



Line Graph

import

```
import matplotlib.pyplot as plt
```

Write a python code to create a line graph to list

```
import matplotlib.pyplot as plt
```

```
x = [1, 2, 3]
```

```
y = [4, 7, 3]
```

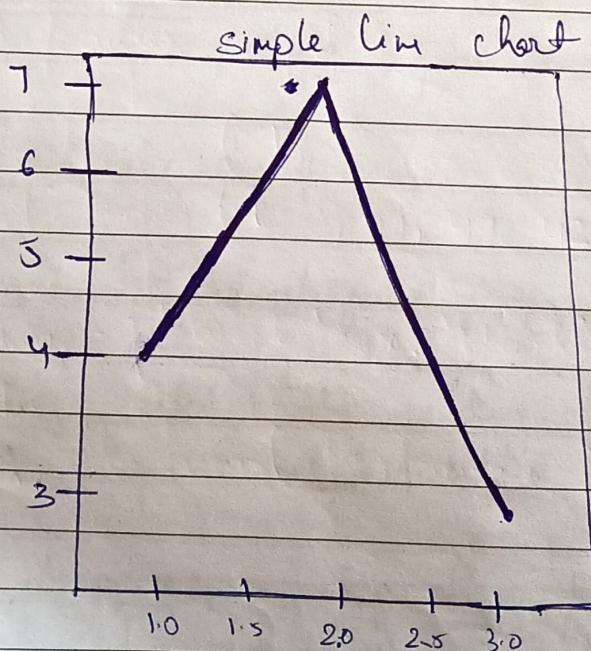
```
plt.xlabel('x-axis')
```

```
plt.ylabel('y-axis')
```

```
plt.plot(x, y) # function to create linegraph
```

```
plt.title('simple line chart')
```

```
plt.show()
```





Legend

Write a python code to draw 2 lines along with proper titles, legends and label to a line plot with multiple lines.

→ import matplotlib.pyplot as plt

$$x_1 = [1, 2, 3]$$

$$y_1 = [5, 7, 3]$$

plt.xlabel('x-axis')

plt.ylabel('y-axis')

plt.title('Sample graph for multiple lines')

plt.plot(x1, y1, label='First line')

$$x_2 = [1, 2, 3]$$

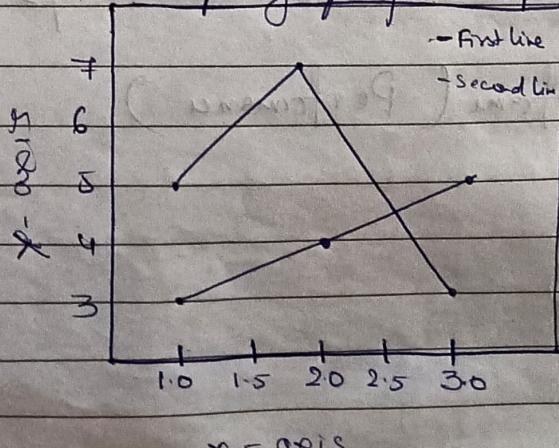
$$y_2 = [3, 4, 5]$$

plt.plot(x2, y2, label='Second line')

plt.legend()

plt.show()

Sample graph for multiple lines



Title

Q) Write a python code to plot a line chart changing weekly onion price for 4 weeks labels.

