In [1]:
```python
#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

#Players
Players = ["Sachin","Rahul","Smith","Sami","Pollard","Morris","Samson","Dhoni","
Pdict = {"Sachin":0,"Rahul":1,"Smith":2,"Sami":3,"Pollard":4,"Morris":5,"Samson"

#Salaries
Sachin_Salary = [15946875,17718750,19490625,21262500,23034375,24806250,25244493,
Rahul_Salary = [12000000,12744189,13488377,14232567,14976754,16324500,18038573,1
Smith_Salary = [4621800,5828090,13041250,14410581,15779912,14500000,16022500,175
Sami_Salary = [3713640,4694041,13041250,14410581,15779912,17149243,18518574,1945
Pollard_Salary = [4493160,4806720,6061274,13758000,15202590,16647180,18091770,19
Morris_Salary = [3348000,4235220,12455000,14410581,15779912,14500000,16022500,17
Samson_Salary = [3144240,3380160,3615960,4574189,13520500,14940153,16359805,1777
Dhoni_Salary = [0,0,4171200,4484040,4796880,6053663,15506632,16669630,17832627,1
Kohli_Salary = [0,0,0,4822800,5184480,5546160,6993708,16402500,17632688,18862875
Sky_Salary = [3031920,3841443,13041250,14410581,15779912,14200000,15691000,17182
#Matrix
Salary = np.array([Sachin_Salary, Rahul_Salary, Smith_Salary, Sami_Salary, Polla

#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, Samso

#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, Morr
```

In [2]:
```python
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   # it store in matrix way

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]: Seasons

Out[5]: ['2015',
          '2016',
          '2017',
          '2018',
          '2019',
          '2020',
          '2021',
          '2022',
          '2023',
          '2024']

```
In [6]: Games[1]     # here it will print the first col all

Out[6]: array([82, 57, 82, 79, 76, 72, 60, 72, 79, 80])
```

```
In [7]: Games[0,6] # here the o - col sixth number

Out[7]: 58
```

```
In [8]: # combinig the NUMPY and MATPLOTLIB = Visual  Matplotlib-Framework to handle vis
        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    # here the salary print for one Game

         C:\Users\P HARI PRASAD\AppData\Local\Temp\ipykernel_6164\228956897.py:1: RuntimeW
         arning: divide by zero encountered in divide
           Salary/Games   # here the salary print for one Game
```

```
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)  # here the salary can give without decimal points
```

C:\Users\P HARI PRASAD\AppData\Local\Temp\ipykernel_6164\3235482490.py:1: Runtime
Warning: divide by zero encountered in floor_divide
  np.round(Salary//Games) # here the salary can give without decimal points

```
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]])
```

```python
In [12]:  import warnings          # we are using above code to ignore unknown error cause
          warnings.filterwarnings('ignore')
```

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

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

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

```python
In [15]:  plt.plot(Salary[0]) # here the plot()- its means it print the graph (Salary[0])
```

```
Out[15]:  [<matplotlib.lines.Line2D at 0x1617841f830>]
```
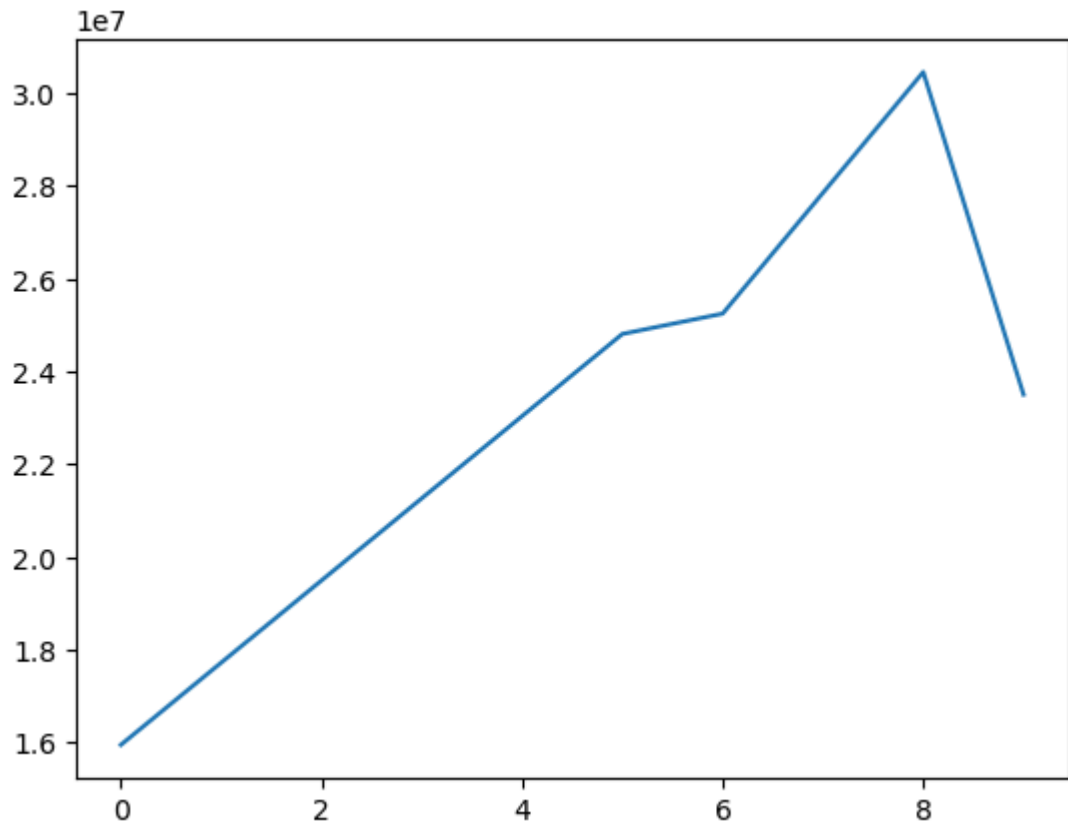
```
In [16]:  plt.plot(Salary[0])       # this is second method to show the graph
          plt.show()
```
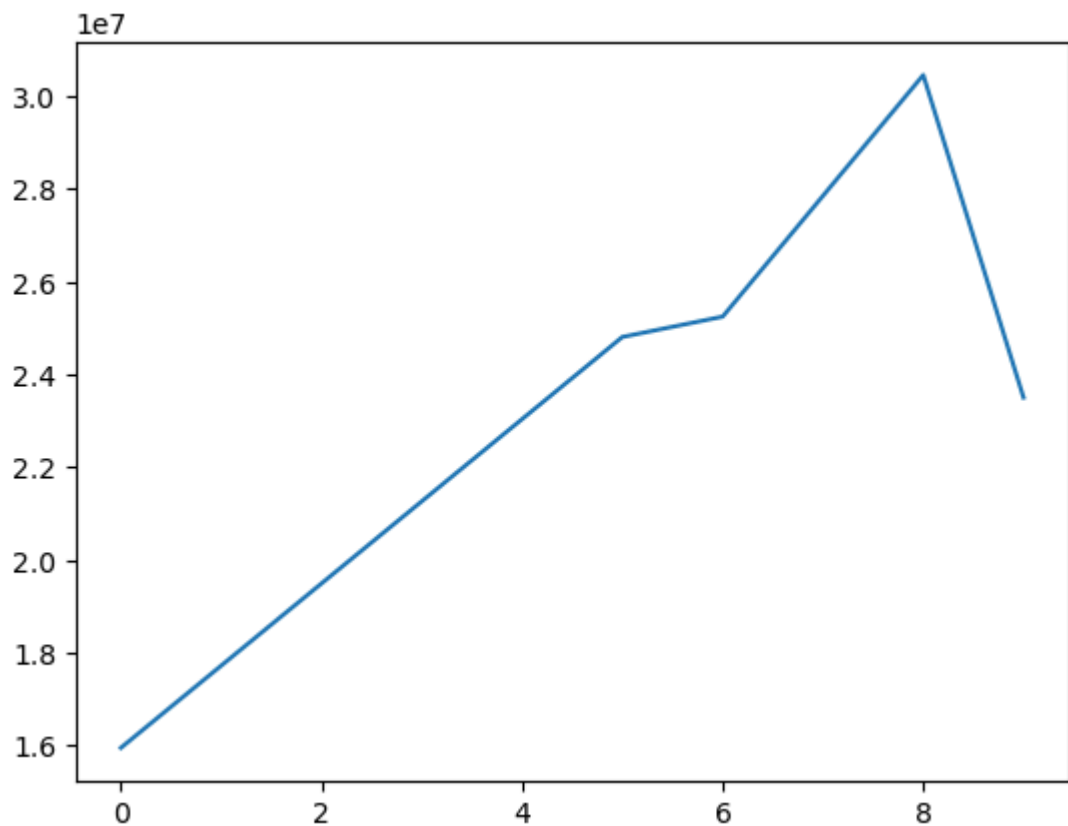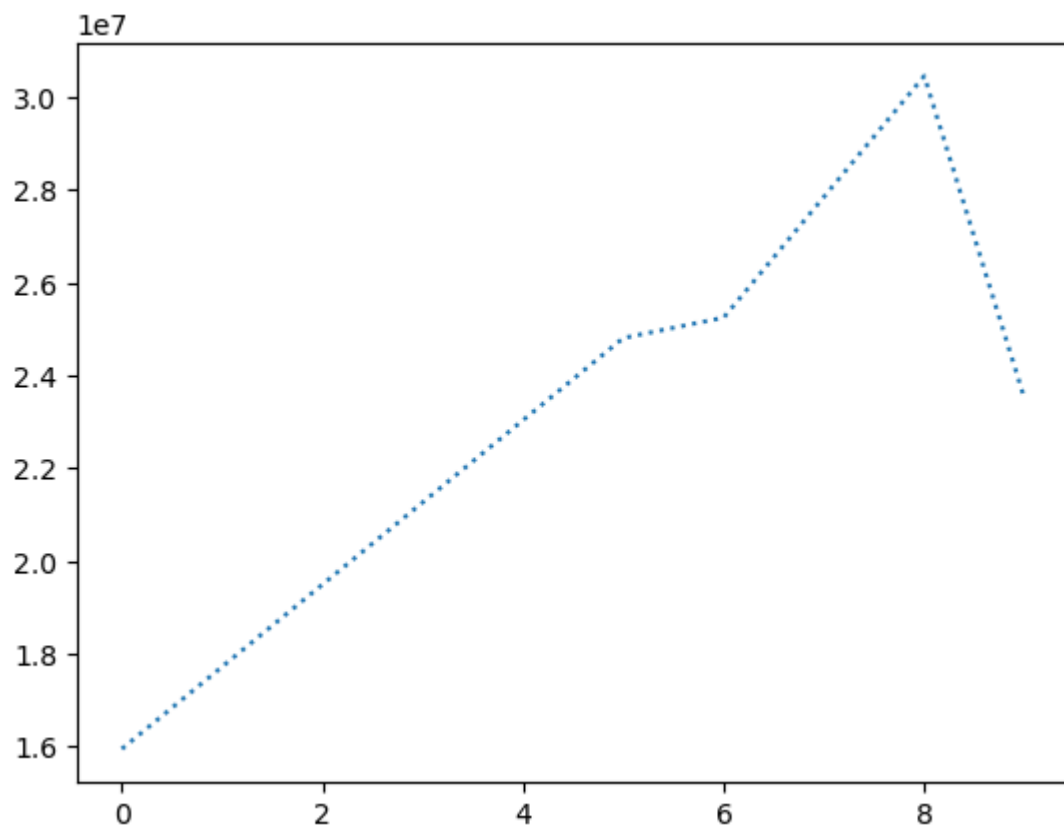


