

STAFF ATTENDANCE AND PERFORMANCE TRACKING SYSTEM

CASE STUDY: AIRCOM TECHNOLOGIES LIMITED

By

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A PROJECT REPORT SUBMITTED TO THE DEPARTMENT OF COMPUTER STUDIES
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REQUIREMENTS FOR THE AWARD OF BACHELOR OF
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BUSITEMA UNIVERSITY.

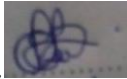
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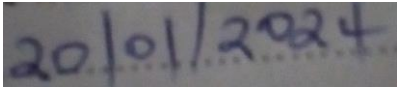
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January 2024.

DECLARATION

I OKWANGA KFNNEDY declare this work titled “Staff attendance and performance tracking system a case study of Aircom Technologies limited (ATL) is mine and has never been submitted in any university or any other higher institution of learning for any award or any other purpose.

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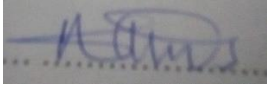
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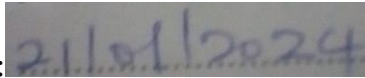
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APPROVAL

This is to acknowledge that this project report is for Okwanga Kennedy, Registration number BU/UP/2020/1102. It was done under my supervision and was completed successfully.

Signed... 

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DEDICATION

I dedicate this work to my parents who doubled to be my sponsors Mr. Okwanga Peter and Mrs. Nalubanga Esther Boona, the manager of Aircom Technologies Ltd, Mr. Ochieng Philip

My supervisor Dr. Angole Richard for having guided me throughout my research. My elder brother Mr. Eeget Herbert Okwanga and his wife Achieng Sandra who also supported me financially, my aunt Miss Amusugut Topista who gave out most of the necessary requirements to have me financially supported to undertake this course. My friend Mr. Baisuka Billy Nicholas, who helped me acquire requirements that helped me develop a working system. On the other hand, I also dedicate this book to all beloved ones who prayed for me during my course.

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First and foremost, I would like to express my sincere thanks to Almighty God for the gift of life, wisdom and understanding he gave me, a reason of my existence

I wish to also thank all the academic staff of Busitema University Faculty of Science and Education for all the guidance offered to me during the research development.

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May GOD reward them abundantly

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LIST OF ABBREVIATIONS AND ACRONYMS

TMS	Staff attendance and performance tracking system
ATL	Aircom Company Limited
ERD	Entity Relationship Diagram
DFD	Data Flow Diagram SM Shop Management
IT	Information Technology
CS	Computer Science
OS	Operating System
HTML	Hyper Text Markup Language
CSS	Cascading Style Sheets
PHP	Hypertext Preprocessor
SQL	Structured Query Language
MySQL	My Structured Query Language
XAMPP	Cross-Platform Apache server, MySQL,
PHP,	Perl Programming language.

ABSTRACT

Staff attendance and performance tracking system is a web system by which any company or organization can manage tasks among its employees. Staff attendance and performance tracking system is an automation system, which is used to store the Work tasks information of a company and attendance of employees.

In a company where the hierarchy of employees spans over thousand managing the work with them is a difficult job. And in an environment where number of jobs is done simultaneously picking the right person for the job is also difficult task, as you are not aware of their availability. This application is designed for such an environment where the work is divided into group of employees and during the course of division the employees are selected to be part of the work in hand.

This software being a web based is easily accessible from any corner of the company as every machine is part of a LAN network. The reason why it is made as a web application rather than a window-based application is for the same reason. The complete task is divided into two types of users. Administrator (Highest authority), employee (working group Community). The activities underlying these sections are as per the company policies.

This application provides most of the features required to manage the tasks developed in a firm. This volume presents the manner in which the software was developed and how the various problems are tackled at the different levels to convince the user.

CHAPTER ONE

INTRODUCTION

1.1: Background of the Study

Staff attendance and performance tracking system was envisioned as the improved version of Integrated Public Alert & Warning System (iPAWS) [Hallord Bismack, 1923] and by manual management of tasks carried out in companies, a need for modern way of managing tasks was thought of and this arose the ideas of the staff attendance and performance tracking system consisting of two major subsystems: a backend named Task Manager that is used by supervisors and an administrator as well as a frontend accessed by eventual end users, namely seniors. Communication between Task Manager and Task Assistant with the server is accomplished using Web APIs (MDN, 2018). The system has ensured that there is efficient management of tasks performed within the company, while capturing the start and end time of the task, employee to whom the task is assigned to, time taken as well as capturing daily attendance of the employees in the company.

No visibility on task progress. Administering tasks becomes a challenge for any team without transparency in task progress. Lack of structured performance reports: To know about the efficiency and productivity of your team, getting a complete overview of each team member's performance is necessary. Without the proper insight, no one can possibly know about the task's progress. With the help of a performance management system, you can track the performance of your team members. The Staff Attendance and Performance Tracking System is one such system that tracks employee working hours, login time, departures, breaks, and time off in order to prevent employee time theft.

With the availability of online technology, system ensures there is efficient management of tasks performed within the company, while capturing the start and end time of the task, employee to whom the task is assigned to, time taken as well as capturing daily attendance of the employees in the company.

1.2: Problem Statement

Currently all work task requests of the company are handled manually over the telephone and others physically. The staff attendance and performance tracking system automates the process by streamlining the handling of the work tasks requests thereby reducing the manual intervention. It is also time consuming, "Better three hours too soon than a minute too late." ~ William Shakespeare (The Merchant of Venice 1596/97). furthermore, high costs are incurred while assigning and managing tasks, poor follow up of the tasks manually, absenteeism and impersonation of employees at place of work due to faulty access points that are currently being used.

Therefore, this system ensures there is efficient management of tasks performed within the company, while capturing the start and end time of the task, employee to whom the task is assigned to, time taken as well as capturing daily attendance of the employees in the company.

1.3: Main Objective:

The major objective of this project is developing a staff attendance and performance tracking system.

1.4: Specific Objectives:

- I) To establish requirements for developing a staff attendance and performance tracking system.
- II). To design a staff attendance and performance tracking system.
- III) To implement a staff attendance and performance tracking system for aircom technologies Limited.
- IV) To test and validate a staff attendance and performance tracking system for aircom technologies Limited.

1.5 Significance of the Study

This project has enabled Administrators to keep track and monitor tasks performed at Aircom company as well as track attendance of the employees.

Justifications for a Staff Attendance and Performance Tracking System:

- i) Improved Efficiency and Productivity:

Accurate time tracking: Tracks actual work hours, preventing under- or over-payment.

Optimized scheduling: Schedules employees based on workload and availability, ensuring efficient staffing.

Reduced time theft: Minimizes unauthorized breaks and early departures, increasing productivity.

Improved project management: Monitors progress towards goals and identifies areas for improvement.

ii) Enhanced Transparency and Accountability:

Real-time visibility: Provides managers with instant access to attendance and performance data.

Clear communication: Eliminates confusion about work schedules and expectations.

Reduced conflict: Provides objective evidence for performance reviews and disciplinary actions.

Improved employee engagement: Empowers employees by providing feedback and recognition.

iii) Data-driven Decision Making:

Identifies trends: Spot patterns in attendance and performance to improve overall effectiveness.

Supports strategic planning: Makes informed decisions about staffing, resource allocation, and future growth.

Demonstrates ROI: Provides quantitative data to measure the system's impact on business goals.

Improves compliance: Ensures adherence to labor laws and regulations.

iv) Cost Savings:

Reduces payroll errors: Eliminates manual timekeeping and data entry mistakes.

Optimizes labor costs: Identifies areas where staffing can be adjusted.

Improves employee retention: Contributes to a positive work environment, reducing turnover costs.

Reduces administrative costs: Streamlines processes and saves time for managers and HR personnel.

v) Enhanced Employee Well-being:

Promotes work-life balance: Monitors overtime and encourages breaks.

Identifies potential burnout: Early detection of performance issues allows for intervention.

Supports professional development: Provides data-driven feedback for improving skills.

Creates a fairer work environment: Ensures everyone is held accountable and rewarded for their performance.

Overall, a staff attendance and performance tracking system can provide significant benefits to businesses and employees alike. By improving efficiency, transparency, and data-driven decision making, these systems can lead to cost savings, enhanced employee well-being, and a more successful organization.

1.6 Scope of the Study

The system has two levels of access including Administrators and Employees.

The Administrator is responsible for assigning tasks by filling a form with their information like the Task title, Task description, start time and end time, the employee to whom the task is assigned to. Administrator is also responsible in monitoring tasks and maintaining the website.

The Employee can view and manage their tasks as well as update the status of the task performed. This is after they log into their respective accounts their personal information as well as changing of their password on the first login.

Henceforth to develop the system, a server-side scripting language which is PHP as the front end was used. CSS was also be needed for styling purposes and HTML for creating forms. In addition, MySQL for the backend.

1.6.1 Geographical scope

The study was carried out at Aircom Technologies limited that is located along Lady Lize Mulooki Road in Jinja district.

1.6.3 Time Scope

The entire development process took three (3) months to come up with the fully working system.

CHAPTER TWO

LITERATURE REVIEW

2.1: Introduction

This chapter explains the working of the system and goes ahead to describe the current system in line with the previous developed systems. It presents state of Art and state of practice in staff attendance and performance tracking. It described the following sections:

2.2: ATTENDANCE

Attendance is the act or state of being present. It is often used to refer to the number of people who are present at a particular event or activity. Attendance can be taken for a variety of reasons, such as to ensure that everyone who is expected to be present is actually there, to track participation, or to collect data for research purposes. (GIMME, 1998)

2.3: PERFORMANCE

Performance in an Information Technology (IT) company is a multifaceted concept that encompasses various dimensions, ranging from individual employee productivity to the overall efficiency and effectiveness of the organization. (PUULE JUDETTE, 2013) In the ever-evolving landscape of technology, where innovation is the driving force, the success of an IT company hinges on its ability to consistently deliver high-quality products and services. This essay explores the key aspects of performance in an IT company, shedding light on the factors that contribute to success and sustainability.

