STUDENT MEDICAL RECORD MANAGEMENT SYSTEM

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CHAPTER I

CAPSTONE PROJECT BACKGROUND

Introduction

Student medical records are essential to protect students' health and safety, especially in an emergency. It enables the school to provide the right care in an emergency by providing knowledge of the illnesses, allergies, and prescriptions that pupils are taking. However, because managing student medical records manually is time-consuming and prone to errors, schools find it challenging to do so successfully.

The management, retrieval, and updating of student medical records are managed by a computer-based system known as a student medical record management system (SMRMS). SMRMS use provides several advantages, including improved information accuracy and reliability, higher security, and easier accessibility. Due to the growing use of technology in education, schools must deploy SMRMS to enhance the administration of student medical records and the standard of healthcare services provided to students.

Project Context and It's Background

The problem of organizing and giving access to student health information in educational institutions is the focus of a research project known as the Student Medical Record Management System. The project's origins can be attributed to the growing concern over preserving the privacy and accessibility of student health information. The current manual system of record keeping requires a lot of time, is prone to errors, and compromises privacy. The goal of this project is to give authorized employees easy access to a secure, centralized database for student health records. The use of this system will improve educational institutions' whole approach to managing

healthcare by giving them a more efficient and straightforward way to retain and retrieve student health information.

Project Purpose and Description

Designing and creating a student medical record management system for educational institutions is the goal of this project. Student health records will be able to be stored, retrieved, and maintained effectively courtesy of this platform. The institutions will be able to decrease the time and labor needed for manual record-keeping and enhance the overall accuracy and security of student medical information by putting in place a centralized and secure system.

The system will have features including the capacity to input and maintain medical history, vaccinations records, and current medical issues. It will be created for use by medical staff and administrators inside the educational institution. Additionally, it would give users the choice to create reports and monitor crucial health-related data like allergies and diseases. A user-friendly interface will be built into the system to provide simple navigation and access to student medical records. The objective of this project is to create a complete and efficient system that can simplify the management of student health records while protecting the privacy and security of sensitive data.

Objective of the Study

Main Objective

The main objective of this system is to establish medical records for students at the Quezon City University Clinic that include contact information, a patient's medical history, and a medication log.

Specific Objectives

1. To develop a system that will record the student data.

2. To develop a system that will retrieve the student's information using QR code.

3. To develop a system that allows admin to add and view information in the medicine inventory,

4. To develop a system that can manage medical staff information.

5. To develop a system that detects student/s in the entrance who were previously admitted in the university clinic and suspected for covid-19 symptoms.

Scope and Delimitations of the Project

SCOPE

1. The system requires authentication login for medical staff.

2. The system can manage patients and medical staff information.

3. The system has hardware to scan QR code to retrieve information.

4. The system can manage inventory of medicine in the facility.

DELIMITATIONS

1. The system is for Quezon City University only.

2. The system is not available for outsiders' excluding visitors.

3. The system does not involve medical dealings and any dealings outside the school.

Theoretical Framework and Conceptual Framework of the Study

Theoretical Framework

Based on "The Computer-Based Patient Record: Revised Edition: An Essential Technology for Health Care". A patient record management system would help to improve health care system and could create a good impact in our society. In addition, General Accounting Office (GAO) stated 3 major ways how to improve automated patient medical record management. First, by giving medical staff better access to data, faster data retrieval, higher-quality data, and a wider variety of data display options. An automated patient records can enhance the delivery of healthcare services. Automated patient records can help with decision-making, quality control, and clinical reminders that can help with patient care. Second, computerized patient records that electronically capture clinical data for assessment can improve outcomes research programs. Third, through lowering expenses and boosting worker productivity, computerized patient records can boost hospital efficiency.

In order to improve the efficiency of the healthcare services provided, computers and internet technologies are now being incorporated into hospitals. Computers in hospitals has also expanded tremendously due to the fact that the operations have to be rapid to cater a greater population and the medical services have to be more precise. Healthcare computer systems, also referred to as clinic management systems, are computer system products that coordinate and

integrate all the essential tasks involved in managing and operating healthcare facilities. For the management of electronic medical records and practice management data, they must adhere to specific security, technical, and functional requirements.

According to Techopedia, the main goal of patient record is to digitize patient medical information in order to facilitate and improve data retrieval. According to the area of specialization required by patients, doctors are no longer only located in hospitals and are now providing care to more patients and families in their own private clinics. Doctors who conduct their own Clinic management are tasked with providing patients with individualized care and attention as opposed to the impersonal care provided in hospitals.

Being in digital form, patient data can be easily shared and viewed by multiple users simultaneously at various locations, resulting in more efficient clinical operations and clinician collaboration. The goal of this project is to create a web-based application that will reduce the amount of paperwork and manual record-keeping of student medical records in Quezon City University particularly in three (3) campuses (Batasan, San Bartolome and San Francisco). This system will make it simple for the nurse and staff to keep track of the patients' records. It also means that patient data can be easily backed up and protected for confidentiality and tampering via access control, reducing patient wait times and increasing the number of patients served. Also, Student Medical Record Management can generate patient's medical history, medical clearance where a nurse certificate giving evidence of a person's satisfactory medical examination, and a medical abstract that will generate important information from a patient's medical record. The system incorporates features aimed at dealing with each procedure in record-keeping, and this software also covers areas such as medical records, patient tracking, and patient history.
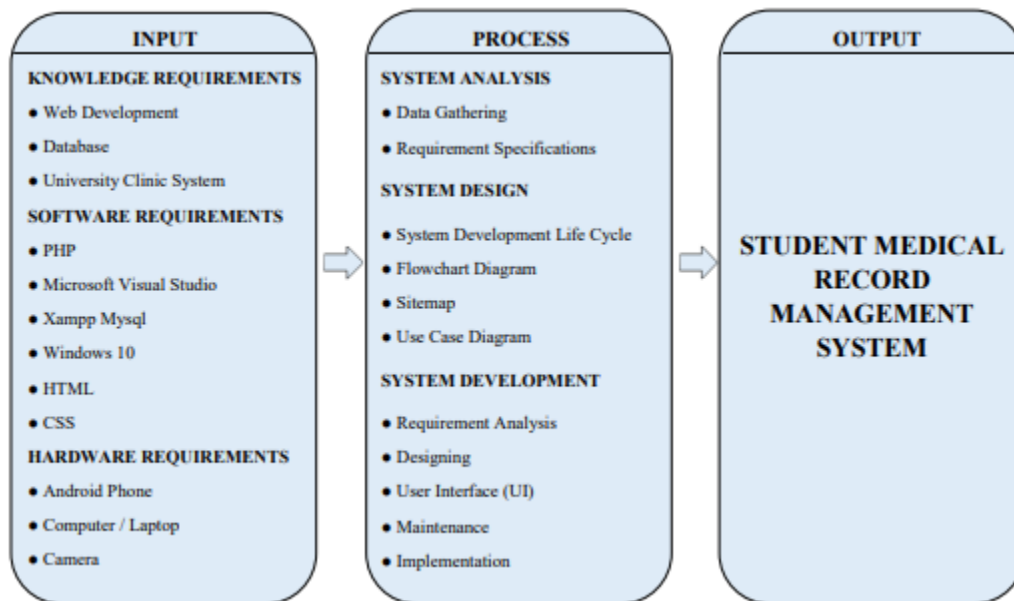
Conceptual Framework

INPUT	PROCESS	OUTPUT
KNOWLEDGE REQUIREMENTS • Web Development • Database • University Clinic System **SOFTWARE REQUIREMENTS** • PHP • Microsoft Visual Studio • Xampp Mysql • Windows 10 • HTML • CSS **HARDWARE REQUIREMENTS** • Android Phone • Computer / Laptop • Camera	**SYSTEM ANALYSIS** • Data Gathering • Requirement Specifications **SYSTEM DESIGN** • System Development Life Cycle • Flowchart Diagram • Sitemap • Use Case Diagram **SYSTEM DEVELOPMENT** • Requirement Analysis • Designing • User Interface (UI) • Maintenance • Implementation	**STUDENT MEDICAL RECORD MANAGEMENT SYSTEM**

FIGURE 1.1. Conceptual Framework of the Study

The figure 1.1 above shows the Input, Process, and Output of the project. To begin development of the project, the Input or requirements where needed to determine what features the project would have, Process defines how the development process was done by the proponents and shows the models used in helping develop project. And the Output will be A Web-Based Clinic Management System with QR Code.

Significance of the Study

An important resource for safeguarding students' wellbeing in educational institutions is the Student Medical Record Management System. This system makes it possible to efficiently and accurately track a student's medical background, medication use, and treatment regimens. The importance of this study resides in its potential to enhance student health outcomes, facilitate communication between medical professionals and educators, and offer a thorough resource for handling student medical requirements. The establishment of an effective system for managing student medical records has the potential to improve students' well-being and academic performance as well as lower liability concerns for educational institutions. In the development of the proposed system, this study is deemed beneficial to the following:

To the Students of Quezon City University

Students can benefit from a student medical record management system by having access to a centralized database of their medical history, symptoms, and treatments. This can make it easier for medical providers to determine a student's medical requirements and to offer the necessary care. Students can track their health and identify movements or patterns in their medical situations with its assistance.

To the Clinic Department of Quezon City University

A student medical record management system can help the clinic department by giving it a more efficient and accurate means to manage student health data. This can facilitate communication between health workers, guarantee accurate evaluations and treatments, and lower errors in patient data. A centralized system can also make it simpler for clinic employees to access and retrieve patient records as needed.

To the Administrators of Quezon City University

A student medical record management system can give school officials a complete overview of student health information. In addition to ensuring compliance with health and safety standards, this can assist in identifying health developments and problems within the student population. Also, it may help in improving communication between various departments and healthcare professionals.

To the Future Developers

Future health care developers may benefit from researching Student Medical Record Management Systems. Developers can create and construct more effective and efficient systems in the future by understanding the potential and difficulties associated with such a system. The development of a student medical record management system can also help identify gaps in existing technology and present possibilities for creativity and development.

Definition of Terms

Authentication Log. The process of verifying a user's identity when they visit their profile on a certain platform.

Bar-Code. A barcode is a machine-readable representation of numbers and characters that consists of bars and spaces.

Data Analytics. Individuals and organizations can benefit from data analytics. Raw data is typically analyzed by data analysts in search of insights and developments.

Information Silo. A system for managing information that is limited from freely interacting with other system for managing information.

Medical History. Having a complete medical history on hand will assist your primary care doctor better understand your health. It enables your doctor to spot trends and make more informed decisions based on your specific medical requirements.

Medication Log. allows you to keep track of all the professional activities you've engaged in, including emergency situations, and consultations.

MySql. To add, access, and process data stored in a computer database, you need a database management system such as MySQL Server.

PHP. Many developers use PHP, an open-source server-side programming language, to create websites. In addition, it is a general-purpose language that you can employ to create a variety of tasks, such as Graphical User Interfaces (GUIs).

QR Code. It is used digitally. It contains information of the patient and the staff may be able to acquire patient information and restore using QR code.

SDLC. A organized procedure known as the Software Development Life Cycle (SDLC) provides the fastest possible production of high-quality, low-cost software.

