Experiment no: 05

Date: 13.08.2025

EDA - Data Visualization with Matplotlib

AIM:

To understand and implement basic data visualization techniques using **Matplotlib**, including **line charts**, **bar charts**, and **histograms** as part of exploratory data analysis.

Code:

```
# Import necessary libraries

import matplotlib.pyplot as plt


# Sample data for plotting

x = [1, 2, 3, 4, 5]

y = [10, 12, 8, 14, 7]


# ----------------------------------------

# 1. Line Chart

# ----------------------------------------

plt.figure(figsize=(6, 4))

plt.plot(x, y, marker='o', color='blue', linestyle='--')

plt.title('Line Chart Example')

plt.xlabel('X-axis')

plt.ylabel('Y-axis')

plt.grid(True)
```

```
plt.show()


# ----------------------------------------

# 2. Bar Chart

# ----------------------------------------

categories = ['A', 'B', 'C', 'D', 'E']

values = [5, 7, 3, 8, 4]


plt.figure(figsize=(6, 4))

plt.bar(categories, values, color='green')

plt.title('Bar Chart Example')

plt.xlabel('Categories')

plt.ylabel('Values')

plt.show()


# ----------------------------------------

# 3. Histogram

# ----------------------------------------

import numpy as np


# Generate random data for histogram

data = np.random.normal(50, 10, 1000)  # mean=50, std=10


plt.figure(figsize=(6, 4))

plt.hist(data, bins=20, color='purple', edgecolor='black')

plt.title('Histogram Example')

plt.xlabel('Value Range')

plt.ylabel('Frequency')

plt.show()
```

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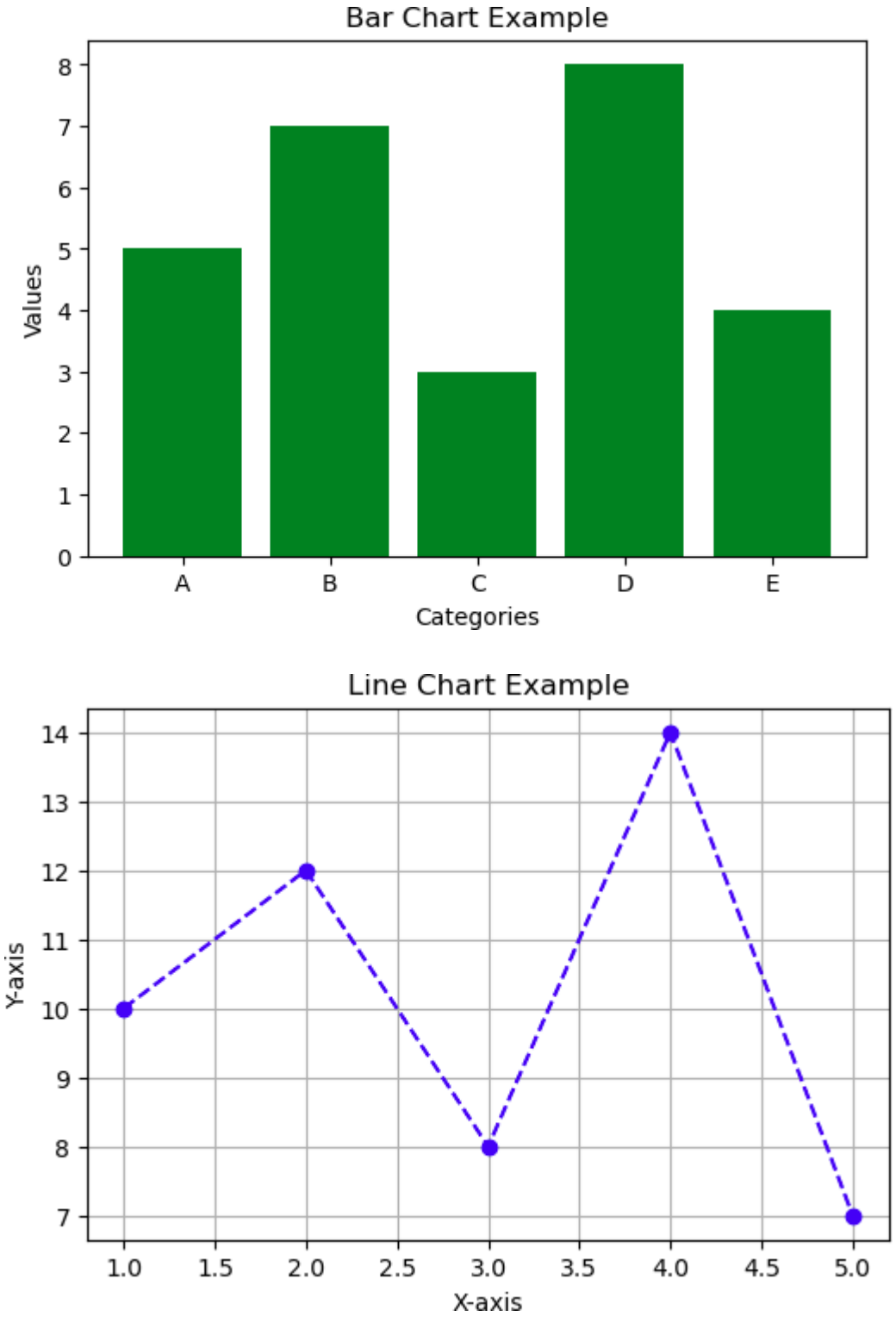
output:



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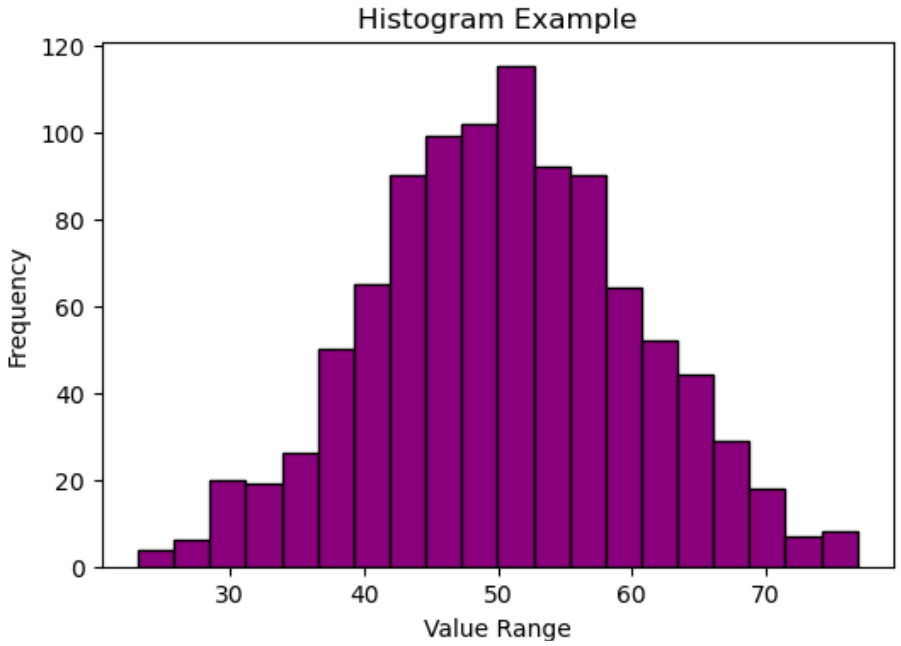

Result:

Basic plotting techniques using **Matplotlib** were successfully implemented. The line chart showed trends over a sequence, the bar chart displayed categorical comparisons, and the histogram visualized the distribution of numerical data.