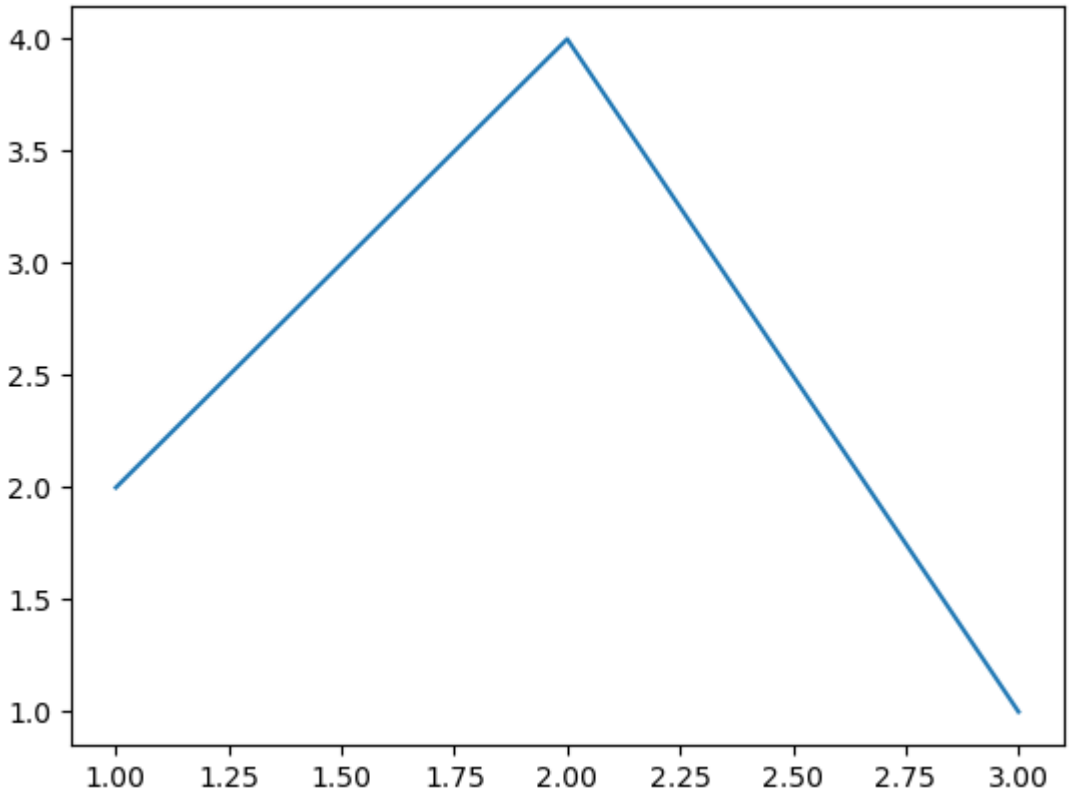
In [239…
```
import pandas as pd
import matplotlib.pyplot as plt
```

Q.1: Write a Python program to draw a line using given axis values with suitable label in the x axis , y axis and a title.

In [258…
```
x=[1.0,2.0,3.0]
y= [2.0,4.0,1.0]

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



In [ ]:

In [ ]:

Q.2: Write a Python program to plot two or more lines with legends, different widths and colors.The code snippet gives the output shown in the following screenshot:

In [288…
```
data ={
'x' : [10,20,30],
'l1': [20,40,10],
'l2': [40,10,30],

