CS157A Lab 1: Creating a table in MySQL

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Contents

1 Introduction

For this assignment, you design a table structure for a chosen item and encode this table structure using CREATE TABLE statement in MySQL. This Lab will be conducted in pairs to help each other in the process. You can complete the tasks either using the command-line or MySQL Workbench client.

Pre-requisites   This lab assumes the completion of Assignment 1, that is, MySQL Server should be installed on your machine and a new user with a DBDesigner role was created. You have MySQL buddy identified by the name. It also assumes that you have familiarized yourself with Chapter 1, 2.1, and 2.2 from zyBook.

2 Tasks

2.1 Data item analysis

1. Go back to your post on the Canvas discussion forum: "Introductory Discussion-Getting to know you" to remind yourself what favorite *item* you bought recently was. My favorite item I recently bought (in Target) was radio with Bluetooth and CD player (see Figure 1). It is my favorite item, because right now I can listen to not only my favorite radio stations but also to Pandora playing connected from my phone through Bluetooth. The tasks to complete will be shown using this as a sample *item*.

Figure 1: A sample favorite item - a radio.

2. Think about *attributes* that describe your item. If your item is available for sale online, the description provided on the website might help you. For example, I found my item online under https://www.target.com/p/ jensen-portable-bluetooth-cd-music-system-white-cd-565/-/A-76535919. Based on my physical observation of the item, the user manual, and the description provided on the website, I identified the following *attributes* that describe my item:

   - Color (yes, white color mattered to me a lot when I chose the item)
   - Price
   - Average rating (I found it on the website)
   - Brand (I did not really pay attention to it, because I liked the design in the first place)
   - Model (here, *CD-565*)
   - Name - the name of the product as displayed on the website and on the box (here, *Portable Stereo Bluetooth CD music system*)
   - Description - longer text description I found on the website
   - Dimensions, as specified by:
     - Width
     - Length
     - Thick
   - If it has Bluetooth
   - If it has a CD player
   - If it has FM stereo

   Consult the choice of attributes with your MySQL buddy. Find out of they can suggest any additional attributes to you.

2.2 Relational data structure

3. Define a *relational data structure* for your item. You can find example of a *table* in zyBook Participation Activity 2.2.1 For my item, the *table* describing my item would consist of the following *columns* and the corresponding *values* in a sample *row*:

Table 1: Relational structure for a radio item as represented by *column names* and *values* for my sample radio item (here, the longer text values were replaced with . . . .)

Brand	Name	Model	Color	Price	Rat	Wth	Lth	Tck	Blth	CD	FM	Descr
Jensen	. . .	CD-565	White	49.99	3.6	10.63	7.76	4.72	yes	yes	yes	. . .

4. Define *data types* for the attributes you identified in the previous step among the types you learned in zyBook 2.2 (see Table 2.2.1). I have identified the following data types for the columns describing a radio item:

- Color - Character
- Price - Decimal
- Average rating - Decimal
- Brand - Character
- Model - Character
- Name - Character
- Description -Character
- Width - Decimal
- Length - Decimal
- Thick - Decimal
- If it has Bluetooth - Boolean
- If it has a CD player - Boolean
- If it has FM stereo - Boolean

Consult the choice of data types with your MySQL buddy and take their suggestions into account.

2.3   Creating table in MySQL

5. Encode the relational structure using SQL statement CREATE TABLE in MySQL syntax. See zyBook Participation Activity 1.3.5 (Chapter 1) for a sample CREATE TABLE statement and zyBook Table 2.2.2 (Chapter 2) for data types available in MySQL. The full documentation for CREATE TABLE statement in MySQL can be found in the online manual under https://dev.mysql.com/doc/refman/8.0/en/create-table.html and for data types under https://dev.mysql.com/doc/refman/8.0/en/data-types.html. In my example CREATE TABLE for a radio item would be:

```
1  CREATE TABLE radio(
2
3          brand           VARCHAR(20),
4          model           VARCHAR(20),
5          name            VARCHAR(30),
6          color           VARCHAR(15),
7          price           DECIMAL(5,2),
8          rating          DECIMAL(2,1),
9          descr           TEXT,
10         width           DECIMAL(4,2),
```

Figure 2: Connecting to MySQL via command line with the user created in Assignment 1.

```
11        length              DECIMAL(4,2),
12        thick               DECIMAL(4,2),
13        bluetooth           BOOLEAN,
14        cd                  BOOLEAN,
15        fm                  BOOLEAN
16  );
```
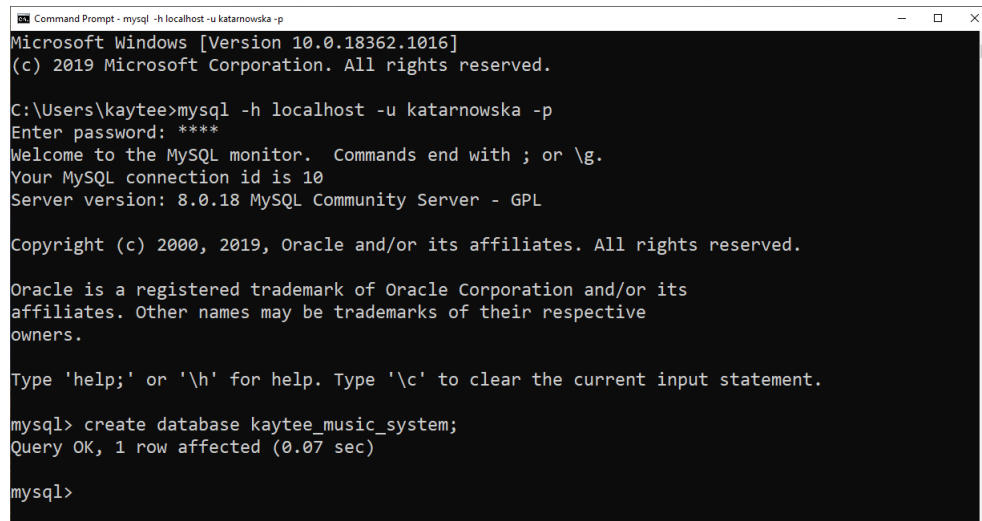
Please note, that name of attributes should not contain spaces. Also, please note that SQL language is *case-insensitive*, that is, is does not differentiate between upper- and -lower case versions. Check the syntax with your MySQL buddy. Refer to SQL naming conventions for database, table, and column names, which can be found under: https://www.isbe.net/Documents/SQL_server_standards.pdf.

6. Log in to MySQL server using MySQL Workbench/command-line client with the user that you created in Lab 1 (see Figure 2).

7. Create a new *database* (see Figure 3 as an example), refer to MysQL Manual under https://dev.mysql.com/doc/refman/8.0/en/database-use.html for creating and using databases in MySQL and https://dev.mysql.com/doc/refman/8.0/en/create-database.html for CREATE DATABASE syntax.
   Save the screenshot and attach it to your report.

8. Create a table for your item in the database using CREATE TABLE

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Figure 3: Creating a new database using CREATE DATABASE statement (here, *kaytee_music_system*)

statement (refer to the manual at https://dev.mysql.com/doc/refman/8.0/en/create-table.html). See Figure 4 as an example.

9. Check that a table was created in the database unser your user. **Provide the result of the following queries:** (see Figure 5 as an example). **Save the screenshot and attach it to your report**.

```
1  SELECT USER(), CURRENT_DATE, DATABASE();
2  SHOW TABLES;
```

10. Add privileges to your user to be able to retrieve (SELECT) data (see Figure 6 as an example). Open MySQL Workbench, connect as *root*, go to the Administration tab in the left navigation tab, select your user, select *Administrative Role*. Under roles check *DBManager* role. You can check that under *Global Privileges* SELECT privilege was added to your user.

11. Check the definition of the table is created as you wanted to. Issue the following query

```
1  DESCRIBE <tablename>
```

,where *tablename* is the table you created for your item. See Figure 7 as an example. **Save the screenshot and attach it to your report**. (see Figure 7 as an example).

Figure 4: Creating a new table using CREATE DATABASE statement (here, *radio*)

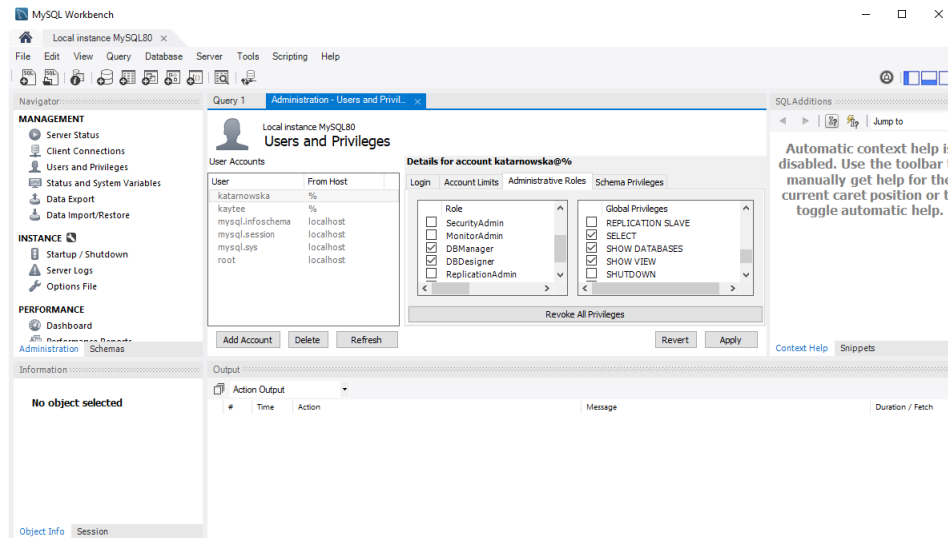Figure 5: Checking that the table was created using SHOW TABLES statement.

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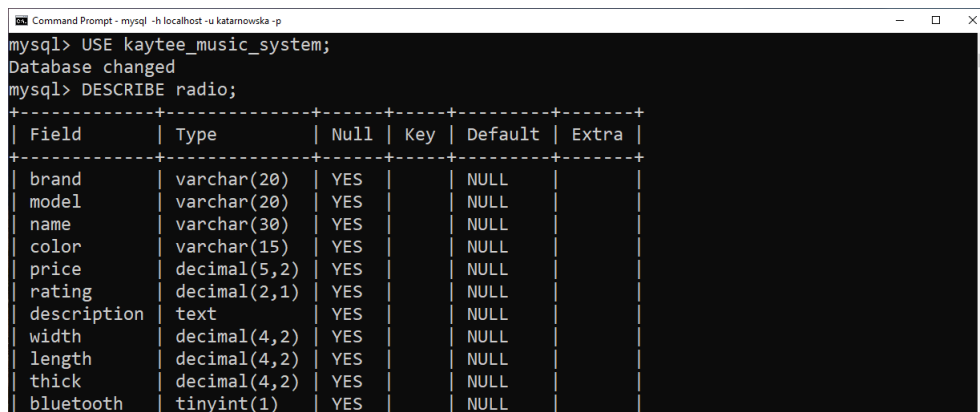Figure 6: Granting the *DBManager* role to your user to be able to SELECT data.

Figure 7: Checking the definition of the created table using DESCRIBE statement.

3 Deliverables

The deliverable is the task report uploaded on Canvas in pdf format. It has to contain the following sections and screenshots embedded into the report. Each student has to submit their report individually.

1. The name of the student you paired up with and description of tasks where your buddy helped you/provided suggestions.

2. Your favorite item analysis - description, attributes chosen, and their data types.

3. Screenshots providing proof of successfully creating a database (see Figure 3 as an example).

4. Screenshots providing your table definition in SQL and proof of its succesfull creation (see Figure 4 as an example).

5. Screenshots providing proof that the table was created under the new database with your user (see Figure 5 as an example).

6. Screenshots providing proof that the table definition was as designed and created by you (see Figure 7 as an example).

Note: Instead of the command-line client, you can use MySQL Workbench, and attach the corresponding screenshots from MySQL Workbench.

4 Grading

The lab will be graded according to the rubric in Table 2.

Table 2: Grading rubric

Rubric	Criteria	Points
1	Paired up with another student - name provided	10
2	Provided description of tasks where you helped each other	10
3	The item chosen, described, and congruent with introductory discussion as described in 2.1	10
4	Suitable attributes identified for the item (at least 5)	10
5	The relational structure provided including data types as described in 2.2	10
6	Screenshot of succesful CREATE DATABASE statement (as 3)	10
7	Screenshot of succesfull CREATE TABLE statement (as 4)	15
8	Screenshot of your user, time, database, and its tables (5)	10
9	Screenshot of succesful DESCRIBE statement (as in 7)	15
Total		**100**