

Internship Final Paper  
Technology Integration Group  
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CYSE 368  
Summer 2023

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## Introduction:

Through my years of high school and college, I have fallen in love with information technology and even more so with cybersecurity. Throughout my coursework at Old Dominion University, I found out that I had to do an internship in the summer of 2023. I tried looking for a cybersecurity internship but since I was bound to a certain geographical area, I had to look into general IT jobs and internships. For this internship, I have chosen to work for the Technology Integration Group in Henrico, Virginia as an Information Technology Technician. In this internship, I wanted to build on my knowledge of IT systems and learn how ticketing systems worked as that was a major requirement for most jobs. I also wanted to just experience the life of a person who works in the IT industry. Of course, before I had to change the type of internship, I had other objectives but since I was not able to secure that type I chose those objectives. Overall I have learned how to repair laptops and how a majority of the different entry-level IT jobs interact with each other in an office environment.

## Company and Internship:

The company TIG or Technology Integration Group is an information technology integrator company based out of San Diego, California with many offices around the world. The office I had the pleasure of working at was in Henrico County, Virginia just about ten minutes from the Virginia State Capital. TIG was founded about 38 years ago and offers many different IT solutions to companies such as data centers, cybersecurity, and deployments. Here at the Richmond branch, we work solely on the deployment and refurbishment of some of the many school districts in the State of Virginia. For example, we refresh all the laptops and desktops used in the public school systems such as Henrico, Newport News, and Charles City counties just to name a few.

The initial training for the job was taught all on the first day and then touched up later as you progressed through the different units. We start all the technicians on the Henrico (HCPS) devices which are Dell Latitude 3420 models. These are the easiest to work on due to most of the damage that can happen to them is cosmetic and not fully hardware. The training for myself could have been a little better in my opinion. I learned how to work on the Latitude model for HCPS but when it came to the other devices I was really left on my own. I could ask questions and I did but there was no formal training for the Dell Chromebooks or the Dell 2-in-1 models for the other school systems. This was not hard for me because I have had a technical background with robotics and fixing random devices for my family but for someone who did not,

I would imagine it would be hard. Overall, TIG has done a great job of training people and I enjoyed working with their great Richmond team this summer.

## Management:

Management at Technology Integration Group is very structured and all-around amazing. The structure of the management team starts at the top with General Manager and then trickles down to the deployment manager who oversees the development manager. Who then oversees the team leads who are in charge of the tech room or the room where all the IT technicians are. This structure is amazing in my opinion because there's always someone to talk to if you ever need anything from a certain department. In my past experiences, there was only one or two people to talk to about the whole division and usually they were always busy. This leaves the techs with a sense of comfort and being able to always have a say in certain aspects of the job. The only confusing part of the management of the job is when the higher-up managers at TIG change something. Just recently we have changed how we log hours for projects three times in the same week all because they wanted an easier job for billing schools. Some of the changes were necessary but not all of them especially when it came to the logging hours. But overall the management team at TIG surpassed all my expectations and I love working with them.

## Work Duties

The structure of the job is very simple and straightforward as you would probably think when you hear that this IT job is a desk job. This job entails getting devices that are flagged for repairs and then you register them to your name as the technician. Once that happens you can start diagnosing the unit and if you can, if the parts are in stock, repair the device. If the device is not one we can repair it immediately due to warranty issues or part issues. Then we will have to suspend them until we can get the other stuff situated. Most of the time that stuff is fixed in a matter of days if not hours. Once the unit is repaired we will complete it in the ticketing system we used for suspends and checking the device out. Once it's completed it will go through a series of quality assurance checks before we "OK" it for the customer to receive it. Then the tech would repeat this about twenty to thirty times a day.

