

Matplotlib

Seaborn

Matplotlib is a plotting library for the Python programming language and its numerical mathematics extension NumPy. It provides an object-oriented API for embedding plots into applications using general-purpose GUI toolkits like Tkinter, wxPython, Qt, or GTK+.

Some of the major Pros of Matplotlib are:

1. Generally easy to get started for simple plots
2. Support for custom labels and texts
3. Great control of every element in a figure
4. High-quality output in many formats
5. Very customizable in general

```
import matplotlib.pyplot as plt
%matplotlib inline

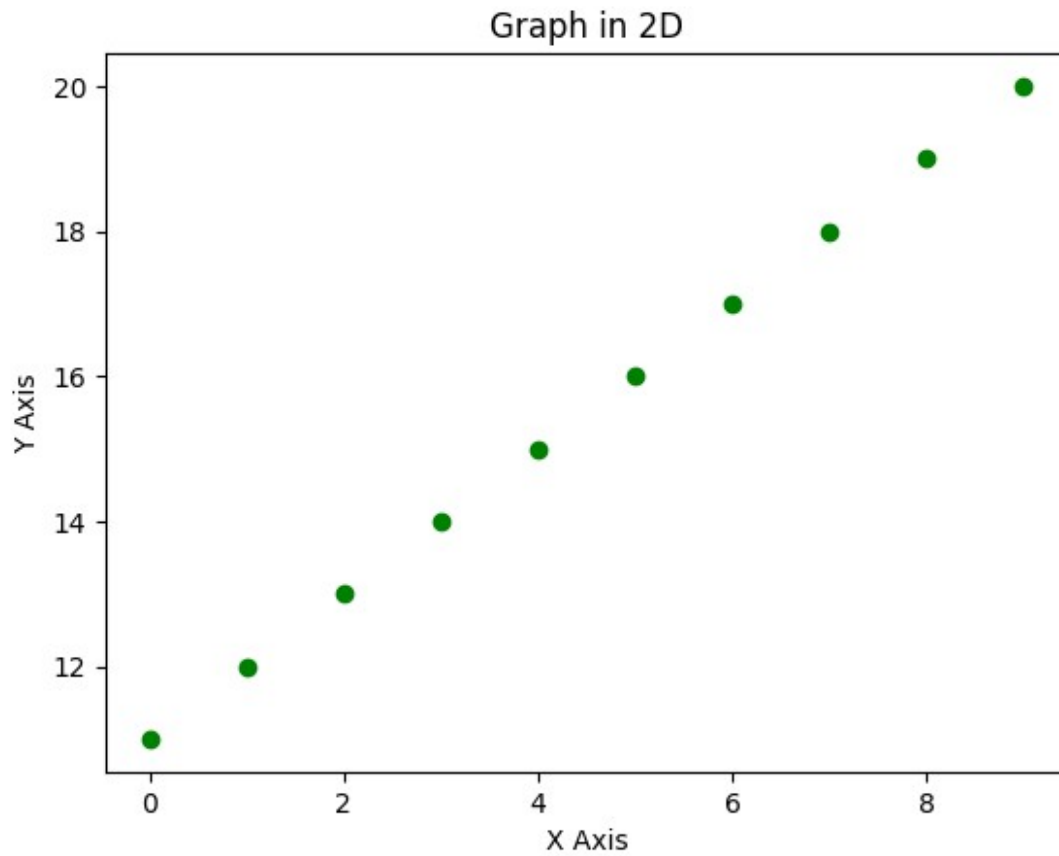
import numpy as np

x=np.arange(0,10)
y=np.arange(11,21)

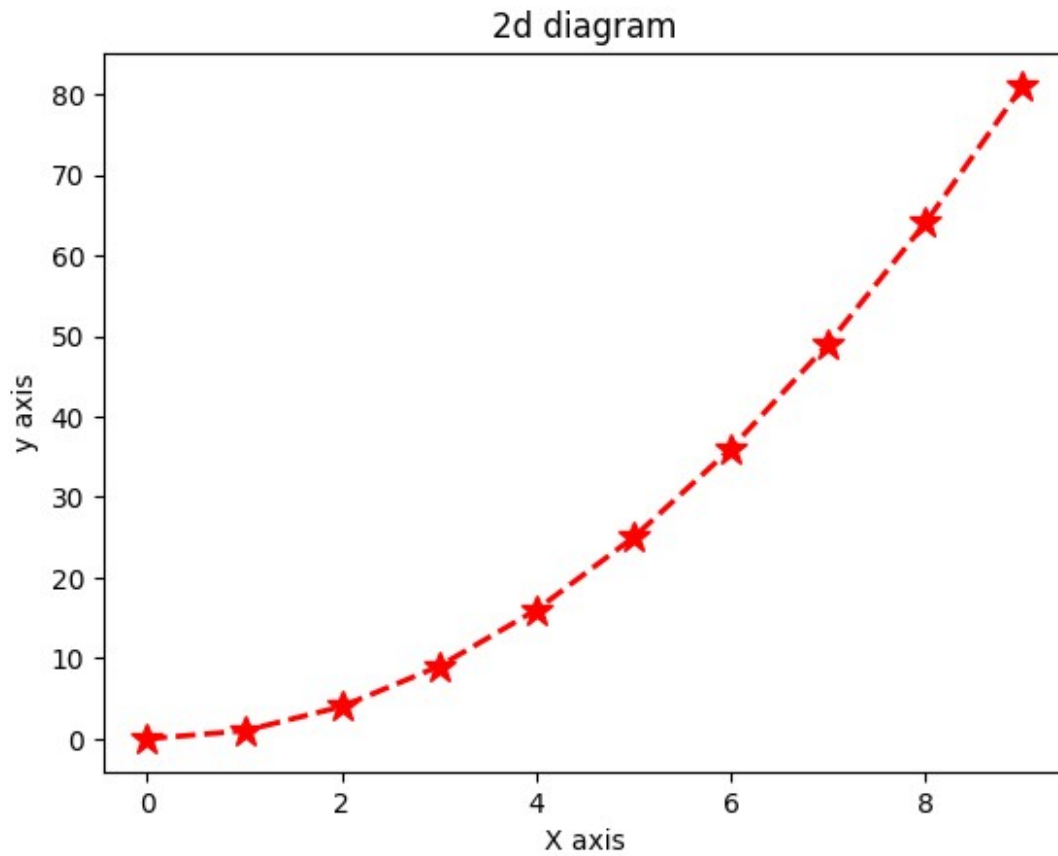
x
array([0, 1, 2, 3, 4, 5, 6, 7, 8, 9])

y
array([11, 12, 13, 14, 15, 16, 17, 18, 19, 20])

plt.scatter(x,y,c='g')
plt.xlabel('X Axis')
plt.ylabel('Y Axis')
plt.title('Graph in 2D')
plt.savefig('Test.png')
```

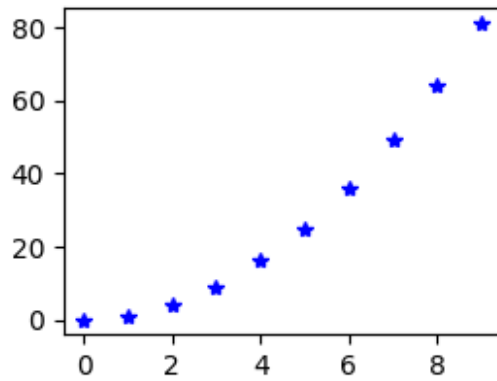
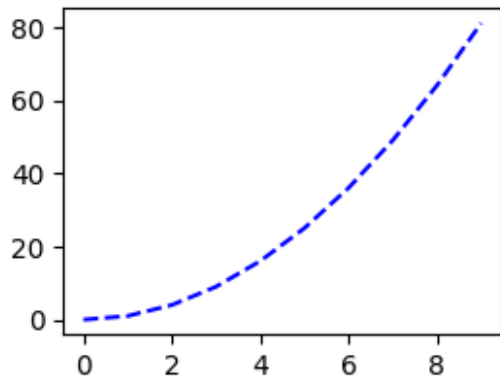
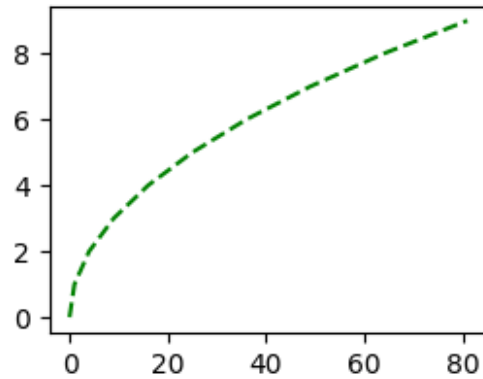
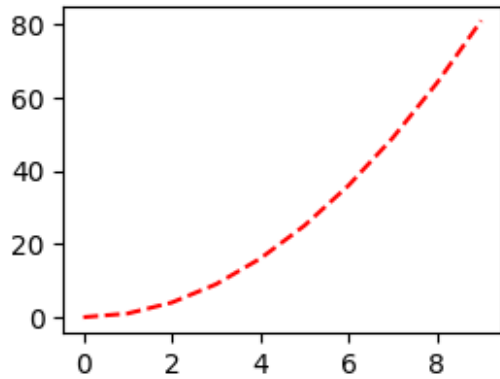


```
y=x*x  
  
y  
array([ 0,  1,  4,  9, 16, 25, 36, 49, 64, 81])  
  
## Line plot  
plt.plot(x,y,'r*',linestyle='dashed',linewidth=2,markersize=12)  
plt.xlabel('X axis')  
plt.ylabel('y axis')  
plt.title('2d diagram')  
  
Text(0.5, 1.0, '2d diagram')
```



```
##creating subplots
## Assignment--plot x title y title
plt.subplot(2,2,1)
plt.plot(x,y,'r--')
plt.subplot(2,2,2)
plt.plot(y,x,'g--')
plt.subplot(2,2,3)
plt.plot(x,y,'b--')
plt.subplot(2,2,4)
plt.plot(x,y,'b*')

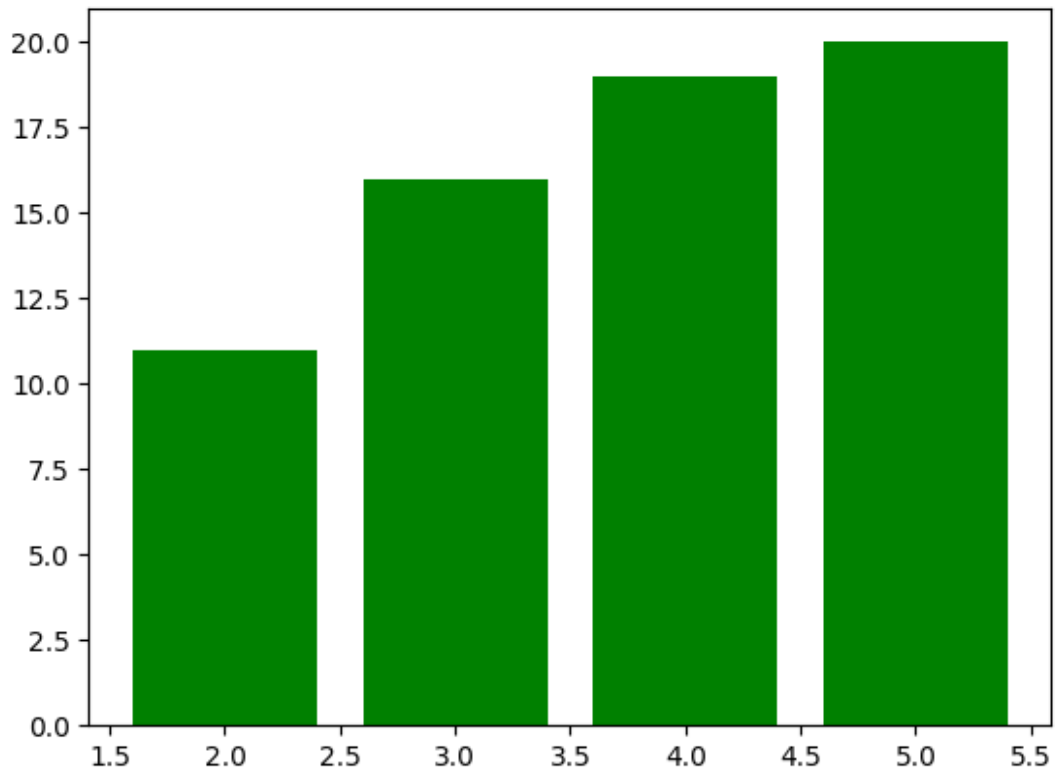
[<matplotlib.lines.Line2D at 0x7e3cb0595c30>]
```



```
## bar plotss
x1=[2,3,4,5]
y1=[11,16,19,20]

x2=[3,9,11,14]
y2=[6,15,7,9]
plt.bar(x1,y1,color='g')
#plt.bar(x2,y2)

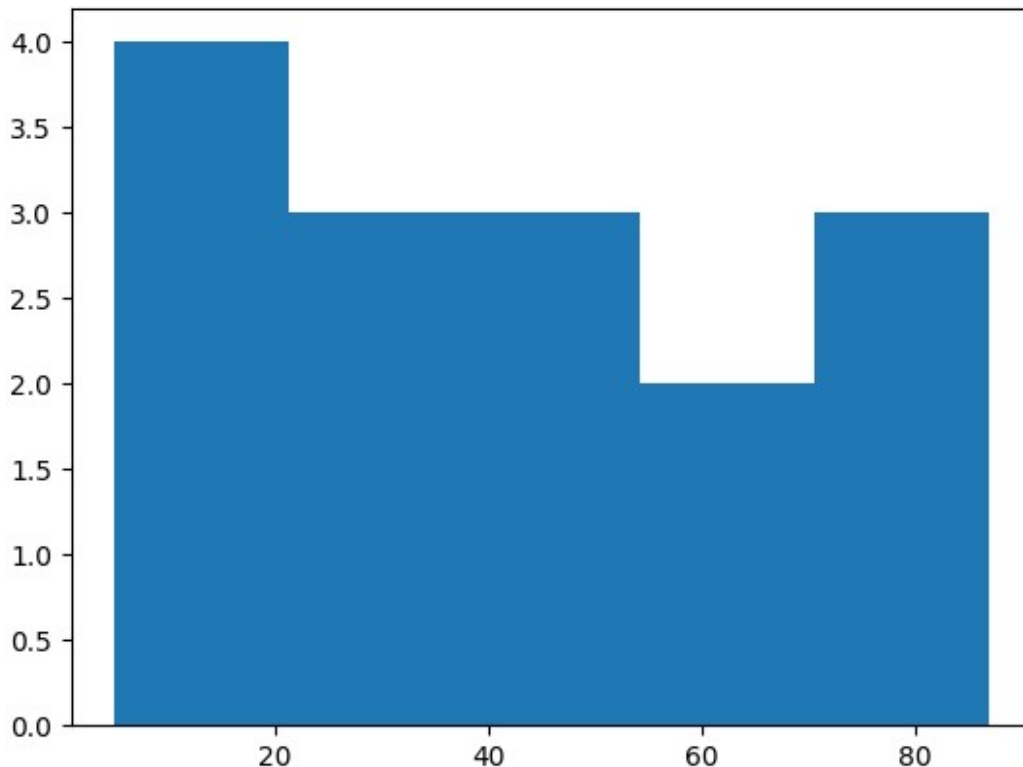
<BarContainer object of 4 artists>
```



```
## Histograms
```

```
a = np.array([22,87,5,43,56,73,55,54,11,20,51,5,79,31,27])  
plt.hist(a,bins=5)
```

```
(array([4., 3., 3., 2., 3.]),  
 array([ 5. , 21.4, 37.8, 54.2, 70.6, 87. ]),  
 <BarContainer object of 5 artists>)
```

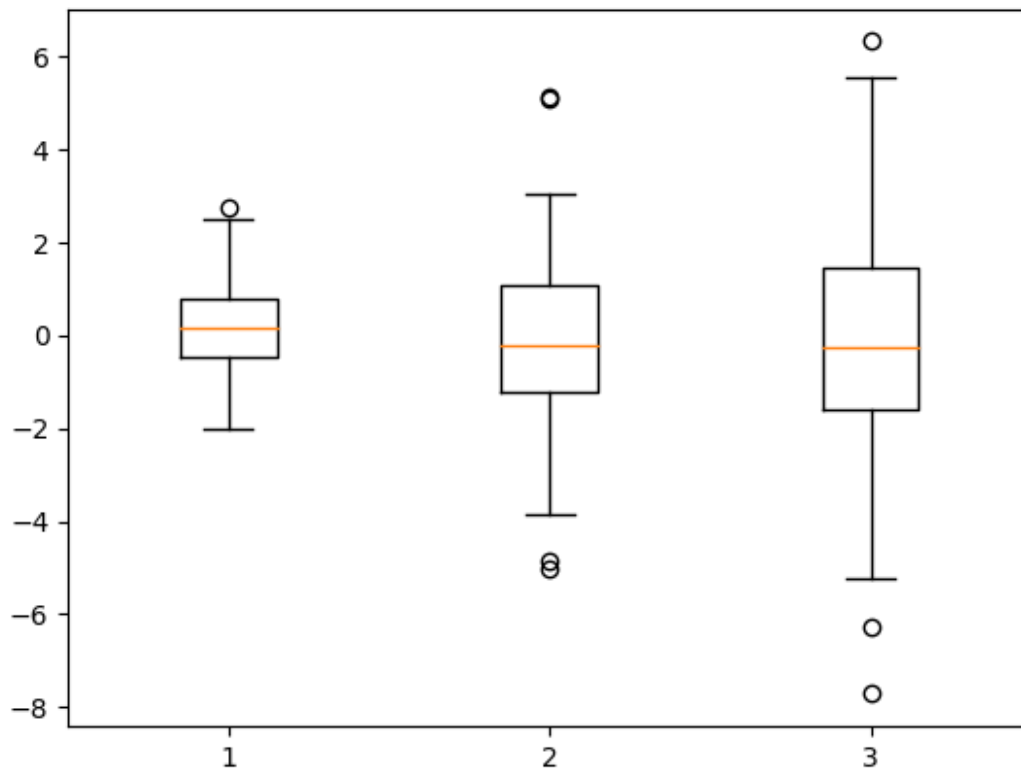


```
## Boxplot using Matplotlib
```

```
data = [np.random.normal(0, std, 100) for std in range(1, 4)]
plt.boxplot(data)
```

```
{'whiskers': [<matplotlib.lines.Line2D at 0x7e3cb03b0b50>,
<matplotlib.lines.Line2D at 0x7e3cb03b0df0>,
<matplotlib.lines.Line2D at 0x7e3cb03b1db0>,
<matplotlib.lines.Line2D at 0x7e3cb03b2050>,
<matplotlib.lines.Line2D at 0x7e3cb03b3010>,
<matplotlib.lines.Line2D at 0x7e3cb03b32b0>],
'caps': [<matplotlib.lines.Line2D at 0x7e3cb03b1090>,
<matplotlib.lines.Line2D at 0x7e3cb03b1330>,
<matplotlib.lines.Line2D at 0x7e3cb03b22f0>,
<matplotlib.lines.Line2D at 0x7e3cb03b2590>,
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<matplotlib.lines.Line2D at 0x7e3cb03b37f0>],
'boxes': [<matplotlib.lines.Line2D at 0x7e3cb03b08b0>,
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<matplotlib.lines.Line2D at 0x7e3cb03b2d70>],
'medians': [<matplotlib.lines.Line2D at 0x7e3cb03b15d0>,
<matplotlib.lines.Line2D at 0x7e3cb03b2830>,
<matplotlib.lines.Line2D at 0x7e3cb03b3a90>],
'fliers': [<matplotlib.lines.Line2D at 0x7e3cb03b1870>,
<matplotlib.lines.Line2D at 0x7e3cb03b2ad0>,
```

```
<matplotlib.lines.Line2D at 0x7e3cb03b3d30>],  
'means': []}
```



Pie Chart

```
# Data to plot  
labels = 'Python', 'C++', 'Ruby', 'Java'  
sizes = [215, 130, 245, 210]  
colors = ['gold', 'yellowgreen', 'lightcoral', 'lightskyblue']  
explode = (0, 0, 0.2, 0) # explode 1st slice  
  
# Plot  
plt.pie(sizes, explode=explode, labels=labels, colors=colors,  
autopct='%1.1f%%', shadow=True)  
  
plt.axis('equal')  
plt.show()
```

