

**TECHNICAL REPORT ON
STUDENT INDUSTRIAL WORKING EXPERIENCE
SCHEME (SIWES)**

AT

**TWOTENLABS LTD
001 UNKNOWN, LAGOS, NIGERIA**

BY

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CSC/2025/0456

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ABSTRACT

This technical report documents the Students Industrial Work Experience Scheme carried out at TwotenLabs Ltd, Lagos, Nigeria, as part of the academic requirements for a degree in Computer Science. The SIWES program provided practical exposure to web development and software engineering processes over a three-month period. During the training, the student participated in designing, developing, testing, and maintaining web applications, while using industry-standard tools and technologies such as HTML, CSS, version control systems, databases, and integrated development environments. The experience enhanced both technical competence and professional skills, including teamwork, communication, problem solving, and project management. This report presents a detailed account of the training experience, tools used, challenges encountered, and recommendations for future SIWES students.

CERTIFICATION

This is to certify that **MOHAMMAD JAMIU BALOGUN** with the Matriculation number **CSC/2025/0456** of the Computer Science, University of Lagos has completed his **3 months (12 weeks)** Student Industrial Work Experience Scheme (SIWES) at TwotenLabs Ltd, 45X Innovation Drive, Lagos, Nigeria, from July 1, 2025 to September 30, 2025.

(Institution Supervisor)

Signature/Date

(SIWES Coordinator)

Signature/Date

(Head of Department)

Signature/Date

DEDICATION

I dedicate this report to Almighty God, the source of all knowledge and wisdom, for His unending grace and guidance throughout this endeavor.

I offer this work to my family and friends, whose unwavering love and support have been a constant source of strength and inspiration.

I express my sincere gratitude to Mr. Adewale Johnson for his invaluable mentorship and technical expertise, and to Prof. Funke Adebayo for her academic guidance and encouragement.

ACKNOWLEDGEMENT

I express my sincere gratitude to TwotenLabs Ltd for providing me with the opportunity to participate in their SIWES program. I am particularly indebted to Mr. Adewale Johnson, Lead Software Engineer at TwotenLabs Ltd, for his invaluable guidance and supervision throughout my time there. Finally, I would like to thank the Department of Computer Science at the University of Lagos for facilitating this enriching experience.

TABLE OF CONTENTS

ABSTRACT	I
CERTIFICATION	II
DEDICATION	IV
ACKNOWLEDGEMENT	V
CHAPTER ONE	1
1.0 INTRODUCTION	1
1.1 OVERVIEW OF SIWES	1
1.2 BRIEF HISTORY OF SIWES	1
1.3 OBJECTIVES OF SIWES	2
1.4 SIGNIFICANCE OF SIWES	2
1.5 CHAPTER SUMMARY	3
CHAPTER TWO	4
2.0 GENERAL PRINCIPLES OF MANAGEMENT	4
2.1 HISTORY OF THE ORGANIZATION	4

2.2 ORGANIZATION SET-UP OF THE COMPANY	5
2.3 PROFESSIONAL ETHICS	6
2.4 CHAPTER SUMMARY	7
CHAPTER THREE	8
3.0 EXPERIENCE GAINED	8
3.1 INTRODUCTION	8
3.2 WEB DEVELOPMENT ACTIVITIES UNDERTAKEN	8
3.3 SOFTWARE TOOLS AND TECHNOLOGIES USED	8
3.4 HARDWARE APPLICATIONS USED	11
3.5 SKILLS ACQUIRED DURING THE SIWES PROGRAM	13
3.6 CHAPTER SUMMARY	14
CHAPTER FOUR	15
4.0 CONCLUSION, LIMITATIONS, RECOMMENDATION	15
4.1 CONCLUSION	15
4.2 LIMITATIONS	15
4.3 RECOMMENDATIONS	15

CHAPTER ONE

1.0 INTRODUCTION

1.1 OVERVIEW OF SIWES

The students' industrial work experience scheme (SIWES) is a skill acquisition and training program designed to build, prepare and expose students of universities, polytechnics, and that of the college of education to the real world by providing them with the means to understanding what is going on within the industries that are related to their field of studies before graduation in order to let them make better decisions after graduating and also allowing them to get used to the codes and conducts in industry.

The scheme also focuses on providing the students with the opportunity of familiarizing and exposing themselves to the needed experience in handling equipment, machinery, and tools that are usually not available in their institutions. For the scheme to achieve its goal, it imposes a certain duration at which the program has to hold for the various type of institutions.

