8. Visualize the data using Python libraries matplotlib, seaborn by plotting the graphs

for airquality dataset.(Use Air\_quality\_forvisualization.csv)( Charts : Line chart,

Barplot, Heatmap, Scatterplot, histogram, boxplot, violin, timeseries chart)

1. import pandas as pd

import numpy as np

import matplotlib.pyplot as plt

import seaborn as sns

1. pip install –updates seaborn
2. df = pd.read\_csv('AirQuality-chart,bar,hist.csv',delimiter=';')
3. df
4. df.head()
5. df.columns

------------------HEATMAP-------------------

# Plot correlation heatmap

plt.figure(figsize=(8, 6))

sns.heatmap(df.corr(), annot=True, cmap='coolwarm')

plt.title('Correlation Heatmap')

plt.show()

--------------BARPLOT------------

1. print (df.head())
2. import seaborn as sns

import matplotlib.pyplot as plt

# Aggregate by Year if you want to see average NO2 per year

df['Year'] = df['Date'].dt.year

sns.barplot(x='Year', y='NO2(GT)', data=df)

plt.title('Average NO2(GT) by Year')

plt.xlabel('Year')

plt.ylabel('NO2(GT)')

plt.show()

-------------SCATTERPLOT------------

import seaborn as sns

import matplotlib.pyplot as plt

# Plot Scatterplot between 'NO2(GT)' and 'T' (Temperature)

sns.scatterplot(x='NO2(GT)', y='T', data=df)

plt.title('Scatterplot of NO2(GT) vs Temperature')

plt.xlabel('NO2(GT)')

plt.ylabel('Temperature (T)')

plt.show()

--------------BOXPLOT------------

import seaborn as sns

import matplotlib.pyplot as plt

# Boxplot to check the distribution of 'NO2(GT)' across different years

sns.boxplot(x='Year', y='NO2(GT)', data=df)

plt.title('Boxplot of NO2(GT) by Year')

plt.xlabel('Year')

plt.ylabel('NO2(GT)')

plt.show()

--------------VIOLIN PLOT---------

import seaborn as sns

import matplotlib.pyplot as plt

# Violin plot to show the distribution of 'NO2(GT)' for each year

sns.violinplot(x='Year', y='NO2(GT)', data=df)

plt.title('Violin Plot of NO2(GT) by Year')

plt.xlabel('Year')

plt.ylabel('NO2(GT)')

plt.show()

-------------TIMESERIES CHART------------

import seaborn as sns

import matplotlib.pyplot as plt

# Convert 'Date' to datetime

df['Date'] = pd.to\_datetime(df['Date'], format='%d/%m/%Y')

# Time series chart for 'NO2(GT)' over 'Date'

sns.lineplot(x='Date', y='NO2(GT)', data=df)

plt.title('Time Series of NO2(GT) over Time')

plt.xlabel('Date')

plt.ylabel('NO2(GT)')

plt.xticks(rotation=45)

plt.show()

----------HISTOGRAM------------

import seaborn as sns

import matplotlib.pyplot as plt

# Plot histogram for the 'NO2(GT)' column

sns.distplot(df['NO2(GT)'], kde=True)

plt.title('Histogram of NO2(GT)')

plt.xlabel('NO2(GT)')

plt.ylabel('Frequency')

plt.show()

---------LINE CHART-----------------

import matplotlib.pyplot as plt

# Convert 'CO(GT)' to float (fix comma decimals if needed)

df['CO(GT)'] = df['CO(GT)'].str.replace(',', '.').astype(float)

# Plot the first 100 values for simplicity

plt.plot(df['CO(GT)'][:100])

plt.title('CO(GT) - First 100 Observations')

plt.xlabel('Index')

plt.ylabel('CO(GT)')

plt.show()