Lab 03: CD (full)

1 Objective

After completing this assignment you should feel comfortable creating and working with medium-size databases that include many entities and both one-to-many and many-to-many relationships.

2 Setup

You will need the same two pieces of software as in the previous lab: a text editor and an SSH client.

You will need two files to start:

`Chap5CDinserts.sql` contains SQL instructions to insert rows into many different tables about recorded music. You will use this in Section 3.

`handin.sql` is where you will record all of your answers, and is the file that you will submit when you are finished.

You can find both files at `/home/faculty/chogg/Public/366/a03cdfull` on the server, but will also probably want to download an archive file containing both of them directly from AutoLab so that you work with them on your local computer.

It is very important that you **NOT** change the format of the `handin.sql` file and put your answers in between the appropriate "Begin" and "End" sections, as otherwise the autograder will not be able to find your answers. Please add your name to the comment at the beginning.

3 Assignment

For each question below, you are going to write your SQL code into your text file in the appropriate section. You will then use your SSH client to run that code in a database. For this assignment, your database will be named `a03cdfull_username`, with `username` replaced by your actual username.

We are going to be creating a database about many different types of information regarding recorded music. Figure 1 shows an Entity-Relationship diagram for the desired database. It may look somewhat different from other E-R diagrams you have seen. If you are confused about the meaning of any part of it, please ask for clarification.

1. (30 points) Write and execute statements that will create all tables needed for this database. Name the tables exactly the same as the entity sets, and the columns exactly the same as the attributes except that all names should be purely lowercase and all hyphens have been replaced by underscores. For example, one of your tables should be named `person_recording`. When adding columns to a table to keep track of a relationship, add them after all columns representing entity attributes. For all of the associate tables, add the column copied from `PERSON` before the column copied from the other side. The table for `TRACK` requires a special column ordering: `cdid`, `trknum`, `rcdid`, `compid`. You can derive appropriate types for the

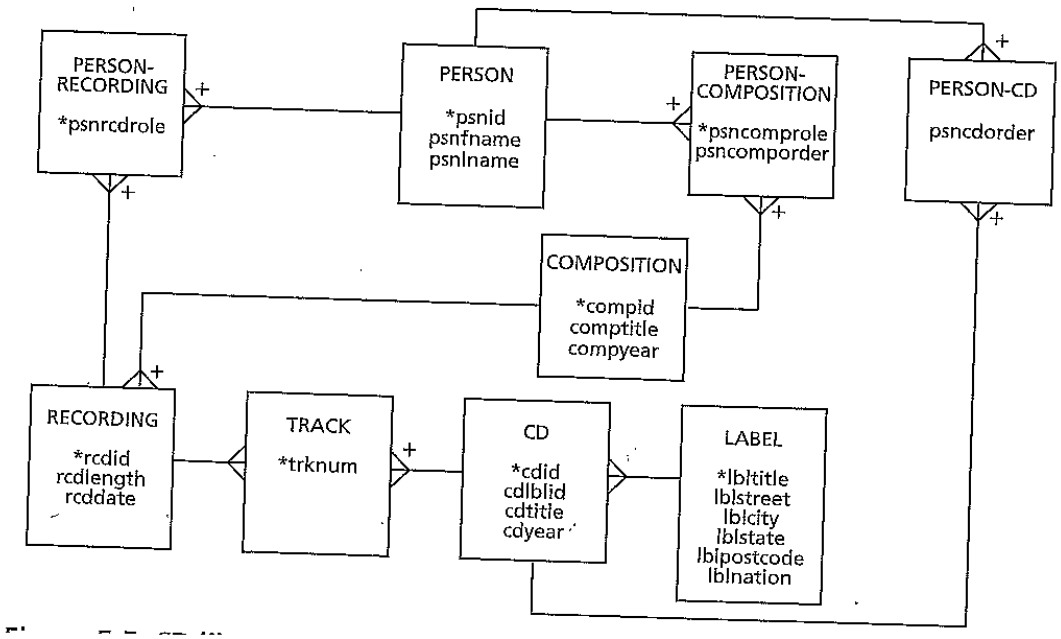

Figure 1: Entity-Relationship Diagram

columns by looking what data will be inserted by the statements in `Chap5CDinserts.sql`. After you have created your tables, run the code from that file to populate them. To do so, type `\include /home/faculty/chogg/Public/366/a03cdfull/Chap5CDinserts.sql`. If any insertions fail, you will need to drop your tables, fix your table creation code, and then re-run it and re-run the insertion code. It would probably be a good idea to see whether or not AutoLab likes your tables before moving on to other problems.

2. (10 points) Write a query to retrieve the track number and composition title of all tracks on the CD titled "Giant Steps". (Do not encode into your query any information about which CD that is – make the query find it.)

3. (15 points) Write a query to retrieve the first and last names of the musicians, along with the instruments they played, for the May 4, 1959 recording of the composition titled "Giant Steps".

4. (15 points) Write a query to retrieve the first and last names of all people who both compose music and play tenor sax. Each person should only be listed once in the results.

5. (15 points) Write a query to retrieve the composition title, track number, and CD title of any composition that appears as multiple tracks on the same CD. Sort the data by composition title (ascending) and track number (ascending). Note that this should include two different recordings of the same composition, such as the two recordings of "Countdown" that occurs on "Giant Steps".

6. (8 points) Write a query to retrieve the recording ID and recording date of all recordings that appear on every CD. Write the query using the `EXISTS` keyword.

7. (7 points) Write a query that produces the same output as the previous question, but this time do not use the `EXISTS` keyword.

4 Submission

Please submit your completed `handin.sql` file to autolab. You can submit as many times as you like. The file will be autograded when you submit. The instructor will later be checking over your answers to be sure that you approached problems in the specified way. Note that grades assigned by AutoLab can be adjusted if I spot problems. All problems are autograded, so you should be able to earn 100/100.