**WEATHER FORCAST DATA**

**Problem Statement:** Predicting rainfall from weather data

**What is problem:**

we want to predict it will rain or not on the base of previous weather data under different weather condition and want to build a model for prediction it will rain or not .

**Why it is important:**

It is important for decision making in **agriculture** (deciding when to irrigate or harvest crops.), **outdoor event** (planning outdoor functions.)**,** **transportation** (preparing for travel) and **disaster management**.

**How we can solve this problem:**

 **Data Exploration & Cleaning (EDA)**

* Understand distributions, missing values, outliers, and relationships between features.

 **Feature Engineering**

* Convert categorical target into numeric format.
* Check for correlation between features.
* Possibly create new features like "Feels Like Temperature" or "Humidity Index".

 **Model Selection & Training**

* Try classification models like:
  + Logistic Regression
  + Decision Trees / Random Forest
  + Support Vector Machines
  + XGBoost or LightGBM
* Evaluate using metrics like:
  + Accuracy
  + Precision, Recall, F1 Score
  + Confusion Matrix
  + ROC-AUC

 **Model Evaluation & Tuning**

* Perform hyperparameter tuning using GridSearchCV or RandomizedSearchCV.
* Cross-validation for stability of performance.

 **Deployment & Real-World Use Case (optional)**

* Create an interactive dashboard using **Streamlit** or deploy model as a web API for live prediction.