**Development of Web-Based Automated Document Record Management System for LNU Clinic**

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A Thesis Presented to the Faculty of the IT

And Computer Education Unit

Leyte Normal University

Tacloban City

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In Fulfillment of the

Requirements for the Degree

Bachelor of Science in Information Technology

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**ABSTRACT**

This project was to design and present the use of an Automated Document Record Management System in Leyte Normal University Clinic, with the aim of improving their services especially in this digital time. The research was used the instrument to utilized the study which are interview, observation and questionnaire where a few inquiries were raised by the researcher such as, what are the difficulties related with the utilization of the current manual record management system in the Leyte Normal University Clinic? How to enhance the current manual record managements system to reduce human mistake during the process of the records? How to improve on the current manual record management system among the staff of the clinic? Also, how to give more security to patients' records and information in the clinic? The proponent’s conduct a survey with 30 respondents from clinic staffs and students, and the results were evaluated which led to the design of the aforementioned system. This project is a web-based platform system, and in order to design the programmed, the researcher uses some web development tools such as; Visual Studio Code for the coding editor; hypertext preprocessor (PHP) for programming language; Codelgniter for PHP web application framework and MySQL used to design the databases that store the overall system data. Lastly, this study will help in improving the effectiveness and efficiency for record keeping such as difficulties in storing, organizing, retrieving, updating records, lack of security of records and loss of relevant information in the Leyte Normal University Clinic.

**APPROVAL SHEET**

In fulfillment of the requirement for the degree **“Bachelor of Science in Information Technology,** this thesis entitled **“Development of Web-Based Automated Document Record Management System for LNU Clinic ”,** has been prepared and submitted by ***Antonio C. Ocaña Jr., Gary Jade C. Basan, and Kim P. Dancil,*** who are hereby recommended for oral examination.

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**Dedication**

This research is dedicated and gratitude to our parents, family and guardians.

Mr. and Mrs. Ocaña

Mr. and Mrs. Basan

Mr. and Mrs. Dancil

Who has been support and guide until the research has fully completed. Their attention has completely encouraging to accomplish our work with self-confidence.

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System Source Code……………………………………………………

**Chapter 1**

**Introduction**

Technology today has made the requirement for information flow to be quick and effective. Technology appears which promises to change our lives for the better. Either it improves our performance by working more simply and at a faster rate, or it creates possibilities and options that did not previously exist. Some business firms, government agencies, medical services, educational institutions and other organizations are face with the amount of paper that must handle in order to conduct their operations. These organizations are continually seeking systems that can solve a variety of problems connected with handling large volumes of paper. The problems include the need for large volume of storage space required to keep documents, work serious operations related with filing, retrieving, and transferring paper documents and an increase in processing time in transaction concerned with operations in period and reduction in processing time.

Documents flowing in paper form are increasingly being substitute by its electronic equivalent in the modern office today so that any stored document can retrieved whenever needed. The office worker had already burdened with information overload, so effective and efficient retrieval facilities become an important factor that affects worker productivity.

These days, computers turn as an aid in document management. In spite of the quick growth of technology, there are offices that still dependent in the process of filing of information and including the Leyte Normal University Clinic office that not yet using computerized record management system.

The Leyte Normal University Clinic is currently using manual record keeping, it consumes a large amount of space when filing, this process relies heavily on the person-in-charge thus it is prone to damage and being misplaced. It is also not appropriate for disasters, fire or natural disaster that could mean the loss of important information. It is difficult to make changes on the documents since only one needs to make a copy and to avoid edits the original information. To search for a file is time consuming if it is disorganize. Lowering the productivity by having to spend too much time dealing with this manual process, paper documents have a tendency to be less secure, a cabinet is less secure than a computer, which requires user credentials before accessing the needed file.

Today, designing, manufacturing and sales of industrial products involve large amounts of documents: project specifications, reports and orders, patents and standards, etc. Safe storage and quick access to these documents contribute to sustainable development of any company. At the same time, the traditional paper-based document management has plenty of shortcomings, hence, there is the need to develop and implement automated information system of electronic document Electronic Document Management System: The main management system (EDMS) (Ostroukh, 2014).

Information systems have shown its significant impact and importance in the digital age. A study reveals the benefits of having a digitmiesal process were fast and increased productivity, better monitoring, high level of accuracy, and high level of consistency of information. Many organizations are developing information systems designed specifically to facilitate the sharing and integration of knowledge. Despite the application of technologies, there are still using the manual process of data storage and retrieval which hinders the productivity, efficiency, and accuracy of information and the quality service itself identified four problems in traditional methods of data storage such as it takes too long to acquire, it costs too much regarding maintenance, it is not scalable enough, and it requires too much commitment (Caluza, 2017).

In recent years, technology had grown largely. The greatness of the impact it made on the lives of people who use it was generally paramount. No other generation has felt the positive effect of technological advances like the present generation. Technology practically supports our lives, with applications in every field possible. Every person regardless of age now connected to the world around us because of technology (Abuda, Makabenta, Penaranda, Valdez, & Quisumbing, 2018).

In modern healthcare settings, doctors record the details of patient visits in electronic medical records (EMRs), which are then collected in databases. At first, EMR systems were poorly implemented; initial studies reported that they reduced physician productivity and lacked data sharing capabilities. However, recent advances have improved recordkeeping and decision support. For example, EMR systems have enhanced productivity in physician workloads2 and have increased the delivery of health behavior counseling (Edward W Huang, 2017)

Computers have reduced the task of analyzing vast amounts of data and can be invaluable in many ways just like in Human Resource (HR) management. With hardware, software, and databases, organizations can protect records and information better as well as retrieve it with greater ease (Abuda, Makabenta, Penaranda, Valdez, & Quisumbing, 2018).

The proposed system, which is the Development of Web Based Electronic Medical Document Record Management System, will help the management of Leyte Normal University Clinic, which the development of the current system from manual to computerized document system. The system will store, organize and retrieve information to reduce the operation of retrieving large amount of documents.

**Project Context**

The research is present at the Leyte Normal University Clinic thru sequence of interviews. The interview was conduct to all the staff in the university clinic. These interviews convey the researchers the chance to ask and follow up questions based on the topic, get clearness of the answers, and understand the research topic. In this manner, reducing concepts and making progressively exact purposes and suggestions of the theme.

**Theme 1:** *Storage for storing volume of documents record*

Leyte Normal University Clinic Office received a number of documents, such as medical and dental record of students, faculties and staff. Volume of documents records every year, particularly during the enrollment period for the incoming first year and transferee, that in order to fill up and submit the medical and dental records requirements in the university. These documents are place or keep in a filing cabinet inside the office. As indicated by the school doctor that recently, there are more than 2,000 student health document they got from first year recruits and transferee and more or less 8,000 medical records they kept of all students in the university not including the faculty and staff. Moreover, they kept the documents for fifteen years; they kept the records in the storage even the students was already graduated and for the returnee students. Their documents are increasing and the problem is they need a large storage space to store the documents. Most of their patient information are record in a paper and as the patient visit often the clinic staff will add in paper to that patient record in order to let the doctor have enough space to write down the diagnosis to that patient. The proposed system provides the ability to store the patient information into database so that the data stored in a more organized manner and do not wasted any single space in a clinic. Furthermore, the database supports the clinic to store up to volume of records in an easy managerial way.

**Theme 2:** *Seeking for retrieval document record from the storage*

Furthermore, the LNU clinic staffs facing difficult for searching for documents and to be time consuming, because there are too many paper documents that needs to search. Another concern is there is no backup records for lost or missing information, since they are depend on the paper-based copy and these records are vulnerable for damage or misplacement. Instead of searching the patient record from a hundred or thousands of patient record from the cabinet, the proposed system can search for the patient records easily by only input some criteria such as the patient ID or the patient name.

Furthermore, for the fixed the problem, the proposed system will aid to generate and securing documents. This type of system is a more particular kind of electronic document management system, a more general type of storage system that helps users to add, organize, retrieve and store paper in a digital form. This system will help to the user to improve the management from manual process to electronic system.

**Framework of the Study**

The proposed system applied different kinds of theories that enable them to stablish their desired outcomes. By the theories, it will help them deeply understand the processes and creation of the proposed system.

*Records Management Theory*

Records Management Theory is the lifecycle of information. This ranges from the birth of the record to the final disposition either through controlled destruction process or to designate a record as permanent. The duration that a record could be considered prevalent, kept in storage, destroyed (if applicable) varies based on the business function, as well the legal and regulatory requirements. According to this there are four phases to the lifecycle of records namely, creation in which records begin the lifecycle when they are created or received; active records where records that are accessed are considered active records; inactive records are records that are no longer needed yet are required to be retained for a period of time for legal, administrative or historical reasons; and final disposition in which records will be retained permanently or non-permanent records are destroyed when they have no more value. Since the researchers are dealing with documents, it is necessary to understand the phases in which a document experiences. (Kemoni, 2009). LNU clinic keeping document records. The propose system will provide the reliability, authenticity and completeness of records. This will help the storage and retrieving records.

*Design Theory*

The Design Theory explained that design work is and design knowledge in system is very important for both research and practice. In addition, this theory deals how designer see and perceive visual information and separates ideas of styles, taste and trend from universal principle of aesthetics that common to every person (Gregor, 2013). In connection to the research, this theory will applied so that it help to the researchers to have a positive outcome and create good design in a proposed system

*Database Theory*

The Database Theory it states that encompasses various topics related to the study and research of databases and database management systems. It is a concept of using databases to create, retrieve, update, delete and store data or information. A central focus of database theory is on understanding the complexity and power of query languages and their connection to logic (Kanellakis, 2010) **.** The researchers will have a better standing of how to a database woks and how to connect it to our system to record data will greatly increase the capability in creating a more efficient and liable database. Moreover, the use of the database is a big factor in our proposed system. This means that the database must maintain a high level of security were only authorized to access information from database can do in order for researchers to ensure the integrity of the study and to be able to manage the record management system effectively and efficiently

*Conceptual Framework*

The diagram below shows how the researcher will use the gathered theories to develop a “Development of Web Based Automated Document Records Management System for Leyte Normal University Clinic”

Development of Web Based Automated Document Records Management System for Leyte Norma University Clinic

Functionality and Increase Flexibility of LNU Clinic Document Record Management System

Design

Theory

Database

Theory

Records Management Theory

***Figure 1.0*** *Conceptual Framework*

**Objective of the Study**

This study aims to develop an Automated Document Record Management System in LNU Clinic that will manage the daily operation in effective and efficient way throughout the help of the system so that they could eliminate the paper work that originally happened in a clinic.

Specifically, this study aims to develop a system that will:

1. Provide automated data, keeping organized and immediate response on searching data.
2. Generate accurate reports such as: number of patient, list of diagnosis, list of medicine, tools and supply.
3. Maintain the security of the data through the authentication of user accounts.
4. Comply the ISO/IEC 25010: 2011 standard:
   1. Security
   2. Accuracy
   3. Speed
   4. Reliability
   5. Efficiency
   6. Functionality
   7. Usability

**Scope and Limitation**

*Scope of the Study*

The scope of the study is for creation of an LNU Clinic Automated Document Record Management System. The focus of the study is to improve the current manual record management system and to provide a system that will solve their problems. Additionally, this system will significantly reduce the amount of storage necessary for paper-based records and quickly retrieve all the information as well keeping all data in particular databases. The general scope of this study will focused on Web Based Automated Document Records Management System for Leyte Normal University Clinic. While the specific scopes of the study are as follows:

1. A computer base system that will be design to manage medical and dental records documents in Leyte Normal University Clinic.
2. Computerized document records that can accept, stored, and retrieve patient health records.
3. Computerized document records for generating reports.

*Limitation of the Study*

This project only covers inside or under in LNU Clinic Management System. Furthermore, only medical and dental information and necessary personal data will be stored in the system. Other information like academic, sports and any information within the university are not in the said project also, this system does not include any money or any other transactions.

**Chapter 2**

**Review of Related Literature and Systems**

This chapter reviews relevant concepts from related literature and system, which includes the ideas, finished thesis, generalization or conclusion. Those that were included in this chapter helps in familiarizing information that are relevant and similar to the present study. A review of the related literature and system shows a great number of recent article on electronic records management and deal with the process of developing research projects and how can contribute.

**Related Literature**

Records are essential assets that should be handle efficiently regardless of form. Information recorded in records that are stored in various media are ought to be promptly accessible, comprehensible, manageable and usable for assisting management in making decision. A well-managed records is a prerequisite for any organization to acquire competitiveness, and seen as accountable and transparency to the government and the public (Galala, 2013). Therefore, the project need to address this kind of management system in order to manage their electronic medical records effectively and supportively. Safe records in the database and quick access of medical information record.

The Electronic Medical Record (EMR) or Electronic Health Record (EHR) are broadly defined tools designed to house medical information electronically. Ideally, each person would have one electronic medical record that would receive contributions from all healthcare providers, archiving all medical data, and all information could be share between providers. EMR expected to improve the efficiency of healthcare, improve access to information, preserve complete records without gaps, and provide safer healthcare at lower cost. However, these benefits depend on significant integration between a multitude of clinical services and users. (Christe, 2018). As a result, the system will used to kept electronic health document record and as a tool to gather and maintain medical information record. The system contains the arrangement of an electronic archive and the information flow management, as well as automation of various document.

In response to incentives created by the Health Information Technology for Economic and Clinical Health (HITECH) Act, one electronic health record (EHR) systems have become a central part of the medical information ecosystem. Because they are relatively new, the business and ethical norms that surround EHR systems are still evolving. What is clear is that EHR systems lack transparency, or engage in information blocking, in many key areas because the contracts that govern the relationships between health care providers, their business associates, and EHR vendors contain provisions that block or obscure important information. (Jim Hawkins, 2019). The proposed study will provide health information record. Also, secure and protect confidential health information. The system will serve in the LNU clinic to be responsible for health information or medical record in the university.

Electronic Document Management Systems (EDMS) identified globally as one of the key development strategies in e-Government and as such, has influenced many governments to implement it. For instance, the German government has successfully implemented a system called Document Management and Electronic Archiving (DOMEA) to attain a paperless office at all the three levels administrative in the country. In another example, the government of the Republic of Korea has implemented EDMS through integrated portal websites that has enabled its citizens access government services at all levels from the comforts of their homes and offices. From these examples, it is obvious that many governments have had a common objective of ensuring a better quality of keeping good records in their organizations through EDMS implementation project. Furthermore, government organizations can access information in a faster and easier way, higher employee turnover or productivity. They improve citizen satisfaction and relations management as well. EDMS implementation also provides better security measures in government document processing procedures and delivers accountability and transparency that are main requirements for effective corporate governance. (Haider Abdulkadhim, 2015). The development of web based electronic medical document record management system, supports the LNU Clinic to improve work process and productivity, an easier search of medical records, cost saving from low use of materials (paper).

Health information technology (HIT) the hardware, software, and infrastructure required to collect, store, and exchange electronic patient information in clinical practice - is transforming health care in Canada and around the world. Commonly used HIT software includes electronic health records, which are person-centric records; electronic medical records (EMRs), which are provider-centric records; clinical decision support systems; computerized provider order entry; and patient reminder and scheduling software. The usual foundation for HIT in community-based ambulatory practices is the EMR, which works harmoniously with computerized provider order entry, electronic prescribing (e prescribing), and clinical decision support systems, enabling community practitioner access to patient information from a central repository. The EMR is a portal for the adoption of other HIT in clinical practice. Despite subtle distinctions between EMRs and electronic health records, the terms are generally used interchangeably we use EMR in this review. (Chang, 2015). For that reason, the system will help the user to adopt the environment of information technology process using computer and the proposed system will serve as a software to manage the medical information record.

Due to the emergence of digital systems the so-called "computerizing documentation procedures” was found, which is based on transferring and registering, sorting and preparing of research computerized tools for documents saved electronically, thus they are retrieved quickly. Availability of data and information about them made dealing with them locally at first then remotely over networks later with collective documents at the same time, which was the maximum an employee aspired in his office. (Al Shobaki, 2017). Therefore, the system will express the availability of electronic transaction. As well, the development of performance through increasing efficiency, effectiveness, enhancing and improving public service. Including the need to enhance the skills and abilities of staff required to implement electronic transactions.

**Related System**

The system will implement electronic information management system and as result in the rapid growth in the usage of records that are present in electronic format. The proposed study is undertaken base on the fact that the process of modernizing the economy has led to a generation of electronic records.

**Health Information Management System**

Described as playing a critical role in the delivery of healthcare in United States through the focus on the collection, maintenance and use of quality data support the information-intensive and information-reliant healthcare system. Health administrators plan information systems, develop health policy, and identify current and future information needs. In addition, they apply the science informatics to the collection, storage, use, and transmission of information. Also, practice of maintenance and care of health records by traditional and electronic means in hospitals physician’s office clinics, health departments, health insurance companies, and other facilities that provide health care or maintenance of health records. Health informatics technology utilized in information management. (Al Kiyumi, 2017). The proposed system will serve as tools for data collection, process the data and reports, help to improve the quality of information management system, maintain accessibility information and secure all the health information record.

**Electronic Document and Records Management System Implementation in Malaysia: A Preliminary Study of Issues Embracing the Initiative**

EDRMS is “an automated system that supports the creation, use, and maintenance of documents and records in both paper and electronic format, with the intention of reaping an efficient organization’s workflow and processes”. The implementation of EDRMS proven to improve effectiveness, reduce costs, keep information safe and secure, manage record versions, manage the integrity and reliability of data, improve service delivery and generally enhance business processes. EDRMS is supposed to provide a more integrated and efficient solution for record management within the organizations. However, the public sector is suffering from a range of issues in implementing the initiative where the failure to the implementation can lead to embarrassment, reputation damage, and financial loss. Previous studies have reported the failure of the system implementation was due to a variety of factors such as computer illiteracy, attitude towards technology, and poor of change management. Yet, few studies have actually been conduct in the context of the public sector (Ab Aziz, 2018). Then, the proposed project is a software application that manages information from document to electronic form, which will increase the productivity and deliver better accountability. Possibility to retrieve accurate information about the medical document record with the exact time of the document creation and editing dates.

**Hybrid Query System for Electronic Medical Records**

An electronic medical record employs a hybrid search engine, which can perform structured queries for comprehensive search. The present invention relates to electronic medical records used for storing clinically derived medical information about patients in a healthcare setting and in particular to an improved method of obtaining information from Such electronic medical record systems. Electronic medical record systems are computerized record-keeping systems intended to Supplement or replace paper record systems in the healthcare environment. Such electronic medical record systems typically use a structured database holding a logical record for a given patient (for example, as may be represented as a row in a table) together with multiple data fields (for example, as may be represented as columns in the table). Healthcare professionals to provide a comprehensive, reliable, and accurate view of the patient’s health and medical treatment collect the values populating the data elements of the records and fields (Rana, 2015). The proposed system will be responsible for information retrieval, providing structured database that can accessible using text search engine. Also, retrieve information based on records related with particular medical record, and organizing information from different fields of selected records according to the request.

**Development of Automated Control System for University Research Projects: Tambov State Technical University (TSTU), Tambov, Russia**

The system is design to solve the main problems of paper document management: loss of documents, long search for information, large storage area, low-speed editing, etc. The purpose of this paper is to study the possibility of integration of electronic document management system applications, organizational documents (e.g., for meetings, and electronic product catalogs. Storage of documents with no connection to relevant current orders or projects does not make sense as any networked storage can handle such a task. In this respect, the synthesis of EDMS and product catalogs is of the greatest interest. The introduction of electronic document management system can solve many ‘hidden’ problems and improve the performance of the organization as whole (Ostroukh, 2014). This journal will aid to the proposed system, which the reduction in the time spent on searching and filling out documents and secure storage of documents: all documents are digitize, collected on the server and have backups.

**Electronic Patient Record Management System**

Is a centralized database contains the patient record. It was implemented using PHP & MYSQL combination. The database record contains the patient personal info, department lies-in, physician, tours, and treatment and lab results. Since the patient enters the hospital, the workflow starts as the reception user creates new record by entering the personal info and sends the record to assigned department; at this stage the nurse starts update the record by entering the physician comments, required treatment, and sends lab test when it is required. The procedure continues as long as the patient still in the hospital. At last, when the patient recovered or died the International Classification of Diseases (ICD) inserted to the record and out or died date (Nasralla, 2013). Therefore, the system will be responsible for database, by accurately recording data, updating and tracking them on a well-organized record. This data is made and available to the management and employees of the organization through computerized database. The information is easily available to the user, when the system or software connected to the database.

**Chapter 3**

**Technical Background**

This chapter discuss the current system and the proposed system, software to be use in the software development, hardware specifications and people ware. Through this chapter, we will be able to distinguish the current system and the proposed system.

**Current System**

Leyte Normal University Clinic dealing with manual process of document (paper-based) system, which is medical and dental health record. The new patient will get the laboratory request at the LNU clinic then proceed to the diagnostic laboratory for the laboratory procedure. Then the patient will return to the clinic with the following laboratory test results. At that time, the patient will fill-out the patient health record and consultation by the school doctor. For dental, the patient will fill-out as well the school dental health record and consultation by the school dentist. Then the nurse for medical health record and dental aide for dental health record will be manage all the documents for record keeping, retrieving and storing all the documents. For consultation patient, the preliminary assessment is done by the school nurse and will look for the patient’s name to identify their number in the Microsoft excel using computer desktop and get or retrieve the patient health record from the record files or filing cabinet, same also with the dental process.

The storing process of the documents are filtered by the type of the document such as date, name of the students faculty and staff and patient health number and that are organized by document filers or folders to be stored in filing cabinets. The said office received a number of documents every year and they kept volume of records of all the student, faculty and staff. The clinic staff experienced problem and could be time consuming in record keeping, retrieving, storing, searching for medical and dental record and generating reports. The proposed project will help to develop automated record keeping management system for quickly retrieving, protected data and keeping record by means of database. The LNU clinic staff use Microsoft word for encoding reports and Microsoft excel just to find the name of the student, faculty and staff, to identify the patient number and look the document by means of that patient number. Leyte Normal University Clinic is a separated in two unit, such as medical and dental unit. The university physician leads the medical unit and school dentist leads the dental unit; the nurse aide and dental aide will assist in managing the document record keeping, retrieving and storing the data.

**Proposed System**

The proposed system is a Development of Web Based Automated Document Records Management System for Leyte Normal University Clinic that requires the use of desktop computer, and that will be view by a local host browser. Two forms of account – the administrator and user, only use the system. The system will create registration for the user and admin. The system can be right to use through its valid passwords and usernames. The admin has different passwords and usernames to secure of all the records and information. The Leyte Normal University Management Information System (MIS) is the administrator and has the fully control over the user’s information and maintain the system. The user had only access on their own functionality and verified all the records, which is the record keeping, retrieving, and storing data. Only the administrator can view, add, delete and update the user’s information. The system will generate reports such as number of patient, number of particular diagnosis, medicines and supply. The system will accomplish all the patient health record run in the LNU clinic.

**Hardware**

Hardware plays most important role, for it is used for the functionalities and obtaining a best result within a particular software. For the proposed system the following hardware that are needed.

**Table 1**: *List of hardware to be use in system development*

|  |  |
| --- | --- |
| **Hardware** | **Uses** |
| Desktop Computer | Intel Core i5 and above**,** use to install operate the system for the administrator and user |
| Hard Drive | 500GB or higher, Use to backup information of the client. |
| Printer | HP LaserJet 1020 series printers***,*** used for printing reports. |
| RAM | Minimum of 2GB, used to store running programs and data for the programs. |
| Laptop | Intel Core i3 and above, use to install operate the system for the administrator and user |

**Software**

System software allows application developers to focus on specific tasks their software needs to accomplish. Further down arethe following list of particular software required for the development of the proposed system.

**Table 2**: *List of software to be use in system development*

|  |  |
| --- | --- |
| **Tools and Software** | **Uses** |
| PHP | Is a script language that is used to create a program that runs on a web server |
| JQuery | used to make interface with an animated effect and functionality |
| Codeigniter | Is an open-source software rapid development web framework, for use in building dynamic web sites with PHP |
| Visual Studio Code | Is a source-code editor. It includes support for debugging, embedded, syntax highlighting, intelligent code completion, snippets, and code refactoring |
| CSS | Used to create great looking or presentable interfaces or simply used for designing. |
| HTML | Used for tagging text files to achieve font, color, graphic, and hyperlink effects on World Wide Web pages. |
| XAMPP | Used to create local web server for testing and development purpose |
| JavaScript | Used to create responsive, interactive elements for web pages, enhancing the user experience. |
| Bootstrap | Is a framework to help you design websites faster and easier |
| Chrome browser | Used in fixing and testing the system by developing developer tools |

**People ware**

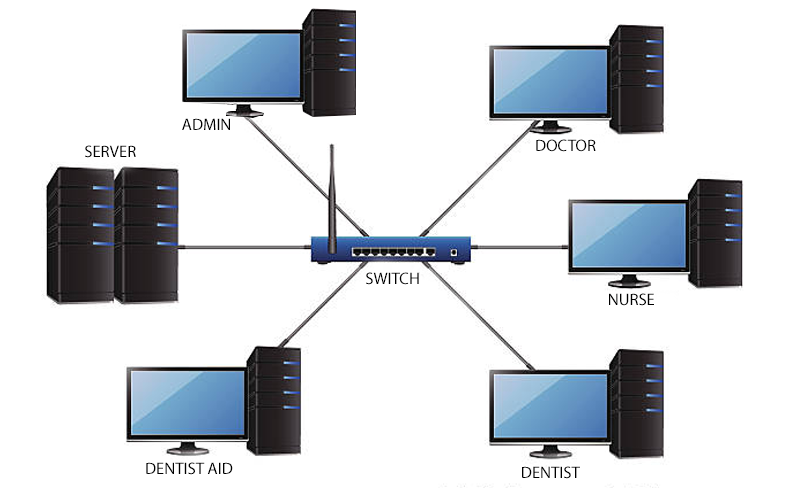
People ware can refer to anything that has to do with the role of people in the development or *use* of computer software and hardware systems*.* The proposed system composed of administrator and user, which were the end user of the system. Further down are the roles and rights of each user of the proposed system.