But before the establishment of the scheme, there was a great concern among our industrialists that graduates from institutions of higher learning lacked adequate practical background studies preparatory that can enhance the output of industries. Thus, makes most graduates, not being able to cope and even get a better job.

1.2 BRIEF HISTORY OF SIWES

SIWES was established to curb all the shortcomings discussed above in the year 1973 by the industrial training fund (ITF) and it was approved by the federal government in 1974.

During the formative years, the scheme was funded by ITF but as finances become unbearable, ITF withdrew itself from the scheme five years later (1978).

In 1979, the federal government handed over the management and task of the scheme to both the national universities commission NUC and the national board for technical education (NBTE).

But later in late 1984, the federal government reverted the management and implementation of the scheme to ITF while the funding was solely borne by the federal government.

1.3 OBJECTIVES OF SIWES

Generally, the scheme has aimed to achieve the following objectives

- Provides the student with an opportunity to apply their theoretical knowledge in real work situations thereby bridging the gap between theory and Practical.
- Provides an avenue for students in tertiary institutions to acquire industrial skills and experience in their course of study.
- Expose students to work methods and techniques in handling equipment and machinery that may not be available in universities.
- Familiarizing the student for the working conditions they are likely to meet after graduation; and
- Make the transition from the university to the world of work easier and thus enhance students' contacts for later job placement.

1.4 SIGNIFICANCE OF SIWES

The SIWES program is significant as it provides students with practical industrial experience that complements their theoretical knowledge.

1.5 CHAPTER SUMMARY

Chapter one provides an introduction to the Students' Industrial Work Experience Scheme (SIWES), emphasizing its role in bridging the gap between theoretical knowledge and practical application for Computer Science students. It outlines the aims and objectives of SIWES, focusing on the development of essential skills and industry exposure. Furthermore, the chapter underscores the significance of SIWES in enhancing students' employability and preparing them for successful careers in the technology sector.

CHAPTER TWO

2.0 GENERAL PRINCIPLES OF MANAGEMENT

2.1 HISTORY OF THE ORGANIZATION

TwotenLabs Ltd, located at 45 Innovation Drive, Victoria Island, Lagos, Nigeria, is a technology firm established on 12th March 2015. The company focuses on providing comprehensive software development, web solutions, and IT consultancy services to both private and government organizations. Recognizing the growing need for robust and innovative technology solutions, TwotenLabs Ltd was founded with the aim of empowering businesses and government agencies to thrive in the digital age. From its inception, the company has been committed to delivering high-quality services that meet the unique needs of its clients, driving efficiency and fostering growth.

TwotenLabs Ltd specializes in developing custom software tailored to specific business requirements, creating responsive and user-friendly websites that enhance online presence, and providing comprehensive IT support to ensure seamless business operations. These services are strategically designed to support digital transformation initiatives, enabling clients to leverage technology for competitive advantage. The company's vision is to be a leading technology solutions provider in Africa, renowned for innovation, excellence, and the transformative impact of its software and IT services on businesses.

The mission of TwotenLabs Ltd is to deliver innovative, reliable, and efficient technology solutions that empower clients to achieve their digital goals while upholding the highest standards of quality and customer satisfaction. The company's organizational structure is hierarchical, as depicted in the organizational chart, illustrating the reporting relationships within the company, with the CEO at the top. The management structure comprises executive leadership and departmental managers, ensuring effective oversight and coordination. Furthermore, TwotenLabs Ltd adheres to strict professional ethics, emphasizing integrity, confidentiality, and excellence in all aspects of service delivery.

2.2 ORGANIZATION SET-UP OF THE COMPANY

The organizational chart of TwotenLabs Ltd shows a hierarchical structure with the Chief Executive Officer (CEO) at the top, providing overall leadership and strategic direction for the company. Reporting directly to the CEO are the executive management team, including the Chief Technology Officer (CTO), Chief Operating Officer (COO), and Chief Financial Officer (CFO), who oversee their respective functional areas.

The company's management structure consists of departmental managers who supervise specialized teams in Software Development, Web & Digital Solutions, IT Consultancy & Support, Marketing & Sales, Finance & Accounts, and Human Resources & Administration. Each department has a clearly defined reporting line to ensure efficient communication, coordination, and delivery of projects.

The organizational chart illustrates the reporting relationships within the company, highlighting the flow of authority from executive leadership to departmental managers and staff. SIWES interns and other trainees typically report to their assigned departmental supervisors, ensuring guidance, mentorship, and accountability during their placement.

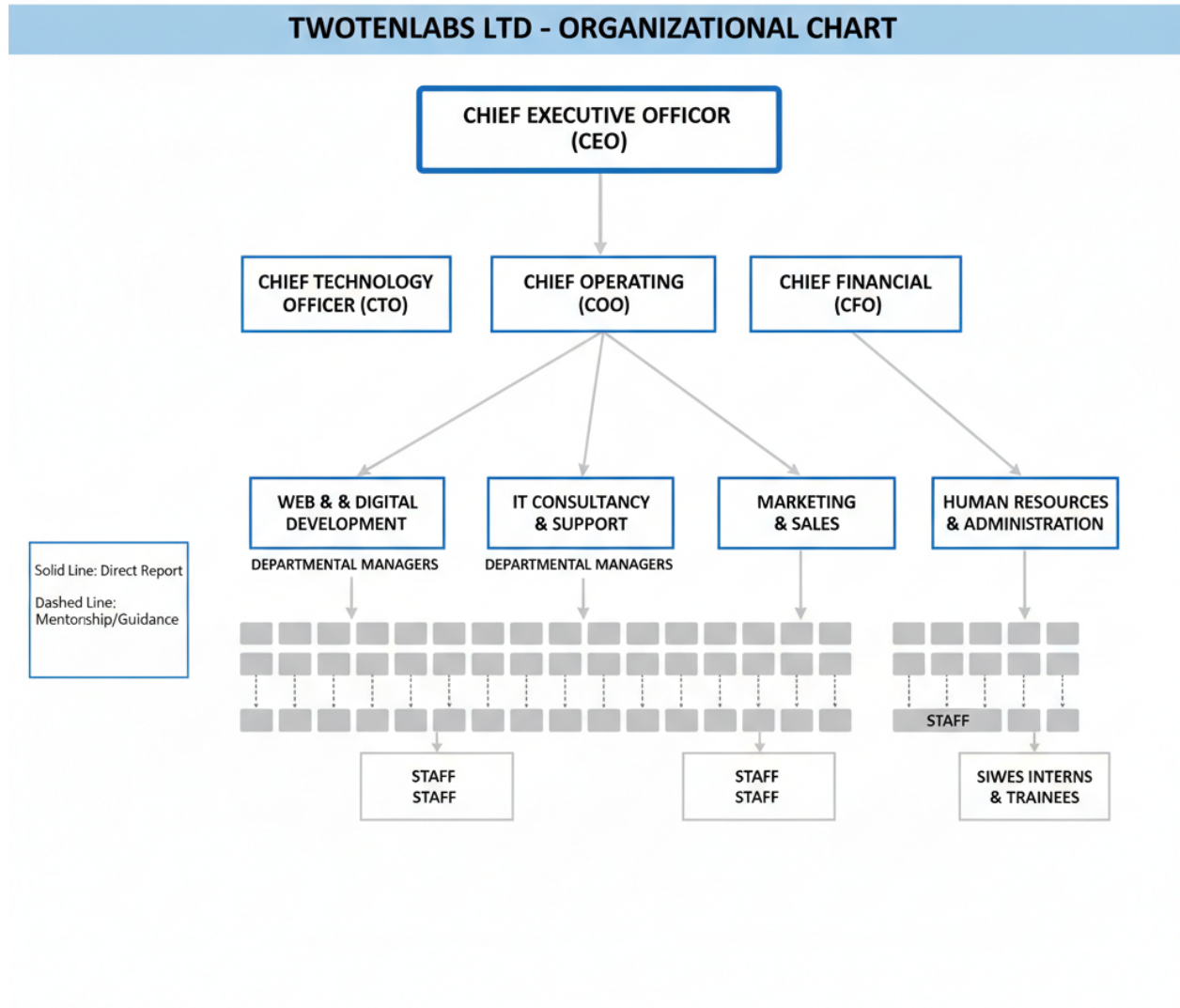


Fig. 1: Organizational Chart

2.3 PROFESSIONAL ETHICS

The company adheres to strict professional ethics including integrity, confidentiality, and excellence in service delivery.