```
In [17]:  plt.plot(Salary[0], ls='--')  # the ls-(line style) it print line in graph --
```

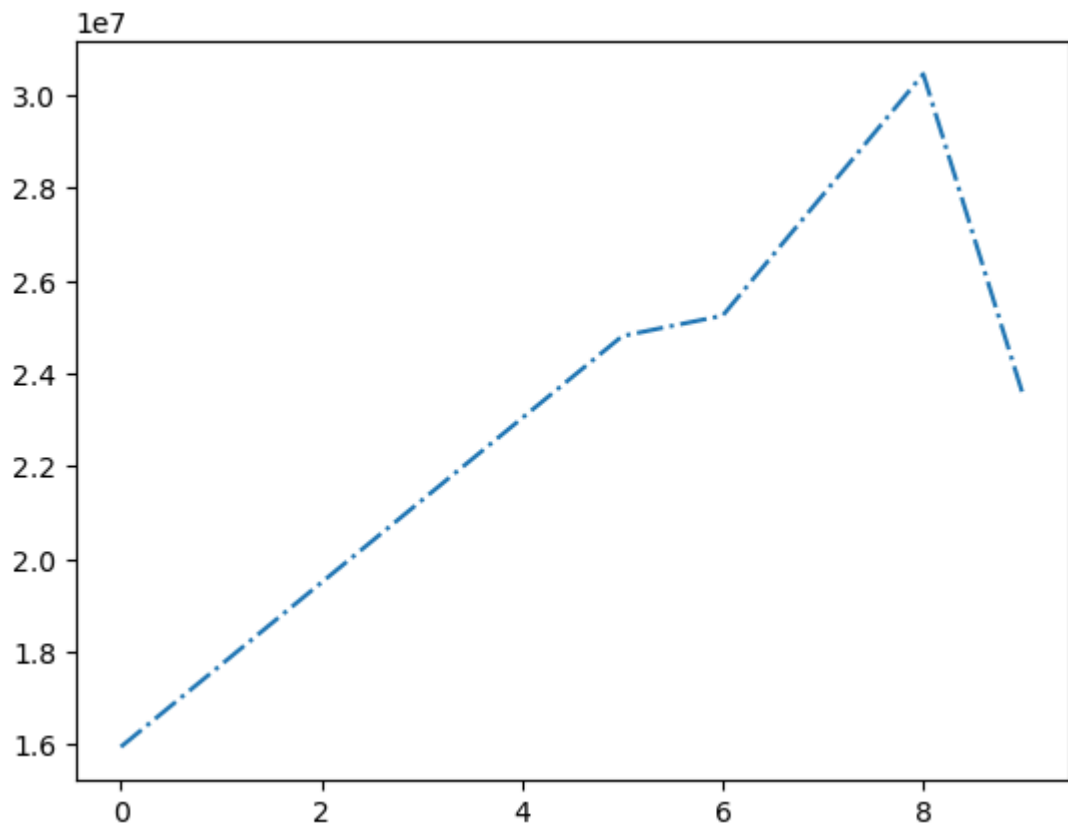Out[17]: [<matplotlib.lines.Line2D at 0x161785622a0>]
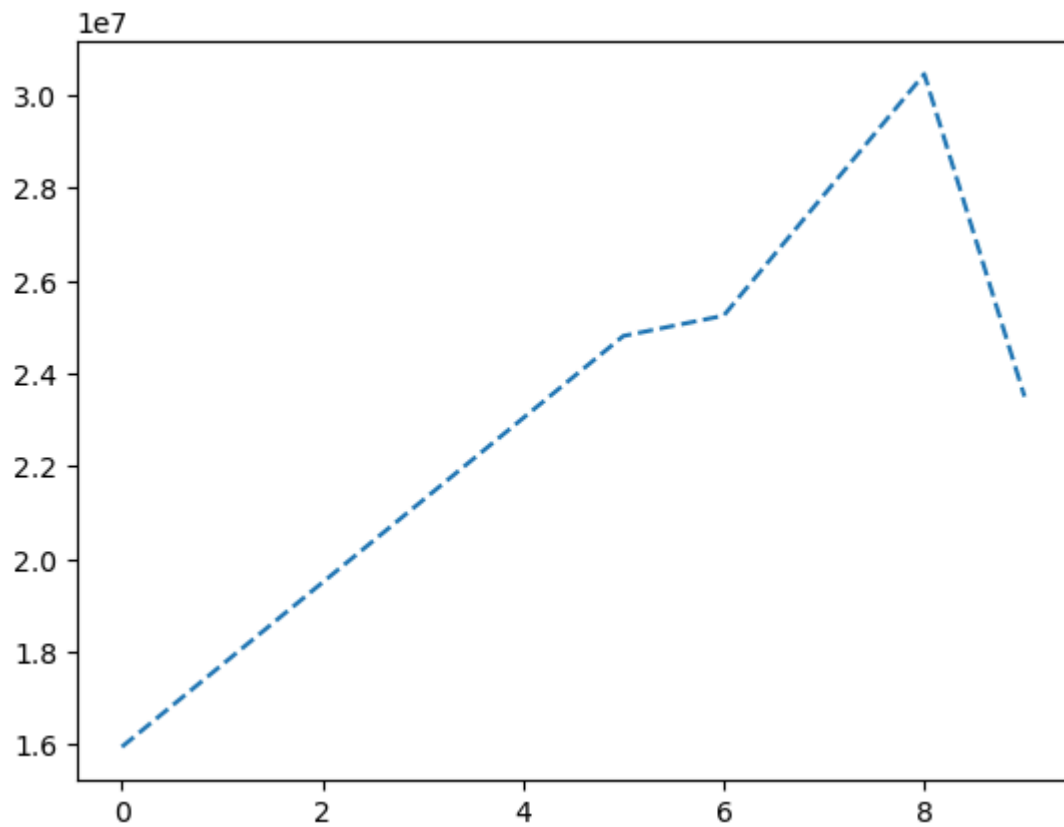
```
In [18]: plt.plot(Salary[0], ls=':')
```
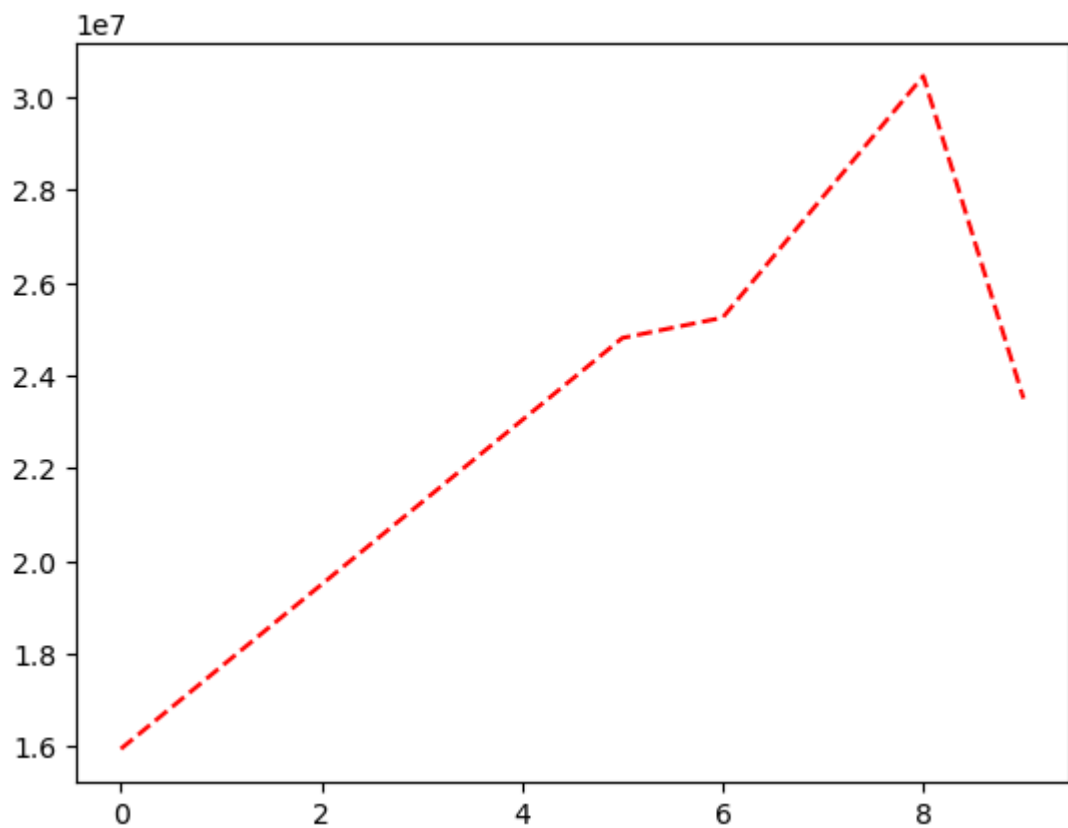
Out[18]: [<matplotlib.lines.Line2D at 0x1617841f920>]
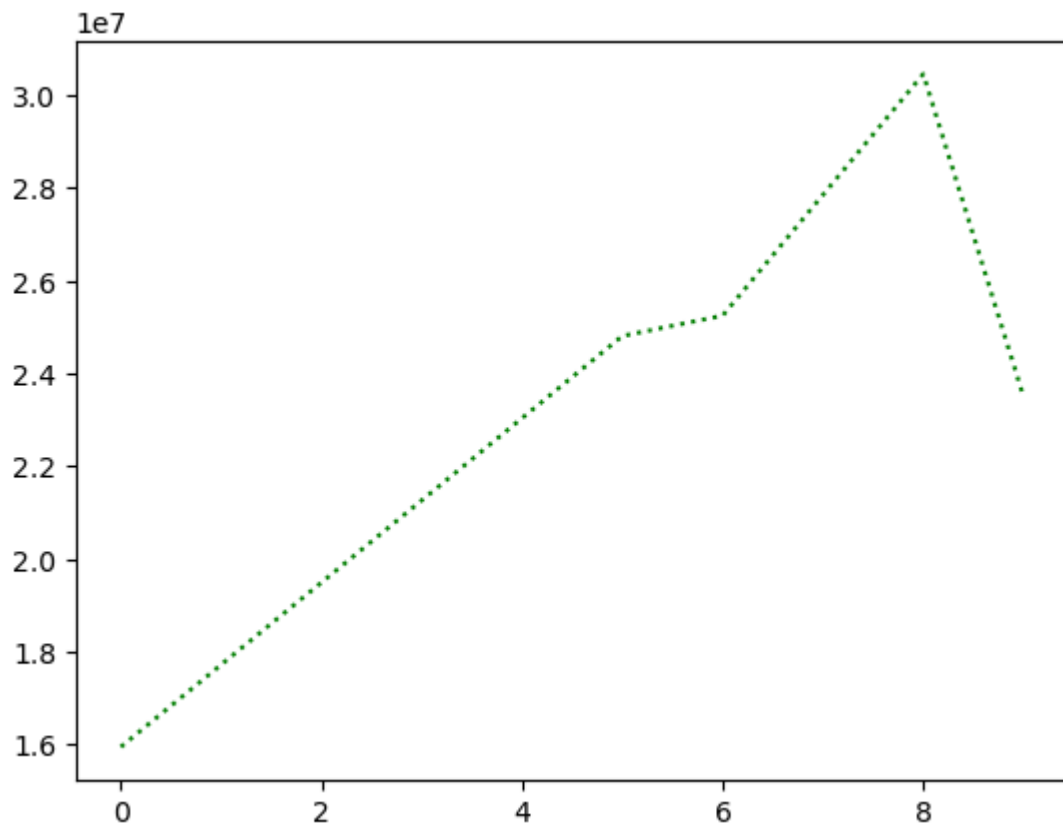


```
In [19]: plt.plot(Salary[0], ls='-.')
```

Out[19]: [<matplotlib.lines.Line2D at 0x161785d3500>]

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

Out[20]: [<matplotlib.lines.Line2D at 0x16179e5c350>]


```
In [21]:  plt.plot(Salary[0], ls=':',color='g')      # linespace is used for the line of gr
```

Out[21]: [<matplotlib.lines.Line2D at 0x16179ec5190>]

In [22]: `plt.plot(Salary[0], ls='--',color='b',marker='o')`   *# here the marker ar using t*

Out[22]: `[<matplotlib.lines.Line2D at 0x16179ce1d30>]`
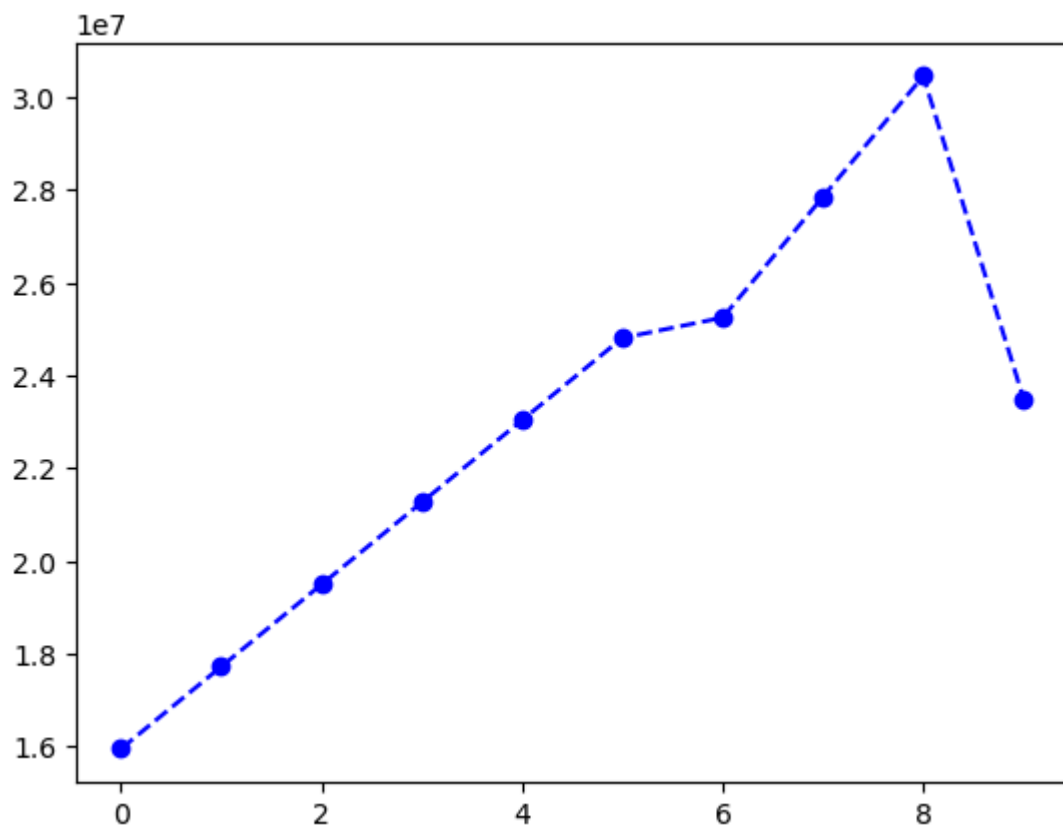
In [23]: `plt.plot(Salary[0], ls='--',color='g',marker='s', ms=10)`   *# here marker are ['*

Out[23]: `[<matplotlib.lines.Line2D at 0x16179d52f30>]`
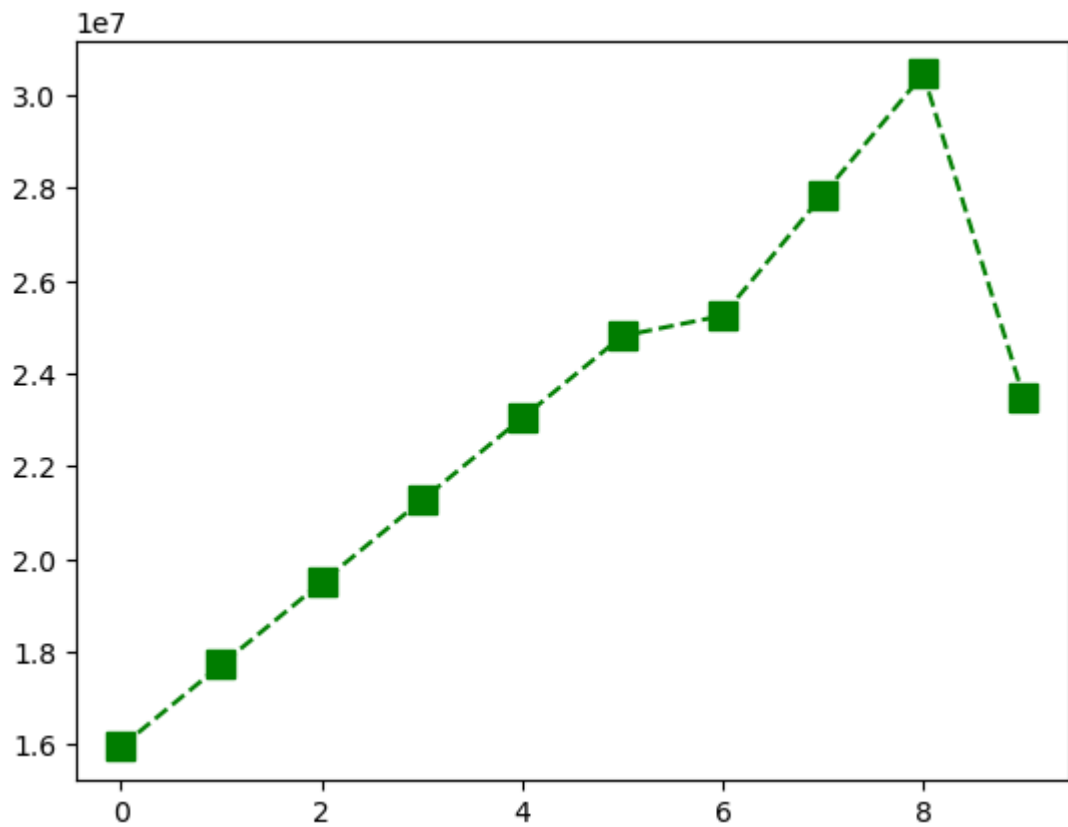
In [24]: `plt.plot(Salary[0], ls='--',color='g',marker='*', ms=10)`

Out[24]: `[<matplotlib.lines.Line2D at 0x16179da3b00>]`
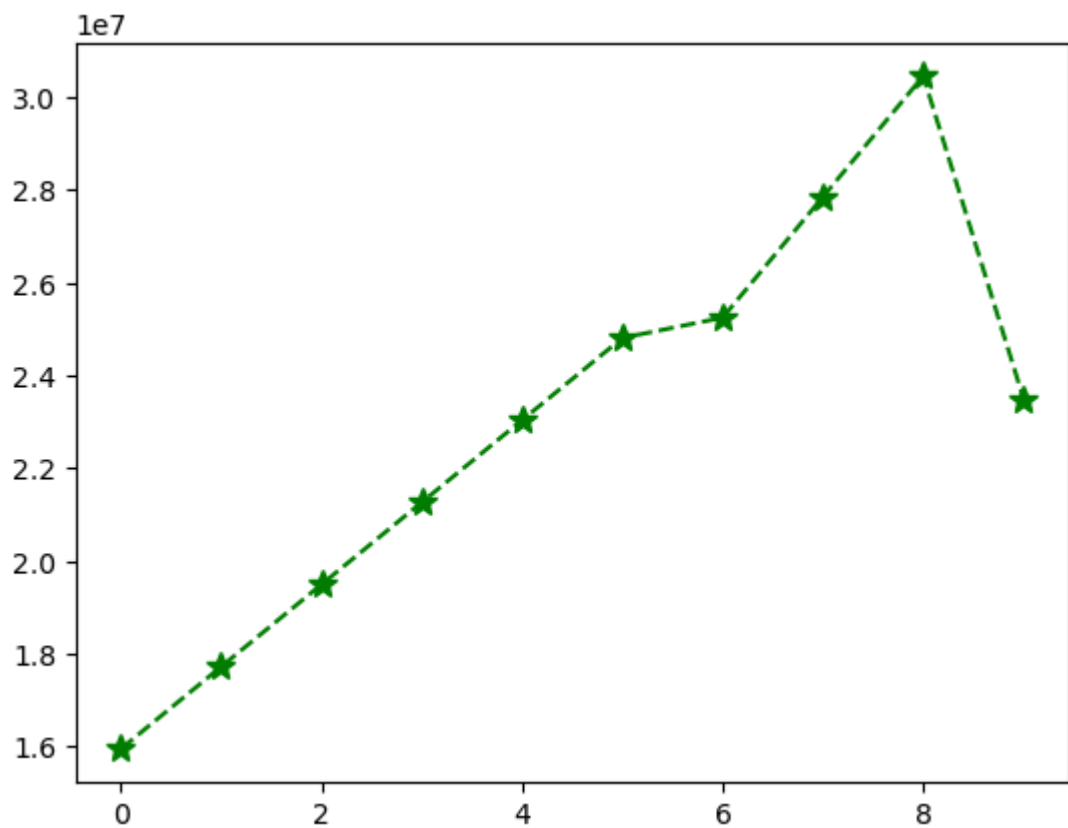
In [25]: `plt.plot(Salary[1], ls='--',color='g',marker='^', ms=10)`

Out[25]: `[<matplotlib.lines.Line2D at 0x16178460050>]`
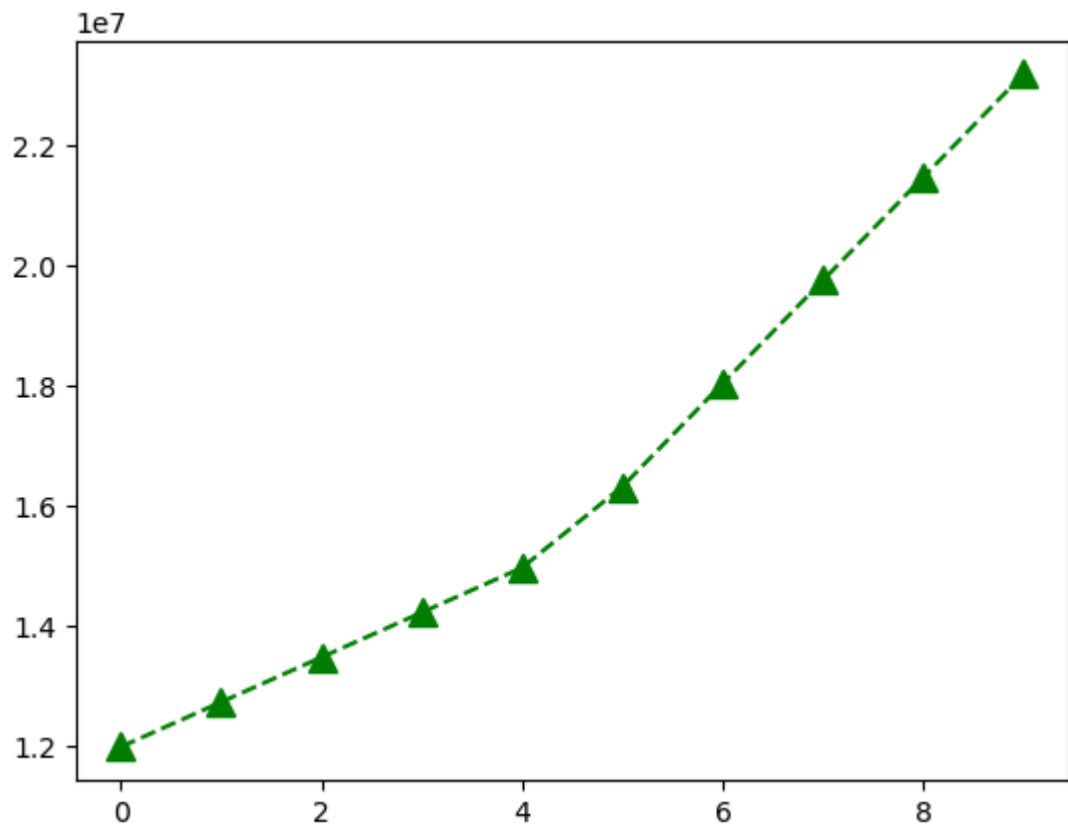
In [29]: `plt.plot(Salary[1], ls='--',color='g',marker='*', ms=10)`

Out[29]: `[<matplotlib.lines.Line2D at 0x16100d26660>]`
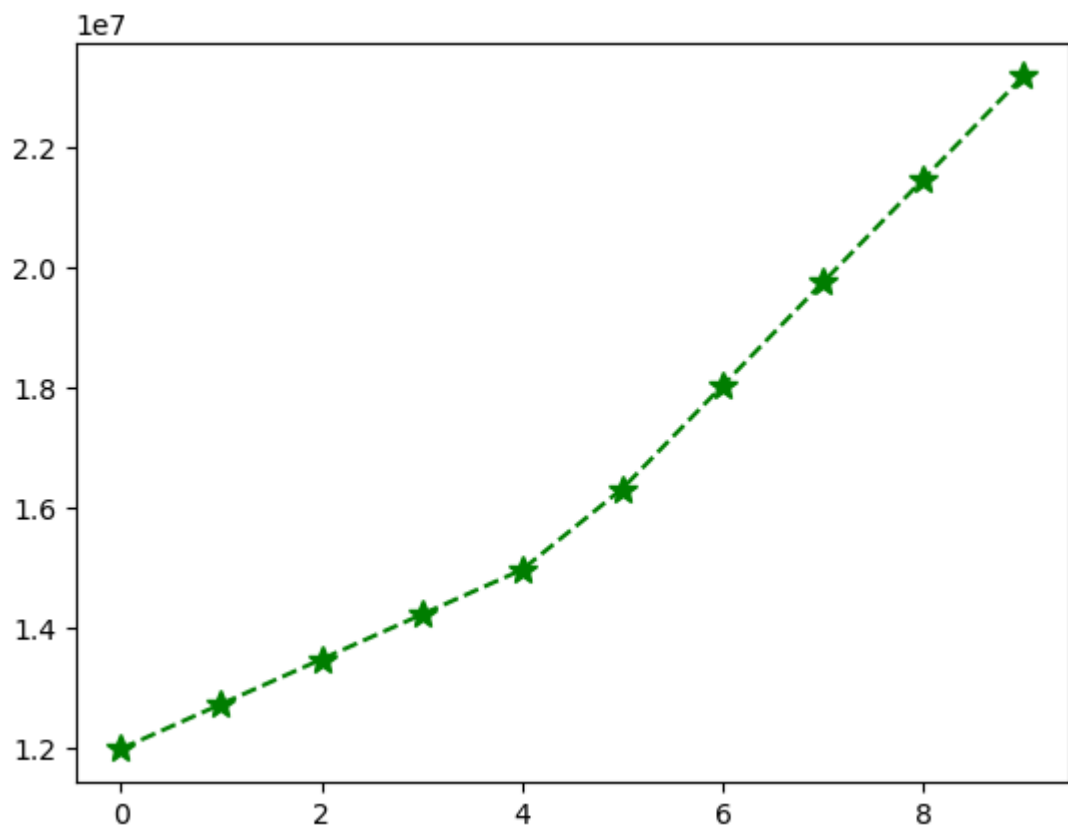
In [31]: `Sdict`

Out[31]: {'2015': 0,
 '2016': 1,
 '2017': 2,
 '2018': 3,
 '2019': 4,
 '2020': 5,
 '2021': 6,
 '2022': 7,
 '2023': 8,
 '2024': 9}

In [32]: `Pdict`

Out[32]: {'Sachin': 0,
 'Rahul': 1,
 'Smith': 2,
 'Sami': 3,
 'Pollard': 4,
 'Morris': 5,
 'Samson': 6,
 'Dhoni': 7,
 'Kohli': 8,
 'Sky': 9}

In [36]:
```python
plt.plot(Salary[0],c='b',ls='--',marker='s',ms=8)
plt.xticks(list(range(0,10)),Seasons)
plt.show()
```
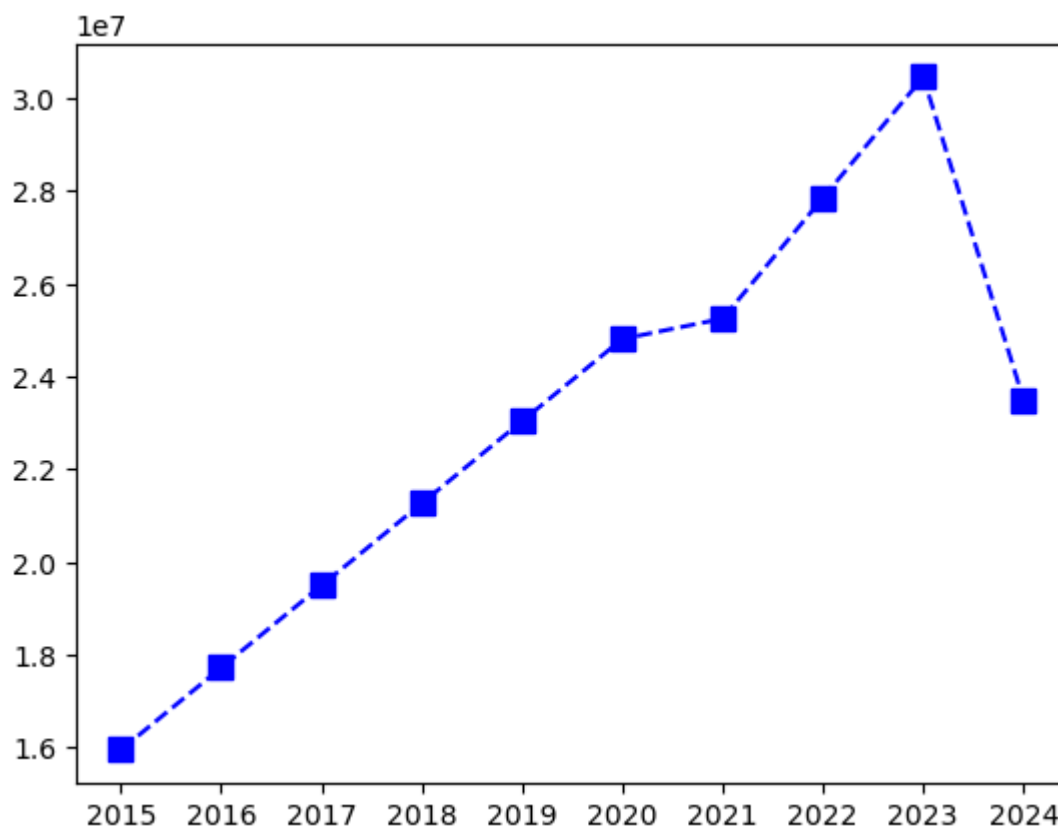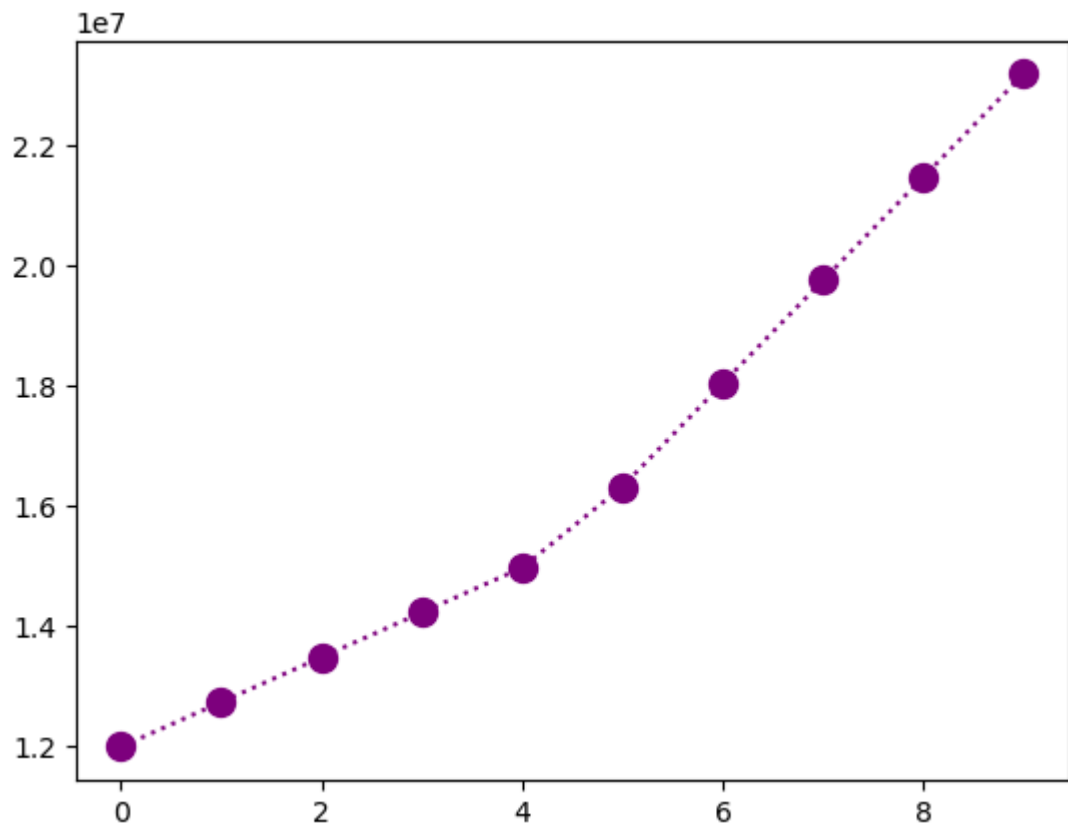

In [39]:
```python
plt.plot(Salary[0],c='b',ls='--',marker='s',ms=8)
plt.xticks(list(range(0,10)),Seasons,rotation='vertical')
plt.show()
```
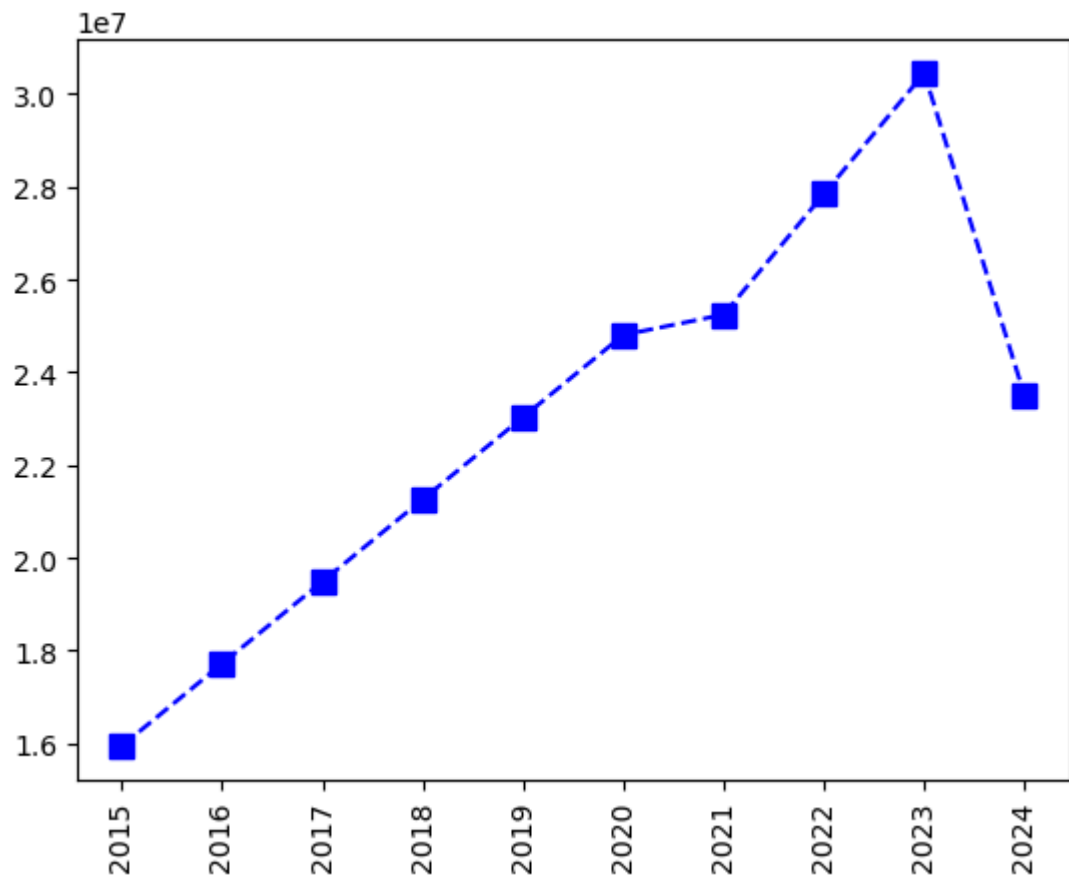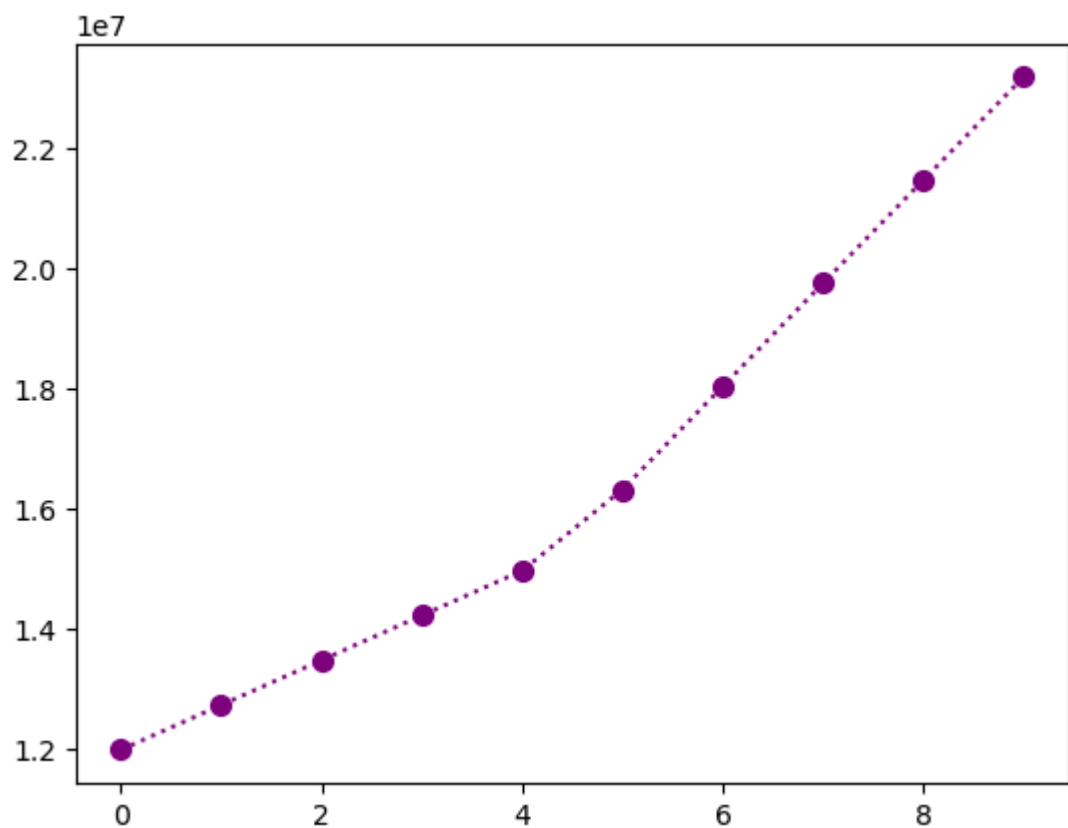
In [40]: `Salary[1]`

Out[40]:
```
array([12000000, 12744189, 13488377, 14232567, 14976754, 16324500,
       18038573, 19752645, 21466718, 23180790])
```

In [42]:
```python
plt.plot(Salary[1],c='purple',ls=':',marker='o',ms=10)
plt.show()
```
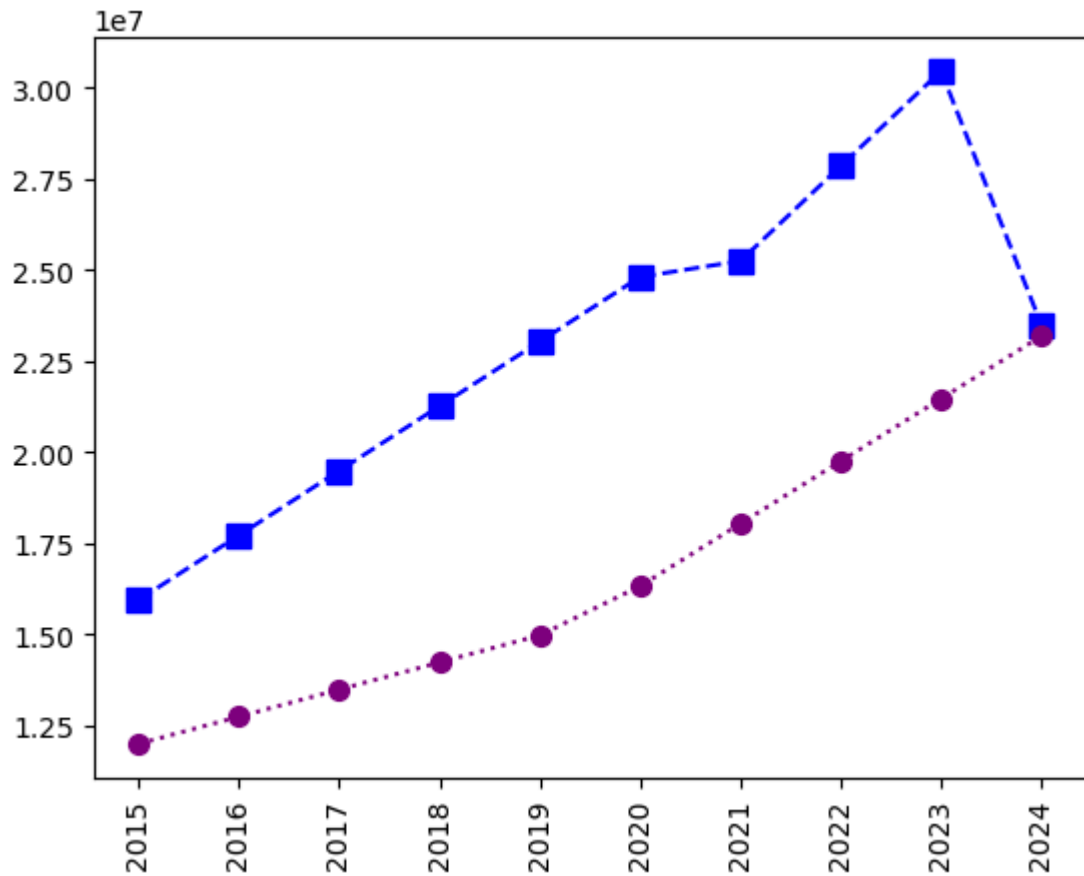
```
In [45]: plt.plot(Salary[1],c='purple',ls=':',marker='o',ms=7,label= Players[1])
         plt.show()
```
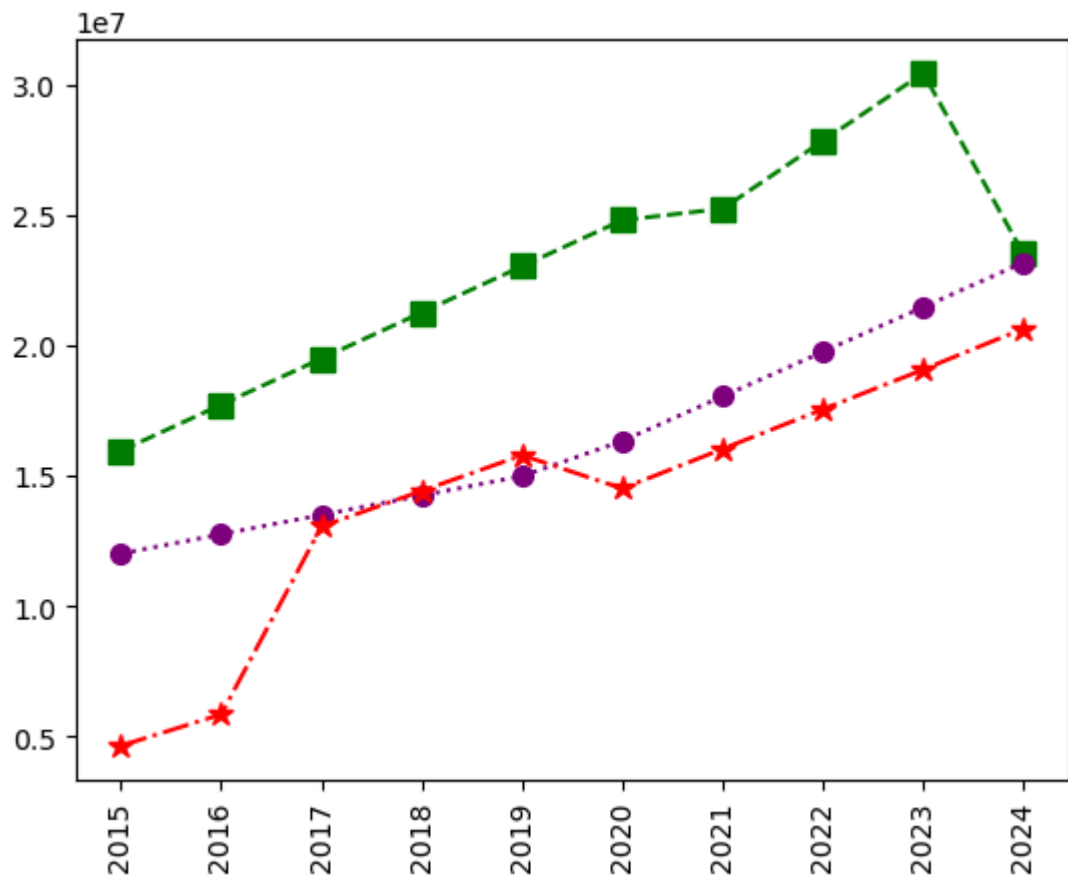


