Individual Assessment

CS Senior Design

Kevin Eaton

**Individual Contribution:**

For our project, Plant Pal, I did work on the hardware portion. This included a Raspberry Pi, moisture and sunlight sensors, a water pump, and the software that controlled all those parts. Some of the skills I identified in my initial assessment were database communications, Python programming, utilizing a Raspberry Pi, and utilizing hardware components.

During the timeline of this project, I set up the Pi’s electronic components, learning a lot more about how electronics on a breadboard work and overcame obstacles unforeseen to the project. I also learned more about Python and utilized new libraries and functionality of classes I had not done in a while. Using MySQL statements with Python, I helped make a reliably working communication between the Pi and the database. Lastly, I learned how to communicate effectively with my team to make sure needs on my end and on the app end of the project were on the same page.

This project helped me learn a lot about IoT projects and team collaboration. I learned a lot about how breadboard components and electronics work. When I got the sunlight and moisture sensors, I realized that it was outputting 1’s and 0’s only not interval signals which we needed. I then learned the difference between analog and digital signals and found a solution in a small module I needed on the breadboard called a MCP3008. I was able to read technical documents to wire my components, which was a challenge at first to understand. I also had issues with unreliable moisture sensors. Since the issues occurred one week before the expo, I overcame it by writing software to overcome the inconsistency issues. I also was able to become more competent on how to communicate with a database. I learned how to send and receive select statements, update a table, and add new entries to a table. We experienced challenge in database hosting on the Pi. We realized it would have to be hosted on a separate machine instead of the original plan on the Pi because of computational limitations. Our solution ended up working great with only minor issues in communication. Another challenge we ran into with app to Pi communication was keeping them both on the same page for user settings. Originally, we wanted a direct communication, but issues with the app made that difficult. We instead opted to have the database be a middleman who they would both grab from to stay in sync. While not optimal, it all worked great in the end with every component we had finished running smoothly at the expo.

**Group Contribution:**

Our group accomplished our goals. We created an app that monitored your plant’s health and hardware that would automatically water your plant for you when the moisture got too low. At the expo, after some bugs setting up, our project had no issues for the judges and whoever came by to see it.

I learned that group work is about trust and constant communication. I worked with good friends of mine which made working on a team that easier because we had similar trust and work ethic. We were successful in fulfilling deadlines and being able to rely on each other. Sometimes we fell behind a and had to crunch to meet deadlines, other times we were a little ahead. Overall, we finished everything by the expo. I always was able to ask a question and get an answer almost immediately from our team and vice versa. We worked consistently, but we had some weeks where little work was done when there should have been. Even though we always hit deadlines, our consistency of work together could have been better.

My efforts compared to my teammates was adequate. I did the hardware portion entirely on my own and worked a lot on research and integration to get everything working properly. When integration time came along, my portion was easily integrated into the whole project and I had a good understanding of how to fit it in. I had issues as a teammate, however. I showed up to our meetings late a handful of times, but I got better as we went along. I also was stubborn on some decisions instead of listening to other ideas by the team. These were usually about minor decisions about specific issues.

I think Chris Butts deserve special recognition. He handled all the Senior Design documentation for the course along with writing the entire app. The app gave him a lot of trouble with bugs, and he learned all the coding for Android on a framework he had never used before. He grinded a lot to make sure that the app worked and ended up making it look great.

Overall, our team worked great together, worked hard on our project, and delivered something to be truly proud of.