Final Internship Paper

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1. Introduction

This summer, I have had the great opportunity to work at Warwick Mechanical Group as an intern in the IT department. This has been a great experience which has provided me with a lot of opportunities to gain real-world, hands-on experience as I have been tasked with working on multiple projects and tasks, some of which I even got the chance to work on alone, which has not only helped me get more comfortable with certain processes and skills, but has also helped me gain confidence in myself as an aspiring employee for a company for when I go on to start my career. I have been extremely fortunate to work with so many amazing people, not just in my department, but all the other departments that coincide in this workplace. Their repour, interactions, and comradery have been infectious, and have made it very easy to feel like I fit in and belong. I am forever grateful to them for this experience and am excited to share what my experiences have been like through this paper.

Before I begin talking about my experience, it is important to shed some light and exposure to what Warwick does and represents as a company. Warwick Mechanical Group is described on their website as a "full service mechanical contracting firm" which provides mechanical systems for commercial, industrial, medical, and institutional facilities throughout the Southeastern and Central Virginia as well as the Northeastern North Carolina.area. While they were formally known as Warwick Plumbing & Heating Corporation, the firm rebranded in 2016, emphasizing their four operating divisions (Mechanical Contracting, Industrial Contracting, Mechanical Service, and Fabrication) to better represent the different capabilities and services that the company provides. The company was founded in 1952 and ventured into the sheet metal industry by acquiring Minton & Roberson, a company located in Chesapeake, in 2010.

While they specialize specifically in engineering, inventory, and mechanical procedures, they heavily rely on their IT department to provide reliable and efficient service, depending on them to provide the technical tools that they use through application installation and computer set up. This group ensures that the LAN and WAN network infrastructures that both Warwick and their sister company, Minton & Roberson, rely on are properly constructed and secure from potential malware, in efforts to keep sensitive data and information confidential and untampered with. Aside from their business, Warwick Mechanical Group also emphasizes the importance of community service and outreach, with the company working with many organizations with some notably being St. Jude Children's Hospital, Achievable Dream Academies, and the ORPHANetwork. Many of their employees also volunteer their time to serve within the community.

I found out about Warwick during an internship career far event hosted by Old Dominion University in the school's Chartway arena. I had been fortunate enough to have ran into the HR director of the company after being turned down a numerous number of times by other companies who either were not interested in bringing on an IT intern or didn't have any local IT departments in the area. Things were looking pretty bleak, until I stumbled upon her. She told me that although they didn't have any cybersecurity specific opportunities, they had an excellent IT department who may be interested in training somebody young and willing to learn. This gave me a bit of hope, so I gave her my information and left the event. A few weeks later, I received an email from her letting me know that the IT team was indeed interested and that they were interested in interviewing me for a potential internship opportunity. I eagerly accepted and gave them a date and time that was good for me.

After contemplating my decision, which took a little over a week, I had decided that Warwick was the best opportunity for me to develop my skillset due to the IT opportunity that it provided. At first, I wasn't sure how much they had utilized in IT or cybersecurity, but upon doing research, I quickly figured out how successful and needed a company such as this was. Being a full-service mechanical engineering HVAC, construction, and plumbing organization is a very critical and crucial role that plays a multifactorial role in our economy today, and an organization like that must heavily rely on technical support in a vital way. From the

Another factor that contributed to my decision was the interview that I had with the IT department as well as the head of HR. Although I was nervous coming into it, once the interview had gotten started, my anxiousness started to ease as the conversation flowed naturally. The people who were present during the interview were nothing short of kind and generous and didn't hold my lack of experience against me as I had previously feared they would. They were very encouraging, taking notice of my hard work over the years with my GPA being displayed on my resume and judging me that way. They had also displayed how flexible and accommodating they were, offering to work with my busy schedule, when I had disclosed to them that I had a job working with children as a counselor at the time. This was another factor that further added reassurance for me and greatly motivated me to seriously consider their company as an internship start for my first academic career experience.

