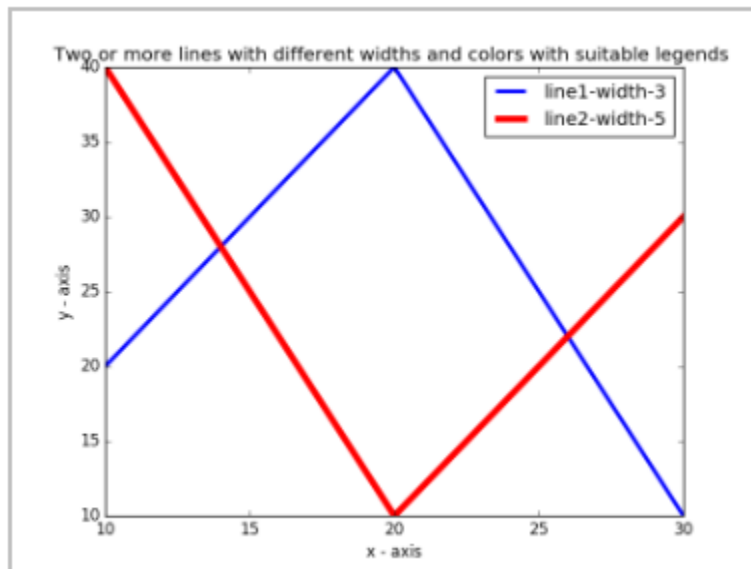


25. Write a Python program to plot two or more lines with legends, different widths and colors.

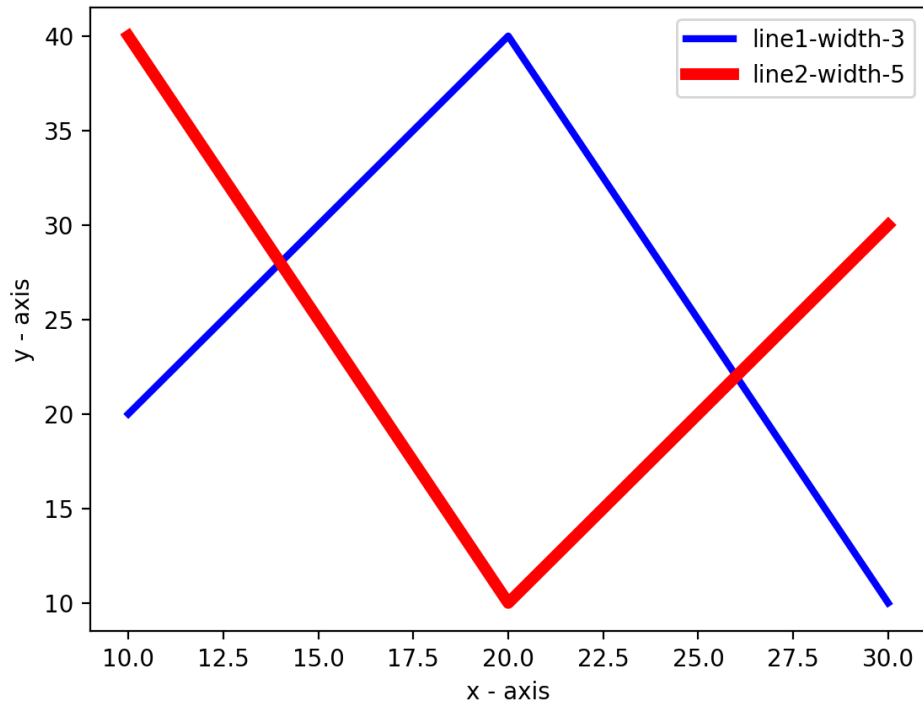


Input:

```
prog25.py - C:/Users/Supriya/OneDrive/Desktop/prog25.py (3.11.6)
File Edit Format Run Options Window Help
import matplotlib.pyplot as plt
x1 = [10,20,30]
y1 = [20,40,10]
x2 = [10,20,30]
y2 = [40,10,30]
plt.xlabel('x - axis')
plt.ylabel('y - axis')
plt.title('Two or more lines with different widths and colors with suitable legends ')
plt.plot(x1,y1, color='blue', linewidth = 3, label = 'line1-width-3')
plt.plot(x2,y2, color='red', linewidth = 5, label = 'line2-width-5')
plt.legend()
plt.show()
```

Output:

Two or more lines with different widths and colors with suitable legends



26. Write a Python program to create multiple plots.




Input:

prog26.py - C:/Users/Supriya/OneDrive/Desktop/prog26.py (3.11.6)

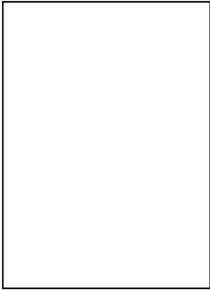
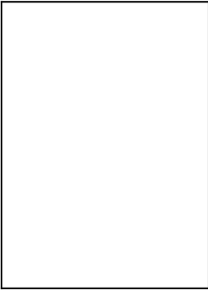
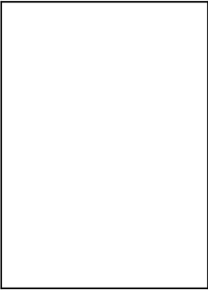
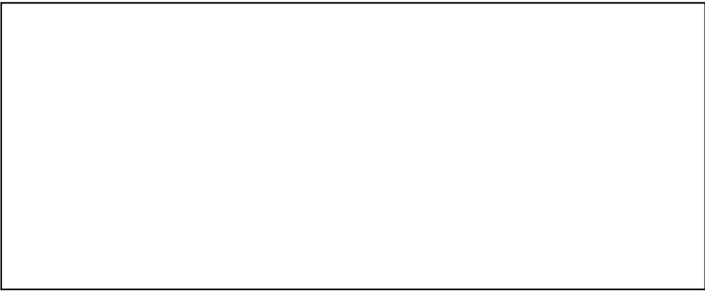
File Edit Format Run Options Window Help

```
import matplotlib.pyplot as plt
fig = plt.figure()
fig.subplots_adjust(bottom=0.020, left=0.020, top = 0.900, right=0.800)
plt.subplot(2, 1, 1)
plt.xticks(), plt.yticks()
plt.subplot(2, 3, 4)
plt.xticks()
plt.yticks()
plt.subplot(2, 3, 5)
plt.xticks()
plt.yticks()
plt.subplot(2, 3, 6)
plt.xticks()
plt.yticks()
plt.show()
```

Ln: 16 Col: 0

 9:27 PM 6/17/2024

Output:

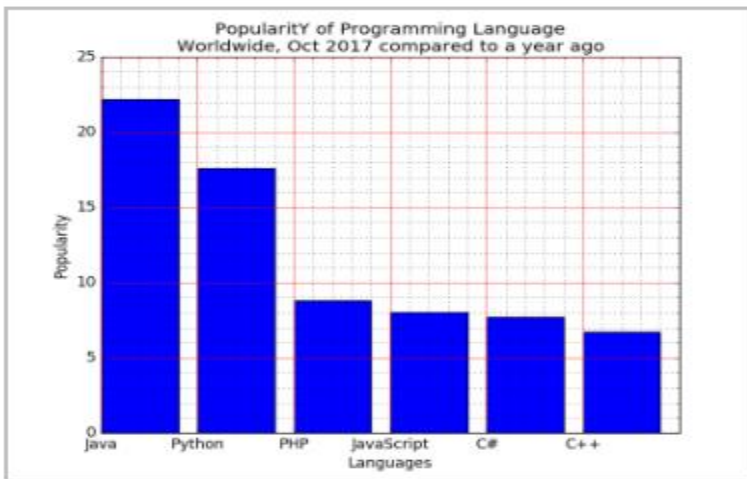


27. Write a Python programming to display a bar chart of the popularity of programming Languages.

Sample data:

Programming languages: Java, Python, PHP, JavaScript, C#, C++

Popularity: 22.2, 17.6, 8.8, 8, 7.7, 6.7

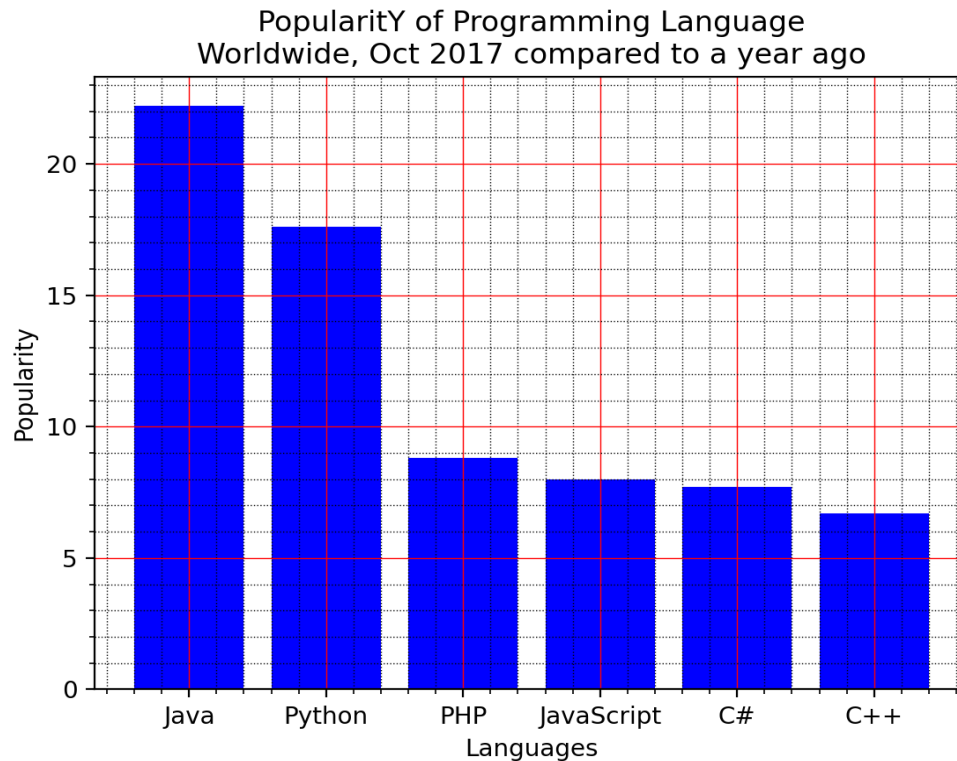


Input:

```
prog27.py - C:/Users/Supriya/OneDrive/Desktop/prog27.py (3.11.6)
File Edit Format Run Options Window Help
import matplotlib.pyplot as plt
x = ['Java', 'Python', 'PHP', 'JavaScript', 'C#', 'C++']
popularity = [22.2, 17.6, 8.8, 8, 7.7, 6.7]
x_pos = [i for i, _ in enumerate(x)]
plt.bar(x_pos, popularity, color='blue')
plt.xlabel("Languages")
plt.ylabel("Popularity")
plt.title("Popularity of Programming Language\n" + "Worldwide, Oct 2017 compared to a year ago")
plt.xticks(x_pos, x)
plt.minorticks_on()
plt.grid(which='major', linestyle='-', linewidth='0.5', color='red')
plt.grid(which='minor', linestyle=':', linewidth='0.5', color='black')
plt.show()
```

Ln: 12 Col: 0

Output:

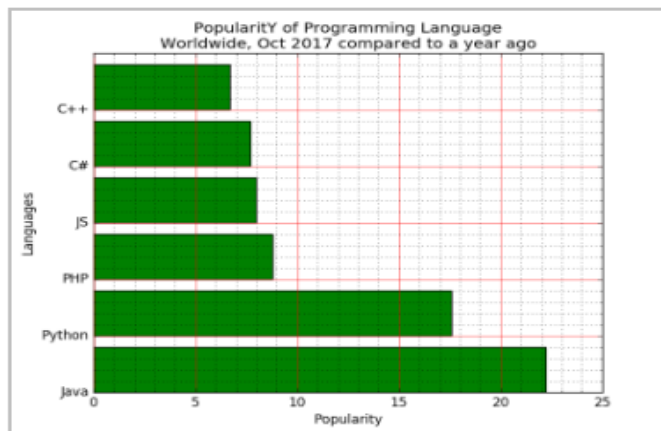


28. Write a Python programming to display a horizontal bar chart of the popularity of programming Languages.

Sample data:

Programming languages: Java, Python, PHP, JavaScript, C#, C++

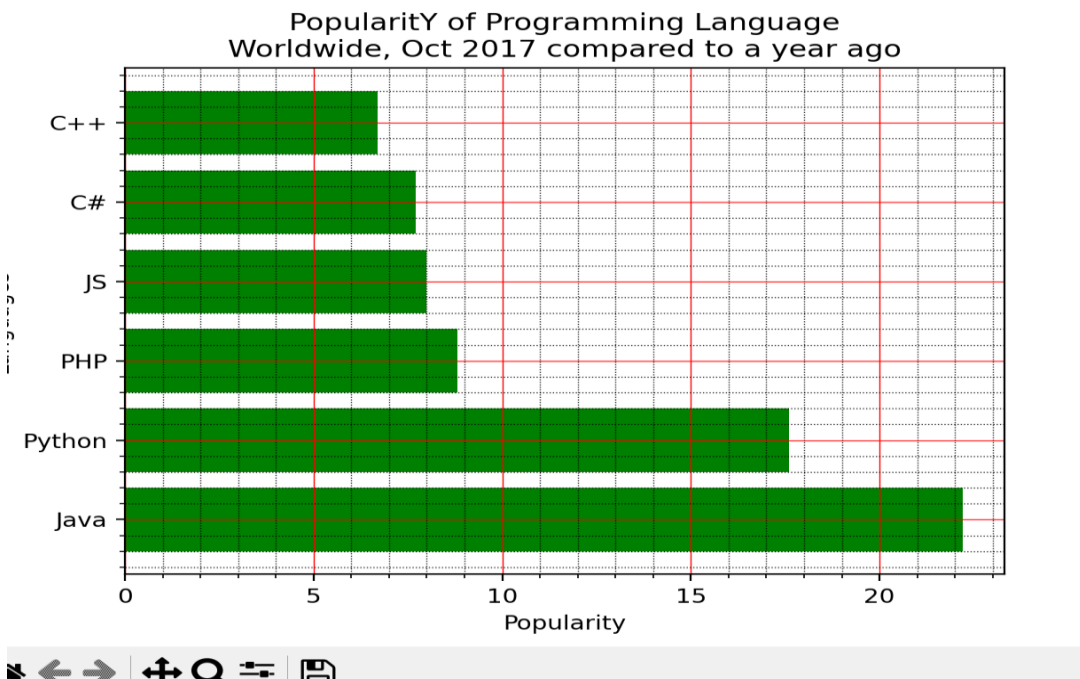
Popularity: 22.2, 17.6, 8.8, 8, 7.7, 6.7



