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Cumulative Reflection

At Iowa State University problem solving has always been a large focus. With each class that I have taken, my problem-solving skills have become stronger with time. Even with courses focusing on problem-solving, I have still wanted more and have driven myself to find other places to challenge myself in new and different ways than what is done in the classroom. Problem-solving is a lifelong process that requires one to keep working and learning to keep up to date with the current trends and ideas.

One of the first problem-solving tasks that I struggled with was in CPR E 185, Introduction to C Programming. For one of our lab assignments, we were tasked with making a maze style game where you would control a cursor on the screen with a dual-shock PS4 controller. This was difficult as it required input correction along with checking the game state and drawing the game onto the screen. My previous programming experiences were not anywhere close to this level and I had a hard time working through the problem. However, after many failed attempts and countless hours troubleshooting small bugs I was able to get a working version. The feeling of having a working version of this game made me very happy and drove me to find other problems to solve that were harder. The feeling of defeat at first was a learning experience, however, this was one of the first times I was able to work through it and keep going to get a final product. Over time, I was able to solve other problems in classes that were much more difficult and they were based on troubleshooting I learned on this small-ish programming assignment during my first semester at Iowa State.

One of the most fascinating courses that I have taken at Iowa State was CPR E 288, Embedded Systems. While most of the course content I have yet to use in a

real-world environment, the overall troubleshooting and experience of teamwork in that course was second to none. Having to troubleshoot hardware and software together while also having to worry about physical limitations gave me quite a challenge but once we saw our robot moving around successfully, my teammate and I were ecstatic. However, the hardware and software connection from that course has driven my interest in hardware security. This was very useful in my Senior Design project where we are working towards emulating a physical Internet of Things device for the Iowa State University Cyber Defense Competiton. Working with Linux and it's relation to the hardware has benefited from the knowledge and tools that I used in CPR E 288. This included the knowledge of how processors and buses work together and how processors can access external devices.

Outside of Iowa State and the research and classwork that I have done, I am already applying some of the basic knowledge that I have learned from some of my Cyber Security classes. I have already used industry-standard tools such as Wireshark, Splunk, ESXi, and many more. This experience has given me the ability to keep learning about these tools even after I have completed the classes that have used them. Due to my experience during some Iowa State classes, I am able to work with ESXi and Linux at a higher level at my current employer than what I would have been able to without those classes. I also find myself working on small personal projects related to Cyber Security where I enjoy learning about new things and keeping up to date with current security threats, vulnerabilities, and events. This keeps me engaged with the industry and allows me to respond to problems as soon as possible and to even possibly discover my own vulnerabilities in the future.

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Iowa State has given me the ability to problem solve on a new level that what I have had in the past and given me the ability to try and fail. However, after failing I always get back up and try again. This has given me the strength to see a problem to competition and think of the future rather than the present. I plan on keeping working with problem-solving for the rest of my life and also allowing myself to keep learning.