```
In [47]: plt.plot(Salary[0],c='b',ls='--',marker='s',ms=8,label =Players[0])
         plt.plot(Salary[1],c='purple',ls=':',marker='o',ms=7,label= Players[1])
```

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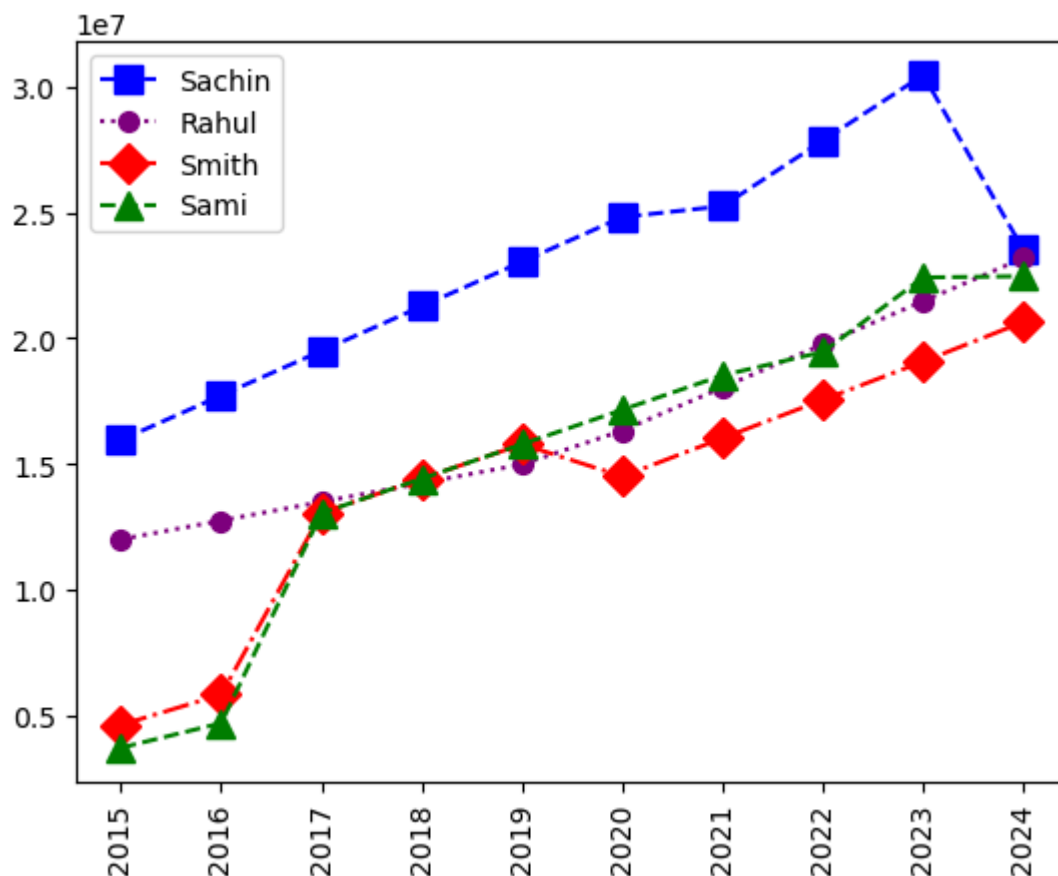

In [51]:
```
plt.plot(Salary[0],c='g',ls='--',marker='s',ms=8,label =Players[0])
plt.plot(Salary[1],c='purple',ls=':',marker='o',ms=7,label= Players[1])
plt.plot(Salary[2],c='red',ls='-.',marker='*',ms=9,label= Players[2])
plt.xticks(list(range(0,10)),Seasons,rotation='vertical')
plt.show()
```

```
In [59]: plt.plot(Salary[0],c='blue',ls='--',marker='s',ms=10,label =Players[0])
         plt.plot(Salary[1],c='purple',ls=':',marker='o',ms=7,label= Players[1])
         plt.plot(Salary[2],c='red',ls='-.',marker='D',ms=10,label= Players[2])
         plt.plot(Salary[3],c='g',ls='--',marker='^',ms=10,label= Players[3])

         plt.legend()

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

```python
In [58]: plt.plot(Salary[0],c='blue',ls='--',marker='s',ms=10,label =Players[0])
         plt.plot(Salary[1],c='purple',ls=':',marker='o',ms=7,label= Players[1])
         plt.plot(Salary[2],c='red',ls='-.',marker='D',ms=10,label= Players[2])
         plt.plot(Salary[3],c='g',ls='--',marker='^',ms=10,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()
```
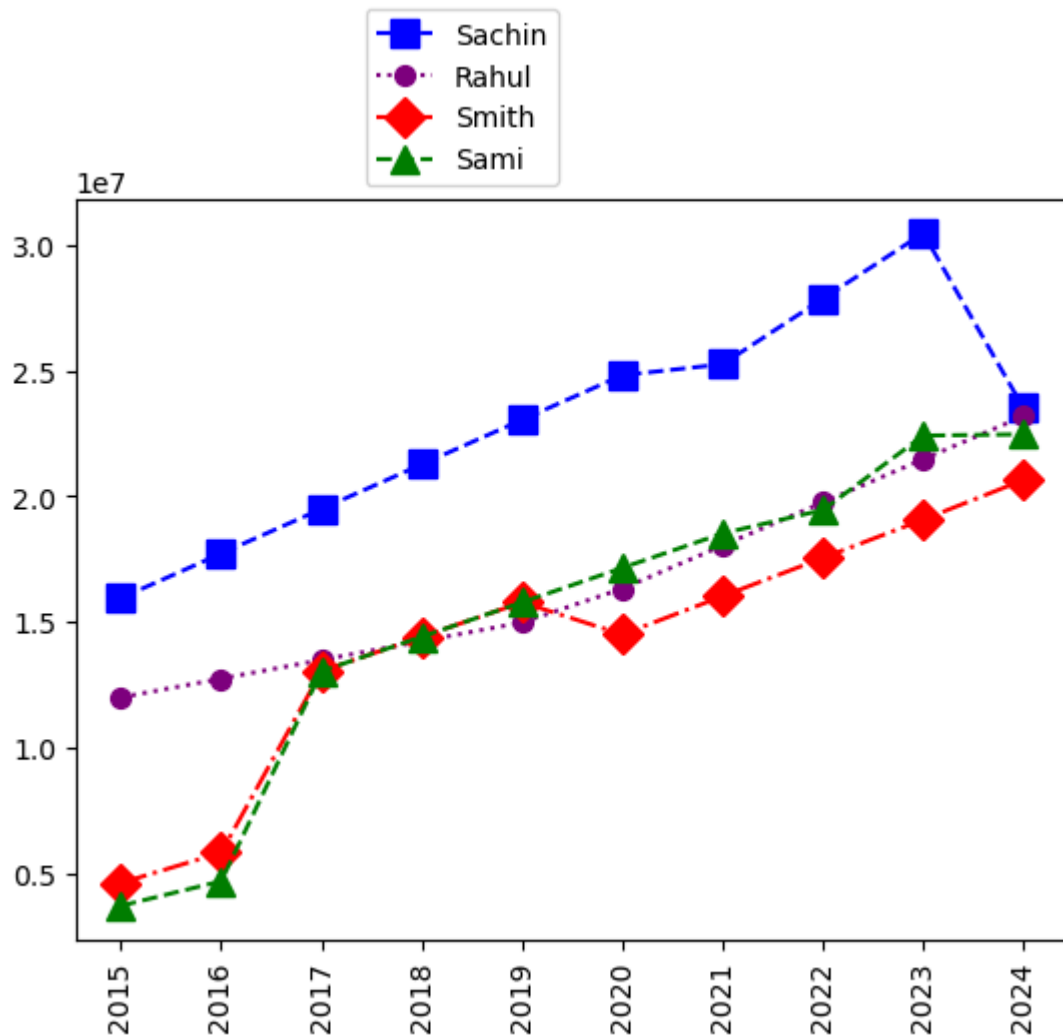
```python
plt.plot(Salary[0],c='blue',ls='--',marker='s',ms=10,label =Players[0])
plt.plot(Salary[1],c='purple',ls=':',marker='o',ms=7,label= Players[1])
plt.plot(Salary[2],c='red',ls='-.',marker='D',ms=10,label= Players[2])
plt.plot(Salary[3],c='g',ls='--',marker='^',ms=10,label= Players[3])
plt.plot(Salary[4],c='r',ls='--',marker='o',ms=10,label= Players[4])
plt.plot(Salary[5],c='b',ls='--',marker='d',ms=10,label= Players[5])
plt.plot(Salary[6],c='purple',ls='--',marker='*',ms=10,label= Players[6])
plt.plot(Salary[7],c='g',ls='--',marker='^',ms=10,label= Players[7])

plt.legend(loc='lower right',bbox_to_anchor=(0.5,1))

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