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Python Programming - 2101CS405

Lab - 11

name : Gohel Krish V.

Roll No : 108

Enr NO : 22010101060

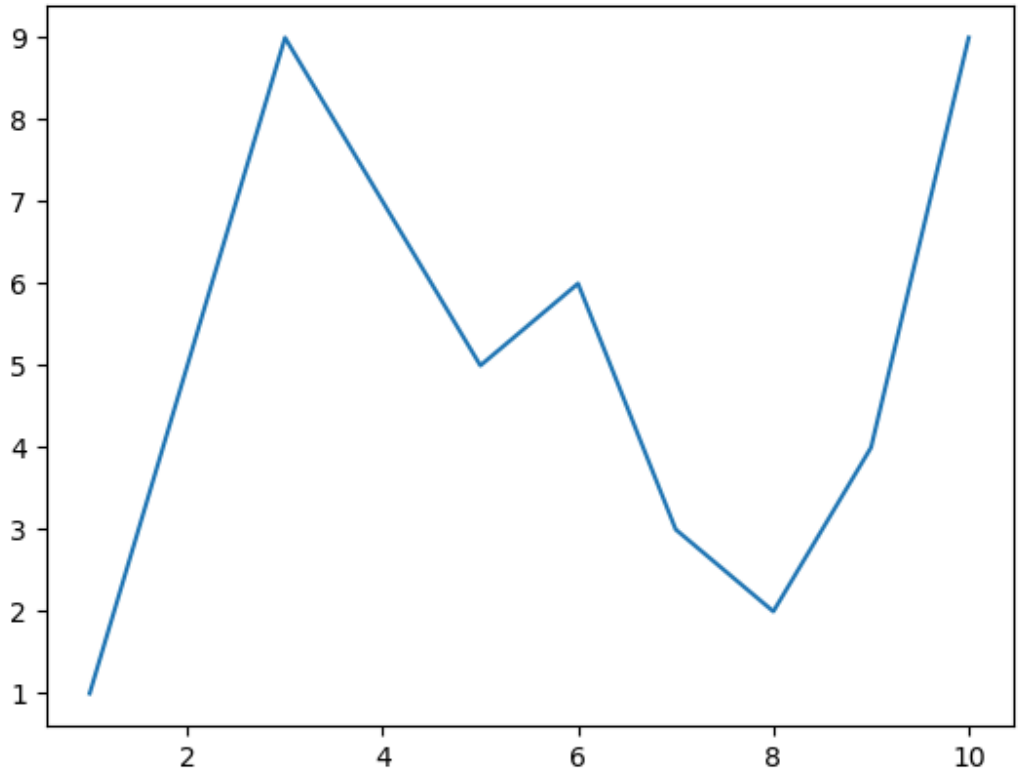
Graphs

A

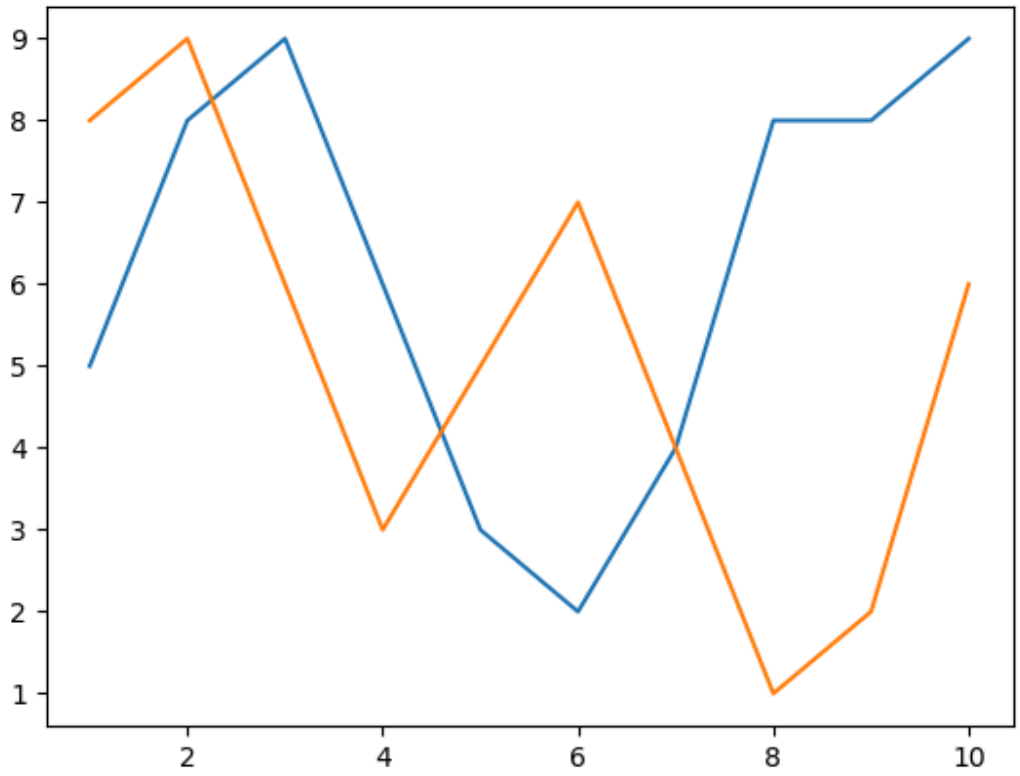
In [ ]:
```
#import matplotlib below
```

In [ ]:
```
#set matplotlib inline below
```

In [32]:
```
import matplotlib.pyplot as plt
%matplotlib inline

x = range(1,11)
y = [1,5,9,7,5,6,3,2,4,9]

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

# write a code to display the line chart of above x & y
```