}
df = pd.DataFrame(data)
```

In [289…
```
# df.set_index('x',inplace=True)
```

In [290…
```
df
```

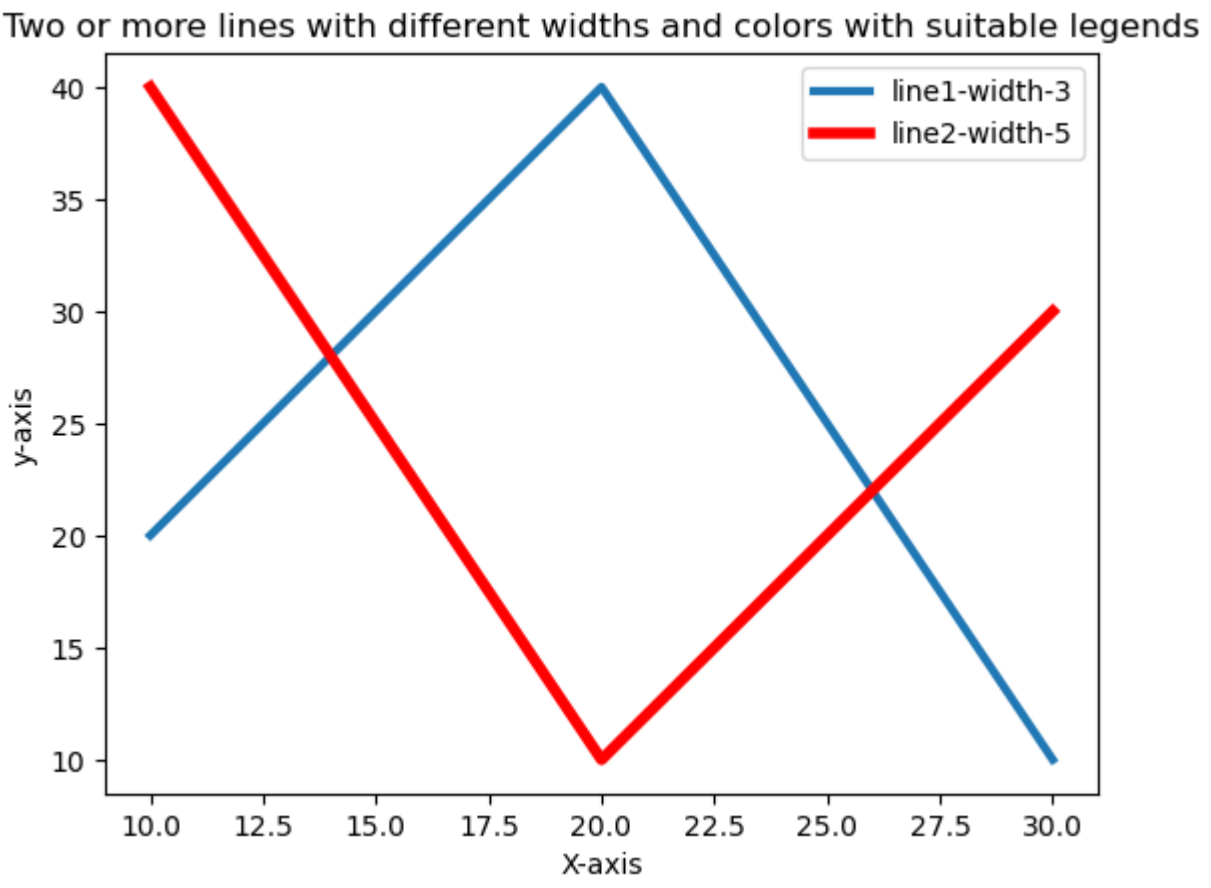
Out[290]:

	x	l1	l2
0	10	20	40
1	20	40	10
2	30	10	30

In [291…
```
df.x
```

Out[291]:
```
0    10
1    20
