CPSC 408
Database Management
Final Project Outline

Overview

For the final project you will push your programming and database abilities to the limit by implementing a database application of your liking. The end-product will be a highly polished and well thought out application that will include both a database and front-end UI component. In a nutshell, your application will allow an end-user to insert, delete, update, query data (CRUD) and generate reports.

While I am providing you with a general outline for the project, many of the implementation details will be up to you. It will be your responsibility to research the techniques and best practices for developing an application/database of this scope.

Project Details

The UI can be developed in the framework of your choosing (i.e., web, .net, java, python etc.), however the backend database must be MySQL. **You MUST have a front end UI for your application. CLI is not going to be accepted.**

The final project must incorporate at a **minimum** the following:

1. Print/display records from your database/tables.
2. Query for data/results with various parameters/filters
3. Create a new record
4. Delete records (soft delete function would be ideal)
5. Update records
6. Make use of transactions (commit & rollback)
7. Generate reports that can be exported (excel or csv format)
8. One query must perform an aggregation/group-by clause
9. One query must contain a subquery.
10. Two queries must involve joins across at least 3 tables
11. Enforce referential integrality (PK/FK Constraints)
12. Include Database Views, Indexes
13. Use at least 5 entities

Deliverables:

Idea + Group Members (20 points): You must submit your idea and your group (up to four members) for approval before you can continue. Details and deadlines will be provided in class.

ER Diagram + Schema (20 points): Once your group and idea have been approved, you must fully draft your ER Diagram and Schema and submit for approval. Your ER Diagram must use best practice and include all relationships and cardinality, and your Schema must implement all relationships using referential integrity, primary and foreign keys, and must be normalized to the 3rd normal form. Your schema must also list all functional dependencies for each table. I recommend using LucidCharts for both.

Presentation + Demo (60 points): The presentation (power point) will be between 10-15 minutes and occur during the last two weeks of class. Sign up information will be provided before the presentation.

The presentation will contain the following:
1. Problem/Issue you are trying to resolve
2. Your solution to the problem
3. Schema diagram
4. Demo

Do not treat the slides and demo as an afterthought. Please give yourself ample time to do the write up and make sure you proofread and edit carefully!

Source Code (100 points):
All source code should be commented and designed following best practices. All files (source, code, write up, slides) must be submitted by the last day of the semester (the friday of finals week)

- Submit your data files as well as SQL files so I can replicate your database
- Submit all source code and instructions to run the project
    - Submit the instructions in a README along with all dependencies I might need to install
- If your code is not commented well and does not include a well-written README, I will be docking points.