

Reflective Essay

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Introduction

Throughout my time spent learning and developing skills in the cybersecurity program at Old Dominion University, I have produced many artifacts of the knowledge and skills I have gained. Reflecting back on my classwork and experience, the following are what I would consider to be my top three skills: critical thinking and analytical writing, technical-based skills, and finally, interpersonal skills including multi-tasking and communication.

The artifacts have been taken from various courses across my college career at Old Dominion University. These courses include the following:

- Cybersecurity Ethics, which introduces ethical theory and principles and then integrates them into informed analytical writing.
- Interdisciplinary Theory and Concepts, which introduces an interdisciplinary approach to research and problem solving.
- Introduction to Criminology, which examines the science of criminology, including the study of crime, criminals, and society's response to them.
- Cybersecurity Techniques and Operations, which introduces various cybersecurity strategies and techniques of attack and attack prevention.
- Ethical Hacking and Penetration, which introduces techniques utilized in ethical hacking and penetration testing.
- Applied Machine Learning in Cybersecurity, which introduces machine learning and applies them to cybersecurity concepts.
- Cybersecurity Internship, which is a course that is meant to go alongside an internship and provide reflection opportunities.

Critical Thinking and Analytic Writing

The first group of artifacts I will discuss exemplifies my critical thinking and analytical writing skills that I have developed through my collegiate courses. The cybersecurity program at Old Dominion University is one in which an interdisciplinary approach is taught. Thinking not through one lens when examine a topic or problem, but multiple, is integral to success within the field. I was able to learn and develop the skills of doing just that in my Interdisciplinary Theory and Concepts course.

An artifact found on the page for that course is my final research paper. For the length of this course, I went through the full process of forming a research question, conducting research across multiple disciplines, and then formulating interdisciplinary insights from that research. It required that I learn how to look at matters through an interdisciplinary lens, which was admittedly presented a learning curve for me. But over the semester, I was able to gather sources from across different disciplines to incorporate into my paper, significantly assisting in developing my critical thinking and analysis skills. The final paper examines how cultural attitudes towards trust in technology affects susceptibility to cybersecurity scam tactics, and utilizes perspectives from the fields of cybersecurity, psychology, linguistics, and anthropology.

The second artifact exemplifying this skill is taken from my Cybersecurity Ethics course. I have provided a paper discussing data protections in the United States and whether we should adopt policies similar to the GDPR present within the European Union using an ethical lens. I was required to read the sources and ethics papers presented and think critically to compose my own opinion and argument utilizing ethical theory and principles.

A third artifact for this skill is taken from my Introduction to Criminology course and is a paper I wrote examining white-collar crime. Similar to the past two artifacts discussed, I was required to examine topics that could fall within the cybersecurity field and then proceed to include more disciplines in order to produce insightful, quality work. In order to accomplish this, I was required to be able to thoroughly and critically examine references from across disciplines, resulting in the strong skill of critical thinking and analysis I now possess.

Technical Skills

Technical skills are extremely important for success in the cybersecurity field. Even if mastery in them is not yet present, having experience and showing proficiency with multiple different types of programs and techniques is integral. The first artifact is taken from my Cybersecurity Techniques and Operations course and shows my completion of an ethical hacking lab. It required that I exploit vulnerabilities using Metasploit Framework, a cybersecurity tool on Linux systems, execute a simulated attack on a virtualized victim system, and further escalate my privileges.

A second artifact that shows my technical skills comes from my Ethical Hacking and Penetration course. It is a lab in which I utilized Nmap, a program that can execute scripts and scan networks, in order to determine open ports, determine vulnerabilities, and perform a virtualized brute force attack using Nmap specific scripts. It demonstrates my experience with active reconnaissance and vulnerability testing.

For the last artifact for this section, I am using my final project for my Applied Machine Learning course. It asked that I create and train different machine learning models using a dataset

and then compare them based on the results. It required technical knowledge both of how to train these models using Jupyter Notebook and then how to interpret and format the results provided.

Communication, Multitasking and Interpersonal Skills

This last section includes artifacts that exemplify my communication, multitasking, and interpersonal skills. All of these artifacts have been taken from my internship that I completed in the last semester of my degree program. The first is a professional interview that I conducted with a professional in the cybersecurity field that I completed and wrote up for a reflection assignment. This artifact is with an IT team member at my local hospital, which offers some unique insight due to the sensitivity of the data stored within their systems. It demonstrates my ability to communicate and have the interpersonal skills needed to arrange and efficiently conduct the interview.

The second and third artifacts for this section are both deliverables that I was tasked with creating and providing to my supervisor. The first deliverable that I provided is a cybersecurity best practices manual that I conducted the research for and created. The second deliverable is the presentation I created alongside the best practices manual that I presented the team with at the end of my internship. For both of these artifacts, multitasking and communication played a major role. This internship was remote, and it very much had the style of a cybersecurity consultant project, so I was required to set up my own schedule and deadlines in order to complete my work on time and gather the required number of hours needed for my course. Both the manual and the presentation show my ability to create materials of that type and that I have the skills required in order to communicate what I needed to with my audience.

Conclusion

In conclusion, the courses at Old Dominion University have not just provided me with crucial academic knowledge and foundation, but it has also helped develop a range of practical skills that are valuable beyond the classroom setting. Through engaging with assignments, creating projects, and applying critical thinking, I have strengthened my ability to communicate effectively, manage time, solve problems, and adapt to new challenges. This has not only deepened my understanding of the subject matter but also prepared me for future professional environments where such competencies are essential. Overall, this reflection highlights how my academic work serves as a meaningful foundation for personal growth and career readiness.