2    30
Name: x, dtype: int64
```

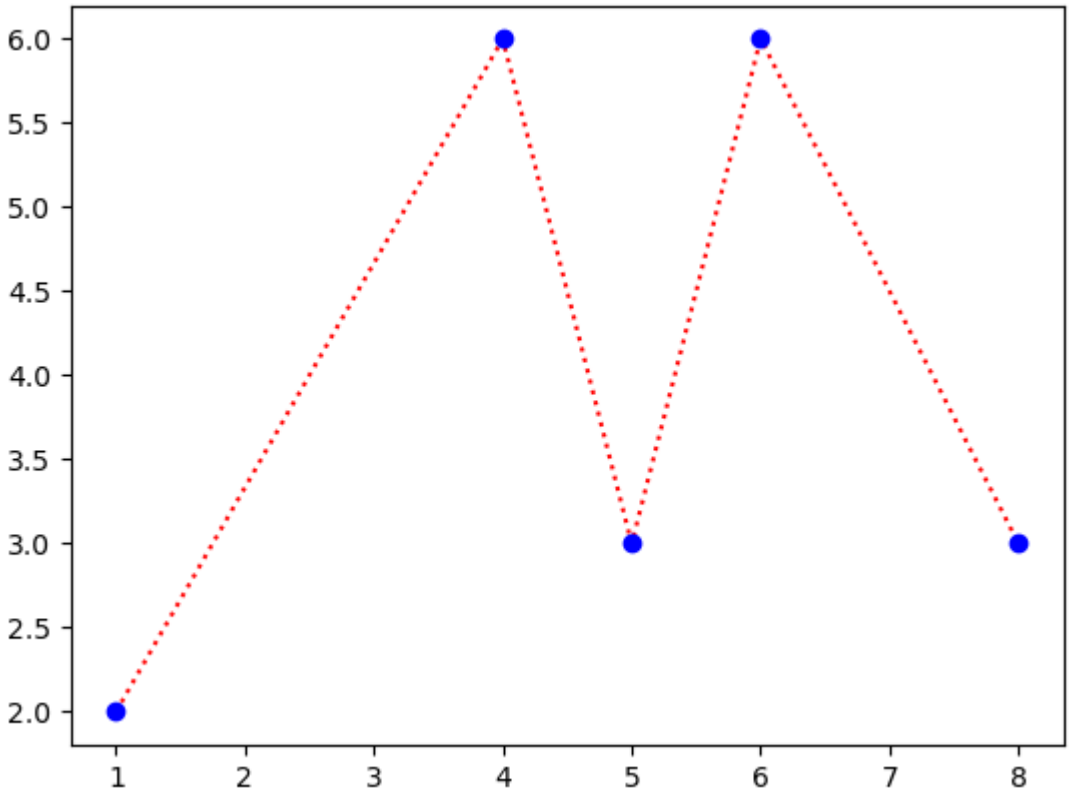
In [294…
```
plt.plot(df.x,df.l1,linewidth=3)
plt.plot(df.x,df.l2,linewidth = 4,color='red')
plt.title('Two or more lines with different widths and colors with suitable legends')

