COMP 440 - Course Project: Phases 1&2&3

Fall 2024

Description

Consider the design of a database for online rental . Each rental unit is identified by a unique rental ID, a title including city and state (like Los Angeles, California), a description of the rental unit, the price per night, and a list of features (each feature is a single word like Mountainview or Wi-Fi, or Kitchen). Only registered users can post, rent, and review a rental unit. Each registered user is identified by a user ID or username (or both), a (hashed) password, a first name, a last name, an email address and a phone number. A user can give at most one review for each rental unit, and on a particular day, the user can post at most 2 rental units and 3 reviews. Meanwhile, a rental unit can have no or many reviews. The review given by a user provides a score of "Excellent, Good, Fair, or Poor" and then a short remark. A user cannot modify an existing review that she/he gave earlier.

Some simple GUI interfaces are required for each functionality. **All functionality must be performed via the interface of your system. Direct SQL statement execution via any tools (MySQL Workbench) can only be used for debugging purposes.**

Phase 1 – Deadline: Sunday, 10/20/2024 by midnight

Use Java/C#/PHP/Python/C++ (or any other programming language) and SQL to implement the following functionality:

1. (5 pts) Create a database schema and implement a user registration and login interface so only a registered user can login into the system. The schema of the user table should be:

   user(username, password, firstName, lastName, email, phone)

   username is the primary key, and *email/phone* should be unique. You have to prevent the SQL injection attack. There is an attached pdf file about SQL injection attacks. In addition, create hashed passwords.

2. (5 pts) Sign up for a new user with information such as: *username*, *password*, *password confirmed, first name, last name, email, phone*. Duplicate *username*, *email* and *phone* should be detected and fail the signup. Unmatching passwords should be detected, as well.

How to submit:

1. The source code package. All files (source codes, class files, bat, and txt) should be contained in a war or zip file called COMP440_TeamNo_P for a team whose team number is TeamNo submitted via Canvas.
2. A YouTube video. Use a recorder: https://www.apowersoft.com/free-online-screen-recorder. And upload your video to www.youtube.com. We only need you to record your screen and your voice for the project demo, not your face. You can add the YouTube URL to a readme file inside your project directory. You can create slides for your presentation if that is helpful, or you can use YouTube to record your video:

https://www.labnol.org/software/create-youtube-screencast/27936/

You need to come to the office hours or make an appointment with the instructor immediately if you fail to complete phase 1 by the due date. Please send an email to me to list all the challenges of your project and where exactly you need help. Otherwise, you might not be able to do the remaining parts of this project.

Phase 2 – Deadline: Sunday, 11/3/2024 by midnight

Based on part 1, implement the following functionality using your selected programing language and SQL with necessary GUI interfaces. Phase 2 emphasizes the programming of interfaces and design and their integration with database operations.

1. (5 pts) Implement an interface so that a user can insert a rental unit, such as:
   Title: Los Angeles, California
   Description: Peaceful modern cabin with a view
   Feature: Mountainview, Kitchen, Wi-Fi
   Price: 100
   The IDs of rental units should be generated automatically using the autoincrement feature of MySQL (surrogate key). Make sure that a user can only post 2 rental units per day.

2. (5 pts) Implement a search interface as a form so that after one type in a feature, all the rental units with that feature are returned. The result needs to be shown as a table/list on a page.

3. (5 pts) Select a rental unit from the above list, and one can write a review like the following:
   A dropdown menu to choose "excellent/good/fair/poor", and then a description such as "This is a cool place to rent.".
   Make sure that a user can give at most 3 reviews a day and cannot give a review to his own rental unit (no self-review) and only can review once per rental unit.

How to submit:

1. The source code package. All files (source codes, class files, bat, and txt) should be contained in a war or zip file called COMP440_TeamNo_P2 for a team whose team number is TeamNo submitted via Canvas. One of the files should be called readme.txt, which includes the information about the group members' contributions and any instructions to install, configure and run your project.
2. A YouTube video. Use a recorder: https://www.apowersoft.com/free-online-screen-recorder. And upload your video to www.youtube.com. We only need you to record your screen and your voice for the project demo, not your face. You can add the YouTube URL to a readme file inside your project directory. You can create slides for your presentation if that is helpful, or you can use YouTube to record your video:
   https://www.labnol.org/software/create-youtube-screencast/27936/

You need to come to the office hours or make an appointment with the instructor immediately if you fail to complete phase 2 by the due date. Please send an email to me to list all the challenges of your project and where exactly you need help. Otherwise, you might not be able to do the remaining parts of this project.

Phase 3 – Deadline: Sunday, 12/1/2024 by midnight

Based on parts 1 & 2, implement the following functionality using your selected programing language and SQL with necessary GUI interfaces. Phase 3 emphasizes both the interfaces and their integration with backend database operations. Each item has 5 points.

1. List the most expensive rental units for each feature.
2. List the users who posted at least two rental units that were posted on the same day, one has a feature of X, and another has a feature of Y. In rental units of the user interface, you will implement two text fields so that you can input one feature into each text field, and the search will return the user (or users) who (the same user) posted two different rental units on the same day, such that one rental unit has a feature in the first text field and the other has a feature in the second text field.
3. List all the rental units posted by user X, such that all the comments are "Excellent" or "Good" for these rental units (in other words, these rental units must have comments, but these rental units don't have any other kinds of comments, such as "bad" or "fair" comments). User X is arbitrary and will be determined by the instructor.
4. List the users who posted the most number of rental units on 10/15/2024; if there is a tie, list all the users who have a tie.
5. Display all the users who posted some reviews, but each of them is "poor".
6. Display those users such that each rental unit they posted so far never received any "poor" reviews. In other words, these users must have posted some rental units; however, these rental units have never received any poor reviews or have not received any reviews at all.

How to submit:

1. The source code package. All files (source codes, class files, bat, and txt) should be contained in a war or zip file called COMP440_TeamNo_P3. Please upload the file to canvas. One of the files should be called readme.txt, which includes the information of the group members' contributions as well as any instructions to install, configure and run your project.
2. A YouTube video. Use a recorder: https://www.apowersoft.com/free-online-screen-recorder. And upload your video to www.youtube.com. We only need you to record your screen and your voice for the project demo, not your face. You can add the YouTube URL to a readme file inside your project directory. You can create slides for your presentation if that is helpful, or you can use YouTube to record your video: https://www.labnol.org/software/create-youtube-screencast/27936/

The project will be done by a team of a maximum of three students, but each student's contribution needs to be clearly stated in readme.txt. Start your project early and ask questions if you have doubts. Do not wait until the last minute.

Demo

You will be required to show a demo of your complete project (phases 1, 2 and 3) right after the submission of phase 3 or sooner. **Each group will have 30 minutes for the demo of their project. Please make sure you arrive at least 5 minutes before your appointment time. Make sure you always have a working version by archiving so that you avoid last-minute mistakes. Populate your database, so it is ready to answer all the queries in the project. We will need to see your database as well. All functionality must be performed via the interface of your system. Direct SQL statement execution via any tools (MySQL workbench) is not allowed during the demo.**

Examples of previous project:

- https://www.youtube.com/watch?v=J5rxAaTCcjU&feature=youtu.be
- https://www.youtube.com/watch?v=lNZJQYIQmco
- https://www.youtube.com/watch?v=NEejGx4xk7U