IPL DATA ANALYTICS USING NUMPY+MATPLOT

story telling #CLIENT -ESPN,STAR SPORTS USE CASE-they have dataset problem statement-please analyst the data and find the trends

```
In [1]:  import matplotlib.pyplot as plt
```

```
In [2]:  import numpy as np

         #Seasons
         Seasons = ["2010","2011","2012","2013","2014","2015","2016","2017","2018","2019"]
         Sdict = {"2010":0,"2011":1,"2012":2,"2013":3,"2014":4,"2015":5,"2016":6,"2017":7,"2

         #Players
         Players = ["Sachin","Rahul","Smith","Sami","Pollard","Morris","Samson","Dhoni","Koh
         Pdict = {"Sachin":0,"Rahul":1,"Smith":2,"Sami":3,"Pollard":4,"Morris":5,"Samson":6,

         #Salaries
         Sachin_Salary = [15946875,17718750,19490625,21262500,23034375,24806250,25244493,278
         Rahul_Salary = [12000000,12744189,13488377,14232567,14976754,16324500,18038573,1975
         Smith_Salary = [4621800,5828090,13041250,14410581,15779912,14500000,16022500,175450
         Sami_Salary = [3713640,4694041,13041250,14410581,15779912,17149243,18518574,1945000
         Pollard_Salary = [4493160,4806720,6061274,13758000,15202590,16647180,18091770,19536
         Morris_Salary = [3348000,4235220,12455000,14410581,15779912,14500000,16022500,17545
         Samson_Salary = [3144240,3380160,3615960,4574189,13520500,14940153,16359805,1777945
         Dhoni_Salary = [0,0,4171200,4484040,4796880,6053663,15506632,16669630,17832627,1899
         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_

         #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

         #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 [3]: Salary

Out[3]: 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 [4]: Games

Out[4]: 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 [5]: Points

Out[5]: 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 [6]: Salary
```

```
Out[6]:  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 [7]: `Games`

```
Out[7]:  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 [8]: `Games[0:5]`

```
Out[8]:  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]])
```

In [12]: `Games[5]`

```
Out[12]:  array([70, 69, 67, 77, 70, 77, 57, 74, 79, 44])
```

In [18]: `Games[0,5]`

```
Out[18]:  82
```

In [19]: `Games[1:2]`

```
Out[19]:  array([[82, 57, 82, 79, 76, 72, 60, 72, 79, 80]])
```

In [20]: `Points`

```
Out[20]:  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 [25]:  Points[0]
```

```
Out[25]:  array([2832, 2430, 2323, 2201, 1970, 2078, 1616, 2133,   83,  782])
```

```
In [27]:  Points[:]
```

```
Out[27]:  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 [29]:  Points[-6,-1]
```

```
Out[29]:  646
```

```
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 [33]:  Pdict['Rahul']
```

```
Out[33]:  1
```

```
In [35]:  Pdict['Sachin']
```

```
Out[35]:  0
```

```
In [37]:  Games[1]
```

Out[37]:   array([82, 57, 82, 79, 76, 72, 60, 72, 79, 80])

In [39]:   ```
Games[Pdict['Rahul']]
```

Out[39]:   array([82, 57, 82, 79, 76, 72, 60, 72, 79, 80])

In [41]:   ```
Games
```

Out[41]:   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 [43]:   ```
Pdict['Rahul']
```

Out[43]:   1

In [45]:   ```
Points
```

Out[45]:   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 [47]:   ```
Salary
```

Out[47]: 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 [49]: Games

Out[49]: 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 [51]: Salary/Games

C:\Users\nandh\AppData\Local\Temp\ipykernel_19508\3709746658.py:1: RuntimeWarning: d
ivide by zero encountered in divide
  Salary/Games

```
Out[51]:  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 [53]:  np.round(Salary/Games)
```

```
C:\Users\nandh\AppData\Local\Temp\ipykernel_19508\3232172828.py:1: RuntimeWarning: d
ivide by zero encountered in divide
  np.round(Salary/Games)
```

```
Out[53]:  array([[ 199336.,    230114.,    237691.,    259299.,    315539.,    302515.,
                    435250.,    357040.,  5075634.,    671429.],
                 [ 146341.,    223582.,    164492.,    180159.,    197063.,    226729.,
                    300643.,    274342.,    271731.,    289760.],
                 [  58504.,     74719.,    173883.,    177908.,    207630.,    183544.,
                    258427.,    230855.,    247630.,    299194.],
                 [  46420.,     72216.,    169367.,    218342.,    228694.,    222717.,
                    336701.,    290299.,    291006.,    561450.],
                 [  54795.,     58619.,     73918.,    174152.,    185397.,    213425.,
                    335033.,    257057.,    288918.,    522836.],
                 [  47829.,     61380.,    185896.,    187150.,    225427.,    188312.,
                    281096.,    237095.,    241361.,    469191.],
                 [  40311.,     52815.,     45200.,     58643.,    300456.,    186752.,
                    272663.,    253992.,    301104.,    244739.],
                 [      0.,         0.,     52140.,     60595.,     58499.,     77611.,
                    234949.,    205798.,    220156.,    703542.],
                 [      0.,         0.,         0.,     59541.,     66468.,     68471.,
                    179326.,        inf,  1763269.,    369860.],
                 [  40426.,     75322.,    255711.,    182412.,    204934.,    186842.,
                    320224.,    249014.,    345796.,    241935.]])
```

In [55]: ```np.round(Salary//Games)```

