CSC3170 Introduction to Database Systems (Fall 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 4th December 2015 23:59***

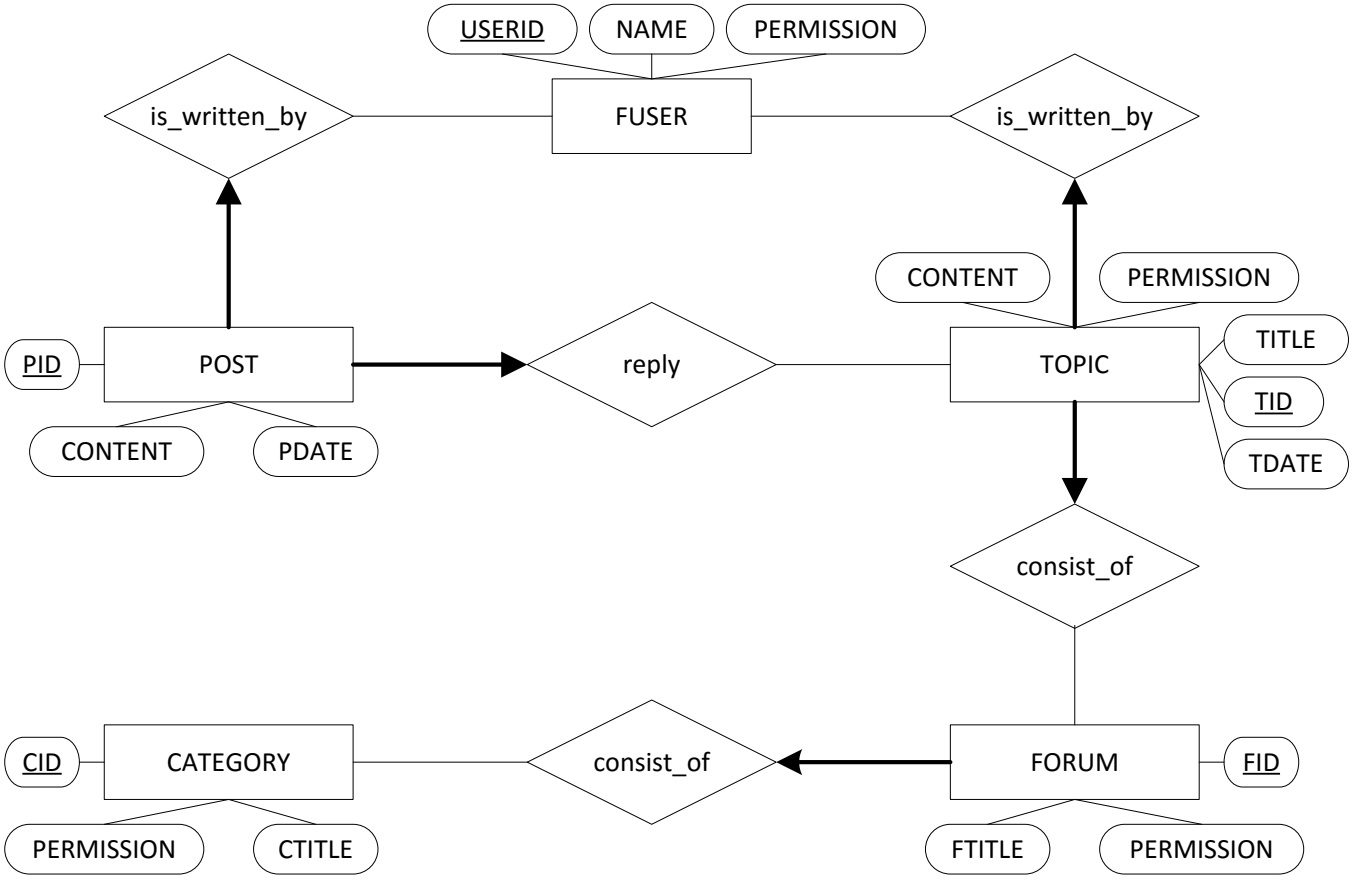
1. Background

An online discussion forum consists of forums with different subjects. Each forum belongs to exactly one category and contains topics written by users. Users may reply a particular topic by a post and there can be more than one post. Users are classified into different user groups and the corresponding user group of a user can be determined by the attribute PERMISSION. There are permission settings for categories, forums and topics which are also determined by the attribute PERMISSION. For example, users in PERMISSION 2 cannot access the forums which belong to categories in PERMISSION 3 or above.

2. Schema

FUSER (USERID, NAME, PERMISSION)
CATEGORY (CID, CTITLE, PERMISSION)
FORUM (FID, FTITLE, PERMISSION, CID)
TOPIC (TID, TITLE, CONTENT, TDATE, PERMISSION, USERID, FID)
POST (PID, CONTENT, PDATE, USERID, TID)

3. ER-diagram



4. Description

FUSER - It stores information about the users.

Item Name	Format	Description
USERID	Integer	The ID of the user. It is the primary key.
NAME	30 Characters	The name of the user.
PERMISSION	Integer	The current access level of the user.

CATEGORY - It stores information of each category.

Item Name	Format	Description
CID	Integer	The ID of the category. It is the primary key.
CTITLE	30 Characters	The title of the category.
PERMISSION	Integer	The current access level of the category.

FORUM - It stores information of each forum.

Item Name	Format	Description
FID	Integer	The ID of the forum. It is the primary key.
FTITLE	30 Characters	The title of the forum.
PERMISSION	Integer	The current access level of the forum.
CID	Integer	The foreign key referenced to CID in CATEGORY.

TOPIC - It stores information of each topic.

Item Name	Format	Description
TID	Integer	The ID of the topic. It is the primary key.
TITLE	30 Characters	The title of the topic.
CONTENT	100 Characters	The content of the topic.
TDATE	Date	The date of the topic.
PERMISSION	Integer	The current access level of the category.
USERID	Integer	The foreign key referenced to USERID in USER.
FID	Integer	The foreign key referenced to FID in FORUM.

Post - It stores information of each post.

Item Name	Format	Description
PID	Integer	The ID of the post. It is the primary key.
CONTENT	100 Characters	The content of the post.
PDATE	Date	The date of the post.
USERID	Integer	The foreign key referenced to USERID in USER.
TID	Integer	The foreign key referenced to TID in TOPIC.

5. Queries

1. *(2 marks)* Find the **TID, TITLE, TDATE** and **PERMISSION** of TOPIC(s) which belong to FORUM(s) of CATEGORY "Digital". The result should be sorted by **TID** in descending order. The ordering of the columns is shown below:

TID	TITLE	TDATE	PERMISSION

2. *(2 marks)* List the **FID(s), FTITLE(s)** and **the number of TOPIC** of each FORUM. The result should be sorted by **FTITLE** in ascending order. The ordering of the columns are shown below:

FID	FTITLE	NUM_OF_TOPIC

3. *(2 marks)* Find the **TID(s)** and **TITLE of TOPIC(s)** to which no one reply. The result should be sorted by **TID** in descending order. The ordering of the columns are shown below:

TID	TITLE

4. *(2 marks)* Find the **USERID(s)** and **NAME(s)** of USER(s) who never reply to their own TOPIC(s). The result should include the FUSER(s) without any posts and should be ordered by **NAME** in ascending order. The ordering of the columns are shown below:

USERID	NAME

5. *(2 marks)* Find the **USERID(s)**, **NAME(s)** of USER(s) who are able to access all TOPIC(s). The result should be sorted by **USERID** in descending order. The ordering of the columns is shown below:

USERID	NAME

6. *(2 marks)* The popularity of a TOPIC refers the number of USER replied. Find the **FTITLE** and the average popularity of the TOPICs of each FORUM. The result should be sorted by **the average popularity of the TOPICs** descending order. The ordering of the columns is shown below:

FTITLE	AVG_POPULARITY

(Note: you may need to use a aggregation function called AVG(). For detail, please refer to http://docs.oracle.com/cd/B19306_01/server.102/b14200/functions011.htm)

7. *(2 marks)* Suppose TOPIC(s) are divided into discrete pages and each page consists of 10 TOPICS. Find the **TID(s)**, **TITLE(s)** and **TDATE(s)** of TOPIC(s) displayed on the second page of FORUM "Camera". The result should be ordered by **TDATE** in descending order. The ordering of the columns is shown below:

TID	TITLE	TDATE

(Note: you may need to use a pseudocolumn called ROWNUM. For detail, please refer to http://docs.oracle.com/cd/B19306_01/server.102/b14200/pseudocolumns009.htm)

8. *(2 marks)* The latest update time of a TOPIC is the PDATE of the latest POST replied to the TOPIC. List the **TID**, **TITLE**, **the latest update date** and the **number of reply** of the TOPIC(s) with maximum number of reply. The result should be ordered by **the latest update date** in descending order. The ordering of the columns is shown below:

TID	TITLE	LATEST_UPDATE_DATE	NUM_OF_REPLY

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.lst
Select … from … ;
Spool off
/* Query 2 */
Spool result2.lst
Select … from … ;
Spool off
……
/* Query 8 */
Spool result8.lst
Create OR Replace view temp AS …
……
Drop view temp;
Spool off
```

Please use an 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.