During the end of the interview, the company head of HR told me that they would reach out to me within the next few weeks to let me know whether I was accepted or not. During these weeks, I had found myself anxiously waiting for the news to arrive, keeping my notifications on for an email as well as even keeping my phone on ringer and accepting phone calls from unknown numbers, hoping that it would be somebody from the company with news of the

decision. As time went on, I would occupy my time in other ways to distract myself, such as working on assignments like labs, papers, and presentations, as finals week was approaching, as were deadlines that needed to be met. One morning, I had just made it to campus as I was driving to my first class when my phone rang. Upon answering, I immediately recognized the voice as one of the people from the IT department as he addressed himself. After I had answered, he started to give me the news, which felt like seconds turned into minutes as my anticipation grew. Fortunately, to my surprise, he had given me the news I had been so anxiously waiting for: that I had been accepted for the internship position at Warwick Mechanical Group. I breathed a sigh of relief and thanked him for believing in me, reassuring him that I would not let the IT department down, and that I was extremely excited to be a part of the team.

Regarding learning outcomes, I had a few goals in mind. One was to learn as much as I could on the premise of computer network literacy, with intent to gain technical skills through training in specific talents through daily tasks as well as special assignments that might present themselves as the summer would continue. I wanted to substantially increase my knowledge of Windows systems and how to manage them, ensuring that I could stay up to date with the OS and various applications provided. In addition to this, I also wanted to develop a strong foundational knowledge base in troubleshooting and systems diagnostics, ensuring that I had enough practice and scenarios to become dependable with helpdesk strengths, especially if there were issues in real-time presenting themselves, where quick and dependable decision-making is highly essential and sought after in this field.

Another goal that I wanted to gain more confidence in was to work on some hands-on skills that I could develop to have a fundamental skill and ability to accomplish and use in the workplace. One of these skills was terminating cables, as I have learned much about these tools

and how to make them in the workplace but lacked the proper time and resources to practice. My goal was to get my hands on some Cat-5 and Cat-6 cables, learn and memorize the pattern of how the cables were to be arranged, and how to use them to make a secure RJ45 ethernet cable that can be utilized to connect devices to the internet. I knew that these tasks were crucial to not only learn how to accomplish in general, but how to accomplish these configurations in a time efficient matter. After all, these strengths may be heavily needed regarding switch or server repair and/or replacement.

Lastly in reference to goals, my final major goal was to find comfortability in the workplace through daily attendance and repetition with various workplace tasks, believing that the more I work on various skills to increase my proficiency in the matter, the more useful and reliable I'll be in the long-term in a future job setting. Furthermore, I sought to gain respect in the workplace as well for my strong work ethic, which is one of the traits that I had previously described myself as having obtained. My goal to achieve this was so sought after that I had promised myself that diligence would be one of my most important and recognized traits and skills. I wanted to be completely and undeniably reliable to show up for any task that was needed for me to accomplish. I knew that if I could achieve this type of recognition, that I would be more than ready and prepared to work in any organization and setting that I might find myself in as life continues for me. I would also hope to develop trust and a gain a good repour with my employees and supervisors, allowing them to respect and admire my contributions to the team, so that when it came time to search for future jobs, perhaps in a new city or a different role in the company that in currently at, I can remain fully confident in the fact that I would have good colleagues that would be more than willing to encourage and champion me to these roles by

being reliable references for these companies that may need a little more information than what is displayed on my resume.

2. Management Environment

The management environment during my internship was nothing short of phenomenal. The supervisors and colleagues were nothing short of supportive, kind, helpful, and engaging, with each of the team members working together as a solid unit, using each of their roles and talents to contribute to the overall success of the projects and assignments that we found ourselves tasked with. While I was given plenty of tasks and assignments as well as clear expectations that were set, I was also privileged to be given plenty of time and space to explore and figure out things on my own, which only emboldened me to grow more confident in my problem-solving abilities. My coworkers and supervisors were always more than willing to answer questions, explaining things with genuine enthusiasm and eagerness. I never felt like a burden to any of them, and for that I am truly fortunate and grateful. This made the overall environment quite exciting to return to every day.

3. Work Duties and Assignments

When I first arrived at Warwick to begin my internship experience, from day one, the day provided an educational opportunity for me to learn through a task that my supervisor and I had to figure out. There was a training session as well as a series of meetings that were supposed to span two days in the organization's training center, and staff had wanted us to figure out how to utilize a limited number of power strip boxes to the numerous desks that were set up throughout the room so that the attendees of the training could be able to easily access and connect their devices to a reliable source of power. This provided a slight challenge for us as well due to there

being a limited number of outlets for all the power strip boxes that we were assigned to place in an efficient manner that could be easily accessible for all attendees despite the challenges faced by the room design. To solve this problem, my supervisor and I devised a plan in which we would use the daisy-cabling method in order to achieve a positive outcome from a practical and visual perspective.

Our strategy was to plug the power strip boxes into the limited number of outlets, then using the outlets from the power strip boxes as a connector for the other power boxes, that way we could cover the tables in the middle of the room that otherwise would have been impossible to reach. After placing the power strip boxes where we needed them, to minimize the chances of the trainees accidentally tripping over the wires from the connected power strips, we used gaff tape to secure the loose wires to the floor of the room in a train-track formation. That way, the wires wouldn't provide to be a safety hazard as trainees moved around the room for various purposes, ensuring a practical, yet safe design to be totally useful for the training program. This task and challenge would provide a great introduction to the many tasks that would present themselves as the internship would continue to progress over the next coming months.

Over the first week, I would continue to learn various skills that I had long-awaited to gain hands-on experience in the IT world. One of these skills had been terminating Cat-6 ethernet cables, which is different from its other version Cat-5 in the way that it is a larger cord, more costly than its predecessor, and better for high speed, long-distance networks, while Cat-5 cables are better for use in standard office and home networks. It took a little bit of time to get used to the wires as well as memorizing the color pattern, but it got easier the more time that I had put into practicing. Over the following weeks, I would be tasked by my supervisor with the job of timing myself, seeing how quickly I could make an ethernet RJ45 cable. Some days

proved to be more challenging than others, but once I was able to consistently get the hang of it, it became less of a burdensome task and more of a process that I quite enjoyed.

Another task that I had been assigned to that I found to be quite interesting was testing UPS batteries, which are used to power devices such as workstation desktops, laptops, telephones, and various other tools and are extremely crucial to rely on, especially during the event of a power outage, due to these batteries having the ability to continue to provide a stable power source from their limited battery life for up to half a day of work. My job was to test a large amount of UPS batteries (around 50 or so), over the span of the next few weeks and sort out the good batteries from the bad ones, which vary based on factors such as age and wear/tear. To determine the quality of the battery, I was tasked with hooking up a fully charged (8-24 hours) battery to a workstation computer, then unplugging the UPS battery from its power strip outlet to simulate a "power outage" and timing the event for 10 minutes. If the battery was able to keep the workstation running for the full 10 minutes, it was deemed a "good' battery, and if it fell short or if I heard a loud prolonged beep, I was to label the UPS as having a "bad" battery.

In addition to learning new tasks, I had the exciting opportunity to shadow a couple of my colleagues who were responsible for different aspects or factors of the IT department, pieces to the puzzle to put it in simple terms. These individuals had years of experience and were well-versed in their craft. One of them, who happened to be three years my junior, had been able to work for the company for over 4 years, which was very impressive, and was responsible for setting up and keeping a log of company issued iPhones as well as iPads, which was cool to observe and ask questions about the process that went into this. I was very interested in learning how this process worked and gave him props for being so reliable at such a young age. It was inspiring to say the least.

Another colleague that I had been assigned to shadow, was responsible for a variety of things: keeping track of all registered employees, taking down their information and logging it into a database portal called SharePoint, as well as an active directory in Windows, responding to cybersecurity incidents involving employees such a suspicious activity (log-ins from questionable locations, employees falling for social engineering tactics such as phishing, etc.) having the authorization to then locking their email accounts and sending alerts to this third-party Cybersecurity departments, who would then respond in various ways depending on the severity of the incident which could include a full on investigative response. One thing that he was responsible for as well was sending non-malicious phishing emails to test employees across the workplace cyberliteracy level and security awareness, as well as sending training programs to employees and reminding those who haven't completed those trainings as the deadline to finish those approached by tracking them down in another logging system that he had created.

What was especially intriguing to witness was the concept and strategy that my colleague had developed to make his life much easier when it came to the plethora of tasks that he was responsible for. He had taken me through a process in which he had constructed an automated scheme using PowerShell which made his job much easier, as having to log in peoples information and track down devices, and sending testing programs for each individual employee could become a very tedious task to have to manually type in everything. These various PowerShell documents came with a certain script language that would automate information in a much simpler and easier way, that way such tasks such as keeping track of employees or documenting or changing certain information would not be such a burden to keep up with. I had found the idea of PowerShell scripting to be incredible interesting, and something that I may

want to delve into, whether that be through a class next semester or something to research and practice on my own.

One of my duties that I also found myself responsible for was utilizing excel to keep track of and documenting employees that hadn't yet updated their Windows software from 10 to 11. My job specifically was to reach out to these employees, via either phone call or email, and to ask them to confirm whether or not they had updated their system, and if not, when a good time would be to either have me come to them to update the system, or have them drop their laptops over to the office. Once I was able to get my hands on the device, I was able to use a very simple and easy procedure that would allow me to successfully update the device's operating system. While at times, the procedure found itself to be challenging at times due to admin and password issues occasionally, despite these setbacks, I was successfully able to update a number of these devices and would then let them know through email that their device had successfully been updated and was ready to pick up at their convenience.

Another duty of mine was to focus my time into working on many help-desk duties, from troubleshooting TV monitors and gaging connection efficiency, to delivering replacement tools such as spare mouse and keyboards to employees whose old tools may have either malfunctioned or simply got too old. Many times, I found myself shadowing my main supervisor while we would head to other coworker's workstations to troubleshoot. He would take a look at the situation while talking to me about the possible steps to remediate the problem, if possible. I found this to be a very educational experience, and it allowed me to experience and be a part of something that was crucial to maintaining the flow of the workplace, with every single department, even the CEO's, heavily relying on the minds and skills of the IT department. Without them, the business would run into an immeasurable number of headaches trying to solve

these problems on their own. The IT department is the backbone of any organization that wants to be successful.

Some of the minor duties that I found myself doing was organizing equipment in the office that was in the training center, cleaning and putting away equipment such as keyboards, mice, cables, and CPUs as well as determine what equipment was worth keeping out of the bunch of older, more used items in the inventory. The ones that were either too old or no longer functional were placed into a trash bin located in the office and labeled as “unknown” or “to be determined”. This allowed us to keep track of the fully functioning one's vs the defective ones. Occasionally, if the CPUs were in good enough shape, they were put into a protocol in which they had to be thoroughly wiped and made into “resells”, which could make some profit for the company as well as giving Warwick a possibility of giving it to those who are in need of such technology for free, such as kids in lesser fortunate circumstances. This was a fun process that I fortunately got to be a part of in which I was able to use a “Shred OS” software USB drive to use to wipe a computer completely to resell it.