→ import matplotlib.pyplot as plt

$$x_1 = [1, 2, 3, 4]$$

$$y_1 = [20, 40, 30, 50]$$

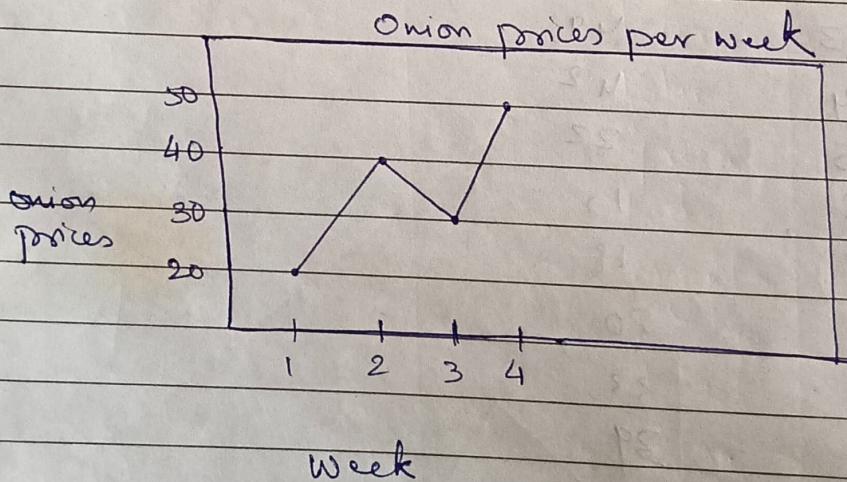
plt.xlabel('week')

plt.ylabel('onion price')

plt.title('Onion prices per week')

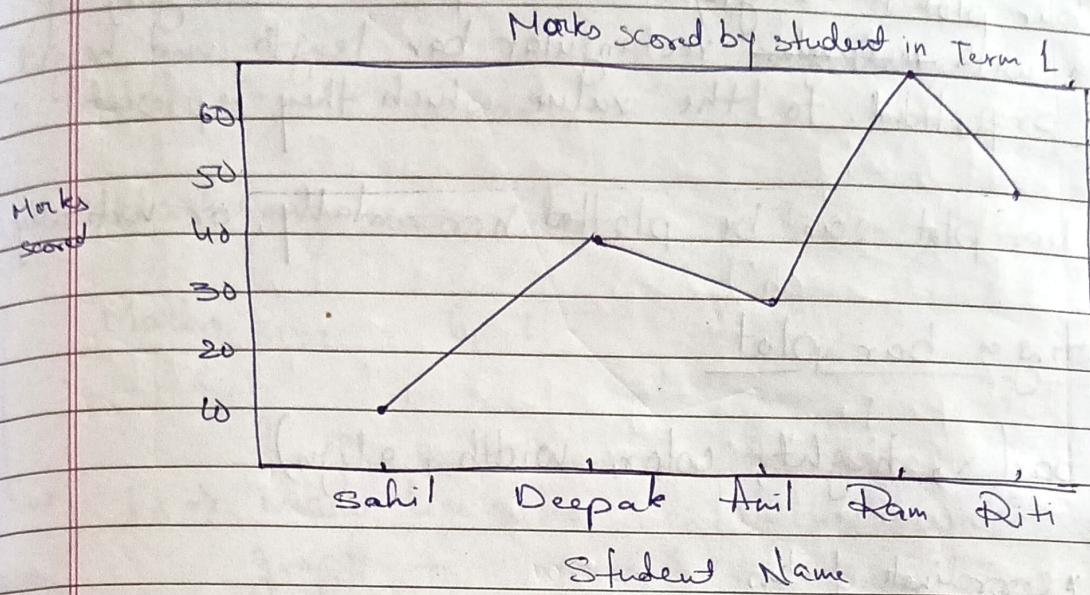
plt.plot(x1, y1)

plt.show()





Q) Write a python code to plot it. Also add the Title, label for x and y axis.



→ import matplotlib.pyplot as plt

Marks = [10, 20, 30, 40, 50, 60]

name = ['Sahil', 'Deepak', 'Anil', 'Ram', 'Riti']

plt.xlabel('Student Name')
plt.ylabel('Marks scored')

plt.title('Marks scored by student in Term 1')

plt.plot()

plt.show()



Bar plot in matplotlib

A bar plot is a graph that represent the category of data with rectangular bars length and height i.e. proportional to the value which they represent.