plt.xlabel('X-axis')
plt.ylabel('y-axis')
plt.legend(['line1-width-3','line2-width-5'])

plt.show()
```



Q.3: Write a Python program to plot two or more lines and set the line markers. The code snippet gives the output shown in the following screenshot:

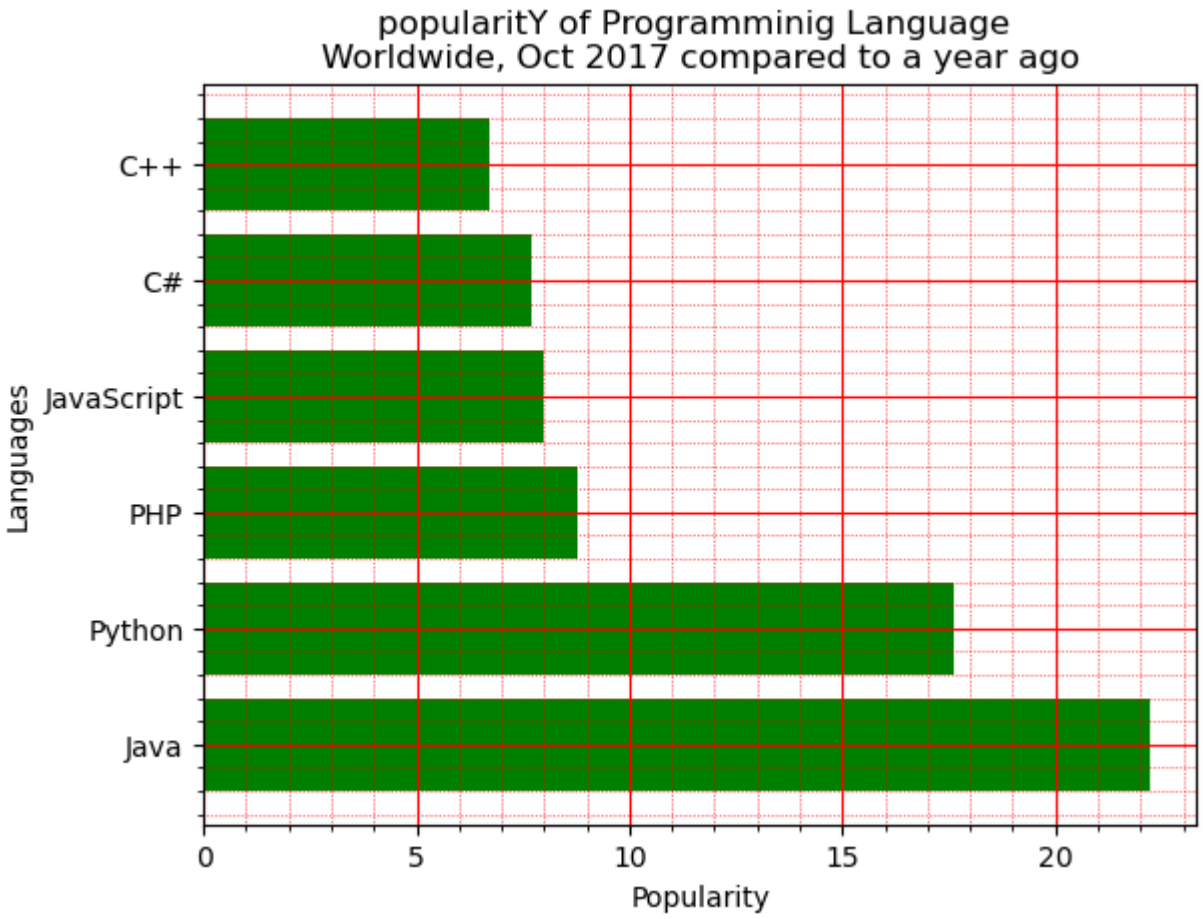
In [207…
```
x = np.array([1,4,5,6,8])
lin = np.array([2,6,3,6,3])
plt.plot(x,lin,linestyle='dotted',marker='o',color='red',mfc='blue',mec='blue')
```

Out[207]:
```
[<matplotlib.lines.Line2D at 0x25823282df0>]
```



Q.4: Write a Python program to display a horizontal bar chart of the popularity of programming Languages. Here is sample data: Programming languages: Java, Python, PHP, JavaScript, C#, C++ Popularity: 22.2, 17.6, 8.8, 8, 7.7, 6.7 The code snippet gives the output shown in the following screenshot:

In [295…
```
p_languages = ['Java','Python','PHP','JavaScript','C#','C++']
popularity = [22.2,17.6,8.8,8,7.7,6.7]
plt.minorticks_on()
plt.grid(which='minor', linestyle=':', linewidth='0.5', color='red')
plt.grid(color='red')
plt.barh(p_languages,popularity,color='g')
plt.title('popularitY of Programminig Language \nWorldwide, Oct 2017 compared to a yea
plt.xlabel('Popularity')
plt.ylabel('Languages')
plt.show()
```



In [ ]:

Q.5: Write a Python program to create bar plot from a DataFrame. Sample Data Frame:

a b c d e

2 4,8,5,7,6

4 2,3,4,2,6

6 4,7,4,7,8

8 2,6,4,8,6

10 2,4,3,3,2

The code snippet gives the output shown in the following screenshot:

In [297…