**Table 3**: *List of people ware for the proposed system*

|  |  |
| --- | --- |
| **Role** | **Rights** |
| Administrator (MIS) | Maintain of all user’s information and system |
| User 1 (Doctor) | Secure, keep, add, update, and retrieve all medical health record |
| User 2 (Nurse) | Add, keeping and retrieving data |
| User 3 (Dentist) | Secure, keep, add, update, and retrieve all dental health record |
| User 4 (Dental Aid) | Add, keeping and retrieving data |
| User 5 (Student) | Pre-Registration |

**Network**

The proposed project is a framework that will utilize in Local Area Network (LAN) connection, which is open by every client through an Ethernet kind of connection. The system that will be use is the school intranet to make the framework run and that associated with the server.



**Figure 1***: LAN connection of the proposed system*

**Chapter IV**

**Methodology**

This chapter will discuss about the requirements analysis in which performance requirements, safety requirements and security requirements that specified. It also talks about system design that explain System Development Life Cycle (SDLC). Program Considerations/Issues/Tool, Software/ Hardware Requirements Specifications, Chart and Diagram.

**Requirements Analysis**

To determine the needs of the LNU Clinic Automated Document Record Management System specifically the documents they use, the researchers recognize first the nature of the existing system by conducting an interview with the head of the LNU Clinic Office. Asking for some questions, clarifications, and suggestions that are essential for better understanding of the system in the present time. Gathering of information will help the researchers to know the exact process, which is regards the records in the LNU Clinic Office and what causes the problems to occur in order to improve it with the help of the proposed system. From the gathered information, the researchers specified the requirements needed, what is the development project is for and its purpose to become the LNU Clinic Automated Record Management System’s documents successful and realistic.

**Performance Requirements**

**Table 4:** *Performance Requirements*

|  |  |
| --- | --- |
| **Name** | **Description** |
| *Workload* | The proposed study will perform through a Microsoft visual studio code editor for coding and xampp for the database. This study will add, update and search patient health records and has a Server that can provide decision support for the LNU Clinic administrator. |
| *Response Time* | Proponents performed load test to determine the response time of the proposed system. The response time is measure by clock speed. Formal loading of web pages, it takes four to five seconds of waiting time to finish the load. |
| *Scalability* | The system is capable for handling large quantity of patient records and allow users to view patient records in LNU Clinic and server that is permit to access by the MIS. |

**Safety Requirements**

As a requirement of the system, the LNU staff and the administrator are required to input the username and password for identification in login specified and it must be in control. The system will notify that the username and password is invalid. The file is very important when it comes to storing the data to have a proper safety in using the system. When this PHP file was delete or moved into other the system, it will not function well. The programmer’s codes are save into the htdocs the proponents warns each user to do not delete everything inside the htdocs. It is possible that the databases may crash or damaged due to the loss of electricity and virus infection of the operating system. To prevent this kind of problem, the databases is required to have a backup file. Therefore, when the database is accidentally crash or the virus infects the system it is easy to restore all the information in your previous database because of the backup file.

It is important that every user must know the proper way of using the system; the user should be well oriented about the system.

**Table 5:** *Safety Requirements*

|  |  |
| --- | --- |
| **Name** | **Description** |
| *Software Error* | Proponents will perform several testing methods to ensure that the system is working properly before the official launch. Thus, all the errors and bugs that found after testing phase will be fix within the development. |
| *Hardware Failure* | Hardware failures happen anytime and puts data at risk. Therefore, it necessary to backup patients records by using drives and cloud to backup files. It is also necessary to backup patient records in the database you can back up your system database by exporting the database. This exported database is download through a text type, which has a (.sql) file name. Remember, that the system is connected to the database; once the data from database is missing the localhost will read it as undefined index. You can recover the database and connect to the system by importing to the PHP Admin/Sever.  It is important that every user must know the remedies to backup and to secure the database data, the user should be well oriented about the system database. |

**Security Requirements**

To prevent other users to access the system the proponents decided to have a different login accounts on each staff, and including the LNU Clinic administrator. The purpose of this is to prevent other users to see health information that may cause manipulation of health records in unethical way. In addition, to prevent other health centers to access the system. The system must provide a highly security on protecting the health record privacy. In addition, some confidential data should restrict to authorize user only to access it.

**Table 6:** *Security Requirements*

|  |  |
| --- | --- |
| **Name** | **Description** |
| *Sensitive Data access* | The system only can access by the authority user, which is an official clinic staff who is registered. The authority user must use username and password to login to the system. Validation on username and password that input is required to deny the invalid user to the system. |
| *Validation Form* | Its classification will approve all information sources that will asked by the framework. Clear forms and restricted characters will additionally checked. Therefore, causing the framework to acknowledge and process forms free of errors and are in information right. |

**System Design**

**System Development Life Cycle Processes**

Software Development Life Cycle (SDLC) is a process used by the software industry to design, develop and test high quality software. The SDLC aims to produce a high-quality software that meets or exceeds customer expectations, reaches completion within times and cost estimates. Developers use and follows before, during and after the development of a system, which will become a product called software. SDLC followed for a software project, within a software organization. It consists of a detailed plan describing how to develop, maintain, replace and alter or enhance specific software. The life cycle defines a methodology for improving the quality of software and the overall development process. ISO/IEC 12207 is an international standard for software life-cycle processes. It aims to be the standard that defines all the tasks required for developing and maintaining software. The researcher use the merging of Iterative and Waterfall method in Systems Development Life Cycle (SDLC)

Data Gathering

Design

Implementation

Maintenance

Testing

**Figure 2**: *Iterative Waterfall Model*

First introduced by Dr. Winston W. Royce in a paper [published in 1970](http://www.cs.umd.edu/class/spring2003/cmsc838p/Process/waterfall.pdf), the waterfall model is a software development process. The waterfall model emphasizes that a logical progression of steps will take throughout the software development life cycle (SDLC), much like the cascading steps down an incremental waterfall. While the popularity of the waterfall model has waned over recent years in favor of more agile methodologies. Waterfall is a cascade SDLC model, in which development process looks like the flow, moving systematically through the phases of analysis, design, testing, implementation, and maintenance. This SDLC model includes gradual execution of every stage completely. This process strictly documented and predefined with features expected to every phase of this software development life cycle model.

The Iterative SDLC model does not need the full list of requirements before the project starts. The development process may start with the requirements to the functional part, which can expanded later. The process is repetitive, allowing making new versions of the product for every cycle. Every iteration includes the development of a separate component of the system, and after that, this component added to the functional developed earlier. Speaking with math terminology, the iterative model is a realization of the sequential approximation method; that means a gradual closeness to the planned final product shape. The researcher uses this method because the system will constantly improve for additional development of other relations into the system.

**Planning**

*Technical Feasibility*

The LNU clinic currently possesses necessary hardware components such as desktop computer and memory storage. In addition, Management Information System (MIS) have trained personnel who has this technical expertise to operate and maintain the system.

*Operational Feasibility*

The management of this said LNU Clinic has their full support to this project and willing to use or maneuver the proposed system in return, the system will help the LNU Clinic staff to reduce work force of their current system. This system aims to give good performance and efficiency to the patient’s health records and retrieving and managing files. In addition, it aims to give functional and beneficial record management system to the organization so they could give the best service for the client.

*Resource Feasibility*

To be able to do this study, proponents used different multimedia such as books and the internet for them to gain insight in every activity the proponents will do. In addition, these resources will not be useful there will be no human resources involve. The proponents assigned themselves to different roles of project team organization.

**Data Gathering**

This phase includes gathering of data and requirements to develop the proposed system. The proponents conducted the interview in LNU Clinic together with the University Physician regarding the process of their current system and determine the problem encountered of using this. Through this, it guided the proponents on how they will develop a system that will improve the existing system in their office.

*Information Gathering*

**Table 7:** *Information Gathering*

|  |  |
| --- | --- |
| **Name** | **Description** |
| *Observation* | Before the researchers can design a system for the clinic, the researchers do visit to the clinic to do an observation on how is their daily business operation. It is an ordinary clinic which done everything manually. The researchers observe and record down in detail how is the progress flow from register, keep, stored and retrieve. Through the progress, the researchers can see that there is a lot of paper needed to use in order to complete this progress. We did question on them when we found out some problem that we do not truly understand on it and the doctor was kindly answer every question and explain to in detail. Furthermore, the doctor had shown several type of document that they usually do for reference purpose. Most of the document done manually in paper. |
| *Interview* | End user is the one who are going to interact with the system, thus interview the end user is one of the most effective ways on gathering facts. Throughout the interview session, we can get the exact information and definite requirement that the end user expected on the system. Doctor and staff requirement are different as the job that they carry out is different from each other. |

**Design**

Using analysis, the researchers had a system review for the techniques and tools that are going to be use in developing a system for the documents such as an object-oriented database, programming languages, and other related systems about Electronic Medical Records Management System. By this stage, it will help the implementation stage for further improve the quality of the system. The design stage was start from selecting the methodology for development (SDLC) which is the iterative and waterfall model and making the different diagrams needed for the graphical representation of the system especially the context diagram and the data flow diagram, which used for describing the design of the system. The context diagram is an overview of an organizational system that shows the system boundaries, external entities that interact with the system, the major information flows between the entities and the system, and the data flow diagram is the further decomposition of the context diagram in the proposed system.

The researcher uses programming languages such as hypertext pre-processor (PHP) programming as the main computer programming languages for web development system. PHP programming was created by Rasmus Lendorf and was commonly known before as Personal Home Page and continuously improved by rewriting its parser by Zeev Suraski and Andi Gutmans and later introduce to Zend scripting to deliver higher performance and supported by running under the web servers like Apache as a native server module. Other scripting languages where JavaScript to facilitate the data manipulation before its processing in the server-side scripting of the system. The use of HTML5, which is the latest version of the Hyper Text Markup Language (HTML) for web development document creation and the use of Cascading Style Sheet version 3 (CSS3) as the latest version in web designing. A bootstrap is an open source JavaScript Framework set up by the team at Twitter. It is a combination of JavaScript, HTML5, and CSS3 to give an easy creation of web design and functionalities of a website. With these latest software development-programming languages and scripting languages, the development of systems will be easy, manageable, and fast. CodeIgniter is a free, open-source, easy-to-use, object-oriented PHP web application framework, providing a ready-to-use library to use with your own PHP applications.

**Testing**

The researcher have need of to complete various tests to ensure the accuracy of the system or programmed code, the addition of expected functionality, and the capability of the system and other network components. Systematic testing is critical to ensuring systems meet the end-user requirements.

**Table 8:** *Testing Phase*

|  |  |
| --- | --- |
| **Name** | **Description** |
| *Unit Testing* | A level of software testing where individual units/components of a software are tested. Since the development of the system was through different modules, each module tested separately to determine its functionality. The purpose is to validate that each unit of the software performs as designed. |
| *Integration Testing* | Where units or modules are to be integrated which gives rise to integration testing. The purpose of integration testing is to verify the functional, performance, and reliability between the modules that are integrated. During this test, all modules were integrate into one and tested for the full functionality of the system. |
| *Compatibility testing* | A non-functional testing to ensure customer satisfaction. It is to determine whether your software application or product is proficient enough to run in different browsers, database, hardware, operating system, mobile devices and, networks. |
| *Usability testing* | Refers to evaluating the application by testing it with representative users. The goal is to identify any usability problems, collect qualitative and quantitative data and determine the participant's satisfaction with the product. |
| *Performance testing* | A non-functional testing technique performed to determine the system parameters in terms of responsiveness and stability under various workloads. Performance testing measures the quality attributes of the system, such as scalability, reliability and resource usage. |
| *Alpha Testing* | This type of testing will be conduct during the evaluation and dry run of the full system, and guaranteeing that the system is already efficient. The system will be validate and verified by the respondents from other office with the same function. Cronbach’s Alpha will used to make sure the stability and dependability of the questionnaire take on from ISO/IEC 25010: 2011 standard: security, accuracy, speed, reliability, efficiency, functionality, and usability. |
| *Beta Testing* | After the alpha testing, Beta testing will follow. The respondents will be the end users or client of the proposed system. This is to assure that the proposed system run into the desired requirements. Same questionnaire from ISO/IEC 25010: 2011 standard will used to evaluate the system. |

*Alpha Test Result*

Cronbach’s alpha is a statistic commonly quoted by authors to demonstrate that tests and scales that have been constructed or adopted for research projects are fit for purpose. Cronbach’s alpha has regularly adopted in studies in science education: it has referred to in 69 different papers published in four leading science education journals in a single year (2015)—usually as a measure of reliability (Taber, 2018). The Cronbach's alpha is the most generally utilized strategy for assessing inward consistency reliability. The proponents conducted a survey with 30 persons from clinic office staff and students in Eastern Visayas State University (EVSU) Tacloban City. The questionnaire take on from ISO/IEC 25010: 2011 standard:

**Table 9**: *Cronbach’s Alpha of item user “Security” category.*

Security

Cases

Valid

Excluded

Total

N

%

2

100.00

0

0.00

2

100.00

0.76

30

No. of items

Cronbach’s Alpha

Security Statistics

The Cronbach’s Alpha with reference to the “Security” of the Development of Web-Based Automated Document Record Management System for LNU Clinic is 0.76. This means that the deliberation of security of test items is enough to consider as reliable.

**Table 10:** *Cronbach’s Alpha of item user “Accuracy” category.*

Accuracy

Cases

Valid

Excluded

Total

N

%

2

100.00

0

0.00

2

100.00

0.81

30

No. of items

Cronbach’s Alpha

Accuracy Statistics

The table show that the Cronbach’s Alpha with reference to the “Accuracy” of the proposed system is 0.81. This means that the deliberation of accuracy of test items is enough to consider as reliable and consistent with other test items.

**Table 11:** *Cronbach’s Alpha of item user “Speed” category.*

Speed

Cases

Valid

Excluded

Total

N

%

2

100.00

0

0.00

2

100.00

0.75

30

No. of items

Cronbach’s Alpha

Speed Statistics

The Cronbach’s Alpha with reference to the “Speed” is 0.75. This interprets that the question given is enough and to be consider as reliable and consistent with other test items.

**Table 12:** *Cronbach’s Alpha of item user “Reliability” category.*

Reliability

Cases

Valid

Excluded

Total

N

%

2

100.00

0

0.00

2

100.00

0.82

30

No. of items

Cronbach’s Alpha

Reliability Statistics

In this table, show with reference to the “Reliability” is 0.82. This means that the deliberation of Reliability of test items is enough to consider as reliable and consistent with other test items.

**Table 13:** *Cronbach’s Alpha of item user “Efficiency” category.*

Efficiency

Cases

Valid

Excluded

Total

N

%

3

100.00

0

0.00

3

100.00

0.82

30

No. of items

Cronbach’s Alpha

Efficiency Statistics

The Cronbach’s Alpha with reference to the “Efficiency” is 0.82. This means that the deliberation of Efficiency of test items is enough to consider as reliable and consistent with other test items.

**Table 14:** *Cronbach’s Alpha of item user “Functionality” category.*

Functionality

Cases

Valid

Excluded

Total

N

%

3

100.00

0

0.00

3

100.00

0.80

30

No. of items

Cronbach’s Alpha

Functionality Statistics

In this table, show with reference to the “Functionality” is 0.82. This means that the deliberation ofFunctionality of test items is enough to consider as reliable and consistent with other test items.

**Table 15:** *Cronbach’s Alpha of item user “Usability” category.*

Usability

Cases

Valid

Excluded

Total

N

%

9

100.00

0

0.00

9

100.00

0.96

30

No. of items

Cronbach’s Alpha

Usability Statistics

The Cronbach’s Alpha with reference to the “Usability” is 0.96. This means that the deliberation of Usability of test items is enough to consider as reliable and consistent with other test items.

To get the overall Cronbach’s Alpha in evaluating and testing the system, the proponents use the following formula:

(*Cronbach’s Alpha Value of Security* **(0.76)** + *Cronbach’s Alpha Value of Accuracy* **(0.81)** + *Cronbach’s Alpha Value of Speed* **(0.75)** + *Cronbach’s Alpha Value of Reliability* **(0.82)** +*Cronbach’s Alpha Value of Efficiency* **(0.82)** +*Cronbach’s Alpha Value of Functionality* **(0.80)** + *Cronbach’s Alpha Value of Usability* **(0.96)** ) / *Number of all categories* ***(*7)** = **0.81** is the overall result.

*Beta Test Result*

After alpha is beta testing. The last phase of evaluating the system. Beta testing are actual users or client and conduct another evaluation or testing of the proposed system for the beta test as the final assessment. This also means it is the first chance for full security and reliability testing. The respondents for dry run of the system are the clinic staff and students in Leyte Normal University (LNU) Tacloban City. The same questionnaire take on from ISO/IEC 25010: 2011 standard:

To determine the respondent’s evaluation on the system, the researcher used the scale below as indicator to define the description.

**Table 16**: *Five Point Likert Scale*

|  |  |
| --- | --- |
| **Limit of Scale** | **Description** |
| 4.21 – 5.0 | Fully Functional |
| 3.21 – 4.20 | Mostly Functional |
| 2.61 – 3.20 | Functional |
| 1.81 – 2.60 | Slightly Functional |
| 1.0 – 1.8 | Not Functional |

**Table 17**: *Qualitative Question and Description on Security*

|  |  |  |  |
| --- | --- | --- | --- |
| **Questioner** | **N** | **Mean** | **Interpretation** |
| 1. Authorized users can access the system. | 30 | 4.16 | Mostly Functional |
| 1. All records are secure. | 30 | 4.20 | Fully Functional |
| **Overall Mean** |  | **4.18** | **Mostly Functional** |

The table shows the “Security” of the developed system based on the given question in ISO/IEC 25010: 2011 standard: which received an overall mean of 4.18 indicates as “Fully Functional” that the system has meet the intentions. Moreover, highlighting that the respondents who tested the system security are generally approve. This indicates that operation would be effective to the functionalities of the system.

**Table 18**: *Qualitative Question and Description on Accuracy*

|  |  |  |  |
| --- | --- | --- | --- |
| **Questioner** | **N** | **Mean** | **Interpretation** |
| 1. The records have updated information. | 30 | 4.23 | Fully Functional |
| 1. The system gives complete information. | 30 | 4.16 | Mostly Functional |
| **Overall Mean** |  | **4.20** | **Mostly Functional** |

The table shows the “Accuracy” of the developed system based on the given question in ISO/IEC 25010: 2011 standard: which received an overall mean of 4.20 indicates as “Mostly Functional” that the system has meet the intentions. Additionally, underlining that the respondents who tested the system accuracy are mostly approve. This indicates that operation would be effective to the functionalities of the system.

**Table 19**: *Qualitative Question and Description on Speed*

|  |  |  |  |
| --- | --- | --- | --- |
| **Questioner** | **N** | **Mean** | **Interpretation** |
| 1. Is the speed of the system is good. | 30 | 4.20 | Fully Functional |
| 1. Is the system is interconnected per departments. | 30 | 4.23 | Mostly Functional |
| **Overall Mean** |  | **4.21** | **Mostly Functional** |

The table shows the “Speed” of the developed system based on the given question in ISO/IEC 25010: 2011 standard: which received an overall mean of 4.21 indicates as “Fully Functional” that the system has meet the intentions. In addition, highlighting that the respondents who tested the system speed are mostly approve. This indicates that operation would be effective to the functionalities of the system.

**Table 20**: *Qualitative Question and Description on Reliability*

|  |  |  |  |
| --- | --- | --- | --- |
| **Questioner** | **N** | **Mean** | **Interpretation** |
| 1. The fault in the system can be easy to identify. | 30 | 4.16 | Fully Functional |
| 1. The system quality is performing consistently well. | 30 | 4.23 | Mostly Functional |
| **Overall Mean** |  | **4.20** | **Mostly Functional** |

The table shows the “Reliability” of the developed system based on the given question in ISO/IEC 25010: 2011 standard: which received an overall mean of 4.20 indicates as “Mostly Functional” that the system has meet the intentions. Furthermore, emphasizing that the respondents who tested the system Reliability are mostly approve. This indicates that operation would be effective to the functionalities of the system.

**Table 21**: *Qualitative Question and Description on Efficiency*

|  |  |  |  |
| --- | --- | --- | --- |
| **Questioner** | **N** | **Mean** | **Interpretation** |
| 1. The system response time is appropriate. | 30 | 4.23 | Fully Functional |
| 1. The system execution is appropriate. | 30 | 4.26 | Fully Functional |
| 1. The system does what it meant to do | 30 | 4.20 | Mostly Functional |
| **Overall Mean** |  | **4.23** | **Fully Functional** |

The table shows the “Efficiency” of the developed system based on the given question in ISO/IEC 25010: 2011 standard: which received an overall mean of 4.23 indicates as “Fully Functional” that the system has meet the intentions. Also, highlighting that the respondents who tested the system efficiency are generally approve. This indicates that operation would be effective to the functionalities of the system.

**Table 22**: *Qualitative Question and Description on Functionality*

|  |  |  |  |
| --- | --- | --- | --- |
| **Questioner** | **N** | **Mean** | **Interpretation** |
| 1. Does the system provide useful information | 30 | 4.16 | Mostly Functional |
| 1. The records of the system are well organized | 30 | 4.23 | Fully Functional |
| 1. Does the system provide complete information | 30 | 4.20 | Mostly Functional |
| **Overall Mean** |  | **4.20** | **Mostly Functional** |

The table shows the “Functionality” of the developed system based on the given question in ISO/IEC 25010: 2011 standard: which received an overall mean of 4.20 indicates as “Fully Functional” that the system has meet the intentions. Additionally, underlining that the respondents who tested the system functionality are generally approve. This indicates that operation would be effective to the functionalities of the system.

**Table 23**: *Qualitative Question and Description on**Usability*

|  |  |  |  |
| --- | --- | --- | --- |
| **Questioner** | **N** | **Mean** | **Interpretation** |
| 1. I feel comfortable using this system | 30 | 4.16 | Mostly Functional |
| 1. It was easy to learn on how to use this system | 30 | 4.23 | Fully Functional |
| 1. The records of the system well organized | 30 | 3.93 | Mostly Functional |
| 1. The system is unique and paperless | 30 | 4.03 | Mostly Functional |
| 1. The system track all the records of the process documents | 30 | 4.13 | Mostly Functional |
| 1. The information provided for the system is easy to understand | 30 | 4.23 | Fully Functional |
| 1. The record system was easily to find the old and new patient | 30 | 4.20 | Mostly Functional |
| 1. The system is not low processing | 30 | 4.36 | Mostly Functional |
| 1. It was simple to use this system | 30 | 4.60 | Mostly Functional |
| **Overall Mean** |  | **4.21** | **Mostly Functional** |

The table shows the “Usability” of the developed system based on the given question in ISO/IEC 25010: 2011 standard: which received an overall mean of 4.21 indicates as “Fully Functional” that the system has meet the intentions. Moreover, highlighting that the respondents who tested the system usability are mostly approve. This indicates that operation would be effective to the functionalities of the system.

**Implementation**

Once this system implemented to the designated client, proponents will conduct again an interview to the LNU Clinic regardless what are their advice effect of the proposed system especially to the user who will operate the system. Development of record management system can be approach using waterfall model. The waterfall model is a popular version of the systems development life cycle model for software engineering. Often considered the classic approach to the systems development life cycle, the waterfall model describes a development method that is linear and sequential. Waterfall development has distinct goals for each phase of development. Once a phase is completed, the development proceeds to the next phase and there is no turning back.

The advantage of waterfall development is that it allows for departmentalization and managerial control. A schedule can be set with deadlines for each stage of development and a product can proceed through the development process like a car in a car wash, and theoretically, be deliver on time. Development moves from concept, through design, implementation, testing, installation, troubleshooting, and ends up at operation and maintenance.

**Maintenance**

The maintenance phase involves making changes to hardware, and software to support its operational effectiveness. The researcher includes making changes to improve a system's performance, correct problems, enhance security, or address user requirements. To ensure modifications do not disrupt operations or degrade a system's performance or security, organizations should establish appropriate change management standards and procedures.

**Test Plan**

The proponents develop a Development of Web Based Electronic Medical Records Management System for Leyte Normal University to make their recording operation fast, reliable, easy to use and safe. The output of the system will result a good functional software and hardware. The user should be friendly so that it will not be hard for the user to use. The purpose of this test is to know or to find out the capabilities and the limitation of the proposed system and the system test is only focusing the behavior of the proposed system. Generally, the system will be test and verify that meets requirements needed by the user.

