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import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns

# Load your dataset
df = pd.read_excel('FDI data.xlsx')

# Display basic information about the dataset
print(df.info())

# Explore the first few rows of the dataset
print(df.head())

# Summary statistics for numerical columns
print(df.describe())

# Sector-wise investment analysis
sector_wise_investment = df.groupby('Sector')['Amount (in crore)'].sum().sort_values(ascending=False)
print("Sector-wise Investment Analysis:\n", sector_wise_investment)

# Year-wise investment analysis
year_wise_investment = df.groupby('Financial Year')['Amount (in crore)'].sum()
print("Year-wise Investment Analysis:\n", year_wise_investment)

# Visualize sector-wise investment
plt.figure(figsize=(12, 6))
sns.barplot(x=sector_wise_investment.index, y=sector_wise_investment.values)
plt.title('Sector-wise FDI Investment')
plt.xlabel('Sector')
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plt.ylabel('Amount (in crore)')  
plt.xticks(rotation=45, ha='right')  
plt.show()
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# Visualize year-wise investment
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plt.figure(figsize=(12, 6))  
sns.lineplot(x=year_wise_investment.index, y=year_wise_investment.values, marker='o')  
plt.title('Year-wise FDI Investment')  
plt.xlabel('Financial Year')  
plt.ylabel('Amount (in crore)')  
plt.xticks(rotation=45, ha='right')  
plt.show()
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# Correlation matrix to find relationships between attributes
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correlation_matrix = df.corr()  
plt.figure(figsize=(10, 8))  
sns.heatmap(correlation_matrix, annot=True, cmap='coolwarm', fmt='.2f')  
plt.title('Correlation Matrix')  
plt.show()
```