Course Project: An Online Enterprise Information System

COP 4710 Term Project

Milestones due: September 22, October 27, and the week of November 25–December 1

1 Introduction

In this project, you are expected to design and develop an online enterprise management system with nontrivial functionality. You can choose whatever enterprise you want to simulate. Your system should:

- be backed by a commercial or open source DBMS such as PostgreSQL, MySQL, or MongoDB;

- have a text, GUI, or web-based interface to interact with a human user, which must have at least three different appearances (menus, windows, web pages, etc.);

- be written in a general programming language (Java, C, etc.), using JDBC/ODBC (or other communication protocols) to connect to the database and send in queries;

- have a minimum of at least three relations, all of which have some data (you need to either make up some data or borrow data from other sources with permission from the data owner); and

- use at least eight different types of queries (in terms of SQL statements), some of which must be able to modify the contents of your database;

- be reasonably easy to use and robust to user error

Meeting all of the above features will guarantee you a B grade (i.e., $\sim 80\%$) in the project, assuming you do a good job in the demo and the reports. To get a higher grade, you should implement additional, more advanced database features; e.g.,

- create users for your system, with user ID and password;

- create views for your database and assign different privileges to different users;

- use stored procedures/functions to process application logic on the database side;

- employ good database security practices; and

- *any other database features we've discussed in class that are relevant to your project*

Some grading consideration will be given to projects that are GUI- or web-based; however, a polished and functional console application that incorporates several of the features above will be scored much higher than an incomplete or buggy website.

2 Getting Started

Reading the design and relevant code of a sample system will be a good way to get started. Links to two sample systems have been attached to this assignment on Canvas. The first is an online bookshop system implemented using JSP, while the second (from Connolly and Begg) is a course registration system.

3   Environment

In this project, you get to choose the platform to work on. The most successful demonstrations from previous years were done in standalone machines (e.g., a laptop) where students installed their own DBMS and application servers. I suggest you follow that strategy so that you are not vulnerable to all kinds of problems caused by sharing a server with other (sometimes inexperienced) users.

You are free to use a non-relational (NoSQL) database on the project. However, your reports will need to include SQL queries for all operations your project supports, even if the underlying code does not feature SQL, so you may need to "translate" your queries into SQL if you use a non-relational database. In addition, some DBMSs (notably SQLite) may not support all of the database features we have discussed in class, so your choice of DBMS may limit your options for advanced features later in development.

4   Deliverables and Grading

For this project, you will need to submit two intermediate reports, a final report, and three peer evaluations. You will also need to give a demonstration of your system during the last week of the semester.

By 11:59pm on September 22, you should submit a mini-report (in PDF format) with your conceptual design of the information system you are building. In this report, you should use an EER diagram to explain your design, and put all entity sets, relationship sets, as well as their attributes, relevant and reasonable constraints into the diagram. You should also submit a peer evaluation of your group members by this time, which will be posted as a separate assignment on Canvas.

By 11:59pm on October 27, you should to submit a short PDF report that shows you have started working on all three tiers (i.e., the interface, the application logic, and the database) of the proposed system. The functionality for each tier does not need to be complete at this point; you just need to show some initial work on all parts of the project. To convince us the system is a working state, you can show some screenshots or attach chunks of your code into the report (or both). You should also submit a peer evaluation for this part of the project.

The final project will be due the week of November 25–December 1. You will need to submit a report (in PDF format) describing your design and the main functionality by December 1, along with all of your code (JSP, HTML, Java, SQL statements, etc.), in a zip archive. This report should describe the features of your project, feature several screenshots of the project, and include all SQL tables and queries you used. If the design of your database is different than what you submitted for Milestone 1, you should also include a reflection on how and why the design changed.

You will need to schedule a time during this week to give a demonstration of your project. During the demo, you and your group will walk through all of the features of your project. Demos will be held individually via Teams (one meeting per group). You may want to practice the demo ahead of time. Think about who will present what and how you'll demo all of the features of the system. I expect you to share your screen during the demo. Either one of you can share their screen the entire time, or you can trade off who is sharing their screen for the different parts of the demo.

Important: everyone must speak at some point in the demo to receive full credit. Students who do not participate in the demo will lose substantial credit.

The project is worth 25 percent of your overall grade in the class. The first milestone report will be worth 3 percent, the second report 1 percent, and the final report 3 percent. In addition, the three peer evaluations will be 1 percent each. **Important:** even though the submitting the peer evaluation is not a substantial portion of the overall grade, your project grade will suffer (possibly substantially) if you are not contributing equally to your group's solution. The rest of the project will be graded based on the functionality implemented and ease of use (10%), and the demo quality (5%).

5   Other Issues

- Copying code from the Internet or other sources without an explicit acknowledgment is considered plagiarism.

- This project is intended to be done in 3-person groups. If you choose to work by yourself or form 2-person groups, you are expected to do the same amount of work as other groups.

- When you've decided on your team, submit the names of all team members to the Final Project groups assignment on Canvas. If you have trouble finding partners or just want to be assigned a group, submit "you choose" to the groups assignment. Groups are due by August 23.

- Try to think creatively about the kind of system you're developing. If you're stuck, you can create a system for a shop or course registration system, but the best projects tend to be something you're passionate about or interested in.

- You can receive full credit for a text-based or GUI project, but the expectations required to make an A will be higher. As a result, you'll need to look at implementing several of the other optional features and polishing your project functionality if you would like to make an A.

- Counterpoint: be aware that learning web technologies (React, notoriously) represents a substantial amount of work, and the project *does not require* you to develop a website. Learning web technologies may be a very valuable skill for you in the future, and I will offer some grading consideration for students who develop more ambitious projects, but you may wish to pursue a less ambitious project if you find your group is running out of time. You are allowed to "change your mind" on project modality.

- As we discuss new topics in the course (especially post-midterm), consider whether and how these ideas could be applied to your project.

- Do NOT wait to start working on this. Start now by talking to fellow students to form a group!