Introduction to Databases
Course Project
Fall 2019

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Due Date: Monday, December 2. Send an email with your project attached as an SQL script (no text documents!). Email from your UofL account by 5 pm. The script should include all SQL commands required to execute the actions below. NOTE: what you turn in will be run through MySQL as is; if it requires modifications to run, you will receive a large penalty.

Recall that late projects are not accepted; if you have not finished the project by the deadline, email what you have done for partial credit. If you have any questions, send me an email with the subject "CECS 535 Project." Note: emails sent after Monday November 25 may take several days to be answered. Do not procrastinate!

1. Create a database/schema with the name "<username>CECS535". That is, if your username is *Jjones01*, call the database/schema *Jjones01CECS535*.

2. Inside this database, create the following tables:

   - `Publisher`, with attributes `publisherid, name, address, discount`, where `publisherid` is the primary key (make this a system generated attribute).
   - `Books`, with attributes `isbn, title, qty_in_stock, price, year_published, publisherid`, where `isbn` is the primary key and `publisherid` is a foreign key.
   - `Author`, with attributes `author-id, name, age, address, affiliation`, where `author-id` is the primary key (make this a system generated attribute). (Affiliation is the name of the institution where the authors works, if it exists).
   - `Writes`, with attributes `author-id, isbn, commission`. The primary key is `(author-id, isbn)`; each attribute is a foreign key. Note that this implies that a book may have multiple authors, and an author may write several books (alone or with others).
   - `Sales`, with attributes `isbn, year, month, number`. The primary key is `(isbn, year, month)`; `isbn` is a foreign key; `number` is the number of copies sold.

   You will have to pick adequate data types for each attribute. Make sure to declare all primary key and all foreign keys in order to have integrity constraints.

3. Add as much as you can of the following information to the database schema using triggers (MySQL does not enforce CHECKS).

   (a) All publisher discounts should be between 1.00 and 10.00

   (b) All commissions are expressed as a number between 0 and 100 (percentages); all commissions for a single book (across authors) should add up to 100.

   (c) All numbers in `Sales` should be greater than 0.

4. Insert at least five tuples into each relation (you can make up the values, but they should be valid data, i.e. respecting all constraints).

5. Create a trigger such that, when an insertion happens in `Sales` and a book b has sold, the quantity (number of copies) sold is subtracted from the quantity in stock for b in `Books`. If you end up with a negative number, set the quantity in stock to zero. If the quantity in stock is already zero, reject the insertion in `Sales`.

6. Royalties: this is what is paid to an author for the sales of her/his books. It is calculated as: the price of book minus discount times the commission (percentage) times number sold. Create a table `ROYALTIES(author-id,amount)` and populate it by using a query over the existing data. Then create a trigger to keep the table up-to-date. This involves

   - add a new author (with zero royalties) when an author is added to `Author`.
   - Update the royalty amount each time that there are new sales.