This assignment has two parts. The first is a reading assignment. The second asks you to define a simple relational schema for storing music information. Hand in both parts together in class on the due date. Note that the two parts are graded separately, i.e., you will receive a separate reading and homework grade.

**Part 1: Reading Assignments.** The main goal of the reading assignments is to give you an opportunity to read and reflect on the material covered in the textbook. Each assignment will consist of general questions about the reading as well as specific questions on the topics covered. Reading assignments are assessed on how fully you answer the questions and whether you demonstrate that you understand the reading material. Answers must be clear and neatly written (preferably typed).

Read the following sections in the textbook and then answer the questions below.

- Ch. 1: 1.1, 1.2, 1.3
- Ch. 2: 2.1, 2.2, 2.3, 2.4

1. Briefly explain in your own words the major disadvantages according to the textbook of a “file-processing system” compared to a database management system.

2. What are the three levels of data abstraction described in the book? Briefly describe each of these in your own words.

3. Consider a programming language you are familiar with. How do relational tables compare to data structures within the programming language? For example, is there one or more built-in data structures that could be used to represent a table? Briefly describe how a table could be stored/represented in the language using examples.

4. In your own words, describe the concept of a “primary key”.

5. In your own words, describe the concept of a “foreign key”.

**Part 2: Design a Database.** Your job is to define a set of relational tables for storing basic information about albums, songs, music groups and group members, music genres, and recording labels. Your relations should be able to support the following queries.

- Q1: Find the album titles created by a particular music group.
- Q2: Find the music groups that play a particular genre of music. Note that a group can be associated with multiple genres of music (e.g., rock as well as rap).
- Q3: Find the names of people that were members of a particular music group in a particular year.
- Q4: Find the song titles for a particular album.
- Q5: Find the song titles that were on albums of groups that had a particular group member at the time the album was recorded.
Q6: Find album titles released under a particular record label (e.g., “Columbia”, “CBS”, etc.) within a given range of years (e.g., “2000” to “2005”).

Hand in your answers for each of the following questions. Note for this assignment you only need to write down your answers on paper (i.e., you don’t have to implement anything in MySQL and you don’t need to turn in your answers through dropoff).

1. Give the schema (table and attribute names) for your music database. Indicate which attributes are primary and foreign keys. For foreign keys, state which attributes the foreign keys refer to. You do not need to give the datatypes for attributes in this assignment.

2. Draw a “schema diagram” (similar to Figure 2.8 in the textbook) for your answer in Question 1.

3. Construct instances of your schema (i.e., tables) such that each of the above queries would return at least two rows.

4. List what the queries should return when run against your database instance.

5. We typically think of a “well designed” schema as one with little redundancy (note that there are times when a bit of redundancy can help performance). For instance, representing the above information in a single table would result in considerable redundancy. Based on this, rate how “good” you think your schema design is and why. Be specific (e.g., use examples) when describing your rating.