

CSCI 585- Database Systems
Spring 2010
Homework Assignment 1
Part 2&3 Due: 03/08/2010 8:00 PM

Part 2: Map the ER diagram into Oracle OR-DBMS model
(25 points)

Convert the above EER conceptual schema into tables and then store the tables in the Oracle database.

Note: We will provide some skeleton data after the submission of EER diagrams. You are required populate sufficient data to test your schemas and the queries in Part3 based on this information posted after 02/10/2010. Also, go through the queries in part3 to make reasonable assumptions regarding the attributes unavailable in the file provided.

IMPORTANT

Reduction Guidelines for Oracle OR-DBMS

- Use Oracle Object-Relational features
- Use **user-defined subtypes** for specializations (e.g., do not differentiate between coach and player by using an attribute).
- Use **user-defined object types** for composite attributes.
- Use reference for **foreign key**.
- **Do not use triggers.**

Use reference for foreign keys and specify what action should be taken in case of update and/or deletion of the referenced tuple (i.e., cascade, reject, or set default/null).

Reference: Refer to Oracle manual for information on how to create tables, indexes, insert data, etc. (a link is provided in the web page).

Part 3: Queries on the database (75 points)

Write the following queries in Oracle SQL and run them on your database developed as mentioned in Part 2 of this assignment.

Q1: Find maximum, minimum, and average number of tags for photos of each user. (5 points)

Q2: Find the number of times each photo selected as favorite in the descending order. (5 points)

Q3. Find top-5 frequent tags in the entire database. (5 points).

Q4: There exists a photo with the maximum number of comments. List all the sets which this photo belong to. (5 points)

Q5: Find the top-2 frequent locations

a) For each set in the system separately, (5 points)

b) For all the photos in the system. (5 points)

Q6: Find the cameras which were used the most for the (photos of) 2 locations retrieved in Q5.b. (7.5 points)

Q7: Find the user who has the largest number of photos not belonging to any set (7.5 points)

Q8. Find average length of sessions and total number of sessions when the user is guest, pro member and basic member. (5 points)

Q9: Find the first three *popular* users (i.e., users with the maximum number of friends). For those three, then retrieve the total number of comments generated on their photos (combined) (10 points)

Q10. Find the most diverse set. A diverse set is defined as a set for which its value (number of distinct tags / total number of tags: for the tags associated to the set's photos) is maximized. Do this

a) for the photos of each user separately (7.5 points)

b) for all the photos in the system (7.5 points)

Submission Guidelines

1. Your submission of part2 and part3 should include one createdb.sql file, one dropdb.sql file, ten .sql files for queries described in part 3 (named q1.sql to q10.sql), and one readme.txt file.
2. createdb.sql file should create your database, required tables, indexes, generate public keys, ... , and populate sufficient data based on the skeleton data provided. "Sufficient data" means enough data such that your queries return something, but not everything. There is 60 (40) points penalty if this file is missing (not executable) since it is not possible for us to check your queries without any data.
3. The dropdb.sql file should drop the database and all tables that are created by createdb.sql. There is 10 points penalty if this file is missing from your submission or if it does not drop all of your databases and tables.
4. q1.sql to q10.sql query files should contain SQL statements for queries Q1 to Q10 described in part 3 respectively. If you need to write two or more SQLs for ONE step, then they should be written after each other in ONE file. (e.g., do not create q1-1.sql and q1-2.sql if you need to have 2 SQLs for Q1, rather create only one q1.sql and have both SQLs in that file).
5. The readme.txt file must have your name, USC-ID, your Oracle username, the name of the database and tables that your createdb.sql file generates, and your user name on **DEN.usc.edu**. There is 25 points penalty if this file or some of the required information is missing from your submission.
6. Make a tar/zip file to include all of your files in one file You must only send one file (either tar or zip), which includes all your files :**createdb.sql dropdb.sql readme.txt q1.sql q2.sql q3.sql q4.sql q5.sql q6.sql q7.sql q8.sql q9.sql q10.sql**
7. You need to submit your assignment electronically using the digital drop box on the DEN website. To do so, you login to DEN, and go to the course page. Click on the Tools option on the left panel and then click on the Digital Dropbox. There you can attach/send your file with the name "HW1-part23-LastName-firstName". Make sure you see the confirmation that your homework has been successfully sent.

8. We run your sql files in the following order:

createdb.sql
q1.sql
q2.sql
q3.sql
q4.sql
q5.sql
q6.sql
q7.sql
q8.sql
q9.sql
q10.sql
dropdb.sql

Note that you should run your own “dropdb.sql” file or delete your database in sqlplus right before submitting your assignment otherwise Oracle will return an error when we try to create your database and publish your data again by running your “createdb.sql” file. This is because your database already exists. You need to make sure that Oracle does not return ANY error while running these files. If Oracle returns ANY error during execution of any of the above files, we make no attempt to fix the problem, and you will lose the points associated with those steps.

9. You need to develop your database objects and SQLs in your machine using Oracle Client. More information about how to install and use **Oracle Client** is provided [here](#).

10. An Oracle username and password will be provided to each of you by email from the TAs. If you have not received such email, please send an email to the TAs.

10. Note that the deadline for your submission is at 8pm. Assignments will be timestamped. Assignments submitted after 8pm will **not** be accepted. If you have not completed your assignment, send whatever you have to get a partial credit.

11. Start working on your assignment early