CSC 355 Database Systems 501T-530
Assignment 1 (01/18) - SQLDeveloper and Database Structures

Name:
Course Number:
Section:
Date:

1.- Download and Install SQLDeveloper

- Download and install SQLDeveloper following the instructions from the CDMOracleTutorial2023 Document posted in D2L.

2.- Creating a new database connection

- Create a new database connection as specified in the tutorial.
- Use CSC355_USERNAME for the name of your connection. Username refers to your DePaul username.
  For example, if your DePaul email is **JSMITH**@DEPAUL.EDU; then, your username is **JSMITH** and the name of your database connection should be **CSC355_ JSMITH**
- Test a successful connection and take a screenshot of it.

4.- Create the structure and initial data

- Download the file **HR_Setup.sql** from D2L and run it in SQL Developer. This will create the HR schema to be used for this homework

5.- Checking the tables/relations in SQL Developer

a) Using the navigation pane, view the tables you just created in step 4.
Take a screenshot of it, where all the table names can be read.

b) Verify which of the following tables are present (mark with X):
__ COUNTRIES
__ DEPARTMENTS
__ EMPLOYEES
__ JOB_GRADES
__ JOB_HISTORY
__ JOBS
__ LOCATIONS
__ REGIONS
__ STATES
__ SALARY_RANKS

c) Examine the structure of the tables EMPLOYEES and JOBS. Copy their data structure including attributes and data types.
   - For table Employees use the navigation tree (click on the table)
   - For the table Jobs, use the command **DESCRIBE**

EMPLOYEES	JOBS

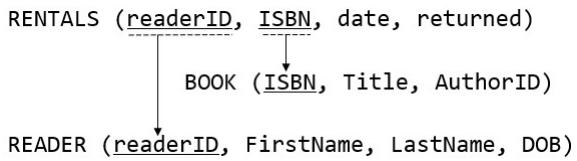
d) See the data of the DEPARTMENTS table (by using the navigator).
   - Then, put the column names (same as the column names of the DEPARTMENTS table) on the first row of the following table
   - Copy the details of five (5) of the departments in the remaining rows.

e) See the data of the REGIONS table (by running SELECT * FROM REGIONS;).
   - Then, put the column names (same as the column names of the REGIONS table) on the first row of the following table
   - Copy the details of the regions in the remaining rows.

6.- Schemas, instances and keys

For the following database schema and database instance, answer the questions below

Schema



Instance

BOOK

ISBN	Title	AuthorID
123456789	Algebra	20202
321654987	Math for Dummies	10001
456789321	Algebra II	20202
564897231	Database Concepts	32322
564897232	Database Queries	32322

READER

readerID	FirstName	LastName	DOB
1001	John	Smith	11/06/1957
1002	John	Doe	03/31/1987
1003	Jane	Doe	01/10/2001
1004	Kate	Turner	05/24/1998
1005	Austin	Lopez	06/15/2002

RENTALS

readerID	ISBN	date	returned
1001	123456789	11/25/22	12/03/22
1002	564897231	11/24/22	12/12/22
1001	456789321	12/08/22	NULL
1004	123456789	01/03/23	NULL

a. List the attribute(s) that make up the primary key (if one exists) in BOOK.
b. List the attribute(s) that make up the primary key (if one exists) in READER.
c. List the attribute(s) that make up the primary key (if one exists) in RENTALS.
d. List the attribute(s) that make up the foreign key(s) (if any exist) in BOOK.
e. List the attribute(s) that make up the foreign key(s) (if any exist) in READER.
f. List the attribute(s) that make up the foreign key(s) (if any exist) in RENTALS.
g. Construct a new tuple that cannot be inserted into BOOK because doing so would violate a key constraint.
h. Construct a new tuple that can be inserted into RENTALS without violating any constraints.
i. Construct a new tuple that cannot be inserted into RENTALS because doing so would violate referential integrity, but that would not violate any other constraints.
j. Construct a new tuple that can be inserted into BOOK without violating any constraints.
k. Which of the tuples in BOOK can be removed without violating referential integrity? Explain in your own words why these tuples can be removed
l. Which of the tuples in READER can be removed without violating referential integrity? Explain in your own words why these tuples can be removed

7.- ER Model – Optional – Extra credit

For the following description and business specifications draw a diagram representing the ER Model for the database.
DePaul University would like to keep records of all the classes the students have taken through the terms as well as the instructors teaching those courses.
At least, the university wants to record the first and last names of the student, their program, email. For the instructors, the information to keep is email, first name, last name, office, and zoom_link. Both students and instructors are identifiable by their DePaul id number, if by any chance you are both a Student and an Instructor your id will be the same.
For the courses, it is required to track the subject (a three-letter code), the catalog number (a 3-digit code), the section, the term in which the class is being taught, and the course title.

From the description above:

- Identify entities and their attributes
- Identify relationships between the entities
- Draw an ER Model that represents these business specifications.

Remarks:

1. Please submit a copy of this document containing your information at the top: name, course number, section date, the requested screenshots, and the answers to the other questions stated above. The assignment submission should be a single document – .doc, .docx, .pdf formats are preferred.

2. As will be the case for all assignments, all work must be completed individually. Do not post this assignment to any website in search of answers, and do not consult posted answers on any website while completing the assignment. No collaboration between students or sharing of answers between students is permitted. Your assignment must be your own individual work.

3. All screenshots should be readable and fit in the document. Please crop and resize the screenshots accordingly.