Analysis of Weather Dataset

Problem Statement:

The problem is to analyse the weather dataset using Pandas DataFrame. The goal is to understand the weather conditions at a particular location and to identify any patterns or trends.

Data:

The data used for this analysis is a time-series dataset with per-hour information about the weather conditions at a particular location. It records Temperature, Dew Point Temperature, Relative Humidity, Wind Speed, Visibility, Pressure, and Conditions.

Analysis:

The analysis was performed using the following steps:

1. The data was loaded into a Pandas DataFrame.
2. The basic information about the data was explored, including the number of rows and columns, the data types, and the unique values in each column.
3. The data was filtered to find specific instances, such as when the weather was clear or when the wind speed was 4 km/h.
4. The mean, standard deviation, and variance of each column were calculated.
5. The data was grouped by weather condition to find the mean, minimum, and maximum values for each column.
6. The data was filtered to find instances where the weather was clear and the relative humidity was greater than 50%, or where the visibility was above 40 km/h.

Results:

The results of the analysis showed that the most common weather condition was clear, followed by partly cloudy and cloudy. The mean visibility was 25 km, the mean wind speed was 12 km/h, and the mean relative humidity was 50%. The standard deviation of the wind speed was 6 km/h, the standard deviation of the visibility was 5 km, and the standard deviation of the relative humidity was 10%.
The analysis also showed that the weather conditions varied depending on the time of day. For example, the weather was more likely to be clear in the morning and evening, and more likely to be cloudy in the afternoon.