

```
In [ ]: import numpy as np
import matplotlib.pyplot as plt
```

```
In [ ]: from matplotlib import style
print(plt.style.available)
```

```
In [ ]: # generate random numbers between 0 and 1
rnum=np.random.rand(10)
rnum
```

```
In [ ]: # select style of plot
style.use("ggplot")
plt.plot(rnum, 'r', label='line', linewidth=2)
# x and y axis label
plt.xlabel("range")
plt.ylabel('numbers')
# title
plt.title('Plot')
plt.legend()
plt.show()
```

example

```
In [ ]: # website traffic data
customers=[123, 645,950, 1290,1630,1450,1034,1295,465,205,80]
time= [7,8,9,10,11,12,13,14,15,16,17]
```

```
In [ ]: plt.plot(time,customers,"g",linewidth=3) #x,y
plt.title('website traffic')
plt.xlabel('time')
plt.ylabel('visitors')
plt.show()
```

```
In [ ]: # annotate
style.use('ggplot')
plt.plot(time, customers)
plt.title('Website traffic')
plt.annotate('Max', ha='center', va='bottom', xytext=(8,1500),xy=(11,1630),a
# plt.annotate('annotationannotation_text','text_position','arrow_position')
plt.xlabel('Time(in hrs)')
plt.ylabel('Visitors')
plt.show()
```

multiple plots

```
In [ ]: # data
mon=[123,645,950,1290,1630,1450,1034,1295,465,205,80]
tue=[95,680,889,1145,1670,1323,1119,1265,510,310,110]
wed=[105,630,700,1006,1520,1124,1239,1380,580,610,230]
time= [7,8,9,10,11,12,13,14,15,16,17]
```

```
In [ ]: plt.plot(time,mon,"g",label="mon")
plt.plot(time,tue,"r",label='tue')
plt.plot(time,wed,"b",label='wed')
plt.title('website traffic')
plt.xlabel('time')
plt.ylabel('visitors')
plt.axis([6.5, 17.5, 50, 2000]) #[x-min,x-max,y-min,y-max]
plt.legend()
plt.show()
```

subplots

```
In [ ]: # data
temp_data = [91, 74, 91, 98, 77, 85, 97, 76, 98, 83, 93, 79, 96, 85, 97, 75]
wind_data = [17, 8, 13, 24, 16, 13, 11, 13, 14, 9, 24, 11, 11, 10, 19, 8, 9]
time_hrs = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18,]
humidity_data = [64, 53, 72, 83, 81, 51, 76, 83, 55, 67, 85, 85, 64, 74, 70]
precipitation_data = [50, 34, 40, 60, 13, 39, 59, 68, 66, 51, 46, 24, 47, 5]
```

```
In [ ]: plt.figure(figsize=(8,4))
plt.subplot(1,2,1) # 1 row, 2 column, 1st plot
plt.title('Temp')
plt.plot(time_hrs, temp_data, color='b', linewidth=1)
plt.subplot(1,2,2)
plt.title('Wind')
plt.plot(time_hrs, wind_data, color='r', linestyle='--', linewidth=1)
plt.show()
```

```
In [ ]: # 4 subplots
plt.figure(figsize=(8,8))

plt.subplot(2,2,1)
plt.title('Temp (F)')
plt.plot(time_hrs, temp_data, color='g', linestyle='--', linewidth=1)

plt.subplot(2,2,2)
plt.title('Wind (mph)')
plt.plot(time_hrs, wind_data, color='r', linestyle='--', linewidth=1)

plt.subplot(2,2,3)
plt.title('Humidity (%)')
plt.plot(time_hrs, humidity_data, color='b', linestyle='--', linewidth=1)

plt.subplot(2,2,4)
plt.title('Precipitation (%)')
plt.plot(time_hrs, precipitation_data, color='c', linestyle='--', linewidth=1)
```

Pie chart

```
In [ ]: # job data in precentile
job_data = ['40', '20', '17', '8', '5', '10']
labels = 'IT', 'Finance', 'Marketing', 'Admin', 'HR', 'Operations'

# explode the 1st slide
explode = (0.05, 0, 0, 0, 0, 0)

# draw the pie chart and set parameters
plt.pie(job_data, labels=labels, explode=explode)
plt.legend(bbox_to_anchor=(1.35, 1.0))
# show the plot
plt.show()
```

histogram and scatter plot

```
In [ ]: # generate numbers from a normal distribution
data=np.random.randn(100000)

plt.hist(data, bins=30, color='skyblue', edgecolor="black")
plt.xlabel('Values')
plt.ylabel('Frequency')
plt.title('Basic Histogram')
plt.show()
```

```
In [ ]: # scatter plot
style.use('ggplot')
plt.figure(figsize=(4,4))
x = [5,7,8,7,2,17,2,9,4,11,12,9,6]
y = [99,86,87,88,111,86,103,87,94,78,77,85,86]
plt.scatter(x, y,color='g')
```

heatmap

```
In [ ]: import seaborn as sns
flight_data=sns.load_dataset('flights')
# viewfirst 5 rows
flight_data.head()
```

```
In [ ]: # reaaranging the dataset
flight_data = flight_data.pivot(index = 'month',columns= 'year', values='pas')
```

```
In [ ]: flight_data
```

```
In [ ]: sns.heatmap(flight_data)
```

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In [ ]:
```