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Course: CS5001

Task: Assignment 3 Part 2: Individual Capstone Assessment

The senior design project that my partner and I are planning on creating is a process protection system for Windows applications. Our goal is to create an anti-cheat system that safely monitors and guards running processes on Windows. We will also have a web interface to monitor these processes. We will use the coursework knowledge we developed here at UC and used techniques like memory protection and code integrity checks to have better security. The user side of this project will be a web interface that monitors the running processes, detects when there is a threat, and alerts the user. This process will give us hand-on experience and more knowledge on the cybersecurity side of computer science, something my partner and I are very excited about.

At the University of Cincinnati, I've had many courses that went over theoretical computer science concepts. I've also had many courses that have given me real experience programming. For this project, I will be using both, theoretical and real programming experience, to help me develop this project. Two courses that have significantly helped me throughout my career so far is CS2028C: Data Structures and CS3003 Programming Languages. These courses helped me practice logical and critical thinking by forcing me to learn and tackle different programming techniques that I continuously use today, both at college and for work. For this project, I will also use the knowledge and techniques I learned in EECE4029: Operating Systems and Systems Programming to securely protect running processes. Finally, I will also use the knowledge I learned in EECE3093C: Software Engineering to help guide me in this project. This course discussed the software development process, techniques such as agile, code coverage, and team collaboration are all skills that I have learned in this course. I will demonstrate the use of these technical and mechanical skills that I have learned here at UC during the development of my project.

At UC, I mainly co-oped at Siemens Digital Industries Software as a Software Development Co-op. I believe this will help me even more during my project because during these co-ops, I already became familiar with the software development process. I was able to get hand-on experience on software that was readily available to the public. I was able to see and

participate on how real development teams collaborate and was able to build my communication and collaboration skills. I also was able to learn new technical skills, specifically web interface work. For majority of my time at Siemens, I was able to work with our software's web interface, making it more understandable to the user and adding features that the user would need. I believe this will be a great advantage for me when developing the web interface part of our project. At Siemens, I also gained skills in unit testing, GitLab CI/CD pipelines, and microservices. I hope to also create a stable pipeline for our project just for future development. All these skills will help make sure that we have a smooth and well-tested project.

I am very excited and motivated to begin this project because I am able to use the skills I've learned at UC and my co-ops to create a team collaborated project. I am excited because this project will be ours, not something that was assigned to us, and it is on a topic that interests me, cybersecurity. I am motivated to learn more about cybersecurity during the development of this project. The approach I have for this project is to initially do research on process protection, see if there are similar software's and learn off of them. Then, I will begin implementing some of the techniques used in other software's and add it to our project, as well as improve upon it. During this, I will be building the web interface as well as testing our software with various use cases. The most important part is how we will track this project. I plan on creating stories for my partner and I to follow. I will add these stories to something simple such as Microsoft Excel and we can assign ourselves stories and keep them updated, whether they are in the development stage or completed stage. I believe this is what excites me the most, creating my own software development process.

Currently, I will know that I have completed this project when I have a piece of software that detects, alerts, and prevents unauthorized access to processes and has a web interface that I can interact with. This interface will show the user running processes and see if there is any unauthorized threat to those process and then alert the user. I will self-evaluate myself by testing this software with programmed test cases and my own ability to use the software. I will know if I have done a good job if I showed what I learned at UC, and my time at Siemens, in this project. This means I want to see myself using the skills I've learned from my experiences on my own project and find out how useful those skills are in software development. This project will really test me to see how far I have gotten as a developer since the beginning of my time here at UC.