```
Out[55]:  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]])
```
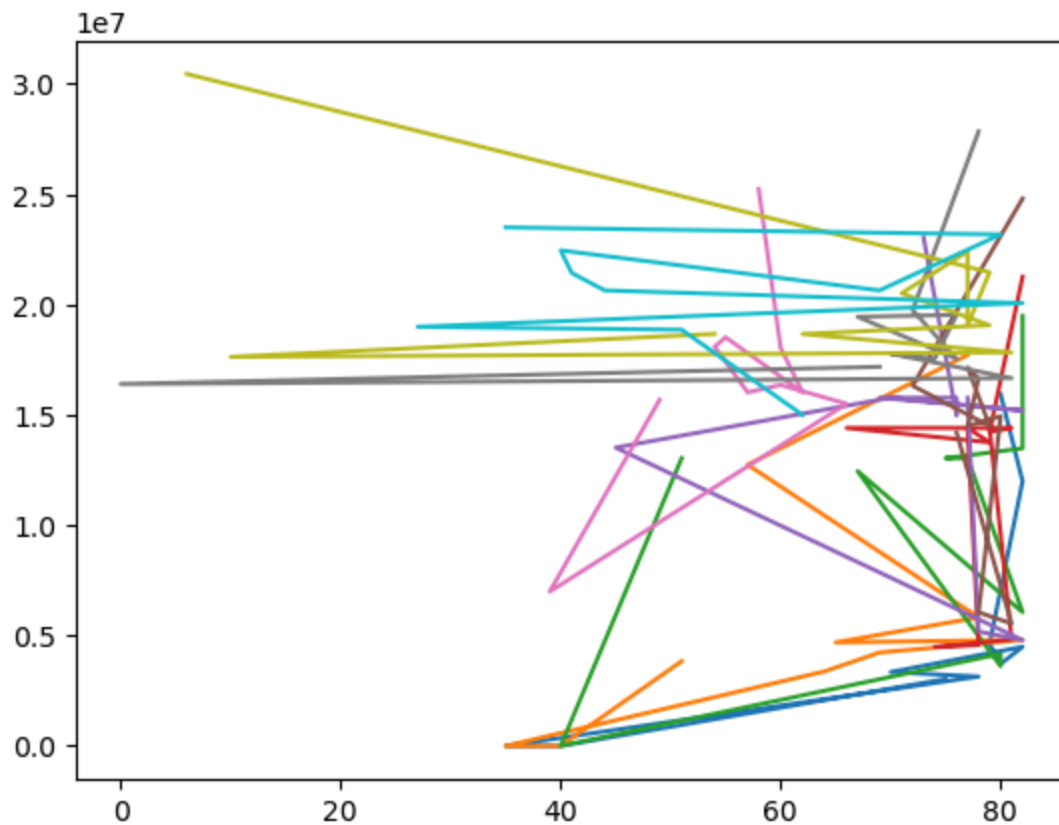
In [57]: ```import warnings
warnings.filterwarnings('ignore')```

In [59]: ```import matplotlib.pyplot as plt```

In [61]: ```plt.plot(Games,Salary)```

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```
Out[61]:  [<matplotlib.lines.Line2D at 0x187de3e3f80>,
           <matplotlib.lines.Line2D at 0x187dff21ac0>,
           <matplotlib.lines.Line2D at 0x187dff221e0>,
           <matplotlib.lines.Line2D at 0x187dff8cb60>,
           <matplotlib.lines.Line2D at 0x187dff8cc50>,
           <matplotlib.lines.Line2D at 0x187dff8cd40>,
           <matplotlib.lines.Line2D at 0x187dff8ce30>,
           <matplotlib.lines.Line2D at 0x187dff8cf20>,
           <matplotlib.lines.Line2D at 0x187dff8d010>,
           <matplotlib.lines.Line2D at 0x187dd7d8aa0>]
```



```
In [62]:  Salary
```

```
Out[62]: 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 [65]: Salary[0]
```

```
Out[65]: array([15946875, 17718750, 19490625, 21262500, 23034375, 24806250,
                25244493, 27849149, 30453805, 23500000])
```

```
In [67]: plt.plot(Salary[0],ls='--',color='red')
```
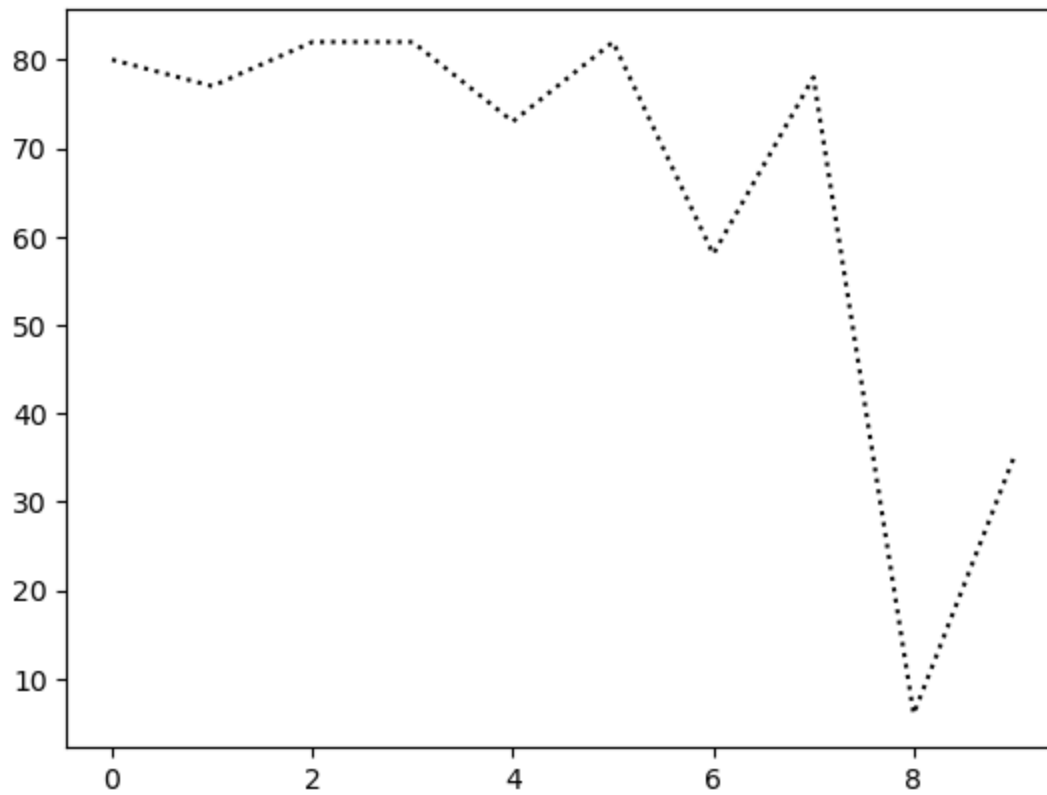
```
Out[67]: [<matplotlib.lines.Line2D at 0x187dfd92210>]
```
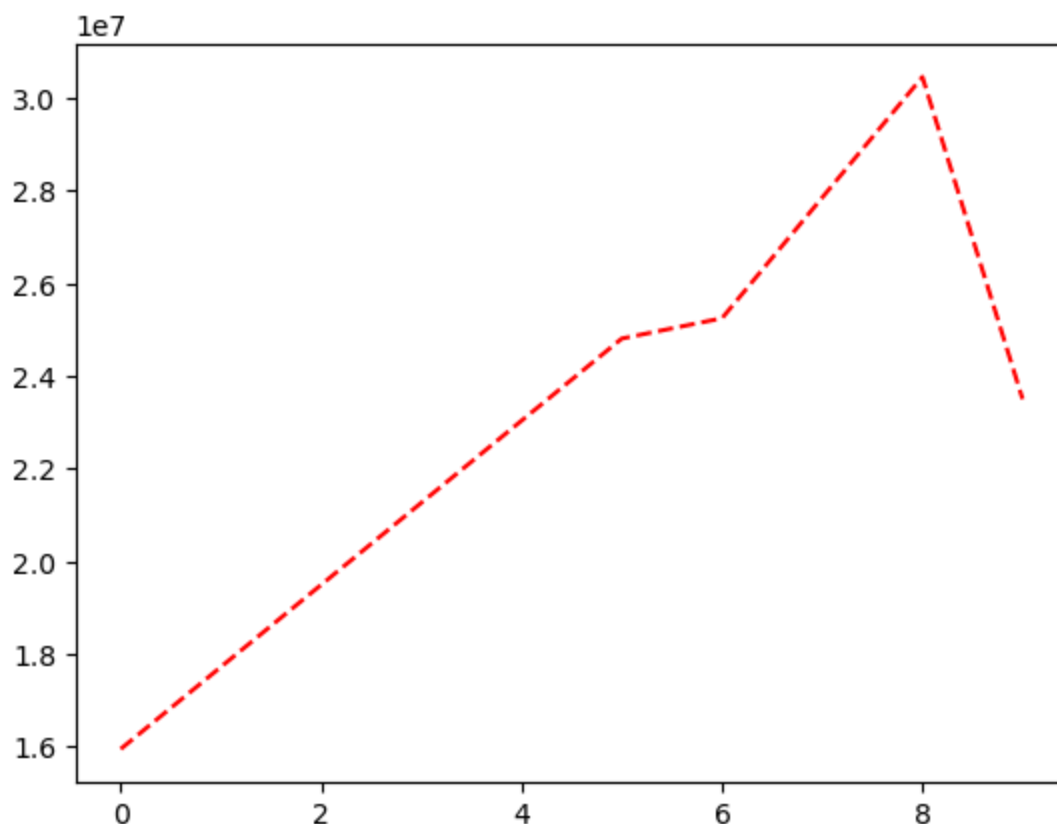
In [69]: `plt.plot(Salary//Games[1],c='k')`

Out[69]: [<matplotlib.lines.Line2D at 0x187e00cb7d0>,
 <matplotlib.lines.Line2D at 0x187dff69f40>,
 <matplotlib.lines.Line2D at 0x187e00cb800>,
 <matplotlib.lines.Line2D at 0x187e00cb9b0>,
 <matplotlib.lines.Line2D at 0x187e00cbaa0>,
 <matplotlib.lines.Line2D at 0x187e00cbb60>,
 <matplotlib.lines.Line2D at 0x187e00cbc50>,
 <matplotlib.lines.Line2D at 0x187e00cbd40>,
 <matplotlib.lines.Line2D at 0x187e00cbe30>,
 <matplotlib.lines.Line2D at 0x187e00cbf20>]
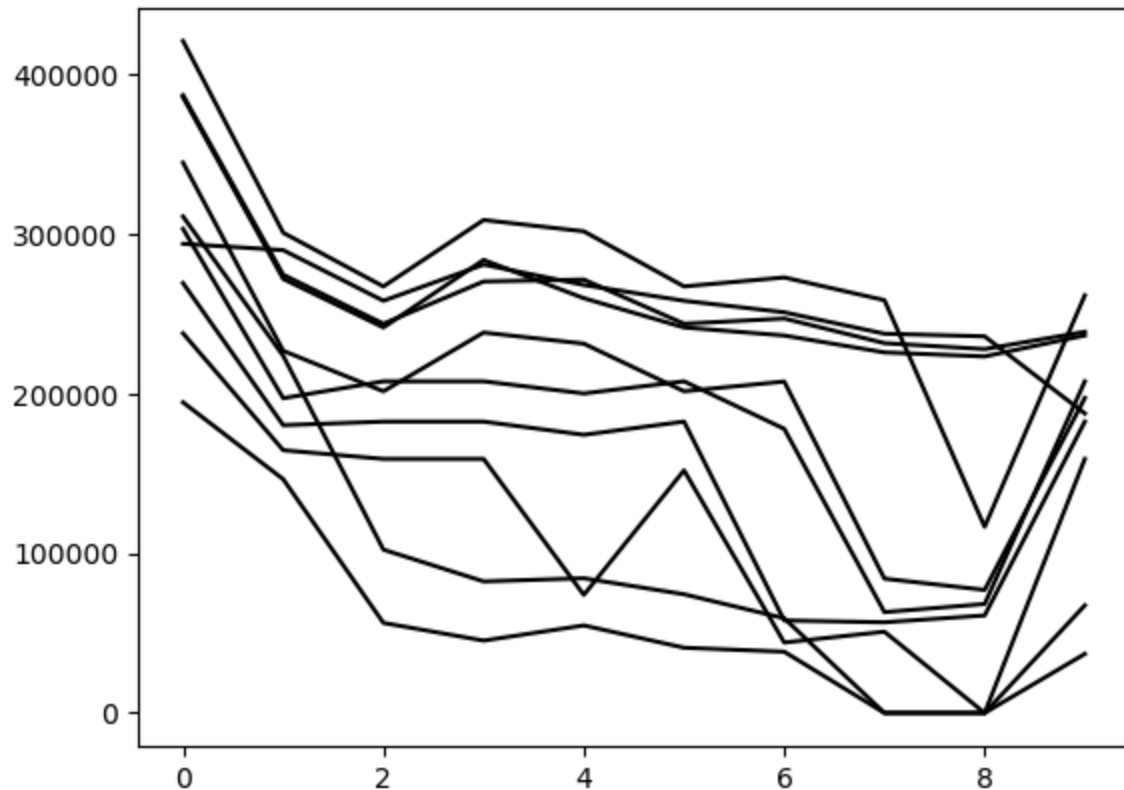
In [71]: `plt.plot(Salary[0],ls='--',color='red')`

