

INTERNSHIP MANAGEMENT INFORMATION SYSTEM

CASE STUDY: SOROTI UNIVERSITY, SOROTI

BY

OKODAN ALEX

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**A PROJECT REPORT SUBMITTED TO THE DEPARTMENT OF COMPUTER
STUDIES FOR PARTIAL FULFILLMENT OF BACHELOR OF INFORMATION
TECHNOLOGY.**

SUPERVISOR: DR. NAKASI ROSE

**DEPARTMENT OF COMPUTER STUDIES
FACULTY OF SCIENCE AND EDUCATION**

JANUARY, 2024.

DECLARATION

I OKODAN ALEX hereby declare that this project report is my original work with exception from quotations and literature review. I strongly affirm that this project has never been submitted to any institution of higher learning for any academic award.

Signature.....

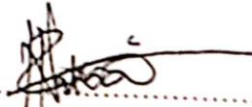
Date.....24.01.2024

OKODAN ALEX

APPROVAL

This PROJECT report is to satisfy the design and implementation of an Internship management information system by OKODAN ALEX under my supervision, is worthy and true source of what he is able to accomplish. This report has been read and approved for submission to the Department and University Library.

Signature:



Date 3.1.2024

Dr. NAKASI ROSE

SUPERVISOR

DEDICATION

I dedicate this book to my beloved parents **Mr. Okise Moses I.M** and **Mrs. Asio Samali** for the grateful work they have done for me. It's my pleasure to thank them for the so much efforts and support they gave me to see my success. May the Almighty God shower them with his bounties abundantly.

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This attachment was successful due to the cooperation and support of a number of people who have enabled me gain much more than the scholastic aspects of the program could have given.

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ABSTRACT

The purpose of this study was to solve all the problems that exist in each stage of the internship process, starting from application, registration, selecting an internship place, submission of report and appraisal of internship reports. This study used descriptive research methods. The primary aim of this study is to design and implement an internship management information system, introduce its use to Soroti University and be used by the appropriate departments of this organization and others in Uganda.

The main goal of this paper is to research demands and practices on internships and to develop a web application in compliance with these demands and practices. Its role introduces portion of internship management system functionalities. An important component of communication between businesses, educational institutions, and students (S-B-A) is the Internship Management System (IMS), which is also a potent tool for enhancing the digitization of internship-related procedures.

The Internship Management System (IMS) will facilitate many processes between the counterparts. Internships will ease the process of discovering talents fitting the internal culture of the companies and increasing the companies' productivity. And, the internship will assist educational institutions being market-oriented by making students prior to their graduation to be better informed with the requests of the market and being aware of their skills and abilities.

In this research, we give different perspectives and approaches on practices of internships, design patterns and frameworks and on reinforcing the communication between the three above mentioned pillars (S-B-A). Questionnaire surveys are used as a methodology for conducting this research. Businesses are the subject of the study and the gained information provide a better observation of the study. The design pattern is chosen as a trend in software development as best suited implementation for the internship web-based portal as an outcome of this study.

The approaches employed include RAD (Rapid Application Development), which made it simple to deliver a functioning system by working on every part one after the other, and Structured System Analysis and Design (SSAD), which was employed for the system's analysis and design. In addition, the researcher used PHP, an open-source general-purpose scripting language that is particularly well-suited for web application and system development

and is capable of being integrated into the Hypertext Markup as well as The MySQL database system as a tool for managing databases. Furthermore, the two main web scripting languages used to create web pages and web based applications were HTML (Hyper-text Markup Language) and CSS (Cascading Style Sheets). HTML structured web pages, whereas CSS was mostly used to govern out looks in addition to bootstrap framework open source for uniformity and system interface consistency and user friendliness.

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LIST OF ACRONYMS

CSS	Cascading Style Sheet
DBMS	Database Management System
DFDs	Data Flow Diagrams
GUI	Graphical User Interface
HTML	Hyper-Text Mark Language
IMIS	Internship Management Information System
IS	Information System
MIS	Management Information System
MYSQL	MY-Structured Query Language
PHP	Hyper-Text Preprocessor
RDMS	Relational Database Management System
SUN	Soroti University
UML	User-Modeling Language

CHAPTER ONE: INTRODUCTION

1.0 Background of the Study

Internship refers to the placement of students in the industry or organization related to their study field and this is one of the courses that must be fulfilled by students in order to finish their study at university or other institutions. Stirling, Kerr, and Macpherson (2014) defined the internship as a program which student need to go through it within a period of time. It is a working experience that student needs to work in an organization with supervision from the supervisor for their achievement throughout the internship program. Whereas management is the process of doing thing together that organized informally (Carpenter, Bauer, &Berrin, 2012).

A manual system and very slow dissemination of information make the training often very few people want to follow. A computerized internship management information system will make it easier for companies to collect data quickly, and also make it easy for prospective applicants to quickly get information about existing training. The management has the duty to manage all matters related to the training, from managing the data of the interns to the organization of the training. (Haris & Priliasari, 2021)

The internship management system (IMS) is a fundamental fragment of communication between students, educational institutions and businesses (S-B-A) and is an influential tool to improve the digitization of processes related to internships. **The Internship Management System (IMS)** will ease many processes between the counterparts. Internships will ease the process of discovering talents fitting the internal culture of the companies and increasing the companies' productivity. Moreover, the internships will assist educational institutions being market-oriented by making students before their graduation to be better informed with the requests of the market and being aware of their skills and abilities.(Mydyti & Kadriu, 2020)

This is to analyze the internship expectations gap amongst the three main internship stakeholders: employers (company supervisors/consultants and heads of departments), academic supervisors and students, in an effort to detect the variables which could assist closing the gap between students' perceptions and the labor market employers and then, between the academic supervisors in Higher Education Institutions and the students.(Urquía-Grande & Perez Estebanez, 2020).

Internship management is rooted in the concept of human resource management (HRM) and talent development within organizations. As businesses and institutions recognized the value of investing in their workforce, the need for effective internship management emerged. This led to the development of systems and processes aimed at efficiently managing interns during their learning and development journey.

1.1 Problem Statement

The current manual and distributed approach of managing interns and internships has several shortcomings, despite the growing significance of training and development programs in many firms. Located in Uganda's east, Soroti University is a model public university. Located in Arapai, Soroti, was granted full university status under the Universities and Other Tertiary Institution Act of 2001 as revised by statutory instrument No. 34 of July 2015.

Currently, the organization faces several challenges in managing interns due to lack of IMIS and as a result, business/companies use different sources to find interns and does not have a system to ease the internship process of application and difficulty to find workplaces, no information and adequate consultation, as well as students who work outside the job field. The manual process involves paperwork, spreadsheets, and disparate systems, leading to data duplication, high risk of record loss, errors, and difficulty in tracking interns progress. The absence of a centralized platform hinders seamless communication between trainers, administrators, and interns, leading to potential miscommunications and missed training opportunities. Certain students select internship programs that are not as relevant to their field; many struggle to identify and understand internship conduct guidelines; the location of internships might pose a risk to students participating in internship programs.

As a result, given the issues, there is an urgent need for an all-inclusive and user-friendly internship management system that facilitates a more efficient and effective training experience for program administrators as well as interns by streamlining the entire internship lifecycle, optimizing resource utilization, offering real-time performance tracking, and improving communication. The management of learning and instructor-led training is done via an internship management system (IMIS). This system can do a wide range of other tasks, including scheduling, administering, delivering, reporting, analyzing, and much more.

1.2 Main Objective.

To develop a web based internship management information system(IMIS). The system will solve all the above-mentioned problems through ensuring a more efficient and non-mechanical way of keeping records of interns at the institution, through providing easier tracking of sessions, monitoring to the managers thus reducing burdensome work and loss of records. This will determine the system's reliability by selecting the best trends and technologies that strengthens linkages between S-B-A and study its objectives.

1.3 Specific Objective.

- To determine and establish requirements for developing internship management information system.
- To determine the reliability of the system by selecting the best trends and technologies.
- To design an internship management information system.
- To implement the design of an internship management system.
- To test and validate an internship management information system.

1.4 Research questions

- 1) Which requirements must be met in order to create an information system for internship management?
- 2) How will the internship program be created to enhance the current one?
- 3) How will the organization's internship management system requirements be met by the implementation and testing of the Internship Management Information System?

1.5 Scope.

The study is focused on the web and computer-based management system. The world we are living today is moving towards ICT and every aspect changes simultaneously. The research project is aimed at setting a standard for internships management. This scope of area coverage includes stock taking, printing of certificates including interns' details which prevents forgery.

Organizations /educational institutions are opting for better management of their interns through the use of computerized system. This research is to analyze the internship expectations gap amongst the three main internship stakeholders: employers (company supervisors), academic supervisors and students, in an effort to detect the variables which could assist closing

the gap between students' perceptions and the labor market employers and then, between the academic supervisors in Higher Education Institutions and the students.(Urquía-Grande & Perez Estebanez, 2020)

The internship management systems research was conducted and designed for Soroti University (SUN), which is located in Arapai Sub-county, Soroti district with an aim of improving on the performance of different functionalities such as data backup, data confidentiality and integrity, store, search, retrieve, update, submit reports, issuing of training/internship certificates and share experiences concurrently and management of different departments such as administration, trainers, consultants, Library, and other staffs after the validation of the system software.

The main functionalities of the system are to perform data backup, store, edit, share, update, search, and notifications and certificate/report generation in most common document formats.

The design interfaces of the system are user-friendly interfaces, for example the login interface of the system user may include the username and a password.

To develop the system, a server-side scripting language, PHP is used. As the front end will use CSS for styling and JavaScript and the bootstrap framework for responsiveness as well as consistency. HTML for creating forms. In addition, MySQL for the database end. The undertaking ran from July 2023 until November 2023, approximately a duration of five months.

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

There is extensive literature regarding the set-up of very complex and structured applications with design patterns. This master thesis compiles selected research papers that are related to internship as facilitator and various design patterns, frameworks and web technologies in the implementation of IMS's. It brings the scientific data and information from the scholarship together to achieve the main goals of this research.

2.1 Internship systems as a bridge and facilitator

Researchers have shown different perspectives and concepts related to internships by implementing programs and technologies of modern trends. The consulted research papers give insights on the internship as a concept in general, the process of searching, getting and conducting an internship, and the ways of implementation to strengthen the linkages between educational institutions, businesses and students.

Through a study on the Development of Internship & Capstone Design Integrated program for University-Industry Collaboration, present program to enhance the collaboration between industry and university is presented and solutions in solving problems are given. The process in checking the progress and status of each student is considered difficult, the short internships for the students are considered a problem and in finding the proper real field problems by the University is considered a problem.

The beneficiary of the project is industry by obtaining solutions to their problems and being provided with a better understanding by students and educational institutions. The next beneficiary of the project are educational institutions by building a relationship with Industry and gain insights from industry on education system. (Steele & Cleland, 2015)

(Shin, Lee, Ahn, & Jung, 2013) also give their perspective on Capstone Projects in their paper ICT Capstone Projects and Internships: Analysis of Work Environment Characteristics.

Currently interns are not able to make applications on a web based system, selecting the training areas of specialization as well as making the necessary payments. Some interns are able to make phone calls and send emails in request for opportunities.

The following are some of the terms used in our research study:

2.2 Information systems.

An information system (IS), from the word system which is defined as “a collection of parts or components which interact with each other to function as a whole”, is a collection of interrelated components that collect, process, store, and provide information as output needed to complete a business task.

The use of automated information systems has resulted into improved faster and efficient means of information collection, processing, store, distribution and retrieval. Information system is also a reliable tool that can be used in billing the financial information required in decision making for proper planning and budgeting of the resources in an organization. There are different types of information systems for example Management information systems, Transaction processing systems, Expert information systems, Decision support systems, Communication support systems among others.

2.3 Management Information Systems (MIS)

Management information systems are systems that take information captured and recorded by other systems about the transactions that affect the organization and produce reports that management needs for proper planning and controlling the business

The number of organizations using the management information system keep the records and manage their interns is increasing. A computerized technology is being adopted in capturing and recording of interns/interns' details in order to realize the benefits and challenges of a complex manual system.

In general, management information systems provide accurate, timely, relevant and complete information necessary to facilitate decision making in an organization. It helps in planning, control and operational functions to be carried out effectively and efficiently. While in the organization, there is quick access to relevant data and documents, provides valuable time-saving benefit to the workforce, improvement in organizational and departmental techniques,

use of less labor, effective and efficient coordination between departments, and quick and reliable referencing.

2.4 Internship management information systems.

The purpose of this study is to design a web-based internship information system that will assist the school in managing all internship activities, such as scheduling of internship activities, determining the place of internship, determining the supervising staff and consultants, collecting reports and evaluating internship results.

A similar study was also carried out by Teguh Andrianto, Risky Aswi R. which aims to create a management information system for internship by using a web service at the University of Nusantara PGRI Kediri. This information system includes the process of internship registering, activating logins, group share of internship, and supervisor share of internship, uploading internship reports and internship assessments. In the design and development of the system produces an internship information system that is integrated with academic information systems.

Silvia Rizka Febrianti, Lusi Melian a conducted a similar study. This study develops a web based internship information system that can provide Puncak Pass Resort in the process of receiving and scheduling student internship, facilitating student attendance, and processing internship assessments. Likewise, for the organization, the web-based internship information system is useful for providing information about the procedures for implementing the internship and submitting the final report.

Many internship management systems and projects (Chanlin & Hung, 2015; Xue, 2015;) have been implemented by skilled IT professionals and sophisticated specifications. They have been developed using different programming languages such as HTML, CSS, JavaScript, XAMPP, PHP.

The objective of the research was to develop an easy-to-use internship management system that was easy to maintain, with high up-time and simple administration requirements with administrators being able to modify the system depending on the changing requirements.

2.5 Current internship management information system

This section covers three existing internship management systems namely ImBlaze, LetsIntern, and AP Link. A comparison between them is reported.

The Industrial Training System is developed for the Faculty of Resource Science and Technology in UNIMAS in handling the internship courses. The purpose of developing this system is to solve the problem where when the number of students applied to internship increase, but the number of organizations that open for internship in this course is less due to the difficulty of registering .(Musa et al., 2017)

This system focuses on management and works especially for the coordinator. The target user of this system also targeted to the students, coordinator and also for the employer.

FTK Industrial Training System UniversitiTeknikal Malaysia Melaka, The FTK industrial training system is a system that developed by UniversitiTeknikal Malaysia and it is based on latest technology where the goal is making the management becomes easier, quicker and efficient. The system is designed for an administrator, students and industry to help student in Faculty of Engineering Technology to a better management in a work placement for industrial training (UTeM, 2017).

This system will provide four processes which are registration process, confirmation and announcement. However, this system is not a standalone website, but the system is attached to the official portal of their university.

2.5.1 ImBlaze

ImBlaze is an internship management system that operates on mobile platforms by supporting student interest by linking them to community mentors for internship purposes. Interested students may seek their internships through ImBlaze which will link their interest to specific real-world projects while at the same time support the internship work site as well. The principle ImBlaze revolves around is the automation of the business process that many schools deemed as a difficulty for them to introduce a high-quality internship program.

As for the type of features, ImBlaze added mobile transactions, remote connectivity, and location verification through a mobile device or a device application that can run on either Android or iOS operating system with the purpose of easing the burden of implementing and managing internship from school. Aside from that, their application has been stated to be able to overcome geographical separation and enable 24/7 and 365 connectivity at all the time. Other than that, the common interface implemented for all users includes functions such as attendance, communication, and feedback.

2.5.2 LetsIntern

LetsIntern is essentially an application that is designed to cater to students that looking for internship placement across the globe(Fei, Waheeb, & Sulaiman, 2020). The students will be required to register an account before they can begin applying for internship placement. The web-based platform of the application allows users to browse the list of companies and employers that have posted their job placements in the system. After registering an account, the student can begin looking for an internship position that interests him/her. After successfully receive a reply and completed the interview process, the student can officially begin the internship placement after receiving the offer letter from the company. By comparison, LetsIntern has a lesser intricate function compared to other similar systems because it only handles the basic features such as profile manager, job posting advertisement manager, manage candidate status and notify the shortlisted candidate/applicant.

2.5.3 AP Link

AP Link is specially catered toward undergraduates of Asia Pacific University of Technology and Innovation (APU) with the main purpose of fulfilling the academic process of the internship. As for the function that the system provides, it covers all the basic pre-requisite of an internship system such as login, account manager, search placement, document upload, and many more. As the major differences between AP Link and the other system. Undergraduates from APU can enhance their portfolio by adding a personal statement about themselves, listing their education, experience, project, and even their skills. Aside from that, the student can also include their external details such as their Facebook account, LinkedIn account, and past project such as websites.

As for the step to use the system, the students of APU can begin by setting up their accounts and profiles through the AP Link page. Before the student can begin the application process, they will be required to submit their internship declaration that will be received from the APU administration. At the same time, the student will be required to submit their resume/CV form to the academic mentor for the internship approval process.

As the submission has been approved, the student can begin searching and applying for internship placement from the AP Link page. The system will display a list of employers and companies that have registered in the system. Finally, once the student receives the job offer, they can either accept or ignore it.

2.6 Comparison between the Existing Internship Management Systems

Based on the conducted review and study on these internship management systems and applications, many features can be considered as important to be included in internship management systems that includes portfolio management capability which allows interns enhance their employability chances with employers that use the system.

On the other hand, implementation of the company profile benefits both the students and the host company as it can avoid the chances of mismatch placement which will result in the waste of time and resources for both parties.

Capabilities that allow students to communicate with the past intern from the company to gain more understanding of the workplace. This will allow students to secure a suitable placement that fit their current skillset and company expectation.

Meanwhile the system may also include a feedback feature that will allow interns and host companies the opportunities to use feedback information to improve and enhance themselves. Unlike other systems, real time communication platforms can be integrated with this system in form of a chat or messaging feature that allows interns to communicate directly with their supervisors, mentors/facilitators and fellow interns. This fosters collaboration and presents a quick and efficient communication means. To aid learning during the study period, the system

may hold a centralized resource library where interns can access learning material, guides and best practices to their fields of study.

2.7 Loopholes of the current system.

The current manual-based system used by Soroti University. Particularly, the system is inefficient especially when many interns are to be handled in a short time. The system is slow and requires many workers all of which leads to increased costs.

On the other hand, manually handling intern's registrations, enrollment, and course scheduling can be time-consuming for administrators. This manual process may involve paperwork, data entry, and constant communication with interns, leading to delays and potential errors. This is also due to the manual and large volumes of data that is normally recorded on paper which is in most cases thrown away by the managers after delivering training sessions. Therefore, there are no or very few records kept about the different applications by interns. Sometimes the manual records are misplaced thus difficulty in tracking the past history records.

Therefore, systems often lack centralized databases, making it difficult to access interns records and track their progress efficiently. This lack of visibility may result in duplicate records, inaccurate data, and difficulties in generating comprehensive reports. Consequently, manual communication methods, such as email or paper-based notices, may lead to delays in conveying important information about course updates, schedule changes, or training announcements to interns and instructors.

Without an automated system, tracking interns progress and performance becomes challenging. Evaluating course completion rates, assessment scores, and identifying areas that require improvement may not be readily available or accessible. Manual systems can make it challenging to allocate training resources effectively, such as training facilities, trainers' schedules, and learning materials, potentially leading to scheduling conflicts and resource wastage. A manual internship management may present a challenge of difficulty being integrated seamlessly with other systems, such as Learning Management Systems (LMS) or Human Resource Management Systems (HRMS), resulting in data silos and redundant efforts.

2.3 Relevance of the internship management system.

In this paper, a systematic online industrial/internship system will facilitate student, facilitators and employer in the industry or organization. The manual system used in universities had been transformed into the automation system. The system able to list out all the organization that registered in the system which offered an internship in their organization.

A suitable searching technique used in this system search and recommend the best organization to the user. The system eased the students to find the organization easily by giving a recommendation which organization suitable for them based on their qualifications. This system had already been implemented at other universities and the majority agreed that the system succeeds to overcome the problem. Prospective employers need to register with the application system and provide with the required information regarding the background of organization. The students also need to register with the system and provide qualification details and achievement. As registered employers, they can select qualified students to undergo internship at their respective organization after the student submits an application letter to their organization

This project is aimed at developing an online based internship management system which can be used in small and bigger organizations. Relevance implies the merits as well as the reasons as to why the internship management information system is aimed at. The following are some of the merits of the system that is to be implemented;

The web based Internship Management System (IMIS) is a recommender system which can guide students to find the best organization that suits their qualification. The recommender is developed by using case based approach which is the best approach to obtain the result of the best recommended organization.

Besides, the interface design included the buttons and the forms are very simple that make the user feel connected to the system. Apart from that, all the criteria that have been included in this recommender system are based on the provided criteria by the students into the system. The placement for the student is recommended based on allowance, qualification and also preferred location. This system can give a lot of benefits to the coordinator, organization and student in handling the internship program.

Greatly simplifies processes for both the interns and the specific organization. This saves time spent by the interested participants travelling to the organization to take a look at the open slots before applying. Therefore, with the online system, one is able to look up through an online system and apply as well as make the necessary transactions after which the application may be approved.

Alternatively, it will ensure data accuracy during application process. This is due to the interactive interface that has provision for interns to apply more easily, forms as well as have a visual confirmation that the information placed is correct.

CHAPTER THREE: METHODOLOGY

3.1 Introduction

This chapter describes the methods that shall be used to achieve the objectives of the study. This describes how data was collected using literature review, interviews, observation, focus groups and how collected data will be analyzed to aid the system development.

The method chosen for data collection of this project is qualitative, which is often the best and most efficient approach of collecting complete information from the small population and horse mouth of the administrator. Qualitative methods are for conducting researches that rely on open ended exploration of people's action, words, thoughts and intentions. Qualitative methods include observation, focus groups and interview.

3.2 Area of Study

This study shall be conducted in Soroti University (SUN) in Arapai Sub County, in Soroti district. SUN is chosen due to the existing problems identified by the system, above all, it is near and data can be collected easily given the fact the researcher has previous experience with the area while serving a training period as an intern.

Departments that directly deal with training and internship related activities will be of major consideration and these includes; library management department, Directorate of Information and communication technology, Human resource department and others.

3.3 Population and Sampling

Population refers to the entire group of people, events or subjects of interests that the researcher wishes to investigate whereas sampling refers to the process of selecting a sufficient number of elements (sample) from the population. The purpose of the study determines the number of participants to involve in the study. The participants can be segregated by many factors such as employment title, gender and other dimension that would benefit the study.

In this research, twenty-one participants shall be involved in the study. The Head of Department, one (01) shall be involved and the other participants shall come from two focus groups that are the employee(s) and interns(s). A total sample size of (10) male and nine (11) female participants shall be involved in the study.

Table showing the sample size of this research.

Group	Head of Dep't	Employee (s)	Interns (s)	Total
Number of participants	02	03	16	21
Male	01	02	10	13
Female	01	01	6	8

Table 1: sample size table

3.4 Iterative Model.

This is the main method to be used for system development. It takes the waterfall model which emphasizes a logical expression of steps including requirement specification, system and software design, implementation and testing, verification as well as maintenance. Henceforth the iterative model cycles the waterfall model through it several times in small increments.

3.5 Data Collection Techniques

This explains the different methods that shall be used by the researcher. A number of steps, procedures and tools that will be employed are as shown below;

3.5.1 Interview technique

This is the most commonly used and normally most useful fact-finding technique used by the researchers to collect information from the participants face to face. There can be several objectives of using interviewing such as finding out facts, generating user interest and feelings of involvement, identifying the requirements and gathering ideas and options.

This technique involves asking open-ended questions to converse with respondents and collect elicited 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 are to be used as they help one explain, better understand and explore research subjects' opinions, behavior, experiences and phenomenon.

3.4.2 Observation

This method is utilized to collect precise data regarding the real functioning of the system, especially with regard to its processes. With the use of this technique, the researcher was able to methodically examine and document the features and behavior of the organization's activities and procedures.

The approach provides more context-relevant and in-depth information, allows for data gathering, enables evaluations of the responses' dependability when viewing a system's activities in real time, and is flexible enough to adjust to changing circumstances. It is significant because it enables the observer to see precisely what is being done, validates facts and data, is reasonably priced, and provides information on the task's physical surroundings.

People may, consciously or unwittingly, behave differently while they are being observed, and certain tasks may not always be completed in the way that is observed, making the observation technique unworkable.

3.5.2 Questionnaire.

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

3.6 System Design.

This describes how the functions of the internship management information system could be realized. This shall be done through the use of system design tools such as DFDs, Context diagrams, ERDs that could be used in the development of the system and its databases.

The architectural and module design shall be integrated to make up the system using (UML) Unified modeling Language which is an object-oriented language. UML clarifies and specifies the working of the system with the help of the UML standards. The requirements specifications from the requirements analysis shall be studied to prepare the system design which helps in specifying the hardware and software requirements and it defines the overall system architecture.

The system is to have a home page where multiple options allow the users log into the system. In addition, the system will have a system administrator who has the ability to add and manage user accounts departments, internship dates and calendars as well as heads of departments who manage their interns but with limited management rights apart from creation sessions and allocating a specific staff and with tools to generate reports and analyze data related to training programs, interns progress, and feedback to evaluate the effectiveness of the training.

3.7 System Implementation Software and Tools

On the other hand, XAMPP server has the MYSQL components that shall enable us to create the system databases and tables that provides the platform from which the system information is stored. The XAMPP server used is a relational database management system (RDMS) whose primary Query language is MYSQL. MYSQL supports different data types including primary types such as integer, float, decimal, char (including character strings), varchar (variable length character strings), Binary (for unstructured blobs of data), text (for textual data) among others.

PHP, Bootstrap, CSS, HTML, JavaScript, MySQL database, and Apache web server is a technology used to develop this system. The results of the research assure that the system can be used as a support for the internship program.

3.8 Testing and Validation

To ensure appropriate operation, the system's components must all be put through testing. They must be combined to create a system that is completely operational.

Software or hardware attached to a computer system is tested as part of a system test to see whether the system complies with the requirements. No understanding of the logic or internal structure of the code should be necessary for this testing.

System testing should be applied to the entire system, keeping in mind the functional and system requirements. System testing should be done to confirm that the client cannot submit empty fields, especially those that are necessary. Leave some fields empty to see if the system can send an alert message.

Validation shall be done to ensure that data fed into the system satisfied the pre- determined formats and complied with stated length and character requirements including other defined input criteria. For example, a field that requires a date should not allow letters.

For accurate validation, sample data should be into the system to find out if the system is able to respond correctly to the test data fed into the application that is if it is correct or incorrect data. Different stakeholders shall be left to interact with the system to find out its validity.

CHAPTER FOUR: SYSTEM ANALYSIS AND DESIGN

4.1 Introduction

This chapter covers the analysis of the current system, including its strengths and shortcomings, as well as its requirements (both functional and non-functional), design (system architecture, context diagram), and requirements for the system. User case diagram, ERD, and data flow diagram).

4.2 Current system study

The human resource manager serves as the chief administrator of the manual file-based IMIS information system, which is also overseen by other administrators from various departments.

In addition, a student is responsible for maintaining the manual file and log books where data is entered, processed, and authorized. The institution is a single, divided building, but each intern's data is stored separately in a file from each department, with little automation in the system.

When a student arrives at the internship location, the human resource department meets him or her, records the important documents in the intern enrollment book, and directs them to the appropriate departments.

In order to decide whether or not to enroll the intern, the department head speaks with the student. The intern's details, including those regarding the internship for which the student has been enrolled, are recorded in a form. This form is subsequently produced in two copies, one of which is given to the intern and the other of which is kept for future reference and to provide data for the books of records.

The interns within a department is handed over to the field supervisors or staff who provides the necessary training and captures intern records about performance and progress in the intern evaluation form.

Evaluation results captured in the records book for further reference and these records may be used for accountability, report preparation and other statistical purposes.

4.1.1 Findings from the questionnaire.

Questionnaires were given out to different respondents including interns, head of departments and hiring manager. The responses are presented as follows;

"To place an application, every intern has to physically go to the desired organization to present an introduction letter or a written application." This indicated that it would be inconvenient for every intern to come in and place a costly (transport-related) application for an internship place. Because some applicants tend to leave out such processes, this decreases productivity of capable interns and also resulted to last option entry of interns to less desirable places to carry out the internship.

Furthermore, the human resource managers and department heads reported that requests for applications were submitted over the telephone, but that this method was ineffective because of how unofficial it was due to its resultant discrepancies with the organizational policies as well as a big inconvenience to them since they never had the authorities of running such duties. As a consequence, fewer individuals made applications at the organization which resulted in lower numbers of applicants.

The person in charge went on to point out that calling or traveling were the only ways that clients could place their orders. It indicates that to enhance visibility, services and efficiency, employees and interns were at a loss for ideas.

The pie chart of the major challenges of the current system.

A pie chart of challenges presented by current system
sun.ac.ug

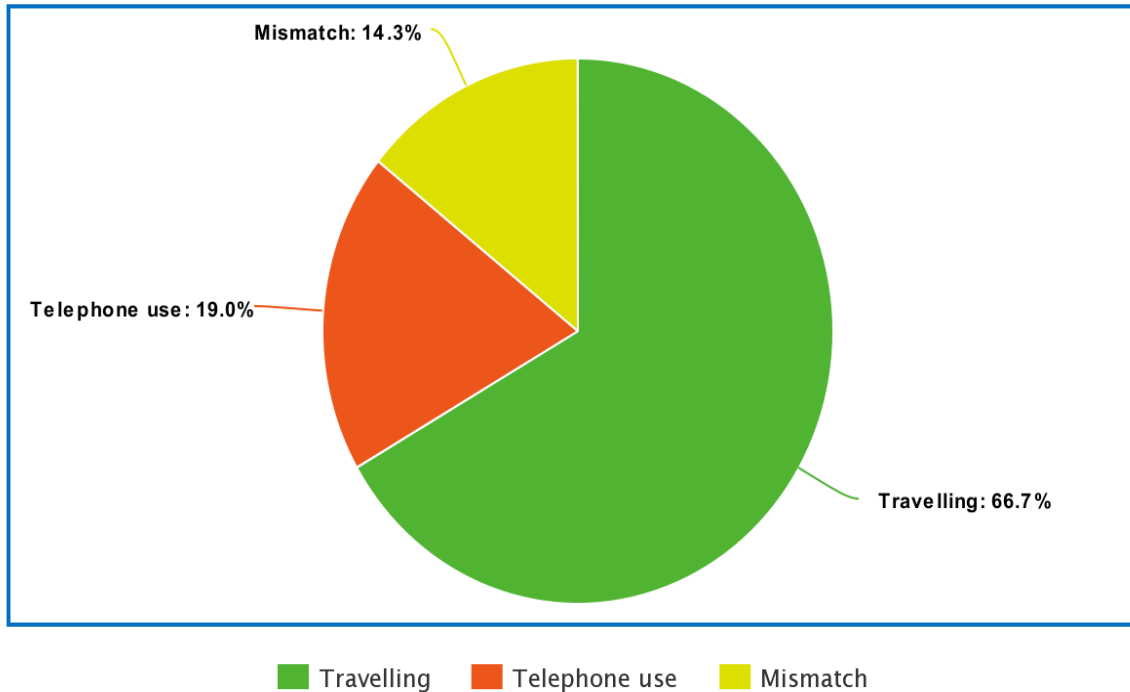


Figure 1: Pie-chart of challenges at SUN

The difficulty of actual travel, however, included delays, wasted time, and transportation costs. The interns pulled out, meaning they didn't submit any placement applications, because they were unwilling to overcome these obstacles. During this research, travelling presented to be the most challenge and generated 66.7% of the challenges.

According to the preceding figure, 19.0% of respondents stated that a significant difficulty with the current system was using telephones. This problem affected both the applicants and the staff because some managers were inaccessible by phone, and the managers complained that the system was insufficiently official because they were still receiving calls after hours, which was extremely inconvenient.

Failure of interns to get places of internship that met their fields as well as offering the necessary training that met their interest persisted to be another challenge of the system. This collected the smallest 14.3% of the total sample size used.

4.3 Strength of the current system

The current information system at SUN gives an intern chance to interact with the location of internship/organization physically thus explaining their interest in details and also allows better selection of places by considering aspects such as access to reliable accommodation, state of organizational infrastructure in relation to outcome.

Close supervision of the field supervisors and staff by the directing managers towards intern handling in terms of training while giving interns an opportunity to resort to any other organization with a report describing previous internship training and achievements. The current system may not require specific skills and knowledge in the field of ICT to handle intern problems and records, and enrollment processes.

4.4 Weaknesses of the current system

Difficulty in Retrieving Records as one of the primary challenges faced in manual record-keeping is the difficulty in retrieving records promptly when needed accompanied by need for large physical storage area or expansive enough to accommodate book-based records poses a logistical and spatial challenge.

The mode of the current system is susceptible to deterioration of paper based record over time, leading to information loss as well as threat of losing information due to disasters such as fires, floods, or earthquakes is a serious concern with physical record-keeping. This research explores the time consuming nature of the current system in that the manual recording process is inherently time-consuming, contributing to system inefficiency

Posing inability to remote access since the current system is manual in its nature often restricts access to on-site locations, limiting the ability of personnel, including directors, to retrieve information remotely. Let alone its vulnerability to corruption or destruction of evidence that would be mitigated by digital safeguards.

The system is prone to errors due to the fact that it is manual throughout. The managers or hiring officers have to manually capture data from interns since all humans are prone to making mistakes.

4.5 System Requirements

The information gathered from the Organization was analyzed using a variety of techniques, including interviewing and observation, from which pertinent data was gleaned. The functional and non-functional requirements were identified and listed in a systematic and ordered fashion.

Table showing system users and their respective requirements.

System User	Summary	Requirements for each user
Hiring Manager/Human resource officer	This is a staff whose role is tied at receiving and registering interns and forwarding them to the responsible departmental staffs.	<ul style="list-style-type: none"> • Login • Register intern • View records • Search intern, department, HOD record • Edit records, save intern records • Approve intern • Post internships/dates • Logout.
Head of Department	A senior generally involved in overseeing a specific department or unit. He manages students under his department.	<ul style="list-style-type: none"> • Login. • view student records, • Search for intern records, • Add staff • Evaluate student progress • Assign student staff and logout.
Insurance Manager	An official who manages the insurance related processes of the interns.	<ul style="list-style-type: none"> • Login, • Fuse insurance records, • Search for student • Logout

Student	This is a registered intern in the facility who responds to the system notifications prescribed on the diagnosis form.	<ul style="list-style-type: none"> • Applies for internship • Edits personal profile • Enrolment application • Record on logbook • Attend sessions
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Table 2: Table of system user and their requirements

4.5.1 Functional Requirements

The following are included in the functional requirements, which outline the features or services the system will provide to its final users,

All pertinent intern data as well as any additional medical data should be captured by the system. To facilitate retrieval, the system should efficiently enable the storing of internship records.

The system and other pertinent internet services, such as research on management practices and unidentified internship opportunities and how to access them, should always be accessible to the manager, students and other users. The data should be able to be uploaded by the system for cloud backup and storage. Any transaction should be able to be automatically calculated mathematically by the system. The ability to access remotely, making it convenient for all authorized users to do so at once.

4.5.2 Nonfunctional Requirements

The non-functional requirements, which focus on improving the system's accuracy, dependability, and performance rather than its specific functions may include the ease to use the system ought to assist users in making easy use of it.

Among others, arises the requirement of backup recovery such that in the event of a disaster, records can have restored and system operation restored in lean time and low down time. The system enforces high security that should be guaranteed by the system to keep unauthorized users out of the database, resources and interfaces and to guarantee that only authorized users can access user profiles, records and even perform the necessary operations on the data.

Power sources that can be swiftly substituted, such as UPS- systems, solar panels and standby generators, maybe implemented for undistorted supply of electricity that will aid smooth operation of the system and minimal data loss due to incomplete execution.

To guarantee correct system use, all users must possess a basic understanding of computers and use. This will range from performing the necessary updates to ensure proper maintenance and constant up to date state of the system for smooth running of the system.

4.6. Hardware/ Software requirements.

4.6.1 Hardware requirements

The hardware requirements include;

- i. A hard disk of at least 80GB.
- ii. A Universal hard disk drive.
- iii. Random Access Memory (RAM) not less than 1GB.
- iv. An uninterruptible power supply (UPS).

4.6.2 Software Requirements

The software specifications required on the computer system include;

- i. XAMPP (Version3. 2.4).
- ii. Windows 7 or higher version.
- iii. Internet browser such as Mozilla Firefox and Google Chrome.
- iv. The system should have 32/64 bits Operating System.

4.7 System Design

Determining the architecture, interfaces, and modules necessary for the system to fulfill the requirements' functionality is known as system design. This was accomplished by using system design tools, such as context diagrams, DFDs, ERDs, system architectures, and user case modeling diagrams, to better understand the links and interactions between various processes.

4.7.1 System Architecture

The web-based architectural system of the IMIS provides an overview of how users interact with the system database via the Internet. Each user on the system will have their password

and username. After seeing the welcome screen in any department, the user must proceed to log into the system using their valid login information, which is usually their username and password. To gain access to the system, a new user must first register.

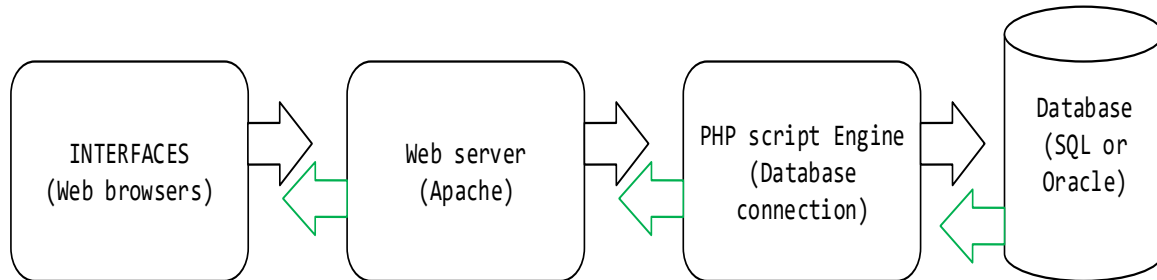


Figure 2: The system's architectural layout

The human resource personnel reserve the exclusive authorization to the system by new users and administrators and monitors all the activities in the system. The receptionist receives the interns, captures their details and then forwards them the head of department.

The department head gets to his interface page and sees all the interns awaiting approval after the personnel examines the student and determines whether to deploy/approve. The head of department approves the intern, who is then added to the list of registered students in that department, allowing him to prepare a report form that confirms the intern's registration and acceptance in the particular department.

This document can be distributed digitally by automating the intern page update which exempts a download of a confirmation form by the intern themselves. The intern's interface also presents a page that allows one to track the application status, initially after registration application the approval status stays pending till the manager and the head of department approve the intern on their respective interfaces.

At the intern's interface, an initial login prompts a registration process that is carried out by the intern themselves as requested by the insurance officer depending on the organizational policy. This details are captured and sent to the insurance officer. This official manages the intern's insurance detail by confirming their qualification details and further has ability to generate reports as desired. The interface of the insurance officer shows him the list of students who have completed the registration process fully.

4.7.2 System Context Diagram

This is the most advanced level of data flow diagram, defining the scope of the system and providing a "outward" looking view from the system, showing limits of the system and interaction with external entities. The framework diagram also depicts various subsystems or groups of individuals who interact with the system, as well as the primary data flows. It has the data flows and processes depicted below;

Context diagram of the Internship management information system

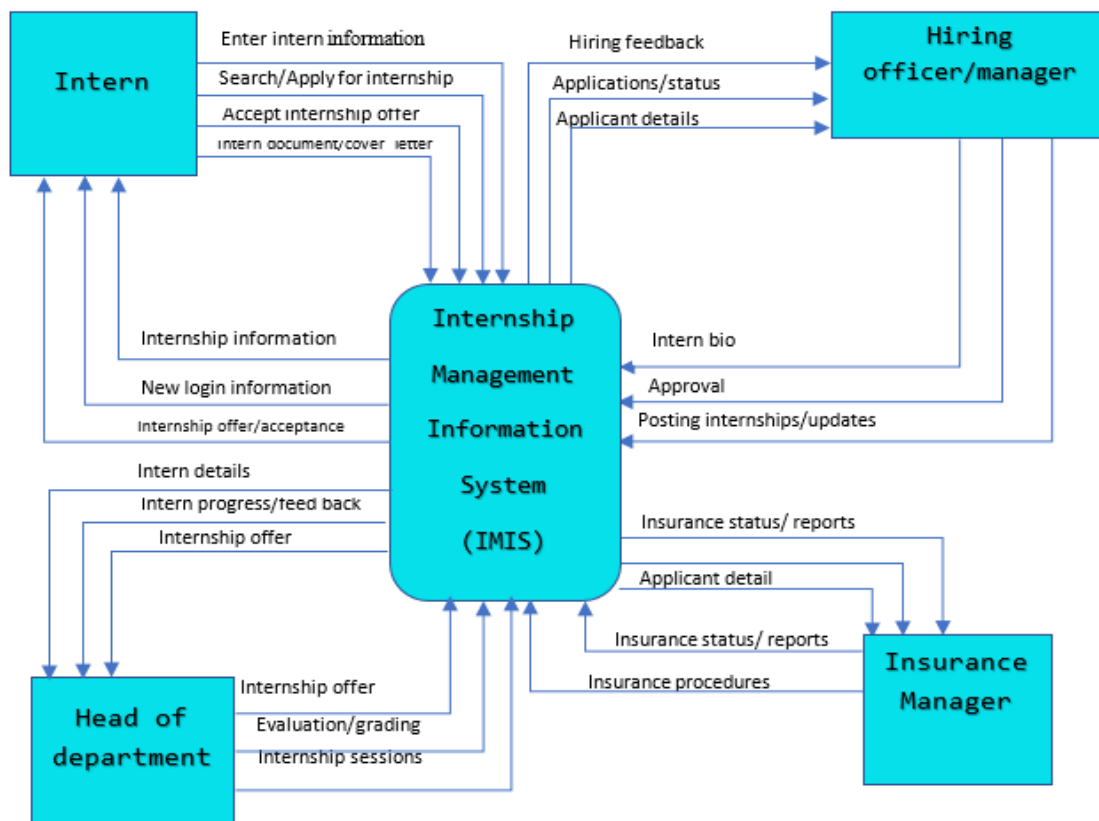


Figure 3: The context diagram of the IMIS

4.7.3 Data Flow Diagram (DFD)

The data flow diagram below depicts how data moves or changes through a specific sequence in a graphical top-down form that explains the system components, operations, and interfaces. It is beneficial to investigate the internship management information system's inputs, outputs, and procedures.

4.7.3.1 Data flow diagram –Level 0

A Level 0 Data Flow Diagram (DFD) is the highest level in a hierarchy of DFDs and provides an overview of the entire IMIS system and its process. It represents the system as a single process (often labeled as "System" or the name of the overall process) and shows the major high-level processes and external entities that interact with the system.

The Level 0 DFD is also known as the context diagram because it places the system in its broader context and illustrates how it interacts with external entities.

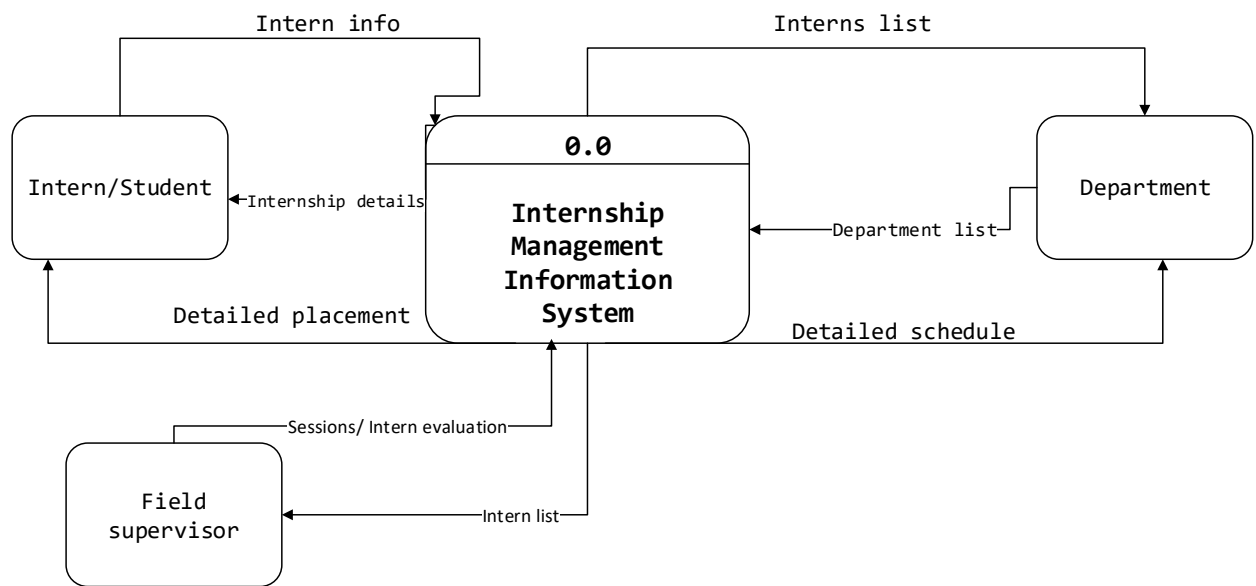


Figure 4: DFD level-0

4.7.3.1 Data flow diagram –Level 1

A Level 1 Data Flow Diagram (DFD) is a more detailed version of the system representation compared to the Level 0 DFD. The Level 1 DFD breaks down each of the main processes from

the Level 0 into sub-processes, providing a clearer depiction of how data flows within the system.

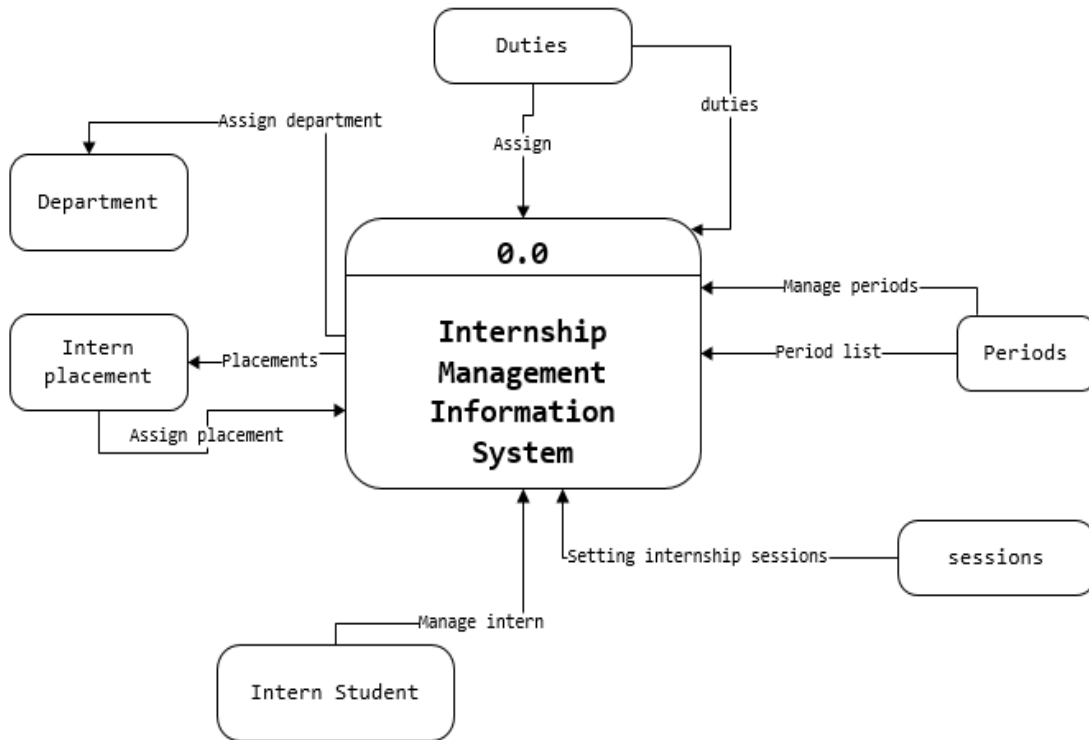


Figure 5: DFD level-1

4.7.3.1 Data flow diagram –Level 2

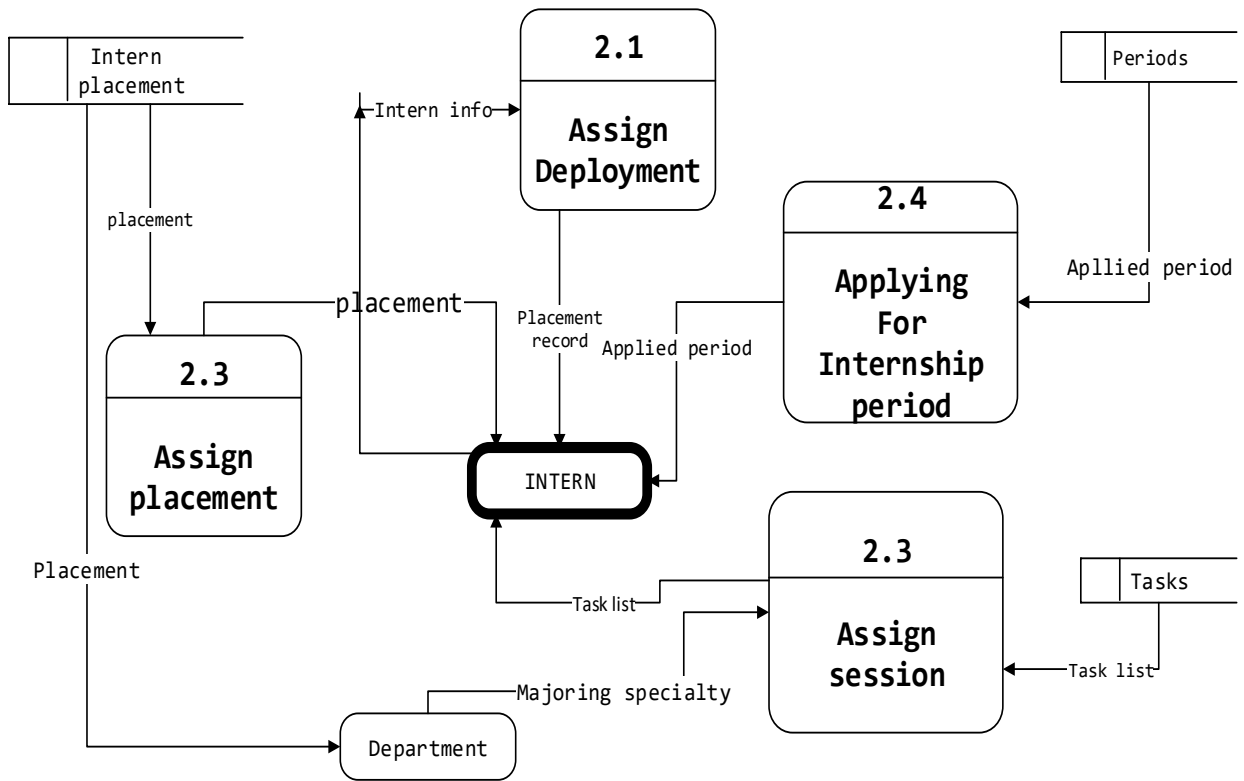


Figure 6: DFD level-2

4.7.4 System Entity Relationships Diagram (ERD)

The Entity Relationships Diagram is a graphical representation of the relationship between the entities and attributes within a proposed database of the system. The entities about the data and this particular system includes head of departments, students, departments, internship, application.

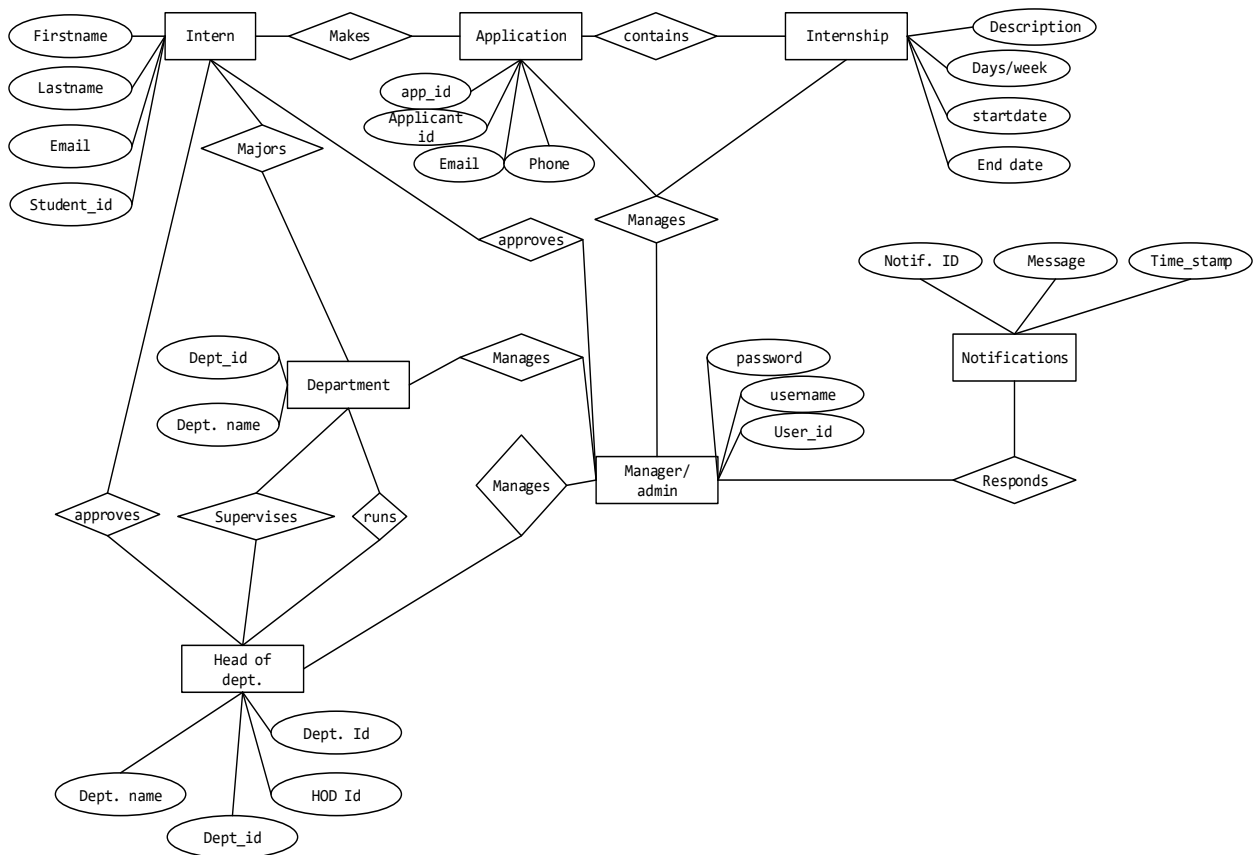


Figure 7: Entity relationship Diagram of the IMIS

4.7.5 User Case Diagram

The User case diagram represents the activities of the users with special functionalities of the system. Use case diagram model is what the system is expected to do and to view externally the use of the system from the user's perspective rather than internally.

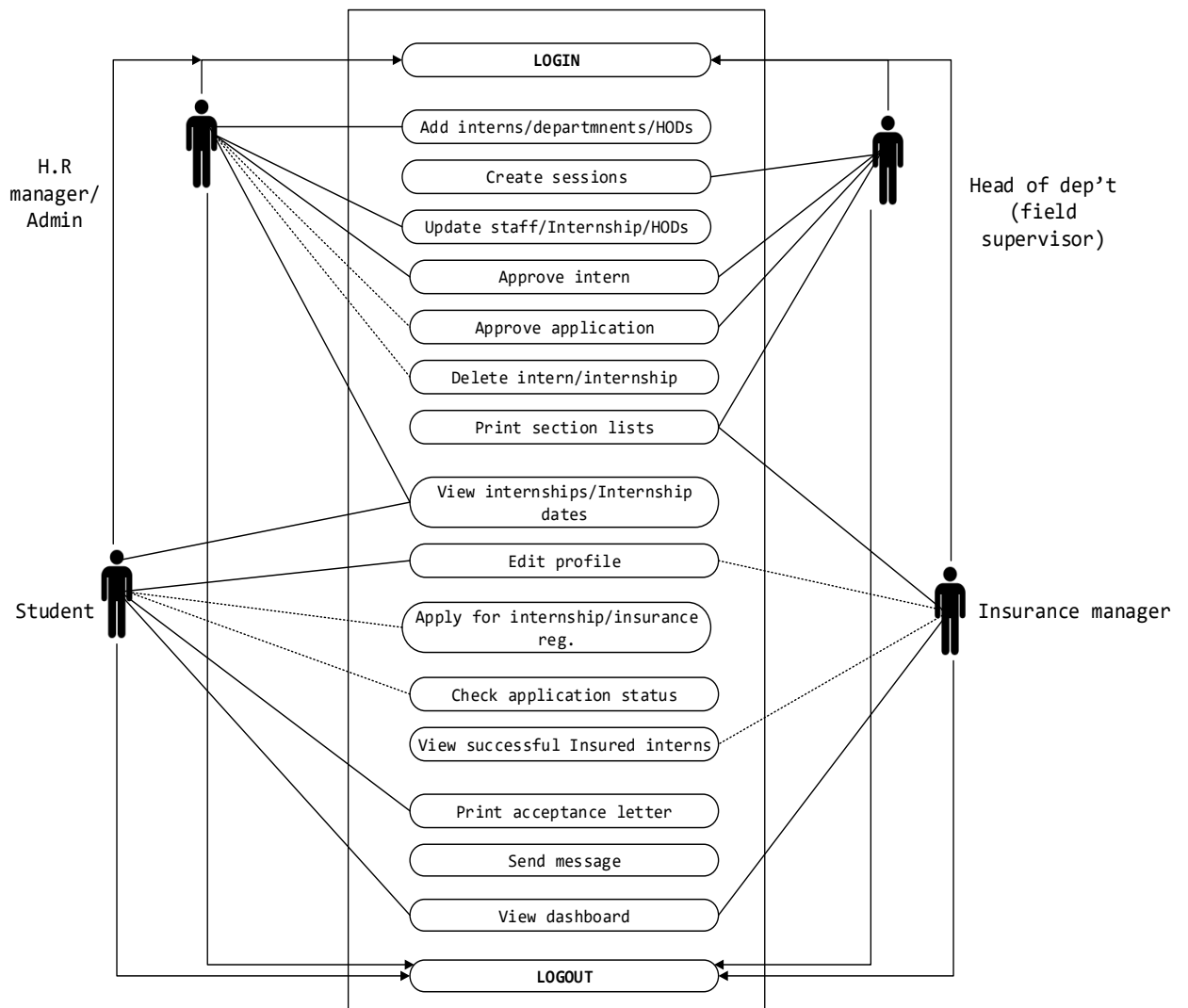


Figure 8: User case diagram for the IMIS

4.7.6 Tools used to implement the IMIS.

To develop the IMIS, application of the following programming tools was done effectively;

- HTML
- JavaScript and bootstrap framework
- MySQL
- PHP
- Sublime Text editor
- XAMPP version 3.2.4

4.7.7 Implementation and Testing.

This is where the real-world creation of the internship management information System took place, which includes establishing the Graphical User Interface (GUI), implementing the model in HTML and PHP, and creating the system database using MySQL, with the aid of Sublime text serving as a text editor.

4.7.8 Coding and testing.

Coding entailed converting the discovered structural design criteria into actual working computer codes, following which each function was built and tested to ensure that it operated as expected by the user. Coding was done with the Visual Studio Code text editor, and testing was done with the localhost XAMPP server software.

4.7.9 System Documentation and Training.

After all of the tests were completed, the system was documented to serve as a reference point for the system administrator and customers to maintain the system during its productive life. Following the system testing, the system users were trained.

CHAPTER FIVE: IMPLEMENTATION AND TESTING

5.0 Introduction

This area concentrated on turning the needs, both functional and non-functional, into a working / running system. It also demonstrated the implementation of the design described in this chapter.

5.1 Interface Design

The purpose of designing the user interface is to make how users interact with the system as effortless and effective in terms of achieving user goals as possible. It is also the method by which a user interacts with a program or web page. It was primarily concerned with the appearance and style of how a system appeared to the user, in this instance the client and administrator.

The following functional as well as non-functional specifications for the Internship Management Information System were put into effect:

The user is capable of viewing the various internship opportunities and dates available at the given organization as well as placing an application by filling out a given form with the required details, after which he can attach a cover letter or introduction letter and confirm the submission. The following are the user interfaces: interface for homepage and internship page.

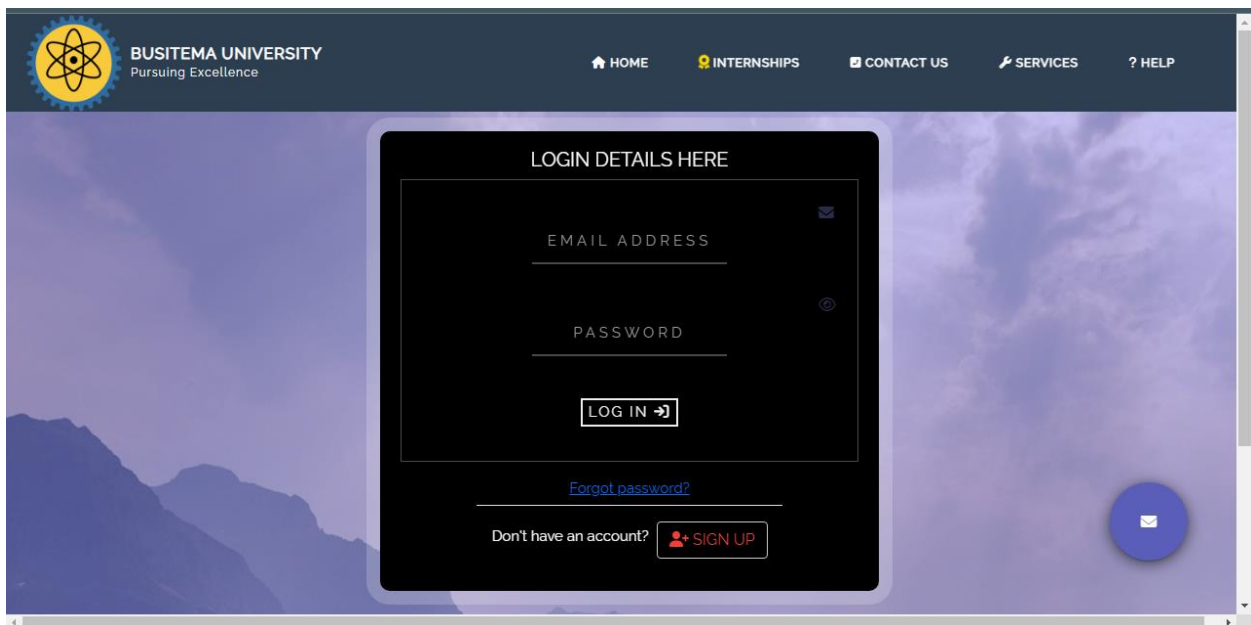


Figure 9: The login interface/index page of the IMIS

However, the system's homepage is a login page that comes along with a navigation header. The login allows the system users to login easily as long as they are registered. The same interface allows elite users like the administrators, Head of departments to login to their respective interfaces.

The internship page is linked below, and it allows interested parties to peruse through available internships, read the details, and apply for a specific internship opportunity if desired. When opportunities are added from the administrator/hiring manager interface, they are produced dynamically and automatically into a card interface within the internships page.

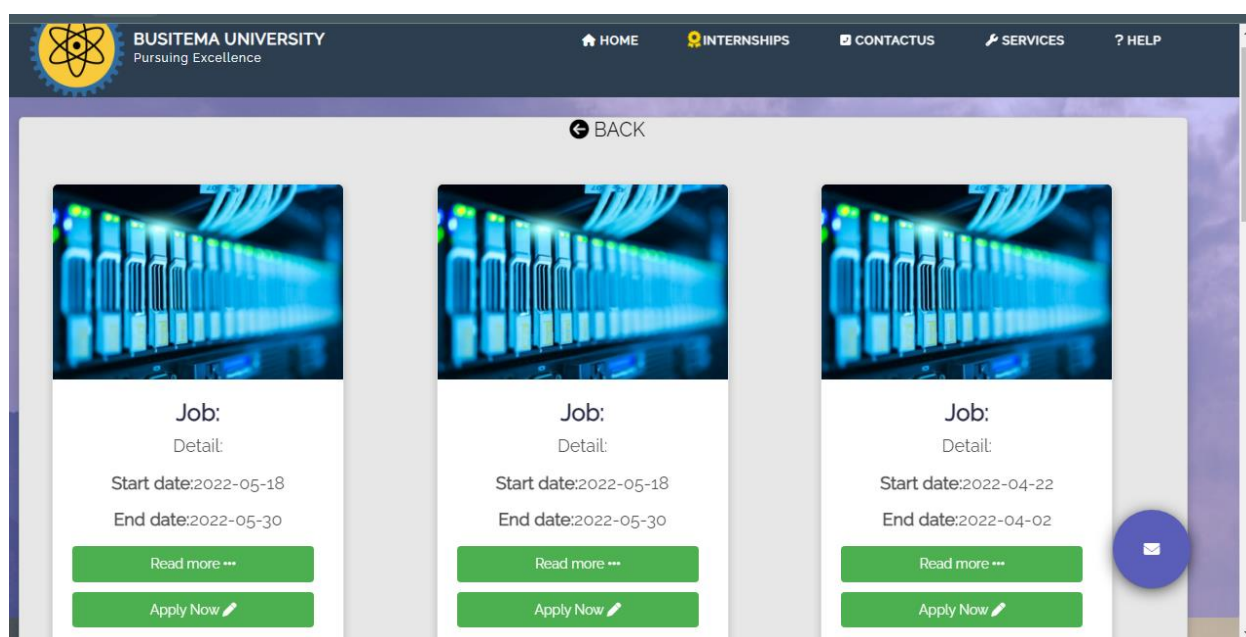


Figure 10: The internship page showing available postings

When one applies, they are redirected to a modal form where they add the relevant papers and details and submit using the button displayed below. The system's design permits the applicant to attach just a portable document format (.PDF) or a Word document (.docx).

If this process is successful, the administrator will be able to examine the applicant and his attached documents in his interface. The applicant will be screened by the internship body or hiring board, which in this case is a human resource manager. If desired, the administrator can download each applicant's accompanying paperwork and enroll them.

An applicant receives a confirmation email with updated login information, which includes an organizational email address paired with his student number, e.g. (2300402365@busitema.ac.ug) and a password that is encrypted on the organizational mail server.

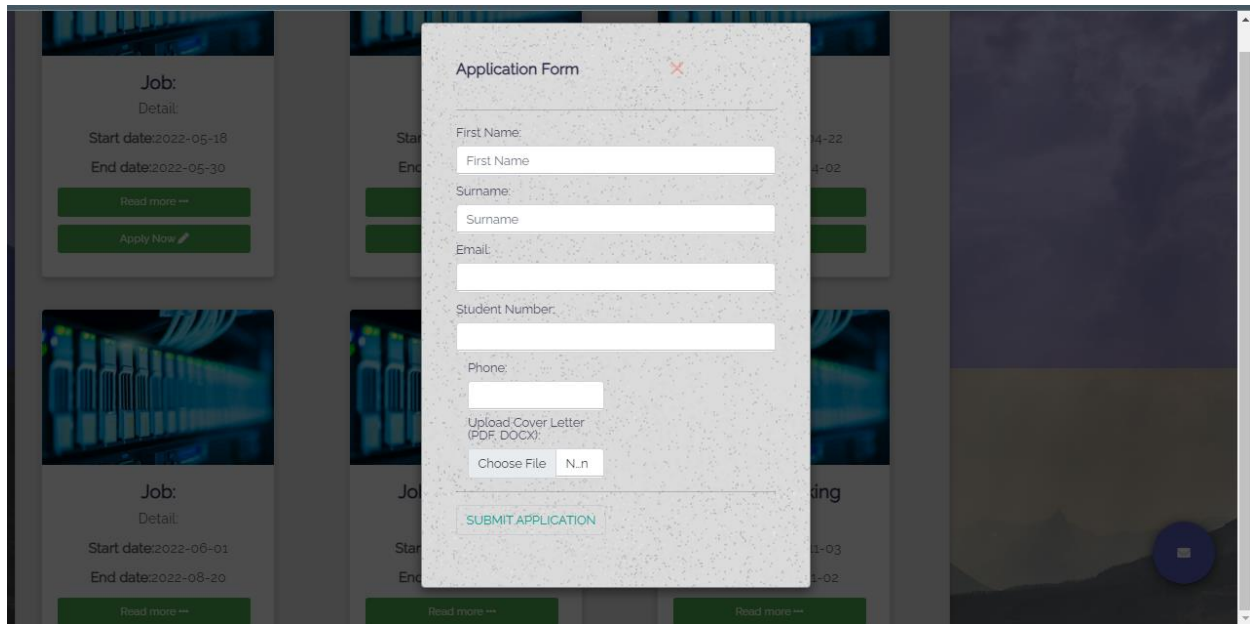
The image shows a web application interface with a modal form titled "Application Form" in the center. The modal has a close button (red 'X') in the top right corner. It contains several input fields: "First Name:", "Surname:", "Email:", "Student Number:", and "Phone:". Below these is a section for "Upload Cover Letter (PDF, DOCX):" with a "Choose File" button and a file name "N.n". At the bottom of the modal is a "SUBMIT APPLICATION" button. The background is a blurred view of a job listing page with cards for each job, showing details like "Job:", "Detail:", "Start date:", and "End date:". One card shows a start date of "2022-05-18" and an end date of "2022-05-30".

Figure 11: A modal application interface for each internship

The applicant can now login and instantly check his dashboard to view the status of his application, which is marked "Not approved" initially unless actions by the Department head and recruiting manager take effect. Upon placement and initial login, the applicant must additionally complete an application process as shown below.

Intern/Busitema | Today is Saturday, November 18th, 2023 | PROFILE: | Nakasi Rose

Internship application | My Application Status

Registration has occurred

Homepage / Registration

Welcome to the dashboard | Nakasi Rose, please fill this to complete your application

Identification number xxxxxxxxxx	Telephone Number e.g 07712345678	Academic year Choose academic year	Weekly working days Please choose the day
Date of Internship Select Start Date	Internship End Date End date	Your social security Receives health services	The name of the institution Company Name
Address Institution Address	Service area Service area	Telephone No. (5xx)-(xxx)-(xx)-(xx)	FaxNo. (xxx)-(xxx)-(xx)-(xx)
E-mail address E-mail Address of the Authc	Web Address www.xxxx.com	Residence address Enter the residence address ...	Complete the application

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Figure 12: An intern's application registration form

Intern/Busitema | Today is Saturday, November 18th, 2023 | PROFILE: | Nakasi Rose

Internship application | My Application Status

Internship Application Status

Home page / Status

Hello, Nakasi Rose. Your application is being processed. Check within 24 hours!

Names	✓ Manager Approval	✓ Supervisor Approval	✗ Creation Date	✗ Operations
Nakasi Rose	Not approved	Not approved	2023-11-18 15:55:02	Download File Trash

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Figure 13: Intern's status page showing application status

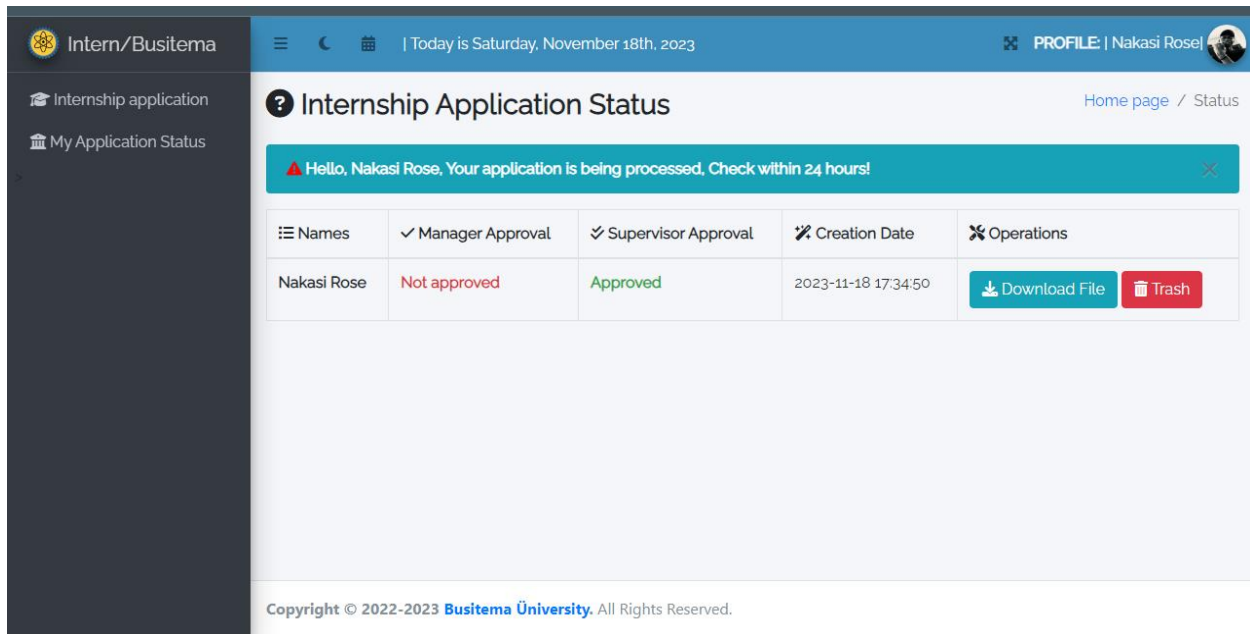


Figure 14: Intern application confirmed by the supervisor

The intern has been approved by the head of the particular department after completing the registration process, and his application status will indicate "approved" in the application status page, as seen below. As a result, an acceptance document in PDF format is generated, which the intern can obtain by clicking the "download file" button in the interface below.

The paper will include information about the organization to which he has been hired as well as his personal information. Details about his internship, dates, and the department to which he is assigned are automatically included.

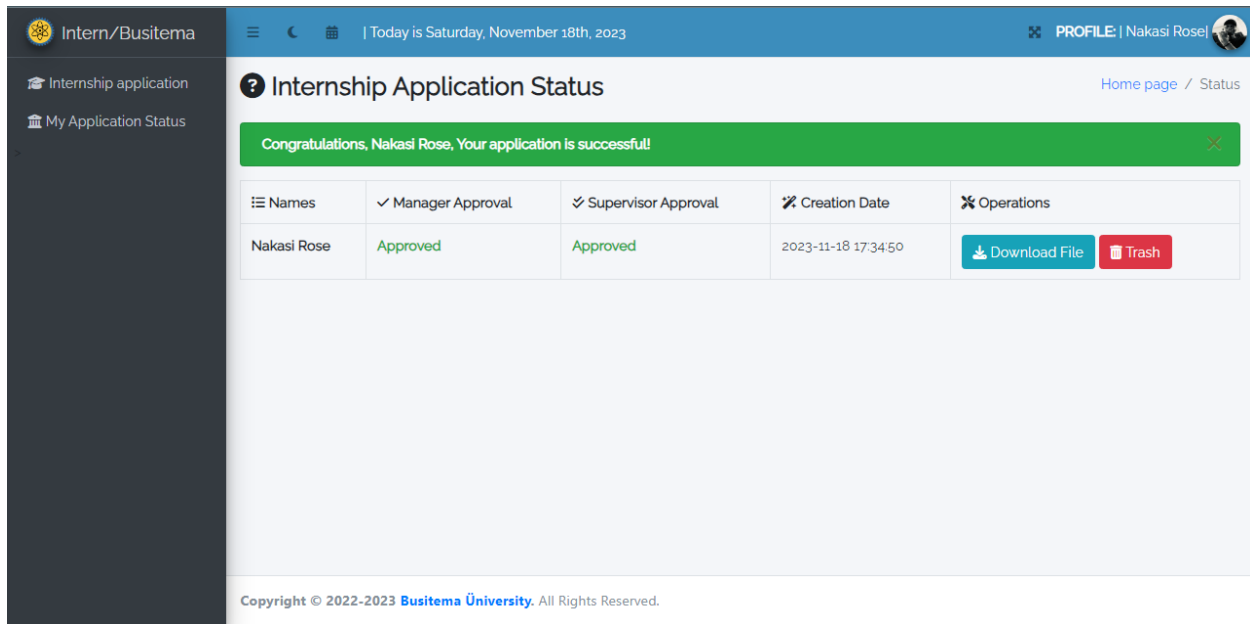


Figure 15: Intern application page showing success upon manager approval.

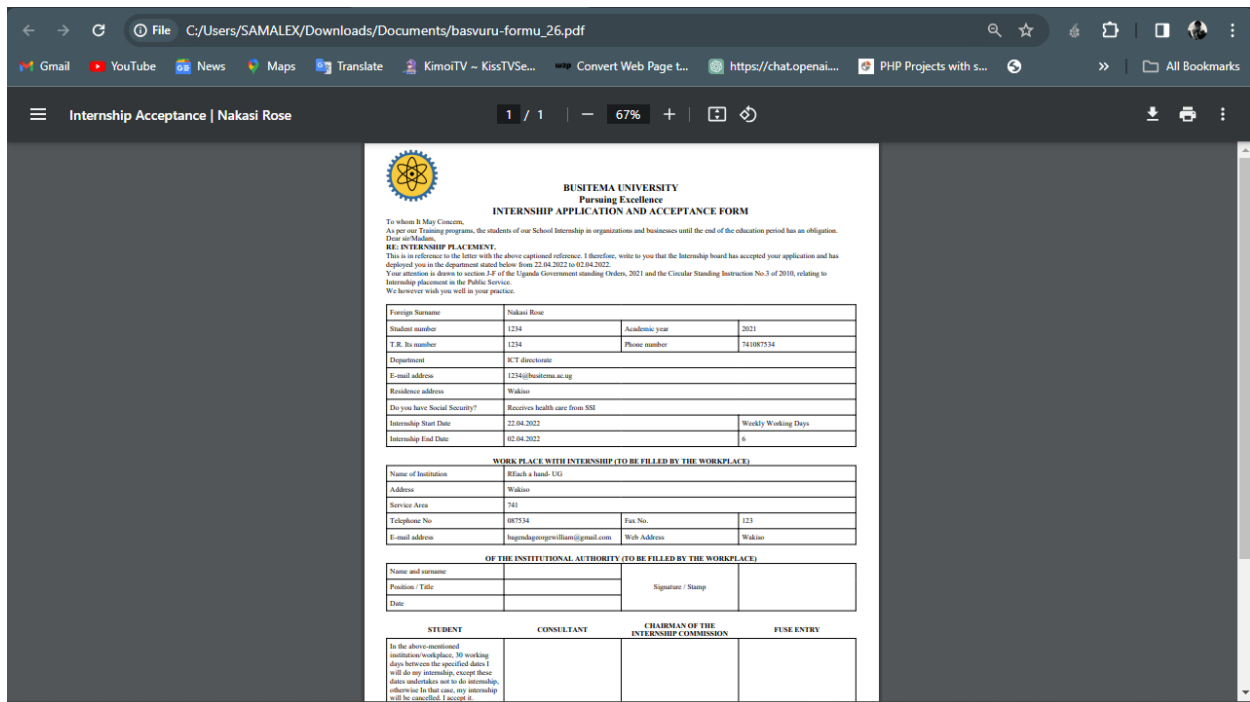


Figure 16: An internship acceptance form generated by the system.

The administrator is presented with a login form that is identical of all other login interfaces in which he/she must enter his/her username, which is a mail address designated for him, and password in order to access the administrator dashboard as well as the various pages for managing departments, internship dates, intern students, staff, approval processes, and applicant applications. The administrator dashboard is shown below.

The administrator panel is designed with a side navigation panel that allows him to navigate easily to pages desired with effectiveness.

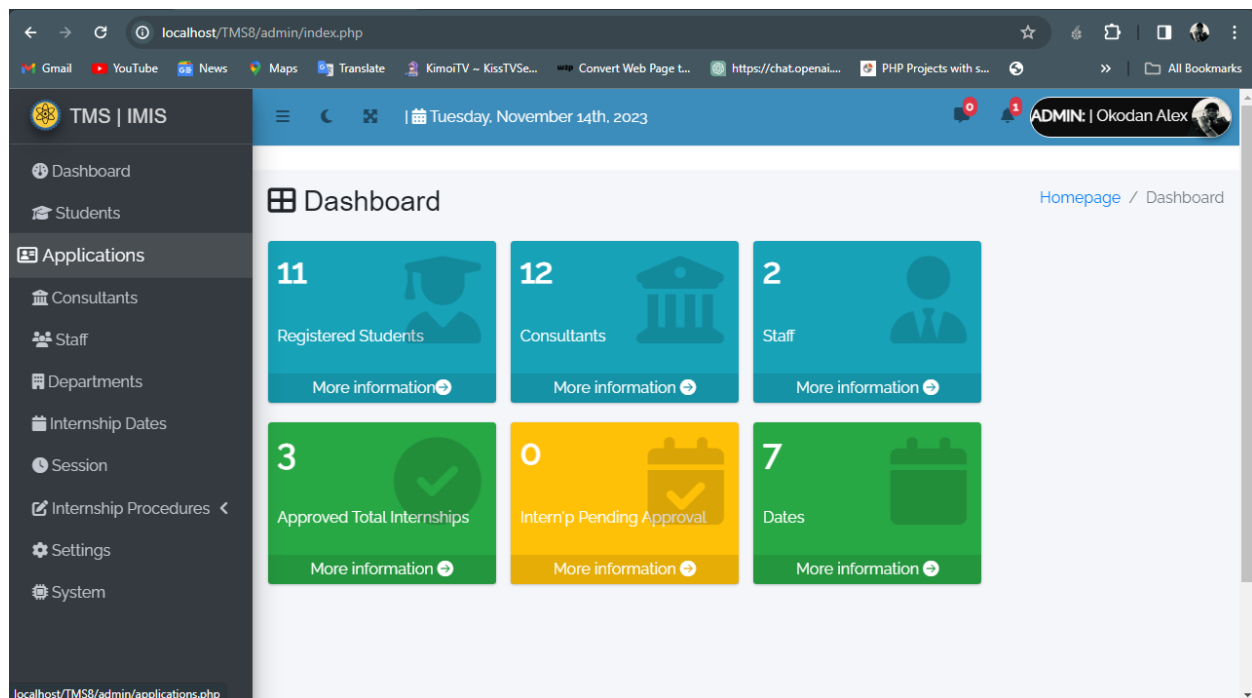


Figure 17: Administrator dashboard

The administrator can oversee and manage intern students, internship dates, head of departments (consultants), and sessions by gaining access to a side navigation panel. As can be seen in the interfaces below, the administrator can modify numerous aspects of the system, including intern periods, internship descriptions, requirements, consultants, applications, confirmations/approvals, and communications. Below, the administrator can view applicants and clicking on one will bring up a modal form that will enroll the desired applicant in the system under a specific department.

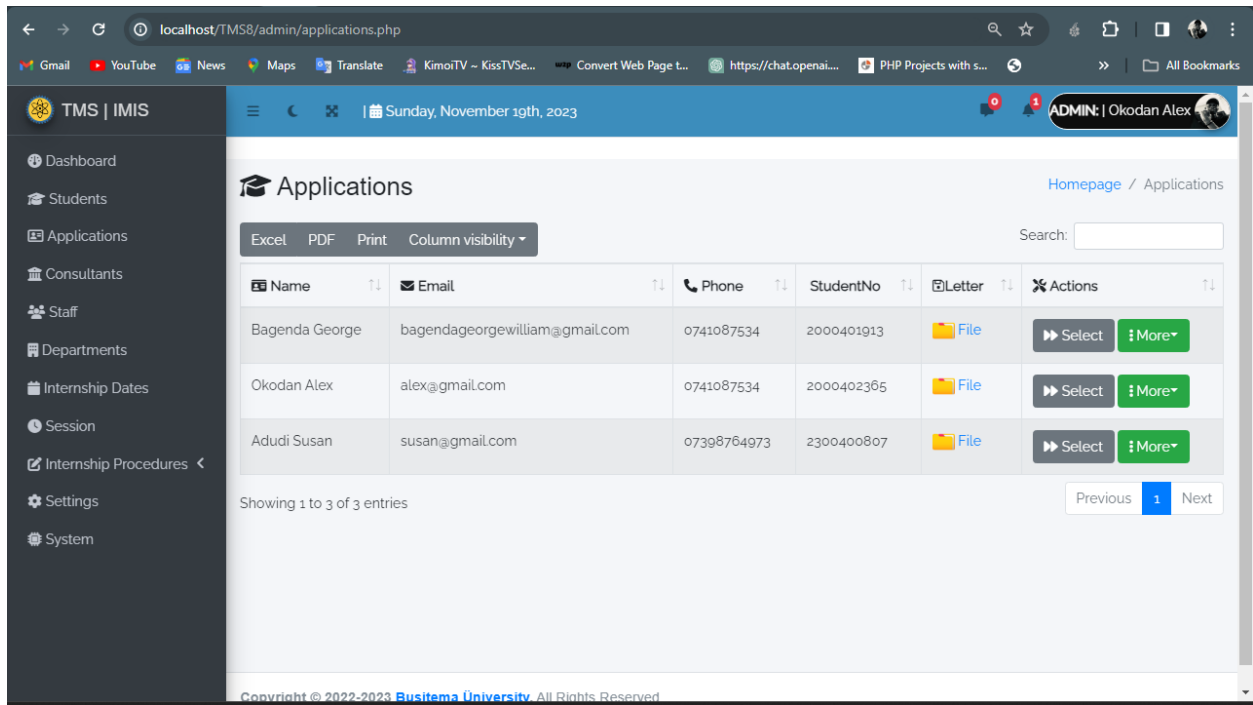


Figure 18: Administrator applicants page

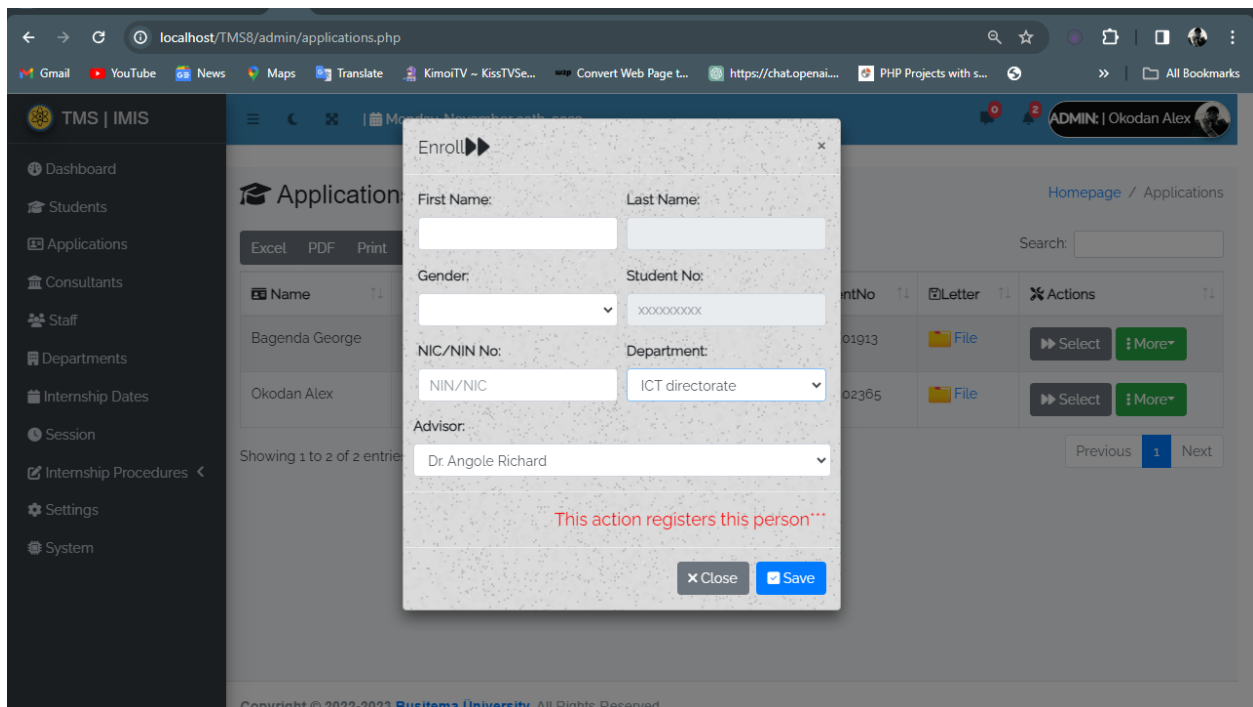


Figure 19 Administrator enrollment modal popup

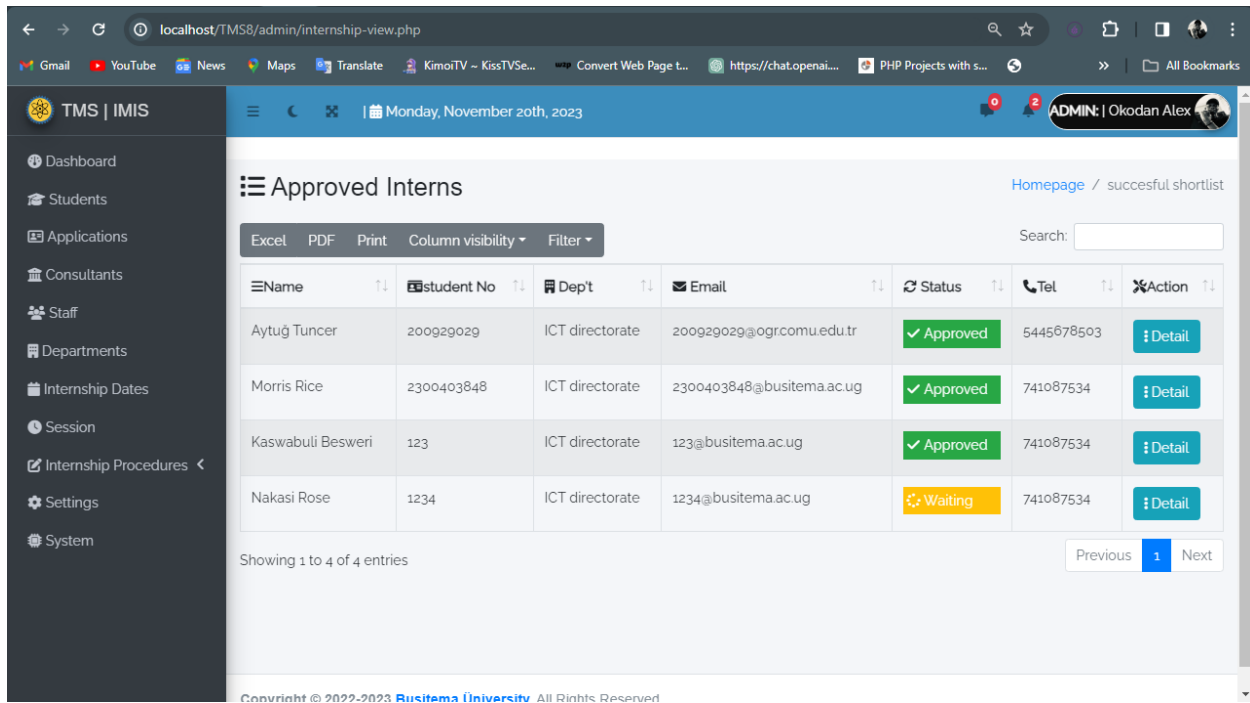


Figure 20: Administrator panel for approved and non-approved interns

The insurance personal manages matters of intern insurance and below is his dashboard, it presents him with records of all those under the internship program. Interns who undergo the registration process are reflected on this interface and their status of insurance inclusive.

Below is an interface listing the records of the insured students including their status and details. And here, a test intern “Nakasi Rose” insurance entry status shows “waiting” meaning the intern hasn’t completed a registration or the registration is complete but is not under any insurance program.

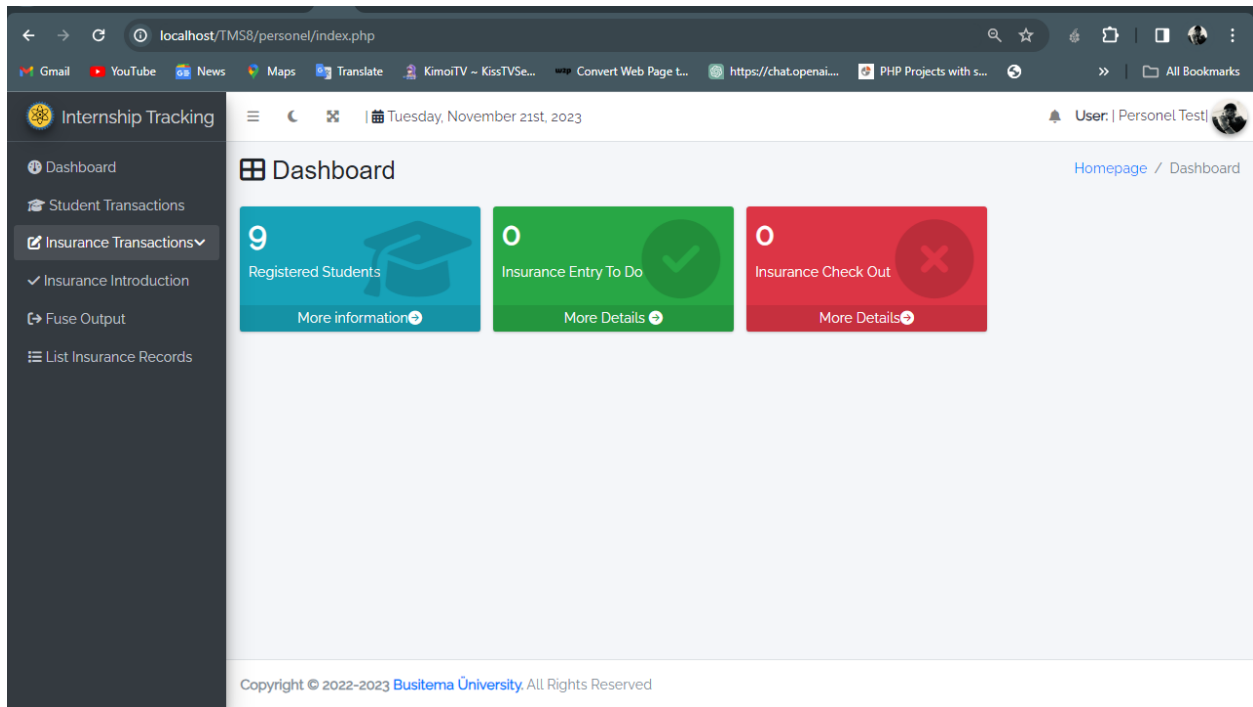


Figure 21: Insurance personnel dashboard

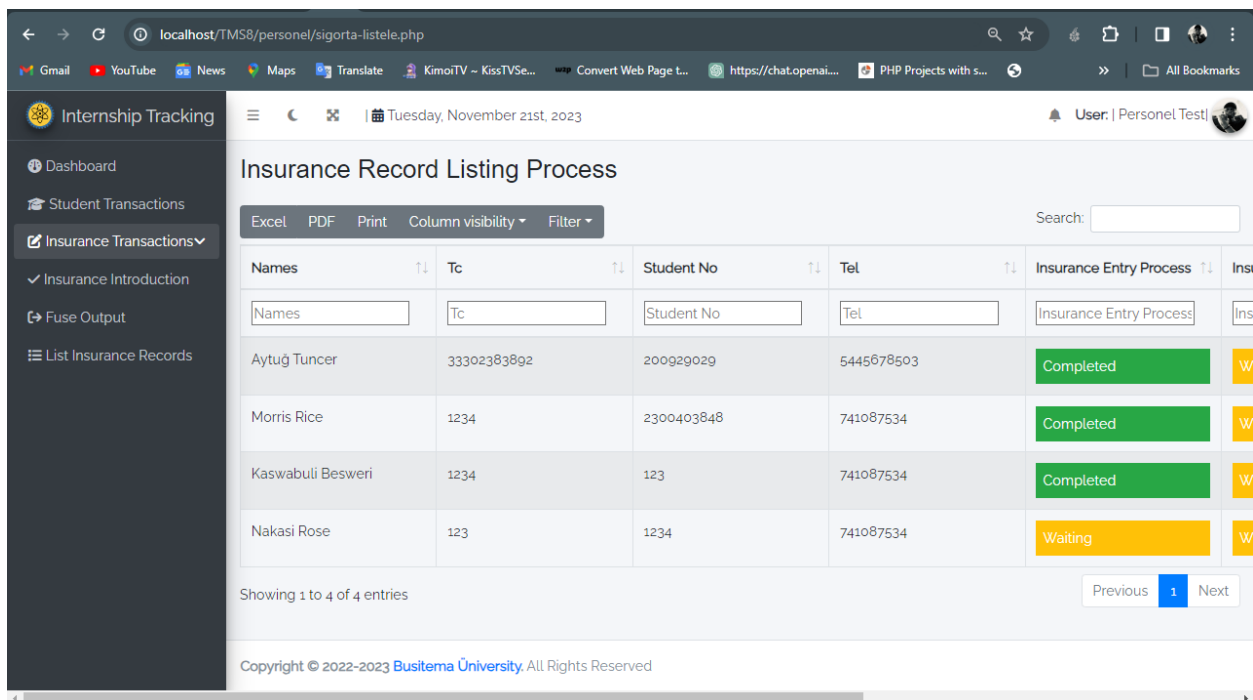


Figure 22: Insurance personnel page of insurance listings and status of interns

5.3 Database design architecture

The program simultaneously inserted the information of user types, internship schedules, departments, applications and messages into the relational database "imis_db" in tables. It also automatically records administrator, intern, field supervisor and insurance manager details. This design makes up a DBMS is typically shared among many users.(Ramakrishnan, Gehrke, & Gehrke, 2003) Transactions from these users can be interleaved to improve the execution time of users' queries. By interleaving queries, users do not have to wait for other user's transactions to complete fully before their own transaction begins.

Among the database tables are the following:

Role table(roller)

This table specifically stores specified roles of the system users and using an "id" value of 1-4, the system will be able to redirect a user to a designated interface. Here, the intern has the role_id value of 4. Others are shown below.

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	id	int(11)			No	None		AUTO_INCREMENT
2	role_ad	varchar(255)	utf8_general_ci		No	None		
3	thumbnails	varchar(300)	utf8_general_ci		No	None		

Figure 23: The database role table

	id	role_ad	thumbnails
<input type="checkbox"/> Edit Copy Delete	1	admin(HR)	
<input type="checkbox"/> Edit Copy Delete	2	HOD	
<input type="checkbox"/> Edit Copy Delete	3	Insurance manager	
<input type="checkbox"/> Edit Copy Delete	4	student	

Figure 24: The database roles and defined IDs

Student table (student_detail)

This table captured the id, student_id, HOD_id_fk, department_id_fk, student_no, nin as well as the gender of the interns added by the admin.


#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	id 	int(11)			No	None		AUTO_INCREMENT
2	student_id	int(11)			No	None		
3	HOD_id_fk	int(11)			No	None		
4	department_id_fk	int(11)			No	None		
5	student_no	bigint(20)			No	None		
6	nin	varchar(255)	utf8_general_ci		No	None		
7	gender	varchar(11)	utf8_general_ci		No	None		

Figure 25: Student details table of the IMIS database

Department table (departments)

This department table records the id, department_name and this is also managed by the admin.

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	id 	int(11)			No	None		AUTO_INCREMENT
2	department_name	varchar(255)	utf8_general_ci		No	None		

Figure 26: The system's department table

Users table (users)

The database takes records of the systems users and stored in a single table. The columns are id, firstname, lastname, email, sifreHash (this is an MD5 system hashed password), rol_id which is a foreign key to the roller table then finally the avatar column to store user images.



#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	id 	int(11)			No	None		AUTO_INCREMENT
2	firstname	varchar(255)	utf8_general_ci		No	None		
3	lastname	varchar(255)	utf8_general_ci		No	None		
4	email	varchar(255)	utf8_general_ci		No	None		
5	sifreHash	varchar(255)	utf8_general_ci		No	None		
6	rol_id 	int(11)			No	None		
7	avatar	text	utf8_general_ci		No	None		

Figure 27: The users' database table

User-notifications table(Usernotifications)

This table records of the system users by capturing the User notification table in the first table and User id, NotificationId as well as the Isread status into the respective tables.

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	UserNotificationID 	int(11)			No	None		
2	UserID 	int(11)			Yes	NULL		
3	NotificationID 	int(11)			Yes	NULL		
4	IsRead	tinyint(1)			No	0		

Figure 28: The database user notifications table

Notifications table(notifications)

This database table serves as a container for the values of the actual user notifications and maintains a foreign key relationship with the User Notifications table through the notificationID

column. A text message from the user is stored, and its time stamp is noted in the Tym_stamp column.

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	NotificationID	int(11)			No	None		
2	Message	text	utf8mb4_general_ci		No	None		
3	Tym_stamp	timestamp			No	current_timestamp()		ON UPDATE CURRENT_TIMESTAMP()
4	IsRead	tinyint(1)			No	0		

Figure 29: Notifications table

5.3 Testing.

The complete system was tested employing codes and modules. This phase of execution verified the correctness and effective operation of the system before it was handed to the users. It needed to be tested using a variety of methods that differed depending on the system level. The system in question is believed that the objective would have been attained in the end if every component of the system was functioning properly. The procedures of running the program to find defects or errors is called testing.

Tests reveal the bugs in the program's code. Validation was therefore carried out once the system was finished and tested. Unit and integration testing were the two forms used for purpose.

5.3.1 Unit testing.

To make sure that each code in the system produces all of the functional units, unit testing was done on each code separately. This was accomplished by looking over each unit, such as the application code, update, delete generally referred as CRUD. This was done to make sure there were no mistakes and the application arrived exactly as intended. After addressing each of the detected faults on an individual basis, I felt empowered to proceed with integration testing after accomplishing that successfully.

5.3.2 Integration testing.

This had been carried out following the assembly of every module to create an operational system. The goal of integration was to make sure that every system module functioned as a whole and could be combined to create a fully functional system.

CHAPTER SIX: DISCUSSION, CONCLUSION, RECOMMENDATION AND FUTURE WORK.

6.0 Introduction

With this chapter, we go over the results for creating an Internship management information system with respect to the predetermined goals and process. According to the study, the Soroti University only used a traditional procedure in which the human resource manager and various department physically pen down applications in record books. This suggested that applicants must be present in person at the place of application for their requests to be placed and approved.

The goal of the designed Internship Management Information System was to replace the manual method with an accurate data repository that would facilitate effective application and placement processes. Applicants, managers, and other others participated in the planned system's implementation, along with the outcomes that were previously mentioned.

6.1 Discussion.

The dichotomy of the objectives in Chapter One is the foundation for this chapter's discussion.

Objective (1):

Review the literature and establish the requirements for developing an Internship Management Information system. The requirements for the study developed from field research and online research. The study executed for online research journals like a thesis by looked at previous projects that dealt with the identical topic of ideas and the benefits of implementation of this system.

This gave the researcher direction for integrating my work efforts. A few other needs that resulted in the fulfillment of functional and non-functional requirements were also developed by the online research review study and employed in the conception of the DFD database architecture. The researcher's comprehension of the manual system's operation, as well as the participant's views and perceptions of the Internship Management Information System, were aided by the field study, which also produced the specifications needed to develop the interactions.

Objective (2):

Designing/Creating an Internship Management Information System is the second goal. The system was created following the specifications that the RAD. Data flow was made possible by the framework, use-case diagram, database layout, contextual flow diagram, and data flow diagram included in the design stage. The application of the various stages of design was motivated by the design and assessment of the efficacy of remote application and management.

Objective (3):

Implement /Putting in place of a web based Internship Management Information System the third goal. The Sublime text editor, XAMPP server, Web Browsers, MySQL, HTML, JavaScript and PHP as scripting languages together with a bootstrap framework, windows operating system machine were the construction tools used to carry out the system design implementation.

It is during this process that the researcher developed the user interfaces described in the early chapters, which include "logging in, a dashboard and manage interns/staff, manage head of departments, adding/manage departments, manage internship postings, as well as the initial landing page for the clients." With the goal to allow users to use the manual system while they adapted to the new one, the arrangement was put into place in simultaneously this meant a parallel method.

Objective (4):

Testing a web based Internship Management Information System was the fourth goal. Both before and after it was put into use, the system was tested. Both individual parts and the entire system were tested (system testing and unit testing, respectively). Unit testing was utilized to test individual modules, and each component of the interface was tested to ensure that it functioned as intended.

This was crucial for locating flaws in particular algorithm units, which made debugging a relatively straightforward process. After every module had been put together to form a whole system, integration testing was carried out. The goal of integration was to make sure that every system module functioned as a whole and could be combined to create a fully functional system.

6.2 Conclusion.

As previously discussed in this write-up's previous chapters, particularly the problem statement clearly stated in chapter 1, the Internship Management Information System should be made available for use since the majority of users concur that it fulfills their needs and performs its functions well.

However, this research paper has delved into gathering requirements, analysis, design, implementation and testing of the IMIS based on the findings that spell out the pressing need for a system. The comprehensive analysis and insights gathered through questionnaires and observation shed light on the impact of the absence of a centralized internship management information system. As evidenced by suiting responses of the various respondents and individuals involved in this study, the findings of this study hold significant implications for major industries and organisations running internship activity.

The study not only adds to the existing body of knowledge in internship management but also opens avenues for further exploration and research. Addressing time and money wasted by interns on travelling to areas in search for internship slots as well as manual handling of processes, future studies may build upon these findings to improve sensitive aspects related to this topic.

Ultimately, the collective contributions of this research aim to improve the processes involved in the internship environment, underscoring its relevance to academic community, industry, or society at large. This suggests that the Internship Management Information System is deemed suitable for adoption in Soroti University - SUN, Soroti.

6.3 Recommendations.

In order to facilitate online application and placement in organizations that match interest and field—particularly during internships and to further minimize the amount of manual work involved, time spent moving to places linked with the process, The researcher advises the various organizations and companies, particularly those that are still run manually, to adopt and implement my web based internship management system.

6.4 Future work.

Long-term user input on the features this system offers will be gathered in the future, along with plans to integrate AI principles. In this way, the system's quality, usability, and automation will be strengthened and the profiles of businesses and students will be automatically generated.

While minimizing the use of manual methods and avenues of recording/tracking, the system will be improved to take daily activity to interns. This means an implementation of a digital logbook that will be filled with form interfaces. To eliminate forgery of activity filling, all activities fed to the system by the intern must go through the field supervisor for confirmation before it can be saved and downloaded as a document.

Moreover, to enhance instruments for communication and options to help team members, managers, and interns engage more effectively. This could involve collaborative areas, discussion boards, and chat features. For now, the system supports a user to directly text to the system manager using the system chat interface. To improve this experience, chatbots would be put in place to respond to user request as well as fulltime assistance.

To enhance effectiveness of the entire internship programs and activities, the researcher looks into improvising a wide-resource hub that is centralized. Documentation, instructional materials, and connections to outside resources that can support interns in their jobs could fall under this category.

Enhancing relations between various bodies, MOU - "Memorandum of Understanding", a formal agreement between two or more parties outlining the terms and details of a mutual understanding, commitment, or relationship will be implemented. This will allow organisations to perform the outlined duties such as internship provider and educational institution. This includes, specification of internship dates, requirements, learning objectives and potential provisions for retention of interns.

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APPENDIX

Appendix I: Questionnaire

QUESTIONNAIRE FORM

TOPIC: ONLINE LOGISTICS MANAGEMENT SYSTEM

Dear Sir/ Madam,

As a student at Busitema University seeking an information technology degree, my name is OKODAN ALEX, and I am working on a thesis on the Internship Management Information System, with SOROTI UNIVERSITY serving as the case study. As a result, I respectfully urge that you respond to the questions posed below with clarity.

Your replies will be used for academic reasons only and will be treated discreetly.

Use the spaces provided to answer the questions given.

1. What role do you now hold at Soroti University? (manager)

.....
.....

2. What are the main obstacles to placing an internship and managing interns at Soroti University?

.....
.....

3. What functions, in your opinion, should an internship management information system to have in order to meet some of the above mentioned difficulties?

.....
.....

4. How do the interns at Soroti University submit requests for applications for the various internships that may be available?

.....
.....

THANK YOU.

Appendix II: Questionnaire Analysis

This analysis is represented in the table below.

RESPONDENT	ROLE/DETAIL	QN	RESPONSE
Mr.Oyare Shaban	Hiring officer/ University secretary Tel: 0782683259	1	University secretary
		2	<ul style="list-style-type: none"> • Phone calls make process unofficial. • Interns should be able to place application online.
		3	<ul style="list-style-type: none"> • Allows non physical application and submission of digital requirement. • Automated department placement.
		4	<ul style="list-style-type: none"> • Phone calls, direct email application and physical handwritten applications.
Mr.Okiria Anthony	Intern Tel: 0706052229	2	<ul style="list-style-type: none"> • Travelling to place to make a request /ask for available internships. Cost intensive. • Mismatch of place to fit internal culture.
		3	<ul style="list-style-type: none"> • Application and acceptance online without sending mails or making calls.
		4	<ul style="list-style-type: none"> • Phone calls, direct email application and physical handwritten applications.
Mr.Biryomumaisha Justus	HOD Tel:	1	Head of ICT directorate
		2	<ul style="list-style-type: none"> • Intern management is not automated and digitized.
		3	<ul style="list-style-type: none"> • Enrollment of intern and evaluation should be digitized. • Reduced paperwork load.
		4	<ul style="list-style-type: none"> • Huge amount of paper enrollment and intern file management. • Written requests, calls.

RESULTS:

Based on the information mentioned above, every participant was in consensus that the Internship Management System needs to function in a manner that permits interns to send in applications without physically visiting the organization as well as relatively lean management of interns.

Appendix III: Manager Interview guide.

During this interview procedure, researchers will meet and respectfully request for authorization before they ask questions to the participants.

Topic: INTERNSHIP MANAGEMENT INFORMATION SYSTEM

Greetings, Respondent I'm a Busitema University student working toward an information technology bachelor's degree. At Soroti University in Soroti, I am conducting research on the Internship Management Information System. I'm using this poll to help me comprehend more about Soroti University's existing internship placement procedure.

I respectfully ask for your assistance in responding to the following inquiries. Any information submitted will only be used for academic research and will be kept completely private.

I sincerely hope that my modest plea would be given careful thought. I'm grateful.

NAME OF THE INTERVIEWEES..... TITLE OF THE INTERVIEWEES.....

- 1. For what duration have you been employed by this company?.

.....

- 2. What is your present Position?

.....

- 3. Are you familiar with using computers or any other type of computer system?

YES NO

- 4. Could you please explain the internship process that takes place inside the current system?.

.....

5. What types of reports are used to track the activities of the internship?

.....

6. Regarding the monitoring of internship activities, what kinds of obstacles do you have within the current system?

.....

7. Any thoughts of how you see how these challenges can be reduced? And how if yes?

YES

NO

.....

THANK YOU

Appendix IV: HOD Interview guide.

1. What is the duration of your employment at the supermarket?

.....

2. Does the organisation have any Information System?

YES

NO

3. What are the Procedures you follow when managing interns? Do you keep any records for the interns if you have any Can we check on them please?

.....

YES

NO

4. What are the challenges of the existing Internship Management Information System?

.....

5. How many employees are under your Supervision?

.....

6. Does the system perform to your expectations?

.....

THANK YOU

Appendix V: Intern Interview guide.

1. How did you come to know about the organisation?

.....

2. What kind of challenges do you face when placing an application to this organisation?

.....

3. What would you love to see being improvised in this organizational internship management system?

.....

THANK YOU

Appendix VI: Code snippet of the login php.

```
<?php
require ("config.php");

if (isset($_POST["email"]) || isset($_POST["sifre"])) {
    $email= $_POST["email"];
    $sifre= md5($_POST["sifre"]);

    $query = $db->prepare("SELECT users.id,ad,soyad,email,role_ad FROM users INNER JOIN roller ON users.rol_id
    = roller.id WHERE email=:kemail AND sifreHash=:ksifreHash");
    $query->execute([
        "kemail" =>$email,
        "ksifreHash" =>$sifre
    ]);
    $data = $query->fetch(PDO::FETCH_ASSOC);

    $kontrol = $query->rowCount();
    //print_r($data);

    if($kontrol==0){
        // Redirect if Login Failed;
        header("Location:index.php");
    }else{
        session_start();
        $_SESSION["kullanici"] = $data;
        $_SESSION["login"] = true;

        //If the login is successful;
        switch ($data["role_ad"]){
            case "müdü":
                $_SESSION['username']=$data['ad'].' '.$data['soyad'];
                header("Location:admin/index.php");
                break;
            case "danışman":
                $_SESSION['username']=$data['ad'].' '.$data['soyad'];
                header("Location:advisor/index.php");
                break;
            case "personel":
                $_SESSION['username']=$data['ad'].' '.$data['soyad'];
                header("Location:personel/index.php");
                break;
            default:
                $_SESSION['username']=$data['ad'].' '.$data['soyad'];
                header("Location:ogrenci/index.php");
        }
    }
}
//print_r($data);
?>
```

Figure 30: Code snippet for logging in

Appendix VII: Code snippet of logout modal form.

```
<!--log out-->
<div class="modal fade" id="exampleModal" tabindex="-1" role="dialog" aria-labelledby="exampleModalLabel" aria-hidden="
true">
<div class="modal-dialog" role="document">
<div class="modal-content">
<div class="modal-header">
<h5 class="modal-title" id="exampleModalLabel">Log Out </h5>
<button type="button" class="close" data-dismiss="modal" aria-label="Close">
<span aria-hidden="true">&times;</span>
</button>
</div>
<div class="modal-body">
Do you want to log out ?
</div>
<div class="modal-footer">
<button type="button" class="btn btn-secondary btn-shake" data-dismiss="modal"><span class="fa fa-times"></
span> Cancel</button>
<a href="../../logout.php" type="button" class="btn btn-danger"><span class="fa fa-sign-out"></span> Exit</a>
</div>
</div>
</div>
</div>
<!--log out end-->
```

Figure 31: Logout code snippet