CSC3170 Introduction to Database Systems (Spring 2015)
Assignment 3

Please answer all the questions below and hand in your answer to the submission box on the eLearning platform ***on or before 17th April 2015 12:00am***

1. Introduction

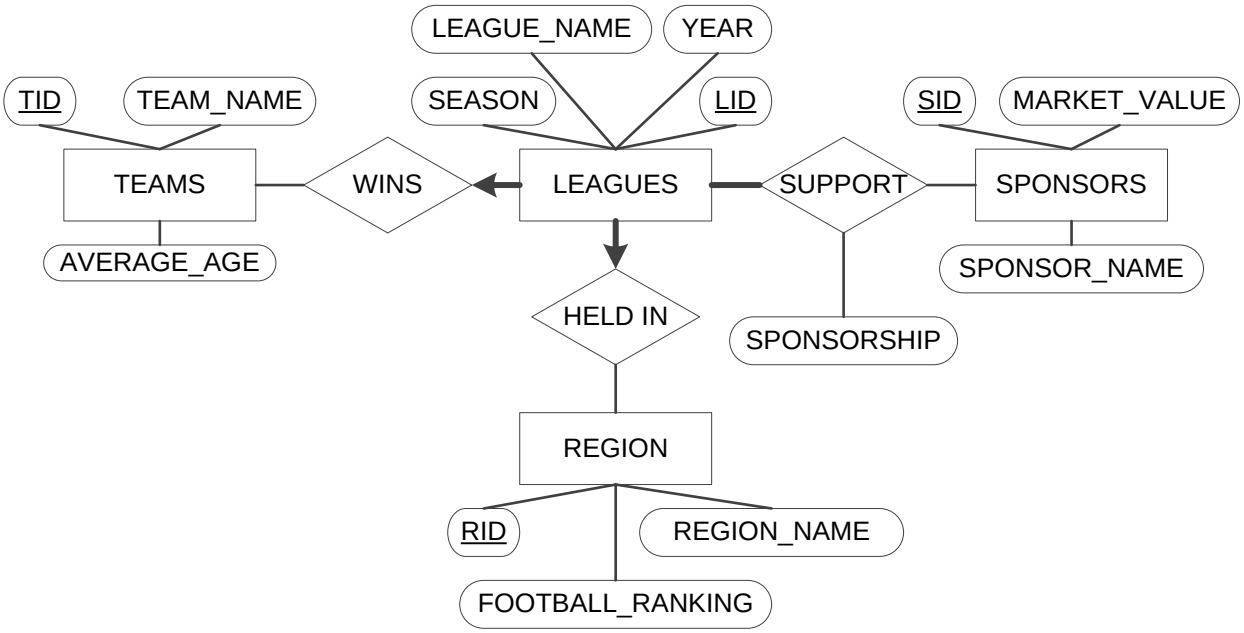
The International Football Organization keeps a record of all the football leagues, sponsors and football teams in different regions all over the world. In any region, there can be many leagues happening within the year in different season. Each league can be uniquely determined by its league ID (LID). Supports of the leagues, which can be uniquely determined by their sponsor ID (SID), together with their amount of sponsorship, are kept in the database for future reference. In addition, the database also records the champion team of all the leagues, which can be uniquely determined by their team ID (TID).

2. Schema

The relational database schema is shown as follows:

```
TEAMS(TID, TEAM_NAME, AVERAGE_AGE)
LEAGUES(LID, LEAGUE_NAME, CHAMPION_TID, YEAR, SEASON, RID)
SPONSORS(SID, SPONSOR_NAME, MARKET_VALUE)
REGIONS(RID, REGION_NAME, FOOTBALL_RANKING)
SUPPORT(LID, SID, SPONSORSHIP)
```

3. ER-Diagram



4. Description

TEAMS - It stores information about the teams.

Item Name	Format	Description
TID	Integer	The ID of the team. It is unique.
TEAM_NAME	30 Char	The full name of the team
AVERAGE_AGE	Float	The average age of players in the team.

LEAGUES - It stores information about the leagues.

Item Name	Format	Description
LID	Integer	The ID of the league. It is unique.
LEAGUE_NAME	30 Char	The full name of the league.
CHAMPION_TID	Integer	The ID of the champion team of this league.
YEAR	Integer	The year when the league was held.
SEASON	10 Char	The season when the league was held, includes “Spring”, “Summer”, “Autumn” and “Winter”.
RID	Integer	The ID of the region where the league was held.

SPONSORS - It stores information about the sponsors.

Item Name	Format	Description
SID	Integer	The ID of the sponsor. It is unique.
SPONSOR_NAME	30 Char	The name of the sponsor.
MARKET_VALUE	Float	The market value of the sponsor. (in million dollar)

REGIONS - It stores region information.

Item Name	Format	Description
RID	Integer	The ID of the region. It is unique.
REGION_NAME	30 Char	The name of the region.
FOOTBALL_RANKING	Integer	The ranking of the region team in the world.

SUPPORT - It shows which sponsor supports which league.

Item Name	Format	Description
LID	Integer	The ID of the supported league.
SID	Integer	The ID of the sponsor.
SPONSORSHIP	Float	The total amount of money the sponsor supports. (in million dollar)

5. Queries

You are required to write the queries below in SQL. **Your queries will be tested under the db12 Oracle server in CSE department.** We provide seven files containing SQL statements that create tables and insert data for you to test your queries in db12. These seven files can be downloaded from the course homepage. You should put these seven files in your Unix account, then login to your Oracle account in the directory that contains these files, and execute the SQL statements by the following commands in Oracle:

SQL> @create_table
SQL> @add

1. Find the **TEAM_NAME** of the champion teams and the **LID**, **LEAGUE_NAME** and **YEAR** of the leagues of all the leagues held in 'Summer' **SEASON**. The result should be sorted by **LID** in ascending order.

   The ordering of the columns:

LID	LEAGUE_NAME	TEAM_NAME	YEAR

2. Find the **REGION_NAME** and **FOOTBALL_RANKING** of the region that held the maximum number of leagues in 'Spring' **SEASON**. If there are more than 1 region**,** the result should be sorted by **REGION_NAME** in ascending order.

   The ordering of the columns:

REGION_NAME	FOOTBALL_RANKING

3. Find the **TEAM_NAME** of all champion team of the leagues held in the regions having the maximum **FOOTBALL_RANKING**. There should not be any duplicate in the results of the query. If there are more than 1 champion team**,** the result should be sorted by **TEAM_NAME** in ascending order.

4. Find the **REGION_NAME** and the number of leagues held in this region among all leagues (**LEAGUES_NO**). The result should be ordered by the **LEAGUES_NO** in descending order.

   The ordering of the columns:

REGION_NAME	LEAGUES_NO

5. Find the **SID**, **SPONSOR_NAME** and the corresponding sum of SPONSORSHIP supporting the leagues held in region (**SPONSORSHIP_SUM**) with **REGION_NAME** "England". The result should be ordered by **SPONSORSHIP_SUM** in descending order.

   The ordering of the columns:

SID	SPONSOR_NAME	SPONSORSHIP_SUM

6. Find the **LID** of the leagues which contain at least six different sponsors, the total amount of **SPONSORSHIP** are more than "2.0" million dollars, and does not contain the sponsor with **MARKET_VALUE** less than "30" million dollars. The **LID** should be listed in ascending order.

7. Find **SPONSOR_NAME** of the sponsor which has the highest value of (total **SPONSORSHIP** /**MARKET_VALUE**). If the result has more than one sponsor, the result should be sorted by **SPONSOR_NAME** in ascending order.

8. We define the most active sponsor as the sponsor with highest total amount of **SPONSORSHIP** over all leagues. Find the **LID**, **LEAGUE_NAME**, **YEAR** and **SEASON** of the leagues which are not supported by the most active sponsor. The result should be sorted by **LID** in ascending order. The ordering of the columns:

LID	LEAGUE_NAME	YEAR	SEASON

6. Submission Procedure

You should follow this procedure to submit all your SQL queries **STRICTLY** or you may receive mark deduction. Assume your name is "Chan Tai Man" and your student ID is 1101234567. The submission procedures are shown as follows:

1. Write your queries to single file called **<your_student_ID>.sql** (e.g. 1101234567.sql) for all of the above queries and save the query results to the files result1.lst, result2.lst, …, result8.lst for queries 1, 2, …, and 8 respectively using the Spool command in Oracle (see the example shown below).

You should use comment lines to include your name and student ID at the header of 1101234567.sql. You should also use the Oracle command Spool for each of the queries. Do NOT add any comment lines inside your SQL statements. There is always at least one space between your comment body and /* (or */). Your 1101234567.sql should be in the following format:

```
/*
    Student ID: 1101234567
    Name: Chan Tai Man
*/
/* Query 1 */
Spool result1.lxt
Select … from … ;
Spool off
/* Query 2 */
Spool result2.lxt
Select … from … ;
Spool off
……
/* Query 8 */
Spool result8.lxt
Create OR Replace view temp AS …
……
Drop view temp;
Spool off
```

Please use a Unix text editor instead of a Windows editor, or you should ensure that your submitted file should not contain any special characters (e.g. ^M), which are resulted from transferring your files from Windows to Unix, by using a Unix command dos2unix on *linux* machines. You should test your final .sql file (e.g. 1101234567.sql) before submission by typing the command "@<your_student_ID>" (e.g. @1101234567) in your Oracle account. This should generate the result files result1.lst, result2.lst, …, result8.lst in your current directory in Unix. You have to ensure that the content of each result file is correct in order to get score for the query.

2. Submit your .sql file to the submission box on the eLearning platform.