Self Assessment - Spring

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This project pushed me to use my skills I have developed over my time as a student, as well as to learn new skills that I had not had the chance to acquire prior to the project. My contributions started with our first goal of the project, to get Rust code running on an embedded chip. Prior to this project, my knowledge of writing embedded code was minimal, and to make the situation even less optimal, we were trying to get Rust to run on an embedded chip, and there is very little documentation aimed at running embedded Rust. Myself and Dan started working on getting some basic embedded tasks to work using Rust. This included using peripherals like LED lights, as well as reacting to interrupts, mainly triggered by buttons in our case. This took a great amount of time and resulted in some examples that turned on LED lights when a interrupt was triggered by a button, all written in Rust. From doing this, I learned a lot about how basic embedded code works, and also what limitations using Rust might impose on any embedded project.

Once we understood how to write embedded Rust, my efforts were then turned towards designing and implementing a simple real time operating system (RTOS). This task was more well suited towards my own skills, and worked on a level of abstraction that I was more comfortable with. After some research on how a basic RTOS could be implemented in C, I designed an RTOS that used a very basic scheduler, and started working on the implementation in Rust. I wrote the scheduler and the first of the tasks that would test our scheduler. This is the accomplishment I am most proud of, as the scheduler really brought together the whole project.

In the end, our group had a working real time operating system that used a hardware abstraction layer (HAL) that was also built by us. The time spent contributing to the project as a group really taught me some valuable lessons about group research projects in general. I found that it was very hard to work with others on a fast moving project in which new aspects were explored fairly often. My roommate Dan and I worked on similar parts of the project and I think that worked out well because we were close and could talk to each other fairly frequently. Doug, on the other hand, worked on the HAL implementation which was separate from what Dan and I worked on. I feel this worked out pretty well because we could come together after a week or so and put our separate parts together. With that being said, I feel as if we could have done better at designing as team. It seemed like we all came up with very different ideas about how something would be implemented, and then when we would meet up, we were on totally different tracks. This could have been solved with better and more frequent communication.