Data_Visualisation

August 19, 2022

[1]:
```
#Data Visualisation--->Graphical Representation
#Matplotlib
#Seaborn
#bokeh
```

[2]:
```
#data visualisation using Matplotlib
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
```

[3]:
```
x=np.linspace(0,20,10)
x
```

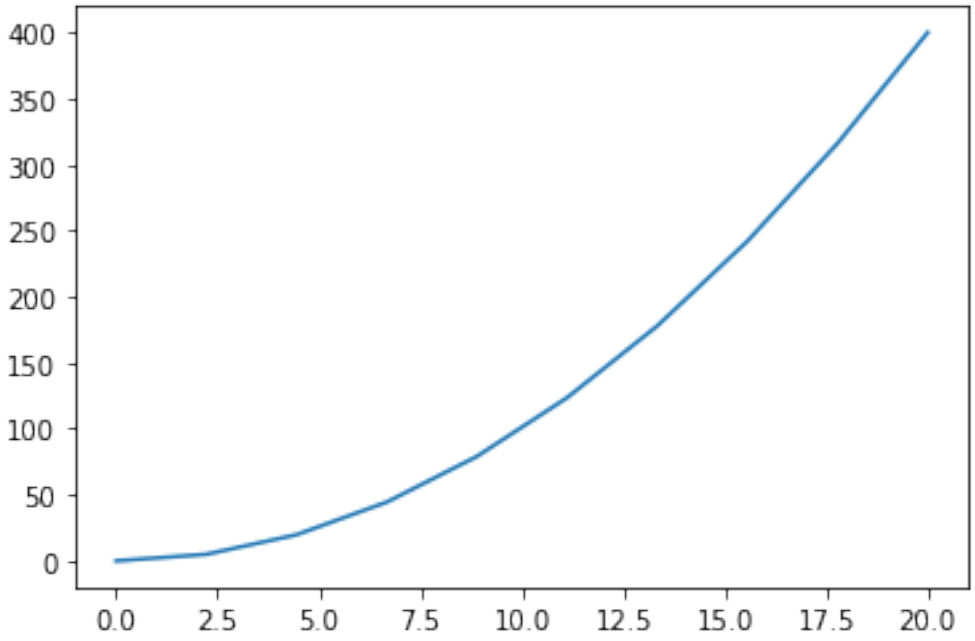
[3]:
```
array([ 0.        ,  2.22222222,  4.44444444,  6.66666667,  8.88888889,
       11.11111111, 13.33333333, 15.55555556, 17.77777778, 20.        ])
```

[4]:
```
y=x**2
y
```

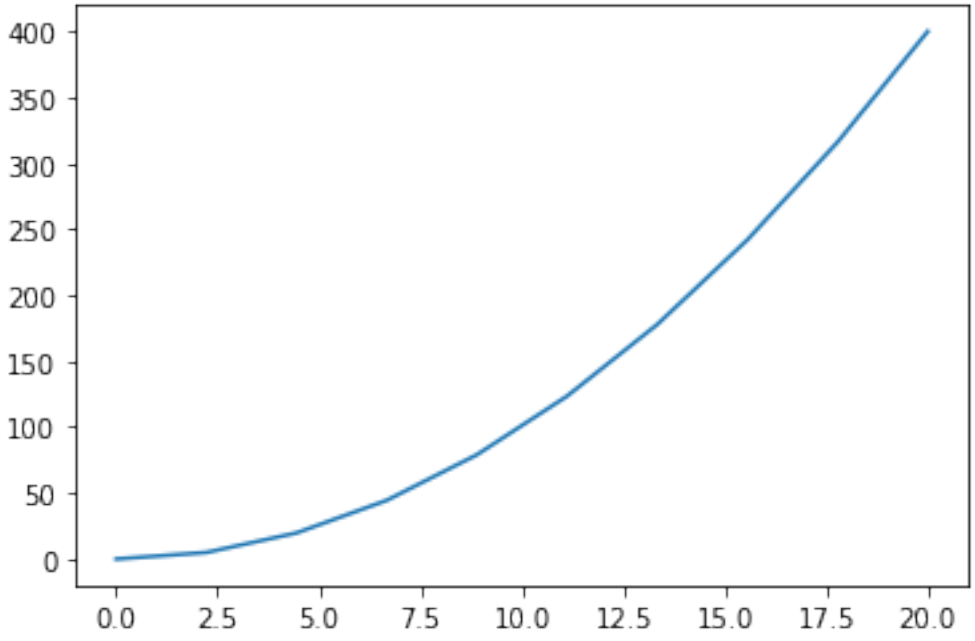
[4]:
```
array([  0.        ,   4.9382716 ,  19.75308642,  44.44444444,
        79.01234568, 123.45679012, 177.77777778, 241.97530864,
       316.04938272, 400.        ])
```

[5]:
```
plt.plot(x,y)
```

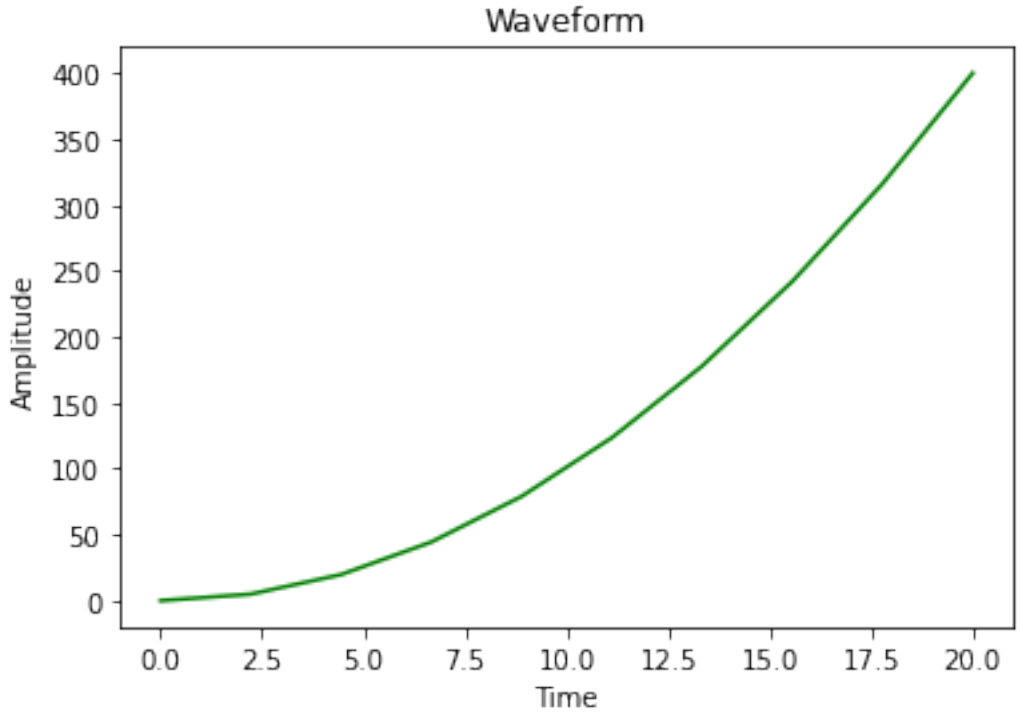
[5]:
```
[<matplotlib.lines.Line2D at 0x7fe8f41ce150>]
```



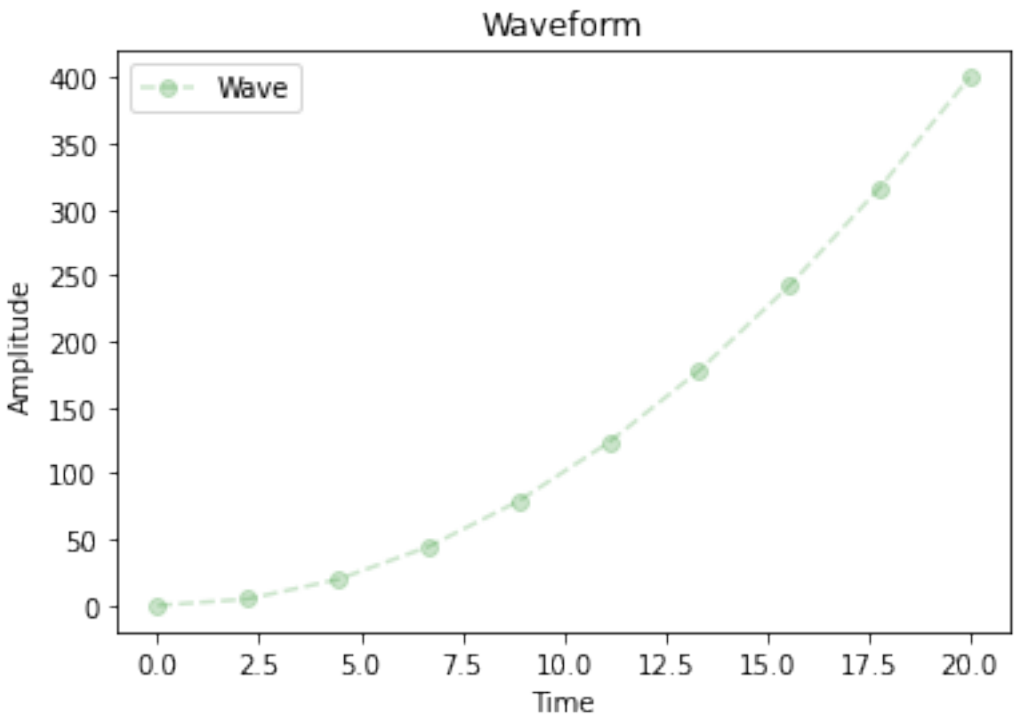
[6]:
```
plt.plot(x,y)
plt.show() #to remove index or heading
```



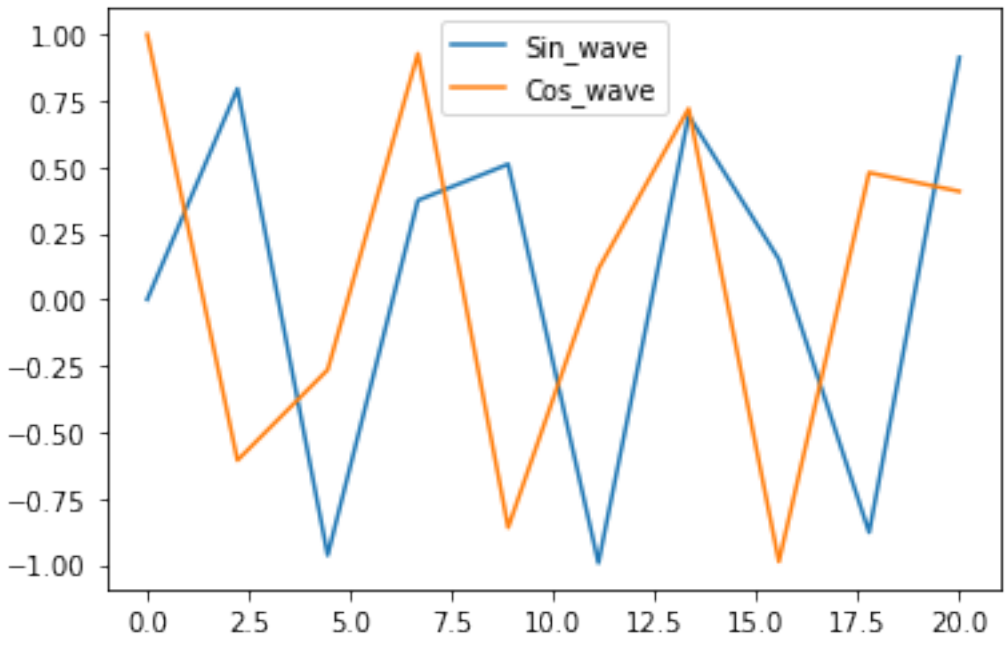
[7]:
```
plt.plot(x,y,color='g') #--to change color use it
plt.xlabel('Time')
plt.ylabel('Amplitude')
plt.title('Waveform')
plt.show()
```



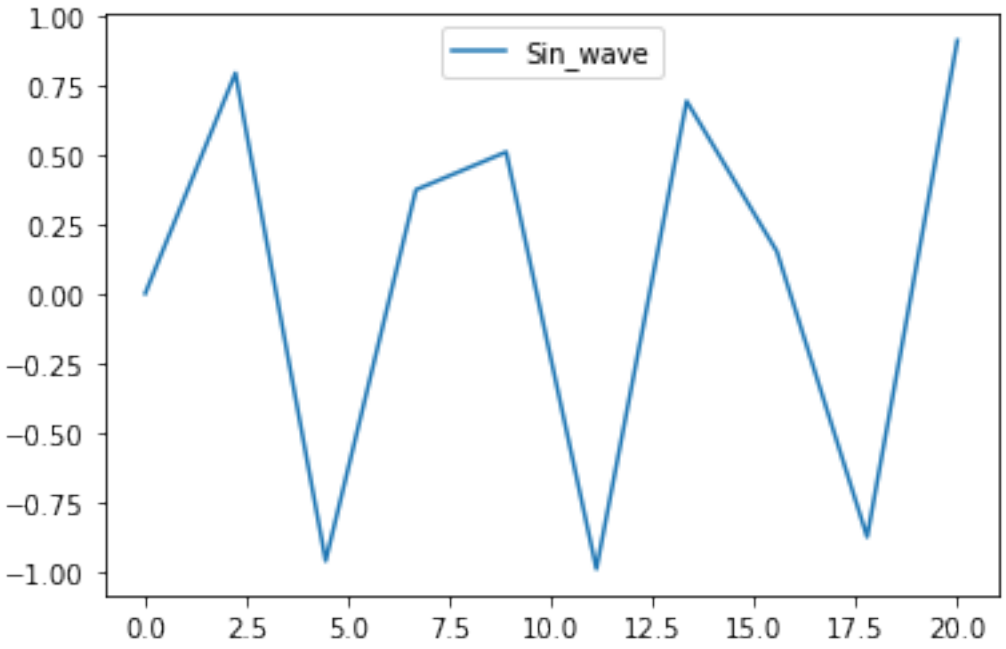
[8]:
```
#lineplot------>1D plot
plt.plot(x,y,color='g',alpha=0.2,linestyle='--',marker='o',label='Wave') #--to␣
 ↪change transparency of line use alpha, to change linestyle use it
#plt.axis([0,30,0,500]) --->to change axis limit
plt.xlabel('Time')
plt.ylabel('Amplitude')
plt.title('Waveform')
plt.legend() #--to name a graph
plt.show()
```

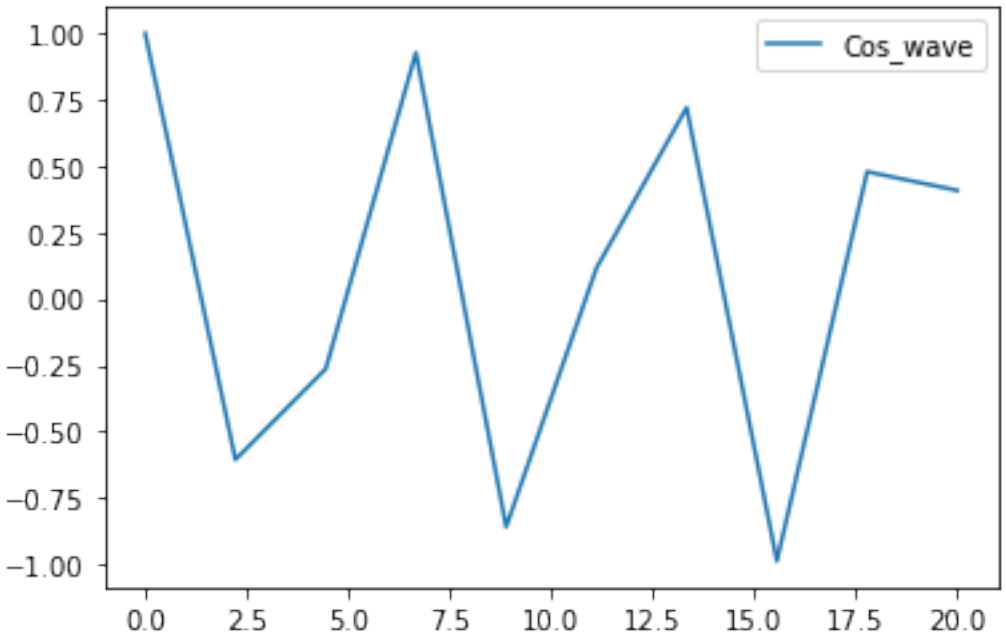


[9]:
```
#to plot multiple plots
plt.plot(x,np.sin(x),label='Sin_wave')
plt.plot(x,np.cos(x),label='Cos_wave')
plt.legend()
plt.show()
```



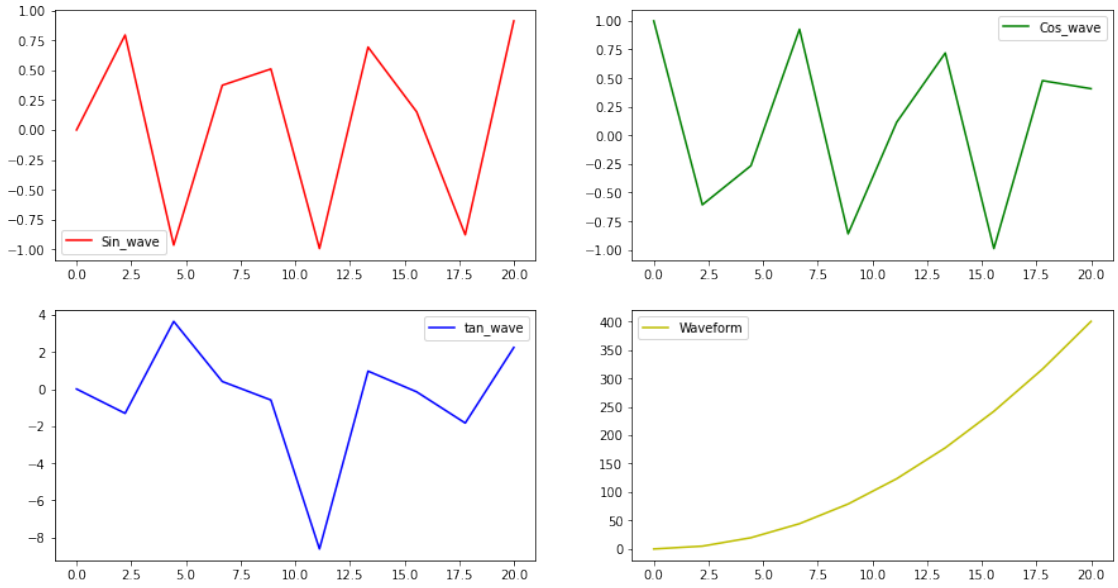
[10]:
```
#Multiple plot in seperate window
plt.plot(x,np.sin(x),label='Sin_wave')
plt.legend()
plt.show()   #to seperate windows of graph
plt.plot(x,np.cos(x),label='Cos_wave')
plt.legend()
plt.show()
```



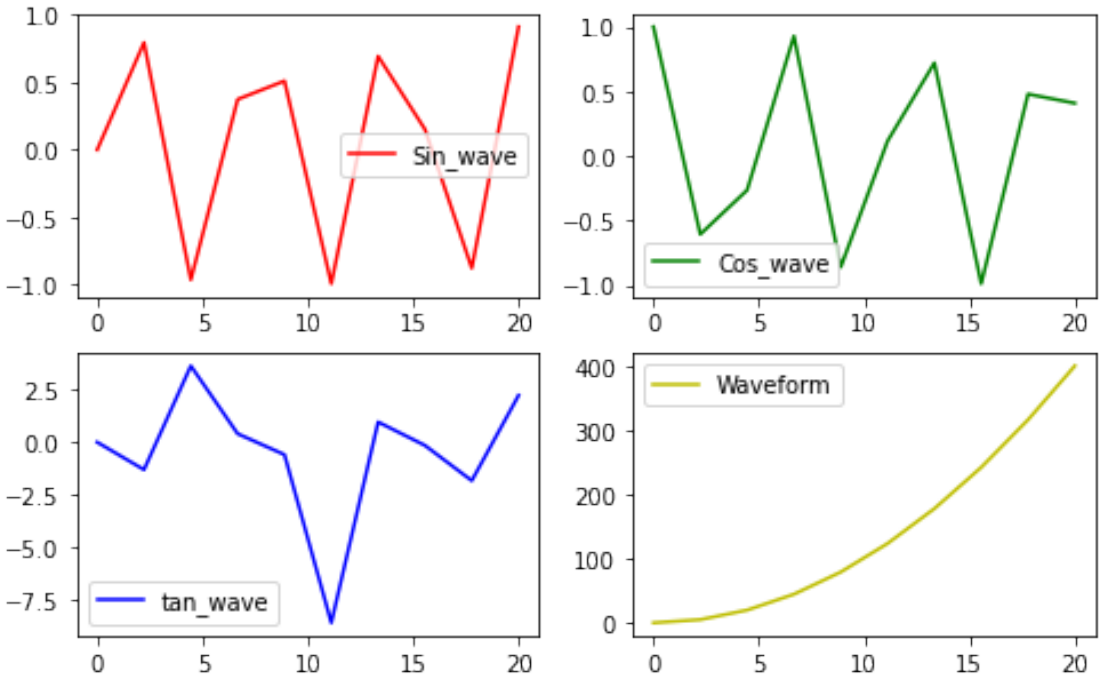


[11]:
```
#Subplot---------->for 20 graphs the above one would be difficult so we use␣
 ↪Subplot
plt.figure(figsize=(15,8)) #----->to fix dimensions of the graph
plt.subplot(2,2,1)
```

```
plt.plot(x,np.sin(x),color='r',label='Sin_wave')
plt.legend()
plt.subplot(2,2,2)
plt.plot(x,np.cos(x),color='g',label='Cos_wave')
plt.legend()
plt.subplot(2,2,3)
plt.plot(x,np.tan(x),color='b',label='tan_wave')
plt.legend()
plt.subplot(2,2,4)
plt.plot(x,y,color='y',label='Waveform')
plt.legend()
plt.show()
```



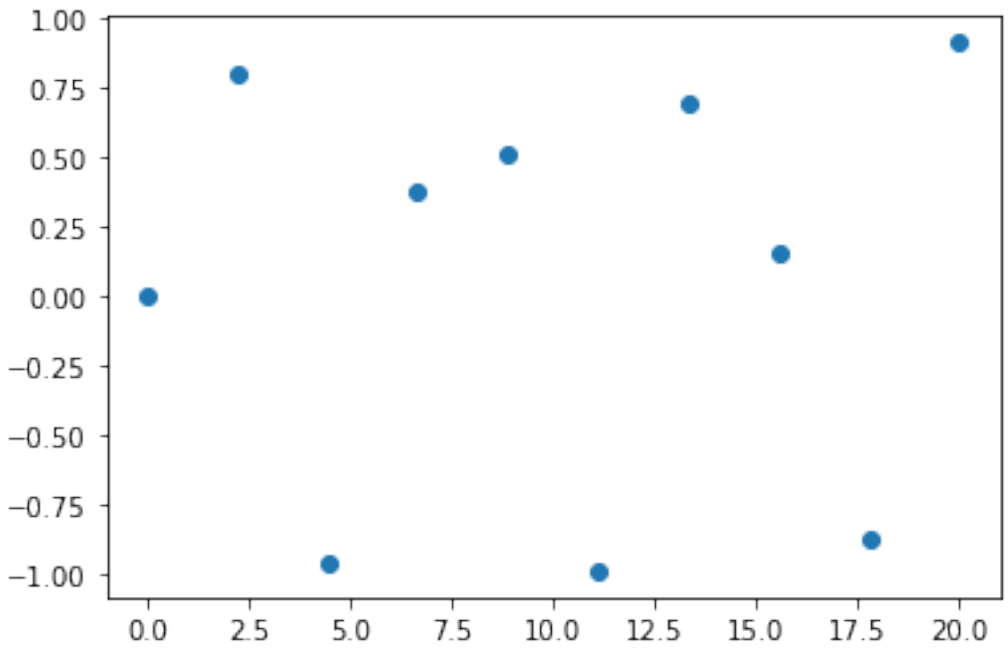
[12]:
```
plt.figure(figsize=(8,5)) #----->to fix dimensions of the graph
plt.subplot(2,2,1)
plt.plot(x,np.sin(x),color='r',label='Sin_wave')
plt.legend()
plt.subplot(2,2,2)
plt.plot(x,np.cos(x),color='g',label='Cos_wave')
plt.legend()
plt.subplot(2,2,3)
plt.plot(x,np.tan(x),color='b',label='tan_wave')
plt.legend()
plt.subplot(2,2,4)
plt.plot(x,y,color='y',label='Waveform')
plt.legend()
plt.show()
```



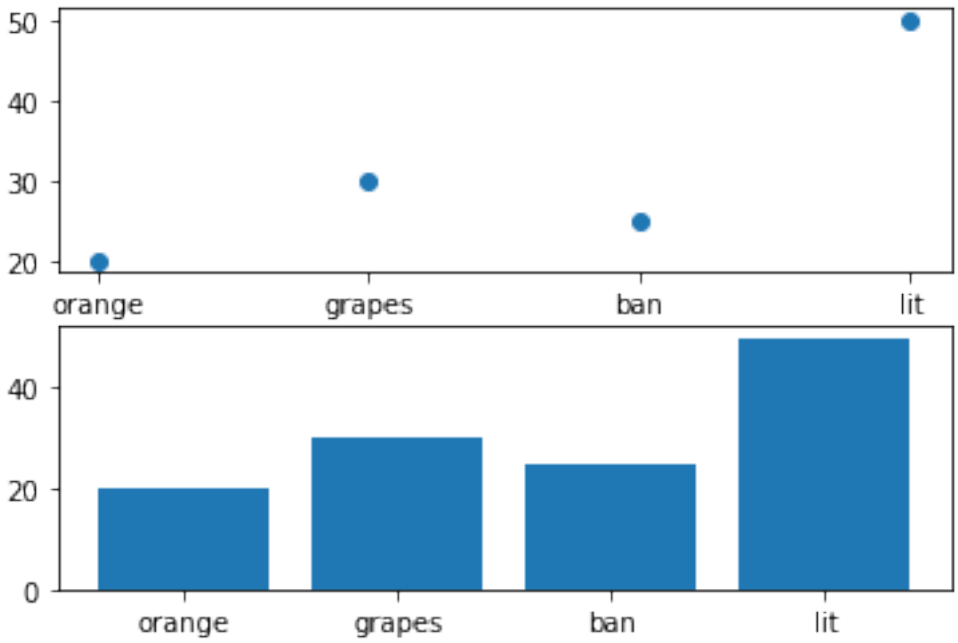
[13]:
```
#line plot
#scatter plot
#bar chart
#pie chart
```

[14]:
```
#scatter plot---->data is distributed(it is used to relationship between␣
 ↪numerical values)
plt.scatter(x,np.sin(x))
```

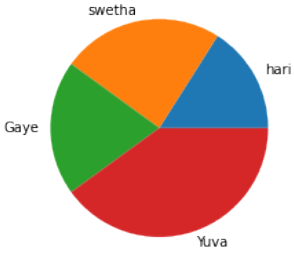
[14]: <matplotlib.collections.PathCollection at 0x7fe8bb5f8710>

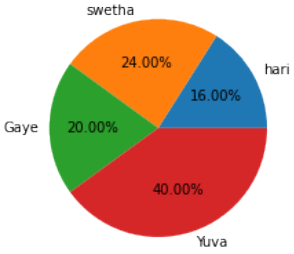


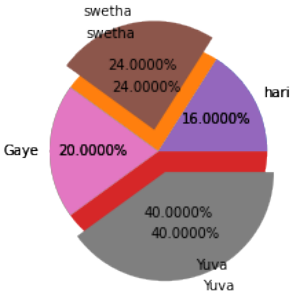
[15]:
```
#bar chart------->
x=['orange','grapes','ban','lit']
y=[20,30,25,50]
plt.subplot(2,1,1)
plt.scatter(x,y)
plt.subplot(2,1,2)
plt.bar(x,y)
plt.show()
```



[23]:
```
#piechart
agent=['hari','swetha','Gaye','Yuva']
sales=[20,30,25,50]
plt.figure(figsize=(15,8))
plt.subplot(2,3,1)
plt.pie(sales)
plt.subplot(2,3,2)
plt.pie(sales,labels=agent)
plt.subplot(2,3,3)
plt.pie(sales,labels=agent,autopct='%.2f%%')
plt.subplot(2,3,4)
plt.pie(sales,labels=agent,autopct='%.4f%%')
plt.subplot(2,3,4)
plt.pie(sales,labels=agent,autopct='%.4f%%',explode=[0,0.2,0,0.2])
plt.show()
```







[24]:
```
#histogram----DataDistribution
data=np.random.random(100)
plt.hist(data)
plt.show()
```