python

CLASS-X

SUBJECT – AI (417)

PRACTICAL FILE QUESTION WITH ANSWER

PRACTICAL NO: 1

Write a python program to visualize plots **line, bar and pie chart** using matplotlib library.

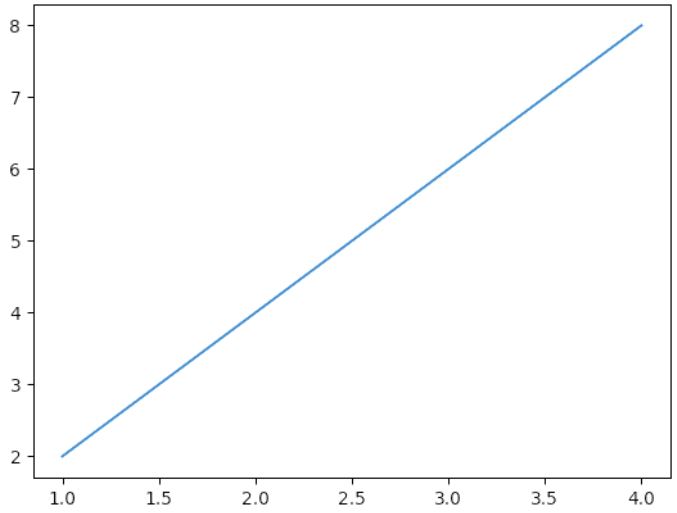
[Hint: first from cmd prompt> pip install matplotlib]

PLOT LINE-GRAPH IN PYTHON

Matplotlib is a data visualization library in Python.
The **pyplot,** a sublibrary of matplotlib, is a **collection of functions that helps in creating a variety of charts**. ***Line charts*** are used to represent the relation between two data X and Y on a different axis

```
# importing the required libraries
import matplotlib.pyplot as plt
import numpy as np

# define data values
x = np.array([1, 2, 3, 4])  # X-axis points
y = x*2                     # Y-axis points

plt.plot(x, y)  # Plot the chart
plt.show()  # display
```

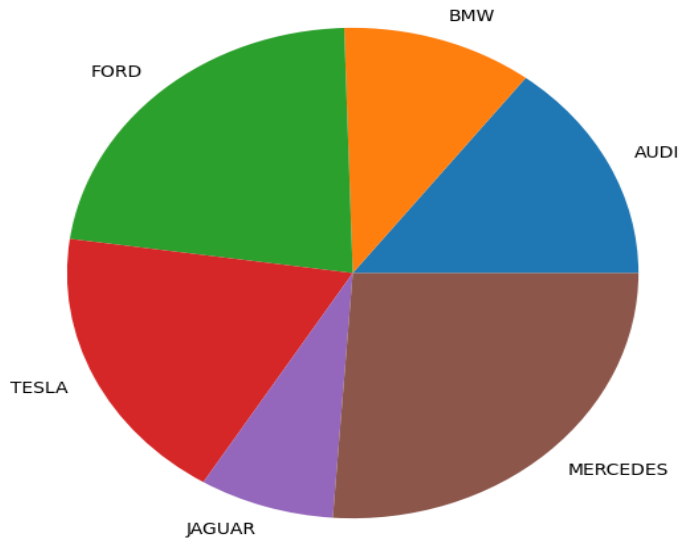
OUTPUT



PLOT PIE-GRAPH IN PYTHON

```
# Import libraries
from matplotlib import pyplot as plt
import numpy as np


# Creating dataset
cars = ['AUDI', 'BMW', 'FORD','TESLA', 'JAGUAR', 'MERCEDES']

data = [23, 17, 35, 29, 12, 41]

# Creating plot
fig = plt.figure(figsize =(10, 7))
plt.pie(data, labels = cars)


# show plot
plt.show()
```

