Reflection Essay

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Cybersecurity

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Abstract

This reflection lists skills I gained throughout the cybersecurity program at Old Dominion University. Skills listed in this paper include critical thinking, Linux commands, and attention to details. Other skills I gained include knowledge and skills I gained from coursework and other assignments involving topics such as Python programming, networks, Linux commands, Wireshark, Nmap, firewalls, and passwords. Through the program, I learned about cybersecurity issues and gained hands-on experience with cybersecurity tools. Creating an ePortfolio helped me understand how my coursework skills apply to a career in cybersecurity and areas where I need to improve. Other career goals discussed in this paper include applying for high-level cybersecurity government jobs. Creating an ePortfolio helped me evaluate my career readiness in cybersecurity.

While attending Old Dominion University, I learned skills that will help me succeed as a cybersecurity student. Three skills I have added to my ePortfolio are critical thinking, technical skills with Linux command-line, and attention to detail. Work that has been done in classes at ODU has prepared me to protect information and solve cybersecurity problems. Other skills I have learned that relate to cybersecurity include skills in programming, math, and communication. Protecting systems, networks, and information from cyberthreats is similar to what I learned in my classes.

This ePortfolio project helped me think about previous projects and what I've learned.This shows me that I am benefiting more from formal education than simply earning a grade because I can think about how my education relates to future job opportunities. Artifacts in my ePortfolio shows growth and areas where I need to learn more.

Critical Thinking

Critical thinking involves analyzing problems and finding solutions. Critical thinking is important in the field of cybersecurity because many cybersecurity problems do not have simple solutions. I have used critical thinking skills in programming and cryptography projects and other cybersecurity work. My FIFA World Cup client-server project shows my problem-solving ability. I developed an a system giving users information about previous men's and women's tournaments. Other features of the system I developed include login and registration functions.

One challenge was getting the program to carry out commands correctly according to user input. When commands didn't work as expected, I reviewed and made other changes to my code to fix problems. It took multiple tries as well as paticents to fix the errors. Actions I took to address these issues helped me develop good problem-solving skills.

That project included programming and cybersecurity because applications must be developed with consideration for the security of user information. Cybersecurity is securing applications and data. One lesson learned from that project is that cyber considerations are part of the application development.

My Linux assignments taught me problem-solving skills. While completing assignments on Linux users and groups and other Linux topics, I gained experience applying commands and

other Linux skills. These Linux assignments provided opportunities to practice using the Linux environment. Knowledge of Linux can be useful in a cybersecurity career. I learned that patience and practice are needed to work through cybersecurity issues.These projects could be beneficial to me professional field because in cybersecurity is a must to analyze and solve problems Cybersecurity refers to efforts to protect information systems and networks from information security threats.

My networking and subnetting assignment helped me understand how IP addresses are organized into networks. I worked with network addresses, broadcast addresses, usable IP addresses, and the number of hosts a network can support.

This assignment required me to follow steps and check my calculations carefully. I learned that a small mistake in subnetting can lead to an incorrect answer. Practicing these problems helped me understand networking concepts that are important in cybersecurity. This information can help me understand how devices communicate and how networks are organized. It also gives me a better understanding for learning how to identify network problems and protect systems.

My Windows security lab introduced me to security weaknesses in older Windows systems. I learned about the vulnerabilities and how attackers could use it to gain access to a vulnerable computer. The lab also covered the EternalBlue vulnerability and why newer systems with the proper security updates are less vulnerable to older attacks. I understood why security updates are important. It showed me how attackers can take advantage of weaknesses in computer systems. I had to pay attention to the steps and results to understand what was happening during the lab.

These experiences helped me see how critical thinking is used to understand security problems. In a future cybersecurity job, I may need to investigate weaknesses and determine how to reduce risks.

Linux Command-Line Skills

Linux command-line skills allow users to manage computer systems by entering commands in a terminal. My Linux assignments helped me practice using commands, managing user accounts, and writing shell scripts. These skills are useful because cybersecurity professionals often work with Linux systems and tools.

My Linux network configuration assignment taught me how to use commands to check network information. I worked with commands such as ifconfig, route,netstat,ping,host, and cat. These commands helped me view network settings, check connections, perform DNS queries, and view system information.

One challenge I would face was understanding what each command displayed and comparing network information after changing the virtual machine's network connection. I had to go over the results and identify differences between the network settings.This class helped me become more comfortable using the Linux terminal. It also showed me how command-line tools can help troubleshoot network problems, which is useful in cybersecurity.

One assignment taught me how to create users, manage groups, change account settings, and check user information. I also practiced adding users to groups and working with file ownership.I learned that user accounts and groups help control access to a computer system. Users should have the access they need without automatically having access to everything. Mistakes in account management can create security risks.

The National Institute of Standards and Technology (NIST) provides resources on cybersecurity and privacy practices. This assignment helped me connect those topics to managing accounts and access on Linux systems.My Linux shell scripting assignment introduced me to writing scripts that perform tasks automatically. I worked with conditional statements and scripts that checked whether a file or directory existed. I also learned how scripts could respond to information entered by a user.

At first, I needed to understand how to write the commands in the correct order and how the script would respond to different situations. I learned that small errors in a script can affect whether it runs correctly.This assignment helped me understand how scripting can save time and make repeated tasks easier. In cybersecurity, scripts can help professionals complete system tasks and check information more efficiently.

Attention to Detail

Attention to detail means carefully checking information and making sure work is correct. This is important in cybersecurity because small mistakes can lead to huge security problems. My Wireshark assignment, Nmap and firewall lab, and password-hashing lab helped me understand the importance of reviewing results.

My Wireshark assignment helped me learn how to scan network traffic. I reviewed captured packets and looked at details such as source and destination addresses, packet sizes, ports, and responses.This assignment required me to look closely at packet information instead of only looking at the total number of packets. I learned that reviewing the details can help explain what is happening on a network.

Wireshark gave me a better understanding of how network communication can be examined. In a future cybersecurity position, I may use similar skills to investigate unusual traffic or help troubleshoot network problems.My Nmap and pfSense lab helped me understand network

scanning and firewall rules. I used Nmap to identify active hosts and open ports. I also worked with firewall settings to understand how traffic could be allowed or blocked.

One important lesson was that firewall settings can affect the results of a network scan. For example, a port may appear filtered when a firewall prevents Nmap from receiving a response. I learned that I needed to review the results carefully rather than assume that a port was closed.My lab helped me understand how network scanning and firewalls relate to finding and reducing security risks. I also picked up that network scanning should only be performed on systems when I have permission.

A password assignment introduced me to password information and the process of working with password hashes. I worked with security tools and files related to password cracking, although I had difficulty getting some of the expected results.Even when I could not complete every step as expected, the assignment helped me realize the importance of following instructions and checking file locations, commands, and results. It also showed me that troubleshooting is part of learning technical skills.This assignment helped me understand why password security matters. Passwords and account information need to be protected to reduce the risk of unauthorized access. I can use what I learned to build a stronger understanding of account security in my future career.

My Portfolio and Professional Goals

Creating my ePortfolio helped me connect my assignments to the skills I have developed at ODU. Before organizing my work, I mainly thought about completing assignments and earning grades. Looking at my projects by skill helped me recognize what I have learned and how I can use that knowledge in the future.When I first started college, I was still figuring out what I wanted to do after graduation. As I completed more cyber courses, I gained a better understanding of the field and became more confident in my career choice. My ePortfolio gives me a way to show my work and the skills I have developed.

My career goal is to work in cybersecurity and eventually earn a senior-level position in government. The Capital One Senior Lead Information Security Consultant (AI) job listing helped me understand the skills and experience that may be expected in a senior cybersecurity role. However, I know I still need more professional experience and training before I qualify for a position at that level.

I also need to improve my time management. I sometimes wait until the last minute to complete assignments, which can make me feel stressed. Starting assignments earlier would give me more time to review my work and fix mistakes. I also want to improve my public speaking and teamwork skills because communication and working with others are important in cybersecurity.

Conclusion

Programming and cryptography assignments helped develop my critical thinking skills. Linux assignments helped develop my skills with commands and access control. Other assignments using Nmap, pfSense, and logins helped me recognize the value of paying attention to detail.

I learned the value of completing assignments, as well as other learning methods. I also learned to evaluate knowledge gained from assignments and apply it to other learning situations. Resources from IBM, Cisco, and NIST helped me make connections between my education. I still have a lot to learn about cybersecurity, but I have a better understanding of my career goals.

Reference

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