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import pandas as pd

# Step 1: Import the necessary libraries

# Step 2: Load the dataset

# Replace 'your_dataset_path.csv' with the actual path to your dataset file
# The following assumes the dataset is in a CSV format
dataset_path = 'your_dataset_path.csv'
df = pd.read_csv(dataset_path)

# Display basic information about the dataset
print("Dataset Info:")
print(df.info())

# Display basic statistics about the dataset
print("\nDataset Statistics:")
print(df.describe())

# Display the first few rows of the dataset to understand its structure
print("\nFirst 5 rows of the dataset:")
print(df.head())

# Step 3: Preprocess the dataset

# You can perform preprocessing steps such as handling missing values, data type conversions, etc.

# Example: Drop rows with missing values
df.dropna(inplace=True)

# Example: Convert a column to datetime if needed
# df['date_column'] = pd.to_datetime(df['date_column'])

# Example: Convert a column to numeric if needed
# df['numeric_column'] = pd.to_numeric(df['numeric_column'])

# Display the preprocessed dataset
print("\nPreprocessed dataset:")
print(df.head())

# Step 4: Perform further analysis or visualization

# Here, you can conduct additional analysis, visualizations, or any other operations on the preprocessed data.
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# For example, plotting a histogram for a specific column
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import matplotlib.pyplot as plt
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plt.hist(df['air_quality_column'], bins=20)
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plt.xlabel('Air Quality')
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plt.ylabel('Frequency')
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plt.title('Air Quality Distribution')
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plt.show()
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