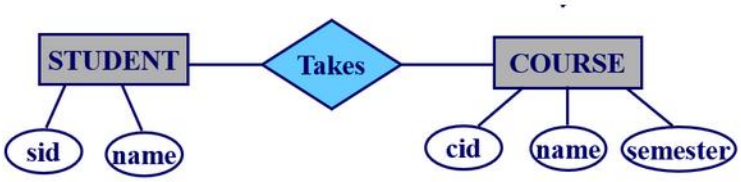
COEN 280 - Database Systems
Winter 2022
Homework Assignment 2
Due: Thursday, Feb 3 @11:59pm

Part 1: Map the (E)ER diagram into Relational model (25 points)
Convert your (E)ER conceptual schema from Assignment 1 into relational database ***schema***. Be certain to indicate primary keys and referential integrity constraints. Please follow the relation schema format discussed in Lecture 3: ER to Relational mapping.

Example: Students Taking Course



Now, mapping the above ER to relational schema would look like the following. Primary Keys and Foreign Keys are marked as shown.

Student(SID: Integer, name: String)

Takes (SID: Integer, CID: Integer)

Course(CID: Integer, name: String, Semester: String)

Note: You can change your EER design from Assignment 1 freely during your conversion since your schema might not optimal.

Part 2: Map the Relation Schema into Oracle RDBMS model (25 points)
Convert your relation schema from Part 1 into tables and then implement these tables in the Oracle database.

Using the dataset provided on Camino, populate your database with the given data and test data with the queries in Part3. The excel data file has tabs in the bottom for each data section.

1) Create a "createdb.sql" file that includes required CREATE TABLE statements to create required tables, primary keys, foreign keys and referential integrity constraints, table constraints, etc
   - Indicate Primary Keys and table constraints where required
   - Use REFERENCE for foreign keys and specify update and/or delete actions for the referenced tuple/row (i.e., cascade, reject, or set default/null).

2) Include INSERT statements in your "createdb.sql" file to populate all the provided data based on the skeleton data provided using the excel data files.
SQL Syntax:

```
INSERT INTO table_name (column1, column2, column3, ...)
VALUES (value1, value2, value3, ...);
```

3) Execute "created.sql" script in Oracle to create all the tables and populate the data. To do so, login to Oracle database, as shown in the important notes above:

```
$ sqlplus
SQL> @createdb.sql
```

To execute a script file in sqlplus, type @ and then the file name. The above command assumes that the file is in the current directory. (ie: the current directory is usually the directory that you were located in before you launched SQLPlus.) This command would run a script file called created.sql.

4) Create a "dropdb.sql" file to drop all the tables that are created by createdb.sql.

```
DROP TABLE <table_name>
```

Part 3: Queries on the database (100 points)

Write the following queries in Oracle SQL and run them on your database developed as mentioned in Part 2 of this assignment. Depend on the data, your query might not return any data but it does not means your query is wrong.

1) Find the business names for which there is some review (no duplicate names).
2) Find the names of users who have reviewed every business in OH.
3) Find the businesses by name which are reviewed by John Smith and no one else.
4) For each business, find the user (by name) who rates it highest (highest stars value), including ties.
5) Find all users who have written a review for China Coffee Toffee for 5 stars on or after January 1st, 2007. Return the name the reviewers, the name of the business and the review date. Order results by review date.
6) Find the maximum funny, useful and cool votes ever received by a review for a business in CA(note that the funniest, useful and coolest review may not be the same one!).
7) Get all checkin info and business ID for business receiving more than 2 reviews.
8) Find all restaurants have an average rating of 2 stars or higher, have at least 2 reviews and have not received a rating of 3 stars or lower since January 1st 2007 in a review with at least 1 vote (all of funny, cool or useful). Return the id, name, stars, review count and the full address of restaurant, sorted by the name.
9) Find all users who have written at least 1 reviews for a business in CA and 2 reviews for a business in AZ. Return their name and ID.
10) Return the name of all categories that are associated with a business in CA or CT that is also given the category Restaurants. Do not return Restaurants but the other categories, ordered by category name.

Submission Guidelines

1. Part 1 should be submitted as a PDF file containing the relation schema.
2. Your submission of Part 2 and Part 3 should include one createdb.sql file, one dropdb.sql file, ten .sql files for queries described in part 2 (named q1.sql to q10.sql), and one readme.txt file.
3. **createdb.sql** file should create required types, tables, indexes if required, generate primary 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 points penalty if this file is missing since it is not possible for us to check your queries without any data.
4. The **dropdb.sql** file should drop all types and 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 database objects.
5. **q1.sql ~ q10.sql** query files should contain SQL statements for queries Q1 to Q11described 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.
6. The **readme.txt** file must have your name, the name of the database, tables that your createdb.sql file generates and the execution result of query files (q1.sql…q10.sql). There is 10 points penalty if this file or some of the required information is missing from your submission.
7. You must make a .zip file to include all of your files in one file (<your_name>_hw2.zip:
   Your zip file should contain **hw2_part1.pdf 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** files.
8. You need to submit all 3 parts of your assignment as a single zip file to Camino
9. Start working on your assignment early.