Start coding or generate with AI.

Matplotlib

Matplotlib is a comprehensive library for creating static, animated, and interactive visualizations in Python. It is widely used for generating plots, graphs, and other visual representations of data, making it a key tool for data analysis and presentation.

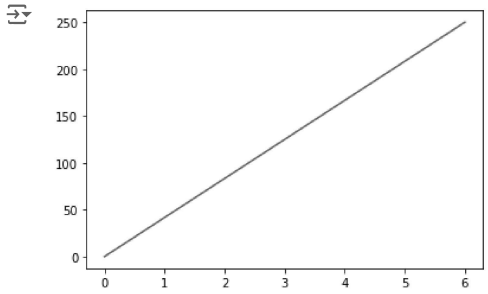
Key Features of Matplotlib

1. **Variety of Plots**: Matplotlib supports a wide range of plots and charts, including:
    - Line plots
    - Scatter plots
    - Bar charts
    - Histograms
    - Pie charts
    - Box plots
    - Error bars
    - Contour plots
    - 3D plots (using the mplot3d toolkit)
2. **Customization**: Extensive customization options for plots, such as:
    - Titles, labels, and legends
    - Colors, markers, and line styles
    - Axis scales, limits, and ticks
    - Grids and subplots
    - Annotations and text
3. **Integration**: Compatible with other popular Python libraries, such as NumPy, Pandas, and SciPy, allowing for seamless integration into data analysis workflows.
4. **Interactive Plots**: Capabilities for creating interactive plots that can be embedded in graphical user interfaces (GUIs) or web applications.
5. **Publication Quality**: Tools for creating high-quality plots suitable for publication, with support for various output formats (PNG, PDF, SVG, etc.).
6. **Gallery and Documentation**: Extensive gallery of examples and thorough documentation to help users create complex and customized visualizations.

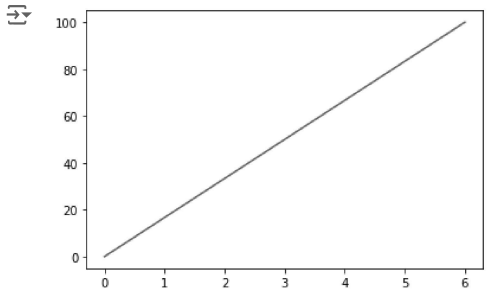
Start coding or generate with AI.

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

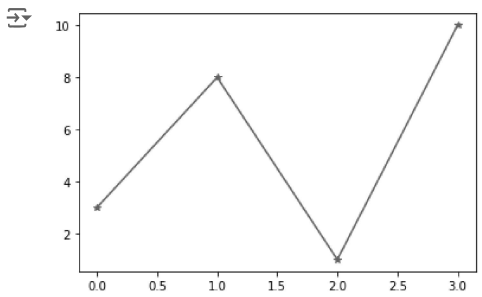
```
xpoints=np.array([0,6])
ypoints=np.array([0,250])
plt.plot(xpoints,ypoints)
plt.show()
```



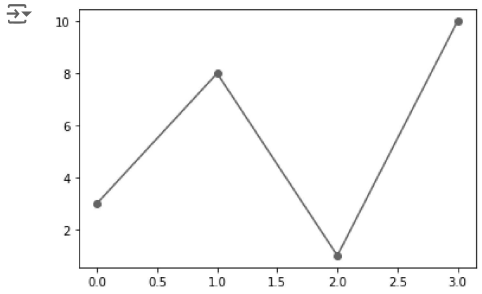
```
x=np.array([0,6])
y=np.array([0,100])
plt.plot(x,y)
plt.show()
```



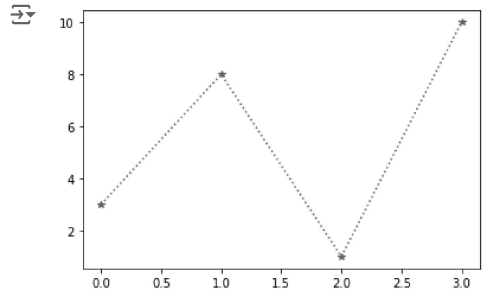
```
ypoints=np.array([3,8,1,10])
plt.plot(ypoints,marker='*')
plt.show()
```



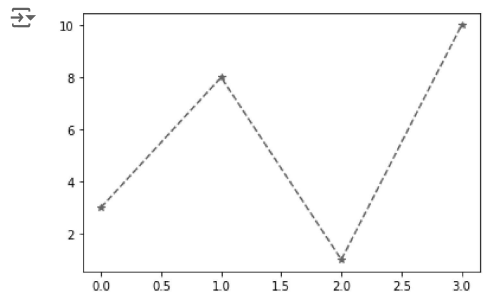
```
ypoints=np.array([3,8,1,10])
plt.plot(ypoints,marker='o')
plt.show()
```



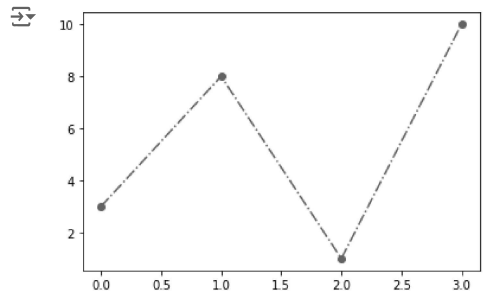
```
ypoints=np.array([3,8,1,10])
plt.plot(ypoints,marker='*',linestyle='dotted')
plt.show()
```



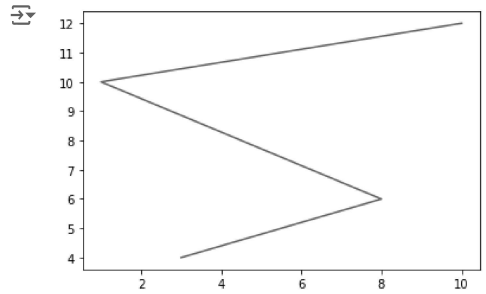
```
ypoints=np.array([3,8,1,10])
plt.plot(ypoints,marker='*',linestyle='dashed')
plt.show()
```



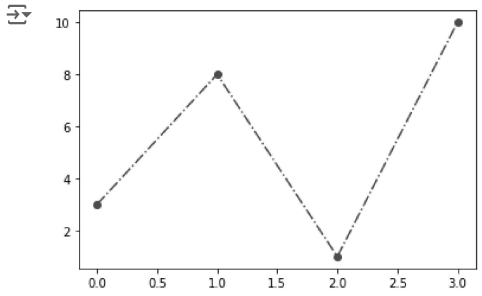
```
ypoints=np.array([3,8,1,10])
plt.plot(ypoints,marker='o',linestyle='dashdot')
plt.show()
```



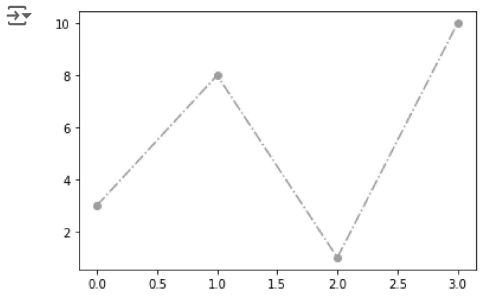
```
ypoints=np.array([3,8,1,10])
xpoints=np.array([4,6,10,12])
plt.plot(ypoints,xpoints)
plt.show()
```



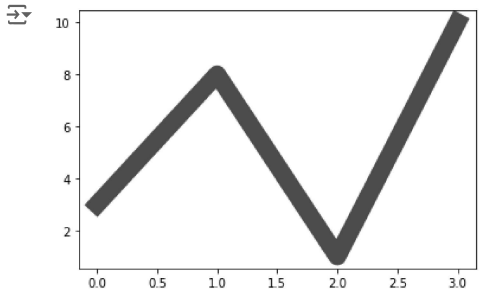
```
ypoints=np.array([3,8,1,10])
plt.plot(ypoints,marker='o',linestyle='dashdot',color="r")
plt.show()
```



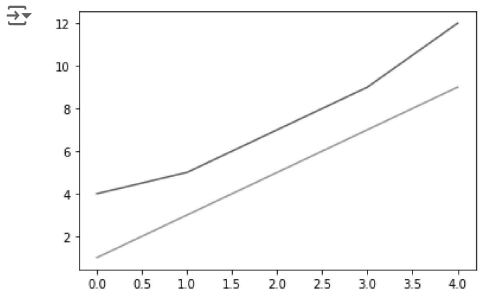
```
ypoints=np.array([3,8,1,10])
plt.plot(ypoints,marker='o',linestyle='dashdot',color="hotpink")
plt.show()
```



```
ypoints=np.array([3,8,1,10])
plt.plot(ypoints,marker='o',color="r",linewidth="15.0")
plt.show()
```



```
x=np.array([4,5,7,9,12])
y=np.array([1,3,5,7,9])
plt.plot(x)
plt.plot(y)
plt.show()
```



```
x=np.linspace(0,5,11)
y=x**2
```

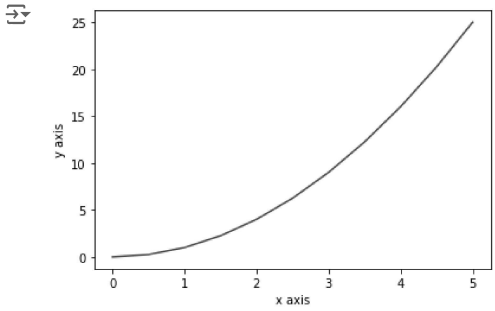
```
x
```

```
array([0. , 0.5, 1. , 1.5, 2. , 2.5, 3. , 3.5, 4. , 4.5, 5. ])
```

```
y
```

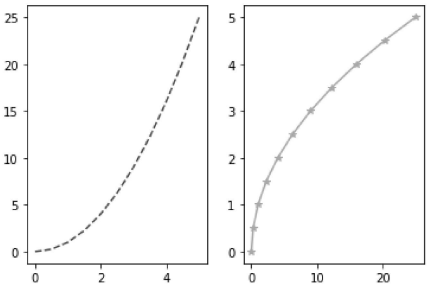
```
array([ 0.  ,  0.25,  1.  ,  2.25,  4.  ,  6.25,  9.  , 12.25, 16.  ,
       20.25, 25.  ])
```

```
plt.plot(x,y,color="r")
plt.xlabel("x axis")
plt.ylabel("y axis")
plt.show()
```



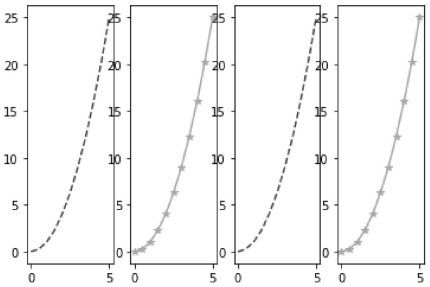

```
plt.subplot(1,2,1)
plt.plot(x,y,'g--')

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

```
[<matplotlib.lines.Line2D at 0x7f89ed839be0>]
```



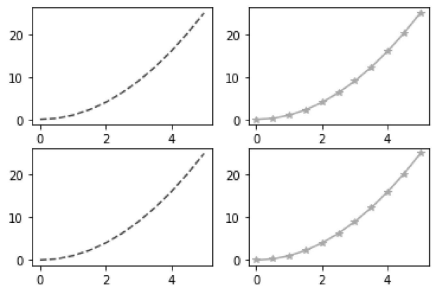
```
plt.subplot(1,4,1)
plt.plot(x,y,'g--')

plt.subplot(1,4,2)
plt.plot(x,y,'y*-')

plt.subplot(1,4,3)
plt.plot(x,y,'g--')

plt.subplot(1,4,4)
plt.plot(x,y,'y*-')
```

```
[<matplotlib.lines.Line2D at 0x28b1d7b3e50>]
```



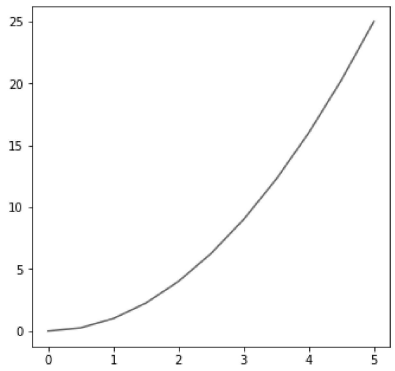
```
plt.subplot(2,2,1)
plt.plot(x,y,'g--')

plt.subplot(2,2,2)
plt.plot(x,y,'y*-')

plt.subplot(2,2,3)
plt.plot(x,y,'g--')

plt.subplot(2,2,4)
plt.plot(x,y,'y*-')
```

```
[<matplotlib.lines.Line2D at 0x28b1e10e280>]
```



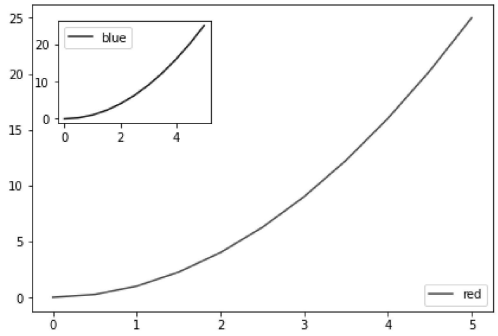
```
fig=plt.figure()
axes=fig.add_axes([0.1,0.5,0.7,1])
#add_axes(left,bottom,width,height)
axes.plot(x,y)
```

```
[<matplotlib.lines.Line2D at 0x28b1e13a280>]
```

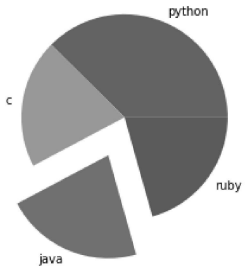


```
fig=plt.figure()
axes1=fig.add_axes([0.1,0.2,0.9,0.9])
#add_axes(left,bottom,width,height)
axes1.plot(x,y,'r',label="red")

axes2=fig.add_axes([0.15,0.75,0.3,0.3])
#add_axes(left,bottom,width,height)
axes2.plot(x,y,"b",label="blue")

axes1.legend(loc=4)
axes2.legend()
```

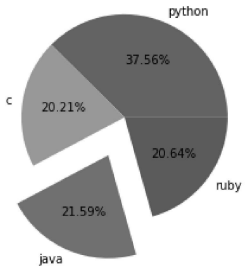
```
<matplotlib.legend.Legend at 0x28b1e044790>
```



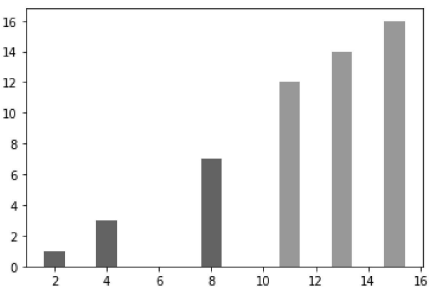

```
sizes=[435,234,250,239]
labels=['python','c','java','ruby']
explode=[0,0,0.4,0]
plt.pie(sizes,labels=labels,explode=explode)
plt.show()=
```



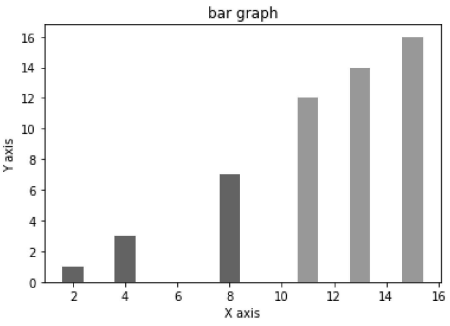

```
sizes=[435,234,250,239]
labels=['python','c','java','ruby']
explode=[0,0,0.4,0]
plt.pie(sizes,labels=labels,explode=explode,autopct='%1.2f%%')
plt.show()
```



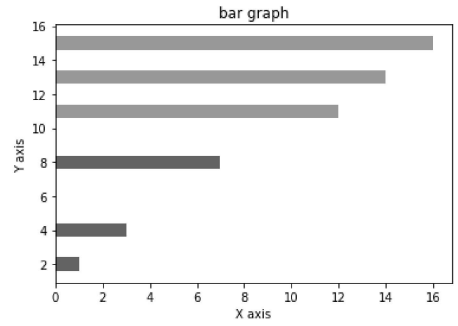

```
x=[2,4,8]
y=[1,3,7]
x2=[11,13,15]
y2=[12,14,16]
plt.bar(x,y)
plt.bar(x2,y2)
plt.show()
```



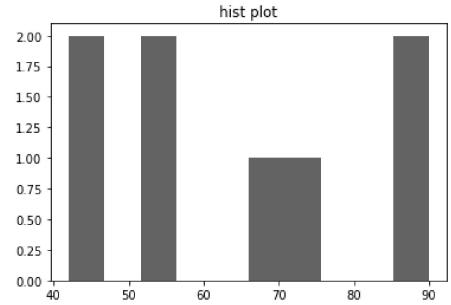

```
x=[2,4,8]
y=[1,3,7]
x2=[11,13,15]
y2=[12,14,16]
plt.bar(x,y)
plt.bar(x2,y2)
plt.title("bar graph")
plt.xlabel('X axis')
plt.ylabel('Y axis')
plt.show()
```



```
x=[2,4,8]
y=[1,3,7]
x2=[11,13,15]
y2=[12,14,16]
plt.barh(x,y)
plt.barh(x2,y2)
plt.title("bar graph")
plt.xlabel('X axis')
plt.ylabel('Y axis')
plt.show()
```




```
#hist plot


a=np.array([45,67,86,75,55,42,56,90])
plt.hist(a)
plt.title("hist plot")
plt.show()
```




```
#box plot


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

```
[array([ 1.13186498,  1.48649785, -0.24676559,  0.20987842,  0.74002416,
         0.57324804,  0.41150315,  0.68550816, -1.52324918,  0.95219982,
        -0.53605153, -0.71089349, -1.42527993, -0.07249693, -0.45416083,
        -0.91047016, -0.77404395, -0.03240351, -0.1497518 , -0.33175716,
        -0.04014579, -0.34716472,  1.65361754,  0.50863775, -0.85843394,
        -0.73086632, -0.95766774, -0.48382194,  1.40183897,  1.40155757,
        -0.28661307, -0.09807881,  0.39246005, -0.33170013, -0.58232061,
        -0.24251043, -0.49103582, -1.37503927,  0.76526997,  1.23078412,
        -0.04580387, -1.61711826,  0.68635776, -0.74272528, -0.35878308,
         0.27500188,  0.59913682,  0.49508294, -0.24709025,  0.39674813,
        -0.85124075, -1.37667638,  0.66183805,  1.50605986, -0.48778093,
        -0.67526571,  0.05854373, -0.39270625, -1.45017707, -0.56603984,
        -0.46151021, -1.30231566,  0.9624459 ,  0.07989255,  0.224529  ,
         1.18010845,  1.76919661, -0.81448678, -0.65370854,  1.35671678,
         1.61053156,  1.41179231, -1.44080381,  0.78970709, -1.58211384,
         0.45768408,  0.94422137,  0.51634745, -0.96550663,  1.41016595,
         1.18761845,  0.36574522, -1.17005764, -0.09167156,  0.75938826,
         0.31964875,  0.43247509, -0.9412192 , -0.44654709,  0.97370077,
        -0.16578765, -1.83936754,  1.58721723,  0.51737705,  1.4158126 ,
         0.17526918,  0.17186677,  0.20874355, -1.00891659, -0.7991399 ]),
 array([ 0.07832193,  2.32611547,  4.42650686, -1.11477845,  2.25283641,
         2.90548233, -0.82902067,  0.98680166, -2.89530077, -0.69714594,
        -0.06688889, -0.92141908, -1.59820731, -2.83862548,  3.32590368,
         1.00941028, -0.34023548,  3.31353139,  0.34361909,  0.49354337,
        -0.51965474, -1.93002512, -0.58163378, -3.13345723, -1.98271628,
         1.1666514 ,  2.70987323,  1.69423908,  2.00881865, -0.05284003,
        -1.85409617,  1.0335716 , -2.1194647 ,  0.16640968, -0.16127234,
        -0.21878446,  1.24397915,  0.16590417,  0.07197959, -0.71323451,
         1.85408816, -1.96395969, -0.23716719, -2.37285514, -1.96744594,
         1.93342007, -0.01189077, -0.5119969 , -0.98664315, -0.97238686,
        -0.8174363 , -3.78255751, -2.99651004,  0.00557101, -1.21649926,
         0.84666763,  1.35407567, -2.77400372, -0.93548052, -3.45240608,
         3.1222252 ,  3.65990068, -0.55405688, -0.68759408, -1.25849431,
        -0.54927221, -4.11755283,  0.39994174, -2.28618367,  1.75676552,
```

```
        0.95709421,  0.40596949, -1.86103263,  1.5062261 ,  2.15461433,
       -1.42404146,  0.64111092, -1.34319421,  1.14659063,  4.2173038 ,
        0.96956578,  1.44059393,  2.73610038, -0.39502048, -0.65470158,
       -2.3509102 ,  0.08168917, -1.68486797,  0.25331556,  3.49504793,
        0.6177072 ,  2.67542541, -2.19602724,  1.64373947,  0.48782634,
       -2.46153989, -2.94404667,  0.44352547, -0.02080558, -2.04960446]),
array([ 1.83854166e+00, -2.29802210e-01,  2.42766020e+00, -1.65986953e+00,
       -7.36937939e+00, -3.07245138e+00,  9.60612676e-01, -4.06107309e+00,
       -4.39017548e+00, -1.69555740e+00,  2.26459440e+00, -1.14080697e+00,
       -1.69171484e+00,  8.84413240e-01, -1.68770034e+00, -3.37179724e+00,
       -2.50597325e+00,  1.41284319e+00,  3.78457321e-01,  1.74370685e-01,
        1.83190894e+00, -2.31440646e+00, -9.71267827e-03,  3.06990885e-02,
        6.50638514e-02,  2.44463380e+00, -1.00334665e+01, -6.17921664e+00,
       -5.45807968e+00,  2.07235448e+00, -3.61142632e+00, -1.50321759e+00,
        1.72225993e+00, -8.23768435e-01, -2.39423119e+00, -7.80749685e-01,
       -6.12195005e+00,  2.07562582e+00, -3.77170480e+00,  8.07264054e-01,
       -1.26630598e-01,  1.57704947e+00, -4.26250905e+00, -4.90575165e+00,
        1.23149695e+00,  4.60714626e-01, -1.21645398e+00, -7.90600313e-01,
        6.14914566e+00, -6.46232185e-01,  2.02145338e+00, -6.92485747e+00,
        1.66270593e+00,  4.24235483e+00, -1.84188172e+00,  6.25529733e+00,
       -2.34737072e-01,  2.12950804e-01,  4.87420902e+00,  4.21882917e-01,
       -3.88218114e+00,  2.66693893e+00, -3.27682787e+00, -3.54541450e-01,
       -6.99799430e-01,  3.05711624e+00, -1.94760419e+00,  4.74668790e+00,
```