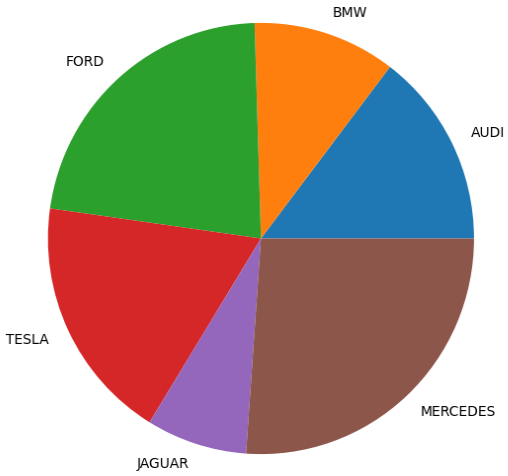
OUTPUT

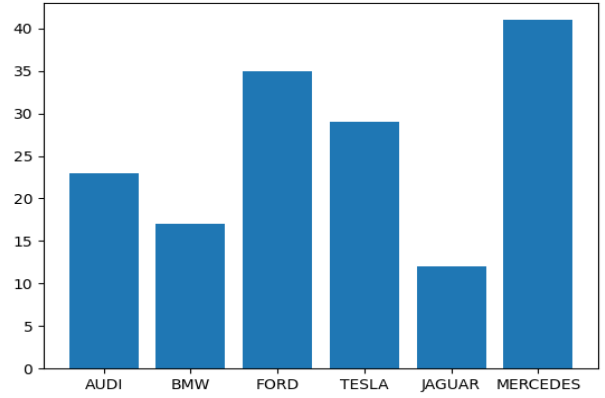


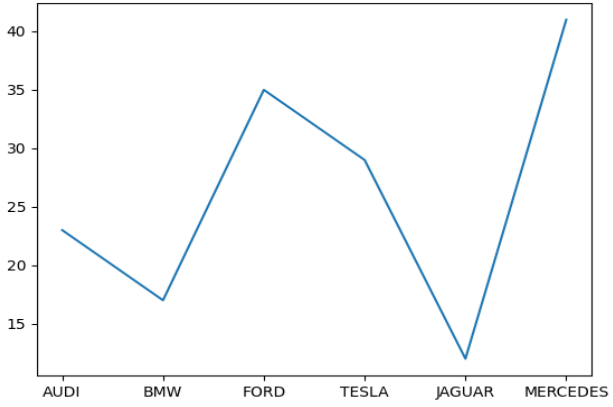
Plot Line graph/ pie graph/bar graph in Python

```
# Creating dataset
cars = ['AUDI', 'BMW', 'FORD', 'TESLA',
'JAGUAR', 'MERCEDES']
data = [23, 17, 35, 29, 12, 41]

# Creating plot
fig = plt.figure(figsize =(10, 7))
plt.pie(data, labels = cars)

# show pie plot
plt.show()

plt.bar(cars, data)
# show pie plot
plt.show()

plt.plot(cars,data)
plt.show()
```

OUTPUT







PRACTICAL NO: 2

Write a program in python to read and display an image.

Adjust the size of the image, and display the height and width of the image.

