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Professor Annexstein

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I made several contributions to the application side of our project. I worked on our application's development using Flutter (the application can technically be compiled for any platform, but is currently deployed as a web application), I deployed our application to Google Cloud Platform, I introduced continuous integration and continuous delivery processes to our application's deployment using GitHub Actions, I collaborated on the development of supporting Python Flask weather alert microservices which interface with a MongoDB Atlas Database, and I collaborated on the persistence of sensor time series data on our InfluxDB cloud database. These contributions enabled me to leverage and build upon invaluable full-stack development skills. These are not part of the skills I identified in the fall, but I did also find myself applying the basic principles I had identified from core classes such as ENED and Data Structures.

During this project, I learned a lot about the Flutter framework. Going in, I had no experience with it, only having heard of it from one of my coworkers at a previous co-op. Over the course of the project, I became more comfortable with some of its concepts like widgets, state providers, and the various Flutter development tools at my disposal. I also learned a lot about Google Cloud Platform. I had some exposure to AWS from my 5 years in CS but had never worked with GCP before. They offer a \$300 credit for new accounts, and we were able to leverage this for the scale required of our project. I went from being unfamiliar with the many services GCP has to offer to developing at least a base competency with Firebase, IAM, Cloud

Run, and the Container Registry. I also learned a lot about GitHub actions during my work in implementing CI/CD. I had worked with GitLab CI/CD during past co-op rotations, but never with GitHub Actions, and there was a significant learning curve involved. I had great success learning and working with these new technologies, but I did find it difficult at times to keep everything straight in my head when juggling the scope of the application with this plethora of new information.

Our group accomplished a great deal with this project. We were able to come together as a multi-discipline team and combine our skills and knowledge to create a working system covering a significant scope. We were able to develop a comprehensive wireless microclimate sensor system that interfaces cleanly with an accessible user application. While it is still largely a proof of concept, it is a solid, working system that we will be physically deploying in the near future. The only thing we were unable to achieve was the system's integration with movable solar panels, but this was due to factors outside of our control.

Our team was very successful in collaborating across discipline lines. A good example of this is how Yulia and I worked closely with the Computer Engineers to ensure the microcontrollers controlling the individual sensors were sending data to the cloud in a manner such that our application was able to easily manipulate it. However, due to the size of our team, our greatest struggle was coordinating meeting times where everyone could be present. Many times, we met without the entire group, although these were still productive meetings. I feel that everyone contributed to the project equally within their respective domains. I would especially like to acknowledge Anthony Napolitano for voluntarily taking on the role of team leader to keep us on top of things, and I would like to acknowledge Keith Springs for going above and beyond

in communicating with our client at the vineyard and with keeping in touch with Dr. Bahk throughout the sensor provisioning and design process.