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Project Title: Development of a secure online system for students check ins, Logbook management and Wil monitoring

Company: Moepi Publishing

Mentor: M.A Ramapuputla

Date: 15 October 2025 to 25 November 2025

Prepared by:

Codnell Chabalala

221648380

Declaration

1 Codnell Chabalala declare that this these is my original work and that it has not been presented to any other university or institution for similar or any other degree award.

c chabalala _____ 18/11/2025

Signature Date

This is to certify that this research project titled: Development of a Secure Online System for Student Check-Ins, Logbook Management, and WIL Monitoring is written by Codnell Chabalala with the 221648380 under my supervision.

18/11/2025

_____

Signature Date

Acknowledgement

Name	Affiliation
Naledi Nkgodi	
Sandile Sibundeni	

Abstract

This study explains the development of a secure online system that helps students complete important Work Integrated Learning tasks. These tasks include checking in daily, uploading logbooks, and submitting monthly timesheets. The purpose of the study was to solve the problems found in manual WIL processes, such as lost documents, slow feedback, and difficulty tracking student progress. The research problem focused on finding a simple and reliable digital method that allows students, mentors, and administrators to work smoothly and access information in real time.

The system was designed using a clear structure that connects the frontend, backend, and database. The frontend provides an easy-to-use web interface where users can log in, submit files, and view their activity. The backend, built with the Flask framework, handles all system logic and ensures that each user has the correct access based on their role. The database securely stores student records, check-in history, logbooks, and timesheets. To improve safety, the system uses two-factor authentication, secure file uploads, and strict role management. Students use the system to record daily attendance and upload required documents, while mentors, WIL coordinators, and MICTSETA staff view progress, download files, and monitor performance.

The results of the system showed that digital WIL management reduces human error, saves time, and makes information available instantly. It also improves communication because mentors and administrators can quickly see updates and respond when needed. The system creates a more organized way of handling student information and reduces the risk of missing or inaccurate records.

In conclusion, the study proves that a secure online system can greatly support WIL monitoring and document management. The system improves efficiency, strengthens security, and provides a modern solution for managing student activities. Future upgrades may include mobile access, advanced reporting, and integration with other institutional platforms.

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Acronyms and Abbreviations

Abbreviations	Full meaning
MICSETA	Media, Information and Communication Technologies Sector Education and Training Authority
SETA	Sector Education and Training Authority
WIL	Work Integrated Learning
TAM	Technology Acceptance Model

Table 1:Abbreviation

Chapter 1: Introduction

1.1 INTRODUCTION

Scope:

This project is about creating an online system that helps students record their attendance, upload logbooks, and submit timesheets while doing work integrated learning. It also helps mentors, WIL coordinators, and MICTSETA administrators easily track and check student progress online in real time.

Context:

WIL helps students gain real work experience while studying. It allows students to apply academic knowledge in real work environments. However, many institutions still use emails to track student progress, which is slow and often inaccurate. Using technology can solve these problems by making WIL monitoring easier, faster, and more reliable through a secure online system that helps students, mentors, and coordinators work together better.

Importance:

This project is important because it makes tracking student progress in WIL faster, safer, and more reliable. It combines everything into one online system where students, mentors, and WIL co-ordinator can easily manage attendance and reports. The system saves time, keeps data safe, and helps students stay responsible. Overall, it makes WIL programs more organized, secure, and efficient for everyone, addressing a critical gap in the education and training sector.

1.2 PROBLEM STATEMENT

The main problem is the difficulty in accurately tracking student attendance and progress during Work-Integrated Learning (WIL). Many institutions still use paper logbooks and manual registers, which are time-consuming, unreliable, and often contain errors. This makes it hard for mentors, WIL coordinators, and SETA administrators to monitor student activities and provide timely feedback.

This problem is important because ineffective tracking can lead to poor communication, delayed assessments, and a lack of accountability in WIL programs. Developing a secure

online system can help solve this issue by allowing students to record their daily activities digitally while giving administrators real-time access to monitor and evaluate student progress efficiently

1.3 DELIMITATION

This project will not include advanced features such as payroll management, detailed academic grading systems, or the development of a separate mobile application. The main focus will be on creating a functional and secure web-based platform that allows students to record their daily attendance, upload logbooks, and submit timesheets during their WIL placement. Mentors, coordinators, and SETA administrators will use the same platform to monitor student progress, verify attendance, and generate reports. By limiting the project scope to WIL tracking and reporting, the development process remains focused, manageable, and aligned with the core objective of improving efficiency and transparency in student monitoring.

1.4 ASSUMPTIONS

This project assumes that everyone using the system (students, mentors, WIL coordinators, and SETA administrators) will have internet access and a device that can open a web browser. It also assumes that users know how to use basic computer features like logging in, uploading files, and viewing reports. The system expects that institutions already have their own ways to check attendance and assess logbooks, and the system will only help with these processes, not replace them. Lastly, it is assumed that all users will give correct and honest information when using the system.

1.5 RESEARCH OBJECTIVES:

Main objective:

To design and implement a web-based Work-Integrated Learning (WIL) monitoring system that enables students, mentors, WIL coordinators, and SETA administrators to track student activities, attendance, and progress effectively.

Specific Objectives:

Objective 1:

- To develop a secure, web-based platform for students to check in three times daily and record their current activities.

Objective 2:

- To implement an authentication system that ensures only registered students, mentors, WIL coordinators, and SETA administrators can access the system

Objective 3:

- To integrate a database for storing student check-ins, logbook submissions, monthly timesheets, and user profiles.

Objective 4:

- To provide mentors, WIL coordinators, and SETA administrators with an interactive dashboard to view, filter, and monitor student progress.

Objective 5:

- To allow mentors to upload graded and signed logbooks and monitor student daily activities.

Objective 6:

- To enable SETA administrators to download student monthly timesheets for verification and overall progress tracking.

Objective 7:

- To deploy the system in a centralized environment accessible to all users for efficient monitoring and reporting.

1.6 IMPORTANCE OF STUDY

The Check-In System will play a vital role in improving the monitoring and accountability of students participating in Work-Integrated Learning (WIL) programs. It provides an innovative solution to ensure that students are genuinely completing their required daily activities and check-ins.

For SETA administrators, the system offers reliable and verifiable data that can be used for reporting, auditing, and evaluating student progress. For mentors and WIL coordinators, it simplifies the process of tracking student activities, reviewing logbooks, and monitoring performance, reducing administrative workload and improving efficiency. For students, it provides a transparent and convenient way to record daily check-ins, submit logbooks, and upload monthly timesheets, whether they are working on-site or remotely.

From an academic and technical perspective, this project demonstrates the practical application of web development, database integration, authentication mechanisms, and interactive dashboards to solve real-world challenges faced by educational and professional institutions operating under hybrid training models

1.7 CHAPTER OUTLINES

Chapter 1 introduces the background of the study and explains the problem, purpose, and objectives of developing the web-based WIL Check-In System. It also discusses the scope, limitations, and importance of the project.

Chapter 2 provides the theoretical framework of the study and includes a detailed literature review related to WIL monitoring systems, digital check-in tools, and web-based solutions.

Chapter 3 describes the research methodology used in the project. It explains the system development process, tools, technologies, and the data collected during the design and implementation of the system.

Chapter 4 presents the summary, conclusions, and recommendations of the study, showing how the system solves the problem and suggesting improvements for future development.

1.8 SUMMARY

Chapter 1 introduces the development of a web-based Check-In System designed to improve the monitoring of students participating in Work-Integrated Learning (WIL). The chapter explains that many institutions still rely on paper-based and email-driven processes, which are slow, inaccurate, and difficult to manage. The proposed system provides a centralized online platform where students can record attendance, submit logbooks, and upload timesheets, while mentors, WIL coordinators, and SETA administrators can monitor progress in real time.

The problem addressed is the lack of accurate and efficient tools for tracking student activities during WIL, leading to delays, errors, and poor communication. The chapter outlines the scope of the project, which focuses on WIL monitoring only, excluding

advanced features such as payroll and mobile app development. Assumptions include user access to the internet and basic computer skills.

The main objective is to design and implement a secure online system for monitoring WIL activities. Specific objectives include developing check-in features, authentication mechanisms, a database, dashboards, logbook review tools, and administrator reporting functions, as well as deploying the system in a centralized environment.

Finally, the chapter highlights the importance of the study, emphasizing how the system enhances accountability, transparency, and efficiency for all stakeholders involved in WIL. The project also demonstrates practical application of web technologies to solve real-world academic and administrative challenges.

Chapter 2: Literature Review

2.1 INTRODUCTION

This chapter presents a review of existing literature related to attendance monitoring systems, Work-Integrated Learning (WIL), and digital tracking solutions in educational and workplace settings. It explores previous studies, theoretical frameworks, and technological approaches that have been applied to monitor learner or employee activities, track progress, and improve accountability. The chapter also highlights gaps in current methods and identifies the need for a secure, web-based system like the Check-In System to support efficient monitoring of student participation during WIL programs.

2.2 LITERATURE RIVIEW

Attendance monitoring and Work-Integrated Learning (WIL) are essential for ensuring that students gain real workplace experience while staying accountable for their activities. Research shows that accurate tracking of attendance and tasks supports performance evaluation, communication between students and mentors, and overall program effectiveness (Smith & Jones, 2020; Nkosi, 2019). Traditional methods, such as paper logbooks and manual registers, are still widely used, but they are often slow, prone to errors, and difficult to manage. These weaknesses can lead to incomplete records, delayed feedback, and miscommunication between students, mentors, and administrators.

Digital solutions have been developed to address these limitations. Online check-in systems and mobile apps allow real-time tracking of student activities, reduce administrative workload, and provide instant access to performance data (Patel & Kumar, 2021). Interactive dashboards make it easier for mentors and coordinators to monitor trends, identify students who need support, and generate reports efficiently. Despite these advantages, some studies note challenges, such as the need for reliable internet, potential security risks, and difficulties for users unfamiliar with technology (Adeyemi, 2020). This indicates that while digital systems improve efficiency, careful design and user training are necessary to ensure success.

The literature also highlights the importance of theoretical frameworks in designing effective monitoring systems. Activity Theory explains how digital tools can mediate learning tasks and

improve accountability by linking student activities with reporting mechanisms. Systems Theory emphasizes that the success of a monitoring system depends on the interaction of its components, including students, mentors, administrators, and technology. The Technology Acceptance Model (TAM) shows that ease of use and perceived usefulness are key factors influencing whether users adopt new digital systems. By combining these insights, it becomes clear that a secure, web-based WIL Check-In System can address gaps in traditional methods while supporting accountability, monitoring, and data-driven decision-making.

In summary, the reviewed literature demonstrates that traditional attendance tracking methods are inefficient and prone to errors, while digital systems offer significant improvements in efficiency, accuracy, and real-time monitoring. However, challenges such as accessibility, security, and user adoption must be considered. These findings support the need for a secure, user-friendly Check-In System that integrates attendance tracking, logbook submission, and timesheet management into a single platform, improving WIL monitoring and program effectiveness.

2.2 Conceptual framework of the project

The conceptual framework of the Check-In System outlines the key concepts, definitions, and ideas that form the foundation of the study. It provides a structured understanding of how the system functions and its role in monitoring Work-Integrated Learning (WIL) activities.

Key Concepts:

1. **Work-Integrated Learning (WIL):** WIL refers to educational programs that combine academic learning with practical workplace experience. It allows students to apply theoretical knowledge in real work environments while gaining professional skills. In this study, WIL is the central activity being monitored through student check-ins, logbook submissions, and timesheets.
2. **Attendance Monitoring:** This concept involves tracking the presence and activities of students in a structured manner. Traditional attendance methods, such as paper registers, are prone to errors and inefficiencies. The Check-In System applies digital attendance monitoring to ensure accuracy, accountability, and ease of verification.

3. **Web-Based System:** A web-based system is an online platform accessible through browsers, enabling users to perform tasks remotely. The Check-In System leverages this technology to allow students, mentors, WIL coordinators, and SETA administrators to access the system anytime and anywhere.
4. **Authentication and Security:** Authentication ensures that only authorized users can access the system. This is critical to protect sensitive data, maintain integrity of student records, and prevent unauthorized access.
5. **Dashboard and Reporting:** Interactive dashboards and reporting features allow mentors, WIL coordinators, and SETA administrators to monitor student check-ins, view logbooks, and generate monthly timesheets. This concept supports informed decision-making and performance evaluation.

By linking these concepts, the conceptual framework provides a clear understanding of how the Check-In System operates to achieve its objectives of improving accountability, monitoring student activities, and supporting the efficient management of WIL programs.

2.3 THEORETICAL FRAMEWORK

The theoretical framework of the Moepi Check-In System project provides the underlying principles and theories that guide the design, implementation, and evaluation of the system. It links the problem of monitoring student activities during Work-Integrated Learning (WIL) to established theories in education, technology adoption, and workplace learning.

1.ActivityTheory:

Activity Theory emphasizes the relationship between individuals, their tasks, and the tools they use to achieve objectives. In the context of this study, students are the subjects, WIL tasks are the activities, and the Check-In System serves as the mediating tool that enables effective monitoring and reporting. This theory supports the idea that digital tools can enhance productivity, accountability, and learning outcomes in workplace-based training.

2.Systems Theory:

Systems Theory focuses on understanding how different components of a system interact to achieve a common goal. The Check-In System can be viewed as a system comprising students, mentors, WIL coordinators, SETA administrators, and a web-based platform. Each component interacts to collect, process, and report data on student activities. This framework helps explain

how the system integrates various elements to improve monitoring, data accuracy, and decision-making.

3. Technology Acceptance Model (TAM):

The Technology Acceptance Model explains how users come to accept and use technology based on perceived usefulness and ease of use. Applying TAM to the Check-In System highlights the importance of designing an intuitive, user-friendly interface that encourages students, mentors, and administrators to actively engage with the platform, thereby ensuring reliable attendance tracking and performance monitoring.

By anchoring the study on these theories, the project establishes a solid foundation for understanding how a web-based monitoring system can improve WIL management, enhance accountability, and support both educational and administrative objectives.

2.4 SUMMARY

The literature shows that tracking student activities during Work-Integrated Learning (WIL) is essential for accountability, performance evaluation, and effective program management. Traditional methods, such as paper logbooks and manual registers, are commonly used but are slow, prone to errors, and difficult to manage. Digital solutions, including online check-in systems and dashboards, improve efficiency, provide real-time monitoring, and reduce administrative workload. However, challenges such as internet access, data security, and user adoption must be addressed for these systems to be effective.

These findings highlight the significance of developing a secure, web-based Check-In System. By integrating attendance tracking, logbook submissions, and timesheet management into one platform, the system addresses the gaps identified in the literature. It directly responds to the problem of unreliable and time-consuming monitoring methods by providing a user-friendly and efficient solution for students, mentors, WIL coordinators, and SETA administrators.

Chapter 3: Project Methodology

3.1 INTRODUCTION

The methodology chapter outlines how the web-based Check-In System was designed, developed, and implemented to improve monitoring of student activities during Work-Integrated Learning (WIL). It connects the findings from the literature review to practical steps taken in the project. The chapter explains the research approach, system design methods, data collection and analysis procedures, and testing strategies used to ensure the system is functional, reliable, and secure.

3.2 Research Design

The research design for the Moepi Check-In System project follows a descriptive and developmental approach, focusing on the design, development, and implementation of a web-based platform for monitoring student activities during Work-Integrated Learning (WIL) programs. This design serves as a blueprint for the project, guiding the steps required to achieve the system's objectives, from requirement analysis to deployment.

A descriptive approach is adopted to understand the challenges faced by students, mentors, WIL coordinators, and SETA administrators in tracking attendance, logging activities, and submitting reports. This involves studying existing attendance and monitoring methods to identify gaps and requirements for the new system.

The developmental aspect focuses on the actual creation of the web-based system. It involves system analysis, design, coding, database integration, testing, and deployment. This approach ensures that the system is tailored to the specific needs of WIL programs, providing secure login, multiple daily check-ins, logbook submission, interactive dashboards, and report generation.

By combining descriptive and developmental research designs, the project provides both a theoretical understanding of the problem and a practical solution through the implementation of a functional monitoring system.

3.3 Method of Data Analysis

The method of data analysis for the Moepi Check-In System involves collecting, organizing, and examining data on student attendance, check-ins, logbook submissions, and monthly timesheets. Data is first prepared by collecting records from students, mentors, WIL coordinators, and SETA administrators and ensuring their accuracy and completeness.

The data is then tabulated in the system's database, organized by students, dates, activities, and user roles. This structure allows the system to generate summaries such as total daily check-ins, logbook submission status, and monthly timesheet reports.

Finally, analysis is carried out using the system's interactive dashboards and reporting tools. Patterns, trends, and irregularities in student activities are identified to help mentors, WIL coordinators, and SETA administrators evaluate performance, verify compliance with WIL requirements, and make informed decisions regarding supervision and training.

3.4 Presentation and Analysis of Data

The data collected through the Moepi Check-In System is presented using interactive dashboards, tables, and charts, providing a comprehensive view of student attendance, daily check-ins, logbook submissions, and monthly timesheets.

On the admin dashboard, key statistics such as total check-ins, earliest check-in, most and least active students, and total absent days are displayed in cards for quick reference. Bar charts visualize monthly check-ins and check-ins by employee, highlighting trends and patterns in student activity. A pie chart provides an overview of attendance, showing the proportion of present versus absent students. The "All Employee Check-In History" table lists detailed records, including employee names, check-in dates, times, and comments. Pagination ensures efficient navigation through large datasets, displaying 10 records per page.

On the student dashboard, each student can view their daily check-in slots, record comments about current activities, and upload monthly timesheets. Cards indicate whether a check-in has been completed, while a table summarizes recent check-ins with timestamps and comments. This presentation allows students to track their own participation and maintain accountability.

The analysis of this data enables mentors, WIL coordinators, and SETA administrators to:

- Identify students who are consistently absent or late,
- Verify student activities and logbook submissions,
- Monitor daily and monthly performance trends, and
- Make informed decisions regarding supervision, feedback, and compliance with WIL requirements.

By combining visual dashboards**,** tables**,** and real-time updates, the system improves transparency, accountability, and efficiency in monitoring student progress during Work-Integrated Learning programs.

The system has a registration page where students, mentors, WIL coordinators, and administrators can create accounts by entering their name, email, password, user type, and organization. Dropdown menus make sure users select the correct roles and organizations.

Only users with email addresses ending in @tekete.co.za, @mictseta.org.za, or @vut.ac.za are allowed to register.

After registering, users can use the system for daily check-ins, logbook submissions, and monthly timesheet uploads. The registration page is simple, secure, and easy to use

3.5 System Design and Architecture

3.5.1 Use case Diagram

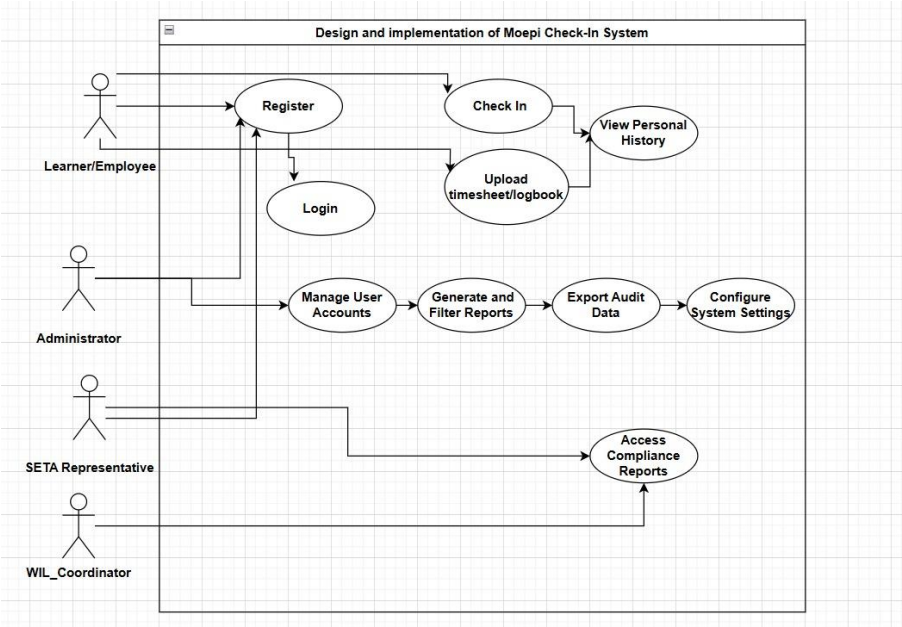

Figure 1:use case diagram

3.5.2 Entity Relationship Diagram (ERD)

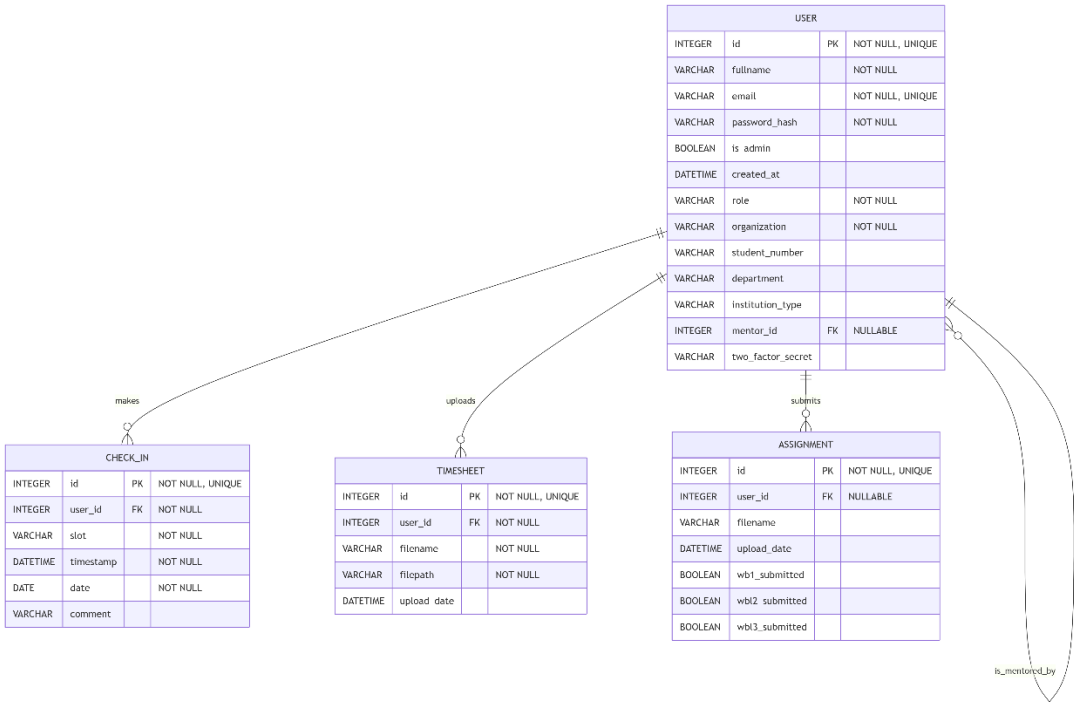

Figure 2:ERD

3.5.3 Flow chart

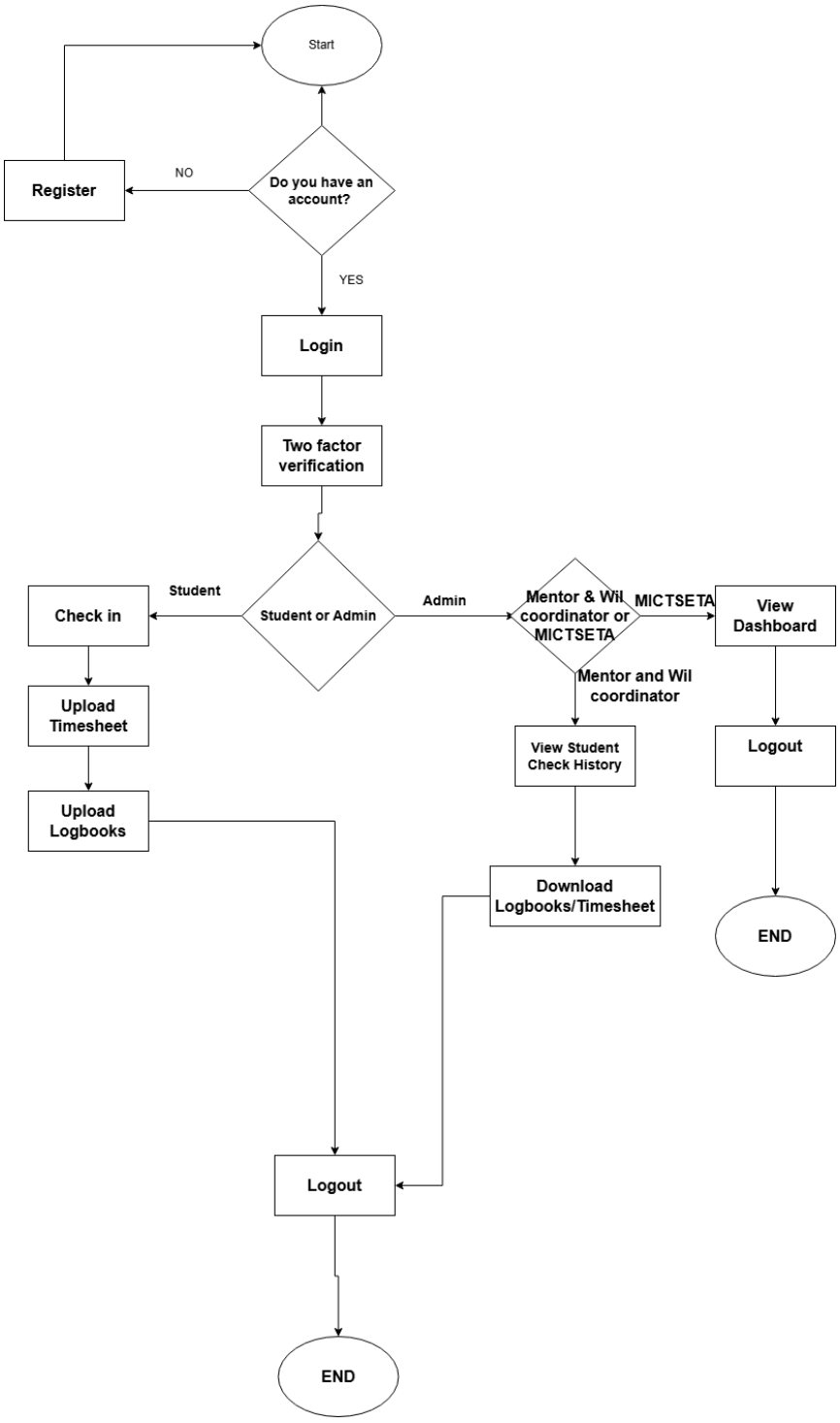

Figure 3:Flow chart

3.6 Technologies Used

The Moepi Check-In System was developed as a web-based application using modern and widely adopted technologies to ensure efficiency, reliability, and scalability. The backend of the system was implemented in Python, utilizing the Flask framework to handle server-side logic,

routing, and database interactions. Flask provides a lightweight yet robust environment for developing web applications and enables seamless integration with frontend components.

The frontend was built using HTML, CSS, and JavaScript, providing a responsive and interactive interface for students, mentors, WIL coordinators, and SETA administrators. HTML structures the content, CSS defines the styling and layout, and JavaScript enables dynamic elements such as charts, tables, filtering, and pagination.

Data exchange between the frontend and backend is facilitated using JSON, allowing efficient transfer of check-in records, logbooks, and timesheet information. All records, including attendance data, student comments, logbooks, and monthly timesheets, are stored securely in a MySQL relational database, ensuring data integrity and easy retrieval for reporting purposes.

The combination of these technologies ensures that the Moepi Check-In System is secure, user-friendly, and capable of supporting hybrid Work-Integrated Learning programs, providing administrators and mentors with real-time insights into student progress and participation.

