Experiment no: 05

Date: 13.08.2025

EDA - Data Visualization with Matplotlib

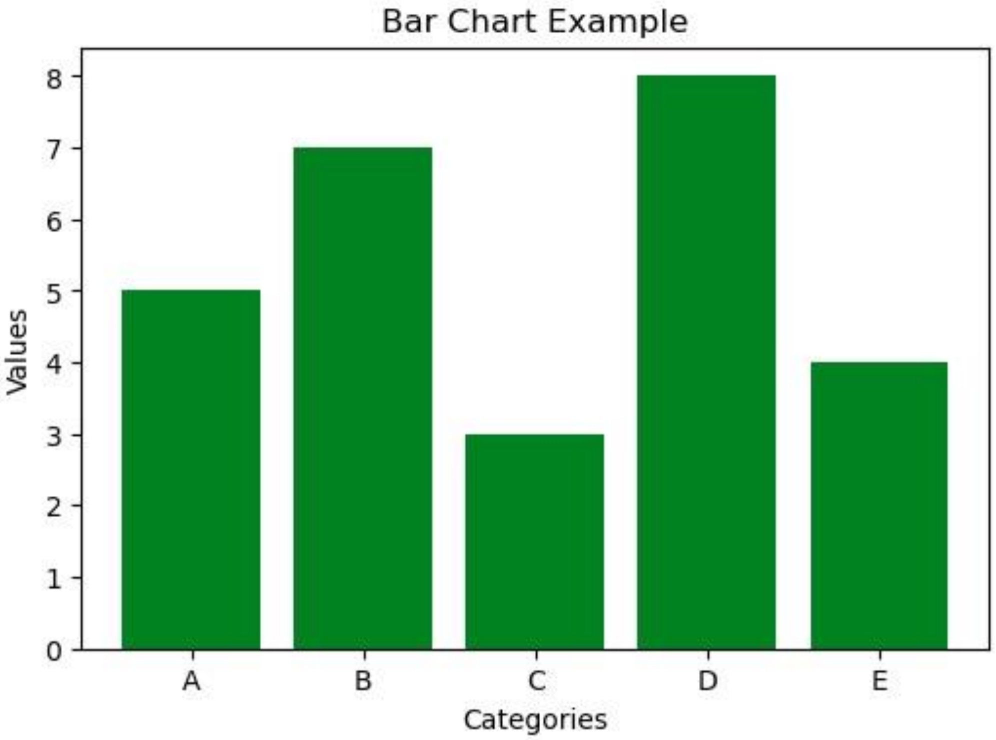
AIM:

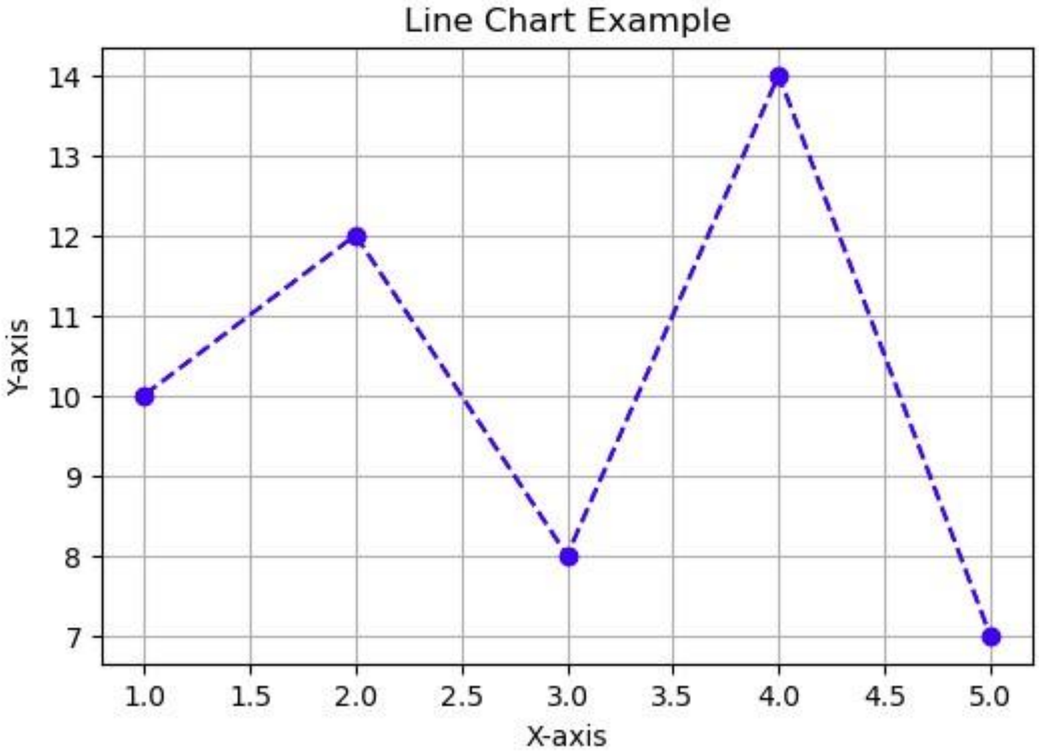
To understand and implement basic data visualization techniques using **Matplotlib**, including **line charts**, **bar charts**, and **histograms** as part of exploratory data analysis.

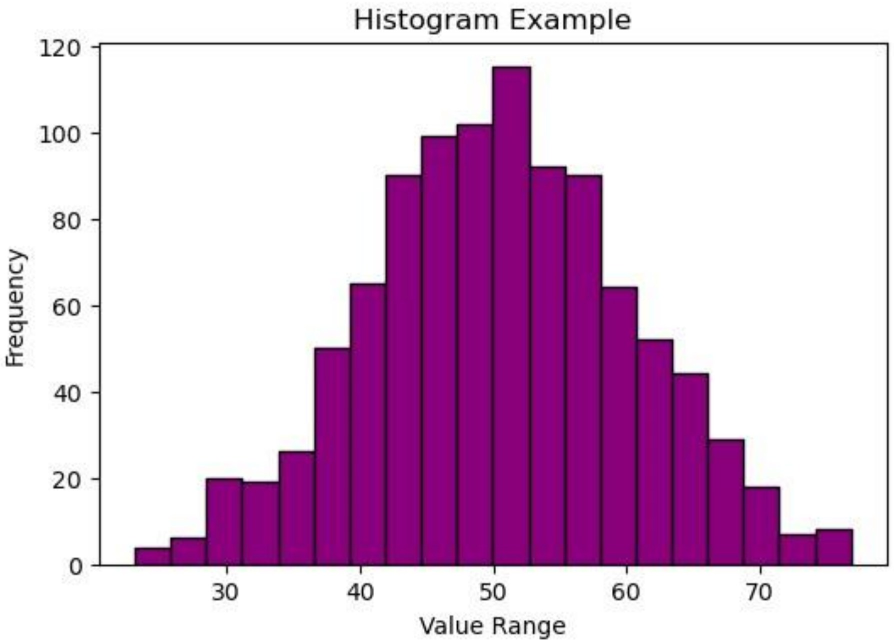
Code:

```
# 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()
```

output:


Bar Chart Example
Values
0
1
2
3
4
5
6
7
8
A
B
C
D
E
Categories


Line Chart Example
Y-axis
7
8
9
10
11
12
13
14
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
X-axis



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.