



TECHNICAL REPORT ON

STUDENT INDUSTRIAL WORK EXPERIENCE

SCHEME (SIWES)



UNDERTAKEN AT PETROLEUM TECHNOLOGY

DEVELOPMENT FUND (PTDF)

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DEDICATION

I dedicate this work to The Almighty God for giving me the opportunity to participate in this industrial training and for guiding me through it safely. I'm very thankful for the strength and protection I received throughout this entire experience.

ACKNOWLEDGEMENT

I want to express my heartfelt gratitude to God for His sustenance throughout my Industrial Training and for giving me the grace to overcome the challenges I faced.

I would like to give special thanks to my parents, Dr Fabian Ihekwe and Mrs Excel Fabian Ihekwe, for their unwavering support during my SIWES, which made my experience much smoother.

I extend my sincere appreciation to the PTDF management for providing me with the opportunity to gain invaluable industrial experience and for sharing their knowledge with me.

I would also like to express my gratitude to the Department of Software Engineering, Faculty of Computing, and the SIWES coordinators at Nile University of Nigeria for incorporating this program into our curriculum and providing all the necessary resources to ensure a fruitful and productive SIWES experience.

ABSTRACT

The Industrial Training Fund (ITF) was set up in 1971 to tackle skills shortages in Nigeria and launched the Students Industrial Work Experience Scheme (SIWES) in 1973 to give university students hands-on experience with industrial equipment, since there were concerns that theoretical learning wasn't enough to meet what employers were looking for. (ITF, n.d.)

I embarked on this SIWES journey to apply the knowledge I've gained in school to real-world situations and to acquire valuable industrial experience that will help me stand out in the industry after graduation.

My SIWES experience at PTDF primarily involved providing technical support to various offices throughout the organization, where I gained technical skills that I likely wouldn't have learned in school. Additionally, I applied concepts from my earlier coursework to practical situations, which deepened my understanding and allowed me to clarify any areas where I needed further assistance.

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1. INTRODUCTION

1.1 INTRODUCTION

I completed my Student Industrial Work Experience Scheme (SIWES) at the Petroleum Technology Development Fund (PTDF), a Nigerian government parastatal headquartered in Abuja, responsible for capacity building and promoting research in Nigeria's oil and gas sector. The program ran from Monday, July 8, to Friday, September 27, 2024. I was assigned to the ICT unit located on the 11th floor of the PTDF Tower. My training took place weekly from Monday to Friday, between 9 a.m. and 5 p.m. Within the unit, I worked alongside other university students participating in the Students Industrial Work Experience Scheme, as well as members of the National Youth Service Corps (NYSC) serving at the organization.

Before starting SIWES, I had high expectations for the program. I watched numerous videos on platforms like YouTube and TikTok where students shared their experiences from SIWES and other similar internships, both in Nigeria and abroad, to get a sense of what to expect. I assumed that my training would focus primarily on using coding skills, so I made efforts to brush up on my programming knowledge before the program began. I also expected the experience to revolve around what I could contribute to the organization. However, it turned out to be more focused on gaining knowledge and practical experience, although I did contribute in my own way.

This report will focus on comparing my initial expectations with the reality of my experience, detailing the nature of the training I received, and explaining how I applied the knowledge I gained in school during my time at the organization.

1.2 BACKGROUND OF THE STUDENT WORK EXPERIENCE SCHEME (SIWES)

SIWES is a Skills Training Programme designed to prepare and expose students from Universities, Polytechnics, Colleges of Technology, Colleges of Agriculture, and Colleges of Education to the industrial work environment they are likely to encounter after graduation. The scheme provides students with the opportunity to familiarize themselves with and operate equipment and machinery that are typically unavailable in their academic institutions. (ITF, n.d.)

SIWES was established in 1973 by the Industrial Training Fund (ITF) to address the issue of graduates from tertiary institutions lacking the necessary practical skills for employment in Nigerian industries. (Mountain Top University, n.d.)

1.3 OBJECTIVES OF THE STUDENT WORK EXPERIENCE SCHEME (SIWES)

The ITF provides various services such as direct training, vocational programs, consultancy, and the administration of SIWES, all aimed at enhancing workforce skills, boosting

productivity, and supporting both employee training and self-employment opportunities for graduates. (Aroge, 2012)

SIWES benefits students by providing them with industrial skills, exposing them to equipment not available in their institutions, offering opportunities to apply classroom knowledge in real work settings, easing the transition from school to the workforce, and helping them build professional connections for future job placements, while also encouraging employer involvement in their education. (Ojokuk, Emeahara, Aboyade, & Chris-Israel, 2015)

1.4 BODIES INVOLVED IN THE MANAGEMENT OF THE STUDENT WORK EXPERIENCE SCHEME (SIWES)

Federal Government of Nigeria

The government funds SIWES through the Ministry of Industry, Trade & Investment and mandates ministries, companies, and parastatals to provide student placement opportunities. Non-compliance results in fines or imprisonment.

Industrial Training Fund (ITF)

ITF oversees SIWES by setting guidelines, organizing student orientations, facilitating placements, supervising students, and disbursing allowances. It also provides insurance, conducts research, and ensures effective scheme administration through regular reviews.

Supervisory Agencies (NUC, NBTE, NCCE)

These agencies ensure institutions have properly staffed SIWES units, approve placement lists, and collaborate with ITF to monitor, develop, and review SIWES programs. They also participate in conferences and update course eligibility for SIWES.

Institutions

Universities and colleges must have SIWES Directorates with designated staff, vehicles, and proper equipment. They prepare placement lists, identify job opportunities, supervise students, and organize orientation in collaboration with ITF. They also award academic credit for SIWES participation.

Employers of Labour

Employers must collaborate with institutions to define job specifications, accept students for attachment, and ensure their welfare. They are responsible for supervising students and assessing their performance through logbooks and ITF forms.

Students

Students must submit bank details for allowances, attend orientation, and adhere to organizational rules during their attachment. They must regularly document their work in logbooks, complete required ITF forms, and ensure they act diligently during their industrial attachment.

(University of Uyo, 2021)

1.5 CONCLUSION

In conclusion, SIWES equips students with practical skills through industrial training and fosters collaboration between institutions, employers, and the government.

2. BACKGROUND OF THE PETROLEUM TECHNOLOGY DEVELOPMENT FUND (PTDF)

2.1 INTRODUCTION

The Petroleum Technology Development Fund (PTDF) is a Nigerian government parastatal responsible for capacity building and promoting research in the country's oil and gas sector. Its mandate includes advancing technology development, funding educational programs, and supporting human resource development within the petroleum industry.

Since becoming fully operational in 2000, the Petroleum Technology Development Fund (PTDF) has significantly advanced Nigerian expertise in the oil and gas sectors. One of its most notable initiatives is the Overseas Scholarship Scheme (OSS), managed in partnership with Univation Limited, a branch of Robert Gordon University in the UK. The OSS provides scholarships for outstanding Nigerian graduates to pursue postgraduate studies in fields related to the oil, gas, and solid minerals industries. (Uniamikogbo & Aibieyi)

PTDF supports SIWES by providing placements across various departments, such as ICT, protocol, and oil and gas, to help students gain practical experience and develop professional skills.

2.2 HISTORY OF THE PETROLEUM TECHNOLOGY DEVELOPMENT FUND (PTDF)

The Petroleum Technology Development Fund (PTDF) was established in 1973 by the Federal Military Government headed by General Yakubu Gowon. Coincidentally, PTDF was established the same year as SIWES.

The Petroleum Technology Development Fund (PTDF) was created to train Nigerians in fields like Engineering, Geology, Science, and Management for the petroleum industry. This initiative supports the government's effort to develop local manpower, ensuring Nigerians take over key roles in the oil and gas sector. PTDF focuses on producing skilled professionals, upgrading local institutions for training, and encouraging research to promote the use of local materials and technology within the industry. (Petroleum Technology Development Fund, 2016)

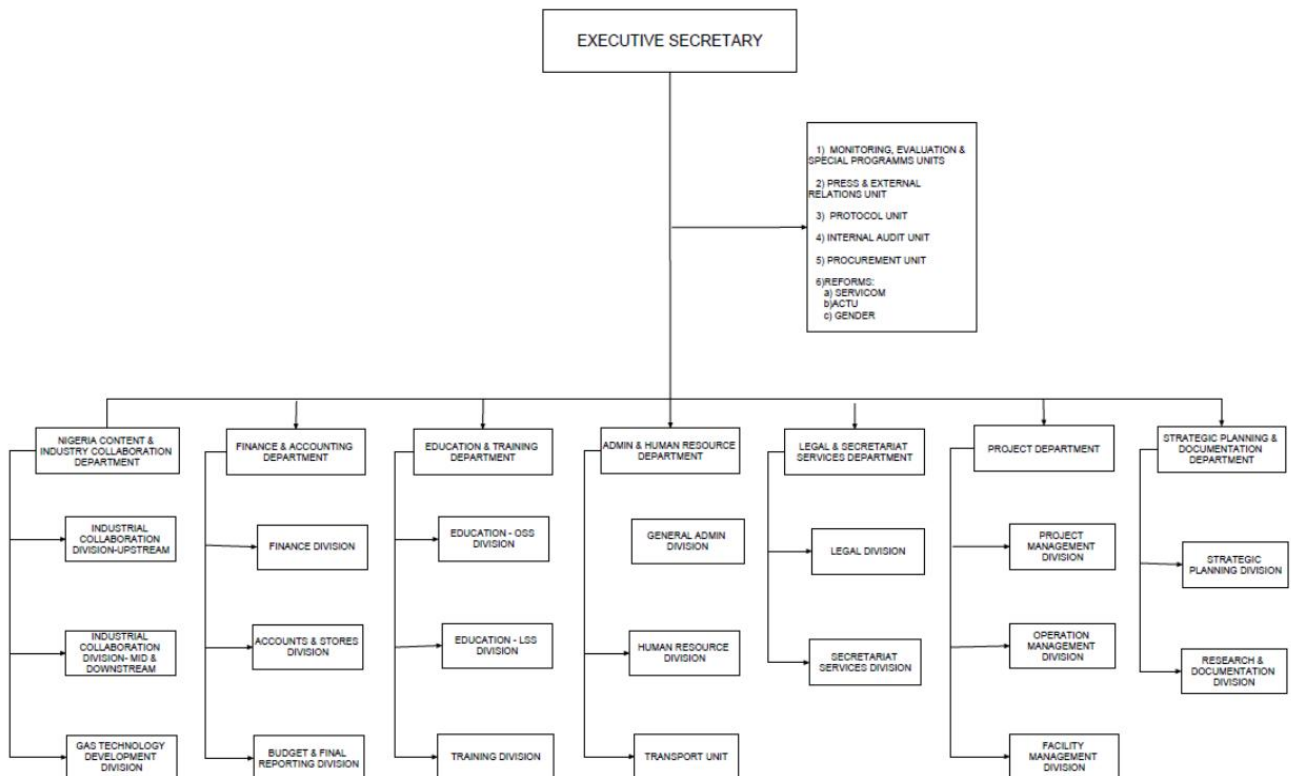
2.3 STRUCTURE OF THE PETROLEUM TECHNOLOGY DEVELOPMENT FUND (PTDF)

The Petroleum Technology Development Fund (PTDF) is led by an Executive Secretary who works with General Managers to manage different departments and units. The Anti-Corruption and SERVICOM units also report directly to the Executive Secretary.

Key Departments:

The key departments at PTDF include Nigerian Content and Industry Collaboration, Education and Training, Finance and Accounts, Administration and Human Resources, Strategic Planning and Documentation, Projects, and Legal and Secretariat Services.

2.4 ORGANOGRAM OF THE PETROLEUM TECHNOLOGY DEVELOPMENT FUND (PTDF)



(Petroleum Technology Development Fund, 2016)

2.5 OTHERS DEEMED NECESSARY

The vision of PTDF is “To serve not only as a vessel for the development of indigenous manpower and technology transfer/acquisition in the oil and gas industry but to make Nigeria a human resource centre for the West African sub-region and the Gulf of Guinea.” (Petroleum Technology Development Fund, 2016)

The mission of PTDF is “To train Nigerians to qualify as graduates, professionals, technicians and craftsmen in the field of engineering, geology, science and management in the oil and gas industry in Nigeria and abroad.” (Petroleum Technology Development Fund, 2016)

2.6 CONCLUSION

The Petroleum Technology Development Fund (PTDF) is a Nigerian government organization created in 1973 to train Nigerians in areas like engineering, science, and management for the oil and gas industry by offering scholarships, supporting research, and working on technology development, with a focus on building local expertise and reducing dependence on foreign professionals; it is led by an Executive Secretary, has several key departments, and runs programs like the Overseas Scholarship Scheme (OSS) to help Nigerians gain postgraduate qualifications in related fields.

3. THE PROCESS, COMPONENTS & DESCRIPTION OF MY INDUSTRIAL TRAINING AT PTDF

3.1 INTRODUCTION

My industrial training at PTDF consisted of instructions, assignments, projects, supervisory work, observations, hands-on training, and collaborative team efforts, where I developed a range of skills and gained valuable insights into the professional environment. Through these experiences, I enhanced my technical abilities, improved my problem-solving skills, and learned how to work effectively in a team setting.

During my industrial training at PTDF, I worked on several projects that helped me gain both practical and theoretical skills.

- i. On my first day, I was asked to do extensive research on the organization and get familiar with the environment. This task was considered a project in itself and took about a week to complete. From this experience, I gained valuable insights into the organization's structure and operations, which helped me understand how everything works together. I also improved my research skills and learned how to navigate professional environments more effectively.
- ii. Shortly after getting familiar with the organization, I was asked to come up with an idea for an application or tool that aligns with the organization's goals and enhances its operations. Along with some fellow interns, we evaluated our skills and idealized an automatic data entry system and an image-to-document converter using Tesseract. From this experience, I gained teamwork and collaboration skills as we brainstormed ideas. I also improved my problem-solving abilities and learned how to apply technology to create practical solutions for real-world challenges.
- iii. I researched OCR (Optical Character Recognition) technology and learned how to use Tesseract to extract text from images using a Python script. I learned how to set up the Tesseract library, write scripts to process images, and handle different file formats. This experience enhanced my programming skills and deepened my understanding of how OCR technology works in practice.
- iv. I was assigned to reinstall Windows on a computer because a user had forgotten their password. After following several previous instructions and watching others do it, I learned the entire process step by step. This experience helped me gain practical skills in operating system installation and troubleshooting. I also became more confident in my technical abilities.
- v. I was also assigned to install ESET on a Windows PC. This task taught me how to set up antivirus software and ensure it runs correctly. I learned about the importance of

cybersecurity and how to protect systems from threats. Overall, it boosted my technical skills and knowledge of software installation.

- vi. While setting up the organization's computer, I bypassed the Microsoft account setup using an elevated command prompt. This experience helped me understand how to manage user accounts and navigate system settings more efficiently. It also improved my troubleshooting skills and taught me about alternative methods for system configuration.

I also participated in supervisory tasks, where I provided assistance and was guided in carrying out specific responsibilities within the organization.

- i. I provided technical support to various offices under the supervision of NYSC Corp members and my industry-based supervisor. My responsibilities included; troubleshooting hardware and software issues, installing applications, setting up printers, configuring network connections, training staff on software tools, recovering lost files and maintaining office equipment functionality. From this experience, I developed strong problem-solving skills and learned the importance of effective communication with non-technical staff.
- ii. I fixed audio crossover problems between two meeting rooms by identifying and correcting misconfigurations in the audio routing system. This involved verifying proper audio isolation through rigorous testing to ensure clear communication in both rooms. From this experience, I learned the importance of attention to detail and critical thinking in troubleshooting complex systems. I also gained hands-on experience with audio equipment and improved my technical skills in configuring and optimizing sound systems.
- iii. I assisted in recovering files from OneDrive by troubleshooting and restoring lost files to ensure data integrity within the organization. From this experience, I learned the importance of data management and recovery processes, as well as the critical role they play in maintaining organizational efficiency. I also enhanced my troubleshooting skills and became more familiar with cloud storage solutions.
- iv. I assisted in replacing the hard drive of a computer that was experiencing motherboard issues, allowing for continued functionality and performance. From this experience, I enhanced my troubleshooting skills for diagnosing and resolving PC hardware problems. I also gained practical experience in hardware replacement and learned the importance of proper system maintenance in ensuring reliable performance.
- v. I was supervised to design the flowchart for the PTDF in-country scholarship scheme using Microsoft Word, visually representing the process and key components of the program. From this experience, I developed my skills in visual communication and learned how to effectively present complex information in a clear and organized manner. I also gained insights into the scholarship scheme's structure, enhancing my understanding of organizational processes. Additionally, I learned how to use the graphic design tools in Microsoft Word, which improved my proficiency in creating professional-looking documents.
- vi. I assisted in resolving a network issue during a boardroom meeting, which involved troubleshooting connectivity problems and ensuring a stable connection for all participants. From this experience, I learned how to connect LAN cables from the network room, enhancing my understanding of network infrastructure. I also developed my problem-solving skills and learned the importance of maintaining reliable connectivity in a professional setting.

- vii. I was involved in replacing the cartridges of a printer, a task that, while seemingly trivial, is essential for maintaining smooth operations within the office. From this experience, I learned the importance of regular maintenance for office equipment and how even small tasks contribute to overall productivity. I also gained hands-on experience with printer maintenance and developed a better understanding of the components that ensure quality printing.

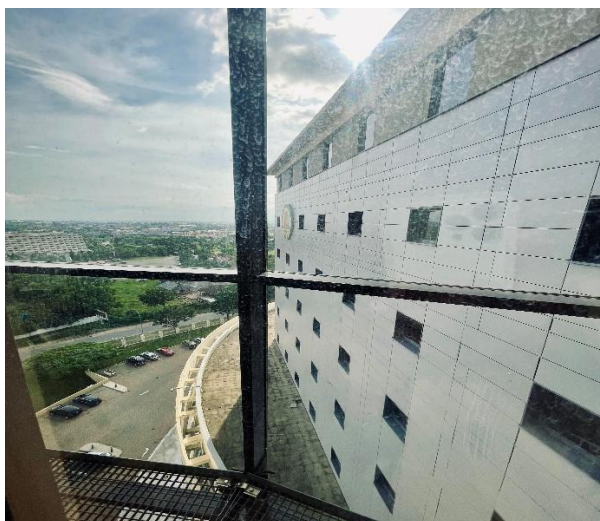
This experience allowed me to learn from more experienced colleagues and gain practical insights into various operations.

3.2 PROJECTS CARRIED OUT

Organizational Research and Familiarization

Upon my arrival for my industrial training at the Petroleum Technology Development Fund, the first seemingly trivial, but highly beneficial project I was given was to conduct extensive research on the organization by physically going around, communicating with employees and NYSC Corp members who were serving at the organization and doing some online research to learn more about the organization.

What I expected: Prior to the commencement of my industrial attachment, I did not expect to engage in such a task. Though, I expected some sort of orientation but little did I know I will be orienting myself. On my first contact with my industry-based supervisor, when he assigned me this task, it seemed daunting because of my social anxiety and the fact I had to communicate with new people around the organization. I was anxious, as not to ask the wrong questions and not to leave a bad first impression.