**Security Plan**

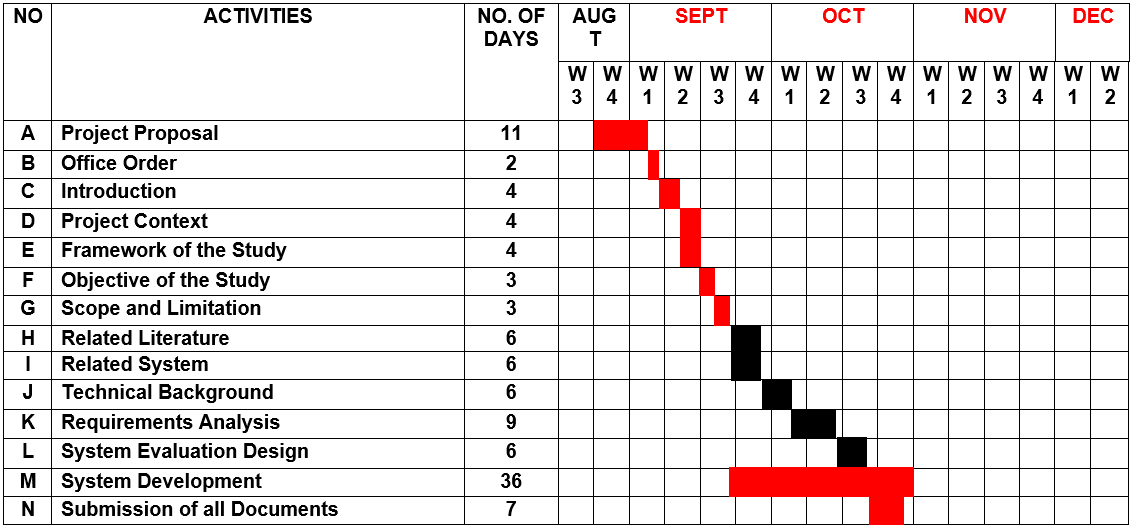
Health information privacy is important to a clinic. Clinic management system provides a secure way towards the health information by restrict the access right to authority user only. Only the authorized user such as doctor could access to the health history. The proponents made the operation of the proposed system secured, organized, easy to use and safe from any manipulation to come up with an effective security plan. Login produced to make this plan be in action, it includes the username and the password for the system.

**Maintenance Plan**

The MIS will be in control in maintaining the system and comprehending errors that could appear within or after the arrangement since the employees in the MIS are knowledgeable in programming and databases. The MIS will assume responsibility on database reinforcement and reestablishment to stay away from loss of information in the framework.

**GANTT CHART OF ACTIVITIES: Development of Web Based Automated document Records Management System for Leyte Normal University Clinic**

**Table 24:** *Gantt chart Activities*

****

**Legend:**

|  |  |
| --- | --- |
|  | **Critical Path** |
|  | **On-time** |

**Table 25*:*  Development of Web Based Automated Document Records Management System for Leyte Normal University Clinic** *Activity List*

|  |  |  |  |
| --- | --- | --- | --- |
| **Activity No.** | **Activities** | **Number of Days** | **Predecessor/s** |
| A | Project Proposal | 11 | - |
| B | Office Order | 2 | A |
| C | Introduction | 4 | B |
| D | Project Context | 4 | C |
| E | Framework of the Study | 4 | C |
| F | Objective of the Study | 3 | D,E |
| G | Scope and Limitation | 3 | F |
| H | Related Literature | 6 | G |
| I | Related System | 6 | G |
| J | Technical Background | 6 | H, I |
| K | Requirements Analysis | 9 | J |
| L | System Evaluation Design | 6 | K |
| M | System Development | 36 | G |
| N | Submission of all Documents | 7 | L |

**PERT CHART OF ACTIVITIES:**

|  |  |  |
| --- | --- | --- |
| 0 | **A** | 11 |
| 0 | 11 | 11 |

|  |  |  |
| --- | --- | --- |
| 13 | **C** | 17 |
| 13 | 4 | 17 |

|  |  |  |
| --- | --- | --- |
| 11 | **B** | 13 |
| 11 | 2 | 13 |

|  |  |  |
| --- | --- | --- |
| 17 | **E** | 21 |
| 17 | 4 | 21 |

|  |  |  |
| --- | --- | --- |
| 17 | **D** | 21 |
| 17 | 4 | 21 |

|  |  |  |
| --- | --- | --- |
| 21 | **F** | 24 |
| 21 | 3 | 24 |

|  |  |  |
| --- | --- | --- |
| 24 | **G** | 27 |
| 24 | 3 | 27 |

|  |  |  |
| --- | --- | --- |
| 27 | **H** | 33 |
| 36 | 6 | 42 |

|  |  |  |
| --- | --- | --- |
| 27 | **I** | 33 |
| 36 | 6 | 42 |

|  |  |  |
| --- | --- | --- |
| 27 | **M** | 63 |
| 27 | 36 | 63 |

|  |  |  |
| --- | --- | --- |
| 33 | **J** | 39 |
| 42 | 6 | 48 |

|  |  |  |
| --- | --- | --- |
| 39 | **K** | 48 |
| 48 | 9 | 57 |

|  |  |  |
| --- | --- | --- |
| 48 | **L** | 54 |
| 57 | 6 | 63 |

|  |  |  |
| --- | --- | --- |
| 63 | **N** | 70 |
| 63 | 7 | 70 |

**Legend:** Critical Path: **A**, **B, C, D, E, F, G, M and N**

|  |  |
| --- | --- |
|  | **Critical Path** |
|  | **On-time** |

|  |  |  |
| --- | --- | --- |
| **ES** | **Activity** | **EF** |
| **LS** | **No. of Days** | **LF** |

**Context Diagram (Proposed System)**

User Account Approval

Admin

Account Details

Backup data

Maintaining

Consultation Findings

Patient Details

Dentist

User Details

/

LEYTE

NORMAL

UNIVERSITY

CLINIC

AUTOMATED RECORD MANAGEMENT

SYSTEM

(LNU-CMS)

Confirmation

User Account Approval

User Account Request

/

User Details

/

Dental Staff

Dental Equipment Report

Medicine Details

Patient Details

Set Schedule

t Details

User Details

/

Doctor

Dental Record

Set Schedule

Patient’s Report

/

Medicine Stock Report

/

Dental Equipment Stock Report

/

Pending request

Medical Equipment Details

/

Medical Entries

/

Nurse

User Account Approval

Medical Record

/

User Details

/

Medical Entries

/

Patient Details

/

Medical & Physical Examination Result

/

Medicine Details

/

Medical Equipment Stock Report

/

Medicine Stock Report

/

Medical Record

/

Diagnosis Report

/

Patient’s Report

/

User Details

/

User Account Approval

Dental Record

**Data Flow Diagram (Proposed System)**

Level 1- Process 1.0

User Account

1.0

LNU-CMS DB

LNU-CMS DB

Personal Information

Username & Password

Confirmationation

Personal Information

Username & Password

Username & Password

Confirmation

Doctor/Dentist

Medical/Dental

Staff

Personal Information

Admin

Confirmation

Registration Request

Registration Request

Level 1- Process 2.0

Username & Password

LNU-CMS DB

User Accountation

Username & Password

Username & Password

User Account

Doctor/Dentist

Medical/Dental

Staff

2.0

Login

Admin

Date & Time

User Log in

User Account

LNU-CMS DB

Level 1- Process 3.0

LNU-CMS DB

Medical Record List

Medical Record Entries

3.0

Doctor

Updated Medical Record

Medical Record Entries

Manage Medical & Dental Record

Medical Staff

Dentist

Updated Dental Record

Dental Record Entries

Dental Staff

Dental Record List

Dental Record Entries

LNU-CMS DB

Level 1-Process 4.0

Medical & Physical Examination Result

LNU-CMS DB

Patient Data

4.0

Diagnosis Report

Manage Medical Patient

Nurse

Patient

Data

7

Doctor

Patient’s Report

7

Doctor

Medical & Physical Examination Result

7

Patient Record

7

Level 1- Process 5.0

Medical & Physical Examination Result

LNU-CMS DB

Patient Data

5.0

Diagnosis Report

Manage Dental Patient

Set Schedule

7

Dental Staff

Patient Data

7

Dentist

Patient’s Report

7

Consultation Findings

7

Doctor

Patient Record

7

Level 1-Process 6.0

LNU-CMS DB

Equipment Details

7

Medicine Supply Details

7

6.0

Manage Medicine Supply & Equipment

Medicine

Supply Details

7

Doctor/Dentist

Supply/Equipment Report

7

Medical/Dental

Staff

Equipment Details

7

Equipment Used

7

Doctor/Dentist

Medicine Supply Used

7

**System Flowchart**

*Patient Profile and Registration Maintenance (Medical & Dental)*

Start

Login

Verify username & password

Error message

Select patient profile

Fill patient registration

Press submit button

Verify all input data format

Successful input

Error message

End

A

Enter username & password

Add new patient

Saved

Display Login Form

Homepage

Display Patient Profile

Display Registration Form

Yes

No

Yes

No

Updated

A

Verify the patient ID

Error message

Update record

Delete record

Confirmation message

Press delete button

Successful

Press save button

Verify patient detail

Error message

Successful

End

Update patient detail

Search Patient ID/Barcode Scanner

Display Patient Record

Display Patient Record

No Yes

No Yes

*Staff Profile Maintenance (Medical and Dental)*

**Admin**

Display Login Form

Homepage

Display Staff Profile

Display Registration Form

Start

Login

Verify username & password

Error message

Enter username & password

Select staff profile

Add new staff

Fill registration form

Press add button

Verify all data input

Successful

Error message

End

B

Saved

Admin Verification

Yes

No

No Yes

B

Verify the staff

Error message

Update staff profile

Delete staff record

Confirmation message

Press delete button

Successful

Press save button

Verify staff detail

Error message

Successful

End

Update staff detail

Updated

Search Staff Record

Display Staff Record

Display Staff Profile

Yes

No

Yes

No

*Patient History Maintenance (Medical & Dental)*

Consultation/Checkup

Start

Login

Verify username & password

Error message

Enter username & password

Select patient history

Add new history record

Fill new history record

Press add button

Verify all data input

Error message

End

Updated

Request Certificate?

Display Login Form

Homepage

Display Patient History Page

Display new History Record

Print

Prescription/medicine

No Yes

Yes

No

*Inventory Maintenance (Medical & Dental)*

Start

Login

Verify username & password

Error message

Enter username & password

Select Inventory Page

Add new item

Fill item form

Press add button

Verify all data input

Successful

Error message

End

C

Saved

Display Login Form

Homepage

Display Inventory Page

Display new item form

No Yes

No Yes

C

Verify the item

Error message

Update item record

Delete item record

Confirmation message

Press delete button

Successful

Press save button

Verify item detail

Error message

Successful

End

Update item detail

Updated

Search/Select item

Display item record

Display inventory record

Print report

No Yes

No Yes

*Report Generation Maintenance (Medical & Dental)*

Start

Login

Verify username & password

Error message

Enter username & password

End

Number of patient 0

Select record

Record

Number of diagnosis

Select list

Record

Inventory

Item list

Record

Print list

Print list

Print record

Display Login Form

Homepage

Yes

No

No

No No

Yes Yes Yes

**Input-Process-Output Diagram**

|  |  |
| --- | --- |
| **Process:** StudentPre-Registration | |
| **Program:** Automated Document Record Management System for LNU Clinic | **Reference No.:** 1.0 |
| Pending Record  Verify Information  Personal Information  **INPUT**  **OUTPUT**  **PROCESS** | |

|  |  |
| --- | --- |
| **Process:** User Accounts | |
| **Program:** Automated Document Record Management System for LNU Clinic | **Reference No.:** 2.0 |
| User List Information  Verify Admin  Personal Accounts  **INPUT**  **OUTPUT**  **PROCESS** | |

|  |  |
| --- | --- |
| **Process:** User Login | |
| **Program:** Automated Document Record Management System for LNU Clinic | **Reference No.:** 3.0 |
| Dashboard  Validate Authorizations  Username Password  **INPUT**  **OUTPUT**  **PROCESS** | |

|  |  |
| --- | --- |
| **Process:** Registered Record | |
| **Program:** Automated Document Record Management System for LNU Clinic | **Reference No.:** 4.0 |
| List of Student Registered  Accept new student info  User Accounts  **INPUT**  **OUTPUT**  **PROCESS** | |

|  |  |
| --- | --- |
| **Process:** Manage User/Admin | |
| **Program:** Automated Document Record Management System for LNU Clinic | **Reference No.:** 5.0 |
| List of User  Save to Database  User Information  **INPUT**  **OUTPUT**  **PROCESS** | |

|  |  |
| --- | --- |
| **Process:** StudentProfile | |
| **Program:** Automated Document Record Management System for LNU Clinic | **Reference No.:** 6.0 |
| Student Profile  Verify data in Database  Student ID  **INPUT**  **OUTPUT**  **PROCESS** | |

|  |  |
| --- | --- |
| **Process:** Search Patient | |
| **Program:** Automated Document Record Management System for LNU Clinic | **Reference No.:** 7.0 |
| Patient Record  Validate Patient ID  Patient ID  **INPUT**  **OUTPUT**  **PROCESS** | |

|  |  |
| --- | --- |
| **Process:** Manage Record | |
| **Program:** Automated Document Record Management System for LNU Clinic | **Reference No.:** 8.0 |
| Update Patient Record  Updated Health Record  User ID/Patient ID  **INPUT**  **OUTPUT**  **PROCESS** | |

|  |  |
| --- | --- |
| **Process:** Patient History | |
| **Program:** Automated Document Record Management System for LNU Clinic | **Reference No.:** 9.0 |
| Patient History Record  Consultation  User ID/Patient ID  **INPUT**  **OUTPUT**  **PROCESS** | |

|  |  |
| --- | --- |
| **Process:** View Records | |
| **Program:** Automated Document Record Management System for LNU Clinic | **Reference No.:** 10 |
| List of Records  Get Records from Database  User ID/Record Type  **INPUT**  **OUTPUT**  **PROCESS** | |

|  |  |
| --- | --- |
| **Process:** Inventory | |
| **Program:** Automated Document Record Management System for LNU Clinic | **Reference No.:** 11 |
| Updated Inventory Record  Update Inventory Record  User Accounts  **INPUT**  **OUTPUT**  **PROCESS** | |

|  |  |
| --- | --- |
| **Process:** Generate Reports | |
| **Program:** Automated Document Record Management System for LNU Clinic | **Reference No.:** 12 |
| Print Reports  Select Document Records  User Accounts  **INPUT**  **OUTPUT**  **PROCESS** | |

**Program Considerations/Issues/Tools**

**Program Consideration**

* The system should base on the current system of LNU clinic.
* The system must be user friendly.
* The system should have a database that stores and monitor registered users and records of patients.
* The assign staff and the doctor must be train well regarding the system itself.
* The structure and flow of the system should easy to navigate.
* Security and validation should implied.

**Program Issues**

The LNU clinic Automated Document Record Management System provides a way to managing patient health record. To replace from processing of manual to computerized document record system by adding, retrieving, keeping and storing information. However, sustaining the system is another issue. There are limitations in order to use the system.

*Skill of Users*

Teaching and training the user on how to use the system is required in the implementation. Although, technology oriented people will find it easy to use the system.

*Device Specification*

To attain best result in using the system, the researchers recommended the users to use computer/laptop that meets the required specification to avoid inaccuracy on recording patient records and the server decision support.

**Program Tools**

* PHP (Hypertext Preprocessor) - is an HTML-embedded Web scripting language. This means PHP code can be insert into the HTML of a Web page. When a [PHP page](https://fileinfo.com/extension/php) is accessed, the PHP code is read or "parsed" by the server the page resides on, the output from the PHP functions on the page are typically returned as HTML code, which can be read by the browser. Because the PHP code is transform into HTML before the page is loaded, users cannot view the PHP code on a page. This make PHP pages secure enough to access databases and other secure information.
* XAMPP - is a free and open-source cross-platform web server solution stack package developed by Apache Friends, consisting mainly of the Apache HTTP Server, MariaDB database, and interpreters for scripts written in the PHP and Perl programming languages.
* Visual Studio Code - is a [source-code editor](https://en.wikipedia.org/wiki/Source-code_editor) developed by [Microsoft](https://en.wikipedia.org/wiki/Microsoft) for [Windows](https://en.wikipedia.org/wiki/Windows), [Linux](https://en.wikipedia.org/wiki/Linux) and [macOS](https://en.wikipedia.org/wiki/MacOS). It includes support for [debugging](https://en.wikipedia.org/wiki/Debugging), embedded [Git](https://en.wikipedia.org/wiki/Git) control and [GitHub](https://en.wikipedia.org/wiki/GitHub), [syntax highlighting](https://en.wikipedia.org/wiki/Syntax_highlighting), [intelligent code completion](https://en.wikipedia.org/wiki/Intelligent_code_completion), [snippets](https://en.wikipedia.org/wiki/Snippet_(programming)), and [code refactoring](https://en.wikipedia.org/wiki/Code_refactoring). The source code is [free and open source](https://en.wikipedia.org/wiki/Free_and_open_source) and released under the permissive [MIT License](https://en.wikipedia.org/wiki/MIT_License). The compiled binaries are [freeware](https://en.wikipedia.org/wiki/Freeware) and free for private or commercial use.
* Bootstrap - is a [free and open source](https://whatis.techtarget.com/definition/Free-and-open-source-software-FOSS-or-free-libre-open-source-software-FLOSS) [front-end](https://whatis.techtarget.com/definition/front-end) development framework for the creation of websites and [web apps](https://searchsoftwarequality.techtarget.com/definition/Web-application-Web-app). The Bootstrap framework is built on [HTML](https://www.theserverside.com/definition/HTML-Hypertext-Markup-Language), [CSS](https://www.theserverside.com/definition/cascading-style-sheet-CSS), and JavaScript ([JS](https://www.theserverside.com/definition/JavaScript)) to facilitate the development of [responsive](https://whatis.techtarget.com/definition/responsive-design), [mobile-first](https://searchmobilecomputing.techtarget.com/definition/mobile-first) sites and apps.
* JavaScript - is a [programming language](https://techterms.com/definition/programming_language) commonly used in [web development](https://techterms.com/definition/web_development). It was originally developed by Netscape as a means to add dynamic and interactive elements to websites. While JavaScript is influenced by [Java](https://techterms.com/definition/java), the [syntax](https://techterms.com/definition/syntax) is more similar to [C](https://techterms.com/definition/cplusplus) and is based on ECMAScript, a scripting language developed by Sun Microsystems.
* CSS - Stands for "Cascading Style Sheet." Cascading style sheets are used to format the layout of [Web pages](https://techterms.com/definition/webpage). They can be used to define text styles, table sizes, and other aspects of Web pages that previously could only be defined in a page's [HTML](https://techterms.com/definition/html).
* CodeIgniter - is a powerful PHP framework with a very small footprint, built for developers who need a simple and elegant toolkit to create full-featured web applications.

**Software Requirements Specification**

* Operating System – Windows 7 up to latest version
* Browser: Google Chrome, Firefox
* Web Server: XAMPP

The system is develop such as HTML, CSS, JavaScript, Bootstrap, Visual Studio Code, PHP, and Codelgniter.

**Hardware Requirements Specification**

* Hard Disc Space minimum of 2GB for installation
* 2GB RAM recommended and above
* Intel core i3-2.4 GHZ processor
* Desktop Computer

**System Evaluation Design**

To describe the idea of scaling for every question: Likert scale. A five point scaling was used, so for the respondents to avoid confusion on answering and to provide a precise evaluation of every question in the evaluation. A Likert scale is psychometric scale questioner generally used in questionnaires, which are commonly use in survey research because it is a suitable way of giving meaning to the feedback of the respondents.

*Instrument*

The proponents design a questionnaire by way of the key information-gathering instrument for this study. By means of ISO/IEC 25010:2011 and revised according to the characteristics of system the survey questionnaire was aim to answer the objectives of the study. Questions has seven categories with different sections namely security, accuracy, speed, reliability, efficiency, functionality, and usability. First is security which degree to which a product or system protects information and data so that persons or other products or systems have the degree of data access appropriate to their types and levels of authorization. Second is accuracy, which is the closeness of agreement between a test result and the accepted reference value. Third is speed, which the ability to measure the speedand to automatically locate and estimate the stages of the system and evaluation process. Fourth is reliability which is the degree to which a system, product or component performs specified functions under specified conditions for a specified period. Fifth is efficiency resources expended in relation to the accuracy and completeness with which users achieve goals. Sixth is functionality which a set of attributes that bear on the existence of a set of functions and their specified properties. The functions are those that satisfy stated or implied needs. And last is usability degree to which a product or system can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use

The instrument was structure in the modified Likert fashion, on a 5–point scale, ranging from the table below:

**Table 26**: *Five Point Likert Scale*

|  |  |  |
| --- | --- | --- |
| **Rating** | **Description** | **Definition** |
| 5 | Fully Functional | All components and features operates without problems. |
| 4 | Mostly Functional | Most of the components and features function properly. |
| 3 | Functional | The system is functioning but some features are missing. |
| 2 | Slightly Functional | Major component or feature of the system is not working. |
| 1 | Not Functional | The system does not work. |

Subjects were instruct to respond to their degree of agreement with the statement contained in the instrument.

*Validation*

Validation is one type of testing which will test on whether the system can deal with an inappropriate information that entered by the client or not. It is likewise to guarantee that the information entered by the client is relevant and in the right organization. For this testing, we will test whether the system can deal with the information that entered by the client. To validate the internal consistency or reliability of the questionnaire, the researchers have conducted a Cronbach Alpha Testing and Beta Testing. Cronbach alpha is a measure used to assess the reliability, or internal consistency, of a set of scale or test items. In other words, the reliability of any given measurement refers to the extent to which it is a consistent measure of a concept, and Cronbach’s alpha is one way of measuring the strength of that consistency. Beta testing are real clients or customer and lead another assessment or testing of the proposed system for the beta test as the last evaluation. This also indicates as the primary possibility for full security quality testing. Most commonly used when you have multiple Likert questions in a survey/questionnaire that form a scale and you wish to determine if the scale is reliable. A researcher has devised a nine-question questionnaire to measure how safe people feel at work at an industrial complex.

The respondents are 30 who participated Alpha testing and evaluation test. These respondents are the doctor, nurse, staff and students from Eastern Visayas State University (EVSU) and 30 from Leyte Normal University (LNU) Tacloban City for Beta testing with the same kind of respondents. Each respondent has given a survey questionnaire that relies on our system. The proponents give their individual rating and comments in our system. Each question was a 5-point Likert item from "Fully Functional" to “Not Functional”. In order to understand whether the questions in this questionnaire all reliably measure the same latent variable

*Alpha Testing Result*

**Table 27**: *Cronbach’s Alpha Result*.

|  |  |
| --- | --- |
| **Categories** | **Cronbach’s Alpha Result** |
| Security | 0.76 |
| Accuracy | 0.81 |
| Speed | 0.75 |
| Reliability | 0.82 |
| Efficiency | 0.82 |
| Functionality | 0.80 |
| Usability | 0.96 |
| **Total Result** | **0.81** |

**Figure 3**: *Weighted of seven categories evaluated system (Alpha)*

To get the overall Cronbach’s Alpha in evaluating and testing the system, the proponents use the following formula:

(*Cronbach’s Alpha Value of Security* **(0.76)** + *Cronbach’s Alpha Value of Accuracy* **(0.81)** + *Cronbach’s Alpha Value of Speed* **(0.75)** + *Cronbach’s Alpha Value of Reliability* **(0.82)** +*Cronbach’s Alpha Value of Efficiency* **(0.82)** +*Cronbach’s Alpha Value of Functionality* **(0.80)** + *Cronbach’s Alpha Value of Usability* **(0.96)** ) / *Number of all categories* ***(*7)** = **0.81** is the overall result.

*Beta Testing Result*

**Table 28**: *Beta Testing Result*.

|  |  |  |
| --- | --- | --- |
| **Categories** | **Mean** | **Interpretation** |
| Security | 4.18 | Mostly Functional |
| Accuracy | 4.20 | Mostly Functional |
| Speed | 4.21 | Fully Functional |
| Reliability | 4.20 | Mostly Functional |
| Efficiency | 4.23 | Fully Functional |
| Functionality | 4.20 | Mostly Functional |
| Usability | 4.21 | Fully Functional |
| **Total Mean** | **4.20** | **Mostly Functional** |

**Figure 4**: *Weighted of seven categories evaluated system (Beta)*

*Data Gathering Procedure*

The study entitled Development of Web Based Automated Document Record Management System (ADRMS), a research study of Leyte Normal University Clinic. The researcher pursued permission to conduct a survey with the approval of the school doctor in the university. The researcher gathered data trough qualitative research method. The researcher created using suitable questions modified from related research and individual questions formed by the researchers. Here the researcher will review some documented patients health record from the records office in charge and probably from the doctors and nurse in charge of data management to get a picture of how data is stored. With this method, the researcher will get more information relating to the system such as the arrangement of the fields in the records, and the doctors diagnosing record update in the patients’ file. The researcher getting information on how the clinic organizes its data resources and the order in which the current system flows, the doctor and staff will be interviewed by asking questions on how the current system is working, which will enabled there searcher to recite areas of improvements and innovations in the current systems. Through observation, the researcher will also be able to find out if the files are normally return to their rightful places that is cabinets immediately after recording or checking any record.

*Statistical Tools*

The researcher was conduct Alpha testing and Beta testing for evaluating and assessment the system. The following are the result of Cronbach’s Alpha Reliability Assessment in testing the consistency of the instrument. The formula used to get the Cronbach’s Alpha is:

a = [k / (k – 1)] \* [1 – ( / ∑y)]

k = number of test items in the questionnaire

∑ = total sum of variance of all respondents per question

∑y = total sum of variance of all question per respondents

After Alpha, is Beta testing, to accomplish the point scaling for every question. Likert Scale, five point scaling was used for the respondents to avoid confusion on answering and to provide a precise assessment for every question given in the evaluation.

The researchers used the formula x = ∑ f w / n in computing the overall mean where:

x is the computed mean.

∑ f w is the sum of all the score in the set.

n is the total number of respondents.

The answers from the questionnaire were evaluated using descriptive statistics. Moreover, has used to determine the respondents’ evaluation and test of the system developed by the researchers. The scale below has used as an indicator to determine the qualitative description.

**Table 29**: *Five Point Likert Scale*

|  |  |
| --- | --- |
| **Limit of Scale** | **Description** |
| 4.21 – 5.0 | Fully Functional |
| 3.21 – 4.20 | Mostly Functional |
| 2.61 – 3.20 | Functional |
| 1.81 – 2.60 | Slightly Functional |
| 1.0 – 1.8 | Not Functional |

The researchers come-up with questions in survey questionnaire and each questionnaire lies on seven categories under ISO/IEC 25010:2011, which are:

* Security

Which degree to which a product or system protects information and data so that persons or other products or systems have the degree of data access appropriate to their types and levels of authorization.

* Accuracy

Which is the closeness of agreement between a test result and the accepted reference value.

* Speed

Which the ability to measure the speed and to automatically locate and estimate the stages of the system and evaluationprocess.

* Reliability

Which is the degree to which a system, product or component performs specified functions under specified conditions for a specified period.

* Efficiency

Resources expended in relation to the accuracy and completeness with which users achieve goals.

* Functionality

Which a set of attributes that bear on the existence of a set of functions and their specified properties. The functions are those that satisfy stated or implied needs.

* Usability

Degree to which a product or system can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use

**Chapter 5**

**Results and Discussions**

This chapter will discuss based on the overall point of view of the researchers, by accomplishing the design and develop an LNU Clinic Automated Document Record Management System. From the objectives stated in chapter 1, the researchers were able to achieve and meet their particular objectives. Below are the results and discussion with evidences.

**Results based on the Objectives of the Study**

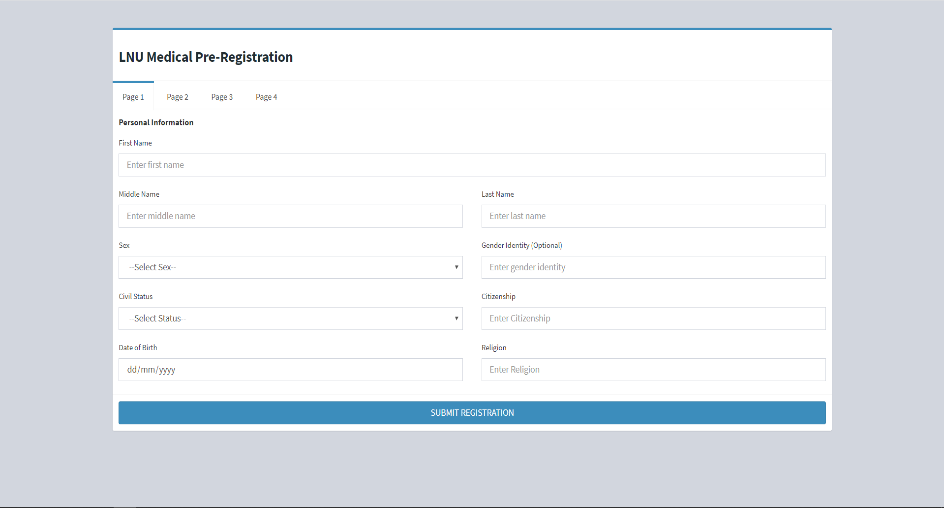
The major concern and target beneficiary of this proposed system are the students, faculty and staff in Leyte Normal University Clinic. The Leyte Normal University Clinic is currently using manual record keeping, it consumes a large amount of space when filing, this process relies heavily on the person-in-charge thus it is prone to damage and being misplaced. It is also not suitable for disasters, fire or natural disaster that could mean the loss of important information. It is difficult to make changes on the documents since only one needs to make a copy and to avoid edits the original information. To search for a file is time consuming if it is disorganize. Lowering the productivity by having to spend too much time dealing with this manual process, paper documents have a tendency to be less secure, a cabinet is less secure than a computer, which requires user credentials before accessing the needed file.

To reduce the paper works of the office and have a quick productivity system, one supposed solution is to have a Development of Web-Based Automated Document Record Management System.

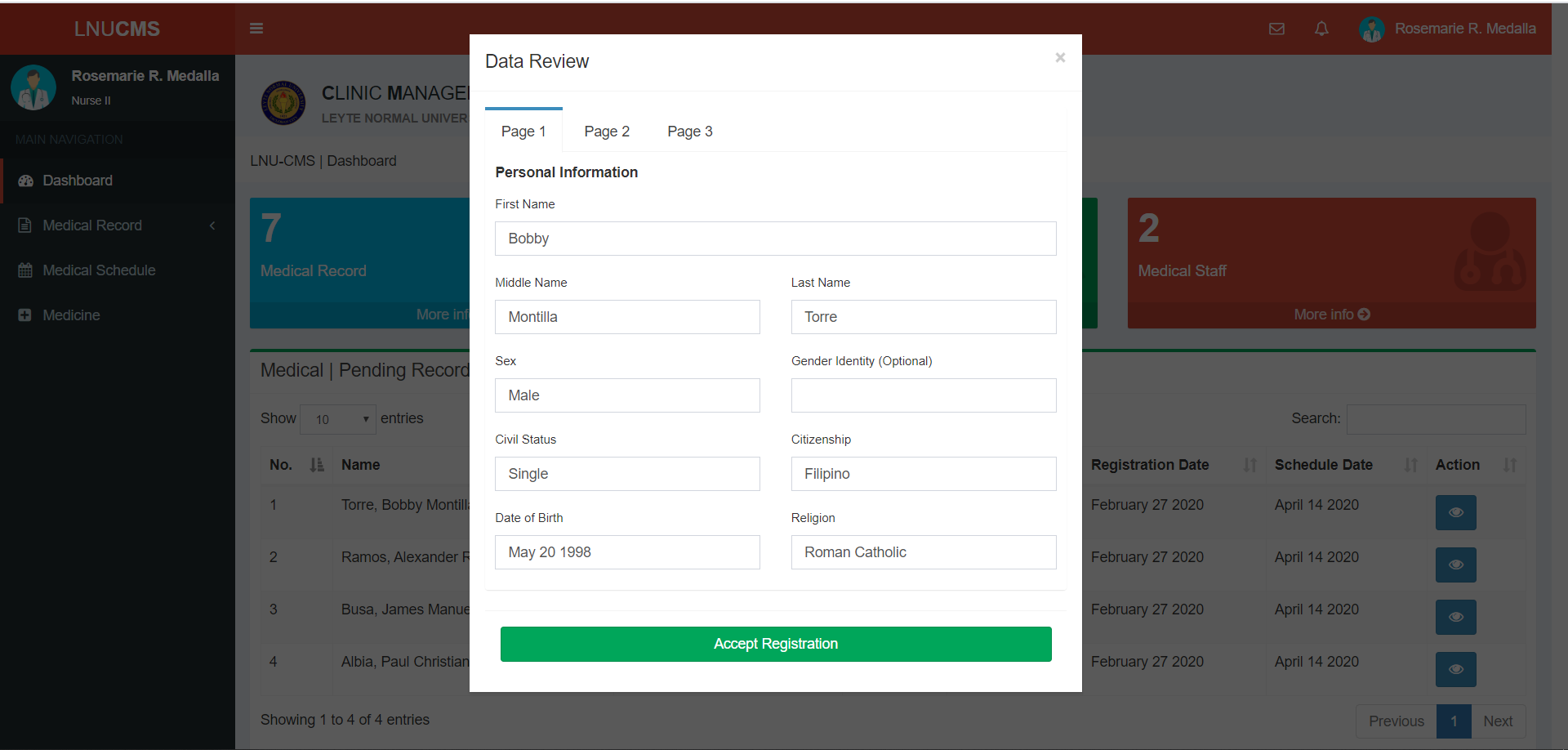
**1. Provide Pre-Registration of the student information record online.**

Online Registration system will helped a lot in reducing the errors resulted in different ways and which in turn afferent the correctness of the information itself (Ala'a, 2010). The online-collection of user information is becoming more and more popular due to its favorable economics in comparison with traditional methods of data collection. The practice of "online-registration" allows companies to force potential customers to fill out arbitrary forms as a prerequisite to granting some incentive (Neus, 2000).

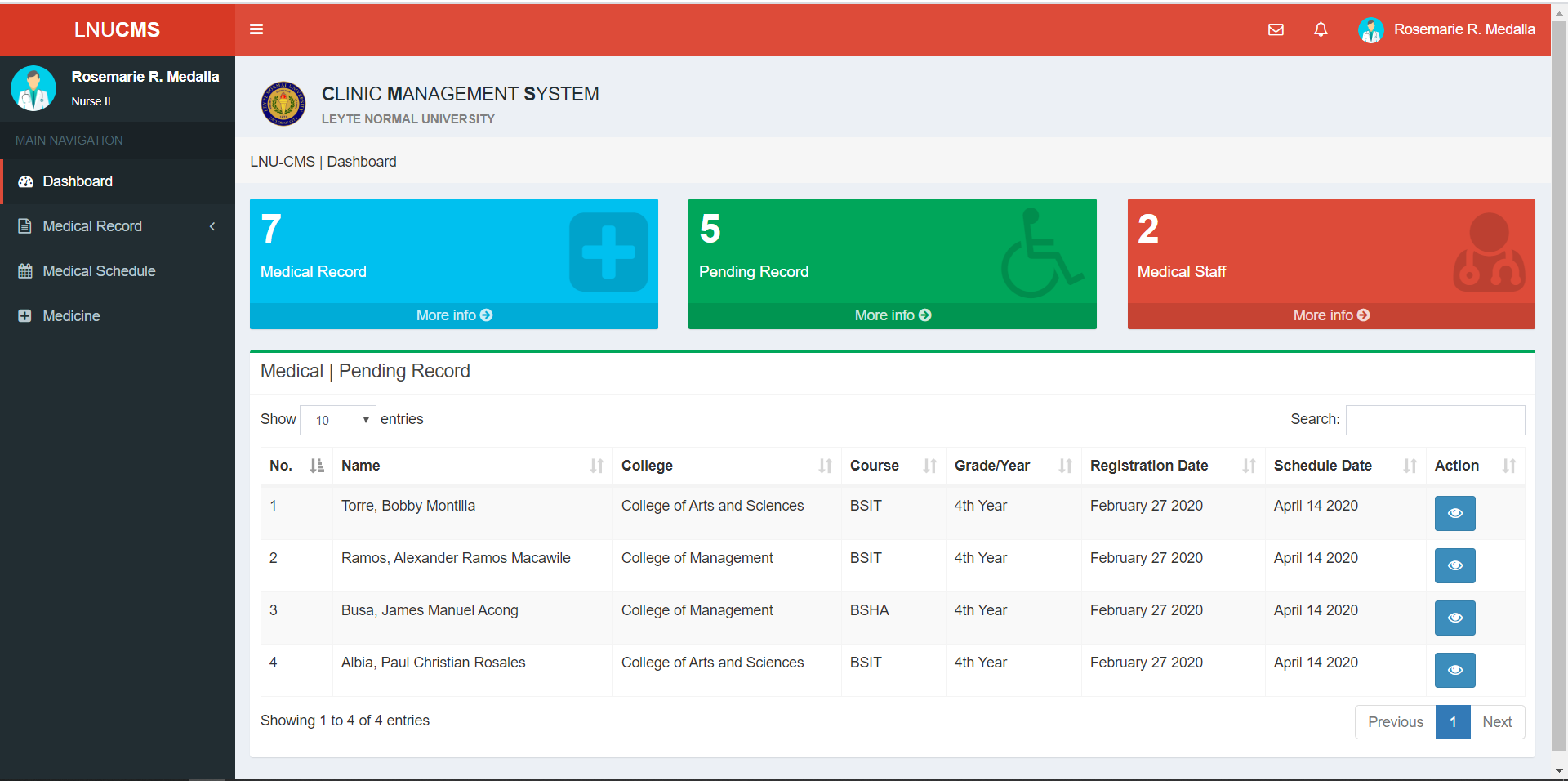
**Figure 5**: *Show the Pre-Registration Form of the student.*

**

**Figure 6**: *Show the Pre-Registration Form for data review.*

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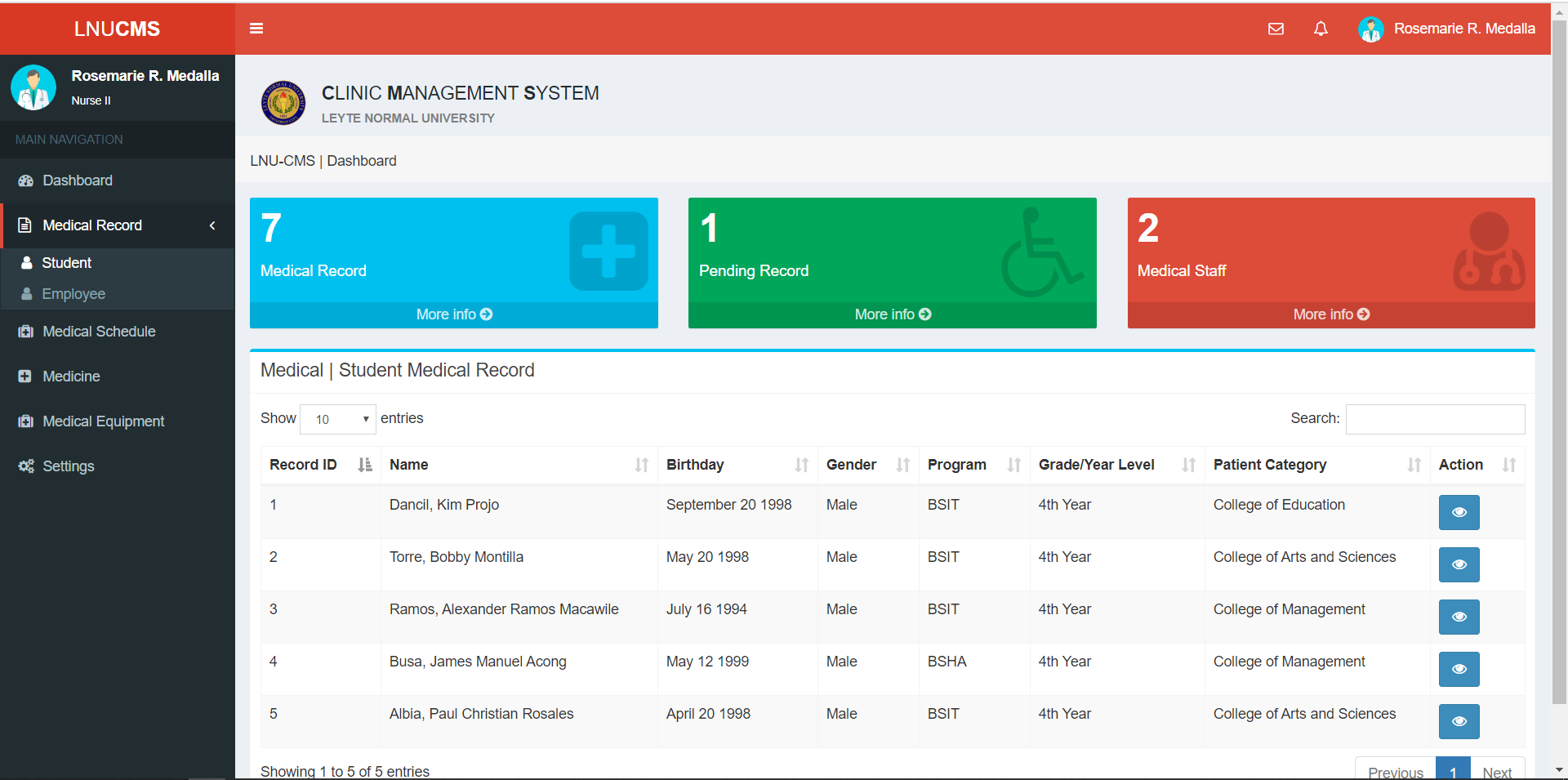
**Figure 7**: *Show the Pre-Registration Form for pending record.*

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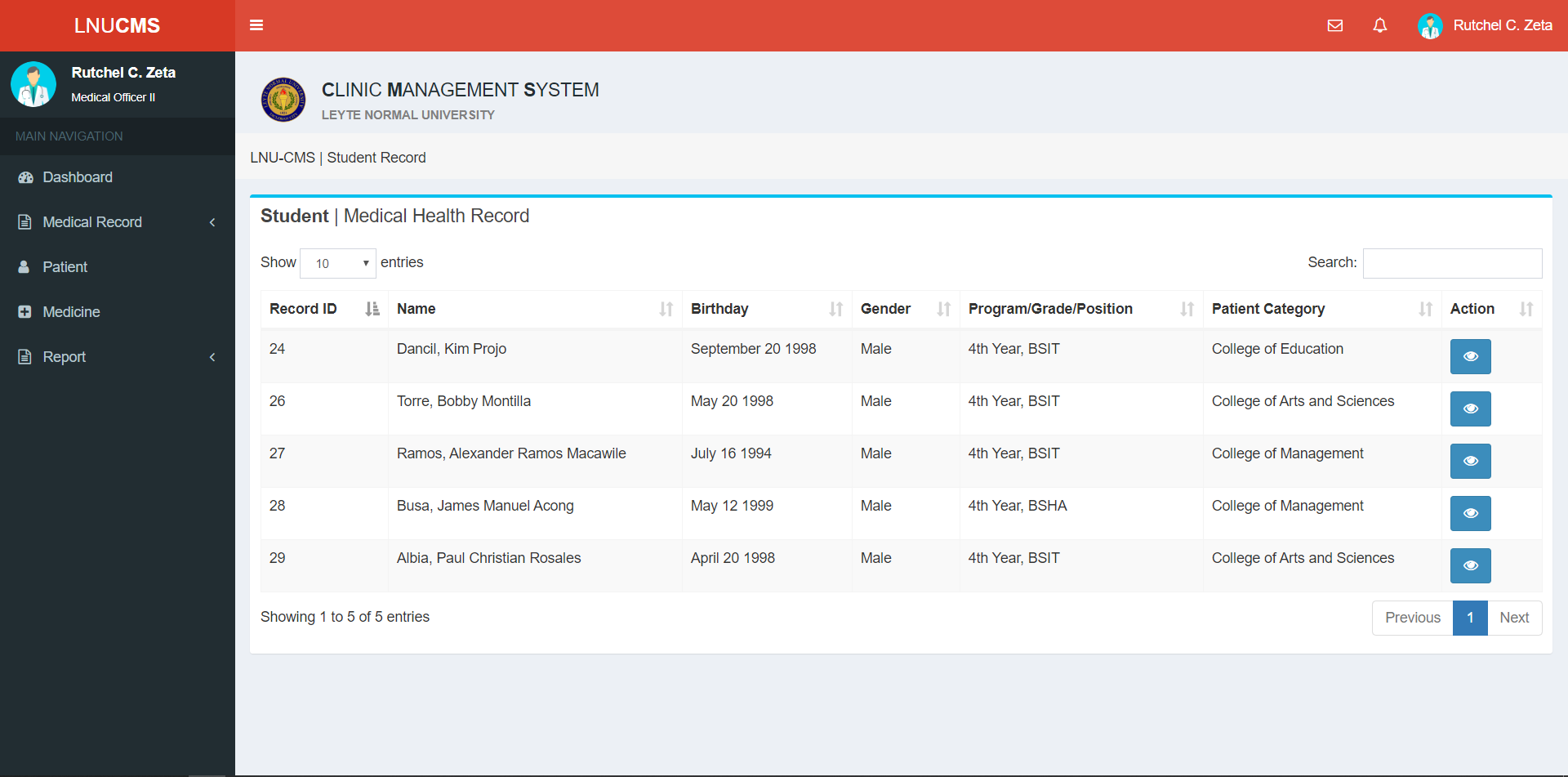
**2. Provide automated data, keeping organized and immediate response on searching data.**

A computer based records management system comprises an information filter for assuring that record data units offered to the system for storage are complete and not redundant. These record data units may be electronic in nature, Scanned from paper, digitally formed from audio, Video or otherwise formed as digital data information media, an objective of the disclosed System being to eliminate paper or microform record keeping (Johnson, 1998). A system for automatically collecting data from electronic documents that comprises a combination of functionalities, which include in particular a one-click automation system to navigate through the electronic documents. A query system to locate data through other systems on the network if present which may have already performed similar searches, filtered views of the electronic documents or pages, an automatic structure recognition system and a multi-purpose collection basket, which is a user database accepting polymorphic data (Combaz, 2008).

**Figure 8**: *Show the student registered information record.*

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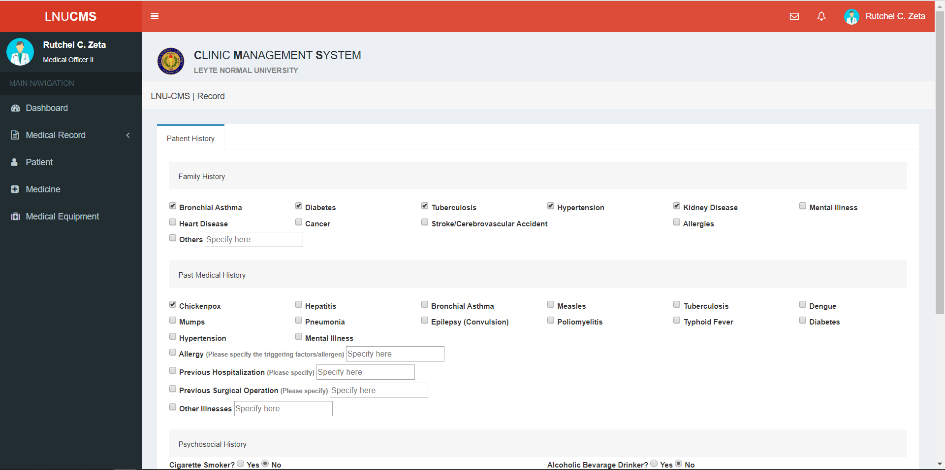
**Figure 9**: *Show the student health record.*

**

**3. Generate accurate reports such as number of patient, list of diagnosis, and list of medicine.**

A system and method for generating a report for a user, which allows the user to make decisions, without requiring the user to understand or interpret data itself. A method of creating data types and data relationships within a database for generating the report for the user includes the steps of organizing the data within the database into columns of tables. Providing a computer coupled to the database that executes an application program that generates the report, recording a business concept by the application program, recording an attribute associated with the business concept by the application program. Displaying a list of the columns of tables in the database by the computer. Recording a mapping of the attribute to one of the columns in the list, displaying a list of business indicators by the computer. Recording a mapping of one of the business indicators to the column, joining the attribute table with the business indicator table so that the application program can use the additional table to create the report (Anand, 1997).

**Figure 10**: *Show the patient history record.*



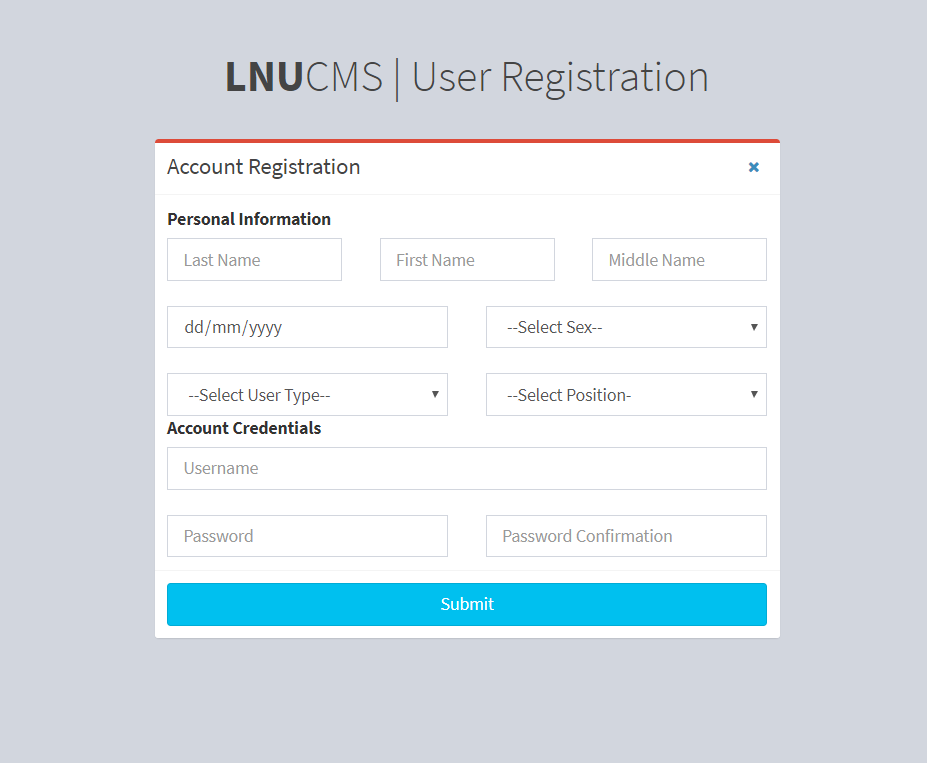
**Figure 11**: *Show the medicine inventory record.*

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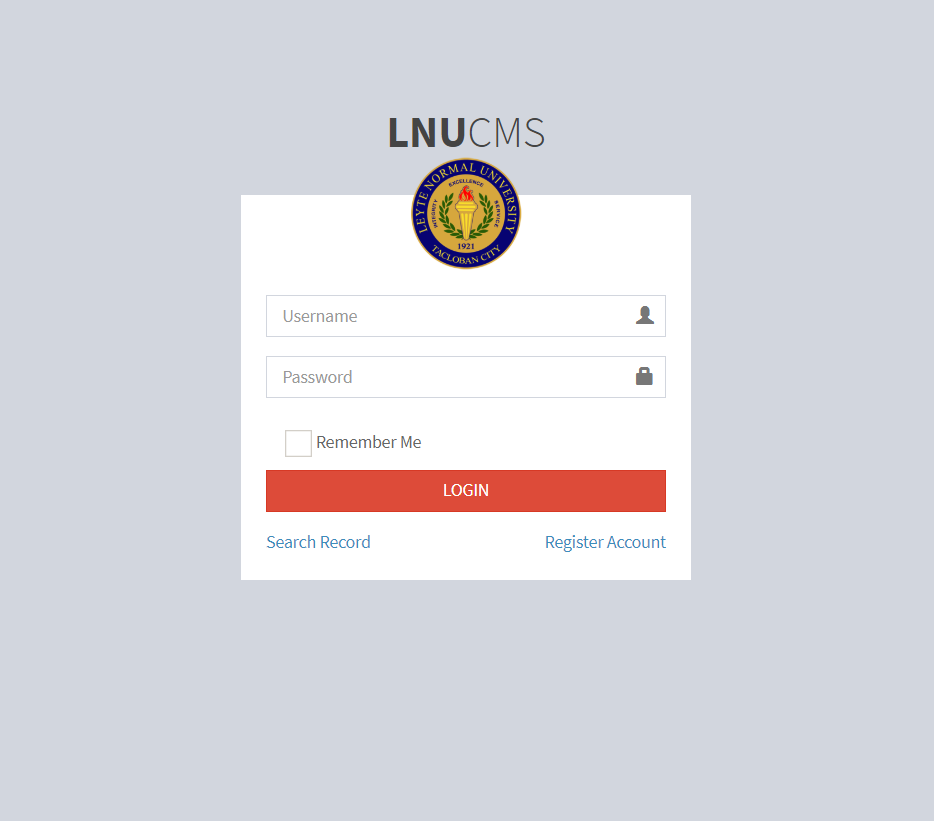
**4. Maintain the security of the data through the authentication of user accounts.**

A server utilizes authentication when the server has to know precisely who is getting to their data or site. Approval is a procedure by which a server decides whether the customer has consent to utilize an asset or access a document. Encryption includes the way toward changing information so any individual who does not have a decoding key confuses it. The most commonly used form of identification and authentication is the username–password entry method. Usernames provide a mechanism for confirming the user’s identity, or identification. Passwords used for authentication, establishing one’s identity for the purpose of access to systems and networks (Proctor, 2002).

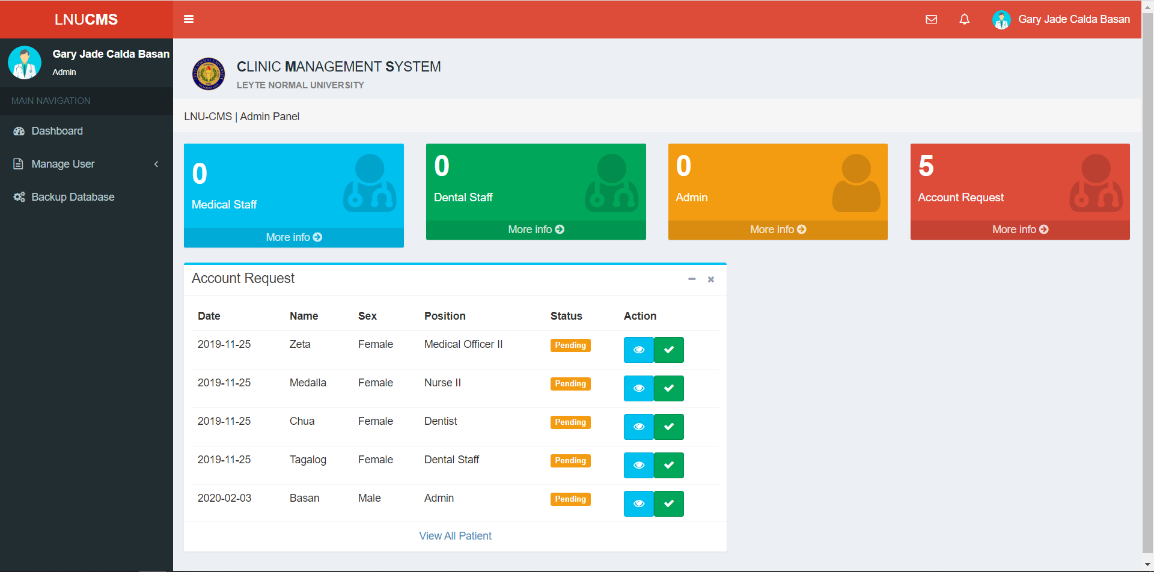
**Figure 12**: *Show the Registration Form for staff.*

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**Figure 13**: *Show the Login Form for staff.*

****

**Figure 14**: *Show the Admin dashboard.*

****

**5. To assessment, evaluate and fulfill the requirements of the client according to the discussion made by the researches based in ISO/IEC 25010: 2011 standard:**

The researchers conducted an evaluation among the respondents for a total of thirty personnel from Eastern Visayas State University (EVSU) Tacloban City for Alpha Testing and thirty respondent’s personnel from Leyte Normal University Tacloban City for Beta Testing. This kind of testing would evaluate and by means of gave recommendation to the system developed. The evaluation conduct, the question were based from the ISO/IEC 25010: 2011 standard: the question was categorized into seven (7): Security, Accuracy, Speed, Reliability, Efficiency, Functionality and Usability.

**Result of Testing Plan**

*Alpha Test Result*

**Figure 15**: *Weighted of seven categories evaluated system.*

To get the overall Cronbach’s Alpha in evaluating and testing the system, the proponents use the following formula:

(*Cronbach’s Alpha Value of Security* **(0.76)** + *Cronbach’s Alpha Value of Accuracy* **(0.81)** + *Cronbach’s Alpha Value of Speed* **(0.75)** + *Cronbach’s Alpha Value of Reliability* **(0.82)** +*Cronbach’s Alpha Value of Efficiency* **(0.82)** +*Cronbach’s Alpha Value of Functionality* **(0.80)** + *Cronbach’s Alpha Value of Usability* **(0.96)** ) / *Number of all categories* ***(*7)** = **0.81** is the overall result.

*Beta Test Result*

**Figure 16:** *Result for Question number 1*

The figure shows the result of “Security” for question number 1 of the developed system based on the given question in ISO/IEC 25010: 2011. The responses are; 0% answered not functional, 0% for slightly functional, 30% functional, 23% mostly functional and 47% states fully functional.

**Figure 17:** *Result for Question number 2*

The figure shows the result of “Security” for question number 2 of the developed system based on the given question in ISO/IEC 25010: 2011. The responses are; 0% answered not functional, 6% for slightly functional, 17% functional, 27% mostly functional and 50% states as fully functional.

**Figure 18:** *Result for Question number 1*

The figure shows the result of “Accuracy” for question number 1 of the developed system based on the given question in ISO/IEC 25010: 2011. The responses are; 0% answered not functional, 0% for slightly functional, 10% functional, 57% mostly functional and 33% states as fully functional.

**Figure 19:** *Result for Question number 2*

The figure shows the result of “Accuracy” for question number 2 of the developed system based on the given question in ISO/IEC 25010: 2011. The responses are; 0% answered not functional, 3% for slightly functional, 10% functional, 53% mostly functional and 34% states as fully functional.

**Figure 20:** *Result for Question number 1*

The figure shows the result of “Speed” for question number 1 of the developed system based on the given question in ISO/IEC 25010: 2011. The responses are; 0% answered not functional, 0% for slightly functional, 10% functional, 64% mostly functional and 26% states as fully functional.

**Figure 21:** *Result for Question number 2*

The figure shows the result of “Speed” for question number 2 of the developed system based on the given question in ISO/IEC 25010: 2011. The responses are; 0% answered not functional, 3% for slightly functional, 7% functional, 53% mostly functional and 37% states as fully functional.

**Figure 22:** *Result for Question number 1*

The figure shows the result of “Reliability” for question number 1 of the developed system based on the given question in ISO/IEC 25010: 2011. The responses are; 0% answered not functional, 3% for slightly functional, 23% functional, 27% mostly functional and 33% states as fully functional.

**Figure 23:** *Result for Question number 2*

The figure shows the result of “Reliability” for question number 2 of the developed system based on the given question in ISO/IEC 25010: 2011. The responses are; 0% answered not functional, 3% for slightly functional, 10% functional, 47% mostly functional and 40% states as fully functional.

**Figure 24:** *Result for Question number 1*

The figure shows the result of “Efficiency” for question number 1 of the developed system based on the given question in ISO/IEC 25010: 2011. The responses are; 0% answered not functional, 0% for slightly functional, 23% functional, 30% mostly functional and 47% states as fully functional.

**Figure 25:** *Result for Question number 2*

The figure shows the result of “Efficiency” for question number 2 of the developed system based on the given question in ISO/IEC 25010: 2011. The responses are; 0% answered not functional, 0% for slightly functional, 20% functional, 33% mostly functional and 47% states as fully functional.

**Figure 26:** *Result for Question number 3*

The figure shows the result of “Efficiency” for question number 3 of the developed system based on the given question in ISO/IEC 25010: 2011. The responses are; 0% answered not functional, 0% for slightly functional, 20% functional, 40% mostly functional and 40% states as fully functional.

**Figure 27:** *Result for Question number 1*

The figure shows the result of “Functionality” for question number of the developed system based on the given question in ISO/IEC 25010: 2011. The responses are; 0% answered not functional, 0% for slightly functional, 23% functional, 37% mostly functional and 40% states as fully functional.

**Figure 28:** *Result for Question number 2*

The figure shows the result of “Functionality” for question number of the developed system based on the given question in ISO/IEC 25010: 2011. The responses are; 0% answered not functional, 0% for slightly functional, 20% functional, 37% mostly functional and 43% states as fully functional.

**Figure 29:** *Result for Question number 3*

The figure shows the result of “Functionality” for question number 3 of the developed system based on the given question in ISO/IEC 25010: 2011. The responses are; 0% answered not functional, 0% for slightly functional, 17% functional, 47% mostly functional and 36% states as fully functional.

**Figure 30:** *Result for Question number 1*

The figure shows the result of “Usability” for question number 1 of the developed system based on the given question in ISO/IEC 25010: 2011. The responses are; 0% answered not functional, 0% for slightly functional, 30% functional, 23% mostly functional and 47% states as fully functional.

**Figure 31:** *Result for Question number 2*

The figure shows the result of “Usability” for question number 2 of the developed system based on the given question in ISO/IEC 25010: 2011. The responses are; 0% answered not functional, 3% for slightly functional, 20% functional, 27% mostly functional and 50% states as fully functional.

**Figure 32:** *Result for Question number 3*

The figure shows the result of “Usability” for question number 3 of the developed system based on the given question in ISO/IEC 25010: 2011. The responses are; 0% answered not functional, 4% for slightly functional, 23% functional, 50% mostly functional and 23% states as fully functional.

**Figure 33:** *Result for Question number 4*

The figure shows the result of “Usability” for question number 4 of the developed system based on the given question in ISO/IEC 25010: 2011. The responses are; 0% answered not functional, 3% for slightly functional, 23% functional, 40% mostly functional and 34% states as fully functional.

**Figure 34:** *Result for Question number 5*

The figure shows the result of “Usability” for question number 5 of the developed system based on the given question in ISO/IEC 25010: 2011. The responses are; 0% answered not functional, 0% for slightly functional, 9% functional, 16% mostly functional and 5% states as fully functional.

**Figure 35:** *Result for Question number 6*

The figure shows the result of “Usability” for question number 6 of the developed system based on the given question in ISO/IEC 25010: 2011 standard: The responses are; 0% answered not functional, 3% for slightly functional, 20% functional, 27% mostly functional and 50% states as fully functional.

**Figure 36:** *Result for Question number 7*

The figure shows the result of “Usability” for question number 7 of the developed system based on the given question in ISO/IEC 25010: 2011. The responses are; 0% answered not functional, 0% for slightly functional, 17% functional, 47% mostly functional and 36% states as fully functional.

**Figure 37:** *Result for Question number 8*

The figure shows the result of “Usability” for question number 8 of the developed system based on the given question in ISO/IEC 25010: 2011. The responses are; 0% answered not functional, 0% for slightly functional, 10% functional, 43% mostly functional and 47% states as fully functional.

**Figure 38:** *Result for Question number 9*

The figure shows the result of “Usability” for question number 9 of the developed system based on the given question in ISO/IEC 25010: 2011. The responses are; 0% answered not functional, 0% for slightly functional, 6% functional, 27% mostly functional and 67% states as fully functional.

**Security Plan**

The researcher will design the system with completely security and have to be work or dealt with appropriate end user who are going to use the system. Besides, it must plan with username and password key so that the approved authorized person will be the one who manipulate the system and protect the confidential records.

**Maintenance Plan**

In order to maintain the system the end user should always updates most especially the database. Keep all the essential record and delete not necessary needed in the system or the document that required removing. Furthermore as much as possible avoid making error to protect the system against data loss records.

**Implementation Plan**

Once all the necessary software and hardware are equipped, implementation the system will be present. The LNU clinic office needs to provide computer desktop that will be serve as the main framework of the system. All necessary software application that will run from the system will need to be install. The researcher will introduced and transfer the entire system utilizing the internet browser of the server PC. A short time later, the system will tried utilizing other PC inside the system.

**Implementation Results**

After implementation and testing, the system will be able to perform the following:

1. The administrator will maintain and have the access of every user information record. Also authorized to accept and remove employee in the developed system.
2. Automated pre-registration for student information record and scheduling for upcoming new student applicant.
3. The system is friendly user, convenient and flexible to use.
4. Faster response time to search, retrieve data and remove, since all information are already store in database
5. Secure database, the user of the system is only allowed to access to those data that authority by the user, private information is restricted to access and only by doctor
6. Perform all the activity efficiently, since the data will store in a well-organized database, when they want to modified some detail from particular records.

**Cost and Benefit Analysis**

*Cost*

Aside from a laptop or computer desktop, the system has no additional software and hardware requirements, on the other hand the hardware device should run into the least possible requirements. Furthermore, the manual labor costs are small since it has made through the effort of the researchers.

**Table** **30:** *List of all cost.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Cost** | **Unit** | **Entry** | **Total** |
| Development | Hours  Days  Weeks | 5  7  28 |  |
| Labor | Philippine Peso | 50 | 49,000 |

*Benefits*

This system will benefit to the client, which is Leyte Normal University (LNU) clinic office, from manual process to computerized system. The system will easy to manipulate and navigate since it is a user friendly. This will increase the productivity of work to the staff, secured files from damage, loses, misplaced and care for against disaster.

**Chapter 6**

**Conclusion and Recommendations**

This chapter will discuss about the conclusion and recommendations of the researchers based on the results of the study.

**Conclusion**

Leyte Normal University (LNU) Clinic Office facing difficulties in keeping, searching and retrieving records. Therefore, the researcher were seek solution and address problem to create or developed a Web Based Automated Document Record Management System.

The developed system will aid to the LNU Clinic office since they were currently using manual record keeping, it consumes a large amount of space when filing, this process relies heavily on the person-in-charge thus it is prone to damage and being misplaced. It is also not appropriate for disasters, fire or natural disaster that could mean the loss of important information. It is difficult to make changes on the documents since only one needs to make a copy and to avoid edits the original information. To search for a file is time consuming if it is disorganize. Lowering the productivity by having to spend too much time dealing with this manual process. Paper documents have a tendency to be less secure, a cabinet is less secure than a computer, which requires user credentials before accessing the needed file, and the Web Based Automated Document Record Management System for LNU Clinic will help to minimize their problem storage records and searching for clinic records. The clinic staff will not have to store the records in the cabinet instead; they will store their files in a database for better storage and for high confidentiality.

**Recommendations**

The researchers recommended for the future research of this study, which are search and retrieve data using Radio Frequency Identification (RFID). In addition, the system must offer both considerable flexibility for users and standards required for data transfer and exchange. To protect patient record privacy by the need for sensible access the data at multiple device or sites.  It would to be helpful if the system will immediately print all the reports and necessary information. Additionally, further improvement of this project as to improve the system, which include more functions and features that can help the clinic staff in faster productivity. The administrator should backup the system and update with the particular database. The system must be implement.

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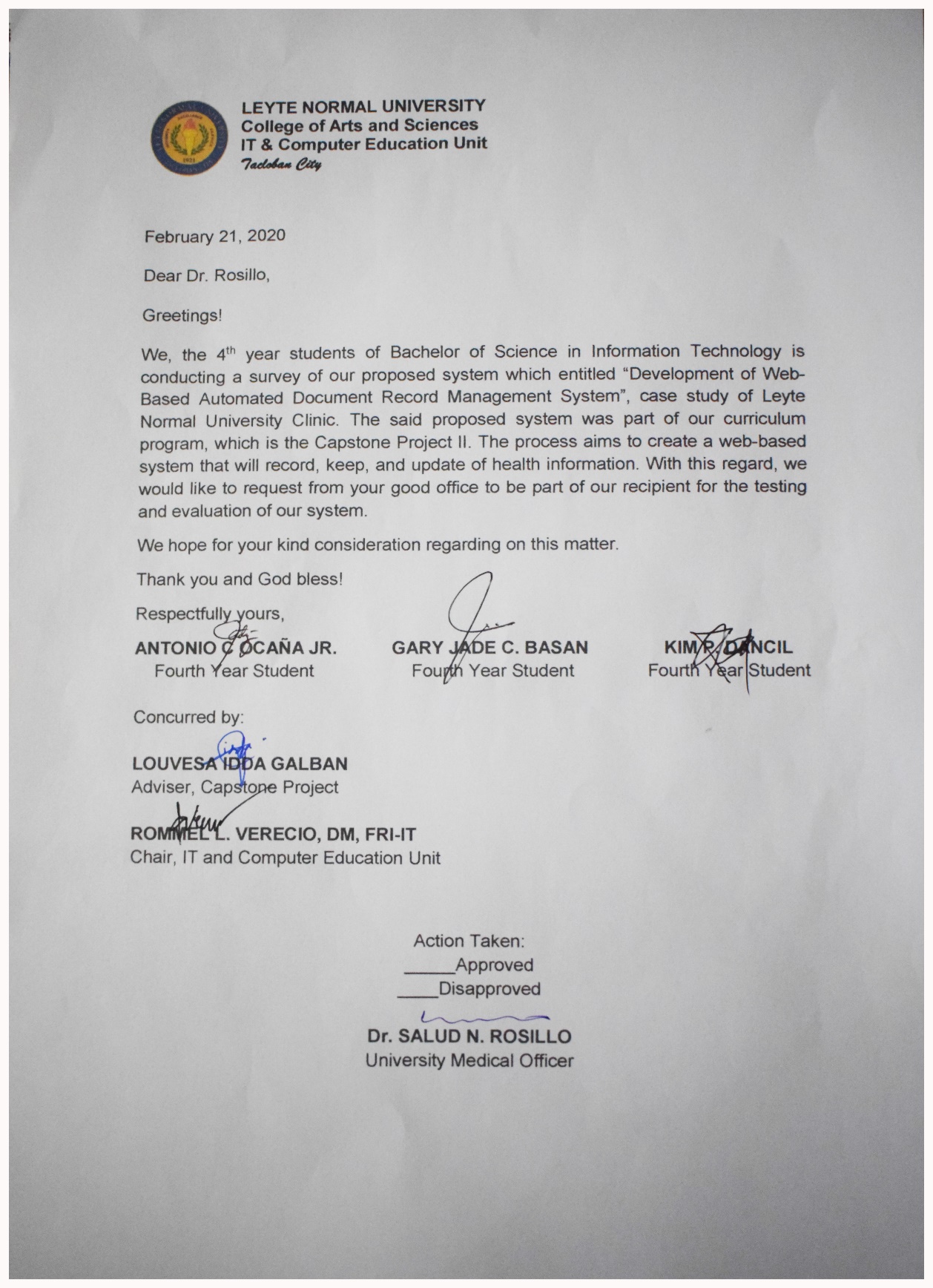
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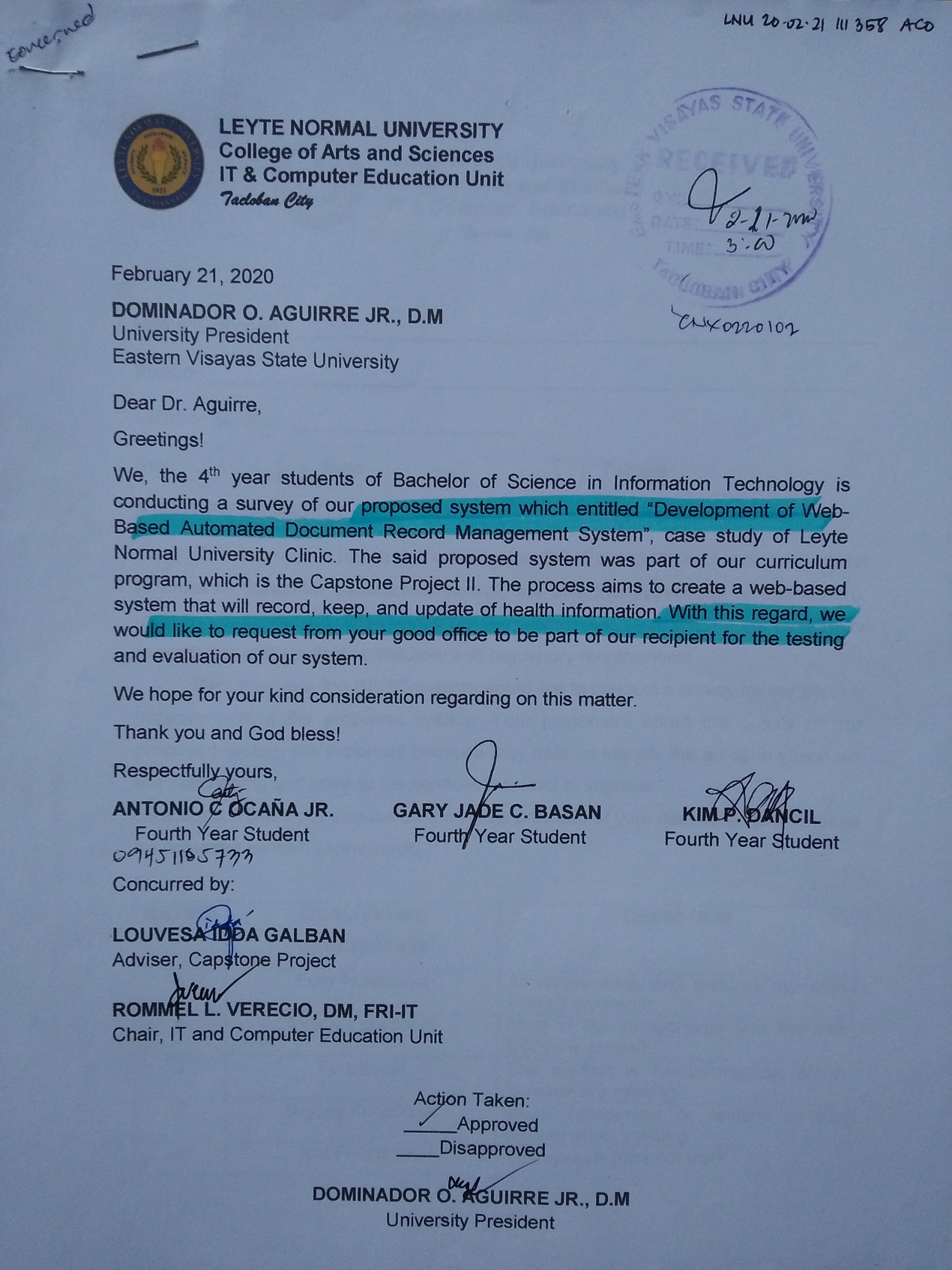
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**Appendix A**

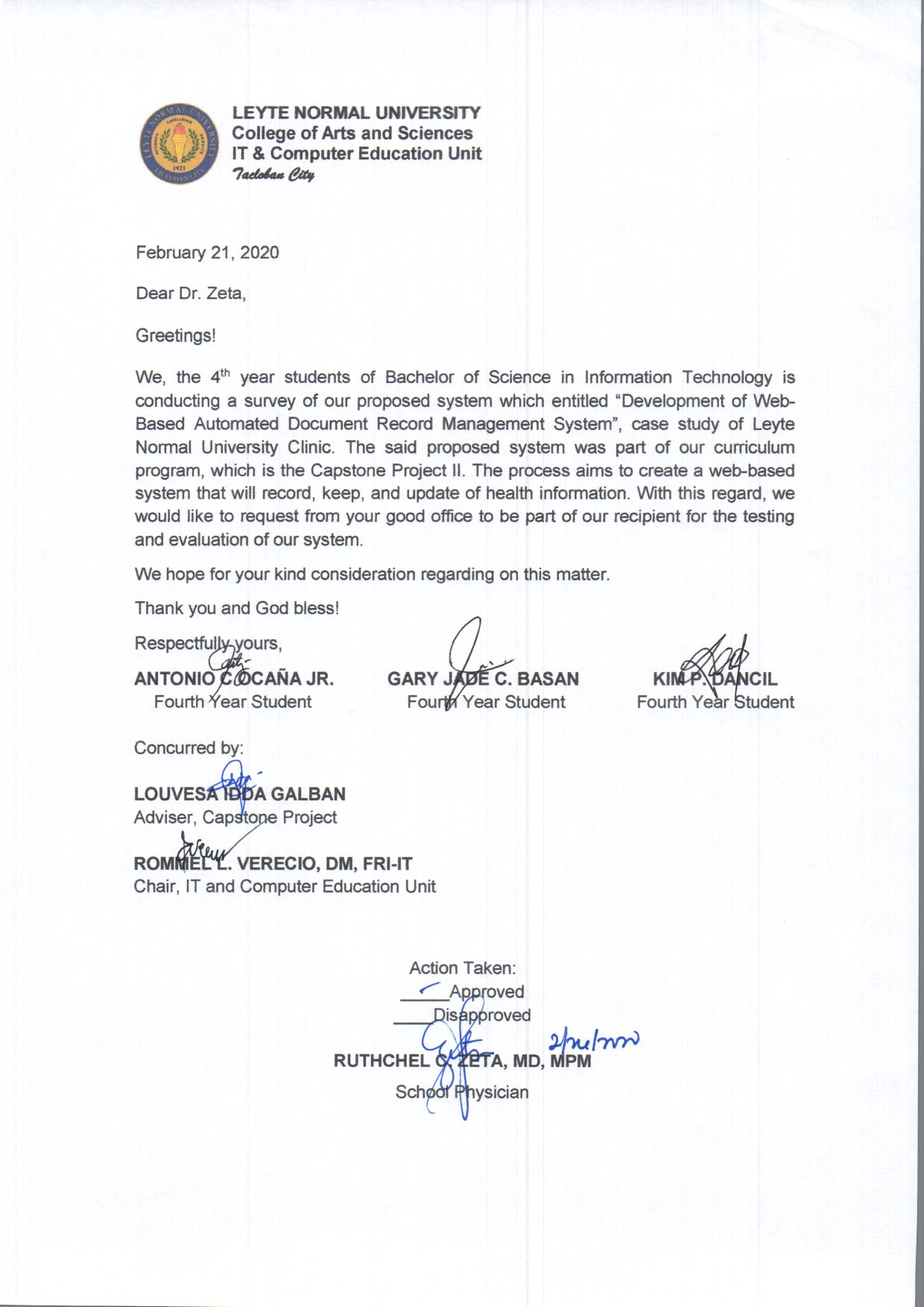
**Communication Letter (Alpha)**

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**Communication Letter (Alpha)**

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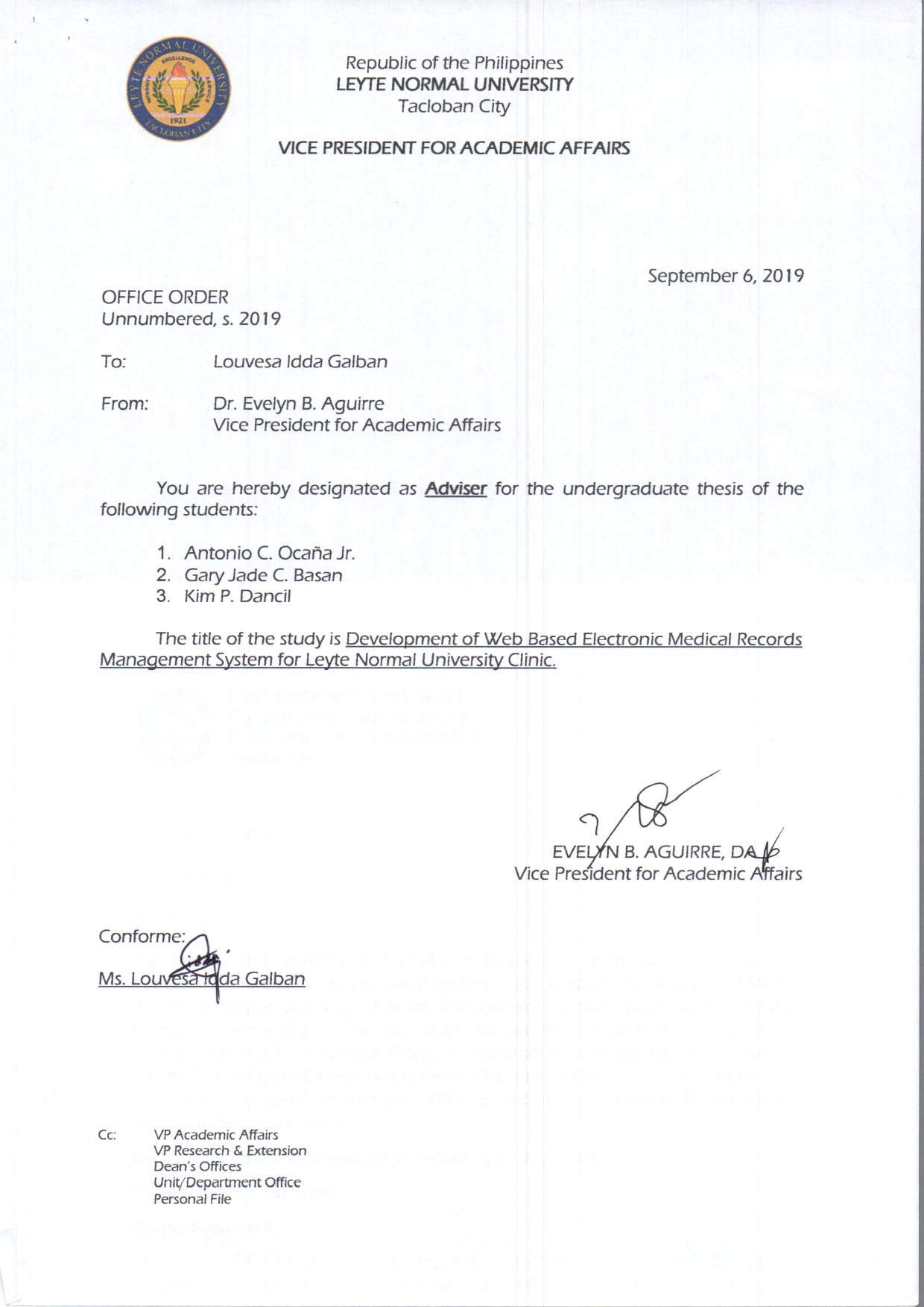
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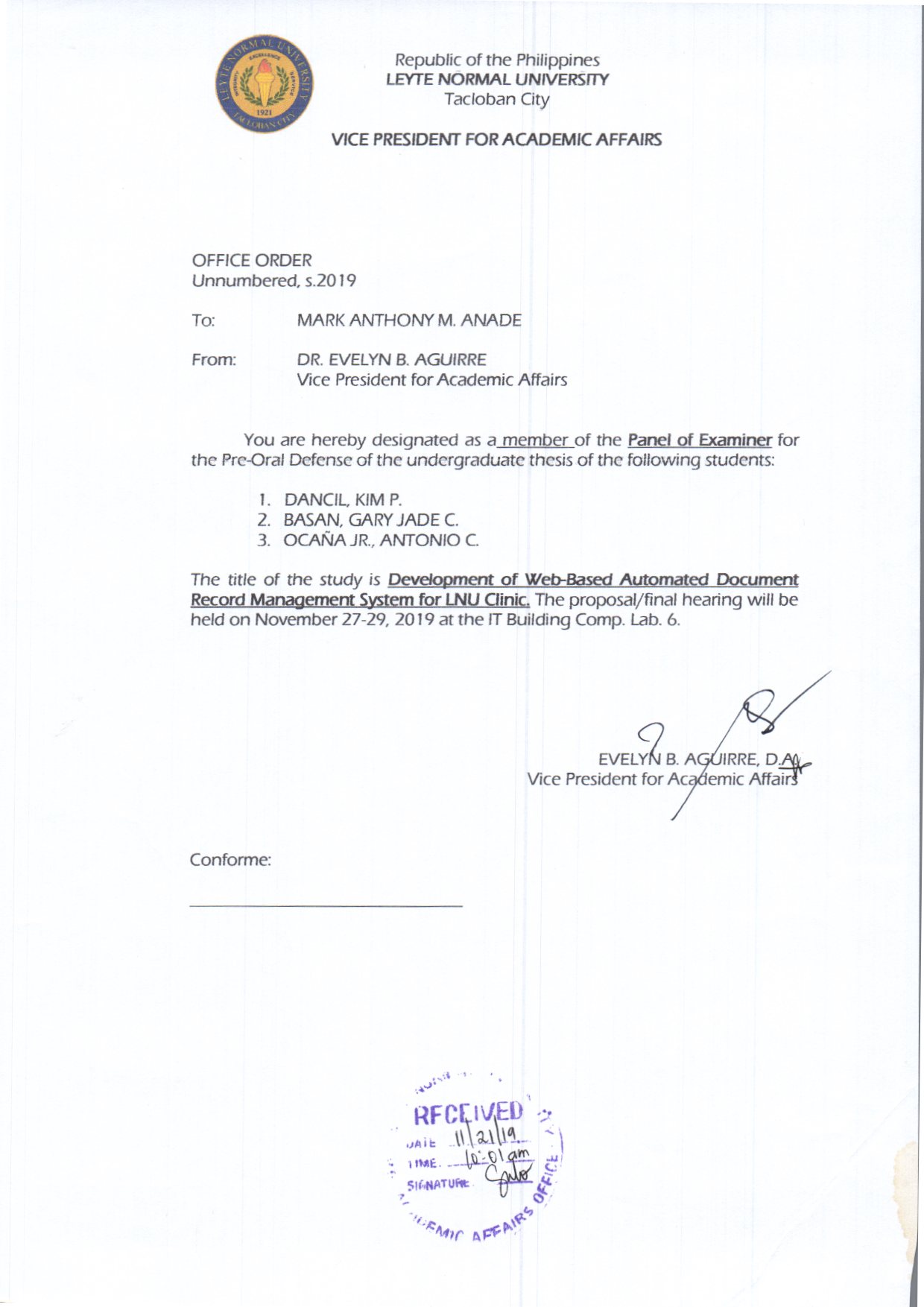
**Appendix B**

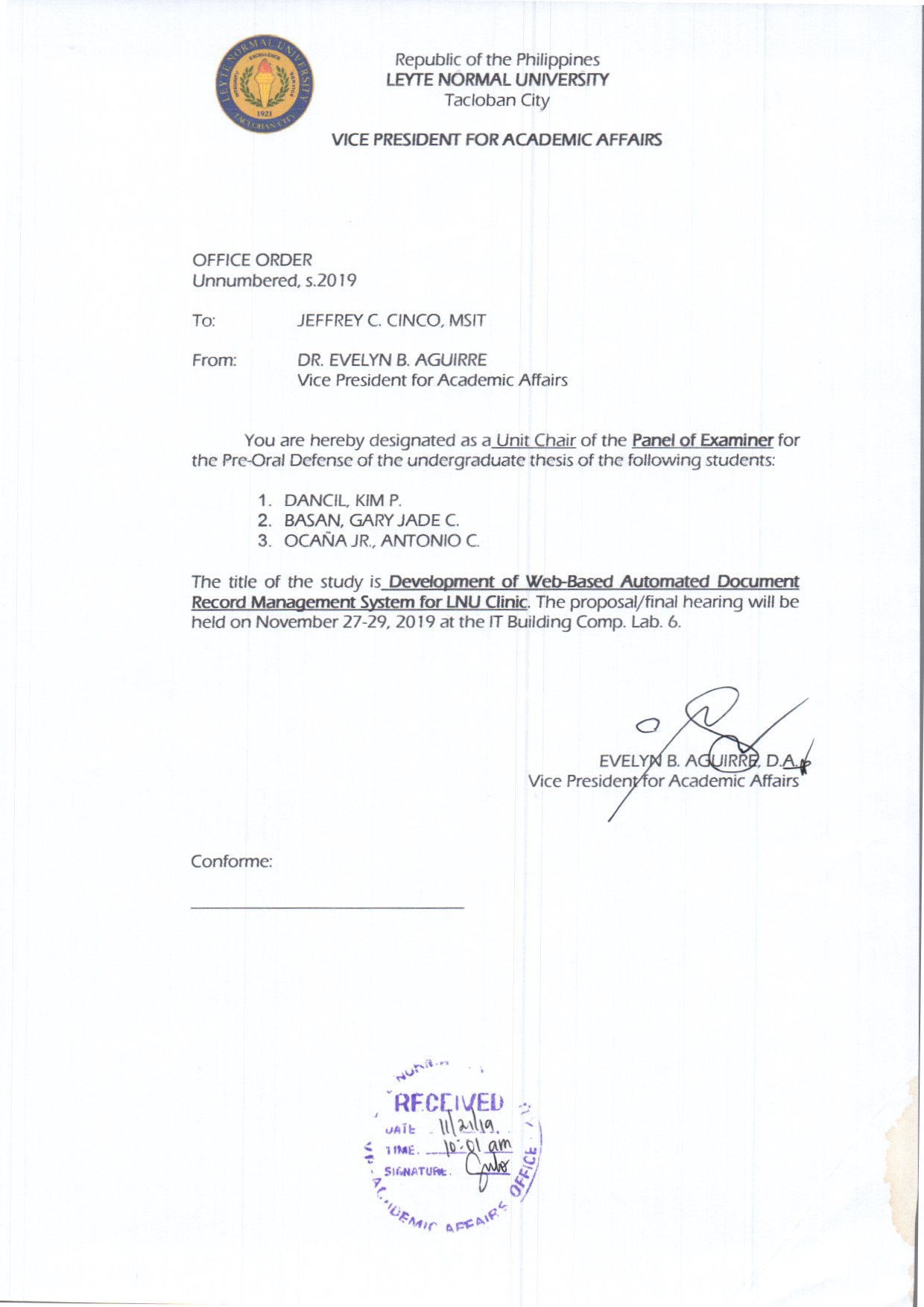
**Office Orders** **(Adviser**)

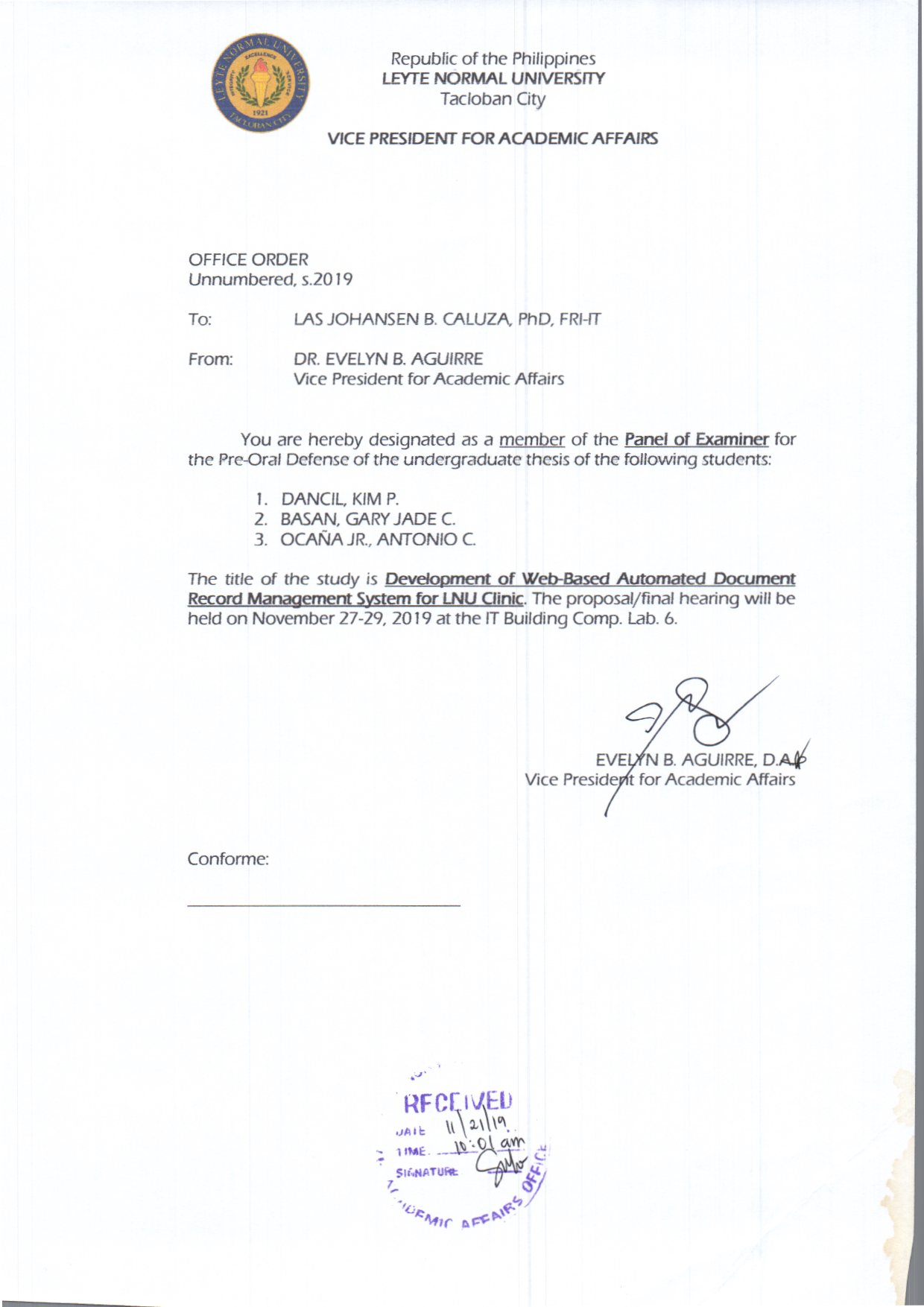
**Pre-Oral Defence**



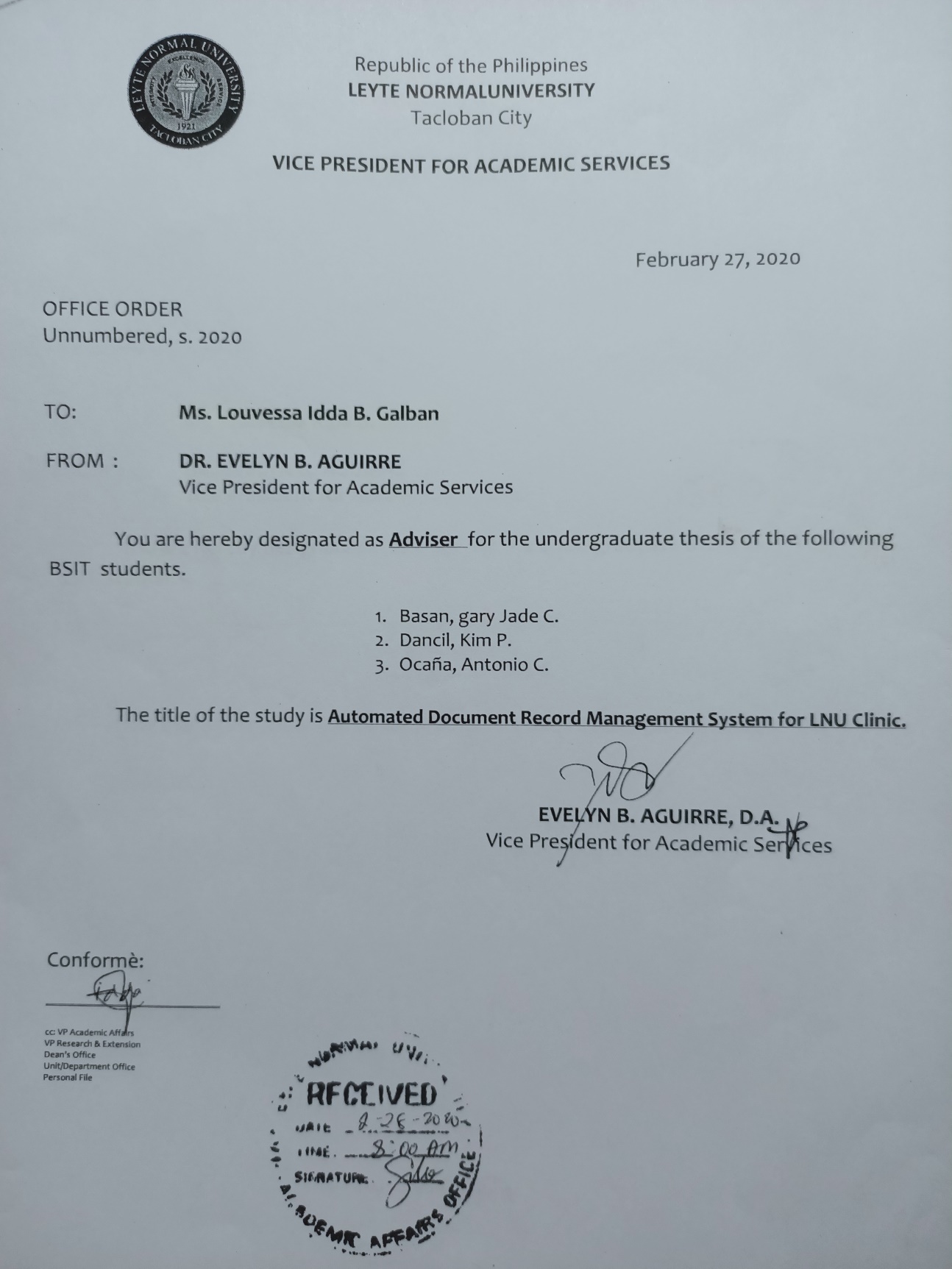
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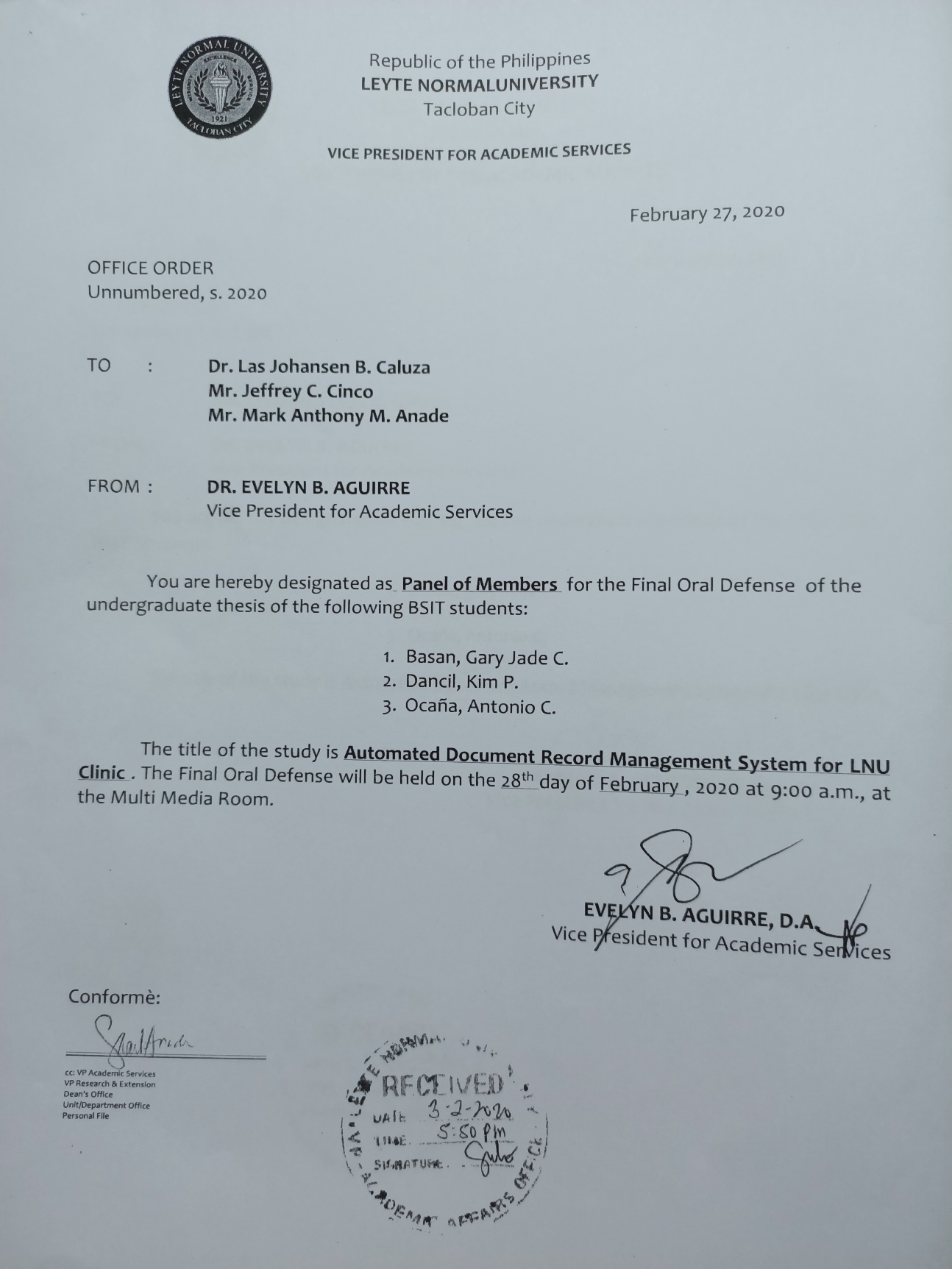
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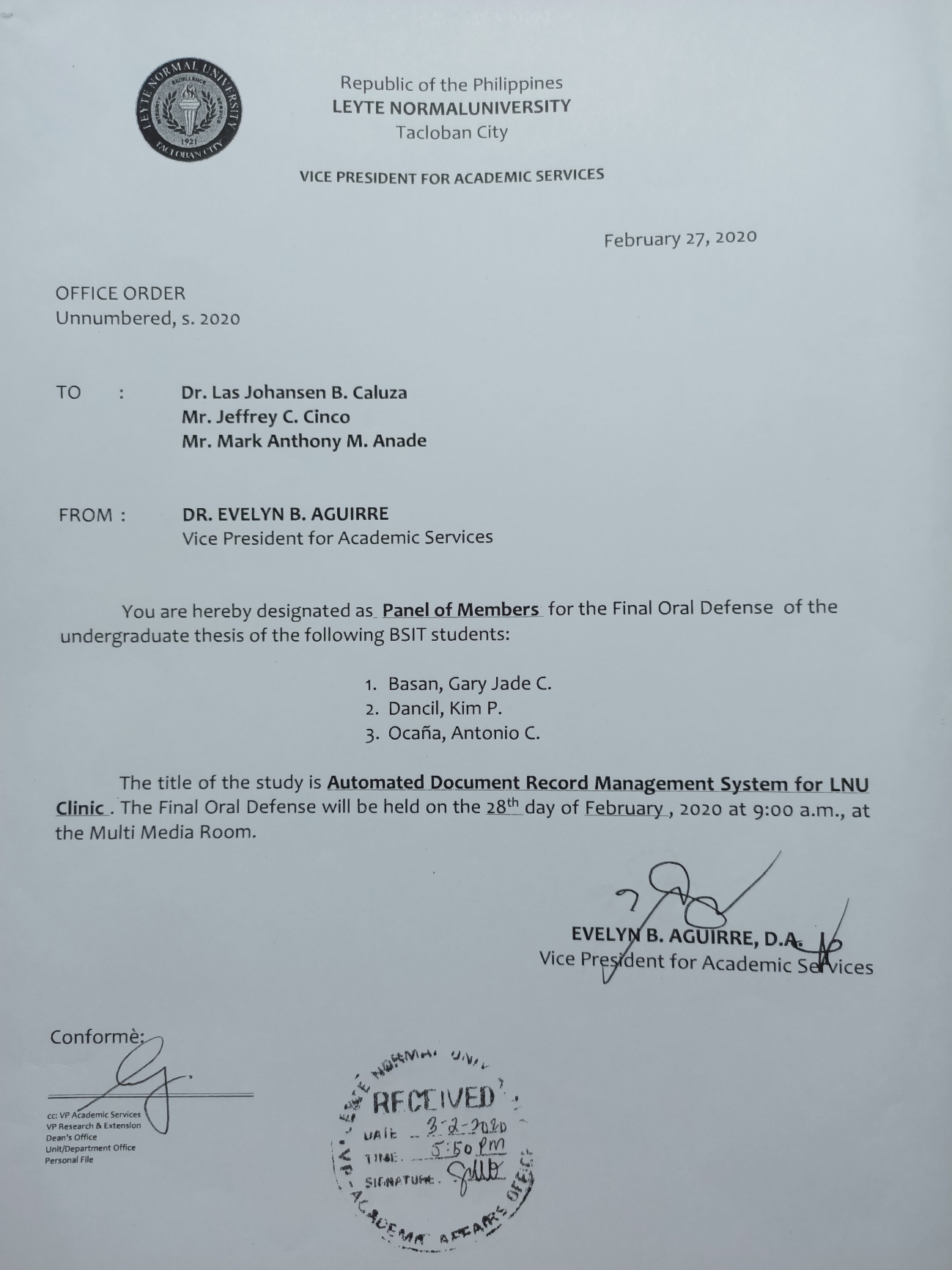
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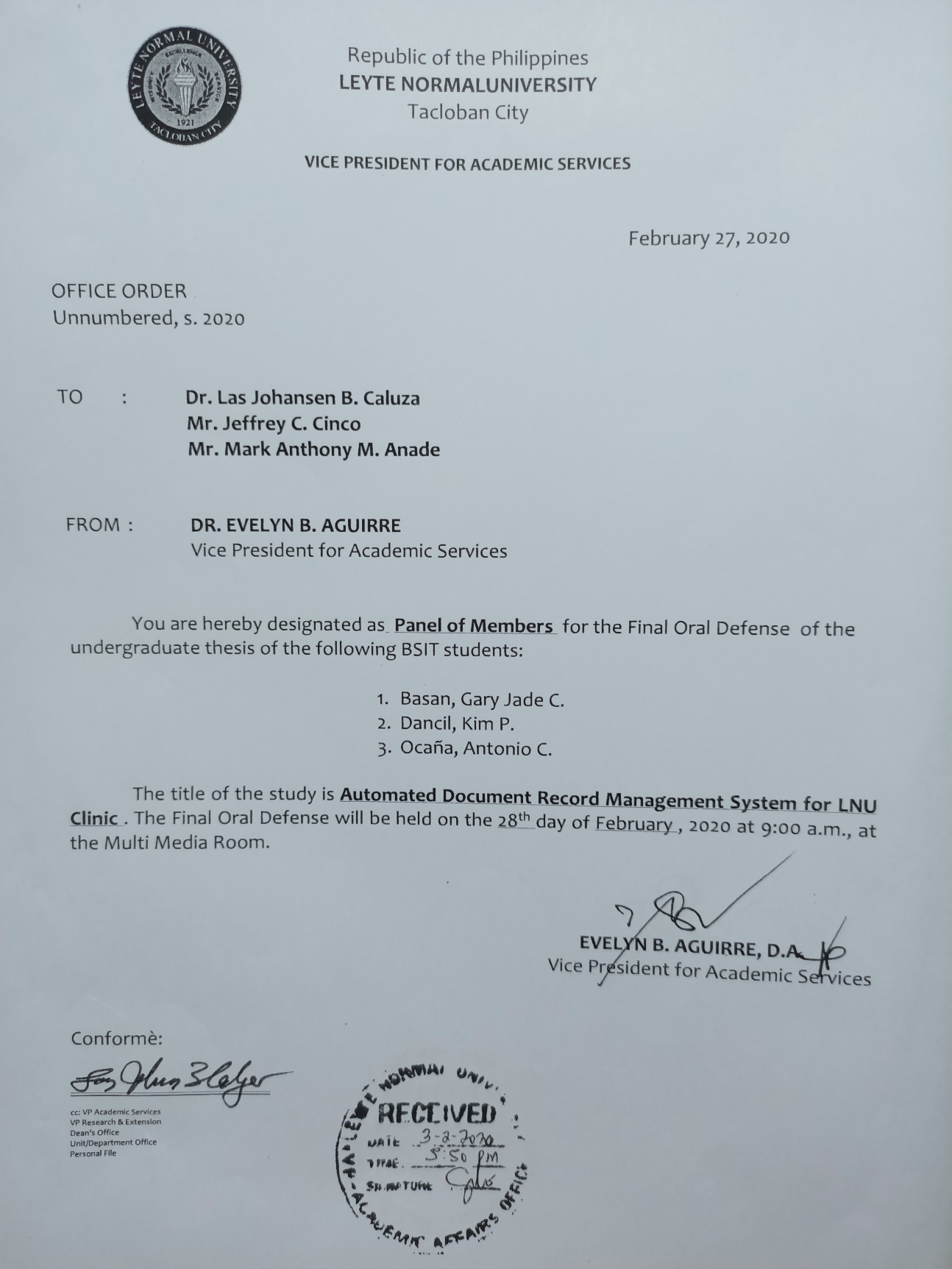
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**Panel Member**

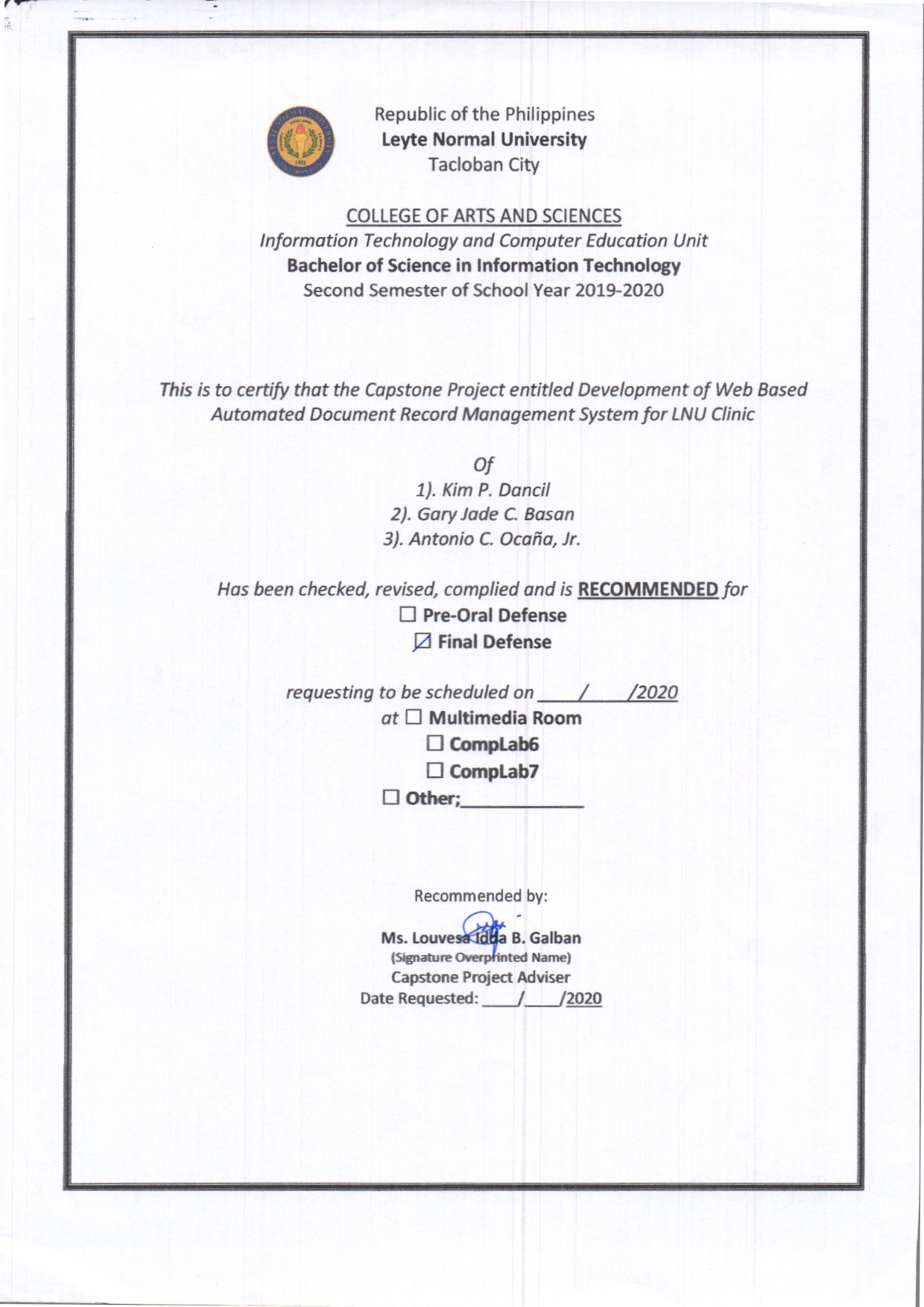
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**Panel Member**

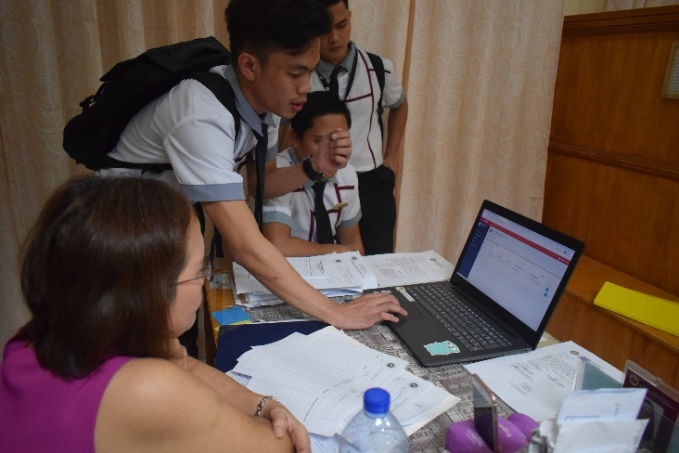
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**Appendix C**

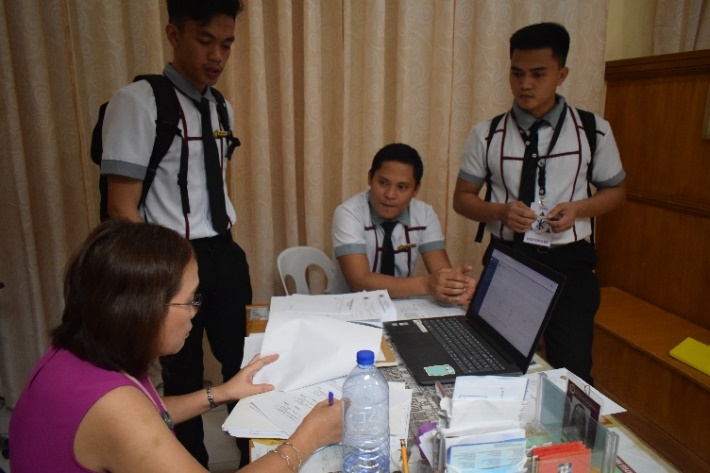
**Certificate of Endorsement**

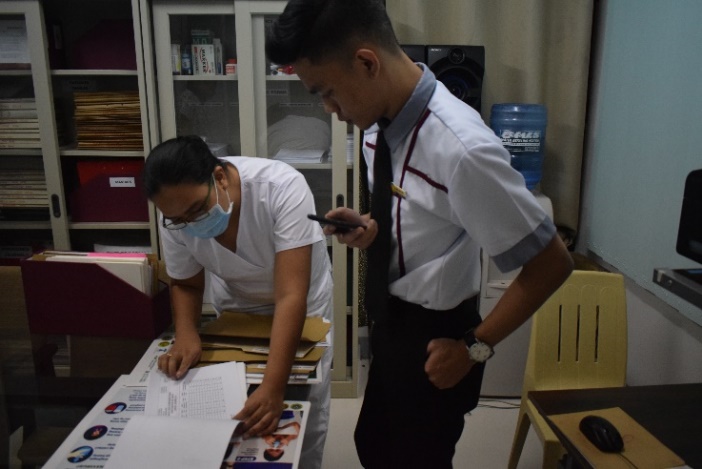
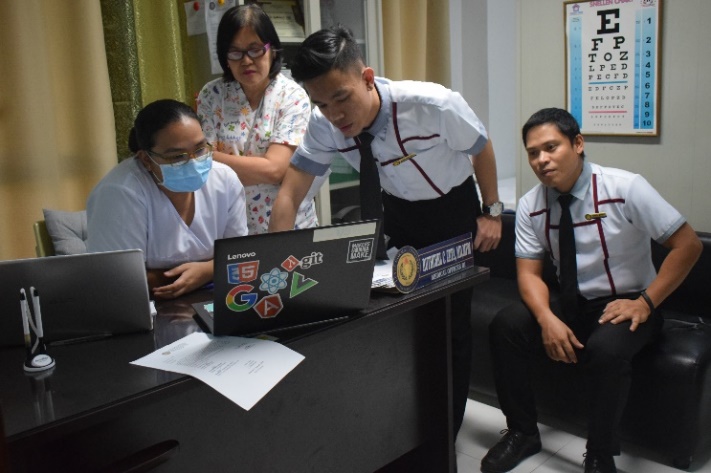
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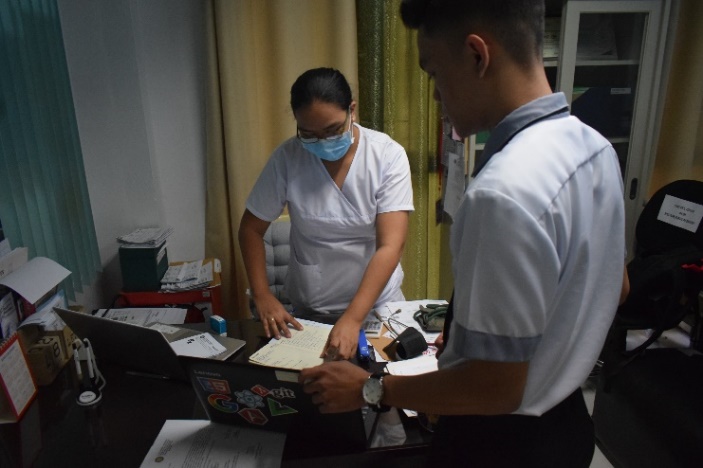
**Appendix D**

**Showcasing Data / Gathering Interviews (Alpha)**

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**Showcasing Data / Gathering Interviews (Beta)**

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**Appendix E**

**Survey Questionnaire**

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**Leyte Normal University**

**College of Arts and Sciences**

**IT & Computer Education**

**Tacloban City**

Name (Optional):\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Position: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Years in Service: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Sex: Male Female

**STUDY INFORMATION**

This survey was base and validated by ISO/IEC 25010: 2011 standard – Aims to enhance customer satisfaction through the effective application of the system, including processes for improvement of the system and assurance of the conformity to customer and applicable statutory and regulatory requirements.

With this view, the BSIT Students would like to conduct a survey for the service improvement of the proposed system. Your judgement about the quality of our proposed system are important because they help us identify the areas in which we are succeeding and point to the services we need to improve.

Directions: Please put a check on the space provided of your desired answer. Please do not leave an item unanswered.

|  |  |  |
| --- | --- | --- |
| **RATING** | **QUALITATIVE DESCRIPTION** | **DEFINITION** |
| **5** | Fully Functional | All components and features operates without problems. |
| **4** | Mostly Functional | Most of the components and features functions properly. |
| **3** | Functional | The system is functioning but some features are missing. |
| **2** | Slightly Functional | Major component or feature of the system is not working. |
| **1** | Not Functional | The system does not work. |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Indicator** | | **Responses** | | | | |
| **Security** | | 5 | 4 | 3 | 2 | 1 |
| 1 | Authorized users can access the system |  |  |  |  |  |
| 2 | Records are secured |  |  |  |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Indicator** | | **Responses** | | | | |
| **Accuracy** | | 5 | 4 | 3 | 2 | 1 |
| 1 | The records have updated information |  |  |  |  |  |
| 2 | The system gives complete information |  |  |  |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Indicator** | | **Responses** | | | | |
| **Speed** | | 5 | 4 | 3 | 2 | 1 |
| 1 | Is the speed of the system is good |  |  |  |  |  |
| 2 | Is the system is interconnected per departments. |  |  |  |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Indicator** | | **Responses** | | | | |
| **Reliability** | | 5 | 4 | 3 | 2 | 1 |
| 1 | The fault in the system can be easily identified |  |  |  |  |  |
| 2 | The system quality is performing consistently well. |  |  |  |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Indicator** | | **Responses** | | | | |
| **Efficiency** | | 5 | 4 | 3 | 2 | 1 |
| 1 | The system response time is appropriate |  |  |  |  |  |
| 2 | The system execution is appropriate |  |  |  |  |  |
| 3 | The system does what it meant to do |  |  |  |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Indicator** | | **Responses** | | | | |
| **Functionality** | | 5 | 4 | 3 | 2 | 1 |
| 1 | Does the system provide useful information |  |  |  |  |  |
| 2 | The records of the system are well organized |  |  |  |  |  |
| 3 | Does the system provide complete information |  |  |  |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Indicator** | | **Responses** | | | | |
| **Usability** | | 5 | 4 | 3 | 2 | 1 |
| 1 | I feel comfortable using this system |  |  |  |  |  |
| 2 | It was easy to learn on how to use this system |  |  |  |  |  |
| 3 | The records of the system well organized |  |  |  |  |  |
| 4 | The system is unique and paperless |  |  |  |  |  |
| 5 | The system track all the records of the process documents |  |  |  |  |  |
| 6 | The information provided for the system is easy to understand |  |  |  |  |  |
| 7 | The record system was easily to find the old and new patient |  |  |  |  |  |
| 8 | The system is not low processing |  |  |  |  |  |
| 9 | It was simple to use this system |  |  |  |  |  |

**System Source Code**

*Registration code*

Let the user register account to be able to log into the system.

<?php

defined('BASEPATH') OR exit('No direct script access allowed');

class Register extends CI\_Controller {

public function \_\_construct() {

parent::\_\_construct();

$this->load->model('Login\_model');

}

public function index(){

$this->load->view('register\_view'

}

public function check\_user(){

$firstName = $this->input->post('first\_name');

$lastName = $this->input->post('last\_name');

$middleName = $this->input->post('middle\_name');

$this->db->select('employee\_id');

$this->db->from('user\_info');

$this->db->where('first\_name', $firstName);

$this->db->where('last\_name', $lastName);

$this->db->where('middle\_name', $middleName);

$query = $this->db->get();

$num = $query->num\_rows();

if ($num > 0) {

return FALSE;

} else {

return TRUE;

}

}

public function form\_validation(){

$this->load->library('form\_validation');

$this->form\_validation->set\_rules("first\_name", "First Name", 'required|callback\_check\_user');

$this->form\_validation->set\_rules("last\_name", "Last Name", 'required');

$this->form\_validation->set\_rules("middle\_name", "Last Name", 'required');

$this->form\_validation->set\_rules("username", "Username", 'required');

$this->form\_validation->set\_rules("password", "Password Confirmation", 'required');

$this->form\_validation->set\_rules("c\_password", "Confirm Password", 'required|matches[password]');

if($this->form\_validation->run()){

$this->load->model("main\_model");

$user\_data = array(

"last\_name" =>$this->input->post('last\_name'),

"first\_name" =>$this->input->post('first\_name'),

"middle\_name"=>$this->input->post('middle\_name'),

"birthday"=>$this->input->post('birthday'),

"sex" =>$this->input->post('sex'),

"username" =>$this->input->post('username'),

"user\_type" =>$this->input->post('user\_type'),

"position" =>$this->input->post('position'),

"password" =>md5($this->input->post('password'))

);

$this->db->insert('user\_info', $user\_data);

$this->session->set\_flashdata('success', 'Successful registration, waiting for confirmation..');

redirect('Login');

}

else{

$this->session->set\_flashdata('error', 'Error registration, please try again..');

redirect('Register');

}

}

}

?>

*Preregistration page*

Let the student pre-register into the system

<?php

defined('BASEPATH') OR exit('No direct script access allowed');

class PreRegister extends CI\_Controller {

public function \_\_construct(){

parent::\_\_construct();

$this->load->model('main\_model');

}

public function index(){

$this->load->model("main\_model");

$data["GetSchedule"] = $this->main\_model->GetSchedule();

$this->load->view('pre\_register', $data);

}

/\*public function patientInsertion() {

$record\_id = $this->uri->segment(4);

$this->load->model("main\_model");

$data["record\_data"] = $this->main\_model->fetch\_single\_data($record\_id);

$data['query'] = $this->main\_model->getUserPatientData($record\_id);

$data["fetch\_data"] = $this->main\_model->fetch\_data();

$this->load->view('layouts/header');

$this->load->view('doctor/patient\_insertion', $data);

}\*/

public function check\_data(){

$firstName = $this->input->post('first\_name');

$lastName = $this->input->post('last\_name');

$middleName = $this->input->post('middle\_name');

$this->db->select('record\_id');

$this->db->from('personal\_info');

$this->db->where('first\_name', $firstName);

$this->db->where('last\_name', $lastName);

$this->db->where('middle\_name', $middleName);

$query = $this->db->get();

$num = $query->num\_rows();

if ($num > 0) {

return FALSE;

} else {

return TRUE;

}

}

public function form\_validation(){

$this->load->library('form\_validation');

$this->form\_validation->set\_rules("first\_name", "First Name", 'required|callback\_check\_data');

$this->form\_validation->set\_rules("last\_name", "Last Name", 'required');

$this->form\_validation->set\_rules("middle\_name", "Last Name", 'required');

if($this->form\_validation->run()){

$this->load->model("main\_model");

$now = date('Y-m-d H:i:s');

$data = array(

"last\_name" =>$this->input->post('last\_name'),

"first\_name" =>$this->input->post('first\_name'),

"middle\_name" =>$this->input->post('middle\_name'),

"birthday" =>$this->input->post('birthday'),

"sex" =>$this->input->post('sex'),

"gender\_identity"=>$this->input->post('gender\_identity'),

"civil\_status" =>$this->input->post('civil\_status'),

"citizenship" =>$this->input->post('citizenship'),

"religion" =>$this->input->post('religion'),

"category" =>$this->input->post('category'),

"program" =>$this->input->post('program'),

"grade\_year" =>$this->input->post('grade\_year'),

"section" =>$this->input->post('section'),

"office\_department" =>$this->input->post('office\_department'),

"year\_employed" =>$this->input->post('year\_employed'),

"home\_address" =>$this->input->post('home\_address'),

"contact\_num" =>$this->input->post('contact\_num'),

"school\_name" =>$this->input->post('school\_name'),

"school\_address" =>$this->input->post('school\_address'),

"emergency\_person" =>$this->input->post('emergency\_person'),

"emergency\_relation" =>$this->input->post('emergency\_relation'),

"emergency\_contact" =>$this->input->post('emergency\_contact'), "schedule\_id" =>$this->input->post('schedule\_date'),

"register\_date" =>date('Y-m-d')

);

$record\_id = $this->main\_model->create('personal\_info', $data);

$this->session->set\_flashdata('success', 'Success: Pre-registration was successfully submitted');

redirect('PreRegister');

}

else{

$this->session->set\_flashdata('error', 'Error: Something went wrong. Pre-registration failed');

redirect('PreRegister');

}

}

}

?>

*Patient scheduling code*

<?php

defined('BASEPATH') OR exit('No direct script access allowed');

class Schedule extends CI\_Controller {

public function \_\_construct(){

parent::\_\_construct();

if($this->session->userdata('logged\_in') !== TRUE){

redirect('Login');

}

}

public function index() {

if($this->session->userdata('user\_type') === 'nurse') {

$this->load->view('layouts/header');

$this->load->model("main\_model");

$data["GetSchedule"] = $this->main\_model->GetSchedule();

$this->load->view('nurse/Schedule', $data);

}

}

public function GetSchedule(){

$schedule\_id = $this->uri->segment(4);

$this->load->model("main\_model");

$data["GetSchedule"] = $this->main\_model->GetSchedule();

$data["schedule"] = $this->main\_model- >fetch\_single\_schedule($schedule\_id);

$this->load->view('layouts/header');

this->load->view('nurse/schedule', $data);

}

public function form\_validation(){

$this->load->library('form\_validation');

$this->form\_validation->set\_rules("date", "date", 'required');

$this->form\_validation->set\_rules("max", "max", 'required');

$this->form\_validation->set\_rules("time\_start", "time\_start", 'required');

$this->form\_validation->set\_rules("time\_end", "time\_start", 'required');

$this->form\_validation->set\_rules("message", "message", 'required');

if($this->form\_validation->run()){

$this->load->model("main\_model");

$schedule = array(

"date" =>$this->input->post('date'),

"max" =>$this->input->post('max'),

"time\_start" =>$this->input->post('time\_start'),

"time\_end" =>$this->input->post('time\_end'),

"message" =>$this->input->post('message')

);

$id = $this->main\_model->create("medical\_schedule", $schedule);

$this->session->set\_flashdata('success', 'A new schedule successfuly added!' );

redirect('nurse/Schedule');

}

else{

$this->session->set\_flashdata('error', 'Failed to add new schedule!' );

$this->index();

}

}

function del()

{

$schedule\_id = $this->uri->segment(4);

$this->load->model("main\_model");

if (!$this->main\_model->DeleteSchedule($schedule\_id)){

$this->session->set\_flashdata('success', 'Deleted Successfuly' );

redirect('nurse/Schedule/');

}else{

$this->session->set\_flashdata('error', 'Failed to delete' );

}

redirect('nurse/Schedule/');

}

public function edit() {

$schedule\_id = $this->input->post('schedule\_id');

$date = $this->input->post('date');

$max = $this->input->post('max');

$time\_start = $this->input->post('time\_start');

$time\_end = $this->input->post('time\_end');

$message = $this->input->post('message');

$data = array(

'schedule\_id' => $schedule\_id,

'date'=>$date,

'max'=>$max,

'time\_start'=>$time\_start,

'time\_end'=>$time\_end,

'message'=>$message,

);

$this->load->model('main\_model');

if($this->main\_model->UpdateSchedule($data, $schedule\_id)){

$this->session->set\_flashdata('success', 'Data successful update!' );

redirect('nurse/Schedule/');

}

else {

$this->session->set\_flashdata('error', 'Failed to update data!' );

redirect('nurse/Schedule/');

}

}

}

?>

*Patient retrieve & update code*

<?php

defined('BASEPATH') OR exit('No direct script access allowed');

class StudentMedicalRecord extends CI\_Controller {

public function \_\_construct(){

parent::\_\_construct();

$this->load->model("main\_model");

if($this->session->userdata('logged\_in') !== TRUE){

redirect('Login');

}

}

public function index() {

if($this->session->userdata('user\_type') === 'doctor') {

$this->load->view('layouts/header');

$this->load->model("main\_model");

$data["fetch\_data"] = $this->main\_model->fetch\_data();

$this->load->view('doctor/student\_medical\_record', $data);

}

else {

echo "Access Denied";

}

}

public function getRecordData(){

$record\_id = $this->uri->segment(4);

$this->load->model("main\_model");

$data["record\_data"] = $this->main\_model->fetch\_single\_data($record\_id);

$data["fetch\_data\_join1"] = $this->main\_model->fetch\_data\_join1($record\_id);

$data["fetch\_data\_join2"] = $this->main\_model->fetch\_data\_join2($record\_id);

$data["fetch\_data\_join3"] = $this->main\_model->fetch\_data\_join3($record\_id);

$data["fetch\_data\_join4"] = $this->main\_model->fetch\_data\_join4($record\_id);

$data['query'] = $this->main\_model->getUserPatientData($record\_id);

$this->load->view('layouts/header');

$this->load->view('doctor/get\_medical\_record', $data);

}

public function GetData(){

$record\_id = $this->uri->segment(4);

$this->load->model("main\_model");

$data["record\_data"] = $this->main\_model->fetch\_single\_data($record\_id);

$data["fetch\_data\_join1"] = $this->main\_model->fetch\_data\_join1($record\_id);

$data["fetch\_data\_join2"] = $this->main\_model->fetch\_data\_join2($record\_id);

$data["fetch\_data\_join3"] = $this->main\_model->fetch\_data\_join3($record\_id);

$data["fetch\_data\_join4"] = $this->main\_model->fetch\_data\_join4($record\_id);

$this->load->view('layouts/header');

$this->load->view('doctor/update\_data', $data);

}

function del()

{

$record\_id = $this->uri->segment(4);

$this->main\_model->delete($record\_id);

redirect('/doctor/StudentMedicalRecord');

}

public function edit() {

$first\_name = $this->input->post('first\_name');

$last\_name = $this->input->post('last\_name');

$middle\_name = $this->input->post('middle\_name');

$birthday = $this->input->post('birthday');

$sex = $this->input->post('sex');

$gender\_identity = $this->input->post('gender\_identity');

$civil\_status = $this->input->post('civil\_status');

$citizenship = $this->input->post('citizenship');

$religion = $this->input->post('religion');

$category1 = $this->input->post('category1');

$program = $this->input->post('program');

$grade\_year = $this->input->post('grade\_year');

$section = $this->input->post('section');

$office\_department = $this->input->post('office\_department');

$year\_employed = $this->input->post('year\_employed');

$home\_address = $this->input->post('home\_address');

$contact\_num = $this->input->post('contact\_num');

$school\_name = $this->input->post('school\_name');

$school\_address = $this->input->post('school\_address');

$emergency\_person = $this->input->post('emergency\_person');

$emergency\_relation = $this->input->post('emergency\_relation');

$emergency\_contact = $this->input->post('emergency\_contact');

$record\_id = $this->input->post('record\_id');

$data = array(

'first\_name'=>$first\_name,

'last\_name'=>$last\_name,

'middle\_name'=>$middle\_name,

'birthday'=>$birthday, 'sex'=>$sex,

'gender\_identity'=>$gender\_identity,

'civil\_status'=>$civil\_status,

'citizenship'=>$citizenship,

'religion'=>$religion,

'category'=>$category1,

'program'=>$program,

'grade\_year'=>$grade\_year,

'section'=>$section,

'office\_department'=>$office\_department,

'year\_employed'=>$year\_employed,

'home\_address'=>$home\_address,

'contact\_num'=>$contact\_num,

'school\_name'=>$school\_name,

'school\_address'=>$school\_address,

'emergency\_person'=>$emergency\_person,

'emergency\_relation'=>$emergency\_relation,

'emergency\_contact'=>$emergency\_contact, );

$this->load->model('main\_model');

if($this->main\_model->UpdateQuery($data, $record\_id)){

redirect('doctor/StudentMedicalRecord/getRecordData/'.$record\_id);

$this->session->set\_flashdata('success', 'Data successful update!' );

}

}

public function getRecordData2(){

$employee\_id = $this->input->post('employee\_id', TRUE);

$password = $this->input->post('password', TRUE);

$result = $this->Login\_model->check\_user($employee\_id, $password);

if ($result->num\_rows() > 0) {

$data = $result->row\_array();

$employee\_id = $data['employee\_id'];

$last\_name = $data['last\_name'];

$first\_name = $data['first\_name'];

$middle\_name = $data['middle\_name'];

$position = $data['position'];

$user\_type = $data['user\_type'];

$sesdata = array(

'employee\_id' => $employee\_id,

'last\_name' => $last\_name,

'first\_name' => $first\_name,

'middle\_name' => $middle\_name,

'position' => $position,

'user\_type' => $user\_type,

'logged\_in' => TRUE

);

$this->session->set\_userdata($sesdata);

if($user\_type === 'doctor'){

$record\_id = $this->uri->segment(4);

$this->load->model("main\_model");

$data["record\_data"] = $this->main\_model->fetch\_single\_data($record\_id);

$data["fetch\_data"] = $this->main\_model->fetch\_data();

$this->load->view('layouts/header');

$this->load->view('doctor/get\_medical\_record', $data);

}

elseif($user\_type === 'nurse'){

redirect('nurse/Nurse');

}

elseif($user\_type === 'dentist'){

redirect('dentist/Dentist');

}

elseif($user\_type === 'dental staff'){

redirect('dental\_aide/Dental');

}

elseif($user\_type === 'admin'){

redirect('admin/Administrator');

}

else{

echo "<script>alert('access denied');history.go(-1);</script>";

}

$this->load->view('login\_view');

}

}

}

?>

*Patient report code*

<?php

defined('BASEPATH') OR exit('No direct script access allowed');

class PatientReport extends CI\_Controller {

public function \_\_construct(){

parent::\_\_construct();

$this->load->model('main\_model');

If($this->session->userdata('logged\_in') !== TRUE){

redirect('Login');

}

}

public function index() {

if($this->session->userdata('user\_type') === 'doctor') {

$this->load->model('main\_model');

$this->load->view('layouts/header');

$DailyPatient['DailyPatient'] = $this->main\_model->ViewPatients();

$this->load->view('doctor/patient\_report', $DailyPatient);

}

else {

echo "Access Denied";

}

}

public function PatientCategoryReport() {

$this->load->model('main\_model');

$this->load->view('layouts/header');

$this->load->view('doctor/patient\_category\_report');

}

public function PatientCategoryReportbyDate() {

$date\_from = $this->input->post('date\_from');

$date\_to = $this->input->post('date\_to');

$date\_from = strtotime($date\_from);

$date\_to = strtotime($date\_to);

$date\_from = date('Y-m-d', $date\_from);

$date\_to = date('Y-m-d', $date\_to);

$this->load->view('layouts/header');

$PatientCategoryReportbyDate['PatientCategoryReportbyDate'] = $this->main\_model->PatientCategoryReportbyDate($date\_from, $date\_to);

$this->load->view('/doctor/patient\_category\_report', $PatientCategoryReportbyDate);

}

}

?>

*Patient insertion code*

<?php

defined('BASEPATH') OR exit('No direct script access allowed');

class PatientInsertion extends CI\_Controller {

public function \_\_construct() {

parent::\_\_construct();

if($this->session->userdata('logged\_in') !== TRUE){

redirect('Login');

}

}

function index() {

if($this->session->userdata('user\_type') === 'doctor') {

$record\_id = $this->uri->segment(3);

$this->load->view('layouts/header');

$this->load->view('doctor/patient\_insertion');

$this->load->model("main\_model");

$data["record\_data"] = $this->main\_model->fetch\_single\_data($record\_id);

$this->load->view('doctor/patient\_insertion', $data);

}

else {

echo "Access Denied";

}

}

public function patientInsertion() {

$vital\_id = $this->uri->segment(4);

$this->load->model("main\_model");

$data['patient\_data'] = $this->main\_model->UserPatientData($vital\_id);

$data['med\_data'] = $this->main\_model->selectMedicine();

$this->load->view('layouts/header');

$this->load->view('doctor/patient\_insertion', $data);

}

public function test(){

$this->load->view('layouts/header');

$this->load->model("main\_model");

$this->load->view('doctor/test');

}

public function historyInsertion(){

$vital\_id = $this->uri->segment(4);

$this->load->model("main\_model");

$data['patient\_data'] = $this->main\_model->UserPatientData($vital\_id);

$this->load->view('layouts/header');

$this->load->view('doctor/history\_insertion', $data);

}

public function form\_validation(){

$this->load->library('form\_validation');

$this->form\_validation->set\_rules("gen\_status", "gen\_status", 'required');

if($this->form\_validation->run()){

$this->load->model("main\_model");

$data = array(

"gen\_status" =>$this->input->post('gen\_status'),

"head " =>$this->input->post('head'),

"ears" =>$this->input->post('ears'),

"throat" =>$this->input->post('throat'),

"chest\_lungs" =>$this->input->post('chest\_lungs'),

"abdomen" =>$this->input->post('abdomen'),

"skin" =>$this->input->post('skin'),

"eyes" =>$this->input->post('eyes'),

"nose" =>$this->input->post('nose'),

"neck" =>$this->input->post('neck'),

"heart" =>$this->input->post('heart'),

"extremities" =>$this->input->post('extremities'),

"others" =>$this->input->post('others')

);

$physical\_id = $this->main\_model->create('physical\_examination', $data);

$data2 = array(

"consultation\_date" =>date('Y/m/d'),

"record\_id" =>$this->input->post('record\_id'),

"vital\_id" =>$this->input->post('vital\_id'),

"physical\_id" =>$physical\_id,

"history" =>$this->input->post('history'),

"assessment " =>$this->input->post('assessment'),

"plan\_management" =>$this->input->post('plan\_management'),

"remarks" =>$this->input->post('remarks')

);

$insert2 = $this->main\_model->create('patient\_info', $data2);

$vital\_id = $this->input->post('vital\_id');

$data3 = array(

"vital\_status" =>$this->input->post('status')

);

$insert3 = $this->main\_model->UpdateStatus($data3 , $vital\_id);

$data4 = array(

"medicine\_id" =>$this->input->post('medicine'),

"record\_id" =>$this->input->post('record\_id'),

"quantity" =>$this->input->post('quantity'),

"date" =>date('Y/m/d')

);

$insert4 = $this->main\_model->create('prescription\_table' , $data4);

$medicine\_id = $this->input->post('medicine');

$prescription\_quantity = $this->input->post('quantity');

$this->main\_model->UpdateQuantity($prescription\_quantity, $medicine\_id);

$record\_id2 = $this->input->post('record\_id');

redirect('/doctor/PatientHistory/PatientTable/'.$record\_id2);

}

else{

echo "FAILED";

}

}

}

?>

*Patient history code*

<?php

defined('BASEPATH') OR exit('No direct script access allowed');

class PatientHistory extends CI\_Controller {

public function \_\_construct(){

parent::\_\_construct();

if($this->session->userdata('logged\_in') !== TRUE){

redirect('Login');

}

}

function index() {

if($this->session->userdata('user\_type') === 'doctor') {

$this->load->view('layouts/header');

$this->load->view('doctor/patient\_history');

} else {

echo "Access Denied";

}

}

function PatientTable(){

$record\_id = $this->uri->segment(4);

$this->load->model('main\_model');

$data["record\_id"] = $this->main\_model->fetch\_single\_data($record\_id);

$data["record\_data"] = $this->main\_model->fetch\_history\_data($record\_id);

$this->load->view('layouts/header');

$this->load->view('doctor/patient\_history', $data);

}

function PatientHistoryData(){

$patient\_id = $this->uri->segment(4);

$this->load->model('main\_model');

$this->load->view('layouts/header');

$data["record\_data"] = $this->main\_model->single\_history\_data($patient\_id);

$this->load->view('doctor/patient\_data', $data);

}

}

?>

*Medicine inventory code*

<?php

defined('BASEPATH') OR exit('No direct script access allowed');

class MedicinePage extends CI\_Controller {

public function \_\_construct(){

parent::\_\_construct();

if($this->session->userdata('logged\_in') !== TRUE){

redirect('Login');

}

}

public function index() {

if($this->session->userdata('user\_type') === 'doctor') {

$this->load->view('layouts/header');

$this->load->model('main\_model');

$med\_data['med\_data'] = $this->main\_model->FetchMedicine();

$this->load->view('doctor/medicine\_page' , $med\_data);

}

else {

echo "Access Denied";

}

}

public function edit() {

$medicine\_id = $this->input->post('medicine\_id');

$batch\_no = $this->input->post('batch\_no');

$item = $this->input->post('item');

$expiry\_date = $this->input->post('expiry\_date');

$stock\_count = $this->input->post('stock\_count');

$remarks\_justification = $this->input->post('remarks\_justification');

$data = array(

'batch\_no'=>$batch\_no,

'item'=>$item,

'expiry\_date'=>$expiry\_date,

'stock\_count'=>$stock\_count,

'remarks\_justification'=>$remarks\_justification

);

$this->load->model('main\_model');

$this->main\_model->UpdateMed($data, $medicine\_id);

redirect('doctor/MedicinePage');

}

public function AddMed(){

$this->load->library('form\_validation');

$this->form\_validation->set\_rules("batch\_no", "batch\_no", 'required');

if($this->form\_validation->run()){

$this->load->model("main\_model");

$data = array(

"batch\_no" =>$this->input->post('batch\_no'),

"item " =>$this->input->post('item'),

"expiry\_date" =>$this->input->post('expiry\_date'),

"stock\_count" =>$this->input->post('stock\_count'),

"remarks\_justification" =>$this->input->post('remarks\_justification')

);

$this->main\_model->create('medicine\_table', $data);

redirect('doctor/MedicinePage');

}

else {

echo "FAILED";

}

}

public function del() {

$medicine\_id = $this->uri->segment(4);

$this->load->model("main\_model");

$this->main\_model->deleteMed($medicine\_id);

redirect('doctor/MedicinePage');

}

}

?>

*Authentication*

This page let the user login into the system in their specific role

<?php

defined('BASEPATH') OR exit('No direct script access allowed');

class Login extends CI\_Controller {

public function \_\_construct(){

parent::\_\_construct();

$this->load->model('Login\_model');

}

public function index()

{

$this->load->view('login\_view');

}

public function auth() {

$username = $this->input->post('username', TRUE);

$password = $this->input->post('password', TRUE);

$result = $this->Login\_model->check\_user($username, $password);

if ($result->num\_rows() > 0) {

$data = $result->row\_array();

$employee\_id = $data['employee\_id'];

$last\_name = $data['last\_name'];

$first\_name = $data['first\_name'];

$middle\_name = $data['middle\_name'];

$position = $data['position'];

$confirmation = $data['confirmation'];

$user\_type = $data['user\_type'];

$sesdata = array(

'employee\_id' => $employee\_id,

'last\_name' => $last\_name,

'first\_name' => $first\_name,

'middle\_name' => $middle\_name,

'position' => $position,

'user\_type' => $user\_type,

'confirmation' => $confirmation,

'logged\_in' => TRUE

);

$this->session->set\_userdata($sesdata);

if($user\_type === 'doctor' && $confirmation === '1'){

redirect('doctor/Physician');

}

elseif($user\_type === 'doctor' && $confirmation === '0'){

$this->session->set\_flashdata('error', 'Account not confirmed');

redirect('Login');

}

elseif($user\_type === 'nurse' && $confirmation === "1"){

redirect('nurse/Nurse');

}

elseif($user\_type === 'nurse' && $confirmation === "0"){

$this->session->set\_flashdata('error', 'Account not confirmed');

redirect('Login/');

}

elseif($user\_type === 'dentist' && $confirmation === "1"){

redirect('dentist/Dentist');

}

elseif($user\_type === 'dentist' && $confirmation === "0"){

$this->session->set\_flashdata('error', 'Account not confirmed');

redirect('Login');

}

elseif($user\_type === 'dental staff' && $confirmation === "1"){

redirect('dental\_aide/Dental');

}

elseif($user\_type === 'dental staff' && $confirmation === "0"){

$this->session->set\_flashdata('error', 'Account not confirmed');

redirect('Login/');

}

elseif($user\_type === 'admin'){

redirect('admin/Administrator');

}

else{

$this->session->set\_flashdata('error', 'Invalid creadential, please try again..');

redirect('Login');

}

}

else{

$this->session->set\_flashdata('error', 'Invalid creadential, please try again..');

redirect('Login');

}

}

public function logout(){

$this->session->sess\_destroy();

$this->index();

}

}

?>

*Disease report code*

<?php

defined('BASEPATH') OR exit('No direct script access allowed');

class DiseaseReport extends CI\_Controller {

public function \_\_construct(){

parent::\_\_construct();

$this->load->view('layouts/header');

$this->load->model('main\_model');

if($this->session->userdata('logged\_in') !== TRUE){

redirect('Login');

}

}

public function index() {

if($this->session->userdata('user\_type') === 'doctor') {

$DiseaseRanking['DiseaseRanking'] = $this->main\_model->DiseaseRanking();

$this->load->view('doctor/disease\_ranking', $DiseaseRanking);

}

else {

echo "Access Denied";

}

}

public function FilterData() {

$date\_from = $this->input->post('date\_from');

$date\_to = $this->input->post('date\_to');

$date\_from = strtotime($date\_from);

$date\_to = strtotime($date\_to);

$date\_from = date('Y-m-d', $date\_from);

$date\_to = date('Y-m-d', $date\_to);

$FilterDiseaseRanking['FilterDiseaseRanking'] = $this->main\_model->FilterDiseaseRanking($date\_from, $date\_to);

$this->load->view('/doctor/disease\_ranking', $FilterDiseaseRanking);

}

}

?>

*Dental schedule code*

<?php

defined('BASEPATH') OR exit('No direct script access allowed');

class StudentDentalRecord extends CI\_Controller {

public function \_\_construct(){

parent::\_\_construct();

if($this->session->userdata('logged\_in') !== TRUE){

redirect('Login');

}

}

function index() {

if($this->session->userdata('user\_type') === 'dental staff') {

$this->load->view('layouts/header');

$this->load->model("dental\_model");

$dental\_table['dental\_table'] = $this->dental\_model->ViewDentalRecord();

$this->load->view('dental\_aide/student\_dental\_record' , $dental\_table);

} else {

echo "Access Denied";

}

}

function ViewRecord(){

$this->load->view('layouts/header');

$this->load->model("dental\_model");

$this->load->view('dental\_aide/view\_dental\_record');

}

function ViewRecordById(){

$id = $this->uri->segment(4);

$this->load->view('layouts/header');

$this->load->model("dental\_model");

$dental\_record['dental\_data'] = $this->dental\_model->ViewDentalRecord($id);

$this->load->view("dental\_aide/view\_dental\_record", $dental\_record);

}

}

?>

*Student dental retrieve record*

<?php

defined('BASEPATH') OR exit('No direct script access allowed');

class StudentDentalRecord extends CI\_Controller {

public function \_\_construct(){

parent::\_\_construct();

if($this->session->userdata('logged\_in') !== TRUE){

redirect('Login');

}

}

function index() {

if($this->session->userdata('user\_type') === 'dental staff') {

$this->load->view('layouts/header');

$this->load->model("dental\_model");

$dental\_table['dental\_table'] = $this->dental\_model->ViewDentalRecord();

$this->load->view('dental\_aide/student\_dental\_record' , $dental\_table);

} else {

echo "Access Denied";

}

}

function ViewRecord(){

$this->load->view('layouts/header');

$this->load->model("dental\_model");

$this->load->view('dental\_aide/view\_dental\_record');

}

function ViewRecordById(){

$id = $this->uri->segment(4);

$this->load->view('layouts/header');

$this->load->model("dental\_model");

$dental\_record['dental\_data'] = $this->dental\_model->ViewDentalRecord($id);

$this->load->view("dental\_aide/view\_dental\_record", $dental\_record);

}

}

?>