Web Application. is an application program that is provided through the Internet via a browser interface and stored on a remote server.

Web-Based System. The web-based version of the system is mainly accessible for registrar's use, IT coordinator, Clinic User and teaching staff for generation of digital ID with QR code, and gather recover patients information.

CHAPTER II

REVIEW OF RELATED LITERATURE, STUDIES AND SYSTEMS

This chapter presents the related literature and studies after the thorough and in-depth search done by the researchers. The literature of this study comes from the article, journals, E-Book and in other learning materials. This will help the researchers to deeply understand the proposed topic.

Related Literature

Foreign Literature

"Design and Implementation of a Student Health Record Management System" by O. Adegboye and F. Adebisi (2017) is a study that describes the development and implementation of a student health record management system for a university clinic. The authors present a system design that integrates various components, such as a database, user interface, and security features. The implementation of the system is described in detail, including the use of programming languages, database management tools, and security measures. The authors also evaluate the performance and functionality of the system, and report on the benefits and challenges encountered during the implementation process. The findings suggest that the student health record management system has the potential to improve the efficiency and accuracy of health records management in university clinics, and to provide a secure and accessible platform for student health information.

"A Web-Based Student Medical Record Management System" by P. Kim, S. Lee, and J. Park (2015) is a study that describes the development of a web-based student medical record management system for a university clinic. The authors present the system design, which includes modules for patient registration, medical history management, and record sharing

with authorized personnel. The implementation of the system is described, including the use of web technologies and database management tools. The authors also evaluate the performance and functionality of the system, and report on the benefits and challenges encountered during the implementation process. The findings suggest that the web-based student medical record management system has the potential to improve the efficiency and accuracy of health records management in university clinics, and to provide a secure and accessible platform for student health information.

"Design and Development of an Online Medical Record System" by C. Li, Y. Zhang, and X. Liu (2016) presents the design and development of a web-based online medical record system. The system allows patients to access their medical records, as well as communicate with healthcare providers, through a secure and user-friendly platform. The authors describe the development process, including requirements gathering, system design, implementation, and testing. The study concludes that the online medical record system has the potential to improve the accessibility, efficiency, and quality of healthcare, and that it can be further enhanced by incorporating features such as telemedicine and decision support tools.

"An Electronic Medical Record Management System on Blockchain" by Hao Wang(2021)

Medical Record Management System is an important information management system in healthcare centers and hospitals. Information kept in such systems need to be clean, correct and tamper-proof. In this paper, we take advantage of blockchains' tamper-proof and decentralization properties to develop a robust and secure electronic medical record management system. In particular we choose HyperLedger Fabric as our underlying technical architecture. HyperLedger Fabric yields higher throughput and lower latency compared with

other blockchains, which is a perfect candidate for enterprise software development. Our system is a novel innovation that can serve as an ideal replacement for conventional Medical Record Management Systems.

"Student perceptions of a teaching electronic medical record in Health Administration education" by Heather Taylor,Gary Brumitt,Christopher A Harle(2022). As electronic health records (EHRs) have become widely used, it is important for health administrators to be trained in how to use and evaluate EHR data for common operational tasks and managerial decision-making. One tool that can help with this training is a teaching electronic medical record (tEMR), which is an electronic medical record that uses de-identified patient data and provides a way for students to become familiar with the features and functionality of an EHR. Although the benefits of using a tEMR in health administration education are not well understood, we conducted a study to examine the perceptions of Master of Health Administration (MHA) students who were exposed to a tEMR during a course. We collected qualitative data from a focus group and administered pre- and post-surveys on students' self-efficacy and perceptions of using healthcare data analysis in their future jobs. Our findings suggest that exposure to a tEMR can positively impact students' perceptions of using EHR data for strategic and managerial tasks. Specifically, we found that students valued their exposure to the tEMR and that their perceived ease of using healthcare data analysis in their future job significantly increased following use of the tEMR.

"Electronic records management systems and the competency of educational institutions: Evidence from Yemen"byMuaadh Mukred, Zawiyah M. Yusof,Burkan Hawash,Umi Asma'a Mokhtar,Waleed Abdulkafi Al-Moallemi(2021) In today's world, technology is storing an increasing amount of information. This has changed the way

governments, organizations, and individuals manage their business and record-keeping. Cloud computing, along with ICT, office automation, and digitalization, has changed how electronic records are created. To ensure competent operations and regulatory compliance in the future, organizations should embrace this emerging environment. However, the absence of a framework makes it challenging to implement the Electronic Records Management System (ERMS). This study proposed a framework for ERMS implementation and identified critical factors related to the ERMS characteristics and cloud characteristics. Implementing the ERMS will improve the competency of Yemeni public sector educational institutions, and the proposed framework will facilitate this. The study used the Technology Acceptance Model 3 (TAM3) to implement a cloud ERMS and distributed questionnaires to 350 academicians and managers in the Yemeni public education sector using a quantitative approach method. Using Partial Least Square-Structural Equation Modelling (PLS-SEM) through a second-order analysis method, variable relationships were identified. All the identified factors were found to be crucial and had a significant relationship with the behavioral intention to implement ERMS. The study also found that ERMS plays a vital role in the competency of educational organizations. In summary, the study demonstrates the importance of the ERMS and Cloud dimension in its implementation and its significant effect on public sector educational competency. The findings of this study could contribute to shaping the direction of theoretical and empirical studies concerning ERMS, particularly in its implementation to support the competency of educational institutions.

"Blockchain-Based Medical Record Management with Biofeedback Information" by Hui LiWang, Shao-IChu, Jiun-HanYan, Yu-JungHuang,I-YuehFang, Shu,Wei-ChengLin, Chao-TienHsu,Chih-LungHung, Tzung-ChingLin and Te-TsunShen(2020)The use of

blockchain technology, a distributed database that employs cryptography to ensure data integrity, security, and incorruptibility, is explored in this chapter in relation to medical health record and biofeedback information management. A framework utilizing smart contracts to establish a medical record management system is proposed, with a focus on patient privacy. By using blockchain, medical records and information can be exchanged more efficiently and at a lower cost, with patients able to manage their records across different hospitals and clinics. This is in contrast to traditional medical record systems, which often involve complicated administration procedures that waste valuable human resources. Blockchain offers increased stability, consistency, and resistance to attacks, as well as protection against distributed denial-of-service attacks (DDOS) that are common in centralized systems. By decentralizing ownership of medical records, patients are empowered to manage their own health and take control of their medical records directly. Overall, the adoption of blockchain technology in medical record systems provides a reliable and efficient solution that benefits patients and healthcare providers alike.

Automated Clinic Record Management System A Case Study Of Ahmadu Bello University Sick-Bay By Alfa Mahfooz Ahmed(2018) The purpose of this study was to develop an automated clinic record management system for Ahmadu Bello University Sick-bay to improve their services in this digital age. Qualitative research was conducted using interviews, observations, and questionnaires to identify challenges associated with the current manual record management system and ways to improve it. Fifteen respondents, including clients and staff, were randomly selected for the study. The findings were analyzed and used to design the automated system, which was created using web development tools such as Adobe Dreamweaver, Notepad Plus Plus, hypertext preprocessor (PHP), Java scripts (JS), and

MySQL. The study identified problems associated with manual record keeping, such as difficulties in sorting, retrieving, and updating records, lack of record security, and loss of relevant information. The implementation of the automated system is expected to improve the effectiveness and efficiency of clinic operations. The study concludes with a summary of the findings, conclusions, and suggestions for future research.

Local Literature

According to Theresa Mee S. Habagat (2017) The use of cutting-edge technology in colleges and universities has increased productivity in data processing and exchange, maintained data quality, and production, which has increased the quality of instruction and services provided. The goal of the project was to create and implement a computerized system to enhance the management of student records at the Jose Rizal Memorial State University-Katipunan Campus, Philippines. Computerized student records, including information from student record forms, psychological test results, counseling notes, admission slips, referral slips, and certificates of good moral character, are stored in the automated student record system. It applies the system development life cycle approach with the developmental research methodology. The International Organization for Standardization (ISO) 9126-1 software quality parameters were used by information technology professionals and students to evaluate the system. In tabulating the results, mean calculations were the statistical method utilized. According to the research, this system has five qualities of high-quality software: it is very functional, reliable, useful, efficient, and maintainable. Student records could be stored, sorted, and retrieved more quickly and effectively. The study's findings show that this approach enhances student record management by removing issues like tardy retrieval and time-consuming record sorting and searching.

The clinic at Bestlink College of the Philippines has a system in place for keeping students' medical records organized. The proposed system's goal was to improve the current situation of the school clinic by simplifying difficult tasks. When problems arise, the researchers are committed to meeting the needs of the users. The researchers examined the current situation at the school clinic in order to find a suitable solution to the problem. Because the school uses Microsoft Excel, the researchers discovered that Bestlink College of the Philippines clinic has difficulty searching for student records. The school can easily search the information in Microsoft Excel.

However, if the user searches for the student's surname, comparable results will appear. The researchers employed the systems development life cycle technique to follow the timetable on time, allowing the school to track the supplied stages on how to document or conclude the research on time. The findings of our research effort missed a few pieces of information and system functions. The researchers finished their first effort at employing SLDC to tackle the difficulties. The researchers restarted from the beginning and added numerous elements to the suggested system. The researchers found that a medical record system is one that has all of the student's medical information. To improve this study project, more research should be undertaken to supply more functionalities to the system. This approach can be applied to future systems developed by other researchers studying a medical record system.

The digital age necessitates the use of electronic medical records. This study was carried out to identify the benefits that the system delivers to the school clinic and to make it easier to manage the medical data and employees of Saint Michael College of Caraga (SMCC). While the current CPD framework is superior to paper in general, it frequently falls short of meeting the client's needs since it is based on an outdated paper-outline' mindset (Gad & Ramadan, 2013). The study discovered that the system was required for handling medical records and that it is extremely advantageous to the institution. Furthermore, this system secures data and adds information to both students and personnel, including consultations with the clinic. Furthermore, the system updates the information anytime the patient changes - fast-tracking data that can be useful for the clinic attendant. The system also generates three types of reports that are simple to alter. It was suggested that the system be implemented at the school clinic to improve performance in handling medical records, increase security standards, and safeguard patient data privacy and confidentiality.

According to JUVIE PAULINE L. RELACION, University of the Immaculate Conception, Davao City, Philippines (2017) This is a research project for the University of the Immaculate Conception College Department Clinic's patient management information system. The study's goal was to provide a simple method for storing and maintaining patient records and inventory. It creates an automated system for tracking patients, information, and medicine inventory, creates a database for patients' information records and medicine inventory reports, and generates patient, record, and medicine inventory reports. It is required because paper-based records need a significant amount of storage space, are easily misplaced or misfiled, take up more time, lack confidentiality, have poor legibility, and are prone to errors. The iterative and incremental model was adopted in this investigation. The main idea is to build an application in smaller chunks over repeated cycles. According to the findings of this study, the developed system was capable of developing an automated system to track patients, information, and medicine inventory, as well as creating a database of patients, records, and medicine inventory. The findings improve clinic staff efficiency in providing healthcare services to patients. The staff was also able to reduce any negative complaints from patients with the use of this system. Furthermore, because of its ability to provide printed output for patients, records, and medicine inventory reports, the staff was able to meet the administrator's criteria.

Even in the absence of a national strategy, the CHITS (Community Health Information and Tracking System), the Philippines' first extensively utilized electronic medical record system, has endured over time and gradually expanded its geographic footprint. This study analyzes the process of CHITS development, the enabling elements and difficulties that influenced its adoption, as well as its continued use and expansion over an eight-year period (2004–2012) using the HOT-fit model. The case study method was employed in this article. CHITS was created using user-centric collaborative and participatory methodologies. CHITS benefits include increased productivity, enhanced data quality, simpler record administration, and improved morale among government health employees. Its endurance and growth as a result of peer and municipal policy adoption points to an eHealth technology designed for and by the people. While a growing number of local governments have adopted computerization, the needs of end-users, program managers, and policymakers continue to evolve. There are currently challenges in keeping CHITS technically robust, up to date, and scalable. The absence of standards impedes meaningful data exchange and utilization across various information systems.

Infrastructure for energy and connectivity, particularly in rural areas, must be created as soon as possible in order to accomplish overall development goals. In order to attain universal health care, policy and operational deficiencies revealed in this study must be addressed utilizing a people-centric viewpoint and participatory methodologies. More rigorous research studies are needed to assess the benefits of CHITS on public health program management and clinical outcomes.

Foreign Literature

School health records provide a way for school nurses to communicate information to students, families, the school multidisciplinary team, emergency personnel, other healthcare providers, and school nurse substitutes. Electronic documentation systems afford economical information management processes and the aggregation of knowledge from multiple sources. EHRs are needed to build a standardized school health database that identifies student health trends, determines evidenced-based interventions, supports effective student healthcare models, and documents improved student academic success (Importance of Maintaining School Health Records - Education, 2021).

Document digitization is growing in popularity. As seen by online transactions, grocery stores, doctors' offices, gas stations, and airplanes, paper is being swiftly phased out of every industry we are aware of. The digitization concept is being used in schools as well, where it is gradually taking the place of paper papers for all tasks. Many different kinds of papers pertaining to student health and medical information are gathered by schools in the US, ranging from K–12 through higher secondary education. It contains information about student immunizations, allergy data, medical issues, regular medication records, and immunization records.Schools can close the gap by digitizing their student health records. It will not only make it easier to comply with stricter privacy and security regulations than paper records, but it will also improve data collection, control, and auditing access and speed up authorized release in an emergency. Schools face significant challenges in keeping a record of their student's data, which includes attendance sheets, exam report cards, transcripts, exchanges, and papers linked to student loans, sponsorships, and scholarships. Digital technology is becoming the norm in the business world, and education is benefiting greatly from digitalization. The covid-19 epidemic has necessitated digitalization and digitized teaching in schools, with online classes, online assessments, eBooks, video conferencing, and virtual reality. Post-pandemic schools are gathering much of their data in digital files and decreasing the need for paper to keep records. Digitizing school health records provides quick accessibility, cost cutting, information security, higher productivity, data backup and restore, and additional protection against data corruption or loss. Digital access decreases the time required to provide access and lets users specify the level of accessibility, improving data security and safeguards against data leaks. Digitization reduces the need for paper records, is eco friendly, and protects student records from tampering and misuse. It is also easier to find records and information, and can be used for analytical

diagnosis. Digital files are stored on a third-party cloud platform and require a security key to access (The Advantages of Digitizing School Health Records, 2021).

In Advanta, it discussed the importance of student health management software and its features. Student records that have been created as a result of doing good deeds for students' health are kept up by health management. This was implemented by the school administration to address any emergencies that might arise on school grounds. This makes it easier to keep track of each student's health concern, along with how it was diagnosed, treated, and safeguarded. Also, it creates records indicating who is supervising the youngsters there. Some of the features are: managing health problems, maintaining doctor's records, maintaining student medical history, automatic reports generation, and tracking treatment and precautions taken by students (Student Health Records Management System for Schools and Colleges, 2017).

For Camu Digital Campus, an educational institution must record data, maintain track of health-related issues, and take action as required. Luckily, technological advancements have made it possible for campuses to monitor and track the health data of both students and staff. Software for student health records makes it possible to centrally monitor, report, and save medical records. A specially developed piece of software called the students' health record management enables campuses to keep track of health-related incidents, student medical records, and actions while also enabling online access to records for students and staff. This software can be used by institutions in the event of a campus emergency. In addition, it aids students in keeping track of medical conditions, remedies, and safety measures. Moveover, this creates a report that details what occurred, who oversaw the student, and the student's prior medical history. Some features are: maintain a record of all health incidents, ensure restrictive access, create a better atmosphere for students, and inform the parents about the student's health (Ralecon, 2022).

In Oregon State University, protecting the students medical records and rights are their number one priority so one feature of the system is the encrypted email containing your medical record. They believe that students have a right to their medical records and the protection of that information. Student Health Services can assist students in requesting medical records to aid clinicians in providing them care on campus. They can also give copies of the care the students received at the clinic to a doctor at home, parents, or students (Medical Records | Student Health Services | Oregon State University, n.d.).

Local Studies

"Computerized Medical Record and Monitoring System of Saint Michael College of Caraga, Philippines" by Trisha Mae G. Bergado,Jhoanna Diane Esclamado,Missy M. Godinez,Reven E. Isaga and Kimberly D. Magallen(2020) In the digital age, there is a growing need for computerized medical records. This research aimed to identify the benefits that such a system could bring to Saint Michael College of Caraga (SMCC) in managing the medical records of both students and personnel. While the current CPD framework is generally an improvement over paper records, it often fails to fully address the needs of clients because it is based on an outdated paper-based approach (Gad & Ramadan, 2013). The study found that a computerized medical records system is essential for managing records and provides significant benefits to the school. The system ensures secure storage of files and allows for easy updating of patient information, including consultation records. The system also generates three types of reports that are easy to manage. The research recommends implementing the system to enhance medical records management, improve security standards, and maintain patient privacy and confidentiality at SMCC.

"A Web-Based Clinic Records Management and Inventory System for St. Paul University Quezon City" by Ronald Adrian Calucin,John Paolo Hapa,and Jericho Paolo P Benito(2018)

The aim of developing the Web-Based Records Management for St. Paul University of Quezon City was to simplify the tasks of doctors, nurses, and students at the institution. The purpose of this study was to create a functional web-based system that can support doctors and nurses in their daily duties, such as maintaining patient records, monitoring inventory levels, and sending SMS messages, among others. The system also benefits students by allowing them to schedule appointments according to their academic and personal timetables. The developers used Data Flow Diagrams and Unified Modeling Languages to guide the development of the system. The mobile app was constructed using PHP, with Laravel serving as the front-end and Microsoft Azure SQL as the back-end. The system was assessed by 20 end-users and 10 Information Technology experts using the ISO 25000 software quality questionnaires. The system met the criteria for software quality according to the evaluation. The developers concluded that the intended end-users are able to use the system effectively.

"Proposed Students Medical Record System for Bestlink College of the Philippines" by Kenneth Bryan Fajardo,Kervin San Gabriel,Edward Pacheco,Aaron Aytona and Russelle Clint Lacuna(2020) The Bestlink College of the Philippines clinic currently uses Microsoft Excel to keep students' medical records organized, but this method has its limitations, such as difficulty searching for specific information. The purpose of this study was to develop a proposed system that would address these issues and make tasks easier to manage. The researchers used the systems development life cycle (SDLC) method to ensure the project was completed on schedule. However, the first attempt had some limitations, so the researchers went back to the drawing board and added various features to the proposed system. The medical record system now includes all the necessary medical information of the student, and the researchers suggest that further research be conducted to add more functions and upgrades to the system. This work can serve as a useful reference for future researchers studying medical record systems.

"Computerized Health Records Management System" By Aaron O. Estinar, Luis S. Grefiel, Lorenzo H. Libre, Lianne K. Lu, and Marivic S. Tangkeko (2018) The researchers developed a system that not only facilitated the delivery of health services, but also served as a repository for important medical data. This data could be used in the future for clinical purposes and acted as a backbone for future health-related endeavors. The system made the RHU's processes faster, generated accurate reports, and provided relevant and actionable information. PBHIS aimed to help the RHU analyze patient data, identify areas of concern, and make informed decisions. In this study, obtaining timely and valuable data to provide relevant health services was a challenge. However, with the system created, the researchers were able to overcome this obstacle and create a platform that not only facilitated health services but also consolidated important medical data, which could be used in various businesses.

"Records management and archival practices at Central Philippine University: A basis for a proposal for an archival program to establish the University Archives" By Cabalinan, E. J. C. (2016) The management of records aims to effectively and systematically control the entire lifecycle of records that are regularly generated as a result of activities and transactions. Records are an important asset in ensuring that an institution is governed effectively and efficiently and is accountable to its staff, students, and the community it serves. Records help with decision-making, organize documents, provide evidence of policies, decisions, transactions, and activities, and support the university in cases of litigation. However, there have been instances at Central Philippine University where records were reported to be misplaced or missing, which raises questions about how records are managed and what policies and systems are used for records management. This research investigated the current state of records management at Central Philippine University using a survey research method, with the questionnaire as the primary data collection instrument. The study targeted both administrative and academic employees, and the findings revealed that the university still has a lot of work to do regarding day-to-day records management. No formal records management system was identified, and there appeared to be no specific policy for records management. There were no qualified records management practitioners at the university, and proper training, workshops, and skills in records management were lacking among academic and administrative practitioners.

Foreign Studies

College students are facing unique health issues post-pandemic, such as increased mental health services and updated student medical record management processes. A survey of 14,000 on-campus students found that 49% feel lonely, 32% have experienced a high level of stress, 42% sleep less than 7 hours on weeknights, 71% report more than three problems in the past year with academics, career, family, health of someone close to them, bullying, finances, peers and other life events, 34% report an acute diagnosis within the past year that negatively impacted their academic performance, and depression symptoms tripled among American adults, including college students. Additionally, 3 in 4 report facing at least one adverse mental health symptom such as anxiety or depression, and 1 in 4 seriously considered suicide within the 30-days prior to completing the survey.

Campus health centers need to be nimble and nurturing to address the young adults who seek care, while also equipped to meet the advancing regulatory requirements for their electronic medical records. They must store student records 10+ years after the last semester of attendance, and must maintain secure and detailed records for a comprehensive medical record. Additionally, they must comply with the Information Blocking rule, which prohibits practitioners from engaging in information blocking of electronic health information (EHI). Patients are demanding online access to their medical record, and 67% said they will consider changing their doctor or hospital providers in the coming year if their health record is not sharable, available or blocked (Student Medical Record Archiving for Campus Health Centers, 2021).

There is a study conducted in an academic institution wherein it reveals the problem of managing student medical records in school. It found that inadequate computer and other ICT devices, unstable power supply, and lack of funding for training were major challenges. There is a need to switch to digitizing students' medical records by funding ICT to create a management system or software (STUDENTS HEALTH RECORDS MANAGEMENT IN ACADEMIC INSTITUTION: A SURVEY OF PRACTICES AT FEDERAL COLLEGE OF EDUCATION (SPECIAL), MED, 2021).

In Saudi Arabia, there is a study about the experience of medical staff accessing the students' medical records. By reviewing the medical records of students and recording treatment, medical professionals can further their knowledge. The study contrasted the staff' experiences accessing paper medical records and electronic health records (EHRs) and evaluated medical staff access to both types of information from their point of view. As a result, 66.1% of participants had access to electronic health records (EHRs), while 83.27% had read-only access to medical records. The ability to quickly access medical records was rated favorably by both the EHR group and the paper group (70.1% and 67.1%, respectively). With U = 5200, Mean Rank = 122.73, P =.04, the EHR group fared better than the paper group in terms of overall satisfaction. With that, it tells that electronic health records are more accessible than the traditional records which are paper. This supported the idea that having a student medical record management system on campus is not only beneficial to students but also to the staff of the school clinic (Almulhem, 2021).

Clinic management systems are computer system products that coordinate and integrate all the inherent activities involved in the management and running of healthcare facilities. They must meet specified security, technology and functionality standards for managing electronic medical records and practice management information. The primary purpose is to digitize patient records

so as to make data retrieval easy and efficient. The study aims to develop a desktop application design that will minimize all paper works and manual records keeping in a chosen physician's clinic, resulting in smoother clinical operations and collaboration among clinicians. Economically, clinics benefit from constant cost savings as a result of increased productivity and overall efficiency (*Patient Record Management System | Papers Information Technology Management*, 2021).

SYNTHESIS

The systems that are mentioned above were based on both foreign and local system studies. The presented systems were obtained from the gathered foreign and local literature and studies that will serve as a guide to the proponents proposed system which is A web-based clinic management system with QR code.

The related systems mentioned the use of technology by adapting to modern innovative system of providing fast and efficient transaction while focusing in health care services. The use of quick response code or better known as QR Code are identified as a way of retrieving patient records and data. The collected literatures and studies help the proponents to better come up with ideas on what to improve more in the proposed system. The start of pandemic also became a way for everyone to opt for "touchless transactions", thus the start of utilizing QR Codes began at every organizations in the society, but most widely in the healthcare division. Through the use of the said innovative technology, patient records from clinics can be easily retrieved, it will also lessen manual storing of information as all information will also turn digitalized. The clinic admins and nurses will have easier access to view a patients existing records as well as viewing the patients

history. A lot of organizations are also slowly adjusting into using latest technology in storing data, which can help them to reduce data loss and prevent information redundancy.

TECHNICAL BACKGROUND

Software Specifications

Software Specifications comprise a technical document that describes future software functions and capabilities, its characteristics, designs, and implementation constraints for the development tea.

Software	Specification	Descriptions
Operating System	Windows 10	an operating system that is generally common nowadays that is flexible with any program.
Operating System	Android	a mobile operating system (OS) developed by Google designed for mobile phones such as smartphones and tablets.
Database Software	Xampp MySQL Version 3.3.0	an open-source package that is widely used for PHP development. It provides a graphical interface for SQL (php MyAdmin), making it easy to maintain data in a relational database.
Programming Language	PHP	a server-side scripting language that is embedded in HTML. It is used to manage dynamic content, databases, session tracking, even build entire e-commerce sites.
Web Technologies	CSS (Cascading Style Sheet)	a style sheet language used for describing the presentation semantics (the look and formatting) of a document written in a markup language.
Web Technologies	HTML	a standardized system for tagging text files to achieve font, color, graphic, and hyperlink effects on World Wide Web pages.

Web Browser	Google Chrome; Microsoft Edge	These browsers are used to access contents inside the world wide web and other web-based applications.
Compiler	Microsoft Visual Studio Code	a streamlined code editor with support for development operations like debugging, task running, and version control

TABLE 2.1. *SOFTWARE SPECIFICATIONS*

Hardware Specifications

Hardware Specifications means the minimum technical specification and configuration must be met by the hardware in order to ensure the correct operation of the software, as set out in the document.

Hardware	Specification	Descriptions
Processor	Intel Core i3	Is an Intel proprietary processor that is built on the framework of multiprocessor architecture and the successor of the Core 2.
Camera	Web Camera	A webcam is a small digital video camera directly or indirectly connected to a computer or a computer network.
Internet Provider	Converge ICT	is an organization that provides services for accessing, using, or participating in the Internet.

TABLE 2.2. *HARDWARE SPECIFICATIONS*

CHAPTER III

TECHNICAL BACKGROUND

This chapter presents the construction and technical specifications of information technologies that will be needed for the implementation and integration of the proposed system. It discussed the methodology which contains the system development life cycle and the development method. Finally, this chapter also contains the technicality of the project, details of the technologies to be used, how the project will work, and the system architecture of the project system.

Methodology

To attain the objective of this study, the researchers will use a qualitative approach, a research method of the study wherein a valid conclusion is based on finding different affiliations between the Independent variable and Dependent variable. According to Jena et al. (2013), the qualitative research approach is more about understanding a research problem in a humanistic manner. It allows participants to tell their stories, meaning that qualitative research becomes their tool to be heard or simply their voice. It is used to clearly or entirely understand people's beliefs, experiences, attitudes, behaviors, and even interactions. With that, a qualitative research approach will help the researchers achieve the answers to the research query. Since the study is about a web-based clinic management system with QR Code, the qualitative research method is more applicable. The researchers did not use a quantitative research approach since the study does not generate measured and numerical data.

To conduct this study, the researchers will use instruments to gather the needed data, such as consent forms and letters to the participants. To inform the participants that the data gathered from them will be used in the study. Moreover, to gather information from the participants, the

researchers will utilize interviews as a method of data collection wherein researchers will list down all the possible questions according to the needed data of the research. The nature of the questions is a semi-structured questionnaire with probes and follow-up questions protocol.

The researchers will use primary and secondary data sources in this study. The primary data will be collected from the interview with the clinical staff as the participants. The participants are chosen based on the qualifications and characteristics required by the researchers.

On the other hand, the secondary data are collected from various sources, including articles, journals, and related studies or theses from books, magazines, and other computerized databases. These sources of data were organized for the Review of Related Literature. The researchers ensure that the studies and literature are published in the year 2012 and above for the assurance of updated information.

System Development Life Cycle
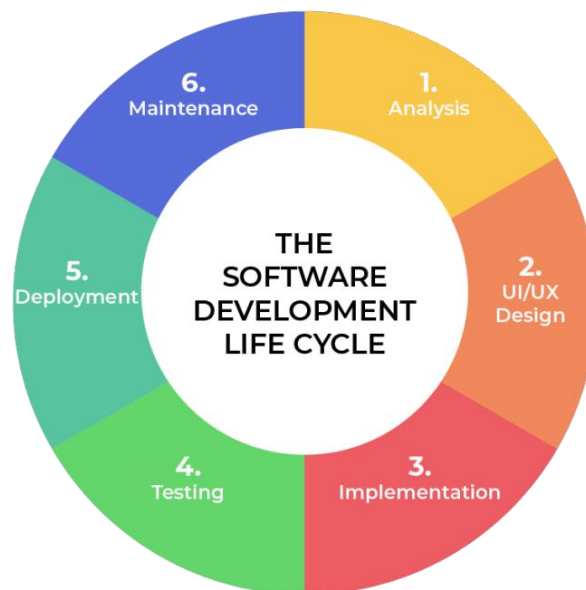
FIGURE 3.1. *THE SOFTWARE DEVELOPMENT LIFE CYCLE*

The proponents aims to deliberately construct a system which follows a step-by-step process in order to meet the expected output from the proposed study. To better monitor the study's progress, the proponents used the systematic approach of the System Development Life Cycle (SDLC), which will guide the developers in analyzing each steps and processes, as well as help the developers to achieve their necessary goals, and help to determine the necessary actions for the difficulties and mishaps that may experience during the duration of the creation of the system. Lastly, in order to make the development systematically planned from the planning to the implementation phase, Waterfall Method will be mainly used in the creation of the system.

System Development Method

FIGURE 3.2. *AGILE SOFTWARE DEVELOPMENT LIFE CYCLE METHOD*

The proponents used Agile Software Development Life Cycle Method. The Agile software development life cycle is the structured series of stages that a program system goes through as it

moves from beginning to end. It contains six phases: Requirements, Design, Development, Testing, Deployment, and Review.

The Agile life cycle will vary slightly depending on the project management methodology chosen by a team. However, the goal of all software development teams is the same: to deliver working software to users on time.

Provided flexibility is the first and foremost benefit of the Agile software development life cycle. The model promotes the development of software in small, quick steps. Agile practices are based on continuous iterations of software that allows continues release of updates to the users in high frequency. Each new released system serves as a base for the next one.

Technical Background

Technicality of the project

The proponents have used web-based programs wherein the users can access them through any digital platform. The Student Medical Record Management System will develop the management, retrieval, and updating of student medical records via a computer-based system.

In order to achieve the development of the proposed system, the proponents used different types of software and hardware technologies. The software technologies include HTML, CSS, Apache, Database – Xampp, MySQL, Functionality PHP, – PhpMyAdmin. For hardware technologies, the proponents will be using a laptop with the brand Dell Latitude 3400 together with its built in peripherals such as keyboard and a mouse. AIODIY Webcam will be used as a camera to scan the qr-codes generated to check the status of the

students, and Windows 10 Pro Education as the operating system used to develop the system.

Details of the technologies to be used

The following software and hardware technologies that were mentioned in the earlier part will be further discussed below to better understand the detailed information of the technologies that will be used in developing the system.

Software Technologies:

PHP - This general-purpose scripting language is especially suited to server-side web development, where PHP generally runs on a web server. It can also be used for command line scripting and client-side GUI applications.

HTML (Hyper Text Markup Language) - This is the language in that Web pages are written. As far as computer languages

go, this is the easiest to learn. You can create a Web page without it using a Web page editing program, but the program will still use HTML to create the page.

CSS (Cascading Style Sheet) - Cascading style sheets are used to format the layout of Web pages. 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. CSS helps Web developers create a uniform look across several website pages.

Xampp - Developers will use this as a development tool to allow website designers and programmers to test their work on their computers without any access to the internet.

MySQL - This is an open-source relational database management system. MySQL will be used by the developer because it is one of the system development compatible

databases.

Apache - The Apache HTTP Server is a web server software notable for playing a vital role in the initial growth of the World Wide Web.

Hardware Technologies:

Laptop/Computer: Dell Latitude 3400 - Powered by a quad-core 1.6 GHz Intel Core .i5 8265U processor, this laptop comes with 4GB of DDR4 RAM, a 500GB HDD, a 14" 1366 x 768 display, and an integrated Intel UHD Graphics 620 core.

Keyboard: Dell Latitude 3400 Internal Keyboard –

Mouse: Imperion z500 Terminator - RGB running gaming mouse; 30 millions clicks rated switch; Built-in memory 32 KB; 7 buttons with 6 programmable buttons; Imperion C050 sensor + Avago A3050. Frame rate 8500/s, Speed 83 IPS and Acceleration 20G.; Wheel LED indicates DPI change: 500 DPI-Red, 1200 DPI-Blue, 2000 DPI-Green, 2400 DPI- Purple, 3600 DPI- Sky Blue

Camera: AIODIY Webcam - 1080P Full HD Video Call For PC Laptop With Microphone Home USB Video Webcam, Built-in omnidirectional high-definition microphone, effective communication distance up to 8 meters.

Operating System: **Windows 10 Pro Education 64 bit** - Windows 10 Pro Education builds on the commercial version of Windows 10 Pro and provides important management controls needed in schools. Windows 10 Pro Education is effectively a variant of Windows Pro that provides education-specific default settings, including the removal of Cortana.

How the project will work

A software program called Student Medical Record Management System makes it easier to store, manage, and retrieve student medical information from educational institutions. The way the system operates is by allowing the authorized staff to input student health information as their personal details, medical histories, vaccination records, and emergency contact information—into the system. Then, this data is kept in a central database that is accessible to authorized users at all times. Moreover, the system offers capabilities for managing medications, scheduling medical appointments, and tracking medical issues. The system intends to increase medical record management's efficiency and accuracy in educational institutions, lowering the possibility of errors and improving the level of treatment given to students.

The system is designed with security components that guarantee that student medical records are kept private and only accessed by authorized employees. To prevent data misuse or tampering, it offers access controls, user authentication, and audit trails. Moreover, the technology makes it possible to track medical data and creates reports on student medical histories that can be used by clinical personnel to give students the treatment they need. To provide a more thorough view of a student's health status, the system may also be connected with other healthcare systems, such electronic health records.

System Architecture

Figure shows the system architecture of the system. The application for a web-based Student medical record management system for educational institutions. The Student Medical Record Management System gives authorized users easy access to secure, centralized databases for the student health records. (Brief process in the figure below).
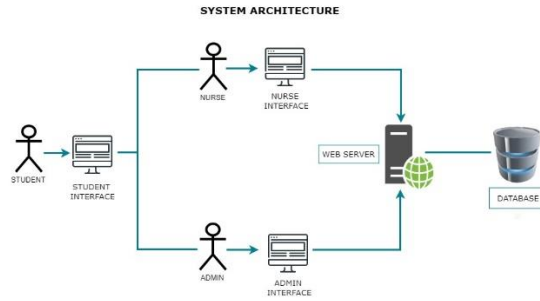
Figure 3.3. *System Architecture*

The website allows Student Health Records stored, retrieved, and maintained courtesy of the platform. The system has capability to input and maintain medical history, vaccination records, and current medical issues. The admin manages the server and is able to manage the system interface. The administrator will handle the user account and store it in the database.

CHAPTER IV

REQUIREMENT ANALYSIS AND DOCUMENTATION

Functional Requirements

The system requires authentication login for medical staff and can manage patients and medical staff information. Additionally, the system has hardware to scan QR codes to retrieve information and can manage the inventory of medicine in the facility.

- System must accurately record and securely store student data including personal and academic information. System should have data validation, user authentication, and encryption features. System should also generate reports and analytics for academic planning and decision-making.

- System must retrieve student information using QR code technology for efficient and secure access. System should generate unique QR codes containing relevant information and scan them to retrieve corresponding data accurately and quickly. Integration with QR code software and necessary security features are required to protect student data from unauthorized access, tampering or theft.

- System should provide an interface for administrators to add and view information in the medicine inventory. Interface should allow adding/updating of medicine items with relevant information and viewing of inventory with search and filter options. Integration with database management system and appropriate access controls required. Essential for ensuring availability of necessary medicines and supplies for institution's medical facilities.

- System must manage medical staff information, including personal and professional details, for effective decision-making, resource allocation, and scheduling of medical services.

- System should capture and store relevant personal and professional information, require integration with database management system, and have appropriate access controls.

- System should also track and manage medical staff performance, such as attendance, performance evaluations, and payroll. Essential for ensuring a skilled and reliable medical staff team to provide high-quality healthcare services to institution's students, faculty, and staff.

- The system should detect students exhibiting symptoms of COVID-19 at the entrance by tracking their medical history and using monitoring tools. It should notify medical personnel or authorities to take appropriate action, such as screening or self-isolation. Integration with medical records management and monitoring tools may be required. This feature is critical for ensuring the safety of students, faculty, and staff by preventing the spread of the virus and supporting contact tracing.

Non-Functional Requirements

Hardware and System Features

Hardware Features
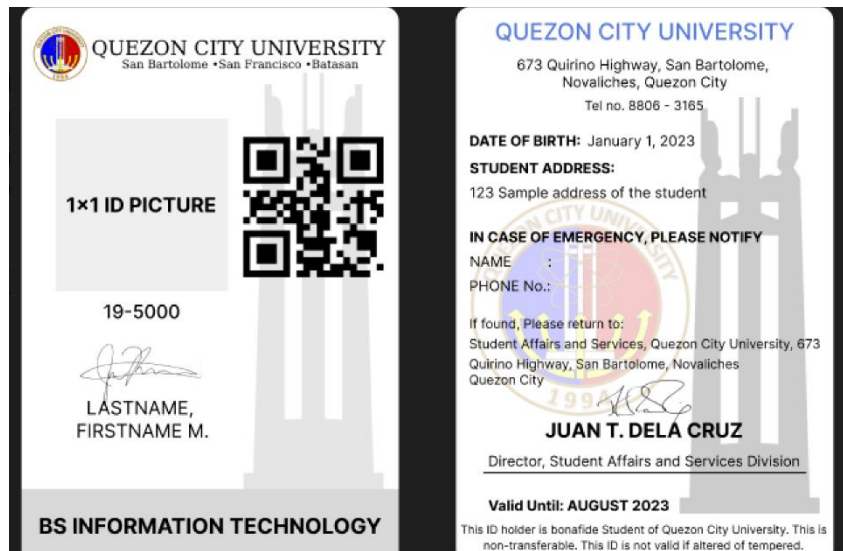
FIGURE 4.1 IDENTIFICATION CARD WITH QR CODE

The figure shows the the sample ID of the students, it includes the QR code that will be scanned in order to determine whether the student is healthy enough to enter the school premises.

FIGURE 4.2 WEBCAM

This figure shows the web camera will be used to scan the QR code on the ID of the students upon entering the school.

FIGURE 4.3 MONITOR

This figure shows the monitor, which will serve as a display for the information of the students/staff after they scanned their QR codes.

System Features
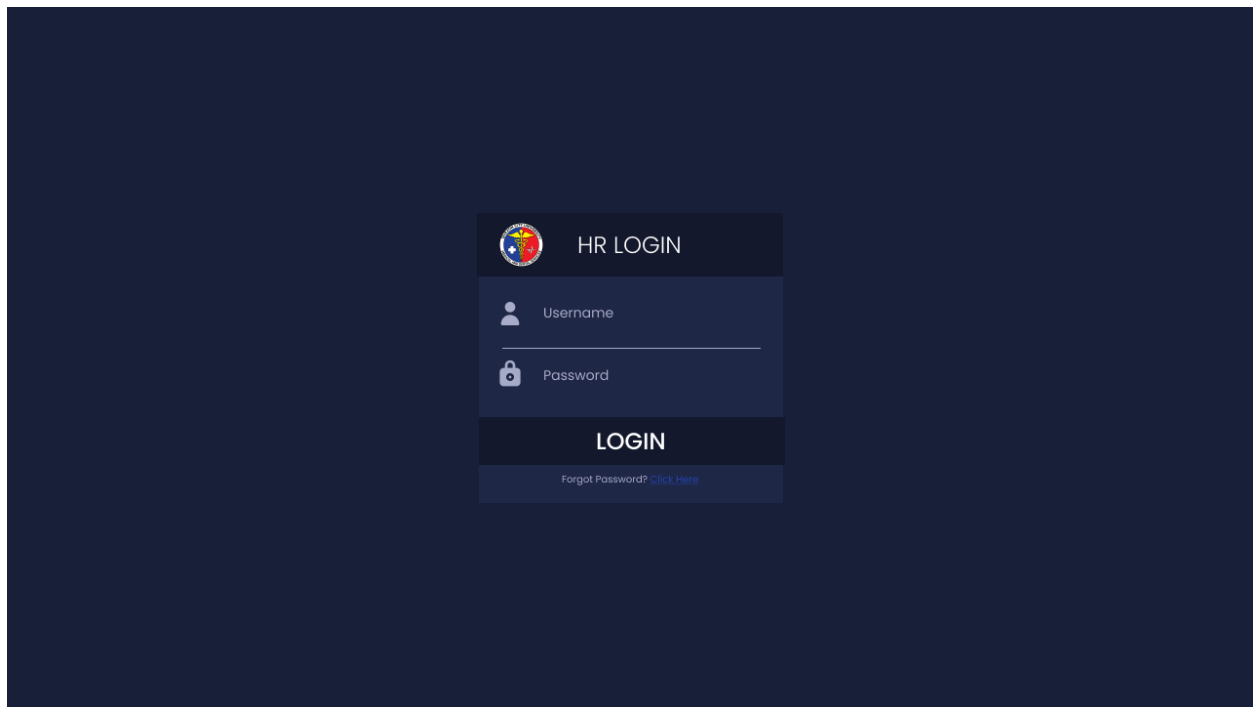
FIGURE 4.4 LOGIN FORM

This form the admin will need to log in to their account.

FIGURE 4.5 DASHBOARD

This form shows the statistical analysis of student covid cases and the number of appointments

for the whole year or months, entrance log, and active nurses.

FIGURE 4.6 MANAGE ACCOUNT

In this form, the Admin can manage their account. They can change their image and password.
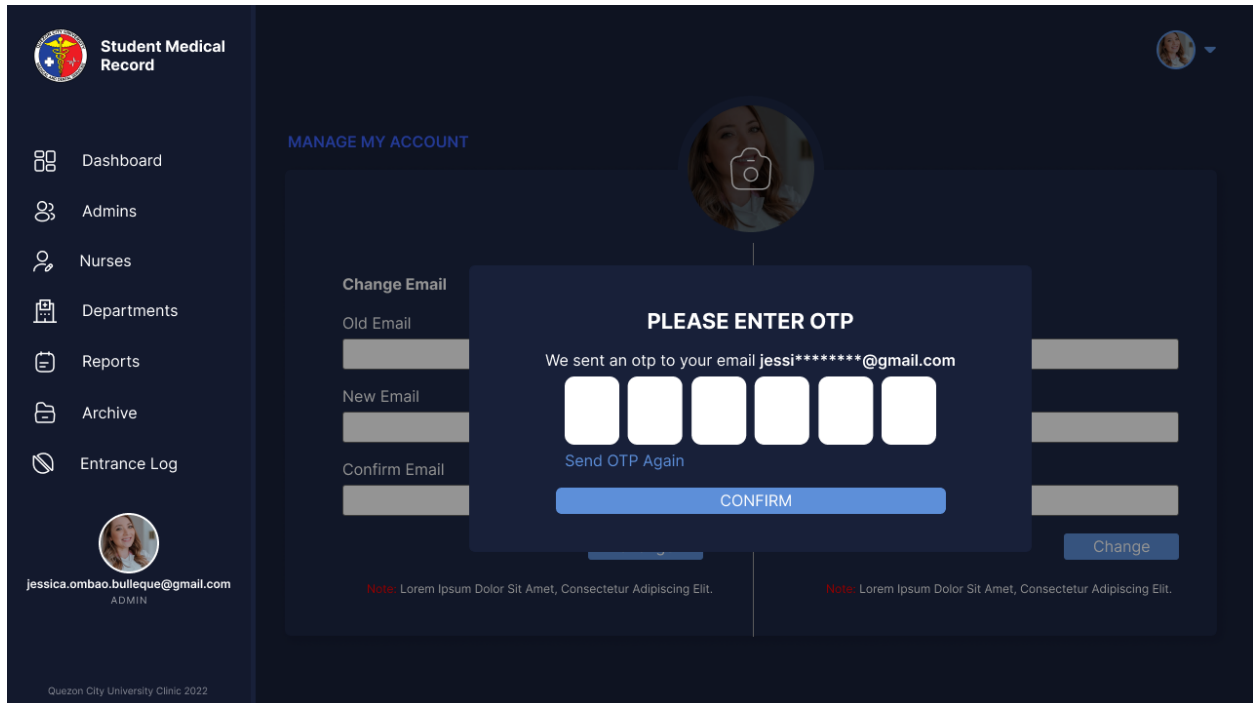
FIGURE 4.7 MANAGE ACCOUNT

The pop-up modal will appear in this form where the user must input the OTP sent to their email.
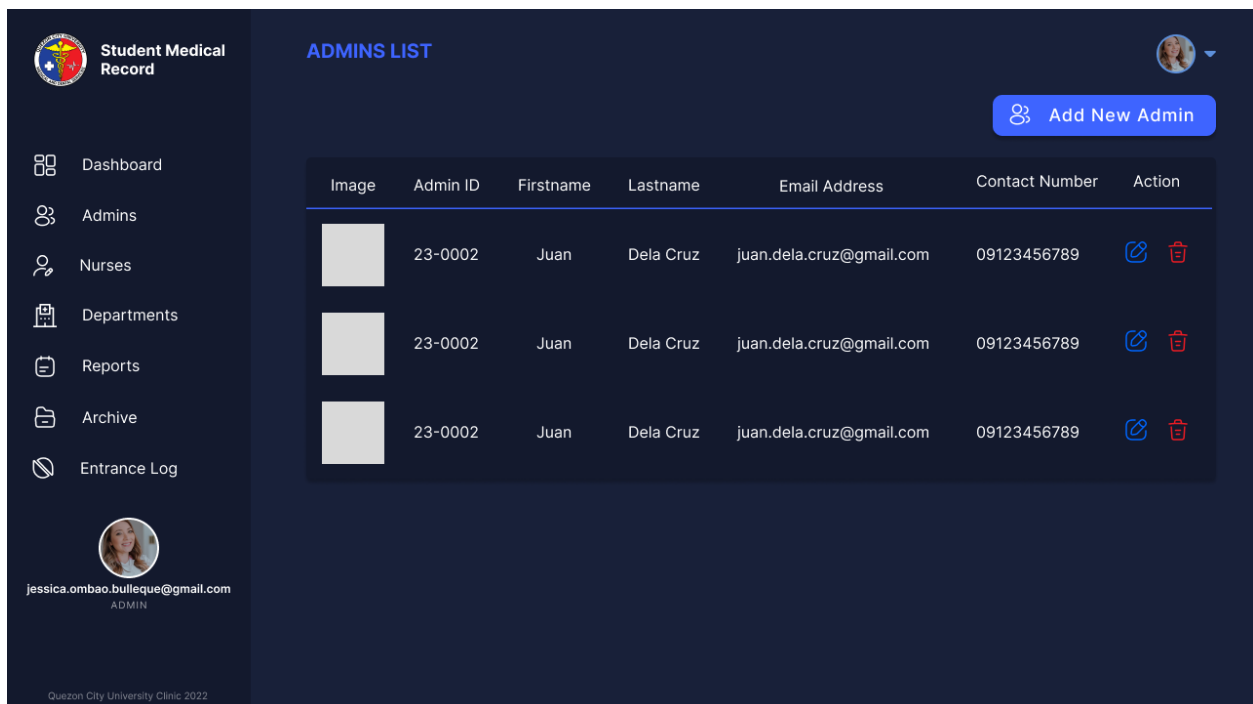
FIGURE 4.8 ADMIN LIST

In this form, the Admin can view, edit and delete the other admins' information.

FIGURE 4.9 ADD NEW ADMIN

This form is where the Admin can add a new admin. department head's and designated department's information edit the information of the department head and their designated department.
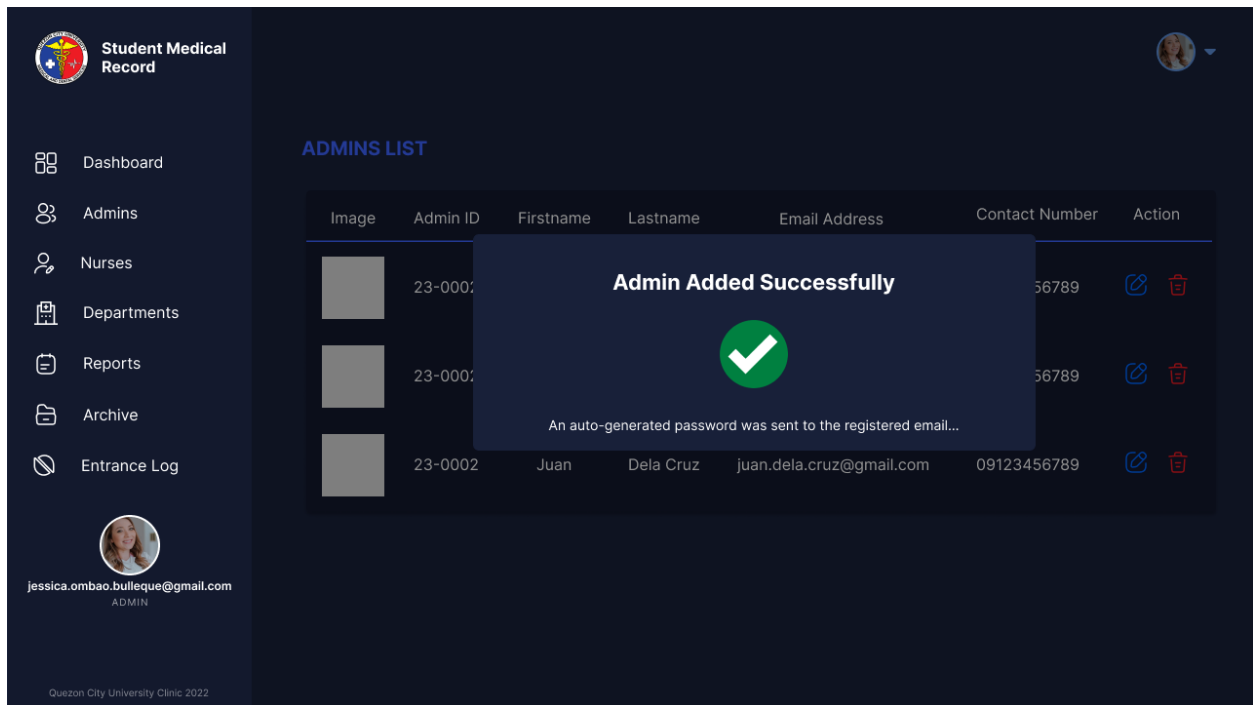
FIGURE 4.10 ADMIN ADDED SUCCESSFULLY

This form will appear when the admin has successfully added a new admin.
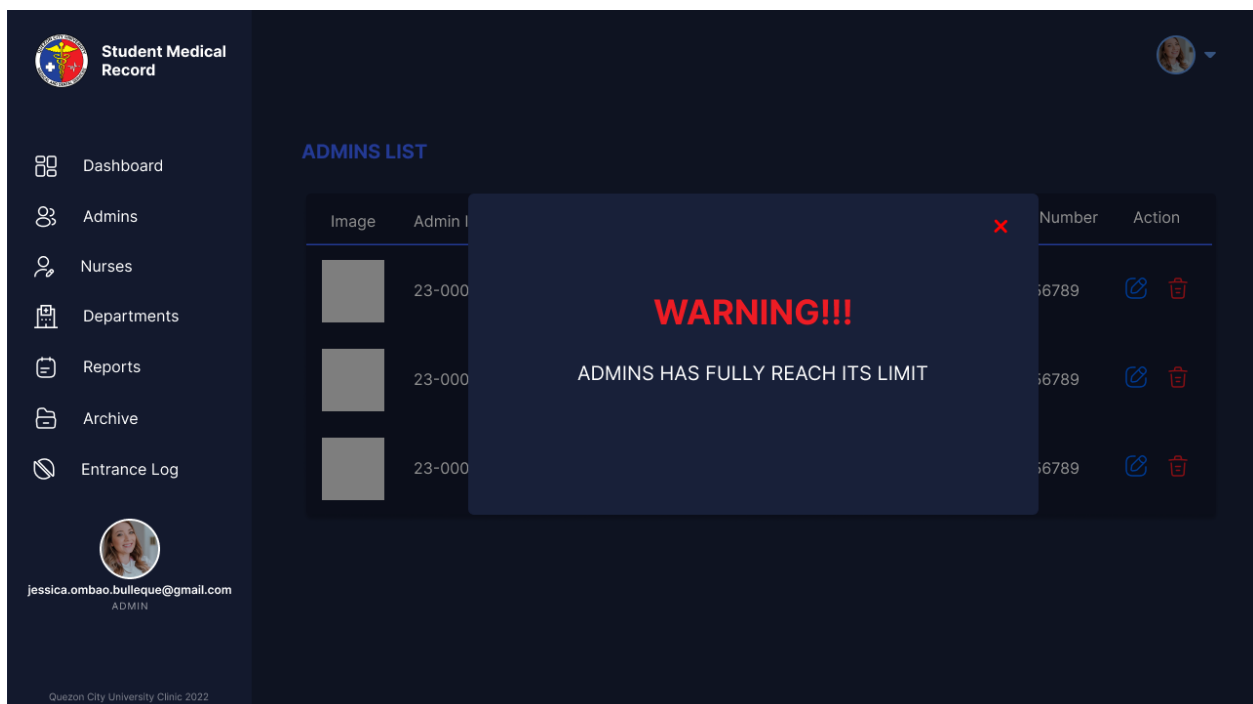
FIGURE 4.11 ADMIN REACHED LIMIT

This form will appear when the number of possible admins has been reached.

FIGURE 4.12 EDIT ADMIN INFO

In this form, the admin can edit other admin's information.
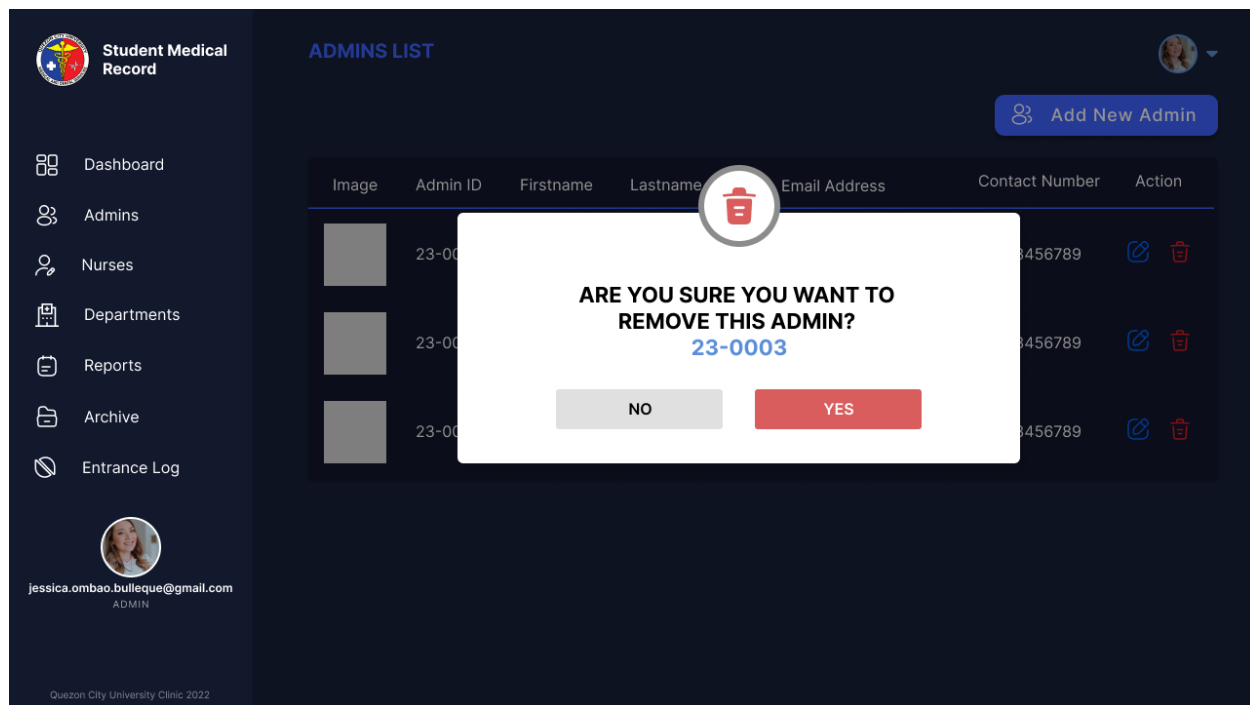
FIGURE 4.13 DELETE ADMIN

This form will appear when the delete button is pressed.
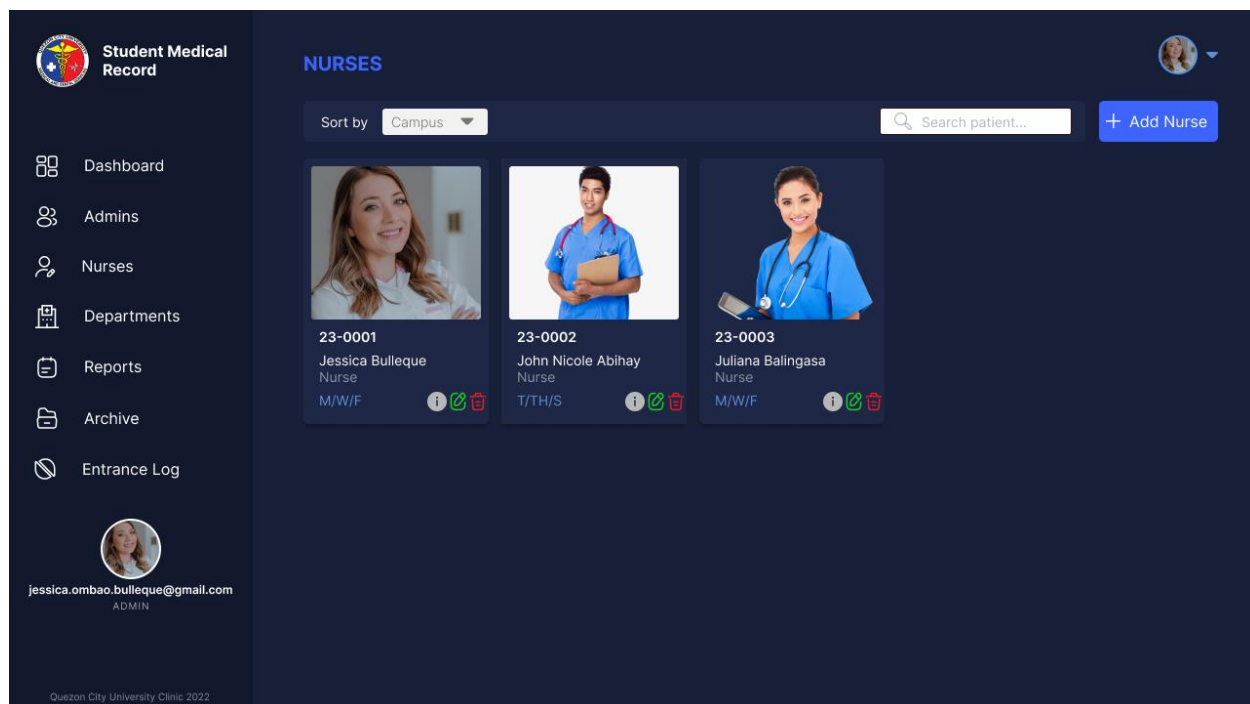
FIGURE 4.14 NURSES FORM

This form allows the users to view all of the available nurses in the clinic/campus.

FIGURE 4.15 VIEW NURSE INFO

In this form, Admin can view all the information of nurses.

FIGURE 4.16 ADD NURSE

The Add Nurse form allows the admin to add new nurses and input the email, position, campus

assignment, and set duty schedule.

FIGURE 4.17 NURSES' BASIC INFORMATION

In this form, upon adding a new nurse, all of his/her basic information will be asked to be input

in the blank fields.

FIGURE 4.18 NURSES' BASIC INFORMATION

In this form, after filling in the basic information, the nurses' emergency contact details will be

asked to be filled in.
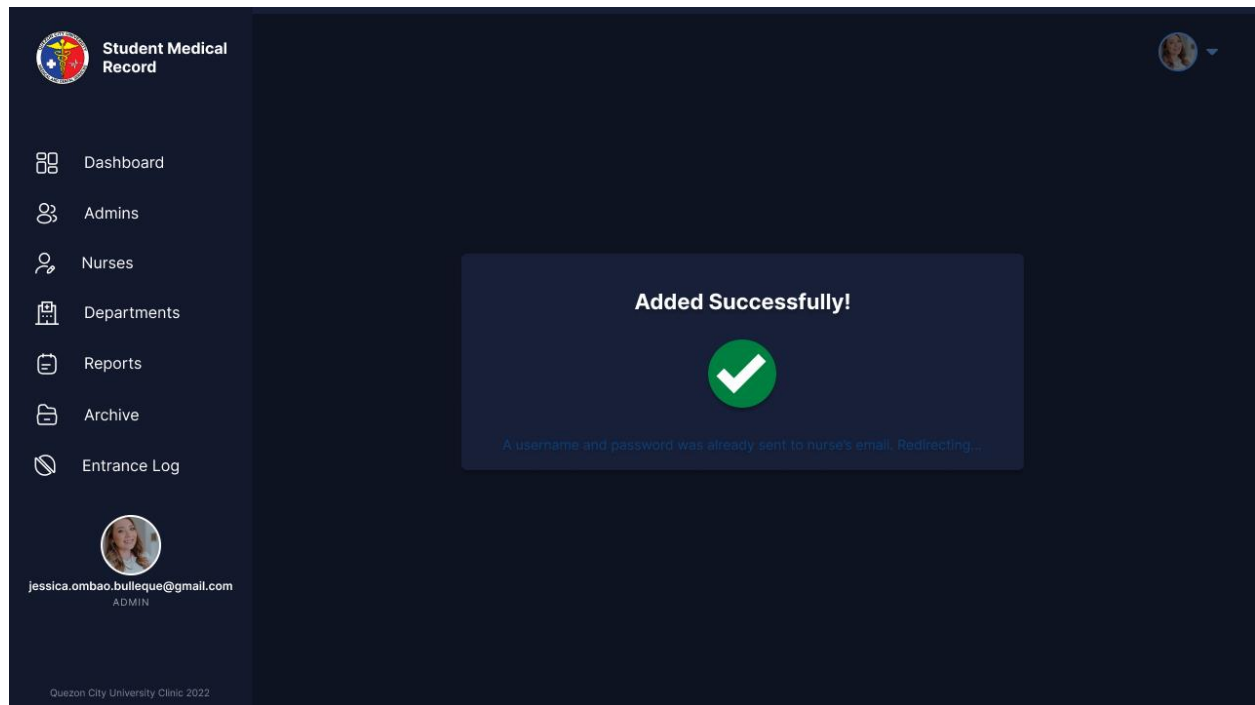
FIGURE 4.19 NURSES FORM

This form will appear once the necessary information about the new nurse has been completed.

FIGURE 4.20 VIEW NURSE

The admin can view, edit, or remove the nurses' information in this form.

FIGURE 4.21 SAVE THE EDITED NURSE INFORMATION

This form will preview all of the information added/ edited and save or cancel the changes that

have been made.