Results: It took up to a week for me to become used to and gather as much information about the organization as was adequate. I had conversations with NYSC Corp members who had been serving at the organization for several months, some of whom had previously completed their industrial attachment at the organization. I also followed them around the organization to perform basic tasks such as re-installing printers, re-installing operating systems, solving

network issues and other related tasks, I was also spoken to by employees around the organization. I also took some time to physically walk around the organization. I discovered that the organization has 174 employees.

What I experienced: This task turned out to be more enriching than I initially thought. I got to experience how the real world of work. During this project, I gained confidence in communicating with professionals from various backgrounds, which was initially challenging due to my social anxiety. I learned the importance of understanding how an organization functions as a whole before contributing to specific tasks. Observing day-to-day operations taught me how small inefficiencies could affect larger projects and highlighted the importance of attention to detail. Additionally, I developed my ability to research and gather information independently, giving me valuable insight into PTDF's goals and workflows. This experience greatly enhanced my understanding of organizational dynamics.

Application of school coursework: While I didn't actively apply any technical skill or knowledge from my Software Engineering courses in this task, some GST courses and activities I have participated in at school came in handy. Knowledge GST 101: Use of English I and GST 102: Use of English II aided my communication skills in a professional environment. Knowledge from GST 105: IT & Library skills also aided.

Idealization of a beneficial tool that aligns with the organization's goals and enhances operations.

After I finished doing research on the organization, my supervisor asked me to come up with an idea for a tool that would help improve the way the company works. The goal was to think of something that fits with what the organization is trying to achieve and could make their day-to-day operations easier and more efficient. My supervisor wanted me to use what I had learned from my research about how the company functions to come up with a tool that would really benefit the organization and help them reach their goals faster and more effectively.

What I expected: Prior to my industrial training, I expected to majorly apply my theoretical things I was thought in school in an industrial setting. I specifically expected tasks involving coding and software development, given the fact that I'm software engineering. When my supervisor assigned me the task of coming up with a beneficial tool that aligns with the organization's goals based on my research, I expected to use my findings to propose a solution that would streamline operations and contribute positively to the company's objectives.

Results: After my supervisor gave me the task to come up with a useful tool, I applied what I had learned from my research and proposed the idea of using OCR (Optical Character Recognition) technology. I suggested implementing Tesseract to develop a text-to-image scanner, which would help the organization easily digitize documents and make their documentation process faster and more efficient. The proposed tool was designed to align with the organization's goals by simplifying how they handle paperwork, reducing manual data entry, and improving overall workflow.

What I experienced: My experience with the task was both challenging and rewarding. When my supervisor first assigned it, I felt a bit unsure because I wasn't entirely sure how to create something that could directly benefit the organization. However, once I started thinking about the research I had done and the skills I had been developing, especially with OCR technology and Tesseract, I felt more confident. Working on the idea of a text-to-image scanner to streamline the documentation process allowed me to combine both technical knowledge and

problem-solving skills. It was exciting to see how technology like OCR could be applied to real-world issues, and it gave me a clearer understanding of how the skills I've been learning could make a real impact in an organization. Overall, the task helped me grow by pushing me to think creatively and practically about how to solve organizational problems.

Application of school coursework: My experience with this task allowed me to apply some of the concepts I learned in my school coursework, particularly from SEN 207: Software Requirements. In that course, I was taught how to analyse and understand the needs of users and organizations before developing any software solution. This was a key part of my approach to the task. When my supervisor asked me to come up with a tool that would benefit the organization, I started by reviewing my research on the company's operations and identifying the areas where improvements were needed. Drawing from what I learned in SEN 207, I carefully considered the requirements for the tool, making sure it would align with the company's goals and help improve efficiency. I then applied my knowledge of OCR technology and Tesseract to propose a text-to-image scanner, which would simplify their documentation process. This experience helped me realize the importance of gathering and understanding requirements before proposing a solution, which was something I had practiced in SEN 207. It was a great opportunity to see how classroom learning can be applied in real-world situations.

In conclusion, this task provided a valuable opportunity to apply my academic knowledge, particularly from SEN 207: Software Requirements, to a real-world scenario. By combining my research on the organization with the technical skills I had gained, such as using OCR technology and Tesseract, I was able to propose a tool that could streamline the documentation process and improve efficiency. The experience not only challenged me to think critically and creatively but also reinforced the importance of understanding and addressing organizational needs when developing a solution. It was a rewarding experience that highlighted how my coursework can directly contribute to solving practical problems in the industry.

Research on OCR technology and using tesseract to create text from an image with a python script.

Another task I worked on during my industrial training was learning how to use OCR (Optical Character Recognition) technology, specifically Tesseract, to extract text from images. This task was part of my project to create a tool that would help streamline the organization's documentation process. My goal was to build a text-to-image scanner that could automatically convert scanned documents or images into editable and searchable text, reducing the need for manual data entry. I started by researching how Tesseract works and how to implement it in a web application. This allowed me to combine my coding skills with my research findings to create a solution that would align with the organization's goal of improving efficiency in their operations. This task was particularly exciting because it gave me the chance to dive deeper into a specific technology and learn how to apply it in a practical way. By the end, I had a clearer understanding of how OCR could be used in real-world applications to solve common business problems, such as managing large amounts of documentation.

What I expected: Before starting my industrial training, I expected to spend most of my time coding and working on software projects. I thought I would just write code and quickly build applications. When I was given the task of creating a tool using OCR technology, I thought I would be mainly focused on coding with Tesseract right away. However, the task ended up being more complicated than I thought. I realized I needed to really understand what the organization needed and how their workflow worked. It was important to make sure that the

tool I created would actually help them. This meant I had to think carefully about the requirements and how to fit the technology into their existing systems.

Results: The results of the task were quite positive. After researching and understanding the organization's needs, I was able to successfully develop a text-to-image scanner using OCR technology and Tesseract. This tool made it easier for the organization to convert scanned documents and images into editable text, which significantly reduced the time spent on manual data entry. The implementation of the tool improved the efficiency of their documentation process, allowing employees to quickly search for and edit important information. Overall, the project helped streamline operations and aligned well with the organization's goals of enhancing productivity and reducing paperwork. My supervisor and the team were pleased with the outcome, and it felt rewarding to see my ideas come to life and make a real difference in the organization.

OCR (Optical Character Recognition) technology is a process that converts different types of documents, such as scanned paper documents, PDFs, or images taken by a digital camera, into editable and searchable data. It uses machine learning algorithms to recognize the characters in the images and translate them into text that can be processed by computers.

Here's what I know about using OCR technology to extract text:

1. **Image Preprocessing:** Before applying OCR, it's important to preprocess the image. This can include converting the image to grayscale, adjusting the contrast, and removing any noise to improve the accuracy of text recognition.
2. **Using Tesseract:** Tesseract is an open-source OCR engine that can recognize more than 100 languages. It works by analysing the shapes of characters in the image and matching them to its trained data. To use Tesseract, you typically need to:
 - Install Tesseract on your computer.
 - Use a programming language like Python to write a script that loads the image and applies Tesseract to extract the text.
 - Use libraries such as PIL (Python Imaging Library) or OpenCV for image preprocessing before feeding the image into Tesseract.
3. **Extracting Text:** Once the image is processed, you can use Tesseract's functions to extract the text. For example, in Python, you can use the tesseract library, which is a wrapper for Tesseract, to easily call the OCR engine and retrieve the text as a string.
4. **Output and Error Handling:** After extracting the text, it's a good practice to check for errors or misrecognized characters, especially if the original image quality isn't great. You can implement additional checks or corrections to improve the final output.
5. **Applications:** OCR technology is useful for digitizing printed documents, automating data entry, and making content searchable, which can significantly improve workflow and efficiency in various industries.

Overall, OCR technology allows organizations to easily convert physical documents into digital formats, making it easier to store, search, and edit important information.

What I experienced: During my experience with OCR technology, I learned a lot about how it works and how to use it effectively. When I first started working with Tesseract, I faced some challenges in understanding how to preprocess images to get the best results. I spent time

learning about different techniques like converting images to grayscale and adjusting the contrast to improve text recognition. As I got more familiar with the process, I was able to write scripts using Python and the pytesseract library to automate the text extraction. It was exciting to see how quickly I could turn a scanned document or an image into editable text. I also learned the importance of testing with different types of documents, as the quality of the original image greatly affected the accuracy of the text extraction. One of the most rewarding moments was when I successfully extracted text from a challenging image with lots of noise and distortions. It took some trial and error, but I was able to implement preprocessing techniques that made a significant difference in the accuracy of the output. Overall, this experience helped me gain a deeper understanding of OCR technology and its practical applications, and it boosted my confidence in using these tools for real-world tasks.

Application of school coursework: My experience with OCR technology allowed me to apply several concepts from my school coursework, particularly from SEN 201: Principles of Programming I with C, SEN 202: Object-Oriented Programming with Java, and SEN 204: Data Structures and Algorithms.

1. SEN 201 - Principles of Programming I with C: In this course, I learned the fundamentals of programming, including syntax, data types, and control structures. When working on the OCR project, I utilized my knowledge of programming basics to write scripts that would interact with Tesseract. This foundational knowledge was essential in understanding how to structure my code and troubleshoot issues as they arose.
2. SEN 202 - Object-Oriented Programming with Java: Although I primarily used Python for the OCR project, the principles of object-oriented programming (OOP) that I learned in this course helped me think about how to structure my code in a modular way. I understood concepts like classes and objects, which allowed me to organize my scripts effectively and make my code more reusable and easier to maintain.
3. SEN 204 - Data Structures and Algorithms: This course provided me with a solid understanding of how to manage and manipulate data efficiently. As I processed images and extracted text, I found that my knowledge of data structures, like arrays and linked lists, helped me manage the text output effectively. Understanding algorithms also enabled me to think critically about optimizing the text extraction process, ensuring that it was both accurate and efficient.

Overall, applying what I learned from these courses to the OCR project reinforced my programming skills and helped me realize how classroom concepts can be directly used in real-world applications. It was a valuable experience that deepened my understanding of programming and problem-solving.

In conclusion, my experience with OCR technology during my industrial training was both educational and rewarding. I was able to apply important concepts from my coursework, including SEN 201: Principles of Programming I with C, SEN 202: Principles of Programming II, and SEN 204: Data Structures and Algorithms. This practical application not only helped me develop a text-to-image scanner that improved the organization's documentation process but also enhanced my programming skills and problem-solving abilities.

Through this project, I learned the significance of understanding user requirements, effectively planning, and implementing technology to solve real-world challenges. Overall, this experience solidified my belief that what I learn in school can have a meaningful impact in a

professional setting, and it has inspired me to continue exploring the intersection of technology and practical applications in my future career.

Restoring Access: Reinstalling Windows for Password Recovery

The next task I worked on during my industrial training involved re-installing Windows on a computer for a user who had forgotten their password. This situation presented a unique challenge, as it required not only technical skills but also a good understanding of the processes involved in operating system installations. I had to ensure that the user's data was handled carefully and that the installation was done smoothly to restore the computer's functionality. This task was an excellent opportunity for me to apply my knowledge of operating systems and technical support while learning more about troubleshooting common user issues.

What I expected: Before I started the task of reinstalling Windows on a computer for a user who had forgotten their password, I expected it to be a straightforward process. I thought I would simply need to use a flash drive to boot the computer and run the installation steps without much hassle. I imagined I would quickly guide the user through the process and have their computer up and running in no time. However, I also anticipated that I might face some challenges, such as ensuring that the user's data was backed up properly before the reinstallation, as I knew losing important files could be an issue. I expected to apply my knowledge of operating systems and installation processes, but I was also prepared for the possibility of troubleshooting any unexpected problems that might arise during the installation. Overall, I was eager to help the user regain access to their computer while improving my technical skills in the process.

Results: The results of the task to reinstall Windows on the computer were successful. After preparing the flash drive with the Windows installation files, I booted the computer and followed the necessary steps to initiate the installation process.

During the installation, I ensured that the user's important files were backed up to prevent any data loss. This involved accessing the hard drive before the reinstallation and transferring key documents to an external storage device. Once the backup was complete, I proceeded with the installation, which went smoothly without any major issues. After reinstalling Windows, I helped the user set up their account and regain access to their computer. They were relieved and grateful to have their system working again. Overall, the task not only improved my skills in OS installation and troubleshooting but also reinforced the importance of data management during technical support tasks. It felt rewarding to successfully assist the user and ensure they could continue their work without further delays.

These were the steps I followed to help the user re-install Windows;

1. **Prepare the Flash Drive:** Download the Windows installation media from the Microsoft website. Use the Media Creation Tool to create a bootable USB flash drive. Follow the prompts to select your USB drive and download the installation files.
2. **Insert the Flash Drive:** Plug the bootable USB flash drive into the computer where you want to reinstall Windows.
3. **Restart the Computer:** If the computer is already on, restart it. If it's off, turn it on.
4. **Access the Boot Menu:** As soon as the computer starts, repeatedly press the F10 key. This should bring up the boot menu or BIOS settings. (Note: Some computers might use different keys like F12, ESC, or DEL depending on the manufacturer; check the screen for instructions.)

5. Select the USB Drive: In the boot menu, look for the option that corresponds to your USB flash drive. It may be listed as "USB," "Removable Device," or something similar. Use the arrow keys to highlight the USB drive and press Enter to boot from it.
6. Start Windows Installation: After booting from the flash drive, the Windows installation screen will appear. Select your language, time, and keyboard preferences, then click Next.
7. Install Windows: Click on the Install Now button.
Accept the license terms and click Next.
Choose whether to upgrade (keeping files) or perform a custom installation (which erases everything). For a clean install, select Custom: Install Windows only (advanced).

Select the Installation Drive: You will see a list of drives and partitions. Select the drive where you want to install Windows (usually the largest partition) and click **Next**. If you want to erase everything, you can delete the existing partitions, but be sure to back up any important data first.

The installation process will begin. Your computer may restart several times during this process.

Follow the on-screen prompts to set up Windows, including creating a user account and selecting privacy settings.

Once the installation is complete, remove the USB flash drive.

Make sure to update Windows and install any necessary drivers to ensure everything functions correctly.

What I experienced: During the process of reinstalling Windows using a flash drive, I encountered a mix of challenges and learning experiences that enriched my technical skills.

Initially, I felt confident as I had prepared the bootable USB drive successfully using the Media Creation Tool. However, when I accessed the boot menu by pressing F10, I noticed that the option for the USB drive didn't appear immediately. This required me to troubleshoot, so I made sure the USB was properly connected and rebooted the computer a couple of times. After a few attempts, I successfully accessed the boot menu and selected the USB drive.

As I proceeded with the installation, I was careful to back up the user's important files before formatting the drive. This step reinforced my understanding of the importance of data management in technical support roles. I had to navigate the installation options carefully, ensuring I chose the correct settings for a clean install.

The installation itself went smoothly, but I had a moment of anxiety when the computer restarted multiple times, as I wasn't sure if everything was working correctly. However, seeing the Windows setup screen and finally completing the installation was incredibly satisfying.

Overall, this experience taught me valuable lessons about problem-solving, data preservation, and the importance of patience in troubleshooting technical issues. I gained more confidence in my ability to handle operating system installations and learned how to approach unexpected challenges more effectively.

Application of school coursework: My experience reinstalling Windows using a flash drive allowed me to apply concepts from my school coursework, specifically SEN 101: Introduction to Computing & Applications and SEN 205: Principles of Operating Systems.

1. SEN 101 - Introduction to Computing & Applications: In this course, I learned the basics of computer hardware and software, including how operating systems function. This foundational knowledge was essential when I prepared the bootable USB flash drive for the Windows installation. Understanding the different components of a computer system helped me troubleshoot when the USB drive did not appear in the boot menu. I was able to quickly identify the problem and take the necessary steps to resolve it.
2. SEN 205 - Principles of Operating Systems: This course provided me with a deeper understanding of operating system concepts, including installation processes, file management, and system configuration. When reinstalling Windows, I applied my knowledge of how operating systems interact with hardware and software. I understood the significance of managing partitions and data during the installation process. Additionally, I was able to explain to the user the steps involved in the installation and the importance of backing up their files, which reinforced my understanding of operating system functionality.

Overall, applying what I learned in these courses to the task of reinstalling Windows enhanced my technical skills and reinforced the connection between theoretical knowledge and practical applications in the real world. This experience has encouraged me to continue exploring the intricacies of computing and operating systems as I move forward in my studies and career.

In conclusion, my experience reinstalling Windows using a flash drive was both educational and rewarding. It allowed me to put into practice the knowledge I gained from my coursework in SEN 101: Introduction to Computing & Applications and SEN 205: Principles of Operating Systems. Through this task, I developed my technical skills in operating system installations, troubleshooting, and data management.

The process taught me valuable lessons about problem-solving and the importance of understanding the underlying principles of computing. I felt a sense of accomplishment when I successfully helped the user regain access to their computer, knowing that I applied classroom concepts to a real-world situation. This experience has motivated me to continue learning about operating systems and their applications, as I aspire to become more proficient in the field of technology and contribute effectively in future endeavours.

Installing ESET on a Windows PC; Strengthening System Security

The full meaning of ESET is **Essential Security Against Evolving Threats**. ESET is an antivirus software used to protect computers from various types of malwares, such as viruses, ransomware, spyware, and phishing attacks. It provides real-time protection by detecting and neutralizing threats before they harm the system. One of the tasks I was given during my Industrial Training at PTDF was to install ESET on a Windows PC independently. The purpose of installing ESET was to improve the security of the organization's computers and ensure that sensitive data and files were protected from potential cyber threats. This task allowed me to gain hands-on experience in setting up

antivirus software and understanding the importance of cybersecurity in a workplace environment.

What I expected: Before starting the task of installing ESET on the Windows PC, I expected the process to be straightforward. I thought it would mainly involve downloading the software, running the installer, and following simple on-screen prompts to complete the installation just like 99% of other application installations. Since I had installed software before, I assumed the steps would be familiar, with just a few clicks to get the antivirus up and running. However, I also expected that there might be some challenges, such as ensuring the system was compatible with ESET or dealing with any potential conflicts with existing software on the computer. I knew that, after installation, there could be settings to configure, like scheduling scans and ensuring real-time protection was active. Overall, I expected it to be a routine installation task, but I was prepared to troubleshoot any issues that might come up.

Results: The task of installing ESET on the Windows PC was successfully completed, and the system was secured with real-time protection against malware. Below are the steps I followed and the outcome of the installation process:

Steps to Install ESET on a Windows PC:

1. Download the ESET Installer:

- I visited the official ESET website to download the latest version of the antivirus software.
- I selected the appropriate version for the operating system (Windows) and began the download.

2. Run the Installer:

- Once the download was complete, I opened the installer file to begin the installation process.
- A prompt appeared asking for permission to make changes to the device, which I accepted.

3. Follow the Installation Wizard:

- The ESET installation wizard launched, and I followed the step-by-step instructions.
- I selected the default settings for installation, which included real-time protection and regular updates.
- During this stage, I also had the option to enable detection of potentially unwanted programs (PUPs), which I activated to maximize protection.

4. Activate ESET:

- After the installation, the software prompted me to enter the activation key, which I obtained from the organization's license for ESET.
- Once the activation key was entered, ESET was successfully activated and ready to use.

5. Run the First Scan:

- To ensure the system was free from malware, I initiated a full system scan using ESET.
- The scan ran smoothly and detected no threats on the computer, confirming that the system was already in good condition.

6. **Configure Automatic Updates and Scans:**

- I set up ESET to automatically update its virus definitions and scheduled regular system scans to ensure continuous protection.

After completing the installation, ESET was fully operational on the Windows PC, providing real-time protection and regularly scheduled system scans. The installation process went very smoothly with no issues. The employee was satisfied with the added security, and I was able to explain how the software works and how to monitor its status to keep the system secure. This task allowed me to further understand how antivirus software operates and the critical role it plays in maintaining cybersecurity for both personal and organizational systems.

What I experienced: The ESET installation process was mostly straightforward but came with a few learning moments. Initially, downloading and setting up the software went smoothly, but I faced a minor issue with activating the license key, which I resolved by manually entering it instead of copying and pasting. I also found that configuring the antivirus settings was more detailed than expected, requiring careful attention to scheduling scans and enabling extra protection features. Running the first scan went well, and it was satisfying to see ESET in action. Overall, the experience deepened my understanding of antivirus setup and cybersecurity best practices.

Application of school coursework: The task of installing and configuring ESET antivirus allowed me to apply knowledge from two important courses: CYB 201: Fundamentals of Cyber Security and SEN 205: Principles of Operating Systems.

1. **CYB 201 – Fundamentals of Cyber Security:** In this course, I learned about the importance of protecting systems from malware, viruses, and other cyber threats. Understanding the role of antivirus software like ESET in maintaining a secure environment helped me approach this task with the right mindset. The course also taught me about security measures such as real-time protection, threat detection, and scheduled scans, which I implemented during the installation.
2. **SEN 205 – Principles of Operating Systems:** This course gave me the foundational knowledge to understand how antivirus software interacts with the operating system. Concepts like system performance, file management, and system security from this course helped me configure ESET without affecting the performance of the Windows PC. I was also able to troubleshoot issues related to system compatibility and ensure that the antivirus was seamlessly integrated into the operating system.

Installing ESET antivirus on the Windows PC was a valuable experience that enhanced my understanding of system security and antivirus software. The task allowed me to apply key concepts from my coursework in CYB 201: Fundamentals of Cyber Security and SEN 205: Principles of Operating Systems, reinforcing the connection between theory and practical application. By successfully configuring ESET for real-time protection and running system scans, I gained hands-on experience in maintaining cybersecurity for a professional

environment. This experience not only improved my technical skills but also deepened my appreciation for the importance of strong security measures in today's digital world.

Designing the Flowchart for the PTDF in-country Scholarship Scheme

As part of my industrial training, I was tasked with designing a flowchart for the PTDF In-Country Scholarship Scheme, which outlines the key steps and processes involved in the application and selection procedures. To accomplish this, I used Microsoft Word, a tool I was already familiar with for creating documents, but now I had the chance to explore its features for designing flowcharts. Microsoft Word offers built-in tools for creating flowcharts, such as shapes and connectors, which allowed me to clearly represent the flow of information and decision-making points within the scholarship scheme. This task not only required attention to detail but also helped me improve my ability to visually organize processes in a clear and structured manner.

What I expected: Before starting my industrial training, I had a general expectation that I would be involved in tasks that required technical skills, problem-solving, and a deeper understanding of real-world applications of my coursework. I anticipated that my experiences would help me gain practical knowledge in a professional setting. When I was given the task to design the flowchart for the PTDF In-Country Scholarship Scheme, I expected it to be relatively straightforward. I thought it would mainly involve gathering information about the scholarship process and then using Microsoft Word to create a visual representation. I anticipated that my familiarity with Microsoft Word would make it easy to navigate the features necessary for designing the flowchart. However, I also expected some challenges, such as ensuring I accurately captured all the steps and decision points in the scholarship process. I realized that I would need to communicate with colleagues to clarify details and ensure that the flowchart was comprehensive and user-friendly. Overall, I looked forward to the opportunity to apply my skills in a meaningful way while also gaining insights into the scholarship application process.

Results: The task of designing the flowchart for the PTDF In-Country Scholarship Scheme was completed successfully, and the final product effectively represented the various steps and processes involved. Here's an overview of the results and the steps I took to create the flowchart:

Steps Taken to Design the Flowchart:

- 1. Gathering Information:**

- I was given a printed document of all relevant information about the scholarship scheme, including the application process, eligibility criteria, required documents, and selection steps.

- 2. Planning the Flowchart Structure:**

- Before diving into Microsoft Word, I outlined the main components and steps of the scholarship process on paper. This helped me visualize how to organize the flowchart logically.

- 3. Creating the Flowchart in Microsoft Word:**

- I opened a new document in Microsoft Word and utilized the **Shapes** tool to create the flowchart.
- I selected appropriate shapes for each step, such as rectangles for processes, diamonds for decision points, and arrows to indicate the flow of information.
- As I added each element, I labelled them clearly to ensure that anyone reviewing the flowchart could easily understand each step of the process.

4. **Reviewing and Refining:**

- Once the initial draft of the flowchart was complete, I reviewed it for clarity and accuracy.
- I sought feedback from colleagues and made necessary adjustments to improve the flow and readability.

5. **Finalizing the Flowchart:**

- After incorporating feedback, I finalized the flowchart and ensured it was properly formatted and visually appealing.
- The completed flowchart was then shared with the relevant departments for their use in guiding potential scholarship applicants.

The final flowchart provided a clear, concise visual representation of the PTDF In-Country Scholarship Scheme, outlining all critical steps from application to selection. It served as a helpful resource for both applicants and staff involved in the scholarship process. This task not only enhanced my skills in using Microsoft Word for design purposes but also deepened my understanding of the scholarship process and its significance within the organization.

What I experienced: Designing the flowchart for the PTDF In-Country Scholarship Scheme was a rewarding experience that helped me develop various skills.

1. **Learning Microsoft Word:** I became more familiar with Microsoft Word's features, exploring shapes and formatting options for flowchart design.
2. **Collaboration:** Gathering information from colleagues taught me the importance of effective communication and teamwork in ensuring accurate representation of the scholarship process.
3. **Attention to Detail:** Creating the flowchart required careful attention to detail, emphasizing the need to double-check information for clarity and accuracy.
4. **Problem-Solving:** I faced challenges in representing complex steps clearly, which enhanced my critical thinking and problem-solving abilities.
5. **Sense of Accomplishment:** Finalizing the flowchart gave me a sense of satisfaction, knowing my work would help others understand the scholarship process better.

Overall, this experience improved my technical skills and reinforced the importance of collaboration and communication in a professional environment.

Application of school coursework: I applied knowledge and skills gained from courses like SEN 101: Introduction to Computing and Applications, where I learnt more about Microsoft Word and the tools it has available to make graphical illustrations such as flowcharts. Course like SEN 207: Software Requirements and Design and SEN 210: Software Engineering Process also helped because I have had to draw flowcharts at some point in those courses.

In conclusion, designing the flowchart for the PTDF In-Country Scholarship Scheme was a valuable experience that allowed me to apply concepts from my coursework effectively. I enhanced my skills in Microsoft Word while reinforcing the importance of clear documentation and structured processes in software design. This task not only contributed to my technical growth but also deepened my understanding of how visual tools can facilitate communication and streamline complex processes in a professional environment.

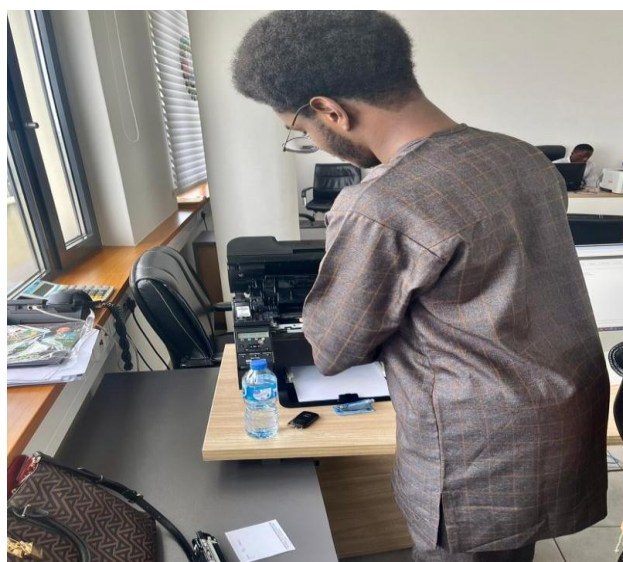
3.3 SUPERVISORY WORKS

I engaged in several tasks during my Industrial Training where I was supervised and/or instructed by my Industry Based supervisor, other employees and even Corp members of the National Youth Service Corps who served at the organization.

Technical Support

I followed NYSC Corp members to various offices around the organization to provide both hardware and software technical assistance under their instruction. I learnt several things in the process and shortly after the commencement of my Industrial training, I was able to, for the most part, provide technical assistance to offices independently. Below is a list of things I did in the aspect of technical support and what I learnt:

1. **Installing and Configuring Office Printers:** I learned how to install and configure office printers across a network, ensuring they were correctly mapped to user devices, and troubleshooting common printer malfunctions. I also learnt how to replace printer cartridges.



2. **Resolving Email Configuration Issues:** I learned how to troubleshoot and resolve issues with email accounts, including incorrect SMTP/IMAP settings and password recovery for office staff.
3. **Diagnosing and Fixing Network Connectivity Problems:** I learned how to troubleshoot network issues, including checking cables, resetting routers, and identifying network outages, boosting your networking skills.
4. **Installing and Updating Software:** I learned how to efficiently install and update software on multiple systems, ensuring compatibility and resolving any installation issues that arose.
5. **Managing User Accounts and Permissions:** I learned how to handle Active Directory, create new user accounts, reset passwords, and assign appropriate permissions to ensure data security and workflow efficiency.
6. **Installing and Configuring VPNs for Remote Workers:** I learned the process of setting up and configuring VPNs to allow remote access to the organization's network securely, understanding encryption and secure tunnelling.

7. Performing Regular System Backups: I learned how to set up and schedule system backups, ensuring critical office data was securely stored and could be recovered in case of hardware failure.
8. Managing Software Licensing: I learned how to track software licenses and ensure compliance with licensing agreements, preventing unauthorized software use and potential legal issues.

Audio Crossover Resolution between Two meeting rooms

Along the course of my Industrial Training, an issue was faced in the meeting rooms, where the audio from an on-going meeting in a meeting room was been played in the sound system of the next empty audio room. The ICT unit was called to resolve this issue and I followed.

The microphone in the active meeting room and the sound system in the adjacent empty room were mistakenly tuned to the same frequency or channel. As a result, the sound from the ongoing meeting was transmitted to both rooms simultaneously.

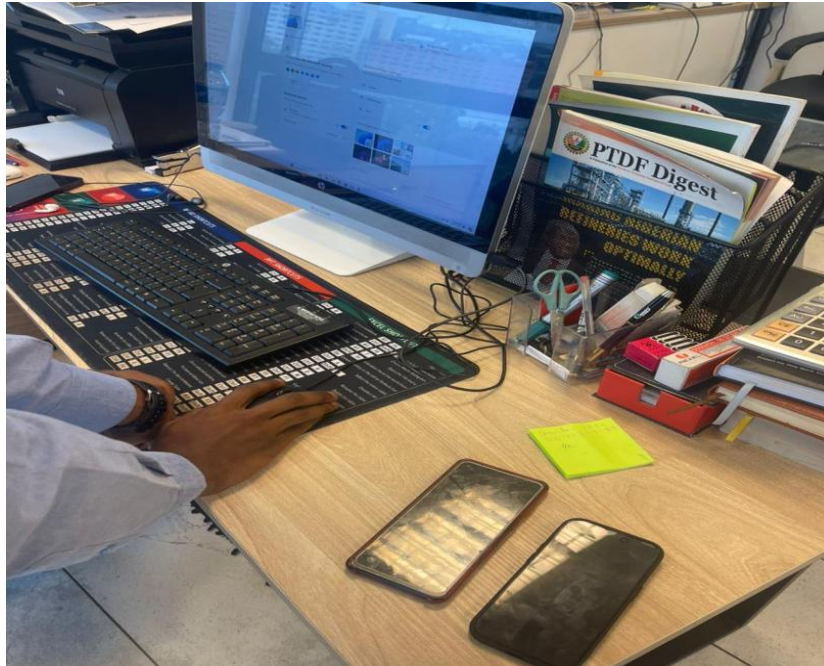
I assisted the ICT team in investigating the issue. We discovered that the microphone and sound system in the two rooms were operating on the same channel. To resolve this, we reconfigured the settings by assigning each room a unique frequency/channel for both the microphone and the sound system. After the adjustments, we tested the setup to ensure the audio was properly isolated in each room.

I helped identify the frequency overlap by inspecting the audio control panel settings. I also supported in testing the system after reconfiguration to ensure the problem was resolved, verifying that the audio was no longer leaking between rooms.

This experience taught me the importance of managing wireless audio systems in shared spaces. I gained a better understanding of frequency/channel assignments for microphones and sound systems and learned how to troubleshoot interference caused by overlapping configurations.

OneDrive File Recovery Assistance and Data Integrity Maintenance

An employee encountered an issue where she believed she had lost all her files, but they were hidden in her OneDrive folder. I assisted in the recovery process, and while my attempts were unsuccessful, our supervisor was ultimately able to retrieve the files.



The employee reported that she could not find her important documents, which led her to believe they were permanently lost. Upon investigation, we discovered that the files were not deleted but were simply hidden in her OneDrive storage. I collaborated with the employee to navigate her OneDrive account, searching for the missing files. After several attempts to locate and restore the files, I escalated the issue to our supervisor, who was able to successfully recover them using advanced recovery techniques.

This experience taught me the importance of understanding cloud storage systems like OneDrive and the various ways files can be hidden or lost within them. I gained insight into file recovery processes and learned how to approach troubleshooting in a methodical manner, emphasizing the value of collaboration and seeking assistance when needed.

Replacement of PC Hard drive

I assisted in replacing the hard drive of a computer that was experiencing motherboard issues, ensuring that the user could continue with their normal operations without significant downtime.

An employee reported that their computer was malfunctioning, leading to significant performance issues. Upon inspection, we determined that the motherboard was faulty, which necessitated the replacement of the hard drive into a similar computer to allow the user to resume their tasks.

I worked alongside my Industry-based supervisor to carefully remove the hard drive from the malfunctioning computer and transferred it to a similar machine. We ensured that all connections were secure and that the operating system and necessary software were properly configured on the new machine.



I assisted in the physical installation of the hard drive, including handling the necessary cables and components. I also helped in verifying that the new setup was functioning correctly, ensuring that the user's files and applications were accessible.

This experience enhanced my understanding of hardware components, particularly the process of diagnosing issues related to hard drives and motherboards. I learned the importance of careful handling during hardware replacements and gained practical skills in assembling and configuring computers for optimal performance.

Network Issue in a Boardroom Meeting

I assisted in resolving a network connectivity issue during a boardroom meeting, which involved connecting LAN cables from the network room to ensure a stable internet connection for the participants. I followed an NYSC Corp member who instructed me on what to unplug and connect in the network room.

During an important meeting, the boardroom experienced a loss of network connectivity, preventing attendees from accessing essential online resources. It was crucial to restore the connection quickly to avoid disruptions.

I accompanied the ICT team to the network room, where we identified the source of the issue. The network room housed the main networking equipment, including routers, switches, and patch panels, which were responsible for managing data traffic throughout the organization. We checked the connections and discovered that a LAN cable had come loose, disrupting the signal to the boardroom.

I assisted in reconnecting the LAN cable and ensured it was securely plugged into both the switch in the network room and the corresponding outlet in the boardroom. After re-establishing the connection, I helped test the network by verifying internet access on the devices in the boardroom.



This experience provided me with valuable insights into how a network room operates and the critical role it plays in maintaining connectivity across the organization. I learned about the various components of a networking setup, including routers and switches, and how to troubleshoot physical network issues. Additionally, I gained hands-on experience in managing LAN connections, reinforcing the importance of secure and reliable network infrastructure for smooth operations in professional settings.

3.4 CONCLUSION

My experience during the Industrial Training at PTDF has been invaluable in developing my technical support skills and understanding of IT infrastructure. By participating in various tasks, such as resolving audio crossover issues, assisting in file recovery, replacing computer hardware, and troubleshooting network problems, I gained practical knowledge that complemented my academic studies. These experiences not only enhanced my technical proficiency but also taught me the importance of teamwork, communication, and problem-solving in a professional environment. As I continue my journey in the field of software engineering, I am confident that the skills and insights I acquired during this training will significantly contribute to my future endeavours in the industry.

4. MY WORKING EXPERIENCE

4.1 INTRODUCTION

During my Industrial Training at PTDF from July 8, 2024 till September 27, 2024, I obtained a great deal of practical experience in the ICT unit. I faced a variety of operational and technical difficulties during this time, which forced me to put my academic knowledge of operating systems, programming, and software engineering to use. Numerous problems, including network management, system configuration, and hardware troubleshooting, were successfully resolved by me. My supervisor in the industry offered direction and assistance for more difficult issues that I was unable to resolve on my own, allowing me to develop in a hands-on, real-world setting.

4.2 EXPERIENCED GAINED

Technical Support

Throughout my SIWES placement at the Petroleum Technology Development Fund (PTDF), I acquired practical experience in offering technical assistance throughout the establishment. As part of my job, I had to help employees with a range of IT concerns, such as fixing hardware and software issues, setting up networks, and configuring systems.

One significant area in which I acquired experience was the reinstallation of operating systems on malfunctioning computers. To reinstall Windows, install drivers, and make sure the systems were up and running, I used bootable flash drives. Along with configuring printers and fixing network connectivity problems, I also learned how to troubleshoot printers that the network was unable to recognize.

I also worked on diagnosing motherboard problems and troubleshooting hardware, including replacing faulty hard drives. This called for meticulous attention to detail, practical experience with computer components, and adherence to safety protocols. With every experience, I improved my ability to solve problems and adjusted to the regular demands of IT support in a work setting.

Software Tools & Skills

During my SIWES placement at PTDF, I developed and enhanced various software skills through hands-on use of tools essential for both technical support and software development. One of the primary tools I worked with was Microsoft Word, which I used for tasks such as reconstructing flowcharts and creating diagrams. My ability to write concise, well-organized documents—which were crucial for internal communication and project planning—improved as a result of this.

Working on an automatic data entry project also gave me experience with Tesseract, an optical character recognition (OCR) tool. I learned how to extract text from images, which involved integrating Tesseract into a web app. This practical use of a software tool allowed me to automate data entry processes, reducing manual input errors.

I also improved my proficiency with troubleshooting tools and operating system utilities. I learned how to use command-line tools, system configuration utilities, and diagnostic software to fix technical problems through reinstalling Windows PCs and configuring office networks. These encounters enhanced not just my technical proficiency but also my aptitude for choosing the appropriate software tools for various tasks.

Networking

I gained useful networking skills during my industrial training at the Petroleum Technology Development Fund (PTDF), which is crucial in today's technologically advanced world. My exposure to practical exercises improved my comprehension of network administration and security.

Important Activities that helped me develop my Network Skills:

1. Configuring and managing networks: Within the company, I helped set up and configure local area networks, or LANs. I was able to learn about different networking protocols and hardware, including switches and routers, through this practical experience.

2. Troubleshooting Network Issues: I assisted in identifying and fixing issues with network connectivity. My analytical and problem-solving skills were enhanced by this task, which entailed evaluating network traffic and locating bottlenecks.

3. Monitoring Network Performance: Using a variety of instruments and programs, I took part in the monitoring of network performance. I learned how to evaluate the health of a network and optimize performance to guarantee smooth operations from this experience.

4. Putting Security Measures in Place: I learned about the procedures and standards for network security. I helped put firewalls and antivirus software into place, which made it clear how crucial it is to keep the network safe from outside attacks.

5. Reporting and Documentation: I gained knowledge about how to carefully record network setups and modifications. This ability is essential for keeping accurate documentation and guaranteeing that team members comprehend the network design.

6. Collaboration with IT Teams: I participated in conversations regarding best practices and current networking developments while collaborating closely with other interns and seasoned IT professionals. Through this partnership, I was able to increase my industry network of connections and broaden my expertise.

I developed a strong foundation in networking principles and practices through these events, which will be very helpful as I progress in my profession.

Team Collaboration

By actively interacting with coworkers and fellow interns during my industrial training at the Petroleum Technology Development Fund (PTDF), I improved my team collaboration abilities. I worked in an atmosphere that valued cooperation and clear communication while I was a member of the ICT unit.

I took part in a variety of projects during my training that called for cooperation amongst various teams. I was able to share thoughts, participate in group discussions, and gain knowledge from the perspectives of others thanks to this experience. Working together on technical support assignments taught me rapidly how to take advantage of each team member's unique strengths in order to solve problems.

I also participated in group problem-solving exercises where we discussed and evaluated problems as a group. This improved my capacity for teamwork and showed me the need of listening and combining many viewpoints in order to accomplish a shared objective.

In addition, I participated in knowledge-sharing programs where we had unofficial training sessions to increase our mutual technical proficiency. These encounters created a welcoming environment that promoted candid communication and respect between team members.

Through these exchanges, I gained a greater appreciation for cooperation and realized how crucial it is to success in any kind of organizational context. I have no doubt that the abilities I developed in teamwork will be useful to me in my future undertakings.

Project Development

Through practical experience and participation in numerous projects, I greatly improved my project development abilities throughout my industrial training at the Petroleum Technology Development Fund (PTDF). I was able to participate in practical projects in the ICT unit that needed careful planning, carrying out, and assessing.

I took part in the creation and execution of multiple IT solutions during my training with the goal of enhancing workplace productivity. My involvement in the development and implementation of software programs gave me the opportunity to put the theoretical information I had learned in the classroom to use in real-world scenarios. Working in a team, I discovered how crucial it was to establish precise goals and project parameters in order to make sure that all parties involved were on the same page.

I learned more about the iterative nature of development work as the projects developed. I took an active part in the feedback sessions where we evaluated our progress and determined where we needed to make improvements. I learned the importance of flexibility and responsiveness in project management from this iterative method, since changes were frequently required to satisfy changing requirements.

I also had to document project outcomes and milestones, which underscored the significance of keeping accurate records for future use. This exercise helped me become more organized and gave me a useful framework for assessing the outcome of projects and pinpointing lessons discovered.

I gained a thorough understanding of project development procedures—from preliminary planning to final implementation—through these experiences. Without a doubt, the abilities I developed during my industrial training will provide me a great starting point for my future project management activities.

Learning beyond coding

It became clear to me throughout my industrial training at the Petroleum Technology Development Fund (PTDF) how important it is to develop skills other than coding. I had thought that I would just study programming, but the ICT course taught me the need of having a wider range of skills.

I took part in a variety of technical support responsibilities that called for strong problem-solving and communication skills. Collaborating with fellow professionals, I acquired the skill of effectively communicating intricate technical ideas to non-technical employees. The importance of interpersonal skills in an IT workplace was brought home by this encounter.

In addition, I worked on projects, which helped me understand the value of documentation and project management concepts. My comprehension of project planning, execution, and evaluation enabled me to recognize the organizational facets of IT work.

In the end, my training showed me that a successful career in the IT sector required a diverse skill set that includes project management, communication, and teamwork in addition to coding. I'll find these insights very helpful as I pursue a career in technology.

4.3 PROBLEMS ENCOUNTERED

Expectation VS Reality

The Petroleum Technology Development Fund (PTDF) provided me with industrial training, where I encountered a significant discrepancy between my aspirations and reality. I had first assumed that the majority of my experience would be in software development and hands-on coding. But I soon discovered that working with different teams and providing technical support was a large part of my job. In addition to learning useful debugging and user assistance skills, I also discovered that being flexible and eager to take on a variety of tasks are necessary for success in the computer industry. I was able to understand the wider breadth of IT job beyond merely coding thanks to this change in viewpoint.

Hardware Issues

I had to solve a number of hardware problems during my industrial training at the Petroleum Technology Development Fund (PTDF), which put my problem-solving abilities to the test. I had to deal with issues like broken printers, sluggish PCs, and peripheral connectivity issues. I had to successfully identify and troubleshoot these difficulties, frequently relying on my knowledge of hardware components and their operations. Even though it was intimidating at first, fixing these difficulties improved my technical knowledge and gave me more assurance that I could solve hardware-related problems in the future.

Unfamiliar Tasks

I had a lot of new jobs during my industrial training that forced me to step outside of my comfort zone. Numerous tasks required me to use techniques and technologies that I had never used before, like particular software programs and network setups. This made me nervous at first, but I saw these difficulties as teaching opportunities. By means of research, teamwork with peers, and practical experience, I progressively gained proficiency in these novel duties. I learned from this experience how important it is to be flexible and have an active approach to learning in the tech sector.

Printer Setup Challenges

During my training, setting up printers came with its own set of difficulties. I frequently ran into problems installing drivers, connecting to the network, and being compatible with various

operating systems. I had to handle every issue I ran into by verifying connections, adjusting settings, and occasionally even referring to technical documentation. Even though it was occasionally unpleasant, overcoming these printer setup difficulties enhanced my technical abilities and broadened my comprehension of how crucial correct configuration is to preserving office productivity.

Flowchart Reconstruction

Rebuilding flowcharts for various processes was one of my industrial training tasks, and it was both a challenge and an opportunity for improvement. It was my responsibility to make sure that the flowcharts appropriately depicted workflows, which called for close attention to detail and a thorough comprehension of the underlying procedures. The particular program utilized for this assignment was new to me at first, but I quickly picked up on how to use it efficiently. My analytical abilities were improved by this experience, which also reaffirmed how crucial visual documentation is to comprehending complicated systems.

Limited Use of Coding Skills

I came across circumstances during my training at PTDF when I anticipated using my coding talents a lot. But I discovered that there weren't many prospects for coding-related work because the majority of my employment was centred on technical support and IT administration. Even though I was initially disappointed, I eventually realized how valuable the variety of talents I was learning was. I learned from this experience that coding is only one facet of a successful IT job and that the computer industry demands a wide range of competencies.

Balancing multiple responsibilities

During my industrial training, juggling many responsibilities proved to be a big struggle. Effective time management and prioritization skills were necessary to balance technical support activities, project development, and documentation. Although the effort felt excessive at times, I eventually learned to divide things into doable chunks and establish reasonable deadlines. This experience helped me become more organized and taught me how important it is to stay flexible and focused in a fast-paced work environment.

Adapting to non-technical roles

I discovered that as my training went on, I had to adjust to non-technical jobs that called for a lot of interpersonal and communication abilities. I was forced to step outside of my comfort zone by interacting with coworkers from different areas and helping them with technical problems. This was a difficult change at first because I had expected a more technical focus. But I quickly saw that these exchanges were necessary to promote teamwork and make sure that technology met the objectives of the company. This experience helped me understand the value of soft skills in the IT sector and equipped me for roles that will require a blend of interpersonal and technical skills in the future.

4.4 RELATED COURSES

My industrial training at the Petroleum Technology Development Fund (PTDF) allowed me to put the knowledge and abilities I acquired from some online courses as well as the classes I taught in school to use. These classes gave me a strong foundation in subjects like networking, software development, and IT management, which gave me the confidence to take on tasks and a deeper comprehension of the underlying technical ideas. I was able to successfully address the challenges I faced and make a valuable contribution to the organization thanks to this combination of academic and self-directed learning.

Google IT Support

I completed the Coursera course on Google IT Support just before I began my industrial training, which gave me a thorough understanding of fundamental IT skills. Important topics covered in the course included system administration, network protocols, hardware and software troubleshooting, and cybersecurity basics. I gained knowledge on how to effectively manage networks, detect and fix typical IT issues, and guarantee system security.

I used this knowledge in a variety of technical support tasks during my SIWES at PTDF. For example, I used the problem-solving strategies and network management ideas I had studied to troubleshoot connectivity problems and set up printers. My knowledge of system administration also came in handy when it came to setting up and installing software on workstations and making sure they were safe and effective. I gained useful skills from the Google IT Support course that greatly improved my performance throughout the training.

SEN 101- Introduction to Computing

I took SEN 101 in my 100 Level, First Semester. It was my first departmental course. I gained knowledge of the foundational ideas of computing, such as operating systems, basic computer architecture, and information processing techniques. I learned about the fundamentals of information technology in this course, including data structures, algorithms, and the functions of hardware and software. I used these fundamental skills while completing my industrial training at PTDF to configure and debug computer systems throughout the workplace. My ability to comprehend the interplay between various components has helped me effectively manage a range of hardware and software problems.

SEN 102- Introduction to Software Engineering

In SEN 102 - Introduction to Software Engineering, I was introduced to the software development lifecycle and the principles of designing high-quality software. This course emphasized the importance of planning, requirements gathering, and testing in creating reliable software systems. I applied these principles during my SIWES while assisting with the development of in-house IT solutions. My understanding of the importance of clear documentation and thorough testing ensured that the software we worked on met the organization's needs and operated smoothly.

SEN 201- Principles of Programming I

My main method of learning programming concepts in SEN 201: Introduction to Programming was with the C language. I learned the principles of programming in this course, including control structures, functions, and memory management. Even though I didn't use programming much during my industrial training at PTDF, my knowledge of programming logic from my time studying C helped me when I experimented with Tesseract's Python-based OCR tool, which is used to extract text from images. Despite the fact that I didn't do a lot of coding during my training, the programming mindset I acquired in this course helped me tackle technical problems more skilfully.

SEN 205- Principles of Operating Systems

I first learned about the fundamentals of operating systems, such as file systems, memory management, and process management, in SEN 205: Principles of Operating Systems. Having this knowledge was really helpful during my SIWES, particularly when I helped with system configuration, operating system reinstallations, and making sure the system ran as efficiently as possible. My understanding of how Windows operating systems functioned allowed me to troubleshoot and effectively resolve a number of system-related issues.

SEN 207- Software Requirements and Design

I learned about the procedures for gathering, recording, and evaluating software requirements in SEN 207: Software Requirements and Design. This helped to guarantee that software solutions satisfy user needs. I also gained knowledge about creating systems that are easy to use and functional. I put this knowledge to use during my training at PTDF by helping to create software design documents and flowcharts for a variety of projects. I recognized the significance of compiling exact requirements and converting them into designs that the technical team could implement.

SEN 210- Software Engineering Process

Software Engineering, SEN 210 I learned about software development frameworks and methodologies from Process, such as iterative, waterfall, and agile models. The importance of process in producing high-quality software on schedule and within budget was stressed in this course. I used process management principles when working on projects at PTDF, especially when attending meetings and keeping track of developments. This experience taught me the value of structured project development and how following a clear process ensures better results.

CYB 201- Fundamentals of Cyber Security

I studied the fundamentals of cybersecurity in CYB 201: securing computer systems and safeguarding sensitive information from threats and unauthorized access. I learned about malware detection, firewalls, encryption, and secure system maintenance best practices in this course. During my SIWES, I put this knowledge to use by helping to install antivirus software and put in place fundamental security measures for office networks. I was able to make sure

that the systems I worked on were secure from potential flaws thanks to my knowledge of cybersecurity.

4.5 PROBLEMS SOLVED

System Reinstallation

One of the office computers was having serious performance problems during my industrial training, necessitating a full system reinstallation. Often, the computer would freeze and become unusable for routine tasks. I used a bootable flash drive to reinstall the operating system in order to fix this, making sure that all required updates and drivers were installed after setup. The system performed much better after the reinstallation was finished, allowing the user to get back to work productively.

Printer Setup

There were some difficulties in setting up printers, particularly when connecting them to several networked computers. There was an instance where a printer's improper network connection resulted in delays for office tasks. I verified that the printer drivers were installed correctly, adjusted the network settings, and verified the connection in order to troubleshoot the problem. The printer was successfully connected, and printing operations were resumed without incident after the network configurations were adjusted and the drivers were installed correctly.

Data Recovery from OneDrive

Vital project documents were among the files that a staff member inadvertently erased from their OneDrive account. In order to make sure nothing was lost forever, I used the OneDrive recycle bin to access the deleted files and restore them. I also gave the employee training on how to frequently backup important files and recover data in the event that they are inadvertently deleted in the future. This method avoided the need for additional recovery tools while saving time and protecting crucial data.

Hardware Replacement

The office computer that was frequently shutting down was probably suffering from a broken hard drive. I diagnosed the problem and installed a new hard drive in place of the malfunctioning one. To prevent data loss, I then copied the contents of the old drive over to the new one. I reinstalled the required software and changed the settings back to how they were before the replacement was finished. As a result, the system could once again run consistently without experiencing frequent shutdowns.

Network Connectivity

The office had a persistent problem with erratic network connectivity, especially with some workstations having trouble keeping a connection. I examined the network cables, made sure all ports were set up correctly, and confirmed the network devices' settings in order to resolve this. In addition, I changed the network settings on the impacted systems and reset the router. Following these actions, the network stabilized and the compromised computers were able to reliably access internal resources and the internet again.

Documentation & Visual Aids

For an internal project, I had to assist in the reconstruction of flowcharts and other visual aids. The team found it challenging to understand the workflow due to the outdated and ambiguous diagrams that were in place. I redesigned the flowcharts using Microsoft Word and additional diagramming tools to make sure they correctly depicted the ongoing procedures. The team's ability to understand complicated workflows was facilitated by these updated visual aids, which enhanced cooperation and communication.

Project Proposal Development

I was in charge of creating proposals for two major projects during my industrial training: a web application for visitor management and an automated data entry system. In order to achieve this, I compiled stakeholder requirements, defined the project's goals, and created documentation that included specifics about the implementation procedure, deadlines, and anticipated results. The management gave my suggestions positive feedback, and they served as the basis for additional project planning and development.

Automated Data Entry Solutions

Creating an automatic data entry web application to reduce office data input tasks was one of my major projects. I suggested automating data entry by extracting text from images using OCR (Optical Character Recognition) technology, such as Tesseract. Even though I didn't put the solution into practice during my training, I did my research on possible tools and set the foundation for creating an automated system that might eventually eliminate the need for human data entry.

Application Security Practices

An essential factor in the projects I worked on was security. I made sure that all necessary security precautions—like setting up user access controls, activating firewalls, and installing antivirus software—were in place while helping with software installations and network configuration. This lessened the possibility of security threats against the office's systems. In my coursework, I also learned how to apply fundamental cybersecurity principles, like making sure that programs were up to date and secure from vulnerabilities.

4.6 CONCLUSION

Having my industrial training at the Petroleum Technology Development Fund (PTDF) was a priceless opportunity for me to put the knowledge I learned in online courses and school courses to use. I gained a variety of skills throughout the training in areas like project development, hardware troubleshooting, system maintenance, and office IT management. In addition, I obtained hands-on experience in project documentation and team collaboration, both of which were essential for completing the tasks that were given to me successfully.

My problems required me to use critical thinking and problem-solving skills, ranging from printer setup and system reinstallation to data recovery and network connectivity problems. The concepts I had learned in courses like SEN 101: Introduction to Computing, SEN 205: Principles of Operating Systems, and the Coursera course on Google IT Support became more solidified as a result of these real-world problems. I improved the organization's operations by effectively restoring systems and resolving network problems thanks to my deeper understanding of computer science.

My approach to software-related tasks and security practices has been greatly influenced by related courses like SEN 102 - Introduction to Software Engineering, SEN 207 - Software Requirements and Design, and CYB 201 - Fundamentals of Cybersecurity. Even though I didn't use them much, my SEN 201 programming skills helped me understand and experiment with Tesseract and other automated data entry tools. In addition, when creating project proposals and participating in office IT projects, I applied the structured procedures I had learned in SEN 210: Software Engineering Process.

I successfully reinstalled operating systems, configured printers, recovered important data from OneDrive, replaced malfunctioning hardware, stabilized network connections, and helped with the creation of technical proposals and documentation, among other issues, during the training. I learned the value of flexibility, critical thinking, and the capacity to pick up and apply new information fast from each of these experiences.

In conclusion, my time at PTDF helped me develop my technical skills even further and exposed me to real-world, practical challenges that broadened my knowledge beyond coding. With both practical experience and a deeper comprehension of how theoretical concepts are applied in professional settings, this experience has equipped me to confidently take on future challenges in the IT and software engineering field.

5. SUMMARY, RECOMMENDATION AND CONCLUSION

5.1 INTRODUCTION

An extensive summary of my Student Industrial Work Experience Scheme (SIWES) at the Petroleum Technology Development Fund (PTDF) can be found in this section. The main tasks, technical know-how, and contributions made during the training session are highlighted in the summary. I will offer suggestions based on my observations and experiences to improve the efficacy of PTDF's upcoming SIWES programs. Ultimately, the conclusion will consider the training's overall importance, how it has impacted my professional development, and how it has equipped me for my future aspirations in the software engineering industry.

5.2 SUMMARY

I worked in the ICT unit of the Petroleum Technology Development Fund (PTDF) during my SIWES training, where I supplied technical support to multiple departments. I acquired practical experience with tasks like installing operating systems, configuring printers, retrieving files from cloud services, and troubleshooting hardware, which included replacing malfunctioning hard drives. In addition, I helped staff members with technical problems and helped install software, particularly ESET on Windows computers. During my training, I learned new technical competencies that were not taught in the classroom, improved my problem-solving abilities, and applied theoretical knowledge from my academic background to real-world IT tasks. My internship helped me close the gap between my academic knowledge and practical experience in the industry by giving me invaluable exposure to real-world IT operations.

5.3 RECOMMENDATION

It is crucial that incoming SIWES students enter the program with an open mind and be prepared to learn outside of the classroom. Students should be ready to work on a range of tasks, even though the expectation may be to concentrate only on coding or technical skills, as this will expand their knowledge and skill set. It's wise to exercise initiative and actively look for chances to work on assignments related to your field of study. Furthermore, as this will help to clarify tasks and foster a deeper understanding of the work environment, students shouldn't be afraid to ask questions or request guidance from their supervisors.

It is equally important to establish relationships with mentors and colleagues, as these individuals can provide insightful information and support throughout the training process. Maintaining flexibility and an open mind to pick up new abilities, even those unrelated to one's academic field, is also essential for both professional and personal development. Ultimately, in order to ensure that they graduate from the program more equipped to handle the demands of the working world, prospective interns should make the most of their experience by critically analysing their everyday tasks and pinpointing areas for development.

5.4 CONCLUSION

I was able to close the gap between theoretical knowledge and practical application thanks to my SIWES experience at the Petroleum Technology Development Fund (PTDF). I received invaluable practical experience in technical support, IT systems, and troubleshooting during the training, which significantly improved my ability to solve problems and adapt. My preparation for future roles in the industry has come from working with professionals in the field and being exposed to real-world IT challenges. All things considered, the program gave me a solid basis for my professional growth and the self-assurance I needed to meet the constantly changing demands of the software engineering industry.

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