



Vidyavardhini's College of Engineering & Technology

Department of Computer Engineering

Experiment No. 10
Program to demonstrate basics Matplotlib for data visualization
Date of Performance:
Date of Submission:



Experiment No 10

Title: Program to demonstrate basics Matplotlib for data visualization.

Aim: To explore the basics Matplotlib for data visualization.

Objective: To understand how to use graphs and charts for data analysis.

Theory:

Matplotlib is a low level graph plotting library in python that serves as a visualization utility. Matplotlib is open source and we can use it freely. Most of the Matplotlib utilities lies under the pyplot submodule, and are usually imported under the plt alias.

- The plot() function is used to draw points (markers) in a diagram.
- By default, the plot() function draws a line from point to point.
- The function takes parameters for specifying points in the diagram.
- Parameter 1 is an array containing the points on the x-axis.
- Parameter 2 is an array containing the points on the y-axis. Eg: (0,0), (6,250), (8,350)

Code & output:

```
import matplotlib.pyplot as plt
import numpy as np
```

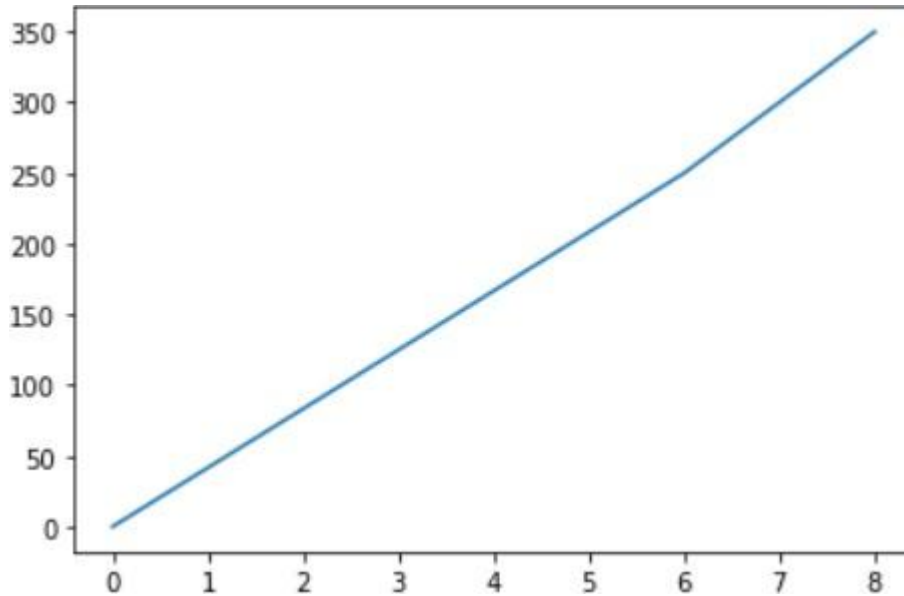
```
x = np.array([0,6,8])
y = np.array([0,250,350])
```

```
plt.plot(x,y)
plt.show()
```



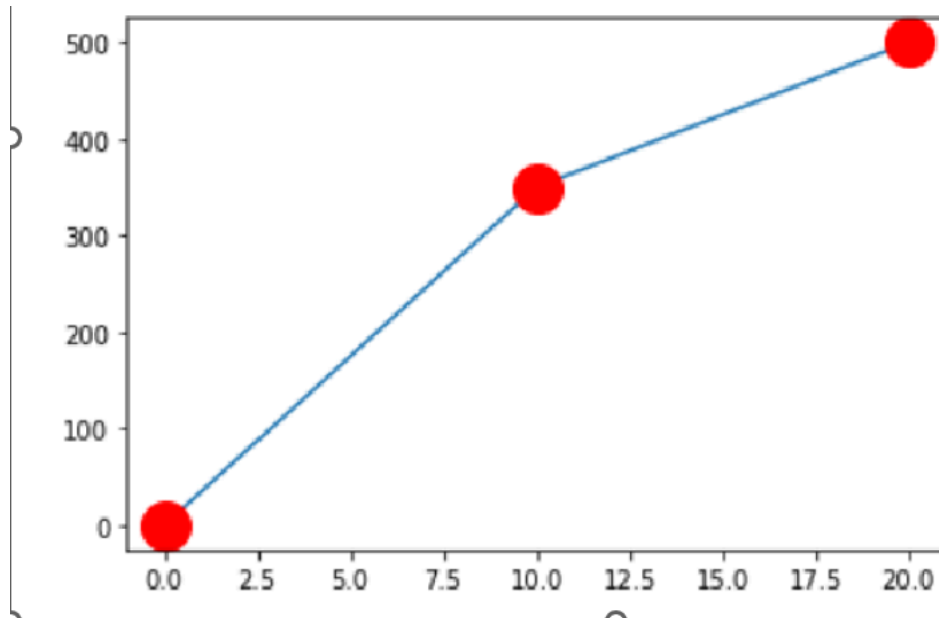
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Department of Computer Engineering

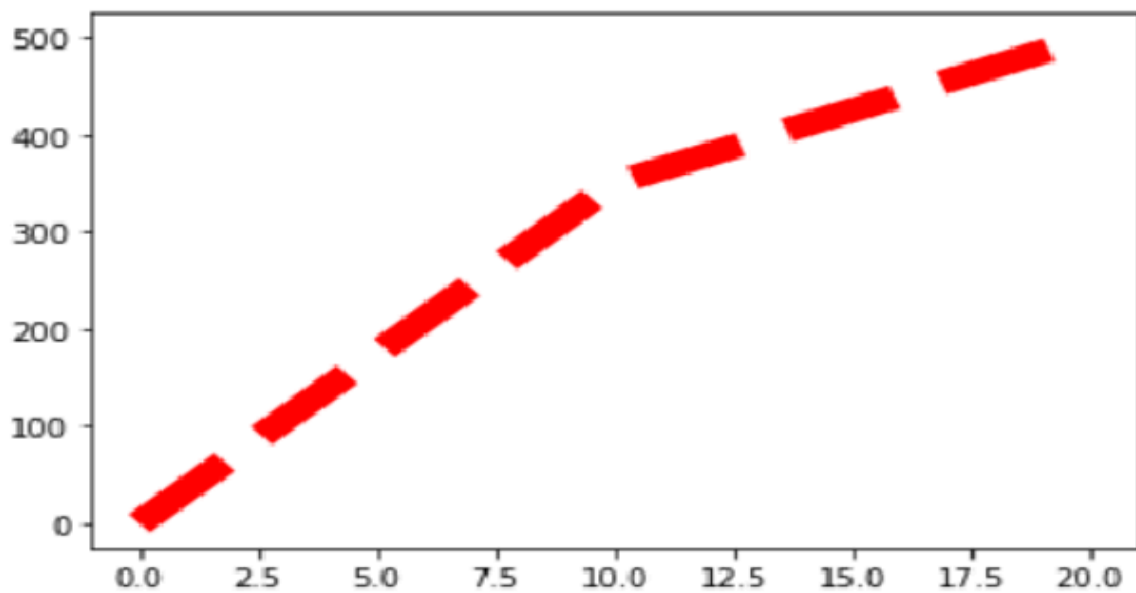


```
import matplotlib.pyplot as plt
import numpy as np

x = np.array([0,10,20])
y = np.array([0,350,500])
plt.plot(x,y,marker="o",ms=20,mec='r',mfc='r')
plt.show()
```

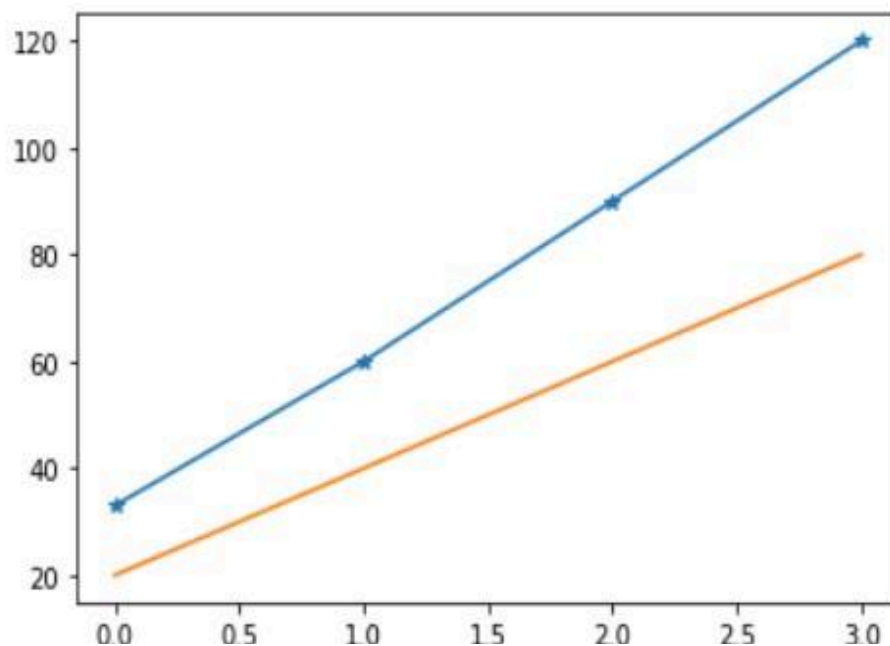


```
import matplotlib.pyplot as  
plt import numpy as np  
  
x=np.array([0,10,20])  
y=np.array([0,350,500])  
plt.plot(x,y,color='red',ls="",lw=10)  
plt.show()
```



```
import matplotlib.pyplot as plt
import numpy as np
```

```
y1=np.array([33,60,90,120])
y2=np.array([20,40,60,80])
plt.plot(y1,marker='*')
plt.plot(y2)
plt.show()
```



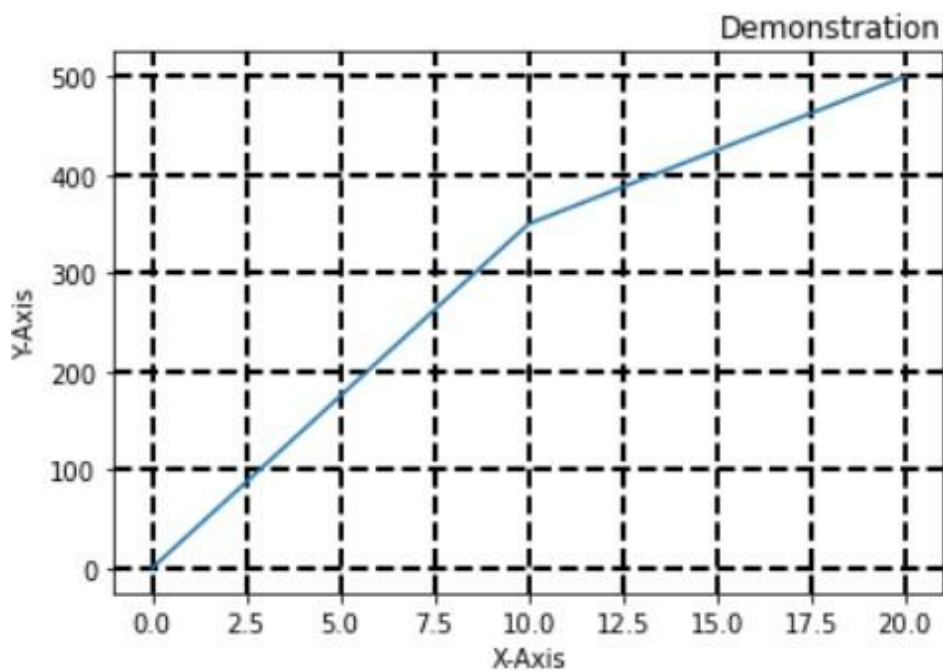


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Department of Computer Engineering

```
import matplotlib.pyplot as plt
import numpy as np
```

```
x=np.array([0,10,20])
y=np.array([0,350,500])
)
plt.plot(x,y)
plt.xlabel("X-Axis")
plt.ylabel("Y-Axis")
plt.title('Demonstration',loc='right')
plt.grid(color='black',linestyle='--',linewidth
=2)
plt.show()
```





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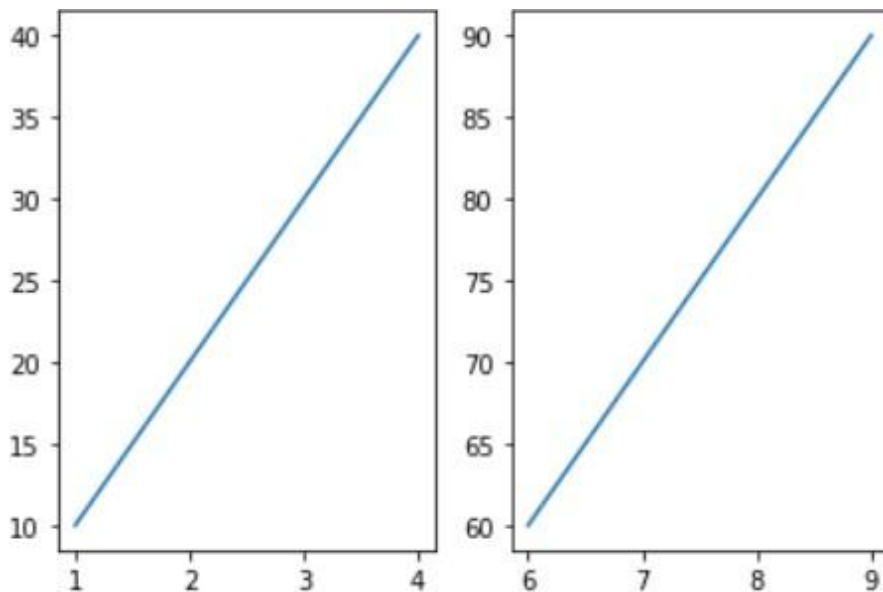
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```
x=np.array([1,2,3,4])  
y=np.array([10,20,30,40])
```

```
plt.subplot(1,2,  
1) plt.plot(x,y)
```

```
x=np.array([6,7,8,9])  
y=np.array([60,70,80,90])
```

```
plt.subplot(1,2,  
2) plt.plot(x,y)
```





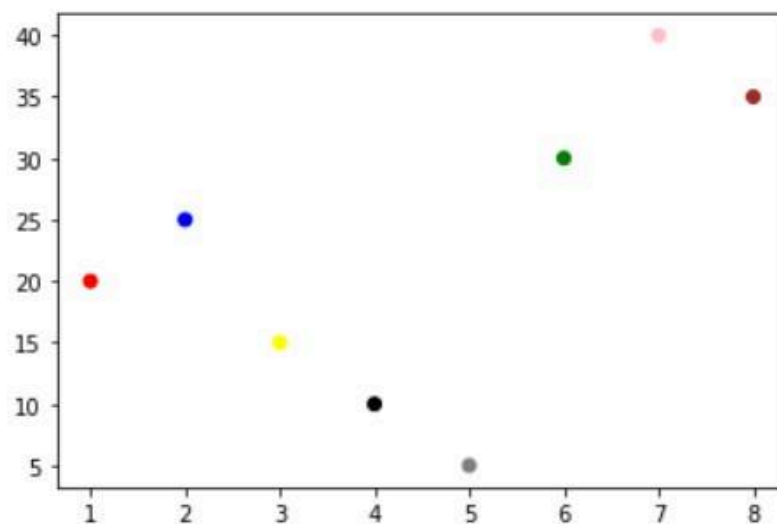
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```
import matplotlib.pyplot as  
plt import numpy as np
```

```
x=np.array([1,2,3,4,5,6,7,8])  
y=np.array([20,25,15,10,5,30,40,35])  
c=np.array(['red','blue','yellow','black','grey','green','pink','bro  
wn']) plt.scatter(x,y,color=c)  
plt.show()
```

Out[53]: <matplotlib.collections.PathCollection at 0x24588442040>



ColorMaps

The Matplotlib module has a number of available colormaps.

A colormap is like a list of colors, where each color has a value that ranges from 0 to 100.