2.4 CHAPTER SUMMARY

Chapter two details the organizational context of TwotenLabs Ltd, providing a comprehensive company profile including its mission, vision, and core business activities. The chapter also explores the company's organizational structure, illustrating the hierarchy and reporting lines relevant to the student's role within the Computer Science department. Finally, it emphasizes the importance of professional ethics within the company and the broader technology industry, highlighting the standards of conduct expected of employees.

CHAPTER THREE

3.0 EXPERIENCE GAINED

3.1 INTRODUCTION

This chapter presents a detailed account of the practical experience gained during the SIWES program at TwotenLabs Ltd. The training focused primarily on web development and related software engineering activities.

3.2 WEB DEVELOPMENT ACTIVITIES UNDERTAKEN

During the SIWES program, the student actively participated in several web development tasks. These activities included:

- Designing web page layouts based on project requirements
- Writing structured HTML code to define page content
- Styling web pages using CSS to enhance visual appearance
- Debugging and correcting errors in existing web applications
- Collaborating with other developers on shared projects
- Testing web applications across different browsers and devices

The training emphasized the importance of clean code, responsiveness, and usability.

3.3 SOFTWARE TOOLS AND TECHNOLOGIES USED

During my SIWES program, I gained proficiency in various software applications relevant to my field:

HTML: HyperText Markup Language was used to structure web pages. It provided the foundation for defining headings, paragraphs, images, links, forms, and other content elements required in web development.

CSS: Cascading Style Sheets were used to style and layout HTML elements. CSS enabled the creation of visually appealing and responsive web pages by controlling colors, fonts, spacing, alignment, and layout structure.

Visual Studio Code: Visual Studio Code (VS Code) is a widely-used, lightweight, and extensible source code editor developed by Microsoft. It provides comprehensive support for numerous programming languages and offers features such as debugging, syntax highlighting, intelligent code completion, snippets, and integrated Git control. A Computer Science student can leverage VS Code for writing, testing, and debugging code across various programming languages encountered in coursework, enhancing their understanding of software development principles. Specific tasks include developing a Python-based data analysis script, building a simple web application using JavaScript, or creating a C++ program for algorithm implementation.

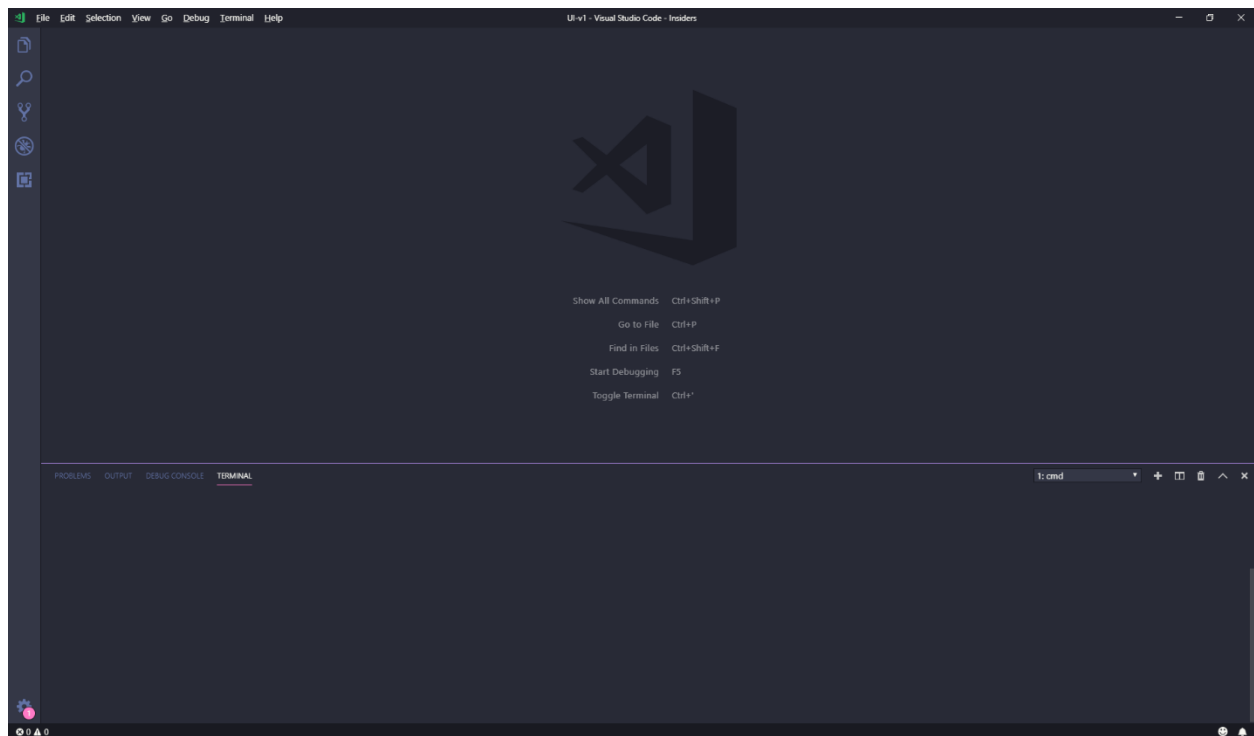


Fig. 2: VSCode IDE

Git & GitHub: Git is a distributed version control system that tracks changes to files, allowing for collaboration and enabling users to revert to previous versions of code. GitHub is a web-based platform that hosts Git repositories, facilitating collaboration and project management for software development teams. A Computer Science student can utilize Git and GitHub to manage personal projects, collaborate with peers on group assignments, and contribute to open-source projects, thereby gaining practical experience in version control and collaborative software development. Specific tasks include managing code changes for a team-based software engineering project, contributing to an open-source library, or tracking the evolution of a personal portfolio website.



Fig. 3: Git and Github

MySQL / PostgreSQL: MySQL and PostgreSQL are robust, open-source relational database management systems (RDBMS) used for storing, organizing, and retrieving data in a structured manner. They provide efficient data management capabilities and support complex queries for a wide range of applications. A Computer Science student can use MySQL or PostgreSQL to design and implement databases for various applications, learning about data modeling, database

design principles, and SQL query optimization. Specific tasks include developing a database schema for an e-commerce application, creating a student management system with appropriate relationships and constraints, or building a backend for a social media platform.

Figma / Adobe XD: Figma and Adobe XD are industry-standard UI/UX design and prototyping tools that allow designers to create interactive mockups, wireframes, and prototypes for web and mobile applications. They facilitate collaboration among designers, developers, and stakeholders throughout the design process. A Computer Science student can use Figma or Adobe XD to create user interfaces for software projects, understanding user-centered design principles and translating design concepts into functional applications. Specific tasks include designing the user interface for a mobile app, creating a prototype for a website redesign, or developing wireframes for a user-friendly software application.

3.4 HARDWARE APPLICATIONS USED

The following hardware equipment was utilized during my SIWES program:

Laptop/Workstation: A primary tool for software development, a workstation facilitates coding, compiling, debugging, and testing applications. As a computer science student, I utilized the workstation to write and execute code for various projects, ranging from basic algorithms to complex software applications. Specifically, I used the Intel i5 processor, 16GB RAM, and SSD storage to compile large codebases and run virtual machines for software testing.

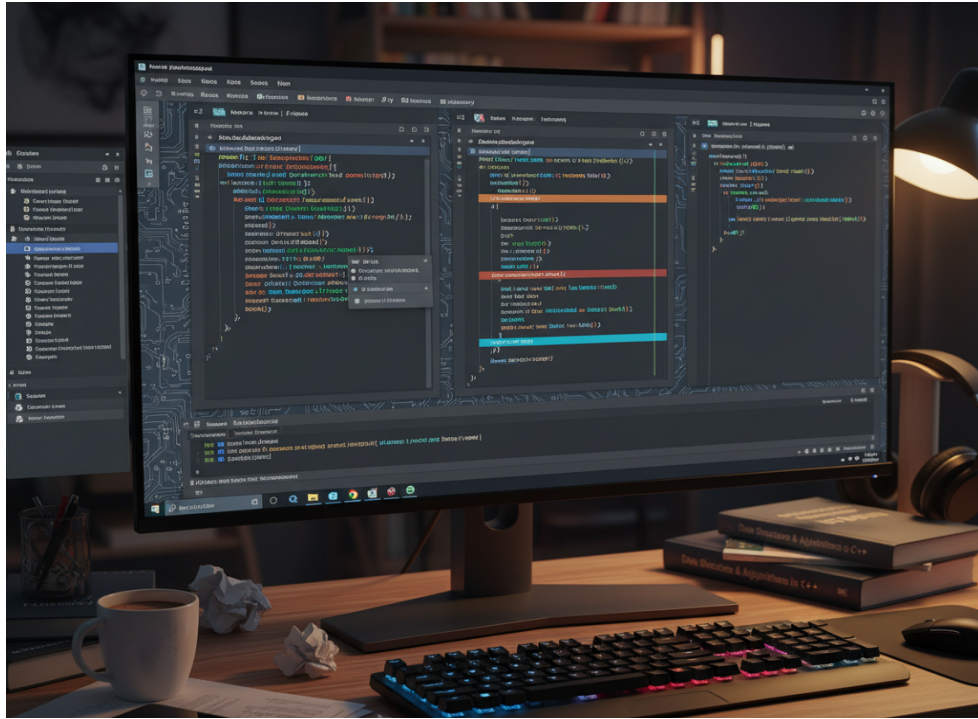


Fig. 4: Desktop computer

Networking Equipment: Routers and switches are essential components of network infrastructure, enabling the creation of networks for testing and simulating real-world environments. During my SIWES program, I used networking equipment to simulate various network topologies for testing web applications under different conditions. This involved configuring routers with specific routing protocols and setting up virtual LANs on switches to isolate network segments for security testing.

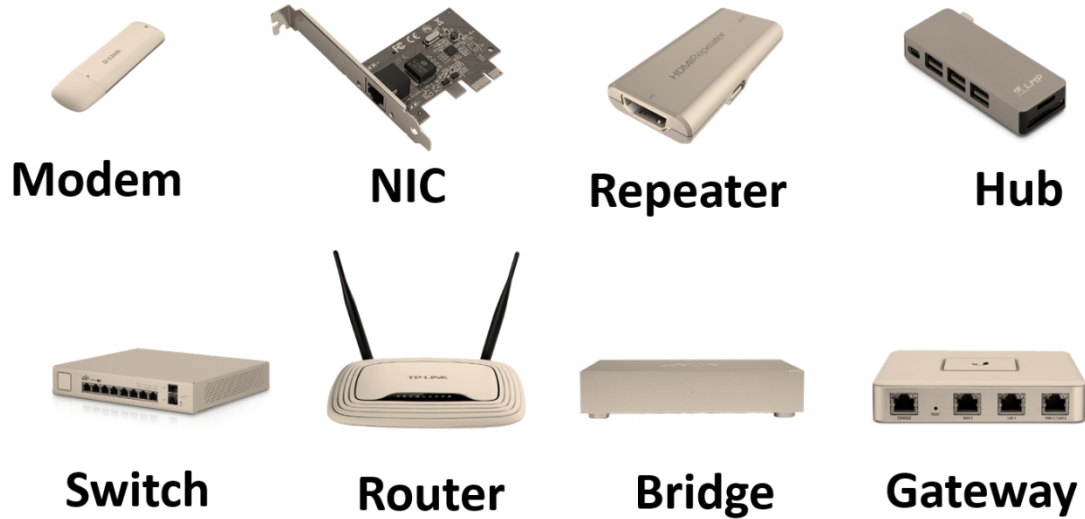


Fig. 5: Networking equipment

Server (Local & Cloud): Servers provide the computational resources necessary for hosting applications, storing data, and running complex operations. I employed both local and cloud-based servers for application deployment, testing scalability, and managing databases during development. This involved deploying web applications on a local server for initial testing and then migrating them to a cloud server to evaluate performance under simulated high-traffic conditions.

3.5 SKILLS ACQUIRED DURING THE SIWES PROGRAM

The SIWES training contributed significantly to skill development in the following areas:

- Frontend web development
- Use of development tools and IDEs
- Version control and collaboration
- Problem solving and debugging
- Professional communication and teamwork

3.6 CHAPTER SUMMARY

This chapter detailed the hands-on experience gained during the SIWES program, including web development tasks, tools used, and skills acquired. It demonstrated the practical benefits of industrial training in web development.

CHAPTER FOUR

4.0 CONCLUSION, LIMITATIONS, RECOMMENDATION

4.1 CONCLUSION

The SIWES program has been a valuable experience that has significantly enhanced my professional development. I aim to apply the knowledge and skills gained during this program in my future career.

4.2 LIMITATIONS

Some challenges encountered during the SIWES program included limited time for mastering advanced technologies, understanding legacy codebases, and managing multiple tasks under strict deadlines.

4.3 RECOMMENDATIONS

It is recommended that future SIWES students acquire basic knowledge of web development before starting industrial training. Organizations should also provide structured mentorship and proper documentation to enhance learning outcomes.

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