Capstone Self-Assessment

Our group's senior design project revolves around combining app development, back-end database management, and 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 the health of the user's plant to the user in an easily digestible way. To be more specific on what our project is, we're going to be making an Android application that displays the moisture and sunlight levels for a plant. With this information, we can 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 began focusing on software development. 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): At the start of the COVID-19 pandemic, I lost the initial co-op opportunity and I had 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 – an obviously useful skill for our project.

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 experience at IT@UC didn't teach me any applicable technical skills, but it taught me a lot about making information presentable to the common consumer. 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 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 second reason is that I wanted to buy a plant. I told myself I would purchase one before graduation, so this is the perfect opportunity.

Our initial approach was not too complex, we can go 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. Once we get all these components finished, we'll work on any extra ideas as they come – additional notifications to the user, adding some security to our SQL database, etc. I know that our group will put everything we can into managing our time and making this project right, so I know that our final product will be something we can be proud of.

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