Input:

```
prog28.py - C:/Users/Supriya/OneDrive/Desktop/prog28.py (3.11.6)
File Edit Format Run Options Window Help
import matplotlib.pyplot as plt
x = ['Java', 'Python', 'PHP', 'JS', 'C#', 'C++']
popularity = [22.2, 17.6, 8.8, 8, 7.7, 6.7]
x_pos = [i for i, _ in enumerate(x)]
plt.barh(x_pos, popularity, color='green')
plt.xlabel("Popularity")
plt.ylabel("Languages")
plt.title("Popularity of Programming Language\n" + "Worldwide, Oct 2017 compared to a year ago")
plt.xticks(x_pos, x)
plt.minorticks_on()
plt.grid(which='major', linestyle='-', linewidth='0.5', color='red')
plt.grid(which='minor', linestyle=':', linewidth='0.5', color='black')
plt.show()
```

Output:

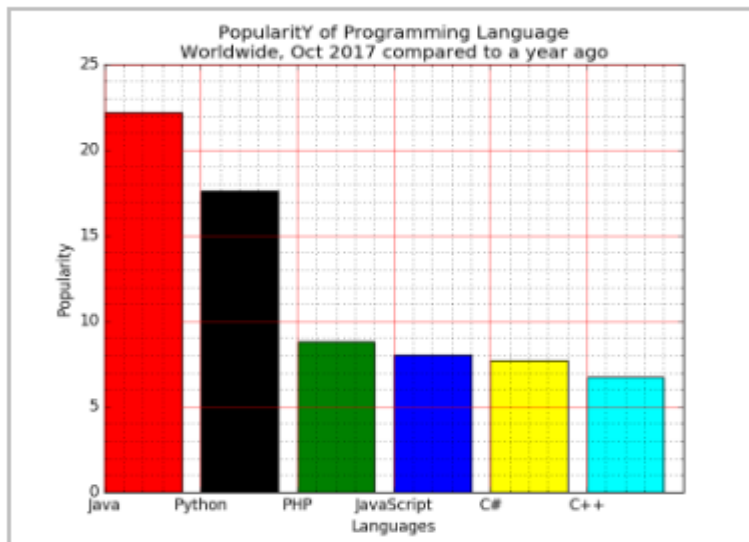


29. Write a Python programming to display a bar chart of the popularity of programming Languages. Use different color for each bar.

Sample data:

Programming languages: Java, Python, PHP, JavaScript, C#, C++

Popularity: 22.2, 17.6, 8.8, 8, 7.7, 6.7

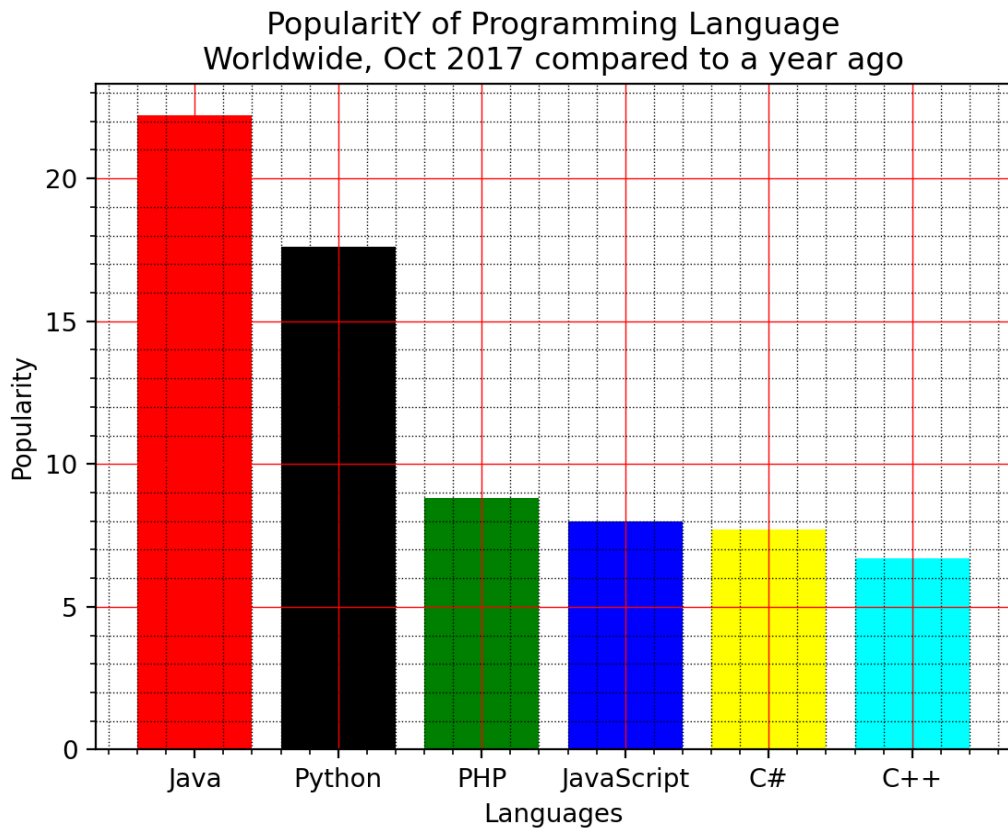


Input:

```
prog29.py - C:/Users/Supriya/OneDrive/Desktop/prog29.py (3.11.6)
File Edit Format Run Options Window Help
import matplotlib.pyplot as plt
x = ['Java', 'Python', 'PHP', 'JavaScript', 'C#', 'C++']
popularity = [22.2, 17.6, 8.8, 8, 7.7, 6.7]
x_pos = [i for i, _ in enumerate(x)]
plt.bar(x_pos, popularity, color=['red', 'black', 'green', 'blue', 'yellow', 'cyan'])
plt.xlabel("Languages")
plt.ylabel("Popularity")
plt.title("Popularity of Programming Language\n" + "Worldwide, Oct 2017 compared to a year ago")
plt.xticks(x_pos, x)
plt.minorticks.on()
plt.grid(which='major', linestyle='-', linewidth='0.5', color='red')
plt.grid(which='minor', linestyle=':', linewidth='0.5', color='black')
plt.show()
```

Ln: 12 Col: 0

Output:

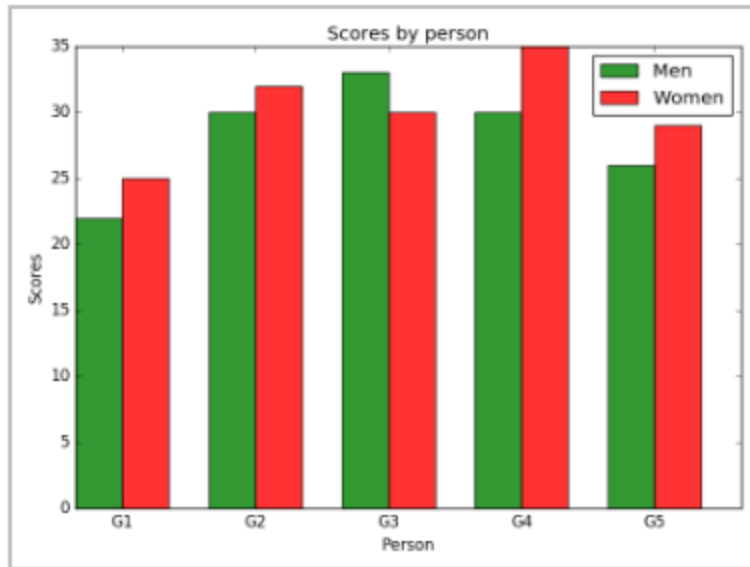


30. Write a Python program to create bar plot of scores by group and gender. Use multiple X values on the same chart for men and women.

Sample Data:

Means (men) = (22, 30, 35, 35, 26)

Means (women) = (25, 32, 30, 35, 29)



31. Write a Python program to create a stacked bar plot with error bars.
 Note: Use bottom to stack the women's bars on top of the men's bars.

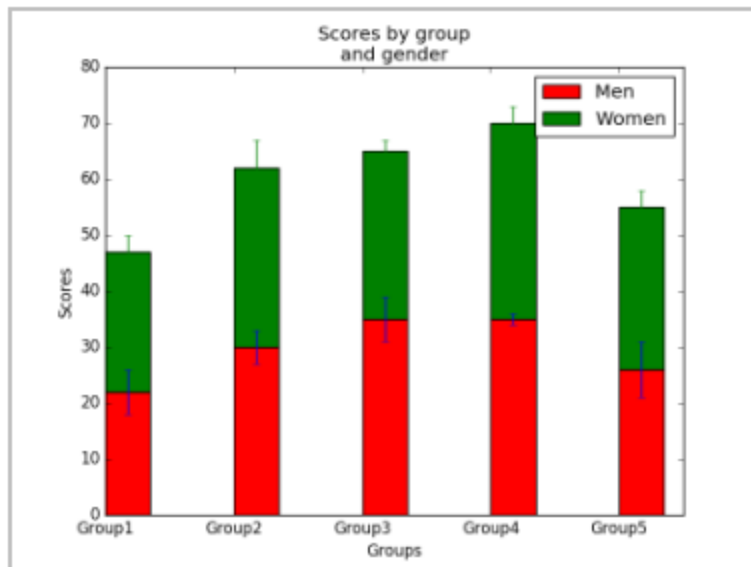
Sample Data:

Means (men) = (22, 30, 35, 35, 26)

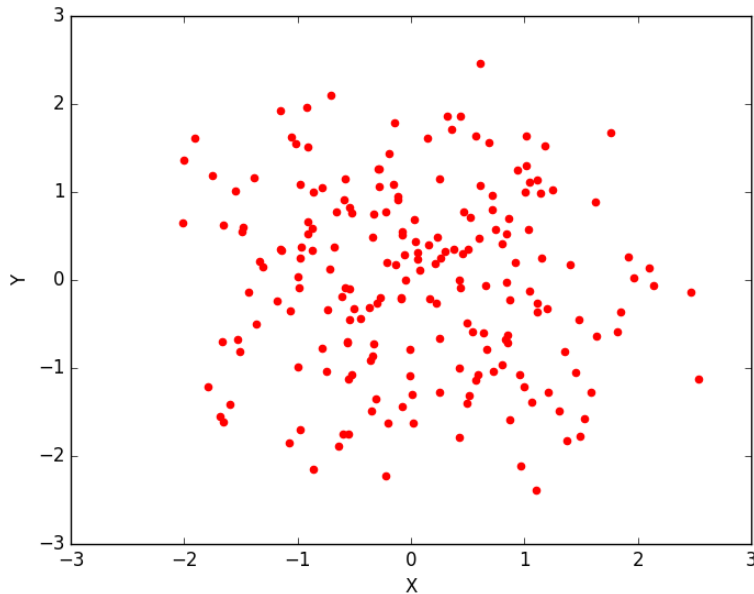
Means (women) = (25, 32, 30, 35, 29)

Men Standard deviation = (4, 3, 4, 1, 5)

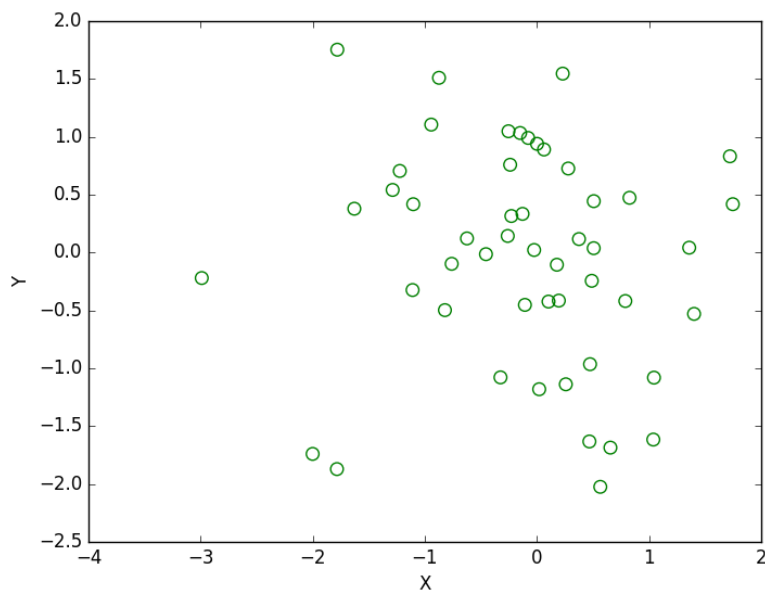
Women Standard deviation = (3, 5, 2, 3, 3)



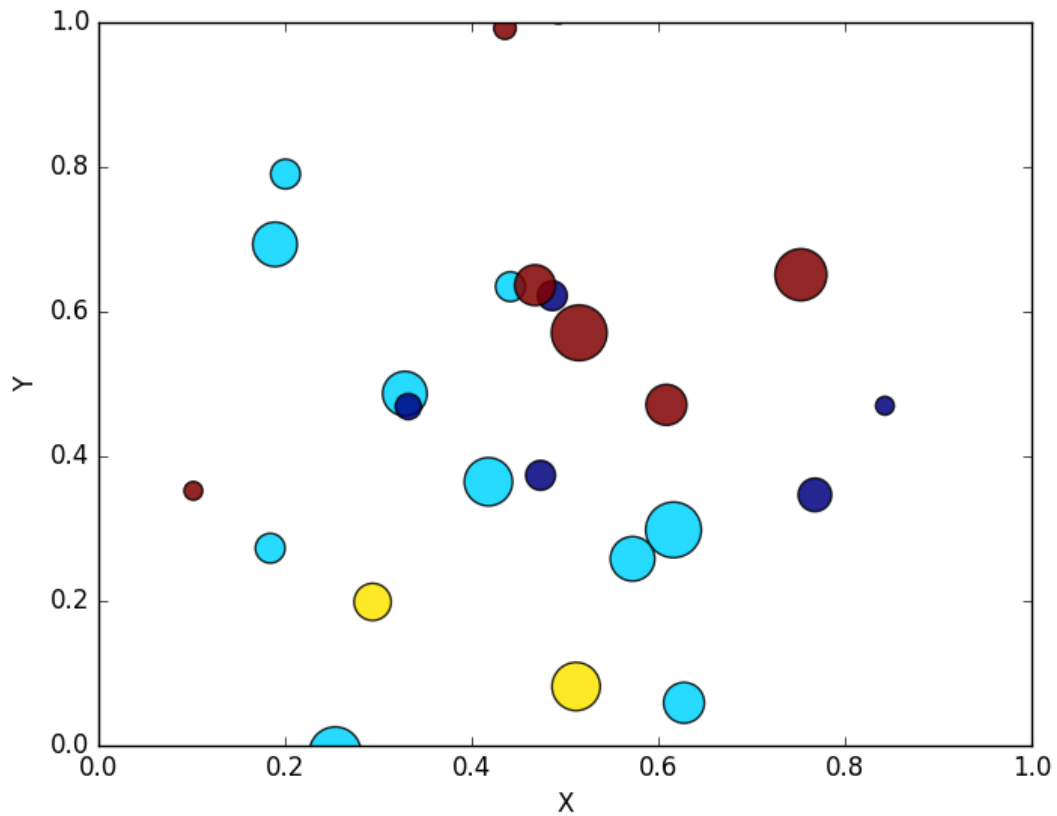
32. Write a Python program to draw a scatter graph taking a random distribution in X and Y and plotted against each other.



33. Write a Python program to draw a scatter plot with empty circles taking a random distribution in X and Y and plotted against each other.



34. Write a Python program to draw a scatter plot using random distributions to generate balls of different sizes.



35. Write a Python program to draw a scatter plot comparing two subject marks of Mathematics and Science. Use marks of 10 students.

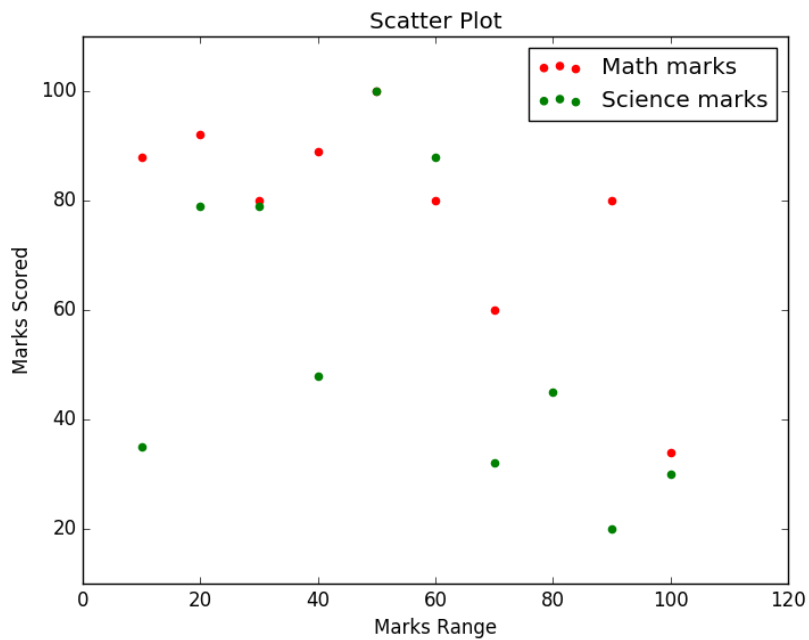
Sample data:

Test Data:

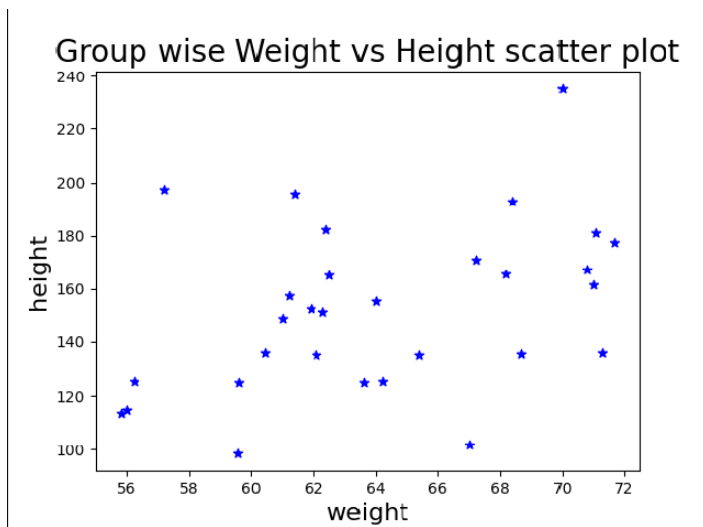
```
math_marks = [88, 92, 80, 89, 100, 80, 60, 100, 80, 34]
```

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

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



36. Write a Python program to draw a scatter plot for three different groups comparing weights and heights.



37. Write a Pandas program to create a dataframe from a dictionary and display it.

Sample data: {'X':[78,85,96,80,86], 'Y':[84,94,89,83,86], 'Z':[86,97,96,72,83]}

Expected Output:

	X	Y	Z
0	78	84	86
1	85	94	97
2	96	89	96
3	80	83	72
4	86	86	83

38. Write a Pandas program to create and display a DataFrame from a specified dictionary data which has the index labels.

Sample Python dictionary data and list labels:

```
exam_data = {'name': ['Anastasia', 'Dima', 'Katherine', 'James', 'Emily', 'Michael', 'Matthew', 'Laura', 'Kevin', 'Jonas'],
'score': [12.5, 9, 16.5, np.nan, 9, 20, 14.5, np.nan, 8, 19],
'attempts': [1, 3, 2, 3, 2, 3, 1, 1, 2, 1],
'qualify': ['yes', 'no', 'yes', 'no', 'no', 'yes', 'yes', 'no', 'no', 'yes']}
labels = ['a', 'b', 'c', 'd', 'e', 'f', 'g', 'h', 'i', 'j']
```

Expected Output:

	attempts	name	qualify	score
a	1	Anastasia	yes	12.5
b	3	Dima	no	9.0
....				
i	2	Kevin	no	8.0
j	1	Jonas	yes	19.0

39. Write a Pandas program to get the first 3 rows of a given DataFrame.

Sample Python dictionary data and list labels:

```
exam_data = {'name': ['Anastasia', 'Dima', 'Katherine', 'James', 'Emily', 'Michael', 'Matthew', 'Laura', 'Kevin', 'Jonas'],
'score': [12.5, 9, 16.5, np.nan, 9, 20, 14.5, np.nan, 8, 19],
'attempts': [1, 3, 2, 3, 2, 3, 1, 1, 2, 1],
'qualify': ['yes', 'no', 'yes', 'no', 'no', 'yes', 'yes', 'no', 'no', 'yes']}
labels = ['a', 'b', 'c', 'd', 'e', 'f', 'g', 'h', 'i', 'j']
```

```

Expected Output:
First three rows of the data frame:
   attempts  name qualify  score
a         1 Anastasia   yes   12.5
b         3      Dima    no    9.0
c         2 Katherine   yes   16.5

```

40. Write a Pandas program to select the 'name' and 'score' columns from the following DataFrame.

Sample Python dictionary data and list labels:

```

exam_data = {'name': ['Anastasia', 'Dima', 'Katherine', 'James', 'Emily',
                      'Michael', 'Matthew', 'Laura', 'Kevin', 'Jonas'],
             'score': [12.5, 9, 16.5, np.nan, 9, 20, 14.5, np.nan, 8, 19],
             'attempts': [1, 3, 2, 3, 2, 3, 1, 1, 2, 1],
             'qualify': ['yes', 'no', 'yes', 'no', 'no', 'yes', 'yes', 'no', 'no', 'yes']}
labels = ['a', 'b', 'c', 'd', 'e', 'f', 'g', 'h', 'i', 'j']

```

```

Expected Output:
Select specific columns:
   name  score
a Anastasia  12.5
b      Dima   9.0
c Katherine  16.5
...
h     Laura   NaN
i     Kevin   8.0
j     Jonas  19.0

```