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Week 5 Programming Assignment

Due on 2022-09-01, 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:

Course outline

How does an NPTEL online course work? ()

Week 1 : Introduction ()

Week 1 Quiz ()

Week 2: Basics of Python ()

Week 2 Quiz ()

Week 2 Programming Assignment ()

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

For example, an input line of the form

```
Osaka:Barty:3-6,6-3,6-3
```

indicates that Osaka beat Barty 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

```
Zverev:Medvedev:2-6,6-7,7-6,6-3,6-1
Barty:Osaka:6-4,6-4
Medvedev:Zverev:6-3,6-3
Osaka:Barty:1-6,7-5,6-2
Zverev:Medvedev:6-0,7-6,6-3
Osaka:Barty:2-6,6-2,6-0
Medvedev:Zverev:6-3,4-6,6-3,6-4
Barty:Osaka:6-1,3-6,7-5
Zverev:Medvedev:7-6,4-6,7-6,2-6,6-2
Osaka:Barty:6-4,1-6,6-3
Medvedev:Zverev:7-5,7-5
Osaka:Barty:3-6,6-3,6-3
```

your program should print out the following

```
Zverev 3 0 10 104 11 106
Medvedev 1 2 11 106 10 104
Osaka 0 4 9 76 8 74
Barty 0 2 8 74 9 76
```

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:6-3,4-6,6-3,6-4
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

 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

Test Case 4

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

Halep 4 4 20 150 12 120\n
Medvedev 4 0 22 244 32 278\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 22 244 32 278\n
Barty 4 0 14 136 14 142\n
Thiem 2 4 28 266 26 256\n

Passed

Test Case 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-

Halep 4 4 20 150 12 120\n
Medvedev 4 0 22 244 32 278\n
Kerber 4 0

Halep 4 4 20 150 12 120\n
Medvedev 4 0 22 244 32 278\n
Kerber 4 0 14 136 14

Passed

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: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:Kerber:7-5,7-5
Halep:Kerber:3-6,6-3,6-3
Halep:Thiem:0-6,0-6,6-0,6-0,7-5
Kerber:Thiem:6-3,4-6,7-6,0-6,7-5
Halep:Medvedev:2-6,6-7,7-6,6-3,6-1
Kerber:Medvedev:6-3,4-6,6-4,6-3

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

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

Test Case 6	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-	Halep 8 8 40 300 24 240\n Medvedev 8 0 44 488 64 556\n Barty 8 0 28 272 28 284\n Williams 6 4 32 320 32 292\n Muguruza 6 2 32 292 32 320\n Djokovic 6 2 26 284 32 286\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 44 488 64 556\n Barty 8 0 28 272 28 284\n Williams 6 4 32 320 32 292\n Muguruza 6 2 32 292 32 320\n Djokovic 6 2 26 284 32 286\n Thiem 4 8 56 532 52 512\n Zverev 4 4 32 286 26 284\n	Passed

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: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
```

The due date for submitting this assignment has passed.

6 out of 6 tests passed.

You scored 100.0/100.

Assignment submitted on 2022-08-25, 12:32 IST

Your last recorded submission was :

```python
 1  stats = {}
 2
 3  # Read a line of input
 4  line = input()
 5  while line:
 6    # Keep track of sets/games won and lost in this match
 7    # with respect to winner of the match
 8    (wsets,lsets,wgames,lgames) = (0,0,0,0)
 9
10    # Extract winner, loser and string of setscores
11    (winner,loser,setscores) = line.strip().split(':',2)
12
13    # Extract sequence of sets from setscores
14    sets = setscores.split(',')
15
16    for set in sets:
17      # Process each set
18      (winstr,losestr) = set.split('-')
19      win = int(winstr)
20      lose = int(losestr)
21      wgames = wgames + win
22      lgames = lgames + lose
23      if win > lose:
24        wsets = wsets + 1
25      else:
26        lsets = lsets + 1
27
28
29    # Updation of data for each of the players
30
31    for player in [winner,loser]:
32      try:
33        stats[player]
34      except KeyError:
35        stats[player] = [0,0,0,0,0,0]
36
37    if wsets >= 3:
38      stats[winner][0] = stats[winner][0] + 1
39    else:
40      stats[winner][1] = stats[winner][1] + 1
41
```

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

Sample solutions (Provided by instructor)

```
 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 name i
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[5])
72
73
```