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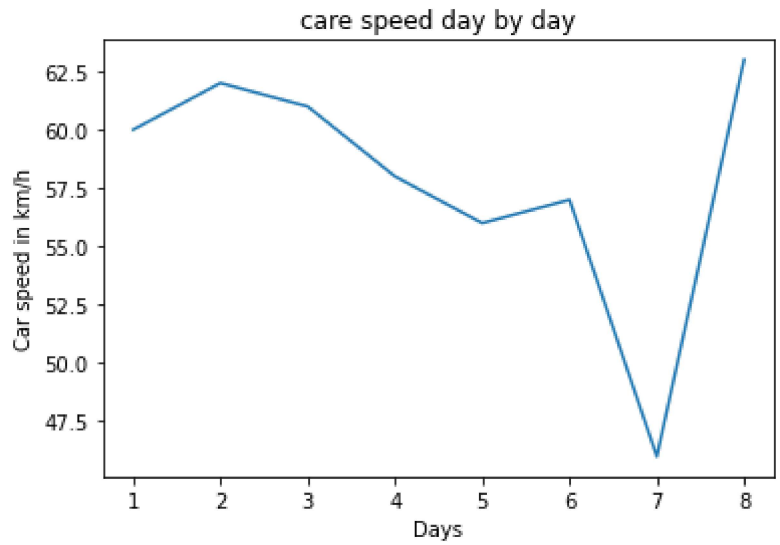
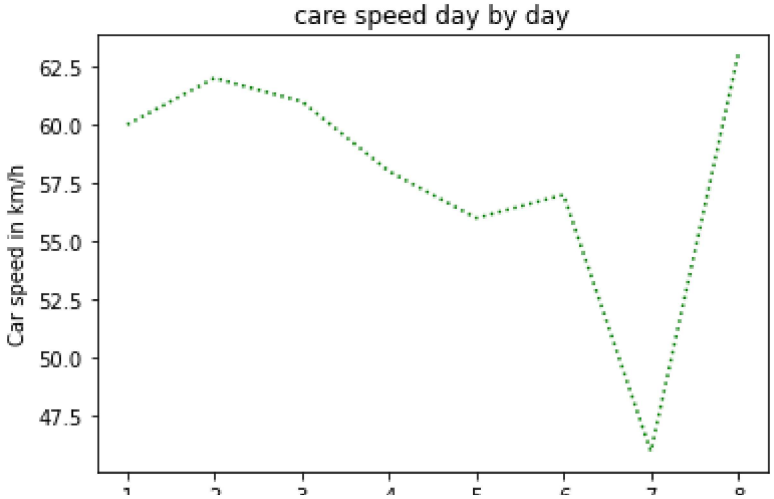
1. Load the necessary package for plotting using pyplot from matplotlib. Example - Days(x-axis) represents 8 days and Speed represents a car's speed. Plot a Basic line plot between days and car speed, put x axis label as days and y axis label as car speed and put title Car Speed Measurement. Days=[1,2,3,4,5,6,7,8] Speed=[60,62,61,58,56,57,46,63]

```
import matplotlib.pyplot as plt
days = [1, 2, 3, 4, 5, 6, 7, 8]
car_speed = [60, 62, 61, 58, 56, 57, 46, 63]
plt.plot(days, car_speed)
plt.xlabel("Days")
plt.ylabel("Car speed in km/h")
plt.title("care speed day by day")
plt.show()
```

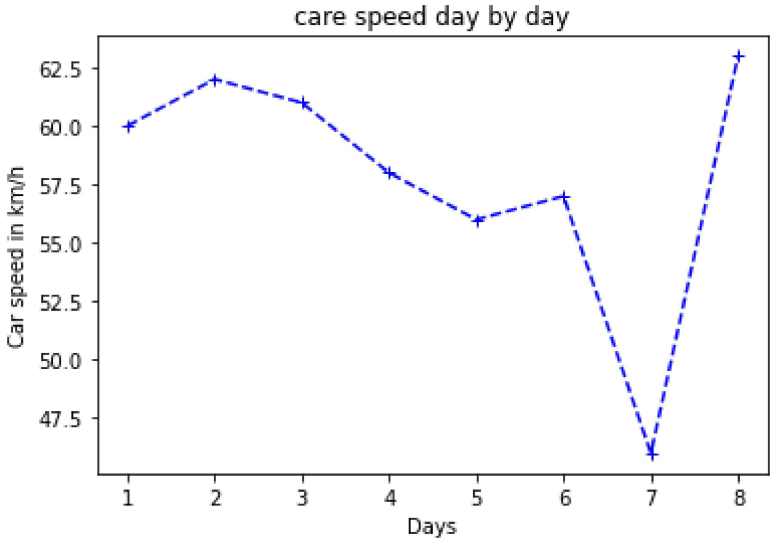


2. Now to above car data apply some string formats like line style example green dotted line, marker shape like +, change markersize, markerface color etc.

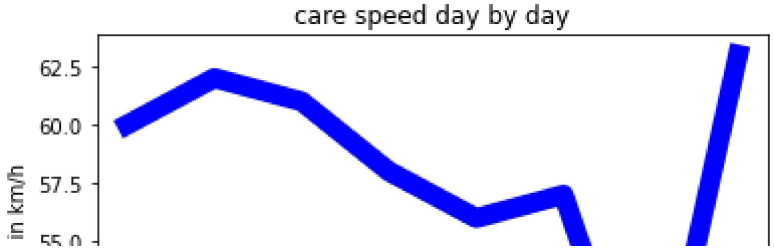
```
days = [1, 2, 3, 4, 5, 6, 7, 8]
car_speed = [60, 62, 61, 58, 56, 57, 46, 63]
plt.plot(days, car_speed, "g:") # green dotted line
plt.xlabel("Days")
plt.ylabel("Car speed in km/h")
plt.title("care speed day by day")
plt.show()
```



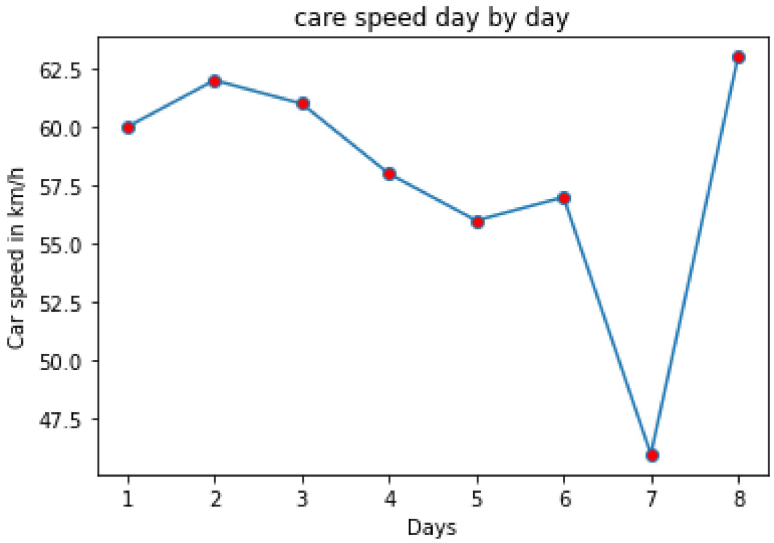

```
days = [1, 2, 3, 4, 5, 6, 7, 8]
car_speed = [60, 62, 61, 58, 56, 57, 46, 63]
plt.plot(days, car_speed, "b+--", marker = "+") # marker shape
plt.xlabel("Days")
plt.ylabel("Car speed in km/h")
plt.title("care speed day by day")
plt.show()
```




```
days = [1, 2, 3, 4, 5, 6, 7, 8]
car_speed = [60, 62, 61, 58, 56, 57, 46, 63]
plt.plot(days, car_speed, "bo-", linewidth = 10) # markersize
plt.xlabel("Days")
plt.ylabel("Car speed in km/h")
plt.title("care speed day by day")
plt.show()
```




```
days = [1, 2, 3, 4, 5, 6, 7, 8]
car_speed = [60, 62, 61, 58, 56, 57, 46, 63]
plt.plot(days, car_speed, markerfacecolor = "red", marker = "o") # markerfacecolor
plt.xlabel("Days")
plt.ylabel("Car speed in km/h")
plt.title("care speed day by day")
plt.show()
```



3. Plot Axes Labels, Chart title, Legend, Grid 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]

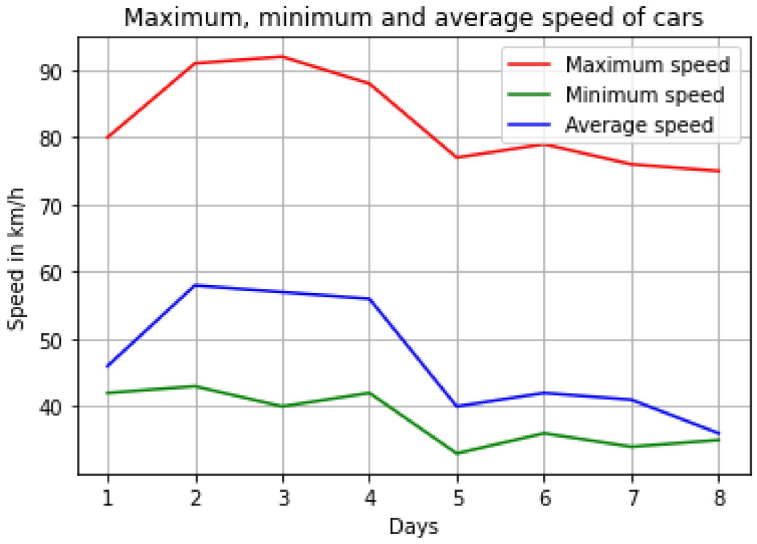
min_speed=[42,43,40,42,33,36,34,35]

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.title("Maximum, minimum and average speed of cars")
plt.xlabel("Days")
plt.ylabel("Speed in km/h")
plt.plot(days, max_speed, color = "red", label = "Maximum speed")
plt.plot(days, min_speed, color = "green", label = "Minimum speed")
plt.plot(days, avg_speed, color = "blue", label = "Average speed")
plt.legend()
```

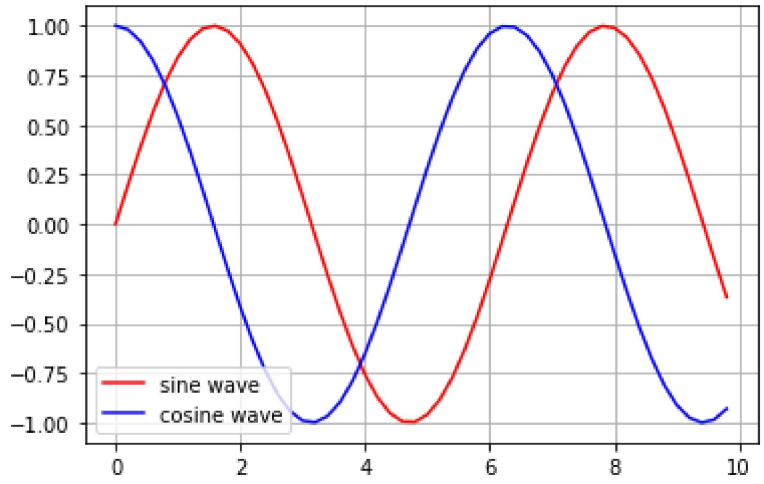
```
plt.grid()
plt.show()
```



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

```
import numpy as np

#sine wave
time = np.arange(0, 10, 0.2)
amplitude = np.sin(time)
amplitude1 = np.cos(time)
plt.plot(time, amplitude, color = "red", label = "sine wave")
plt.plot(time, amplitude1, color = "blue", label = "cosine wave")
plt.grid()
plt.legend()
plt.show()
```



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

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

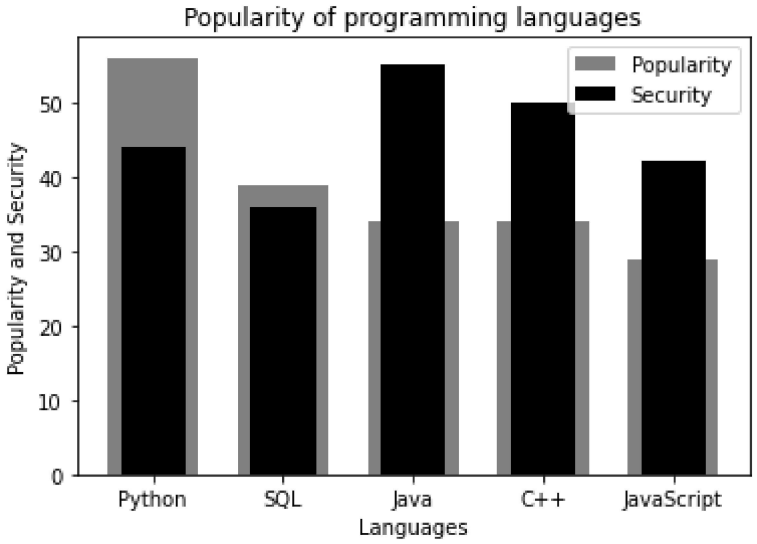
Popularity = [56, 39, 34, 34, 29]

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

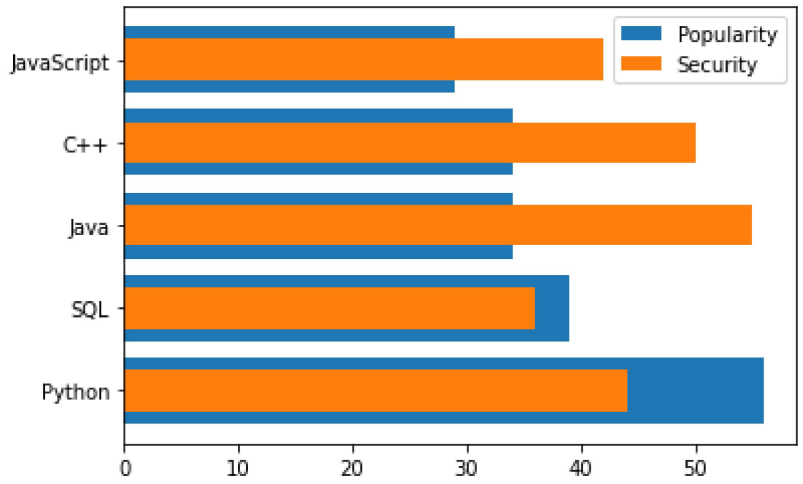
Plot Multiple Bars showing Popularity and Security of major Programming Languages. Also Create Horizontal bar chart using barh function.

```
languages = ["Python", "SQL", "Java", "C++", "JavaScript"]
popularity = [56, 39, 34, 34, 29]
security = [44, 36, 55, 50, 42]

plt.bar(languages, popularity, color = "grey", width = 0.7, label = "Popularity")
plt.bar(languages, security, color = "black", width = 0.5, label = "Security")
plt.legend()
plt.title("Popularity of programming languages")
plt.xlabel("Languages")
plt.ylabel("Popularity and Security")
plt.show()
```




```
plt.barh(languages, popularity, label = "Popularity", height = 0.8)
plt.barh(languages, security, label = "Security", height = 0.5)
plt.legend()
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]

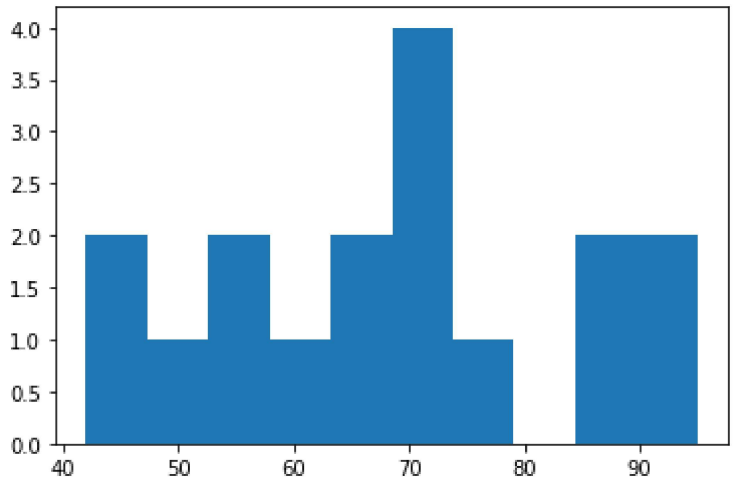
Histogram showing Below Average, Average and Execellent distribution

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]
plt.hist(marks)
plt.show()
```



7. Titanic Data Set Download Data

Load the data file

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

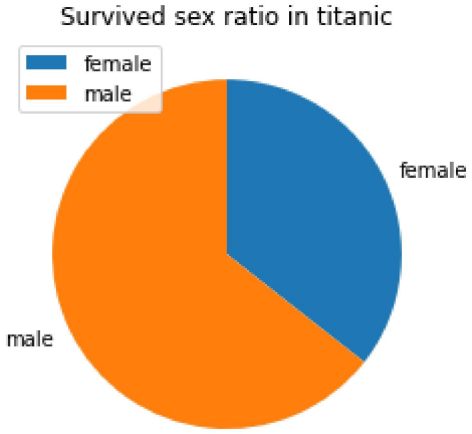
(ii) Create a scatterplot with the Fare paid and the Age, differ the plot color by gender

```
import pandas as pd
titanic = pd.read_csv("/content/titanic_original.csv")
titanic.head()
```

	pclass	survived	name	sex	age	sibsp	parch	ticket	fare	cabin

```
# pie chart for male-female proportion
sex = titanic.groupby(["sex"])["survived"].count()
print(sex)
plt.pie(sex, labels = sex.index, startangle = 90, counterclock = False)
plt.legend()
plt.title("Survived sex ratio in titanic")
plt.show()
```

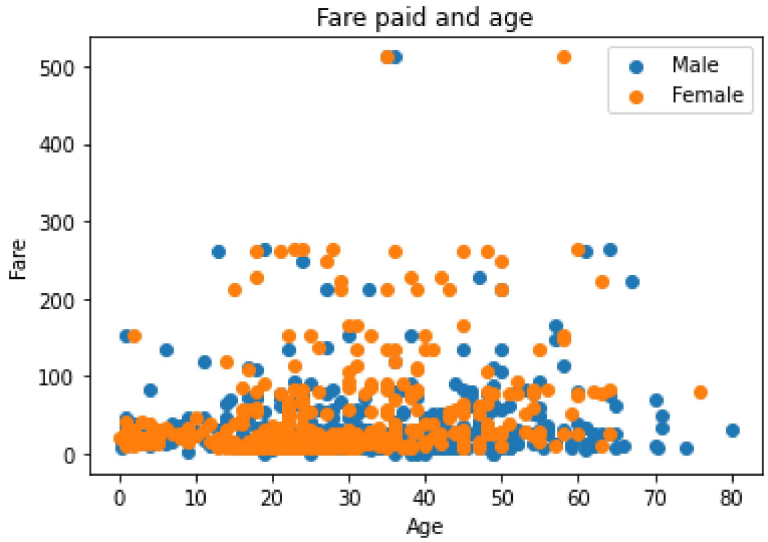
```
sex
female    466
male      843
Name: survived, dtype: int64
```




```
# Create a scatterplot with the Fare paid and the Age, differ the plot color by gender.

male = titanic[titanic["sex"] == "male"]
print(male.sex.value_counts())
female = titanic[titanic["sex"] == "female"]
print(female.sex.value_counts())
plt.scatter(male.age, male.fare, label = "Male")
plt.scatter(female.age, female.fare, label = "Female")
plt.title("Fare paid and age")
plt.xlabel("Age")
plt.ylabel("Fare")
plt.legend()
plt.show()
```

```
male    843
Name: sex, dtype: int64
female    466
Name: sex, dtype: int64
```



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