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Abstract

Over my past four years of attending Old Dominion University, I have been able to learn a lot about Cybersecurity, my academic career, and myself. As mentioned by Dan McAdams, going through this along with building my ePortfolio has truly contributed to my life story (McAdams, 2001). Over my last four years at Old Dominion University, I feel that I was able to accomplish a lot in working towards my goal of graduation in the spring. Before deciding to attend ODU, I was completely unsure of what I wanted to do after I would finish high school. I thought I would go the simpler route of either Business or Undecided, but that's when I landed on Cybersecurity. I already had a basic understanding of computers and networks, so I thought that maybe I should try to expand on that a little more at ODU. Four years later, after finally landing on cybersecurity and completing a lot of hands-on work in that field, I knew then that Cybersecurity is what I wanted to do. I was able to develop lots of skills that pertain to this field, but three of the most important skills that I learned were problem solving and critical thinking, technical skills, and writing.

Problem Solving/Critical Thinking

In my time of attending ODU, I learned the sheer importance of both problem solving and critical thinking. Problem solving can best be defined as the process of identifying a problem, finding out what exactly caused the problem, and figuring out how to solve the problem. Critical thinking, on the other hand, can be defined as analyzing as much things as possible in order to come to a proper conclusion. In the Cybersecurity field, I was required to think outside of the box and to draw the best conclusions possible, since the Cybersecurity field is always changing in terms of what kinds of threats we are facing and what new methods of defense are being developed. However, these skills of critical thinking and problem solving do not only apply to the Cybersecurity field. Since Cybersecurity can be a multi-disciplinary field, these skills can also apply to other fields of study, more specifically Criminal Justice. During my time at ODU, I became quite fascinated with the ideas of Criminal Justice, so much that I ended up minoring in it. The artifacts that are mentioned for this skill are good examples of me having to think outside of the box.

CRJS 262 Law and the Criminal Justice System – Writing Assignment 2

In this course, I learned a lot about both substantive and procedural law in terms of the types of crimes, their definitions, investigations, processing, and their punishment. I found that this course also had some aspects that could be related to cyber law, including the types of crimes that could be committed by computer or cell phone. In the assignment that I provided, we were asked to observe a scenario where a man was suspected to be involved in a string of burglaries in and around the campus of ODU, and potential evidence was provided that could incriminate the man. Then, we were asked what investigative measures could be taken in order to establish probable cause to search the man's house, and if we had probable cause to search his house. Lastly,

we were asked what we would do in the situation that we did not have the sufficient evidence to search the man's house. This assignment taught me to think outside of the box in order to come to a proper solution, as well as trying to analyze as much of a situation as possible. With what was provided, I was able to properly analyze the man's scenario and properly develop probable cause to search his house. Like in Cybersecurity, I was able to learn about a lot of different types of law and policy, and what types of measures that could be taken.

CYSE 409 Crime and Computer Applications – Asymmetric (Public-Key) Cryptography

Continuing off Criminal Justice, I was then able to apply these skills to this course, which helped me understand which ways computers are involved in the investigation and commission of crime. In this assignment, we were asked to answer questions about encryption, then the next step was to use your email to send an encrypted message. I definitely had a difficult time carrying this out, but I was able to figure it out eventually after thinking of how I can properly do it. This assignment helped me in thinking critically to solve problems. Sending encrypted messages is not always an easy thing to do, so putting a little extra thought into it is really what helped me successfully complete this assignment.

CYSE 462 Cybersecurity Fundamentals – Module 10 Assignment

In this course, I was able to learn a little more about networking and the Internet protocol (IP), and other protocols, such as Hypertext Transfer Protocol (HTTP), Domain Name System (DNS), and Border Gateway Protocol (BGP). I was also introduced to wireless communications, vulnerabilities, security protocols, cryptography, and cyber threats and defenses. In this assignment, I was asked to explain types of errors that can happen in a computer network, and possible methods to prevent them from happening. The errors that I discussed were resource leaks, incorrect usage of APIs, insecure data handling, buffer overflow, and use of uninitialized data. By

thinking critically, I was able to come up with multiple methods of preventing each error from happening. For example, one of the ways that buffer overflow can be prevented is by implementing SEHOP a security feature that “helps stop malicious code from attacking Structured Exception Handling (SEH), a build-in system for managing hardware and software exceptions) In Cybersecurity, it is extremely common to run into these types of errors, so it is important to think critically and find ways to resolve these errors.

Writing

Writing is an aspect of academics that I did not really enjoy doing for quite a while. However, eventually I ended up truly enjoying any assignments that involved writing. My favorite thing about doing lengthy writing assignments is that I am best able to express my opinions and feelings, and most importantly myself. Even when my writing was not always perfect while at ODU, I was able to receive some excellent feedback from all of my professors, which is also what made me enjoy writing a lot more. The artifacts that best present my writing skills are why I have become so fond of writing in the past few years.

CYSE 426 Cyber War – Project Paper

The first writing assignment that helped me become even more proficient and confident in my writing capabilities was from my class about cyber war. In this class, we covered cyber war from around the world, what causes it, and how the United States is involved in it. This is one of the lengthiest assignments that I have worked on while at ODU, coming just over 2,500 words. To complete it, I challenged myself to do as much brainstorming as possible. In this paper, the topic that I decided to cover was the potential risk of the militarization of cyberspace. Starting out, I explained what the meaning of cyberspace is to the reader. To answer the question of whether or not the militarization of cyberspace is a concern or not, I brought up the Stuxnet worm that was

created by the U.S. and Israeli governments in an attempt to sabotage the nuclear program of Iran. It is considered to be the “world’s first cyberweapon that impacted physical infrastructure” (Buxton, 2022). The conclusion I came to was that even though cyberspace was already militarized, there could be devastating damages if it were to progress any further.

CYSE 425 Cybersecurity Strategy and Policy – Political Implications of United States Cyber Deterrence Strategy Against China

In this course, the main goal was to explore types of cybersecurity policies and strategies worldwide, and explain the social, political, and ethical implications that may arise from these strategies and policies. As mentioned in the title, the topic that I chose to cover for the entire semester was the United States cyber deterrence strategy against China. This paper primarily covered the political implications of this strategy. In this paper, I focused on the topic of political relations between the U.S. and China, stating that if cyber warfare continues between the two nations, then their relations could become significantly worse. Also, it has been reported that China is coming up with their own deterrence plan in response to the “further development of cyber deterrence by the US” (Jiang, 2019). This topic of cyber warfare has helped me better understand what could happen when I am working in the Cybersecurity field.

PHIL 355E Cybersecurity Ethics – Case Analysis on Cyberconflict

The last assignment that helped me develop my writing skills was in the course about Cybersecurity ethics. In this paper, I covered the ongoing cyberconflict between Iran and Israel. My stance on this conflict was that it was not morally just, and to back up my stance, I used virtue ethics to explain that things were not being done for the right reasons. I was then provided with sources by the course to back up my claims even more, by explaining four moral concepts of information ethics, the first one being “Entropy ought not to be caused in the Infosphere” (Taddeo,

2012). This assignment truly helped me with my writing because it helped me make an argument, then being able to back up that argument with sources.

Technical Skills

The last skill that was necessary in helping me develop my abilities in the Cybersecurity field was my technical, or hands-on skills. These skills are certainly some of the most important if I want to do well in Cybersecurity because it is a very technical field of study. These technical skills can come in the form of programming, networking, coding, and ethical hacking, and they can also be developed from other areas of study.

CYSE 301 Cybersecurity Techniques and Operations – Password Cracking Assignment

This course allowed me to look at a lot of techniques which can secure and analyze computer networks and systems. We used many different types of applications to achieve these goals. In this assignment, we were required to crack passwords. I went step-by-step in this process, starting out with creating user accounts with passwords, then launching dictionary attacks against these accounts, which had increasingly more complicated passwords. I was able to crack two of the three passwords. This assignment helped me use certain applications to perform difficult tasks.

CRJS 344 Social Science and Crime Mapping – Final Map

Once again this is another course that is not exactly Cybersecurity, but it is closely related. In this course, we learned how to use a geographic information system (GIS) called ArcGIS to create crime maps in order to find patterns, relationships, and trends in crime data. In this final map, I used ArcGIS to see if there was a correlation between poverty and crime rate in Norfolk, Virginia during Christmas. I was able to find that this is true not just on Christmas, but also on almost any major holiday. This course really helped me analyze data and come to the right conclusions.

CYSE 270 Linux System for Cybersecurity – Advanced Network Configurations

The last course that helped me develop my technical skills was in a course about Linux, which is an operating system commonly used in Cybersecurity operations. In this assignment, I was asked to configure a firewall to properly secure a network. To do this, I first had to connect two virtual machines on the same network. I then had to configure temporary IP addresses on each machine in order to successfully connect them. This assignment taught me to properly configure two different machines to ensure that their networks are secure.

Conclusion

Being able to learn all of these skills has truly helped me better understand what I want to do in Cybersecurity. Creating this ePortfolio will not only help get my profile out there, but it will also help me reflect on my personal growth and my academic journey. Between the skills of writing, problem solving, critical thinking, and technical skills, I feel that they best display my capabilities in Cybersecurity for once I transition into my professional career.

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