SOROTI UNIVERSITY

FACULTY OF ENGINEERING AND TECHNOLOGY.

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DEPARTMENT OF ELECTRONICS AND COMPUTER ENGINEERING.

DESIGN AND IMPLEMENTATION OF A FINAL-YEAR PROJECT MANAGEMENT SYSTEM FOR THE SCHOOL OF ENGINEERING AND TECHNOLOGY OF SOROTI UNIVERSITY

BY

NAME: Ronald Kasagga

REG: NO 2001600076

ACADEMIC SUPERVISOR: Dr.Tonny Ssettumba

A final year project proposal submitted to soroti university for partial fulfillment of the requirements for the bachelor of engineering in electronics and computer engineering (ecs)

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1 INTRODUCTION

1.1 BACKGROUND

Final-year projects are fundamental for engineering students during their final year at university. The aim is to emphasize creativity and innovativeness and prepare graduates for industry. This process is essential and mandatory for any final-year engineering student as it's a prerequisite for graduation. However, there exist challenges in the way the projects have been handed where students have limited information about the final year projects. Besides, at the time of writing and to the best of my knowledge, there is no streamlined platform that can help students from the time of proposal submission, keep track of project progress to ease the work.

Thus, this project aims to propose an online final-year project management system that includes the students, lecturer (supervisors), coordinator(s) and academic administrators. The goal is to ease the project process for all the parties concerned and more so for future students and supervisors. Such a system will help to curb the issues of bureaucracies and time wastage that students face during project work.

In Universities worldwide, web-based project management systems are now being developed to automate different tasks like tracking, feedback and submission. These systems have started to adopt those tasks to streamline administrative tasks, improve communication between students and supervisors, and ensure project deadlines are met [1]. This has been handled manually in the past, depending on email correspondence, paper-based documentation, and erratic tracking techniques. This strategy frequently leads to several difficulties, such as:

- Delays in commenting. These manual methods of reviewing sometimes result in delays for students to obtain comments.
- Misplaced or Lost Submissions: A lot of time is wasted in arguing due to misunderstanding that arises when paper documents or file-based submissions are misplaced or lost.

- Lack of proper Real-Time monitoring mechanisms. It is very difficult for both supervisors and students to keep track of deadlines and milestones, which causes delays if there are no appropriate systems for monitoring.

Project management systems that are web-based are one type of technology created to solve these difficulties. These systems use the latest developments in database administration and web development to automate processes like submission, feedback, and tracking. The majority of such solutions are being employed in universities with the aim of meeting project deadlines, increasing student-supervisor contact, and expediting administrative duties [2].

Technological solutions in current electronics and computer systems

Web-based project management systems are becoming common in academic and professional environments. Teams can work together, coordinate tasks, and monitor project progress in real time with the help of platforms like Trello, Asana, and GitHub Projects. While academic technologies such as Moodle and Canvas provide functionality for project submission, they do not have the specificity and flexibility needed to manage final-year engineering projects.

Furthermore, the development of database management systems (DBMS), including MySQL, PostgreSQL, and NoSQL databases, has facilitated the effective administration of massive data volumes, guaranteeing scalable and safe project tracking solutions. For the backend, these databases are frequently coupled with PHP and JavaScript, enabling real-time changes and user interactions.

- Context of Today's Technological advancements final-year project management systems for universities are created in line with the most recent developments in technology which include:

  The Internet of Things (IoT) allows communication and the exchange of data online between gadgets.
- Cloud Computing whereby project management systems of universities can be hosted online and guarantee that data is accessible anytime using platforms that are cloud like Google Cloud and Microsoft Azure. In this case, it is additional that students and projects are included which facilitates simple scaling and proper cooperation.

- Artificial Intelligence (AI) and Machine Learning (ML). By giving automatic feedback, notifications for deadlines and project submission trends, ML and AL are improving project management by revolutionizing it. However, artificial intelligence is not going to be part of the initial phase of this project but in later versions, feedback based on AI can be included to make the system work better.
- Data Security and Privacy. Authentication and encryption will be considered in the development of this system to make sure that project submissions, data of users and other legal activities done by a user on a system are safeguarded.

The design and implementation of the Final Year Project Management System of Soroti University will offer a cutting-edge, effective way to manage student projects by leveraging HTML, CSS, JavaScript, PHP, and MySQL. Future improvements to the system will be possible thanks to its architecture, such as the incorporation of artificial intelligence (AI) for automatic feedback, real-time alerts fueled by IoT-like connection, and maybe cloud-based scalability for bigger project submissions.

1.2 MOTIVATION

Justification for selecting the project

The necessity to solve the inefficiencies in university final year project management is what drove me to the development of the Soroti University Final Year Project Management System. The manual approach in place now takes a lot of time and is prone to mistakes like lost papers, slow feedback, and the inability to follow project progress in real-time. My own experience with the difficulties of handling projects by hand as a student in the Electronics and Computer Engineering program motivated me to suggest a digital solution that streamlines and automates this procedure.

Moreover, a more effective method for managing submissions and evaluations is required due to the increase in student enrollment and the complexity of final-year projects. Creating this system fits the larger trend of using technology in academic administration since many universities are heading toward digital transformation. This project was selected to demonstrate how web-based solutions may revolutionize administrative procedures, particularly in educational institutions, as well as to enhance project management at Soroti University.

Relevance to the personal and industrial domains

Relevance to me personally

As a student, I have observed the difficulties that my friends encounter while turning in and handling their assignments using conventional techniques. Stress and missed deadlines are frequently the result of needless delays brought on by a disorganized method of communication between supervisors and students. Because it seeks to directly enhance the student experience by offering a dependable, digital platform that guarantees on-time submissions, well-structured feedback, and real-time project monitoring, this initiative is personally important to me.

Industrial relevance

Effective project management is a crucial ability that is necessary in a variety of fields, such as business, technology, and engineering. The project management system that is to be created is appropriate for teaching students about project planning and execution since it follows industry standards for managing tasks and deadlines in large-scale projects. Students will gain a better understanding of project management as well as how digital technologies may increase accountability and productivity in real-world settings by implementing this system.

To bridge the knowledge gap between academics and technology, this research is equally relevant to industry. Universities are sometimes sluggish to embrace such technology for academic reasons, although many firms employ sophisticated project management software to handle massive projects. This project takes an innovative method to bridge that gap by creating a bespoke system that is suited to the unique needs of Soroti University, guaranteeing that staff and students have access to tools that mirror contemporary industry standards. It also establishes a standard for other academic institutions or universities dealing with comparable issues by providing a scalable solution that may be modified for wider application.

1.3 OBJECTIVES

Main objective

- To design and implement a Final Year Project Management System for the School of Engineering of Soroti University

Specific objectives

- To develop and implement a system with improved Project tracking and management.
- To develop a centralized platform that enhance Communication and Collaboration between users of the system.
- To develop the system and evaluate it's performance and suitability in addressing the specific needs of the school of engineering and technology in managing final-year projects.

2 SCOPE OF WORK

The design and implementation of a web-based application for managing final-year projects will be the main emphasis of the Soroti University Final Year Project Management System. The system will give administrators, coordinators, supervisors, and students the resources they need to make the project tracking, feedback, and submission procedures go more smoothly. The following defines the scope of work:

2.1 PROJECT BOUNDARIES AND AREA OF FOCUS

- **User authentication and role management.** Administrators, supervisors, project coordinators and students will all be able to securely log in to the system. Certain system access capabilities will be granted to each user role.
- **Project management and submission**. Students can turn in final reports and project proposals, which supervisors can examine and comment on.
- **Supervisor assignment and project tracking**. Depending on the kind of project, coordinators will be able to appoint supervisors to students. Students and supervisors will be able to monitor project deadlines and milestones in real-time thanks to the technology.
- **Database design and integration**. To safely store project submissions, user information, and comments, a MySQL database will be created. To allow for real-time data access, the database will be integrated with both the front end and back end of the system.

- **Feedback system**. Using the system, supervisors will be able to offer suggestions in the form of comments and remarks about student submissions.
- **Administrative oversight**. Reports on project status, supervisor activity, and submission progress will be generated via the system's monitoring tools for administrators.

2.2 SYSTEM COMPONENTS BEING DEVELOPED

The following components will be developed in this project:

- **Frontend development**. To create a user-friendly interface, HTML, CSS, and JavaScript will be used in its design.
- **Backend development.** Server-side logic, including supervisor assignments, feedback, and project submissions, will be handled by PHP.
- **Database design.** To hold user data, project submissions, supervisor comments, and administrative data, a MySQL database will be established.
- **System integration.** To give users a smooth experience, the frontend, backend, and database will all be thoroughly interconnected. Integration testing will guarantee that data is appropriately transferred across all system components.

2.3 EXCLUSIONS

The following are excluded from the scope of a project:

- **Hardware design**. Because this project is fully software-based, it will not include the creation of any hardware or embedded devices.
- **Development of mobile applications.** Although the system will be accessed by mobile devices and web-based, the development and creation of a stand-alone mobile application is not included in this scope.
- **Cloud-based hosting**. This system may be modified to be used in a cloud way in the coming versions, cloud-based deployment and hosting are not included in the first edition of the system.
- **Advanced AI and machine learning integration**. This project will not include features based on AI like automatic feedback and grading, however, they could improve the system in the future.

- **Payment processing or financial management.** The system will not handle any kind of financial transactions, such as project submission or payment for administrative services.

3 PROBLEM STATEMENT

The current final-year project management process for the School of Engineering of Soroti University is entirely manual which includes the exchange of emails and verbal communications through meetings. This leads to delays in terms of feedback, and inconsistencies in progress tracking between students, supervisors and project coordinators. Thus, there is a need for an electronic final-year project management system for Soroti University to handle the project process in the School of Engineering.

Components of word problem

Inefficient project submission process

The manual submission of project proposals and final reports often leads to misplaced documents, inconsistent records, and confusion regarding deadlines. Students may miss submission windows or submit incomplete files due to the lack of a proper system that tracks their submissions. This results in delays and unnecessary complications during the project assessment process.

Delayed feedback and communication

The current system relies on email or face-to-face interactions for supervisors to provide feedback on student projects, which often leads to delays. Without a structured platform, supervisors may struggle to manage feedback for multiple students, leading to missed or late responses. Students, in turn, lack real-time visibility into their progress and the status of their submissions.

Lack of tracking and progress monitoring mechanism.

Students and supervisors have no consistent way to track project milestones or deadlines in real-time. Without clear, automated tracking, project timelines can slip, leading to rushed final submissions or incomplete work. This lack of visibility can negatively impact both student performance and the overall quality of the projects.

4 LITERATURE REVIEW

4.1 REVIEW OF RELATED WORK

Several universities and institutions have implemented systems aimed at improving the management of final-year projects and academic workflows. These systems address issues such as document submission, project tracking, supervisor-student communication, and overall administrative oversight. Below is a review of relevant systems and research in this area, focusing on their technologies, techniques, and the gaps they leave, which the Soroti University Final Year Project Management System aims to address.

Moodle and Canvas Learning Management Systems (LMS)

Moodle and Canvas are widely used learning management systems that provide platforms for assignments, grading, and project submissions in academic institutions. These systems allow students to submit their work online and receive feedback from instructors. However, they are general-purpose platforms that are not specifically designed for managing final-year projects. Moodle and Canvas do not offer specialized tools for tracking the progress of long-term projects, assigning supervisors, or providing detailed project feedback [3]. Moreover, these platforms lack real-time tracking of project milestones, which is a key focus of the Soroti University system.

GitHub for Project Management GitHub, a popular platform for collaborative software development, offers features like issue tracking, project boards, and version control. While GitHub is useful for software-related projects, it is not ideal for managing academic projects that span various fields, as it focuses primarily on code management. GitHub's issue-tracking and project boards are primarily used for agile software development methodologies and are less effective for managing academic project submissions and providing structured feedback [4].

Web-Based Project Management Tools (e.g., Trello, Asana) Trello and Asana are examples of web-based project management tools that are used across industries for task management and team collaboration. These tools allow for task creation, assignment, progress tracking, and deadline setting. While useful for task-oriented project management, these systems lack the educational context needed for managing final-year projects. They do not include specific features for academic supervisors to provide structured, ongoing feedback or automated project submission and deadline notifications [5].

Al-Ani et al. (2019) highlight the cloud-based final-year project management system's ability to provide supervisors and students with efficient and scalable services. Through the integration of

cloud computing, the system improved management by providing access and communication in real time. The authors emphasize the flexibility of cloud solutions in academic settings, particularly during the project proposal, selection, and progress-tracking phases [6].

Similar to this, Rababah Set al. (2020) presented a web-based FYPMS intended to address challenges related to project management. This system allowed students to submit proposals on an integrated platform, and supervisors could monitor progress. Furthermore, supervisors can review the benchmarks that students have met at each project phase thanks to the comprehensive feedback mechanism built into their system [7].

Zhang et al. (2018) created a mobile-based project management system for final-year students using an alternative approach. The purpose of developing this system was to use mobile platforms to enhance accessibility and interaction. The main goal of the system was to lower communication barriers between supervisors and students so that real-time updates and mobile notifications could be used for continuous supervision. Students were able to complete their projects on schedule thanks to this innovation [8].

To enhance project management, Kumar et al. (2021) investigated the application of agile approaches in FYPMS development. Iterative methods were applied. Their system was made to be flexible enough to accommodate evolving requirements and enhance manager-team collaboration. More projects were completed as a result of the agile approach's ability to foster continuous improvement through frequent feedback and prompt issue resolution [9].

University-Specific Project Management Systems Some universities have developed custom project management systems tailored to final-year projects. For instance, the University of Leeds has developed a Final Year Project Management System that integrates submission, progress tracking, and feedback features. Their system allows students to upload documents, track deadlines, and receive feedback. However, the system has limitations in terms of real-time supervisor assignment and milestone tracking. Additionally, it focuses more on document management and less on enhancing communication between students and supervisors [10].

4.2 CONTRIBUTIONS OF THE SYSTEM TO THE EXISTING SYSTEMS

Despite the advancements in existing systems, there are several contributions of Soroti University Final Year Project Management System:

- Supervisor assignment.

  The system will help project coordinators assign supervisors to students electronically based on project topics and supervisor availability.

- Structured feedback mechanisms

  This system will allow a looped dialogue between students and their respective supervisors. Students will reply to the feedback from their supervisors to see their areas of improvement in proposals and reports.

- Project milestone tracking.

  The system will provide academic-specific milestone tracking that can give students and supervisors real-time insights into their project's progress.

- Specific focus on final year projects.

  The system will be specifically tailored for managing final-year projects in an academic setting with the unique requirements for supervisor-student interaction, document handling, and project lifecycle management.

5 PROPOSED SOLUTION

5.1 OVERVIEW OF THE PROPOSED SYSTEM

Soroti University's Final Management System aims to occupy the gaps identified by providing a customized solution that is designed specifically to manage final-year projects. This proposed solution is going to be user-friendly for students, administrators and supervisors. It will include the following functionalities.

- Supervisor assignment module.

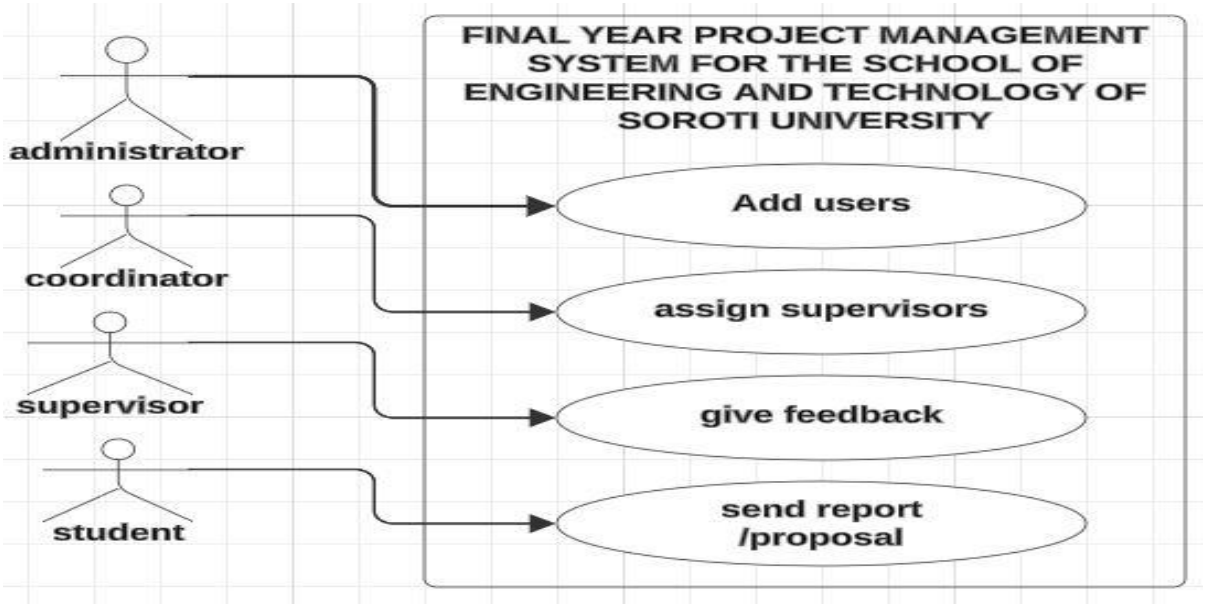
  To avoid time delay caused by assigning supervisors to students manually, this proposed system is going to assign supervisors to students whereby project coordinators will be able to appoint supervisors according to predetermined standards including availability, and project topic. It will guarantee that every student is paired with a supervisor who meets their project requirements. This will significantly improve the supervisor assignment process at Soroti University existing in some systems like Moodle [11].
- Enhanced feedback mechanism.

  Soroti University's Final year Project Management System is going to have a structured feedback mechanism that gives a chance to all parties to continue with a dialogue.
- Project milestone tracking:

  Created for the benefits of academic usage specifically to manage Final year projects in engineering. The system is going to have a real-time project milestone tracking capability. Students and supervisors will be able to track each milestone's development and receive real-time information on the project's status thanks to the Final Year Project Management System. This tool will guarantee that supervisors and students are always informed about deadlines
- Final year project-specific features.

  This system is going to focus on the specific needs of managing final-year projects in the school of engineering. Since it is going to focus on specific needs of managing final year projects like submissions, supervisor assignments, structured feedback mechanisms, automatic notifications about deadlines, and tracking. It will serve as a comprehensive tool for managing the life cycle of a final-year project entirely.

6 BLOCK DIAGRAM OF THE SYSTEM



7 EQUIPMENT / SOFTWARE

- HTML, CSS and JavaScript. These are going to be used for front development.
- PHP. For the application layer. It will handle server-side logic. So it will be used to develop the backend.
- Xampp. It has MySQL, needed for developing database in our system
- Visual Studio Code. This is a developing environment of the system.
- Selenium and Junit. These are testing tools for functionality and unit testing of the system.
- Laptop. This will act as a local host.

8 INNOVATIONS

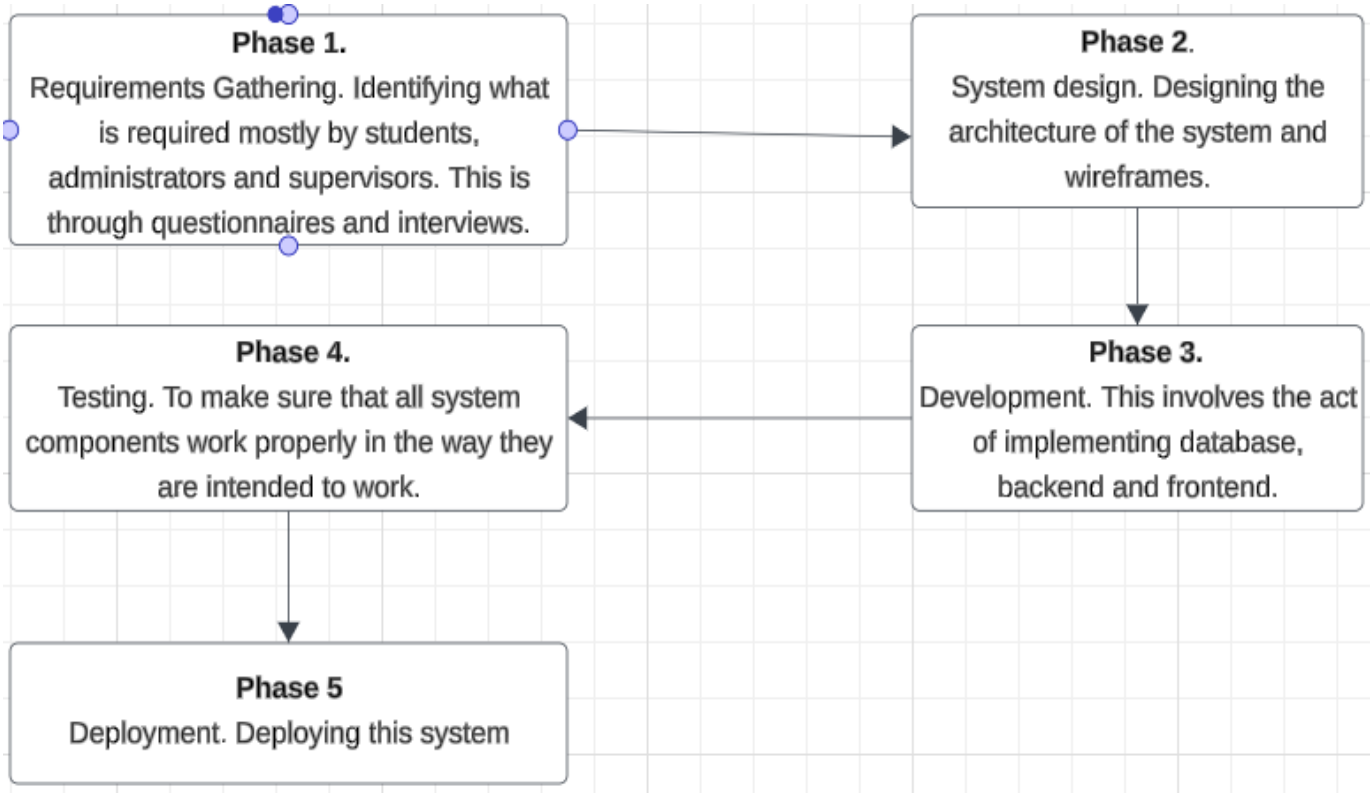
- Coordinators will assign supervisors to students online.
- This system will notify supervisors and students about deadlines.
- The system will allow looped feedback between students and supervisors.
- Future iterations will allow or incorporate AI-based feedback mechanisms to evaluate automatic submissions. However, it is not in the initial version

9 METHODOLOGY

9.1 RESEARCH METHODOLOGY

Method	Explanation
Literature review	This involves reading journals, articles and case studies to understand existing systems and theories, formulating a theory and framework, benchmarking and identifying best practices, and seeing how this proposed system will contribute to the existing ones.
Data collection	That is gathering requirements by collecting data from users (students, administrators, coordinators and supervisors) to identify their needs and challenges, system design and development which will include developing the Final year project management system of Soroti University Engineering.
System design and implementation	This system will be developed using software models by combining agile and waterfall methodologies. The waterfall will be used during a gathering of requirements and phases of system architecture to ensure that requirements are documented thoroughly and the process is structured
Testing and validation	This method will ensure that the system functions as intended to meet users' needs. It will pass through many levels of testing.
Documentation	Writing proposals, writing progress reports of this system, final year project reports and publication of either a conference or journal paper.

10 DEVELOPMENT PHASES



11 EXPECTED OUTCOMES

At the end of this project, the following outcomes are expected;

- A final year project management system that is streamlined for students, project coordinators, and administrators.
- Improved transparency and accountability in the project life cycle.
- Maintained records of project proposals, progress and final submissions

12 TIMELINE

13 BUDGET

ITEM	COST(UGX)
Software subscription	200,000
Data	350,000
The domain name (registering its)	150,000
Miscellaneous	150,000
Total	850,000

14 RISK ANALYSIS

14.1 RISKS

System outage

If the server that supports a system fails to work, students might not be able to submit their projects on time.

Security issues (security breaches)

Access to the system which is not authorized may compromise sensitive project data.

Delay in implementing the system

Developing and deploying this system can be delayed due to unforeseen technical problems.

14.2 MITIGATION STRATEGIES

- In this system, strong methods of encryption will be used to protect the data.
- The project is going to be developed in sprints. This will allow early detection of errors/issues and regular testing.

15 ETHICAL AND SOCIAL CONSIDERATIONS

- This system will adhere to regulations of data privacy to ensure that students' data is not misused and protected.
- This system will consider fairness whereby it will designed in a way of ensuring equal access for all students, regardless of technical proficiency.
- Features that help in tracking will be included to ensure that all users have clear visibility into the project deadlines and supervisor feedback. This will ensure transparency.

16 CONCLUSION

In this project, the proposed system is design and implementation of final year project Management system for the School of Engineering at Soroti University as this system intended to address the problems faced by project coordinators, students, supervisors and administrators in handling the process of the final year project as it will transition manual paper-based methods to a web-based platform offering reliable and efficient ways of handling submissions, feedback, notification, allocating supervisors to students and tracking. It will also improve communication, and monitoring projects and minimizes delays in feedback and submissions. This project is not going to solve only the current problems but it will also lay a foundation for future digital transformation at Soroti University. Finally, it is going to be an important step in aligning the academics of Soroti University in cooperation with modern standards of technology.

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