```
data = {
    'a':[2,4,6,8,10],
    'b':[4,2,4,2,2],
```

```
    'c':[8,3,7,6,4],
    'd':[5,4,4,4,3],
    'e':[7,2,7,8,3],
    'f':[6,6,8,6,2]
}
df = pd.DataFrame(data)
```

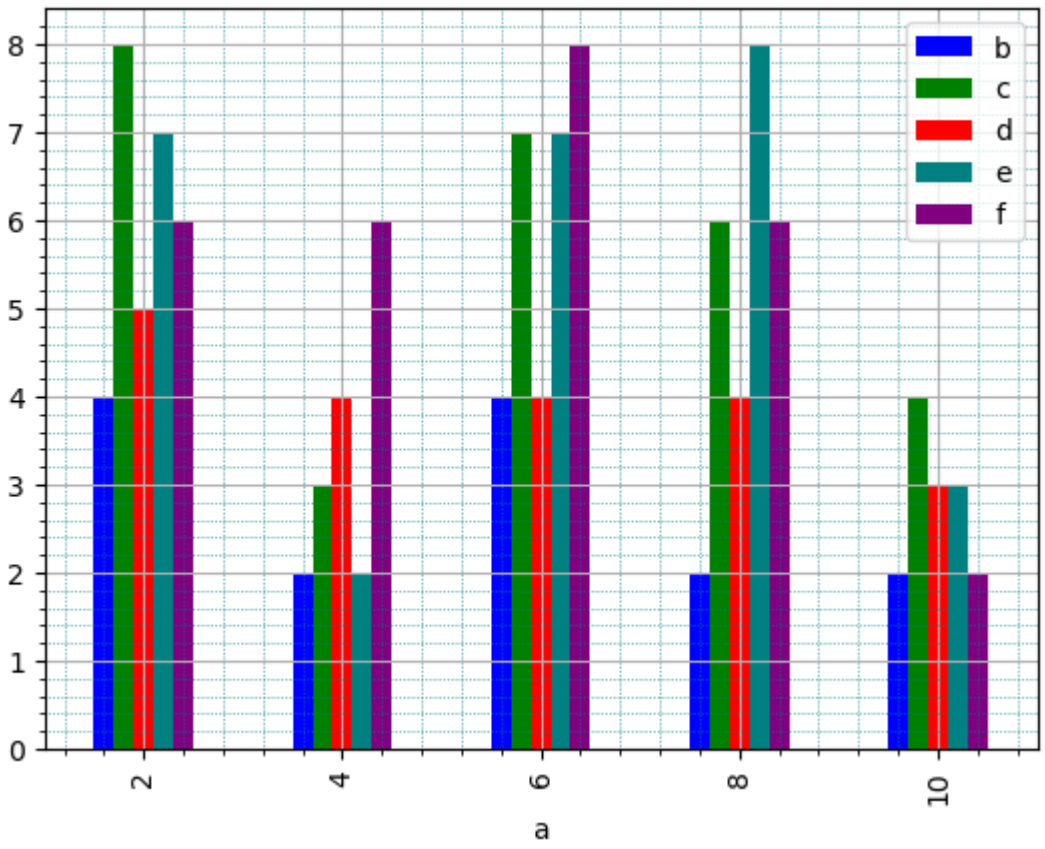
In [298…
```
df.set_index('a',inplace=True)
```

In [299…
```
df
```

Out[299]:

a	b	c	d	e	f
2	4	8	5	7	6
4	2	3	4	2	6
6	4	7	4	7	8
8	2	6	4	8	6
10	2	4	3	3	2

In [300…
```
df.plot(kind='bar',color=['b','g','r','teal','purple'])
plt.minorticks_on()
plt.grid(which='minor', linestyle=':', linewidth='0.5',color='teal')
plt.grid()
```



In [ ]:

Q.6: Write a Python program to create a pie chart of gold medal achievements of five most successful

countries in 2016 Summer Olympics. Read the data from a csv file.

Sample data:

country,gold_medal

United States,46

Great Britain,27

China,26

Russia,19

Germany,17

In [184…

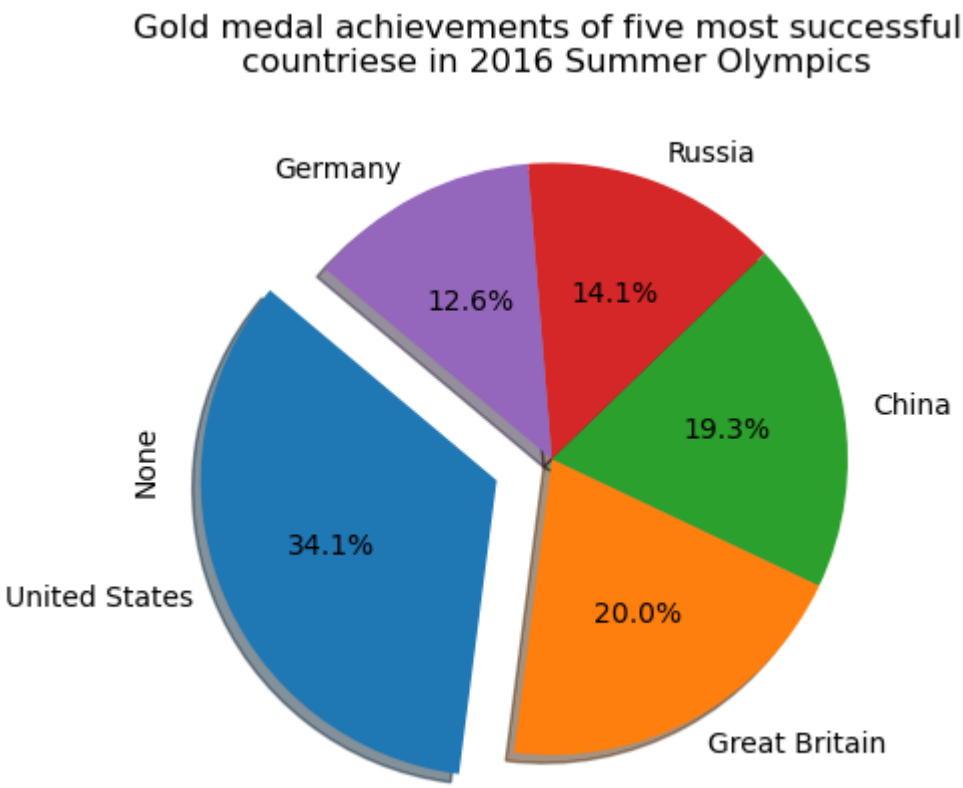
```
data = {
    'United States':46,
    'Great Britain':27,
    'China':26,
    'Russia':19,
    'Germany':17
}
df = pd.Series(data)
df
```

Out[184]:

```
United States    46
Great Britain    27
China            26
Russia           19
Germany          17
dtype: int64
```

In [200…

```
plt.title('Gold medal achievements of five most successful \n countriese in 2016 Summe
df.plot(kind='pie',autopct='%0.1f%%',explode=[0.2,0,0,0,0],shadow=True,startangle=140)
plt.show()
```



Q.7: Write a Python program to draw a scatter plot comparing two subject marks of Mathematics and

Science. Use marks of 10 students.

Sample data:

math_marks = [88, 92, 80, 89, 100, 80, 60, 100, 80, 34]

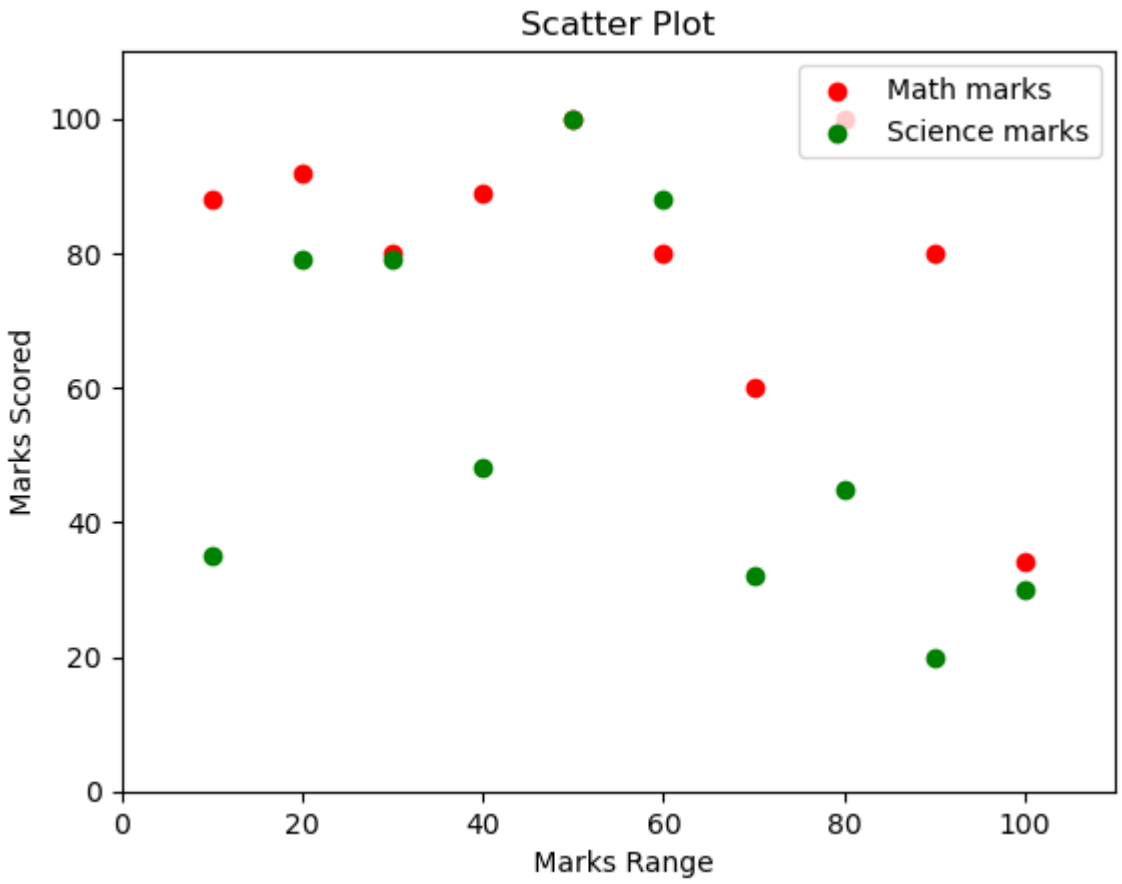
science_marks = [35, 79, 79, 48, 100, 88, 32, 45, 20, 30]

marks_range = [10, 20, 30, 40, 50, 60, 70, 80, 90, 100]

In [302…

```
# Sample data
math_marks = [88, 92, 80, 89, 100, 80, 60, 100, 80, 34]
science_marks = [35, 79, 79, 48, 100, 88, 32, 45, 20, 30]
marks_range = [10, 20, 30, 40, 50, 60, 70, 80, 90, 100]

# Plotting the scatter plot
plt.scatter(marks_range,math_marks, color='red', label='Marks')
plt.scatter(marks_range,science_marks, color='green', label='Marks')


plt.title('Scatter Plot')
plt.xlabel(' Marks Range')
plt.ylabel(' Marks Scored ')

# Adding a legend
plt.legend(['Math marks','Science marks'],loc='upper right')
```

```
# Setting x and y axis limits
plt.xlim(0, 110)
plt.ylim(0, 110)


# Displaying the plot
plt.show()
```



In [ ]: