import pandas as pd

import matplotlib.pyplot as plt

def load\_weather\_data(file\_path):

"""Load weather data from a CSV file."""

df = pd.read\_csv(file\_path, parse\_dates=['date'])

return df

def analyze\_weather\_data(df):

"""Perform basic weather data analysis."""

avg\_temp = df['temperature'].mean()

avg\_humidity = df['humidity'].mean()

total\_precip = df['precipitation'].sum()

hottest\_day = df.loc[df['temperature'].idxmax()]

coldest\_day = df.loc[df['temperature'].idxmin()]

print("=== Weather Data Summary ===")

print(f"Average Temperature: {avg\_temp:.2f} °C")

print(f"Average Humidity: {avg\_humidity:.2f}%")

print(f"Total Precipitation: {total\_precip:.2f} mm")

print(f"Hottest Day: {hottest\_day['date'].date()} ({hottest\_day['temperature']} °C)")

print(f"Coldest Day: {coldest\_day['date'].date()} ({coldest\_day['temperature']} °C)")

def plot\_temperature\_trend(df):

"""Plot temperature over time."""

plt.figure(figsize=(10, 5))

plt.plot(df['date'], df['temperature'], marker='o', linestyle='-')

plt.title('Daily Temperature Trend')

plt.xlabel('Date')

plt.ylabel('Temperature (°C)')

plt.grid(True)

plt.xticks(rotation=45)

plt.tight\_layout()

plt.show()

if \_\_name\_\_ == "\_\_main\_\_":

file\_path = 'weather\_data.csv' # Replace with your CSV file path

df = load\_weather\_data(file\_path)

analyze\_weather\_data(df)

plot\_temperature\_trend(df)