Database Assignment

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STS Program

Notown Records

Notown Records has decided to store information on musicians who perform on their albums (as well as other company data) in a database. The company has wisely chosen to hire you as a database designer and has supplied you with the following information:

- Each musician that records at Notown has a person number, a name, and an address. Poorly paid musicians often share the same address.
- Each instrument that is used in songs recorded at Notown has a name (e.g., guitar, synthesizer) and a musical key (e.g., C, B-flat, E-flat).
- Each album that is recorded on the Notown label has a title and an album identifier.
- Each song recorded at Notown has a title and an author.
- Each musician may play several instruments, and a given instrument may be played by several musicians.
- Each album has a number of songs on it, but no song may appear on more than one album.
- Each song is performed by one or more musicians, and a musician may appear on more than one album.
- Each album has exactly one musician who acts as its producer. A musician may produce several albums of course.

The information above describes what information the Notown database must model. Your tasks are:

1. Design a database schema for the Notown Records database. To design the database schema, it might be helpful for you if you first draw an entiry-relationship (ER) diagram for your schema. However, the ER diagram is *not* one of the things you should submit as part of your solution to the assignment. Instead, the only thing that is required to be handed in for this part of the assignment is a set of tables in e.g., the form:

   albums(<u>album_id</u>, title)

   where the underlining shows the key(s).

   Be sure to indicate the keys of all tables and any assumptions that you make. If appropriate, identify any constraints that you are unable to capture in your design and briefly explain why you could not express them.

2. For the database schema above, write (and hand in as part of your solution) appropriate SQL `CREATE TABLE` commands that create these tables. For example, for the table above an appropriate command could be:

```
CREATE TABLE albums (
       album_id INTEGER,
       title    CHAR(20)
       PRIMARY KEY (album_id) )
```

   After having created these tables, make sure you insert some appropriate information in them so that you can test the following queries before you hand them in as your solution (Hint: to test the correctness of your solutions to part 3 below, add enough information to the tables so that the result of the following queries is not empty or completely trivial). You should *not* hand in these SQL `INSERT` statements though.

3. Write, and hand in, SQL `SELECT` statements that answer the following queries:

   (a) Find the names of instruments that all musicians named "Arne Andersson" play.

   (b) Find the names of albums containing a song with the word "love" in its title.

   (c) For each musical instrument, report the number of mucisians who play it.

   (d) Find the names of albums where all songs are written by the producer of the album.

   (e) Find the names of all musicians that live in the same address as all producers who have produced albums that they have performed on.

NOTE:

- Information on how to access the database system installed in the department will be provided by the assistant, Jesper. Most probably, this info will be available in the course's homepage.
- The deadline for handing in the assignment will be announced in the course's homepage.

Good luck !