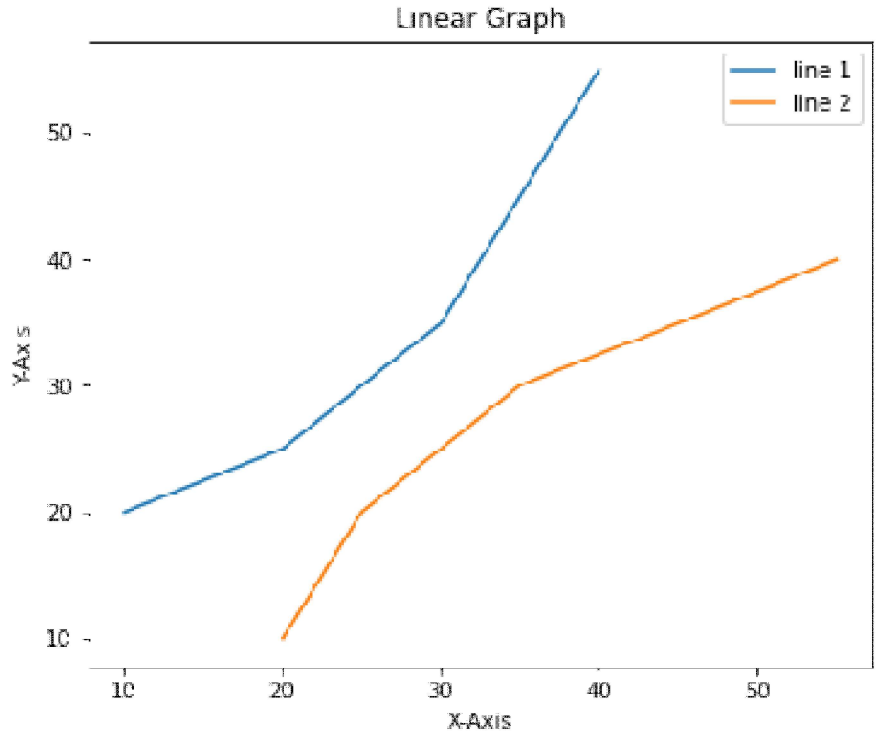
EXPERIMENT-16

Aim: Visualize the datasets using matplotlib in python.(Histogram, Box plot, Bar chart, Pie chart etc.,)

Program for Linear graph:

```
# Python program to show pyplot module
import matplotlib.pyplot as plt
from matplotlib.figure import Figure
# initializing the data
x = [10, 20, 30, 40]
y = [20, 25, 35, 55]
fig = plt.figure(figsize = (5, 4))
# Adding the axes to the figure
ax = fig.add_axes([1, 1, 1, 1])
# plotting 1st dataset to the figure
ax1 = ax.plot(x, y)
# plotting 2nd dataset to the figure
ax2 = ax.plot(y, x)
# Setting Title
ax.set_title("Linear Graph")
# Setting Label
ax.set_xlabel("X-Axis")
ax.set_ylabel("Y-Axis")
# Adding Legend
ax.legend(labels = ('line 1', 'line 2'))
plt.show()
```

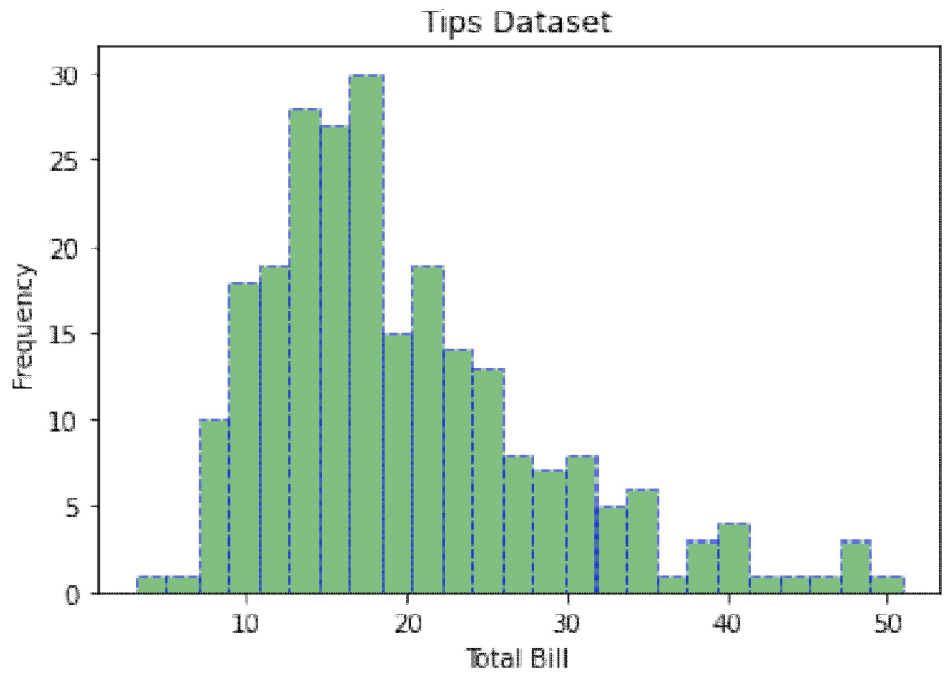
Output:



Program for Histograms:

```
import matplotlib.pyplot as plt
import pandas as pd

# Reading the tips.csv file
data = pd.read_csv('/content/drive/MyDrive/Colab Notebooks/tips.csv')

# initializing the data
x = data['total_bill']

# plotting the data
plt.hist(x, bins=25, color='green', edgecolor='blue',
    linestyle='--', alpha=0.5)

# Adding title to the plot
plt.title("Tips Dataset")

# Adding label on the y-axis
plt.ylabel('Frequency')

# Adding label on the x-axis
plt.xlabel('Total Bill')

plt.show()
```

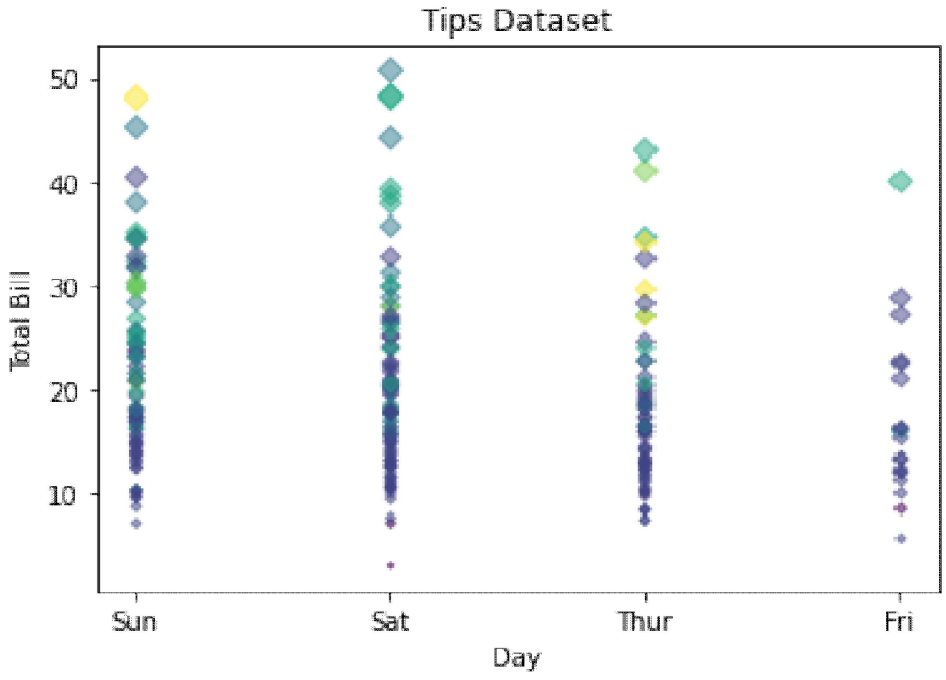
Output:



Program for Scatter Plot:

```
import matplotlib.pyplot as plt
import pandas as pd

# Reading the tips.csv file
data = pd.read_csv('/content/drive/MyDrive/Colab Notebooks/tips.csv')

# initializing the data
x = data['day']
y = data['total_bill']

# plotting the data
plt.scatter(x, y, c=data['size'], s=data['total_bill'],
      marker='D', alpha=0.5)

# Adding title to the plot
plt.title("Tips Dataset")

# Adding label on the y-axis
plt.ylabel('Total Bill')

# Adding label on the x-axis
plt.xlabel('Day')

plt.show()
```

