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CS 5001: Senior Design

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Senior Design Capstone Assessment

This project is all about putting together what we’ve learned over our five years in this program. While it isn’t the culmination of every single individual thing we’ve learned, it’s more designed to put a cap on our college experience by bringing together a few different concepts into a project we can call our own. It gives an opportunity to be creative and choose concepts we enjoy or feel we have a level of mastery in. Some people choose games, others maybe a tool or applet to accomplish something neat. In my case, I feel like a property management system is a nice culmination of the things I’ve learned both at UC and at work.

Some coursework I’ve found to be relevant include ENED1100 Engineering Design, CS1021C Computer Science 1, and CS5127 Requirements Engineering. I feel ENED1100 did well to teach general concepts like team forming and project planning. While I chose not to make a team, project planning will come in handy here as this project will span multiple semesters. This sort of leads into another class I’m currently in, CS5127 Requirements Engineering. This class is all about identifying what a project’s needs are before just jumping in blind, taking into account things like user stories. Finally, CS1021C was my first introduction to C++, which I’m planning on using to write the application itself.

I’ve had the opportunity to work one of my final co-op rotations at a company called ITI. This company develops software that translates CAD filetypes for easy transition between CAD applications. What’s relevant from here is the fact that it runs with a SQL database in the back, which I’m planning on implementing to replace MS Access. I’ve had to manipulate SQL databases countless times to get our software to work for me, which has led me to build up a level of comfort navigating a database. While initial design of a database is not something I’ve dealt with before, I feel I am comfortable enough around applications like MySQL to figure it out.

My father has been working in rental property his entire life. His father, my grandfather, did as well so even as a child my dad was working in and on apartment buildings. He does everything including electricity, HVAC, carpentry, amenities, yard work, and collecting rent. He has a very particular system for collecting rent that involves balancing his book at the end of the day. To help with this process, his friend Steve developed for him a rudimentary property management system: a Visual Basic front for a Microsoft Access database back. This was in 1994 and he’s been using it ever since. In my eyes, it’s time for an upgrade.

The current solution he uses is very comprehensive: there is a GUI to enter information as well as generate PDF reports based on the information entered. These reports generated give a human-readable way to view stats such as rent collected over a period of time, number of vacant apartments, etc. My final deliverables include an application that does the same, built as a Windows application with a SQL backend, with a few more report options. In addition, I plan to implement a water usage tracking feature that tracks the water usage of each building on a weekly basis. Post-graduation I plan to make data gathering automatic for this water usage feature, as well as develop an Android app and implement a ticketing system for tenants to send issues to directly.