

CSCI 585- Database Systems

Fall 2014

Homework Assignment 1 parts II & III

Project Description

Part II: Map the EER diagram into Oracle RDBMS model (20 points)

Convert your EER conceptual schema into tables and then implement these tables in the Oracle database. You can change your EER design freely during your conversion since your schema might not be optimal. You will get full credit for part 2, part 3 if your queries are working properly. Note: You are required to populate your database with the given data and test data with the queries in Part3. Use the excel data file for this. The excel file has tabs in the bottom for each data section. Also, go through the queries in part3 to

make reasonable assumptions regarding the attributes unavailable in the files provided and fill them out. *Note that the provided dataset only includes data and not the table structures. You are supposed to design your own tables and fill them using the provided data.*

For installing Oracle on your Windows Machine: (5 points, you do not need to submit anything for this credit)

0- Make sure you have JDK installed on your machine. You can download it from

<http://www.oracle.com/technetwork/java/javase/downloads/index.html>

1-Install Oracle Database from the given link (this version or a later version)

Oracle Database 11g Release 2 (11.2.0.2.0) either Enterprise or Standard Edition for Microsoft Windows (free downloads available for Mac and Linux users as well)

<http://www.oracle.com/technetwork/database/enterprise-edition/downloads/index.html>

2-Download the two file from the given address and unzip them to the same folder (select both .zip files and “extract all”. This results in merging the unzipped data to the same folder).

3-a Brief installation guide with snapshots.

<http://www.oracle.com/webfolder/technetwork/tutorials/obe/db/11g/r1/prod/install/dbinst/windbinst2.htm>

3-b Long guideline for installation can be found at

http://www.oracle.com/pls/db111/portal.portal_db?selected=11

Running the Database Software

use *sqldeveloper* program (already included in Oracle installation). Create a new connection by clicking on the green + button. Make sure you enter your database's SID correctly. If you have not changed the default name once installing Oracle, the SID is the word *orcl*. Enter the username and password you entered while installing the database. (e.g. username: system, password:?? you tell me! :)

If you are in favor of terminal connection (e.g command prompt), you may use sqlplus command:

//\$ is the system prompt

\$ sqlplus //Use sqlplus to issue sql statements

If you have any further questions or issues, feel free to come to any TA's office hours.

Reduction Guidelines for Oracle RDBMS

- Use reference for **foreign key**.

- **Do not use triggers.**

Reference: Refer to Oracle manual for information on how to create tables, indexes, insert data, etc.. As a 500 level course, learning how to use Oracle by reading the manual and the web is a purpose of this homework.

Part III: 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. Depending on the data, your query might not return any data but it does not mean your query is wrong. Each query is worth 7 points (7 x 11= 77; thus two points as bonus).

In queries, when asked to "find users", return the user id, first name, and last name of the user.

1. List all those villas that are equipped with Jacuzzi and follow a no-pet policy.
2. List the villa owner names, as well as the count of villas they own, sorted by count of villas.
3. Find the (first and last) name of all users who have ever used a coupon code offering a discount more than 10%.

4. Find the name of top three users who have had the highest amount of deposit during 2013.

Notes: Please note that a user (e.g., Jesse Jackson) might have two of the three highest-deposit reservations and this is totally fine.

5. Find the average age (in years) of users who rented villas during low-season last year (i.e. from September to December 2013).

Notes: Please note that a user who reserves a villa in late December 2013, and leaves the villa in Jan. 2014, is among the users that have rented the villa within the period of September to December. Also, note that we are interested in the average age (in years) at the time of reservation (start date). If a user is involved in two reservations, his age will be used in the calculations twice.

6. Find the three villas and their associated owners, who have the highest average user rating.
7. Find the villa with the highest count of reserved nights in 2014.
8. Find the most famous reviewer: the user who owns reviews that have been liked the most for a larger number of villas compared to any other reviewer. Please note that we are NOT looking for the user who has received the largest total number of likes. Rather, we care about the count of villas in which a user's reviews were considered as the top review.

Example:

A, B, and C are three reviewers.

v1,v2,v3 are three villas.

below you can see the "like" table.

*** V1, V2,V3

A: 5,4,3

B: 4,3,2

C:6,2,1

C has the largest number of reviews for V1 only (1)

B does not have any comment which has gained the most likes (0)

A has the largest number of reviews for V2 and V3 (2)

Thus, user A is the answer.

9. Find the *vacancy ratio* for each owner in 8/15/2014. The vacancy ratio is defined as the ratio of villas not reserved for a specific date, over the total number of villas owned by that owner.
10. Find any user who has reserved two or more villas at *overlapping periods*. Such a user has two or more reservations with overlapping (but not necessarily the same) stay periods.

Example:

Consider two reservations made by the same user which both end on Friday. One starts on Wednesday and the other on Thursday respectively. They have Thursday as a day in

overlapping period (thus a non-empty overlapping period for reservations of this user). Both reservations end at Friday noon so Friday night is not in the intersection period.

11. List the name of all villa owners, who own villas with a 10% or more growth in the count of reserved nights in the first 8 months of 2014 compared to the similar period in 2013.

Submission Guidelines

1. Your submission of part2 and part3 should include one createdb.sql file, one dropdb.sql file, eleven .sql files for queries described in part 3 (named q1.sql to q11.sql), and one readme.txt file. Your readme.txt file should include your name and student ID.
2. createdb.sql file should create required types, tables, indexes if required, generate primary keys, etc., and populate all data provided. There is 60 points penalty if this file is missing since it is not possible for us to check your queries without any data.
3. The dropdb.sql file should drop all types and tables that are created by createdb.sql. There is a 10 point penalty if this file is missing from your submission or if it does not drop all of your database objects.