requirements.txt

3. then just start the app: streamlit run app.py

**Different types of plots used in data analysis, their purposes, and the type of data they best representation**

**1. 📊 Bar Chart**

* **Purpose:** Compare **categorical data** or discrete values
* **Used For:** Frequencies, counts, or averages across categories
* **Example:** Count of rainy vs. non-rainy days
* **Data Type:** Categorical (e.g., RainToday, WindGustDir)

**2. 🥧 Pie Chart**

* **Purpose:** Show **proportions** or **percentage contributions** of categories to a whole
* **Used For:** Distribution of categorical data in percentage form
* **Example:** Share of wind directions or rainy days
* **Data Type:** Categorical

**3. 📈 Line Plot**

* **Purpose:** Show **trends over time**
* **Used For:** Continuous data that changes over time (e.g., daily temperature)
* **Example:** Temperature trends over months
* **Data Type:** Time series / Continuous

**4. 📉 Histogram**

* **Purpose:** Show **distribution** of a **single numeric variable**
* **Used For:** Understanding spread, skewness, and central tendency
* **Example:** Rainfall amount or temperature frequency
* **Data Type:** Continuous numerical

**5. 📦 Box Plot**

* **Purpose:** Display **distribution, outliers**, and **quartiles** of a numeric variable
* **Used For:** Comparing distributions across categories
* **Example:** Temperature distribution by season or rain status
* **Data Type:** Numeric vs. Categorical

**6. 🔵 Scatter Plot**

* **Purpose:** Examine **relationship between two numeric variables**
* **Used For:** Detecting correlation, clusters, or trends
* **Example:** Rainfall vs. humidity or wind speed
* **Data Type:** Continuous numerical pairs

**7. 🔺 Heatmap**

* **Purpose:** Show **correlation or intensity** between variables using colors
* **Used For:** Multivariate analysis or correlation matrix
* **Example:** Correlation among temperature, humidity, rainfall
* **Data Type:** Numerical matrix

**8. 📚 Violin Plot**

* **Purpose:** Combine **box plot and density plot** for richer distribution insight
* **Used For:** Distribution comparison with detailed shape
* **Example:** Temperature distribution across different wind directions
* **Data Type:** Numeric vs. Categorical

**9. 📐 Pair Plot (Seaborn)**

* **Purpose:** Plot **pairwise relationships** between several numerical variables
* **Used For:** Quick EDA for multivariate data
* **Example:** Temp, humidity, wind speed relationships
* **Data Type:** Multiple continuous variables