

# **Problem Solving Techniques and Process Homework 1 Basketball**

## *Description*

Basketball is one of the most popular sport in the world. Your task is to write a program that receives the tournament name, team names, and games played and outputs the tournament standings so far.

A team wins a game if it scores more points than its opponent, and loses if it scores fewer points.

Teams are ranked according to these rules (in this order):

1. Most wins.
2. Fewest games played.
3. Most points scored.
4. Case-insensitive lexicographic order.

## *Input*

You must use text file(named input.txt) as a program input. The first line of input will be an integer  $N$  in a line alone ( $0 < N < 1,000$ ). Then follow  $N$  tournament descriptions, each beginning with a tournament name. These names can be any combination of at most 100 letters, digits, spaces, etc., on a single line. The next line will contain a number  $T$  ( $1 < T \leq 30$ ), which stands for the number of teams participating on this tournament. Then follow  $T$  lines, each containing one team name. Team names consist of at most 30 characters (include space " "), except for "#" and "@" characters.

Following the team names, there will be a non-negative integer  $G$  on a single line which stands for the number of games already played on this tournament.  $G$

will be no greater than 1,000. G lines then follow with the results of games played in the format :

**team\_name\_1#points1@points2#team\_name\_2**

For instance, Team A#75@66#Team B means that in a game between Team A and Team B, Team A scored 75 points and Team B scored 66. All points will be non-negative integers less than 200. You may assume that all team names mentioned in game results will have appeared in the team names section, and that no team will play against itself.

### *Output*

You must write to text file(named ouput.txt) as a program output. For each tournament, you must output the tournament name in a single line. In the next T lines you must output the standings, according to the rules above. Should lexicographic order be needed as a tie-breaker, it must be done in a case-insensitive manner. The output format for each line is shown below:

**[a]) Team\_name [b]g ([c]-[d]), [e]pt**

where [a] is team rank, [b] is the number of games played, [c] is wins, [d] is losses, [e] is total points scored.

There must be a single blank space between fields and a single blank line between output sets. See the sample input and output for examples in next page.

## *Hint*

1. How can we simplify our task of writing a comparison function for such a complicated ranking system?
2. Use functions in string.h (strtok, strcmp...) that studied in our class.
3. Use file I/O to read and write to a text file.  
(ref. books about C language or web)

## *# input.txt*

### Sample Input

```
2
2008 Olympics Basketball
4
Korea
USA
China
Russia
6
Korea#75@72#USA
China#80@88#Russia
USA#78@70#China
Korea#91@87#China
USA#72@68#Russia
Korea#88@72#Russia
Some strange tournament
5
Team A
Team B
Team C
Team D
Team E
5
Team A#77@75#Team B
Team A#80@83#Team C
Team A#92@88#Team D
Team E#69@72#Team C
Team E#85@76#Team D
```

*# output.txt*

### Sample Output

2008 Olympics Basketball

- 1) Korea 3g (3-0), 254pt
- 2) USA 3g (2-1), 222pt
- 3) Russia 3g (1-2), 228pt
- 4) China 3g (0-3), 237pt

Some strange tournament

- 1) Team C 2g (2-0), 155pt
- 2) Team A 3g (2-1), 249pt
- 3) Team E 2g (1-1), 154pt
- 4) Team B 1g (0-1), 75pt
- 5) Team D 2g (0-2), 164pt