

Matplotlib

Matplotlib is a plotting library for the Python programming language and it's a numerical mathematics.

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 Very customizable in general.

```
In [2]: import matplotlib.pyplot as plt  
%matplotlib inline
```

```
In [3]: import numpy as np
```

```
In [13]: x=np.arange(0,10)  
y=np.arange(11,21)
```

```
In [14]: x
```

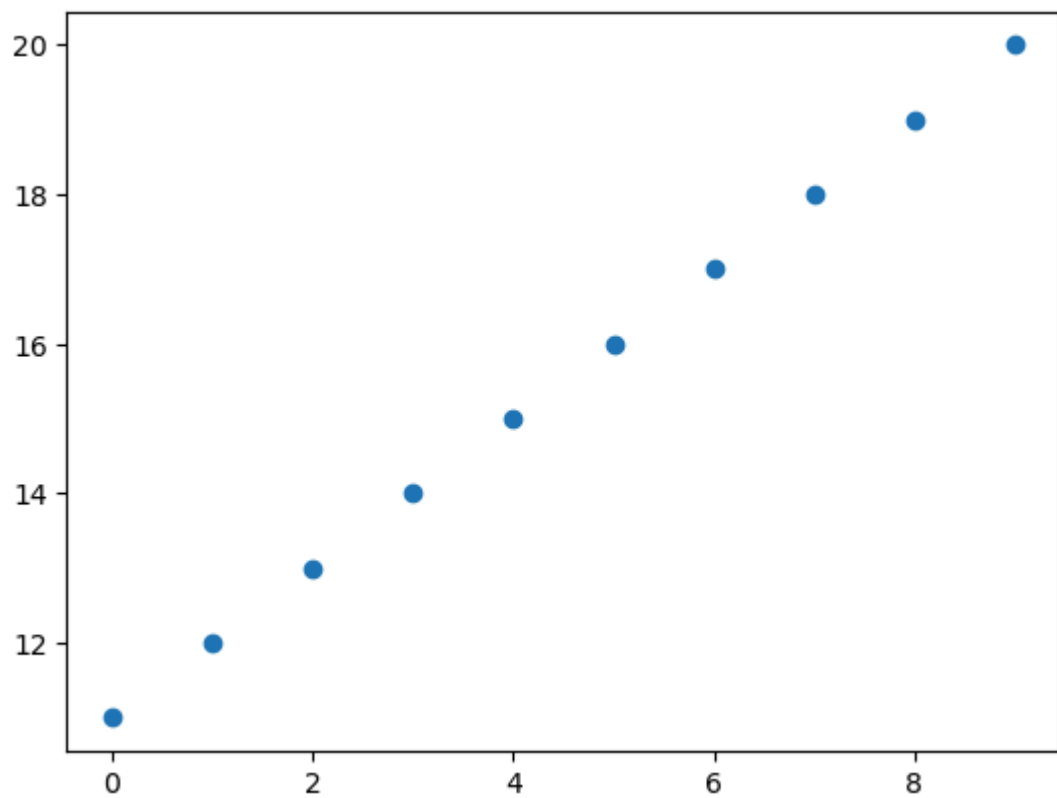
```
Out[14]: array([0, 1, 2, 3, 4, 5, 6, 7, 8, 9])
```

```
In [15]: y
```

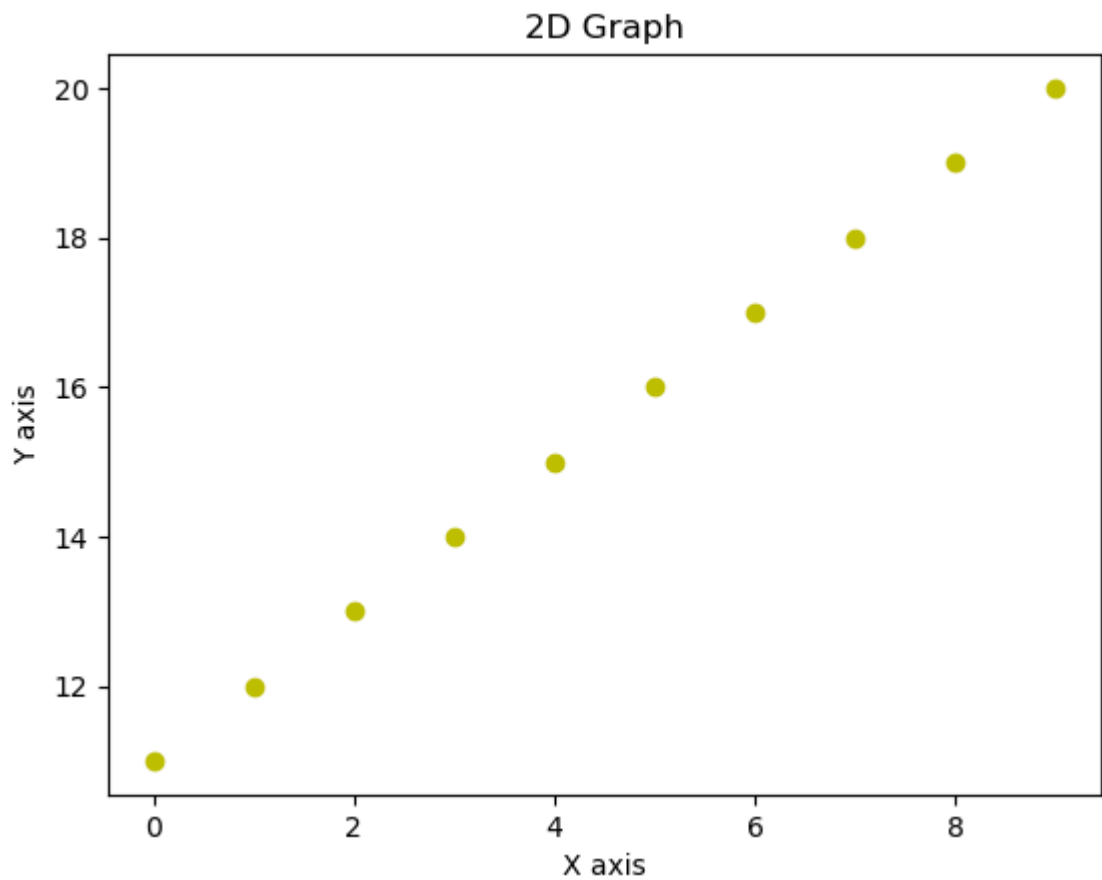
```
Out[15]: array([11, 12, 13, 14, 15, 16, 17, 18, 19, 20])
```

```
In [16]: plt.scatter(x,y)
```

```
Out[16]: <matplotlib.collections.PathCollection at 0x15d3d35e8d0>
```



```
In [22]: plt.scatter(x,y,c='y')  
plt.xlabel('X axis')  
plt.ylabel('Y axis')  
plt.title("2D Graph")  
plt.savefig('Test.png')
```



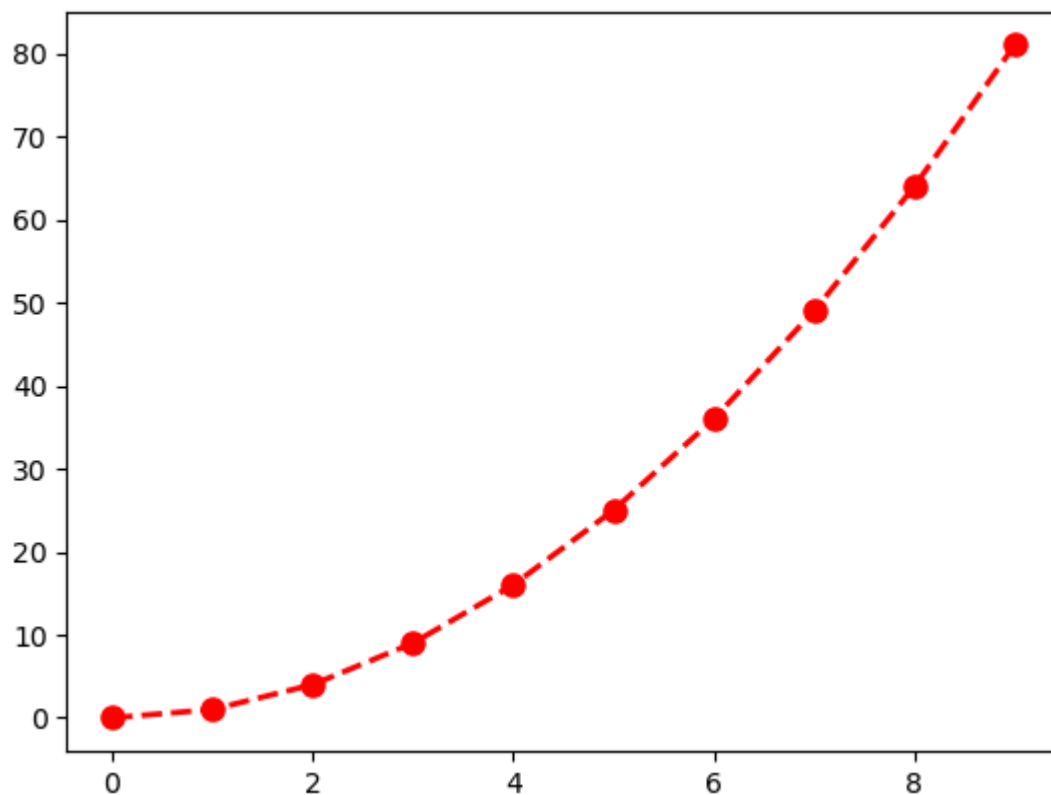
```
In [23]: y = x*x
```

```
In [24]: y
```

```
Out[24]: array([ 0,  1,  4,  9, 16, 25, 36, 49, 64, 81])
```

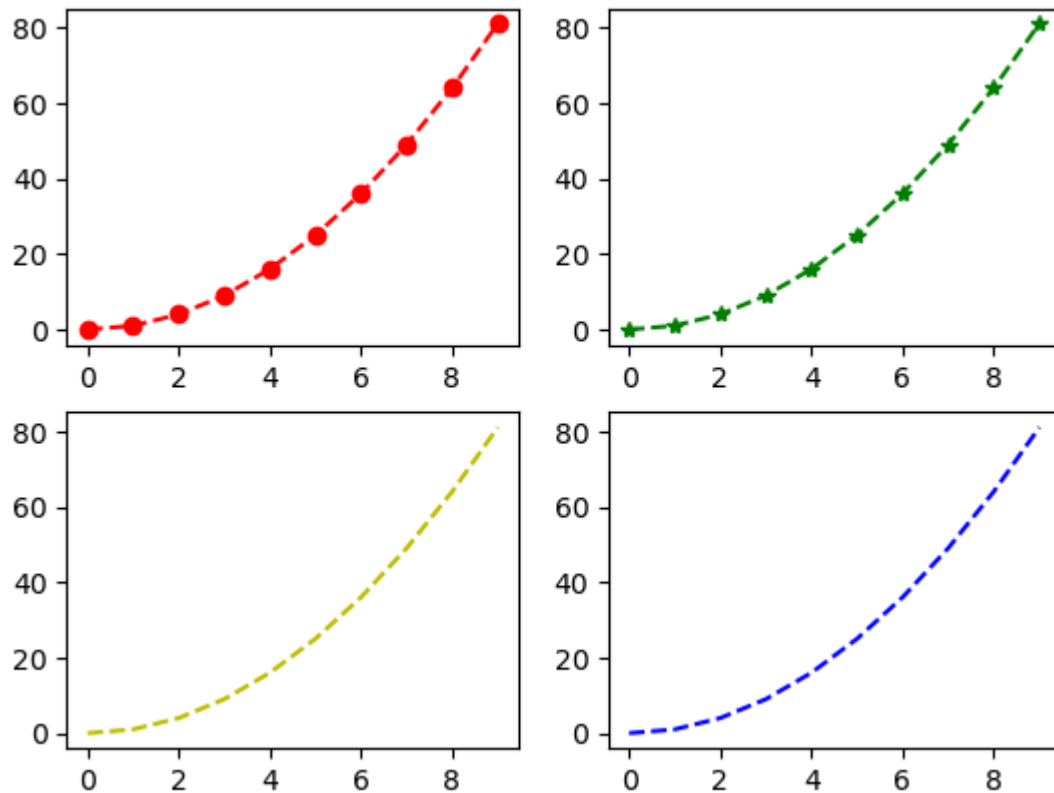
```
In [45]: ## Line Plot  
plt.plot(x,y,'ro',linestyle='dashed',linewidth = 2,markersize=8)
```

Out[45]: [<matplotlib.lines.Line2D at 0x15d45284510>]



```
In [59]: plt.subplot(2,2,1)
plt.plot(x,y,'ro',linestyle='dashed')
plt.subplot(2,2,2)
plt.plot(x,y,'g*',linestyle='dashed')
plt.subplot(2,2,3)
plt.plot(x,y,'y',linestyle='dashed')
plt.subplot(2,2,4)
plt.plot(x,y,'b--')
```

Out[59]: [<matplotlib.lines.Line2D at 0x15d44c37490>]

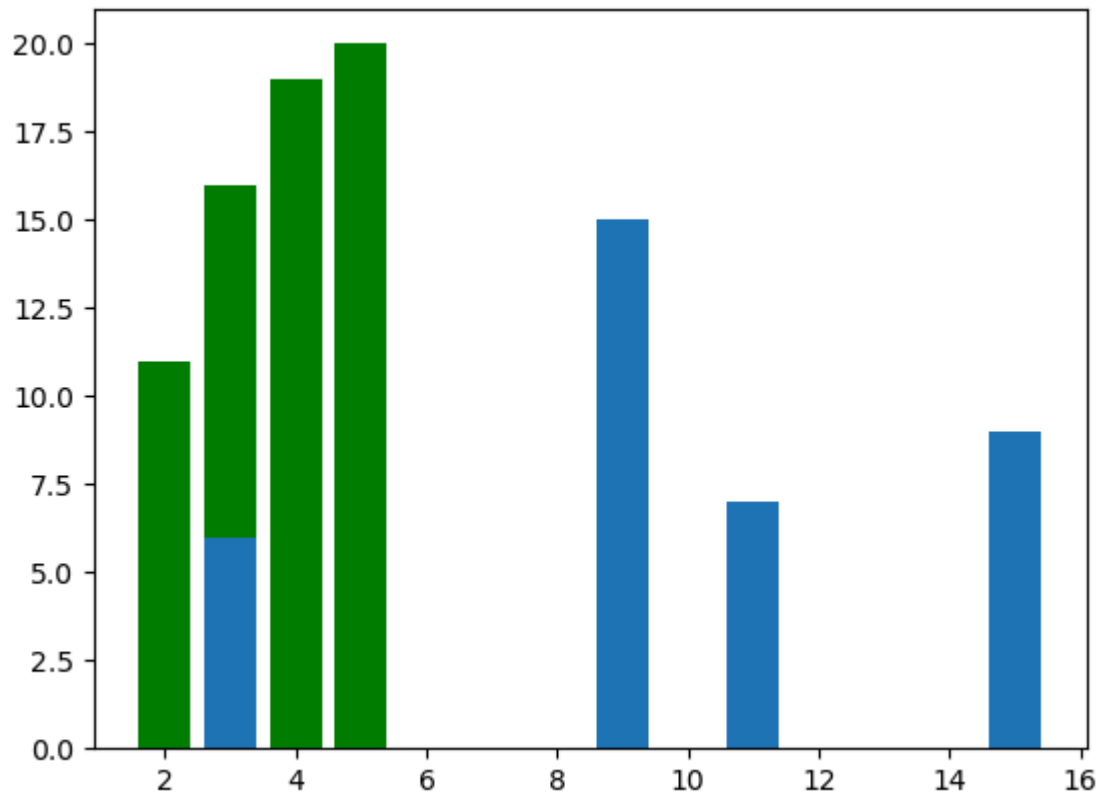


```
In [66]: x1=[2,3,4,5]
          y1=[11,16,19,20]

          x2=[3,9,11,15]
          y2=[6,15,7,9]

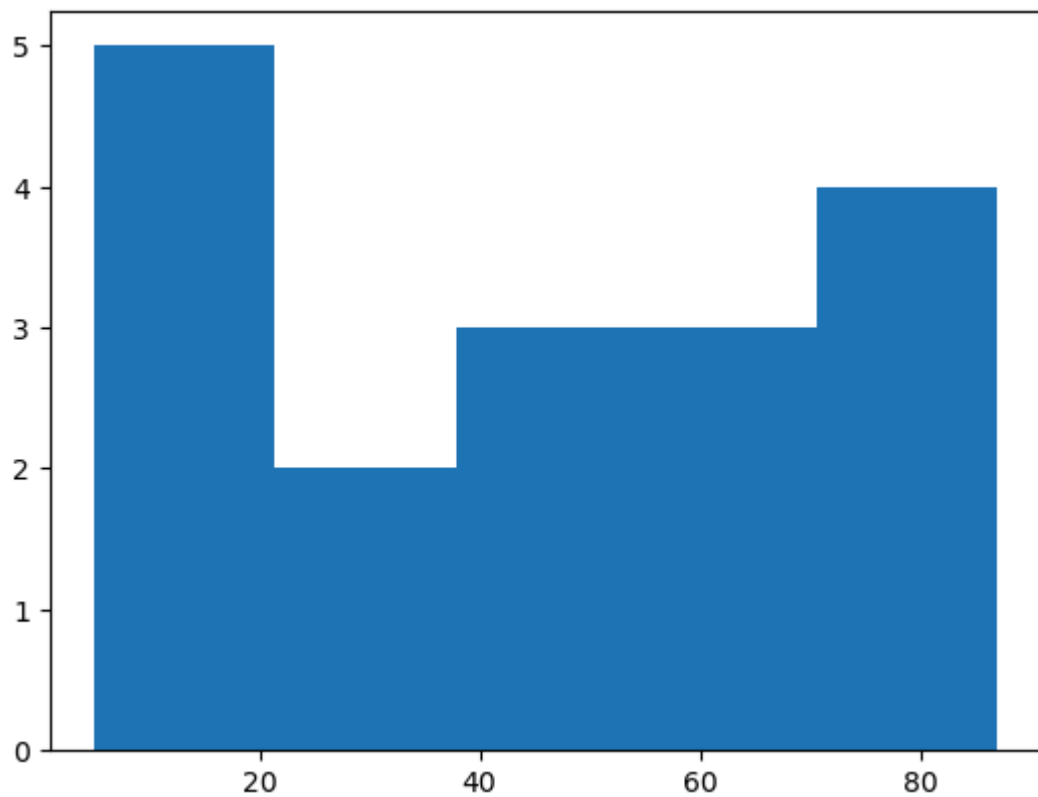
          plt.bar(x1,y1,color='g')
          plt.bar(x2,y2)
```

