

# Math Plot Lib

```
# MathPlot Lib: Matplotlib is a plotting library for the Python programming language
# and its numerical mathematics extension of NumPy.
```

```
# 1) Line
# 2) Scatter
# 3) pie
# 4) bar
# 5) Histogram
```

```
import matplotlib.pyplot as plt
import numpy as np
```

```
x = np.array([1,2,3])
y = np.array([1,2,3])
```

```
#plt.plot(x,y,marker = 'o') # marker = o is used for marking points with solid dot.
#plt.plot(x,y,marker = '*') # marker = * is used for marking points with star.
#plt.plot(x,y,marker = '*',linestyle = ':') # linestyle = : (dotted line)
#plt.plot(x,y,marker = '*',linestyle = '-') # linestyle = - (solid line)
```

```
# colour
#plt.plot(x,y,marker = '*',linestyle = ':',color = 'g')
```

```
# short form
plt.grid() # This function is used for making boxes
plt.plot(x,y,'o:b')
```

```
import matplotlib.pyplot as plt
import numpy as np
x = np.array([1,2,3,4])
y = np.array([5,6,7,8])
```

```
plt.scatter(x,y) # plots points only
```

```
import matplotlib.pyplot as plt
import numpy as np
x = np.array([10,40,50])
y = np.array(['Big data','c','python'])
```

```
plt.pie(x,labels = y)
plt.legend() # show the table colour
plt.show()
```

```
# Example 1
import matplotlib.pyplot as plt
import numpy as np
x = np.array([1,2,3,4])
y = np.array([6,7,8,9])
plt.xlabel("X - axis")
plt.ylabel("Y - axis")
plt.title("Line Graphs")
```

```
plt.plot(x,y,'o:g')
plt.show()
```

# Math Plot Lib

```
import matplotlib.pyplot as plt
import numpy as np
x = np.array(['Bid data', 'CCVT', 'BFSI'])
y = np.array([10, 20, 30])

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

import matplotlib.pyplot as plt
import numpy as np
x = np.array([10, 10, 20, 20, 30, 20, 30, 30, 40, 40, 40, 40, 40])

plt.hist(x)
plt.show()
```

```
# Example 1
import matplotlib.pyplot as plt
import numpy as np
x = np.array([1, 2, 3, 4])
y = np.array([6, 7, 8, 9])
plt.xlabel("X - axis")
plt.ylabel("Y - axis")
plt.xticks(x)      # remove decimal part form x axis
plt.yticks(y)
plt.title("Line Graphs")

plt.plot(x, y, 'o:g')
plt.show()

# subplot
x1 = np.array([1, 2, 3, 4, 5])
x2 = np.array([1, 2, 3, 4, 5])

plt.subplot(2, 3, 1)      # plt.subplot(<row>, <col>, <no>)
plt.plot(x1, x2)

x1 = np.array([10, 20, 30, 40, 50])
x2 = np.array([10, 20, 30, 40, 50])

plt.subplot(2, 3, 2)
plt.plot(x1, x2)

x1 = np.array([100, 20, 30, 40, 50])
x2 = np.array([100, 20, 30, 40, 50])

plt.subplot(2, 3, 3)
plt.xlabel('Hitendra')
plt.plot(x1, x2)

plt.suptitle('TypesOfGraph')
plt.show()
```

# Math Plot Lib

```
# 3d
# eq 1)
x = np.array([1,2])
y = np.array([10,20])
z = np.array([45,46])

plt.axes(projection = '3d')
plt.plot(x,y,z, 'o-r')
plt.show()

# eq 2)

x = np.arange(1,30)
y = np.sin(x)
z = np.cos(x)

plt.axes(projection = '3d')
plt.plot(x,y,z)
plt.show()

# 3d bar graph
x = np.array([1,2,3])
y = np.array([10,11,12])
z = np.array([20,21,22])

X = np.arange(3)  #[0,1,2]

fig = plt.figure()
axes = fig.add_axes([0,0,1,1])

axes.bar(X+ 0.0,x,color = 'r',width = 0.25)
axes.bar(X+ 0.25,y,color = 'g',width = 0.25)
axes.bar(X+ 0.5,z,color = 'b', width = 0.25)

import matplotlib.pyplot as plt
import numpy as np

# plt.plot(x,y,maker,linestyle,color)
# plt.pie(x,labels = y)
# plt.bar(x,y)
# plt.hist(x)
# plt.xlabel("")
# plt.ylabel("")
# plt.title()
# plt.suptitle("")
# plt.subplot()
# plt.axis(projection =)
# plt.show()
# plt.grid()
# plt.xticks(x)
```

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