```python
import numpy as np
```

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

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

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

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

```python
#Salaries
Sachin_Salary = [15946875,17718750,19490625,21262500,23034375,24806250,252
Rahul_Salary = [12000000,12744189,13488377,14232567,14976754,16324500,1803
Smith_Salary = [4621800,5828090,13041250,14410581,15779912,14500000,160225
Sami_Salary = [3713640,4694041,13041250,14410581,15779912,17149243,1851857
Pollard_Salary = [4493160,4806720,6061274,13758000,15202590,16647180,18091
Morris_Salary = [3348000,4235220,12455000,14410581,15779912,14500000,16022
Samson_Salary = [3144240,3380160,3615960,4574189,13520500,14940153,1635980
Dhoni_Salary = [0,0,4171200,4484040,4796880,6053663,15506632,16669630,1783
Kohli_Salary = [0,0,0,4822800,5184480,5546160,6993708,16402500,17632688,18
Sky_Salary = [3031920,3841443,13041250,14410581,15779912,14200000,15691000
```

```python
In [5]:
#Matrix
Salary = np.array([Sachin_Salary, Rahul_Salary, Smith_Salary, Sami_Salary,
```

```python
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]])
```

```python
In [7]:
#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]
```

```python
In [8]:  1  #Matrix
         2  Games = np.array([Sachin_G, Rahul_G, Smith_G, Sami_G, Pollard_G, Morris_G,
         3  Games
```

```
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],
               [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]])
```

```python
In [9]:  1  #Points
         2  Sachin_PTS = [2832,2430,2323,2201,1970,2078,1616,2133,83,782]
         3  Rahul_PTS = [1653,1426,1779,1688,1619,1312,1129,1170,1245,1154]
         4  Smith_PTS = [2478,2132,2250,2304,2258,2111,1683,2036,2089,1743]
         5  Sami_PTS = [2122,1881,1978,1504,1943,1970,1245,1920,2112,966]
         6  Pollard_PTS = [1292,1443,1695,1624,1503,1784,1113,1296,1297,646]
         7  Morris_PTS = [1572,1561,1496,1746,1678,1438,1025,1232,1281,928]
         8  Samson_PTS = [1258,1104,1684,1781,841,1268,1189,1186,1185,1564]
         9  Dhoni_PTS = [903,903,1624,1871,2472,2161,1850,2280,2593,686]
        10  Kohli_PTS = [597,597,597,1361,1619,2026,852,0,159,904]
        11  Sky_PTS = [2040,1397,1254,2386,2045,1941,1082,1463,1028,1331]
```

```python
In [10]:  1  #Matrix
          2  Points = np.array([Sachin_PTS, Rahul_PTS, Smith_PTS, Sami_PTS, Pollard_PTS
          3  Points
```

```
Out[10]: 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]])
```

```python
In [11]:  1  Pdict['Rahul']
```

```
Out[11]: 1
```

```python
In [12]:  1  Games[1]
```

```
Out[12]: array([82, 57, 82, 79, 76, 72, 60, 72, 79, 80])
```

```
In [13]:   1  Pdict['Kohli']
```

Out[13]: 8

```
In [14]:   1  Games[8]
```

Out[14]: array([40, 40, 40, 81, 78, 81, 39, 0, 10, 51])

```
In [15]:   1  Salary[Pdict['Kohli']]
```

Out[15]: array([0,   0,   0, 4822800, 5184480, 5546160,
                6993708, 16402500, 17632688, 18862875])

```
In [16]:   1  Salary[8,0:3]
```

Out[16]: array([0, 0, 0])

```
In [17]:   1  Salary[1]
```

Out[17]: array([12000000, 12744189, 13488377, 14232567, 14976754, 16324500,
                18038573, 19752645, 21466718, 23180790])

```
In [18]:   1  Salary[Salary<100000]
```

Out[18]: array([0, 0, 0, 0, 0])

```
In [19]:   1  Salary[Salary<10000000]
```

Out[19]: array([4621800, 5828090, 3713640, 4694041, 4493160, 4806720, 6061274,
                3348000, 4235220, 3144240, 3380160, 3615960, 4574189,   0,
                      0, 4171200, 4484040, 4796880, 6053663,   0,   0,
                      0, 4822800, 5184480, 5546160, 6993708, 3031920, 3841443])

```
In [20]:   1  Salary[Salary>12000000]
```

Out[20]: array([15946875, 17718750, 19490625, 21262500, 23034375, 24806250,
                25244493, 27849149, 30453805, 23500000, 12744189, 13488377,
                14232567, 14976754, 16324500, 18038573, 19752645, 21466718,
                23180790, 13041250, 14410581, 15779912, 14500000, 16022500,
                17545000, 19067500, 20644400, 13041250, 14410581, 15779912,
                17149243, 18518574, 19450000, 22407474, 22458000, 13758000,
                15202590, 16647180, 18091770, 19536360, 20513178, 21436271,
                12455000, 14410581, 15779912, 14500000, 16022500, 17545000,
                19067500, 20644400, 13520500, 14940153, 16359805, 17779458,
                18668431, 20068563, 15506632, 16669630, 17832627, 18995624,
                16402500, 17632688, 18862875, 13041250, 14410581, 15779912,
                14200000, 15691000, 17182000, 18673000, 15000000])
```

```
In [21]:   1  Salary.reshape(1,100)
```

```
Out[21]: 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 [22]:   1  Salary<10000000
```

```
Out[22]: array([[False, False, False, False, False, False, False, False, False,
                  False],
                 [False, False, False, False, False, False, False, False, False,
                  False],
                 [ True,  True, False, False, False, False, False, False, False,
                  False],
                 [ True,  True, False, False, False, False, False, False, False,
                  False],
                 [ True,  True,  True, False, False, False, False, False, False,
                  False],
                 [ True,  True, False, False, False, False, False, False, False,
                  False],
                 [ True,  True,  True,  True, False, False, False, False, False,
                  False],
                 [ True,  True,  True,  True,  True,  True, False, False, False,
                  False],
                 [ True,  True,  True,  True,  True,  True,  True, False, False,
                  False],
                 [ True,  True, False, False, False, False, False, False, False,
                  False]])
```

```
In [23]:   1  Salary[Salary<10000000]
```

```
Out[23]: array([4621800, 5828090, 3713640, 4694041, 4493160, 4806720, 6061274,
                 3348000, 4235220, 3144240, 3380160, 3615960, 4574189,       0,
                       0, 4171200, 4484040, 4796880, 6053663,       0,       0,
                       0, 4822800, 5184480, 5546160, 6993708, 3031920, 3841443])
```

```
In [24]:    1  Games
```

Out[24]: 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 [25]:    1  Games[8]
```

Out[25]: array([40, 40, 40, 81, 78, 81, 39, 0, 10, 51])

```
In [26]:    1  Games[1]
```

Out[26]: array([82, 57, 82, 79, 76, 72, 60, 72, 79, 80])

```
In [27]:    1  Games[5,5]
```

Out[27]: 77

```
In [28]:    1  Games[8,7]
```

Out[28]: 0

```
In [29]:    1  Games[::-1]
```

Out[29]: array([[75, 51, 51, 79, 77, 76, 49, 69, 54, 62],
                [40, 40, 40, 81, 78, 81, 39, 0, 10, 51],
                [35, 35, 80, 74, 82, 78, 66, 81, 81, 27],
                [78, 64, 80, 78, 45, 80, 60, 70, 62, 82],
                [70, 69, 67, 77, 70, 77, 57, 74, 79, 44],
                [82, 82, 82, 79, 82, 78, 54, 76, 71, 41],
                [80, 65, 77, 66, 69, 77, 55, 67, 77, 40],
                [79, 78, 75, 81, 76, 79, 62, 76, 77, 69],
                [82, 57, 82, 79, 76, 72, 60, 72, 79, 80],
                [80, 77, 82, 82, 73, 82, 58, 78, 6, 35]])

```
In [30]:   1  Points
```

Out[30]: 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 [31]:   1  Points[-1,-1]
```

Out[31]: 1331

```
In [32]:   1  Points[-2,-3]
```

Out[32]: 0

```
In [33]:   1  P=Points[8]
           2  P
```

Out[33]: array([597, 597, 597, 1361, 1619, 2026, 852,   0, 159, 904])

```
In [34]:   1  Pdict['Kohli']
```

Out[34]: 8

```
In [35]:   1  Games[8]
```

Out[35]: array([40, 40, 40, 81, 78, 81, 39, 0, 10, 51])

```
In [36]:   1  Kohli=Salary[8]
           2  Kohli
```

Out[36]: array([0,   0,   0, 4822800, 5184480, 5546160,
               6993708, 16402500, 17632688, 18862875])

```
In [37]:   1  Kohli[9]
```

Out[37]: 18862875

```
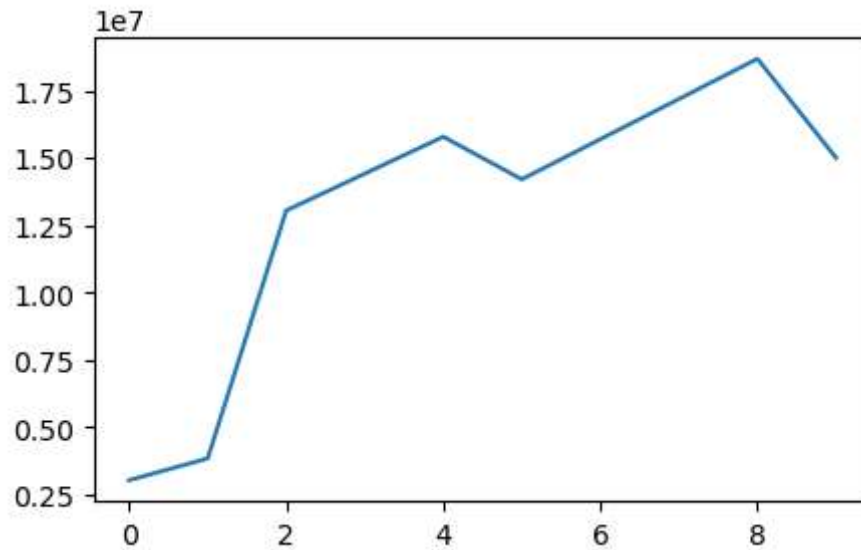In [38]:   1  Kohli[5]
```

Out[38]: 5546160

```
In [39]:   1  import numpy as np
           2
           3  import matplotlib.pyplot as plt
```

```
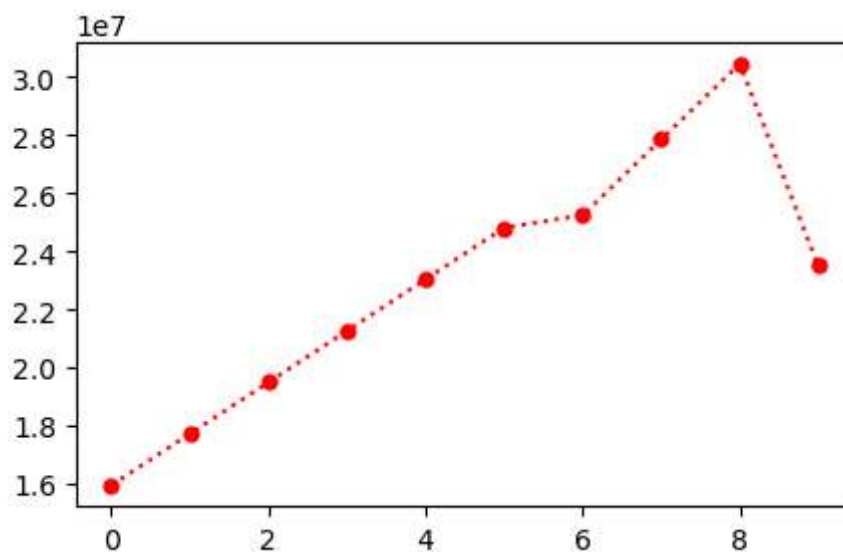In [50]:   1  %matplotlib inline
           2  plt.rcParams['figure.figsize']=5,3
```

```
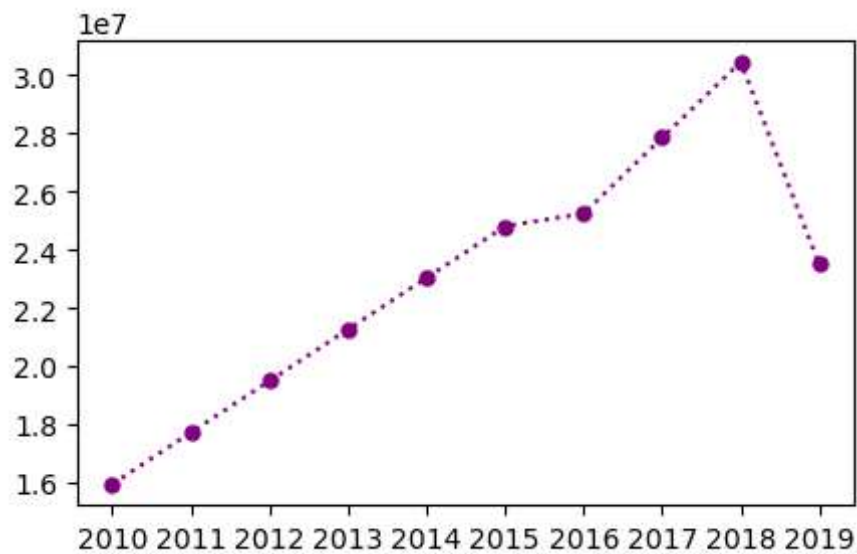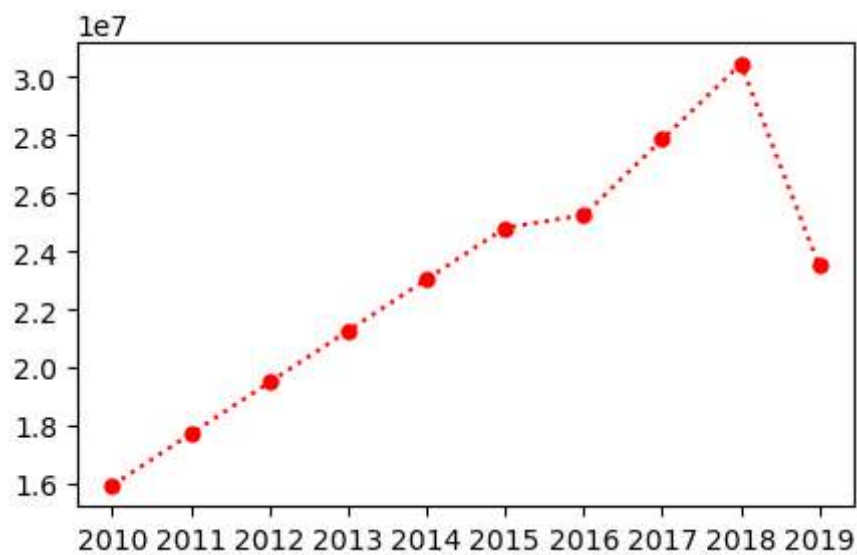In [41]:   1  plt.plot(Salary[9])
           2
```

Out[41]:   [<matplotlib.lines.Line2D at 0x20385daf890>]


```
In [51]:   1  plt.plot(Salary[0],c='r',ls=':',marker=".",ms=10)   # Ls=Line size c=Color
           2  plt.show()
```

```
1  plt.plot(Salary[0],c='purple',ls=':',marker=".",ms=10)
2  plt.xticks(list(range(0,10)),Seasons)
3  plt.show()
```

```
1  plt.plot(Salary[0],c='r',ls=':',marker=".",ms=10,label=Players[0])
2  plt.xticks(list(range(0,10)),Seasons)
3  plt.show()
```

Players Salary Seasonwise

In [49]:

```python
%matplotlib inline
plt.rcParams['figure.figsize'] = 7,5

plt.plot(Salary[0],c='b',ls='solid',marker=".",ms=7,label=Players[0])
plt.plot(Salary[1],c='g',ls='-',marker=",",ms=7,label=Players[1])
plt.plot(Salary[2],c='r',ls='--',marker="o",ms=7,label=Players[2])
plt.plot(Salary[3],c='c',ls='solid',marker="v",ms=7,label=Players[3])
plt.plot(Salary[4],c='m',ls='-.',marker="1",ms=7,label=Players[4])
plt.plot(Salary[5],c='y',ls='-',marker="p",ms=7,label=Players[5])
plt.plot(Salary[6],c='g',ls='--',marker="+",ms=7,label=Players[6])
plt.plot(Salary[7],c='b',ls=':',marker="D",ms=7,label=Players[7])
plt.plot(Salary[8],c='r',ls='-.',marker="H",ms=7,label=Players[8])
plt.plot(Salary[9],c='purple',ls=':',marker=".",ms=7,label=Players[9])

font1 = {'family':'serif','color':'m','size':20}
font2 = {'family':'serif','color':'c','size':15}

plt.xticks(list(range(0,10)),Seasons)
plt.legend(loc=10,bbox_to_anchor=(1.1,0.73))

plt.title("Players Salary Seasonwise",fontdict=font2)

plt.xlabel("Seasons",fontdict=font1)
plt.ylabel("Salary",fontdict=font1)

plt.show()
```
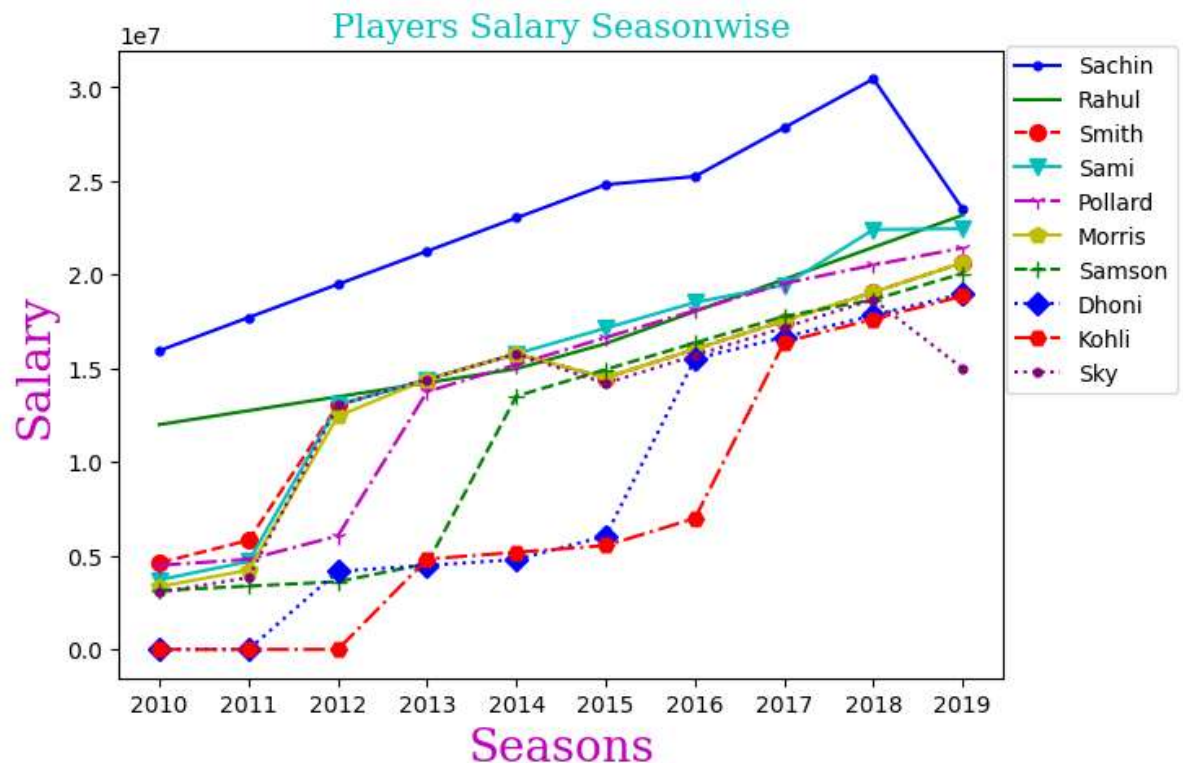
Interpretation: From above graph we can say that Sachin's Salary is very High as compare to other players.

In [46]:
```
1  Games
```

Out[46]: 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]])

Games played by players Seasonwise

In [47]:

```
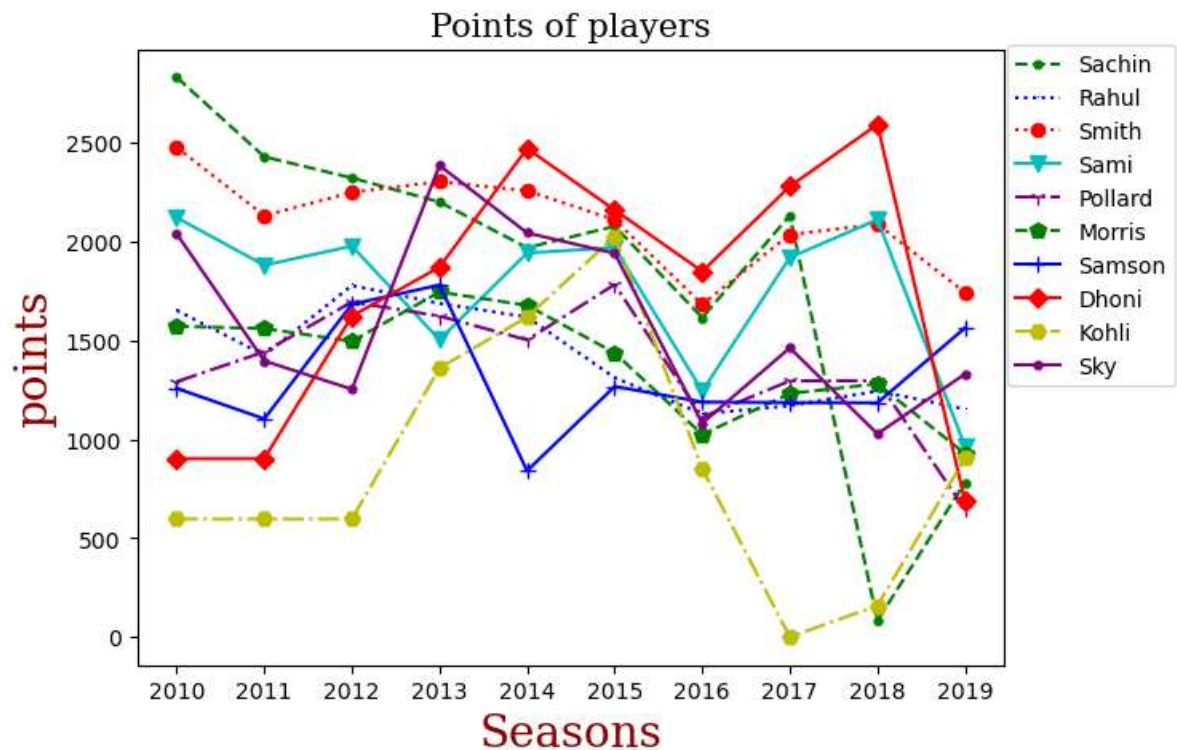1  %matplotlib inline
2  plt.rcParams['figure.figsize'] = 7,5
3
4  plt.plot(Games[0],c='c',ls='solid',marker=".",ms=7,label=Players[0])
5  plt.plot(Games[1],c='g',ls='-',marker=",",ms=7,label=Players[1])
6  plt.plot(Games[2],c='r',ls='--',marker="o",ms=6,label=Players[2])
7  plt.plot(Games[3],c='k',ls='solid',marker="v",ms=7,label=Players[3])
8  plt.plot(Games[4],c='m',ls=':',marker="1",ms=7,label=Players[4])
9  plt.plot(Games[5],c='y',ls='-',marker="p",ms=7,label=Players[5])
10 plt.plot(Games[6],c='g',ls='--',marker="+",ms=7,label=Players[6])
11 plt.plot(Games[7],c='b',ls='solid',marker="D",ms=5,label=Players[7])
12 plt.plot(Games[8],c='r',ls='-.',marker="H",ms=7,label=Players[8])
13 plt.plot(Games[9],c='purple',ls=':',marker=".",ms=7,label=Players[9])
14
15 font1 = {'family':'serif','color':'c','size':20}
16 font2 = {'family':'serif','color':'purple','size':15}
17
18 plt.xticks(list(range(0,10)),Seasons)
19 plt.legend(loc=10,bbox_to_anchor=(1.1,0.73))
20 plt.title("Games Played by Players",fontdict=font2)
21 plt.xlabel("Seasons",fontdict=font1)
22 plt.ylabel("Games",fontdict=font1)
23 plt.show()
```
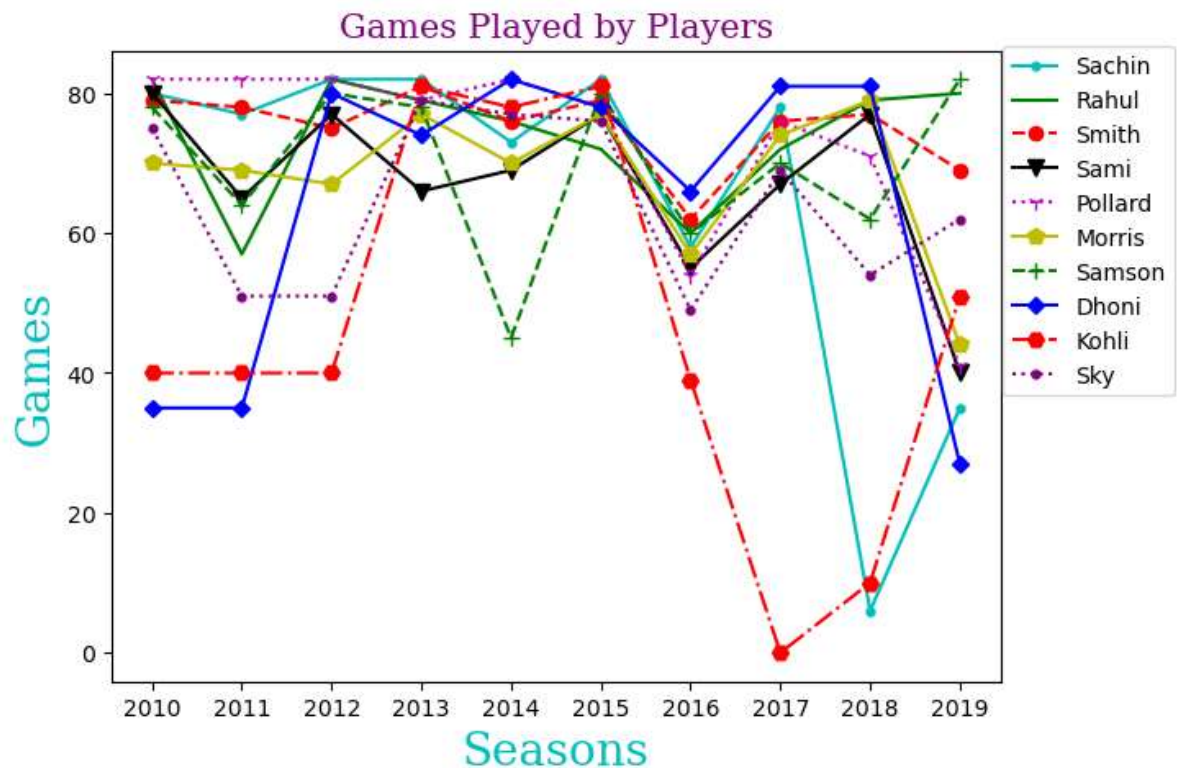
Points of Players Seasonwise

In [54]:

```python
%matplotlib inline
plt.rcParams['figure.figsize'] = 7,5

plt.plot(Points[0],c='g',ls='--',marker=".",ms=7,label=Players[0])
plt.plot(Points[1],c='b',ls=':',marker=",",ms=7,label=Players[1])
plt.plot(Points[2],c='r',ls=':',marker="o",ms=6,label=Players[2])
plt.plot(Points[3],c='c',ls='solid',marker="v",ms=7,label=Players[3])
plt.plot(Points[4],c='purple',ls='-.',marker="1",ms=7,label=Players[4])
plt.plot(Points[5],c='g',ls='--',marker="p",ms=7,label=Players[5])
plt.plot(Points[6],c='b',ls='-',marker="+",ms=7,label=Players[6])
plt.plot(Points[7],c='r',ls='solid',marker="D",ms=6,label=Players[7])
plt.plot(Points[8],c='y',ls='-.',marker="H",ms=7,label=Players[8])
plt.plot(Points[9],c='purple',ls='solid',marker=".",ms=7,label=Players[9])

font1 = {'family':'serif','color':'darkred','size':20}
font2 = {'family':'serif','color':'k','size':15}

plt.xticks(list(range(0,10)),Seasons)
plt.legend(loc=10,bbox_to_anchor=(1.1,0.73))
plt.title("Points of players",fontdict=font2)
plt.xlabel("Seasons",fontdict=font1)
plt.ylabel("points",fontdict=font1)
plt.show()
```


In [ ]: