Python for Data Science (Lab Session 12)

Basics of Data Visualization

Q-1) Read the financial data of Alphabet Inc. between October 3, 2016 to October 7, 2016 from fdata.csv file.

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

Data load

In [2]:
```
df = pd.read_csv("fdata.csv")
df
```

Out[2]:

	Date	Open	High	Low	Close
0	10-03-16	774.250000	776.065002	769.500000	772.559998
1	10-04-16	776.030029	778.710022	772.890015	776.429993
2	10-05-16	779.309998	782.070007	775.650024	776.469971
3	10-06-16	779.000000	780.479980	775.539978	776.859985
4	10-07-16	779.659973	779.659973	770.750000	775.080017

Q-A)Make the date column as the index column

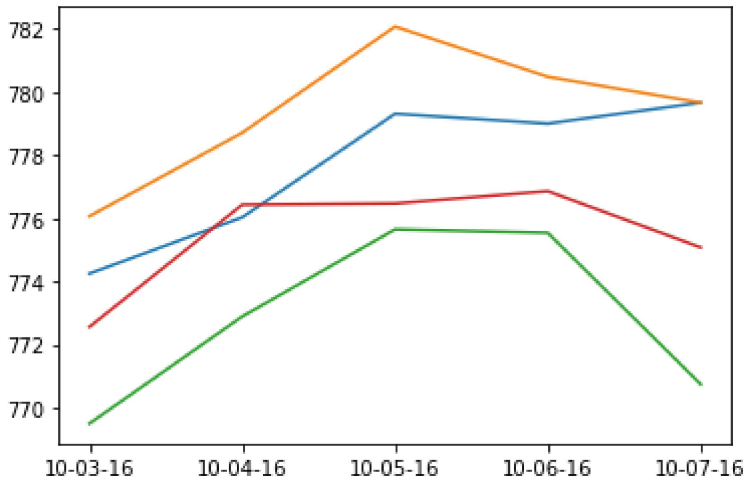
In [3]:
```
date = df.set_index("Date")
date
```

Out[3]:

Date	Open	High	Low	Close
10-03-16	774.250000	776.065002	769.500000	772.559998
10-04-16	776.030029	778.710022	772.890015	776.429993
10-05-16	779.309998	782.070007	775.650024	776.469971
10-06-16	779.000000	780.479980	775.539978	776.859985
10-07-16	779.659973	779.659973	770.750000	775.080017

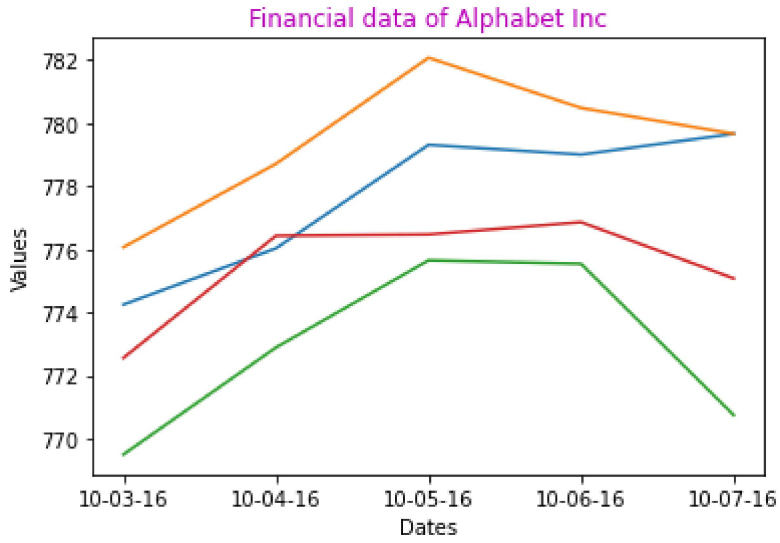
Q-B)Write a Python program to draw line charts of the financial datawith dates on x-axis and open, high, low and close values on y-axis

In [4]:
```
plt.plot(date)
plt.show()
```



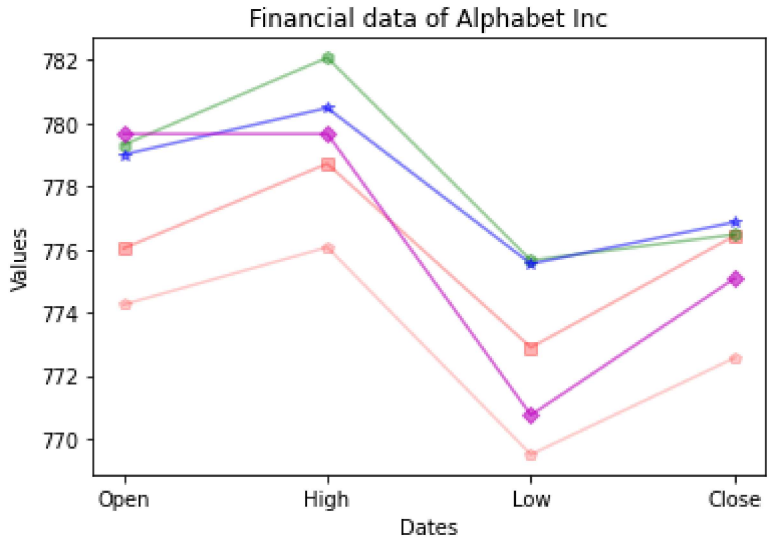
Q-C)Give the appropriate title to the graph and give proper labels to the x-axis and y-axis

In [5]:
```
plt.title("Financial data of Alphabet Inc",color="m")
plt.plot(date)
plt.xlabel("Dates")
plt.ylabel("Values")
plt.show()
```



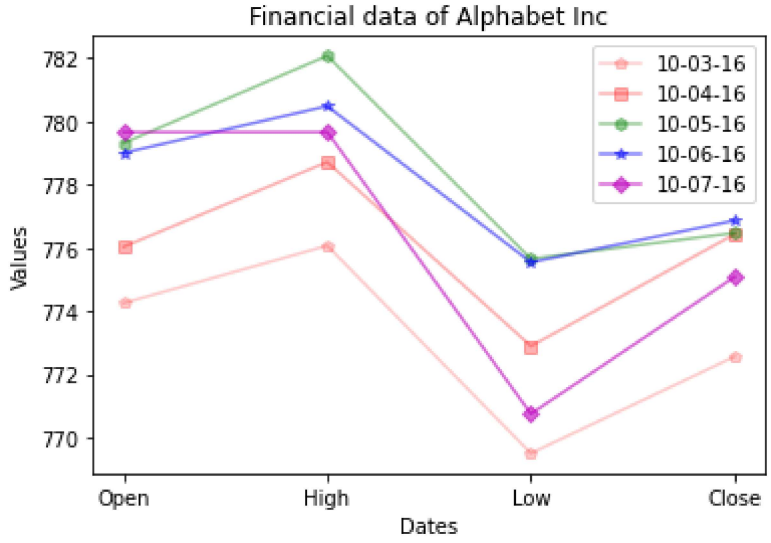
Q-D)Choose different colors for data with different dates

In [6]:
```
plt.title("Financial data of Alphabet Inc")
plt.xlabel("Dates")
plt.ylabel("Values")
date1 = date.loc["10-03-16"]
date2 = date.loc["10-04-16"]
date3 = date.loc["10-05-16"]
date4 = date.loc["10-06-16"]
date5 = date.loc["10-07-16"]

plt.plot(date1, color='r',marker='p',alpha=.2)
plt.plot(date2, color='r',marker='s',alpha=.3)
plt.plot(date3, color='g',marker='h',alpha=.4)
plt.plot(date4, color='b',marker='*',alpha=.5)
plt.plot(date5, color='m',marker='D',alpha=.6)
plt.show()
```



Q-E)Display the legend and give annotations to the chart

In [7]:
```
plt.title("Financial data of Alphabet Inc")
plt.xlabel("Dates")
plt.ylabel("Values")
date1 = date.loc["10-03-16"]
date2 = date.loc["10-04-16"]
date3 = date.loc["10-05-16"]
date4 = date.loc["10-06-16"]
date5 = date.loc["10-07-16"]

plt.plot(date1, color='r',marker='p',alpha=.2,label="10-03-16")
plt.plot(date2, color='r',marker='s',alpha=.3,label="10-04-16")
plt.plot(date3, color='g',marker='h',alpha=.4,label="10-05-16")
plt.plot(date4, color='b',marker='*',alpha=.5,label="10-06-16")
plt.plot(date5, color='m',marker='D',alpha=.6,label="10-07-16")
plt.legend()
plt.show()
```



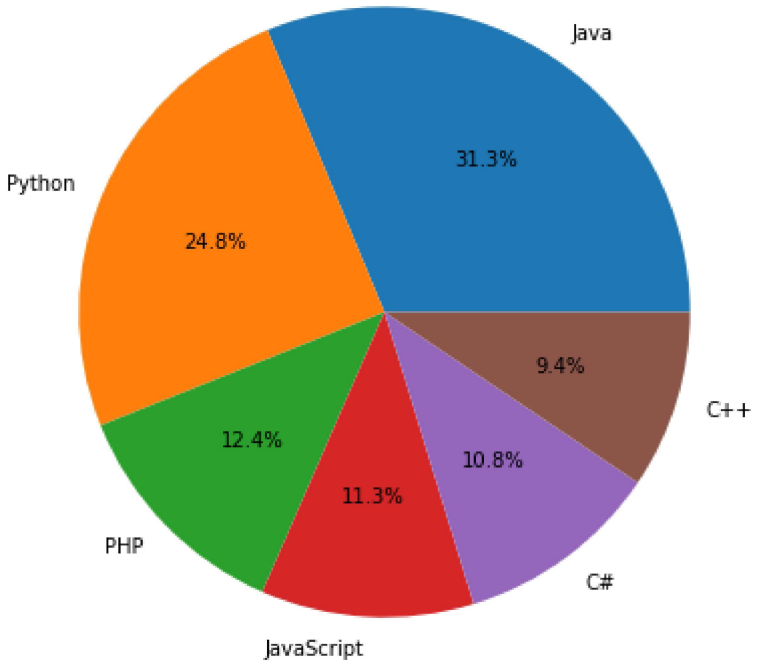
Q-2)Use below values for visualization Programminglanguages:

Java, Python, PHP, JavaScript, C#, C++

Popularity:22.2, 17.6, 8.8, 8, 7.7, 6.7

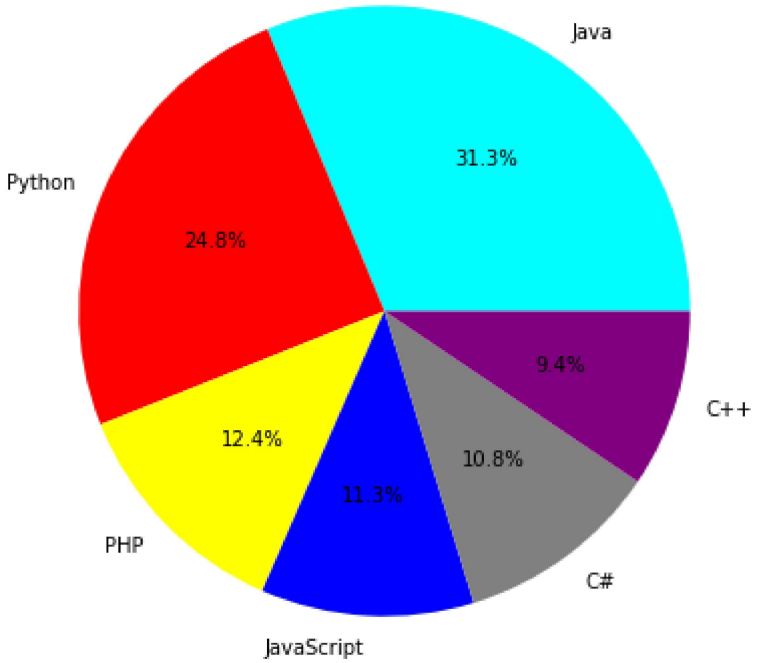
Q-2.A) Make a pie chart to display above data

In [8]:
```
lan = ['Java', 'Python', 'PHP', 'JavaScript', 'C#', 'C++']

popularity = [22.2, 17.6, 8.8, 8, 7.7, 6.7]

fig = plt.figure(figsize =(10, 7))
plt.pie(popularity, labels = lan,autopct="%1.1f%%")
plt.show()
```



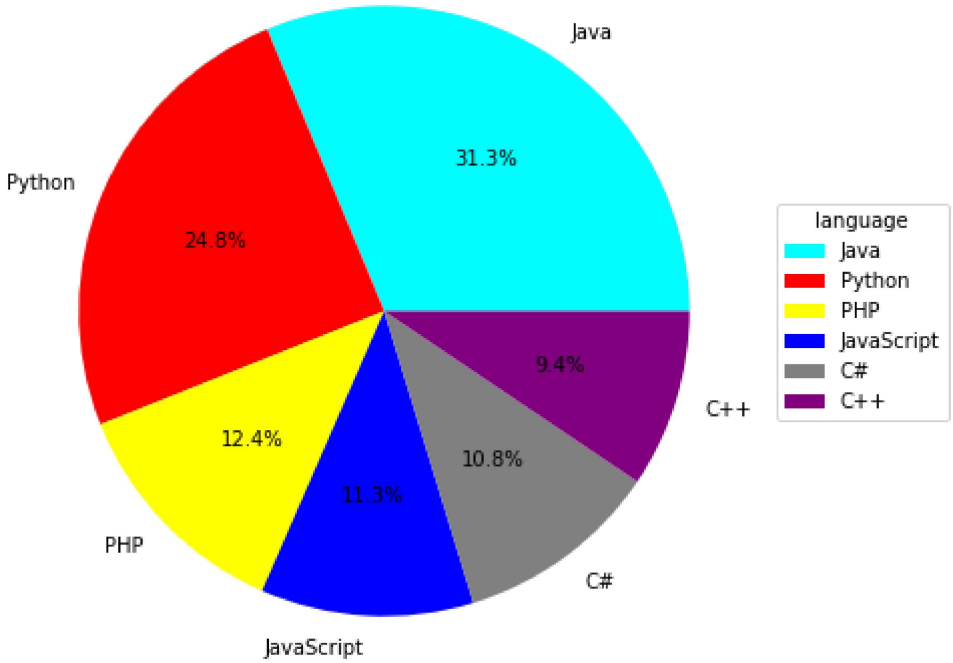
Q-2.B)Use user defined colors to represent each value

In [9]:
```
colors = ['cyan','red','yellow','blue','gray','purple']

fig = plt.figure(figsize =(10, 7))
plt.pie(popularity, labels = lan,autopct="%1.1f%%",colors=colors)
plt.show()
```



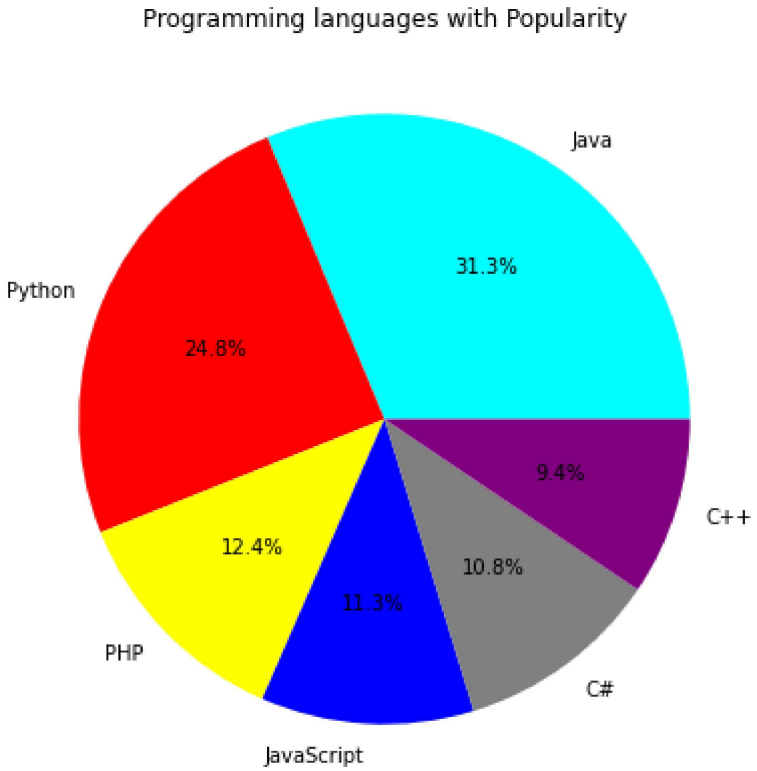
Q-2.C)Give labels to the data

In [10]:
```
fig = plt.figure(figsize =(10, 7))
plt.pie(popularity, labels = lan,autopct="%1.1f%%", colors=colors)
plt.legend(title ="language",loc ="center left",bbox_to_anchor =(1, 0, 0.5, 1
))
plt.show()
```



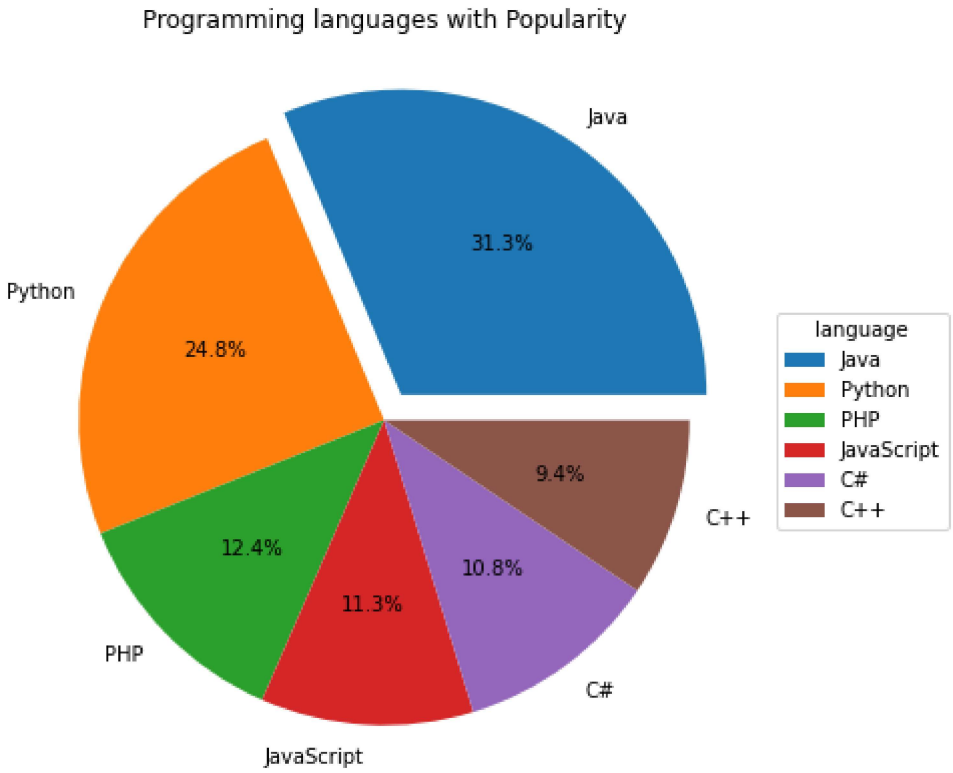
Q-2.D)Give proper title to the graph

In [11]:
```
fig = plt.figure(figsize =(10, 7))
plt.pie(popularity, labels = lan,autopct="%1.1f%%", colors=colors)
plt.title("Programming languages with Popularity")
plt.show()
```



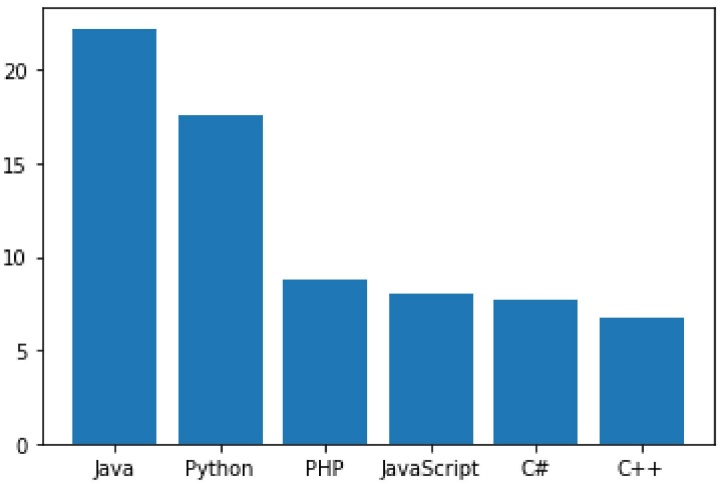
Q-2.E)Display wedges for Java and Python with different values of explode parameter for both languages.

In [12]:
```
ex = [0.1,0,0,0,0,0]  #inwhich perticular , if we want to hilight some part th
en give values of it
fig = plt.figure(figsize =(10, 7))
plt.pie(popularity, labels = lan,autopct="%1.1f%%",explode=ex)
plt.legend(title ="language",loc ="center left",bbox_to_anchor =(1, 0, 0.5, 1
))
plt.title("Programming languages with Popularity")
plt.show()
```



Q-3)Create bar chart from above data

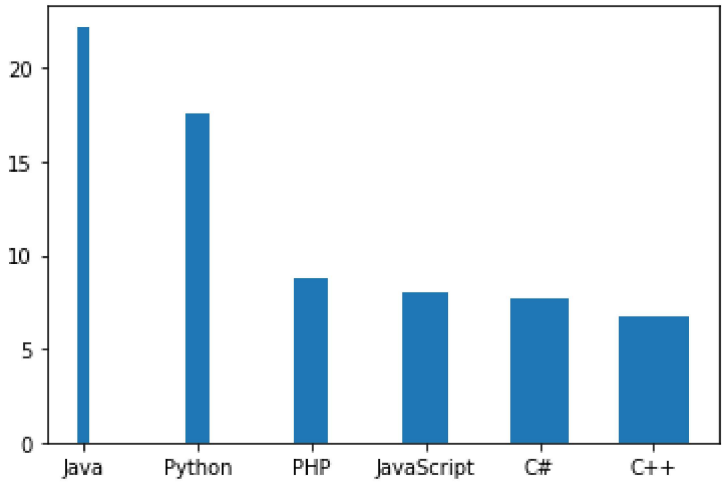
In [13]:
```
plt.bar(lan,popularity)
plt.show()
```



Q-3.A)Change the width of the bar for Python

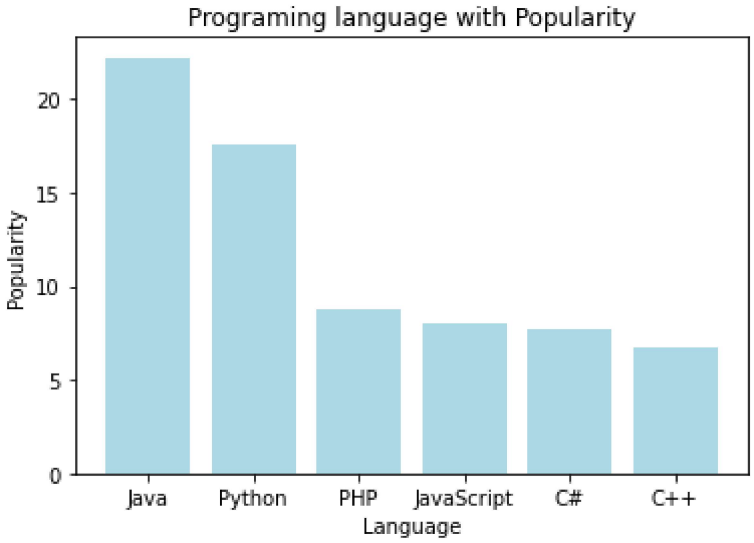
In [14]:
```
w = [.1,.2,.3,.4,.5,.6]
plt.bar(lan,popularity,width=w)
```

Out[14]: <BarContainer object of 6 artists>



Q-3.B)Give proper title to the graph and labels to the x and y axis

In [15]:
```
plt.bar(lan,popularity,color='lightblue')
plt.title("Programing language with Popularity")
plt.xlabel("Language")
plt.ylabel("Popularity")
plt.show()
```



Q-3.C)Use different colors to represent each bar

In [16]:
```
plt.bar(lan,popularity,color=colors)
plt.title("Programing language with Popularity")
plt.xlabel("Language")
plt.ylabel("Popularity")
plt.show()
```