CSC 3300 Homework 2 – Intro to SQL

Skills you will learn :

- Writing SQL Statements
- Querying
- Creating Tables
- Inserting and Deleting data

Description

- **Introduction**

  For this assignment, you will use the employee database that is pre-loaded into the Firebird database server on your virtual machine. Run the flamerobin GUI to access the Firebird database server. In Flamerobin, click on "Localhost" and then double-click on "Employee" to connect to the employee database. If Flamerobin asks for a username and password, then the Firebird database server's username is SYSDBA and the password is coursework.

  Once you have run Flamerobin and logged into the employee database, you will use the Flamerobin GUI to send queries to the Firebird database server. You will show the SQL query that answers the questions 1 through 6 below, along with the query results. Each answer will be a single query. If you do not use a single query for each problem below, then you will receive no credit that the offending problem. Show your query and results by submitting screenshots of the Flamerobin query window. You do not have to show all the results, but show, at-least, the first 4 rows. Use the SQL JOIN syntax where appropriate. Note that you can open a query window in flamerobin by right clicking on "employee" and selecting "Execute SQL Statements". Make sure that the entire query can be seen in your screenshot. If none or only part of the query can be seen, you will not be given credit for your answer.

- **Problems**

  1. (2 pts) Show all customers by first and last name, and their state/province, that have an individual order of 'hardware' items in the SALES table such that the order has a total_value of less that $5000, and the order has not been paid. If the customers state/province is unknown, display 'UNKNOWN' instead of null. Make sure the column is still named STATE_PROVINCE in the results.

     File: problem1.png

  2. (2 pts) Show all the employees' first and last names who have had a single increase in salary since 1992 that is greater-than or equal-to 5% and that have a

job code of 'Eng'. Look up the EXTRACT function on the Web to help you solve this problem. Note that a single increase in salary is represented by a single row in the SALARY_HISTORY table.

File: problem2.png

3. (2 pts) Show all departments that do not have a phone number that looks like an open parenthesis followed by 3 characters, a closed parenthesis, a space, three characters, a dash, and then four characters. You must use the LIKE operator to get credit for this problem.

File: problem3.png

4. (2 pts) Show all the employees' first and last names that are team leaders on at least one project labeled 'other'. Include the project's name. Show only those employees that were hired after March 1, 1990.

File: problem4.png

5. (2 pts) List customers and their total amount of sales for a single shipment of hardware (a single row in the SALES table). However, those customers listed should either have a total_value that is within 20 per cent (inclusive) of the largest total_value sales for hardware, or have a total_value that is within 10 per cent (inclusive) of the smallest total_value sales for hardware.

File: problem5.png

6. (2 pts) Show all jobs and software projects. Only show the job code (from the Job table) or the proj id (from the Project table). Therefore, each row of the results should a single column that is either a job code or a software project. Show the results in a single table with one column called CODE. Do not use any string manipulation functions.

File: problem6.png

For the remaining problems, you will use the terminal (found under Applications->Accessories->Terminal in the Gnome menu) to answer questions 8 – 13. You will need to make a connection to the MySQL server:

1. In the terminal, at the $ prompt, type: mysql -h localhost -u root -pcoursework
2. Once the mysql prompt (mysql>) appears, enter the following command to create a new database: create database movie_db;
3. You now have a new database. Now change to that database by using the following MySQL command: use movie_db;

Do not copy and paste the commands above. The characters may not translate properly to the terminal.

Consider the following schema to solve problems 7 – 14 and give the answer for each problem below. Use the SQL JOIN syntax where appropriate. Make sure you show a screenshot of the terminal that displays both the SQL Query and the results of the command. Do not copy and pasted the text from the terminal as your answer. You will receive a 0 for problems that are copied-and-pasted text.

ACTOR	(aid, fname, lname, gender)
MOVIE	(mid, name, year)
DIRECTORS	(did, fname, lname)
CASTS	(aid, mid, role)
MOVIE_DIRECTORS	(did, mid)
GENRE	(mid, genre)

Figure 1: Movie Database

7. (6 pts) Write SQL DDL corresponding to the schema in Figure 1. All id fields, i.e. aid, mid, and did, are integers. The movie year is a number having four digits. All other fields are character strings. People's names have a maximum of 30 characters, roles and genres have a maximum of 50, and movie titles have a maximum of 150 characters. The gender field is one single character long.

Underlined attributes are primary keys. However, I did not show the primary keys for CASTS, MOVIE_DIRECTORS, and GENRE. You must determine the primary keys for these tables yourself. Make sure you assign these tables primary keys. You should also assign appropriate foreign keys. Following are some fact that will help you determine primary and foreign keys"

Visit the IMDb web page for Schindler's List. Use SQL insert statements to insert rows into the corresponding tables to represent this movie. For this assignment, don't enter all the actors. Enter only the first three. Enter the movie character's name for the corresponding role.

- o An actor can star in more than one movie, and a movie can have mulitple actors.
- o A director can direct more than one movie. However, a movie can have only one director. However, given what we know so far, we cannot enforce the fact that a movie can have only one director given the above schema (can you determine why?).
- o A movie can have more than one genre.

Your screenshot should show all of your DDL statements, and the MySQL server's 'ok' response so that I know your commands worked. Do not use DESCRIBE to show me that you command succeded. DESCRIBE does not show me the necessary information for foreign keys.

End your create table statement with engine=innodb or your foreign keys will not work. For example:

create table ACTOR (...) engine=innodb;

File: problem7.png

8. (3 pts) Visit the IMDb web page for Schindler's List. Use SQL insert statements to insert rows into the corresponding tables to represent this movie. For this assignment, don't enter all the actors. Enter only the first three. Enter the movie character's name for the corresponding role.

   File: problem8.png

9. (3 pts) Visit the IMDb web page for Rob Roy. Use SQL insert statements to insert rows into the corresponding tables to represent this movie. For this assignment, don't enter all the actors. Enter only the first three. Enter the movie character's name for the corresponding role.

   File: problem 9.png

10. (2 pts) Execute a query that shows all movie titles for movies that are dramas in which Liam Neeson stars.

    File: problem10.png

11. (2 pts) Execute a query that show pairs of movies, by title, which have the same actor starring in both. Show the actor in your results also.

    File: problem11.png

12. (4 pts) Alter the movie table, using the ALTER TABLE statement, and add a column called budget. Then go back to the IMDb web page for each movie and find the movie's estimated budget. Using SQL UPDATE statements, update the table with this new information.

    File: problem12.png

13. (2 pts) Execute a query that shows the titles of movies that have the largest budget of all movies in the database. Use a scalar subquery in your answer.

    File: problem13.png

14. (4 pts) Execute a query that shows the titles of movies that have more than two genres. Use grouping in your answer, but only show the title (not the count of genres).

    File: problem14.png