3.7 FRONTEND Screenshots

3.7.1 Registration Page

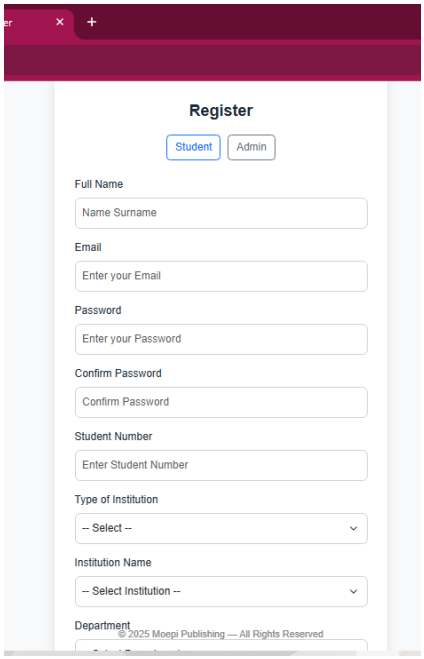

Figure 4: Registration page

3.7.2 Login Page

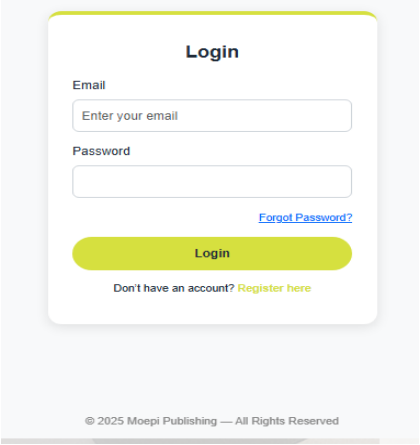

Figure 5:Login page

3.7.3 Student Dashboard

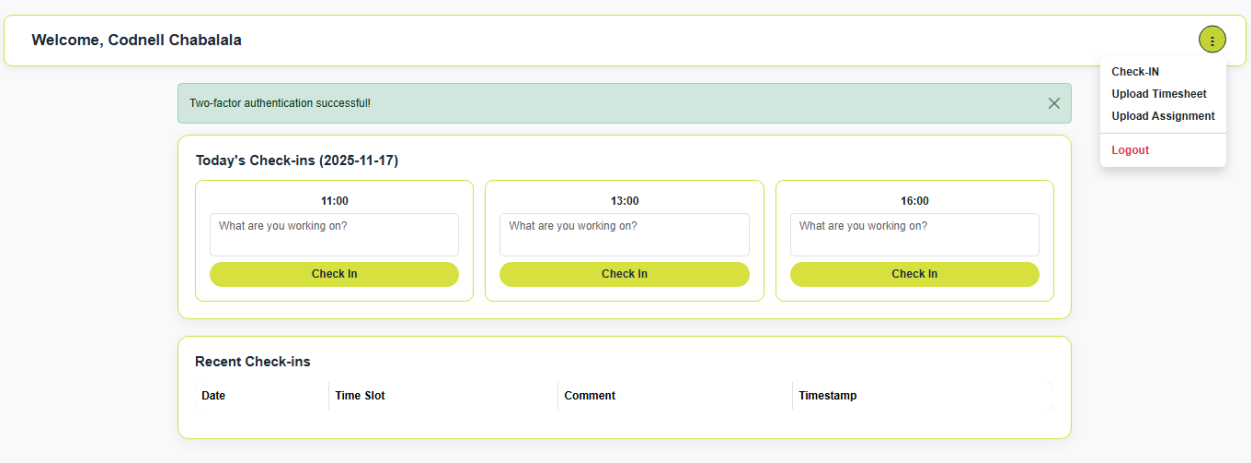

Figure 6:Student Dashboard

3.7.4 MICTSETA Dashboard

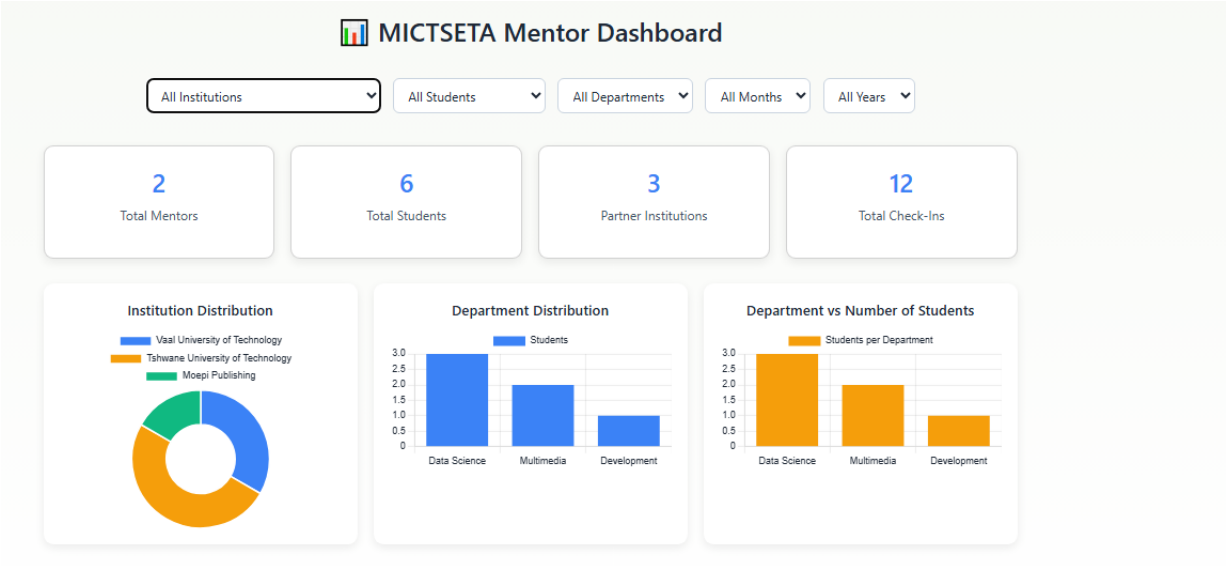

Figure 7: mictseta dashboard

3.7.5 WIL Coordinator Dashboard

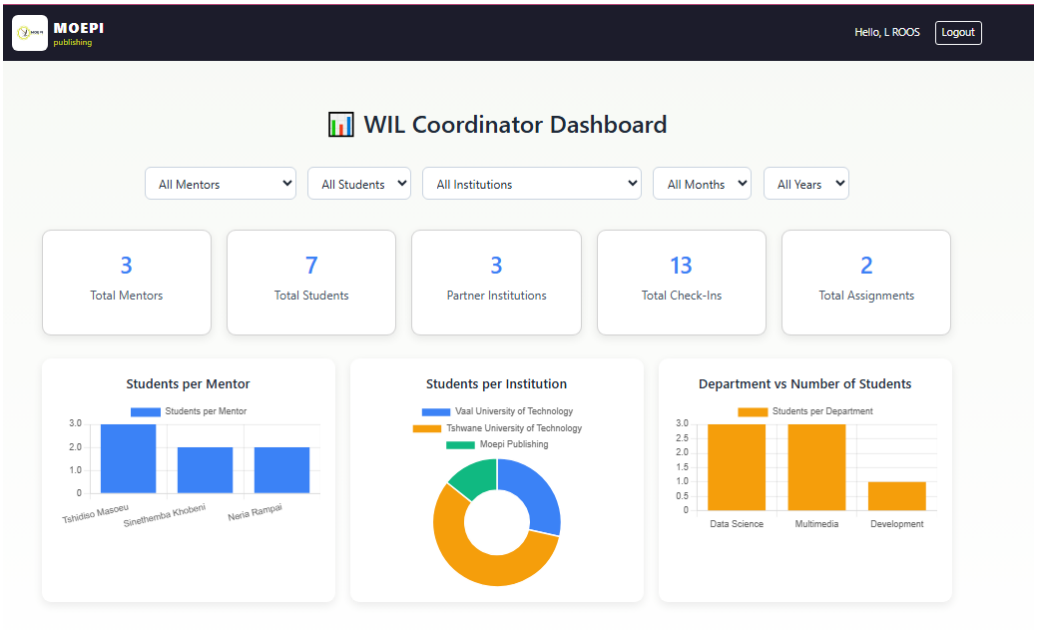

Figure 8:Wil co-ordinator dashboard

3.7.7 Mentor Dashboard

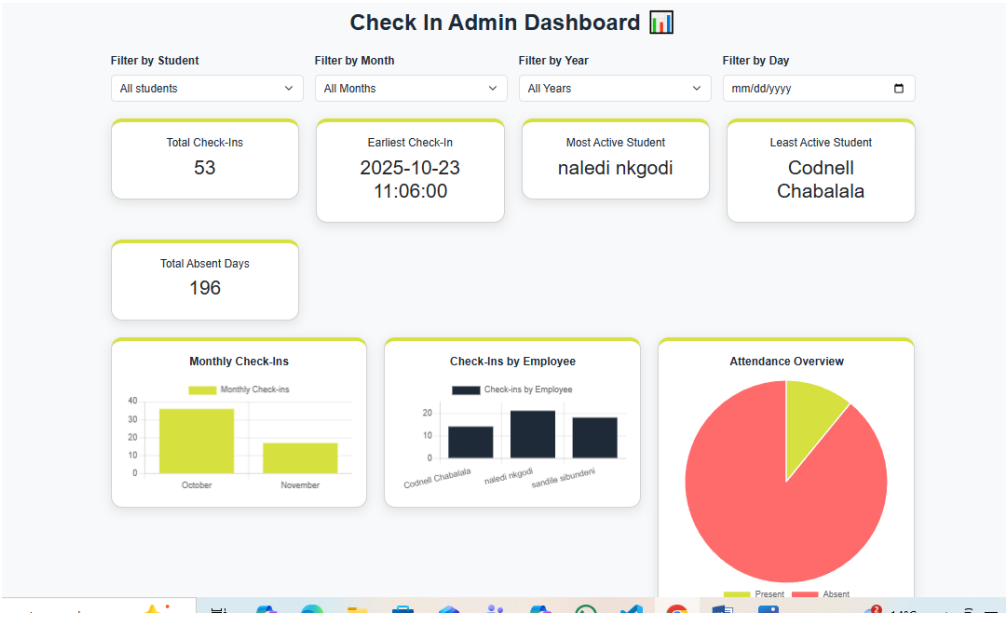

Figure 9:mentor dashboard

3.7.6 Two factor verification page

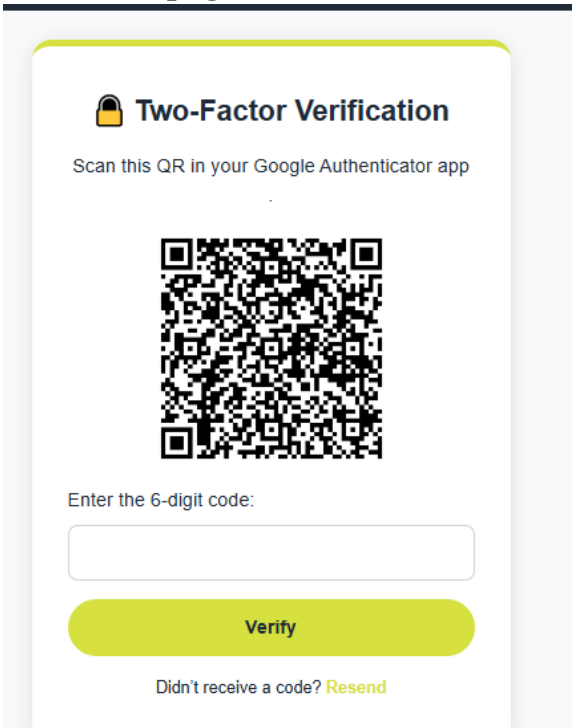

Figure 10:2FA Verification page

3.7.7 Password Reset Page

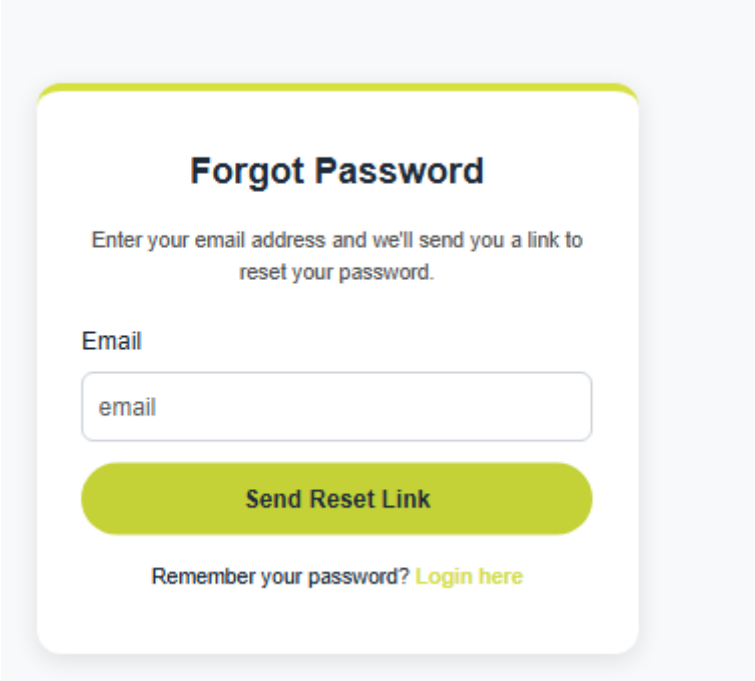

Figure 11:Password Reset Page

3.8 BACKEND Screenshots

3.8.1 FOLDER

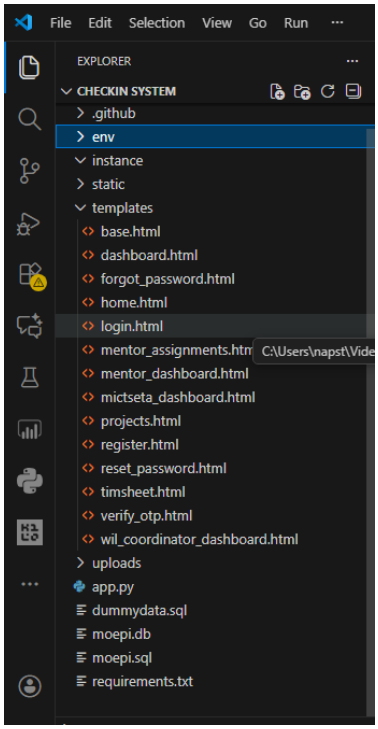

Figure 12:Check in system folder

3.8.2 PYTHON

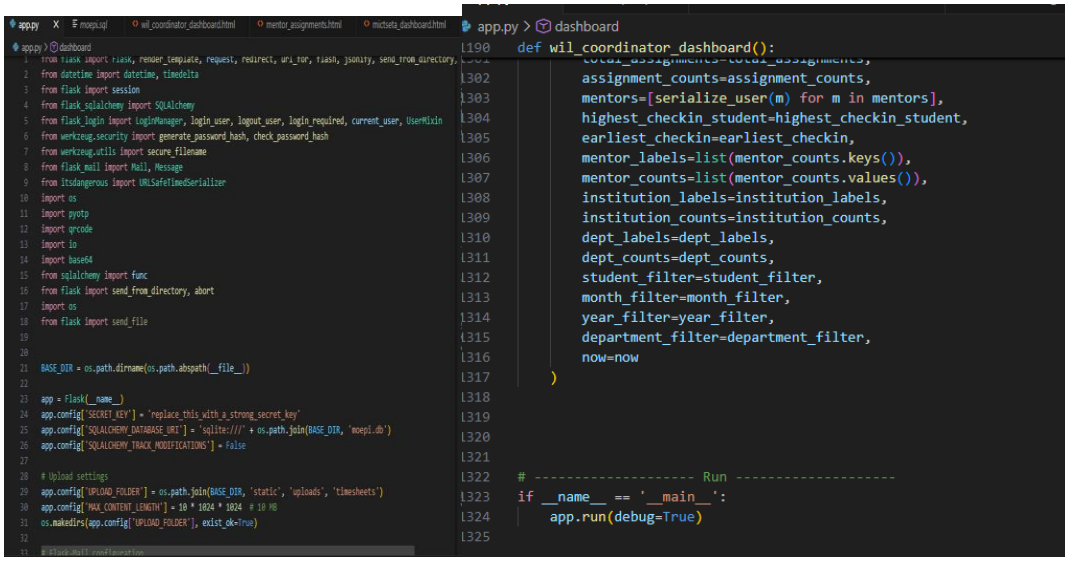

Figure 13:Python file

3.8.3Database

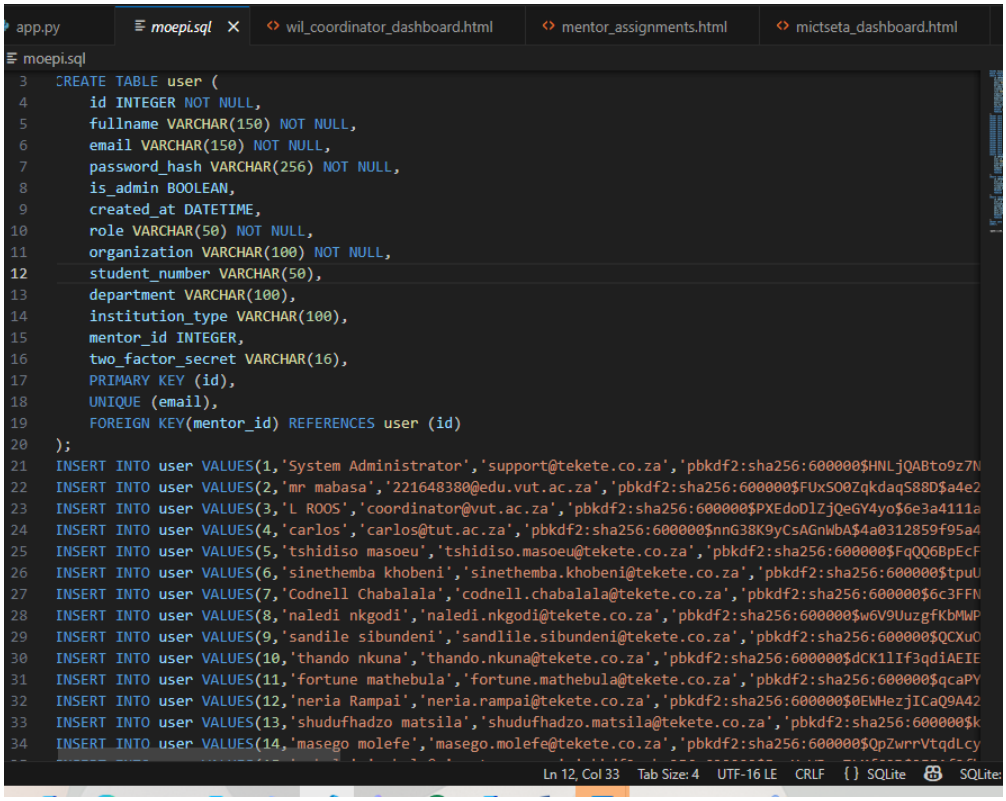

Figure 14:Database

3.8.4 Requirements

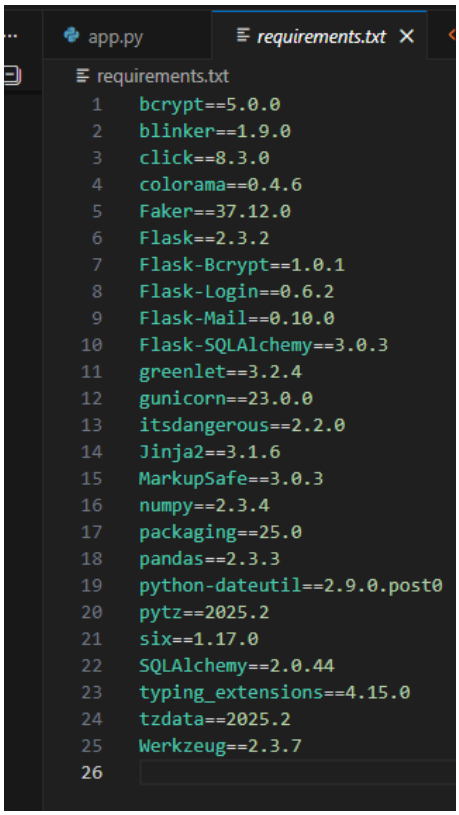

Figure 15:Requirements

3.9 Summary

This chapter presented the methodology used in the development of the Moepi Check-In System. It explained the research design, data collection and analysis methods, system development processes, and the technologies used to create the platform. The chapter also illustrated how data is presented through dashboards and tables, supporting efficient monitoring of WIL student activities. The next chapter will present conclusion and recommendations.

Chapter 4: Findings

4.1 Introduction

This chapter presents the findings of the WIL Check-In System project. It highlights what has been achieved through the development and implementation of the system, evaluates its impact, and provides recommendations for improving WIL monitoring. The chapter also identifies potential areas for further research.

4.2 Summary of main findings

The project successfully developed a secure, web-based Check-In System for monitoring students during Work-Integrated Learning (WIL) programs. The system allows students to record daily attendance, upload logbooks, and submit monthly timesheets digitally. Mentors, WIL coordinators, and SETA administrators can monitor these activities in real time through interactive dashboards.

The system improves data accuracy and security by storing all records in a MySQL database, reducing errors and the risk of lost information. Its user-friendly interface ensures that all users, whether on-site or remote, can easily navigate and use the platform without difficulty. This makes daily monitoring and reporting more efficient than traditional manual methods.

Overall, the Check-In System enhances efficiency, accountability, and reliability in WIL programs. It reduces administrative workload, ensures accurate records, and helps institutions make informed decisions regarding student progress, supervision, and compliance. By integrating digital attendance, logbook submission, and timesheet management into one platform, the system improves the overall quality of workplace learning.

4.3 Recommendations

Based on the findings of this study, it is recommended that the Check-In System be fully adopted across all departments to replace traditional paper-based attendance tracking and manual reporting. To ensure proper use and maximize the benefits of the system, training sessions should be provided for students, mentors, and administrators. Regular system updates and maintenance are also important to maintain security, efficiency, and scalability as more users access the platform. Additionally, a feedback mechanism should be established to allow users to suggest

improvements and report any issues they encounter. Finally, the institution should consider integrating the Check-In System with other existing software to create a unified platform for student management, further enhancing efficiency and ease of monitoring.

4.4. Further Research

- Developing a mobile application version of the Check-In System for easier access on smartphones and tablets.
- Integrating advanced analytics to identify trends in student performance and predict areas of improvement.
- Investigating AI-based verification of logbooks and timesheets to automate evaluation.
- Exploring the integration of biometric attendance systems to enhance security and accuracy.
- Studying the impact of real-time notifications and alerts on student engagement and compliance during WIL programs.

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VAAL UNIVERSITY OF TECHNOLOGY

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APPENDIX A

RUBRIC FOR FINAL ASSESSMENT OF GA 12

GRADUATE ATTRIBUTE 12: WORKPLACE PRACTICES
SUBJECT: WORKPLACE-BASED LEARNING

STUDENT NAME: Codnell Chabalala

STUDENT NO.: 221648380

DATE: ……..

GRADUATE ATTRIBUTE 12: WORKPLACE PRACTICES

Learning outcome: Demonstrate an understanding of workplace practices to solve engineering problems consistent with academic learning achieved. • The balance of investigation and experiment should be appropriate to the discipline. **An investigation or experimental study** should be typical of those in which the graduate would participate in an employment situation shortly after graduation.	
Where is the outcome assessed?	In the final Workplace project report.
How is this outcome assessed?	Students must submit a report, validated by a mentor, demonstrating their capability to: • Utilize computer engineering principles to develop, construct, and configure systems within the workplace-based learning environment. • Employ computer engineering principles for the design or enhancement of existing systems. • Implement computer engineering principles to innovate or improve processes within the workplace. • Certainly! Here are additional points that build upon the initial requirements, showcasing a comprehensive application of computer engineering principles in a workplace-based learning setting: • Analyse and evaluate the performance of implemented systems, employing computer engineering principles to identify optimization opportunities and implement effective solutions. • Apply critical thinking and problem-solving skills to troubleshoot and resolve technical issues that arise during the development or operation of systems.

	• Collaborate effectively with cross-functional teams, using computer engineering principles to communicate technical concepts clearly and contribute to interdisciplinary projects. • Demonstrate an understanding of industry standards and regulatory requirements relevant to computer engineering, ensuring that all projects comply with these guidelines. • Employ computer engineering principles to assess the security implications of systems and processes, implementing robust security measures and protocols to protect organizational data. • Integrate sustainability considerations into system design and development, applying computer engineering principles to promote environmental responsibility and resource efficiency.
What is satisfactory performance?	The student must comply with conducting a proper investigation and experiment to uncover the required information. The student should reflect the following in the report: • define the scope, methodology, and literature review, • analyse the results, draw conclusions, provide possible solutions (outcome if experimental), • report on the work in writing, keeping in mind to use appropriate methods/tools. • Include a portion of data/data analysis in the literature review. This graduate attribute is assessed by a comprehensive four (4) level rubric where a minimum set of outcomes must be met to prove competency. The GA assessment is categorised as follow: • ***Poor*** - student does not comply at all,

	• ***Borderline*** - may comply with corrections, • ***Competent*** - min to moderate compliance is met, • ***exceed expectation*** – max compliance is met. All objectives must be achieved with at least the foundational level of adherence as specified by the assessment criteria. This involves a detailed evaluation of the necessity for the project. Computer engineering students must comprehend the critical importance of experimental and project-based work, demonstrating proficiency in planning and executing technology-driven projects. In particular, they are expected to: 1. Choose the most appropriate hardware and software tools for conducting research or experimental projects, showcasing the ability to accurately select and utilize the necessary technology with minimal mistakes. 2. Independently set up and conduct experiments or simulations using specified hardware and software, requiring negligible assistance. They demonstrate a significant degree of autonomy in navigating and employing complex computational tools and environments. 3. Analyse, interpret, and draw meaningful insights from data collected during the project. Perform precise calculations or analyses with minor discrepancies. 4. They should also be capable of comparing experimental data with theoretical concepts, acknowledging any discrepancies, measurement inaccuracies, and variables that could influence the outcomes.

	5. Formulate conclusions based on a thorough analysis of all gathered data. The conclusions should be detailed in a coherent paragraph that encapsulates the project's findings, exhibits a logical flow, and suggests avenues for future research or development. 6. Compile the project's objectives, methodology, and findings into a well-organized technical report. Although the report might omit a few negligible details, it should largely reflect the attributes of a comprehensive and professional document, including being properly bound.
What is the consequence of unsatisfactory performance?	Achieving this attribute is a critical requirement for successfully completing Workplace Based Learning. Non-compliance will result in failure, regardless of whether the aggregate score from all summative assessments is a pass. Students who do not satisfy one or more of the criteria will be afforded a second opportunity, within specified deadlines, to fulfil all requirements for the Graduate Attribute (GA). Should a student fail to meet all criteria after this second chance, they will not pass the module, and their record will indicate 'Fail to meet GA 12'.

RUBRICS FOR PROJECT REPORT

Note: 10-40% (1-4), 50-70% (5-7), 80-100% = 8-10,

ECSA Graduate Attribute	**Candidate's Surname & Initials**	**Not comply**	**Satisfactory to Excellent**				
		(1-4)	(5-7)	(8-10)		Multiplying factor	Max mark
		Demonstrates a minimal level of understanding of the problem, literature review with references (<5), and ability to use data for analysis and interpretation.	Demonstrates an adequate level of understanding of the problem, literature review with references (at least 5), and ability to use data for analysis and interpretation.	Demonstrates a high level of understanding of the problem, literature review with references (>5), and ability to use data for analysis and interpretation.			
	Chapter 1 How does the candidate logically lead the reader toward the problem to be investigated? Is the problem clearly stated or defined giving the research a central structure?					X1.75	
	Chapter 2 Does the candidate					X1.75	

	demonstrate a clear understanding of the issues that are at stake? Does he/she know what others have written about this area and field of investigation? (Literature review) Does he/she know what sort of conclusions they have come to? Does he/she know what methods they have used to come to those conclusions?						
	SUB-TOTAL MARKS	Pass …….. or Fail……. (tick)					**/35**

	Chapter 3 Does the candidate give a very detailed account of the exact experimental conditions, components, and equipment used to do the experimental research? Would others be able to follow the account and get the same results? Is the application of the process (method) of research to this research project convincingly described, i.e. does the candidate					X1.5	

	understand and effectively apply the method?						
	Chapter 4 Are all the results obtained interpreted by the candidate? How accurate are the results? How much effort was made to validate the accuracy of the results? |Does an objective reading of these results lead to potential answers to the					X1.5	

	research question?						
	Chapter 4 Does the candidate deal with the implications of the interpretation of the results? Does the candidate demonstrate what the bearings are that the results have on the field of inquiry? Does the candidate suggest further topics of research for other researchers?					X1.5	

	Logical Development: Does the candidate demonstrate that he/she has control of the "rhetoric of research" or the process of making an argument and convincing the reader of the results? Does the structure of the document support this?						
	SUB-TOTAL MARKS	Pass …….. or Fail……. (tick)					**/45**

	Is the report structured and presented in a quality consistent with best-practice scholarly journal articles?					X1.2	
	Is the presentation clear and professionally laid out? Are the slides and use of media well executed?					X0.8	
	SUB-TOTAL MARKS	Pass …….. or Fail……. (tick)					**/20**
OVERALL TOTAL **Note: Any failure of a GA caps the overall mark to 45% if the overall mark is equal to or greater than 50%**							**/100**
		NAME	SIGNATURE	DATE			

GA12 Compliant	**YES**				
		WIL CO-ORDINATOR			
	NO	**MODERATOR**			