A290 SQL Programming Final Exam

Instructions

You should turn in two files for the final. The first should be named username_queriesFE.sql and the second should be username_diagramFE.pdf. Any assumptions for queries or the diagrams should be clearly stated. Exams should be taken alone and any indication of working or consorting with other students will be taken as cheating.

Queries

1. (14 points) Find triangles of customers who share similar musical preferences. Your query should return the first and last name for each of the three customers (A, B, C). A triangle of similarity is where customer A shares a preference with customer B, A with C, and B with C.

2. (14 points) Find the lead member of each entertainer. The phone number for an entertainer is the lead member's phone number. You should return a row for every entertainer. If an entertainer has a lead member you should return the entertainer name and member's name. If there is no lead member than the row should have the entertainer name and null values for member's name.

3. (14 points) SSN have a format of xxx-xA-Bxxx where AB is the last two digits of the person's birth year. Find each entertainer who was born in 1980.

4. (14 points) Find how many male and how many female members there are. The result of your query should return two rows, one indicating how many men and a second row indicating how many women.

5. (14 points) What is the most frequent start time for each entertainer? Return the name of the entertainer, the start time, and the percentage of the entertainer's engagements which have the most frequent start time.

6. **(EXTRA CREDIT 5 points)** Do the query from Question 1 but add the restriction that A shares only 1 preference with B, A shares only 1 with C, and B shares only 1 with C.

ER Diagram

The simple ER diagram below attempts to model the basic information for a single movie rental store. The store has employees, movies in inventory, and customers. Employees have a name, home address, and ID number which is used to track what employee handles each rental. Movies have a title and release date. Because there can be multiple movies with the same name there is a unique ID to identify each movie. The store has multiple physical copies of some movies so there is a copy number associated with every copy of a movie. Copies are numbered 1-N where N is the number of copies for the movie. This means that there can be multiple copies with number 1 because they are different movies. A customer has a name, phone number, and membership ID. Customers rent a physical copy of a movie and every rental is processed by an employee. Every rental is time stamped.

1. (20 points) Describe problems with the below ER diagram in satisfying everything described in the above description. Also describe what changes you would make in order to fix the diagram. You can include an altered ER diagram, but it is not required.

2. (10 points) Provide a translation of the below ER diagram to table form. Tables can be given in the format TableName(A,B,C), where the underlined attributes form the primary key for the table. You do NOT need to include Create Table statements.

```
                    ┌──────────────┐
                    │    Clerk     │────────┐
                    └──────────────┘      ┌──────────────────┐
                           │              │  Home Address    │
                           │              └──────────────────┘
                     ╱──────────╲           ┌──────────┐
                    ╱   Checks    ╲          │   Name   │
                    ╲             ╱          └──────────┘
                     ╲    Out    ╱          ┌──────────┐
                      ╲─────────╱           │  ID_Code │
                           │                └──────────┘
        ┌────────┐         │
        │  Title │         │
        └────────┘   ┌──────────────┐
        ┌────────┐   │    Movie     │
        │ Title ID│──└──────────────┘
        └────────┘         │
        ┌────────┐         │
        │ Copy ID│     ╱────────╲
        └────────┘    ╱  Rents   ╲
    ┌──────────────┐  ╲          ╱
    │ Release Date │   ╲────────╱
    └──────────────┘        │           ┌────────┐
                            │           │  Name  │
                    ┌──────────────┐    └────────┘
                    │   Customer   │────┌────────┐
                    └──────────────┘    │  Phone │
                                        └────────┘
```


Entity-Relationship diagram: **Clerk** (attributes: Home Address, Name, ID_Code) — **Checks Out** — **Movie** (attributes: Title, Title ID, Copy ID, Release Date) — **Rents** — **Customer** (attributes: Name, Phone)