[Hint: first from cmd prompt>

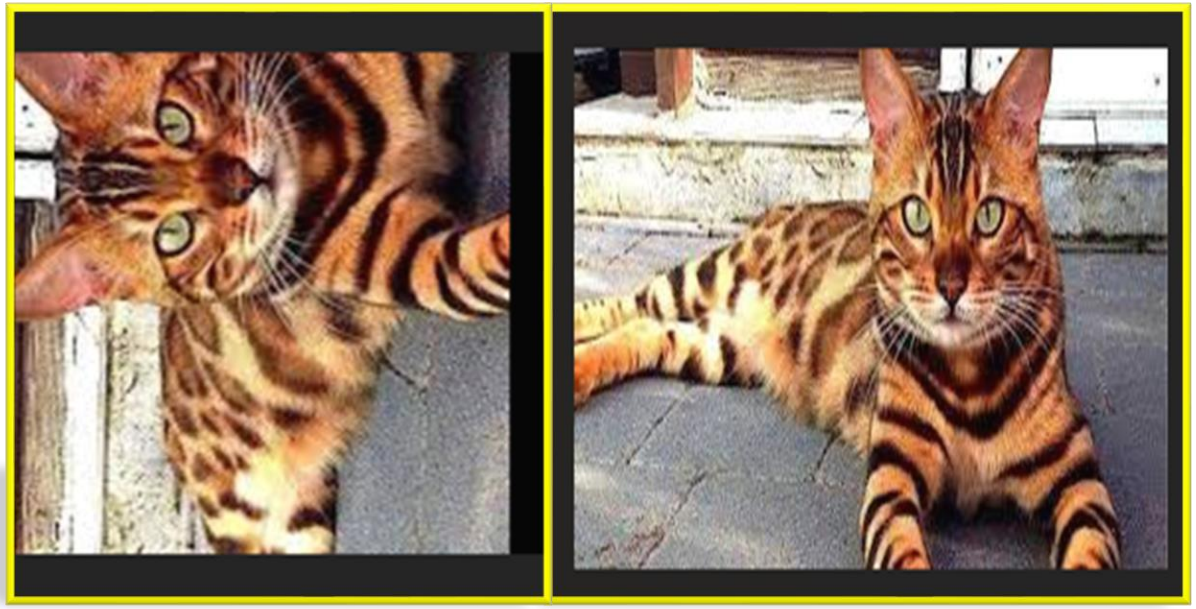
pip install pillow]

```
# Imports PIL module
from PIL import Image

# open method used to open different extension image files
im = Image.open(r"C:\Users\shruti\Dropbox\PC\Desktop\PRACTICAL FILE
2022-23\IMAGE\rose.jpg")
new_image = im.resize((1000, 1000))
new_image.save(r'C:\Users\shruti\Dropbox\PC\Downloads\gulab.jpg')

# This method will show image in any image viewer
im.show()
```

OUTPUT

```
from PIL import Image
#Open image using Image module
im = Image.open("C:\\Users\\shruti\\Dropbox\\PC\\Downloads\\cat.jpeg",'r')

#Show actual Image
im.show()

#Show rotated Image
im = im.rotate(45)
im.show()
```

OUTPUT



PRACTICAL NO: 3

Write a program in python to read display and rotate an image to a certain angle

Display/show/print the size (height or width) of the image

```
# Imports PIL module
from PIL import Image


im = Image.open("C:\\Users\\shruti\\Dropbox\\PC\\Downloads\\cat.jpeg",'r')

im.show()
print(im.size)
print(im.width)
print(im.height)
```

OUTPUT

```
(300, 168)
300
168
```

PRACTICAL NO: 4

wap to generate the following patterns

Pattern -1	Pattern -2	Pattern -3
*	1 2 3 4 5	A
* *	1 2 3 4	A B
* * *	1 2 3	A B C
* * * *	1 2	A B C D
* * * * *	1	A B C D E

#Patter - 1

```
row = int(input("Enter the number of rows : "))
print("Pattern -1 ")
for i in range(0, row + 1, 1):
    for j in range(1, i + 1):
        print('*', end=' ')
    print("")
```

#Pattern- 2

```
row = int(input("Enter the number of rows : "))
print("Pattern -2 ")
for i in range(0, row + 1, 1):
    for j in range(1, 5-i+1 ):
        print(j, end=' ')
    print("")
```

#Pattern- 2

```
row = int(input("Enter the number of rows : "))
print("Pattern -3 ")
for i in range(0, row + 1, 1):
    for j in range(65, 65+i ):
        print(chr(j), end=' ')
    print("")
```

output

```
Pattern -1
Enter the number of rows : 5

*
* *
* * *
* * * *
* * * * *
```

```
Pattern -2
Enter the number of rows : 5
1 2 3 4 5
1 2 3 4
1 2 3
1 2
1
```

```
Pattern -3
Enter the number of rows : 5

A
A B
A B C
A B C D
A B C D E
```