

In [3]: `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}

#Players
Players = ["Sachin", "Rahul", "Smith", "Sami", "Pollard", "Morris", "Samson", "Dhoni", "Kohli", "Sky"]
Pdict = {"Sachin":0, "Rahul":1, "Smith":2, "Sami":3, "Pollard":4, "Morris":5, "Samson":6, "Dhoni":7, "Kohli":8, "Sky":9}

#Salaries
Sachin_Salary = [15946875, 17718750, 19490625, 21262500, 23034375, 24806250, 25244493, 26000000, 27000000, 28000000]
Rahul_Salary = [12000000, 12744189, 13488377, 14232567, 14976754, 16324500, 18038573, 19000000, 20000000, 21000000]
Smith_Salary = [4621800, 5828090, 13041250, 14410581, 15779912, 14500000, 16022500, 17000000, 18000000, 19000000]
Sami_Salary = [3713640, 4694041, 13041250, 14410581, 15779912, 17149243, 18518574, 19450000, 20000000, 21000000]
Pollard_Salary = [4493160, 4806720, 6061274, 13758000, 15202590, 16647180, 18091770, 19000000, 20000000, 21000000]
Morris_Salary = [3348000, 4235220, 12455000, 14410581, 15779912, 14500000, 16022500, 17000000, 18000000, 19000000]
Samson_Salary = [3144240, 3380160, 3615960, 4574189, 13520500, 14940153, 16359805, 17770000, 19000000, 20000000]
Dhoni_Salary = [0, 0, 4171200, 4484040, 4796880, 6053663, 15506632, 16669630, 17832627, 19000000]
Kohli_Salary = [0, 0, 0, 4822800, 5184480, 5546160, 6993708, 16402500, 17632688, 18862875]
Sky_Salary = [3031920, 3841443, 13041250, 14410581, 15779912, 14200000, 15691000, 17182000, 18000000, 19000000]

#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 [5]: `Salary`

```
Out[5]: 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 [9]: Points
```

```
Out[9]: 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 [15]: Points[0]
```

```
Out[15]: array([2832, 2430, 2323, 2201, 1970, 2078, 1616, 2133,  83, 782])
```

```
In [19]: Points[-6,-1]
```

```
Out[19]: 646
```

```
In [39]: Points[5:3]
```

```
Out[39]: array([], shape=(0, 10), dtype=int32)
```

```
In [41]: Points[5,3]
```

```
Out[41]: 1746
```

```
In [21]: Games
```

```
Out[21]: 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]: Games[0]
```

```
Out[43]: array([80, 77, 82, 82, 73, 82, 58, 78, 6, 35])
```

```
In [45]: Games[2,5]
```

```
Out[45]: 79
```

```
In [47]: Games[3:5]
```

```
Out[47]: array([[80, 65, 77, 66, 69, 77, 55, 67, 77, 40],
                [82, 82, 82, 79, 82, 78, 54, 76, 71, 41]])
```

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

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

```
In [25]: Pdict['Rahul']
```

```
Out[25]: 1
```

```
In [51]: Pdict['Sachin']
```

```
Out[51]: 0
```

```
In [53]: Pdict['Dhoni']
```

```
Out[53]: 7
```

```
In [27]: Games
```

```
Out[27]: 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 [29]: Games[1]
```

```
Out[29]: array([82, 57, 82, 79, 76, 72, 60, 72, 79, 80])
```

```
In [31]: Games[Pdict['Rahul']]
```

```
Out[31]: array([82, 57, 82, 79, 76, 72, 60, 72, 79, 80])
```

```
In [55]: Games[Pdict['Sachin']]
```

```
Out[55]: array([80, 77, 82, 82, 73, 82, 58, 78, 6, 35])
```

```
In [57]: Games[Pdict['Dhoni']]
```

```
Out[57]: array([35, 35, 80, 74, 82, 78, 66, 81, 81, 27])
```

```
In [33]: Points
```

```
Out[33]: 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 [35]: Salary
```

```
Out[35]: 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 [37]: Salary/Games

```
C:\Users\arpan\AppData\Local\Temp\ipykernel_30844\3709746658.py:1: RuntimeWarning: divide by zero encountered in divide
Salary/Games
```

```
Out[37]: 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 [59]: np.round(Salary//Games)
```

C:\Users\arpan\AppData\Local\Temp\ipykernel\_30844\3663165759.py:1: RuntimeWarning: divide by zero encountered in floor\_divide  
 np.round(Salary//Games)

```
Out[59]: 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 [61]: import warnings
warnings.filterwarnings('ignore')
```

```
In [63]: import matplotlib.pyplot as plt
```

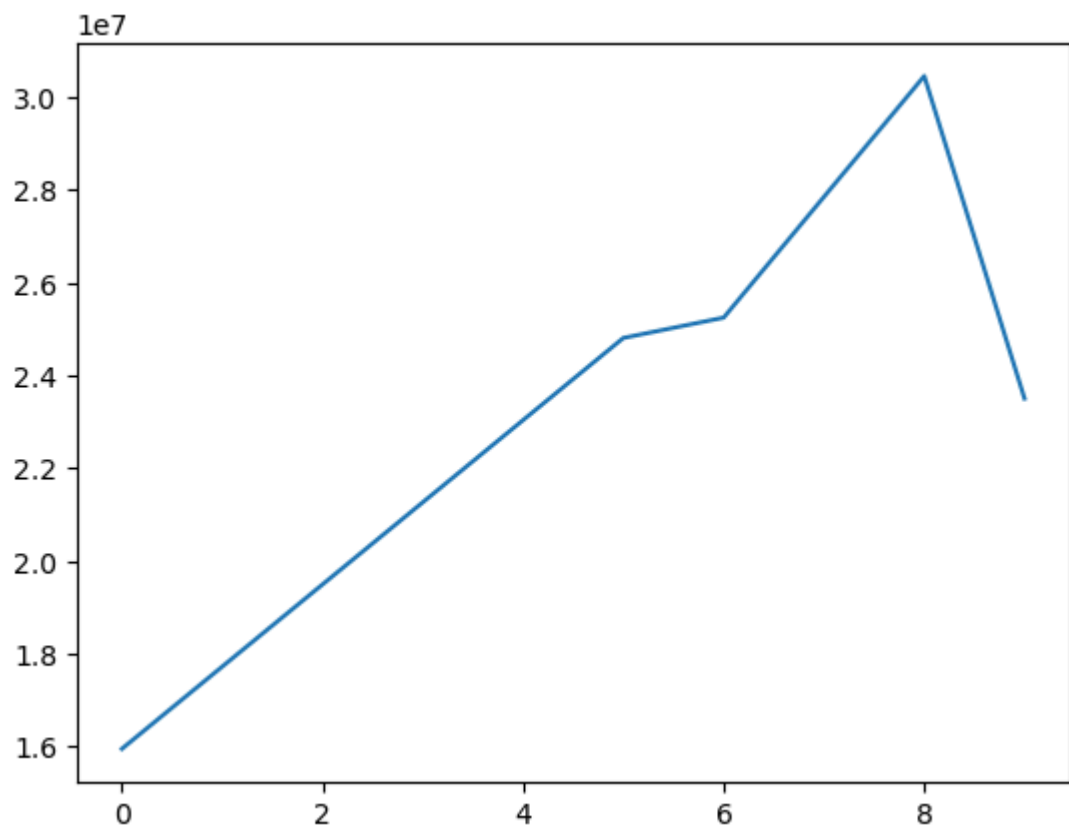
```
In [65]: Salary
```

```
Out[65]: 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]])
```

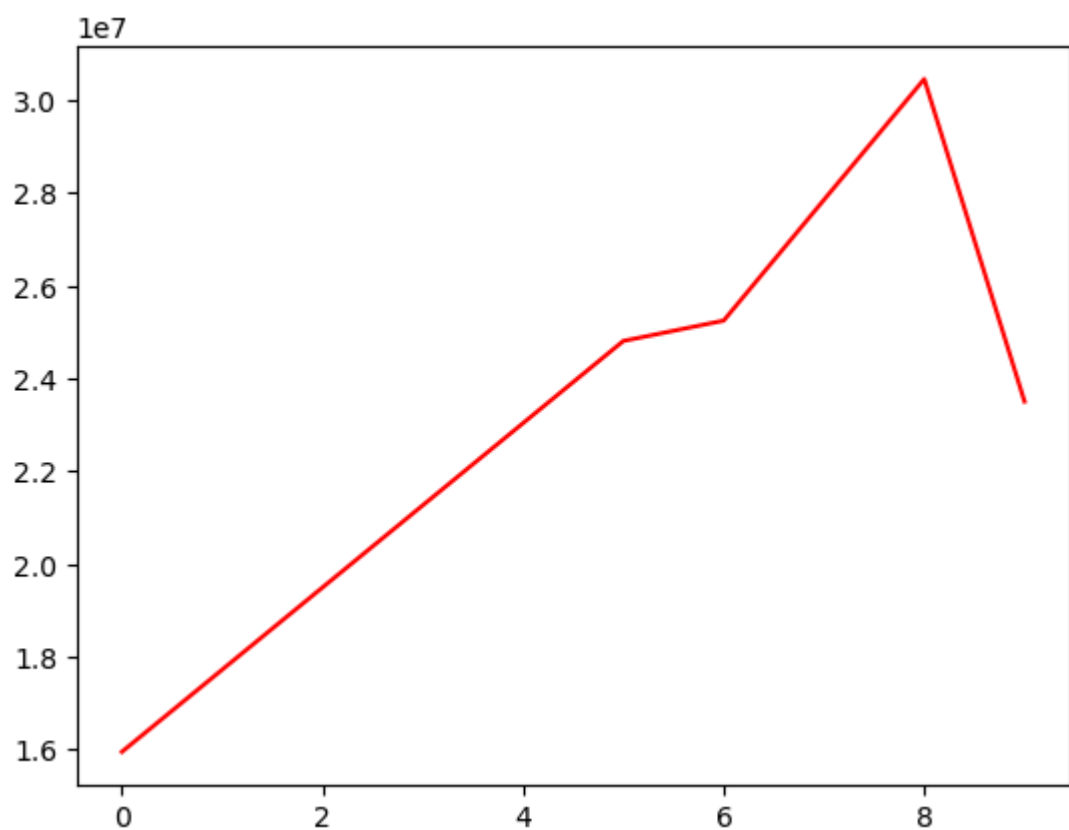
```
In [67]: Salary[0]
```

```
Out[67]: array([15946875, 17718750, 19490625, 21262500, 23034375, 24806250,
                  25244493, 27849149, 30453805, 23500000])
```

```
In [73]: plt.plot(Salary[0])
plt.show()
```



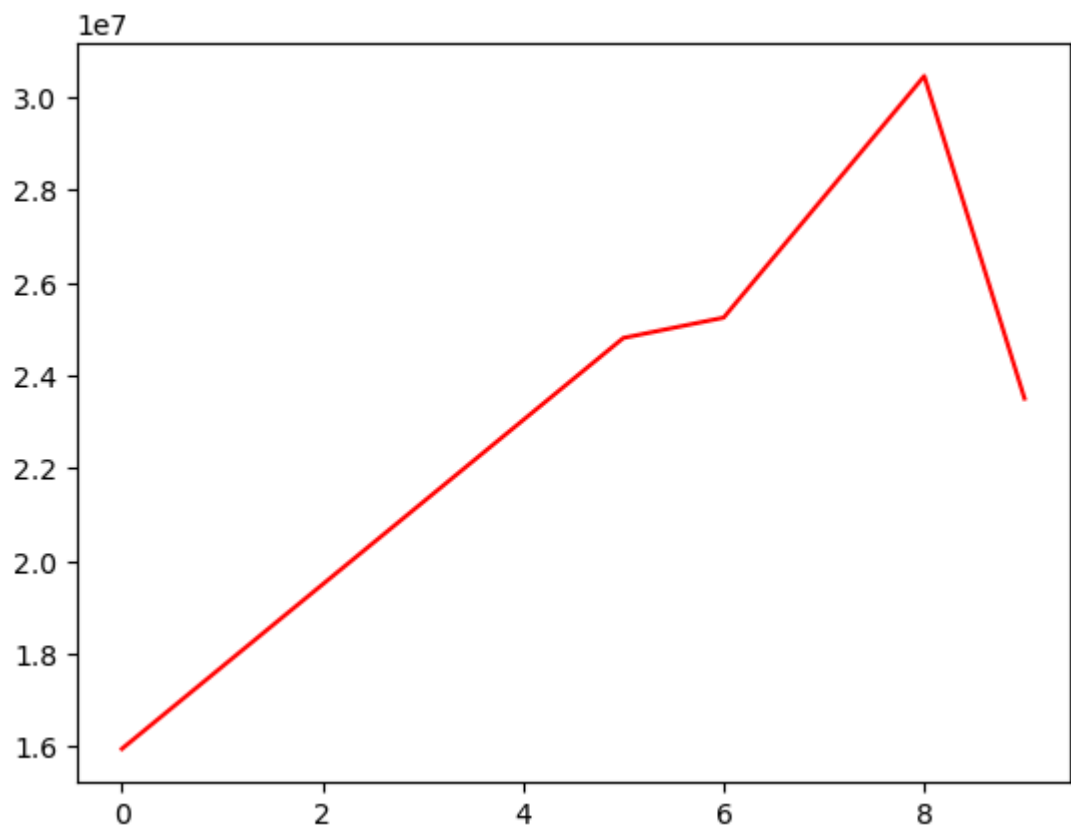
```
In [97]: plt.plot(Salary[0],color='red')  
plt.show()
```



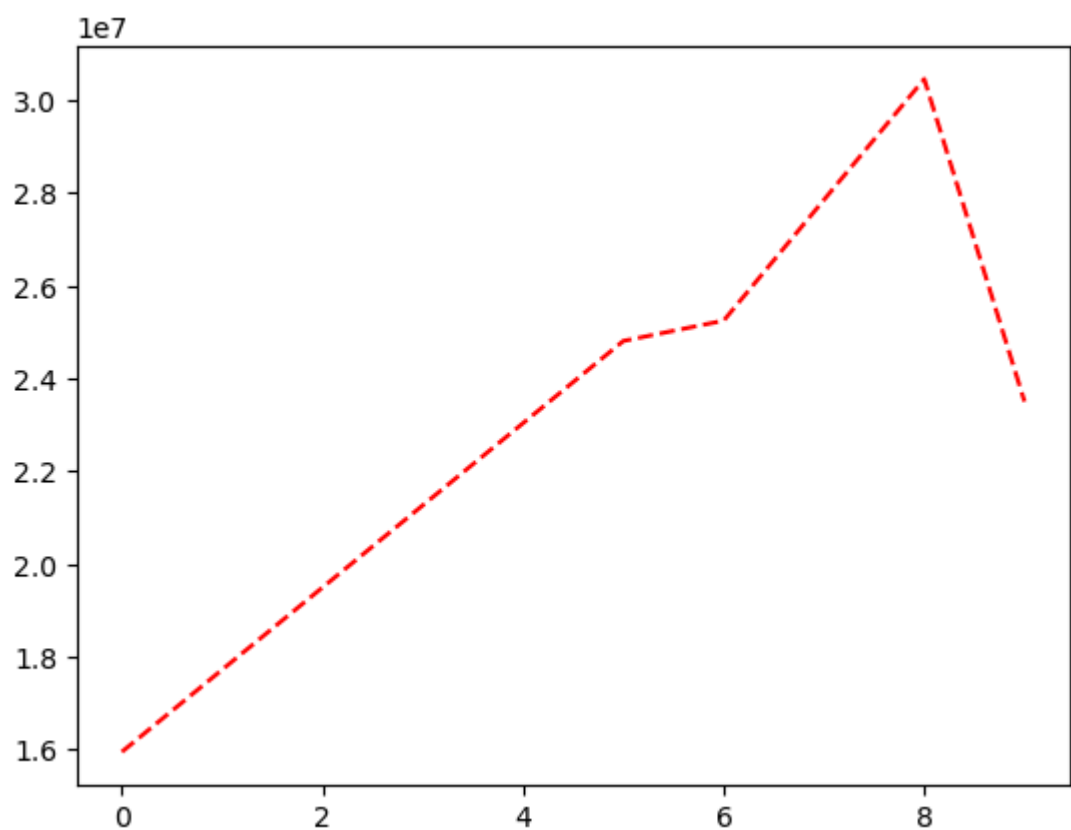
```
In [103]: plt.plot(Salary[0],color='r')
```

```
Out[103]: [<matplotlib.lines.Line2D at 0x1f42eac8320>]
```

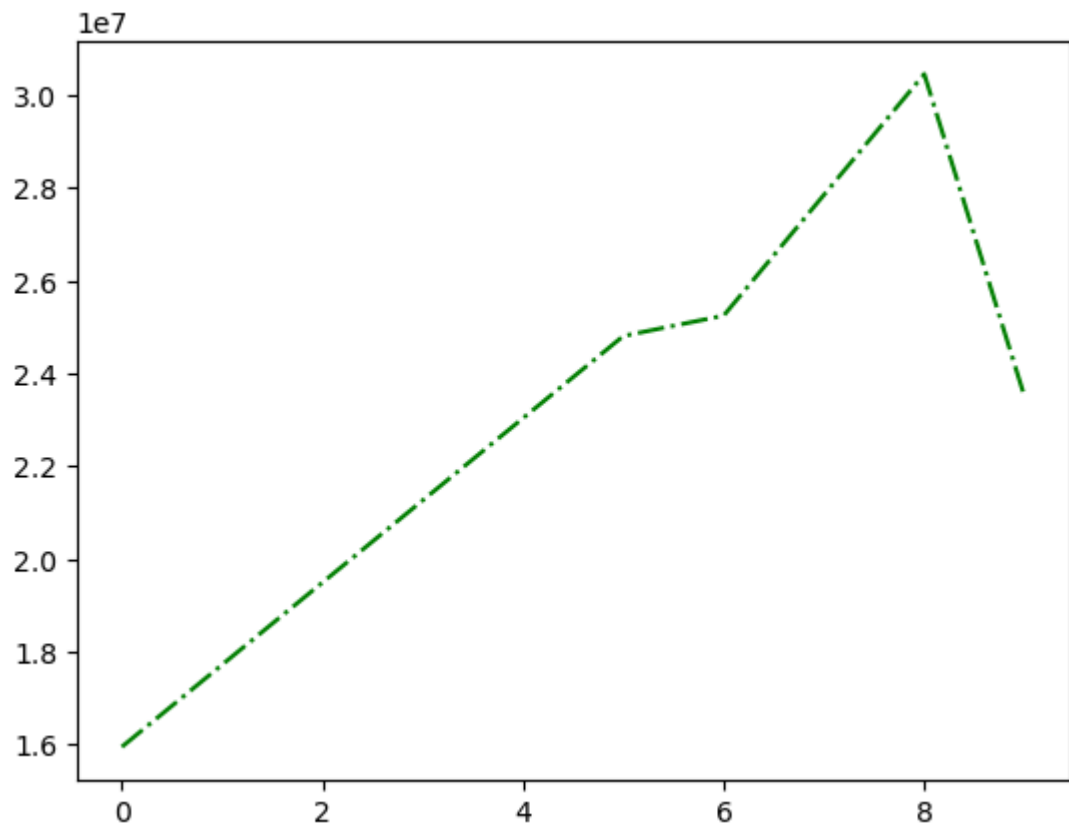




```
In [109... plt.plot(Salary[0], ls = '--', color = 'red')  
plt.show()
```

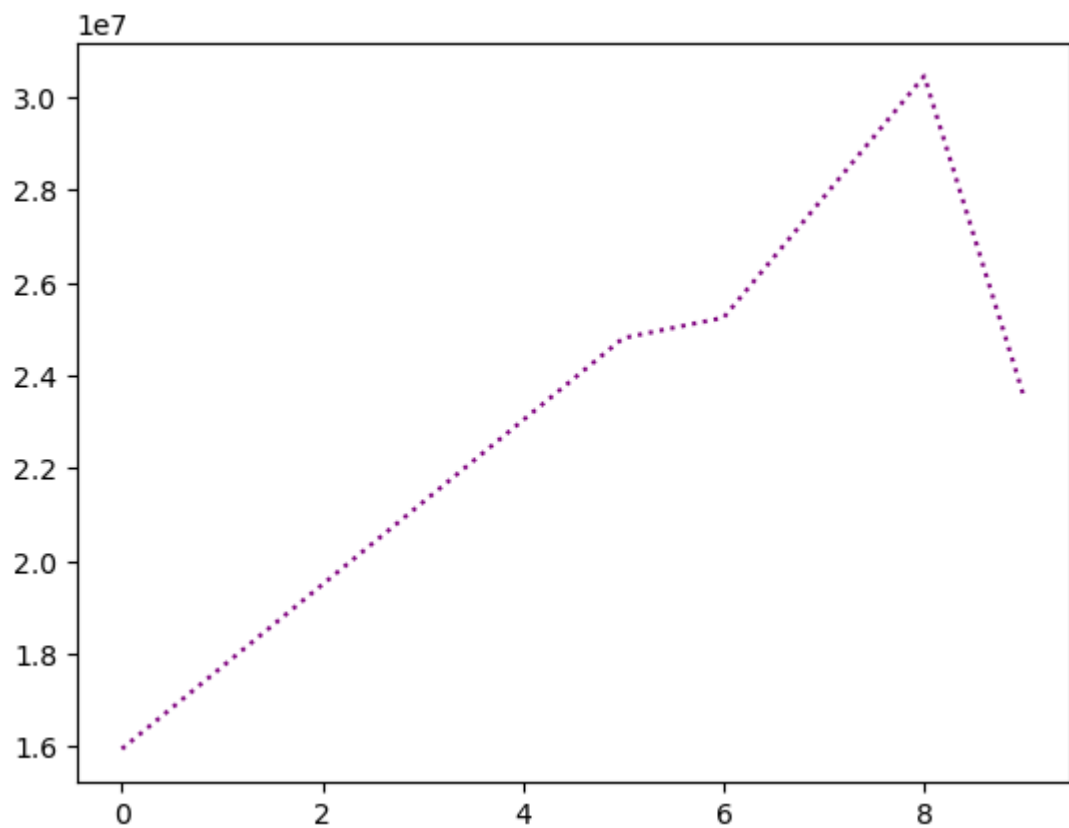


```
In [121... plt.plot(Salary[0], ls = '-.', color = 'green')  
plt.show()
```



In [123... `plt.plot(Salary[0],c='purple',ls='dotted')`

Out[123... `[<matplotlib.lines.Line2D at 0x1f4303f43e0>]`



In [135... `%matplotlib inline`  
`plt.rcParams['figure.figsize'] = 7,3`

```
In [137... plt.plot(Salary[0], c = 'blue' , ls = '--')
```

```
Out[137... [<matplotlib.lines.Line2D at 0x1f4305679e0>]
```

```
In [146... plt.plot(Salary[0], c = 'purple', ls = 'dotted')
```

```
Out[146... [<matplotlib.lines.Line2D at 0x1f43063f140>]
```

```
In [ ]:
```