Out[71]: [<matplotlib.lines.Line2D at 0x187e01701a0>]
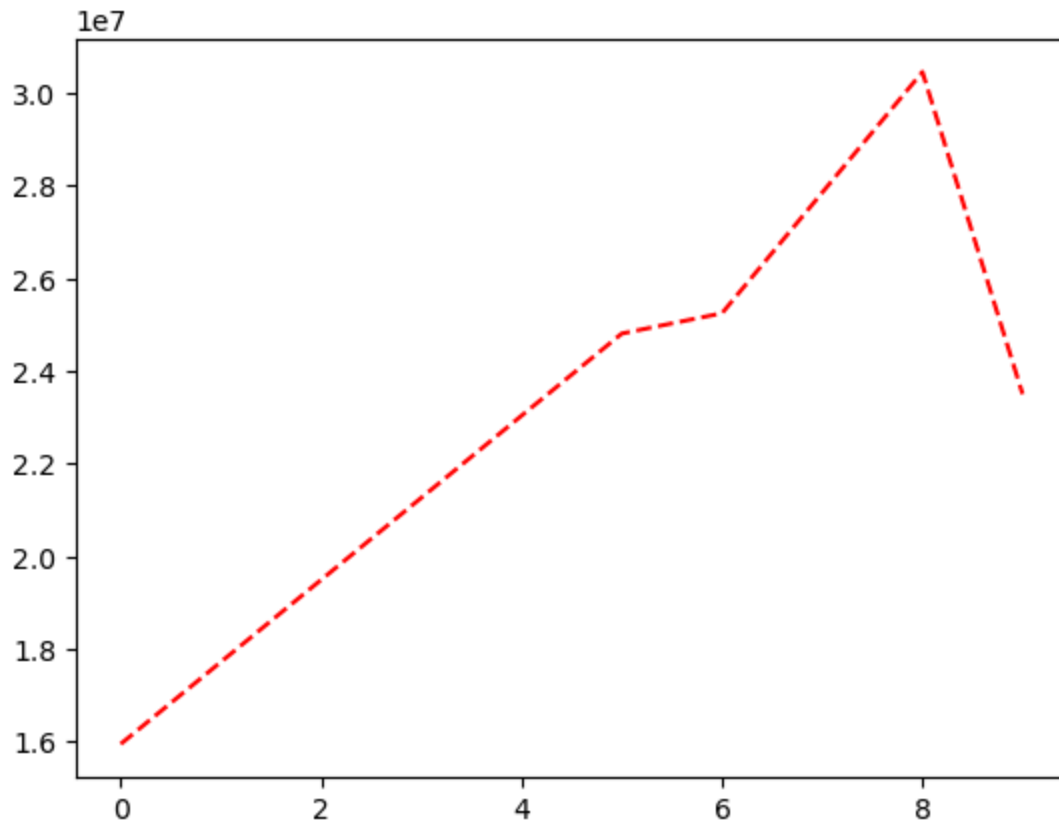
```
In [73]:  Salary[0]

Out[73]:  array([15946875, 17718750, 19490625, 21262500, 23034375, 24806250,
                 25244493, 27849149, 30453805, 23500000])

In [75]:  plt.plot(Salary[0],ls='dotted',color='m')

Out[75]:  [<matplotlib.lines.Line2D at 0x187e0310a70>]
```
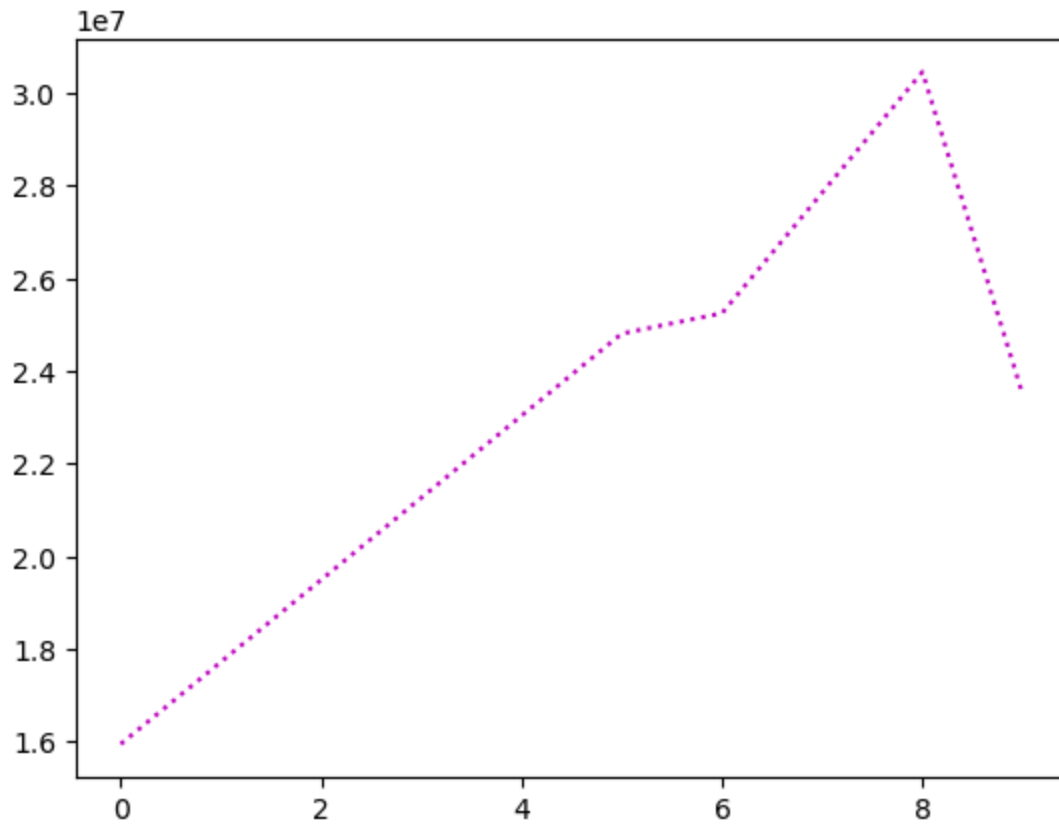
```
In [77]: Games[0]
```

```
Out[77]: array([80, 77, 82, 82, 73, 82, 58, 78,  6, 35])
```

```
In [79]: plt.plot(Games[0],ls='dotted',c='k')
```

```
Out[79]: [<matplotlib.lines.Line2D at 0x187e038df10>]
```

```
In [81]:  %matplotlib inline
          plt.rcParams['figure.figsize']=7,3
```

```
In [83]:  plt.plot(Salary[0])

          plt.show()
```
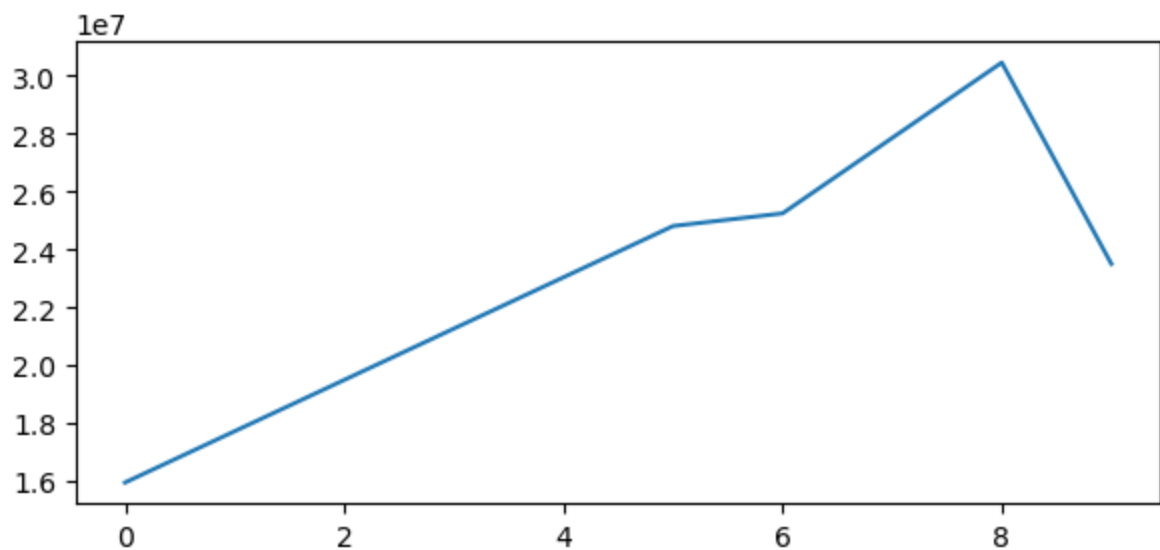


```
In [85]:  %matplotlib inline
          plt.rcParams['figure.figsize']=7,3
```

```
In [87]:  plt.plot(Salary[0])
```

```python
plt.show()
```
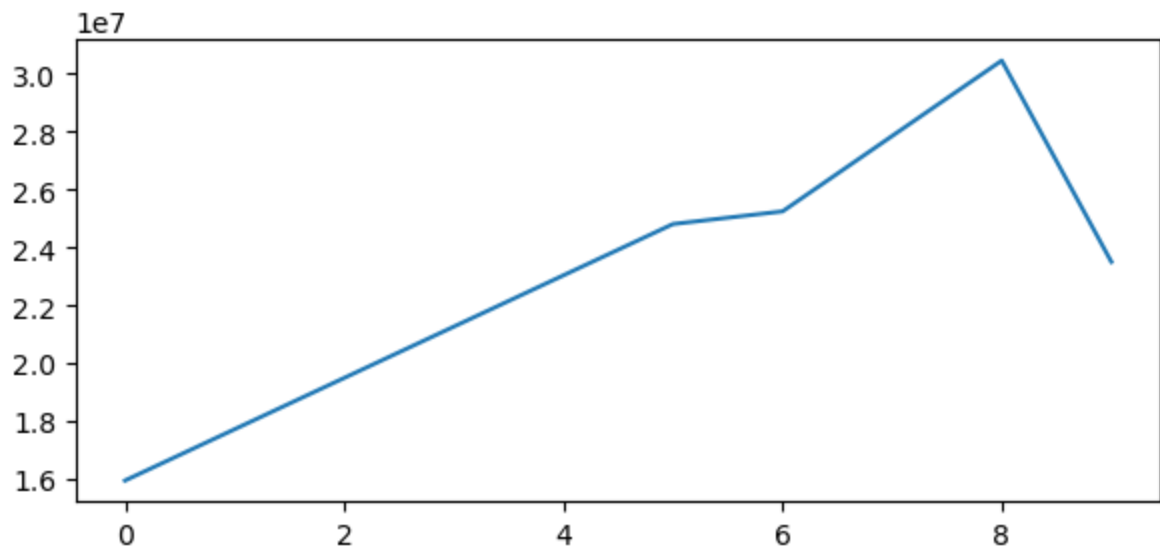


```python
In [89]:  plt.plot(Games[0],ls='dotted',c='k',marker= '^',ms=7)
          plt.show()
```
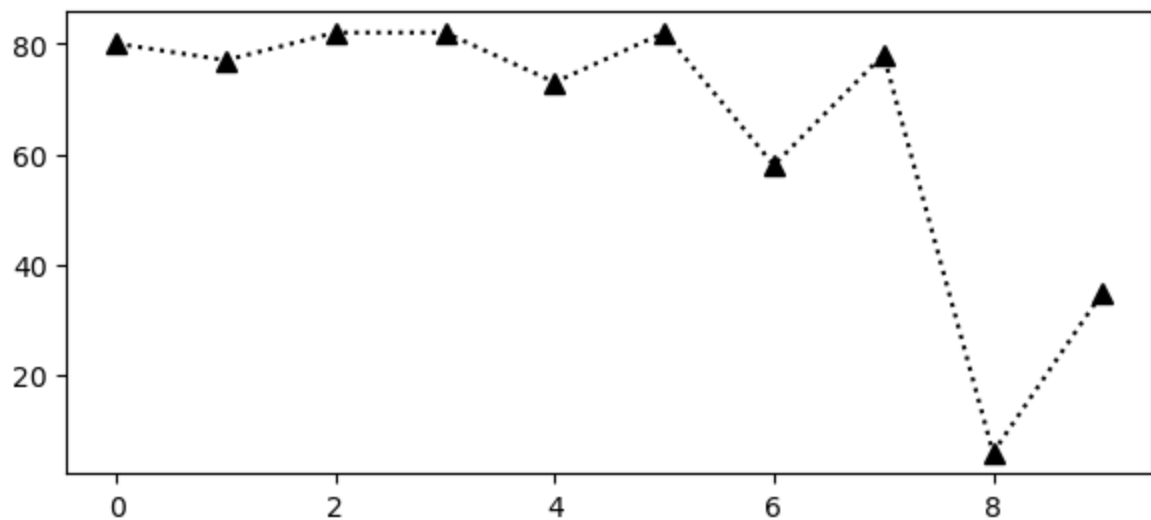


```python
In [91]:  plt.plot(Salary[0],c='Green',ls='--',marker='o')
          plt.show()
```
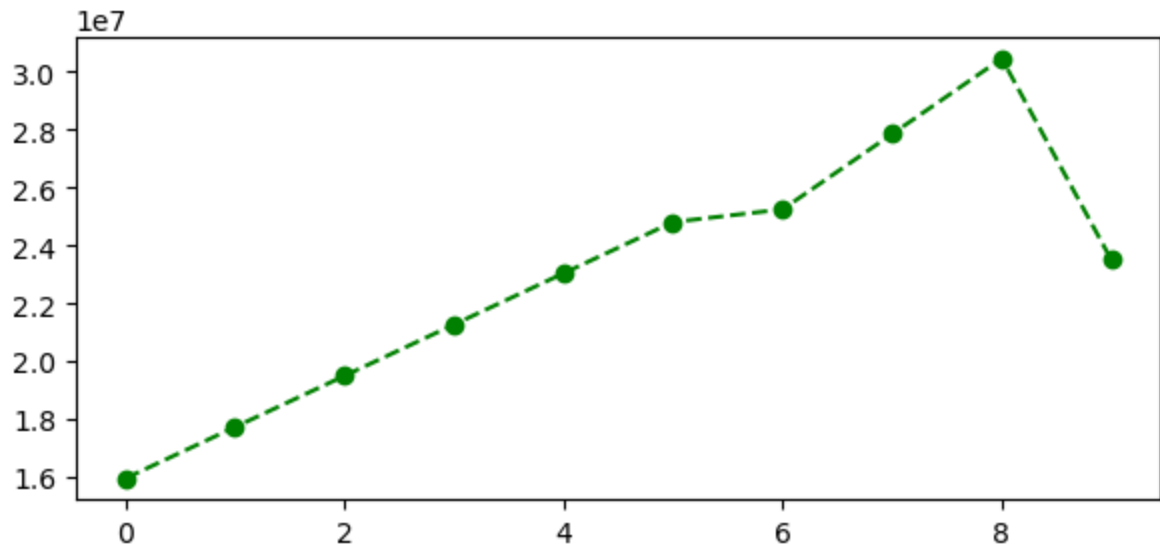
```
In [93]:  list(range(0,10))
```

```
Out[93]:  [0, 1, 2, 3, 4, 5, 6, 7, 8, 9]
```

```
In [95]:  Sdict
```

```
Out[95]:  {'2010': 0,
           '2011': 1,
           '2012': 2,
           '2013': 3,
           '2014': 4,
           '2015': 5,
           '2016': 6,
           '2017': 7,
           '2018': 8,
           '2019': 9}
```

```
In [97]:  Pdict
```

```
Out[97]:  {'Sachin': 0,
           'Rahul': 1,
           'Smith': 2,
           'Sami': 3,
           'Pollard': 4,
           'Morris': 5,
           'Samson': 6,
           'Dhoni': 7,
           'Kohli': 8,
           'Sky': 9}
```

```
In [99]:  plt.plot(Games[0],ls='dotted',c='blue',marker= 's',ms=7)
          plt.xticks(list(range(0,10)),Seasons)
          plt.show()
```
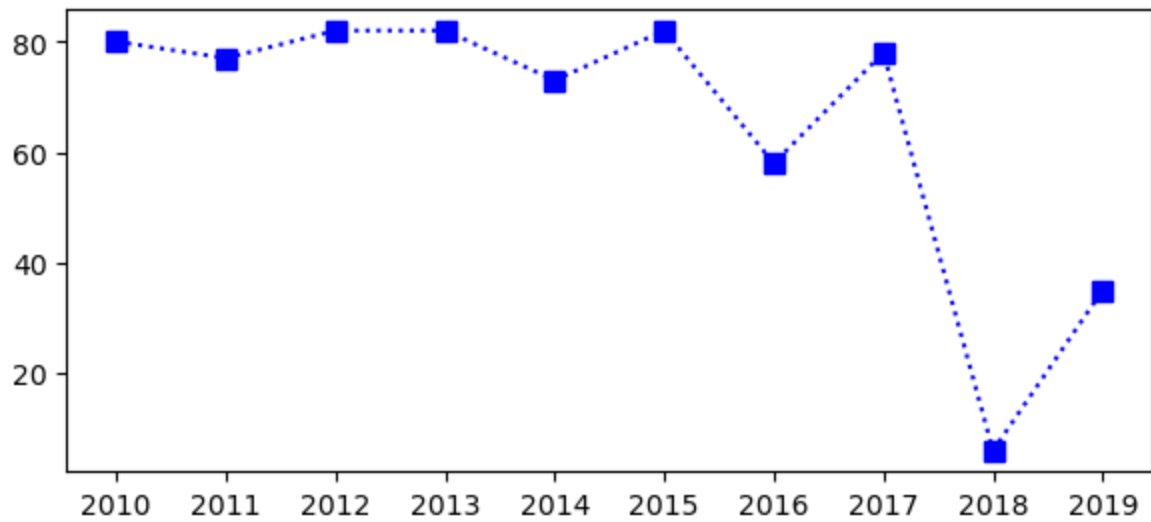
In [100…
```
plt.plot(Games[0],ls='dotted',c='blue',marker= 's',ms=7)
plt.xticks(list(range(0,10)),Seasons,rotation='vertical')
plt.show()
```
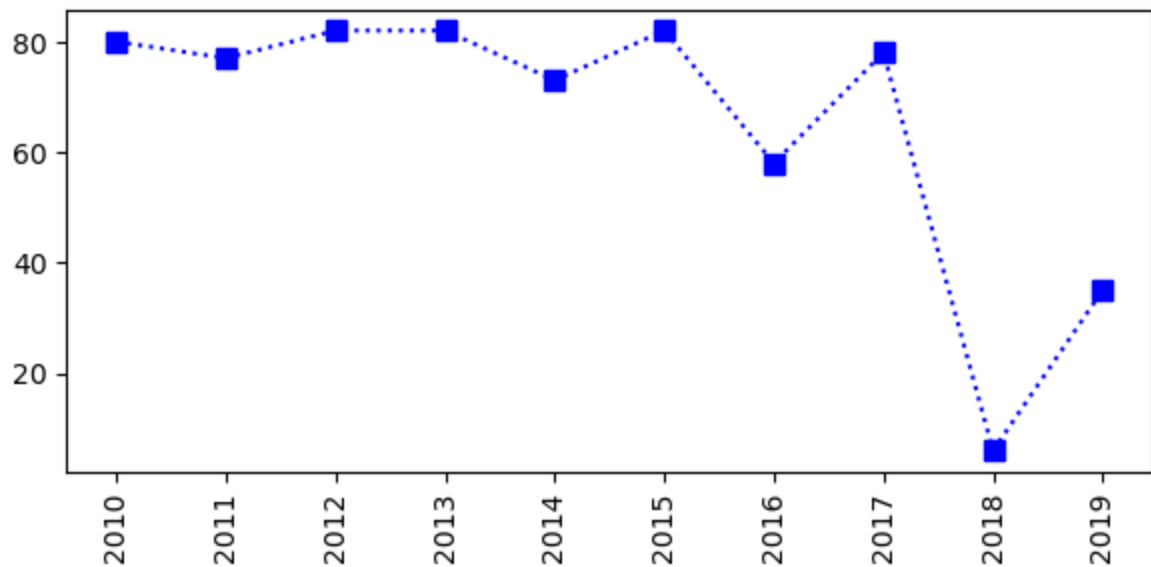

In [102…
```
plt.plot(Games[0],ls='dotted',c='blue',marker= 's',ms=7)
plt.xticks(list(range(0,10)),Seasons,rotation='horizontal')
plt.show()
```
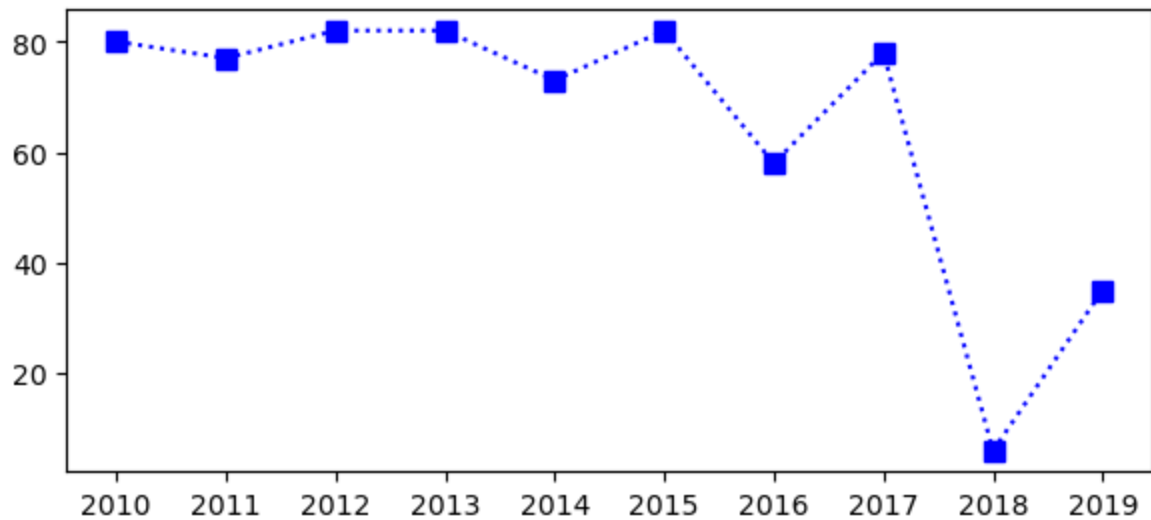
In [104…
```python
plt.plot(Salary[1],c='purple',ls=':',marker='o',ms=10,label=Players[1])
plt.show()
```
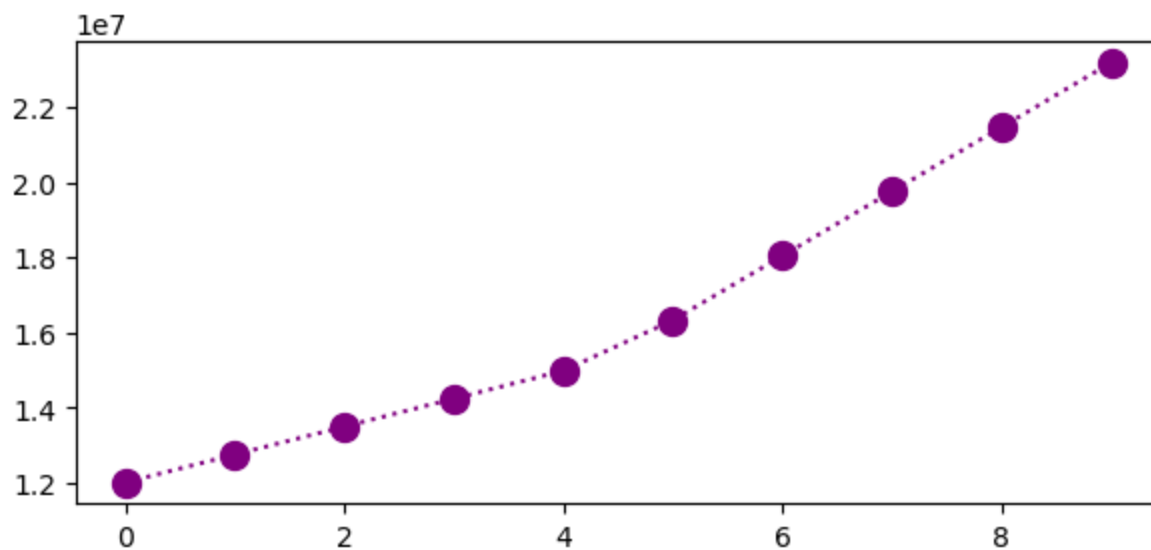

In [106…
```python
plt.plot(Salary[0],c='Green',ls='--',marker='d',ms=10,label=Players[0])
plt.plot(Salary[1],c='purple',ls=':',marker='o',ms=10,label=Players[1])
plt.plot(Salary[2],c='Blue',ls=':',marker='^',ms=10,label=Players[2])
plt.xticks(list(range(0,10)),Seasons,rotation='vertical')
plt.show()
```
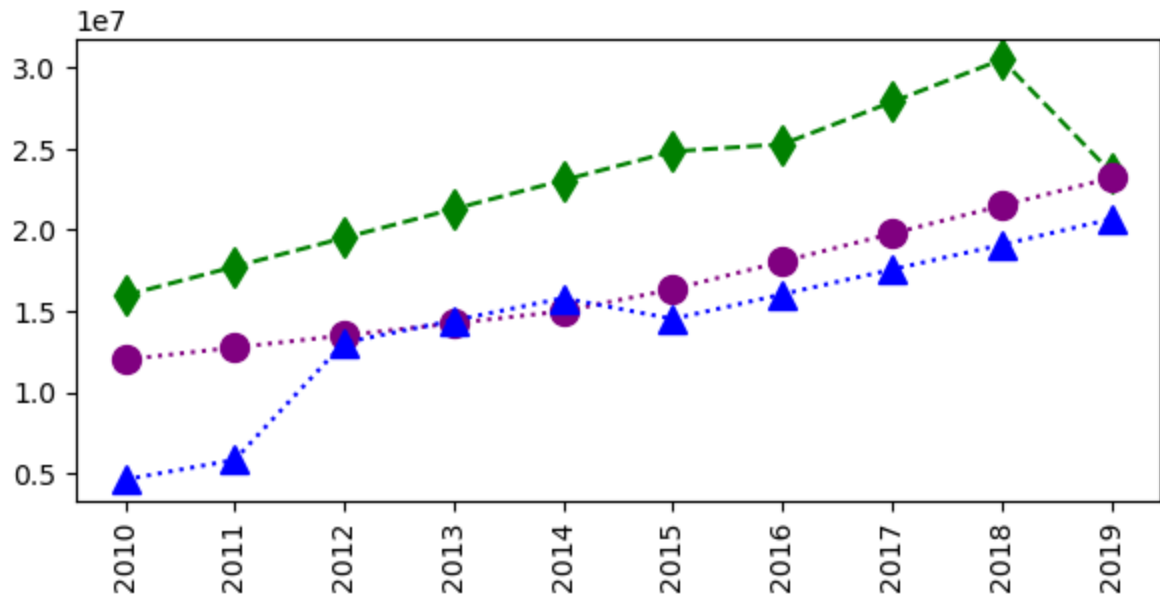
```
In [108…   Pdict

Out[108…   {'Sachin': 0,
            'Rahul': 1,
            'Smith': 2,
            'Sami': 3,
            'Pollard': 4,
            'Morris': 5,
            'Samson': 6,
            'Dhoni': 7,
            'Kohli': 8,
            'Sky': 9}
```

```
In [110…   plt.plot(Salary[0],c='Green',ls='--',marker='d',ms=10,label=Players[0])
           plt.plot(Salary[1],c='purple',ls=':',marker='o',ms=10,label=Players[1])
           plt.plot(Salary[2],c='Blue',ls=':',marker='^',ms=10,label=Players[2])
           plt.plot(Salary[3],c='Blue',ls='-',marker='s',ms=10,label=Players[3])

           plt.xticks(list(range(0,10)),Seasons,rotation='vertical')
           plt.show()
```
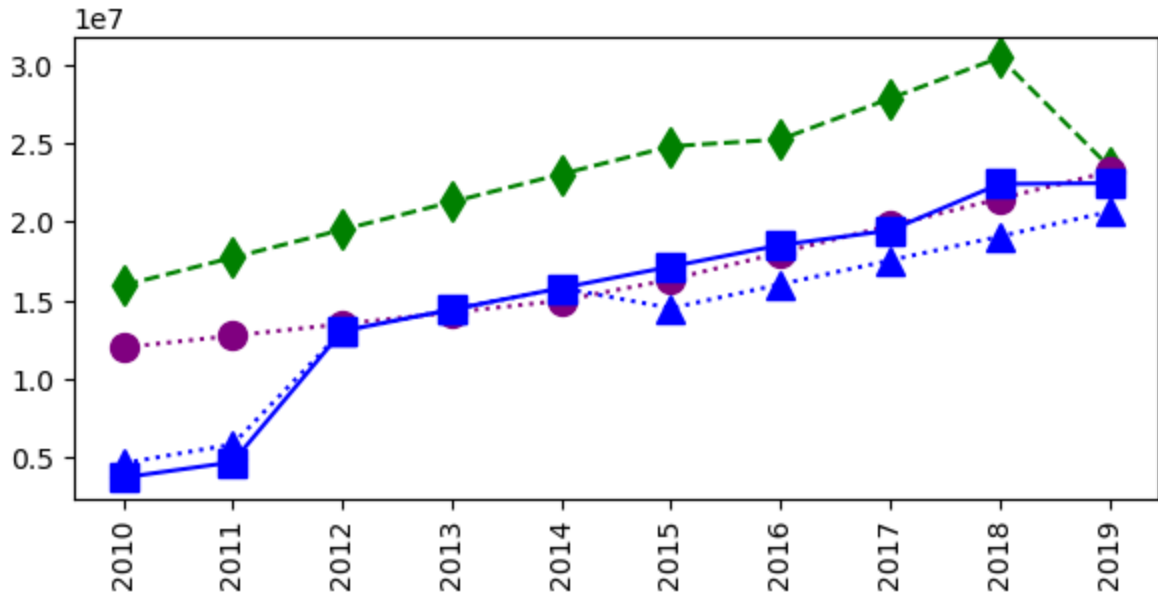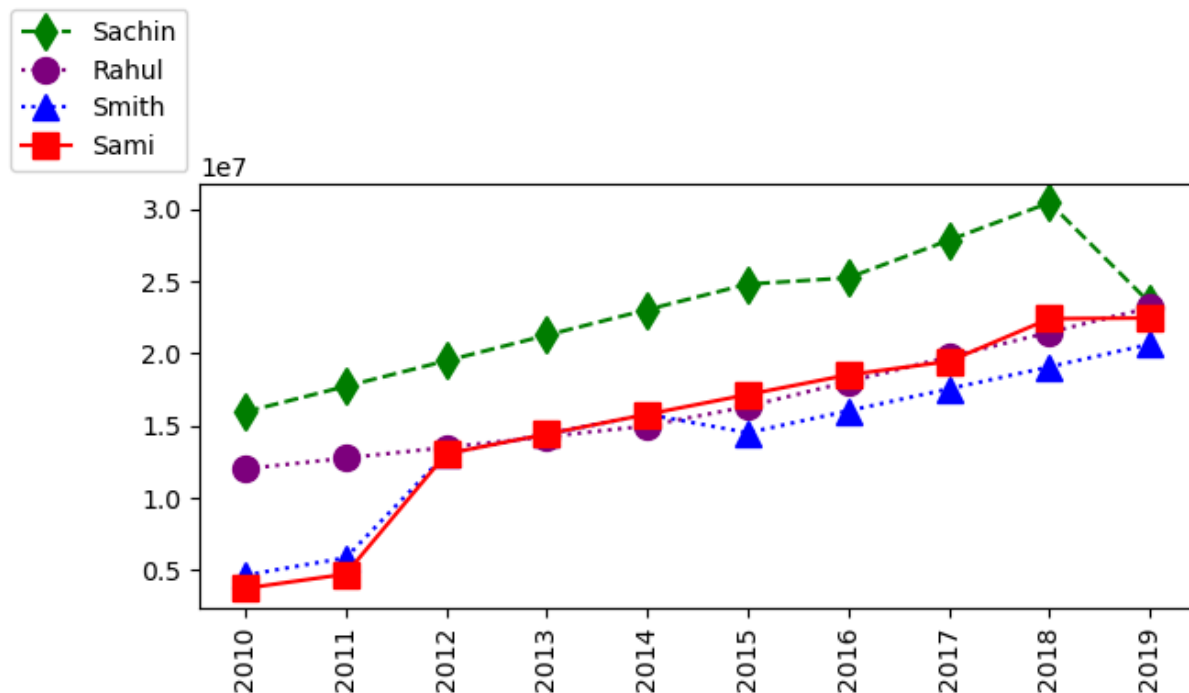
```
plt.plot(Salary[0],c='Green',ls='--',marker='d',ms=10,label=Players[0])#with Legend
plt.plot(Salary[1],c='purple',ls=':',marker='o',ms=10,label=Players[1])
plt.plot(Salary[2],c='Blue',ls=':',marker='^',ms=10,label=Players[2])
plt.plot(Salary[3],c='Red',ls='-',marker='s',ms=10,label=Players[3])
plt.legend()
plt.xticks(list(range(0,10)),Seasons,rotation='vertical')
plt.show()
```
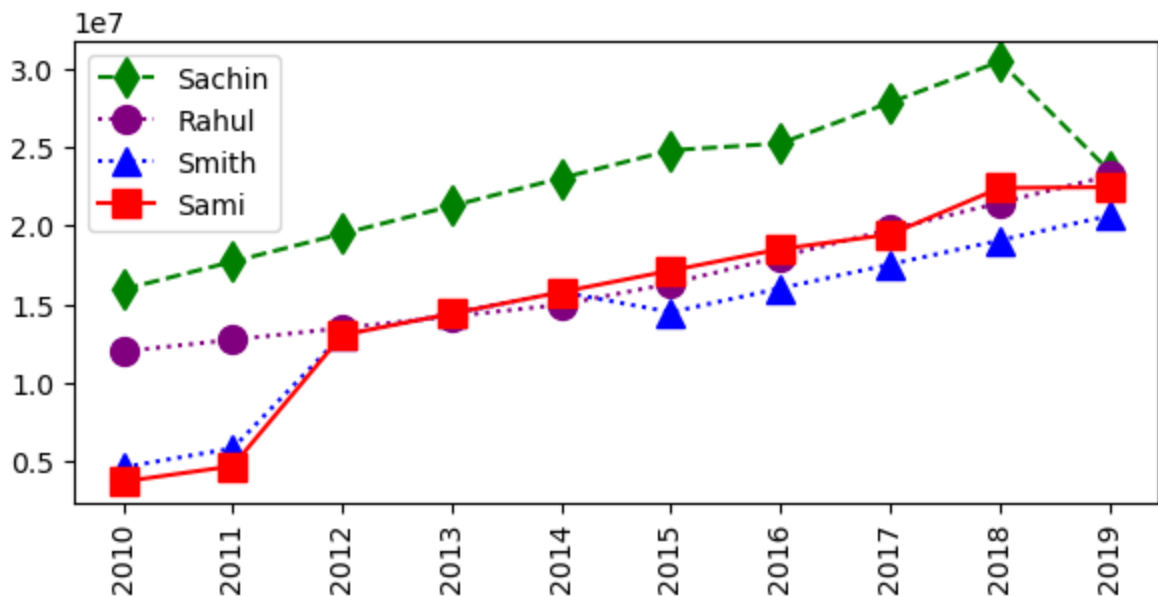


```
plt.plot(Salary[0],c='Green',ls='--',marker='d',ms=10,label=Players[0])#with Legend
plt.plot(Salary[1],c='purple',ls=':',marker='o',ms=10,label=Players[1])
plt.plot(Salary[2],c='Blue',ls=':',marker='^',ms=10,label=Players[2])
plt.plot(Salary[3],c='Red',ls='-',marker='s',ms=10,label=Players[3])
plt.legend(loc='lower right',bbox_to_anchor=(0,1) )
plt.xticks(list(range(0,10)),Seasons,rotation='vertical')
plt.show()
```
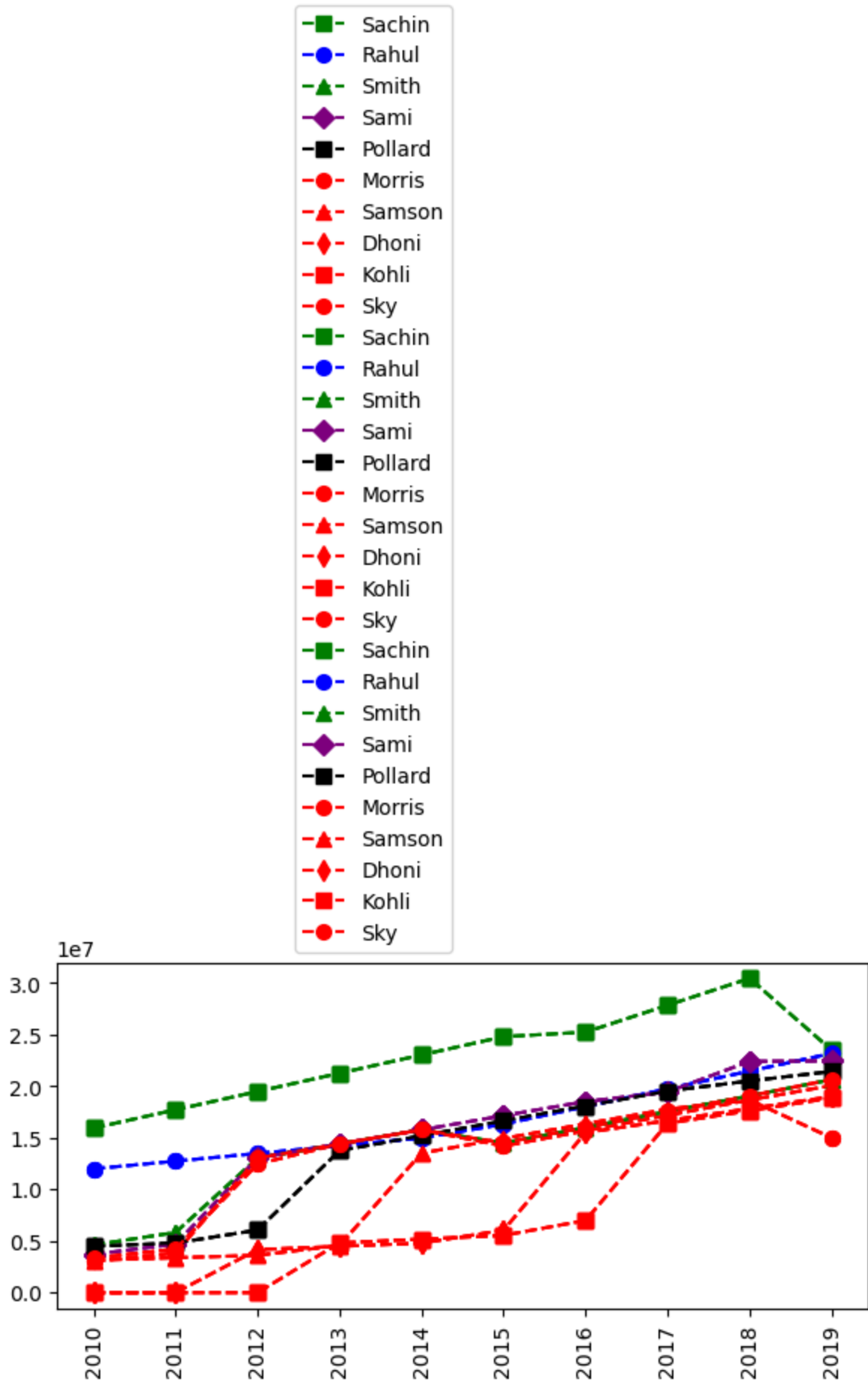
```
In [121...  plt.plot(Salary[0], c='Green', ls = '--', marker = 's', ms = 7, label = Players[0])
           plt.plot(Salary[1], c='Blue', ls = '--', marker = 'o', ms = 7, label = Players[1])
           plt.plot(Salary[2], c='Green', ls = '--', marker = '^', ms = 7, label = Players[2])
           plt.plot(Salary[3], c='Purple', ls = '--', marker = 'D', ms = 7, label = Players[3]
           plt.plot(Salary[4], c='Black', ls = '--', marker = 's', ms = 7, label = Players[4])
           plt.plot(Salary[5], c='Red', ls = '--', marker = 'o', ms = 7, label = Players[5])
           plt.plot(Salary[6], c='Red', ls = '--', marker = '^', ms = 7, label = Players[6])
           plt.plot(Salary[7], c='Red', ls = '--', marker = 'd', ms = 7, label = Players[7])
           plt.plot(Salary[8], c='Red', ls = '--', marker = 's', ms = 7, label = Players[8])
           plt.plot(Salary[9], c='Red', ls = '--', marker = 'o', ms = 7, label = Players[9])

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

           plt.show()
```
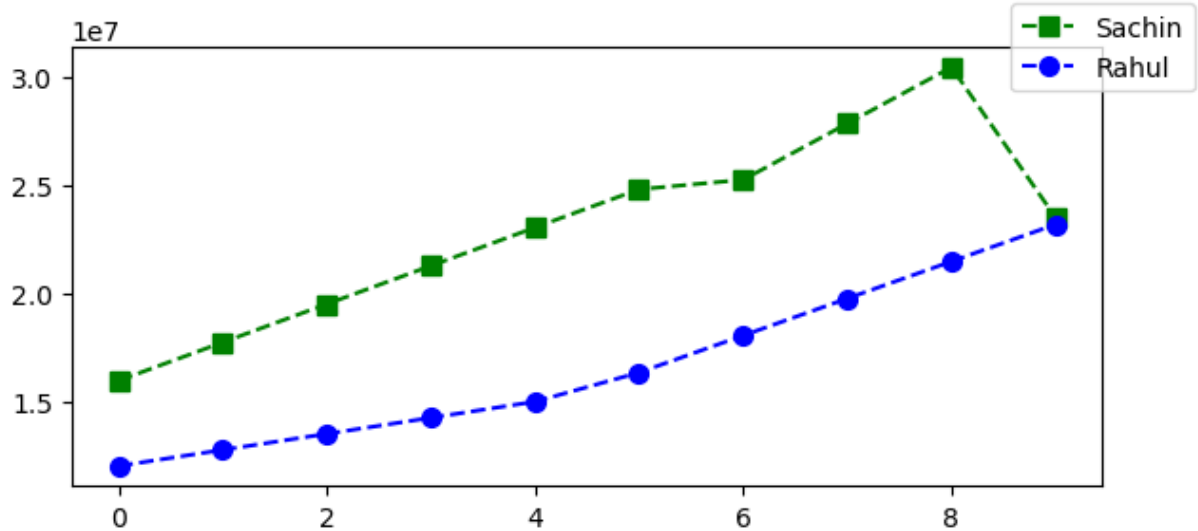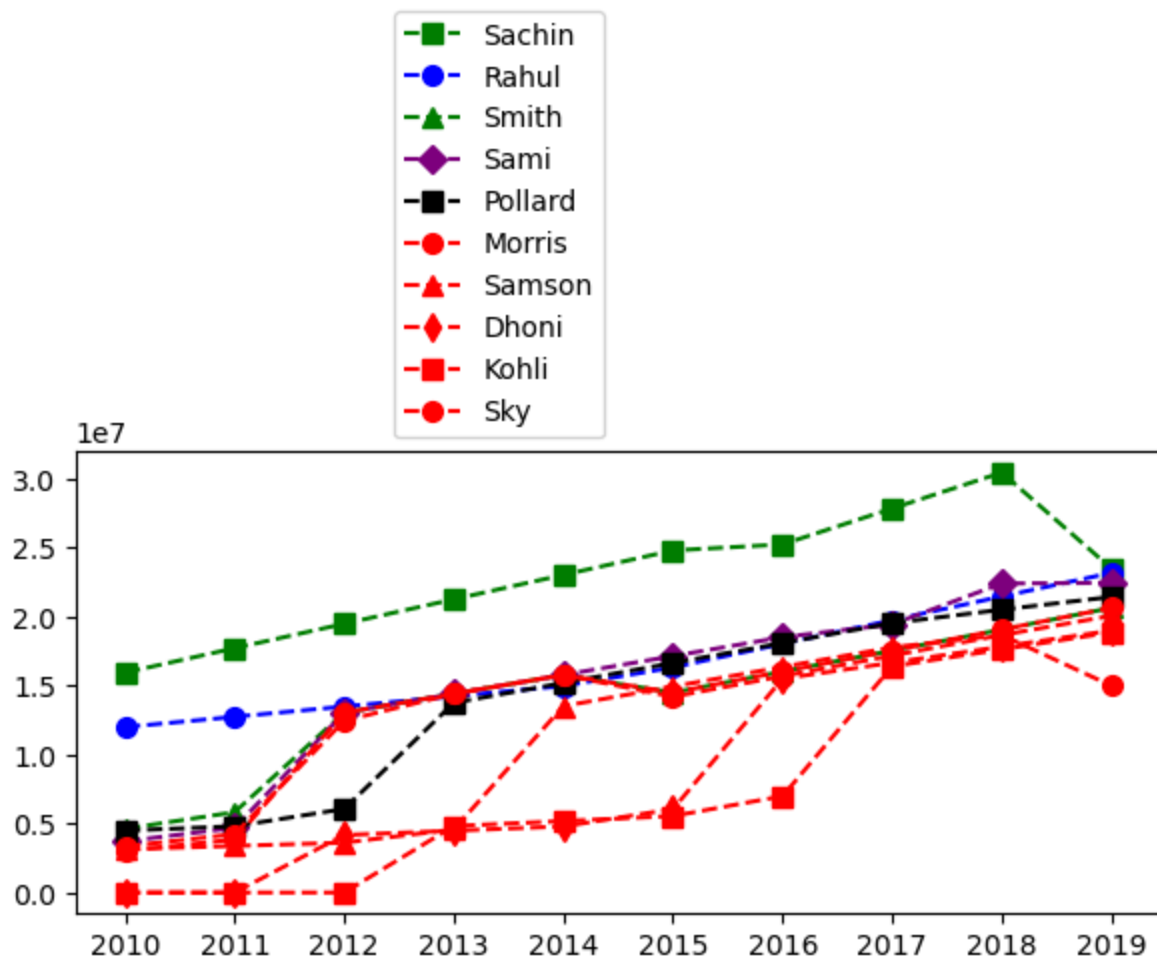
```python
plt.plot(Salary[0], c='Green', ls = '--', marker = 's', ms = 7, label = Players[0])
plt.plot(Salary[1], c='Blue', ls = '--', marker = 'o', ms = 7, label = Players[1])
plt.legend(loc ='center',bbox_to_anchor=(1,1))
plt.show()
```



```python
plt.plot(Salary[0], c='Green', ls = '--', marker = 's', ms = 7, label = Players[0])
plt.plot(Salary[1], c='Blue', ls = '--', marker = 'o', ms = 7, label = Players[1])
plt.plot(Salary[2], c='Green', ls = '--', marker = '^', ms = 7, label = Players[2])
plt.plot(Salary[3], c='Purple', ls = '--', marker = 'D', ms = 7, label = Players[3]
plt.plot(Salary[4], c='Black', ls = '--', marker = 's', ms = 7, label = Players[4])
plt.plot(Salary[5], c='Red', ls = '--', marker = 'o', ms = 7, label = Players[5])
plt.plot(Salary[6], c='Red', ls = '--', marker = '^', ms = 7, label = Players[6])
plt.plot(Salary[7], c='Red', ls = '--', marker = 'd', ms = 7, label = Players[7])
plt.plot(Salary[8], c='Red', ls = '--', marker = 's', ms = 7, label = Players[8])
plt.plot(Salary[9], c='Red', ls = '--', marker = 'o', ms = 7, label = Players[9])

plt.legend(loc = 'lower right',bbox_to_anchor=(0.5,1) )
plt.xticks(list(range(0,10)), Seasons,rotation='horizontal')
plt.show()
```
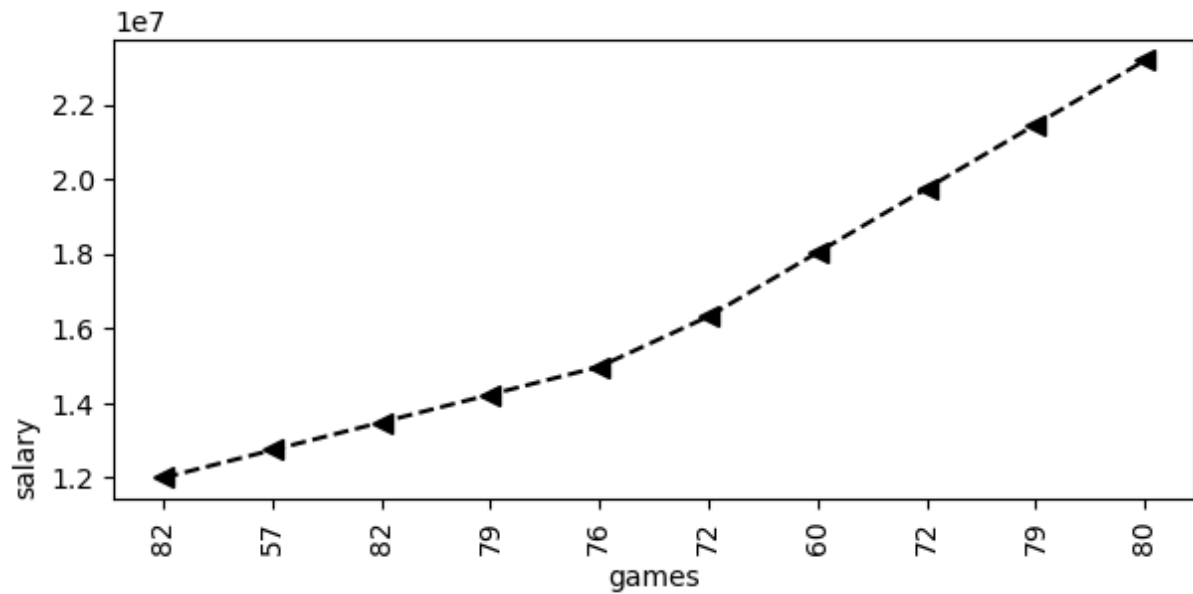
```
plt.plot(Salary[0],c='k',ls='--',marker='<',ms='7',label=Players[0])
plt.xticks(range(0,10),Games[0],rotation='vertical')
plt.xlabel('games',loc='center')
plt.ylabel('salary',loc='bottom')

plt.show()
```
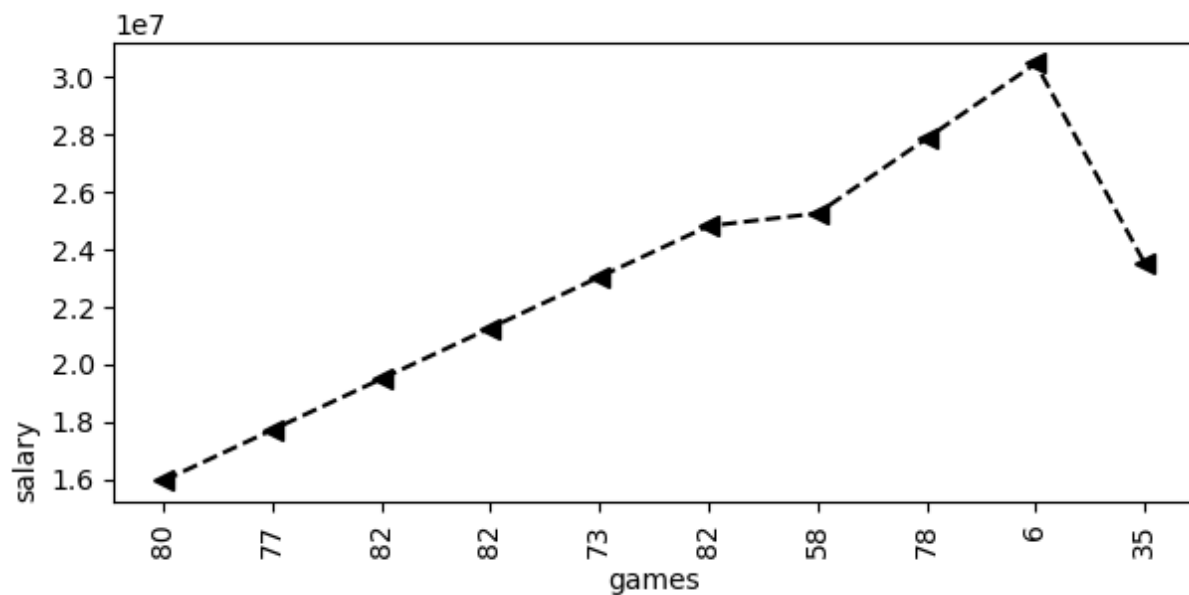
```
In [201…   plt.plot(Salary[1],c='k',ls='--',marker='<',ms='7',label=Players[1])
           plt.xticks(range(0,10),Games[1],rotation='vertical')
           plt.xlabel('games',loc='center')
           plt.ylabel('salary',loc='bottom')

           plt.show()
```


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