

3. Translating Conceptual Models into Relational Schemas

This lab exercise is about translating entity-relationship diagrams into relational schemas and implementing them using SQL.

In your first lab, you developed a diagram that captured requirements for a database about songs and CDs. The diagram that you designed in that lab will be the starting point of this lab.

Requirements for a Music Database

These are the requirements from Lab 1.

1. For each disk, we want to store the disk ID, the title, and the year of production. Disk ID's are unique.
2. A song is recorded on some disk. It has a title and a number that indicates on which track it is recorded on the disk. For each disk, a song is uniquely identified by its track number.
3. For each person that may occur as a an author or a performer we want to store the person ID, the name, and the nationality. Person ID's are unique.
4. Each song has at least one author who is a person. There are different types of authorship, e.g., composer, text writer, or arranger. For each author of a song, we want to store the type of authorship.
5. Each song has at least one performer who is a person. There are different instruments for a performer, e.g., voice, piano, violin. We want to store for each performer the instrument they have played during the recording.

Tasks

Exercise 1 From the data requirements formulated above, derive an entity relationship diagram.

Exercise 2 Translate your entity relationship diagram into a relational schema: list tables with their attributes, underline the attributes that make up the primary key, identify referential integrity constraints, non null constraints and other domain constraints.

Exercise 3 Implement the resulting relational schema of the repository database in PostgreSQL. Take care to include constraints and to specify the policies for maintaining foreign key constraints.

Hint: Write a script that contains the necessary commands.

Exercise 4 Populate the database with the information about best-selling albums worldwide. On the wikipedia page http://en.wikipedia.org/wiki/List_of_best-selling_albums_worldwide find the albums '*The Greatest Hits (1971-1975)*' by **Eagles** and '*Appetite for Destruction (1987)*' by **Guns N' Roses**. Insert into your database all the necessary information about the first five tracks of both disks: track titles, singers, performers, etc.