The bar plot can be plotted horizontally or vertically

Creating a bar plot

Syntax → plt.bar(x, height, color, width, align)

x → x coordinate of bar

height → y coordinate of bar

width → optional, by default 0.8 units

Different colours codes are

Character	Colour
b	Blue
g	Green
r	Red
m	Magenta
y	Yellow
k	Black
c	Cyan
w	White



Line width or $lw = 3, 4, 5$

$ls = \{ 'solid' \}, 'dashed', 'dash dot' \text{ as dotted}$

Marker = '*', '^', 'x'

Marker edge color = 'b'

Marker size = 6, 7

$ls \Rightarrow$ means line size i.e. the line which drawn in graph to represent values

align = { 'centre', 'edge' }

(\hookrightarrow def \Rightarrow centre)

Q) Write a python code to plot a line graph.

$p = [1, 2, 3, 4, 5]$

$q = [2, 4, 6, 8, 10]$

line width = 6 units

color = green

line style = dash dot

marker = *

marker size = 5

marker edge color = red.



→ Write a python
import matplotlib.pyplot as plt

```
p = [1, 2, 3, 4, 5]
```

```
q = [2, 4, 6, 8, 10]
```

```
plt.xlabel('values')
```

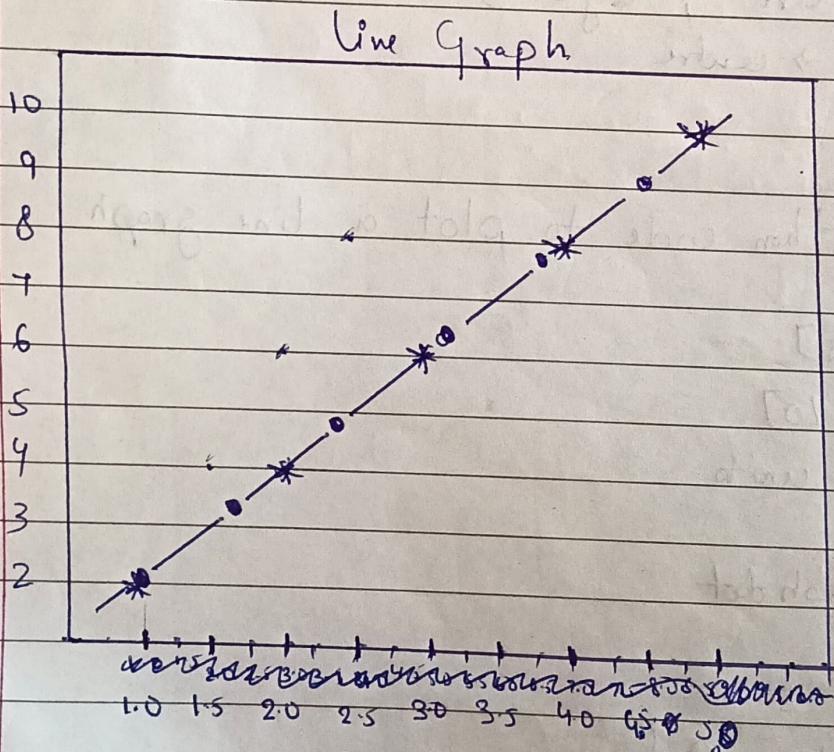
```
plt.ylabel('double')
```

```
plt.title('Line graph')
```

```
plt.plot(p, q, color='g', lw=6, ls='dashdot',
         marker='*', markerSize=5,
         markeredgecolor='R')
```

```
plt.show()
```

end()





Bar Graph

Q) $a = [1, 2, 3, 4, 5]$

$b = [2, 4, 6, 8, 10]$

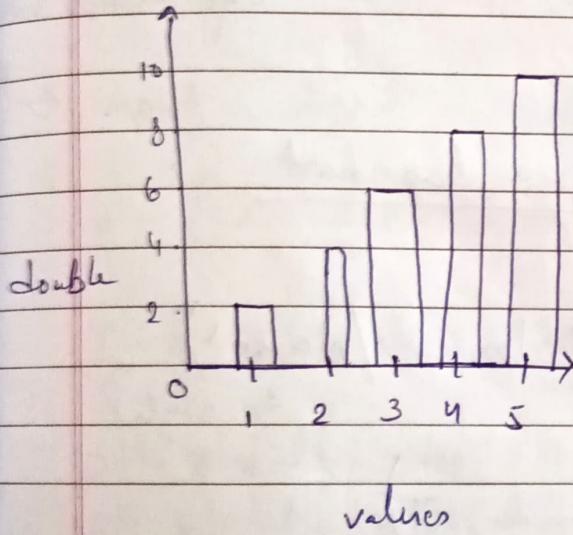
~~import mat plt~~

~~import mat plot lib.pyplot as plt~~

plt.xlabel('values')

plt.ylabel('double')

plt.bar(a, b, color=['r', 'g', ...], width=[3.8, 7.2, ...])
plt.show()



Q) import matplotlib.pyplot as plt

cities = ['Delhi', 'Ranchi', 'Tata', 'Gaya',
 'Papu']



Coloring

Changing width of the bar in a bar graph

→ Def = 0.8

↳ by default, bar chart draw all bar with equal width 0.8

Syntax → plt.bar (<x sequence>, <y sequence>, width = <float value>)

↑ for single value

plt.bar (<x sequence>, <y sequence>, width = [- - -])

↑ for multiple values

Changing color of the bar in a bar chart

plt.bar (<x>, <y>, color = <colour code/Name>)

↑ for single

plt.bar (<x>, <y>, color = [- - -])

↑ for multiple



Creating a horizontal bar chart (barh())

To create a horizontal bar chart, use barh() (bar horizontal)

label to x axis become y axis & label to y axis become x axis.

Cities = ['A', 'B', 'C', 'D', 'E']

population = [23.4, 18.2, 20.6, 12.4, 18.1]

→ import matplotlib.pyplot as plt.

x = ['A', 'B', 'C', 'D', 'E']

y = [23.4, 18.2, 20.6, 12.4, 18.1]

plt.xlabel('cities')

plt.ylabel('population')

plt.barh(x, y, color='r', width=1.0)

plt.show()



Histogram

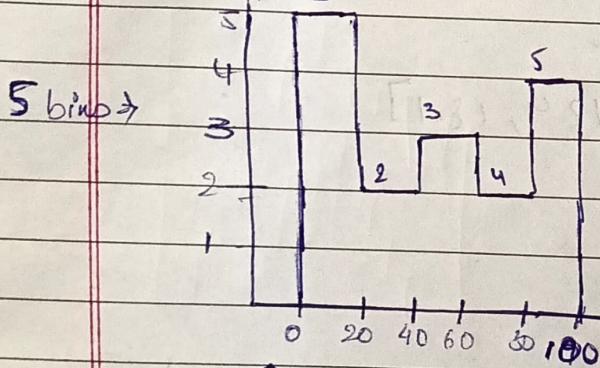
* Creating Histograms with python

A histogram is a graphical representation of numerical data. It is similar to a vertical bar graph with no gap in b/w bars as intervals are continuous.

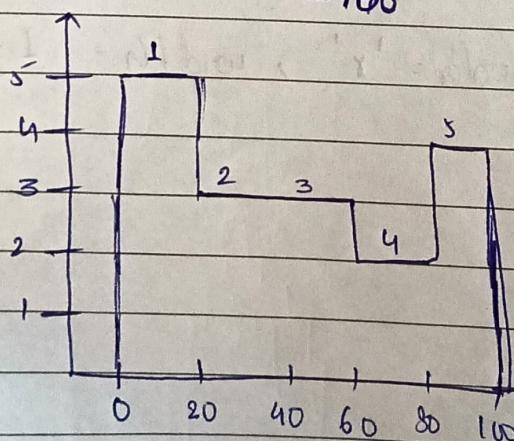
bins (interval/range of value)

Def Divide the entire range of values into series of intervals and then count how many values fall into each interval.

bins are consecutive, non overlapping intervals of values



0 - 20	-	5
20 - 40	-	2
40 - 60	-	3
60 - 80	-	4
80 - 100	-	5



0 - 20	-	5
20 - 40	-	3
40 - 60	-	3
60 - 80	-	2
80 - 100	-	5



hist()

def used to plot histogram from a given sequence of numbers

Syntax import matplotlib.pyplot

plt.hist(x, bins=None, cumulative=False, histtype='bar', align='mid', orientation='vertical')

increasing ~~decreasing~~ order
data ~~arrange~~ कर देता है

horizontal रेखा के x और y axis
switch हो गया

histtype = bar → Def

bar stacked → इनके ऊपर दूसरा (2 अलग-अलग डेटा कराता है)

step → ~~outline~~ outline बनाता

stepfilled

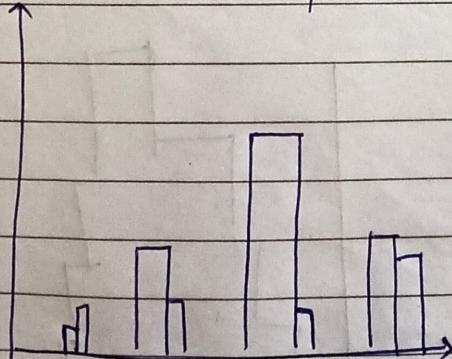
To plot multiple histograms

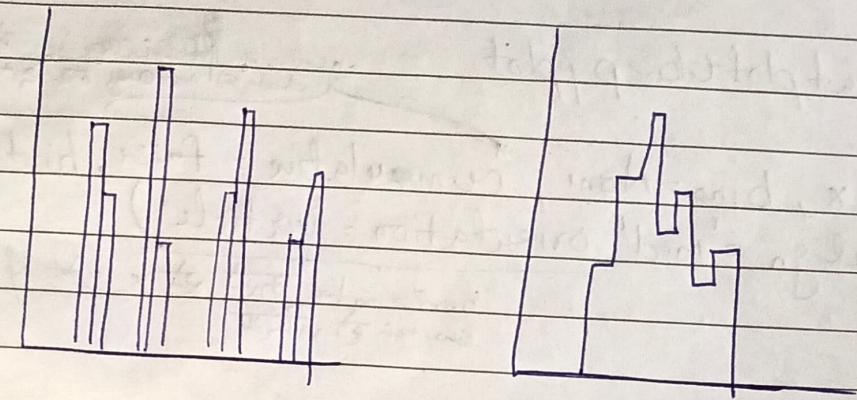
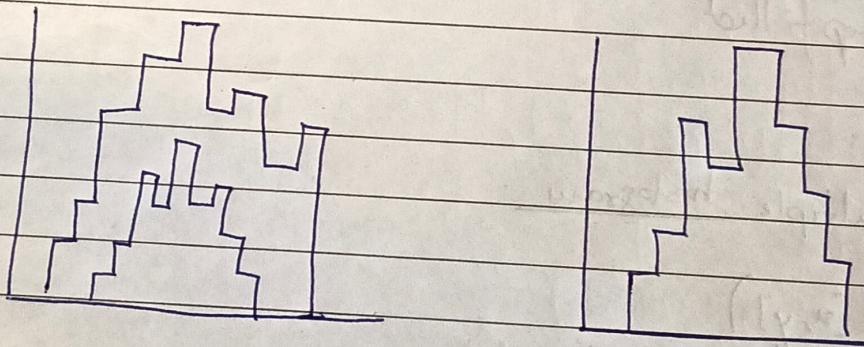
plt.hist([u, y])

array of Data

u का histogram बनाता है

y का भी



HistogramBarBarstackedStep / stepfilled