My duties at this job just consist of diagnosing and repairing the units. But this can be trivial due to the fact that computers can be insanely annoying if more than one essential part is broken. If a system board or motherboard is broken along with the USB board, which is the board that houses the USB ports on the right side of the laptop, then many different issues can occur that look like they are caused by something else. So troubleshooting these laptops can take hours sometimes and then after troubleshooting, we have to repair them. Repairing is the simple part because all you have to do is get the parts and install them. The only complicated part with

completing a repair would be in the Chromebooks when you have to program the serial number via the Linux terminal. Configuring the serial number is not hard it just takes time due to the fact that you have to boot the Chromebook into development mode which takes five minutes at least. Then you have to open the terminal and write about seven commands and then reboot the system. That is about the hardest task in the repair process just due to the time and knowledge of the Linux terminal. My repairs benefit the company by keeping the clients happy. See if I did not complete my number of devices required for the day. Then we would be behind and possibly miss the delivery date thus making the customers angry and they might take their work somewhere else. So keeping the quota definitely keeps up my end of the bargain with the company contracts with the school systems.

## Skills

My skills in cyber security did not 100% help me with the tasks in this job due to the fact that it was a general information technology job. The skills I do use in this job pertain to troubleshooting operating systems such as Windows 10/11 and ChromeOS. I also have developed the skills of circuitry and how to understand them along with knowing how a computer actually works. In the past, I have had experience with building desktop computers and always wanted to learn how to repair a laptop. Laptops require a lot of patience and dedication to learning the different systems because not every laptop is the same. The few cybersecurity skills I have used at this job consist of password security and the physical security of the building. Password security is a big part of my job due to the fact that we have credentials that can log into any computer at the school systems we monitor with unfiltered admin access. If someone were to gain access to these devices that would be bad so password security is the biggest challenge in this job. I have also picked up skills in computer networking and computer imaging. These skills are necessary because in the IT world, you never know when you have to reimagine (reinstall the OS) a computer or design and build out a new computer network.

## ODU Preparation

Old Dominion University prepared me for this job/internship by teaching me patience and time management. Usually in internships, the university prepares them by giving them classes on certain principles that will be taught at the internship. Since my internship was not specifically in the area of IT as my major is, the university gave me “virtues” instead of practical preparation. The classes I had to take this past year at ODU has taught me a lot and has taught me that all good things come in good time. For instance, getting into cybersecurity takes years; most people usually do not enter it right out of college. It also has taught me the simple cybersecurity skills needed to keep passwords secure and how to teach people simple

cybersecurity for their everyday jobs. I do wish that my job did incorporate more of what my cybersecurity studies here at ODU taught me but I will definitely use them later on. After the summer is over I am looking for another job that will help me develop the skills necessary for entering the cybersecurity realm.

## Fulfillment

Throughout this internship, I did fulfill most if not all of the expectations I had going into this internship. The objectives were to get experience with ticketing systems and learn how the IT industry works, and I also wanted to learn how life would be as an IT professional. First off, I learned how to use TIG's proprietary ticketing system called *Tempest*. *Tempest* is a massive web-based application that controls inventory, repair statuses, imaging, and deployments. This software is like other ticketing systems that big corporations use like ZenWorks and more. Having knowledge of how to use ticketing systems will give me the experience needed to use other systems in other roles such as Systems Admin and Cyber Security Analyst since they also use ticketing systems. Also learning how the IT industry works is a good starting point for any IT professional to understand. Once you know how the business works you can climb the ladder into any role you put your mind to by using certification and different experiences. Also learning how it would be in the IT job field would help me decide if I even want to keep pursuing the IT field. Of course, this internship has done nothing but enhanced my view and pushed me even further to get more into the IT field.

## Motivations and Excitements

The most motivating part of this internship/job is completing a whole school system's devices. Though it may seem like a small task it is very rewarding because you know that you are almost done. But not only does it mean you're almost done, but it also means that a customer will be blessed with their devices early or on time. Finishing these contracts early or on time not only benefits the customer it also benefits the company because we can move onto other contracts and have a little more breathing room. Also just making people happy is a very big sense of motivation and excitement for me personally. Another motivation at TIG is the people that have left to go do cybersecurity after working at TIG. This shows that TIG gives them the basic IT experience that all cybersecurity employers want in order to have responsible and good working employees.

# Discouragement

Discouragement at TIG does happen a little bit just as much as in my other jobs as well. The main discouragement at TIG is the lack of moving up in the company or at least it looks that way. Most of the people who have moved up in the company have held those positions for years only because TIG needed new people in those roles when they were bought out by Converge Tech Solutions back in the last 2010s. So the way to move up would either wait it out for one of those people to leave, which would take a while, or just leave the company for a newer and better job. Overall I really enjoy working there but the only two reasons I would leave would be for better compensation and the ability to expand my IT skills. Even though the pay was slightly less than ideal, it is a good rate if you are not on your own. I started out at \$15.50 an hour which is not terrible but it is not great. But if you look at the average entry-level rate it starts at about \$15 dollars an hour and goes up from there depending on experience levels. Hopefully, by the end of this internship, I will have enough skills to move into another company that pays more and has more opportunities for advancement, unlike TIG.

# Challenges

The biggest challenge in the internship is learning how to interact with all the different laptop models and people. Working with people from different backgrounds and attitudes can be a difficult task but it's something that has to be done. For instance, there are a few people at this internship that have a problem with being told what to do but since they have been there for a while nothing happens to them. This is hard to deal with because it is just simple tasks that can be easily fixed if they were not being hardheaded. For me personally, it is hard to work with people like that but I have learned how to deal with it and ignore it for the most part. Another challenge that I have encountered is not getting bored doing computer repairs. Computer repairs can definitely be repetitive and long which would possibly lead to spacing out and just mindless work. This is easily overcome by listening to music and keeping focus on the task that you are working on. Of course, this will be a problem for everyone all the time since every job has its ups and downs, you just have to learn how to work with it. Another challenge that I had to work with for at least me is the early mornings and late nights with this job. The job started at 8 am and ended at a minimum of 5 pm. Now this is not necessarily a long shift but it was long for me as I am still in school full-time and trying to work this full-time job. Time management is a big part of this job and is a skill that had to be developed before I was able to succeed in this internship.

## Recommendations

My recommendation for anyone who is trying to pursue an internship in cybersecurity or just in information technology is to not give up. Even if you cannot find an internship in cybersecurity, do not stop looking for one or any IT job instead. Sure a cybersecurity internship would help with finding a job quickly, but the truth is that you would have to complete certifications along with a degree in order to find a job. Another recommendation is to find a small startup company that would possibly hire you instead of an internship. This not only pays more it also allows you to gain more experience doing more things. I recommend TIG because it not only gives you that baseline knowledge of IT that employers look for. It also gives you the contacts and the determination to climb up that ladder of success and move into more advanced roles. TIG's pay is very little compared to other companies but it is easier to get into since they do not require five years of experience for an internship as some companies do. Starting this job I knew very little about computer repair or any real-life experiences with information technology. That is fine with this type of job as everything is on-the-job training but it does help to have some basic knowledge of computers and how they work. Knowing how computers work you can put the main pieces together rather than quickly. Overall this internship is a great learning opportunity and I would recommend pursuing cybersecurity and starting out as an IT technician at TIG. The environment is great and you will learn many new skills that will help you later on in life.

## Conclusion

Technology Integration Group is an international information technology integration company that provides multiple solutions to many different organizations. At TIG I had the wonderful opportunity to work as an Information Technology Technician aka computer repair technician. This job is an entry-level position and the barrier to entry is very low. This offers a great opportunity to build new skills and meet new people along with just learning how a technology company works. I personally loved this opportunity because it taught me how to use ticketing systems, how it would be to work in an IT environment along with learning the basic skills needed for pursuing a career in cybersecurity. I believe that this job has given me basic skills such as computer troubleshooting, repair, reporting, and analytics. All of these skills are necessary for pursuing a career in IT. I recently was given the opportunity of leaving TIG to join IES as a Data Center Technician and learn how data centers are built and run. I believe that TIG



gave me the necessary experience on my resume in order to apply and secure this new position at a world-renowned company in IT. Overall this internship was a great opportunity and I am very glad that I was able to work with such an amazing company over the course of the summer.