Week 4: Data Visualization with Matplotlib and Seaborn

Objective

Learn Matplotlib and Seaborn for data visualization.

Develop various types of data visualizations.

Create a dashboard for dataset analysis.

Tasks Completed

Basic Matplotlib Plots:

- Created line plots and scatter plots.
- Labeled axes and customized styles.

Seaborn Visualizations:

- Generated histograms and scatter plots.
- Used pair plots and heatmaps for data insights.

Client Project:

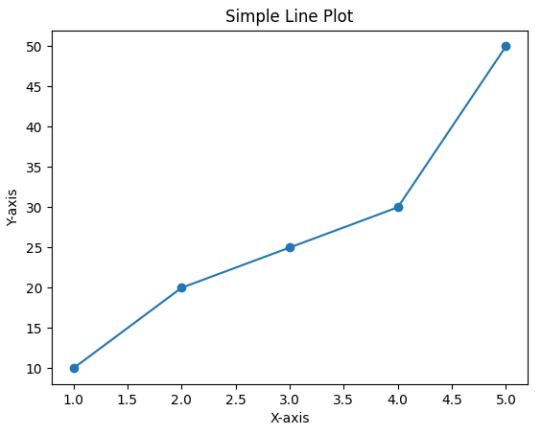
- Developed a dashboard to visualize relationships between dataset features using Seaborn.

Python Scripts

1. Line Plot using Matplotlib

```
python
import matplotlib.pyplot as plt
x = [1, 2, 3, 4, 5]
y = [10, 20, 25, 30, 50]
plt.plot(x, y, marker='o')
plt.title("Simple Line Plot")
plt.xlabel("X-axis")
plt.ylabel("Y-axis")
plt.show()
```

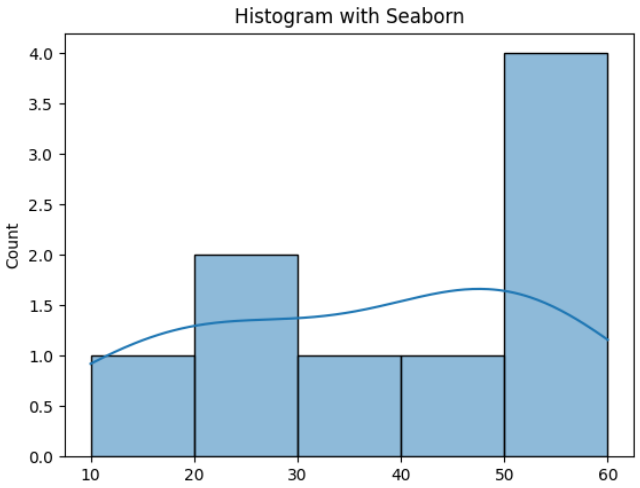
OUTPUT:



2. Histogram using Seaborn

```
python
import seaborn as sns
import matplotlib.pyplot as plt
data = [10, 20, 20, 30, 40, 50, 50, 50, 60]
sns.histplot(data, kde=True)
plt.title("Histogram with Seaborn")
plt.show()
```

OUTPUT:



3. Scatter Plot for Data Analysis

```
python
import seaborn as sns
import matplotlib.pyplot as plt
import pandas as pd
df = pd.DataFrame({
    'Age': [25, 30, 35, 40, 45],
    'Salary': [50000, 60000, 70000, 80000, 90000]
})
sns.scatterplot(x=df['Age'], y=df['Salary'])
plt.title("Age vs Salary Scatter Plot")
plt.show()
```

OUTPUT:

Key Learnings

Learned to create and customize various types of plots.
Used Seaborn for advanced statistical visualizations.
Understood how to analyze data visually using graphs.

Conclusion

Week 4 provided insights into data visualization techniques.

The ability to plot different data relationships helps in drawing meaningful conclusions from datasets.

Next Steps

Apply visualization techniques to real-world datasets.
Explore interactive dashboards with libraries like Plotly and Dash.