Final Design Project

ENSF 608 Fall 2021

Department of Electrical and Software Engineering
Schulich School of Engineering

The objective of this project is to apply your understanding of course concepts, database design, and SQL queries on a real-world database application.

Due: Thursday, December 9th, 11:59 PM

Submission: This is a team assignment. You may work in groups of 3. If you are taking ENSF 607 Fall 2021, your group must be the same. Your submission must be your team's own original work. Only one team member needs to submit the final files, but all names should be included on each document and within the dropbox description. Teams should verify the file upload process together- if one member uploads an incorrect file, it will impact the grade of the entire team.

There are multiple components to the project. Your submission should consist of five files:

- A single .pdf file with your EER diagram
- A single .pdf file with your relational model
- A single .sql file to build and populate your database
- A single .sql file with your query demonstration
- An .mp4 or link to your video demonstration

Please upload your submission to the Assignment 3 Solutions D2L dropbox folder.

Weighting: You will receive a project grade out of 100%. It is worth 30% of your overall grade.

Note: This is an integrated cross-course project with ENSF 607 F21. In ENSF 608, you will only be graded on your database design. If you are not taking ENSF 607 this semester, please see Dr. Marasco to make sure you have all the necessary information.

Grading:

The EER diagram and relational data model should follow the formatting conventions outlined in the lecture notes. Your solution may be computer generated or hand-drawn but must be legible.

The ER diagram should include correct notation for entity types, relationship types, attributes, key attributes, relationship attributes, and cardinality. All relations should have a name, primary key, attribute(s) as necessary, and foreign key(s) as necessary. Use arrows to represent foreign keys (referential integrity).

Your SQL files will be run through MySQL Workbench. **All statements must compile and execute correctly to receive marks.**

Marks will be deducted for incorrect or missing information. Solutions must be neat and organized.

ENSF 608 Project Deliverables (30% of course grade)

Conceptual Database Design (33.33% of 608 project grade, 10% of course):

Based on the provided requirements narrative, design and draw an EER diagram for the described database application. Your solution should follow the model notation presented in class and should include cardinality ratios and participation constraints. Your diagram should also be accompanied by a half-page description explaining your design decisions and any assumptions that were made.

Your solution may be handwritten or typed, and you may draw your diagram by hand or by using software tools. Handwritten work may be scanned or clearly photographed. Marks will be deducted for incorrect or missing information based on the provided narrative. Solutions must be neat and organized.

Logical Database Design and Creation Code (33.33% of 608 project grade, 10% of course):

Map your conceptual schema into a relational data model, including all primary keys and referential integrity constraints (foreign keys). Then use your relational model to create a .sql script that could be used by someone else to initialize and populate your database. You are free to use the given example data or create your own.

Your solution may be handwritten or typed, and you may draw your diagram by hand or by using software tools. Handwritten work may be scanned or clearly photographed. Marks will be deducted for incorrect or missing information based on your EER diagram design. Solutions must be neat and organized.

Query Code and Video Demonstration (33.33% of 608 project grade, 10% of course):

Implement your database in MySQL Workbench. Use Zoom or another tool of your choosing to record a short demonstration of your database (5 minutes or less!). All team members should be part of the demonstration. In the demonstration, show the following elements using your database. In your submission, you should include a .sql file that contains the queries listed below:

1) Show all tables and explain how they are related to one another (keys, triggers, etc.)
2) A basic retrieval query
3) A retrieval query with ordered results
4) A nested retrieval query
5) A retrieval query using joined tables
6) An update operation with any necessary triggers
7) A deletion operation with any necessary triggers

Marks will be deducted for incorrect or missing information and may also be deducted for videos of excessive length. Videos should have clear audio. Cameras should be on or you may use a professional-looking headshot. This is your opportunity to demonstrate how your database works and why it is a correct solution for the client.

Question Narrative

You will be working on a real-world problem from an actual client at the University of Calgary.

While the entire program requirements are included here, you only need to implement the database design for ENSF 608. Consider which elements of the functionality will need to be **stored in the database** and how they **interact** with one another. Your design may be different from others- you have flexibility in how you choose to meet the requirements of the client.

What is the goal?

Our joint ENSF 607-608 goal is to create a web application for the school of Veterinary Medicine at the University of Calgary to help manage their animals and process requests for delivering animals to teaching staff. This application will address the following 3 areas:

1. Manage animals
    a. Create animal profile
       Every animal can have different properties based on type but some properties are the same for example (Name, sex, age, RFID).
    b. Search animals
    c. Ongoing care process(Annual check and vaccination)

2. User Management
    a. Add users
    b. Access control
    c. Manage users (such as block and suspend)

3. Treatment process
    a. Design state diagram for treatment
    b. Define process with 4 states and 3 roles

What problem does this project solve?

The School of Veterinary Medicine at the University of Calgary is maintaining and administering medical care to various types of animals. Some of the treatment and prevention measures offered by the school include administering vaccinations, treating injuries, and disease diagnosis and treatment. The school needs a solution to collect and integrate animal data and automate the prevention and treatment process.

Moreover, the faculty make use of these animals for their teaching and need a process to reserve and request the delivery of the animals for their classes. The faculty should be able to check the availability and health status of animals.

When designing your database, consider the following user requirements and functionalities:

All the users must log in to the web application.

Admins

- Can add users.
- Can edit users.
- Can block users.
- Can monitor an animal's status.
- Can review comments.

Animal care attendants

- Can take photos of animals and upload them.
- Can request treatment from technicians.
- Can change animals' status.
- Can update daily status and treatment.
- Can alert disease and problems (location).

Animal health technicians

- Can diagnose and prescribe for them.
- Can change animals' status.
- Can monitor animal status.

Teaching Technicians

- Can request an animal.
- Can add students.
- Can block and remove students.
- Can search and view animal profiles.
- Can take comments on animal profiles.

Students

- Can search and view animal profiles.
- Can make comments on animal profiles.

Non-functional requirements

- The application must be hosted on AWS
- The application must work in all modern browsers
- The application must be responsive (work well and look good on all screen sizes)
- The application must be able to support 100 simultaneous users
- Etc.