

Plotting List Data with the *matplotlib* Package

First, make sure you use at least Python 3.7 version, then install package matplotlib. On Windows, open a command prompt, and execute the following command:

```
pip install matplotlib
```

alternative way to install matplotlib:

```
py -m pip install matplotlib
```

On MAC, become a superuser, then execute the following command:

```
pip3 install matplotlib
```

This program displays a simple line graph.

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

```
def main():
```

```
    # Create lists with the X and Y coordinates of each data point.
```

```
    x_coors = [0, 1, 2, 3, 4]
```

```
    y_coors = [0, 3, 1, 5, 2]
```

```
    # Build the line graph.
```

```
    plt.plot(x_coors, y_coors)
```

```
    # Display the line graph.
```

```
    plt.show()
```

```
# Call the main function.
```

```
main()
```

```
1 # This program displays a simple line graph.
```

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

```
3
```

```
4 def main():
```

```
5     # Create lists with the X and Y coordinates of each data point.
```

```
6     x_coors = [0, 1, 2, 3, 4]
```

```
7     y_coors = [0, 3, 1, 5, 2]
```

```
8
```

```
9     # Build the line graph.
```

```
10    plt.plot(x_coors, y_coors)
```

```
11
```

```
12    # Add a title.
```

```
13    plt.title('Sample Data')
```

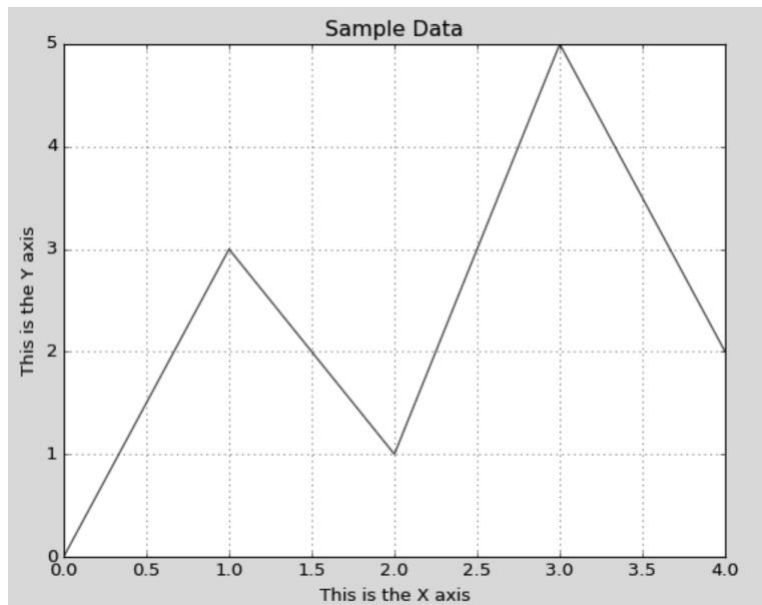
```
14
```

```
15    # Add labels to the axes.
```

```

16 plt.xlabel('This is the X axis')
17 plt.ylabel('This is the Y axis')
18
19 # Add a grid.
20 plt.grid(True)
21
22 # Display the line graph.
23 plt.show()
24
25 # Call the main function.
26 main()

```



What can you do with matplotlib?

1. Plotting a Line Graph
2. Plotting a Bar Chart
3. Plotting a Pie Chart

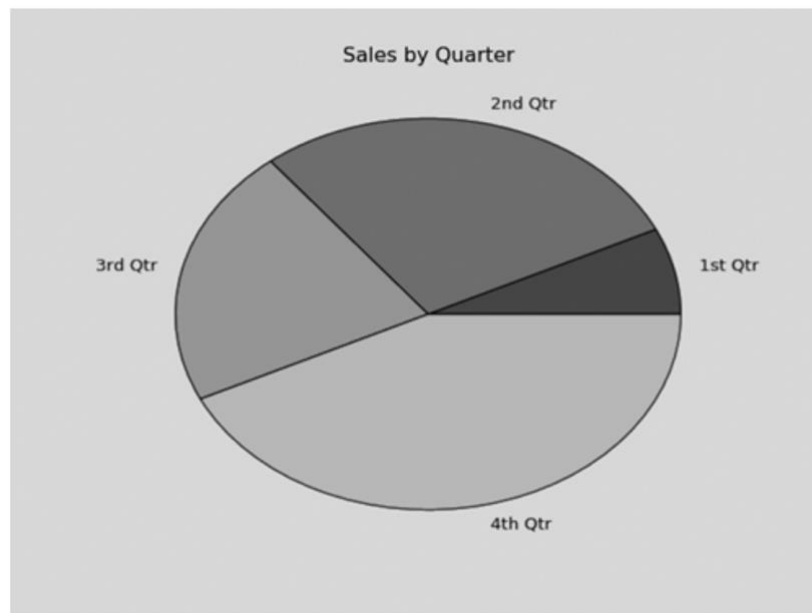
Plotting a Pie Chart

```

1 # This program displays a simple pie chart.
2 import matplotlib.pyplot as plt
3
4 def main():
5     # Create a list of sales amounts.
6     sales = [100, 400, 300, 600]
7