Out[66]: <BarContainer object of 4 artists>



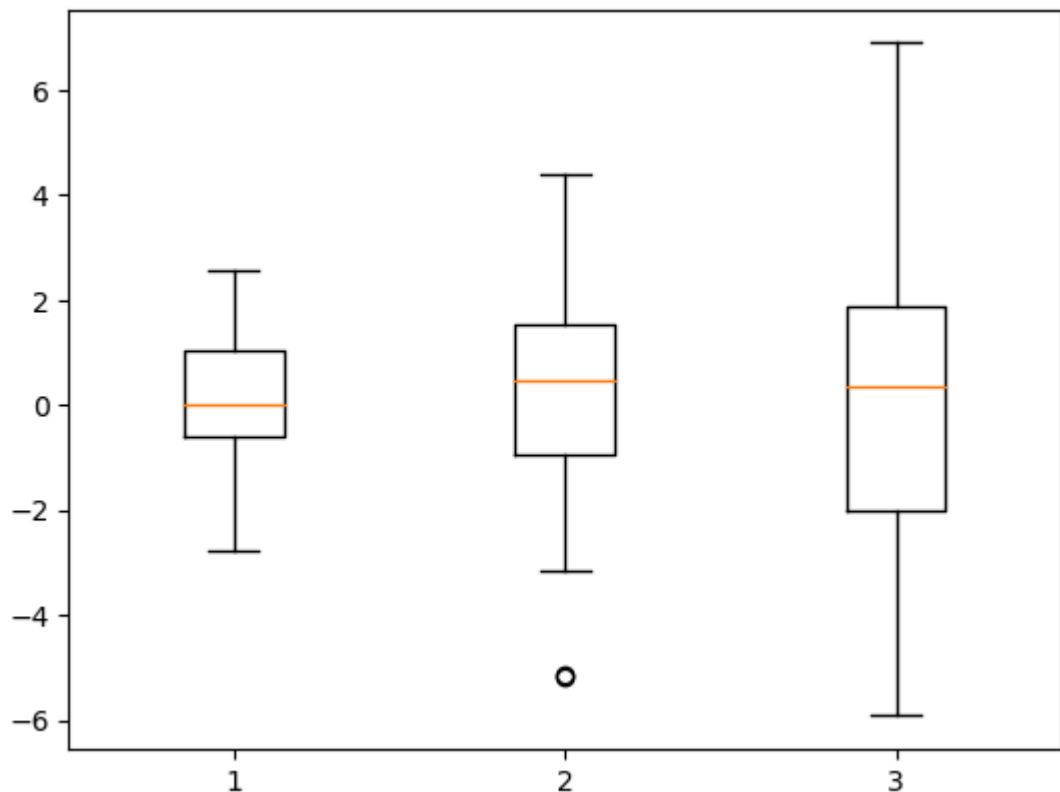
```
In [71]: a = np.array([22,87,5,43,56,73,55,73,55,54,11,20,51,5,76,31,21])  
plt.hist(a,bins = 5)
```

```
Out[71]: (array([5., 2., 3., 3., 4.]),  
array([ 5. , 21.4, 37.8, 54.2, 70.6, 87. ]),  
<BarContainer object of 5 artists>)
```



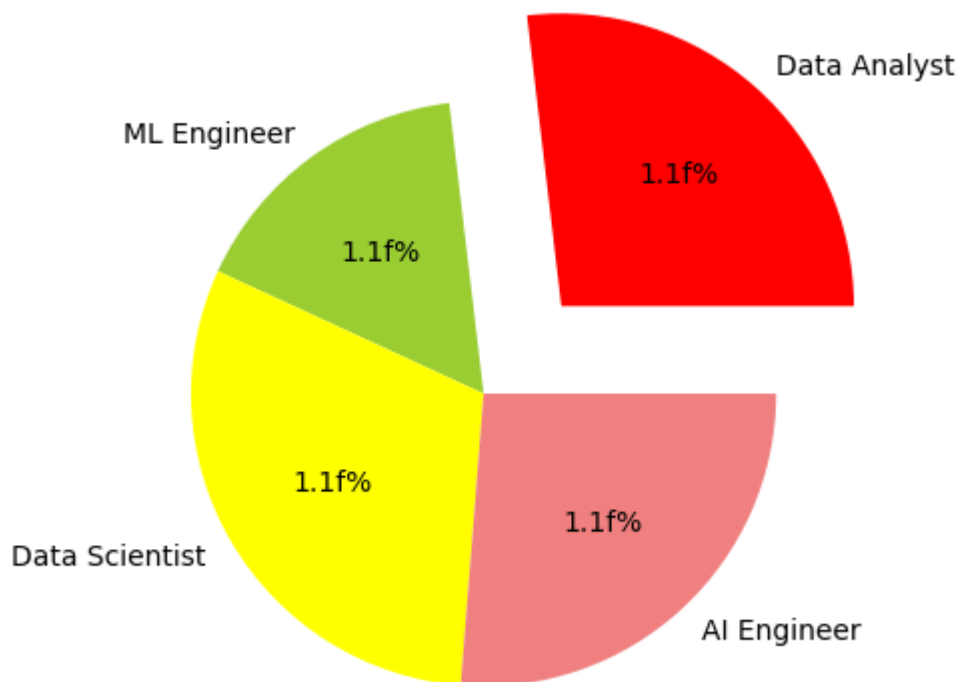
```
In [77]: data = [np.random.normal(0,std,100) for std in range(1,4)]  
plt.boxplot(data)
```

```
Out[77]: {'whiskers': [<matplotlib.lines.Line2D at 0x15d49100250>,  
<matplotlib.lines.Line2D at 0x15d48e3cc50>,  
<matplotlib.lines.Line2D at 0x15d48e34910>,  
<matplotlib.lines.Line2D at 0x15d48e34a90>,  
<matplotlib.lines.Line2D at 0x15d48e5be50>,  
<matplotlib.lines.Line2D at 0x15d48e5b690>],  
'caps': [<matplotlib.lines.Line2D at 0x15d48e3e950>,  
<matplotlib.lines.Line2D at 0x15d48e3e250>,  
<matplotlib.lines.Line2D at 0x15d48e35590>,  
<matplotlib.lines.Line2D at 0x15d48e57f90>,  
<matplotlib.lines.Line2D at 0x15d48e5a7d0>,  
<matplotlib.lines.Line2D at 0x15d48e59e50>],  
'boxes': [<matplotlib.lines.Line2D at 0x15d491ffe50>,  
<matplotlib.lines.Line2D at 0x15d48e62590>,  
<matplotlib.lines.Line2D at 0x15d48e5f650>],  
'medians': [<matplotlib.lines.Line2D at 0x15d48e68950>,  
<matplotlib.lines.Line2D at 0x15d48e55490>,  
<matplotlib.lines.Line2D at 0x15d48e58b10>],  
'fliers': [<matplotlib.lines.Line2D at 0x15d48e3c110>,  
<matplotlib.lines.Line2D at 0x15d491ecdd0>,  
<matplotlib.lines.Line2D at 0x15d48e414d0>],  
'means': []}
```




```
In [86]: labels = 'Data Analyst','ML Engineer','Data Scientist','AI Engineer'
        sizes = [215,130,245,210]
        colors = ['red','yellowgreen','yellow','lightcoral']
        explode = (0.4,0,0,0)

        plt.pie(sizes,explode = explode, colors=colors, labels=labels, autopct="1.1f%")
        plt.axis('equal')
        plt.show()
```



In []: