Reflection Essay

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**Abstract**

In this essay, I will discuss in detail the cybersecurity classes I've completed in the last two years that have improved my abilities to operate Linux systems, do research and analysis, and collaborate with others. In addition to helping with other coursework, these exceptional abilities gained from taking multidisciplinary classes have also benefited me professionally, as evidenced by my success in my current internship, networking with cybersecurity experts, and general self-improvement.

**Linux Operating Systems**

One of the best things I've learnt so far in my cybersecurity degree is definitely how to use Linux operating systems. Linux is crucial to cybersecurity. After a security breach, cybersecurity professionals use Linux distributions like Kali Linux to carry out exhaustive penetration testing, vulnerability assessments, and forensic analysis. I've had three opportunities to learn or improve my Linux abilities while I've been at ODU: CYSE 250, a class that introduces Linux; CYSE 301, a course that covers cyber methods and operations; and practicing CTFs with on-campus cyber organizations.

I was able to expand on the fundamental commands I learnt in my CYSE 250: Introduction to Linux course. Additionally, I managed to set up my own virtual machine on my PC. A virtual machine (VM), which has its own operating system, RAM, storage, and applications, works similarly to a standalone computer. Virtual machines (VMs), which allow several VMs to run independently on a single physical machine, are created through virtualization. Software operating within a virtual machine (VM) is unable to interfere with the host system or other VMs due to this isolation. I installed Kali and Ubuntu on that virtual PC so I could complete my homework. Creating users and passwords, then utilizing John the Ripper tools to crack all of them, was one of my favorite jobs that taught me the most about security and password cracking. Using a dictionary or brute force techniques, you can attach hashed passwords using the John the Ripper Kali tool. The tool can be used for both password recovery and account password strength evaluation.

In my lab-based CYSE 301 course, I was able to further develop my Linux skills. We employed a variety of tools, including Windows 7, Attacker Kali, Internal Kali, and Wireshark. The majority of the tasks were played as attacks and gathering data from the other operating systems we were utilizing, which called for knowledge of Linux in order to execute commands and obtain data from other operating systems. Traffic tracing and sniffing was my favorite task. We used Wireshark's IP address to run a series of Linux commands that allowed us to sniff data from one operating system to another.

**Research and Analysis**

I enjoyed conducting research and analytics after seeing how crucial they were to the field of cybersecurity. Since many cybersecurity courses require a lot of writing, I felt somewhat compelled to complete some. Among the classes I mentioned that helped me improve my writing abilities were IT 201T Information Technology, CYSE 452 Introduction to Bio-Cybersecurity, and CYSE 201T Cybersecurity Technical and Society.

My course on bio-cybersecurity was more of a capstone. We were assigned to prepare a paper regarding the many technological vulnerabilities in a healthcare organization. In accordance with the NIST Cybersecurity framework, the paper included an introduction to the company, a list of the company's assets, a ranking of risk assessments, worst-case cyberthreats, and implementations to support them. Weeks of research, critical analysis, and collaboration are needed for this class to produce a twenty-page paper that covers the required subjects.

I researched a wide range of subjects for my CYSE 201T, including DNA, CIA, SCADA systems, and human factors. This was the first cybersecurity course I took, and it taught me the most about research. The paper I did for this class on the risk and threat of cybersecurity and DNA editing was my favorite. When considering the danger connected with new inventions, this class demanded critical thought and in-depth investigation. I went into detail in the paper on what DNA editing might look like, how it may help with medical issues that affect generations, how it could be used to manipulate inventions, and the security danger that comes with it.

I expected my current IT 201S class to be more technical, but it offers us an understanding of how businesses operate and how they have evolved with technology throughout time. My previous assignment required me to conduct in-depth research and analyze health decrease statistics to write on the social and technical challenges with telehealth during COVID-19.

**Teamwork**

Regardless of your line of employment, teamwork is essential in all facets of life. The glue that holds the planet together is teamwork. I was therefore destined to learn, develop, and innovate in a collaborative environment. I've collaborated on numerous projects, clubs, and cooperative assignments during my time at ODU.

I worked with Commonwealth Cyber Innovation on a project for four months. We were divided into groups of four or the project's goal was to develop a solution that would assist people practice better cyber hygiene. To come up with new ideas and ultimately create a product, we met once a week. CyberBrain is the name of the software that my team decided to develop. We developed the procedures as though the software was to be built, but we did not really build it. CyberBrain was a software program that could be installed on any device that alerted users if their gadget was granting too much information or permission. We came up with this idea by asking students and professional staff members a few questions regarding their device privacy and cyber hygiene, as well as by brainstorming and conducting interviews. We had to adjust after it was discovered that everyone struggled with internet hygiene. Many consumers were unaware that if an app didn't require the camera, you didn't have to grant it permission to use it. At that point, CyberBrain would notify the user that an excessive number of permissions had been granted. To present to the board members, we wrote a script and placed all of our ideas onto a PowerPoint. We collaborated to generate the concept, carry out the interviews, and create the finished

The second two times I worked well with others were when we created PowerPoint and did research for a different cybersecurity course. Additionally, by participating in several cyber campus groups to plan events, get involved, and attend conferences.

**Conclusions**

To sum up, my education has greatly influenced my research, cybersecurity, and teamwork abilities. My knowledge of the topic has grown as a result of the multidisciplinary approaches and theories I've come across, particularly in classes like IDS 300W that placed a strong emphasis on writing and research. I was able to approach assignments with a well-rounded viewpoint thanks to these abilities, which combined critical thinking with technical knowledge. Taking part in varied coursework in several fields improved my capacity for problem analysis, peer collaboration, and successful theory application. Being able to think across disciplines is essential for cybersecurity professionals to solve complicated, ever-changing problems and adjust to new technologies. This more comprehensive strategy has enhanced my technical proficiency and sharpened my problem-solving talents, allowing me to tackle a variety of cybersecurity-related challenges. In the end, having these abilities together guarantees that I am ready for a prosperous career in this fast-paced industry.