```
#Import numpy
import numpy as np

#Seasons into List & dict
Seasons = ["2015","2016","2017","2018","2019","2020","2021","2022","2023","2024"]
Sdict = {"2015":0,"2016":1,"2017":2,"2018":3,"2019":4,"2020":5,"2021":6,"2022":7,"2023":8,"2024":9}

#Players into List & dict
Players = ["Sachin","Rahul","Smith","Sami","Pollard","Morris","Samson","Dhoni","Kohli","Sky"]
Pdict = {"Sachin":0,"Rahul":1,"Smith":2,"Sami":3,"Pollard":4,"Morris":5,"Samson":6,"Dhoni":7,"Kohli":8,"Sky":9}

#Salaries
Sachin_Salary = [15946875,17718750,19490625,21262500,23034375,24806250,25244493,27849149,30453805,23500000]
Rahul_Salary = [12000000,12744189,13488377,14232567,14976754,16324500,18038573,19752645,21466718,23180790]
Smith_Salary = [4621800,5828090,13041250,14410581,15779912,14500000,16022500,17545000,19067500,20644400]
Sami_Salary = [3713640,4694041,13041250,14410581,15779912,17149243,18518574,19450000,22407474,22458000]
Pollard_Salary = [4493160,4806720,6061274,13758000,15202590,16647180,18091770,19536360,20513178,21436271]
Morris_Salary = [3348000,4235220,12455000,14410581,15779912,14500000,16022500,17545000,19067500,20644400]
Samson_Salary = [3144240,3380160,3615960,4574189,13520500,14940153,16359805,17779458,18668431,20068563]
Dhoni_Salary = [0,0,4171200,4484040,4796880,6053663,15506632,16669630,17832627,18995624]
Kohli_Salary = [0,0,0,4822800,5184480,5546160,6993708,16402500,17632688,18862875]
Sky_Salary = [3031920,3841443,13041250,14410581,15779912,14200000,15691000,17182000,18673000,15000000]
#Matrix
Salary = np.array([Sachin_Salary, Rahul_Salary, Smith_Salary, Sami_Salary, Pollard_Salary, Morris_Salary, Samson_Salary, Dhoni_Salary, Kohli_

#Games
Sachin_G = [80,77,82,82,73,82,58,78,6,35]
Rahul_G = [82,57,82,79,76,72,60,72,79,80]
Smith_G = [79,78,75,81,76,79,62,76,77,69]
Sami_G = [80,65,77,66,69,77,55,67,77,40]
Pollard_G = [82,82,82,79,82,78,54,76,71,41]
Morris_G = [70,69,67,77,70,77,57,74,79,44]
Samson_G = [78,64,80,78,45,80,60,70,62,82]
Dhoni_G = [35,35,80,74,82,78,66,81,81,27]
Kohli_G = [40,40,40,81,78,81,39,0,10,51]
Sky_G = [75,51,51,79,77,76,49,69,54,62]
#Matrix
Games = np.array([Sachin_G, Rahul_G, Smith_G, Sami_G, Pollard_G, Morris_G, Samson_G, Dhoni_G, Kohli_G, Sky_G])

#Points
Sachin_PTS = [2832,2430,2323,2201,1970,2078,1616,2133,83,782]
Rahul_PTS = [1653,1426,1779,1688,1619,1312,1129,1170,1245,1154]
Smith_PTS = [2478,2132,2250,2304,2258,2111,1683,2036,2089,1743]
Sami_PTS = [2122,1881,1978,1504,1943,1970,1245,1920,2112,966]
Pollard_PTS = [1292,1443,1695,1624,1503,1784,1113,1296,1297,646]
Morris_PTS = [1572,1561,1496,1746,1678,1438,1025,1232,1281,928]
Samson_PTS = [1258,1104,1684,1781,841,1268,1189,1186,1185,1564]
Dhoni_PTS = [903,903,1624,1871,2472,2161,1850,2280,2593,686]
Kohli_PTS = [597,597,597,1361,1619,2026,852,0,159,904]
Sky_PTS = [2040,1397,1254,2386,2045,1941,1082,1463,1028,1331]
#Matrix
Points = np.array([Sachin_PTS, Rahul_PTS, Smith_PTS, Sami_PTS, Pollard_PTS, Morris_PTS, Samson_PTS, Dhoni_PTS, Kohli_PTS, Sky_PTS])



for i in Sdict:
  print('Season year:',i)
```

```
Season year: 2015
Season year: 2016
Season year: 2017
Season year: 2018
Season year: 2019
Season year: 2020
Season year: 2021
Season year: 2022
Season year: 2023
Season year: 2024
```

```
for i in Pdict:
  print('Player Name:',i)
```

```
Player Name: Sachin
Player Name: Rahul
Player Name: Smith
Player Name: Sami
Player Name: Pollard
```

```
Player Name: Morris
Player Name: Samson
Player Name: Dhoni
Player Name: Kohli
Player Name: Sky
```

```
print(Salary)
print(type(Salary))
```

```
[[15946875 17718750 19490625 21262500 23034375 24806250 25244493 27849149
  30453805 23500000]
 [12000000 12744189 13488377 14232567 14976754 16324500 18038573 19752645
  21466718 23180790]
 [ 4621800  5828090 13041250 14410581 15779912 14500000 16022500 17545000
  19067500 20644400]
 [ 3713640  4694041 13041250 14410581 15779912 17149243 18518574 19450000
  22407474 22458000]
 [ 4493160  4806720  6061274 13758000 15202590 16647180 18091770 19536360
  20513178 21436271]
 [ 3348000  4235220 12455000 14410581 15779912 14500000 16022500 17545000
  19067500 20644400]
 [ 3144240  3380160  3615960  4574189 13520500 14940153 16359805 17779458
  18668431 20068563]
 [       0        0  4171200  4484040  4796880  6053663 15506632 16669630
  17832627 18995624]
 [       0        0        0  4822800  5184480  5546160  6993708 16402500
  17632688 18862875]
 [ 3031920  3841443 13041250 14410581 15779912 14200000 15691000 17182000
  18673000 15000000]]
<class 'numpy.ndarray'>
```

```
print(Games)
print(type(Games))
```

```
[[80 77 82 82 73 82 58 78  6 35]
 [82 57 82 79 76 72 60 72 79 80]
 [79 78 75 81 76 79 62 76 77 69]
 [80 65 77 66 69 77 55 67 77 40]
 [82 82 82 79 82 78 54 76 71 41]
 [70 69 67 77 70 77 57 74 79 44]
 [78 64 80 78 45 80 60 70 62 82]
 [35 35 80 74 82 78 66 81 81 27]
 [40 40 40 81 78 81 39  0 10 51]
 [75 51 51 79 77 76 49 69 54 62]]
<class 'numpy.ndarray'>
```

```
print(Points)
print(type(Points))
```

```
[[2832 2430 2323 2201 1970 2078 1616 2133   83  782]
 [1653 1426 1779 1688 1619 1312 1129 1170 1245 1154]
 [2478 2132 2250 2304 2258 2111 1683 2036 2089 1743]
 [2122 1881 1978 1504 1943 1970 1245 1920 2112  966]
 [1292 1443 1695 1624 1503 1784 1113 1296 1297  646]
 [1572 1561 1496 1746 1678 1438 1025 1232 1281  928]
 [1258 1104 1684 1781  841 1268 1189 1186 1185 1564]
 [ 903  903 1624 1871 2472 2161 1850 2280 2593  686]
 [ 597  597  597 1361 1619 2026  852    0  159  904]
 [2040 1397 1254 2386 2045 1941 1082 1463 1028 1331]]
<class 'numpy.ndarray'>
```

```
print(Points[-3:-1])
print('\n')
print(Points[-3,-1])
```

```
[[ 903  903 1624 1871 2472 2161 1850 2280 2593  686]
 [ 597  597  597 1361 1619 2026  852    0  159  904]]


686
```

```
# Get Salary,Games, Points of Sachin

print('Salary of Sachin is',Salary[Pdict['Sachin']])
print('\n')
print('Games of Sachin is',Games[Pdict['Sachin']])
print('\n')
```

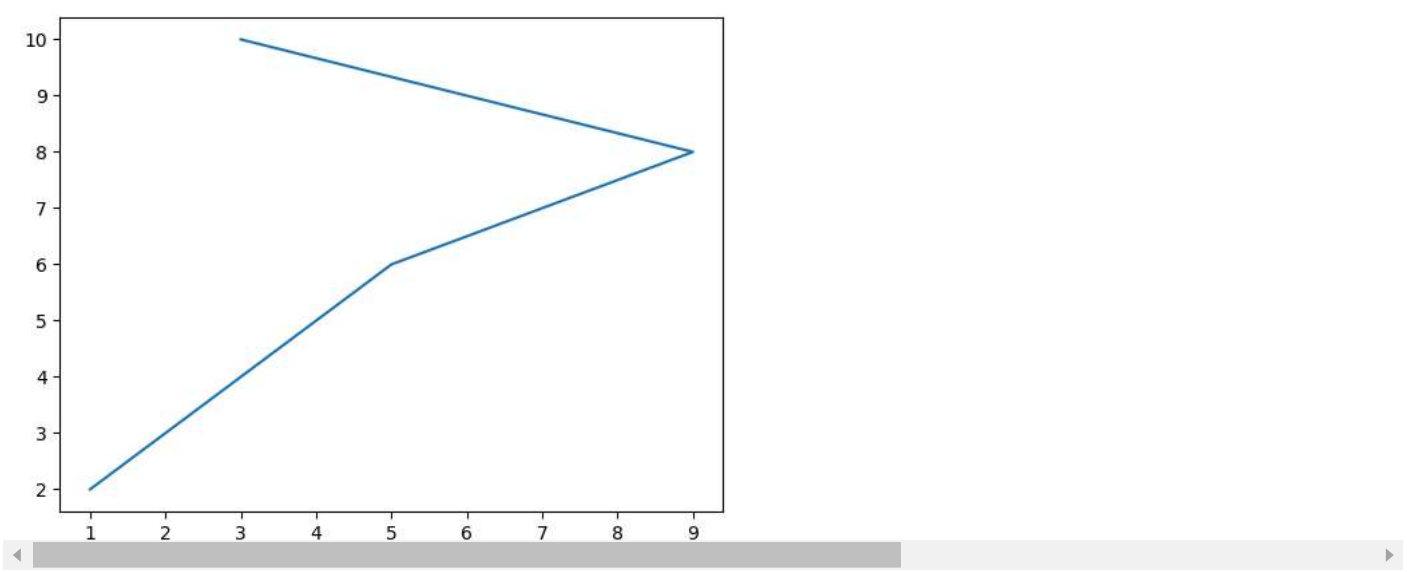
```
print('Points of Sachin is',Points[Pdict['Sachin']])


#Similarly we can get details of individual player using Pdict
```

```
Salary of Sachin is [15946875 17718750 19490625 21262500 23034375 24806250 25244493 27849149
 30453805 23500000]


Games of Sachin is [80 77 82 82 73 82 58 78  6 35]


Points of Sachin is [2832 2430 2323 2201 1970 2078 1616 2133   83  782]
```

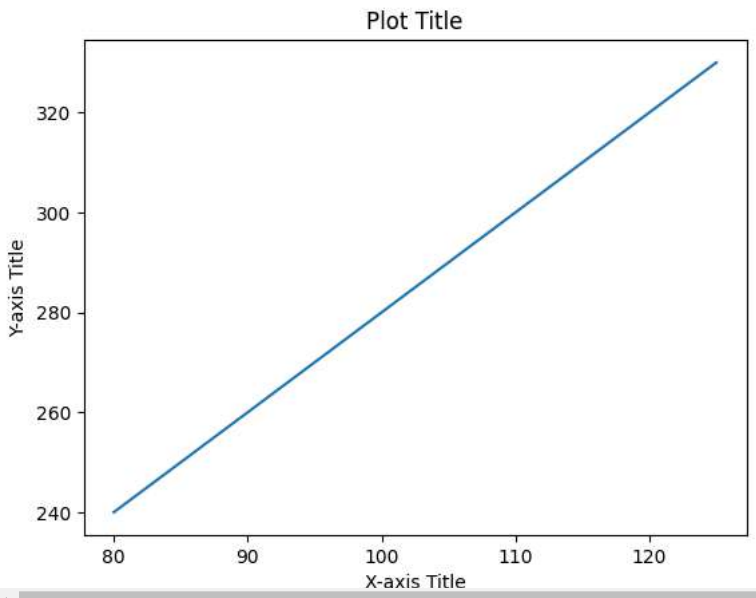
Matplotlib

It is a popular data visualization library in Python. It's often used for creating static, interactive, and animated visualizations in Python. Matplotlib allows you to generate plots, histograms, bar charts, scatter plots, etc., with just a few lines of code.

```
import matplotlib.pyplot as plt


#Example
x=np.array([1,5,9,3])
y=np.array([2,6,8,10])

plt.plot(x,y)
plt.show()
```



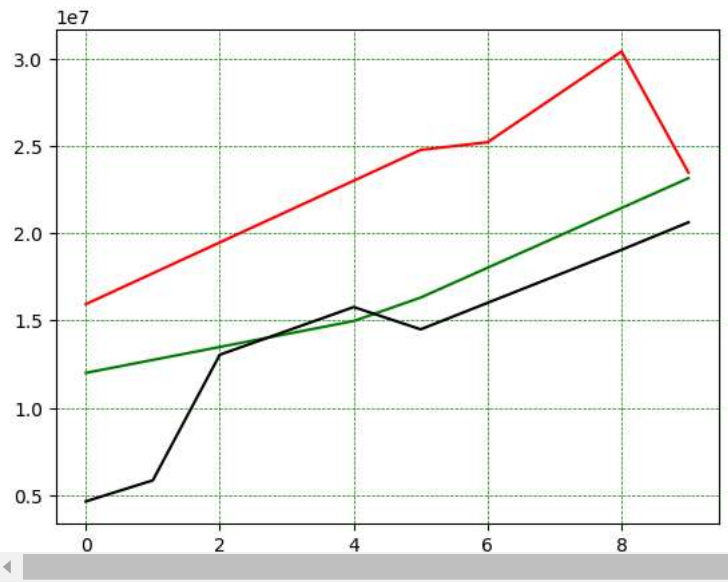

```
x = np.array([80, 85, 90, 95, 100, 105, 110, 115, 120, 125])
y = np.array([240, 250, 260, 270, 280, 290, 300, 310, 320, 330])

plt.title("Plot Title")
plt.xlabel("X-axis Title")
plt.ylabel("Y-axis Title")

plt.plot(x, y)
plt.show()
```



Color

- Red: 'r'
- Green: 'g'
- Blue: 'b'
- Cyan: 'c'
- Magenta: 'm'
- Yellow: 'y'
- Black: 'k'
- White: 'w'

```
plt.plot(Salary[Pdict['Sachin']],color='r')
plt.plot(Salary[Pdict['Rahul']],color='g')
plt.plot(Salary[Pdict['Smith']],color='k')

plt.grid(color = 'green', linestyle = '--', linewidth = 0.5)

plt.show()
```

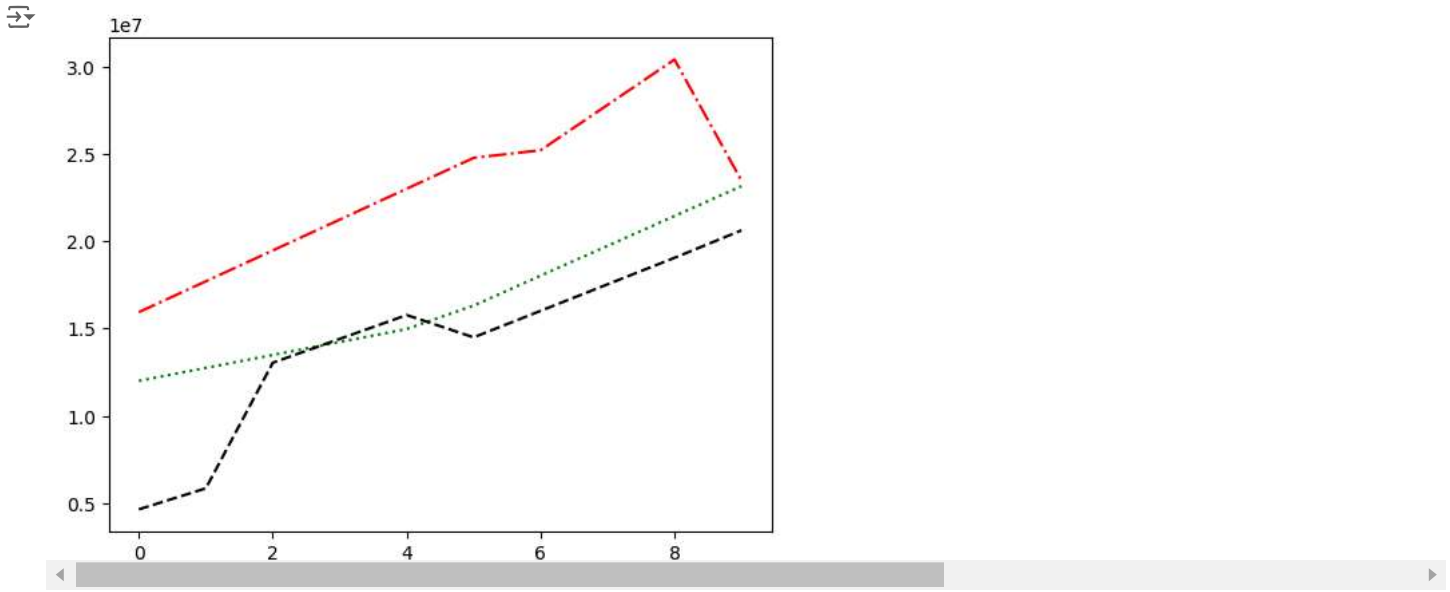


ls

- Solid line: '-'
- Dotted line: ':'

- Dashed line: '--'
- Dashed/Dotted line: '-.'

```
plt.plot(Salary[Pdict['Sachin']],color='r',ls='-.')
plt.plot(Salary[Pdict['Rahul']],color='g',ls=':')
plt.plot(Salary[Pdict['Smith']],color='k',ls='--')

plt.show()
```



Marker

- 'o' Circle
- '*' Star
- '.' Point
- ',' Pixel
- 'x' X
- 'X' X (filled)
- '+' Plus
- 'P' Plus (filled)
- 's' Square
- 'D' Diamond
- 'd' Diamond (thin)
- 'p' Pentagon
- 'H' Hexagon
- 'h' Hexagon
- 'v' Triangle Down
- '^' Triangle Up
- '<' Triangle Left
- '>' Triangle Right
- '1' Tri Down
- '2' Tri Up
- '3' Tri Left
- '4' Tri Right
- '|' Vline
- '_' Hline

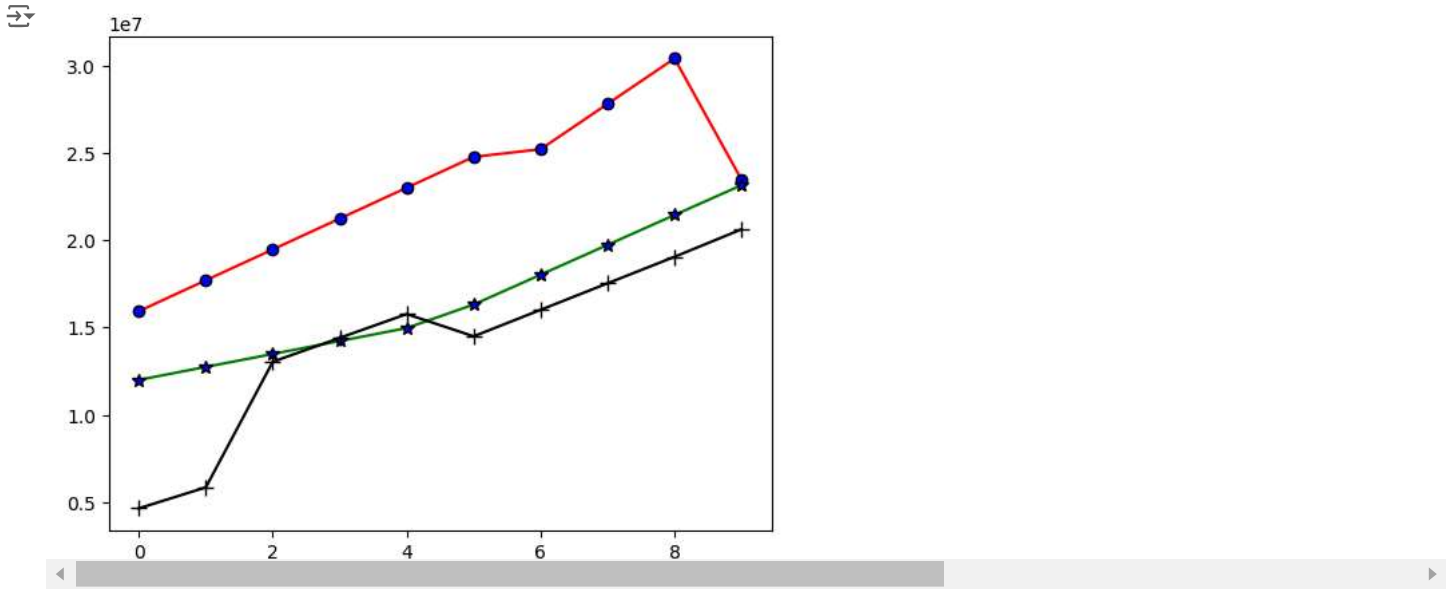
Marker Size(ms)

MarkerEdgeColor(mec)

MarkerFaceColor(mfc)

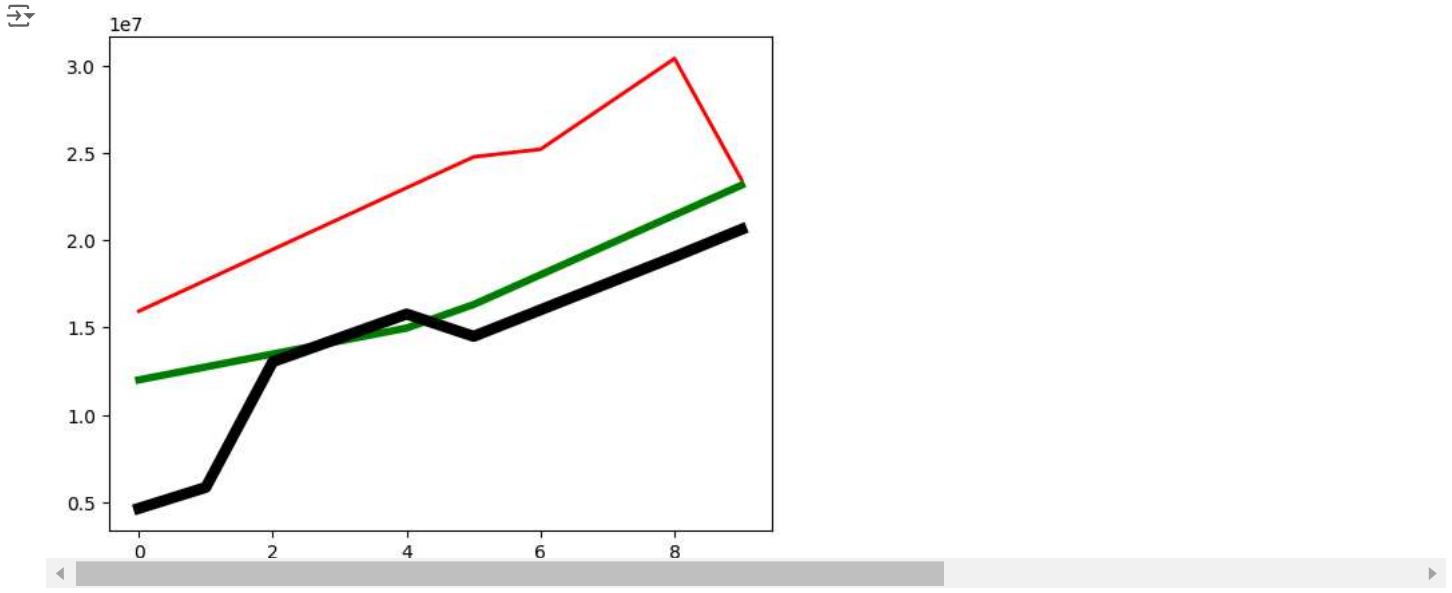
Use both the mec and mfc arguments to color the entire marker

```
plt.plot(Salary[Pdict['Sachin']],color='r',marker='o',ms=6,mec='k',mfc='b')
plt.plot(Salary[Pdict['Rahul']],color='g',marker='*',ms=7,mec='k',mfc='b')
plt.plot(Salary[Pdict['Smith']],color='k',marker='+',ms=8,mec='k',mfc='b')

plt.show()
```



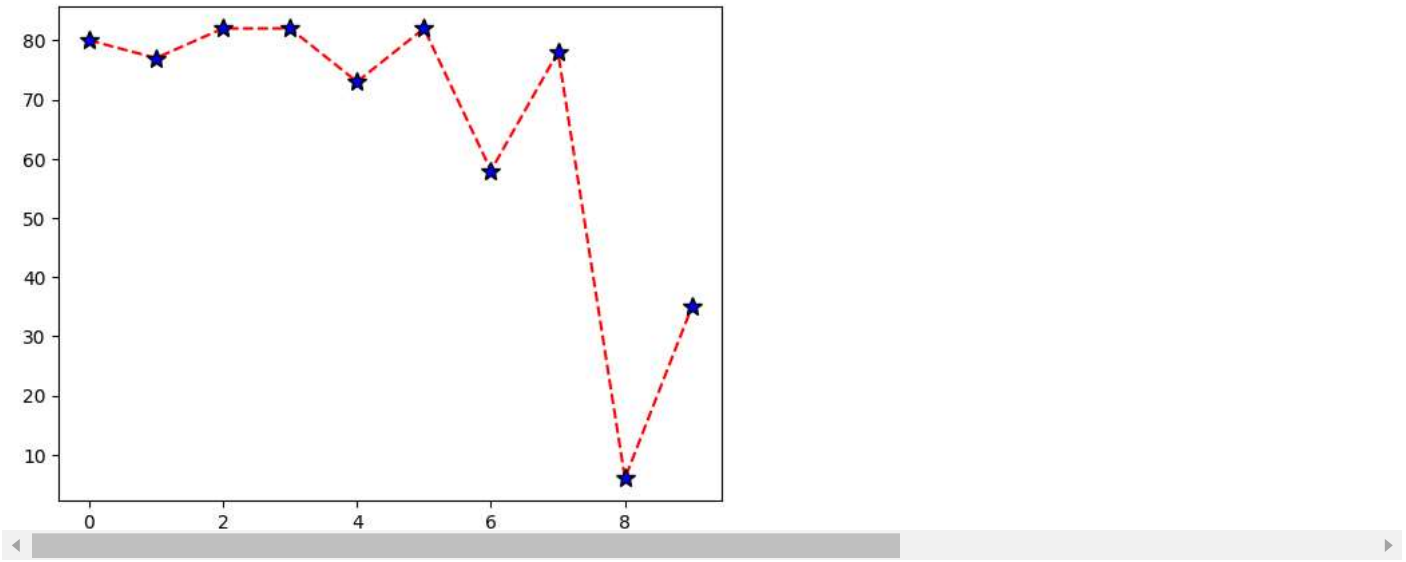
Line Width(lw)

```
plt.plot(Salary[Pdict['Sachin']],color='r',lw=2)
plt.plot(Salary[Pdict['Rahul']],color='g',lw=4)
plt.plot(Salary[Pdict['Smith']],color='k',lw=6)

plt.show()
```

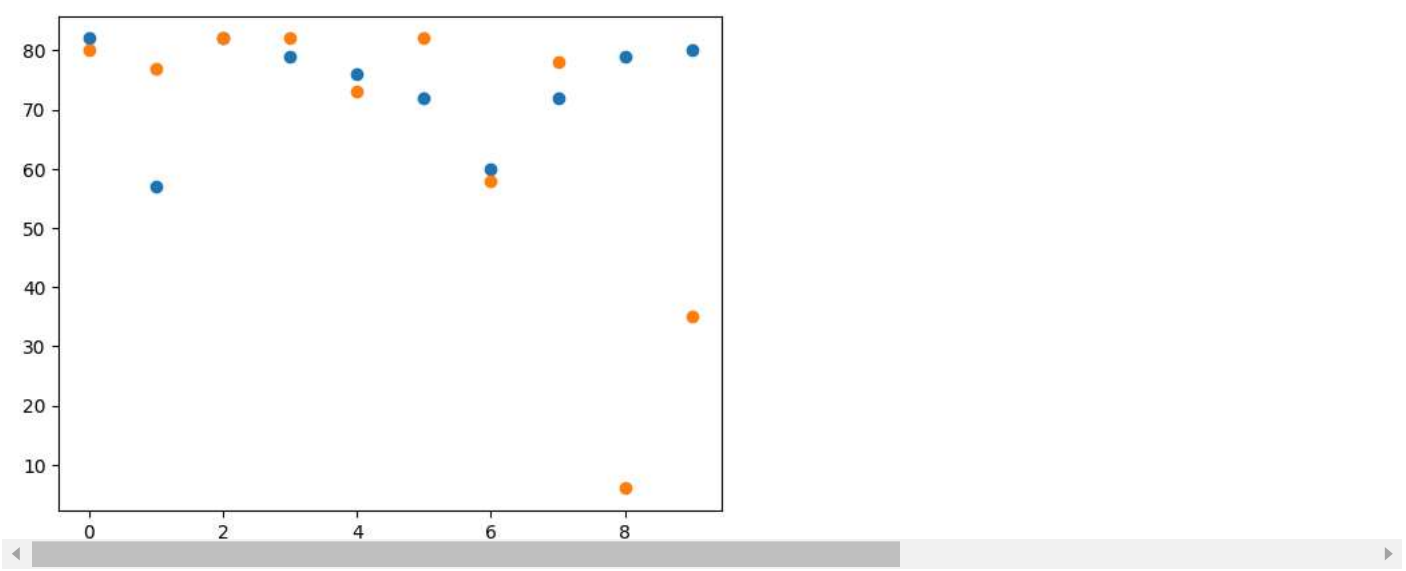



```
#Plot Games of Sachin
plt.plot(Games[Pdict['Sachin']],color='red',ls='--',marker='*',mec='k',mfc='b',ms='10')
```

```
[<matplotlib.lines.Line2D at 0x7b7e87805330>]
```



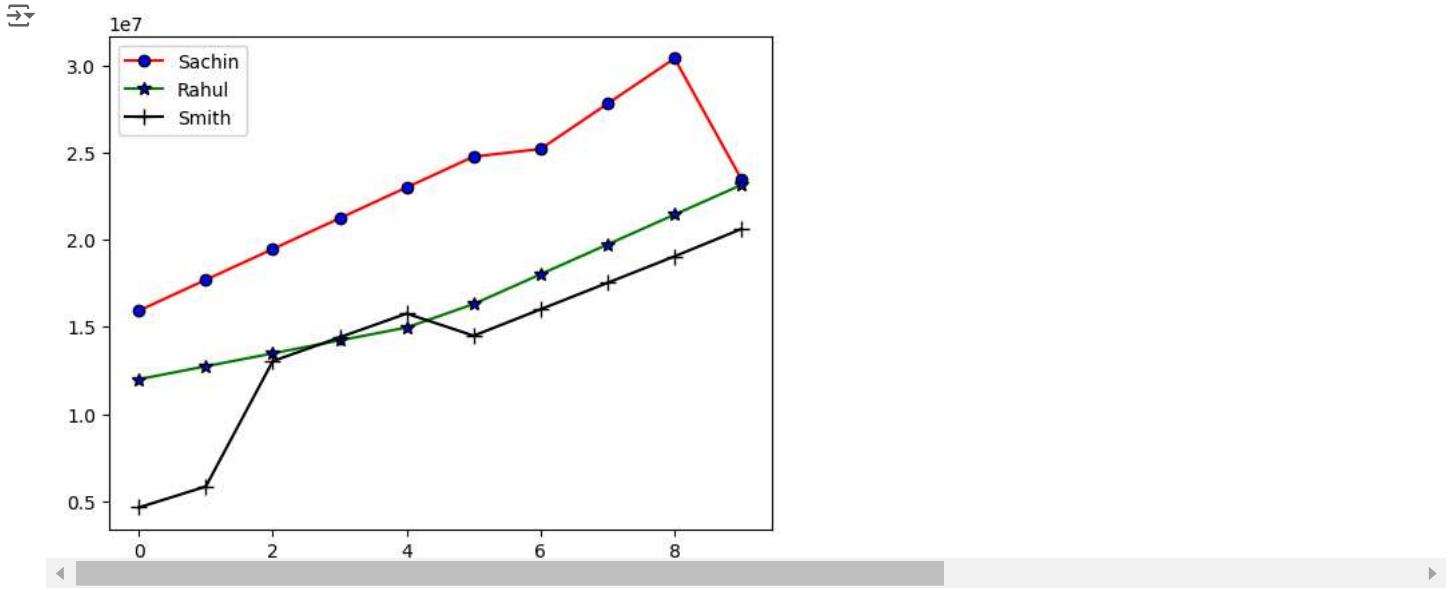

```
x=np.array(range(0,10))
y=Games[Pdict['Rahul']]
plt.scatter(x,y)

x=np.array(range(0,10))
y=Games[Pdict['Sachin']]
plt.scatter(x,y)

plt.show()
```



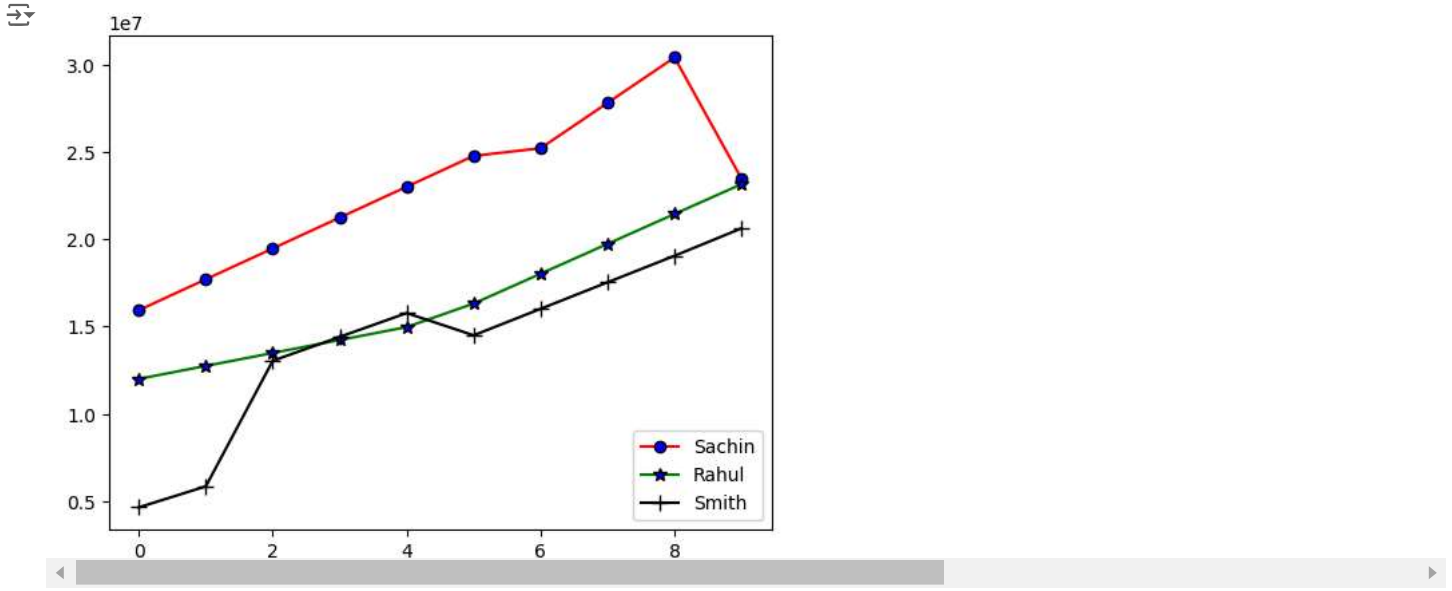
legend

It is an area describing the elements of the graph

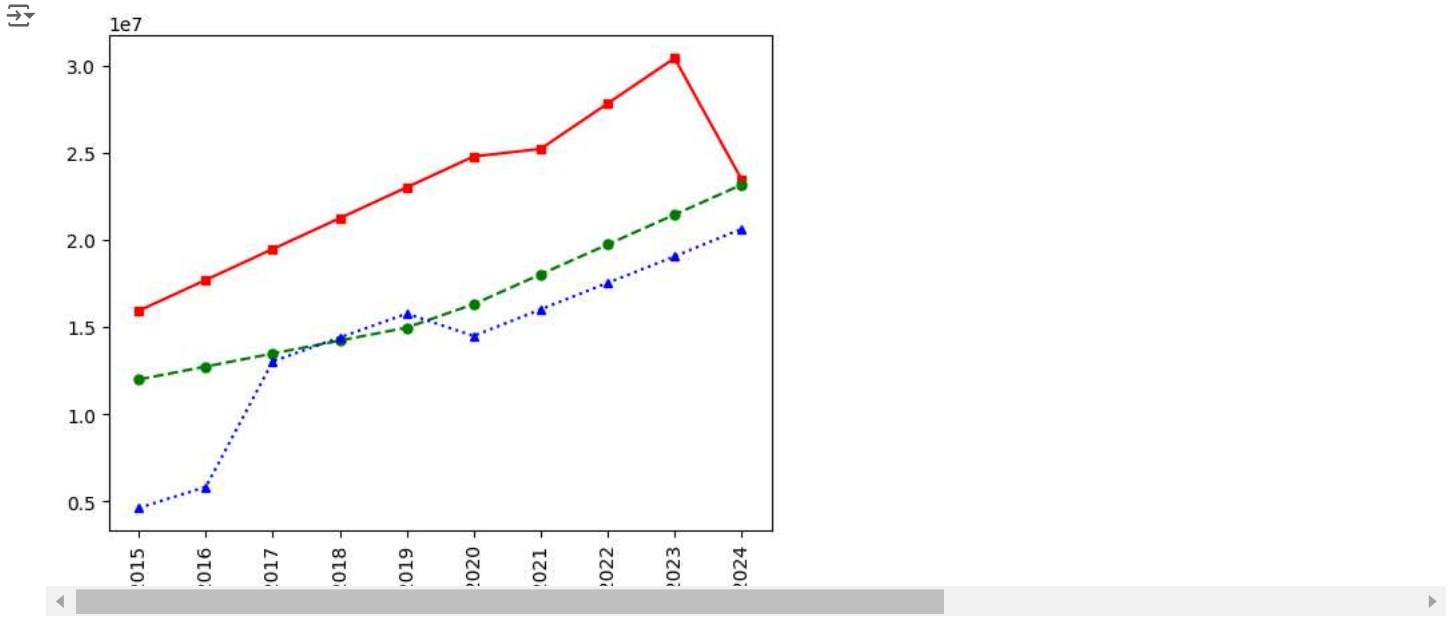
```
plt.plot(Salary[Pdict['Sachin']],color='r',marker='o',ms=6,mec='k',mfc='b',label=Players[Pdict['Sachin']])
plt.plot(Salary[Pdict['Rahul']],color='g',marker='*',ms=7,mec='k',mfc='b',label=Players[Pdict['Rahul']])
plt.plot(Salary[Pdict['Smith']],color='k',marker='+',ms=8,mec='k',mfc='b',label=Players[Pdict['Smith']])

plt.legend(loc='upper left')
plt.show()
```



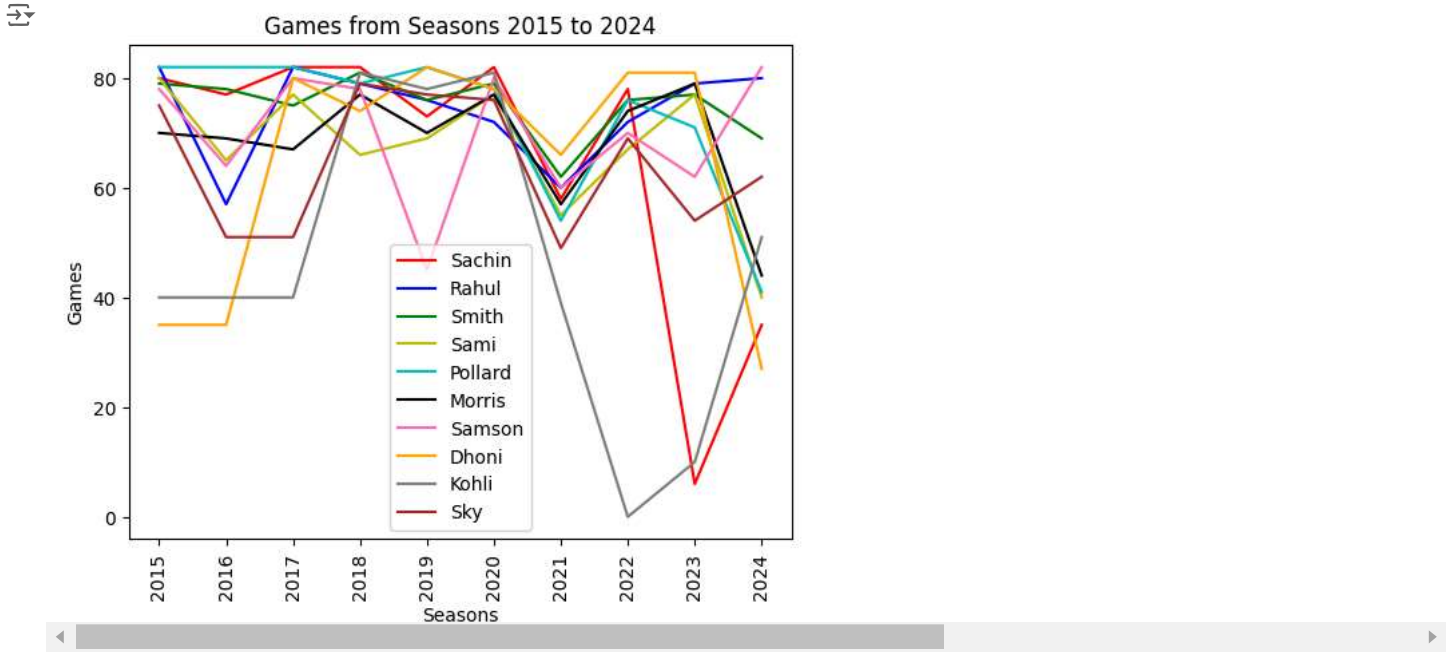

```
plt.plot(Salary[Pdict['Sachin']],color='r',marker='o',ms=6,mec='k',mfc='b',label=Players[Pdict['Sachin']])
plt.plot(Salary[Pdict['Rahul']],color='g',marker='*',ms=7,mec='k',mfc='b',label=Players[Pdict['Rahul']])
plt.plot(Salary[Pdict['Smith']],color='k',marker='+',ms=8,mec='k',mfc='b',label=Players[Pdict['Smith']])

plt.legend(loc='lower right')
plt.show()
```




```
plt.plot(Salary[Pdict['Sachin']],color='red',ls='-',marker='s',ms='5',label=Players[Pdict['Sachin']])
plt.plot(Salary[Pdict['Rahul']],color='green',ls='--',marker='o',ms='5',label=Players[Pdict['Rahul']])
plt.plot(Salary[Pdict['Smith']],color='blue',ls=':',marker='^',ms='5',label=Players[Pdict['Smith']])

plt.xticks(list(range(0,10)),Seasons,rotation='vertical')
plt.show()
```

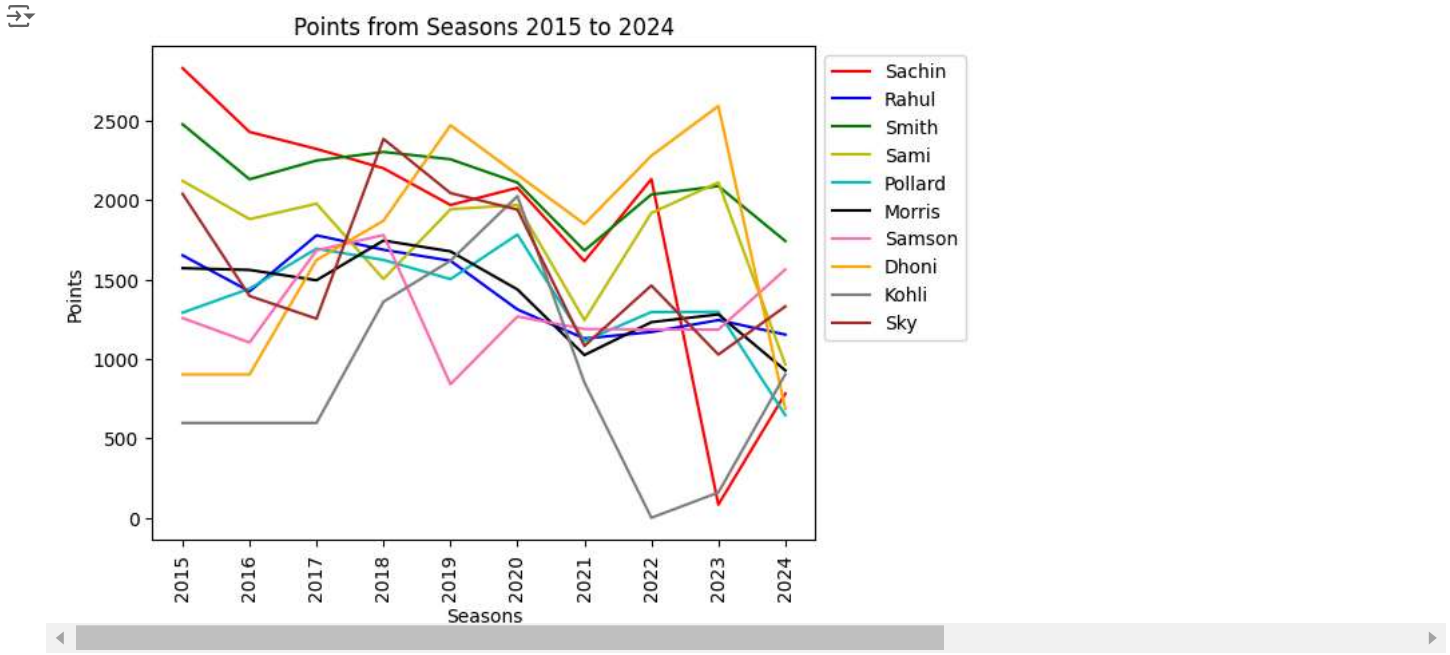



```
plt.plot(Games[Pdict['Sachin']],color='r',label=Players[Pdict['Sachin']])
plt.plot(Games[Pdict['Rahul']],color='b',label=Players[Pdict['Rahul']])
plt.plot(Games[Pdict['Smith']],color='g',label=Players[Pdict['Smith']])
plt.plot(Games[Pdict['Sami']],color='y',label=Players[Pdict['Sami']])
plt.plot(Games[Pdict['Pollard']],color='c',label=Players[Pdict['Pollard']])
plt.plot(Games[Pdict['Morris']],color='k',label=Players[Pdict['Morris']])
plt.plot(Games[Pdict['Samson']],color='hotpink',label=Players[Pdict['Samson']])
plt.plot(Games[Pdict['Dhoni']],color='orange',label=Players[Pdict['Dhoni']])
plt.plot(Games[Pdict['Kohli']],color='gray',label=Players[Pdict['Kohli']])
plt.plot(Games[Pdict['Sky']],color='brown',label=Players[Pdict['Sky']])


plt.xticks(list(range(0,10)),Seasons,rotation='vertical')
plt.legend()
plt.title("Games from Seasons 2015 to 2024")
plt.xlabel("Seasons")
plt.ylabel("Games")

plt.show()
```




```
plt.plot(Points[Pdict['Sachin']],color='r',label=Players[Pdict['Sachin']])
plt.plot(Points[Pdict['Rahul']],color='b',label=Players[Pdict['Rahul']])
plt.plot(Points[Pdict['Smith']],color='g',label=Players[Pdict['Smith']])
```

```
plt.plot(Points[Pdict['Sami']],color='y',label=Players[Pdict['Sami']])
plt.plot(Points[Pdict['Pollard']],color='c',label=Players[Pdict['Pollard']])
plt.plot(Points[Pdict['Morris']],color='k',label=Players[Pdict['Morris']])
plt.plot(Points[Pdict['Samson']],color='hotpink',label=Players[Pdict['Samson']])
plt.plot(Points[Pdict['Dhoni']],color='orange',label=Players[Pdict['Dhoni']])
plt.plot(Points[Pdict['Kohli']],color='gray',label=Players[Pdict['Kohli']])
plt.plot(Points[Pdict['Sky']],color='brown',label=Players[Pdict['Sky']])


plt.xticks(list(range(0,10)),Seasons,rotation='vertical')
plt.legend(bbox_to_anchor=(1.0, 1.0))
plt.title("Points from Seasons 2015 to 2024")
plt.xlabel("Seasons")
plt.ylabel("Points")

plt.show()
```




```
plt.plot(Salary[Pdict['Sachin']],color='r',label=Players[Pdict['Sachin']])
plt.plot(Salary[Pdict['Rahul']],color='b',label=Players[Pdict['Rahul']])
plt.plot(Salary[Pdict['Smith']],color='g',label=Players[Pdict['Smith']])
plt.plot(Salary[Pdict['Sami']],color='y',label=Players[Pdict['Sami']])
plt.plot(Salary[Pdict['Pollard']],color='c',label=Players[Pdict['Pollard']])
plt.plot(Salary[Pdict['Morris']],color='k',label=Players[Pdict['Morris']])
plt.plot(Salary[Pdict['Samson']],color='hotpink',label=Players[Pdict['Samson']])
plt.plot(Salary[Pdict['Dhoni']],color='orange',label=Players[Pdict['Dhoni']])
plt.plot(Salary[Pdict['Kohli']],color='gray',label=Players[Pdict['Kohli']])
plt.plot(Salary[Pdict['Sky']],color='brown',label=Players[Pdict['Sky']])


plt.xticks(list(range(0,10)),Seasons,rotation='vertical')
plt.legend(bbox_to_anchor=(1.0, -0.2))
plt.title("Salary from Seasons 2015 to 2024")
plt.xlabel("Seasons")
plt.ylabel("Salary")

plt.show()
```