CMPT 354 Spring 2023
Database Systems
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Assignment 7

Total marks: 300 (15% of the course)
Due date: April 7, 2023

In this assignment, you will write a simple application program for the Yelp database, created in Assignment 3, and implement several functions for querying and modifying the database.

Preparation

1. You can use the following programming languages to implement the application: Java, Python and C++. Helpdesk has provided the following instructions and examples for using the CSIL databases from various programming languages including Java, and Python: http://www.sfu.ca/computing/about/support/csil/windows/how-to-use-sql.html#sample-codes.
2. You can find your password for the database connection in your database's dbo.helpdesk table in SQL Server -- right click on it and select "Select top 1000 rows".
3. We assume that you are familiar with at least one of the above-mentioned programming languages. Here, we list several tutorials about creating applications based on databases in different languages:

   Creating, Running and Packaging Your First Java Application：

   https://www.jetbrains.com/help/idea/creating-running-and-packaging-your-first-java-application.html

   Java Application with SQL Server Database:

   https://www.youtube.com/watch?v=KzNW4oTpYvs

   Python with SQL Server Database:

   https://www.c-sharpcorner.com/UploadFile/75a48f/micro/

Application Requirements

Your application should either have a graphical user interface or a command line interface with a hierarchical menu to support the following functions. Your submitted application should be run directly on the workstations in CSIL without compiling by the user. For example, an .exe file or an executable JAR file if you use Java for implementation. If you use Python, you can simply submit a .py file that we can directly run. Note that once the program is running, it should allow the tester to test all its functions and not terminate unless the tester manually closes the window or console.

The functions to be implemented are as follows:

Login

1. This function allows the user to log in the interface to have access to all other functionalities. The user must be remembered by the system in further operations.
2. The user must enter a valid user ID.
3. If the user ID is invalid, an appropriate message should be shown to the user.

Search Business
1. This function allows the user to search for businesses that satisfy certain criteria.
2. A user should be able to set the following filters as their search criteria: minimum and maximum number of stars, city, and name (or a part of the name). The search is not case-sensitive. It means that the search for upper or lower case must return the same results.
3. After the search is complete, a list of search results must be shown to the user. The list must include the following information for each business: id, name, address, city and number of stars. The results must be ordered by name. The results can be shown on the terminal or in a GUI.
4. If the search result is empty, an appropriate message should be shown to the user.

Search Users
5. This function allows the user to search for users that satisfy certain criteria.
6. A user should be able to set the following filters as their search criteria: name (or a part of the name), useful (yes/no), funny (yes/no) and cool (yes/no). The search is not case-sensitive. The user is considered useful, funny or cool if has value greater than zero for the corresponding attribute.
7. After the search is complete, a list of search results must be shown to the user. The list must include the following information for each user: id, name, useful (yes/no), funny (yes/no), cool (yes/no) and the date when the user was registered at Yelp. The results must be ordered by name. The results can be shown on the terminal or in a GUI.
8. If the search result is empty, an appropriate message should be shown to the user.

Make Friend
1. A user must be able to select another user from the results of the function Search Users and create a friendship. This can be done by entering the user's ID in a terminal or by clicking on a user in a GUI. The selected user will be a friend of the user that is logged in the interface.
2. The friendship should be recorded in the Friendship table.

Write Review
1. A user should be able to write a review of a business.
2. To write a review, a user must enter the business's ID in a terminal or by clicking on a business in a GUI in Search Business.
3. The user must provide the number of stars (integer between 1 and 5).
4. The review should be recorded in the Review table. Consider the ID of the logged user and the current date.
5. The program should update the number of stars and the count of reviews for the business. You need to make sure that the triggers you implemented in assignment 4 are working properly with your application program.

Submission

Test your application to make sure it can successfully connect to the database and run. Import/restore the data to the original status where necessary. **At submission time your database must contain an identical copy of the provided data without modifications** (insertions, deletions, updates) for the purpose of running test cases by the TA. Also, make sure that the triggers from assignment 4 are created in your database.

Submit a zip-file Assignment7.zip to CourSys.

The zip file should include your complete project directory, including all the source code and the used libraries, an executable application file for your project, as well as a simple read-me file describing how to use your application. You can illustrate the usage of your application in the read-me file with screenshots if you want.