

CSCI 1100 — Computer Science 1 Homework 4

More lists and loops

Overview

This homework is worth **100 points** toward your overall homework grade, and is due Thursday, October 9, 2014 at 11:59:59 pm. You will find a number of files in the zip folder associated with this homework. The files are explained in the relevant sections.

Points to remember:

- Name your submissions as `hw4_part1.py` and `hw4_part2.py`, all lower case. Otherwise, we will not be able to locate and execute your submissions properly.
- As in Homework#3, expect different input cases and input files in the submission server. Your program must work for all possible inputs, not just the ones we test for.
- Remember to print any input you read immediately as we have done in previous homeworks.
- We will grade you on correct program as well as good program structure. We will also continue to check for “excessive collaboration”.

Part 1: World cup strikes again

Your solution for this part must be called `hw4_part1.py`. Only submit this file.

You will use the input module called `hw4_util.py` to read a file `all_games.txt` containing all matches in the World Cup. Read this file into a list of lists in which each item in the list is a different game.

```
import hw4_util
results = hw4_util.read_games('all_games.txt')
print results[-1]
```

For example, given `['Brazil', 3, 'Croatia', 1, 'Brazil']`, we know that the score of the Brazil-Croatia game was 3-1, and Brazil won.

Similarly, `['Netherlands', 0, 'Costa Rica', 0, 'Netherlands']` means that the score of the Netherlands-Costa Rica was 0-0, but Netherlands won (presumably by penalty kicks).

Finally, `['Ecuador', 0, 'France', 0, 'Draw']` means that this game was a draw. No one won.

Write a program to do the following:

- Read the name of a country (upper/lower case should not matter).
- Find and print all the games this country played. Print the total number of games played, wins, lose, draws, goals for and against.
- Print whether the country played in the round of 16, quarter finals, semi finals or the final.

The game number will tell the story. First 48 games are group matches, games 49-56 are round of 16, games 57-60 are quarter finals, 61-62 are semi-finals, 63rd game is the third place playoff and 64th game is the final.

Print the highest achievement for the team (only the group they played in).

- Each game is printed as team 1 name (rjust(24)), team 1 score (rjust(4)), team 2 score (ljust(4)) and team 2 name (ljust(24)). All team stats are printed with ljust(6).
- (Bonus +5 points) Print the final standing of this team if it is one of first, second, third or fourth place.

Here is a possible run of the program:

Please enter a country ==> Algeria

Algeria

All games:

Belgium	2-1	Algeria	Winner:Belgium
Korea Republic	2-4	Algeria	Winner:Algeria
Algeria	1-1	Russia	Winner:Draw
Germany	2-1	Algeria	Winner:Germany

Scores:

Games	Win	Lose	Draw	GF	GA
4	1	2	1	7	7

The highest achievement in 2014 World cup was round of 16

Please enter a country ==> England

England

All games:

England	1-2	Italy	Winner:Italy
Uruguay	2-1	England	Winner:Uruguay
Costa Rica	0-0	England	Winner:Draw

Scores:

Games	Win	Lose	Draw	GF	GA
3	0	2	1	2	4

The highest achievement in 2014 World cup was group games

Please enter a country ==> Germany

Germany

All games:

Germany	4-0	Portugal	Winner:Germany
Germany	2-2	Ghana	Winner:Draw
USA	0-1	Germany	Winner:Germany
Germany	2-1	Algeria	Winner:Germany
France	0-1	Germany	Winner:Germany
Brazil	1-7	Germany	Winner:Germany
Germany	1-0	Argentina	Winner:Germany

Scores:

Games	Win	Lose	Draw	GF	GA
7	6	0	1	18	4

The highest achievement in 2014 World cup was finals

This country placed in the first place

Please enter a country ==> Turkey

Turkey

All games:

Scores:

Games	Win	Lose	Draw	GF	GA
0	0	0	0	0	0

The highest achievement in 2014 World cup was not making it to the tournament

Here are some hints to get you started. Clearly, you will need a loop to go through all the games one by one, and check whether the current team is actually the team we are searching for. Once you find it, print it out. Test your code!

Now, add some variables to count the total number of wins, draws and losses. Remember the team name can appear as the first or the second team.

When you are done with all this, the final step is looking at the team standing. Keep track of the highest index in the list in which you find a game for this team. Using this index, you can figure out where this team has played.

Part 2: Olympic Medals

Your solution for this part must be called `hw4_part2.py`. Only submit this file.

You will use the input module called `hw4_util.py` to read a file containing medal standings of different countries. We have two files, one for 2010 and one for the current standings in 2014. For each country, you have medal counts for: **gold, silver, bronze, total medals**

If the country has won no medals, it is not in this list. Here is an example use:

```
import hw4_util
medals2010 = hw4_util.read_medals('medals2010.txt')
print medals2010
```

Write a program that:

- Reads the medal counts for 2010 and 2014 using this module.
- Asks the user for the name of a country
- Prints the percentage of all gold, silver, bronze and total medals the input country and United States got in 2010 and in 2014.
- If the input country has no medals, you print nothing.
- Format your output so that the country column is 14 characters long and all the other columns are 8 characters long. The first two columns are left justified as before, but the last 4 columns are right justified (use `rjust`).

Example output for different runs of this program shown below.

```
Enter the name of a country ==> Russia
Russia
Year      Country      Gold  Silver  Bronze  Total
=====
2010      Russia          3%     5%     8%     5%
2010      United States    10%    17%    15%    14%

2014      Russia          10%    11%     7%     9%
2014      United States    10%     8%    12%    10%
```

```
Enter the name of a country ==> Ukraine
Ukraine
Year      Country      Gold  Silver  Bronze  Total
=====
2010      United States    10%    17%    15%    14%

2014      Ukraine          0%     0%     1%     0%
2014      United States    10%     8%    12%    10%
```

As Ukraine won no medals in 2010, so the programs prints nothing for this country.

Here is a bit of help on how to organize your code. You do not have to use these suggestions, but if you do, your code will be considerably shorter and easier to debug.

- First find the medal totals in each of the four categories (gold, silver, bronze, total) for 2010 and 2014. Store them in a list e.g. `totals2010= [0,0,0,0]`. You need to go through each list of medals one by one using a loop.
- Write a function such as:

```
print_percentage(year, medals, totals, country)
```

which goes through a list of medals for an input country using a loop and if it finds the given country in the list, it prints the percentage information using the totals from the second list.
- Once you have all this in place, all you need to do is to call this function for the searched country and US for years 2010 and 2014. For example:

```
print_percentage('2010', medals2010, totals2010, country)
print_percentage('2010', medals2010, totals2010, 'United States')
```

Part 3: A bit of repetition!

Your solution for this part must be called `hw4_part3.py`. You cannot use any modules for this part.

Ok, this final part is simple and challenging at the same time. It is only worth 10 points and builds on monday's lecture on string slicing (October 6). My solution is 15 lines of code. We will replicate every horror movie cliché here.

Write a program that:

- Reads an input string
- Reads a line length
- Prints the input string on 10 lines up to the given line length, wrapping the remainder of the string from one line in the next line (spaces are not treated as special).

Here is an example run of the program.

```
Please enter a line ==> I know what you did last summer
I know what you did last summer
Please enter a line length ==> 60
60
I know what you did last summer I know what you did last sum
mer I know what you did last summer I know what you did last
summer I know what you did last summer I know what you did
last summer I know what you did last summer I know what you
did last summer I know what you did last summer I know what
you did last summer I know what you did last summer I know w
hat you did last summer I know what you did last summer I kn
ow what you did last summer I know what you did last summer
I know what you did last summer I know what you did last sum
mer I know what you did last summer I know what you did last
```