Experiment no: 05

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.

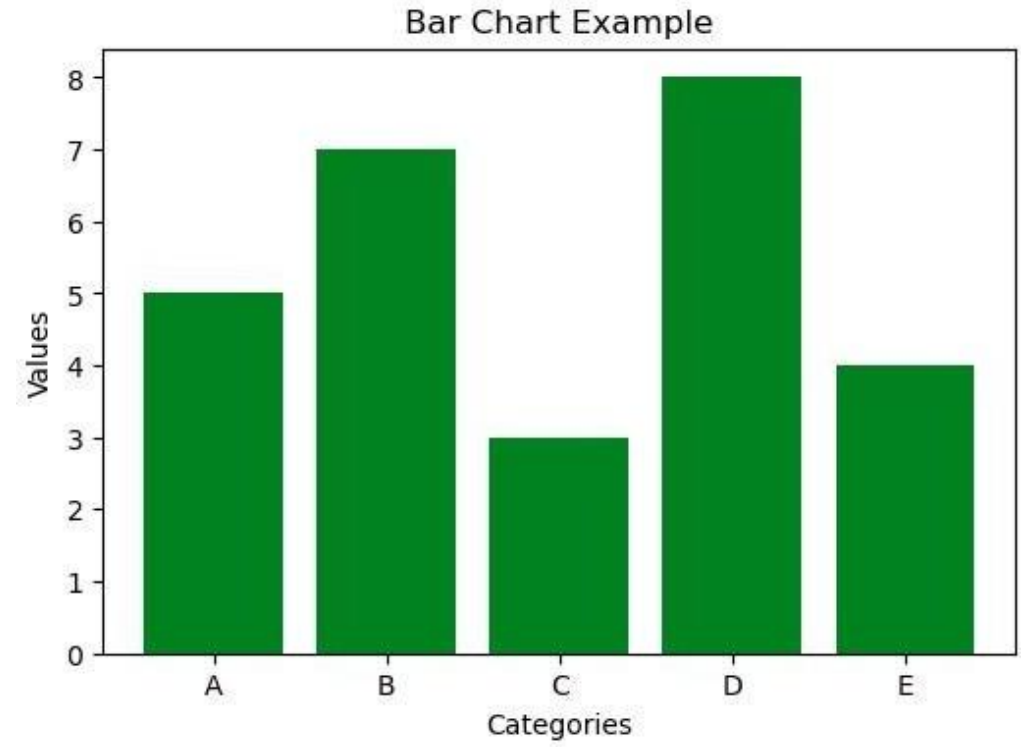
Code:

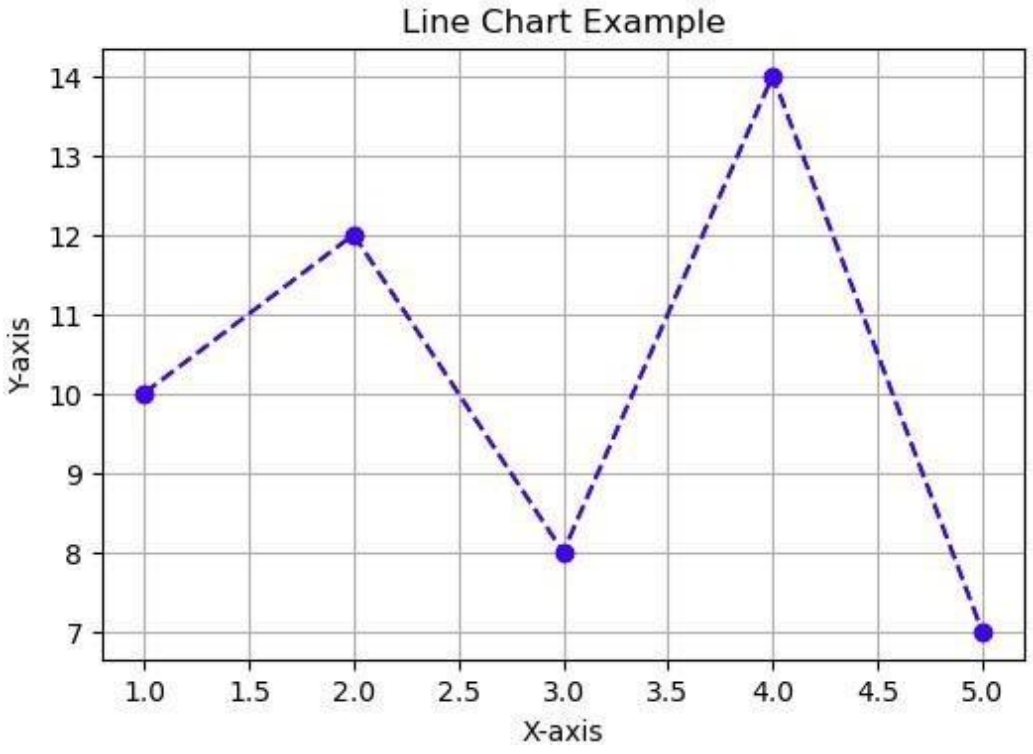
```
# Import necessary libraries import
matplotlib.pyplot as plt


# 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)
```

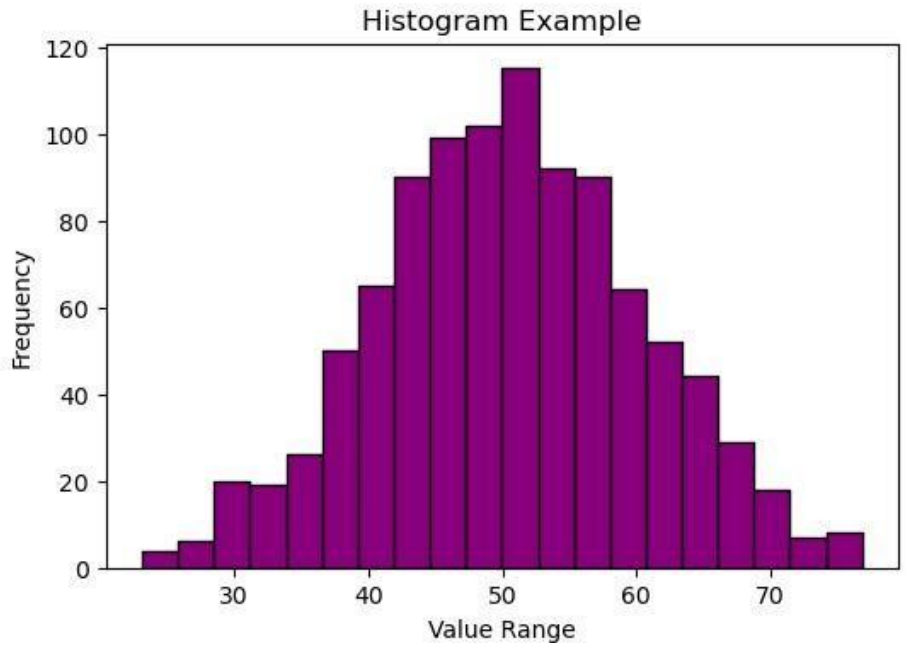
```
plt.show()

#-----------------------------------
# 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('Valuc
```

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

output:


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


Line Chart Example
Y-axis
X-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



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.