Assignment 01
CS 364 | Fall 2017

For this assignment, you will be submitting a set of `.sql` files, one for each of the queries listed below. This assignment is divided into three parts: installing MySQL (both the server and the GUI), loading the Chinook database, and then writing the requested queries. Your assignment is due **October 4** at 11 PM and is worth **16 points**.

Installing MySQL

In this class, we will be using MySQL[1], a popular open source RDBMS implementation of SQL. Companies and services, such as Google, YouTube, Twitter, and PayPal, all use MySQL as part of their operations. MySQL provides a number of downloads to aid developers; the two we will be using are MySQL Community Server (the RDBMS implementation) and MySQL Workbench (the GUI).

Installing MySQL Community Server

Navigate to the "Downloads" page[2] and select your operating system under "Generally Available (GA) Releases". Download whichever version is appropriate for your OS/architecture; you do **not** need the versions with the test suite. After selecting your download, you will be prompted to log in; you can skip this step with the "No thanks" link just below the large buttons. Once the download is complete, launch the installation. The defaults should be fine for the installation. Towards the end of the process, a pop-up window will give you a randomly generated password for your server—<u>**be sure to save this password!**</u>

Installing MySQL Workbench

Navigate to the "Downloads" page[3] and select your operating system under "Generally Available (GA) Releases". Again, feel free to download without signing in. Launch the installation. Again, the defaults should be sufficient. Once you have finished the installation, open the MySQL Workbench.

Loading the Chinook Database

We will be using the Chinook database[4] for a few assignments in this class. This is a mock database of information for iTunes, primarily tracking songs and related information (e.g., what albums those songs appear on, who has purchased them).

On the main page of the MySQL Workbench (loaded from the previous section), you should see a header that says "MySQL Connections"; click the plus sign just to the right of the header. In the new window, fill in `Chinook` for your connection name, then click "OK". You should now see a connection for "Chinook"; click on it to open it in the workbench.

Under "Instance" on the left side of the screen, choose "Startup/Shutdown", and click "Start Server". You should be prompted for your password from the previous step and a request to change it. <u>**Be sure to save this new password!**</u> I do not recommend choosing anything particularly sensitive. This is the password you will use from here on out in MySQL. If you are not prompted, close the

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[1]Website: `https://www.mysql.com/`

[2]Website: `https://dev.mysql.com/downloads/mysql/`

[3]Website: `https://dev.mysql.com/downloads/workbench/`

[4]Website: `https://github.com/lerocha/chinook-database`

tab for Chinook at the top of the workbench, choose the home icon, and then reselect "Chinook" and navigate back to "Startup/Shutdown", then click "Start Server".

Once the server is running, download the MySQL statements for constructing the Chinook database[5]; you will be looking for the file `Chinook_MySql_AutoIncrementPKs.sql`. Download the file, and open it with a plain text editor (e.g., Notepad); these are all the SQL statements necessary to build the tables and import the data. Copy all of the text in the file.

Back in the workbench, you should see a tab entitled "Query 1" just to the left of the tab that opened when you chose "Startup/Shutdown" previously; select the "Query 1" tab. Paste all of the SQL file you previously copied into this window, then click the leftmost lightening bolt icon just below these tabs; this will execute each of these statements in order. Once the statements are finished executing (i.e., you should see "Query Completed" in the bottom left corner of the workbench window), click on the "Reconnect to DBMS" button above the tabs (the last button in the row of buttons); you should see the Chinook database appear under "Schemas" on the left.

To familiarize yourself with the Chinook database's structure, you can reference its ER diagram below:
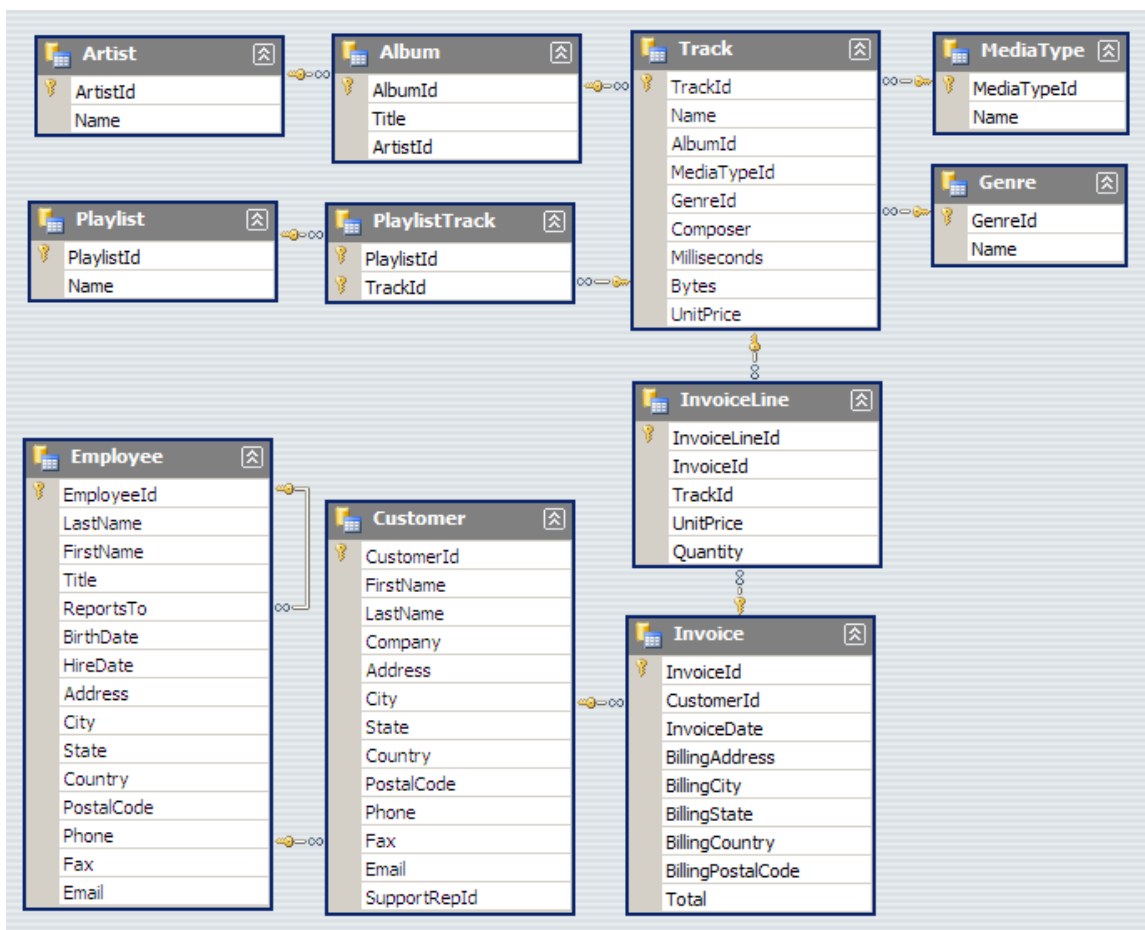
To check to see if everything is installed correctly, you can run `SELECT * FROM Chinook.Employee` - you should see eight tuples returned.

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[5]Download: `https://github.com/lerocha/chinook-database/tree/master/ChinookDatabase/DataSources`

In the future, when opening the workbench, the only steps you should need to take are to 1) choose the "Chinook" connection on the home page, 2) start the server, and 3) click the "Reconnect to DBMS" button. Be sure to stop the server and close the workbench whenever you are not working on your assignments. You will sometimes be prompted for a password; if it's for the user "root", give it the password you set up above. If it's for your username, use the password for your operating system (e.g., to unlock your computer). MySQL is a service run on your machine, so your operating system will sometimes want permission before performing an action (e.g., starting/stopping the server).

Queries

Once you have confirmed that the Chinook database is installed, construct the following queries, paying careful attention to the columns that should be displayed, their order, and their name. Each query should be written and then saved to a separate file; file names appear after the query descriptions below. After writing and running your query in the MySQL Workbench, you can save it by clicking the save button (or pressing Control + s on Windows, command + s on Mac). This will bring up a save window to save your file with the extension `.sql`.

- Find the names and associated length (in milliseconds) of all tracks that have a length between 150,000 and 200,000 milliseconds (inclusive). Your output columns should be listed as `Name` and `Milliseconds` in that order. (`query21.sql`)

- List the title of all albums that start with the word "The" in the title. Note that MySQL is case insensitive when comparing strings. Your output column should be listed as `Title`. (`query22.sql`)

- List the titles of all albums and the songs that appear on that album. Note that the correct query will return 3503 tuples; you can adjust how many rows are displayed just below the tabs. Be careful in what type of join you choose; be sure to examine the attributes of the tables involved. Your output columns should be listed as `Album` and `TrackName` in that order; note that you will need to alias the columns to achieve this. (`query23.sql`)

- List the name of all albums that have a titular track on them (i.e., a track with the same name as the album). Your output columns should be listed as `Album` and `TrackName` in that order; note that you will need to alias the columns to achieve this. (`query24.sql`)

- List track names that have **not** been a part of an invoice. Your output column should be listed as `Name`. (`query25.sql`)

- List the first name, last name, and title of each employee, as well as the first name, last name, and title of their supervisor; employees without supervisors should have null for their supervisor values. Alias **only** the columns for the supervisor to `SuperFirst`, `SuperLast`, and `SuperTitle`; columns should be ordered as `FirstName`, `LastName`, `Title`, `SuperFirst`, `SuperLast`, and `SuperTitle`. (`query26.sql`)

Submission

All six of your `.sql` files must be named exactly as listed above. All six files should be placed in a folder named `cs364-assign02-<lastname>`, where `<lastname>` should be replaced with your last name in camelcase. For example, if your last name is "Von Neumann," your submission will be named `cs364-assign02-vonNeumann`. Your file should be zipped up and named `cs364-assign02-<lastname>`,

then submitted to the Assignment 02 dropbox on D2L. Your folder directory should look as follows:

`cs364-assign02-<lastname>` (folder)
    `query21.sql` (first query)
    `query22.sql` (second query)
    . . .

Grading:

Your assignment will be graded on correctness of queries, correct submission format, and readability of queries (e.g., are keywords capitalized? is the query not indented in an unusual way?). This assignment is worth 16 points.