At the heart of an IT company's success lies the performance of its individual employees. In this dynamic field, technical skills, adaptability, and a commitment to continuous learning are paramount. Employees must stay abreast of the latest technological trends, as well as possess problem-solving abilities to address complex challenges. Regular training programs, skill

development initiatives, and a culture that encourages innovation are crucial in fostering individual performance. (HEYNES, 2012)

In the collaborative environment of an IT company, effective teamwork is essential. Cross-functional teams often work on projects that require diverse skill sets, and success depends on seamless collaboration. Communication, both within and between teams, is a linchpin for effective project management. Establishing a culture that promotes open communication, knowledge sharing, and mutual respect enhances team dynamics, fostering an environment where collective performance thrives (LINCOLN, 2011)

Performance in an IT company is closely tied to project management and delivery. Efficient project management methodologies, such as Agile or Scrum, are commonly employed to ensure that projects are completed within scope, on time, and within budget. Metrics such as sprint velocity, burn-down charts, and cycle time help teams monitor their performance and make data-driven decisions to improve efficiency.

The fast-paced nature of the IT industry demands a commitment to continuous improvement. Regular retrospectives, post-project reviews, and feedback loops facilitate a culture of learning and adaptation. IT companies that prioritize continuous improvement are better positioned to navigate technological shifts, stay competitive, and provide innovative solutions to clients.

Performance in an IT company is a multifaceted and interconnected tapestry of individual excellence, teamwork, effective project management, quality assurance, and a commitment to continuous improvement. Success in this dynamic industry requires a balance between technical prowess, collaborative spirit, and a relentless pursuit of excellence. As technology continues to evolve, IT companies must remain agile, adaptable, and focused on cultivating a culture that fosters high performance at every level of the organization. (BRAVIN SRUFF, 2000)

2.4: TRACKING

Tracking is the process of following the movement or progress of something or someone. It can be used for a variety of purposes. (HERONES, 2011)

In the dynamic landscape of Information Technology (IT) companies, the need for effective tracking mechanisms has become increasingly crucial. Tracking refers to the systematic monitoring of various aspects within an organization, such as employee performance, project

progress, and resource utilization. While tracking can enhance efficiency and decision-making, it also raises concerns about privacy and ethical considerations

One of the primary reasons IT companies implement tracking systems is to enhance efficiency and productivity. Tracking tools can provide real-time insights into employee activities, project timelines, and resource allocation. (ROVINS, 2000) For instance, project management tools offer a transparent view of project progress, enabling teams to identify bottlenecks and allocate resources strategically. Employee tracking can help in evaluating performance, identifying areas for improvement, and recognizing top performers.

Tracking also plays a vital role in maintaining quality standards and ensuring compliance with industry regulations. By monitoring the development process and adherence to coding standards, IT companies can identify potential issues early on, reducing the likelihood of errors in the final product. Tracking tools also assist in documenting and ensuring compliance with data protection laws, cybersecurity protocols, and other regulatory requirements.

While tracking offers numerous benefits, it is essential to address the privacy concerns associated with monitoring employee activities. Striking a balance between transparency and individual privacy is crucial. Implementing clear policies, obtaining informed consent, and anonymizing data whenever possible are essential steps in mitigating privacy concerns. Ensuring that tracking is used solely for business purposes and not as a means of micromanagement fosters a healthy work environment.

Ethical Considerations: In the ever-evolving landscape of Information Technology (IT), companies strive to maximize efficiency and productivity. One critical aspect of achieving this goal is the effective management of staff attendance and performance. This essay delves into the design and development of a comprehensive Staff Attendance and Performance Tracking System, shedding light on how such a system can revolutionize operations within an IT company.

The design phase of a Staff Attendance and Performance Tracking System involves meticulous planning and consideration of various factors. The system needs to be user-friendly, scalable, and adaptable to the unique requirements of the company. A well-thought-out user interface ensures that employees can easily log their attendance and access performance-related information.

Additionally, the system should integrate seamlessly with existing HR and project management tools to create a cohesive ecosystem.

Key features of the system may include real-time attendance tracking, leave management, and performance evaluation modules. By incorporating these features, the system becomes a comprehensive solution addressing both human resource management and project performance assessment needs.

The development phase involves translating the design blueprint into a functional system. A multidisciplinary team, comprising software developers, database administrators, and user experience designers, collaborates to bring the system to life.

The heart of the system lies in its database, where employee information, attendance records, and performance metrics are stored securely. The use of robust security protocols ensures the confidentiality and integrity of sensitive data. The development team also focuses on creating responsive and intuitive interfaces for both desktop and mobile platforms, facilitating accessibility for all employees.

The integration of advanced technologies, such as biometric authentication or RFID (Radio-Frequency Identification), adds an extra layer of security and accuracy to the attendance tracking process. Additionally, the system can leverage data analytics and machine learning algorithms to provide valuable insights into employee performance trends and areas for improvement.

(RODEN, 2001)

The implementation of a Staff Attendance and Performance Tracking System in an IT company yields numerous benefits. Firstly, it eliminates manual attendance tracking, reducing errors and ensuring accurate payroll processing. Automation of leave management streamlines HR processes, allowing staff and management to focus on more strategic tasks.

Moreover, the system provides real-time visibility into employee performance, enabling timely feedback and recognition. By tracking project milestones and individual contributions, managers can identify high-performing individuals and areas that may require additional support. This fosters a culture of accountability and continuous improvement within the organization.

2.5 SYSTEM

A system is a set of things working together as well as a set of principles or procedures to which something is done. (CHONG, 2011) A system consists of three major components including the input which implies something that goes into the system, the processes which is defined as type of work that must be accomplished in the system and lastly the output which is a desired product that must be produced. The system will be able to assign, manage tasks and track attendance of employees.

In the dynamic realm of Information Technology (IT), the term "system" encompasses a multifaceted concept that serves as the backbone of efficiency for companies operating in this domain. A system in an IT company refers to an integrated set of components, both hardware and software, working in harmony to achieve specific organizational objectives. This essay explores the critical role systems play in enhancing the functionality, security, and overall success of an IT company. (KHAN, 2003)

One of the primary functions of systems in an IT company is to optimize efficiency and productivity. These systems streamline various processes, automate repetitive tasks, and facilitate seamless communication between different departments. For instance, Enterprise

Moreover, systems are instrumental in maintaining data integrity by implementing backup and recovery mechanisms. Regularly updated and well-configured backup systems prevent data loss due to unforeseen circumstances, such as hardware failures or cyberattacks. This resilience is essential for IT companies to uphold their reputation and trustworthiness in the eyes of clients and stakeholders. (HEROD, 1996)

Furthermore, systems enable adaptability to changing business environments. Scalable and modular architectures allow IT companies to expand their operations seamlessly, accommodating growth without compromising performance. The ability to integrate new tools and technologies into existing systems ensures that companies remain agile and competitive in the fast-paced IT landscape.

2.6: Loopholes of the current

Here we talk about the weaknesses of the current system that is intended to be improved and the major problems of the existing system include the following;

Currently all work tasks requests from the company are handled manually over the telephone. The staff attendance and performance tracking system automate the process by streamlining the handling of the work tasks requests thereby reducing the manual intervention. the management of activities has been done physically which is tiresome through physical supervision of tasks performed, impersonation at work and this cannot easily be noticed physically due to the large number of employees, faulty access points that are not able to capture attendances as well as their low speed of operation.

Selection of a person for a task is done by manually approaching the person and confirming the availability of the person.

Transfer of information between different sections of the enterprise is in the form of documents or letters. Drafting reports will take time.

Unavailability of proper information to different levels of employees with in the firm.

2.7 Solution to these problems

The information of the entire firm will be maintained at a centralized data base any changes made by the other departs are known to the higher or lower departments instantly.

Provide Interactive interface through which a user can interact with different areas of application easily.

Deploy the application on a single system and make is available on all the systems with in the network, thereby reducing the maintenance cost of software.

Notification regarding the task allocation is done via a email which is a part of the application.

2.8: Relevance of the staff attendance and performance tracking system

This project is aimed at developing a staff attendance and performance tracking system which can help in efficient management of tasks with in companies and organizations. Relevance implies the merits as well as the reasons as to what the staff attendance and performance tracking system is aimed at. The following are some of the merits of the system that is to be implemented;

The system simplifies overall management of tasks in the company. This saves time spent by the administrator in monitoring how tasks are being done in the company. Therefore, with the system, one is able to follow up details on activities or tasks being done in the company.

Also used in tracking attendances through clocking in and out daily by both the employees and the administrators. Although the current system is confined to only one firm its performance is limited and restricted to the company. It spans over all the departments which can reach the server from their systems through LAN network.

The application is made as simple as surfing a website. There by non-technical persons can also interact with the processing on the application easily.

Provides instant information regarding the work under process with in the company.

CHAPTER THREE

METHODOLOGY

3.0: Introduction

This chapter talks about the system design, data collection methods, sampling strategies and data analysis that were used in the study. The main method of system development that will be used is the iterative approach. Research methodology is a way to systematically solve the given problem. Here we study various steps that are generally adopted by a researcher in studying his research problem along with the logic behind the environment (Kothari, 2004). Also, according to (Creswell, 2014), research approaches comprise strategies and methods for research that extend the decisions from general assumptions to thorough methods of data gathering and reasoning, it comprises the joint of theoretical assumptions, strategies, and exact methods. This chapter presents the methodology and procedures that will be used in this study. The research discusses the research

design that include; the area of study, study population and sampling, Data collection, Validity and Reliability Issues, Data Analysis and presentation and Ethical considerations.

3.1: Area of study

The study was conducted at Aircom Technologies Limited in Jinja henceforth the focus was towards understanding the mode of operation of the current delivery system at AIRCOM and coming up with the best ways to manage all tasks carried out by the employees within the company.

3.2: Population and sampling

The study was considered on non-probability sampling i.e., purposive sampling as it involves the researcher to use their expertise to select a sample that is most useful to the purposes of research.

This study involved 5 respondents from whom data is to be collected namely; two administrators and three employees. Non probability sampling shall be used as it involves nonrandom selection based on convenience allowing one to easily collect data from the respondents.

3.3: System Development.

The major development approach employed for this project was the Structured System Analysis and Design Methodology (SSADM).

SSADM follows the waterfall life cycle model starting from the feasibility study to the physical design stage of development. One of the main features of SSADM is the intensive user involvement in the requirements analysis stage. The users are made to sign off each stage as they are completed assuring that requirements are met. The users are provided with clear, easily understandable documentation consisting of various diagrammatic representations of the system (Turner, 2000). SSADM breaks up a development project into stages, modules, steps and tasks. The first and foremost model developed in SSADM is the data model. It is a part of requirements gathering and consists of well-defined stages, steps and products. The techniques used in SSADM are logical data modelling, data flow modelling and entity behaviour modelling (Shaw, 2001).

The specific methodology to be employed was the Rapid application development (RAD). It is based on prototyping and iterative development with no specific planning involved.

It focuses on gathering customer requirements through workshops or focus groups, early testing of the prototypes by the customer using iterative concept, reuse of the existing prototypes (components), continuous integration and rapid delivery. In the RAD model, the functional

modules are developed in parallel as prototypes and are integrated to make the complete product for faster product delivery (Meyers, 1993).

A prototype is a working model of the system, but with limited functionality.

Henceforth the most important aspect for this model to be successful is to make sure that the prototypes developed are reusable.

3.4 : Data collection.

3.4.1 : Sampling methods.

This study involved 5 respondents from whom data is to be collected namely; two administrators and three employees. Non probability sampling shall be used as it involves nonrandom selection based on convenience allowing one to easily collect data from the respondents.

3.4.2: Questionnaires

These are research instruments which consists of a set of questions that aims to collect information from a respondent. Thus, it consisted of open-ended questions so as to offer the respondent to elaborate on their thoughts. Finally, the results shall be compiled from the questionnaires were collected from the different correspondents.

3.4.3: Interviews

This technique involves asking open-ended questions to converse with respondents and collect elicit data about a subject. This involves the interviewer who in most cases is the subject matter expert to understand respondent opinions in a well planned and executed series of questions and answers. These were used as they helped one explain, better understand and explore research subjects' opinions, behavior, experiences and phenomenon.

3.3 System Analysis and Design.

Research design refers to the overall strategy utilized to carry out research that defines a succinct and logical plan to tackle established research question(s) through the collection, interpretation, analysis, and discussion of data (Maynard, 2012).

There are several tools that were used to represent facts from the collected data. The tools included the System Architecture, a Context Diagram, Data Flow Diagram and Use-case Diagrams. These clearly represent the raw facts gathered during the data collection process, while defining the behavior and interactions among the various components of the system as well;

3.4.1 System Architecture

This is a conceptual model that defines the structure, behavior, and other views of a system (Cooper, 2011). This was used to clearly show the interactions and behavior among the various components of the system.

3.4.2 Context Diagram

Relationships were established between the data items to show how the different entities relate with the system. The context diagram therefore shows the basic interaction of the system with its environment.

3.4.3 Data Flow Diagram.

A Data Flow Diagram (DFD) is a graphical representation of the flow of data through an information system. It can as well be used for the visualization of data processing. System designers usually start by drawing a context diagram to show the interaction between the system and outside entities. The Data Flow Diagram shows how the data moves /flows within the system.

3.4.4 Use-Case Diagram.

A use case diagram is a representation of a user's interaction with the system that shows the relationship between users and different cases in which the user is involved. A use case diagram was used to identify the type of users of the system and the different use cases.

3.1 Implementation

At the implementation stage, all the system designs and paper concepts were translated into running computer programs using tools such as HTML, PHP, MySQL, CSS, Bootstrap, JavaScript,

and others. Each of this tool played a vital role in designing the interfaces of the system as well as implementing the system.

3.1.1 HTML

This was used for front-end development to create the data entry forms such as login form, registration form and others as well as creating web links within the system.

3.1.2 PHP

PHP is a server-side scripting language and was used to create dynamic and interactive webpages. PHP helps to convey commands to the users from the server and also sends commands from the users to the server for processing.

3.1.3 CSS

CSS is cascading style sheet and was a powerful tool in enhancing the look of the webpages that is by adding beauty such as formatting colors and style.

3.1.4 JavaScript

JavaScript is a powerful tool that helps to add functionality to the system. JavaScript is also used as a validation tool then the user login to gain access to the system.

3.1.5: MySQL

MySQL was the Database management system that was used while implementing the system. It was used to create the database system that manages the employee's information and tasks that are being stored and allowing update and deletion of records

CHAPTER FOUR

FIELD STUDY AND SYSTEM DESIGN

4.1 Introduction

This chapter presents the results from field study. It highlights the strengths and weakness of the current system. This chapter describes system requirements (user requirements, functional requirements, and non-functional requirements) and the design of the system (system architecture, context diagram, data flow diagram, entity relationship diagram and the flow chart diagram).

4.2 System study

The purpose of this section was to study the existing system and determine the nature of the activities concerning task management at the company.

The study was conducted among the blockers working in Aircom Technologies Limited. The study involved data collection from 5 respondents; administrators and other employees to obtain significant results from this study, I decided to confine the study population within Aircom Technologies Limited.

4.2.1 Weaknesses of the current system

Here we talk about the weaknesses of the current system that is intended to be improved and the major problems of the existing system include the following.

Currently all work tasks requests from the company are handled manually over the telephone. The staff attendance and performance tracking system automate the process by streamlining the handling of the work tasks requests thereby reducing the manual intervention. The management of activities has been done physically which is tiresome through physical supervision of tasks performed, impersonation at work and this cannot easily be noticed physically due to the large number of employees, faulty access points that are not able to capture attendances as well as their low speed of operation.

Selection of a person for a task is done by manually approaching the person and confirming the availability of the person.

4.2.2 Strengths of the current system

The current system is manual, and the task management is done in books hence the company does not incur electricity costs as well as wages for the would-be technical personnel to run the system.

4.3 DERIVING REQUIREMENTS

The system analysis involved identification of the entities, their properties and relationship between them. The requirements of the new system were categorized into user requirements, functional requirements and non-functional requirements and system requirements.

4.3.1 User requirements

User requirements refer to what the user expects the system to be able to do. They also include those characteristics that the system should have so as to function fully and effectively.

The system has the following specified user requirements.

1. The system should have a user-friendly interface with easily understandable icons.
2. The system should be secure that is, should authenticate users by requiring a username and password before accessing and using it.
3. The system administrator should be able to register, update, and delete tasks.

4.3.1.2.: The functionalities of the system.

This component outlines the functions to be used every time an admin or employee checks for the task assigned and is required to perform the task and update in the status in the system except for account creation and management. Thus, this system will perform the following.

Log on either as an administrator, or user.

Register as an administrator or user.

Admin can create task, edit task information and close task.

All types of users must log in by username and password. According to their type there will be different privilege.

Administrator view allows adding tasks and editing existing task

Administrator can manage tasks

4.3.1.3 Non-functional requirements

The non-functional requirements are not directly concerned with specific functions delivered by the system, but they aid in the functioning of the system. They pertain the system properties such as accuracy, usability, performance, security among others. The following are the non-functional requirements for the system.

The system should validate the user's login credentials that is, the username and password to ensure only authorized access.

The system should be efficient so as not to waste system resources such as CPU and memory.

The system output should be accurate provided valid input is entered.

The system should run on most operating systems.

The system should be easy to maintain and should allow updates/changes to be made when need arises.

4.3.1.4 System requirements specification

For the system to perform as expected, there are some minimum requirements that are supposed to be put in place first to achieve the desired objectives and functions.

4.3.1.5. Hardware requirements

These are given in the table below.

Computer brand Dell, Hp, Acer or Lenovo

Generation Duo core or higher

Architecture 64-bit

Processor speed 1.6 GHz or higher

RAM 2 GB or higher

Disk space 250 GB or higher

Hp laser jet, Epson or Canon printer Printing speed.

4.3.2.1 Software requirements

The software provides the facilities for manipulating data through an interface between the users of the system and the hardware on Microsoft Windows platform, and these requirements are in the table below.

Software Requirements

Operating system Windows 8, 8.1, 10 or 11

Server XAMPP or Apache HTTP web server

Database Management System (DBMS) MySQL

Web browser Chrome, Mozilla Fire Fox, Internet explorer

4.3.3 System Development approach.

The requirements determined were used to design the staff attendance and performance tracking System. The major development approach to be employed for this project is the Structured System Analysis and Design methodology.

SSADM followed the waterfall life cycle model starting from the feasibility study to the physical design stage of development. One of the main features of SSADM is the intensive user involvement in the requirements analysis stage.

4.4 System Design

The system design defines the architecture, interfaces, components and modules of the system that satisfy its operations. It is concerned with how the system functionalities are provided by different components of the system. The Staff attendance and performance tracking system is a website that is completely web based and is developed using PHP. The system consists of an admin panel that provides username and password through which the admin starts doing their job assigning tasks and tracking attendance. Thereafter the employees can visit the site and check for the activity assigned to them as well as set the time for completion of the task.

The system is to have a dashboard where multiple options like task management, attendance, administration, task report, attendance report, and logout options are chosen from. In addition, the system will have a system administrator who has the right to assign tasks and manage employee accounts. Furthermore, the structure of the system is to be divided into two main components i.e., the admin side of the system which allows the admin to assign and manage the tasks assigned to employees. Secondly, the employee side of the system which provides the functionality for employees to update their tasks basing on the status details.

4.4.1 Architectural design

This is a conceptual model that defines the structure, behavior, and other views of a system

Presentation layer: This represented the various ranges of devices that were used to access the task management and attendance tracking system.

Server: This showed the server used during implementation.

Storage service: This layer covered the rapid and storage of data or information using a relational data base management system like MySQL which was used in this case.

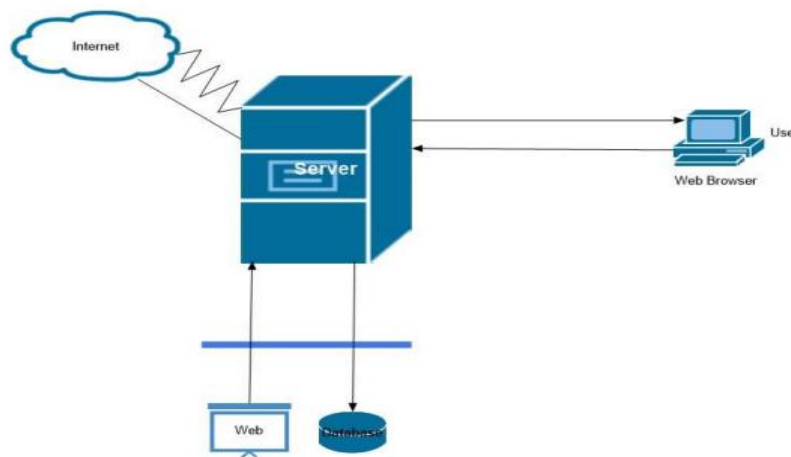


Figure 1.0: The architectural design of the system

The system user first interacts with the user interface which provides him/her with means to place a request to the database which maybe adding, deleting tasks, employees, or attendance reports. The task is passed to server which processes it and include a command to link the available database, the query is executed by the database through the PHP engine which acts as a tool to transform the request to a format both the database and the server can understand.

4.4.2 Context Diagram

This summarized how information flowed in the system. The users could visit the page and view the different partners.

The administrators could login, update, edit as well as deleting different users. All the information was stored in the database.

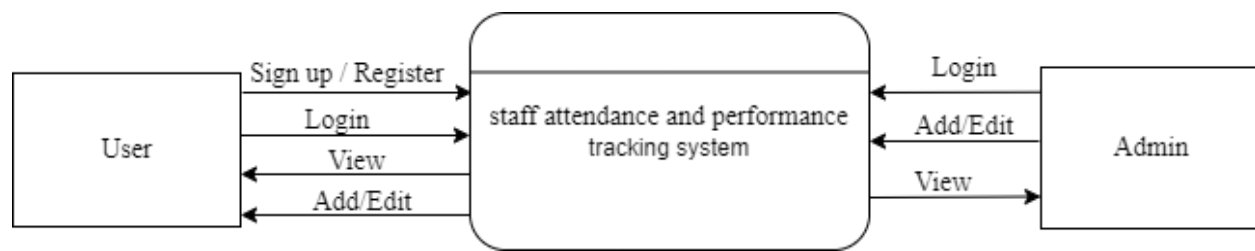


Figure 2.0: The context Diagram

4.4.3 Data Flow Diagram of Staff attendance and performance tracking system

A Data Flow Diagram (DFD) is a graphical representation of the flow of data through an information system. It can as well be used for the visualization of data processing.

The data flow diagram helps to define the boundary between the system or parts of the system with the environment

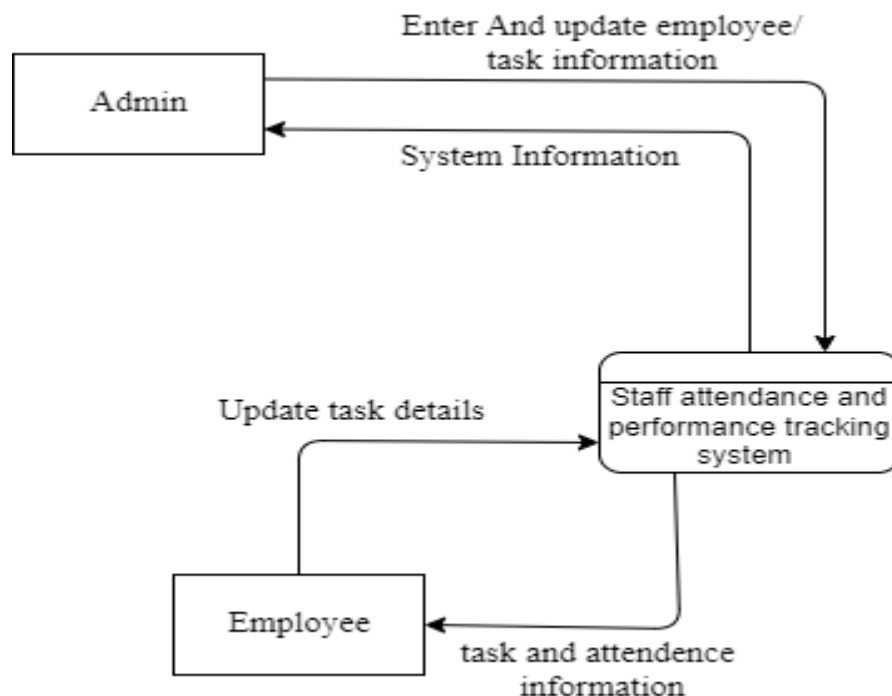


Figure3.0: The Data Flow Diagram Diagram

The data flow between generalized application within the domain, the other entities and the abstraction with which they communicate.

4.4.4 Use case diagram

A use case diagram is a representation of a user's interaction with the system that shows the relationship between users and different cases in which the user is involved

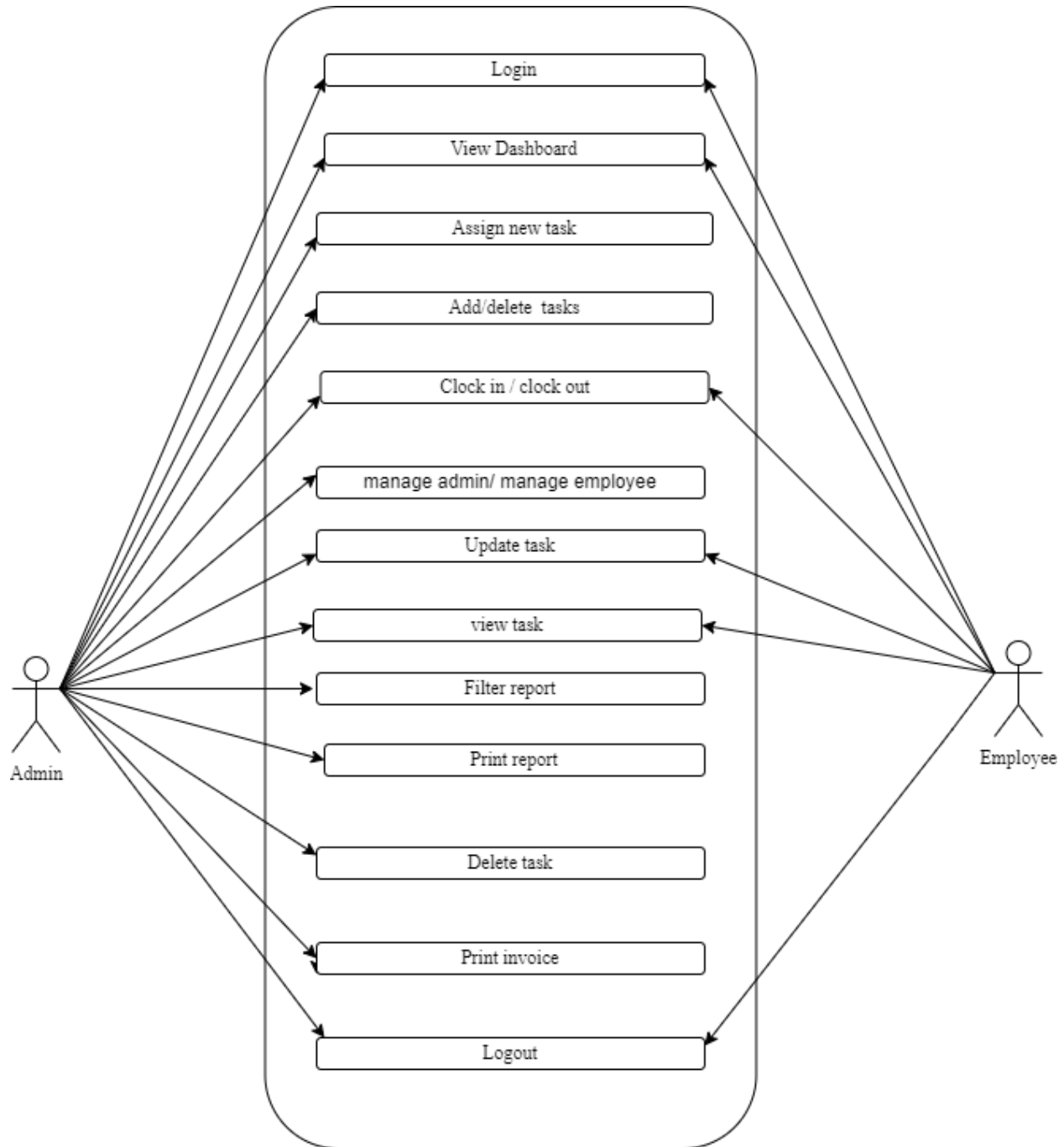


Figure4.0: The use case Diagram

A use case diagram was used to identify the type of users of the system and the different use cases. Use case diagram showed the different activities performed by the two types of users namely

admin and employee.

An Entity Relationship Diagram is the foundation for the development of the database. It shows how different entities, objects or concepts relate to each other within the system. The entities included employees and administrators and the types of relationships are shown on the Entity Relationship diagram.

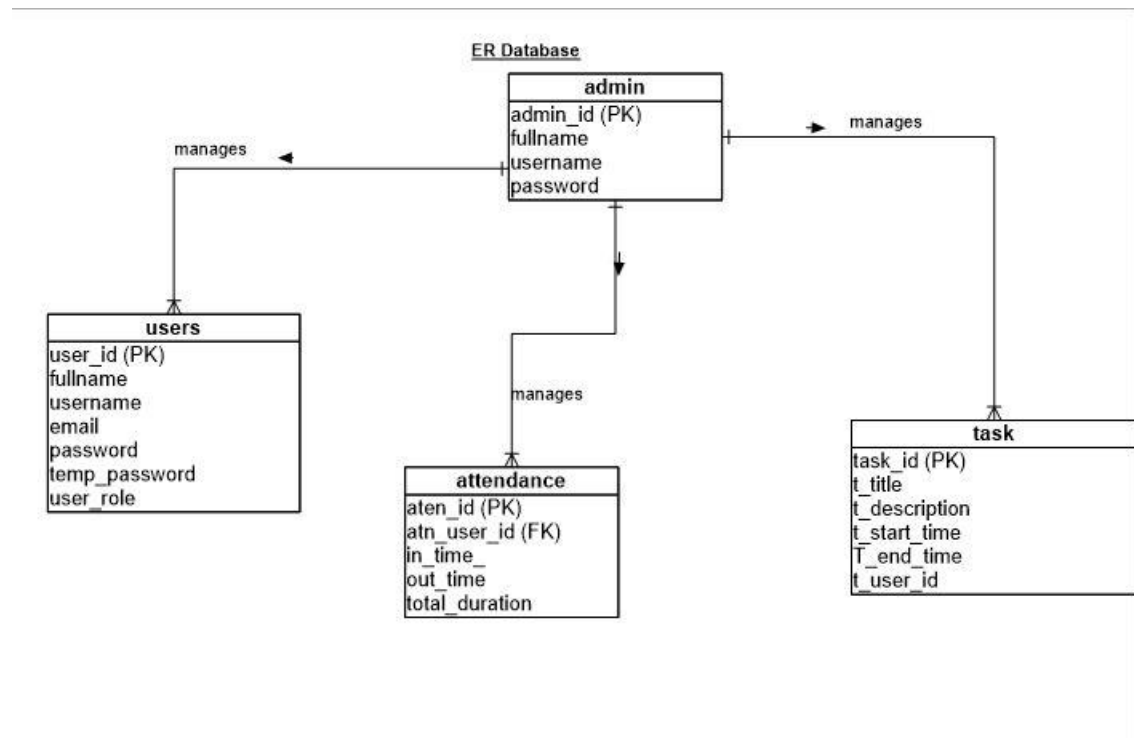


Figure 5.0 Entity Relationship diagram.

4.5 Programming Tools for the task Management and attendance tracking System.

The programming tools included.

- Visual Studio Code
- MySQL
- XAMPP v3.2.4
- HTML
- PHP

4.6 Implementation and Testing.

This is where the actual development of the Online Logistics Management System happened which included developing the Graphical User Interface (GUI), implementing the model HTML and PHP, and creating the system database using MySQL. Visual Studio Code was used as a text editor.

4.7 System Documentation and Training.

The system was documented after all the tests had been performed to serve as a reference point to the system administrator to maintain the system throughout its productive life and the customers. Training of the system users was done after the testing of the system.

4.8: Testing

Assurance of reliability of software is achieved by execution of quality plans and testing during the software development process. This involves unit code testing and integration testing in accordance with the principles of (ISO 12207) and (IEEE 1298 and IEEE829). The development and testing of the hardware and software should be done, documented and formally agreed between the various parties. This can ultimately provide evidence in support of good quality compliance.

CHAPTER FIVE

5.0 IMPLEMENTATION AND TESTING

5.1 Introduction

This chapter introduces the research findings and the actual presentation of the actual system. It also presents the various interfaces of the system that the user will interact with.

5.2.0: system implementation and screenshots

Improved attendance: Task attendance and performance tracking systems helped to improve attendance by making it easy for employees to track their own time and by providing managers with real-time data on employee attendance trends. This information can be used to identify and address any attendance issues early on.

Increased productivity: Task attendance and performance tracking systems helped to increase productivity by providing employees with a clear understanding of what they need to accomplish and by giving them the tools they need to track their progress. This has helped employees to stay focused and motivated, and to make better use of their time.

Improved performance: Task attendance and performance tracking systems helped to improve performance by providing employees with feedback on their work and by helping them to identify areas where they can improve. This information has been used to develop targeted training programs and to provide employees with the support they need to succeed.

Reduced costs: Task attendance and performance tracking systems also helped to reduce costs by eliminating the need for manual timekeeping and by reducing the amount of time that managers spend on administrative tasks. This has freed up managers to focus on more strategic initiatives.

Improved employee engagement: Task attendance and performance tracking system also helped to improve employee engagement by giving employees a sense of ownership over their work and by providing them with a way to track their progress and achievements. This has led to a more motivated and productive workforce.

In addition to these general benefits, task attendance and performance tracking systems have also been used to achieve specific goals, such as reducing absenteeism, improving customer service, or increasing sales.

The company reduced absenteeism by 15% after implementing a task attendance and performance tracking system.

The call centre increased customer satisfaction by 10% after implementing a staff attendance and performance tracking system that helped to ensure that calls were answered promptly and that customer issues were resolved quickly and efficiently.

Overall, the results of implementing a task attendance and performance tracking system have been very positive. By providing employees with the tools and information they need to track their time, performance, and progress, task attendance and performance tracking systems can help organizations to improve attendance, productivity, performance, and employee engagement.

5.3.0: System Interfaces

5.4.1: Login panel

Any user who seeks to gain access to the system must first login by providing a valid username and password for an existing user account. The Login panel is the very first page that is shown to the user and it is used to collect the login credentials from the user. The user is granted access to the system upon confirmation that the provided credentials are correct for a certain existing account, otherwise the system responds with the message “invalid login credentials”.

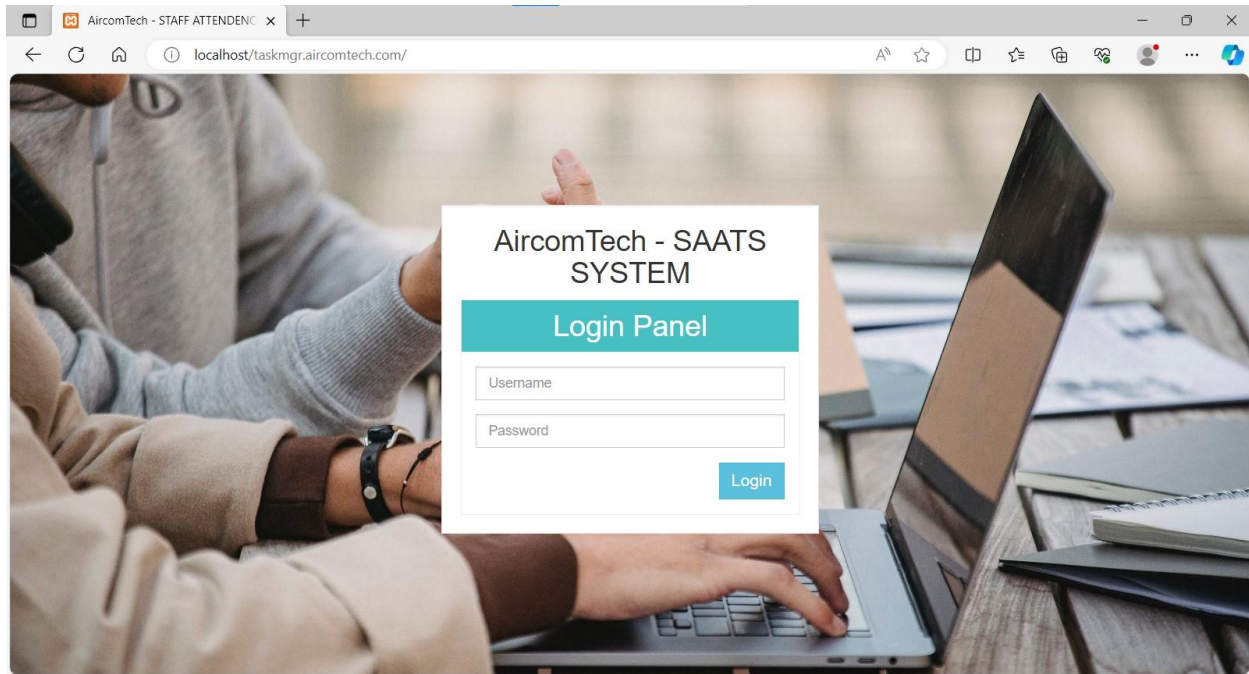


Figure 8.0 The login panel

5.3.2: employee User interfaces

user interface is a point of human-computer interaction and communication while using the system. The system was designed with a number of user-friendly interfaces for easier interaction with the system.

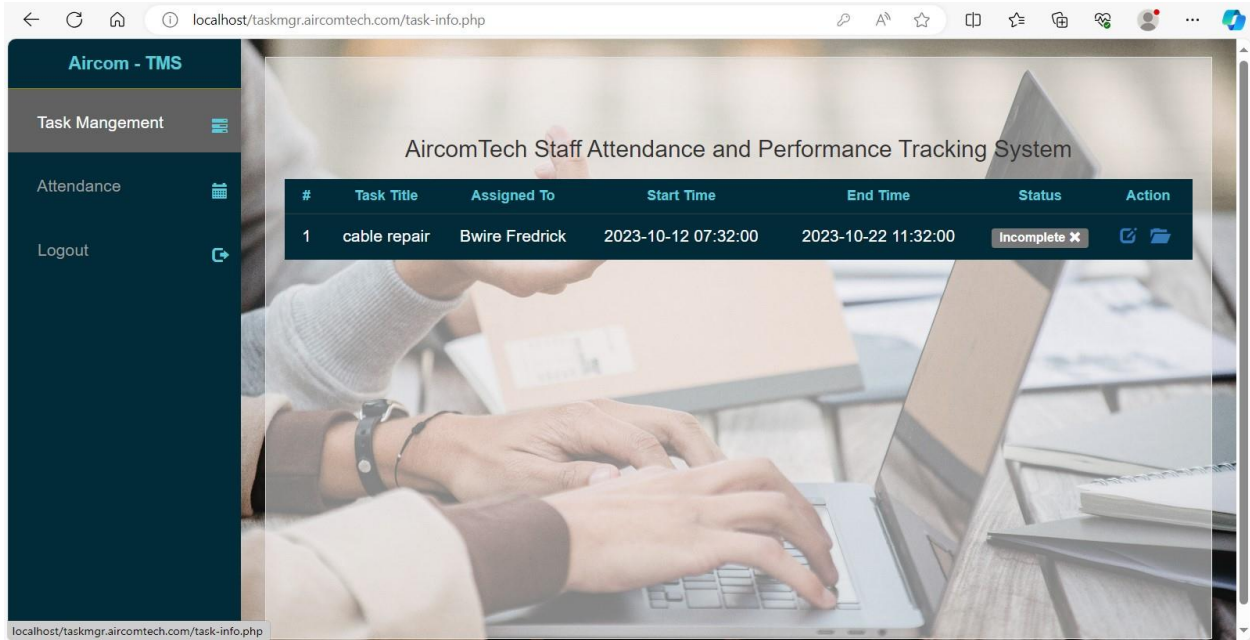


Figure 6: employee User interface.

5.4.3: Employee attendance interface

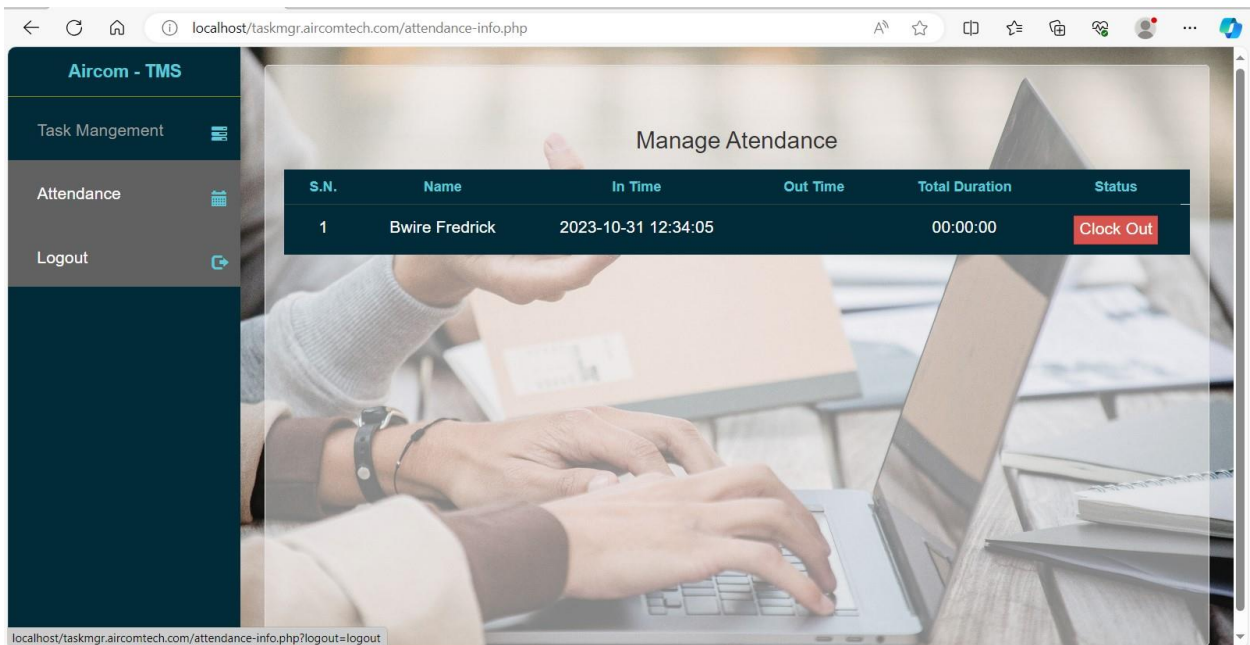


Figure 7: Employee attendance interface

5.4.4: The dashboard

The dashboard is the main page of the system that shows up first when the user login. It usually shows the graphical form and the key modules of the system.

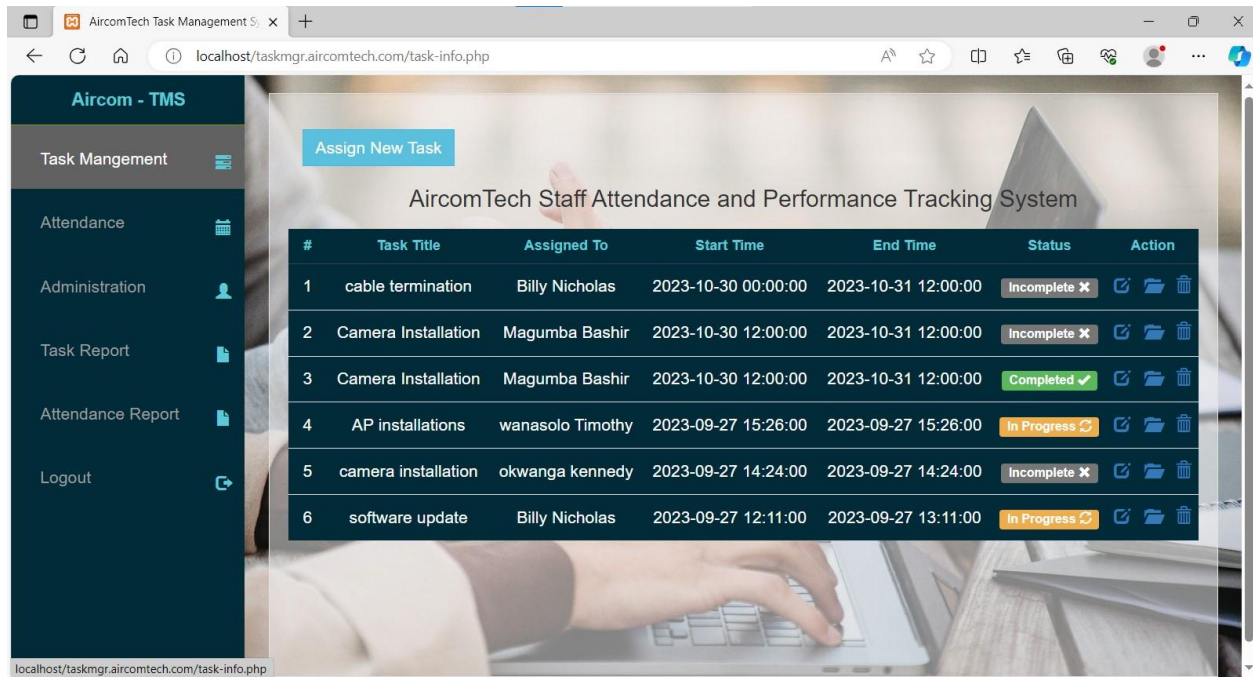


Figure 8: The dashboard

5.4.5: Assigning a new task to an employee.

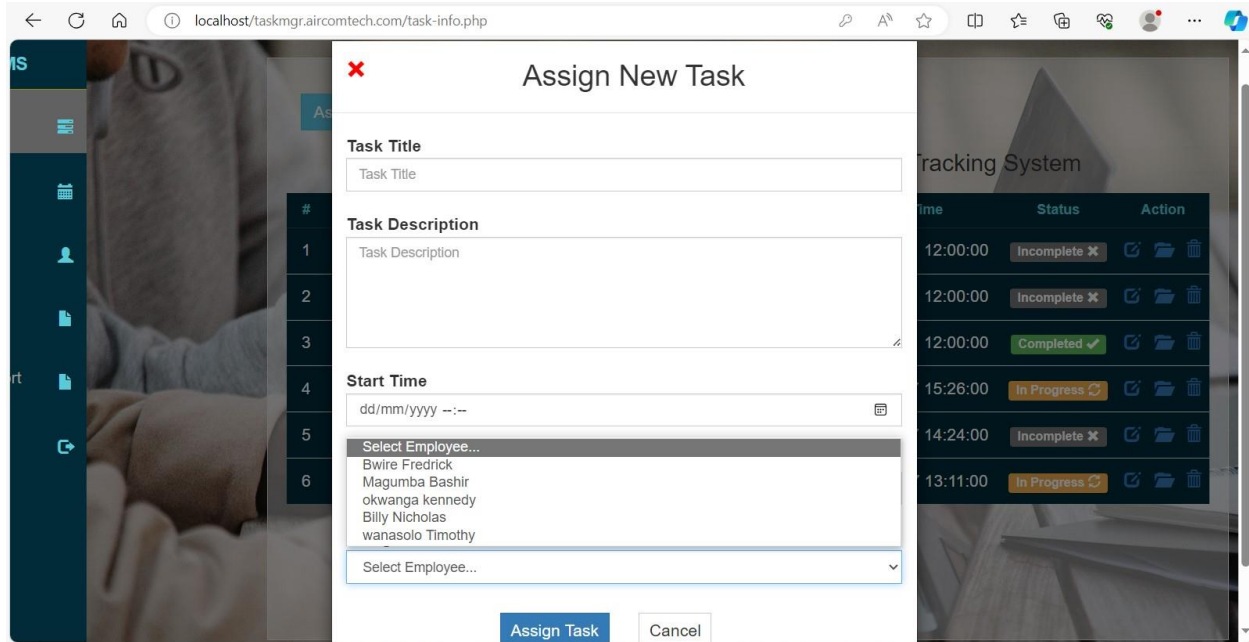


Figure 9: Assigning a new task

5.4.6: Managing admin attendance

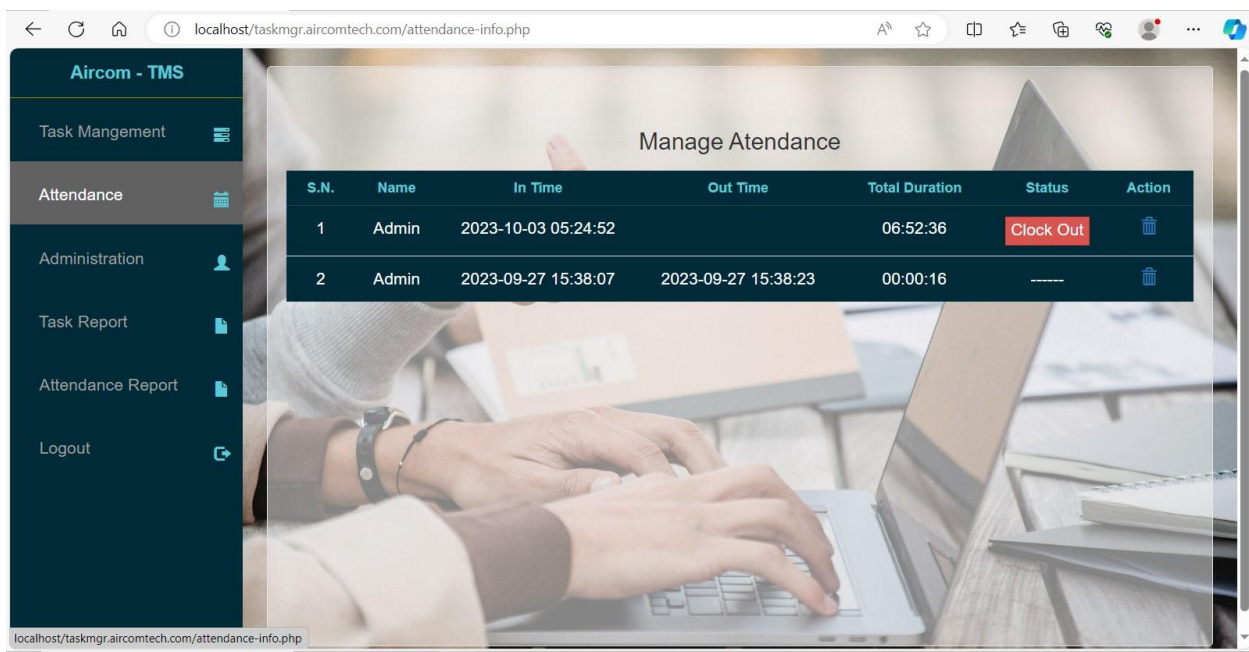


Figure 10: Managing admin attendance

5.4.6: Administration dashboard

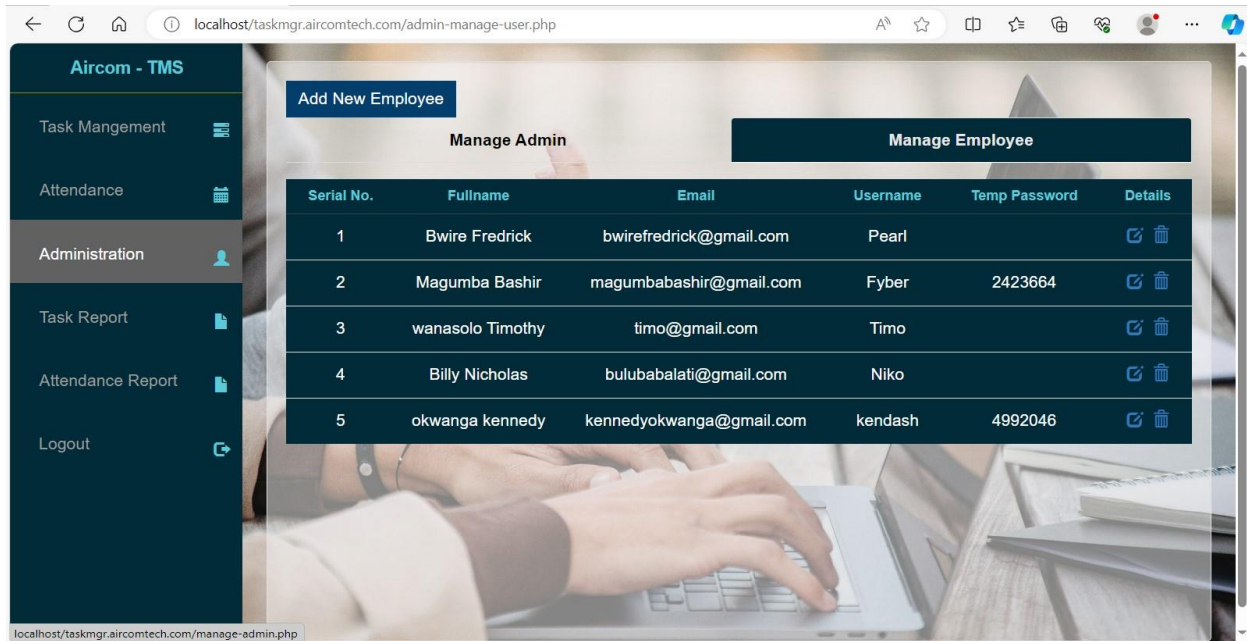


Figure 3Figure 11: Administration dashboard

5.5.1: Database design

First of all, database is a container for storing and retrieving data. The Staff attendance and performance tracking system requires a database to store, update as well as inserting the task information, attendance information and data about the employees. For this system, a database management system namely MySQL was used. MySQL is an open-source relational database management system that organizes data into one or more data tables in which data types may be related to each other. The main reasons for this specific database management system is due to its flexibility, scalability and the level of data protection it provides

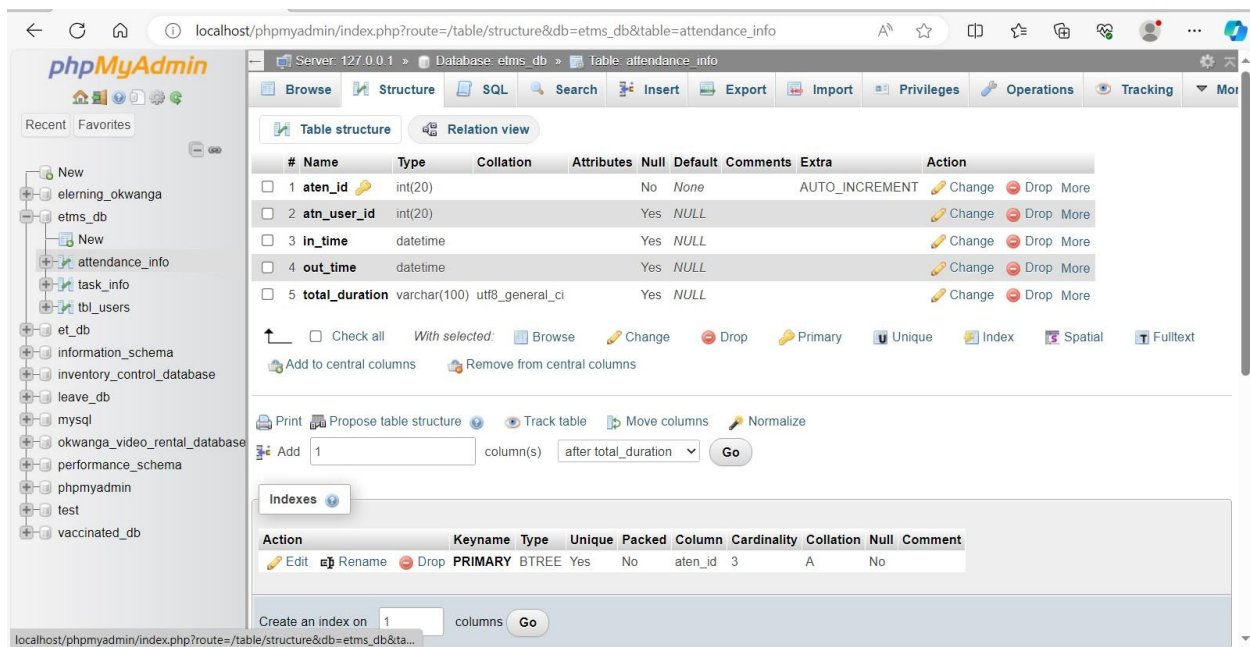


Figure 12: database design

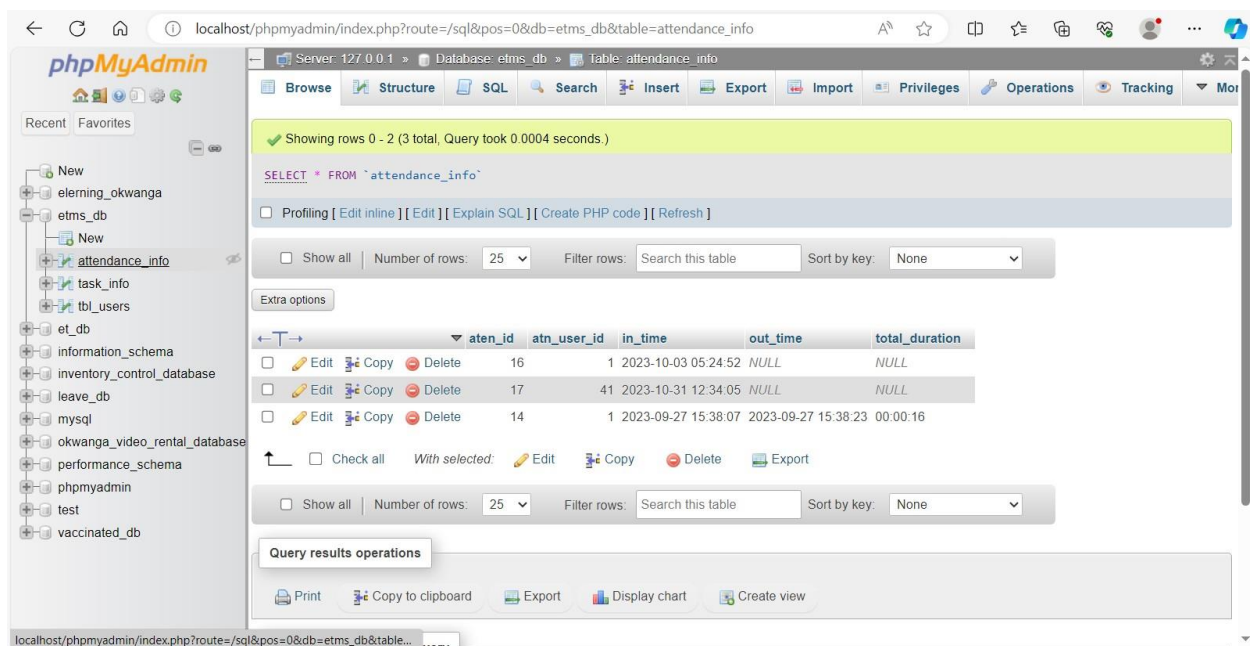


Figure 4Figure 13: Attendance_info table

Task info table

Showing rows 0 - 7 (8 total, Query took 0.0004 seconds.)

```
SELECT * FROM `task_info`
```

Number of rows: 25 Filter rows: Search this table Sort by key: None

	task_id	t_title	t_description	t_start_time	t_end_time	t_user_id	status
☐ Edit ☐ Copy ☐ Delete	1	Coding	Writing code for inserting into database.	0000-00-00 00:00:00	0000-00-00 00:00:00	29	0
☐ Edit ☐ Copy ☐ Delete	12	camera installation	installing of cameras	2023-09-27 14:24:00	2023-09-27 14:24:00	37	0
☐ Edit ☐ Copy ☐ Delete	13	AP installations	Installing APS around campus	2023-09-27 15:26:00	2023-09-27 15:26:00	39	1
☐ Edit ☐ Copy ☐ Delete	14	Camera Installation	installing camera	2023-10-30 12:00:00	2023-10-31 12:00:00	40	2
☐ Edit ☐ Copy ☐ Delete	15	Camera Installation	installing camera	2023-10-30 12:00:00	2023-10-31 12:00:00	40	0
☐ Edit ☐ Copy ☐ Delete	11	software update	update software	2023-09-27 12:11:00	2023-09-27 13:11:00	38	1
☐ Edit ☐ Copy ☐ Delete	16	cable	terminating cables	2023-10-30 00:00:00	2023-10-31 12:00:00	38	0

Figure 14: Task_info table

5.6 System testing

The entire system was tested using codes, class modules and modules. This stage of implementation ensured accuracy and efficiency operation of the system before it was given to the users. It required a series of different tests which varied at different system levels. The system tester assumed that if all parts of the system were correct then the goal would have finally, been achieved.

Testing is the process of executing the program in order to identify errors or bugs. Testing shows the software errors. Therefore, testing was done after completion of the system. This was done in two formats including Unit testing and Integration testing.

5.6.1. Unit testing

Unit testing was done on individual codes of the system to ensure that they fully yield the functional units. This was done by examining each unit, for example the code for checking for partners. This was done to ensure that a man or a woman finds the best match without errors.

Successfully achieving that encouraged me to go ahead with integration testing after all the

identified errors were worked on individually.

5.6.2. Integration testing

This was done after all the different modules had been put together to make a complete system. Integration aimed at ensuring that all the modules of the system worked hand in hand. and that they could be integrated to form a complete working system

Validation of the System.

Validation of the system was done.

CHAPTER SIX

DISCUSSION, CONCLUSION, RECOMMENDATIONS AND FUTURE WORK

6.0 Introduction

This chapter focuses on the outcomes and the achievements of the project, the recommendations and the conclusion. The researcher experienced and learnt quite a number of things.

6.1 Discussion.

The discussion of this chapter is based on the theme of objectives stated in chapter one.

6.2.1 Objective (1): To review the literature and establish the requirements for developing a task attendance and performance tracking system.

The requirements of the study were got from two sources. These include; Task management system research and field research. Under Task management system research, the study was conducted on the previous done projects about the same topic such as online order system by Herbert Hyden. This guided me on the alignment of my project work.

6.2.2 Objective (2): To design a task attendance and performance tracking system

The system was designed depending on the requirements followed by the RAD from the SSADM. The stage of design included Architecture, Context Flow Diagram and Data Flow Diagram, Use-case diagram and database design, which enabled the smooth flow of data. Design and evaluation of the effectiveness of managing tasks and attendance, encouraged the use of the different stages of design.

The development and implementation new staff attendance and performance tracking processing system involved a number stages and activities therein.

The planning stage: This was the very first stage where the researcher came up with the resource plan, communication plan, budget and initial schedule for the project.

The analysis stage: In this stage, the researcher studied the old system which was being used by the company and determined the requirements for the new better system. The researcher also carried out feasibility study to determine how possible it could be given the resources at disposal to develop and implement the system, this guided in the decision making as well as choice of alternatives.

Design stage: The researcher came up with various designs of the system using system design tools such as Data Flow Diagram (DFD), Context Diagram and Entity Relationship Diagram (ERD) to model the data.

Development stage: The system designs were all translated into running computer programs using tools such as HTML, PHP, CSS, JavaScript and MySQL database to come up with the actual running system.

Implementation stage: The system was implemented, tested and validated.

6.2.3 Objective (3): To implement the task attendance and performance tracking system.

The implementation of the system design was carried out using the implementation tools which included Visual Studio code editor, Google Chrome, MySQL, HTML, XAMPP server and windows to fulfil the implementation where I came up with the interfaces in chapter 5, which interfaces include: “login, dashboard, manage customer/delivery agent, manage product, adding manage category, manage order, as well as the home page for the customers. The system was implemented using parallel implementation to enable users to use the manual system as they got used to the new system.

6.2.4 Objective (4): To test a task attendance and performance tracking system.

The system was tested during and after implementation. Each component was tested (Unit testing) and the whole system was also tested (system testing).

Unit testing was used to test individual parts/modules of the code whereby every part of the interface was as well tested to check whether it works properly. This was essential during the identification of errors in specific units of the code thereby making debugging quite an easy task.

Integration testing was done after all the different modules had been put together to make a complete system. Integration aimed at ensuring that all the modules of the system worked hand in hand and that they could be integrated to form a complete working system.

6.3 Conclusion

The Staff and Attendance Tracking System should be deployed for use since most of the users agreed that the system performs its functions that suit their needs especially when it came to addressing majority of the challenges that the existing manual system presented as already discussed in this write up in the previous chapters, specifically in problem statement well-stated in

chapter 1. This implies that the Staff and Attendance Tracking System is deemed fit for adoption in Aircom Technologies, Jinja.

6.4 Recommendations and future works

In the view of the staff attendance and performance tracking system and for effective use of it, the following recommendations are made.

- The system is recommended for use by the company because it is efficient and it meets the requirements needed to manage all tasks performed within the company.
- The system administrators should thoroughly train to use the system to avoid making errors or mistakes while updating tasks.
- The system should be hosted and used online for best performance and to minimize chances of losing data due to computer failure or computer lose.
- Future researchers who will wish to expand and improve the system should be given chance to try and improve the system.

A number of challenges were encountered during the research study and some of them are highlighted below.

- There was limited time to carry out research and develop the system alongside a busy schedule of academic programs
- The researcher encountered difficulties in coding certain parts of the system which forced him to go for extra coding tutorials to improve on his coding skills
- There was a challenge of inadequate financial resources to fund the project for example in transport, buying data bundles for internet, and other things.

Due to limited time, financial and other resources, it was not developed in the way the researcher wished hence there is need for improvement and expansion The.

The system also needs to be expanded to be able to analyze the employees' performances daily and yearly by graphically showing the trends in performances for easier visualization, this helps the administrators to easily analyze and make decisions about employees' performances.

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APPENDIX

Appendix I: Requirements collection interview guide

During this interview process, interviewers will first greet and politely ask for permission before they ask questions to the interviewees.

Topic: STAFF ATTENDENCE AND PERFORMANCE TRACKING SYSTEM

Dear Respondent;

I am a student of Busitema University pursuing a Bachelor’s Degree in Information Technology. I am carrying out a research study on task attendance and performance tracking system at Aircom Technologies Jinja.

This survey is to guide me into understanding the current attendance and performance system at Aircom Technologies. I kindly request for your cooperation in answering the following questions. Any information provided will be for academic purposes only and will be treated with absolute confidentiality.

I hope that my humble request may meet your kind consideration.

Thank you.

Appendix-2. QUESTIONNAIRE GUIDELINES

1. What is your current position of responsibility at Aircom Technologies Limited?

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.....

2. How do the employees at Aircom technologies manage tasks?

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.....
.....

3. What are the major challenges faced during staff attendance and performance tracking at Aircom Technologies Ltd?

.....
.....

.....
.....

1. How do you think a staff attendance and performance tracking System can solve those challenges stated.

.....
.....
.....
.....

THANK YOU