

My senior design project is about testing whether I've gained the skills necessary to create software that could be used in a real-world environment. I've decided on working with databases because they are extremely versatile and are used in countless businesses around the world. The project also aligns well with the coursework I've completed thus far and the work I've performed during past co-ops. I believe that if I can complete this project with a satisfactory result, then it shows me to be in a good position to provide benefit to a future employer, the next step after graduation. It will also test my ability to work as a team and communicate effectively. Lastly, the process of having an idea, designing from scratch, and documenting the process will give me some insight and experience into the general software design process.

The information learned from my past coursework will be helpful in completing this project. Database Design/Development (CS 4092) and Database Theory (CS 5151) have given me insight into the proper ways to structure tables in a database and how to affectively interact with them through commands. Software Engineering (EECE 3093C) gave me my first experience with designing a project from scratch up to completing a working prototype. I believe I can use this experience, and the lessons learned from it to create a more fleshed out design prior to prototyping that should yield better results. I've been using the lessons learned from Data Structures (CS 2028) in almost all of my work since taking that class and it will play a big part in this project as well. The information from the database will have to be temporarily stored in data structures so users can view and modify it without directly accessing the database. Lastly, Computer Networks (CS 4065) should be useful for managing the connection to the database, which will likely be running locally on the same machine as the software.

My previous co-ops will also go a long way in helping me to complete this project. At Accucare Home Medical, I worked as a service technician, and their outdated company software was the inspiration for this project. That position is where I gained knowledge into what types of items will need to be handled by the database and what kinds of functions the software should be able to perform. The experience that will help me build the software came from my co-ops at KLH Engineers as a software developer. My last rotation had me working with their databases through MySQL Workbench as well as creating a new application that would be able to pull equipment information from the database and automatically calculate the heat gain in a given room caused by that equipment. This gave me experience on the whole process of creating this type of application, from setting up the tables in the database, to creating the user interface, and to writing the code to connect both parts together. My co-ops also gave me experience working and communicating as a team and managing my time to complete work efficiently.

I am most excited to work on this project as a challenge to myself. This project will be a test to myself of how I've grown during my time at UC. My second co-op rotation was at Accucare Home Medical, and their outdated software was a constant complaint from most employees. I didn't manage to get a co-op for the following rotation, and my mom suggested I create a program to replace the one at Accucare as a project for the Experiential Exploration Program. At the time, I didn't believe I would be able to complete such a task, so I decided on

something else. Now, with more experience in software development and database management, I believe it is within my ability to create such a program and I want to show myself how much I've learned by doing so.

The first step to designing a solution was to create a list of all the features the software should have. This included a mockup of what items will be placed in tables in the database, what features will be tracked in each table, what kinds of outputs the software should be able to produce, and how the user will interact with the user interface. I expect the result of this project to be a software that will be able to track all the information I can recall was necessary for daily operation of a medical supply store and do so in a timely manner. It should also be simple for the user to find any information they need and make any necessary changes. We will know we are done when the software is able to accomplish all the tasks defined in the design document, including those initially planned for and any more we find necessary as work on the project progresses. The quality of the project will be determined based on a few factors: the speed of operation, the complexity of completing a task (measured in actions taken), and the frequency of errors.