

1. IPL Data set Analysis

In [1]:

```
#Import numpy
import numpy as np

#Seasons
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
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, 27810000, 3031920, 3841443, 13041250, 14410581, 15779912, 14500000, 16022500, 175450]
Rahul_Salary = [12000000, 12744189, 13488377, 14232567, 14976754, 16324500, 18038573, 19750000, 3031920, 3841443, 13041250, 14410581, 15779912, 14500000, 16022500, 175450]
Smith_Salary = [4621800, 5828090, 13041250, 14410581, 15779912, 14500000, 16022500, 175450]
Sami_Salary = [3713640, 4694041, 13041250, 14410581, 15779912, 17149243, 18518574, 19450000, 3031920, 3841443, 13041250, 14410581, 15779912, 14500000, 16022500, 175450]
Pollard_Salary = [4493160, 4806720, 6061274, 13758000, 15202590, 16647180, 18091770, 19536000, 3031920, 3841443, 13041250, 14410581, 15779912, 14500000, 16022500, 175450]
Morris_Salary = [3348000, 4235220, 12455000, 14410581, 15779912, 14500000, 16022500, 175450]
Samson_Salary = [3144240, 3380160, 3615960, 4574189, 13520500, 14940153, 16359805, 17779450, 3031920, 3841443, 13041250, 14410581, 15779912, 14200000, 15691000, 17182000]
Dhoni_Salary = [0, 0, 4171200, 4484040, 4796880, 6053663, 15506632, 16669630, 17832627, 18990000, 3031920, 3841443, 13041250, 14410581, 15779912, 14200000, 15691000, 17182000]
Kohli_Salary = [0, 0, 0, 4822800, 5184480, 5546160, 6993708, 16402500, 17632688, 18862875]
Sky_Salary = [3031920, 3841443, 13041250, 14410581, 15779912, 14200000, 15691000, 17182000]

#Matrix
Salary = np.array([Sachin_Salary, Rahul_Salary, Smith_Salary, Sami_Salary, Pollard_Salary, Morris_Salary, Samson_Salary, Dhoni_Salary, Kohli_Salary, Sky_Salary])

#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_
```

In [10]: Seasons # here we are printing the total season of ipl data

```
Out[10]: ['2015',
 '2016',
 '2017',
 '2018',
 '2019',
 '2020',
 '2021',
 '2022',
 '2023',
 '2024']
```

In [11]: Sdict # here convert the season into 0 to 10 respectively

```
Out[11]: {'2015': 0,
 '2016': 1,
 '2017': 2,
 '2018': 3,
 '2019': 4,
 '2020': 5,
 '2021': 6,
 '2022': 7,
 '2023': 8,
 '2024': 9}
```

In [12]: Players # we have names of players

```
Out[12]: ['Sachin',
 'Rahul',
 'Smith',
 'Sami',
 'Pollard',
 'Morris',
 'Samson',
 'Dhoni',
 'Kohli',
 'Sky']
```

In [13]: Pdict # convert the players to respective number from 0 to 1

```
Out[13]: {'Sachin': 0,
 'Rahul': 1,
 'Smith': 2,
 'Sami': 3,
 'Pollard': 4,
 'Morris': 5,
 'Samson': 6,
 'Dhoni': 7,
 'Kohli': 8,
 'Sky': 9}
```

In [14]: Salary # here we have salaries that players take in every season

```
Out[14]: array([[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, 4822800, 5184480, 5546160,
   6993708, 16402500, 17632688, 18862875],
   [ 3031920, 3841443, 13041250, 14410581, 15779912, 14200000,
   15691000, 17182000, 18673000, 15000000]])
```

In [15]: `# to get dhoni salary`
`Salary[7]`

```
Out[15]: array([ 0, 0, 4171200, 4484040, 4796880, 6053663,
   15506632, 16669630, 17832627, 18995624])
```

In [16]: `Pdict['Dhoni']`

```
Out[16]: 7
```

In [17]: `Games # we have number of games played by player`

```
Out[17]: array([[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]])
```

In [18]: `Points # we have points of every season for players`

```
Out[18]: array([[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]])
```

```
In [20]: # To much a players play games in all season
Games[Pdict['Kohli']] # it says how much games kohli played
```

```
Out[20]: array([40, 40, 40, 81, 78, 81, 39, 0, 10, 51])
```

```
In [21]: # To much a players play games in all season
Games[Pdict['Morris']]
```

```
Out[21]: array([70, 69, 67, 77, 70, 77, 57, 74, 79, 44])
```

```
In [22]: # to get average salary of kohli is
Salary_Ave_Kohli = np.average(Salary[Pdict['Kohli']])
Salary_Ave_Kohli
```

```
Out[22]: 7544521.1
```

```
In [2]: # to get average matches played by cricketer lets for dhoni
Games_Ave_Dhoni = np.average(Games[Pdict['Dhoni']])
```

```
In [3]: print(f'Average games played by Dhoni:-{Games_Ave_Dhoni}')#here i create F-String i
```

```
Average games played by Dhoni:-63.9
```

```
In [5]: #to get average points get by players , lets check for sachin
Point_Ave_Sachin = np.average(Points[Pdict['Sachin']])
print(f'Averge point for sachin from 2015 to 2024 IPL:-{Point_Ave_Sachin}')
```

```
Averge point for sachin from 2015 to 2024 IPL:-1844.8
```

```
In [6]: # to get single season salary for a cricketer, get sky salary
Salary[Pdict['Sky']][Sdict['2024']]
```

```
Out[6]: 15000000
```

```
In [7]: # to get in a single seasonlets check for rahul
Games[Pdict["Rahul"]][Sdict['2019']]
```

```
Out[7]: 76
```

```
In [8]: # to get simgle season points for a player
Points[Pdict['Morris']][Sdict['2020']]
```

```
Out[8]: 1438
```

```
In [9]: import matplotlib.pyplot as plt # importing matplotlib into code for visuals
```

```
In [10]: %matplotlib inline # it help to creat the graph in between the page
```

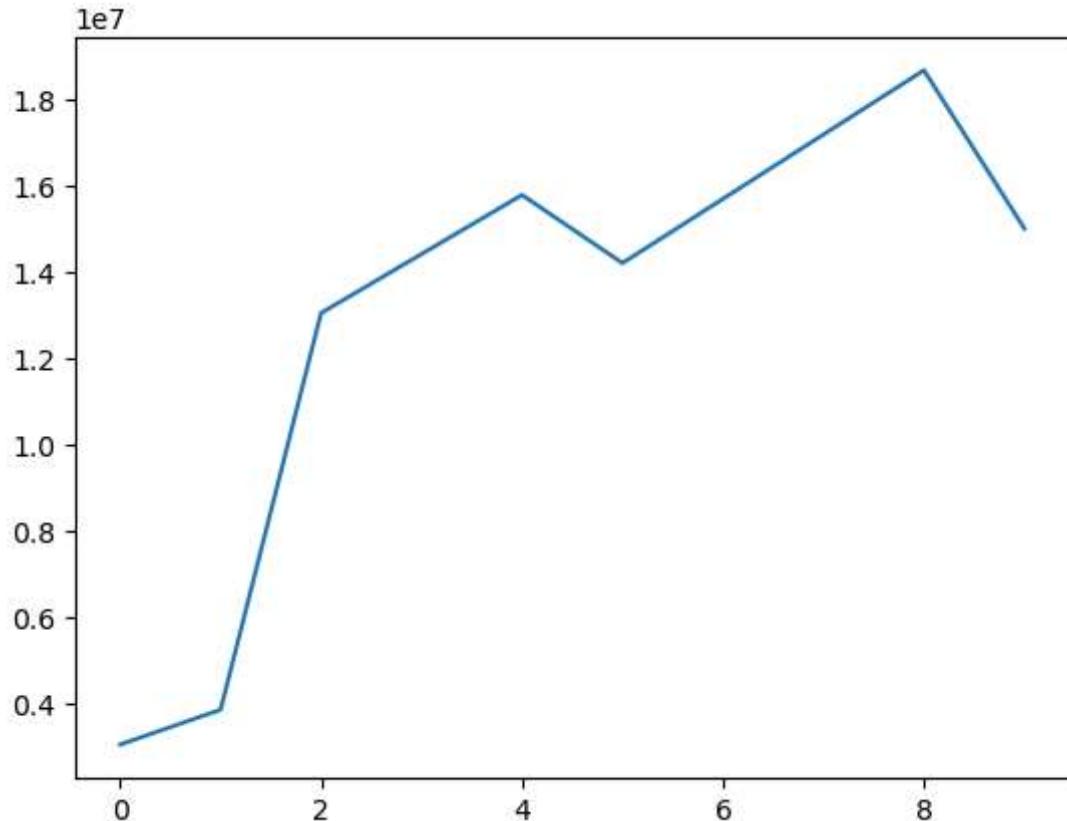
UsageError: unrecognized arguments: # it help to creat the graph in between the page

```
In [ ]: import warnings # it ignore all un-necessary warnings  
warnings.filterwarnings('ignore')
```

1.0.1 working with matplotlib

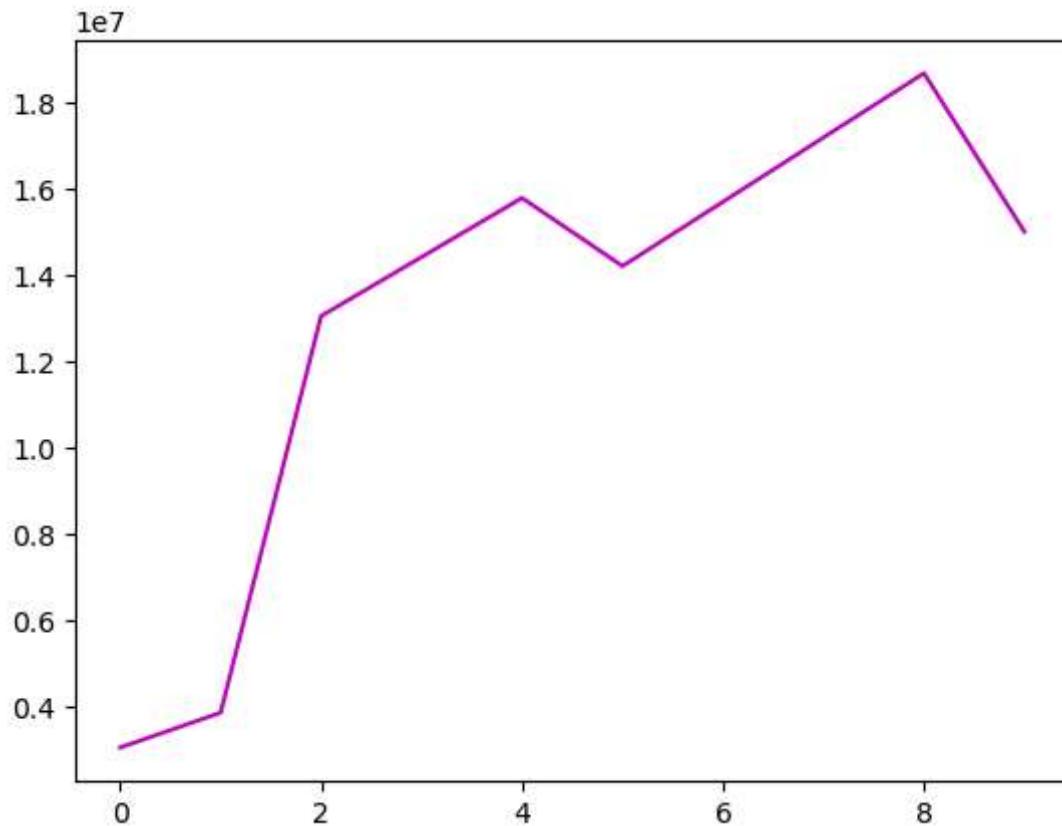
```
In [12]: # to crate graph using salaries  
plt.plot(Salary[Pdict['Sky']]) # here we print the salary graph of the single playe
```

```
Out[12]: [
```



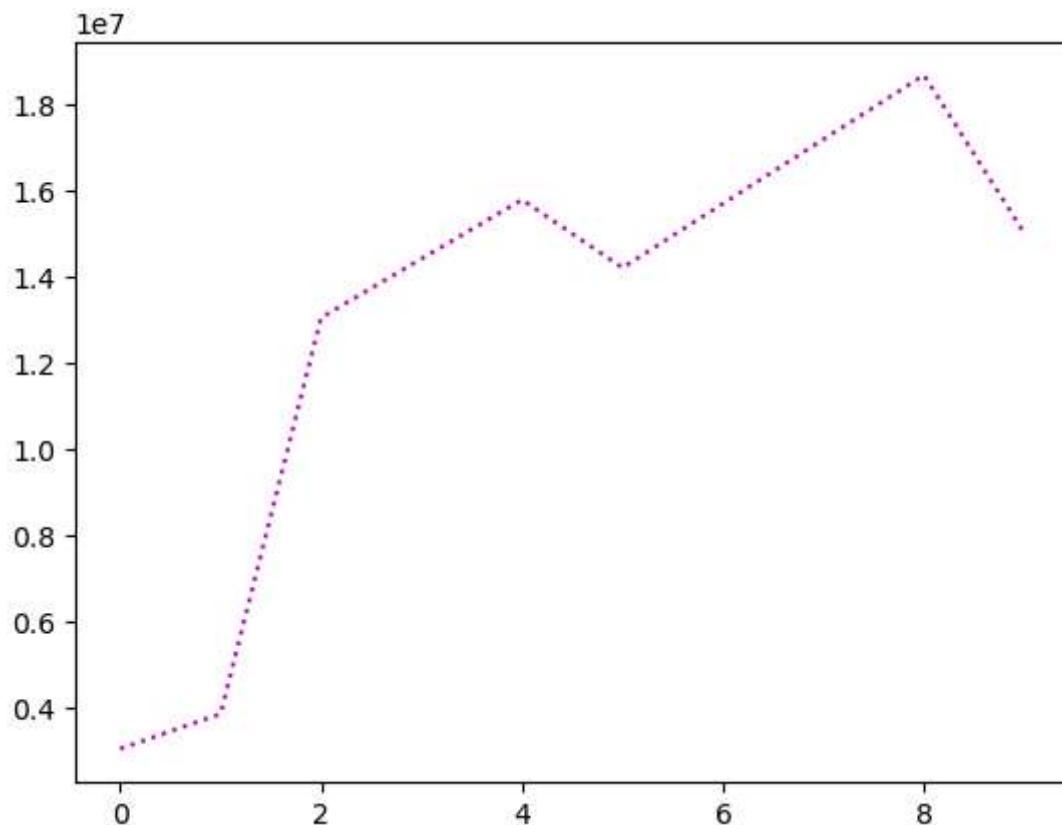
```
In [14]: # if you want to modify on graph lets do that  
plt.plot(Salary[Pdict['Sky']], color='m') # color attribute use to change the defult
```

```
Out[14]: [
```



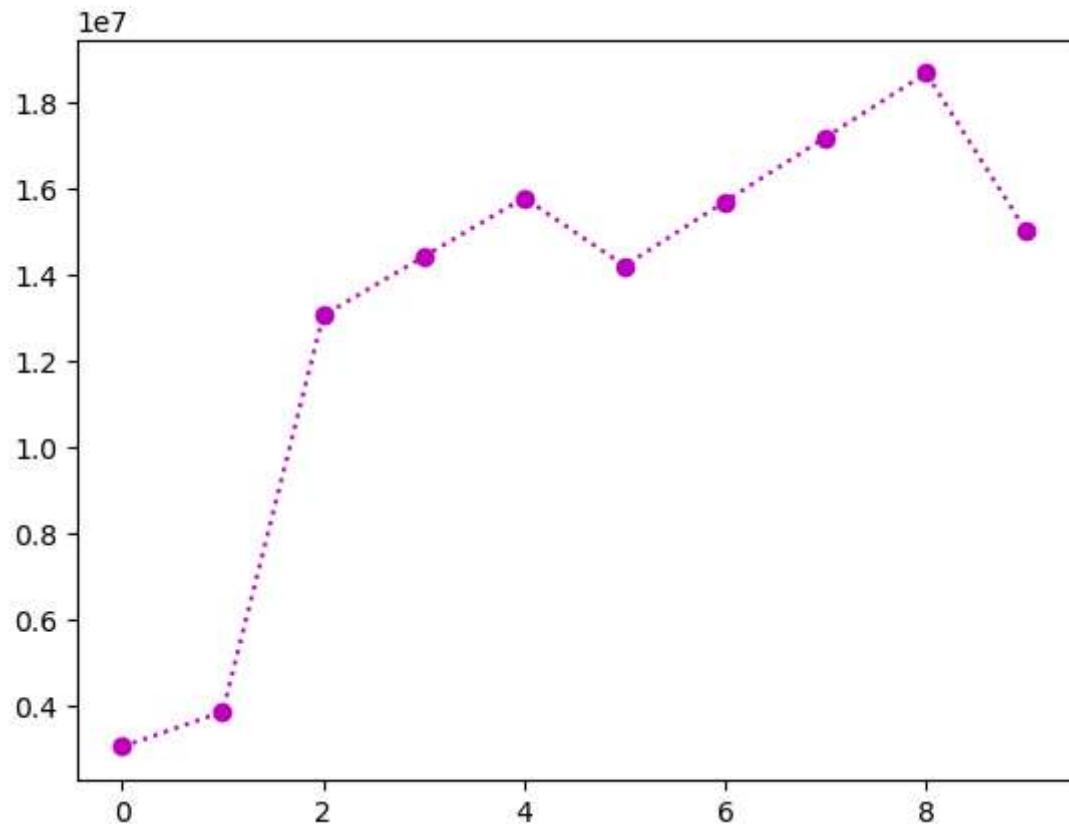
```
In [15]: plt.plot(Salary[Pdict["Sky"]], color='m', ls=':') # ls work as Line style
```

```
Out[15]: [<matplotlib.lines.Line2D at 0x236fb1aaa80>]
```



```
In [16]: plt.plot(Salary[Pdict['Sky']],color='m',ls=':', marker = "o") # marker size define
```

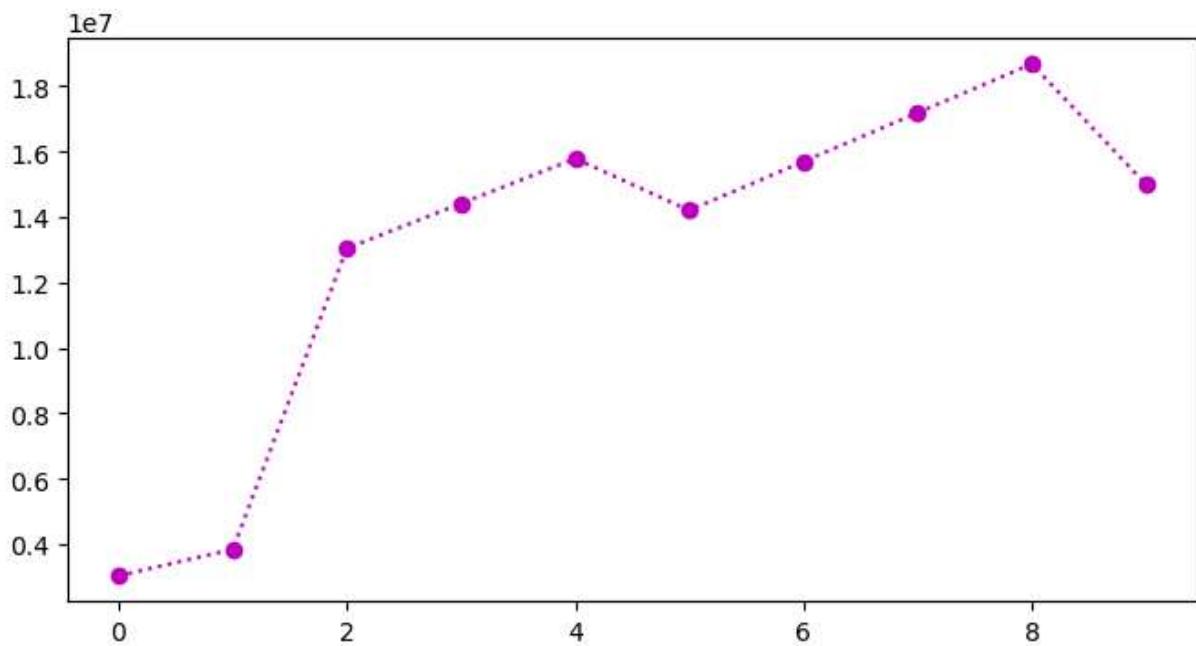
```
Out[16]: <matplotlib.lines.Line2D at 0x236fca4b560>
```



```
In [17]: # to change the visuals size  
plt.rcParams['figure.figsize']=8,4 # 8 is length, 4 is height
```

```
In [20]: plt.plot(Salary[Pdict['Sky']],color='m',ls=':',marker="o",ms='6') # here ms work as
```

```
Out[20]: <matplotlib.lines.Line2D at 0x236fcaa71a0>
```



```
In [21]: list(range(0,10))
```

```
Out[21]: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9]
```

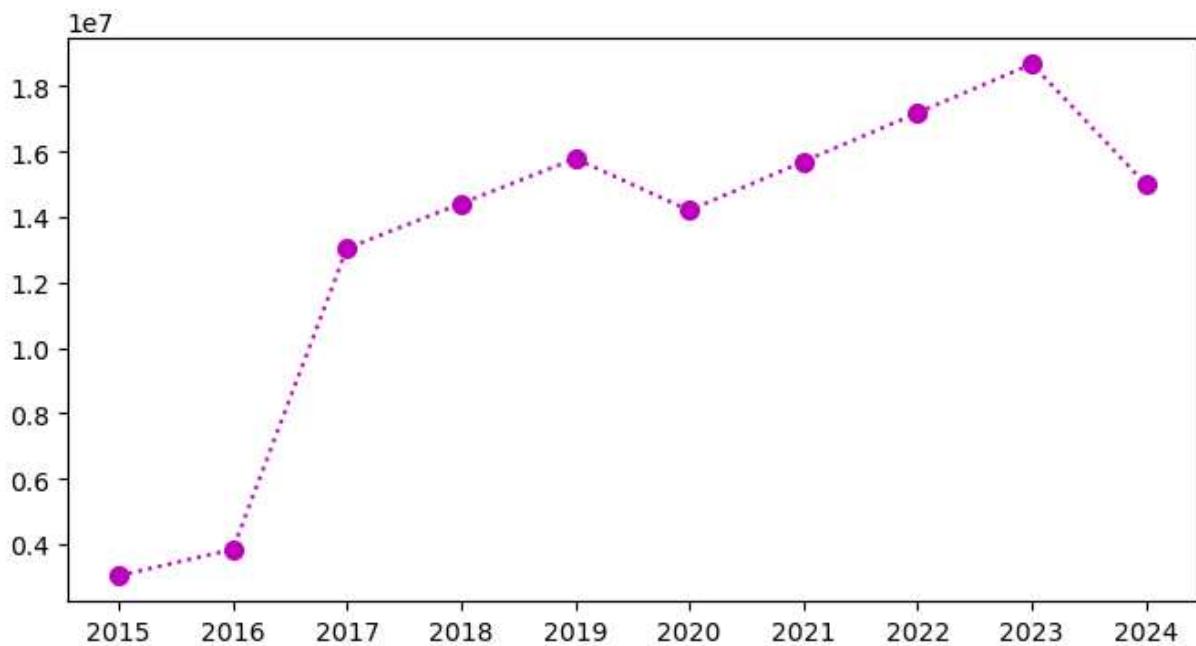
```
In [22]: Sdict
```

```
Out[22]: {'2015': 0,
          '2016': 1,
          '2017': 2,
          '2018': 3,
          '2019': 4,
          '2020': 5,
          '2021': 6,
          '2022': 7,
          '2023': 8,
          '2024': 9}
```

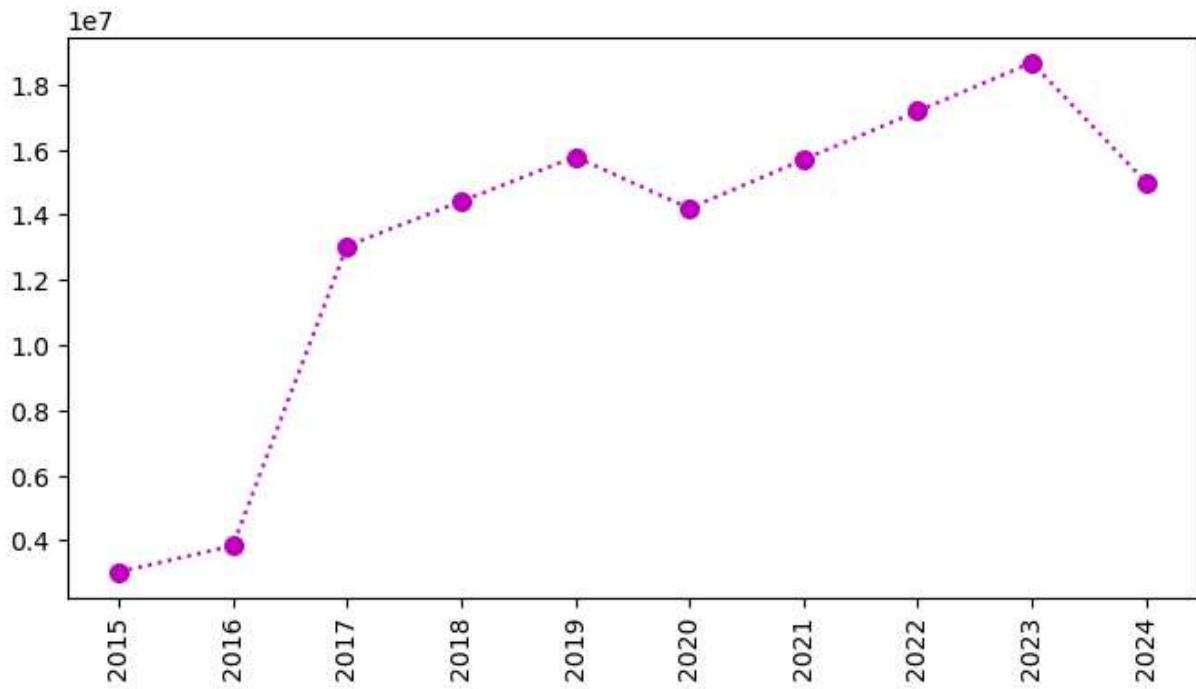
```
In [23]: Pdict
```

```
Out[23]: {'Sachin': 0,
          'Rahul': 1,
          'Smith': 2,
          'Sami': 3,
          'Pollard': 4,
          'Morris': 5,
          'Samson': 6,
          'Dhoni': 7,
          'Kohli': 8,
          'Sky': 9}
```

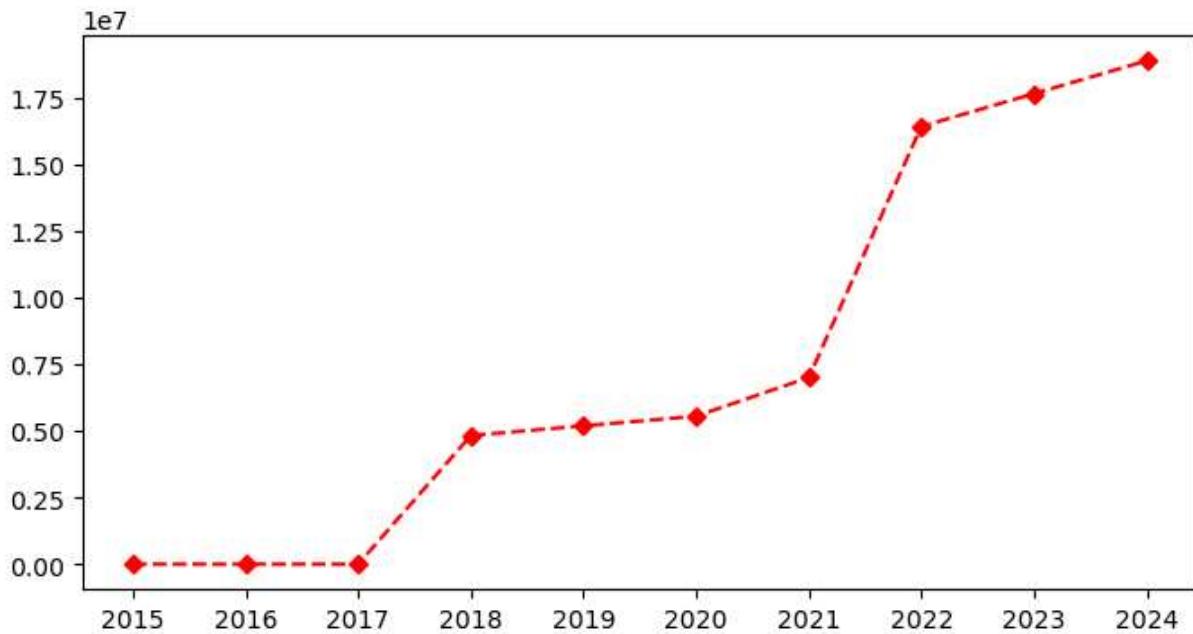
```
In [24]: # for before visuals the x-axis not understandable so
plt.plot(Salary[Pdict["Sky"]],color='m',ls=':', marker="o",ms=7) # plot the salary
plt.xticks(list(range(0,10)),Seasons) # add in x axis all season
plt.show() # showing the graph
```



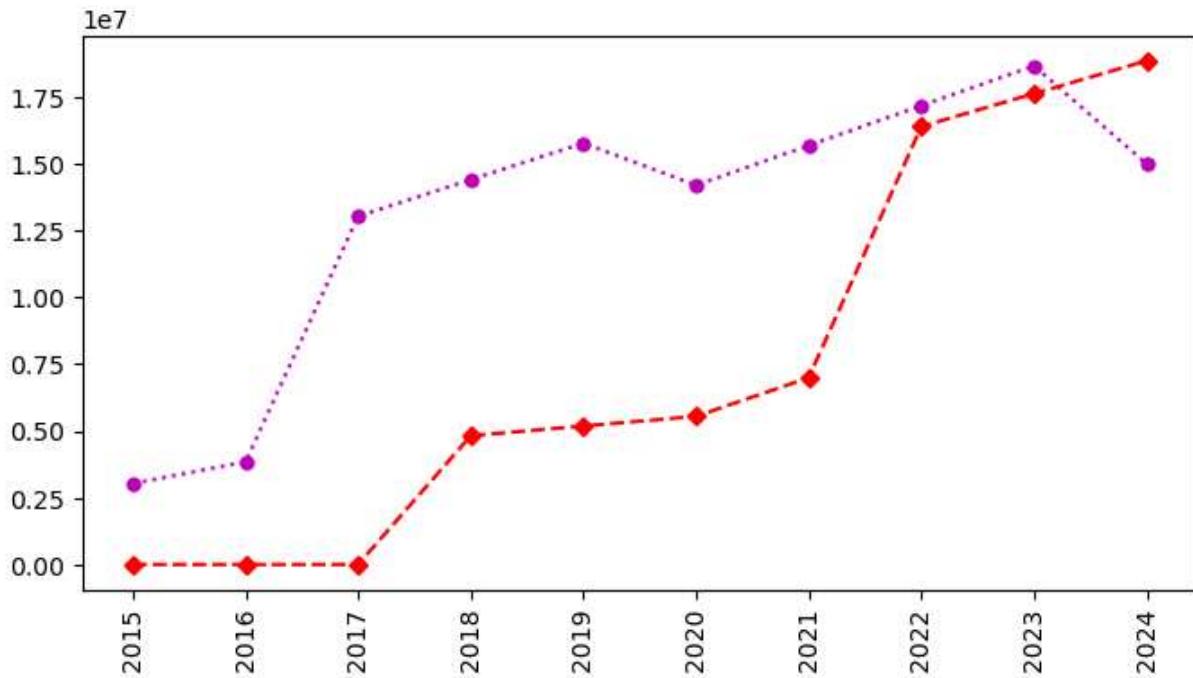
```
In [25]: plt.plot(Salary[Pdict['Sky']],color='m',ls=':', marker="o",ms=7)
plt.xticks(list(range(0,10)),Seasons,rotation='vertical') # rotation attribute help
plt.show()
```



```
In [26]: # plot graph for kohli salary
plt.plot(Salary[Pdict['Kohli']],color='red',ls='--', marker="D",ms=5)
plt.xticks(list(range(0,10)),Seasons,rotation='horizontal')
plt.show()
```



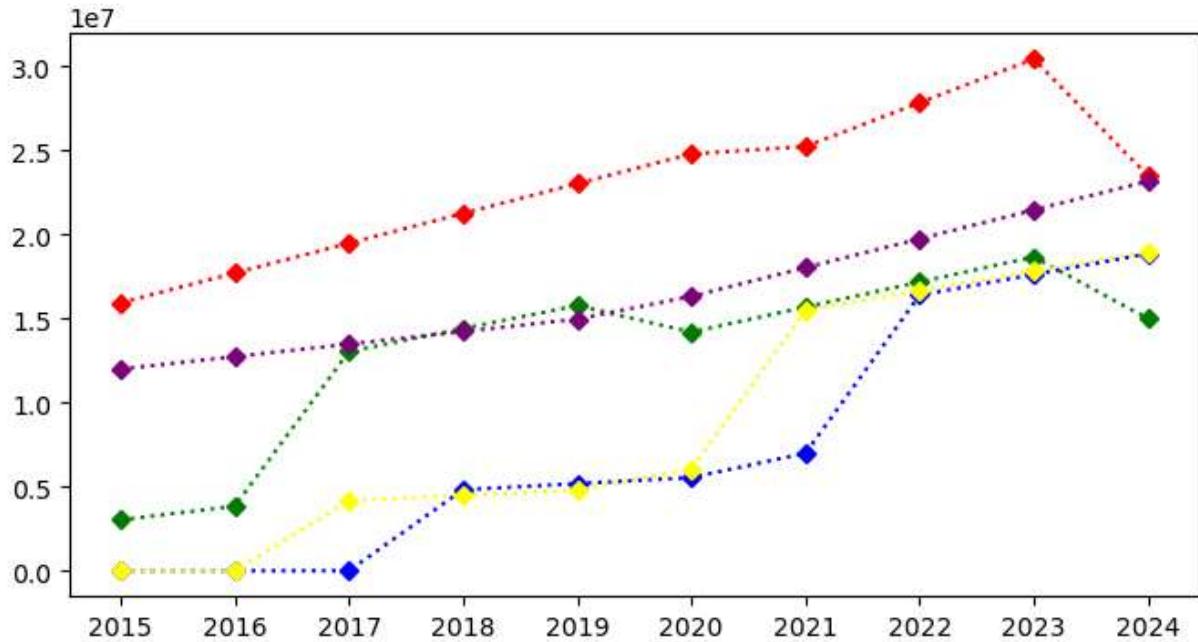
```
In [27]: # Lets combine the kohli and sky salary into one graph
plt.plot(Salary[Pdict['Sky']],color='m',ls=':', marker="o",ms=5) # graph generate f
plt.plot(Salary[Pdict['Kohli']],color='red',ls='--', marker="D",ms=5) # graph gener
plt.xticks(list(range(0,10)),Seasons,rotation='vertical')
plt.show()
```



```
In [30]: # Lets add 5 players salary into a single graph
plt.plot(Salary[Pdict['Sachin']],color='red',ls=':', marker="D",ms=5)
plt.plot(Salary[Pdict['Sky']],color='green',ls=':', marker="D",ms=5)
plt.plot(Salary[Pdict['Kohli']],color='blue',ls=':', marker="D",ms=5)
plt.plot(Salary[Pdict['Dhoni']],color="yellow",ls=":", marker="D",ms=5)
plt.plot(Salary[Pdict["Rahul"]],color='purple',ls=':', marker="D",ms=5)

plt.xticks(list(range(0,10)),Seasons,rotation="horizontal")
```

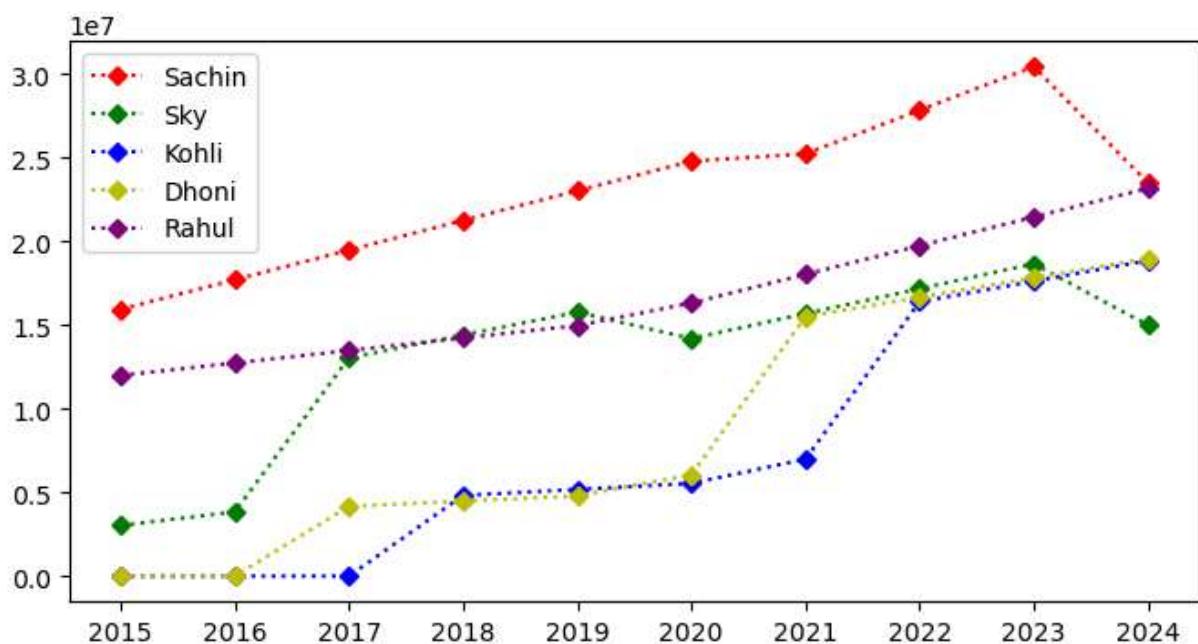
```
plt.show()
```



```
In [31]: # from the above graph we dont know which color is refers to which player for that
plt.plot(Salary[Pdict['Sachin']],color="red",ls=':', marker="D",ms=5,label=Players[Pdict['Sachin']])
plt.plot(Salary[Pdict['Sky']],color='green',ls=':', marker="D",ms=5,label=Players[Pdict['Sky']])
plt.plot(Salary[Pdict['Kohli']],color='blue',ls=':', marker="D",ms=5,label=Players[Pdict['Kohli']])
plt.plot(Salary[Pdict['Dhoni']],color='y',ls=':', marker="D",ms=5,label=Players[Pdict['Dhoni']])
plt.plot(Salary[Pdict['Rahul']],color='purple',ls=':', marker="D",ms=5,label=Players[Pdict['Rahul']])

plt.legend()
plt.xticks(list(range(0,10)),Seasons,rotation="horizontal")

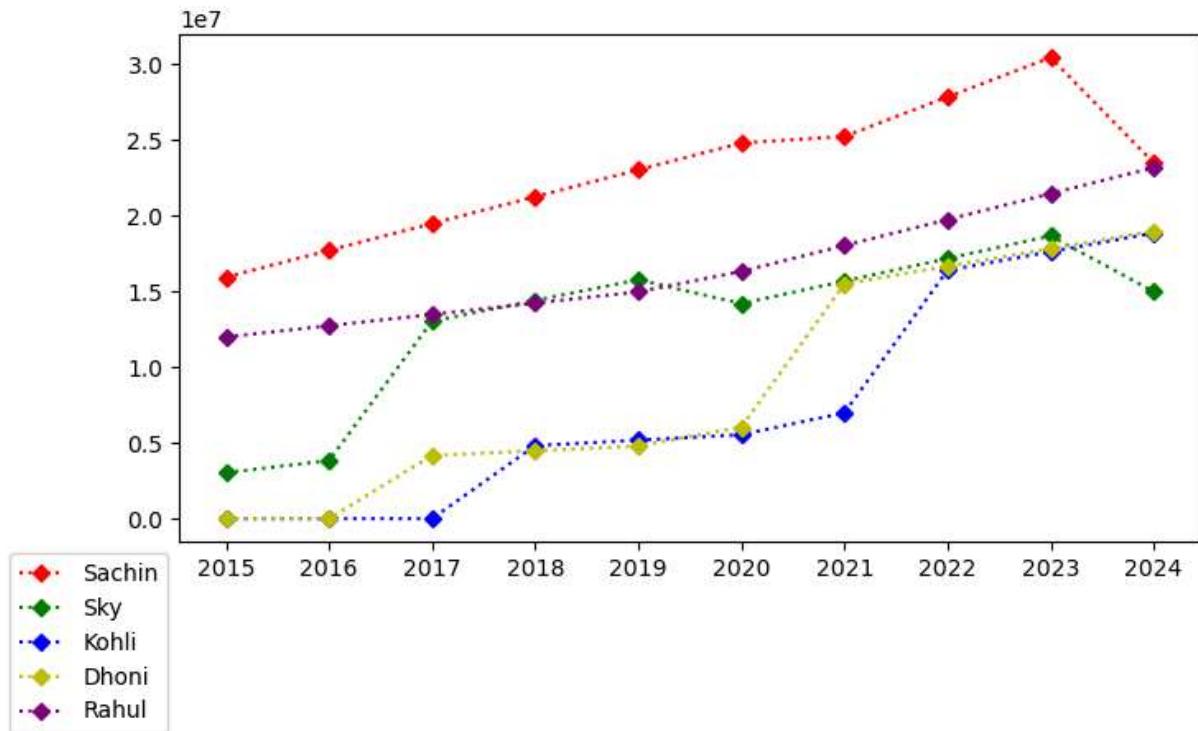
plt.show()
```



```
In [32]: plt.plot(Salary[Pdict['Sachin']],color="red",ls=':', marker="D",ms=5,label=Players[Pdict['Sachin']])
plt.plot(Salary[Pdict['Sky']],color='green',ls=':', marker="D",ms=5,label=Players[Pdict['Sky']])
plt.plot(Salary[Pdict['Kohli']],color='blue',ls=':', marker="D",ms=5,label=Players[Pdict['Kohli']])
plt.plot(Salary[Pdict['Dhoni']],color='y',ls=':', marker="D",ms=5,label=Players[Pdict['Dhoni']])
plt.plot(Salary[Pdict['Rahul']],color='purple',ls=':', marker="D",ms=5,label=Players[Pdict['Rahul']])

plt.legend(loc="upper right",bbox_to_anchor=(0,0)) # move Legend according to choice
plt.xticks(list(range(0,10)),Seasons,rotation="horizontal")

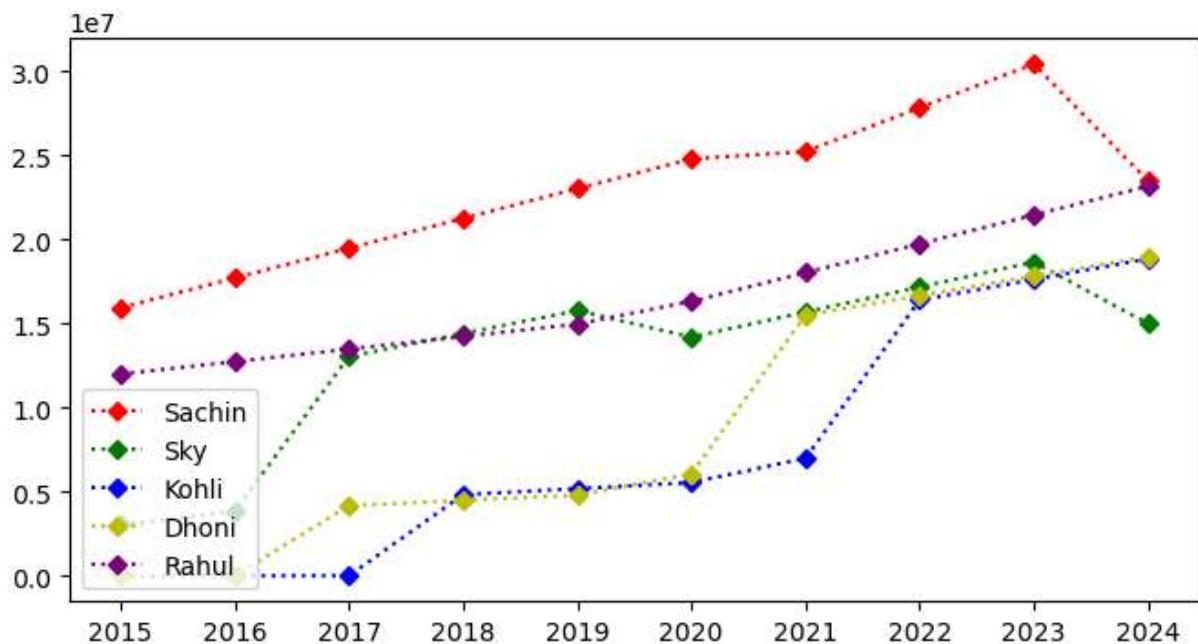
plt.show()
```



```
In [33]: plt.plot(Salary[Pdict['Sachin']],color="red",ls=':', marker="D",ms=5,label=Players[Pdict['Sachin']])
plt.plot(Salary[Pdict['Sky']],color='green',ls=':', marker="D",ms=5,label=Players[Pdict['Sky']])
plt.plot(Salary[Pdict['Kohli']],color='blue',ls=':', marker="D",ms=5,label=Players[Pdict['Kohli']])
plt.plot(Salary[Pdict['Dhoni']],color='y',ls=':', marker="D",ms=5,label=Players[Pdict['Dhoni']])
plt.plot(Salary[Pdict['Rahul']],color='purple',ls=':', marker="D",ms=5,label=Players[Pdict['Rahul']])

plt.legend(loc="lower left",bbox_to_anchor=(0,0)) # move Legend according to choice
plt.xticks(list(range(0,10)),Seasons,rotation="horizontal")

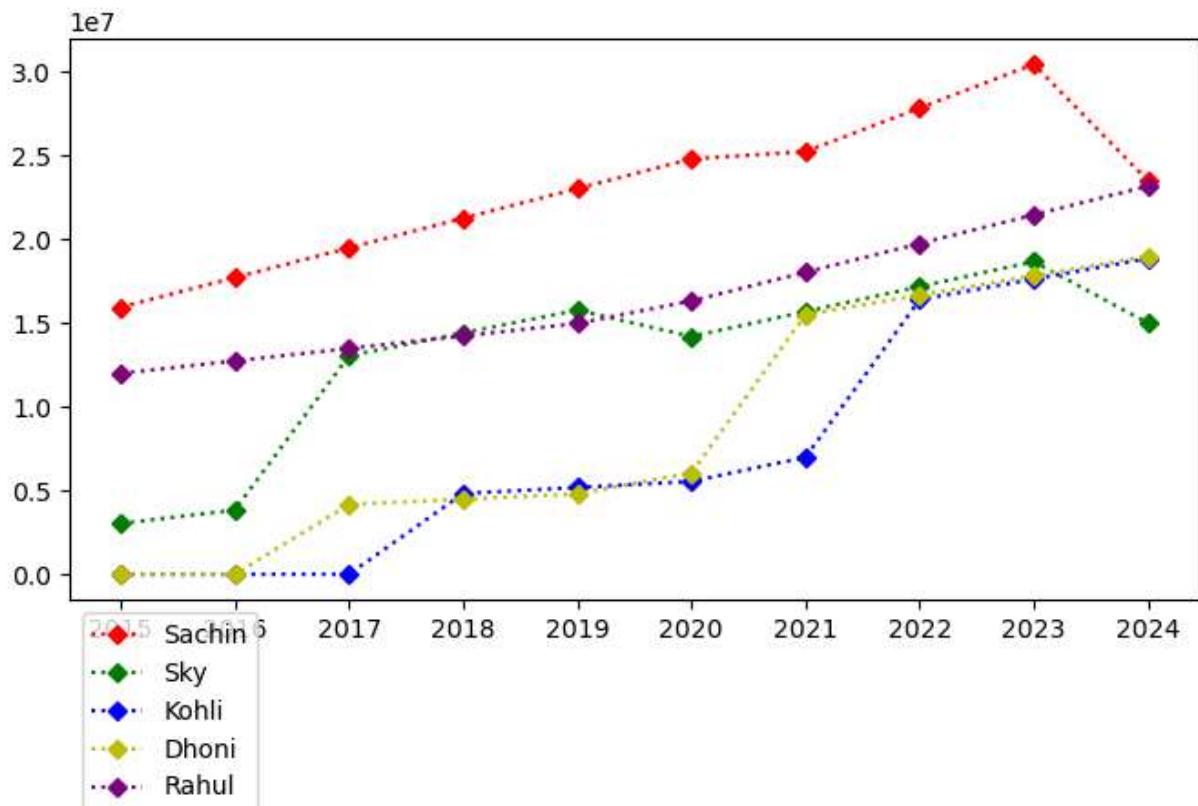
plt.show()
```



```
In [34]: plt.plot(Salary[Pdict['Sachin']],color="red",ls=':', marker="D",ms=5,label=Players[Pdict['Sachin']])
plt.plot(Salary[Pdict['Sky']],color='green',ls=':', marker="D",ms=5,label=Players[Pdict['Sky']])
plt.plot(Salary[Pdict['Kohli']],color='blue',ls=':', marker="D",ms=5,label=Players[Pdict['Kohli']])
plt.plot(Salary[Pdict['Dhoni']],color='y',ls=':', marker="D",ms=5,label=Players[Pdict['Dhoni']])
plt.plot(Salary[Pdict['Rahul']],color='purple',ls=':', marker="D",ms=5,label=Players[Pdict['Rahul']])

plt.legend(loc="upper left",bbox_to_anchor=(0,0)) # move Legend according to choice
plt.xticks(list(range(0,10)),Seasons,rotation="horizontal")

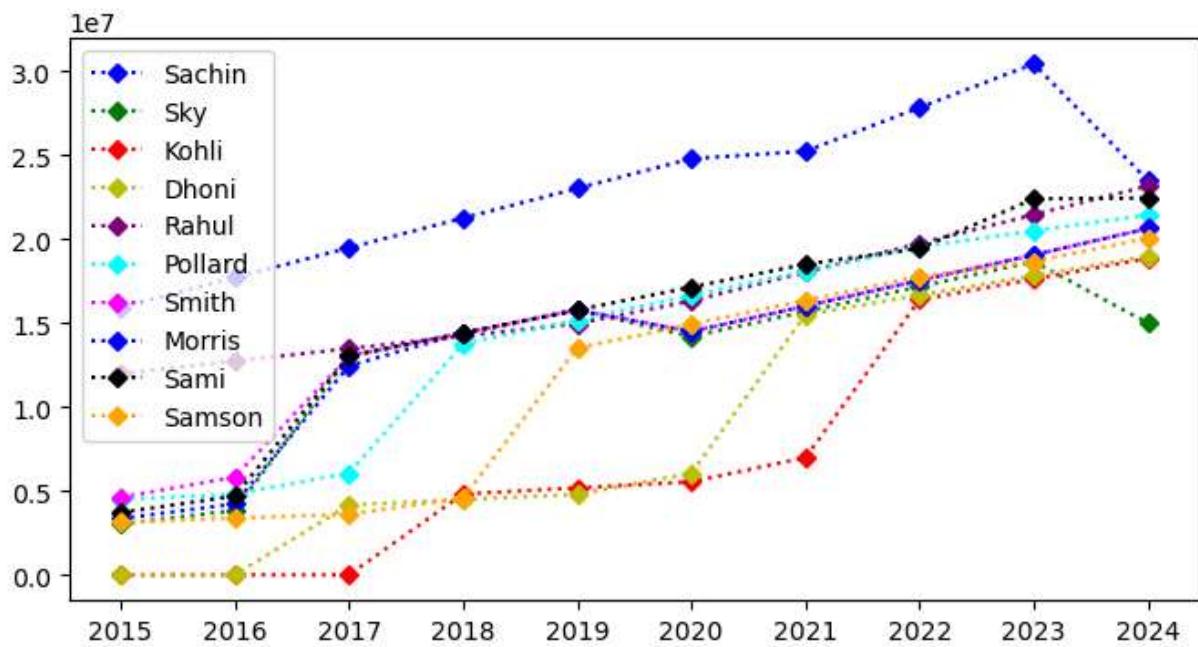
plt.show()
```



```
In [35]: plt.plot(Salary[Pdict['Sachin']],color="blue",ls=':', marker="D",ms=5,label=Players['Sachin'])
plt.plot(Salary[Pdict['Sky']],color='green',ls=':', marker="D",ms=5,label=Players[Pdict['Sky']])
plt.plot(Salary[Pdict['Kohli']],color='red',ls=':', marker="D",ms=5,label=Players[Pdict['Kohli']])
plt.plot(Salary[Pdict['Dhoni']],color='y',ls=':', marker="D",ms=5,label=Players[Pdict['Dhoni']])
plt.plot(Salary[Pdict['Rahul']],color='purple',ls=':', marker="D",ms=5,label=Player[Rahul])
plt.plot(Salary[Pdict['Pollard']],color="cyan",ls=':', marker="D",ms=5,label=Player[Pollard])
plt.plot(Salary[Pdict["Smith"]],color='magenta',ls=':', marker="D",ms=5,label=Player[Smith])
plt.plot(Salary[Pdict["Morris"]],color='blue',ls=':', marker="D",ms=5,label=Players[Pdict['Morris']])
plt.plot(Salary[Pdict['Sami']],color='black',ls=':', marker="D",ms=5,label=Players[Pdict['Sami']])
plt.plot(Salary[Pdict['Samson']],color='orange',ls=':', marker="D",ms=5,label=Player[Samson])

plt.legend() # move Legend according to choice
plt.xticks(list(range(0,10)),Seasons,rotation="horizontal")

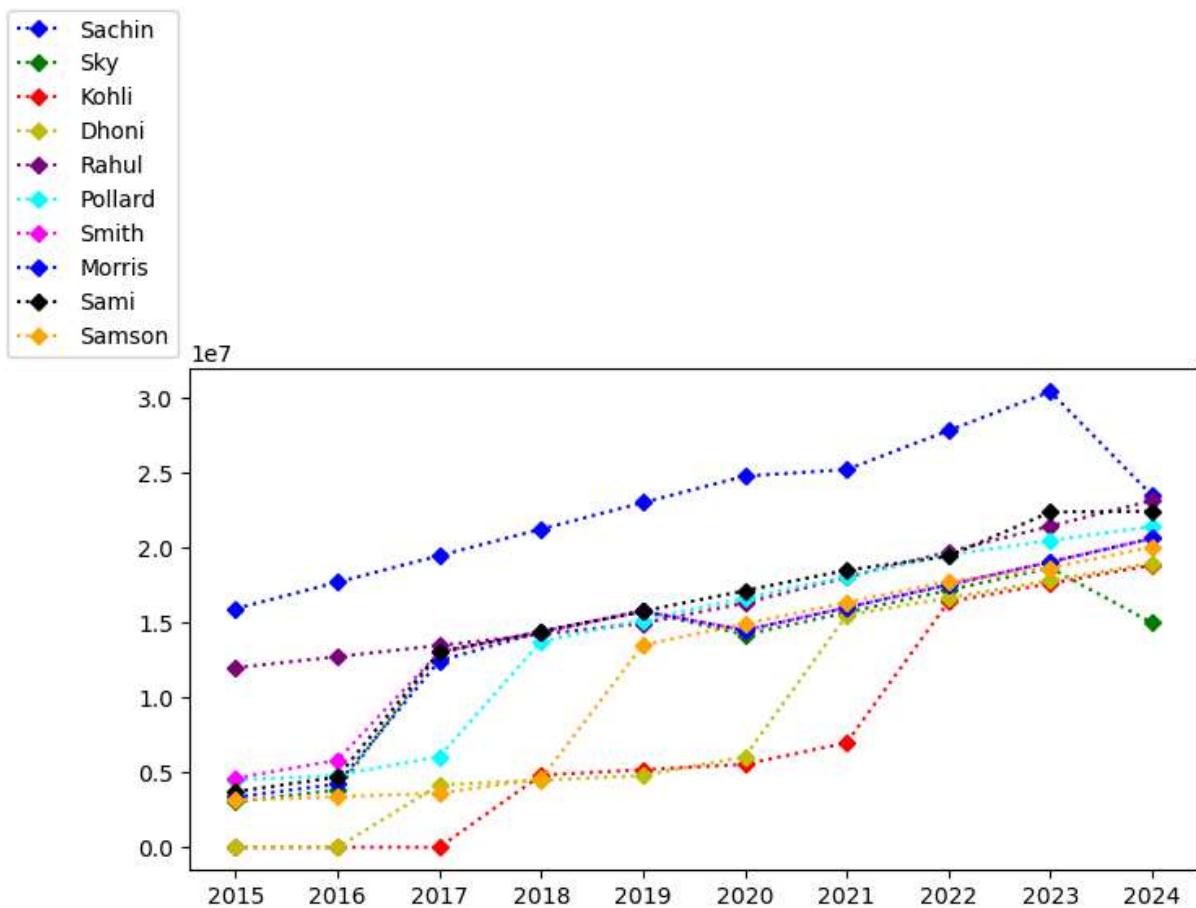
plt.show()
```



```
In [37]: plt.plot(Salary[Pdict['Sachin']],color="blue",ls=':', marker="D",ms=5,label=Players['Sachin'])
plt.plot(Salary[Pdict['Sky']],color='green',ls=':', marker="D",ms=5,label=Players[Pdict['Sky']])
plt.plot(Salary[Pdict['Kohli']],color='red',ls=':', marker="D",ms=5,label=Players[Pdict['Kohli']])
plt.plot(Salary[Pdict['Dhoni']],color='y',ls=':', marker="D",ms=5,label=Players[Pdict['Dhoni']])
plt.plot(Salary[Pdict['Rahul']],color='purple',ls=':', marker="D",ms=5,label=Player[Rahul])
plt.plot(Salary[Pdict['Pollard']],color="cyan",ls=':', marker="D",ms=5,label=Player[Pollard])
plt.plot(Salary[Pdict["Smith"]],color='magenta',ls=':', marker="D",ms=5,label=Player[Smith])
plt.plot(Salary[Pdict["Morris"]],color='blue',ls=':', marker="D",ms=5,label=Players[Pdict['Morris']])
plt.plot(Salary[Pdict['Sami']],color='black',ls=':', marker="D",ms=5,label=Players[Pdict['Sami']])
plt.plot(Salary[Pdict['Samson']],color='orange',ls=':', marker="D",ms=5,label=Player[Samson])

plt.legend(loc="lower right",bbox_to_anchor=(0,1)) # move Legend according to choice
plt.xticks(list(range(0,10)),Seasons,rotation="horizontal")

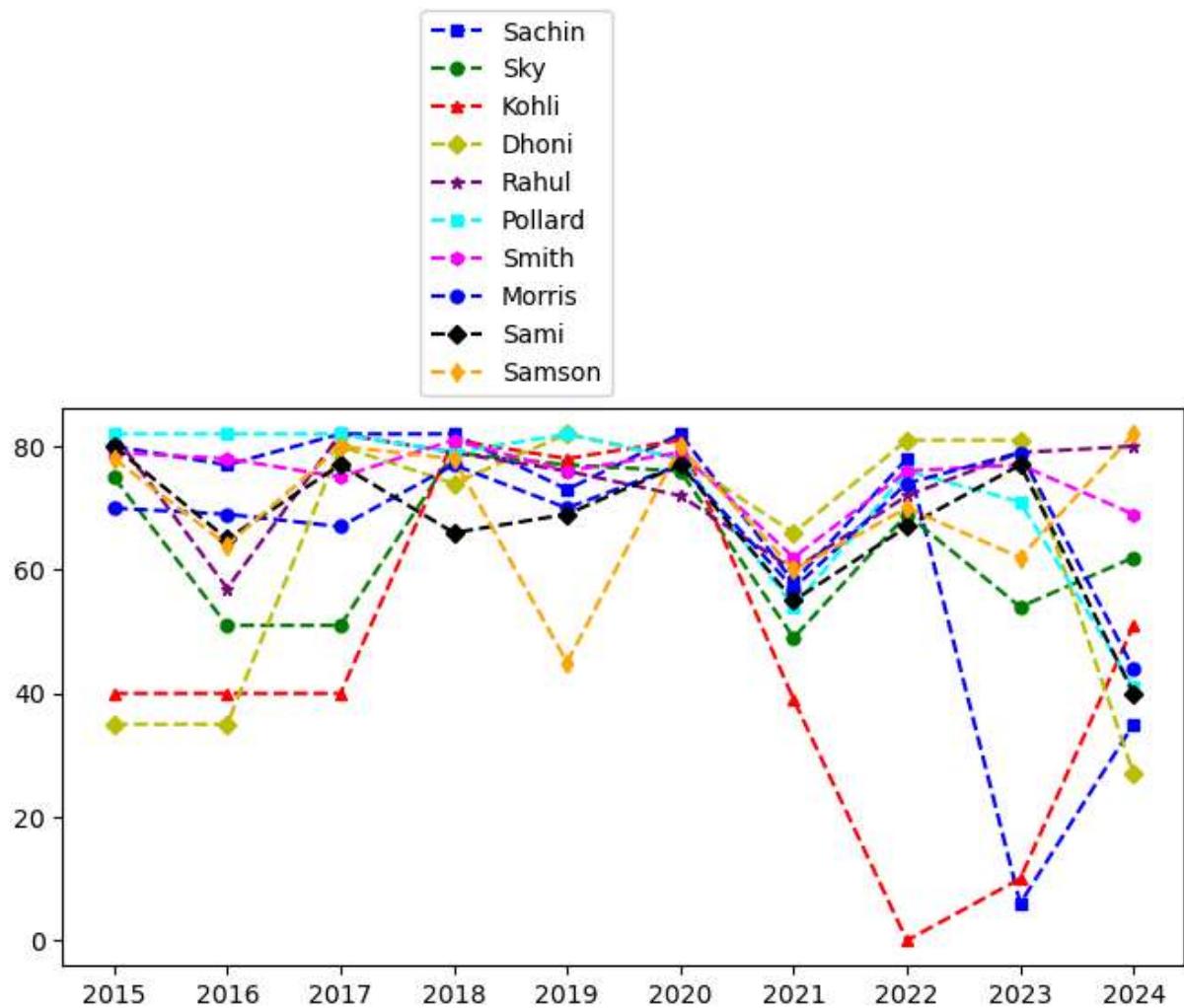
plt.show()
```



```
In [38]: plt.plot(Games[Pdict['Sachin']],color="blue",ls='--', marker="s",ms=5,label=Players['Sachin'])
plt.plot(Games[Pdict['Sky']],color='green',ls='--', marker="o",ms=5,label=Players['Sky'])
plt.plot(Games[Pdict['Kohli']],color='red',ls='--', marker="^",ms=5,label=Players['Kohli'])
plt.plot(Games[Pdict['Dhoni']],color='y',ls='--', marker="D",ms=5,label=Players[Pdict['Dhoni']])
plt.plot(Games[Pdict['Rahul']],color='purple',ls='--', marker="*",ms=5,label=Players['Rahul'])
plt.plot(Games[Pdict['Pollard']],color="cyan",ls='--', marker="s",ms=5,label=Players['Pollard'])
plt.plot(Games[Pdict['Smith']],color='magenta',ls='--', marker="h",ms=5,label=Players['Smith'])
plt.plot(Games[Pdict['Morris']],color='blue',ls='--', marker="o",ms=5,label=Players['Morris'])
plt.plot(Games[Pdict['Sami']],color='black',ls='--', marker="D",ms=5,label=Players['Sami'])
plt.plot(Games[Pdict['Samson']],color='orange',ls='--', marker="d",ms=5,label=Players['Samson'])

plt.legend(loc="lower right",bbox_to_anchor=(0.5,1)) # move Legend according to choice
plt.xticks(list(range(0,10)),Seasons,rotation="horizontal")

plt.show()
```



This my First project Done successfully of IPL Data Analysis

In []: