Capstone Self-Assessment

Our group's senior design project revolves around combining app development, back-end database management, and light automation to create a comprehensive project that could be used to aid plant owners in their day to day lives. This project aims to display a small amount of plant data that a plant owner would most likely want to know. Engineering can be seen as a daunting field of study, and sensors and the like can seem…intimidating; this project hopes to minimize that complexity and make a user-friendly application. To be more specific on what our project will be doing (in case you don't know), we're going to be making an Android application that display the moisture and sunlight levels for a plant. We'll then let the user know if these levels are appropriate and notify them if they need changed; in the case of moisture, we'll make a mechanism to automatically water the plant if its moisture level gets too low. This project will act as a combination of all the different facets of computer science myself and my group have learned over these last 5 years.

Each of the core concepts present in our project were initially presented to me in their own individualized experiences. Focusing on the concepts learned in school first, the following courses were contributing factors in my current knowledge:

ENED1020 – Engineering Foundations: Engineering Foundations is the course that gave me a small taste of mechanical engineering before I went entirely towards software development with computer science. It was a while ago, but the course at least familiarized me with working with hardware.

CS4092 – Database Design and Development: Database Design & Development is the course that first introduced me to SQL, and all the capabilities the language has in storing data in a comprehensive database – useful information to know when we begin setting up our back-end plant database

Besides these courses, all my programming courses in general helped in establishing good programming habits and getting exposed to collaborative programming through group projects. Besides my classes though, the following co-op experiences helped contribute to my knowledge on how I will approach this project:

Self-Upskilling (Student): Yes, this was a co-op experience. At the start of the COVID-19 pandemic I lost the initial co-op opportunity I had and instead to partake in personal upskilling. While this experience was dull, it was not meaningless. During this upskilling, I spent a portion of my time learning how to program in Android – a useful skill to know since we are going to be making an Android Application.

Martin and Associates (CS Co-op): While most of my work did not focus on things applicable to this project, the language I worked in, ProvideX, had some integration to SQL, giving me a little more exposure to the language. I seldom wrote in SQL but having just a little more experience in the language will certainly come in handy down the line.

IT@UC (IT Consultant): My co-op experiences were so not normal…anyways I don't want to believe it either but being an IT Consultant did teach me something applicable. While I won't be fixing anyone's laptops here or connecting a user to the UC wi-fi, this co-op did teach me to "keep it simple, stupid". Interacting with people with no computer experience meant that you had to explain concepts to them in simple terms that they can understand. This is useful information to know when we move forward designing the UI for our Android app. I need to make sure that we keep the UI intuitive, and only display information that the user that they would find relevant.

Regarding motivation for this project, there are a few motivations. The main one is that I get to work on a comprehensive project with my friends! I knew I wanted to do something with them that we would have fun working on, so this idea was perfect – it is something with practical use for anyone with plants, but still comprehensive enough to be considered good for a capstone project. The other more selfish reason is that I just want a good excuse to buy a plant. I told myself I would before I graduate… we are now in year 5, it's now or never. Since none of us own plants (ironic I know), this is the perfect excuse.

Our initial approach was not too complex, we can into this knowing we wanted to measure plant info and show it to the user. The difficult part was being sure it was comprehensive enough so that we weren't overwhelmed, but not to make it too easy of a project. We initially thought of doing the database, an app, more sensors, the light automation of watering, and image processing…but we slimmed it down to just using two sensors, the database, the app, and the automation. This is something that we could much more realistically reach, and it gives us a set goal to know when we are done. Bare minimum, we want to have the Android app finished and integrated with the sensors. Ideally, we'd have all that done and the automation – so the app is our finish line while the automation could be considered extra credit. Now to determine whether we did a good job or not… personally I have a high standard for perfection in big projects like this, so if I can look at the finished result and not doubt if it's good enough, I think we have done good.