

IPL DATA 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"]
Pdict = {"Sachin":0, "Rahul":1, "Smith":2, "Sami":3, "Pollard":4, "Morris":5, "Samson":6, "Dhoni":7, "Kohli":8}

#Salaries
Sachin_Salary = [15946875, 17718750, 19490625, 21262500, 23034375, 24806250, 25244493, 27850000]
Rahul_Salary = [12000000, 12744189, 13488377, 14232567, 14976754, 16324500, 18038573, 19750000]
Smith_Salary = [4621800, 5828090, 13041250, 14410581, 15779912, 14500000, 16022500, 17545000]
Sami_Salary = [3713640, 4694041, 13041250, 14410581, 15779912, 17149243, 18518574, 19450000]
Pollard_Salary = [4493160, 4806720, 6061274, 13758000, 15202590, 16647180, 18091770, 19536000]
Morris_Salary = [3348000, 4235220, 12455000, 14410581, 15779912, 14500000, 16022500, 17545000]
Samson_Salary = [3144240, 3380160, 3615960, 4574189, 13520500, 14940153, 16359805, 1777945000]
Dhoni_Salary = [0, 0, 4171200, 4484040, 4796880, 6053663, 15506632, 16669630, 17832627, 18990000]
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_PTS, Samson_PTS, Dhoni_PTS, Kohli_PTS, Sky_PTS])

```

In [2]: Salary

```
Out[2]: 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, 0, 4822800, 5184480, 5546160,
   6993708, 16402500, 17632688, 18862875],
   [ 3031920, 3841443, 13041250, 14410581, 15779912, 14200000,
   15691000, 17182000, 18673000, 15000000]])
```

In [3]: Games

```
Out[3]: 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 [4]: Points

```
Out[4]: 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 [5]: Games[1]

```
Out[5]: array([82, 57, 82, 79, 76, 72, 60, 72, 79, 80])
```

In [6]: Games[0:6]

```
Out[6]: 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]])
```

```
In [7]: Games[0,6]
```

```
Out[7]: 58
```

```
In [8]: Salary
```

```
Out[8]: 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, 0, 4822800, 5184480, 5546160,  
   6993708, 16402500, 17632688, 18862875],  
   [ 3031920, 3841443, 13041250, 14410581, 15779912, 14200000,  
   15691000, 17182000, 18673000, 15000000]])
```

```
In [9]: Games
```

```
Out[9]: 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 [10]: Salary/Games
```

```
C:\Users\DELL\AppData\Local\Temp\ipykernel_3676\3709746658.py:1: RuntimeWarning: divide by zero encountered in divide  
Salary/Games
```

```
Out[10]: array([[ 199335.9375 ,  230113.63636364,  237690.54878049,
   259298.7804878 ,  315539.38356164,  302515.24390244,
   435249.87931034,  357040.37179487,  5075634.16666667,
   671428.57142857],
 [ 146341.46341463,  223582.26315789,  164492.40243902,
  180159.07594937,  197062.55263158,  226729.16666667,
  300642.88333333,  274342.29166667,  271730.60759494,
  289759.875     ],
 [ 58503.79746835,  74719.1025641 ,  173883.33333333,
  177908.40740741,  207630.42105263,  183544.30379747,
  258427.41935484,  230855.26315789,  247629.87012987,
  299194.20289855],
 [ 46420.5       ,  72216.01538462,  169366.88311688,
  218342.13636364,  228694.37681159,  222717.44155844,
  336701.34545455,  290298.50746269,  291006.15584416,
  561450.      ],
 [ 54794.63414634,  58618.53658537,  73917.97560976,
  174151.89873418,  185397.43902439,  213425.38461538,
  335032.77777778,  257057.36842105,  288918.      ,
  522835.87804878],
 [ 47828.57142857,  61380.        ,  185895.52238806,
  187150.4025974 ,  225427.31428571,  188311.68831169,
  281096.49122807,  237094.59459459,  241360.75949367,
  469190.90909091],
 [ 40310.76923077,  52815.        ,  45199.5       ,
  58643.44871795,  300455.55555556,  186751.9125       ,
  272663.41666667,  253992.25714286,  301103.72580645,
  244738.57317073],
 [ 0.        ,  0.        ,  52140.        ,
  60595.13513514,  58498.53658537,  77611.06410256,
  234948.96969697,  205797.90123457,  220155.88888889,
  703541.62962963],
 [ 0.        ,  0.        ,  0.        ,
  59540.74074074,  66467.69230769,  68471.11111111,
  179325.84615385,  inf,  1763268.8       ,
  369860.29411765],
 [ 40425.6       ,  75322.41176471,  255710.78431373,
  182412.41772152,  204933.92207792,  186842.10526316,
  320224.48979592,  249014.49275362,  345796.2962963 ,
  241935.48387097]])
```

```
In [11]: np.round(Salary//Games) #round for remove decimal
```

```
C:\Users\DELL\AppData\Local\Temp\ipykernel_3676\3216003866.py:1: RuntimeWarning: divide by zero encountered in floor_divide
np.round(Salary//Games) #round for remove decimal
```

```
Out[11]: array([[ 199335,  230113,  237690,  259298,  315539,  302515,  435249,
   357040,  5075634,  671428],
 [ 146341,  223582,  164492,  180159,  197062,  226729,  300642,
  274342,  271730,  289759],
 [ 58503,   74719,  173883,  177908,  207630,  183544,  258427,
 230855,  247629,  299194],
 [ 46420,   72216,  169366,  218342,  228694,  222717,  336701,
 290298,  291006,  561450],
 [ 54794,   58618,  73917,  174151,  185397,  213425,  335032,
 257057,  288918,  522835],
 [ 47828,   61380,  185895,  187150,  225427,  188311,  281096,
 237094,  241360,  469190],
 [ 40310,   52815,  45199,  58643,  300455,  186751,  272663,
 253992,  301103,  244738],
 [ 0,       0,      52140,  60595,  58498,  77611,  234948,
 205797,  220155,  703541],
 [ 0,       0,      0,      59540,  66467,  68471,  179325,
 0,      1763268,  369860],
 [ 40425,   75322,  255710,  182412,  204933,  186842,  320224,
 249014,  345796,  241935]])
```

```
In [12]: import warnings
warnings.filterwarnings('ignore')

#we are using above code to ignore unknown error caused by a updattion on monthly b
```

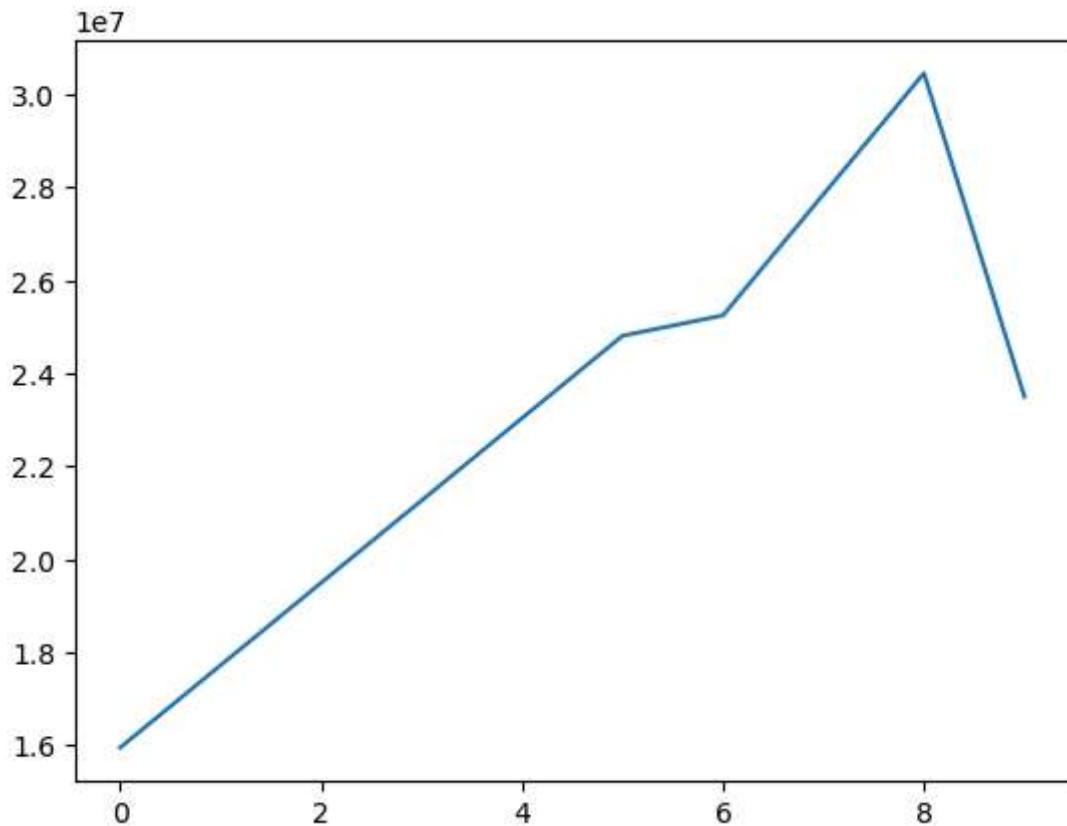
```
In [13]: import matplotlib.pyplot as plt
import numpy as np
```

```
In [14]: Salary[0]
```

```
Out[14]: array([15946875, 17718750, 19490625, 21262500, 23034375, 24806250,
 25244493, 27849149, 30453805, 23500000])
```

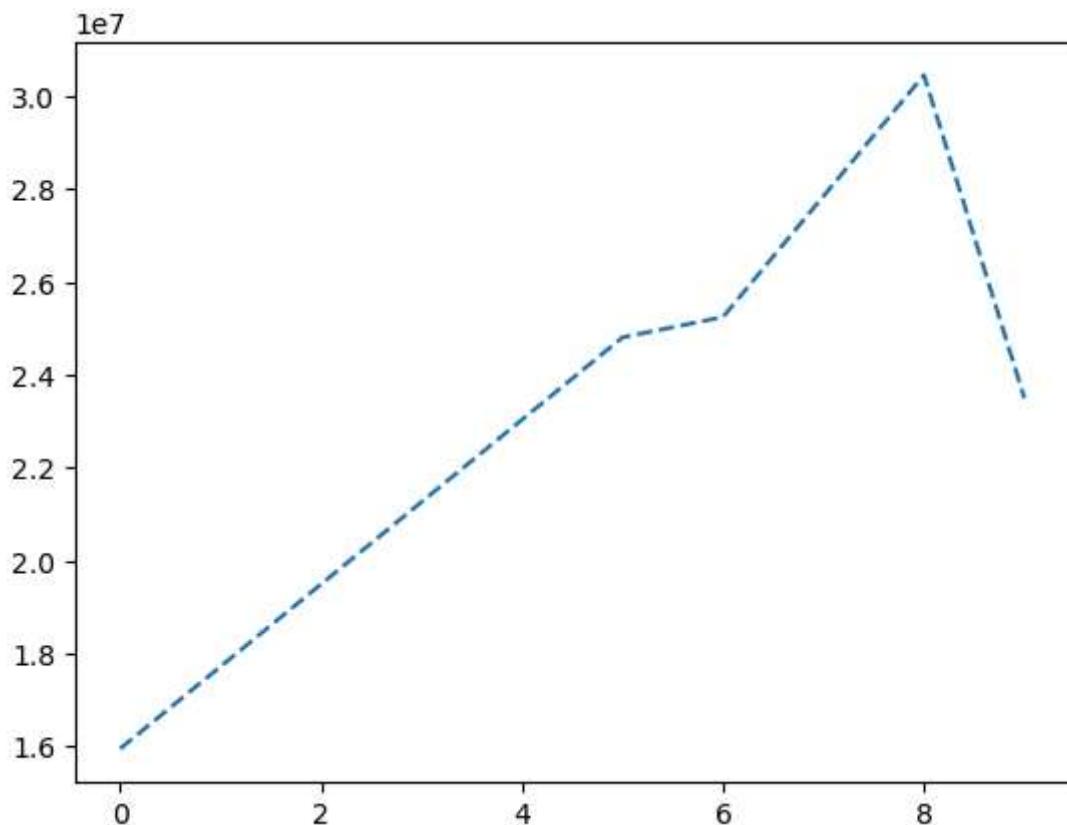
```
In [15]: plt.plot(Salary[0])
#plt.show()
```

```
Out[15]: [
```



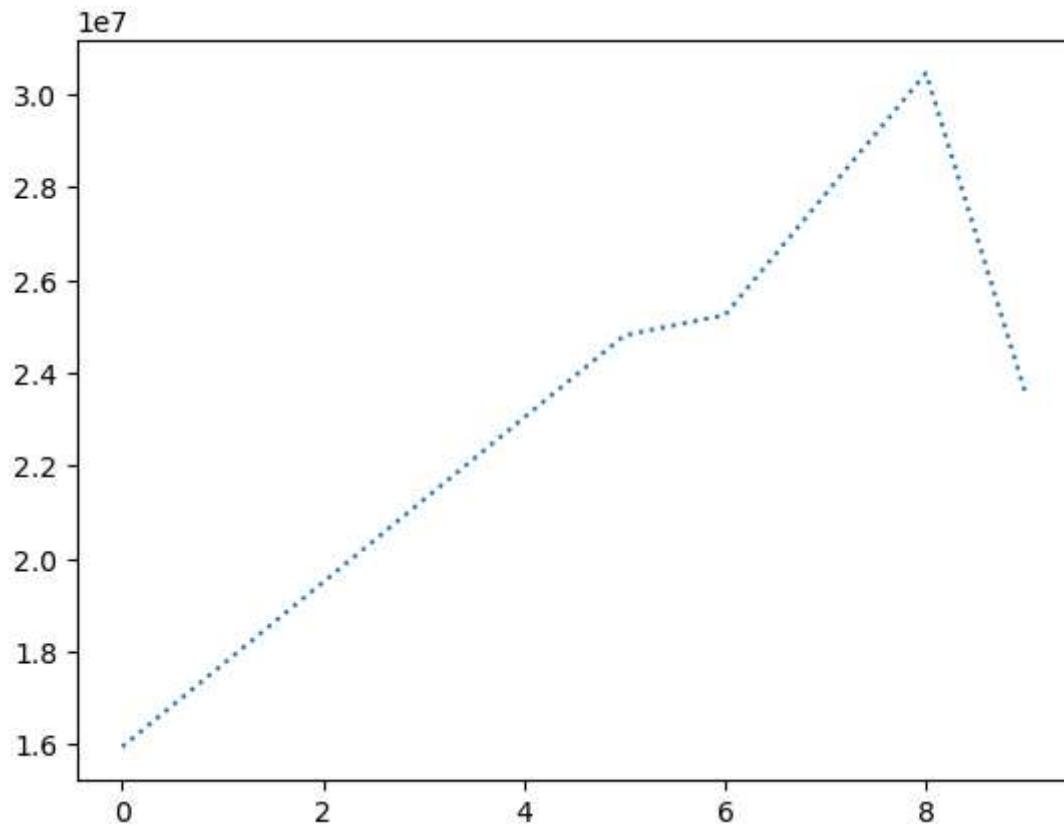
```
In [16]: plt.plot(Salary[0], ls = '--')
```

```
Out[16]: [<matplotlib.lines.Line2D at 0x19703f27e60>]
```



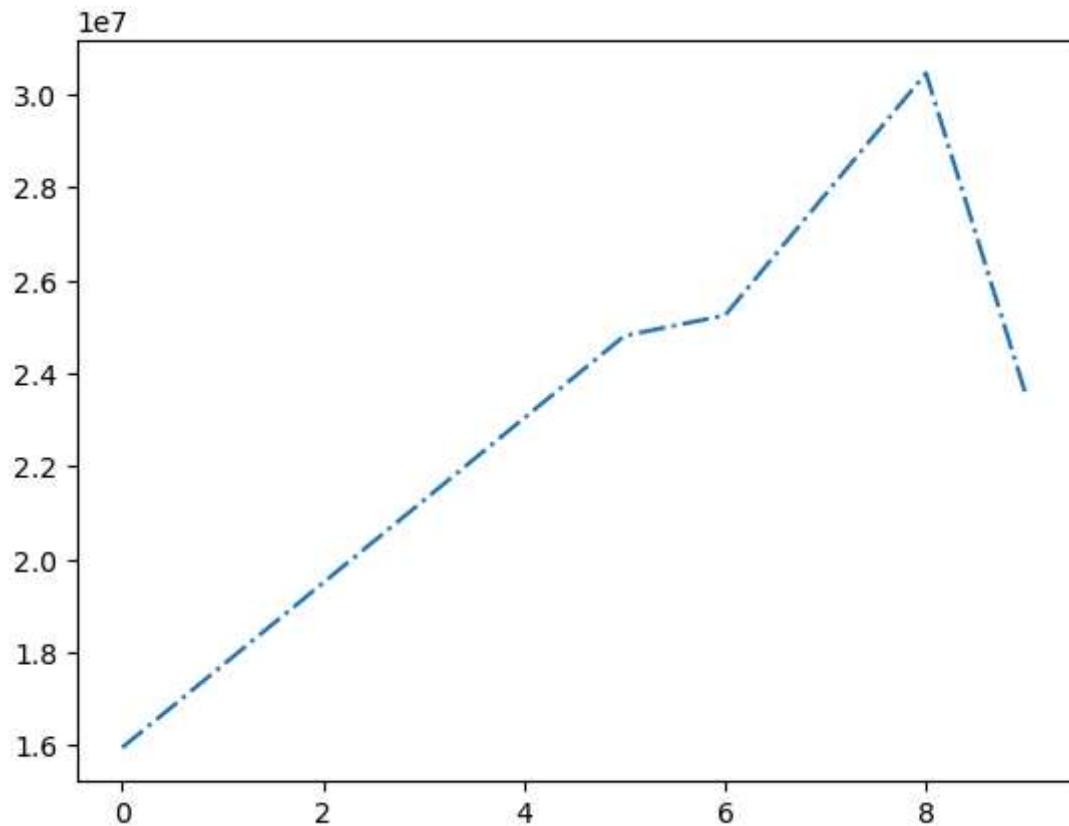
```
In [17]: plt.plot(Salary[0], ls=':')
```

```
Out[17]: [
```



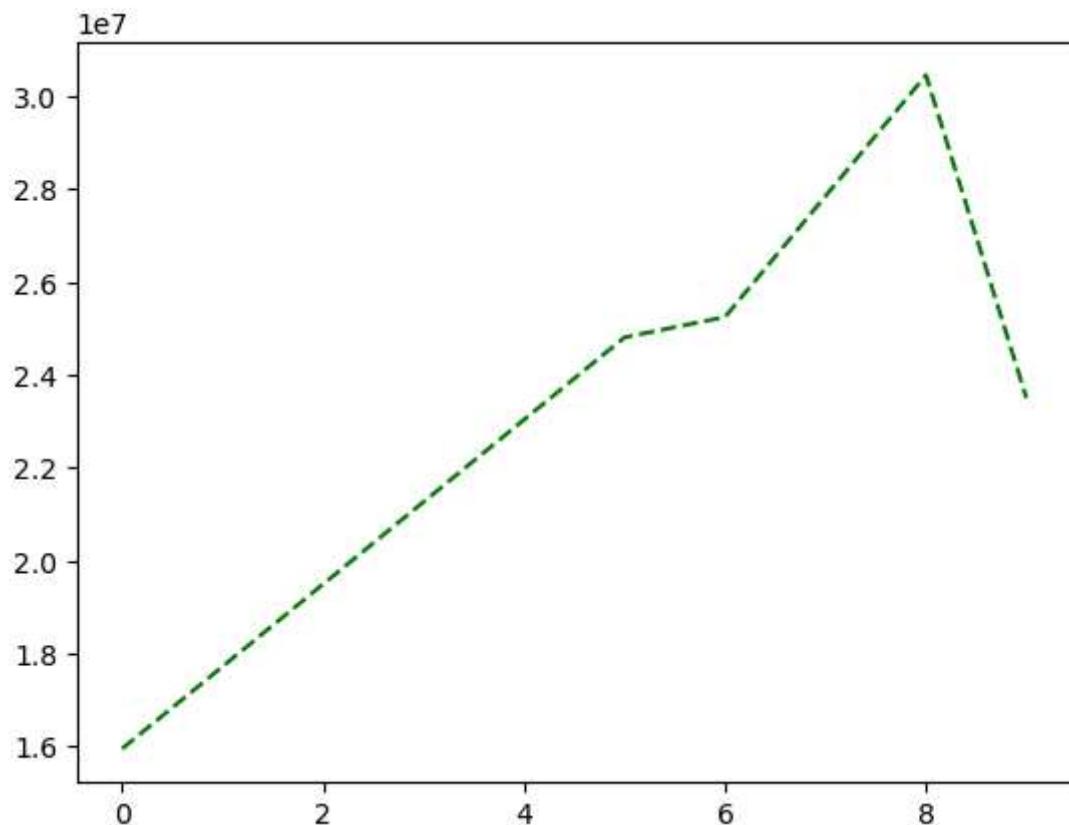
```
In [18]: plt.plot(Salary[0], ls='-.')
```

```
Out[18]: [
```



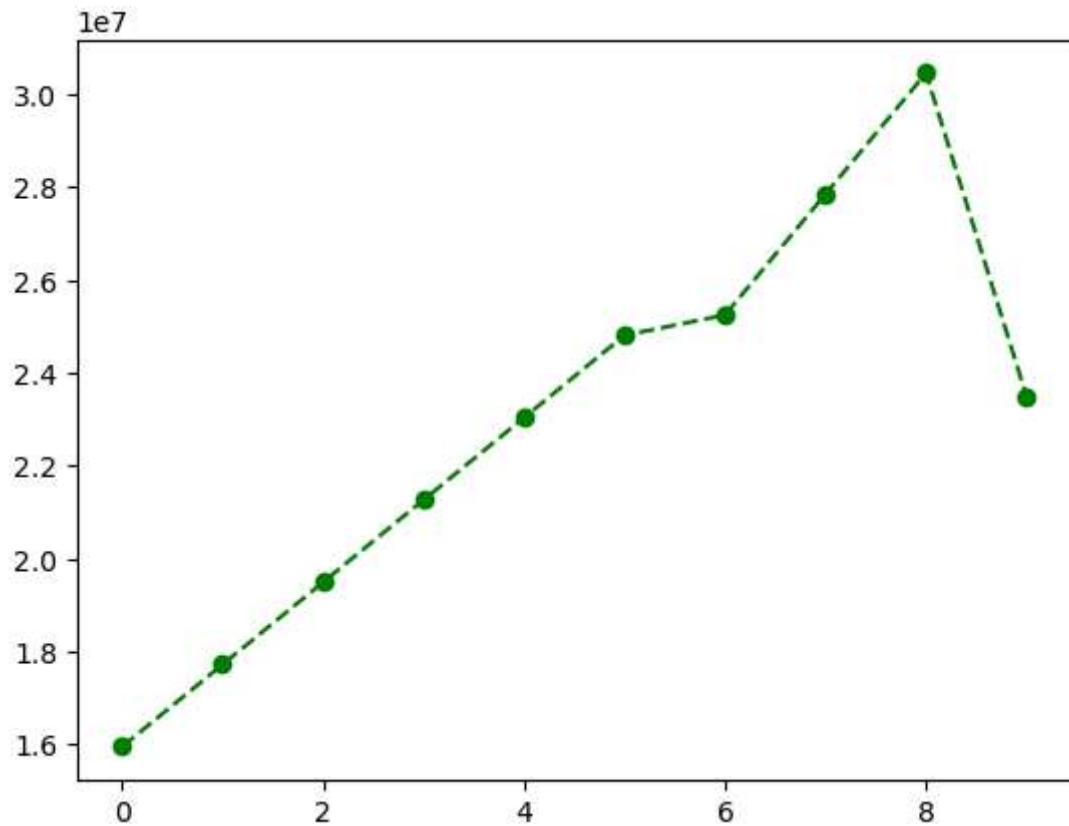
```
In [19]: plt.plot(Salary[0], ls='--', color='green')
```

```
Out[19]: [<matplotlib.lines.Line2D at 0x19703fb1370>]
```



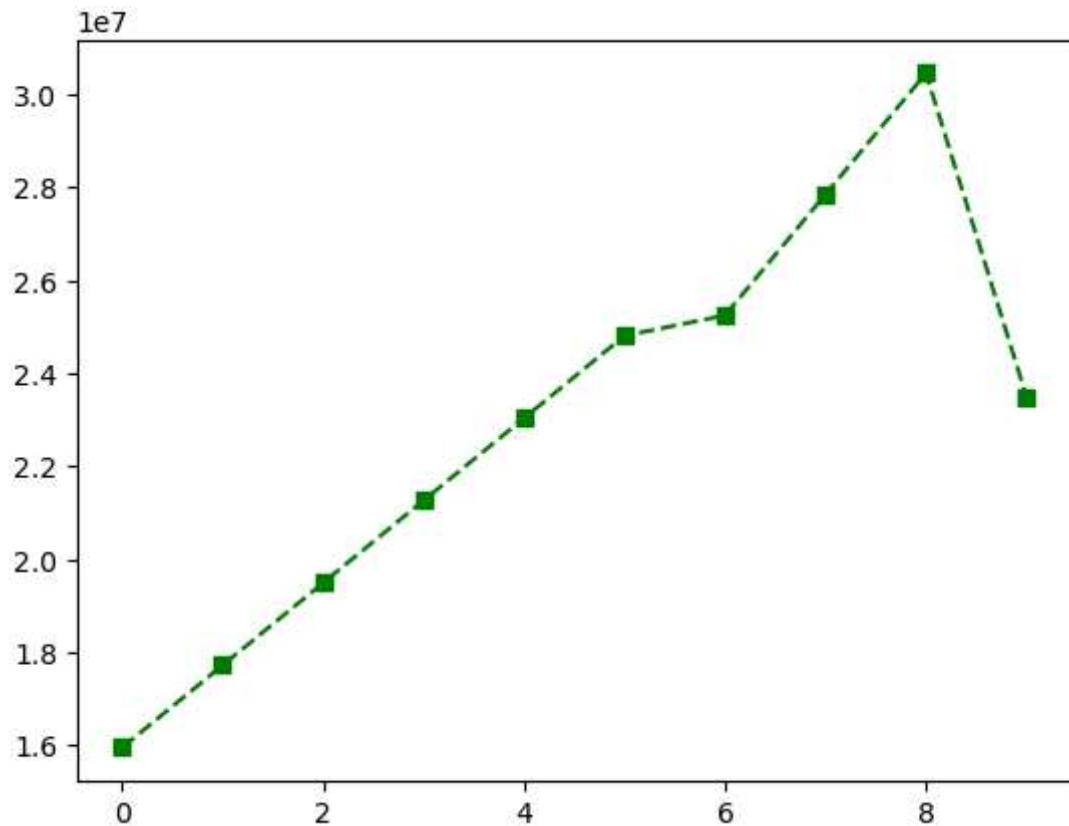
```
In [20]: plt.plot(Salary[0], ls='--', color='green', marker='o')
```

```
Out[20]: [<matplotlib.lines.Line2D at 0x19704016b70>]
```



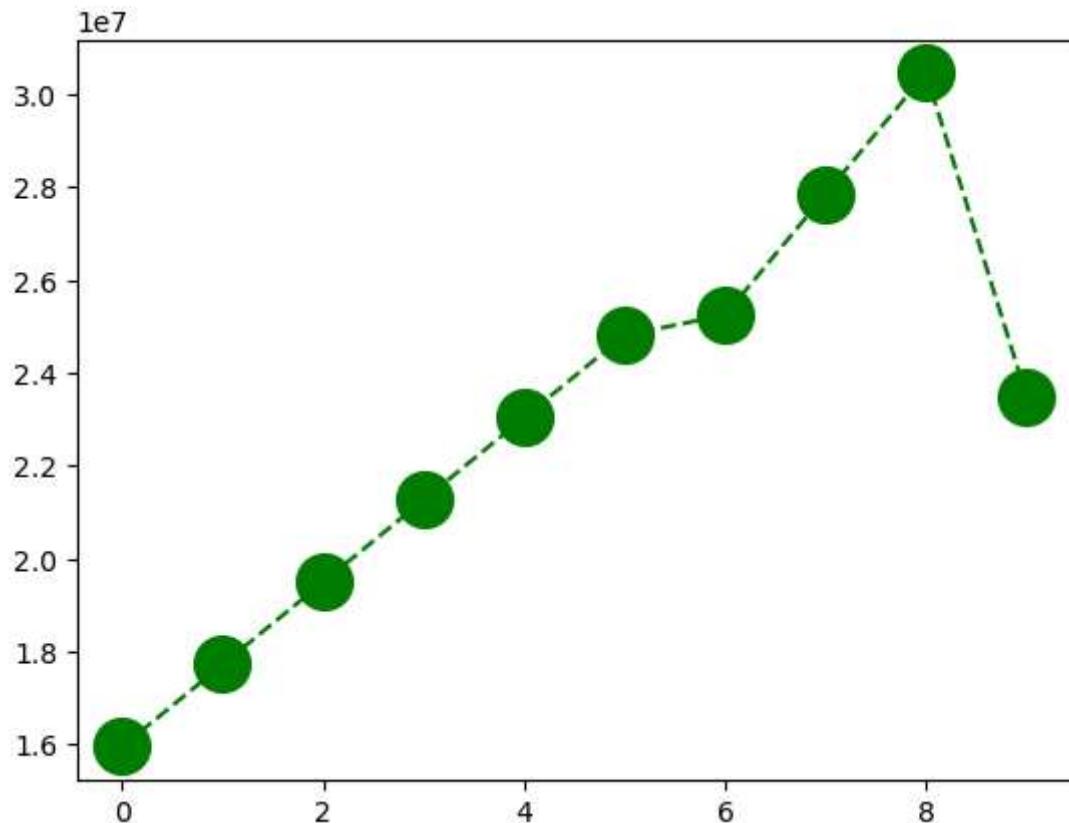
```
In [21]: plt.plot(Salary[0], ls='--', color='green', marker='s')
```

```
Out[21]: [<matplotlib.lines.Line2D at 0x197040735c0>]
```



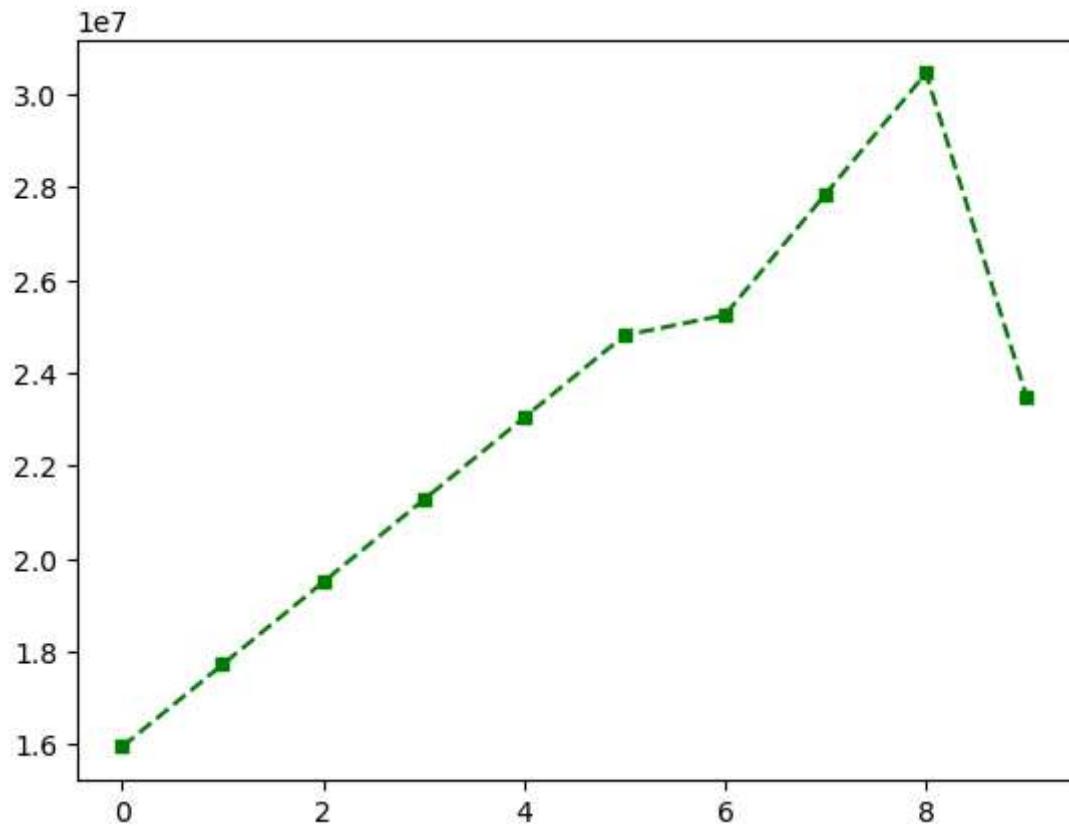
```
In [22]: plt.plot(Salary[0], ls='--', color='green', marker='o', ms=20)
```

```
Out[22]: [<matplotlib.lines.Line2D at 0x197048fcad0>]
```



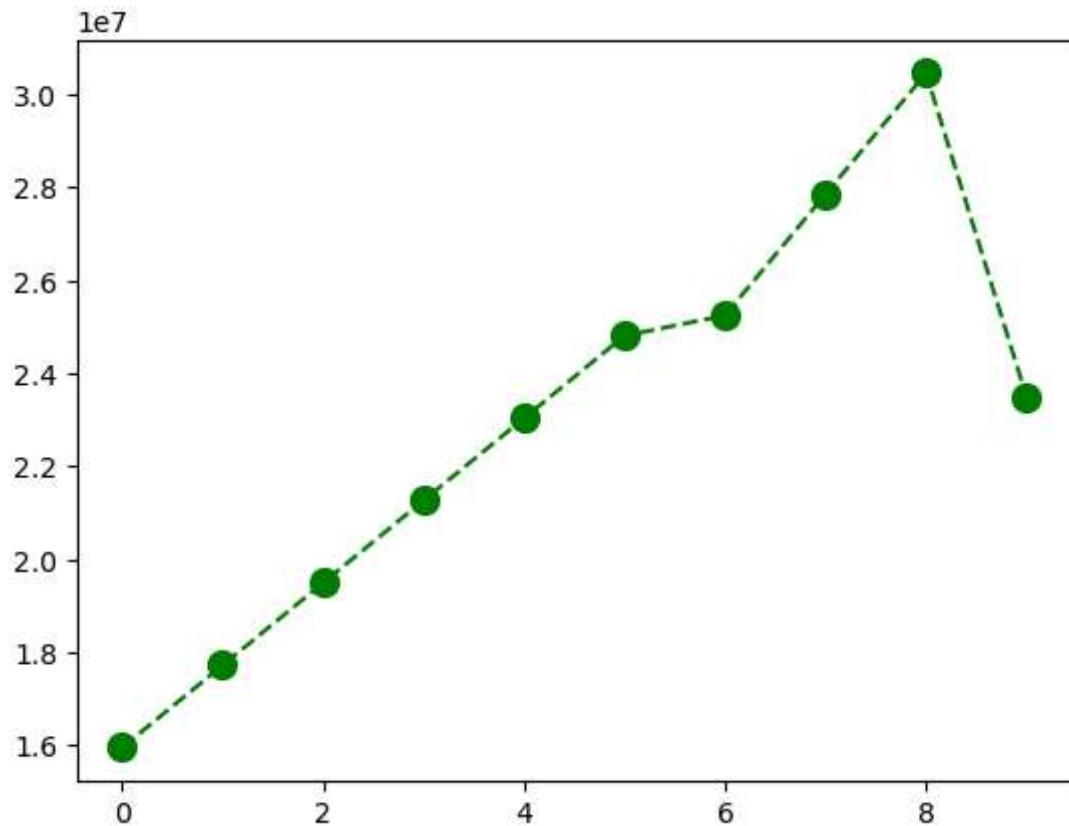
```
In [23]: plt.plot(Salary[0], ls='--', color='green', marker='s', ms=4)
```

```
Out[23]: [<matplotlib.lines.Line2D at 0x197049615b0>]
```



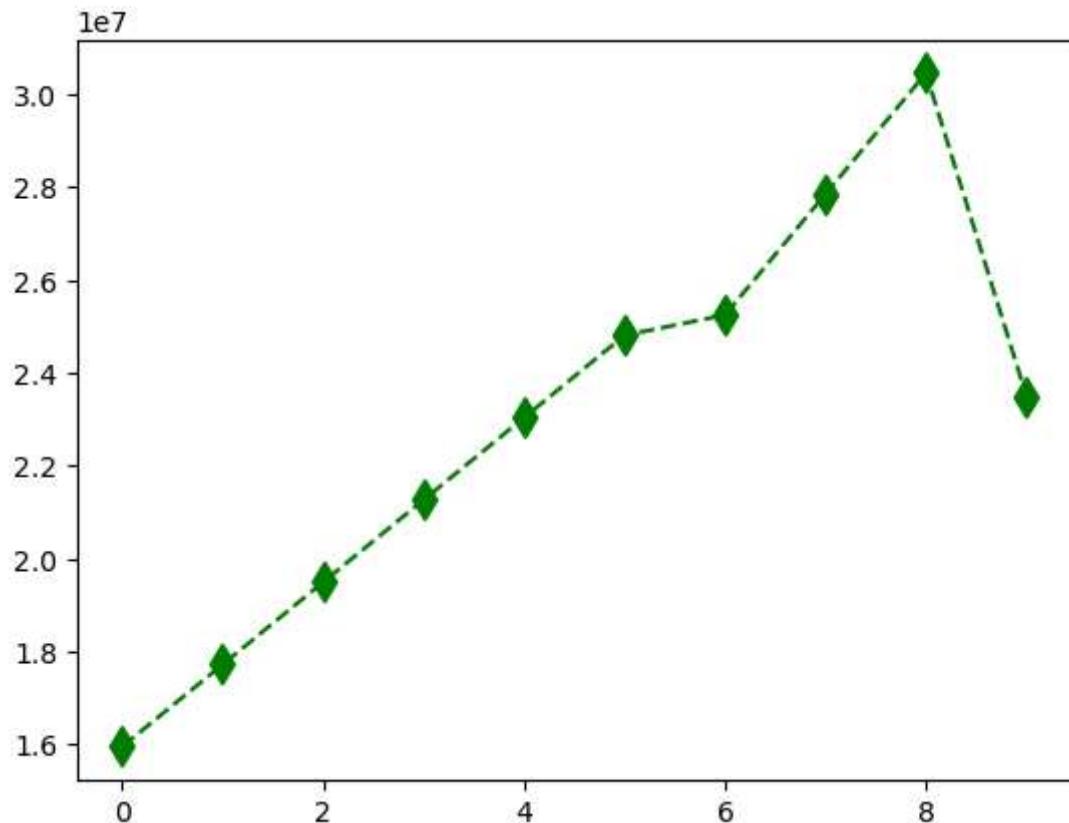
```
In [24]: plt.plot(Salary[0], ls='--', color='green', marker='o', ms=10)
```

```
Out[24]: [<matplotlib.lines.Line2D at 0x19705b065d0>]
```



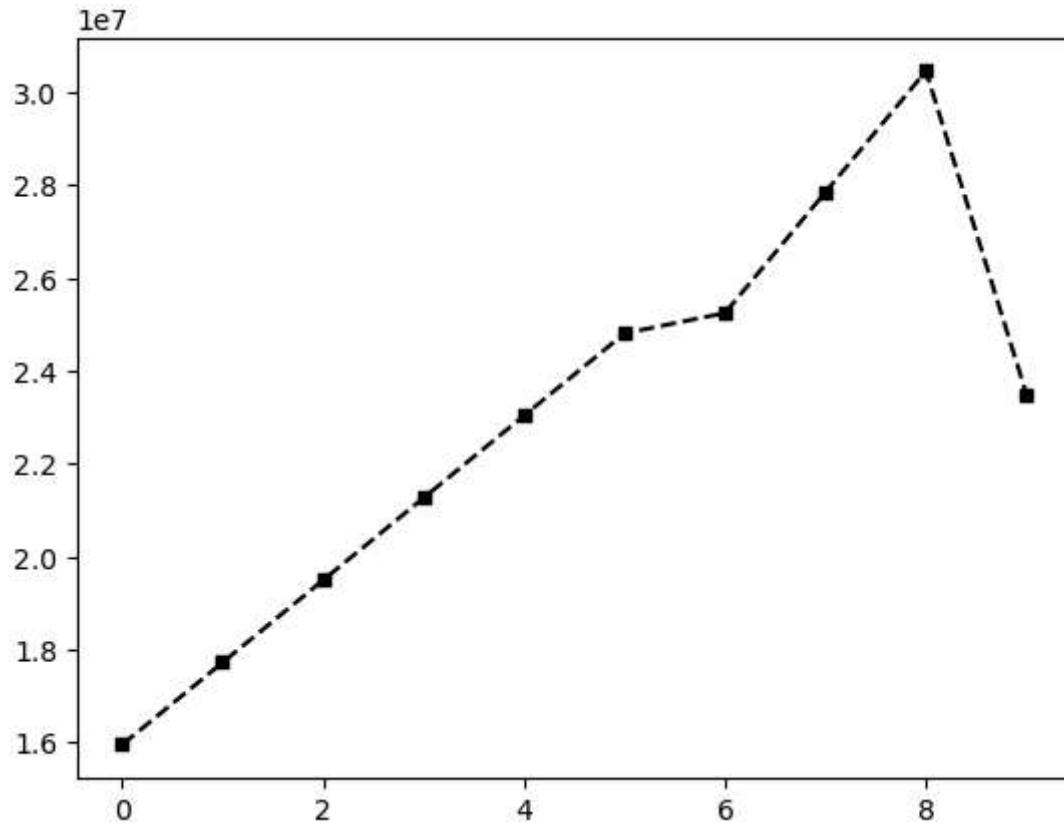
```
In [25]: plt.plot(Salary[0], ls='--', color='green', marker='d', ms=10)
```

```
Out[25]: [<matplotlib.lines.Line2D at 0x19705b72e70>]
```



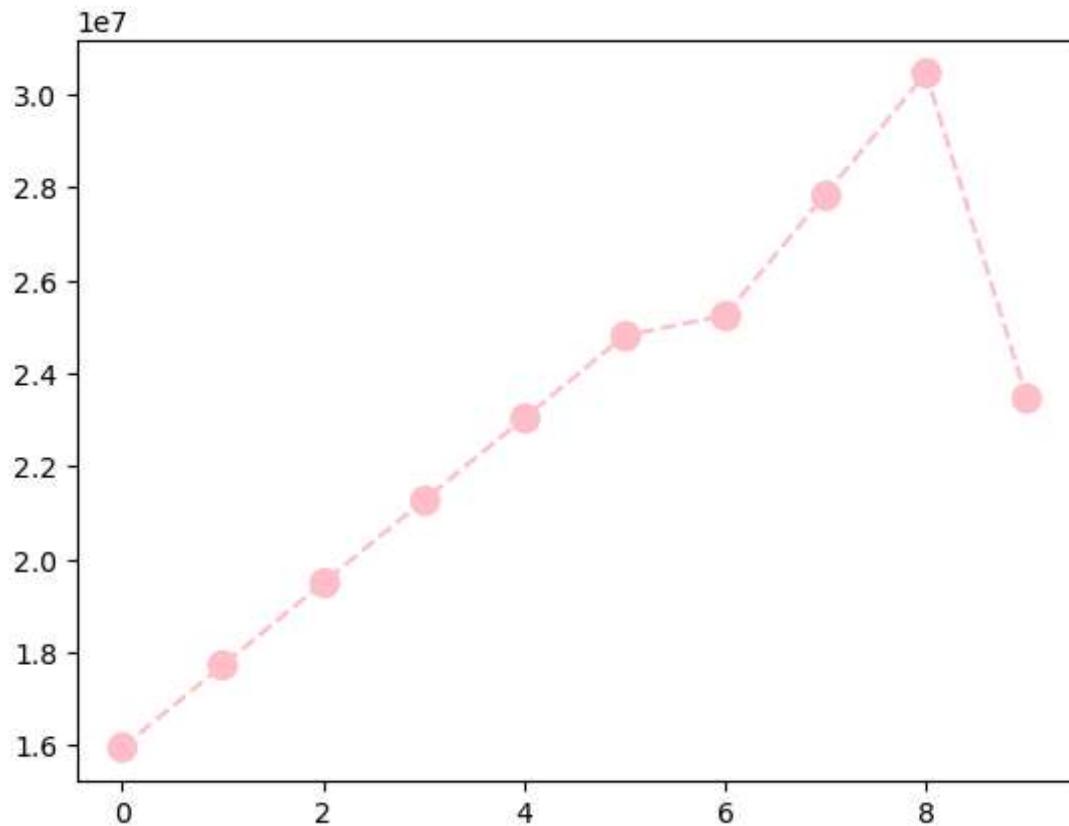
```
In [26]: plt.plot(Salary[0], ls='--', color='black', marker='s', ms=5)
```

```
Out[26]: [<matplotlib.lines.Line2D at 0x19705bd3f50>]
```



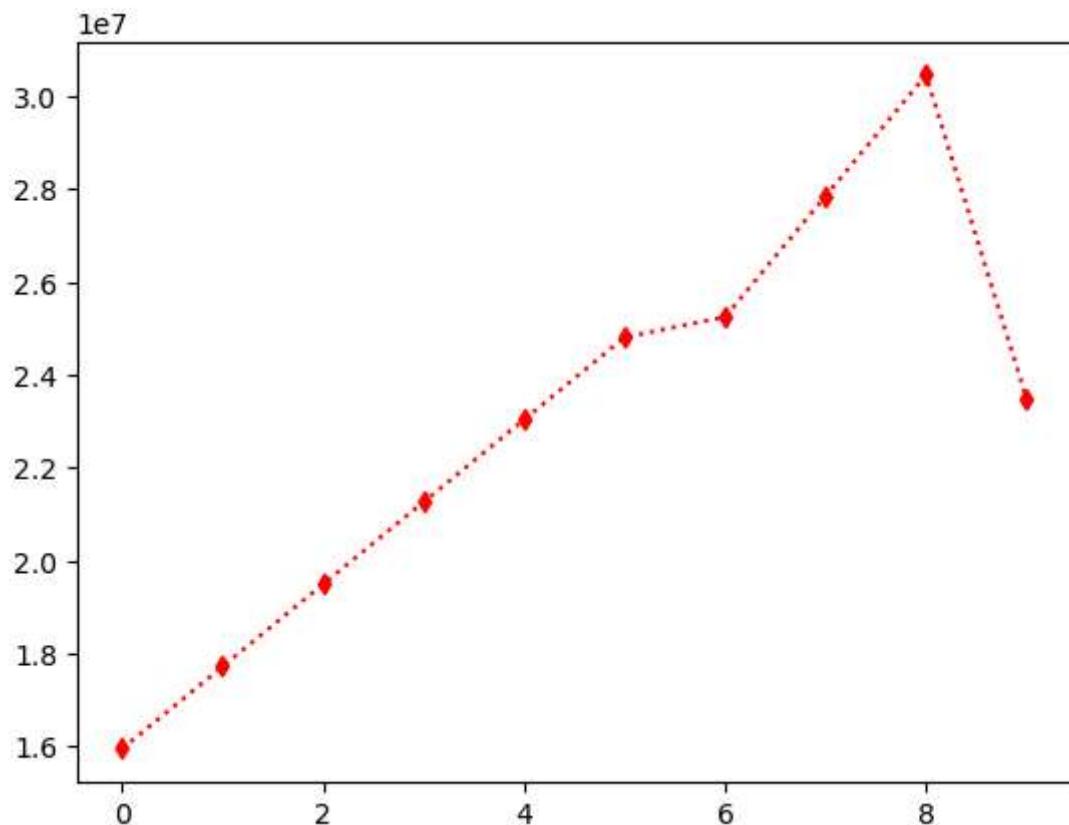
```
In [27]: plt.plot(Salary[0], ls='--', color='pink', marker='o', ms=10)
```

```
Out[27]: [<matplotlib.lines.Line2D at 0x19705c6c6e0>]
```



```
In [28]: plt.plot(Salary[0], ls=':', color='red', marker='d', ms=5)
```

```
Out[28]: [<matplotlib.lines.Line2D at 0x197059a13d0>]
```



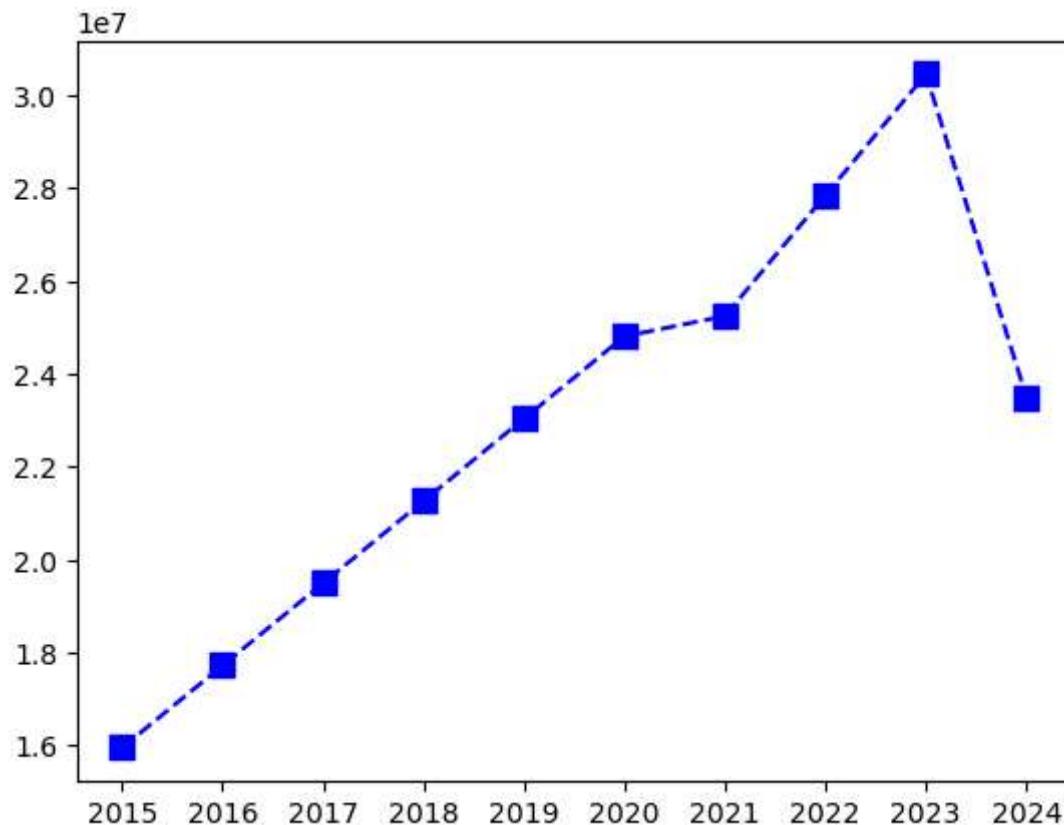
In [30]: Sdict

```
Out[30]: {'2015': 0,
           '2016': 1,
           '2017': 2,
           '2018': 3,
           '2019': 4,
           '2020': 5,
           '2021': 6,
           '2022': 7,
           '2023': 8,
           '2024': 9}
```

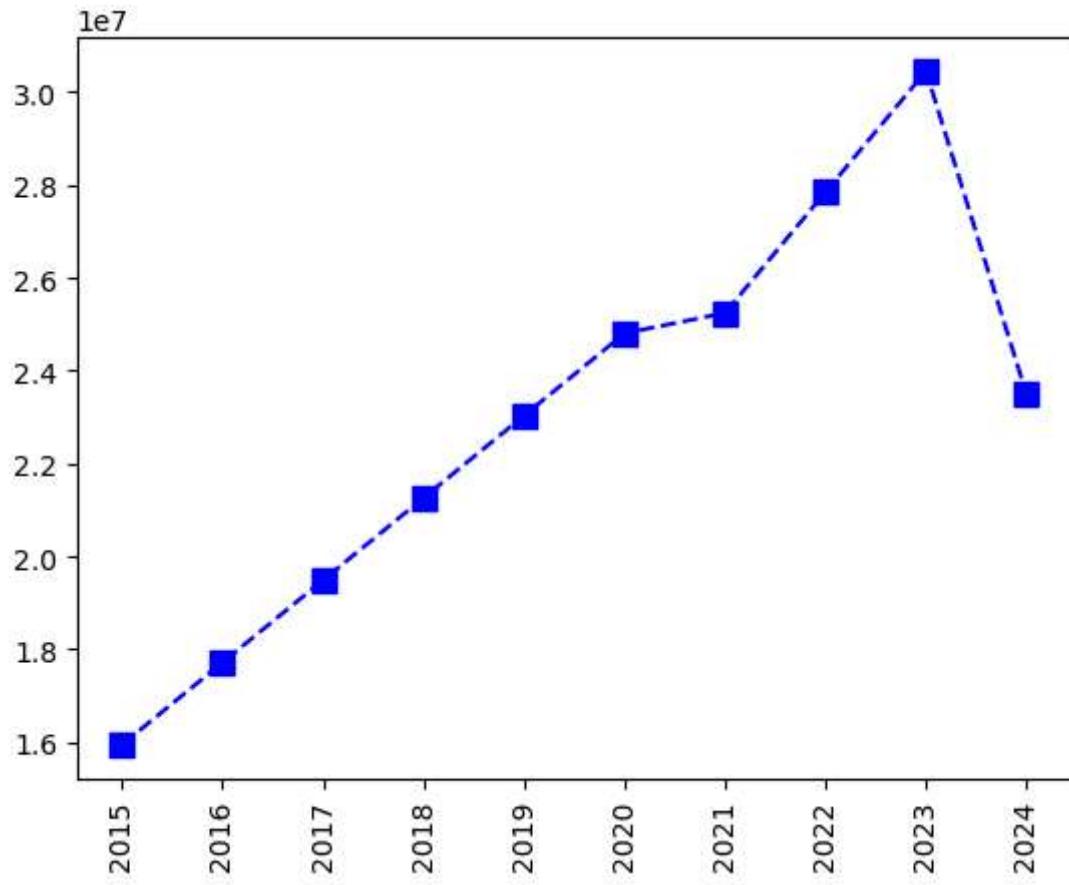
In [31]: Pdict

```
Out[31]: {'Sachin': 0,
           'Rahul': 1,
           'Smith': 2,
           'Sami': 3,
           'Pollard': 4,
           'Morris': 5,
           'Samson': 6,
           'Dhoni': 7,
           'Kohli': 8,
           'Sky': 9}
```

```
In [32]: plt.plot(Salary[0],c='blue',ls='--',marker='s',ms=8)
plt.xticks(list(range(0,10)),Seasons)
plt.show()
```



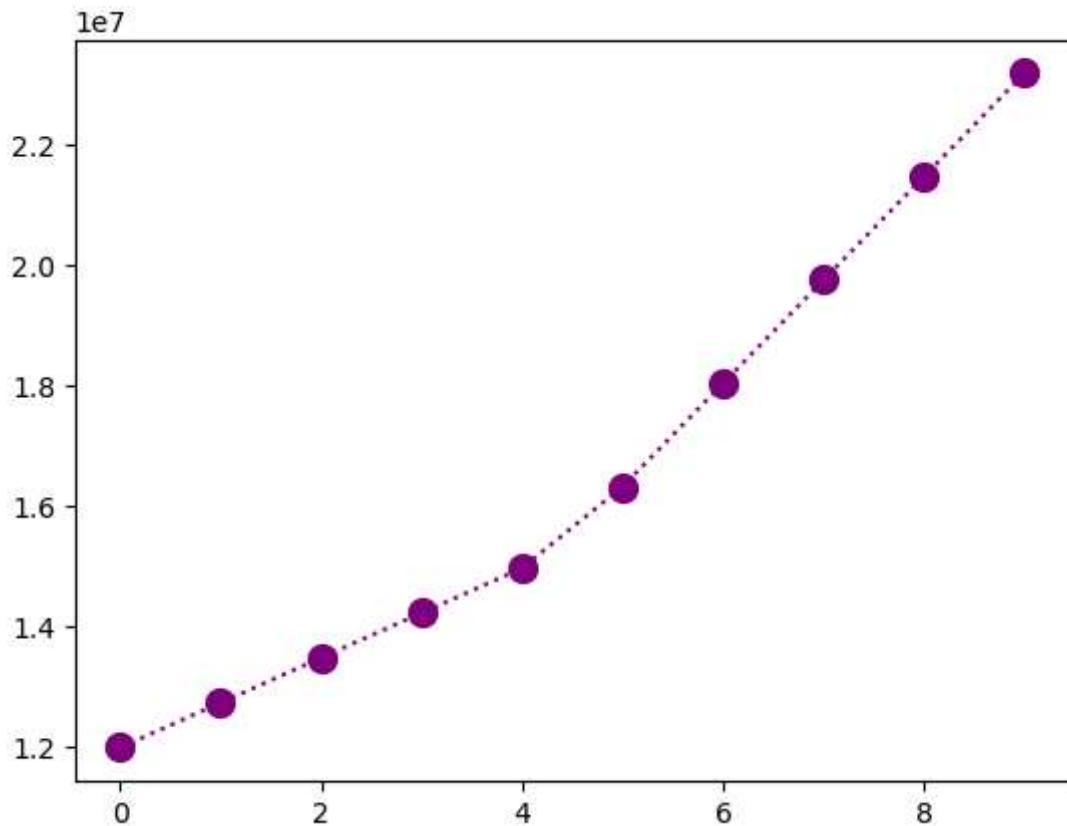
```
In [33]: plt.plot(Salary[0],c='blue',ls='--',marker='s',ms=8)
plt.xticks(list(range(0,10)),Seasons,rotation='vertical')
plt.show()
```



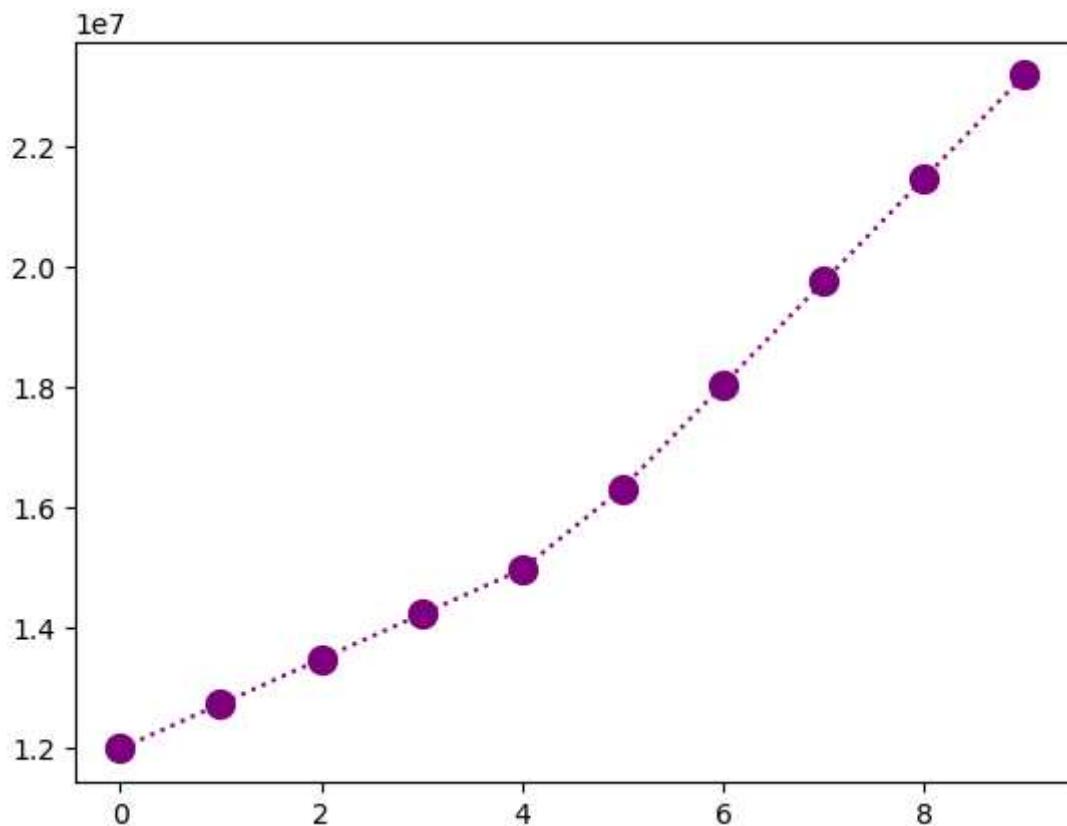
```
In [34]: Salary[1]
```

```
Out[34]: array([12000000, 12744189, 13488377, 14232567, 14976754, 16324500,
18038573, 19752645, 21466718, 23180790])
```

```
In [35]: plt.plot(Salary[1],c='purple',ls=':',marker='o',ms=10)
plt.show()
```

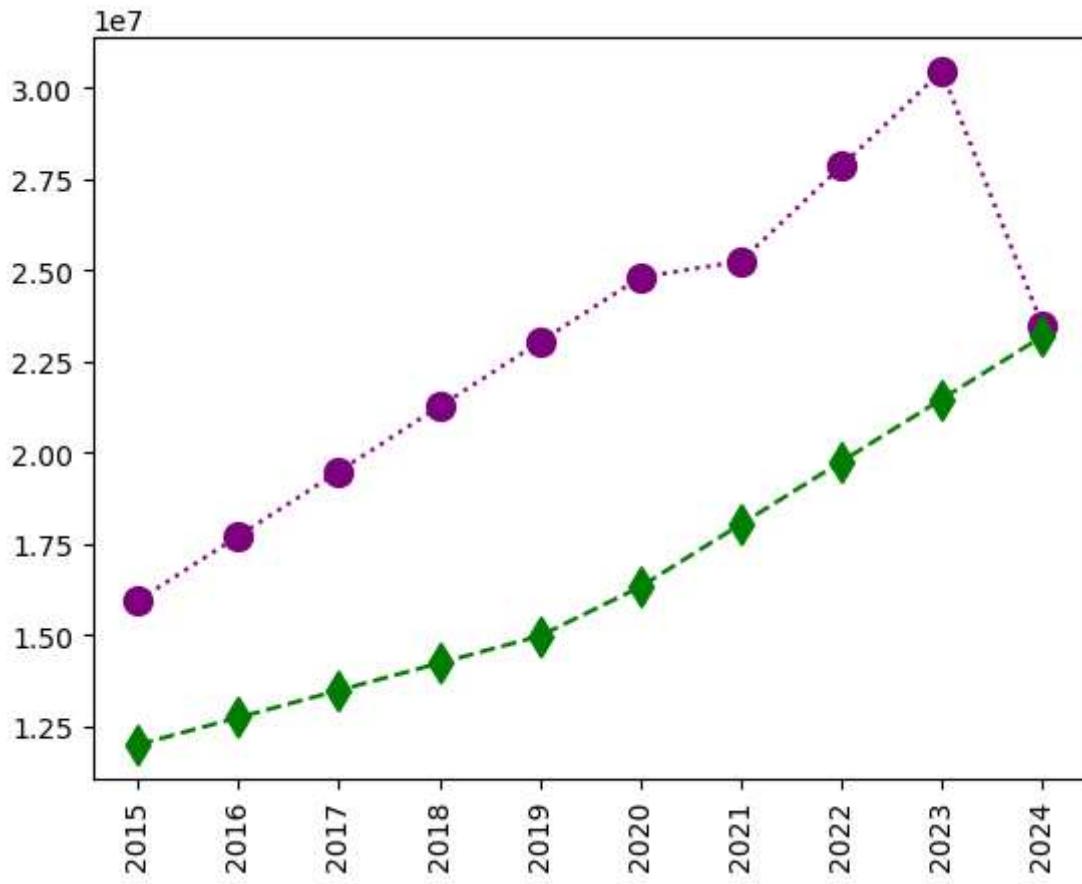


```
In [36]: plt.plot(Salary[1],c='purple',ls=':',marker='o',ms=10, label=Players[1])
plt.show()
```



```
In [41]: plt.plot(Salary[0],c='purple',ls=':',marker='o',ms=10, label=Players[0])
plt.plot(Salary[1],c='green',ls='--',marker='d',ms=10, label=Players[1])

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

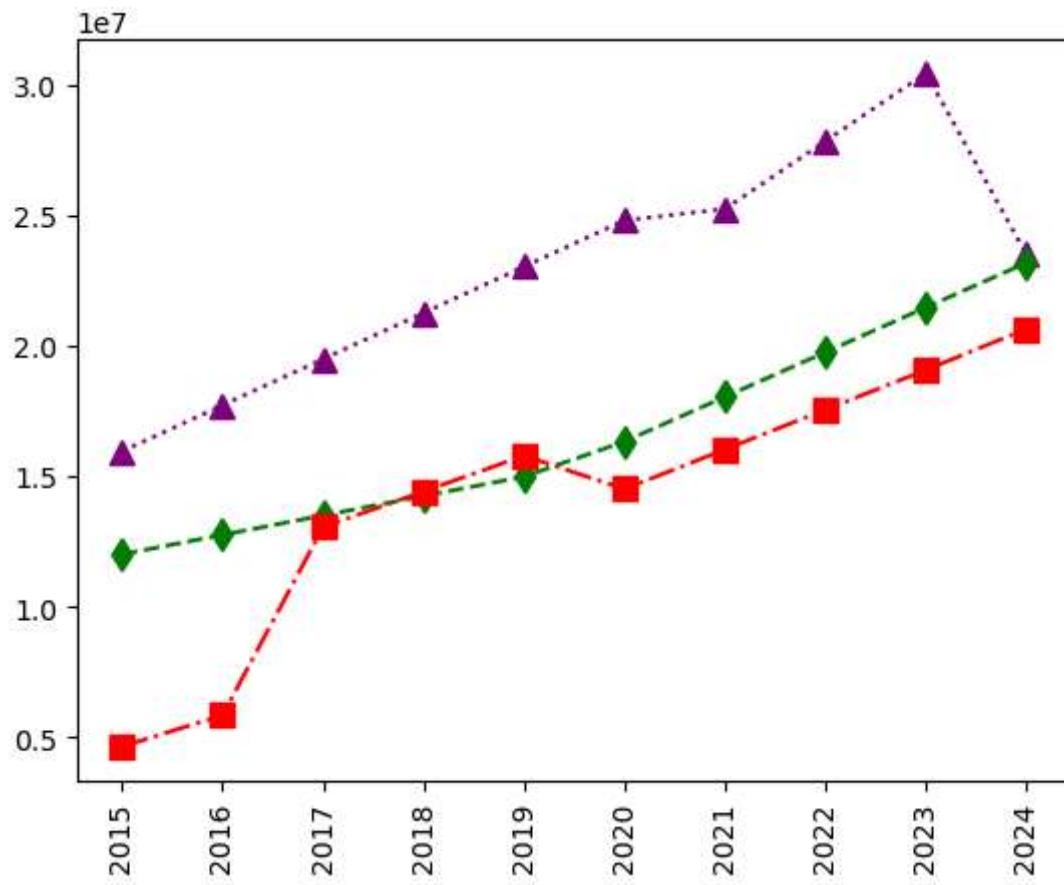


```
In [42]: Games
```

```
Out[42]: 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 [45]: plt.plot(Salary[0],c='purple',ls=':',marker='^',ms=8, label=Players[0])
plt.plot(Salary[1],c='green',ls='--',marker='d',ms=8, label=Players[1])
plt.plot(Salary[2],c='red',ls='-.',marker='s',ms=8, label=Players[2])

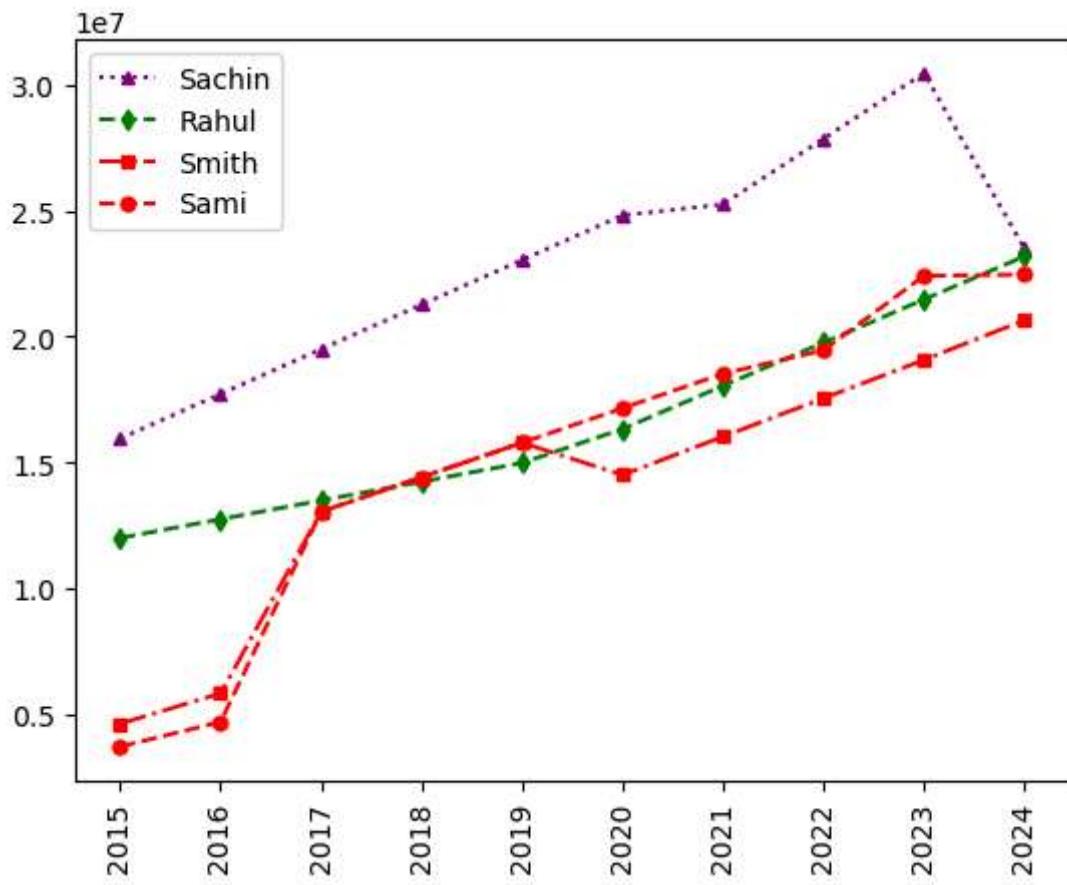
plt.xticks(list(range(0,10)),Seasons,rotation='vertical')
plt.show()
```



```
In [47]: #how to add Legend to visualization
```

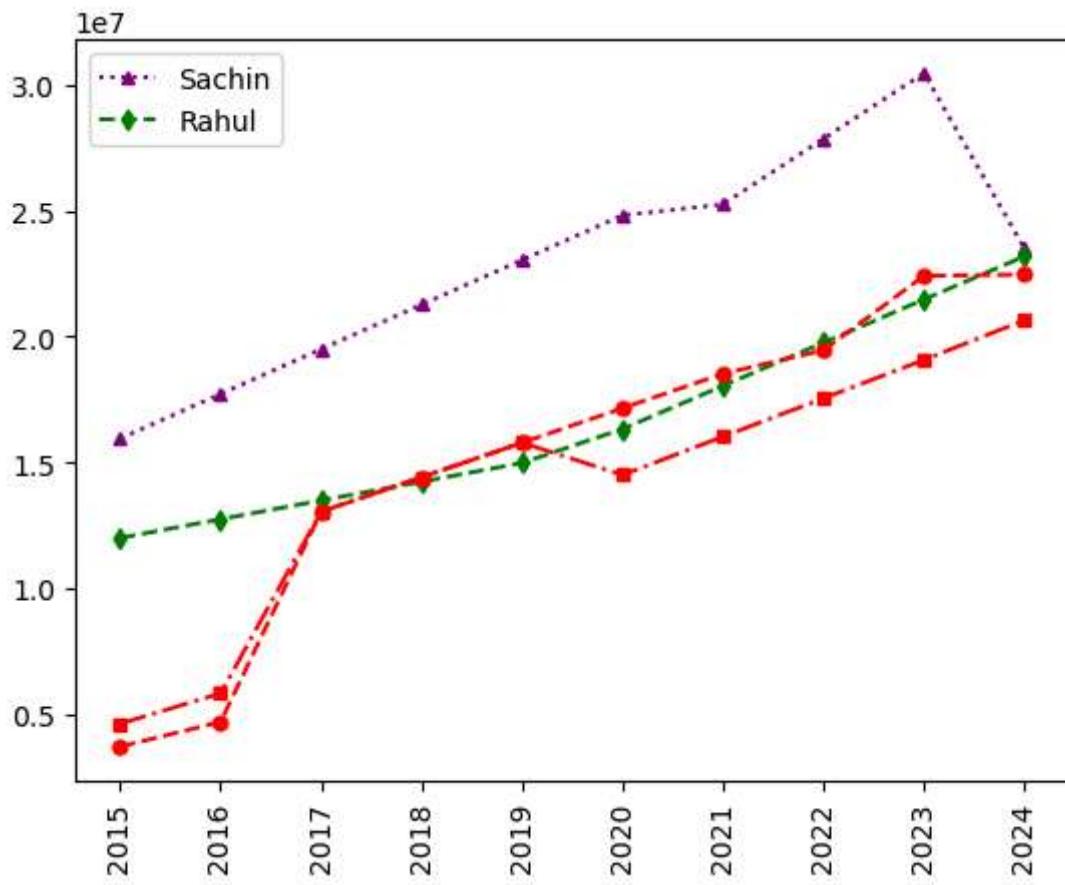
```
plt.plot(Salary[0],c='purple',ls=':',marker='^',ms=5, label=Players[0])
plt.plot(Salary[1],c='green',ls='--',marker='d',ms=5, label=Players[1])
plt.plot(Salary[2],c='red',ls='-.',marker='s',ms=5, label=Players[2])
plt.plot(Salary[3],c='red',ls='--',marker='o',ms=5, label=Players[3])

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



```
In [48]: plt.plot(Salary[0],c='purple',ls=':',marker='^',ms=5, label=Players[0])
plt.plot(Salary[1],c='green',ls='--',marker='d',ms=5, label=Players[1])
plt.plot(Salary[2],c='red',ls='-.',marker='s',ms=5)
plt.plot(Salary[3],c='red',ls='--',marker='o',ms=5)

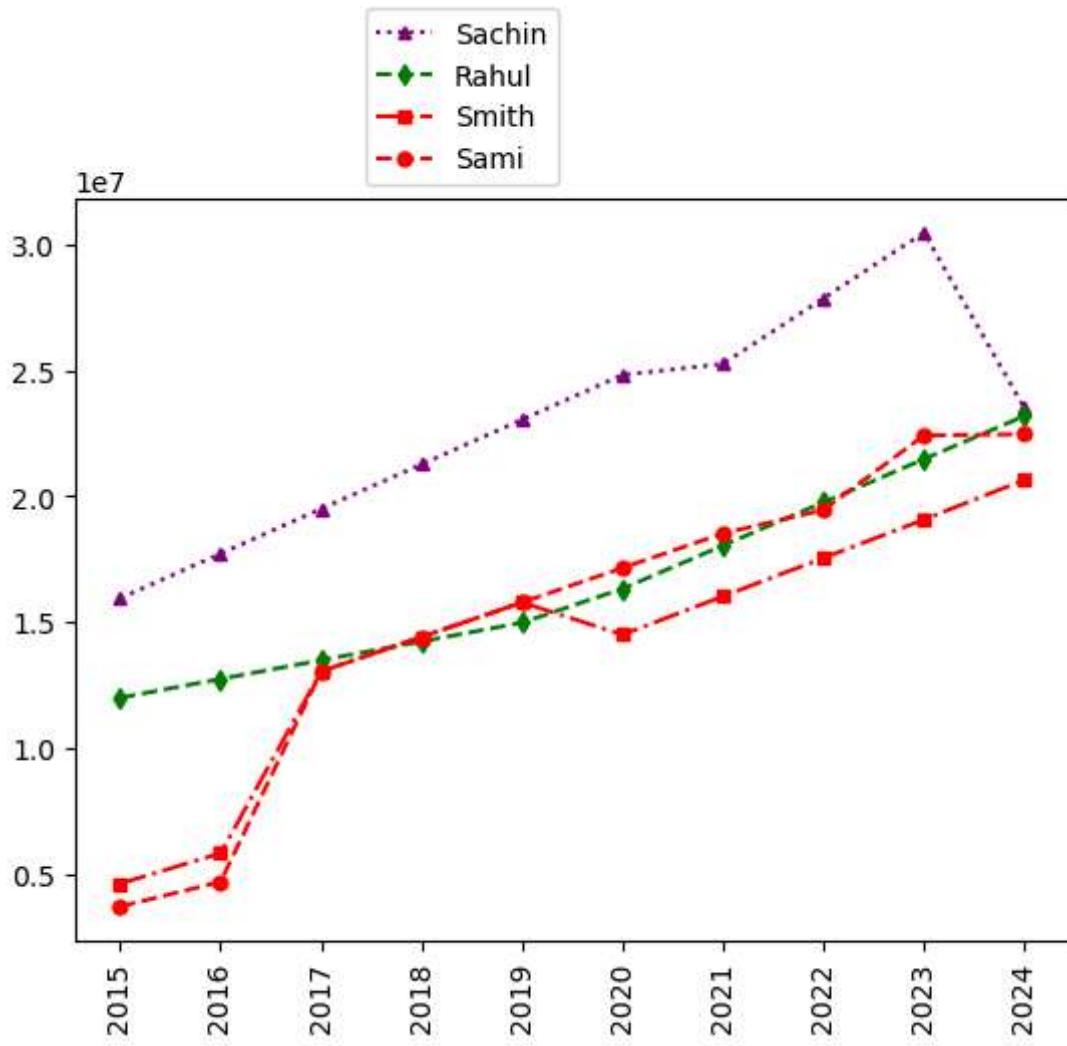
plt.legend()
plt.xticks(list(range(0,10)),Seasons,rotation='vertical')
plt.show()
```



```
In [49]: plt.plot(Salary[0],c='purple',ls=':',marker='^',ms=5, label=Players[0])
plt.plot(Salary[1],c='green',ls='--',marker='d',ms=5, label=Players[1])
plt.plot(Salary[2],c='red',ls='-.',marker='s',ms=5, label=Players[2])
plt.plot(Salary[3],c='red',ls='--',marker='o',ms=5, label=Players[3])

plt.legend(loc='lower right',bbox_to_anchor=(0.5,1))
plt.xticks(list(range(0,10)),Seasons,rotation='vertical')

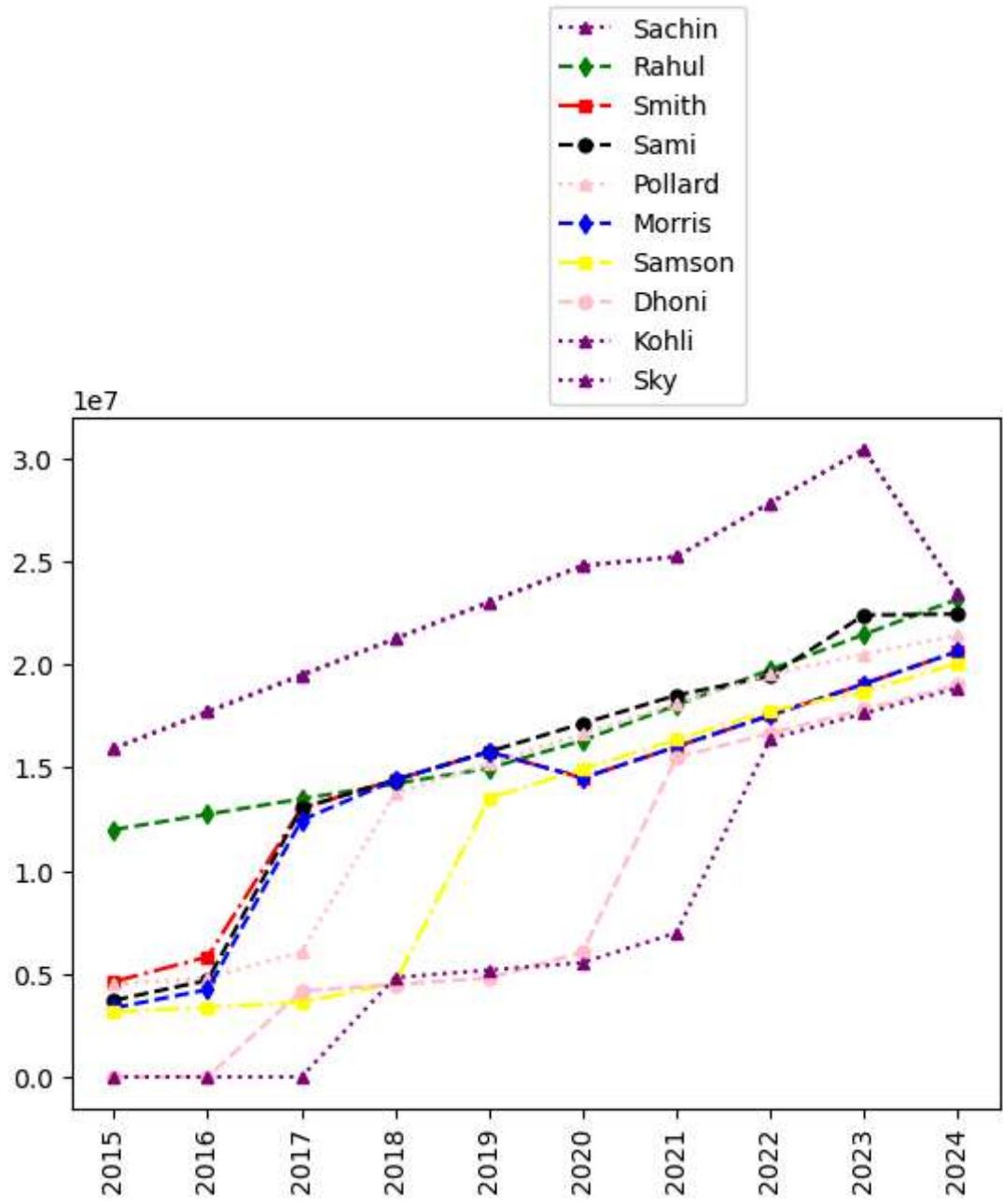
plt.show()
```



```
In [52]: plt.plot(Salary[0],c='purple',ls=':',marker='^',ms=5, label=Players[0])
plt.plot(Salary[1],c='green',ls='--',marker='d',ms=5, label=Players[1])
plt.plot(Salary[2],c='red',ls='-.',marker='s',ms=5, label=Players[2])
plt.plot(Salary[3],c='black',ls='--',marker='o',ms=5, label=Players[3])
plt.plot(Salary[4],c='pink',ls=':',marker='^',ms=5, label=Players[4])
plt.plot(Salary[5],c='blue',ls='--',marker='d',ms=5, label=Players[5])
plt.plot(Salary[6],c='yellow',ls='-.',marker='s',ms=5, label=Players[6])
plt.plot(Salary[7],c='pink',ls='--',marker='o',ms=5, label=Players[7])
plt.plot(Salary[8],c='purple',ls=':',marker='^',ms=5, label=Players[8])
plt.plot(Salary[9],c='purple',ls=':',marker='^',ms=5, label=Players[9])

plt.legend(loc='lower left',bbox_to_anchor=(0.5,1))
plt.xticks(list(range(0,10)),Seasons,rotation='vertical')

plt.show()
```



In []:

In []: