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NPTEL (https://swayam.gov.in/explorer?ncCode=NPTEL) » **Programming, Data Structures And Algorithms Using Python (course)**

Announcements (announcements)

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Week 5 Programming Assignment

Due on 2019-09-06, 23:59 IST

For this assignment, you have to write a complete Python program. Paste your code in the window below.

- You may define additional auxiliary functions as needed.
- There are some public test cases and some (hidden) private test cases.
- "Compile and run" will evaluate your submission against the public test cases
- "Submit" will evaluate your submission against the hidden private test cases. There are 6 private test cases, with equal weightage. You will get feedback about which private test cases pass or fail, though you cannot see the actual test cases.
- Ignore warnings about "Presentation errors".

Here are some basic facts about tennis scoring: A tennis match is made up of sets. A set is made up of games.

To win a set, a player has to win 6 games with a difference of 2 games. At 6-6, there is often a special tie-breaker. In some cases, players go on playing till one of them wins the set with a difference of two games.

Tennis matches can be either 3 sets or 5 sets. The player who wins a majority of sets wins the match (i.e., 2 out 3 sets or 3 out of 5 sets) The score of a match lists out the games in each set, with the overall winner's score reported first for each set. Thus, if the score is 6-3, 5-7,

7-6 it means that the first player won the first set by 6 games to 3, lost the second one 5 games to 7 and won the third one 7 games to 6 (and hence won the overall match as well by 2 sets to 1).

You will read input from the keyboard (standard input) containing the results of several tennis matches. Each match's score is recorded on a separate line with the following format:

`Winner:Loser:Set-1-score,...,Set-k-score`, where $2 \leq k \leq 5$

For example, an input line of the form

```
Halep:Wozniacki:3-6,6-3,6-3
```

indicates that Halep beat Wozniacki 3-6, 6-3, 6-3 in a best of 3 set match.

The input is terminated by a blank line.

You have to write a Python program that reads information about all the matches and compile the following statistics for each player:

1. Number of best-of-5 set matches won
2. Number of best-of-3 set matches won
3. Number of sets won
4. Number of games won
5. Number of sets lost
6. Number of games lost

You should print out to the screen (standard output) a summary in decreasing order of ranking, where the ranking is according to the criteria 1-6 in that order (compare item 1, if equal compare item 2, if equal compare item 3 etc, noting that for items 5 and 6 the comparison is reversed).

For instance, given the following data

```
Federer:Nadal:2-6,6-7,7-6,6-3,6-1
Nadal:Federer:6-3,4-6,6-4,6-3
Federer:Nadal:6-0,7-6,6-7,6-3
Nadal:Federer:6-4,6-4
Federer:Nadal:2-6,6-2,6-0
Nadal:Federer:6-3,4-6,6-3,6-4
Federer:Nadal:7-6,4-6,7-6,2-6,6-2
Nadal:Federer:7-5,7-5
Halep:Wozniacki:3-6,6-3,6-3
```

your program should print out the following

```
Federer 3 1 13 142 16 143
Nadal 2 2 16 143 13 142
Halep 0 1 2 15 1 12
Wozniacki 0 0 1 12 2 15
```

You can assume that there are no spaces around the punctuation marks ":", "-" and ",". Each player's name will be spelled consistently and no two players have the same name.

Private Test cases used for evaluation	Input	Expected Output	Actual Output	Status
Test Case 1	Federer:Djokovic:2-6,6-7,7-6,6-3,6-1 Djokovic:Federer:6-3,4-6,6-4,6-3 Federer:Djokovic:6-0,7-6,6-7,6-3 Djokovic:Federer:6-4,6-4 Federer:Djokovic:2-6,6-2,6-0 Djokovic:Federer:6-3,4-6,6-3,6-4 Federer:Djokovic:7-6,4-6,7-6,2-6,6-2 Djokovic:Federer:7-5,7-5 Halep:Barty:3-6,6-3,6-3	Federer 3 1 13 142 16 143\n Djokovic 2 2 16 143 13 142\n Halep 0 1 2 15 1 12 \n Barty 0 0 1 12 2 15 \n	Federer 3 1 13 142 16 143\n Djokovic 2 2 16 143 13 142 \n Halep 0 1 2 15 1 12 \n Barty 0 0 1 12 2 15 \n	Passed

| Test Case 2 | Halep:Medvedev:2-6,6-7,7-6,6-3,6-1
Williams:Medvedev:6-3,4-6,6-4,6-3
Medvedev:Thiem:6-0,7-6,6-7,6-3
Thiem:Medvedev:6-4,6-4
Halep:Medvedev:2-6,6-2,6-0
Thiem:Medvedev:6-3,4-6,6-3,6-4
Medvedev:Thiem:7-6,4-6,7-6,2-6,6-2
Thiem:Williams:7-5,7-5
Halep:Williams:3-6,6-3,6-3
Halep:Thiem:0-6,0-6,6-0,6-0,7-5
Williams:Thiem:6-3,4-6,7-6,0-6,7-5 | Halep 2 2 10 75 6 60\n
Medvedev 2 0 11 122 16 139\n
Williams 2 0 7 68 7 71\n
Thiem 1 2 14 133 13 128\n | Halep 2 2 10 75 6 60\n
Medvedev 2 0 11 122 16 139\n
Williams 2 0 7 68 7 71\n
Thiem 1 2 14 133 13 128\n | Passed |
| Test Case 3 | Djokovic:Zverev:2-6,6-7,7-6,6-3,6-1
Zverev:Djokovic:6-3,4-6,6-4,6-3
Djokovic:Zverev:6-0,7-6,6-7,6-3
Zverev:Djokovic:6-4,6-4
Djokovic:Zverev:2-6,6-2,6-0
Zverev:Djokovic:6-3,4-6, | Williams 3 2 16 160 16 146\n
Muguruza 3 1 16 146 16 160\n
Djokovic 3 1 13 142 16 143\n
Zverev 2 2 16 143 13 142\n | Williams 3 2 16 160 16 146\n
Muguruza 3 1 16 146 16 160\n
Djokovic 3 1 13 142 16 143\n
Zverev 2 2 16 143 13 142\n | Passed |

```
6-3,6-4
Djokovic:Zve
rev:7-6,4-6,
7-6,2-6,6-2
Zverev:Djoko
vic:7-5,7-5
Williams:Mug
uruza:3-6,6-
3,6-3
Muguruza:Wil
liams:6-4,6-
4
Williams:Mug
uruza:2-6,6-
2,6-0
Muguruza:Wil
liams:6-3,4-
6,6-4,6-3
Williams:Mug
uruza:6-0,7-
6,6-7,6-3
Muguruza:Wil
liams:6-3,4-
6,6-4,6-3
Williams:Mug
uruza:6-0,7-
6,6-7,6-3
Muguruza:Wil
liams:6-3,4-
6,6-4,6-3
Williams:Mug
uruza:6-0,7-
6,6-7,6-3
```

Test Case 4				
	```Halep:Medved ev:2-6,6-7,7 -6,6-3,6-1 Barty:Medved ev:6-3,4-6,6 -4,6-3 Medvedev:Thi em:6-0,7-6,6 -7,6-3 Thiem:Medved ev:6-4,6-4 Halep:Medved ev:2-6,6-2,6 -0 Thiem:Medved```	```Halep 4 4 20 150 12 120\n Medvedev 4 0 22 244 3 2 278\n Barty 4 0 14 136 14 142\n Thiem 2 4 28 266 26 256\n```	```Halep 4 4 20 150 12 120\n Medvedev 4 0 22 24 4 32 278 \n Barty 4 0 14 136 14 142\n Thiem 2 4 28 266 26 256\n```	Pas sed

ev:6-3,4-6,6
-3,6-4
Medvedev:Thi
em:7-6,4-6,7
-6,2-6,6-2
Thiem:Barty:
7-5,7-5
Halep:Barty:
3-6,6-3,6-3
Halep:Thiem:
0-6,0-6,6-0,
6-0,7-5
Barty:Thiem:
6-3,4-6,7-6,
0-6,7-5
Halep:Medved
ev:2-6,6-7,7
-6,6-3,6-1
Barty:Medved
ev:6-3,4-6,6
-4,6-3
Medvedev:Thi
em:6-0,7-6,6
-7,6-3
Thiem:Medved
ev:6-4,6-4
Halep:Medved
ev:2-6,6-2,6
-0
Thiem:Medved
ev:6-3,4-6,6
-3,6-4
Medvedev:Thi
em:7-6,4-6,7
-6,2-6,6-2
Thiem:Barty:
7-5,7-5
Halep:Barty:
3-6,6-3,6-3
Halep:Thiem:
0-6,0-6,6-0,
6-0,7-5
Barty:Thiem:
6-3,4-6,7-6,
0-6,7-5

| Test Case 5 | Djokovic:Zve rev:2-6,6-7, 7-6,6-3,6-1 | Halep 4 4 20 150 12 120\n | Halep 4 4 20 150 12 120\n | Pas sed |

Zverev:Djokovic:6-3,4-6,6-4,6-3
Djokovic:Zverev:6-0,7-6,6-7,6-3
Zverev:Djokovic:6-4,6-4
Djokovic:Zverev:2-6,6-2,6-0
Zverev:Djokovic:6-3,4-6,6-3,6-4
Djokovic:Zverev:7-6,4-6,7-6,2-6,6-2
Zverev:Djokovic:7-5,7-5
Williams:Muguruza:3-6,6-3,6-3
Muguruza:Williams:6-4,6-4
Williams:Muguruza:2-6,6-2,6-0
Muguruza:Williams:6-3,4-6,6-4,6-3
Williams:Muguruza:6-0,7-6,6-7,6-3
Muguruza:Williams:6-3,4-6,6-4,6-3
Williams:Muguruza:6-0,7-6,6-7,6-3
Muguruza:Williams:6-3,4-6,6-4,6-3
Williams:Muguruza:6-0,7-6,6-7,6-3
Halep:Medvedev:2-6,6-7,7-6,6-3,6-1
Kerber:Medve

Medvedev 4 0 22 244 32 278\n
Kerber 4 0 14 136 14 142\n
Williams 3 2 16 160 16 146\n
Muguruza 3 1 16 146 16 160\n
Djokovic 3 1 13 142 16 143\n
Thiem 2 4 28 266 26 256\n
Zverev 2 2 16 143 13 142\n

Medvedev 4 0 22 244 32 278\n
Kerber 4 0 14 136 14 142\n
Williams 3 2 16 160 16 146\n
Muguruza 3 1 16 146 16 160\n
Djokovic 3 1 13 142 16 143\n
Thiem 2 4 28 266 26 256\n
Zverev 2 2 16 143 13 142\n

dev:6-3,4-6,
6-4,6-3
Medvedev:Thi
em:6-0,7-6,6
-7,6-3
Thiem:Medved
ev:6-4,6-4
Halep:Medved
ev:2-6,6-2,6
-0
Thiem:Medved
ev:6-3,4-6,6
-3,6-4
Medvedev:Thi
em:7-6,4-6,7
-6,2-6,6-2
Thiem:Kerbe
r:7-5,7-5
Halep:Kerbe
r:3-6,6-3,6-
3
Halep:Thiem:
0-6,0-6,6-0,
6-0,7-5
Kerber:Thie
m:6-3,4-6,7-
6,0-6,7-5
Halep:Medved
ev:2-6,6-7,7
-6,6-3,6-1
Kerber:Medve
dev:6-3,4-6,
6-4,6-3
Medvedev:Thi
em:6-0,7-6,6
-7,6-3
Thiem:Medved
ev:6-4,6-4
Halep:Medved
ev:2-6,6-2,6
-0
Thiem:Medved
ev:6-3,4-6,6
-3,6-4
Medvedev:Thi
em:7-6,4-6,7
-6,2-6,6-2
Thiem:Kerbe
r:7-5,7-5
Halep:Kerbe

r:3-6,6-3,6-3
Halep:Thiem:
0-6,0-6,6-0,
6-0,7-5
Kerber:Thie
m:6-3,4-6,7-
6,0-6,7-5

Test Case 6

Djokovic:Zve
rev:2-6,6-7,
7-6,6-3,6-1
Zverev:Djoko
vic:6-3,4-6,
6-4,6-3
Djokovic:Zve
rev:6-0,7-6,
6-7,6-3
Zverev:Djoko
vic:6-4,6-4
Djokovic:Zve
rev:2-6,6-2,
6-0
Zverev:Djoko
vic:6-3,4-6,
6-3,6-4
Djokovic:Zve
rev:7-6,4-6,
7-6,2-6,6-2
Zverev:Djoko
vic:7-5,7-5
Williams:Mug
uruza:3-6,6-
3,6-3
Muguruza:Wil
liams:6-4,6-
4
Williams:Mug
uruza:2-6,6-
2,6-0
Muguruza:Wil
liams:6-3,4-
6,6-4,6-3
Williams:Mug
uruza:6-0,7-
6,6-7,6-3
Muguruza:Wil
liams:6-3,4-
6,6-4,6-3

Halep 8 8
40 300 24
240\n
Medvedev 8
0 44 488 6
4 556\n
Barty 8 0
28 272 28
284\n
Williams 6
4 32 320 3
2 292\n
Muguruza 6
2 32 292 3
2 320\n
Djokovic 6
2 26 284 3
2 286\n
Thiem 4 8
56 532 52
512\n
Zverev 4 4
32 286 26
284\n

Halep 8 8
40 300 24
240\n
Medvedev
8 0 44 48
8 64 556
\n
Barty 8 0
28 272 28
284\n
Williams
6 4 32 32
0 32 292
\n
Muguruza
6 2 32 29
2 32 320
\n
Djokovic
6 2 26 28
4 32 286
\n
Thiem 4 8
56 532 52
512\n
Zverev 4
4 32 286
26 284\n

Pas
sed

Williams:Muguruza:6-0,7-6,6-7,6-3
Muguruza:Williams:6-3,4-6,6-4,6-3
Williams:Muguruza:6-0,7-6,6-7,6-3
Halep:Medvedev:2-6,6-7,7-6,6-3,6-1
Barty:Medvedev:6-3,4-6,6-4,6-3
Medvedev:Thiem:6-0,7-6,6-7,6-3
Thiem:Medvedev:6-4,6-4
Halep:Medvedev:2-6,6-2,6-0
Thiem:Medvedev:6-3,4-6,6-3,6-4
Medvedev:Thiem:7-6,4-6,7-6,2-6,6-2
Thiem:Barty:7-5,7-5
Halep:Barty:3-6,6-3,6-3
Halep:Thiem:0-6,0-6,6-0,6-0,7-5
Barty:Thiem:6-3,4-6,7-6,0-6,7-5
Halep:Medvedev:2-6,6-7,7-6,6-3,6-1
Barty:Medvedev:6-3,4-6,6-4,6-3
Medvedev:Thiem:6-0,7-6,6-7,6-3
Thiem:Medvedev:6-4,6-4

Halep:Medvedev:2-6,6-2,6-0
Thiem:Medvedev:6-3,4-6,6-3,6-4
Medvedev:Thiem:7-6,4-6,7-6,2-6,6-2
Thiem:Barty:7-5,7-5
Halep:Barty:3-6,6-3,6-3
Halep:Thiem:0-6,0-6,6-0,6-0,7-5
Barty:Thiem:6-3,4-6,7-6,0-6,7-5
Djokovic:Zverev:2-6,6-7,7-6,6-3,6-1
Zverev:Djokovic:6-3,4-6,6-4,6-3
Djokovic:Zverev:6-0,7-6,6-7,6-3
Zverev:Djokovic:6-4,6-4
Djokovic:Zverev:2-6,6-2,6-0
Zverev:Djokovic:6-3,4-6,6-3,6-4
Djokovic:Zverev:7-6,4-6,7-6,2-6,6-2
Zverev:Djokovic:7-5,7-5
Williams:Muguruza:3-6,6-3,6-3
Muguruza:Williams:6-4,6-4
Williams:Muguruza:2-6,6-2,6-0

Muguruza:Williams:6-3,4-6,6-4,6-3
Williams:Muguruza:6-0,7-6,6-7,6-3
Muguruza:Williams:6-3,4-6,6-4,6-3
Williams:Muguruza:6-0,7-6,6-7,6-3
Muguruza:Williams:6-3,4-6,6-4,6-3
Williams:Muguruza:6-0,7-6,6-7,6-3
Halep:Medvedev:2-6,6-7,7-6,6-3,6-1
Barty:Medvedev:6-3,4-6,6-4,6-3
Medvedev:Thiem:6-0,7-6,6-7,6-3
Thiem:Medvedev:6-4,6-4
Halep:Medvedev:2-6,6-2,6-0
Thiem:Medvedev:6-3,4-6,6-3,6-4
Medvedev:Thiem:7-6,4-6,7-6,2-6,6-2
Thiem:Barty:7-5,7-5
Halep:Barty:3-6,6-3,6-3
Halep:Thiem:0-6,0-6,6-0,6-0,7-5
Barty:Thiem:6-3,4-6,7-6,0-6,7-5
Halep:Medvedev:2-6,6-7,7

```
-6,6-3,6-1
Barty:Medved
ev:6-3,4-6,6
-4,6-3
Medvedev:Thi
em:6-0,7-6,6
-7,6-3
Thiem:Medved
ev:6-4,6-4
Halep:Medved
ev:2-6,6-2,6
-0
Thiem:Medved
ev:6-3,4-6,6
-3,6-4
Medvedev:Thi
em:7-6,4-6,7
-6,2-6,6-2
Thiem:Barty:
7-5,7-5
Halep:Barty:
3-6,6-3,6-3
Halep:Thiem:
0-6,0-6,6-0,
6-0,7-5
Barty:Thiem:
6-3,4-6,7-6,
0-6,7-5
```

Due Date Exceeded.
6 out of 6 tests passed.
You scored 100.0/100.

Your last recorded submission was :

```
 1  input_data = input()
 2  output_data = {}
 3  while input_data:
 4      (bestof5won, bestof3won) = (0,0)
 5      (sets_won,sets_lost) = (0,0)
 6      (games_won,games_lost) = (0,0)
 7      (winner,loser,sets) = input_data.split(':')
 8      for scores in sets.split(','):
 9          scores = scores.split('-')
10          scores[0],scores[1] = int(scores[0]),int(scores[1])
11          if scores[0] > scores[1]:
12              sets_won += 1
13          else:
14              sets_lost += 1
15          games_won += scores[0]
16          games_lost += scores[1]
17      if sets_won >= 3:
18          bestof5won += 1
19      elif sets_won < 3:
20          bestof3won += 1
21
```

```
22        for player in [winner,loser]:
23            try:
24                output_data[player]
25            except:
26                output_data[player] = [0,0,0,0,0,0]
27
28            if player == winner:
29                output_data[player][0] += bestof5won
30                output_data[player][1] += bestof3won
31                output_data[player][2] += sets_won
32                output_data[player][3] += games_won
33                output_data[player][4] += sets_lost
34                output_data[player][5] += games_lost
35
36            if player == loser:
37                output_data[player][2] += sets_lost
38                output_data[player][3] += games_lost
39                output_data[player][4] += sets_won
40                output_data[player][5] += games_won
41
42        input_data = input()
43
44    output_data = sorted(output_data.items(),key = lambda t:t[1], reverse = T
45
46    for values in output_data:
47        print(values[0],values[1][0],values[1][1],values[1][2],values[1][3],v
```

Sample solutions (Provided by instructor)

Select the Language . Python3 ▼

```
 1  # Statistics will be stored as a dictionary
 2  # Each key is a player name, each value is a list of 6 integers
 3  # representing
 4  #    Best of 5 set matches won,
 5  #    Best of 3 set matches won,
 6  #    Sets won
 7  #    Games won
 8  #    Sets lost (store as negative number for comparison)
 9  #    Games lost (store as negative number for comparison)
10  stats = {}
11
12  # Read a line of input
13  line = input()
14  while line:
15      # Keep track of sets/games won and lost in this match
16      # with respect to winner of the match
17      (wsets,lsets,wgames,lgames) = (0,0,0,0)
18
19      # Extract winner, loser and string of setscores
20      (winner,loser,setscores) = line.strip().split(':',2)
21
22      # Extract sequence of sets from setscores
23      sets = setscores.split(',')
24
25      for set in sets:
26          # Process each set
27          (winstr,losestr) = set.split('-')
28          win = int(winstr)
29          lose = int(losestr)
30          wgames = wgames + win
31          lgames = lgames + lose
32          if win > lose:
33              wsets = wsets + 1
34          else:
35              lsets = lsets + 1
36
37      # Update statistics for each of the players
38
39      for player in [winner,loser]:
40          try:
41              stats[player]
42          except KeyError:
43              stats[player] = [0,0,0,0,0,0]
44
```

```
45    if wsets >= 3:
46        stats[winner][0] = stats[winner][0] + 1
47    else:
48        stats[winner][1] = stats[winner][1] + 1
49
50    stats[winner][2] = stats[winner][2] + wsets
51    stats[winner][3] = stats[winner][3] + wgames
52    stats[winner][4] = stats[winner][4] - lsets
53    stats[winner][5] = stats[winner][5] - lgames
54
55    stats[loser][2] = stats[loser][2] + lsets
56    stats[loser][3] = stats[loser][3] + lgames
57    stats[loser][4] = stats[loser][4] - wsets
58    stats[loser][5] = stats[loser][5] - wgames
59
60    line = input()
61
62 # Collect each player's stats as a tuple, name last
63 statlist = [(stat[0],stat[1],stat[2],stat[3],stat[4],stat[5],name) for na
64
65 # Sort the statistics in descending order
66 # Losing games are stored negatively for sorting correctly
67 statlist.sort(reverse = True)
68
69 # Print
70 for entry in statlist:
71     print(entry[6],entry[0],entry[1],entry[2],entry[3], -entry[4], -entry
72
73
```