Practical 1: Data Visualization using Python

Write a python code which defines x as array and y is 2 times of x. Plot line chart in matplot-lib

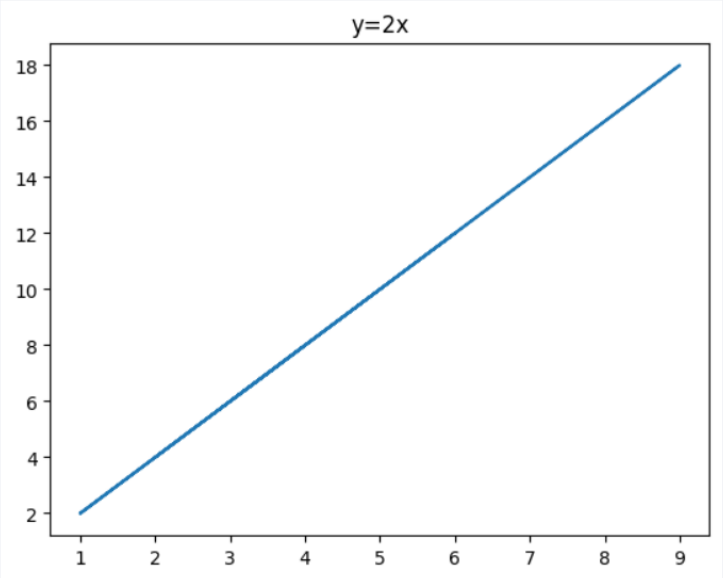
[1]:
```
import numpy as n
import numpy.random as np
import pandas as pd
import matplotlib.pyplot as plt
```

[2]:
```
x=n.array([1,4,3,7,9,2,6,1,5])
y=[]
y=x*2
y
```

[2]:
```
array([ 2,  8,  6, 14, 18,  4, 12,  2, 10])
```

[3]:
```
plt.plot(x,y)
plt.title("y=2x")
```

[3]:
```
Text(0.5, 1.0, 'y=2x')
```



WAP to plot barplot which reprsenets the number of students enrolled in diff cources of an institute

Course	Number of Students
C	20
C++	15
Java	30
Python	35

store this data in dictionary format give appropiate label name

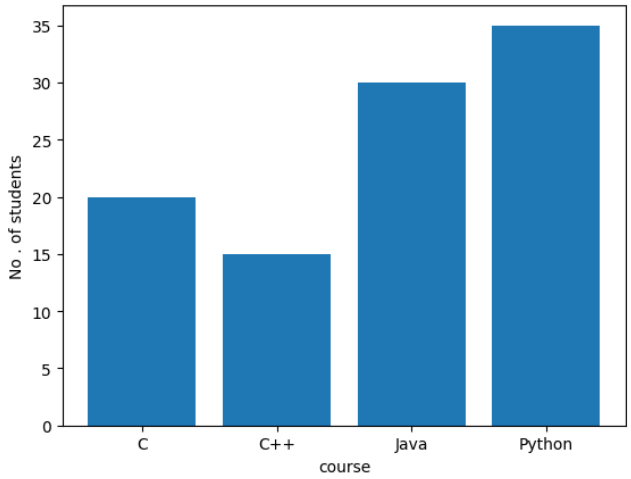
4]:
```
df=pd.DataFrame(
    {
        'Course':['C','C++','Java','Python'],
        'No_students':[20,15,30,35]

    }
)
```

[5]:
```
df
```

[5]:

	Course	No_students
0	C	20
1	C++	15
2	Java	30
3	Python	35

[6]:
```
plt.bar(df['Course'],df['No_students'])
plt.xlabel("course")
plt.ylabel("No . of students")
```



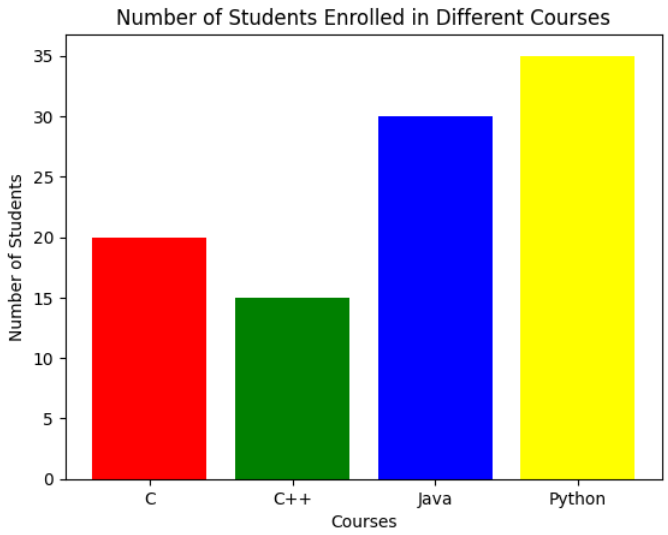
[7]:
```
data ={'C':20,'C++':15,'Java':30,'Python':35}
data
```

[7]:
```
{'C': 20, 'C++': 15, 'Java': 30, 'Python': 35}
```

[8]:
```
course=list(data.keys())
no_of_student=list(data.values())
```

[9]:
```
colors=['red','green','blue','yellow']
plt.bar(course,df['No_students'],color=colors)
plt.xlabel('Courses')
plt.ylabel('Number of Students')
plt.title('Number of Students Enrolled in Different Courses')
```

[9]:
```
Text(0.5, 1.0, 'Number of Students Enrolled in Different Courses')
```



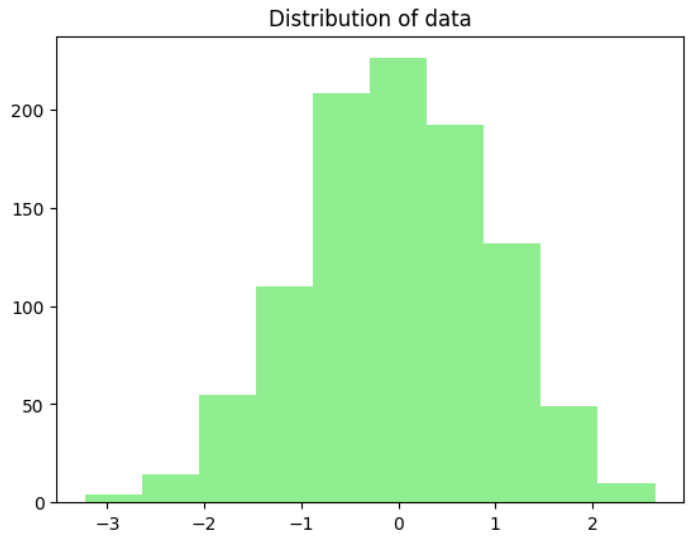
WAP to create basic histogram by generating random data for histogram ¶

[10]:
```
data=np.randn(1000)
data
```

[10]:
```
array([ 2.15315292e-01,  9.82071532e-01,  1.54859982e-01,  3.03657928e-03,
        9.79661641e-03, -4.78025013e-01, -1.59090558e-01,  5.11039735e-02,
        4.98341151e-01,  1.71561627e+00,  1.93754560e+00,  9.93346126e-01,
       -1.81202766e+00,  2.36331740e-01,  2.09069194e-01, -2.07352713e-01,
       -2.28238602e-01, -9.42199569e-01, -2.64020578e-01,  1.12540551e+00,
```

[11]:
```
plt.hist(data,color="lightgreen")

plt.title("Distribution of data")
```

[11]:
```
Text(0.5, 1.0, 'Distribution of data')
```

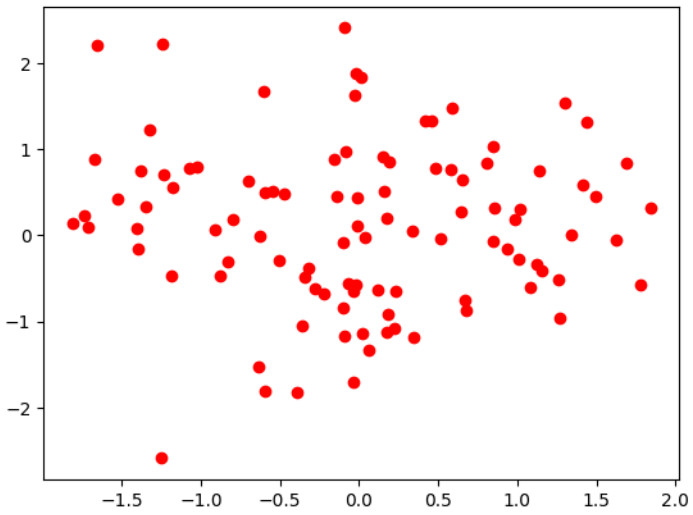


Create a scatterplot which defines x and y coordinates then plots the points in blue and display the plot

[12]:
```
x=np.randn(100)
y=np.randn(100)
```

[13]:
```
plt.scatter(x,y,color='red')
```

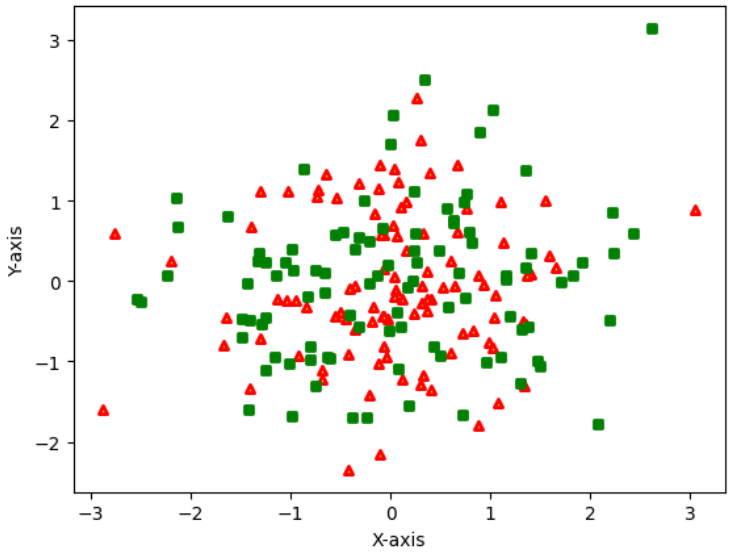
[13]:
```
<matplotlib.collections.PathCollection at 0x2427ed1ae50>
```



Generate the scatter plot showcasing 2 distinct data set , which are set of X and Y coordinates the code employees diffrenet markers , color and styling options for enhanced visualization

[14]:
```
x1 = np.randn(100)
y1 = np.randn(100)

x2 = np.randn(100)
y2 =np.randn(100)
```

[15]:
```
plt.scatter(x1, y1, c ="yellow",linewidths = 2,marker ="^", edgecolor ="red", s = 20)
plt.scatter(x2, y2, c ="green",linewidths = 2,marker ="s", edgecolor ="green", s = 20)
plt.xlabel("X-axis")
plt.ylabel("Y-axis")
plt.show()
```



Craete a Dataset using Data Frame which consist of name of the cars and there espective prce in lakhs to plot piechart

[16]:
```
df2=pd.DataFrame(
    {
        "name":['Volvo','Audi','Maruti','Ford'],
        "Price":[200000,340000,120000,252254]
    }
)
df2
```

[16]:

	name	Price
0	Volvo	200000
1	Audi	340000
2	Maruti	120000
3	Ford	252254

[17]:
```
plt.pie(df2['Price'],labels=df2["name"],autopct='%1.1f%%',startangle=140)
plt.title("Car Prices")
```

[17]:
```
Text(0.5, 1.0, 'Car Prices')
```