University of Perpetual Help System GMA Campus
San Gabriel, GMA, Cavite
COLLEGE OF COMPUTER STUDIES

ONLINE BASED ENROLLMENT RECORDS MANAGEMENT SYSTEM

A Capstone Project
Presented to the

THE FACULTY
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In Partial Fulfillment
of the Requirements for the Degree
Bachelor of Science in Information Technology

by

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The Capstone Project entitled the **Online Based Enrollment Records Management System** prepared and submitted by Alexander Oblego, Erick Jae Goneda, Janoabram Pascua, John Charles Sungahid and John Clark Tadeo in partial fulfillment of the requirements for the degree of Bachelor of Science in Information Technology is here by accepted.

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The Developers

DEDICATION

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The Developers

ABSTRACT

Title:	**ONLINE BASED ENROLLMENT RECORDS MANAGEMENT SYSTEM**
Researchers:	Goneda, Erick Jae Oblego, Alexander Pascua, Janoabram Sungahid, John Charles Tadeo, John Clark
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OCR—Optical Character Recognition—is used in this system. It recognizes digital image text. This method often recognizes picture text. OCR software can convert photos into searchable text. The new electronic file may be a JPG/TIFF or PDF image of the old paper. Developers developed a solution for the University of Perpetual Help solution – GMA Campus registrar department. This study will simplify user verification of students who meet UPHS - GMA Campus enrollment standards. This research aims to (1) provide trustworthy record keeping and monitoring to not only its target audiences (students and parents); (2) keep students' records or requirements up to date with timely and engaging information; (3) provide a simple way to keep and maintain documents; and (4) assist the registrar in updating and adding student records/documents. ISO 25010 assesses software quality. It defines software quality metrics. The majority of thirty (30) respondents that evaluated the system were male (57%) and aged 17-19 (43%). Since it gained (4.47) grand mean, system efficacy was adequate. Strongly Acceptable for Functional Suitability, 4.53, Performance Efficiency, 4.52, Compatibility, 4.56, Usability, 4.52, Reliability, 4.48, Security, 4.34, Maintainability, 4.4, and Portability, 4.42.

Keywords: *OCR Software, ISO 25010, UPHS-GMA Campus, registrar, digital image text, enrollment verification*

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Chapter 1
THE INTRODUCTION

This chapter presents the Project Context, which identifies the main problem and emphasizes the need for a viable solution. The Project Description outlines the technical approach of the system. The Objectives of the Study highlight both the general and specific objectives that aim to benefit individuals or groups mentioned in the Significance of the Study. The Scope and Limitations of the Study outline the extent and boundaries of the proposed system.

Project Context

In accordance with the findings of PandoraFMSTeam (2022), monitoring systems are accountable for overseeing the technological infrastructure employed by an organization, encompassing hardware, networks, communications, operating systems, and applications, among other components. The primary objective of these systems is to conduct an analysis of performance, identify potential errors, and furnish alerts. A monitoring system that is robust in nature has the capability to oversee a wide range of components such as devices, infrastructures, applications, services, and even business processes. The utilization of monitoring software dates to the early stages of computer technology. Michael Churchman's article entitled "The History of Monitoring Tools" chronicles the development of monitoring tools, commencing from a period characterized by minimal monitoring and rudimentary output in the form of basic dumps. During the early 1990s, Unix gained prominence as a frontrunner in the realm of interactive real-time computing. Monitoring tools have gradually evolved into a

customary constituent of most desktop operating systems within the desktop domain. With the onset of the 21st century, monitoring systems have been integrated into cloud and online commerce. Presently, monitoring systems have the potential to be employed in diverse fields, including the business sector. In his scholarly article entitled "Three Small Business Monitoring Tools That Can Facilitate Operations," Dragan Sutevski expounded on an Attendance Monitoring System that has the capability to monitor attendance and assess the efficacy of both students and instructors based on their attendance (Itsourcecode, 2019).

Additionally, according to Technopedia (2022), a Records Management System (RMS) involves the management of records for an organization throughout their lifecycle. This includes tasks such as effectively overseeing the creation, maintenance, and destruction of records, as well as managing the associated business transactions.

Furthermore, Record Management has its roots in the late 19th and early 20th centuries. In a blog titled "The History of Records Management," the evolution of record management from the late 19th century to the digital age is highlighted. In the present day, computers play a significant role in record management, with the use of word processing software generating large volumes of documents at a rapid rate. This development is compared to the experiences of Susan Anderson, an archivist who worked with various institutional archives, who dealt with hard copies of records stored in premium storage during earlier times.

Anything related to light or vision, whether it is visible light or infrared light, and serves a specific purpose, is referred to as optical or optical technology. These signals demonstrate how data can be transmitted over a network and decoded by a computer as

binary data (Computer Hope, 2019). The theories on light and vision were initially established by ancient Greek philosophers, followed by the development of geometrical optics in the Greco-Roman world. The history of optics can be traced back to the ancient Egyptians and Mesopotamians, who constructed lenses (Wikipedia, 2022). By the beginning of the 17th century, it was understood that light travels in straight lines. In 1604, German astronomer Johannes Kepler published a book on optics, in which he proposed that an extended object could be viewed as a collection of distinct points, each emitting light in all directions (Kingslake, Thompson, 2020). Nowadays, optics find applications in various devices such as barcode scanners, credit cards, glasses or contact lenses, smartphones, microscopes, telescopes, binoculars, and automotive technologies.

In this system, optics are used for character recognition, specifically Optical Character Recognition (OCR). OCR is a technology that can identify text in digital images. This technique is commonly employed to recognize text within images. Using OCR software, an image file can be converted into a text-rich, searchable electronic format. The resulting electronic file may still retain the visual representation of the original paper document, such as a JPG/TIFF or PDF file. The scanned electronic document containing the image can be opened in an OCR tool. The OCR software will then recognize the text and convert the document into an editable text file.

OCR software processes a digital image by locating and recognizing characters including letters, numbers, and symbols. Some OCR systems can only export the text, while others can directly extract the characters and convert them to modifiable text. Advanced OCR software can export the text's size, layout, and formatting from a page (Woodford, 2021).

Moreover, according to the academic study conducted by Manasa Ramakrishnan, record management and a monitoring system can contribute to the overall development of a school. These systems offer several advantages, including the reduction of documentation and the enhancement of numerous academic aspects, including performance, attendance, documents, admissions, fees, and disciplinary records. They expedite school operations, prevent errors such as misplaced documents, and improve the financial department's efficiency. Implementing these systems helps course advisors, registrars, and administrators maintain organization, save time, and make better decisions. United States International University-Africa student Shadrack Benard Kweingoti developed a project titled "Registrar's Management System Specification Document" with the objective of automating student record keeping, eliminating paperwork, enabling data manipulation, reducing duplicate data, establishing effective communication channels, and facilitating prompt work completion for the registrar, course advisors, and administrators. Locally, Kurt Phillip P. et al. published a system titled "Computerized Record Management System of one National High School in the Philippines," which provides timely and accurate record keeping, data preservation, protection of student data, and quick access to student records, all of which contribute to a reduction in staff workload.

At the University of Perpetual Help System - GMA Campus, the Registrar's Office is responsible for safeguarding students' requirements such as PSA, Form 137, Form 138, Memorandum of Agreement (MOA), 2x2 pictures, and pre-enrollment forms. These requirements are crucial for students' official enrollment and graduation. However, sometimes these records go missing or are lost due to misplacement, a large volume of

documents, or delayed filing. Additionally, the office needs to remind students to update their requirements as the registrar's office can only contact students who have completed their requirements.

In view of the issues, the developers propose developing a system for the University of Perpetual Help System - GMA Campus registrar department. This research seeks to develop a user-friendly solution for verifying the enrollment eligibility of prospective UPHS - GMA Campus students. The researcher's goals and priorities for this study include: (1) providing reliable record keeping and monitoring not only for the target audiences (students and parents), (2) ensuring up-to-date and engaging information for students' records and requirements, (3) providing a straightforward method for document storage and maintenance, and (4) assisting the registrar in updating and adding student records and documents.

Project Description

The Record Management System is crucial for enhancing the user experience and implementing it can lead to a more organized storage of documents and records. The system aims to achieve two primary goals. Firstly, it strives to provide students with timely and engaging information to facilitate the updating of their documents and requirements. Secondly, it offers a convenient and efficient method for storing and managing documents.

Objectives of the Study

The primary objective was to enhance the efficiency, organization, and effectiveness of record-keeping in the UPHS-GMA Registrar Department, particularly in managing enrollment documents such as PSA, Form 137, Form 138, and Memorandum of Agreement (MoA). This was achieved through the utilization of an Optical Character Recognition (OCR) engine and data analytics.

The system was specifically designed for the UPHS-GMA Registrar Department to automate the record-keeping process for college and senior high school students. Its purpose was to prevent the loss or misplacement of documents during the enrollment requirements phase. By implementing this system, the staff and administration benefited from secure document storage and quick human intervention for data insertion, updates, and retrieval. The system aimed to improve overall management and user-friendliness for the administrative staff.

The evaluation of software quality could be conducted using ISO 25010. This standard specified a comprehensive set of characteristics and sub-characteristics for assessing and measuring software quality. Utilizing this defined framework in research was essential as it ensured the evaluation covered all relevant quality characteristics. It facilitated decision-making, enabled comparisons between software solutions, and promoted consistency in the evaluation process.

The study specifically sought the following:

1. Determine the profile of the software project evaluators to determine the validity of the evaluation in terms of:
   a) age,

b) gender, and

c) role

2. Evaluate the online system's effectiveness in terms of:

a) Functional Suitability;

b) Performance Efficiency;

c) Compatibility;

d) Usability;

e) Reliability;

f) Security;

g) Maintainability;

h) Portability.

The developers reviewed several articles, website articles, and theses in order to create a suitable evaluation instrument for the Online-Based Enrollment Records Management System for College and Senior High in UPHS-GMA. The developers discovered a combination of website documents, systems, and criteria that could be used in the solution. This approach was inspired by the works of Keakopa (2022), Disli and K. O. (2021), Tintswalo, Mazenda et al. (2022), and Vasseur (2021).

Scope and Limitations of the Study

The scope of the system is focused on developing a web-based document record and monitoring system for college and senior high school students in UPHS-GMA. The system will be accessed online, with the main desktop computer in the administrator's office serving as the main server, which will run locally within the UPHS-GMA Registrar

Department. The researchers have formulated the scope and limitations of this study to define its boundaries.

The document record and monitoring system will encompass the management of student information, generation of reports, sending notifications via email, and the creation of staff accounts for enrollment and completion of requirements. Additionally, the system will incorporate an Optical Character Recognition Engine to facilitate the extraction of text from image files, such as promissory letters, course change letters, transfer letters, and more.

The system includes the following user accounts:

- **Administrator.** This account has the authority to add or edit user accounts within the system, including staff and student/parent accounts. The administrator manages the overall system operations.
- **Staff.** The staff account is responsible for encoding the requirements into the system. Their role ensures transparency in the submission of documents. However, they do not have access to open or manage accounts on the admin panel.
- **Students & Parents.** These accounts are for the primary participants of the system. Students and their parents use these accounts to fulfill the requirements for enrolling at the University. They submit the necessary documents through the system.

It can be accessed using Google Chrome, Mozilla Firefox, Safari, Microsoft Edge, and Opera. However, Internet Explorer is not supported as it has ended support for certain operating systems. Instead, users are encouraged to switch to Microsoft Edge,

which offers IE mode for backward compatibility. IE mode will be supported through at least 2029.

To address the concerns of the UPHS-GMA Registrar in maintaining and monitoring college and senior high school documents during enrollment, the system will be developed with a specific focus on the needs of the college and senior high school department's document monitoring during enrollment.

Additionally, the developers have utilized software and applications from third parties to enhance the system's capabilities. For example, the Mail Function is used for sending notifications to students regarding required files to be submitted. Optical Character Recognition (OCR) technology is also employed to read certain file types (.jpg) and extract text from images, which is used in creating letters and obtaining approvals from the school director. Furthermore, the system's performance may be affected by the speed of the internet connection, as certain features such as designs, and third-party APIs rely on prompt data retrieval.

Significance of the Study

Based on the proposed system, the following beneficiaries will benefit from it:

School Administration. The system will assist the school administration in enhancing student satisfaction.

Registrar's Office. The system will benefit the Registrar's Office by enabling document scanning and storage in the database. Additionally, the system can facilitate printing of documents stored in the database.

College & Senior High School Department. The system will aid the department in effectively managing and monitoring the most up-to-date list of student requirements.

Students. The system will support students in tracking their requirement status and provide them with timely notifications about their calendar activities.

Future Researchers. This study can serve as a valuable resource for future researchers, offering insights and ideas for new innovations that can benefit society.

Chapter 2
CONCEPTUAL FRAMEWORK

This chapter encompasses concepts, literature, studies, programs, generalizations, definitions, and other relevant information. It serves as a foundation for the Review of Related Literature, which discusses the factors that supported the project developers in formulating the proposed project. Additionally, the Review of Related Studies encompasses various theses and research that assisted the project developers in shaping their ideas for project development. The Conceptual Model of the Study further supports the project's IPO Model. Finally, the Operational Definition of Terms clarifies key terms used by the project developers.

Definition of Record Management System

According to McCue (2022), many of the departments in our study maintain significant records management systems (RMS) containing data on crime incidents. However, these databases were typically not designed with analysis in mind. Instead, they were developed for case management and general crime tally purposes. Consequently, these databases often include pre-set or routine queries that facilitate the retrieval of frequently needed information or reports. However, they often have limited utility for criminal investigations.

Records management involves establishing guidelines for maintaining various records and implementing practical and systematic control over record production, use, and disposal. Electronic records management provides this functionality and has become the industry standard for safeguarding vital records and documents. Local governments

can develop an electronic records management plan to support their growth and prosperity by utilizing a digital platform to house their records management system (GovOS, 2022).

Technology Used in Record Management System

This chapter covers the hardware and software components of the entire system. It includes a database for front-end development, project management development, graphics, and design, as well as programming and scripting languages.

A. Software and Hardware

1. Visual Studio (VS) Code, an open-source code editor, is primarily used to fix coding problems in cloud and web applications. It was created by Microsoft and is compatible with Linux, macOS, and Windows. It allows for the improvement of any written code.
2. The utilization of phpMyAdmin enables individuals to engage with a MySQL database without the need for command line interface. The MySQL database can be easily administered due to its interface that is designed to be user-friendly. Messina (2021) highlights that users could acquire knowledge on importing and exporting databases between servers, generating backup copies of databases through phpMyAdmin, establishing novel databases, altering, or appending tables, and conducting targeted searches for particular fields.
3. Upon commencing the acquisition of programming skills, it becomes imperative to identify a suitable platform for coding purposes, and Notepad++ presents itself as a commendable option. Nonetheless, the acquisition of proficiency in utilizing an Integrated Development Environment (IDE) may

require a significant investment of time. For novice programmers, there exists a considerable amount of knowledge to acquire, and it can prove to be a formidable task to acquaint oneself with novel software prior to commencing actual programming (Walsh, 2021).

4. Nowadays, many people read on computers, whether it's a smartphone, laptop, or desktop computer. Despite their apparent differences, all these devices operate on the same technology platform, as stated in Fox's study (2022). The more we understand how this technology functions, the better we can utilize the computers around us to make the world a better place. Every computer receives input data, stores it, processes it, and generates output.

B. Code References

1. ChatGPT is a natural language processing tool that utilizes artificial intelligence to facilitate human-like conversations and other related functions. By utilizing a chatbot, the language model can facilitate various tasks, including but not limited to composing emails, essays, and code, as well as furnishing responses to your inquiries. At present, ChatGPT is offered to all users without charge, as it is presently in the research and feedback acquisition phases (Ortiz and Shin, 2023).
2. CodePen, an online code editor widely utilized by numerous developers worldwide, is one of the recommended editors for use with the freeCodeCamp curriculum. It specifically supports front-end projects involving HTML, CSS, and JavaScript (Wilkins, 2021).

3. Stack Overflow serves as a valuable resource for individuals seeking timely and relevant answers. Renowned for its public Q&A platform, Stack Overflow is utilized by over 100 million people each month for asking questions, acquiring knowledge, and exchanging technical information. Whether for professional or personal purposes, individuals can leverage Stack Overflow and its tools to find the information they need for technology development in business or at home (Stackoverflow, 2023).
4. At W3Schools, the focus is on creating dynamic and user-friendly learning experiences. The goal is to make web development easily understandable and accessible from any location. Web developers can find comprehensive resources on various topics, such as HTML, CSS, JavaScript, PHP, and more, to enhance their knowledge of web development (W3Schools, 2023).

C. Programming / Scripting Language

1. Hypertext is a language that has been structured to link together various elements and frequently includes embedded content such as images. Markup serves as a style guide for typesetting anything that will be printed in hardcopy or softcopy format. HTML determines the structure of web pages. However, this organization alone is insufficient to create an appealing and engaging web page (Chris, 2021).
2. According to the separation of concerns design principle, this explanation of CSS (cascading style sheets) describes its purpose and highlights the best practice of integrating it with HTML pages for developing user interfaces

(UIs). CSS is widely accepted and recommended as the method for formatting HTML pages (McKenzie, 2022).

5. Developers only need to place the code into a pre-defined grid system because Bootstrap is a framework that already includes the fundamentals for developing responsive websites. The Bootstrap system is built on cascading style sheets (CSS), JavaScript, and HTML, forming its foundation. By using Bootstrap, web designers can construct websites much more quickly, as they can avoid spending time worrying about basic commands and functionalities (Zola, 2022).
6. According to studies by Megida (2021), JavaScript is a dynamic programming language that can be used to build various things, such as websites, web applications, games, and more. By using JavaScript, you can add dynamic elements to websites that cannot be achieved with just HTML and CSS.
7. Chart.js is a popular, community-maintained, open-source data visualization framework. It enables us to generate responsive bar charts, pie charts, line plots, donut charts, scatter plots, etc. All we have to do is simply indicate where on our page we want a graph to be displayed, what sort of graph we want to plot, and then supply Chart.js with data, labels, and other settings (Olawanle, 2023).
8. Asynchronous JavaScript and XML (AJAX) is defined as a programmatic approach that employs a set of technologies to develop highly interactive and responsive web applications. It allows developers to update individual

components of a web page in real time without the need to reload the entire page (Kanade, 2023).

9. Quick website construction, event handling, HTML page traversal, Ajax interactions, and animation can all be simplified with the help of jQuery, a condensed and brief JavaScript package. jQuery simplifies HTML's client-side scripting, making the building of Web 2.0 apps easier (Techopedia, 2017).
10. According to a study by Ganesan (2021), the open-source software known as XAMPP was created by Apache Friends. The XAMPP software package includes distributions of Apache servers, MariaDB, PHP, and Perl. Furthermore, XAMPP functions as a local host or server.
11. Apache HTTP Server, a free and open-source web server, distributes web information online. It is often referred to as Apache and quickly became the most popular HTTP client after its creation. The common misinterpretation that Apache derived its name from its history of development and improvement through patches and modules was corrected in 2000 (Hernandez, 2019).
12. MySQL is the world's most widely used open-source database system, known for its flexibility and strength. It stores information in tables consisting of rows and columns, similar to other relational databases. Structured Query Language, or SQL as it is commonly known, enables users to define, modify, control, and query data (Drake, 2020).

13. Since MariaDB is derived from MySQL, the two databases share many functionalities and design decisions. MySQL is a relational database management system that is open-source and free. MariaDB, like other relational databases, stores data in tables consisting of rows and columns. Structured Query Language, commonly known as SQL, allows users to define, modify, control, and query data (Drake, 2021).
14. PHP, an open-source server-side programming language, is widely used by developers to create websites. This versatile language can be employed for creating Graphical User Interfaces (GUIs) and various other tasks (Chris, 2021).
15. Optical character recognition (OCR) technology is a commercial solution used to automate data extraction from scanned documents or image files containing printed or written text. It converts the text into a machine-readable format, enabling data processing tasks such as editing or searching (Hyland Software, 2022).
16. The study of examining unprocessed data to draw inferences is known as data analytics. Data analytics techniques can be applied to any information to gain insights that can be utilized for improvement. Data analytics plays a significant role in optimizing enterprise performance (Frankenfield, 2023).
17. FPDF is a PHP class that enables the creation of PDF documents using PHP code. It does not require any API keys and is free to use. The term "Free PDF" (FPDF) signifies that PDF files can be modified in any way (Ishu, 2018).

18. PHPMailer is a code package used to send emails quickly and securely from a web server using PHP code. Direct email sending with PHP code requires a thorough understanding of the SMTP standard protocol, as well as the difficulties and vulnerabilities associated with Email Injection for Spam (Purswani, 2019).

D. Project Management Development

1. Trello is a popular, straightforward, and simple collaboration application that enables you to organize projects and all associated elements into boards. Trello follows the Kanban technique, which is a prominent tool for achieving lean management. Teams can complete tasks more quickly and efficiently, and collaboration can inspire innovation and foster creativity (Arun, 2023).

E. Database

1. phpMyAdmin is a free PHP software utility designed to manage the administration of a MySQL or MariaDB database server. It can perform various administration operations, including creating a database, executing queries, and adding user accounts (phpMyAdmin, 2022).

F. Graphics and Design

1. According to Bracey (2018), Figma is not just a browser-based interface design application; it is much more than that. In fact, I would argue that it is the best software for team-based collaborative design tasks.

2. According to a study by Bianchi (2020), Coolors is a must-have utility for creating and storing color palettes. It allows you to quickly generate perfectly matching colors, even if you are not a design specialist.
3. Canva is a visual design application that simplifies the digital design process. Creating an account is easy, and it works seamlessly through a web browser or iOS and Android apps. Canva's intuitive drag-and-drop interface makes image editing and project-based learning accessible, even for younger children. It has a wide range of potential applications in the classroom, from group brainstorming to individual project creation (Edwards, 2022).

Review of Related Studies

This part discusses some studies that were related to the project from international and local sources.

A book named "Document Management System and Document Tracking System" was authored by Adufina, C. et al. (2020) from Bestlink College of the Philippines. The book illustrates the functionalities of an automated system for organizing, recording, tracking, approving, storing, accessing, and managing corporate files and documents. By utilizing cloud-based document management software, users can securely store files in a central online repository and easily search and retrieve them. The tracking system component of the software offers a versatile solution for businesses to monitor the allocation of papers and supplies to specific individuals or locations. To enhance efficiency and deliver high-quality services, the authors recommend developing an

application that integrates with other departments, thereby streamlining document management and tracking processes.

In a separate study conducted by Benito, J.P., Calucin, R.A., and Hapa, J.P. (2018), the focus was on the development of a Web-Based Records Management system tailored for St. Paul University of Quezon City. The primary objective of this research was to alleviate the workloads and challenges faced by doctors, nurses, and students within the institution. The web-based system was designed to support doctors and nurses in their daily tasks, including the management of patient records, inventory monitoring, and communication via SMS messages. Moreover, students benefit from the system as it enables them to conveniently schedule appointments based on their educational and personal availability.

Jamoya, J., Morales.E., Moyon, E. (2020) developed an OCR-based document archiving and indexing system called "A Record Management System" for DSWD Caraga, Philippines. The study aimed to automate record classification using the open-source Python-Tesseract (PyTesseract) module, which is a wrapper for Google's Tesseract-OCR Engine. The process involved scanning paper-based documents and using the PyTesseract package to extract and recognize text. By integrating this module with Django and MySQL, the system facilitated efficient record classification, indexing, and archiving, making record protection and retrieval more accessible.

Marave, A. (2019) identified challenges and inefficiencies associated with traditional record keeping, application paperwork, and scholarship criteria management. To address these issues, the developer designed the "Online Scholarship Application and Record Management System for AYZ City." The system aimed to streamline the

scholarship office's processes by reducing paperwork and manual processing. The implementation of an application and record management system resulted in labor reduction, improved data storage security, and more reliable data organization.

Pagayonan, S.M. (2021) developed a Record Management System that included Document Control for the Records Office of Northern Iloilo Polytechnic State College Estancia, Iloilo staff. The primary objective of the study was to establish a new method for storing and retrieving digital records. Additionally, a modified computerized leave management system was implemented to enhance staff efficiency.

Purcia, E. and Velarde, A. (2022) conducted a study on the Student Registration and Records Management Services of three private universities in the Philippines. The purpose was to assess the extent of implementation of these services as the basis for academic record digitization. The study utilized a descriptive-evaluative approach, with a random sample of respondents completing a researcher-created questionnaire. The analysis revealed moderate concerns among the majority of respondents regarding issues related to the services provided by the Student Registration and Records Management Offices (SRRMO), including the lack of admission requirements and non-observance of the enrollment schedule.

Foreign Studies

Al-Moallemi, W.A. et al. (2022) developed an Electronic Records Management System to address the changing landscape of electronic document creation with the increased use of cloud computing, information and communication technologies (ICT), office automation, and digitalization. Embracing this new environment is essential for

organizations to ensure competent operations and regulatory compliance in the foreseeable future.

Chikondowa, T. et al. (2022) conducted a review of an Integrated Archives Electronic Document and Records Management System. The paper provides a summary of relevant literature and sources on electronic documents and Records Management Systems (EDRMs) in various university settings. The primary objective is to gain an understanding of how records have been electronically integrated. The study includes an evaluation of the existing systems utilized at Chinhoyi University of Technology, highlighting the current independent operation of record systems and their specific shortcomings.

Mleke, M.N. and Dida, M. A. (2020) presented a thesis emphasizing the use of monitoring and evaluation systems by organizations or governments to measure, track progress, and evaluate project outcomes. The study highlights the benefits of increasing monitoring and evaluation processes in improving organizational performance, effectiveness, and project success. However, despite the importance of information and communication technology systems in these activities, many organizations do not utilize computerized monitoring and evaluation systems due to high costs and insufficient experience. The paper suggests the need for a systematic alert mechanism for project progress.

Schellnack-Kelly, I. & Sithole, N.S. (2022) discuss the development of a Records Management System at eNews Channel Africa (eNCA). The study aims to determine the user-friendliness of the current records management system and identify areas for improvement. Guided by the records life cycle theory and the records continuum theory,

the paper adopts a positivist paradigm and employs a quantitative technique. The article suggests that institutions and organizations managing records should have robust records management systems in place. Additionally, it recommends that records management system suppliers develop user-friendly systems and provide refresher training to their clients.

Svärd, P (n.d.) developed an information and records management system and explored the impact of information culture on public information administration. With information technology playing a crucial role, information is considered a primary asset and driver of economic, cultural, and political success. This trend has also influenced the performance of governments and public institutions in their interactions with citizens. The paper highlights the influence of political, administrative, and technological factors on information and records management practices, leading to new information creation and administration requirements.

Uka, K. and Nwabueze E. (2019) designed a Web-Based Students Record Management System for tertiary institutions. The system enables the recording of student information and documents and was created using PHP. The aim of this initiative was to reduce the workload of school faculty in terms of information management.

Requirements Modeling

The IPO Model of the Proposed System is illustrated in Figure 1, displaying three main components: input, process, and output. The input component includes system requirements, software requirements, and hardware requirements. Furthermore, the Online Based RMS of College and Senior High School Enrollment Requirements for

UPHS-GMA Registrar Department successfully meets all the evaluated criteria for the project.

On the following page, the IPO (Input, Process, and Output) of the proposed system is depicted, providing a graphical representation of the Conceptual Framework of the Study.

Conceptual Model of the Study

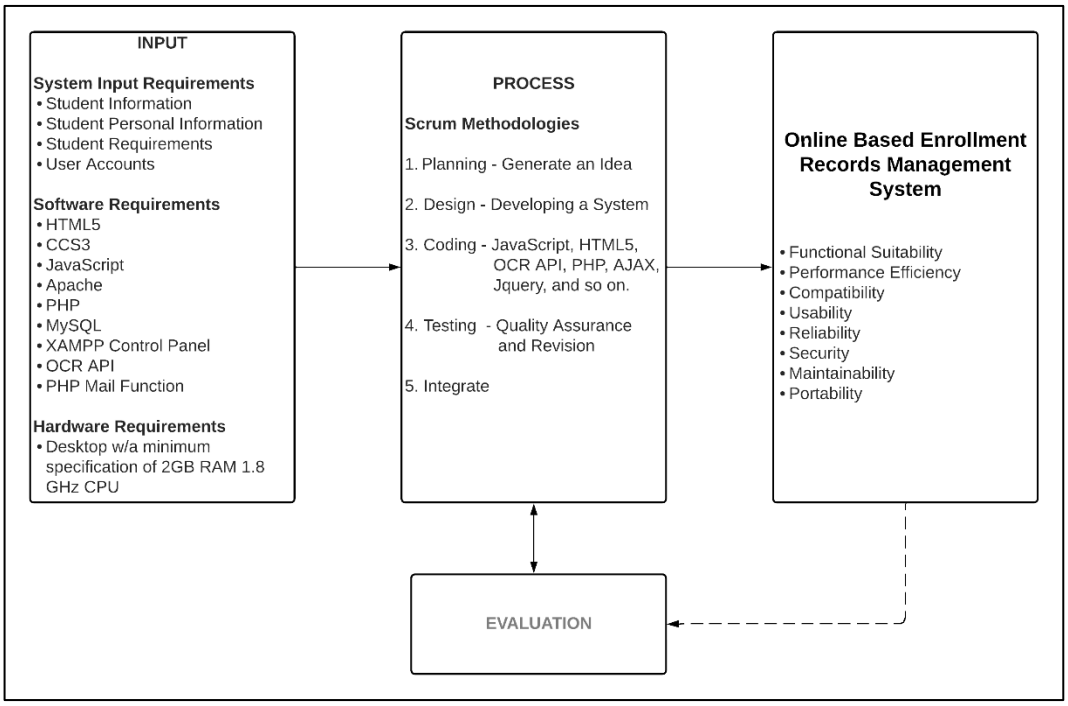

Figure 1. IPO Model of The Online Based Enrollment Records Management System

Chapter 3
METHODOLOGY

This chapter goes through the process of how the project came to be, its design, implementation, and its requirements. The Project Requirement Specification describes the project's needs and utilizes charts and diagrams to illustrate them. Screenshots of the project's GUI are displayed in the Project Design section. The Project Development section includes tables and charts to demonstrate the progress of the project. The Project Implementation and Evaluation sections discuss how the project was carried out and evaluated.

Project Requirement Specification

In this section, the project developer presented various possibilities and models for the project, each representing specific issues related to its development. The Operational Feasibility is demonstrated through a fishbone diagram, which breaks down the primary issue into sub-issues, highlighting the causes and reasons behind the client's challenges. This visual representation helps clarify the reasons, categorize the causes, and highlight their significance in a clear and understandable manner.

The Schedule Feasibility section includes Gantt charts that illustrate the project's development timeline. The timeline spans from November 2022 to April 2023. Additionally, the Project's Development Cost is presented in a table, providing an overview of the overall expenses incurred during the project's development. The table includes variables such as quantity, materials, fees, and remarks.

The final section of the requirements model encompasses an IPO model, a Data Flow Diagram, and a system Flowchart. These components describe the project's software and hardware requirements, input requirements, the overall process, and the flow of data within the system.

Operational Feasibility of the Proposed System

The primary issue of the project is presented in the Operational Feasibility section. It is depicted using a fishbone diagram, which illustrates the causes and variables that impact the main problems.

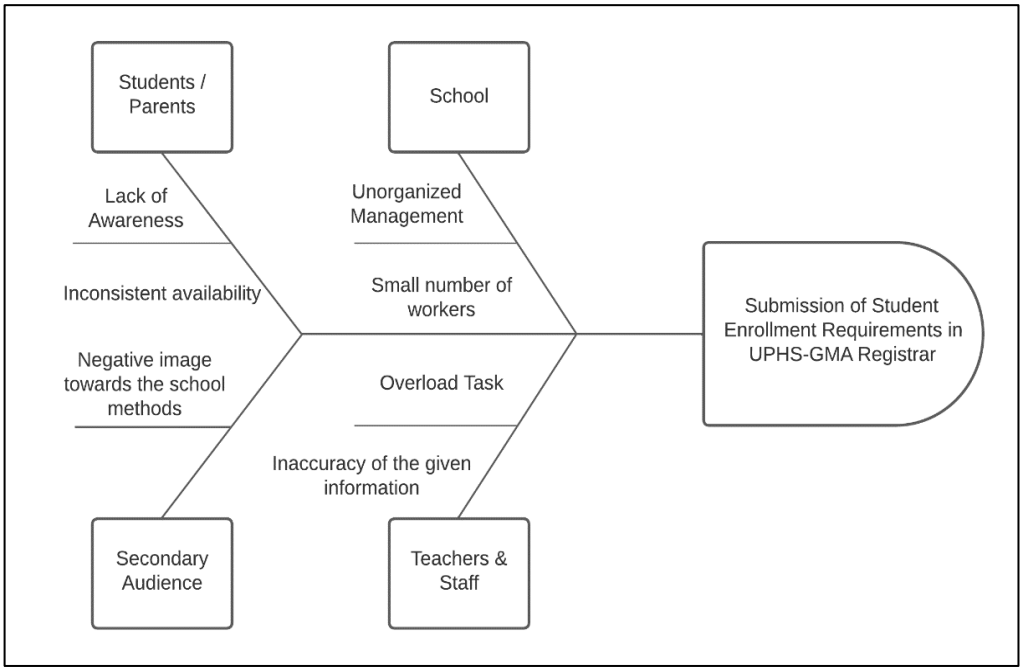

Figure 2. Fishbone Diagram of the Proposed System

The diagram illustrates the root problem faced by UPHS-GMA Registrar, which is the manual safekeeping of documents. It depicts the interrelation of various factors, including the school, students/parents, secondary audience, and teachers & staff entities,

as personas affected by the problem. This diagram serves as supporting material for the proposed system, addressing the question of why the UPHS-GMA Registrar Office requires a comprehensive system that notifies students and parents about the requirements and enables the school's employees or administrators to effectively organize documents and information.

Schedule Feasibility of the Proposed System

The Schedule Feasibility of the Proposed System provides insight into the amount of time dedicated to the project's development.

List of Activities (Weekly Schedule)		November				December 2				January 20				February 2				March 20				April 202			
	Planning																								
	Design																								
	Coding																								
	Testing																								
	Integrate																								

Table 1. The Proposed System is shown in the Gantt Chart for the Academic Year 2022–2023.

Table 1 illustrates the timeline of the project's development, spanning from November 2022 to the fourth week of April 2023. Following the title proposal, the project developers embarked on the conceptualization stage and resource gathering for the system's construction, starting from the first week of November until the second week of December. The Design Phase followed the Planning Phase, with the designer overseeing the website/web page design and layout development. The visual system was then created using design software after the client and developers reached an agreement, which

occurred between the 2nd week of December and the last week of January. In April, the developers-initiated testing after completing the Coding Phase, while the thesis proposal was presented in the last week of April. Lastly, in the month of May, the researcher commenced data gathering for the remaining chapters and presented the final thesis proposal in the 2nd week of May.

Economic Feasibility of the Proposed System

The expenses incurred by the developers, categorized into software, hardware, and other fees, are presented in this section. These costs have already been paid and are accounted for. However, it should be noted that all expenses were allocated for the development of the proposed system during the Academic Year of 2022-2023.

Description	Quantity	Unit Price	Total Cost	Remarks
I. Software				
a. XAMPP v3.3.0	1	Open- Source	Open- Source	Available
II. Hardware				
a. UTP Cable (5 meters)	2	₱ 150	₱ 300	Paid
b. Switch Hub (D-link)	1	Free	Free	Available
III. Miscellaneous				
a. Transportation	5	₱ 790	₱3,952	Paid
b. Documentation	2	A4 Paper	Free	Available
Total Cost:		₱4,252		

Table 2. The Development Cost of the proposed system for the UPHS-GMA Registrar Department

Table 2 presents the expenditure incurred by the developers throughout the entire development stage of the project. It is important to note that the specified software and hardware mentioned in the table are not mandatory for implementation. However, it is recommended to explore more suitable software and hardware options that align with the

project's requirements. The listed components are utilized to construct and enhance the project, ensuring its functionality as a working Record Management System.

Requirements Modeling of the Proposed System

The data flow diagram and system flowchart for the proposed system are displayed in this section.

Data Flow Diagram of the Existing System

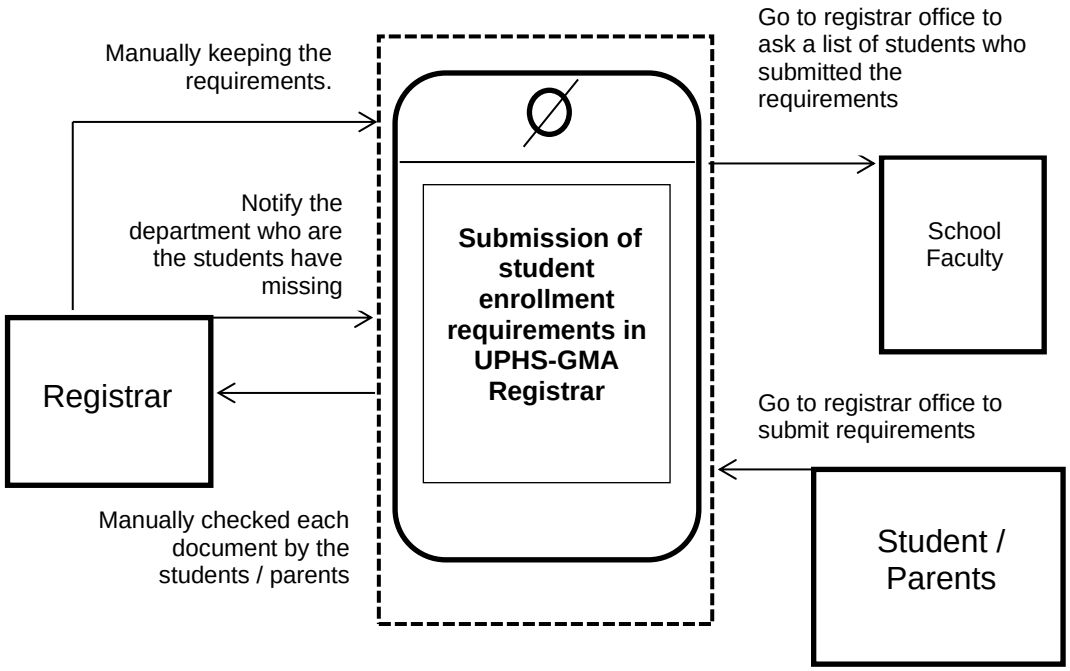

Figure 3. The Context Level Data Flow Diagram of the Existing System in UPHS-GMA Registrar Office

Figure 3 illustrates the current system or process in the UPHS-GMA Registrar office. The Registrar Office requires specific documents, including MoA, PSA, Form 137, Form 138, and a 2x2 Picture, as part of the fulfillment for enrolled students. Upon submission of their requirements, the registrar office manually keeps the documents and

provides a list to the respective departments, indicating which students have deficiencies in their submissions.

Data Flow Diagram of the Proposed Project

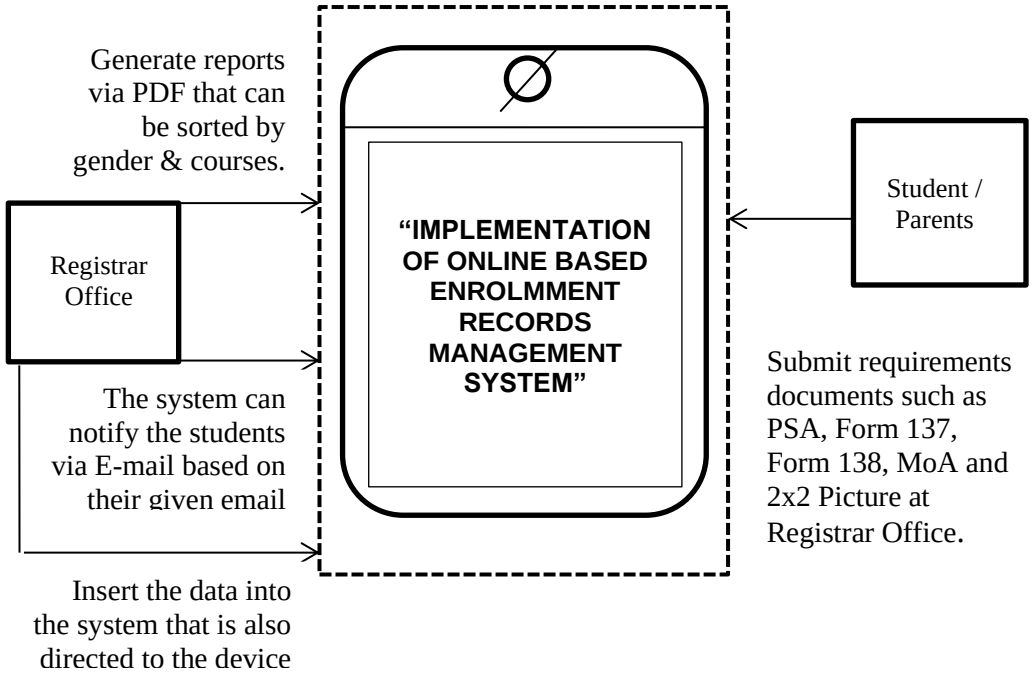

Figure 4. The Context Level Data Flow Diagram of the Proposed System

Figure 4 presents the data flow diagram of the project, showcasing the process of digitally managing the requirements instead of physically storing them. Communication has been identified as a challenge when it comes to reaching out to students who have not completed their requirements. To address this issue, the system can send email reminders to the students. Additionally, the system is equipped with the capability to generate PDF reports that can be sent to each department as a reliable source of information.

System Flowchart of the Existing System

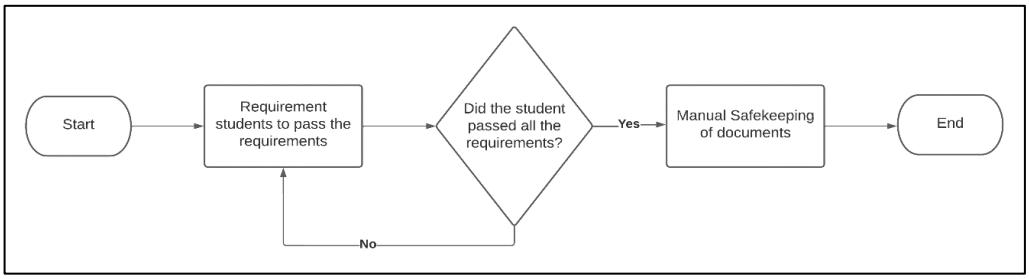

Figure 5. System flowchart of the generalize simplified existing process of the Registrar for submitting requirements

Figure 5 depicts the current procedure for submitting requirements in the Registrar's Department. As shown, the student is required to submit the necessary documents. If the student successfully meets all the requirements, the registrar manually stores the documents for safekeeping. However, if the student has outstanding requirements, they are required to submit the remaining documents to fulfill the requirements.

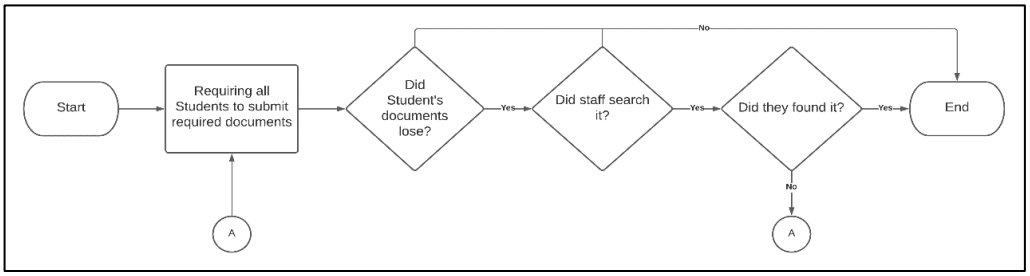

Figure 6. System flowchart of the existing process of the Registrar if the documents lose

Figure 6 illustrates the process that occurs when documents are lost in the Registrar's office. In this scenario, if a student's document is lost, they are required to present the necessary documents. The staff then conducts a search for the lost document,

and if it is not found, the student must submit the required documents again. However, if there is no document loss issue, the student can proceed without any further problems.

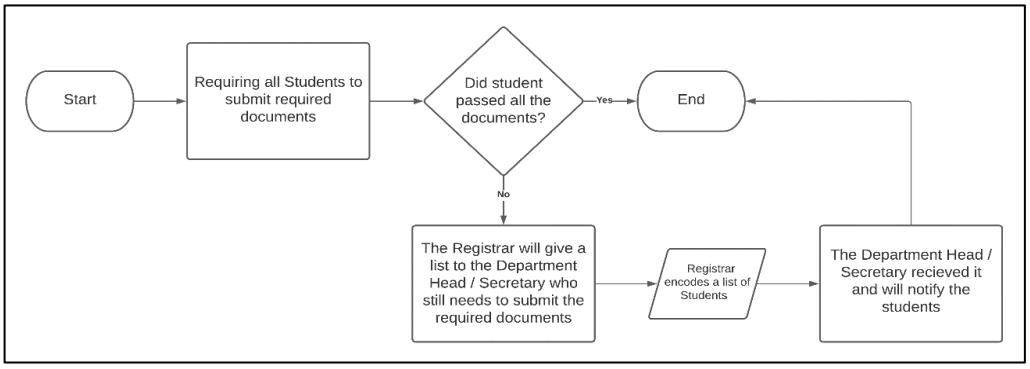

Figure 7. System flowchart of the existing process of the Registrar notifying student to pass the requirements

Figure 7 illustrates the situation where a student fails to complete the required documents in the Registrar's office, resulting in a notification being sent to the student. If the student successfully submits all the necessary documents, there are no further issues. However, if the student has outstanding documents, the Registrar provides a list to the department head/secretary indicating the students who still need to submit the appropriate documents. The Registrar can then encode a list of students that the department has received and notify the students accordingly.

System Design (Employee Side)

In this section, the proponents have included several graphics depicting the user interface design. Each screenshot showcases the features and processes available in the project, with a clear separation into two sections: one for the Employee Side and another for the Administration Side.

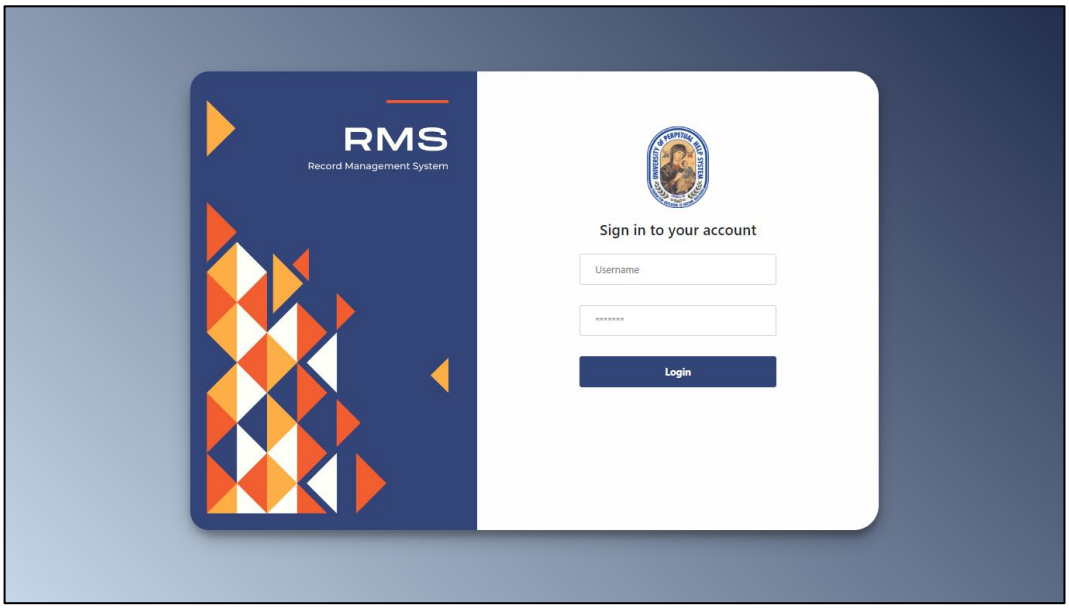

Figure 8. The Record Management System for Employee/Admin Login Page

Figure 8 displays the Employee/Admin Login Page for Record Management. Users can log in using their username and password on this page. The vibrant background is intended to bring the system to life by incorporating different colors. If the account belongs to an employee, they will be directed to the employee side. Conversely, if the account belongs to an admin, they will be directed to the admin side and have the option to switch panels from the admin panel to the employee panel.

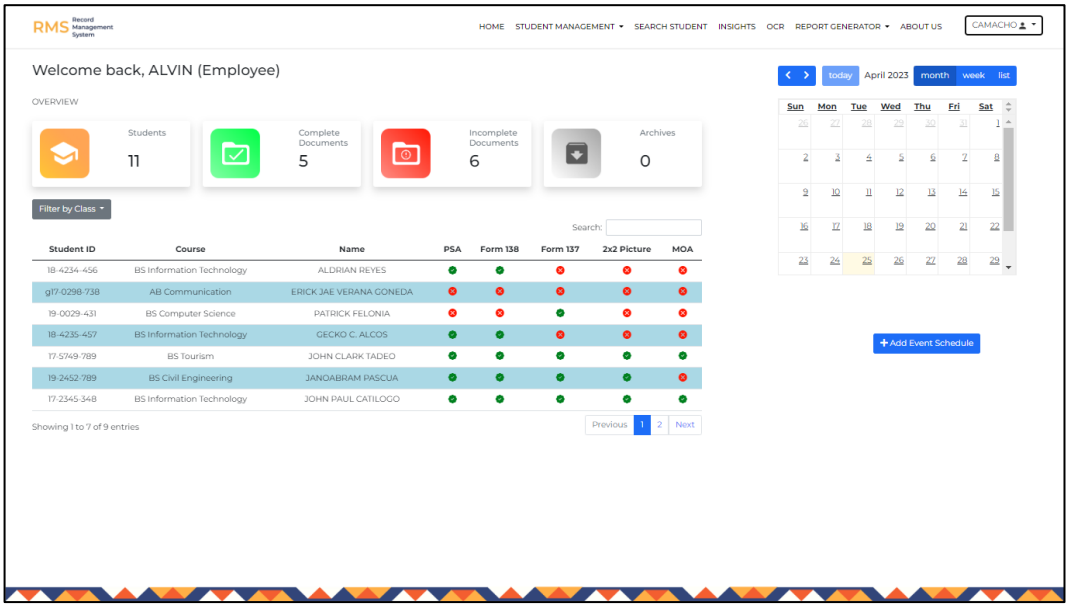

Figure 9. The Record Management System Dashboard for Employee panel

Figure 9 showcases the dashboard of the Record Management System for employees. Once users log into their accounts, their roles are displayed above. The RMS logo is visible in the upper left corner of the page. The navigation bar offers eight functionalities, including home, student management, search student, insights, OCR, report generator, about us, and user buttons. The page also includes a calendar feature positioned in the middle right corner.

The overview section consists of four cards displaying the total number of students, complete documents, incomplete documents, and archives. Beneath the cards, tables of data are presented, which can be filtered based on class.

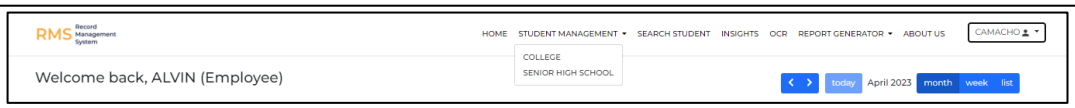

Figure 10. The Record Management System for Employee Student Management Dropdown

Figure 10 displays the Student Management Dropdown, providing options for college and senior high school students that users can select from.

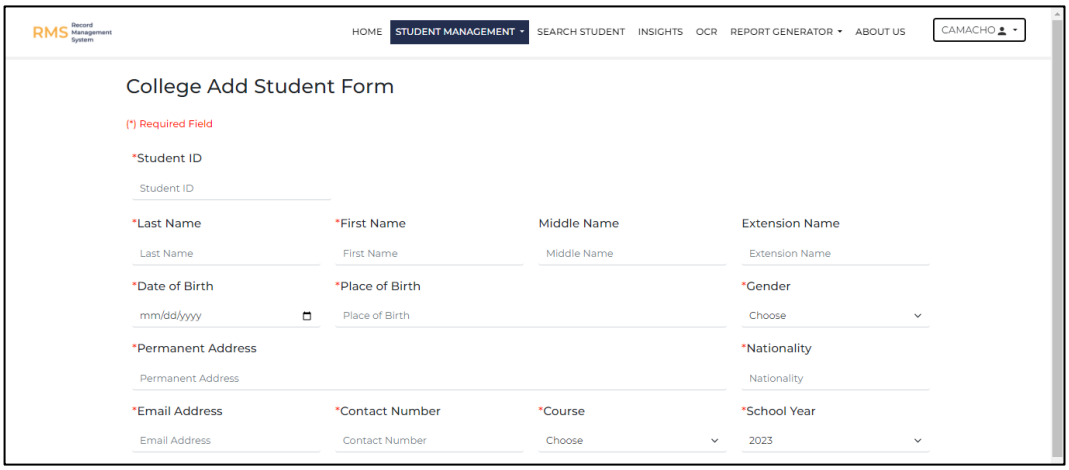

Figure 11. The Record Management System for Employee Student Management College Add Student Form

Figure 11 illustrates the College Add Student Form in the Student Management section, where users can input details about a college student. The required fields include Student ID, Last Name, First Name, Date of Birth, Place of Birth, Gender, Permanent Address, Nationality, Email Address, Contact Number, Course, and School Year. Users must provide the necessary information in these fields.

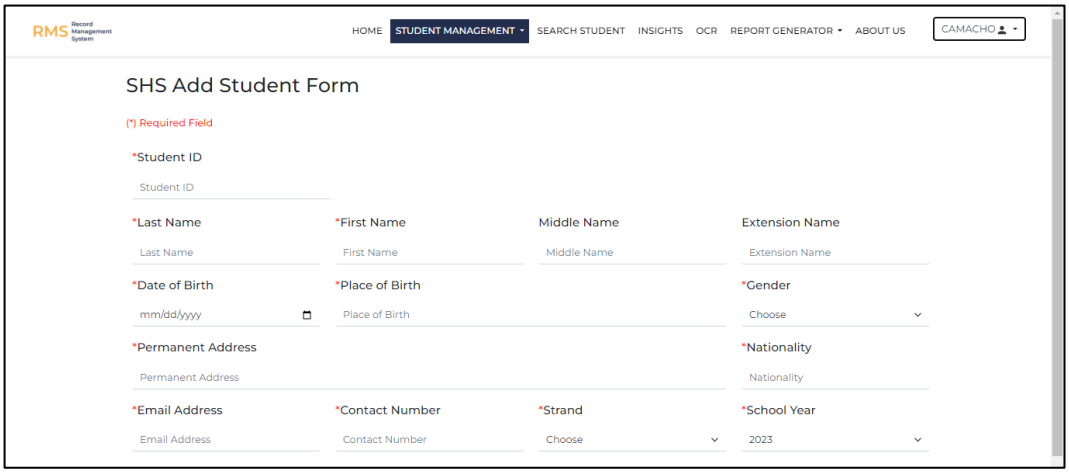

Figure 12. The Record Management System for Employee Student Management Senior High School Add Student Form

Figure 12 displays the Senior High School Student Form in the Student Management section, where users can input details of SHS students. It is similar to Figure 36, but instead of the "course" field, it has been replaced with the "strand" field.

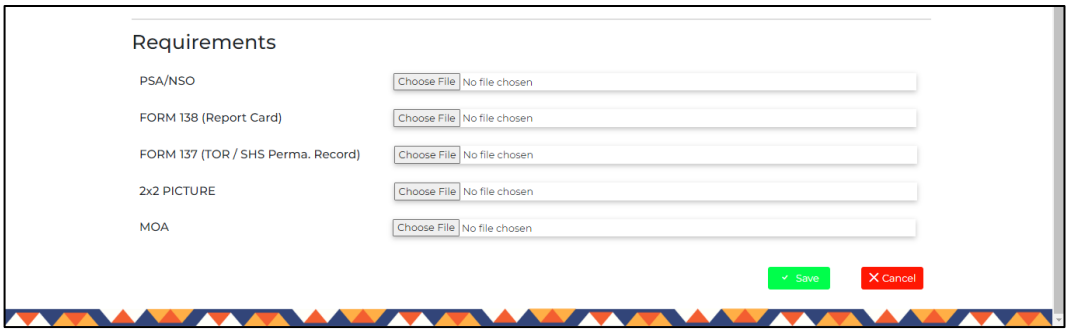

Figure 13. The Record Management System for Employee Student Management Requirements

Figure 13 depicts the Requirements for Student Management. The necessary requirements include PSA/NSO, Form 137, Form 138 (for SHS students), 2x2 Picture, and MoA. Users are required to upload PDF files for student requirements and JPEG files for images. Other file types will not be accepted.

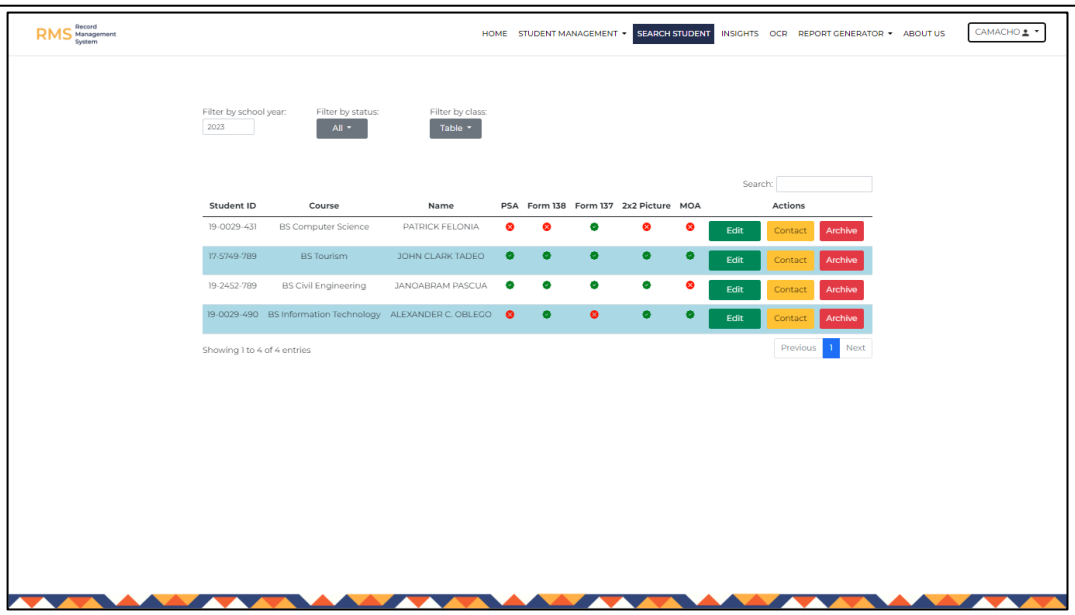

Figure 14. The Record Management System for Employee Search Student

Figure 14 illustrates the Search Student feature. Once the user inputs the student's data in the student management, the search results are displayed. Three filters are available: School Year, Status (Active and Archive), and Class (College and SHS). Additionally, several actions can be performed, including editing a student's information, contacting the student, and archiving the student.

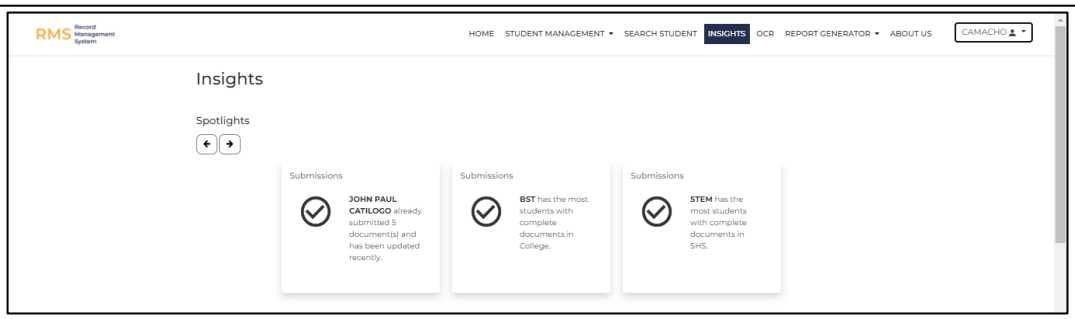

Figure 15. The Record Management System for Employee Insights Spotlights

Figure 15 presents Insight Spotlights. These spotlights showcase various statistics, including the total number of submissions, the name of the most recent student who added requirements, the total count of students with incomplete requirements, the monthly distribution of requirement submissions, and the total count of courses and strands submitted. These insights are listed on the card for easy reference and analysis.

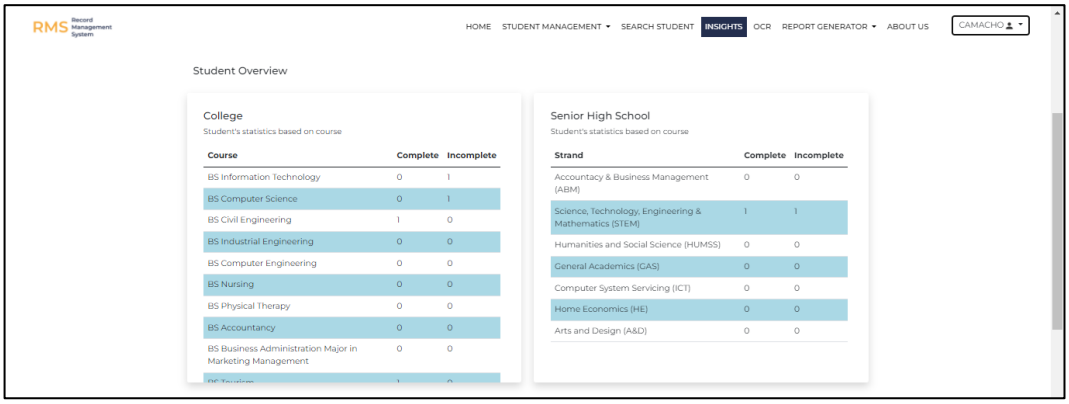

Figure 16. The Record Management System for Employee Insights Student Overview

Figure 16 displays the Student Overview Insight. It features two tables presenting statistics on the total number of completed and uncompleted records for both college and senior high school students.

Figure 17. The Record Management System for Employee Insights Requirements Overview College

Figure 17 showcases the Requirements Overview College Insights. The figure includes two filters: year (from and to) and department. The data pertaining to each department is visually presented in a bar chart within the table, offering a clear representation of the information.

Figure 18. The Record Management System for Employee Insights Requirements Overview Senior High School

Figure 18 displays the Requirements Overview for Senior High School in Insights. It is similar to Figure 17, but it represents the data per strand using a bar chart.

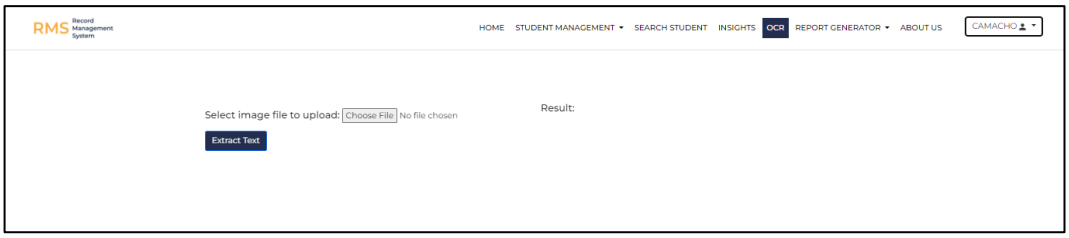

Figure 19. The Record Management System for Employee OCR

Figure 19 showcases the OCR (Optical Character Recognition) feature in our Record Management System. Users have the option to select a JPEG format file, and upon clicking the "Extract Text" button, the system generates the text from the image provided by the user.

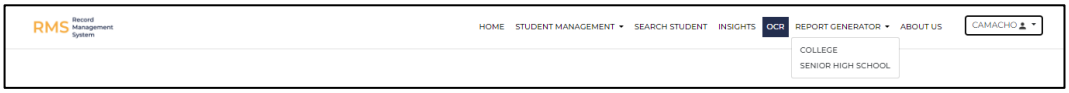

Figure 20. The Record Management System for Employee Report Generator Dropdown

Figure 20 displays the Report Generator Dropdown, presenting options for College and Senior High School choices. These tabs enable users to generate and print various reports based on their specific requirements.

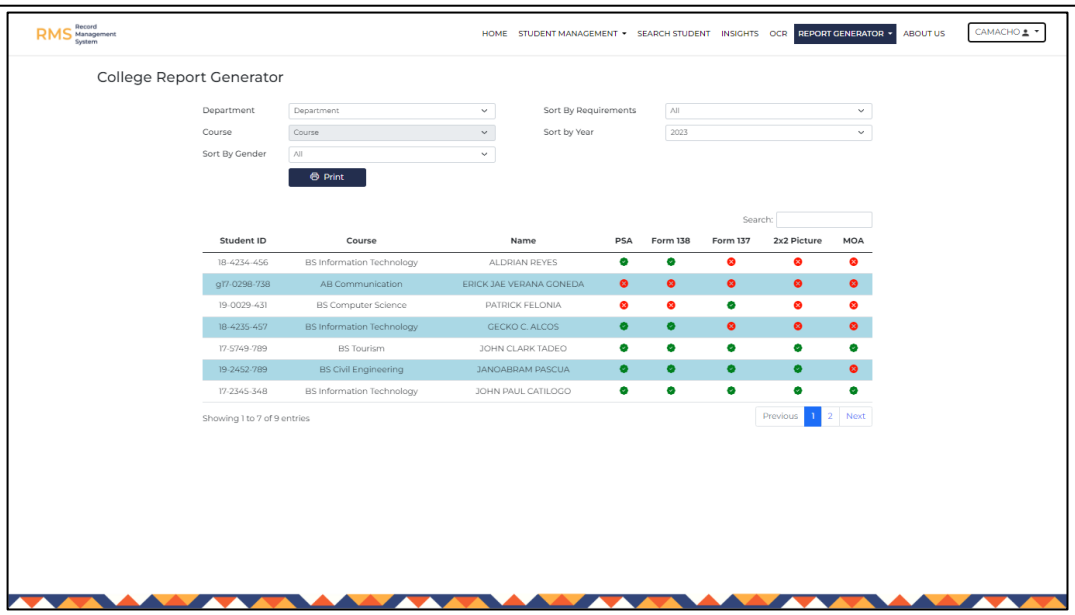

Figure 21. The Record Management System for Employee in College Report Generator

Figure 21 showcases the College Report Generator. Users can utilize various filters such as Department, Course, Sort by Gender, Sort by Requirements, and Sort by Year to generate a table with data specific to college students. This table can then be printed as required.

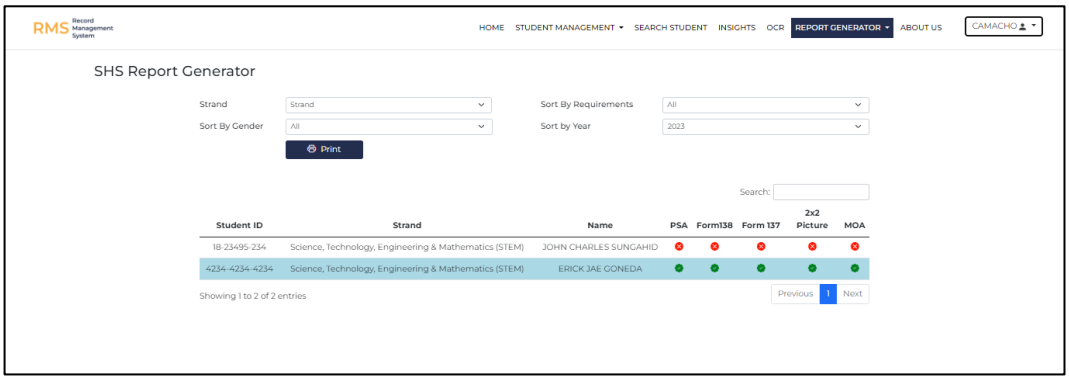

Figure 22. The Record Management System for Employee Senior High School Report Generator

Figure 22 presents the Senior High School Report Generator. This figure depicts a similar feature as shown in Figure 48, but with fewer options available for sorting. Users

can choose to sort the data by strand, gender, requirements, and year when generating reports specific to senior high school students.

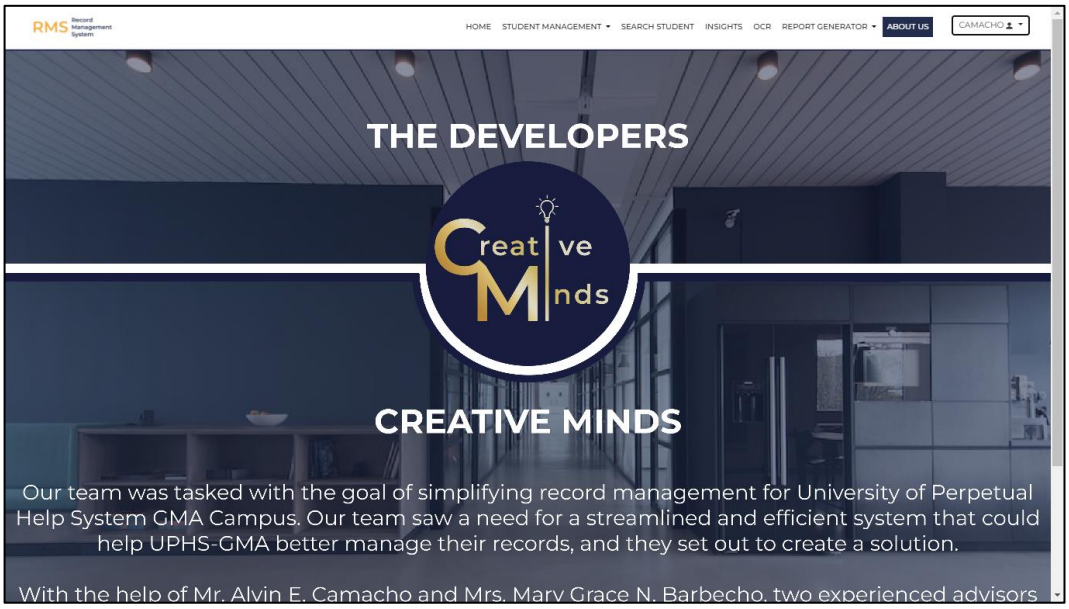

Figure 23. The Record Management System for Employee About Us

Figure 23 displays the About Us section. This page contains information about the system and the developers involved in its creation. Users can find relevant details about the system and learn more about the developers on this page.

System Design (Administration Side)

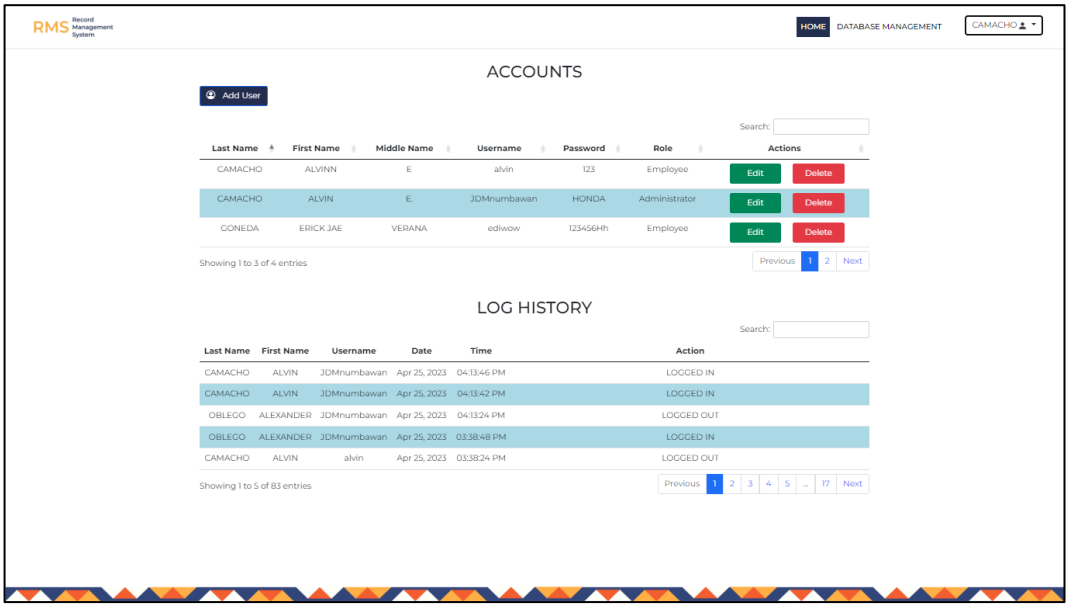

Figure 24. The Record Management System for Administration Dashboard

Figure 24 showcases the Dashboard for Administration. Within this dashboard, there are two tables. The first table, labeled "Accounts," allows the admin to view the information of different user accounts. In the accounts table, the admin has the capability to modify data, specifically the password and role of each user. Additionally, the admin can add new users to the system and assign their roles, as demonstrated in Figure 25.

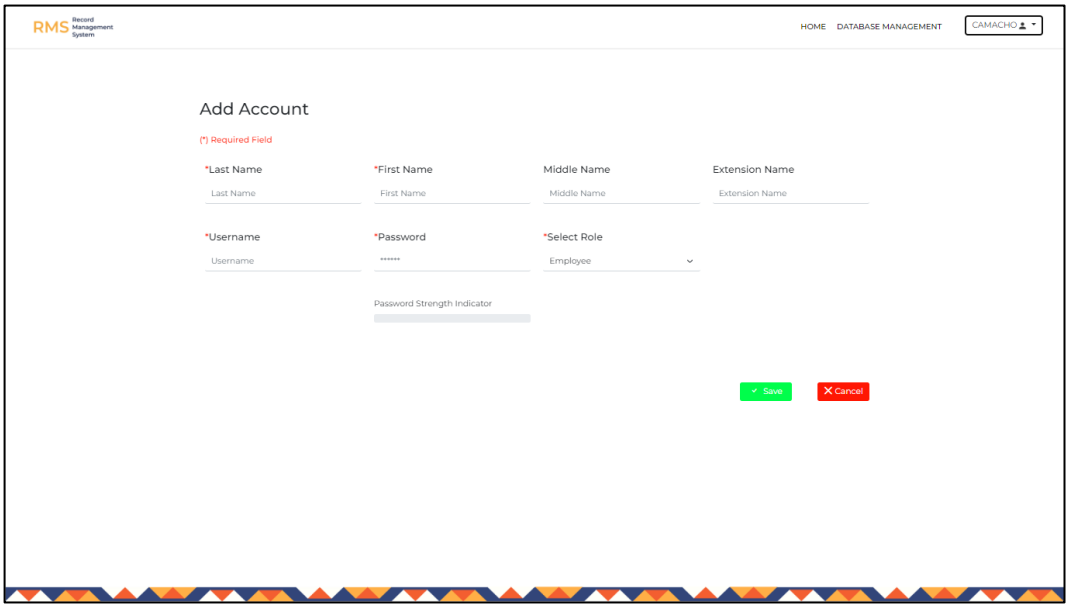

Figure 25. The Record Management System for Administration Add User

Figure 25 displays the Add User feature. Users can enter their details and create their login, password, and roles. The system offers two roles: employee and administrator. Users can select the appropriate role during the user creation process.

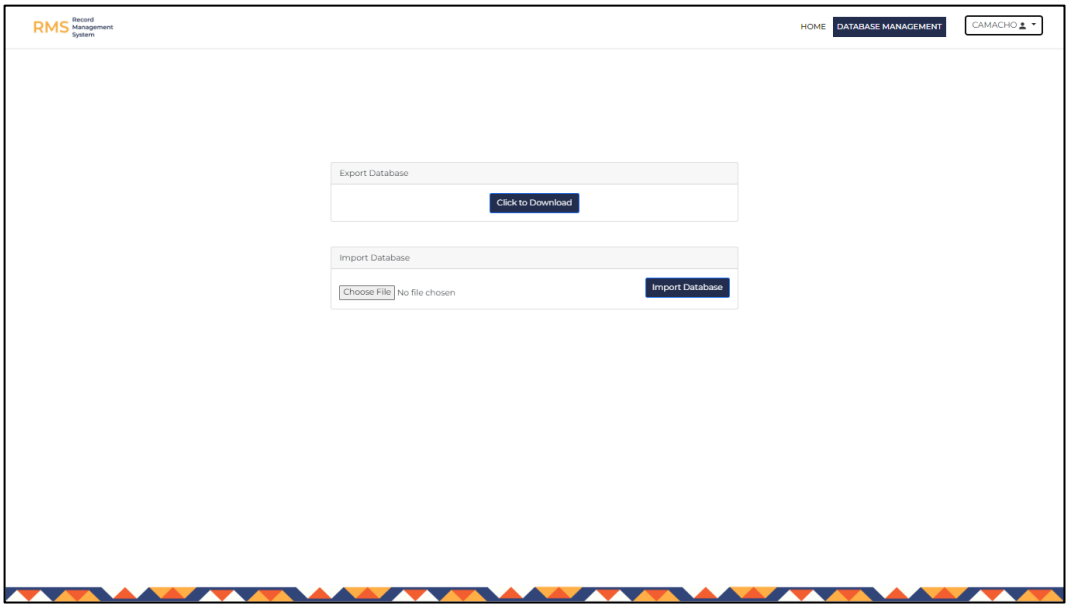

Figure 26. The Record Management System for Administration Database Management

Figure 26 showcases the Database Management feature in the Administration Side. Users have the ability to export the system's database for backup purposes. Additionally, they can import an existing database to retrieve data and incorporate it into the system.

Project Development

As the project is being developed, all specifications and necessary development methodologies are covered in this section.

Software Requirements

The required software requirements for the project are listed below.

- HTML 5
- CCS3
- JavaScript
- Apache
- PHP
- MySQL
- XAMPP Control Panel
- OCR API
- PHP Mail Function

The developers required software that would aid in completing the project and implementing all its features. The following software is exclusively utilized for development purposes and is not relevant to the end-user. Third-party software, such as

OCR API and PHP Mail Function, is being utilized in the construction of the proposed system.

Hardware Requirements

• Desktop w/a minimum specification of 2GB RAM, 1.8 GHz CPU

This proposed system is designed for desktop usage and requires a minimum specification of 2GB RAM and a 1.8 GHz CPU. Users can utilize the system that we have developed with these hardware requirements.

Development

Scrum is a framework that enables individuals to address complex adaptive problems while delivering products of the highest value in a productive and creative manner. Unlike a collection of rigid and mandatory components, Scrum is simple and emphasizes the principles of empiricism and self-organization. It is not a methodology but implements the scientific method to deal with unpredictability and solve complex problems. The graphic below represents Scrum in Action, as described by Ken Schwaber and Jeff Sutherland in their book "Software in 30 Days," guiding us through the entire process from planning to software delivery.

At the core of Scrum is the Scrum Team, which consists of a small group of individuals including the Scrum Master, Product Owner, and Developers. This team works collaboratively and does not have sub-teams or hierarchies. They focus on achieving the Product Goal one objective at a time.

Scrum employs prescribed events to establish regularity and minimize the need for additional meetings outside of the Scrum framework. All events have fixed time-boxes.

Once a Sprint begins, its duration remains constant and cannot be shortened or extended. The other events may conclude as soon as their objectives are met, ensuring the right amount of time is spent without unnecessary waste. The Scrum Events include:

- Sprint
- Sprint Planning
- Daily Scrum
- Sprint Review
- Sprint Retrospective

The Scrum framework includes specific artifacts that represent work or value and provide transparency, as well as opportunities for inspection and adaptation. These artifacts are designed to ensure that everyone involved has a clear understanding of their purpose and contents. The Scrum Artifacts are:

- Product Backlog
- Sprint Backlog
- Increment

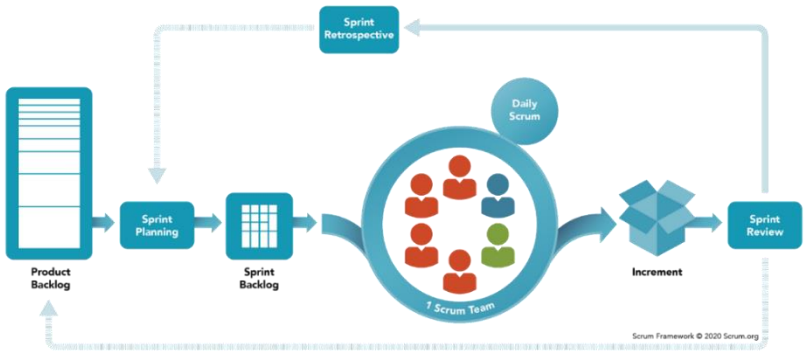

Figure 27. The Scrum Framework of the proposed system

Figure 27 illustrates the workflow of Scrum, starting with the Product Backlog. The Product Owner creates a list of potential ideas and features for the product and prioritizes them. The top items from the Product Backlog are then discussed in the Sprint Planning meeting, involving the Product Owner, Scrum Master, and the team. This meeting determines which user stories will be included in the next Sprint, and the result is the Sprint Backlog. During the Sprint, which typically lasts one to three weeks, the team works on the user stories committed to in the Sprint Backlog. Daily Scrum meetings are held as stand-up meetings, where the team discusses their progress, tasks completed, and any obstacles they may be facing. The goal of each Sprint is to deliver a potentially shippable product. This means that at the end of the Sprint, the Product Owner can decide whether the product is ready to be shipped or if any additional features are required. At the end of the Sprint, a Sprint Review and Sprint Retrospective meeting take place. In the Sprint Review, the team showcases their completed work to the Product Owner. The Sprint Retrospective is a reflection on the process and focuses on identifying areas for improvement. This workflow is repeated for each Sprint, allowing for continuous improvement and delivery of value to the stakeholders.

Project Implementation Checklist

The project implementation checklist outlines the steps involved in implementing the project. The table provides descriptions of each step and includes information on project costing. The table displays detailed descriptions of the steps and indicates whether costs and bills are required for each specific step. These steps have been derived from interviews conducted by the developers with their client.

Step no.	Description	Project Costing
Step 1	The project must be presented to the panelist and adviser in order to critique the project.	**Not Required**
Step 2	If the project passed the evaluation, the developers present it to the client.	**Not Required**
Step 3	If the project passed the evaluation and satisfies the client's needs, the developers must present series of project testing to its users.	**Not Required**
Step 4	While doing project testing, the developers must suggest its client to host an orientation or seminar for the project users and beneficiaries.	**Not Required**
Step 5	The cost and expenses of other tools is part of the limitations of the project but the proponents are willing to suggest. The proposed project's cost is depending on what the client and the developers would agree to.	**Required**
Step 6	The developers give contact information for them to call or email in case of errors and request for upgrade.	**Required**

Table 3. Project Implementation Checklist of the Online Based Enrollment Records Management System

Table 3 outlines the various steps involved in the project implementation process. Step 1 emphasizes the importance of analyzing and presenting the project to a committee of experienced panelists and advisors before proceeding with evaluation. This stage is critical as it determines the project's suitability for the client's use. The subsequent step involves a client presentation, where developers need to exercise caution in using clear language and analogies to ensure the client's understanding. The project then proceeds to undergo multiple testing phases to ensure its functionality and usefulness to users. During this step, the developers assess whether the stated objectives of the proposed system have been achieved. The implementation of the recommended method requires the client to have a strategy for advertising and training individuals on how to use the project

effectively. The project designers' welcome suggestions on how to improve the implementation process. Once the project is implemented, ongoing support and maintenance are essential. The cost of the project is negotiated and agreed upon between the developers and the client. The developers provide their contact information, enabling clients to reach out for future updates or to report any errors.

Project Testing and Evaluation

This section demonstrates the development process of the project and highlights the tools used by the developers to evaluate the proposed system.

Evaluation of the Project

This section covers the different evaluations conducted by the project proponents to design it.

Preliminary Evaluation. The preliminary evaluation of the proposed system took place during the title proposal stage. The panelists approved the title "Record Management System for the Registrar Office in University of Perpetual Help System GMA Campus" and recommended adding an innovative feature such as optical character recognition. This led to the evolution of the title to "Implementation of College Enrollment Requirement Record and Monitoring System using Optical Character Recognition for UPHS-GMA."

Final Evaluation. The Final Evaluation takes place during the final defense, where the panelists provide feedback and critique the project. This stage serves as the last step before the project is handed over to the main client for implementation and deployment.

If the project successfully passes the evaluation and testing, it can be utilized as an effective tool for managing student registration requirements.

Evaluation Instrument

The developers thoroughly reviewed the data and gathered ideas from the mentioned authors, resulting in a set of criteria for the implementation of the Online Based Enrollment Records Management System.

The evaluation tool's questions were derived from articles, theses, and studies that were carefully examined by the developers. To ensure the comprehensiveness of the requirements, validation of the software and system design and testing objectives, quality control criteria for quality assurance, acceptance criteria for the software product and software-intensive computer system, and establishment of measures for quality characteristics, the developers followed the standard set by ISO 25010.

Figure 28. ISO 25010

This figure illustrates the high-level characteristics mentioned earlier, but ISO 25010 goes a step further by defining a set of sub-characteristics. In the case of **Functional Suitability**, these sub-characteristics include:

1. Functional Completeness: This refers to the extent to which the set of functions covers all the specified tasks and user objectives.
2. Functional Correctness: This measures the accuracy of the functions in providing the correct results with the required level of precision.
3. Functional Appropriateness: This assesses the extent to which the functions enable the accomplishment of the specified tasks and objectives.

Performance efficiency

1. Time-behavior: This refers to the extent to which the response and processing times, as well as throughput rates, of a product or system meet the specified requirements when performing its functions.
2. Resource utilization: This assesses the degree to which the amounts and types of resources utilized by a product or system meet the specified requirements when performing its functions.
3. Capacity: This measures the extent to which the maximum limits of the product or system parameters meet the specified requirements.

Usability

1. Appropriateness recognizability: This refers to the extent to which users can recognize whether a product or system is suitable and appropriate for their specific needs.

2. Learnability: This evaluates the degree to which a product or system enables users to learn how to use it effectively and efficiently, especially in emergency situations.
3. Operability: This measures the ease of operating and controlling a product or system, ensuring that it is appropriate and user-friendly.
4. User error protection: This assesses the extent to which a product or system safeguards users against making errors and provides measures to prevent and mitigate potential mistakes.
5. User interface aesthetics: This evaluates the degree to which a user interface offers a visually pleasing and satisfying interaction experience for the user.
6. Accessibility: This measures the extent to which a product or system can be used by individuals with diverse characteristics and capabilities, ensuring inclusivity and enabling them to achieve their goals within a specified context of use.

Reliability

1. Maturity: This measures the extent to which a system, product, or component meets the reliability requirements during normal operation.
2. Availability: This evaluates the degree to which a product or system is operational and accessible when needed for use.
3. Fault tolerance: This assesses the extent to which a system, product, or component continues to function as intended, even in the presence of hardware or software faults.

4. Recoverability: This measures the degree to which a product or system can recover data directly affected by an interruption or failure and restore the system to its desired state.

Security

1. Confidentiality: This assesses the extent to which the prototype ensures that data can only be accessed by authorized individuals.
2. Integrity: This measures the degree to which a system, product, or component prevents unauthorized access to, or modification of, computer programs or data.
3. Non-repudiation: This evaluates the ability to prove that actions or events have taken place, preventing them from being denied or disowned at a later stage.
4. Accountability: This assesses the extent to which the actions of an entity can be uniquely traced back to that entity.
5. Authenticity: This measures the degree to which the identity of a subject or resource can be verified and proven to be as claimed.

Maintainability

1. Modularity: This evaluates the extent to which a system or computer program is composed of distinct components, allowing changes in one component to have minimal impact on others.
2. Reusability: This measures the degree to which an asset can be utilized in multiple systems or in the development of other assets.

3. Analyzability: This assesses the effectiveness and efficiency with which the impact of intended changes to one or more parts of a product or system can be evaluated. It also includes the ability to diagnose deficiencies or causes of failures and identify parts that need modification.
4. Modifiability: This evaluates the ease and efficiency with which a product or system can be modified without introducing defects or degrading the overall quality of the existing product.
5. Testability: This measures the effectiveness and efficiency with which test criteria can be established for a system, product, or component, and tests can be conducted to determine whether those criteria have been met.

Portability

1. Adaptability: This measures the extent to which a product or system can be easily and efficiently adapted to different or evolving hardware, software, or operational environments.
2. Installability: This evaluates the effectiveness and efficiency with which a product or system can be successfully installed and/or uninstalled in a specified environment.
3. Replaceability: This assesses the capability of a product to replace another specified software product for the same purpose in the same environment.

Compatibility

1. Coexistence: This measures the extent to which a product can efficiently perform its required functions while sharing a common environment and resources with other products, without negatively impacting the performance of any other product.
2. Interoperability: This assesses the ability of two or more systems, products, or components to exchange information and effectively utilize the exchanged information.

Chapter 4
FINDINGS ANALYSIS AND INTERPRETATION OF DATA

The findings and analysis of the information collected for this study are presented in this chapter. It includes the presentation of the study's objectives and conceptual framework, which are depicted through graphical, textual, and tabular representations. This section is divided into three parts: the Evaluator's Profile, the Software Evaluation Dimension, and the comparison of evaluations between the new and old system.

1. **System Evaluator's Profile**

To assess the validity of the responses, a total of 30 respondents were selected to evaluate the project titled "Online Based Enrollment Records Management System." The respondents were categorized based on their age, gender, and profession. This classification was implemented to ensure a thorough evaluation of the collected data and to obtain accurate results.

Table 4
Distribution of the Respondents as to Age

Age	Frequency	Percentage
17-19 years old	13	43.33%
20-22 years old	7	23.33%
23-25 years old	8	26.67%
26-28 years old	2	6.67%
Total	**30**	**100%**

Table 4 presents the distribution of respondents based on their age. The respondents were categorized into four age groups: 17-19 years old, 20-22 years old, 23-25 years old, and 26-28 years old.

The age cohort that exhibits the most frequent responses is the 17-19 age group, comprising 13 respondents. This represents roughly 43.33% of the entire sample population. The demographic cohort exhibiting the second highest occurrence is the 23-25 age bracket, comprising 8 participants and accounting for approximately 26.67% of the aggregate sample. The demographic cohort exhibiting the third highest frequency is the 20-22 age group, comprising 7 participants, which accounts for roughly 23.33% of the aggregate. The demographic cohort exhibiting the least occurrence is the 26-28 age bracket, comprising merely 2 participants, accounting for roughly 6.67% of the aggregate.

In general, the greater part of participants belongs to the younger age categories of 17-19 years and 20-22 years, suggesting that the assessment predominantly encompassed individuals who are in the adolescent to young adult stage of development. The study indicates a limited participation of individuals in their late twenties, as evidenced by the smaller number of respondents in the older age groups.

Table 5
Distribution of the Respondents as to Gender

Gender	Frequency	Percentage
Male	17	56.67%
Female	13	43.33%
Total	**30**	**100%**

Table 5 displays the distribution of respondents based on their gender. The respondents were classified as either male or female.

The majority of respondents are male, with a frequency of 17. This accounts for approximately 56.67% of the total respondents. The remaining respondents are female, with a frequency of 13, representing approximately 43.33% of the total.

Based on these findings, it is evident that the study included a slightly higher number of male respondents compared to female respondents. The difference in percentages suggests a slight gender imbalance in the sample. However, it is important to note that the overall difference is not significant, as both genders are well represented in the evaluation process.

Table 6
Distribution of the Respondents as to Profession

Role	Frequency	Percentage
Senior High	14	46.67%
College	10	33.33%
Others	6	20%
Total	**30**	**100%**

Table 6 presents the distribution of respondents based on their profession or role. The respondents were categorized into three groups: Senior High, College, and Others.

The largest group of respondents consists of Senior High students, with a frequency of 14, accounting for approximately 46.67% of the total respondents. The second largest group is College students, with a frequency of 10, representing approximately 33.33% of the total. The remaining respondents fall into the "Others" category, with a frequency of 6, making up approximately 20% of the total.

Based on these findings, it can be concluded that the majority of respondents in this study are Senior High students, followed by college students. The presence of respondents from other professions or roles also indicates a diverse sample, which enhances the representation of different perspectives in evaluating the proposed system.

2. Software Evaluation

Table 7
Evaluation of the Performance of the System as to Functional Suitability

Functionality Suitability	Mean	Interpretation	Rank
Functional Completeness	4.56	Strongly Acceptable	1
Functional Correctness	4.50	Strongly Acceptable	3
Functional Appropriateness	4.53	Strongly Acceptable	2
Average	**4.50**	**Strongly Acceptable**	

Legend: 4.21-5.00 (Strongly Acceptable); 3,41-4.20 (Acceptable); 2.61-3.40 (Slightly Acceptable); 1.81-2.60 (Unacceptable); 1.00-1.80 (Strongly Unacceptable)

Table 7 presents the evaluation of the system's performance in terms of Functional Suitability. The evaluation is based on three aspects: Functional Completeness, Functional Correctness, and Functional Appropriateness.

Functional Completeness has the highest mean score of 4.56, indicating that the system is strongly acceptable in terms of covering all the specified tasks and user objectives. It ranks first among the three aspects evaluated. Functional Appropriateness has a mean score of 4.53, ranking second. This suggests that the system is strongly acceptable in terms of facilitating the accomplishment of specified tasks and objectives. Functional Correctness has a mean score of 4.50, ranking third. This indicates that the system provides the correct results with the needed degree of precision, although slightly lower than the other two aspects.

Overall, the average mean score for all the aspects is 4.50, indicating that the system's performance in terms of Functional Suitability is strongly acceptable. This suggests that the system effectively fulfills the functional requirements and meets the needs of the users.

The evaluation results are positive, indicating that the system performs well in terms of its functional capabilities. This provides confidence in the system's ability to fulfill the specified tasks and objectives, ensuring its suitability for the intended users.

Table 8
Evaluation of the Performance of the System as to Performance Efficiency

Performance Efficiency	Mean	Interpretation	Rank
Time Behavior	4.56	Strongly Acceptable	1
Resource Utilization	4.50	Strongly Acceptable	2.5
Capacity	4.50	Strongly Acceptable	2.5
Average	**4.50**	**Strongly Acceptable**	

Legend: 4.21-5.00 (Strongly Acceptable); 3,41-4.20 (Acceptable); 2.61-3.40 (Slightly Acceptable); 1.81-2.60 (Unacceptable); 1.00-1.80 (Strongly Unacceptable)

Table 8 presents the evaluation of the system's performance in terms of Performance Efficiency. The evaluation is based on three aspects: Time Behavior, Resource Utilization, and Capacity.

Time Behavior has the highest mean score of 4.56, indicating that the system is strongly acceptable in terms of response and processing times, as well as throughput rates. It ranks first among the three aspects evaluated. Resource Utilization and Capacity both have a mean score of 4.50, ranking second. This suggests that the system effectively utilizes the resources and meets the maximum limits of the system parameter requirements.

The average mean score for all the aspects is 4.50, indicating that the system's performance in terms of Performance Efficiency is strongly acceptable. This suggests

that the system performs well in terms of its time behavior, resource utilization, and capacity.

The evaluation results demonstrate that the system efficiently utilizes resources, operates within desired time frames, and meets the capacity requirements. This indicates that the system is efficient and capable of performing its functions effectively, ensuring optimal performance efficiency.

Table 9
Evaluation of the Performance of the System as to Compatibility

Compatibility	Mean	Interpretation	Rank
Co-existence	4.40	Strongly Acceptable	2
Interoperability	4.53	Strongly Acceptable	1
Average	**4.50**	**Strongly Acceptable**	

Legend: 4.21-5.00 (Strongly Acceptable); 3,41-4.20 (Acceptable); 2.61-3.40 (Slightly Acceptable); 1.81-2.60 (Unacceptable); 1.00-1.80 (Strongly Unacceptable)

The evaluation of the system's performance in terms of Compatibility is presented in Table 9. Coexistence and interoperability are the focal points of the evaluation.

Interoperability has the highest mean score of 4.53, indicating that the system is strongly acceptable in terms of its ability to exchange information and use the exchanged information with other systems, products, or components. It ranks first among the two aspects evaluated. Co-existence has a mean score of 4.40, indicating that the system is strongly acceptable in terms of its ability to perform its required functions efficiently while sharing a common environment and resources with other products. It ranks second among the two aspects evaluated.

The average mean score for both aspects is 4.50, indicating that the performance of the system in terms of Compatibility is strongly acceptable. This implies that the system is compatible with other systems, products, or components, allowing for harmonious coexistence and interoperability.

The findings of the evaluation indicate that the system exhibits a notable capacity to coexist harmoniously with other products and exhibits a considerable degree of interoperability. This suggests that the system possesses compatibility with various environments and can effectively exchange information with other systems or components without any disruption.

Table 10
Evaluation of the Performance of the System as to Usability

Usability	Mean	Interpretation	Rank
Appropriateness Recognizabilit	4.56	Strongly Acceptable	1.5
Learnability	4.56	Strongly Acceptable	1.5
Operability	4.53	Strongly Acceptable	3.5
User Error Protection	4.43	Strongly Acceptable	6
User Interface Aesthetics	4.53	Strongly Acceptable	3.5
Accessibility	4.50	Strongly Acceptable	5
Average	**4.50**	**Strongly Acceptable**	

Legend: 4.21-5.00 (Strongly Acceptable); 3,41-4.20 (Acceptable); 2.61-3.40 (Slightly Acceptable); 1.81-2.60 (Unacceptable); 1.00-1.80 (Strongly Unacceptable)

Table 10 depicts the assessment of the system's usability performance. The assessment centers on multiple facets pertaining to the usability of a system, including Appropriateness, Recognizability, Learnability, Operability, User Error Protection, User Interface Aesthetics, and Accessibility.

Appropriateness Recognizability and Learnability both have the highest mean score of 4.56, indicating that the system is strongly acceptable in terms of its ability to be recognized as appropriate for users' needs and its ease of learning. Both aspects rank jointly in the first position. Operability and User Interface Aesthetics both have a mean score of 4.53, indicating that the system is strongly acceptable in terms of its ease of operation and the aesthetic appeal of its user interface. Both aspects rank jointly in the third position. User Error Protection has a mean score of 4.43, indicating that the system is strongly acceptable in terms of its ability to protect users against making errors. It ranks sixth among the evaluated aspects. Accessibility has a mean score of 4.50, indicating that the system is strongly acceptable in terms of its ability to be used by a wide range of individuals with different characteristics and capabilities. It ranks fifth among the evaluated aspects.

Based on the data, it can be inferred that the mean score for all aspects is 4.50, which suggests that the system's Usability performance is highly satisfactory. This implies that the system exhibits characteristics of usability, learnability, operability, and presents a visually attractive and easily navigable user interface.

The evaluation results reveal that the system triumphs in a variety of usability characteristics, including appropriateness recognizability, learnability, operability, user interface aesthetics, and accessibility. These positive results indicate that the system is designed to effectively satisfy the needs of its users, providing an intuitive and user-friendly experience.

Table 11
Evaluation of the Performance of the System as to Reliability

Reliability	Mean	Interpretation	Rank
Maturity	4.40	Strongly Acceptable	2.5
Availability	4.40	Strongly Acceptable	2.5
Fault Tolerance	4.46	Strongly Acceptable	1
Recoverability	4.26	Strongly Acceptable	4
Average	**4.40**	**Strongly Acceptable**	

Legend: 4.21-5.00 (Strongly Acceptable); 3,41-4.20 (Acceptable); 2.61-3.40 (Slightly Acceptable); 1.81-2.60 (Unacceptable); 1.00-1.80 (Strongly Unacceptable)

The evaluation of the system's performance in terms of Reliability is shown in Table 11. The evaluation focuses on Maturity, Availability, Fault Tolerance, and Recoverability, which are all aspects of dependability.

Fault Tolerance has the highest mean score of 4.46, indicating that the system is strongly acceptable in terms of its ability to operate as intended despite the presence of hardware or software faults. It ranks first among the evaluated aspects. Maturity and Availability both have a mean score of 4.40, indicating that the system is strongly acceptable in terms of its reliability and operational availability. Both aspects rank jointly in the second position. Recoverability has a mean score of 4.26, indicating that the system is strongly acceptable in terms of its ability to recover data and re-establish the desired state of the system in the event of an interruption or failure. It ranks fourth among the evaluated aspects.

The average mean score for all aspects is 4.40, indicating that the system's performance in terms of Reliability is strongly acceptable. This suggests that the system demonstrates an acceptable level of maturity, availability, fault tolerance, and

recoverability The findings of the evaluation indicate that the system exhibits robust reliability with respect to fault tolerance, signifying its capacity to sustain operation despite the occurrence of faults. Notwithstanding, there exists scope for enhancement with regards to maturity, availability, and recoverability to attain elevated standards of dependability.

. Overall, the evaluation results indicate that the system's reliability is strongly acceptable, but there is potential for further enhancement. It is important to ensure that the system operates consistently, is available when needed, can handle faults effectively, and can recover from interruptions or failures promptly. By addressing these aspects, the system's reliability can be further improved, leading to increased user trust and satisfaction.

Table 12
Evaluation of the Performance of the System as to Security

Security	Mean	Interpretation	Rank
Confidentiality	4.36	Strongly Acceptable	1.5
Integrity	4.33	Strongly Acceptable	3.5
Non-Repudiation	4.36	Strongly Acceptable	1.5
Accountability	4.33	Strongly Acceptable	3.5
Average	**4.30**	**Strongly Acceptable**	

Legend: 4.21-5.00 (Strongly Acceptable); 3,41-4.20 (Acceptable); 2.61-3.40 (Slightly Acceptable); 1.81-2.60 (Unacceptable); 1.00-1.80 (Strongly Unacceptable)

Table 12 demonstrates the evaluation of the system's performance in terms of Security. The evaluation focuses on several aspects related to security: Confidentiality, Integrity, Non-Repudiation, and Accountability.

Confidentiality and Non-Repudiation both have a mean score of 4.36, indicating that the system is strongly acceptable in terms of ensuring data confidentiality and providing non-repudiation. Both aspects rank jointly in the first position. Integrity and Accountability both have a mean score of 4.33, indicating that the system is strongly acceptable in terms of maintaining data integrity and establishing accountability. Both aspects rank jointly in the third position.

The average mean score for all aspects is 4.30, indicating that the system's performance in terms of Security is strongly acceptable. This suggests that the system demonstrates an acceptable level of confidentiality, integrity, non-repudiation, and accountability.

The evaluation results demonstrate that the system shows strongly acceptable security measures in terms of maintaining data confidentiality, integrity, non-repudiation, and establishing accountability. However, there is room for improvement in these aspects to enhance the system's security further.

Overall, the evaluation results indicate that the system's security is strongly acceptable, but there is potential for further enhancement. It is important to ensure that the system adequately protects data confidentiality, maintains data integrity, prevents repudiation of actions, and establishes accountability for system activities. By addressing these aspects, the system's security can be strengthened, providing users with a higher level of trust and confidence in the system's ability to protect their data and ensure its integrity.

Table 13
Evaluation of the Performance of the System as to Maintainability

Maintainability	Mean	Interpretation	Rank
Modularity	4.40	Strongly Acceptable	1
Reusability	4.40	Strongly Acceptable	1
Analyzability	4.40	Strongly Acceptable	1
Average	**4.40**	**Strongly Acceptable**	

Legend: 4.21-5.00 (Strongly Acceptable); 3,41-4.20 (Acceptable); 2.61-3.40 (Slightly Acceptable); 1.81-2.60 (Unacceptable); 1.00-1.80 (Strongly Unacceptable)

Table 13 illustrates the evaluation of the system's performance in terms of Maintainability. The evaluation focuses on three aspects: Modularity, Reusability, and Analyzability.

Modularity, Reusability, and Analyzability all have a mean score of 4.40, indicating that the system is strongly acceptable in terms of these maintainability aspects. All three aspects rank jointly in the first position.

The mean score for all aspects, on average, is 4.40, which suggests that the system's Maintainability performance is strongly acceptable. The aforementioned observation implies that the system exhibits a satisfactory degree of modularity, reusability, and analyzability, thereby facilitating its maintenance and updating.

The findings of the evaluation indicate that the system exhibits satisfactory levels of maintainability with regards to its modularity, reusability, and analyzability. The aforementioned statement suggests that the system has been devised and constructed in a manner that fosters simplicity of upkeep, incentivizes the reuse of code, and streamlines the process of scrutinizing and resolving problems.

Overall, the evaluation results indicate that the system's maintainability is strongly acceptable, with a strong emphasis on modularity, reusability, and analyzability. This reflects a well-structured and organized system architecture that supports efficient maintenance activities. By maintaining these aspects and continuously improving the system's maintainability, developers can ensure that future updates and modifications can be carried out effectively and efficiently, reducing the overall effort and cost of maintaining the system.

Table 14
Evaluation of the Performance of the System as to Portability

Portability	Mean	Interpretation	Rank
Adaptability	4.46	Strongly Acceptable	1.5
Installability	4.30	Strongly Acceptable	3
Replaceability	4.46	Strongly Acceptable	1.5
Average	**4.40**	**Strongly Acceptable**	

Legend: 4.21-5.00 (Strongly Acceptable); 3,41-4.20 (Acceptable); 2.61-3.40 (Slightly Acceptable); 1.81-2.60 (Unacceptable); 1.00-1.80 (Strongly Unacceptable)

Table 14 shows the evaluation of the system's performance in terms of Portability. The evaluation focuses on three aspects: Adaptability, Installability, and Replaceability.

Adaptability and Replaceability both have a mean score of 4.46, indicating that the system demonstrates a strongly acceptable level of portability in terms of these aspects. Both aspects rank jointly in the first position. Installability has a mean score of 4.3, indicating that the system shows an strongly acceptable level of installability in terms of portability. It ranks in the third position.

The system's average mean score across all portability aspects is 4.40, indicating an strongly acceptable level of performance in terms of portability. This suggests that the system can be easily adjusted, installed, and replaced, enabling its use across different environments and platforms.

Specifically, the evaluation results highlight a strongly acceptable level of portability in terms of adaptability and replaceability, as well as an acceptable level in installability. This demonstrates that the system's design and development facilitate seamless adaptation to diverse environments, hassle-free installation, and convenient replacement if required.

In summary, the evaluation results confirm that the system possesses satisfactory portability, with a notable emphasis on adaptability and replaceability. This means that the system can be efficiently deployed and utilized in various settings or contexts, providing flexibility and smooth transitions. By maintaining these aspects of portability, the system ensures long-term effectiveness, usability, and the ability to adapt, install, and replace as needed.

Table 15
Overall Software Quality Characteristics Evaluation

Software Characteristic	Mean	Interpretation	Rank
Functional Suitability	4.53	Strongly Acceptable	2
Performance Efficiency	4.52	Strongly Acceptable	3.5
Compatibility	4.56	Strongly Acceptable	1
Usability	4.52	Strongly Acceptable	3.5
Reliability	4.48	Strongly Acceptable	5
Security	4.34	Strongly Acceptable	8
Maintainability	4.40	Strongly Acceptable	7
Portability	4.42	Strongly Acceptable	6
Average	**4.47**	**Strongly Acceptable**	

Legend: 4.21-5.00 (Strongly Acceptable); 3,41-4.20 (Acceptable); 2.61-3.40 (Slightly Acceptable); 1.81-2.60 (Unacceptable); 1.00-1.80 (Strongly Unacceptable)

The average mean score for all software quality characteristics is 4.47, indicating an acceptable overall software quality. The evaluation results show that the system demonstrates strong acceptability in compatibility, functional suitability, usability, and performance efficiency.

Specifically, compatibility achieved the highest mean score of 4.56, indicating a strongly acceptable level. This suggests that the system can effectively coexist and interoperate with other systems, ensuring smooth information exchange and shared resources.

Functional suitability and usability both received a mean score of 4.53, also indicating a strongly acceptable level. This indicates that the system's functions are

complete, correct, appropriate, and user-friendly, enabling users to accomplish their tasks effectively and efficiently.

Performance efficiency achieved a mean score of 4.52, further highlighting its strongly acceptable performance. This suggests that the system demonstrates good time behavior, resource utilization, and capacity, meeting the performance requirements efficiently.

Reliability, security, maintainability, and portability all received mean scores within the strongly acceptable range, indicating satisfactory performance in these areas. Although they ranked lower compared to other characteristics, they still meet the acceptable criteria.

Overall, the evaluation results demonstrate that the system has strongly acceptable software quality characteristics. It performs well in terms of compatibility, functional suitability, usability, and performance efficiency. While there is room for improvement in reliability, security, maintainability, and portability, they still meet the acceptable standards. By maintaining and enhancing these software quality characteristics, the system can continue to provide effective and efficient solutions to its users.

Chapter 5
SUMMARY OF FINDINGS AND RECOMMENDATIONS

The findings and recommendations of the study are presented in this chapter, providing a comprehensive overview of the research conducted. The recommendations put forward suggestions and appeals to the relevant individuals or entities in order to address or assist in resolving the identified problem.

Summary of Findings

The summary of findings is as follows:

Among the thirty (30) respondents who evaluated the system, the majority were in the age range of 17-19 years old (43%), and a higher percentage of respondents were male (57%).

In terms of overall system effectiveness, the system obtained an acceptable interpretation with a grand mean of 4.47. The specific characteristics of the system were rated as follows:

- Functional Suitability: scored 4.53, indicating a strongly acceptable level.
- Performance Efficiency: scored 4.52, indicating a strongly acceptable level.
- Compatibility: scored 4.56, indicating a strongly acceptable level.
- Usability: scored 4.52, indicating a strongly acceptable level.
- Reliability: scored 4.48, indicating an acceptable level.

- Security: scored 4.34, indicating an acceptable level.
- Maintainability: scored 4.40, indicating an acceptable level.
- Portability: scored 4.42, indicating an acceptable level.

These findings suggest that the system is performing well overall, with strong acceptability in several key areas and acceptable performance in others.

Recommendations

This section provides suggestions for future researchers who may explore similar research concepts. The recommendations are based on the findings and suggestions provided by the respondents. The following suggestions are outlined:

1. For the Functional Suitability, with an average mean of 4.50, indicating a strongly acceptable level, the developers recommend designing the system to handle increasing user loads and data volumes. It is important to ensure that the system's performance remains stable and responsive, even under high loads or increased data processing requirements.
2. For the Performance Efficiency, with an average mean of 4.50, indicating a strongly acceptable level, the developers recommend conducting thorough performance testing to identify system bottlenecks. It is advisable to stress test the system under various load conditions and measure response times. Utilize tools for load testing, stress testing, and performance profiling to assess and optimize the system's performance.
3. For the Compatibility, with an average mean of 4.50, indicating a strongly acceptable level, the developers recommend ensuring that the system can run on

different operating systems and platforms. It is essential to test the system on various platforms to identify and address any compatibility issues specific to each platform, including Windows, macOS, Linux, and mobile platforms such as iOS and Android.

4. For the Usability, with an average mean of 4.50, indicating a strongly acceptable level, the developers recommend providing comprehensive user training and onboarding materials. These materials should familiarize users with the system's functionalities, workflows, and potential pitfalls to enhance user experience and usability.
5. For the Reliability, with an average mean of 4.40, indicating an acceptable level, the developers recommend establishing a maintenance plan to proactively address potential reliability issues. Regularly apply updates, patches, and bug fixes to improve the system's stability and reliability over time.
6. For the Security, with an average mean of 4.30, indicating an acceptable level, the developers recommend performing a comprehensive security audit to identify potential vulnerabilities and weaknesses. This can involve manual code review and automated vulnerability scanning to ensure that security loopholes are addressed effectively.
7. For the Maintainability, with an average mean of 4.40, indicating an acceptable level, the developers recommend implementing a code review process. This process helps identify and rectify potential issues, enforce coding standards, and improve code quality, thereby enhancing maintainability.

8. For the Portability, with an average mean of 4.40, indicating an acceptable level, the developers recommend conducting thorough testing on different platforms and configurations. This ensures that the system functions correctly and consistently across various environments, including different operating systems, hardware configurations, and software versions.

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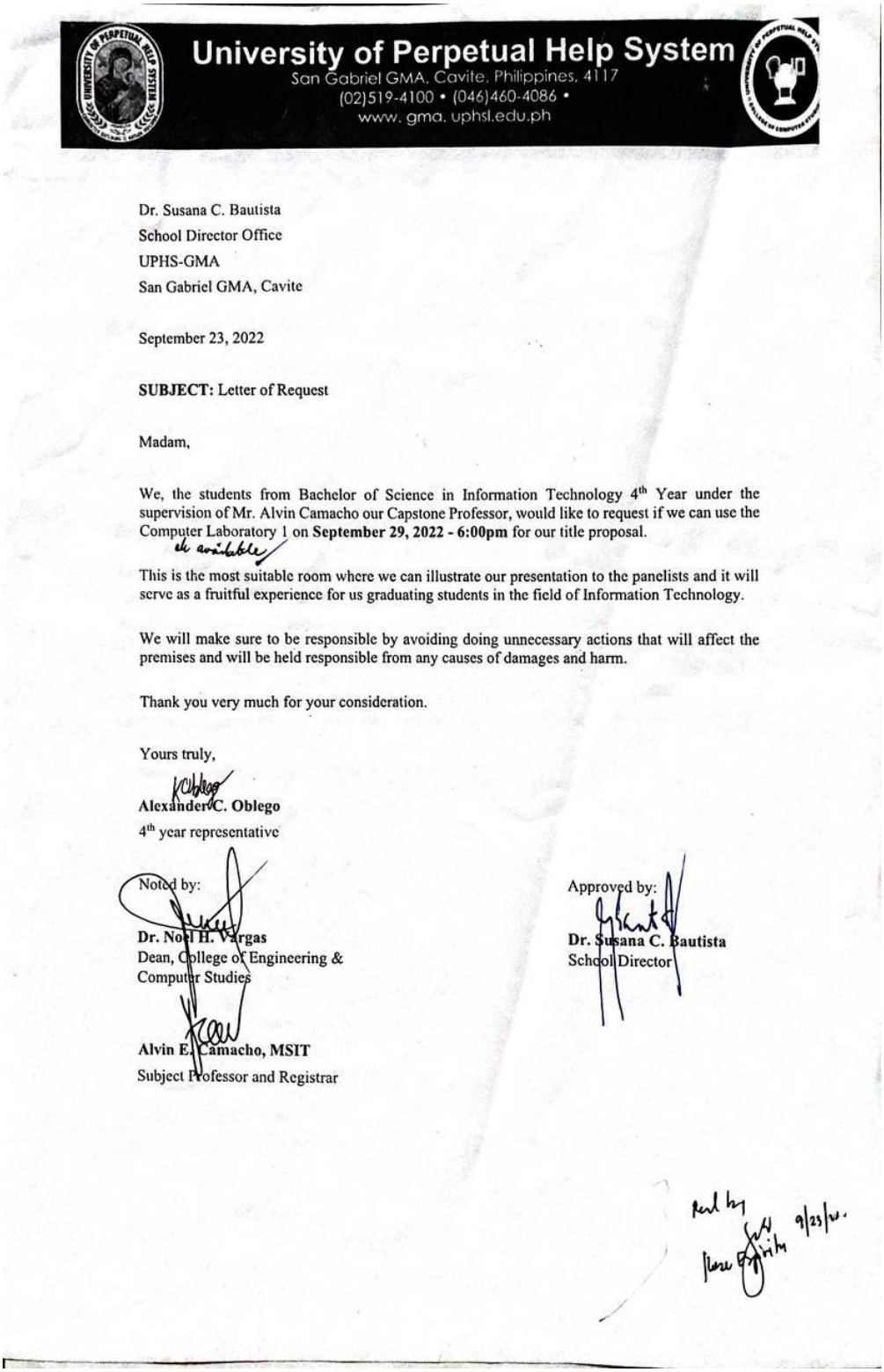
Appendix A
LETTER OF RESERVATION



University of Perpetual Help System
San Gabriel GMA, Cavite, Philippines, 4117
(02)519-4100 • (046)460-4086 •
www. gma. uphsl.edu.ph

Dr. Susana C. Bautista
School Director Office
UPHS-GMA
San Gabriel GMA, Cavite

September 23, 2022

SUBJECT: Letter of Request

Madam,

We, the students from Bachelor of Science in Information Technology 4th Year under the supervision of Mr. Alvin Camacho our Capstone Professor, would like to request if we can use the Computer Laboratory 1 on **September 29, 2022 - 6:00pm** for our title proposal.

This is the most suitable room where we can illustrate our presentation to the panelists and it will serve as a fruitful experience for us graduating students in the field of Information Technology.

We will make sure to be responsible by avoiding doing unnecessary actions that will affect the premises and will be held responsible from any causes of damages and harm.

Thank you very much for your consideration.

Yours truly,

Alexander C. Oblego
4th year representative

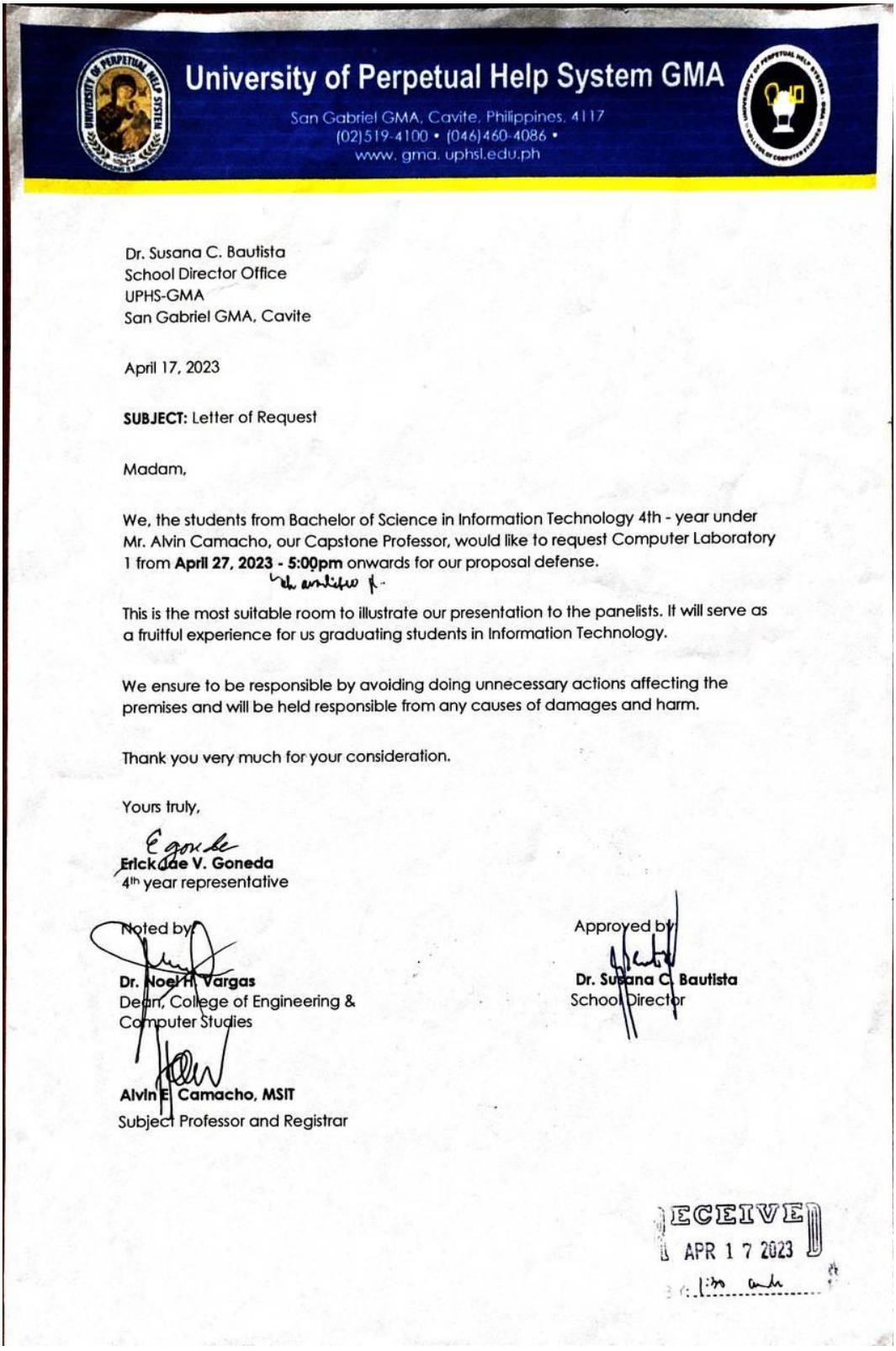
Noted by:

Dr. Noel H. Vargas
Dean, College of Engineering & Computer Studies

Alvin E. Camacho, MSIT
Subject Professor and Registrar

Approved by:

Dr. Susana C. Bautista
School Director



University of Perpetual Help System GMA
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Dr. Susana C. Bautista
School Director Office
UPHS-GMA
San Gabriel GMA, Cavite

April 17, 2023

SUBJECT: Letter of Request

Madam,

We, the students from Bachelor of Science in Information Technology 4th - year under Mr. Alvin Camacho, our Capstone Professor, would like to request Computer Laboratory 1 from **April 27, 2023 - 5:00pm** onwards for our proposal defense.

This is the most suitable room to illustrate our presentation to the panelists. It will serve as a fruitful experience for us graduating students in Information Technology.

We ensure to be responsible by avoiding doing unnecessary actions affecting the premises and will be held responsible from any causes of damages and harm.

Thank you very much for your consideration.

Yours truly,

Erickjae V. Goneda
4th year representative

Noted by:

Dr. Noel H. Vargas
Dean, College of Engineering & Computer Studies

Alvin E. Camacho, MSIT
Subject Professor and Registrar

Approved by:

Dr. Susana C. Bautista
School Director

RECEIVED
APR 17 2023

Appendix B
EVALUATION FORM INSTRUMENT

Online Requirements Record Management System of UPHS GMA The " Online Based Enrollment Records Management System" documentation is currently being carried out to comply with the partial course needs of the BSIT students of the University of Perpetual Help System GMA Campus. Hence the humbly request to go through this questionnaire for the time and effort of the participants, as the answers are beneficial in achieving the objective of the documentation. Ensure that the records will be kept private and used solely for documentation purposes.

The Record Management System (RMS) is a system that will store the documents such as MOA, PSA, 2X2 PICTURE, FORM-137, and FORM-138 that the students will submit. The system aims to eliminate the main problem of missing documents and implement a paperless.

The user side of the system is to register their details and set their username and password. After the registration, the user can pass the scanned copies of the following requirements: PSA, MOA, 2X2 PICTURE, FORM-137, and FORM-138. The employee and admin side will check it and verify it properly.

Kindly visit the link below; it is just a sample domain that will redirect you to the record management system (User Side).
Web Application Link: Record Management System

Regards,
4th year BSIT

Please evaluate the College Enrollment Requirement Record and Monitoring System according to your satisfaction. Below are the rubrics for evaluation.

Rubric:

5 - Strongly Agree (SA)
4 - Agree (A)
3 - Neutral (N)
2 - Disagree (D)
1 - Strongly Disagree (SD)

Name (Optional) _____

Age _____

Gender _____ Role _____

Functional Suitability		1	2	3	4	5
The system has a set of functions covers all the specified task and user objectives.						
The system provides the correct results with the needed degree of precision.						
The system's function facilitates the accomplishment of specified task and objectives						

Performance Efficiency		1	2	3	4	5
When performing its function, the response, processing times, and throughout rates of the system meet the requirements.						
When performing its functions, amounts and types of resources used by the system, meet the requirements.						
The system meets the maximum limit of the parameter requirements.						

Compatibility		1	2	3	4	5
The system can perform its required function efficiently while sharing a common environment and resources with other products, without detrimental impact on any other product.						
the system and two or more systems, products or components can exchange information and use the information that has been exchanged.						

Usability		1	2	3	4	5
Degree to which users can recognize whether a product or system is appropriate for their needs.						
Degree to which a product or system can be used by specified users to achieve specified goals of learning to use the product or system with effectiveness, efficiency, freedom from risk and satisfaction in a specified context of use.						
Degree to which a product or system has attributes that make it easy to operate and control.						
Degree to which a system protects users against making errors.						
Degree to which a user interface enables pleasing and satisfying interaction for the user.						
Degree to which a product or system can be used by people with the widest range of characteristics and capabilities to achieve a specified goal in a specified context of use.						

Reliability		1	2	3	4	5
The system has a component that meets the needs for reliability under normal operation.						
The system has a component that is operational and accessible when required for use.						
The system has a component that operates as intended despite the presence of hardware of software faults.						
In the event of an interruption or a failure, the system can recover the directly affected data and re-establish the desired state of the system.						

Security		1	2	3	4	5
The system has a feature that ensures that data are only accessible through authorized access.						
The system has a function that prevents unauthorized modification of the system or data.						
The system has record to which actions or events have taken place, so that the said events or actions cannot be repudiated later.						
The system has a function to which the actions of an entity can be traced uniquely to the entity.						

Maintainability		1	2	3	4	5
The system is composed of discrete components that a change on one component has minimal impact on other components.						
The system can be used on other systems, or in building other system.						
The system is effective and efficient in assessing the impact of an intended change to one or more of its parts, or to diagnose a part for deficiencies and possible causes of failures; or to identify parts that need to be modified.						

Portability		1	2	3	4	5
The system can effectively and efficiently adapt to different or evolving hardware, software, or other operational or usage environments.						
The system can be effectively and efficiently installed and/or uninstalled in a specific environment.						
The system has a function that can replace another specified software assets for the same purpose on the same environment.						

Feedback and Suggestions:

Give some suggestions, recommendations, comments, and feedback for the improvement of the "Online Based Enrollment Records Management System"

Appendix C
DATA MATRIX

Respondent Profile				Software Characteristics																															
Respondent	Age	Gender	Profession	Functional Suitability			Performance Efficiency			Compatibility		Usability				Reliability			Security			Maintainability			Portability										
1	1	2	1	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
2	1	1	1	5	5	5	5	5	5	5	5	5	5	4	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
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13	1	1	2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
14	1	1	1	5	5	5	5	5	4	5	5	5	5	4	5	5	5	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	5
15	3	2	3	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
16	4	1	3	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
17	4	1	3	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
18	1	1	1	4	4	3	4	4	4	4	4	3	4	4	4	4	4	4	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	5
19	2	1	2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
20	1	1	1	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
21	3	1	3	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
22	1	2	1	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
23	4	1	3	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
24	3	1	2	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
25	3	1	2	4	4	4	5	4	5	5	4	4	5	4	5	4	4	5	4	4	5	4	5	4	4	5	4	4	5	4	5	4	5	4	4
26	1	2	1	5	5	5	5	5	5	5	5	5	5	4	5	5	5	5	4	4	4	4	5	4	4	5	4	4	5	4	5	4	5	4	5
27	1	2	1	5	5	5	4	4	4	5	5	5	5	5	5	5	5	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
28	1	1	1	5	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	5	5	4	5	5	4	5	5	5	5	4	5
29	1	1	1	5	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4
30	1	2	1	5	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4
Mean				4.56	4.5	4.53	4.56	4.5	4.5	4.4	4.53	4.56	4.56	4.53	4.43	44.53	4.5	4.4	4.4	4.46	4.26	4.36	4.33	4.36	4.33	4.4	4.4	4.4	4.46	4.3	4.46				

Legends:

Age
1: 17-19 years old
2: 20-22 years old
3: 23-25 years old
4: 26-28 years old

Gender
1: Male
2: Female

Profession
1: Senior High
2: College
3: Others

Interpretation
5: Strongly Acceptable
4: Acceptance
3: Neutral
2: Not-Acceptable
1: Strongly Not-Acceptable

Appendix D
CERTIFICATE OF STATISTICIAN

This is to certify that the study entitled:

ONLINE BASED ENROLLMENT RECORDS MANAGEMENT SYSTEM

prepared by

Goneda, Erick Jae
Oblego, Alexander
Pascua, Janoabram
Sungahid, John Charles
Tadeo, John Clark
Authors

has undergone data analysis by a certified Data Analyst
of the Research and Development Office.

Mr. Carlo M. Aque, CLDP
Data Analyst

Furthermore, this Certification has been approved by the Research and Development Office through their representative's signature affixed below.

Mr. Arche R. Tudtod, MAF, LPT
Research and Development Office Representative

Appendix E
CERTIFICATE OF ORIGINALITY

University of Perpetual Help System GMA Campus
RESEARCH AND DEVELOPMENT OFFICE
San Gabriel GMA, Cavite, Philippines, 4117
(02)519-4100 • (046)460-4086 •
www. gma. uphsl.edu.ph

CERTIFICATE OF ORIGINALITY

I/We hereby declare that this submission entitled

ONLINE BASED ENROLLMENT RECORDS MANAGEMENT SYSTEM

is my/our own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material to which to a substantial extent has been accepted for award of any other degree or diploma of a university or other institute of higher learning, except where due acknowledgement is made in the text.

I/We also declare that the intellectual content of this research manuscript is the product of my/our work, even though I/we may have received assistance from others on style, presentation, and language expression.

This Certification has been approved by the Research and Development Office through their representative's signature affixed below.

Goneda, Erick Jae
Oblego, Alexander
Pascua, Janoabram
Sungahid, John Charles
Tadeo, John Clark
Authors

Similarity Index: **14%**

Prof. Arche R. Tudtod, MAF, LPT
Research and Development Office Representative
Signature over Printed Name

Appendix F
CERTIFICATE OF LANGUAGE EDITING

This is to certify that the manuscript entitled:

ONLINE BASED ENROLLMENT RECORDS MANAGEMENT SYSTEM

prepared by

Goneda, Erick Jae
Oblego, Alexander
Pascua, Janoabram
Sungahid, John Charles
Tadeo, John Clark
Authors

has undergone language (grammar and composition) editing by a certified editor of the Research and Development Office.

Prof. Arche R. Tudtod, MAF, LPT
Language Editor

Furthermore, this Certification has been approved by the Research and Development Office through their representative's signature affixed below.

Prof. Arche R. Tudtod, MAF, LPT
Research and Development Office Representative

Appendix G
CURRICULUM VITAE

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https://www.linkedin.com/in/alexanderoblego/

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Blk 2 Lot 9 Brgy. Jacinto
Lumbreras GMA Cavite

Skills

- Team Leadership
- Problem Solving
- Front & Back-End Development
- Agile Project Management
- Software Testing
- Technical Documentation
- Communication

References

- Mary Grace Nombre - Barbecho
  Employee at SolarWinds Taguig
  mgbarbecho@gmail.com
  09272711934
- Alvin Encarnacion Camacho
  Head of Registrar at UPHS - GMA CAMPUS
  09688833690

Alexander Oblego

Experienced team lead and full-stack programmer with extensive expertise in software development methodologies, tools, and technologies. Possessing a deep understanding and hands-on experience in utilizing the XAMPP Stack, I have successfully delivered robust applications. My unwavering passion for continuous learning drives me to stay ahead of the curve, embracing cutting-edge technologies and driving innovation. Committed to fostering meaningful connections, I leverage the latest technological advancements to unite people.

Education

2019 - 2023
Bachelor of Science in Information Technology
University of Perpetual Help System GMA Campus

- *Summa Cum Laude*
- *Leadership Awardee*
- *Dean's Lister*

2017 - 2019
Science, Technology, Engineering and Mathematics (Senior High School)
My Messiah School of Cavite - Delas Alas Campus

- *With Honors*

Experiences

March - April 2023
Team Leader | Backend Developer
University, College, and School Registrars Association UCSRA Inc.

- Successfully developed a reservation system for UCSRA Convention 2023. The reservation system is in partner with Shercon Resort and Ecology Park Philippines.

July - December 2022
Web Developer (Intern)
De La Salle University - Dasmariñas

- Accumulated 625 hours of internship at ICTC Department - Web Unit, working as a web developer in maintaining & assisting the DLSU-D university website.

December 2021 - Present
IT Freelancer
Fiverr (Freelance Services)

- Delivering services in the field of web development, software testing, and IT virtual assistance.

Projects

March - April 2023
Reservation System for UCSRA Convention 2023
University, College, and School Registrars Association UCSRA Inc.

Been one of the team lead & backend developer who developed a reservation system that will be used by the UCSRA organization for their convention (2023). The reservation system was inclined with Shercon Resort and Ecology Park Philippines.

In terms of the development & implementation of the system, agile approach was used to deliver a working application that can be used to received data from potential participants of the convention and can be immediately modify / maintain the system even with multiple iterations of features and It was built in a XAMPP stack.

January - May 2023
Online Based Enrollment Records Management System for College and Senior High In UPHS GMA
University of Perpetual Help System GMA Campus

The RMS is intended to be run online, it has the features of CRUD and simple human intervention. The literacy of the users has been taken into consideration and that is the reason why the design has the principle of "KISS" (Keep it simple) it is powered by the feature of PHP Mailer for notifications, OCR for extraction of text from promissory letters and coded query to perform analytics and insights (feedback messages), as well as the capability to print reports. Also performed as the team lead and developer.

February 2023
Senior High School Immersion (Proctor & Speaker)
University of Perpetual Help System GMA Campus

Been one of the speakers who trained the ICT Senior High School Students about Project Management (Scrum) and Software Testing.

November 2021
Project Management Webinar (Speaker)
University of Perpetual Help System GMA Campus

As one of the new organizations in our college of computer studies department, it was our 2nd project to have a webinar about project management and I'm one of the speakers of it. The main goal of this event is to share our learnings and discussed how will it be applied to our future work. These include the principles, project flow, and project methodology (Agile).

Organizations

2022 - 2023
UPHS-GMA Supreme Student Council
University of Perpetual Help System GMA Campus
P.R.O. Internal

2021 - 2022
O.P.T.I.M.A. (UPHS-GMA College of Computer Studies Department)
University of Perpetual Help System GMA Campus
President

Contact

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Barangay 8, Carmona Cavite

Skills

- Documentation
- UI and UX Designing
- Managing
- Microsoft Office Software
- Computer Literacy
- Communication

References

- Mary Grace Nombre - Barbecho
  Employee at SolarWinds Taguig
  mgbarbecho@gmail.com
  09272711934
- Alvin Encarnacion Camacho
  Head of Registrar at UPHS - GMA CAMPUS
  09688833690

Janoabram Pascua

I am currently a student in the course of Bachelor of Science in Information Technology. Knowledgeable in Front-End development, especially in Web and Graphic Design. Loves to explore new things and be part of a team in a challenging and progressive environment.

Experience

March - April 2023
University, College, and School Registrars Association UCSRA Inc.
UI & UX Designer / Business Analyst
- -Provided the UI and the UX for the online registration system for the UCSRA Convention 2023

February 2023
University of Perpetual Help System GMA Campus
Senior High School Immersion (Proctor / Speaker)
- Been one of the speakers who trained the ICT Senior High School Students about Basics of Graphics Design, Introduction to FIGMA, and Smartphone Photography 101.

August - December 2022
Binan City Hall (City Community Affairs Office)
UI & UX Designer (Intern)
- Designed a monitoring system for Biñan TODA.
- Assisted personnel in CCAO (City Community Affairs Office).
- Prepared reports and presentation for weekly updates.

February - May 2022
University of Perpetual Help System GMA Campus
Visual and Character Designer
- Provided the Visual and Character Designs for our game "Moral Town".

April 2021 - May 2021
University of Perpetual Help System GMA Campus
UI & UX Designer
- Provided the UI and UX Design of "Record Management System"
- Giving reports and feedbacks

2019
San Pedro Doctors Hospital
Out-Patient-Department Staff
- Immersion Student
- Assisting my co-nurses in handling patients in Out-Patient-Department

Education

2019 - 2023
University of Perpetual Help System GMA Campus
Bachelor of Science in Information Technology

2017 - 2019
Colegio De San Pedro, Pacita Complex, San Pedro Laguna
Information Communication Technology (ICT)

Contact

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Phase 2 Block 13 Lot 26 Brgy.
Poblacion 5 FVR GMA Cavite

Skills

- Documentation
- Design Thinking
- Managing
- Working well in a team
- Computer Literacy
- Resourceful
- Project Management Tools
- Communication

References

- Mary Grace Nombre - Barbecho
  Employee at SolarWinds Taguig
  mgbarbecho@gmail.com
  09272711934
- Alvin E. Camacho
  Head of Registrar at UPHS-GMA
  09062418111

Erick Jae Goneda

For use by businesses, organizations, or schools, technical writing and IT support are provided through a web-based system while the documentation team is in charge. Aims to push technical writing by providing challenging and meaningful tasks through a company that fosters growth and skill development.

Experience

March - April 2023
University, College, and School Registrars Association UCSRA Inc.
Technical Documentation / IT Support
- Assist my workmate to develop the reservation system
- Testing and Encoding in the system

February 2023
University of Perpetual Help System GMA Campus
Facilitator
- Guided immersion student
- Assisted the the proctor/speaker during the activities to immersion student

August - December 2022
Binan City Hall (City Community Affairs Office)
Technical Documentation (Intern)
- Took a note down the request of our client
- Helped co-workers to develop the monitoring system
- Assisted personnel in CCAO (City Community Affairs Office).

February - May 2022
University of Perpetual Help System GMA Campus
Technical Documentation | Tester
- Help them to suggest what features will be add
- Testing using different mobile and tablet device
- Help to develop the "Moral Town" a mobile application

April 2021 - May 2021
University of Perpetual Help System GMA Campus
Technical Documentation | UI Designer
- Help develop a system called "Record Management System"
- Giving the sample and ideas in terms of design
- Testing and Encoding the system

Education

2019 - 2023
University of Perpetual Help System GMA Campus
Bachelor of Science in Information Technology

2017 - 2019
University of Perpetual Help System GMA Campus
General Academic Strand (GAS)

Contact

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0975-700-6647

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Skills

- Web Design
- Computer Programming
- Managing
- Leadership
- Technical Documentation
- Communication
- Front-end Development
- Observation
- Decision Making
- Time Management
- Presentations
- Multitasking

References

- Mary Grace Nombre - Barbecho
  Employee at SolarWinds Taguig
  mgbarbecho@gmail.com
  09272711934
- Alvin Encarnacion Camacho
  Head of Registrar at UPHS - GMA CAMPUS
  09688833690

John Charles Sungahid

Designs and programs web system for school purposes or activities and businesses while leads in quality assurance and front-end development. Aims to challenge management and front-end skills through challenging and meaningful tasks through an organization which promotes development and a company that enhances one's skills.

Experience

March - April 2023
University, College, and School Registrars Association UCSRA Inc.
Front-End Developer
- Develop the reservation system as per request from the client
- Leads the Front end Development

February 2023
University of Perpetual Help System GMA Campus
Senior High School Immersion (Proctor / Speaker)
- Been one of the speakers who trained the ICT Senior High School Students about Basic HTML and CSS.

August - December 2022
Binan City Hall (City Community Affairs Office)
Web Developer (Intern)
- Developed a monitoring system for Biñan TODA.
- Assisted personnel in CCAO (City Community Affairs Office).
- Prepared reports and presentation for weekly updates.

February - May 2022
University of Perpetual Help System GMA Campus
Game Developer
- Develop a Game called "Moral Town" using Gdevelop

April 2021 - May 2021
University of Perpetual Help System GMA Campus
Front-end Developer | Quality Assurance
- Develop a system called "Record Management System"
- Leads in the quality assurance
- Giving reports and feedbacks
- Giving assurance for the quality of the system

Education

2019 - 2023
University of Perpetual Help System GMA Campus
Bachelor of Science in Information Technology
Running GPA (1.42)

2017 - 2019
University of Perpetual Help System GMA Campus
Information Communications and Technology (ICT)
With Honors
Best in Thesis

Contact

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Poblacion 5 FVR GMA Cavite

Skills

- Good Communication Skills
- Front-End Developer
- Computer Literacy
- Team Player
- Fast Learner

John Clark Tadeo

A Highly organized and hardworking individual looking for a responsible position to gain practical experience where I can utilize my learnings, knowledge and skills to the success of the company.

Experience

March - April 2023
University, College, and School Registrars Association UCSRA Inc.
Benchmarking | Networking
- To complete the reservation system held in Shercon Resort and Ecolgy Park in Batangas.

August 2022 - January 2023
General Mariano Alvarez Municipal Hall
General Service Office (Intern Staff)
- Network Installation
- Software Installation
- Hardware Repair and Maintenance

February - May 2022
University of Perpetual Help System GMA Campus
Game Developer
- Moral Town is a mobile game application for kids between the ages of 6 and 12. The game includes quests that help them make better decisions and simple quizzes and mini-games that may help the kid improve their memory, prediction skills, and moral principles.

April 2021 - May 2022
University of Perpetual Help System GMA Campus
Front-End Developer
- The UPHS GMA's Online Based Enrollment Records Management System for College and Senior High is designed to be operated online and includes CRUD functionality and straightforward human input.

2018 - 2019
SM Cinema Trece Martires
Usher
- Escorting guests to their seats, and providing basic information and assistance to any guests who may need it.

Education

2019 - 2023
University of Perpetual Help System GMA Campus
Bachelor of Science in Information Technology

2010- 2014
Biyaya Polytechnic Academy
High School Graduates