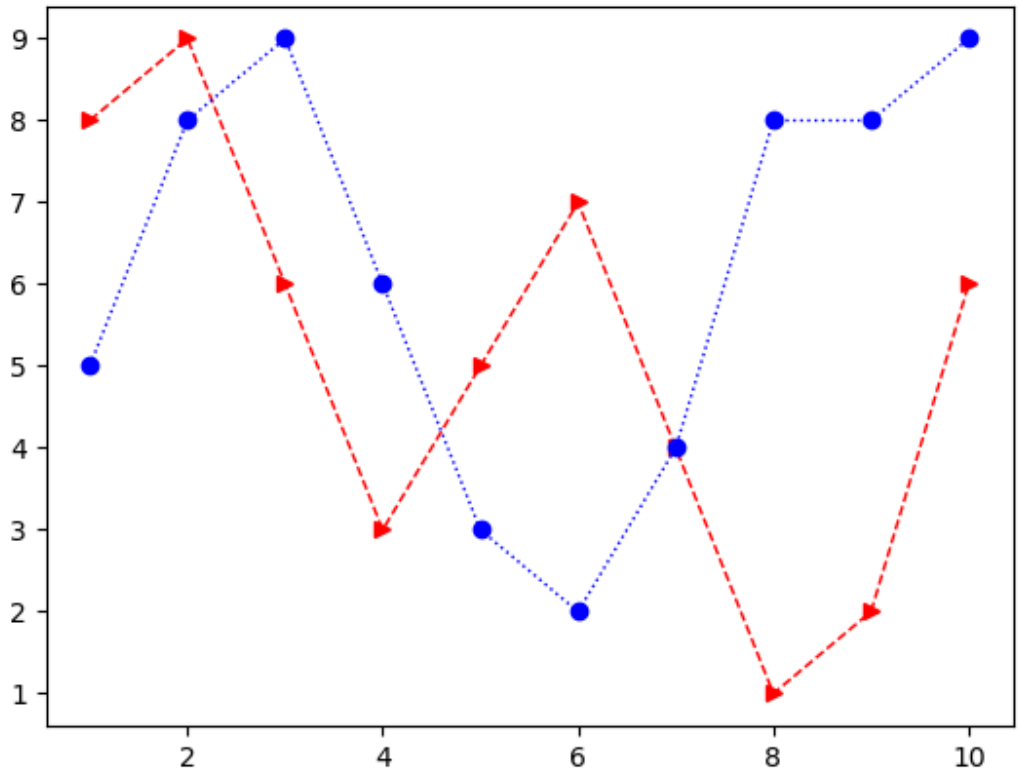


In [38]:
```
import matplotlib.pyplot as plt
%matplotlib inline

x = [1,2,3,4,5,6,7,8,9,10]
cxMarks = [5,8,9,6,3,2,4,8,8,9]
cyMarks = [8,9,6,3,5,7,4,1,2,6]

plt.plot(x,cxMarks)
plt.plot(x,cyMarks)
plt.show()

# write a code to display two lines in a line chart (data given above)
```



In [36]:
```
import matplotlib.pyplot as plt
%matplotlib inline

x = range(1,11,1)
cxMarks= [8,9,6,3,5,7,4,1,2,6]
cyMarks= [5,8,9,6,3,2,4,8,8,9]

plt.plot(x,cxMarks,c="r",lw=1,ls="--",marker=">")
plt.plot(x,cyMarks,c="b",lw=1,ls=":",marker="o")
# write a code to generate below graph
```

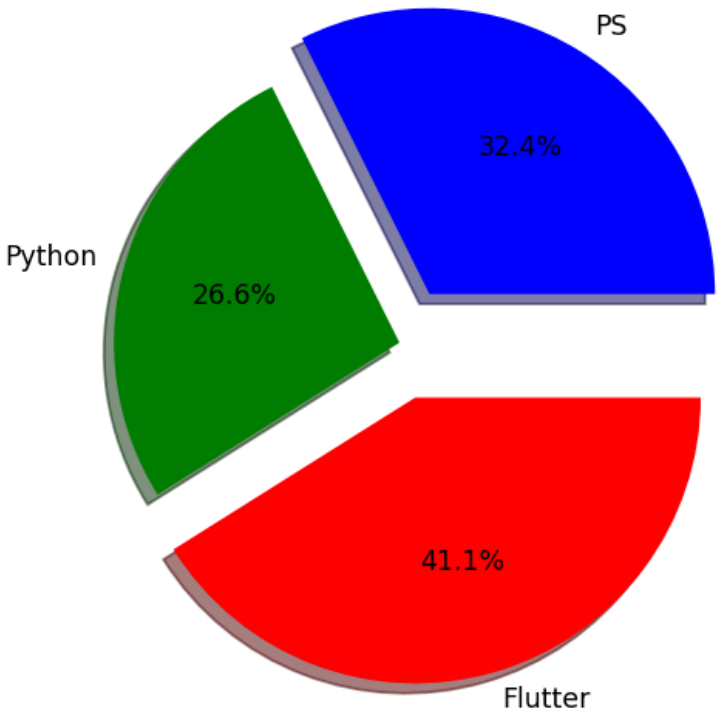
Out[36]: [<matplotlib.lines.Line2D at 0x1eed963d790>]



In [ ]:

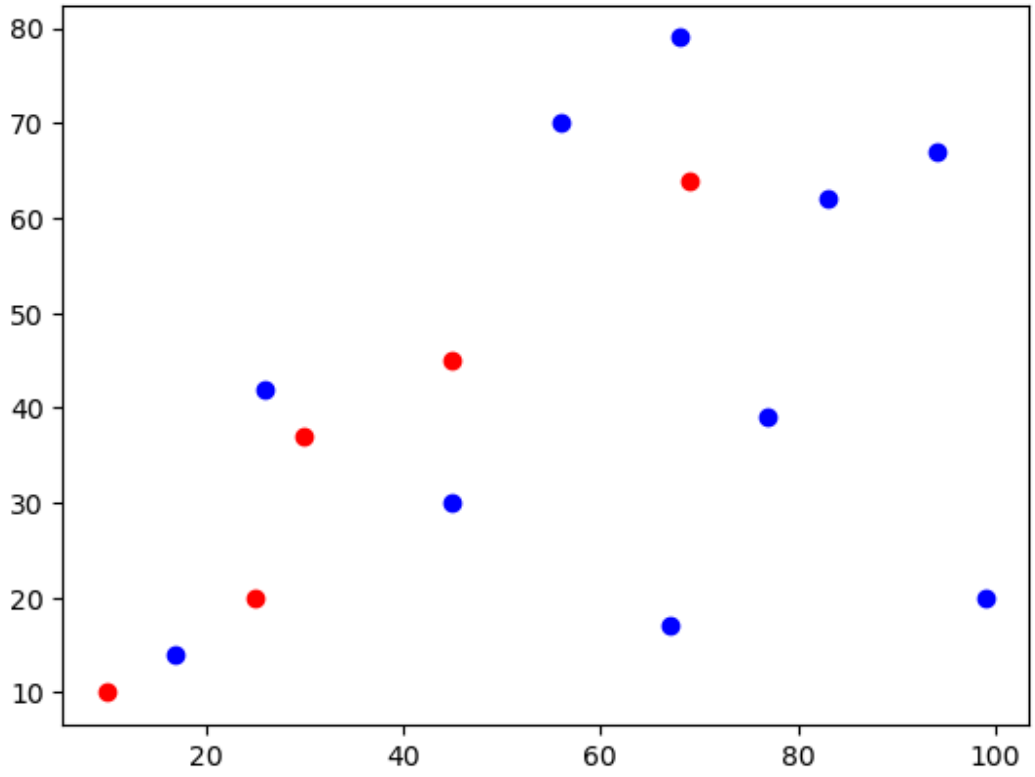
01) WAP to demonstrate the use of Pie chart.

In [40]:
```
import matplotlib.pyplot as plt
%matplotlib notebook
x = ['PS','Python','Flutter']
values = [78,64,99]
c=['b','g','r']
e=[.2,0,.2]

plt.pie(values,labels=x,colors=c,explode=e,autopct="%1.1f%%",shadow=True)
plt.show()
```



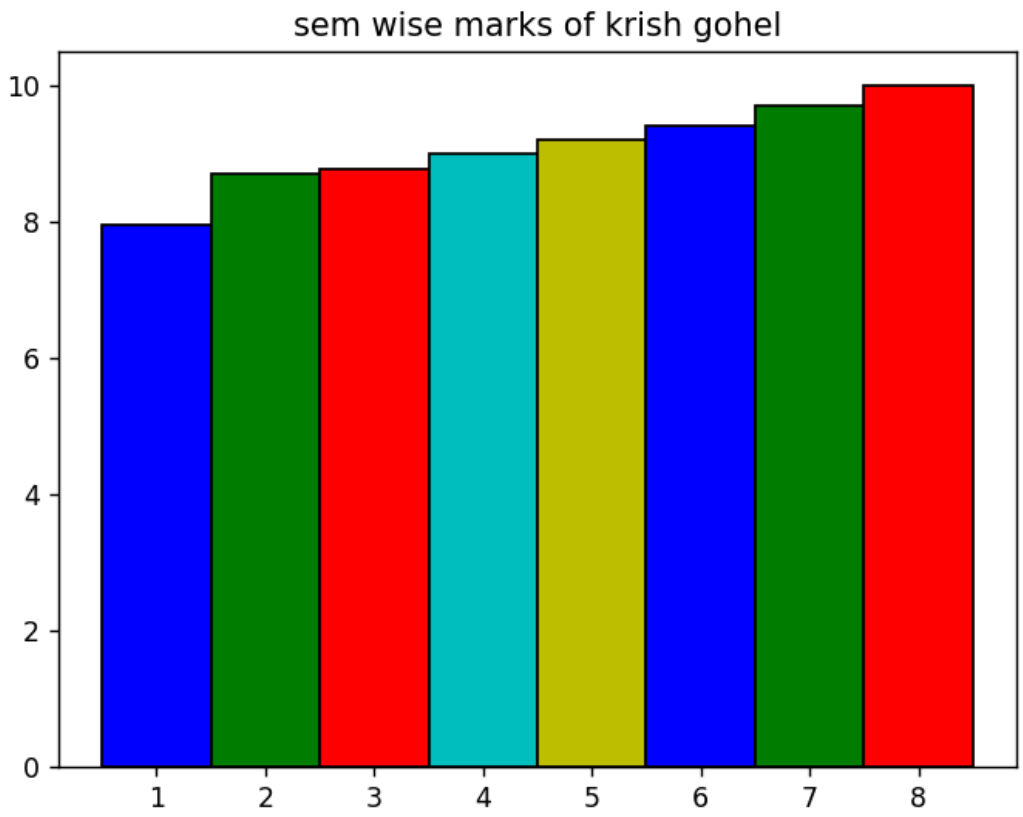
02) WAP to to Plot List random of X, Y Coordinates in Matplotlib.

In [44]:
```
import matplotlib.pyplot as plt
import random
%matplotlib inline

x1 = [10,45,25,69,30]
y1 = [10,45,20,64,37]

x2 = [random.randint(1,100) for i in range(1,11)]
y2 = [random.randint(1,100) for i in range(1,11)]

plt.scatter(x1,y1,color="r")
plt.scatter(x2,y2,color="b")

plt.show()
```



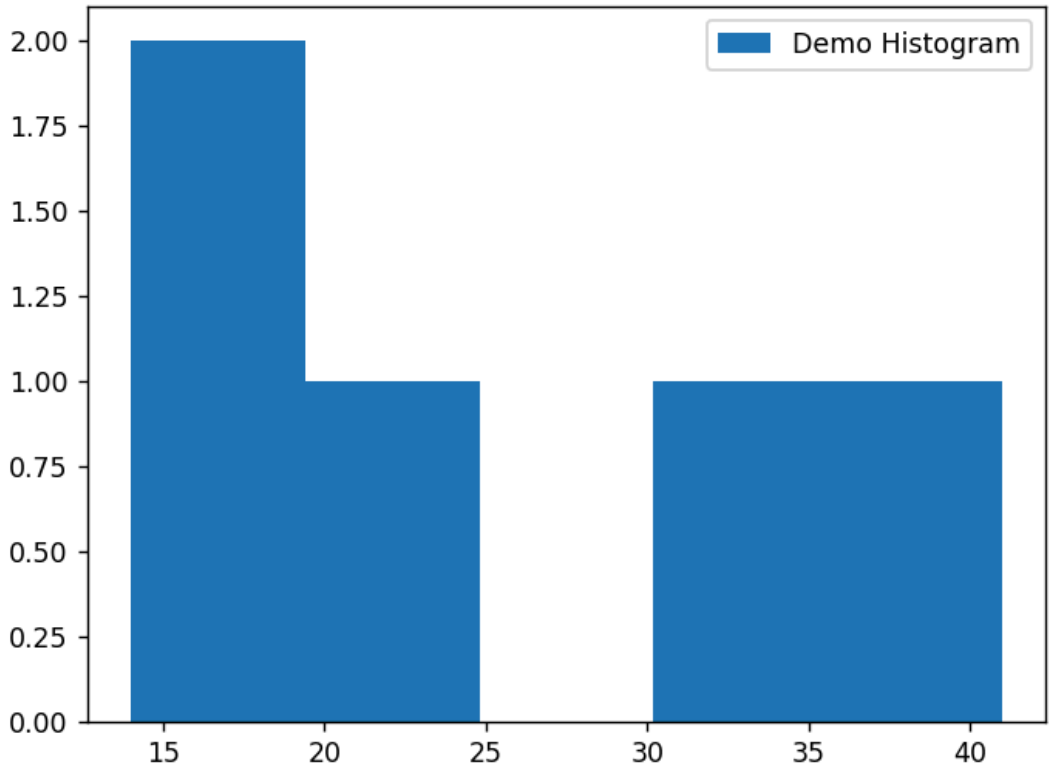
03) WAP to demonstrate the use of Bar chart.

In [102]:
```
import matplotlib.pyplot as plt
%matplotlib notebook

x = [1,2,3,4,5,6,7,8]
y = [7.96,8.7,8.78,9,9.2,9.4,9.7,10]
l = ['1st','2nd','3rd','4th','5th','6th','7th','8th']
c = ['b','g','r','c','y','b','g','r']
w = [1,1,1,1,1,1,1,1]

plt.title('sem wise marks of krish gohel')
plt.bar(x,y,label=l,color=c,width=w,edgecolor='black')
plt.show()
```



04) WAP to demonstrate the use of Histogram.

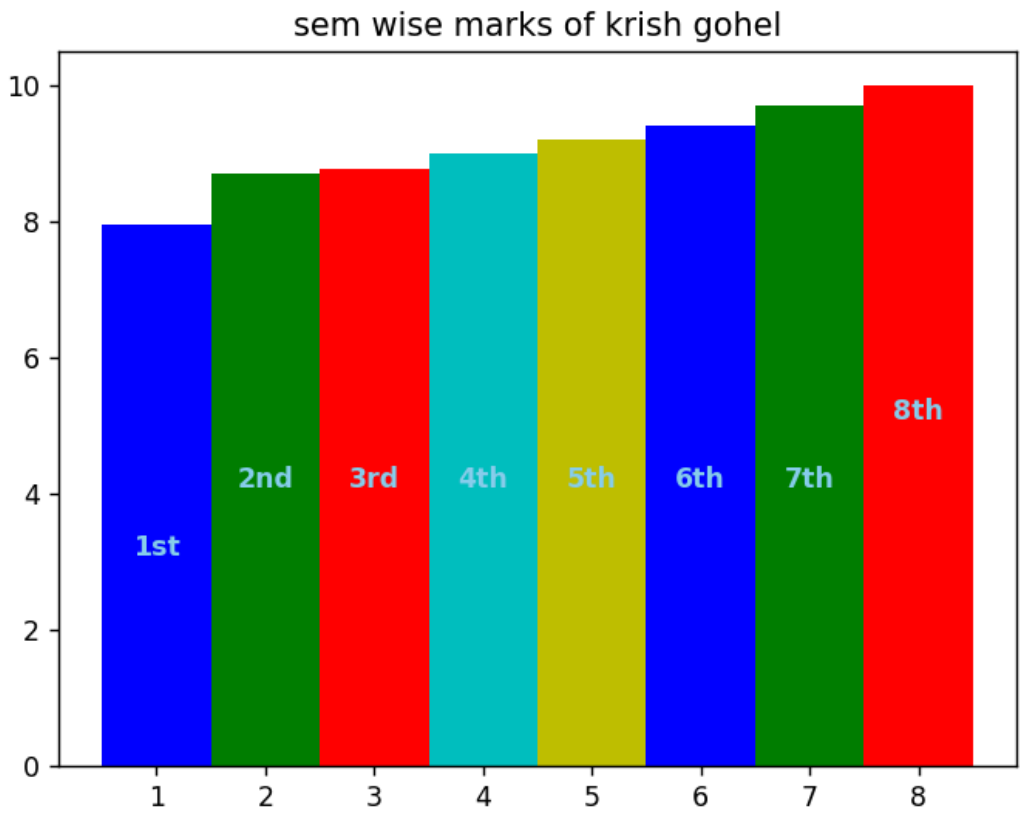
In [80]:
```
import matplotlib.pyplot as plt
import numpy as np
%matplotlib notebook
import random

x = np.random.randint(0,50,5)
plt.hist(x,bins=5,histtype='stepfilled',align='mid',label="Demo Histogram",)
plt.legend()
plt.show()
```



B

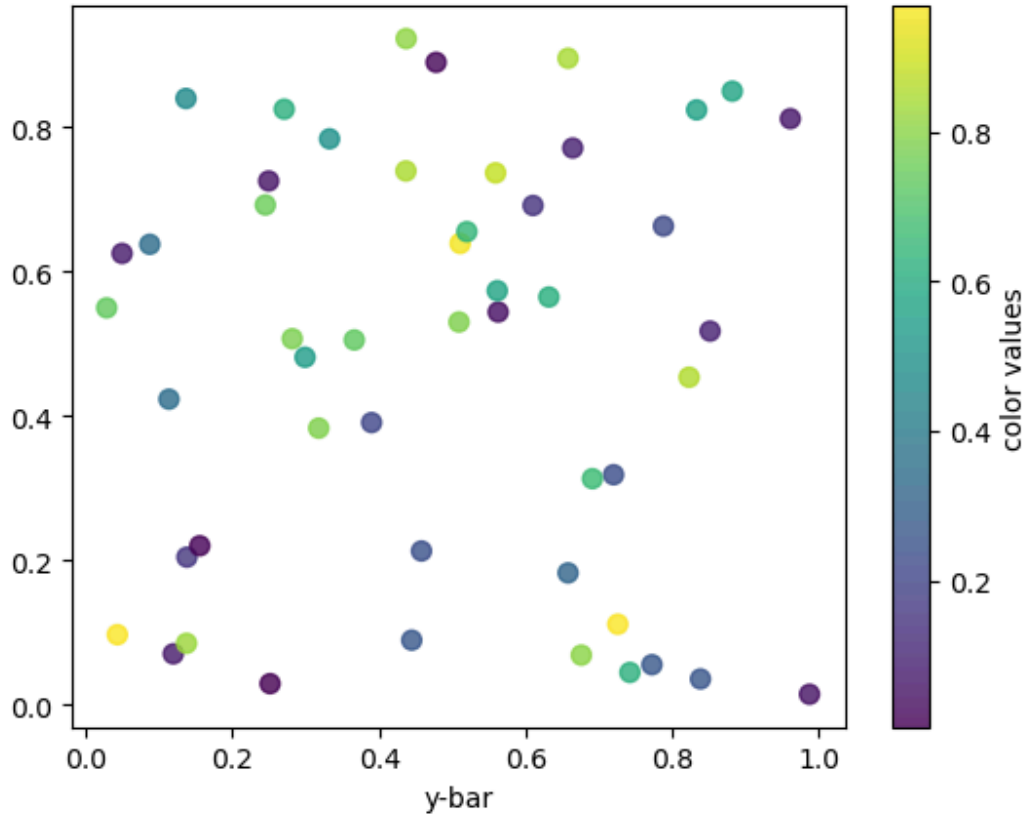
01) WAP to display the value of each bar in a bar chart using Matplotlib.

In [81]:
```
import matplotlib.pyplot as plt
%matplotlib notebook

x = [1,2,3,4,5,6,7,8]
y = [7.96,8.7,8.78,9,9.2,9.4,9.7,10]
l = ['1st','2nd','3rd','4th','5th','6th','7th','8th']
c = ['b','g','r','c','y','b','g','r']
w = [1,1,1,1,1,1,1,1]

plt.title('sem wise marks of krish gohel')
plt.bar(x,y,label=l,color=c,width=w)
for i in range(8):
    plt.text(i+1,y[i]//2,l[i],color='skyblue',weight="bold",ha="center",va='bottom'
plt.show()
```



02) WAP create a Scatter Plot with several colors in Matplotlib?

In [87]:
```
import matplotlib.pyplot as plt
import numpy as np
import random
%matplotlib inline

num_point = 50
c = np.random.rand(num_point)
x = np.random.rand(num_point)
y = np.random.rand(num_point)

plt.scatter(x,y,c=c,s=50,alpha=.8)
plt.colorbar(label="color values")

plt.xlabel("x-bar")
plt.xlabel("y-bar")

plt.show()
```



03) WAP to Display an Image in Grayscale in Matplotlib.

In [100]:
```
import PIL
img=PIL.Image.open("AutumnRaven_EN-IN6850233265_1920x1080.jpg")
gray_image = img.convert('L')
plt.imshow(gray_image,cmap='gray')
```

Out[100]: <matplotlib.image.AxesImage at 0x1eedd279f10>