To wipe this computer, I firstly had to take a windows 11 downloader installed USB drive, remove the existing software, then installing a new ISO image entitled “Shred OS” using Rufus (which is a tool used to write ISO images to USB drives) which I had to replace it with. Then I downloaded the “Shred OS” ISO image file from the official repository, as well as making sure the “Rufus” tool was properly installed onto my computer. Then, I picked up the USB device that I had intentions of using to insert it into my laptop with the purpose of wiping the Windows 11 installer and replacing it with the new “Shred OS” image file software. However, before I could continue with my process, I had to request and receive permission from “Corvid”, a third-party remote cybersecurity team, which my supervisor had to send a request for

them to either allow or deny access. This is a crucial step that ensures security protocols are met to reduce the risk of someone accidentally or intentionally (whether an insider or outsider threat) using random and unknown USB flash drives to introduce malicious files or worms. I had learned about a similar situation during the famous “Stuxnet” breach in the Iranian nuclear facilities in which USB flash drives containing the constant evolving worm were left outside the facilities in the parking lots with hopes of an employee picking up the infected device and inserting it into a computer, which was highly successful, so I immediately understood why the process needed to be done.

About half an hour later, my supervisor sent me an email letting me know that the request was approved and my device was given authorization to proceed with the USB download. I then inserted the USB into my hardware and proceeded to wipe and replace the current existing software with my “Shred OS” software that I had installed with “Rufus”. Once that process was finished, everything from there was smooth and straightforward. I then took out the USB from my laptop, inserted the flash drive to the computer that was to be wiped, connected it to a workstation, then started the computer, pressing the “F12” key multiple times to get into the BIOS/UEFI menu, and from that moment was able to gain access to the correct screen to begin the process. What appeared on the monitor was this blue screen with a variety of options that you could do, with the letters on the keyboard being the input for these different functions. There was a function that required you to press the “M” key that would go to “Method”, which would allow me to set up the different type of wipe that I wanted to do. I used the arrow keys to move to the “zero” method, which writes all binary numbers as 0s to the drive. Then I saved and pressed the “r” key to get into the menu that would allow me to select how many passes that I wanted to do, which allows you to wipe the device more than once if you needed to. I only had to do this once,

so I entered the ‘1’ key for one pass and pressed enter. Finally, I pressed the ‘S’ key which started the wipe and waited for the progress bar to fill up to 100%.

After it fully filled the progress bar, a message appeared on the screen confirming that the “Shred OS” software had been successful in wiping the computer. What made the project even more interesting was that I was instructed to open the computer hardware physically, find the RAM sticks that were hooked up in their slots, and then take one out to check for how many GBs were used. I made sure to put the compartments back together, closed the computer up, and then labelled my name, how many GBs of RAM the computer had, which was 8, and the date that I had completed this process. I then placed the computer in a pile with the rest of the computers that were to be recycled or re-sold. While the computer wiping task was intimidating at first, once completed, I gained this sense of pride and a rewarding feeling with the fact that I had figured it out. I found the project as a whole to be a very educational one, allowing me to once again remember and discover again what the internal components made up a computer and understand to a further degree what the importance of certain features were to make the computer run smoothly.

Another one of my most important projects is that I had the chance to participate in this full-day project in one of Warwick's neighboring collaboration buildings in Chesapeake called M&R. The project required us to install new wall panels with Ethernet cables in one of the meeting rooms. This required us to have to use “fishing poles” to run cables across the ceiling tile through multiple rooms in order to connect the cables with the switch that was in the printer area of the building. We were also tasked with setting up a spot to place this wireless access point called “Meraki” from Cisco which required me to use my terminating skills to make an RJ45 Cat6 cable to use for the wireless access point. The task required constant physical labor

and was challenging at times, but once we were able to set everything up and ensure that the wireless access point had a solid connection, the feeling for me was second to none.

Despite majoring in cybersecurity and enjoying that side of things very much, I have always been deeply interested in the networking side of things, especially the physical aspects of setting up networks in the office setting. From routers to ethernet and coaxial cables and even switches and servers, I have always been so captivated by the process of it all, viewing each concept as a piece to a much grander scale puzzle. So, when the time finally came to put my knowledge and skills to the test, I was more than eager to rise to the occasion. I believe that I get this love for networking from my father, who would go over basic concepts such as local area networking (LAN) and wide area networking (WAN) as well as what the cloud was and how firewalls worked. Telling him about the experience that I had seemed to really put a smile on his face, and I could tell that he was proud of what I was becoming.

One of the most difficult tasks that I have had to work on was working on my own wire pull and installing this 4 port ethernet connector outlet, which would start from the switch on the other side of the building office section near the printers and run all the way to the IT office room through the ceiling. While initially I had help with my supervisor helping and guiding me through the process once again, after he left me to finish the job and head back to the main site in Newport News, I noticed something unexpected that totally caught me off guard. As I was sliding and moving ceiling tiles out of the way, after I had turned the corner, I was surprised to find one of the cables had been completely severed and torn, not only exposing the wires inside, but also significantly damaging them as well. This was a huge liability for the integrity of the wires, not only were they exposed to the elements and debris in the ceiling, but there was also a

significant chance that the damaged wires inside could negatively affect the connection that the cables would be able to provide for the switch and the ethernet outlet in the office.

Knowing that my supervisor would not be back, I knew that I had to respond to this setback, this time on my own. I walked back all the steps I had taken before, taking the cables down a little at a time, until I had the pile in my hand. I then threw the old pile away and started the wire-pull task over again. This time, however, I made sure that I was prepared for the obstacle that I had unintentionally faced previously. Before I got to that corner, I applied electrical tape to the sharp corners and base of the metal ledge that had severed my cables previously, thus ensuring that if the cables did once again brush against the ledge, there would be a soft barrier to protect them instead. I also kept the electrical tape on there, for safety purposes and wire-pulls that were to be conducted in the future.

After I was able to successfully redo the second wire pull procedure, I was able to then start working on installing the outlet that was to be placed on the wall in the office space. I gathered my tools: a metal wall cutting saw, a steel mounting bracket, a 2 x 2 ethernet outlet, a power drill, a couple of Phillips screws, and got to work. I started by outlining the metal bracket against the wall to get a rough idea of where I wanted to start cutting, using a level to make sure the bracket was aligned straight, and traced the interior of the bracket with a pencil, figuring that smaller was going to be better so that I could adjust size of the hole in the wall as needed later on. Once I was satisfied with the rectangular outline, I started cutting away with the saw. This was my first time even attempting this, so it was a surreal experience, and I knew that any mistake could mess up the entire project, so I made my decisions very carefully as I proceeded. Once I had finished cutting the hole, the next step was to open the ceiling tile that was lined up with the outlet, leading the cables over to be placed behind the top. However, upon doing this, I

noticed that there was a metal beam placed horizontally, blocking the cables from reaching the hole I had cut out. As a result, I had to grab my power drill, with a circular metal hole cutter to create an access way for the cables to go through. This took some time, but eventually I was able to successfully cut through the beam, also making sure to apply electrical tape around the edges to further protect the cables that were to be lowered through. I then lowered the cables to align to the rectangular hole in the wall.

Next, I used my saw to cut the hole, making it slightly bigger to fit the bracket that was supposed to be installed, lined it up with the bracket, then used the metal clamps to secure the metal frame to the wall. I then started to work on the wiring on the interior of the cables, using a pocketknife to cut the sleeves of each of the four cables to do the keystone jack configuration. This process was a bit tedious, due to the process of undoing the wires, putting them into the right notch and clamping each down with a clamping tool, but the process was very rewarding as I was able to successfully install the ethernet ports that would be used to connect more devices to the internet. Once I clipped each of the keystone jacks into the outlet openings, I used my Phillips screwdriver to screw the outlet into the wall. The result looked very neat and clean, and I was highly proud of my work. I then went over to the switch and did the same configuration for the other ends of the cables on that side. This was a bit difficult at first due to there being many cables plugged in, so it was a bit of a squeeze to get my hands through, but I was able to eventually get better at connecting the internal wires of each cable to the switch ports. After doing each cable, I had to make sure that I tracked and labeled each outlet port with the switch port that I had used to connect the cables with. Once I had done that, I tested each outlet port with an ethernet cable and a laptop, making sure that each port successfully connected the device to the internet. Each time was successful, so I knew that my project had been a success. This

significantly improved my self-confidence because the project had given me the opportunity to contribute to the team and the company's overall success.

Over the next few weeks, I would continue to be trusted by the team members for various tasks and projects including setting up offices for new hire employees, replacing monitors on my own, and making sure that new employees to be hired had the proper software applications installed on their accounts, as well as adding them to one or multiple of the various printers around the office depending on their qualifications and what department they were assigned to. I also was assigned to aid in specific tasks including replacing older generation desktop computers with newer ones that could be upgraded to Windows 11. I even learned to replace video cards and RAM sticks located inside the computers on my own for those who needed upgrades in both the sites in Chesapeake and Newport News and successfully replaced a broken laptop screen with a fresh new one, taking apart a laptop and putting it back together in the process. As time went on, I was able to improve my hard skills even further and was very grateful to have an amazing and supportive team to guide me along the way. I really felt like I had made a positive impact with my time there and felt accepted by people who worked in different departments in the workplace, making good, solid connections along the way. They, in turn, had a positive impact on me as well.

4. Use of Cybersecurity skills and Knowledge

Although I was learning quite a bit of new things during the internship experience, there were also quite a few things that I had picked up on as well from prior knowledge gained during the previous semesters at ODU, especially when terms relating to cybersecurity processes and tactics came up. During one meeting that I was sitting in, I was just listening to the conversation

between two of my supervisors about this process that they were looking into concerning some of their employees who either had or were going to need access to certain information that was sensitive, but not classified. They referred to this information as “CUI” an acronym for “controlled unclassified information”. These gentlemen were discussing a plan to implement private accounts or even secondary computers to certain individuals depending on their role or position that would give them access to sensitive information that the company would not like to be exposed to external or unnecessary spectators, such as employees who didn’t need access to the information or other competitors. This sensitive information could be things such as building plans, budget costs, spreadsheets, and other various factors which could compromise the confidentiality of the information if misused or unprotected.

5. ODU Curriculum Connection

My supervisors discussed several different strategies to implement the process of this in the most effective but secure way possible. Processes such as “MFA” (Multi-factor Authentication) were discussed, using an app that we use at ODU, called “Duo”, which uses one’s personal iPhone device to authenticate the user, giving them authorization to access the account containing the “CUI”, which pretty much makes hacking with malicious intent far more difficult to nearly impossible, due to many people using biometrics as a primary method of authentication, adding another layer of security to the overall process. I even got to add some input to the discussion, asking questions about certain other acronyms that they brought up to stay present and engaged with the meeting. If I had never taken previous classes that reiterated these important concepts about cybersecurity practices, I would have found myself very

confused and disengaged with the conversations that were going on. However, due to my prior knowledge on the subject matter, I was able to contribute to the team, even adding a vote to what method they wanted to go with to enact their strategy.

6. Objective Outcomes Review

As I have reflected on my time here and the specific goals that I had set for myself coming into this internship, I feel that I truly achieved each one of these goals in a significant way. From taking apart laptops to desktop computers, to learning how to terminate Ethernet cables/ keystone jacks and setting up offices using desk phones as switches, I was able to build upon my prior knowledge of network and computer literacy. I also was able to gain confidence through hands-on tasks, especially during the wire pulls, and switch rack configuration. Lastly, my goal to become a dependable and respected member of the IT team was completely successful, as I found myself being trusted to take on solo tasks and assignments and received nothing but encouragement from my supervisors and colleagues. These outcomes were crucial to my personal development and success.

7. Most Motivating Aspect of the Internship

The most motivating aspect of this internship experience was all the encouragement and kindness that I received, not only from my team members, but also from the other employees in the other departments as well. This contributed to giving me the determination to not only give my best effort, but my best attitude as well. I not only wanted to be extremely dependable and reliable to whoever needed my services, but to also connect with the ones who I was servicing in a compassionate, understanding, and personable way. This successfully created poritive morale

and relationships with my other employees, being a key aspect of allowing me to maintain a strong work ethic and personal integrity.

8. Most Discouraging/Challenging Aspect of the Internship

While there were many challenging moments along the way such as disassembling and reassembling a laptop to replace the screen, attempting to upload the Windows 11 OS through a USB on gen 6 CPUs at times, and others, the most discouraging would have been the time when I found out that the initial wire pull that my supervisor and I had been unsuccessful due to the significant damage that had occurred to the internal wires in the cables. I remember feeling extremely dispirited and slightly unsure if I had what it took to replace the cabling on my own; whether I had what it took to handle this setback on my own under pressure. However, through taking ownership and control of the situation by walking back my steps, replacing the cables, and by implementing a long-term solution to the initial problem by using electrical tape on the sharp corners, I was able to overcome this independently. This became one of my proudest moments in my IT career thus far, allowing me to become fully confident in my abilities to show critical thinking and problem-solving skills as well as a determination to succeed, which worked seamlessly during the process.

9. Recommendations for Future Interns

If I had the chance to speak to another student aspiring to become an intern, knowing the things that I now know through my experience, I would give them solid advice on the proper

steps they need to take prior to creating their resume and beginning to search for new opportunities. Although knowledge of the basics when it comes to computer hardware and software literacy is not always required, companies do want to pick individuals who are eager to learn in an environment that extends beyond the classroom, where they can apply what they have covered in class into hands-on training, which provides an even greater atmosphere for students to learn and grow in their hard and soft skills. This does require a student to take his prior studies and labs that they are presented with in their initial and intermediate semesters very seriously. These labs are meant to prepare the students for real-world scenarios and applications depending on the problems and troubleshooting sessions that they might come across during the workplace environment. Aiming to not only complete, but retain as much as possible will not only help the students with their GPA, but will also translate to the workplace, where they will have an easier time picking up on concepts and even being able to perform basic troubleshooting on their own, without the need for continuous supervising or guidance. Although it's impossible to retain 100% of all the information that is thrown at a student during their time in their university experience, taking courses seriously and staying as engaged with the lectures as one can will significantly prepare a student for the next level.

I would also tell them to not focus so much about the "how" or "what-if's" of the whole process, and to trust themselves and their capabilities, regardless of how much they know going into the process. Anxiety is something that affects many of us, and uncertainty about the future and what may come next is a crucial part of the development of adulting. Many of us, especially in these times, are looking for a simple place to belong, to not only just live and survive, but to thrive and grow in our environments, especially as we establish ourselves in the professional workspace. The beauty of this human experience is that we have the youth to help us understand

life from a different perspective, many times allowing society to change as a result, through new ideas, philosophies, and methods. So if someone is young and inexperienced, it is imperative that they still view themselves as an asset essential to any organization that they find themselves a part of, so long as they are willing to learn as much as they can about the previous generations before them, and as a result of what they have learned take it and put in the work to further grow into the development in their craft. It's a true display of what a diverse rich team is all about, people who come from different backgrounds whether generational, cultural, gender specific, or religious. The right workplace that embraces all of that, with everyone on one page, is what truly makes a team better. That's what gives this country so much potential, and what separates it, still to this day, from the rest of the world. And that is incredibly powerful.

10. Conclusion

I am eternally grateful for the opportunity to be chosen to intern at Warwick Mechanical Group for the summer. They have been so tremendously supportive and kind to me, which has allowed me to grow in a life-changing way. Through this internship I have met so many people from so many departments in this organization and have built a strong positive rapport with so many employees that it feels like I've made a home here. Although I struggled at first with anxiety levels and issues dealing with self-confidence at times, through the encouragement of my team I have been able to ascend to higher levels of self-confidence and determination, which will only aid me not only in this upcoming semester this fall, but in my journey towards my career as well. The future is looking bright, and I cannot wait to see what life has in store for my future.

References

About Warwick – Warwick Mechanical Group. Warwick Mechanical Group. (n.d.). https://warwickmechanicalgroup.com/about-warwick/