

CACSC17 Lab Experiment 1

```
import numpy as np
import pandas as pd
```

Exercise 1

```
x = np.array([[1,2,3],[4,5,6],[7,8,9]])

# gives rank of the array
print(x.ndim)

# gives dimensions of the array
print(x.shape)

# gives the size of the array
print(x.size)

2
(3, 3)
9

arr=[1,2,3,4,5,6]
sliced_array=arr[1:6]

sliced_array

[2, 3, 4, 5, 6]
```

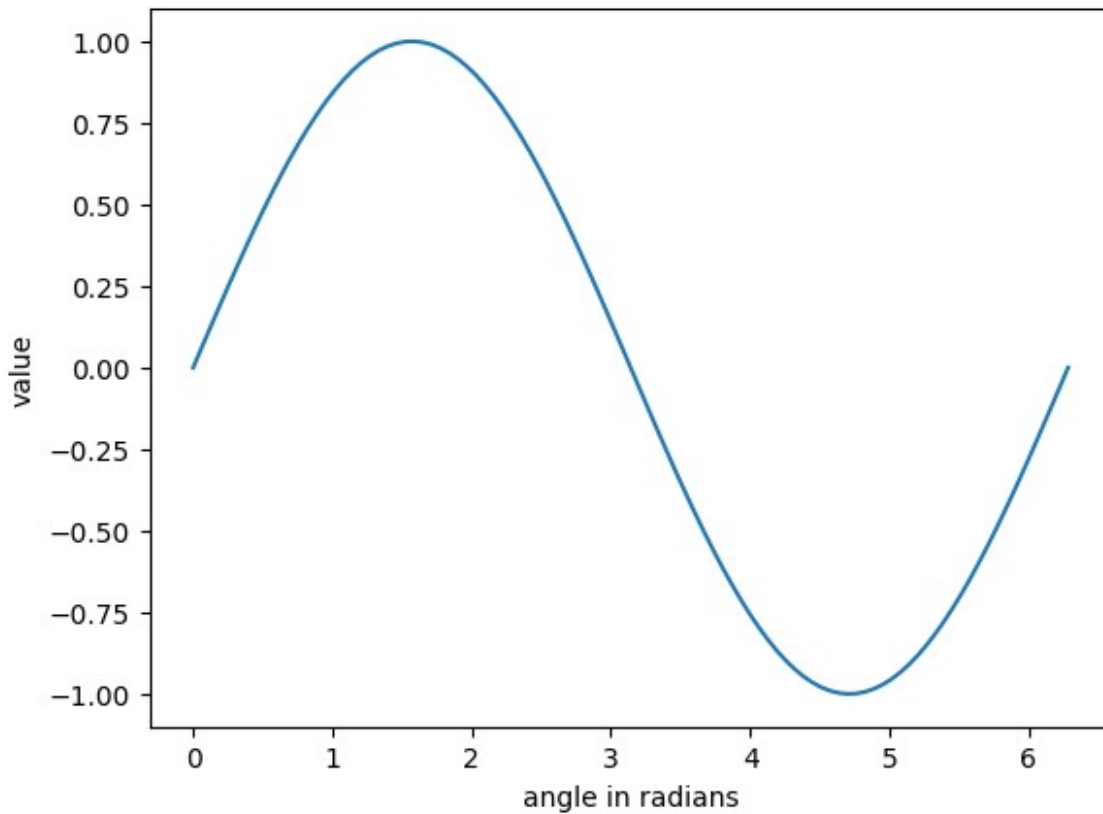
Exercise 2

```
import matplotlib.pyplot as plt

x= np.linspace(0,2 * np.pi,100) #generate 0 to 100 evenly spaced
points by PI. i.e 3.14
y= np.sin(x)
plt.plot(x,y)

plt.xlabel("angle in radians")
plt.ylabel("value")

Text(0, 0.5, 'value')
```



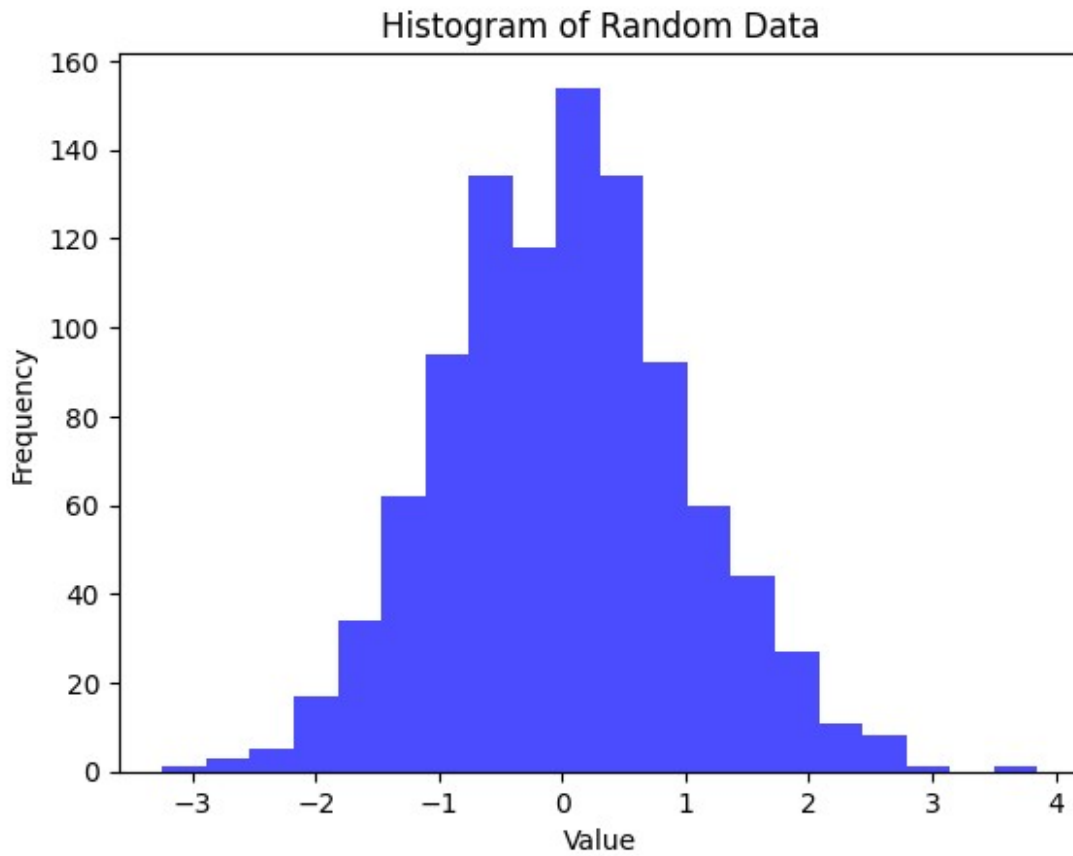
Exercise 3

```
# Generate random data (replace this with your actual data)
np.random.seed(42) # For reproducibility
x = np.random.normal(0, 1, 1000) # Generating 1000 random data points

# Create a histogram plot
plt.hist(x, bins=20, color='blue', alpha=0.7) # Using 20 bins

# Adding labels and title
plt.xlabel("Value")
plt.ylabel("Frequency")
plt.title("Histogram of Random Data")

# Display the plot
plt.show()
```



```
import matplotlib.pyplot as plt

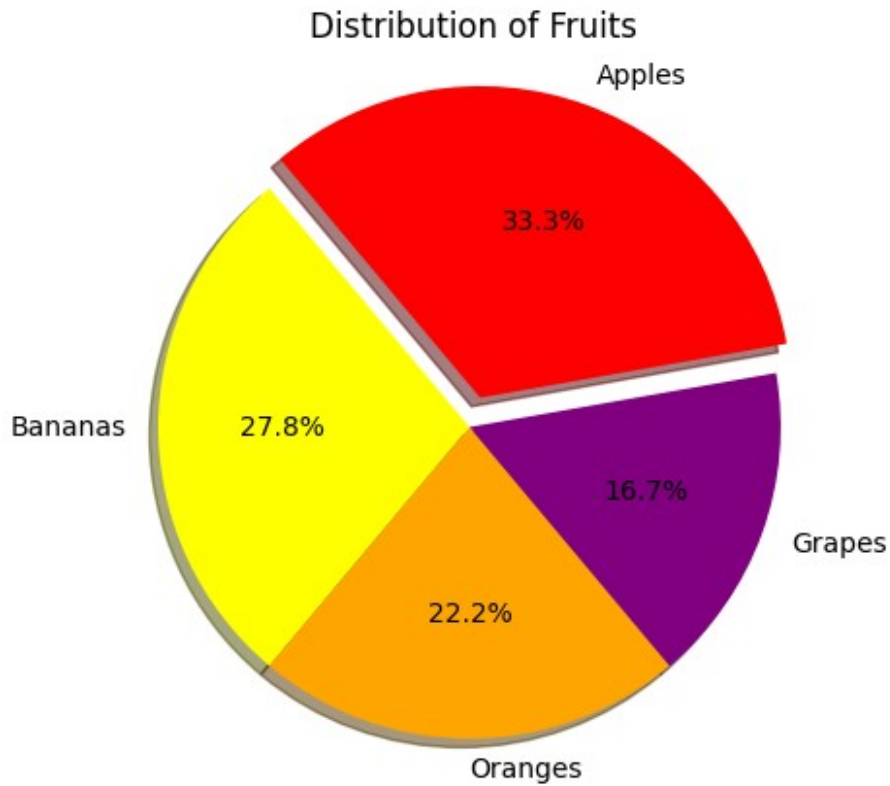
# Sample data for the pie chart
labels = ['Apples', 'Bananas', 'Oranges', 'Grapes']
sizes = [30, 25, 20, 15] # Percentages that add up to 100
colors = ['red', 'yellow', 'orange', 'purple']
explode = (0.1, 0, 0, 0) # Explode the 1st slice (Apples)

# Create a pie chart
plt.pie(sizes, explode=explode, labels=labels, colors=colors,
        autopct='%1.1f%%', shadow=True, startangle=10)

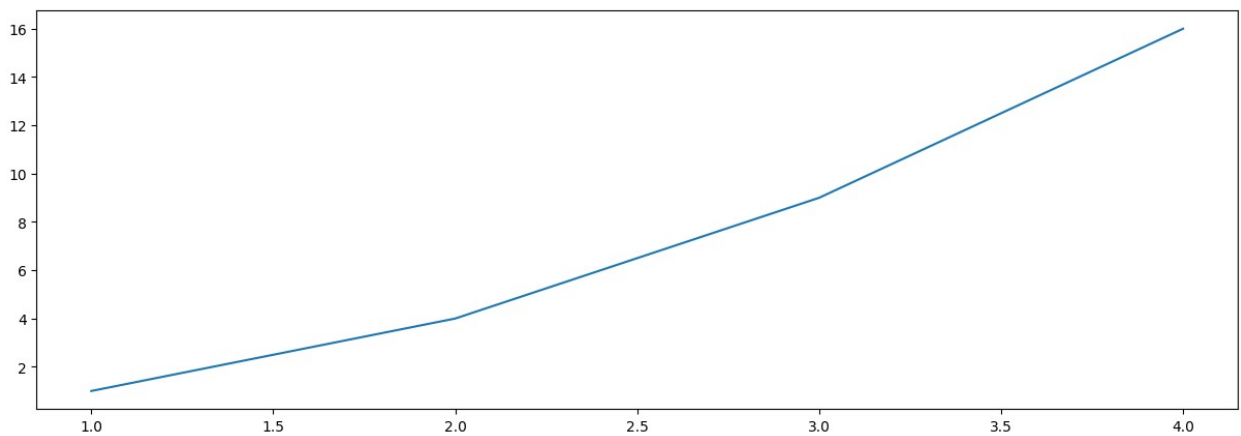
# Equal aspect ratio ensures that pie is drawn as a circle.
plt.axis('equal')

# Adding a title
plt.title("Distribution of Fruits")

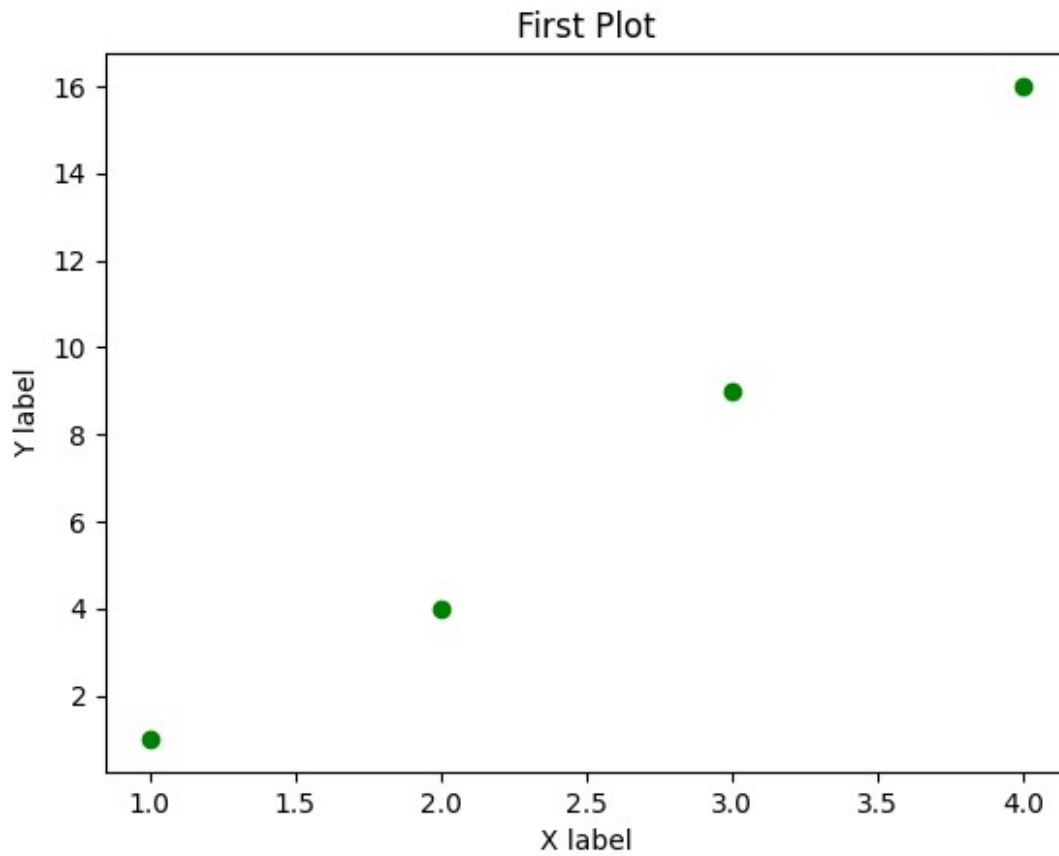
# Display the pie chart
plt.show()
```



```
plt.figure(figsize=(15,5))  
plt.plot([1,2,3,4],[1,4,9,16])  
[<matplotlib.lines.Line2D at 0x11a7aa8d0>]
```



```
plt.plot([1,2,3,4],[1,4,9,16],"go")  
plt.title('First Plot')  
plt.xlabel("X label")  
plt.ylabel("Y label")  
plt.show()
```



Line chart

```
import matplotlib.pyplot as plt

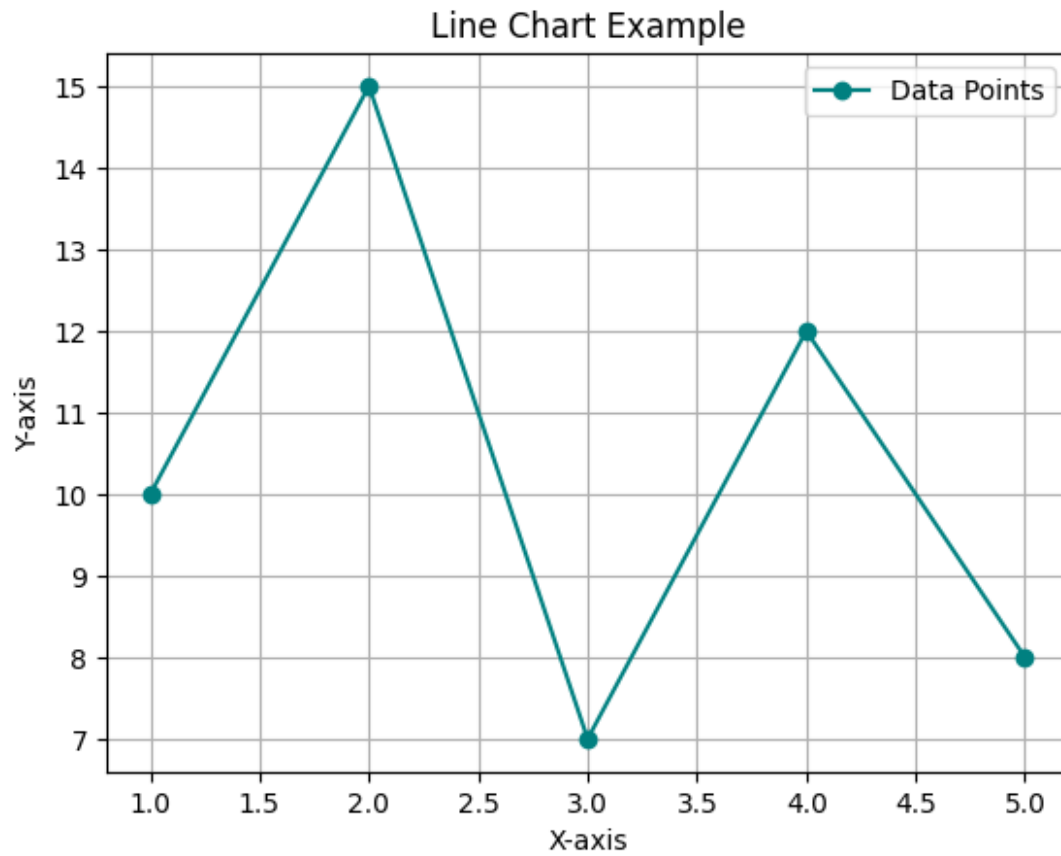
# Sample data for the line chart
x = [1, 2, 3, 4, 5]
y = [10, 15, 7, 12, 8]

# Create a line chart
plt.plot(x, y, marker='o', linestyle='--', color='teal', label='Data Points')

# Adding labels and title
plt.xlabel("X-axis")
plt.ylabel("Y-axis")
plt.title("Line Chart Example")

# Adding a legend
plt.legend()

# Display the line chart
plt.grid(True) # Add a grid for better readability
plt.show()
```



Submitted To Gaurav Singhal Sir

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