```

```
8 # Create a list of labels for the slices.
9 slice_labels = ['1st Qtr', '2nd Qtr', '3rd Qtr', '4th Qtr']
10
11 # Create a pie chart from the values.
12 plt.pie(sales, labels=slice_labels)
13
14 # Add a title.
15 plt.title('Sales by Quarter')
16
17 # Display the pie chart.
18 plt.show()
19
20 # Call the main function.
21 main()
```



Bar Plotting

This program displays a simple bar plot.

importing matplotlib module

from matplotlib import pyplot as plt

x-axis values

x = [5, 2, 9, 4, 7]

Y-axis values

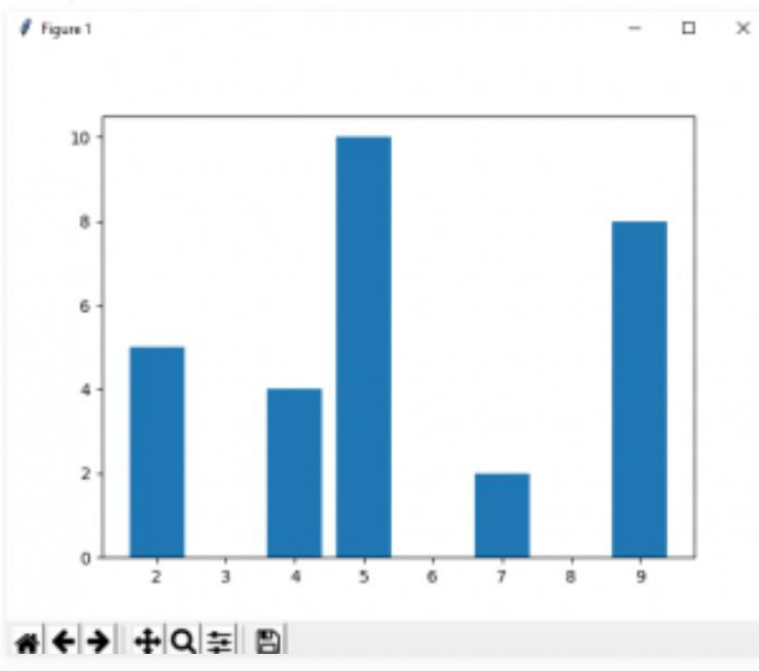
y = [10, 5, 8, 4, 2]

Function to plot the bar

plt.bar(x,y)

function to show the plot

plt.show()



Python turtle library

```
# Python program to draw square
# using Turtle Programming
import turtle
skk = turtle.Turtle()
```

```
for i in range(4):
    skk.forward(50)
    skk.right(90)
```

```
turtle.done()
```

```
# Python program to draw hexagon
# using Turtle Programming
import turtle
polygon = turtle.Turtle()
```

```
num_sides = 6
side_length = 70
angle = 360.0 / num_sides
```

```
for i in range(num_sides):
    polygon.forward(side_length)
    polygon.right(angle)
```

```
turtle.done()
```

```
# Python program to draw
# Spiral Square Outside In and Inside Out
# using Turtle Programming
import turtle  #Outside_In
wn = turtle.Screen()
wn.bgcolor("light green")
wn.title("Turtle")
skk = turtle.Turtle()
skk.color("blue")

def sqrfunc(size):
    for i in range(4):
        skk.fd(size)
        skk.left(90)
        size = size-5

sqrfunc(146)
sqrfunc(126)
sqrfunc(106)
sqrfunc(86)
sqrfunc(66)
sqrfunc(46)
sqrfunc(26)
```