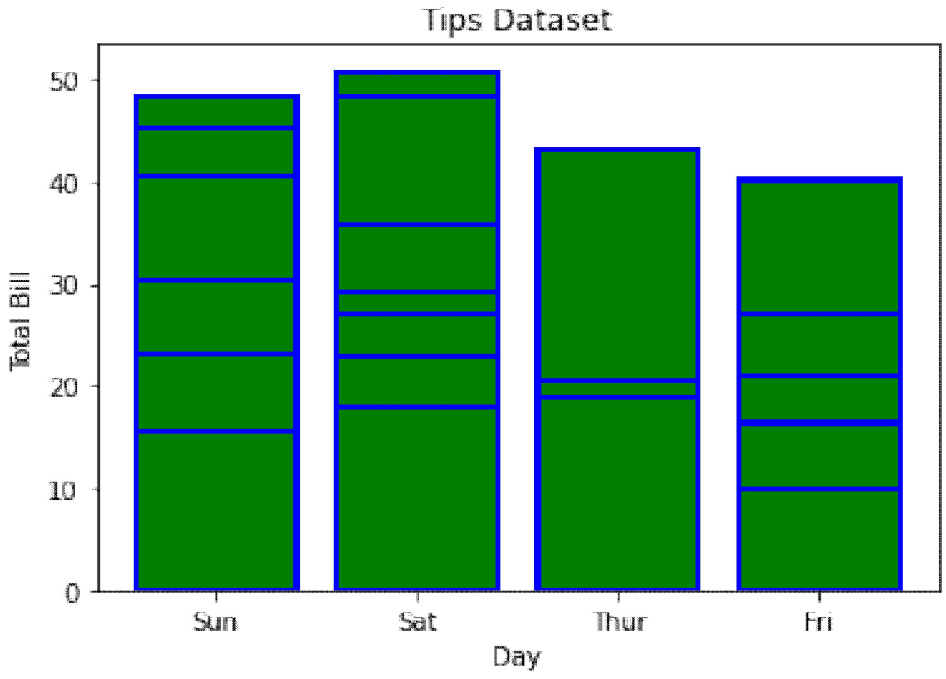
Output:



Program for Bar chart:

```
import matplotlib.pyplot as plt
import pandas as pd

# Reading the tips.csv file
data = pd.read_csv('/content/drive/MyDrive/Colab Notebooks/tips.csv')

# initializing the data
x = data['day']
y = data['total_bill']

# plotting the data
plt.bar(x, y, color='green', edgecolor='blue',
    linewidth=2)

# Adding title to the plot
plt.title("Tips Dataset")

# Adding label on the y-axis
plt.ylabel('Total Bill')

# Adding label on the x-axis
plt.xlabel('Day')

plt.show()
```

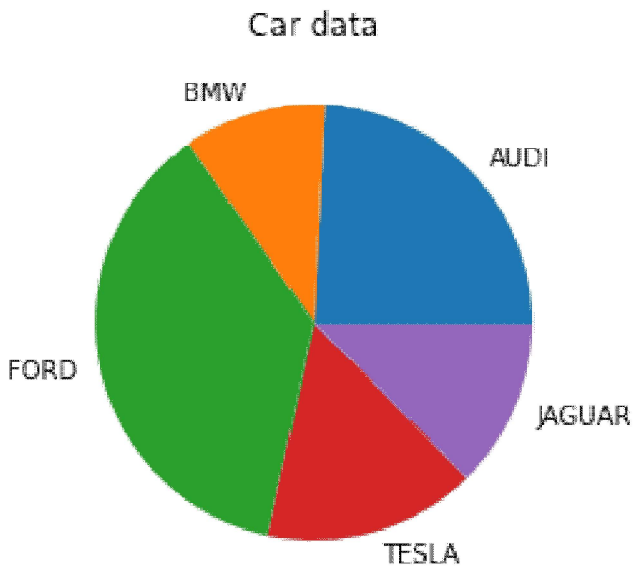
Output:



Program for pie chart:

```
import matplotlib.pyplot as plt
import pandas as pd

# Reading the tips.csv file
data = pd.read_csv('/content/drive/MyDrive/Colab Notebooks/tips.csv')

# initializing the data
cars = ['AUDI', 'BMW', 'FORD',
   'TESLA', 'JAGUAR',]
data = [23, 10, 35, 15, 12]

# plotting the data
plt.pie(data, labels=cars)

# Adding title to the plot
plt.title("Car data")

plt.show()
```

Output:



Program for Box plot:

```
# import the required library
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
%matplotlib inline


# load the dataset
df = pd.read_csv("/content/drive/MyDrive/Colab Notebooks/tips.csv")

# display 5 rows of dataset
df.head()
# Boxplot of days with respect total_bill.
#Draw a vertical boxplot grouped
# by a categorical variable:
sns.set_style("whitegrid")

sns.boxplot(x = 'day', y = 'total_bill', data = df)
```

Output: