

▼ ASSIGNMENT / TASK 6

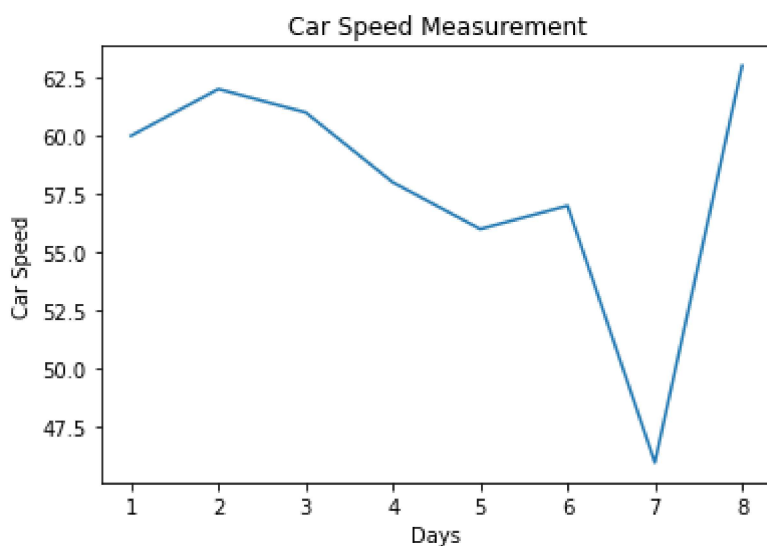
This assignment is for visualization using Python Matplotlib Library

1. Load the necessary package for plotting using pyplot from matplotlib. Example - Days(x-axis) represents 8 days and Speed represents a car's speed. Plot a Basic line plot between days and car speed, put x axis label as days and y axis label as car speed and put title Car Speed Measurement.

```
Days=[1,2,3,4,5,6,7,8]
```

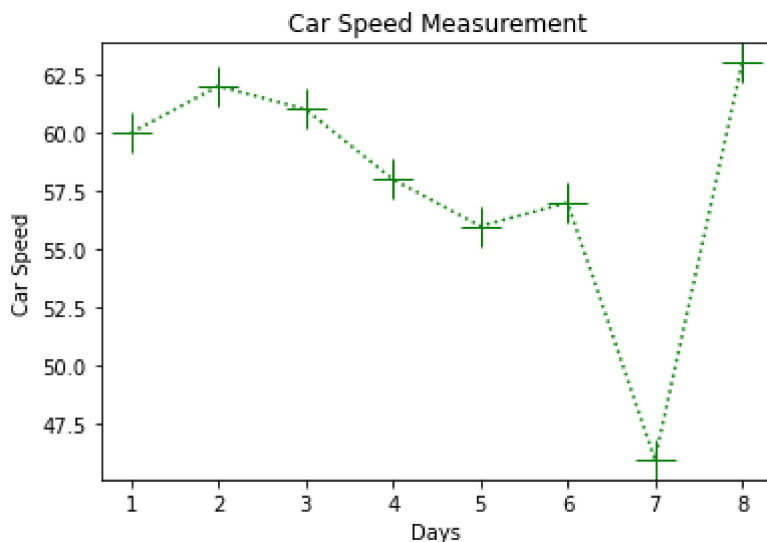
```
Speed=[60,62,61,58,56,57,46,63]
```

```
import numpy as np
import pandas as pd
from matplotlib import pyplot as plt
Days=[1,2,3,4,5,6,7,8]
Speed=[60,62,61,58,56,57,46,63]
plt.plot(Days,Speed)
plt.xlabel("Days")
plt.ylabel("Car Speed")
plt.title("Car Speed Measurement")
plt.show()
```



2. Now to above car data apply some string formats like line style example green dotted line, marker shape like +, change markersize, markerface color etc.

```
plt.plot(Days, Speed , color='g', linestyle="dotted", marker="+", markersize=20, markerfaceco
plt.xlabel("Days")
plt.ylabel("Car Speed")
plt.title("Car Speed Measurement")
plt.show()
```



3. Plot Axes Labels, Chart title, Legend in Car minimum, Maximum and average speed in 8 days.

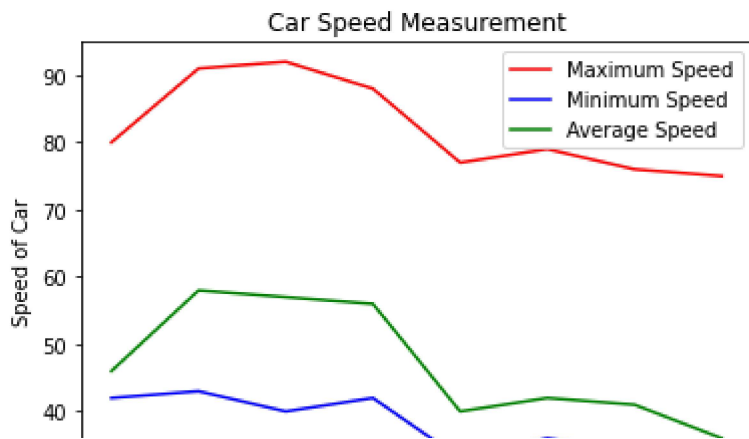
```
days=[1,2,3,4,5,6,7,8]
```

```
max_speed=[80,91,92,88,77,79,76,75]
```

```
min_speed=[42,43,40,42,33,36,34,35]
```

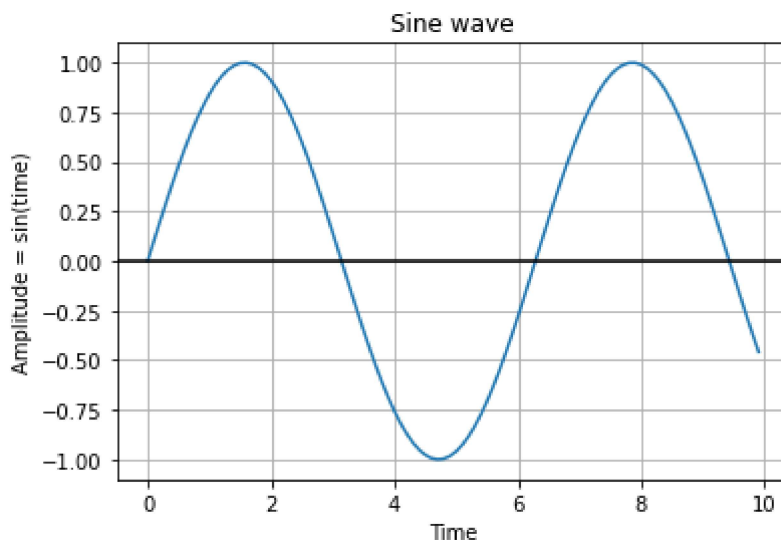
```
avg_speed=[46,58,57,56,40,42,41,36]
```

```
days=[1,2,3,4,5,6,7,8]
max_speed=[80,91,92,88,77,79,76,75]
min_speed=[42,43,40,42,33,36,34,35]
avg_speed=[46,58,57,56,40,42,41,36]
plt.plot(days,max_speed,color='r',label="Maximum Speed")
plt.plot(days,min_speed,color='b',label="Minimum Speed")
plt.plot(days,avg_speed,color='g',label="Average Speed")
plt.legend()
plt.xlabel("Days")
plt.ylabel("Speed of Car")
plt.title("Car Speed Measurement")
plt.show()
```



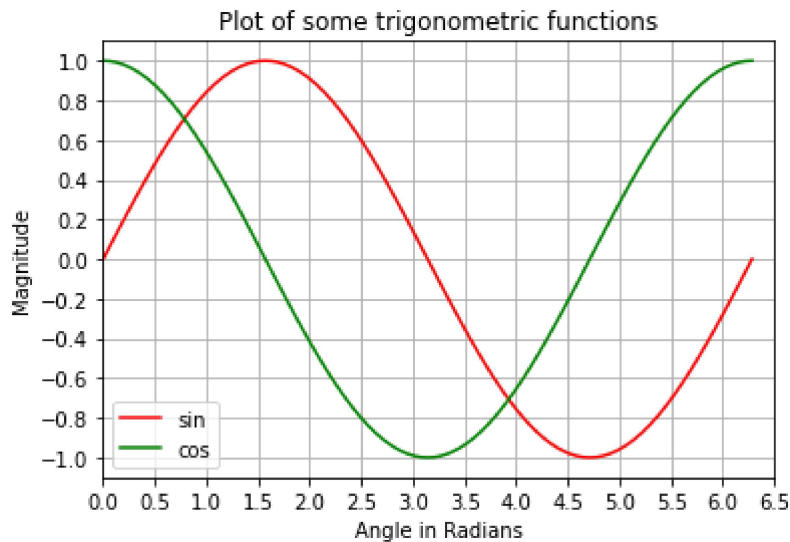
4. Plotting a basic sine graph by adding more features. Adding Multiple plots by Superimposition like cosine wave.

```
time = np.arange(0, 10, 0.1); # Get x values of the sine wave
amplitude = np.sin(time) # Amplitude of the sine wave is sine of a variable like time
plt.plot(time, amplitude) # Plot a sine wave using time and amplitude obtained for the sine wa
plt.title('Sine wave') # Give a title for the sine wave plot
plt.xlabel('Time')
plt.ylabel('Amplitude = sin(time)')
plt.grid(True, which='both')
plt.axhline(y=0, color='k')
plt.show()
```



```
x = np.linspace(0, 2.0*np.pi, 101)
y = np.sin(x)
z = np.cos(x)
# values for making ticks in x and y axis
xnumbers = np.linspace(0, 7, 15)
ynumbers = np.linspace(-1, 1, 11)
plt.plot(x, y, color='r', label='sin') # r - red colour
plt.plot(x, z, color='g', label='cos') # g - green colour
```

```
plt.xlabel("Angle in Radians")
plt.ylabel("Magnitude")
plt.title("Plot of some trigonometric functions")
plt.xticks(xnumbers)
plt.yticks(ynumbers)
plt.legend()
plt.grid()
plt.axis([0, 6.5, -1.1, 1.1]) # [xstart, xend, ystart, yend]
plt.show()
```



5. Plot Simple bar chart showing popularity of Programming Languages.

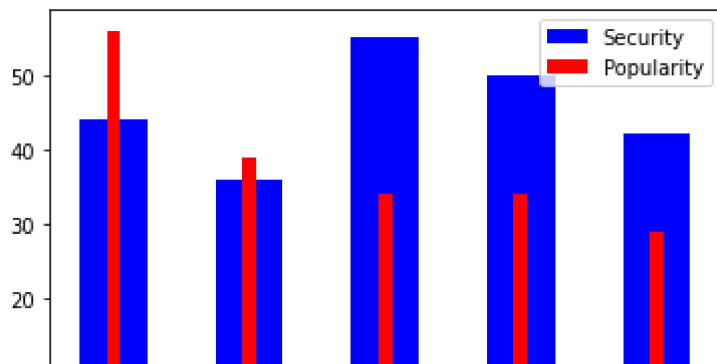
```
Languages = ['Python', 'SQL', 'Java', 'C++', 'JavaScript']
```

```
Popularity = [56, 39, 34, 34, 29]
```

```
Security = [44, 36, 55, 50, 42]
```

Plot Multiple Bars showing Popularity and Security of major Programming Languages. Also Create Horizontal bar chart using barh function.

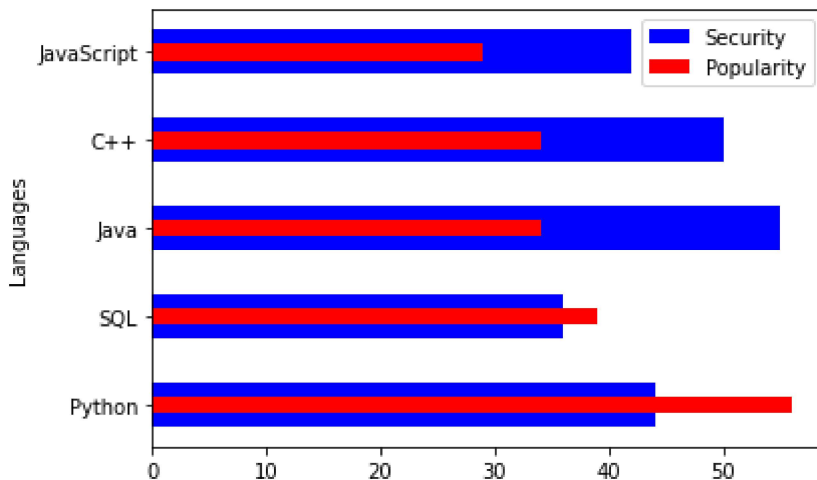
```
Languages = ['Python', 'SQL', 'Java', 'C++', 'JavaScript']
Popularity = [56, 39, 34, 34, 29]
Security = [44, 36, 55, 50, 42]
plt.bar(Languages, Security, label="Security", color='b', width=0.5)
plt.bar(Languages, Popularity, label="Popularity", color='r', width=0.1)
plt.legend()
plt.xlabel("Languages")
plt.show()
```



```

Languages = ['Python', 'SQL', 'Java', 'C++', 'JavaScript']
Popularity = [56, 39, 34, 34, 29]
Security = [44, 36, 55, 50, 42]
plt.barh(Languages, Security, label="Security", color='b', height=0.5)
plt.barh(Languages, Popularity, label="Popularity", color='r', height=0.2)
plt.legend()
plt.ylabel("Languages")
plt.show()

```



6. Plot Histogram, We have a sample data of Students marks of various Students, we will try to plot number of Students by marks range and try to figure out how many Students are average, below-average and Excellent.

Marks = [61,86,42,46,73,95,65,78,53,92,55,69,70,49,72,86,64]

Histogram showing Below Average, Average and Excellent distribution

40-60: Below Average

60-80: Average

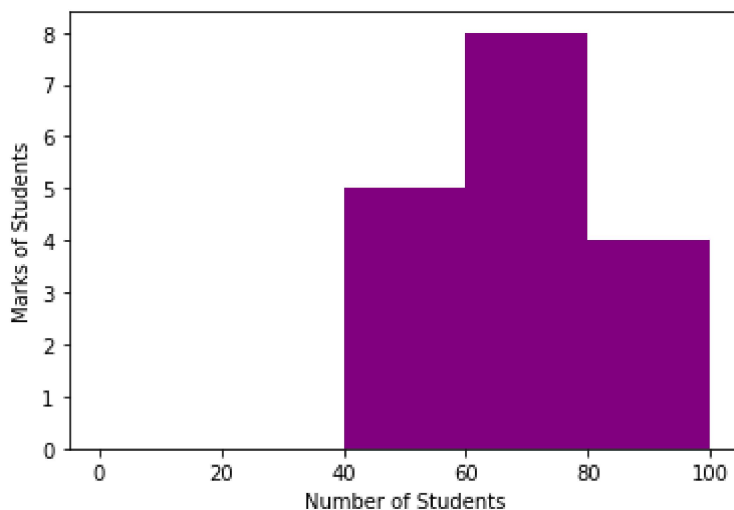
80-100: Excellent

```

Marks = [ 61,86,42,46,73,95,65,78,53,92,55,69,70,49,72,86,64]
num_students=[0,20,40,60,80,100]
plt.hist(Marks, num_students, color='purple')

```

```
plt.xlabel("Number of Students")
plt.ylabel("Marks of Students")
plt.show()
```



7. Titanic Data Set Download Data

Load the data file

(i) Create a pie chart presenting the male/female proportion

(ii) Create a scatterplot with the Fare paid and the Age, differ the plot color by gender

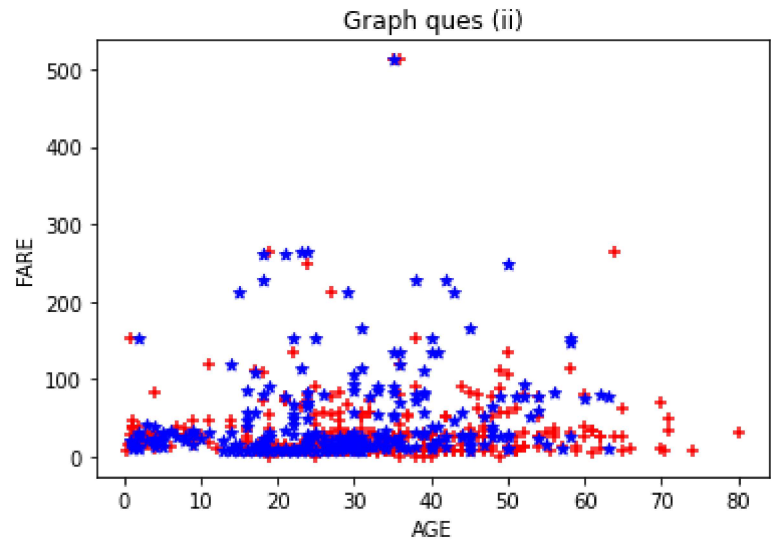
```
import numpy as np
import pandas as pd
from matplotlib import pyplot as plt
df=pd.read_csv('/content/archive.zip')
```

```
df.columns
my_labels=['Male','Female']
cols = ['r','b']
df.Sex.value_counts().plot.pie(labels=my_labels, colors=cols, startangle=180 )
plt.show()
```

```
df.head()
```

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Far
0	1	0	3	Braund, Mr. Owen Harris	male	22.0	1	0	A/5 21171	7.250
1	2	1	1	Cumings, Mrs. John Bradley (Florence Briggs Th	female	38.0	1	0	PC 17599	71.283

```
males=df[df["Sex"]=="male"]
females=df[df["Sex"]=="female"]
plt.scatter(males.Age, males.Fare, color='r', marker="+")
plt.scatter(females.Age, females.Fare, color='b', marker="*")
plt.xlabel("AGE")
plt.ylabel("FARE")
plt.title("Graph ques (ii)")
plt.show()
```



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