

CSCI204/MCS9204/CSCI804 Object and Generic
Programming in C++
Laboratory Exercise 2 (Week 3)

Task 1: Basic class/object construction (1.0)

A basketball union manage the competitions among the teams. There is a text file contains results of the competitions. The format for each competition is like

```
team1-name:team2-name  
score1:score2
```

Define a class **Team** in the file **competition.h** that contains a team name, total win, total loss, total score for, total score against. Define the necessary member functions for the class, such as default constructor and other member functions to set and get data members' values.

Define a class **Result** in the file **competition.h** that contains an array of **Team** with maximum 10 elements, an integer number counts how many teams. Define the following member functions for the class.

- A load function that loads competition results from a given text file, analysis each competition result by modify the two teams' information as following:
 - If a team is not exists in the Team array, add the team in the Team array.
 - If the team already exists, modify the team's data by
 - Increase the total win by one if the team won the competition;
 - Increase the total loss by one if the team lost;
 - Add the score that the team has got to the total score for;
 - Add the score that opponent team has got to the total score against.
- A sort function that sorts the teams in the descending order according to the total win. If the total win times are the same, compare the total loss time, the less the better. If the total win and total loss times are the same, compare the differences of total score for and total score against, the bigger the better. The sorting algorithm is up to you.
- A print function print out the teams' records to screen.

Implement the member functions in a file **competition.cpp**.

Write C++ driver program include main function in a file **basketball.cpp** that read a file name of competition results from keyboard, declare an instance of **Result**, load the competition results by using the instance of **Result**, analyse the results, sort the records and print out all teams' information in the descending order.

You can download a file **results.txt** from the site for your testing. The example output results will be like:

Input a basketball competition results' file name: **results.txt**

Shellharbour	10	0	471	100
Raptors	6	5	227	257
Bobcats	6	5	178	225
Spurs	6	6	275	270
MTSO Warriors	5	7	234	273
Mavericks	1	11	159	419

Submission:

Submit the files to the banshee server by 11:59 PM on Friday, 18 March 2016 via command:

```
submit -u your-user-name -c CSCI204 -a L2 competition.h competition.cpp basketball.cpp
```

and input your password.

Make sure that you use the correct file names. The UNIX system is case sensitive. You must submit all files in one *submit* command line.

After submit your assignment successfully, please check your email of confirmation. You should keep this email for the reference.

You would receive ZERO of the marks if your program codes could not be compiled correctly.

Later submission will not be accepted. Submission via e-mail is NOT acceptable.

End of Specification