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Experiment no: 05

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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)
```

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```
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')
```

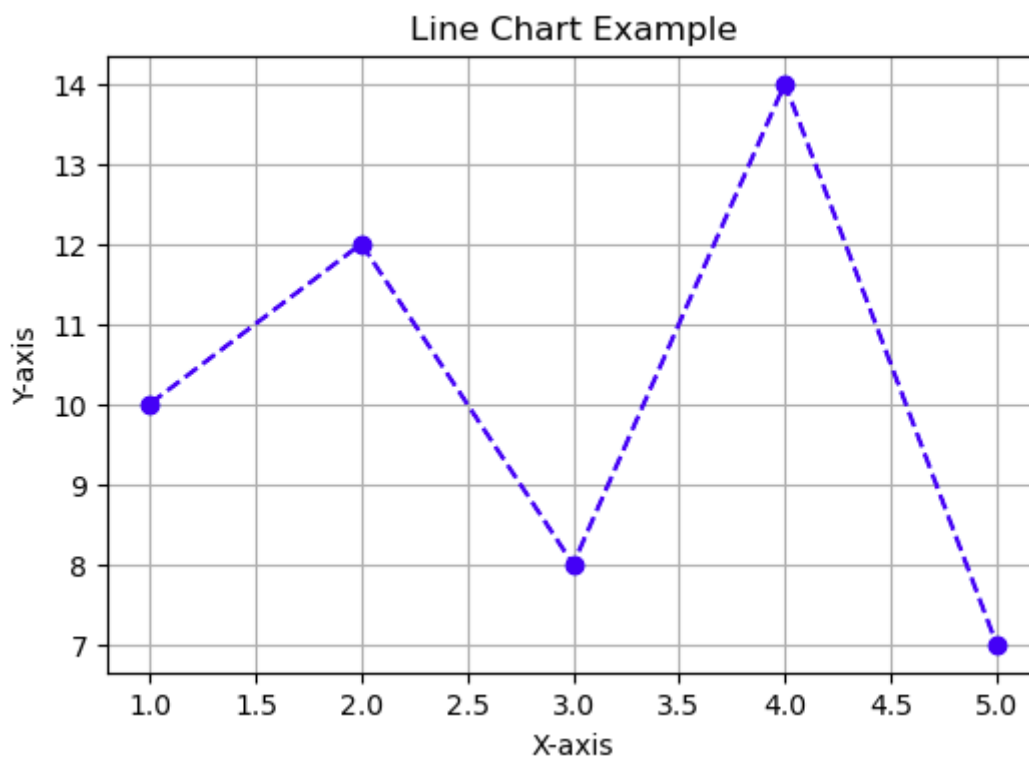
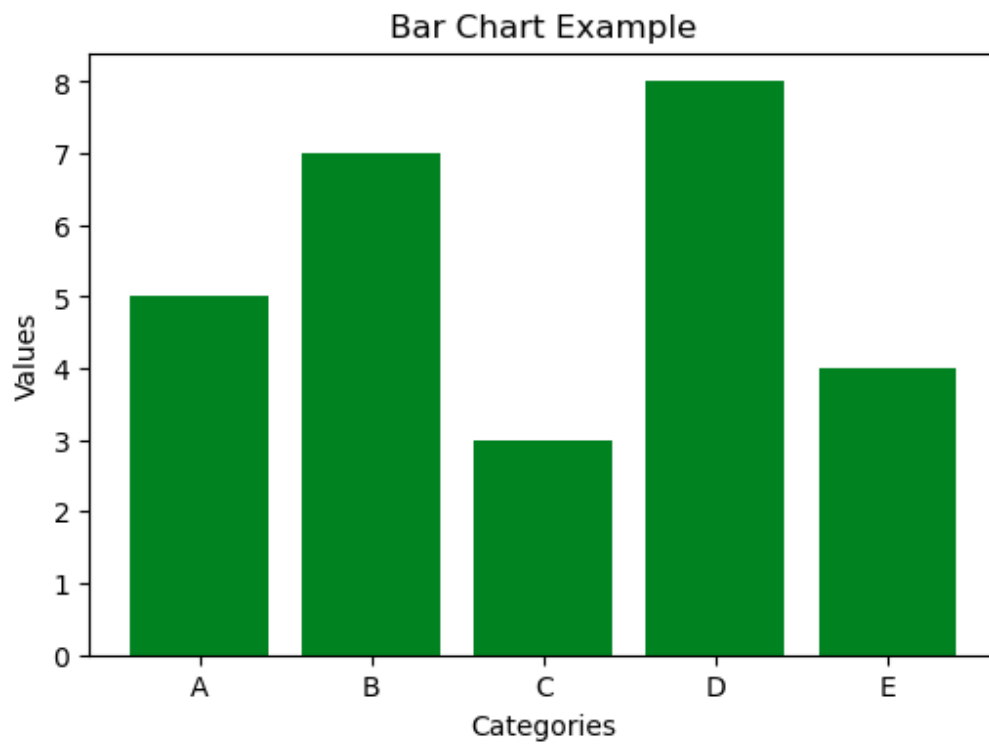
```
plt.title('Histogram Example')
```

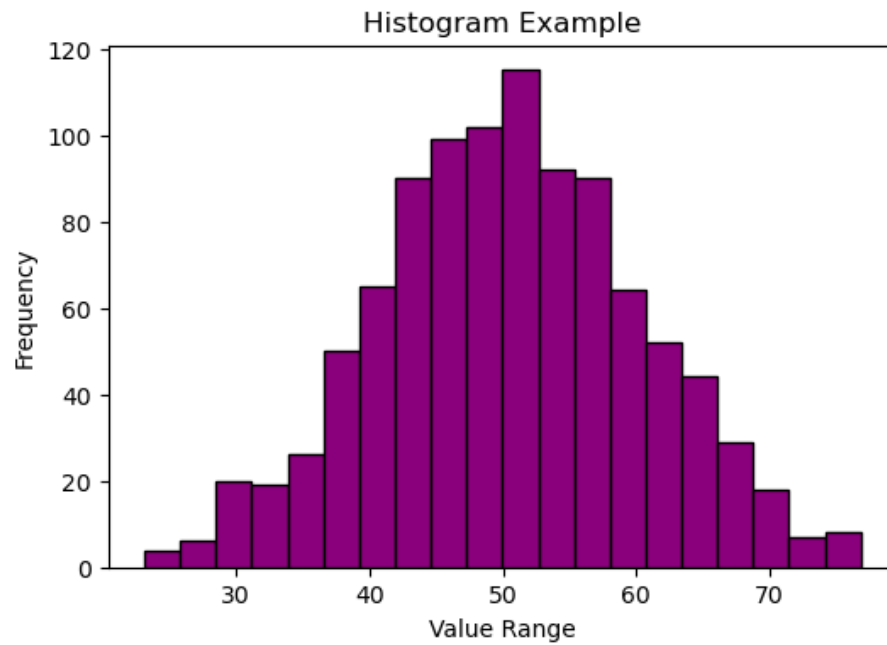
```
plt.xlabel('Value Range')
```

```
plt.ylabel('Frequency')
```

```
plt.show()
```

output:





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.