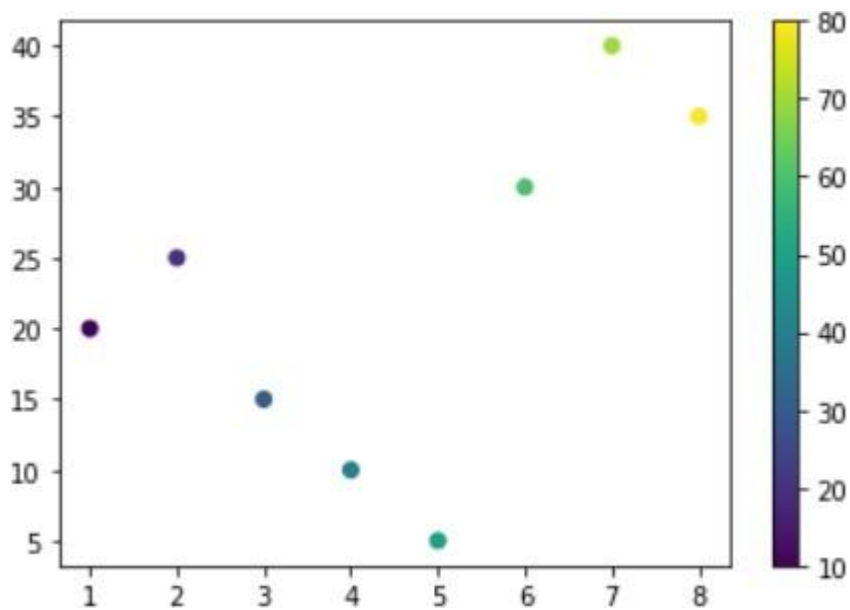


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```
import matplotlib.pyplot as plt  
import numpy as np
```

```
x=np.array([1,2,3,4,5,6,7,8])  
y=np.array([20,25,15,10,5,30,40,35])  
col=np.array([10,20,30,40,50,60,70,80])  
plt.scatter(x,y,c=col,cmap='viridis')  
) plt.colorbar()  
plt.show()
```

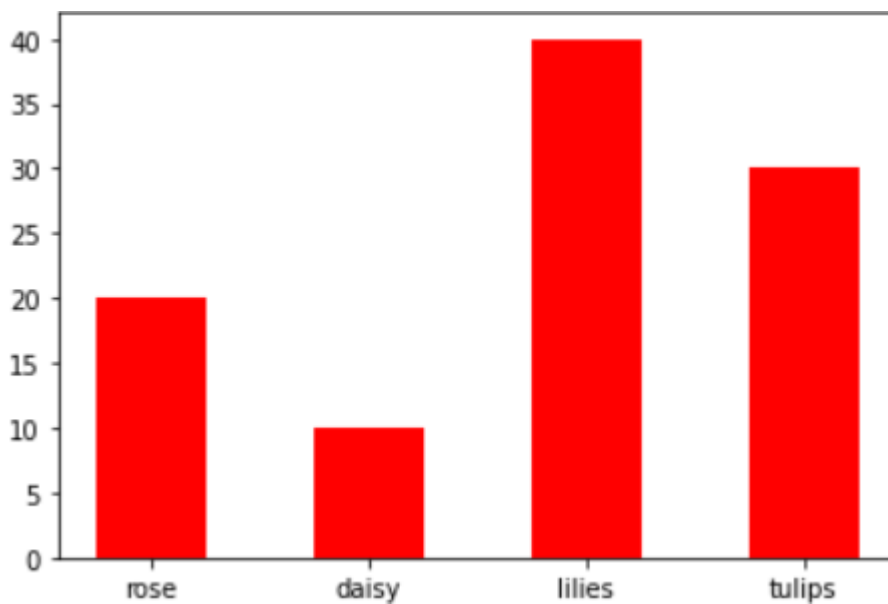




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```
import matplotlib.pyplot as plt
import numpy as np
x=np.array(['rose','daisy','lilies','tulips'])
y=np.array([20,10,40,30])
plt.bar(x,y,color='red',width=0.5)
plt.show()
```

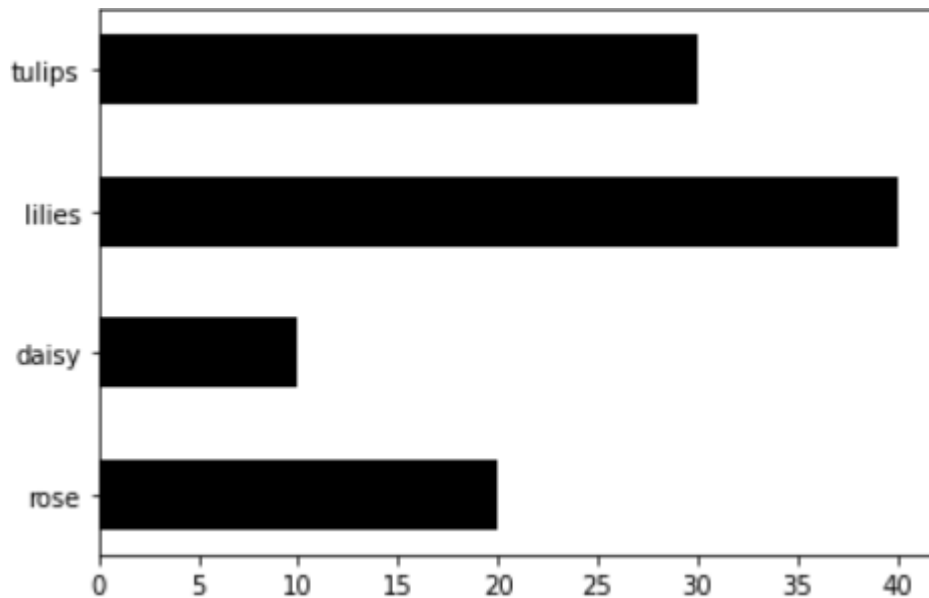


```
import matplotlib.pyplot as plt
import numpy as np
x=np.array(['rose','daisy','lilies','tulips'])
y=np.array([20,10,40,30])
plt.bar(x,y,color='black',height=0.5)
plt.show()
```



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```
import matplotlib.pyplot as plt
import numpy as np
y=np.array([35,15,25,25])
l=np.array(['Reyansh','Deepak','Kashif','Omkar'])
```



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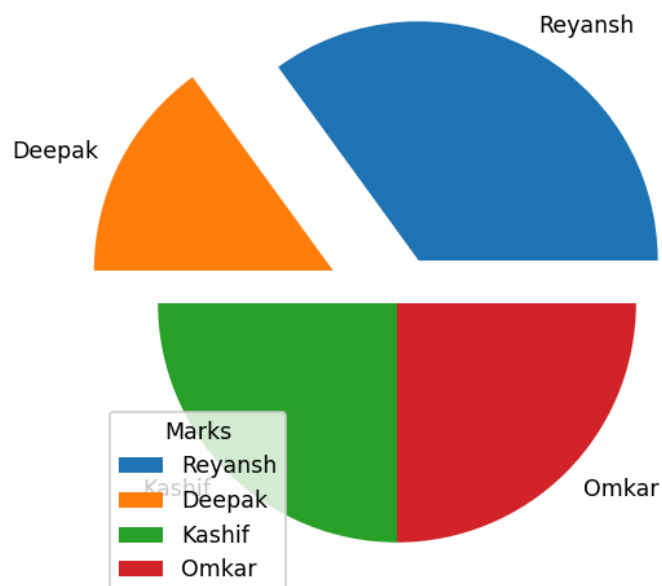
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```
e=np.array([0.2,0.3,0,0])
```

```
plt.pie(y,labels=l,explode=e)
```

```
plt.legend(title="Marks")
```

```
plt.show()
```



Conclusion:

In conclusion, Matplotlib is a powerful tool for data visualization that allows users to create various types of plots and graphs to better understand their data. By learning the basics of Matplotlib, individuals can effectively communicate their findings and insights through visually appealing representations. With its flexibility and ease of use, Matplotlib is a valuable asset for anyone working with data in any field.