

what is matplotlib-----

Matplotlib is a python Library used for creating static, animated and interact

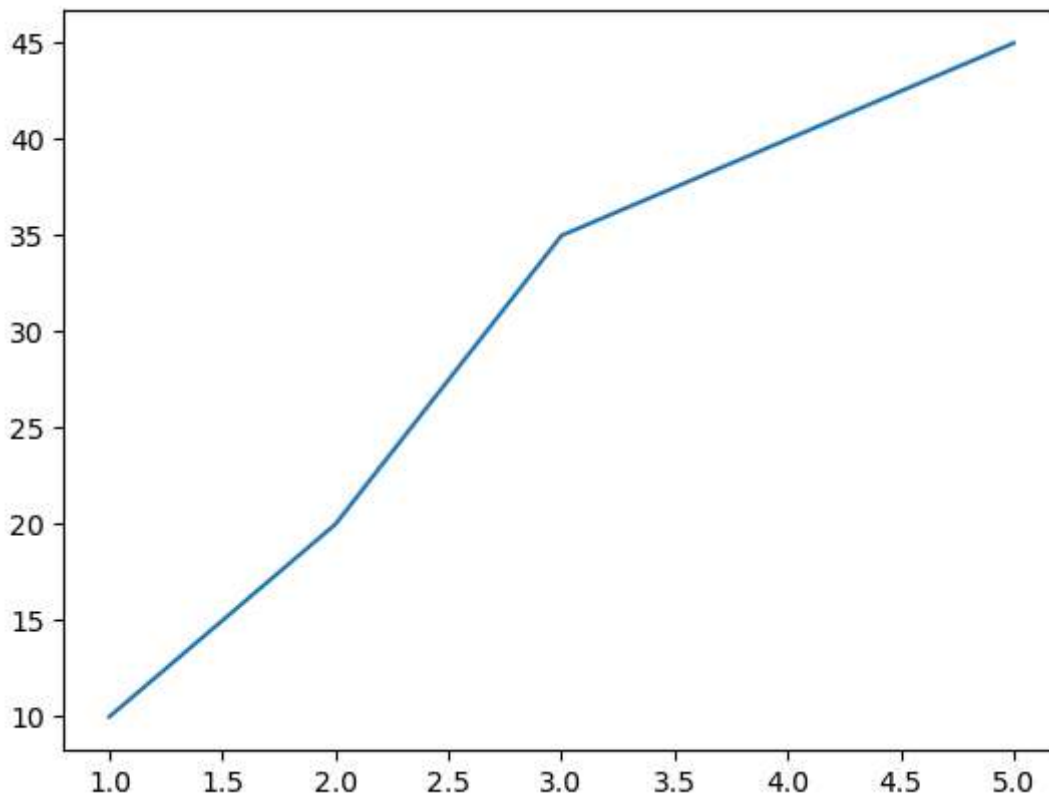
Data Visualzilation ---it is the graphical representation of data to identity

```
In [1]: import matplotlib.pyplot as plt
```

Matplotlib is building the font cache; this may take a moment.

```
In [5]: # data
x=[1,2,3,4,5]
y=[10,20,35,40,45]

plt.plot(x,y) # Line chart # plot-it means connect the point
plt.show() # display chart
```

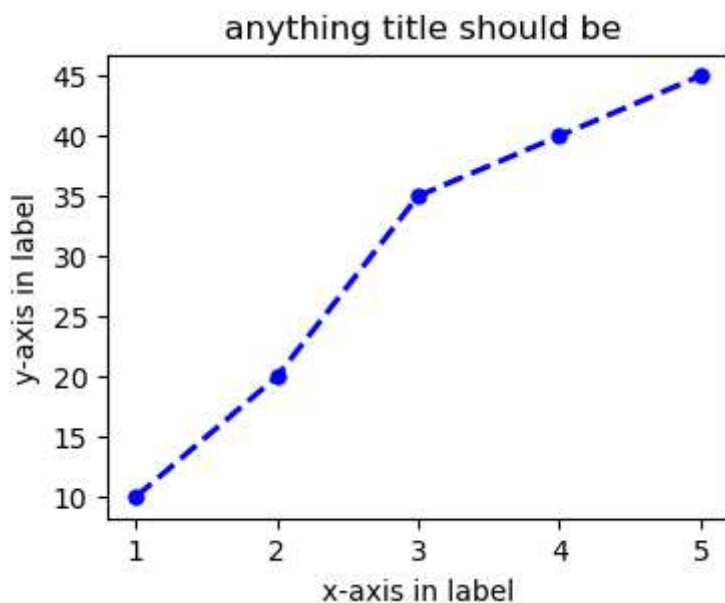


1. Customize chart

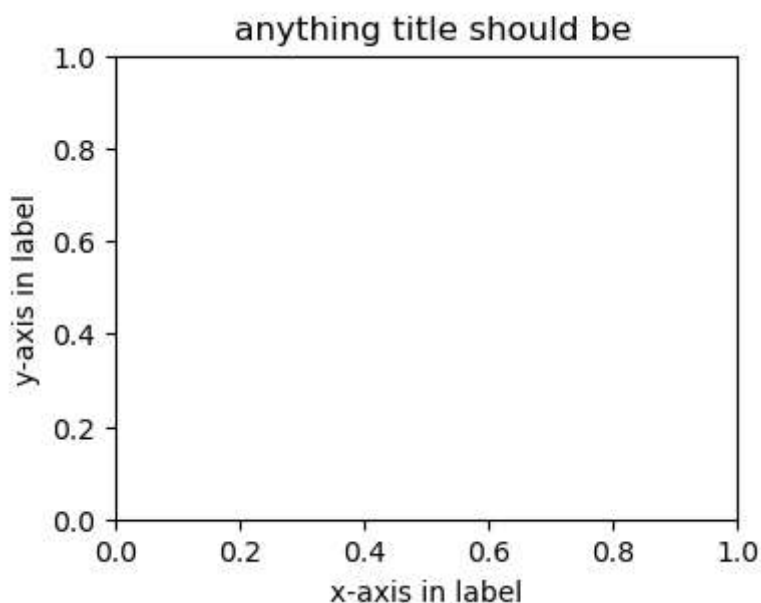
```
In [10]: %matplotlib inline
plt.rcParams['figure.figsize']=4,3
# plt.figure(figsize=(4,3))

plt.plot(x,y,color='blue',marker='o',lw=2,linestyle='--',ms=5)
plt.title(' anything title should be')
plt.xlabel('x-axis in label')
plt.ylabel('y-axis in label')

plt.show()
```



In [9]:



2. Advanced -Multiple Lines & Legends

```
In [12]: x=[1,2,3,4,5]
y1=[10,20,25,30,45]
y2=[20,30,35,45,55]

plt.plot(x,y1,label='Sales 2024')# plot y1 data
plt.plot(x,y2,label='Sales 2025')# plot y2 data

plt.title('YoY Sales')
plt.xlabel('Months')
plt.ylabel('Sales')

plt.legend()
plt.show()
```

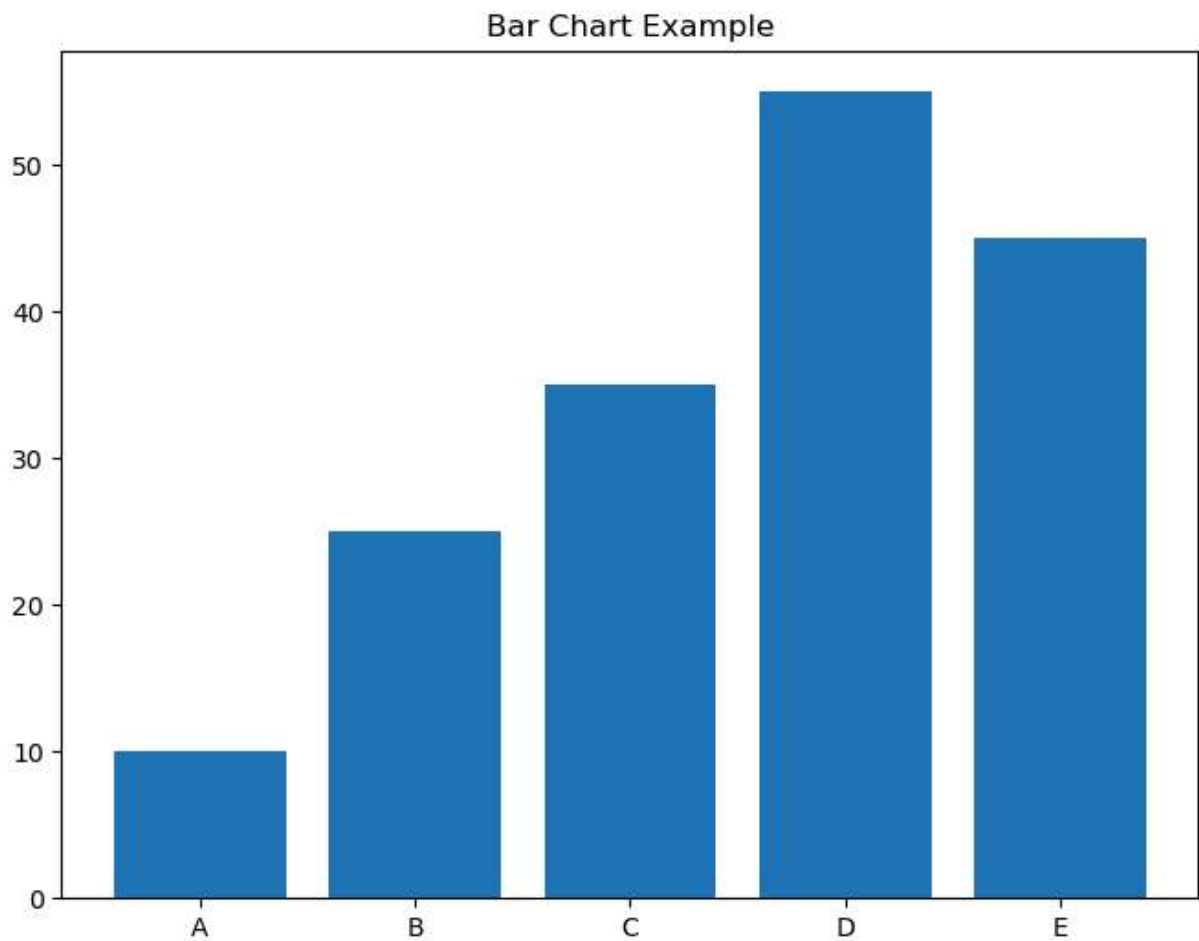


3.Bar Chart

```
In [19]: x=['A','B','C','D','E']
y=[10,25,35,55,45]

plt.bar(x,y)
plt.title('Bar Chart Example')

%matplotlib inline
plt.rcParams['figure.figsize']=7,6
```



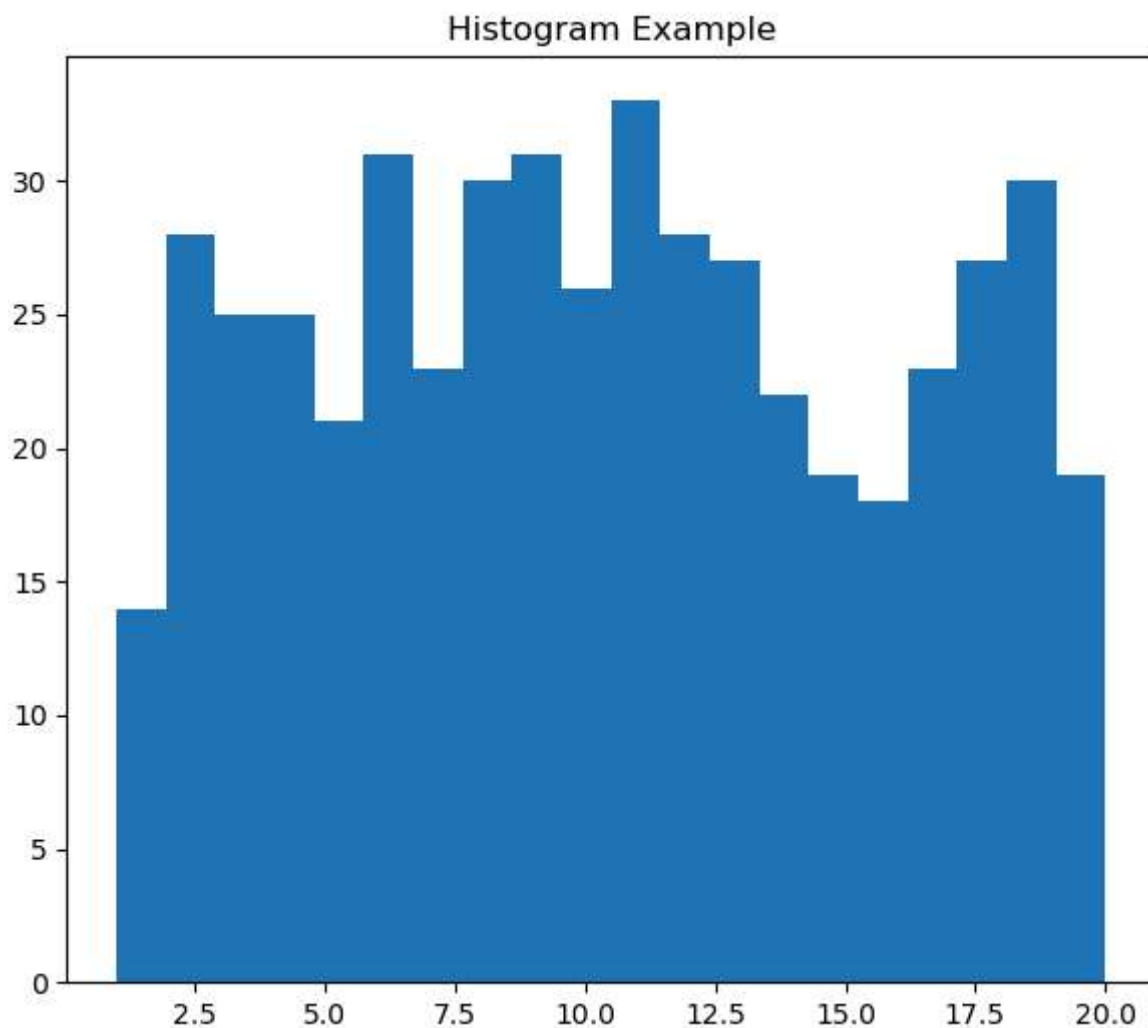
4. Histogram

```
In [29]: # used distribution analysis
# data

import random
import matplotlib.pyplot as plt

data = [random.randint(1, 20) for _ in range(500)]

plt.hist(data, bins=20) # histogram chart
plt.title('Histogram Example')
plt.show()
```

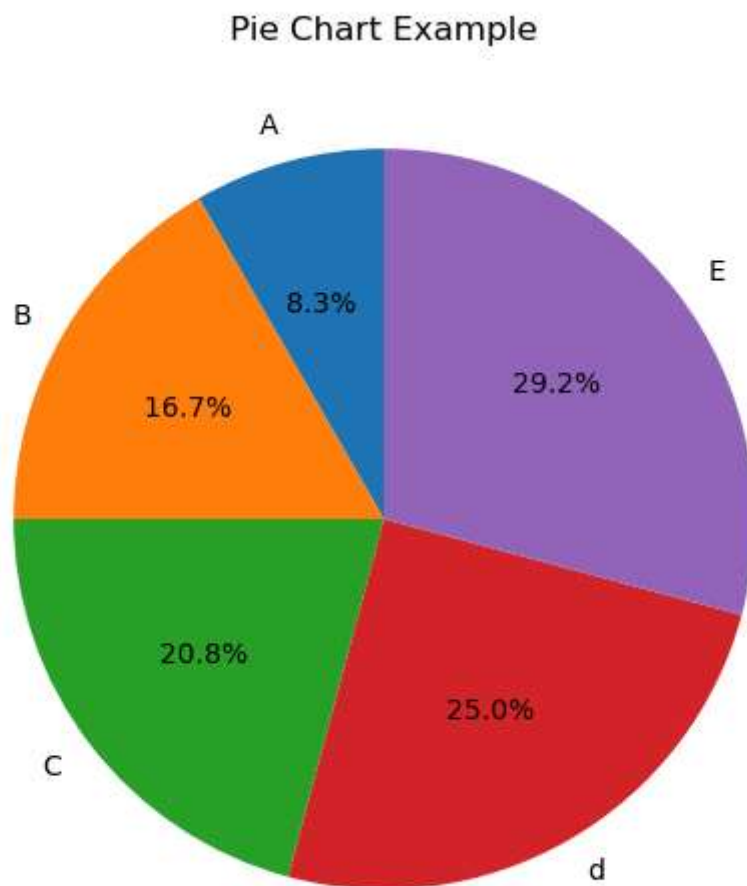


5. Pie Chart

```
In [31]: # used to show part-to whole relationship/data

#data
categories=['A','B','C','d','E']
sales=[10,20,25,30,35,]

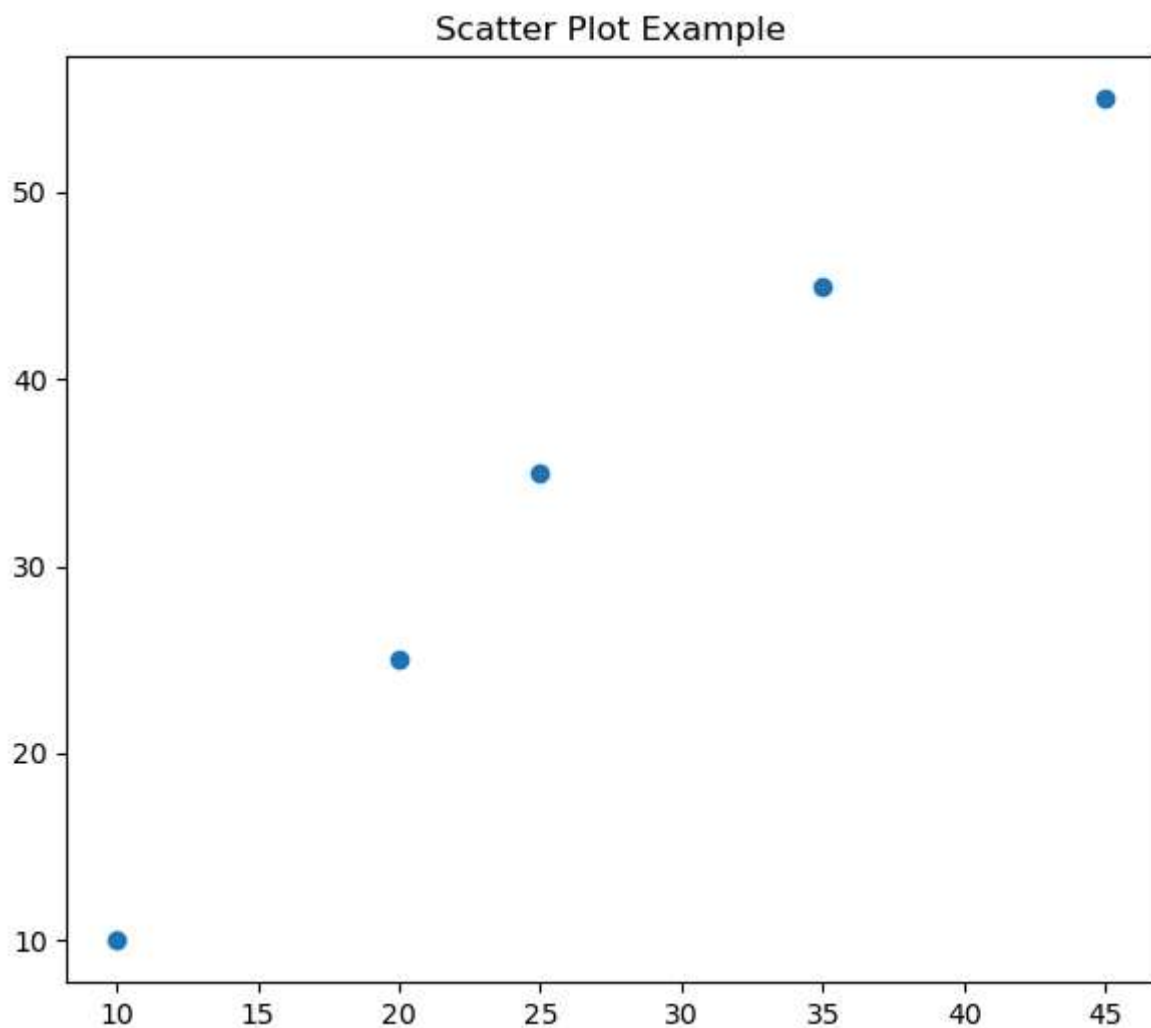
plt.pie(sales ,labels=categories,autopct = '%1.1f%% ',startangle=90)
plt.title('Pie Chart Example')
plt.show()
```



6.Scatter plot

```
In [34]: # used find relation btwn variables
#data
y1=[10,20,25,35,45]
y2=[10,25,35,45,55]

plt.scatter(y1,y2)
plt.title('Scatter Plot Example')
plt.show()
```



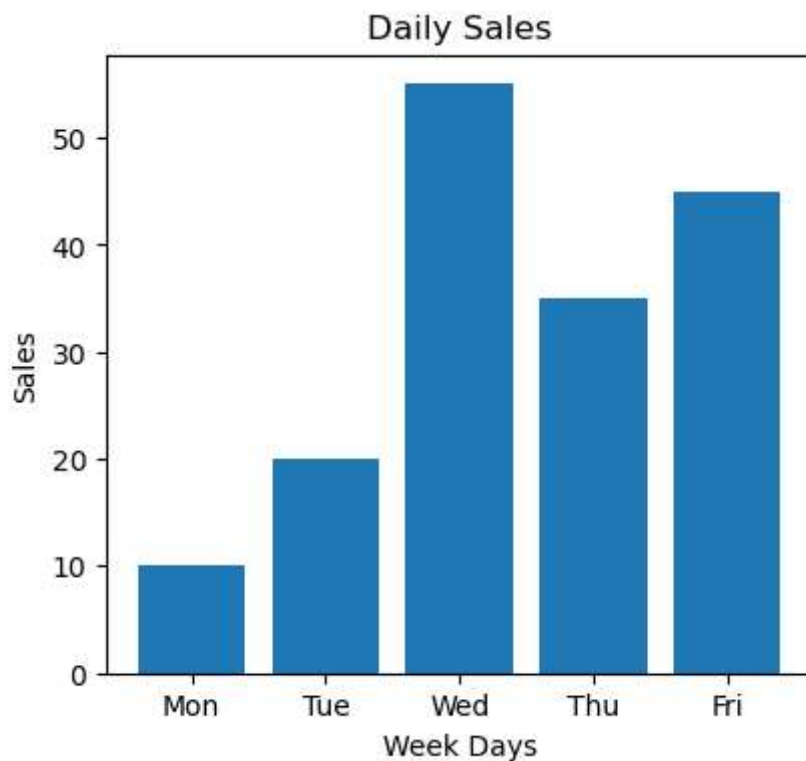
7 subplot

```
In [37]: categories=['Mon','Tue','Wed','Thu','Fri']
sales=[10,20,55,35,45]

plt.figure(figsize=(10,4))

plt.subplot(1,2,1) #row ,column,position
plt.bar(categories,sales)
plt.title('Daily Sales')
plt.xlabel('Week Days')
plt.ylabel('Sales')
```

```
Out[37]: Text(0, 0.5, 'Sales')
```



8 Matplotlib with pandas -real data

```
In [39]: import pandas as pd

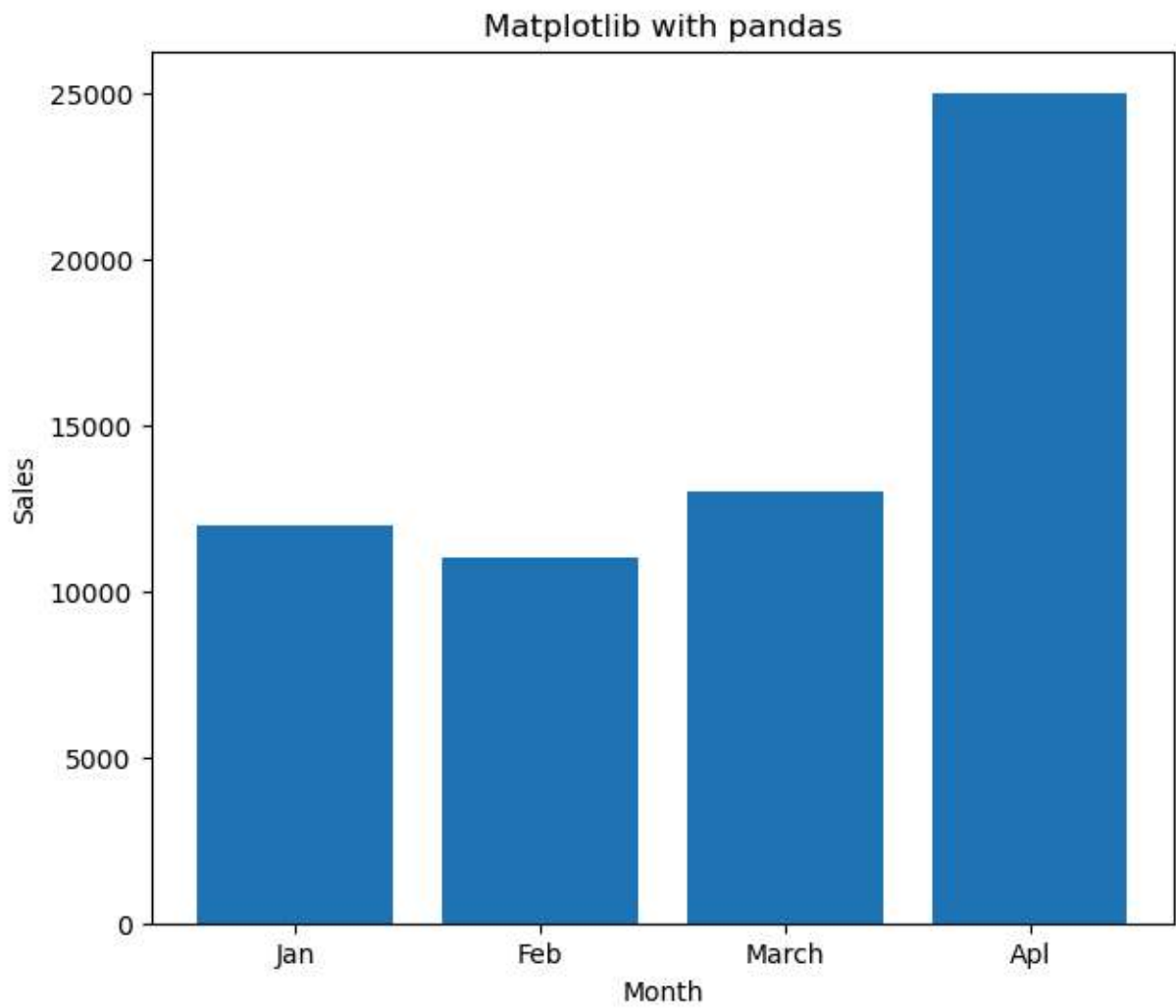
# data
data={
    'Month':['Jan', 'Feb', 'March', 'Apr'],
    'Sales':[12000, 11000, 13000, 25000]
}
df=pd.DataFrame(data)
df
```

Out[39]:

| | Month | Sales |
|---|-------|-------|
| 0 | Jan | 12000 |
| 1 | Feb | 11000 |
| 2 | March | 13000 |
| 3 | Apr | 25000 |

```
In [40]: plt.bar(df['Month'], df['Sales'])
plt.title('Matplotlib with pandas')
plt.xlabel('Month')
plt.ylabel('Sales')

plt.show()
```



In []: