Implementing your relational schema

In this part, you will implement your relational schema designed in part #2 using a commercial database management system, insert some tuples into the tables and query the database. You are required to use MySQL, as your code will be tested in MySQL.

1. [25] Create the tables. Submit your SQL scripts of CREATE TABLE commands. Enforce key and referential integrity constraints and any other constraints you have (e.g. unique, not null, check etc.).

2. [15] Insert into each table 4 records. Submit your INSERT commands and the final result of running "select \* from YOUR\_TABLE" for each of your tables. You can insert 10 records for one or two tables to look at more interesting query results.

3. [20] Update a record in one table. Update potentially several records at once using subqueries. Show the records after updating.

4. [40] Query your database. Submit the SQL scripts of five queries into the tables together with their running results. At least one query includes join operation; one has subquery in it; one has group by and having in it; one has set operation (union , intersect or except) in it.

Deliverables:

- a "database.txt" file containing the SQL to build your database (item 1 above)

- a "queries.txt" file containing the insert and update statements (items 2 and 3 above), and queries you wrote (item 4 above)

- a "results.txt" or "results.pdf" file containing your query results. Above the result of each query, add a sentence in plain english describing what each query is doing. For example, "Title and author of books published before 1980."

Note: the SQL code will be entered directly into MySQL, so you need to ensure that it doesn't contain syntax errors, and that all queries and statements are separated by semi-colon (;)

实现你的关系模式

在这一部分中，你将使用一个商业数据库管理系统实现第二部分中设计的关系模式，在表中插入一些图元并查询数据库。你必须使用MySQL，因为你的代码将在MySQL中进行测试。

1. [25] 创建表。提交你的CREATE TABLE命令的SQL脚本。强制执行键和参考完整性约束以及任何其他约束（例如唯一的、不为空的、检查等）。

2. [15] 在每个表中插入4条记录。提交你的INSERT命令和对每个表运行 "select \* from YOUR\_TABLE "的最终结果。你可以为一个或两个表插入10条记录，看看更有趣的查询结果。

3. [20] 更新一个表中的记录。 使用子查询一次性更新可能的几条记录。显示更新后的记录。

4. [40] 查询你的数据库。将五个查询的SQL脚本连同其运行结果一起提交到表中。至少有一个查询包括连接操作；一个有子查询；一个有group by和having；一个有集合操作（union，intersect或except）。

交付的成果。

- 一个 "database.txt "文件，其中包含建立数据库的SQL语句（上述第1项）。

- 一个 "query.txt "文件，包含插入和更新语句（上述第2和第3项），以及你写的查询（上述第4项）。

- 一个 "results.txt "或 "results.pdf "文件，包含你的查询结果。在每个查询结果的上方，用简单的英语添加一句话，描述每个查询的内容。例如，"1980年前出版的书籍的标题和作者"。

注意：SQL代码将被直接输入MySQL，所以你需要确保它不包含语法错误，并且所有的查询和语句都用分号（;）分开。

Musicians are members of bands.

All bands have at least one musician and musicians belong to a single band.

Musicians are identified by an ID. Musicians also have a name, which is composed of first name, middle initial, and last name. Additionally, musicians have a date of birth and nationality. Information about the experience, in number of years, is also stored for musicians.

Bands are identified by their name and have a genre and date of formation. The years a band has been active is represented and can be computed by other attributes.

Songs are composed by a single musician and contain a name, lyrics, duration, and style. Songs are identified by the musician who composed them along with the song's name.

Musicians may be vocalists, instrumentalists, or both.

Vocalists have a vocal range and one or more languages in which they sing.

Instrumentalists have a handedness (right-handed, left-handed, or ambidextrous) and can play one or more instruments.

Instruments have a name, which identifies them, and a type.

Bands play songs in concerts. Each concert can have multiple bands and multiple songs and, naturally, the same bands and songs can be played at different concerts.

A concert is identified by an ID and has a date, an address (composed by street, city, state, and country), and a capacity.

音乐家是乐队的成员。

所有乐队都至少有一名音乐家，音乐家属于一个乐队。

音乐家由ID标识。音乐家也有名字，由名字、中间首字母和姓氏组成。此外，音乐家有出生日期和国籍。音乐人也可以用年数存储有关体验的信息。

乐队以其名字命名，并有其类型和成立日期。一个活跃的年份会被表示出来，并且可以通过其他属性来计算。

歌曲由一位音乐家创作，包含名字、歌词、持续时间和风格。歌曲由作曲的音乐家和歌曲的名字来识别。

音乐家可能是声乐家、乐器演奏家，或者两者兼而有之。

歌手有自己的音域和一种或多种演唱语言。

乐器手有一种惯用手（右手、左手或左右手），可以演奏一种或多种乐器。

仪器有一个名称和一个类型。

乐队在音乐会上演奏歌曲。每场音乐会可以有多个乐队和多首歌曲，当然，相同的乐队和歌曲可以在不同的音乐会上演奏。

音乐会由ID标识，有日期、地址（由街道、城市、州和国家组成）和容量。