Designing and Implementing a Database using Oracle

Due: 11:59PM, Thursday December 15, 2022

In this project, you will design and implement a bookstore database.

The database stores the following information about an internet bookstore. There should be information about books, authors, publishers, customers, orders, etc. Books will have isbn, title, year, price. Publishers will have name and city. Authors and customers are people. People have ssn, name and address. A book will only be published by one publisher. A book may have co-authors. An author may write many books. A customer may purchase many books. Orders contains information of customers purchasing books. If a customer is removed from the database, orders related to the customer should also be removed.

First, you need to design a conceptual model of the database and draw an **ER diagram** that can capture the information needed for this database. In the ER diagram, you need to model the data stored in the database as entity sets and relationship sets with cardinality and participation constraints, show attributes, and identify primary key for each entity set. You should use the same notation in the textbook.

Next, you should translate your ER diagram into a set of relational tables with primary key and foreign key constraints (if any) indicated by writing **SQL create table statements**. You should populate the database using **insert into statements** with at least five tuples per table with fabricated data or data downloaded from amazon.com.

Then, perform the following **queries** (each query should be answered by a ***single*** SQL statement):

1. List titles of all books in ascending order.
2. Find the name of the author who wrote the book titled "On The Road".
3. List the title and author of books whose price is greater than $20. List your result in the ascending order of the price.
4. Find the books that have the same title but different author(s). Each book title should only be displayed once.
5. Find the publisher that has the largest revenue in 2021.
6. List the title and price of all books written by the author of the best-selling book of 2021 (the book that has been sold the most number of copies in 2021).
7. Find the customer who has purchased every book written by Stephen King.
8. Insert a new author.
9. Increase $2 to those books whose price is lower than $10.
10. Delete publishers and books they have published who are in Chicago.

<u>Materials to Turn In</u>

1. Put the ER diagram in a PDF file. You can either draw by hand or use Microsoft Word, etc.

2. Put all *create table* and *insert into* statements in one “your-name-table.sql” file and all 10 queries in one "your-name-query.sql" file. All 10 queries should be implemented in the given order.
3. Submit the PDF file and the two .sql files by 11:59PM, December 15, 2022 from Blackboard. One submission per team.

Things to remember

- There will be 5 points for the ER diagram, 5 points for the create table and insert into statements, and 1 point for each query.
- The two .sql files must run correctly on *cs-oracle.cs.uml.edu* to receive credits.
- Create table statements must include primary key and foreign key constraints (if any). Queries will be graded on correctness. Few points may be deducted for bad style like use of complicated queries which are difficult to understand.
- Late submissions will not be accepted.
- You should not discuss the project with classmates not in your team.
- **Plagiarism is prohibited. If found, all the students involved will get zero credit for the project.**