FIGURE 4.22 REMOVE THE NURSE

The Admin can remove the specific nurse from the system in this form.
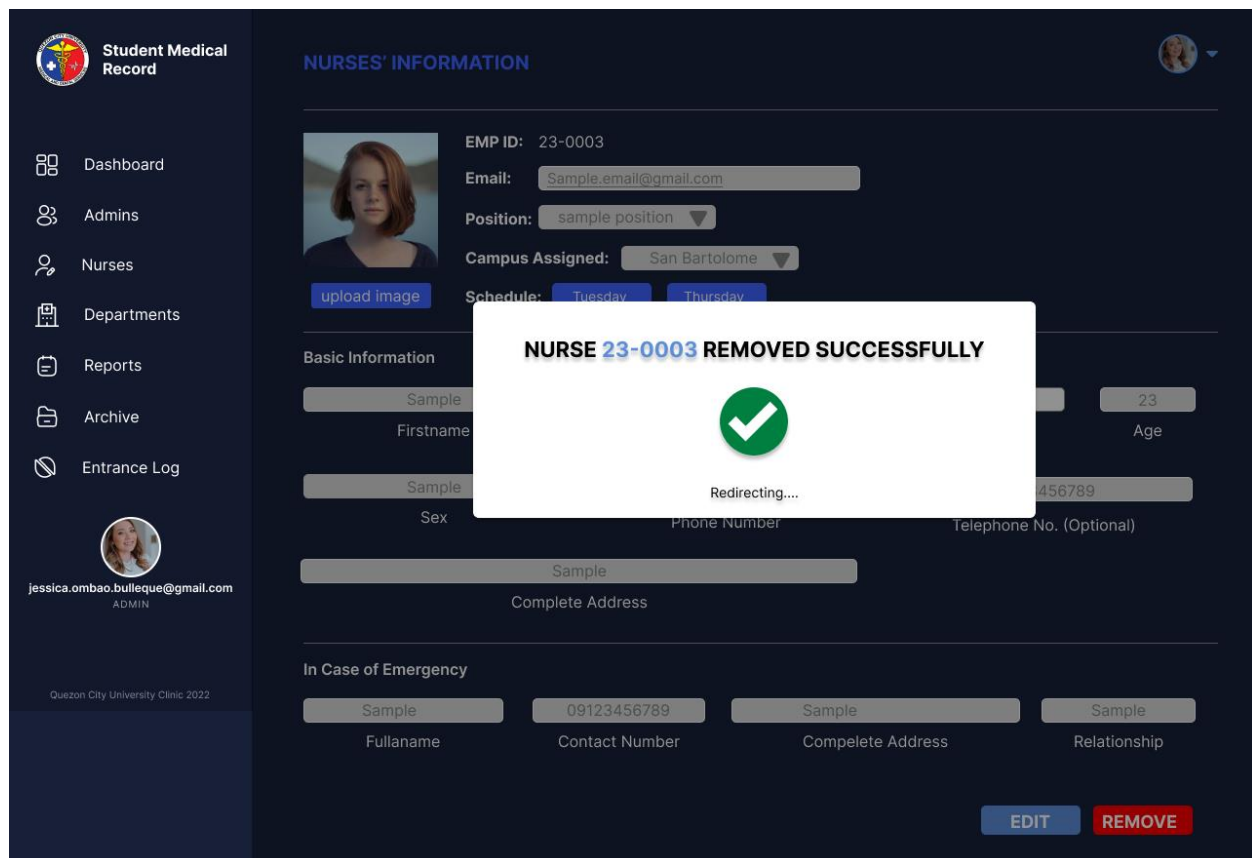
FIGURE 4.23 REMOVE NURSE SUCCESSFULLY

In this form, the pop-up modal will appear if the removal processes/ request has been successful.
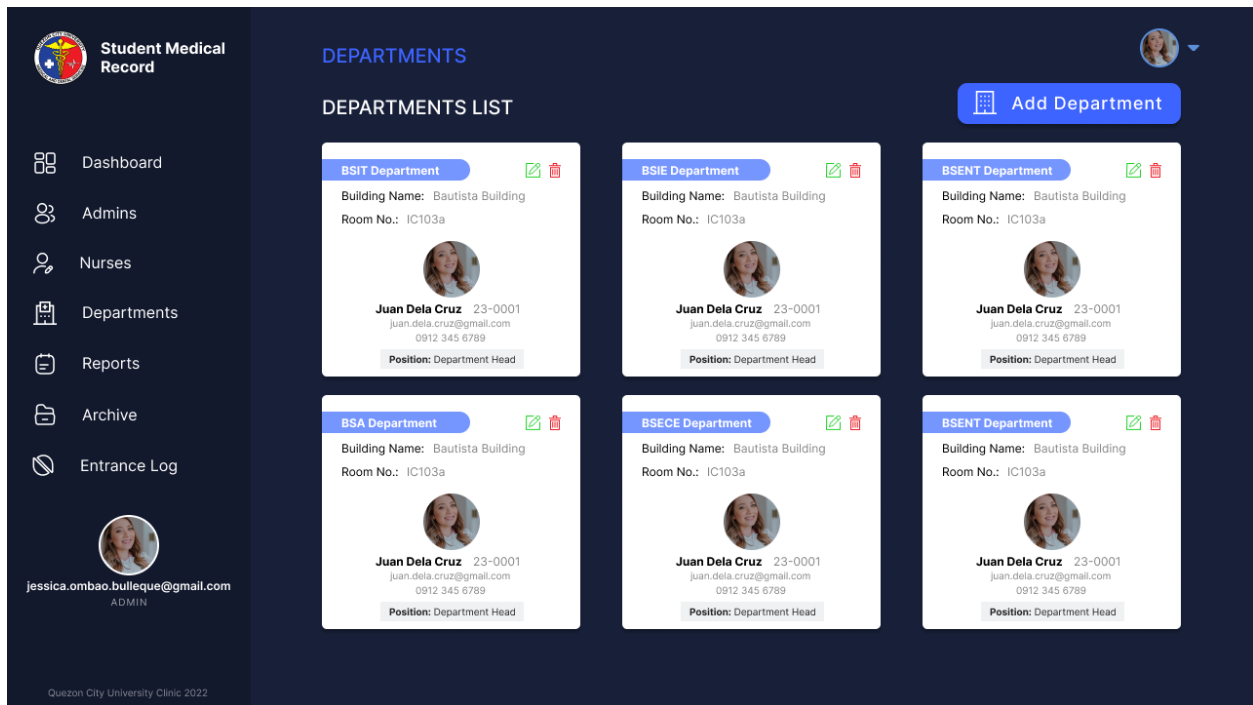
FIGURE 4.24 VIEW DEPARTMENT

This is the View Department form where you can view the head of each department's

information.
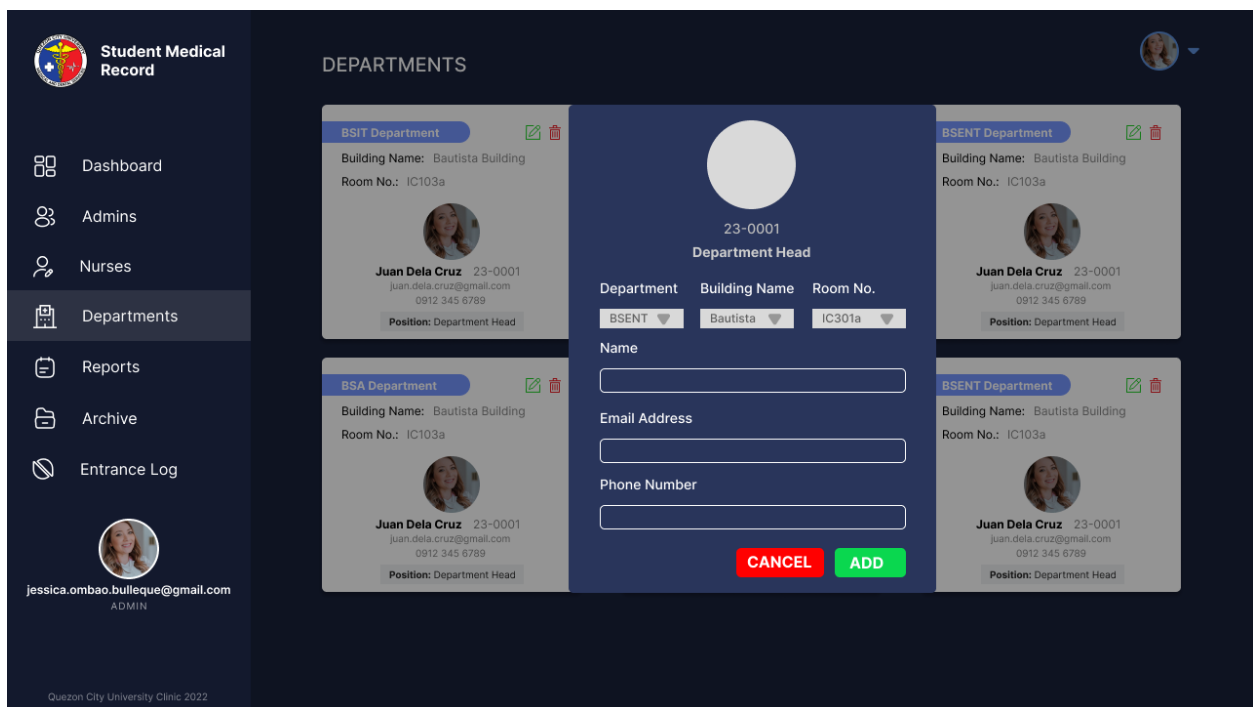
FIGURE 4.25 ADD DEPARTMENT HEAD

In this form, the admin can add a new department head as well as their designated office/s.

FIGURE 4.26 EDIT DEPARTMENT

In this form, the Admin can edit the department heads' information.
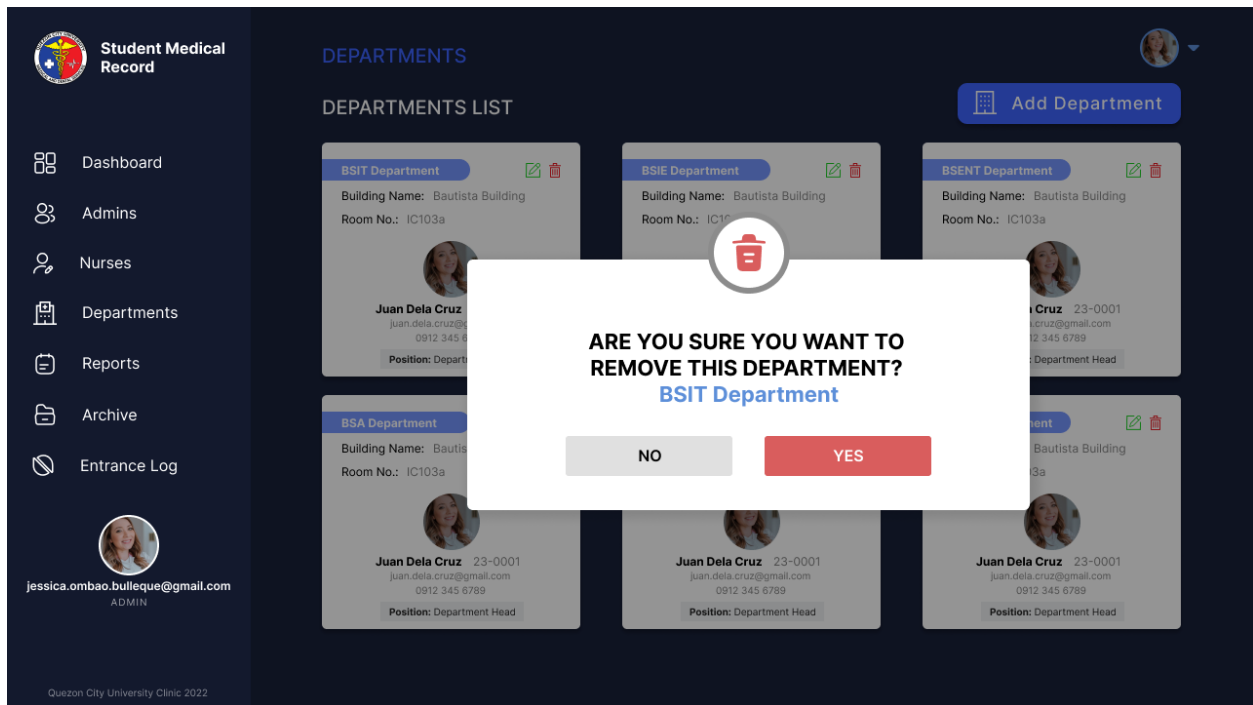
FIGURE 4.27 DELETE DEPARTMENT

This form allows the Admin to delete the department.
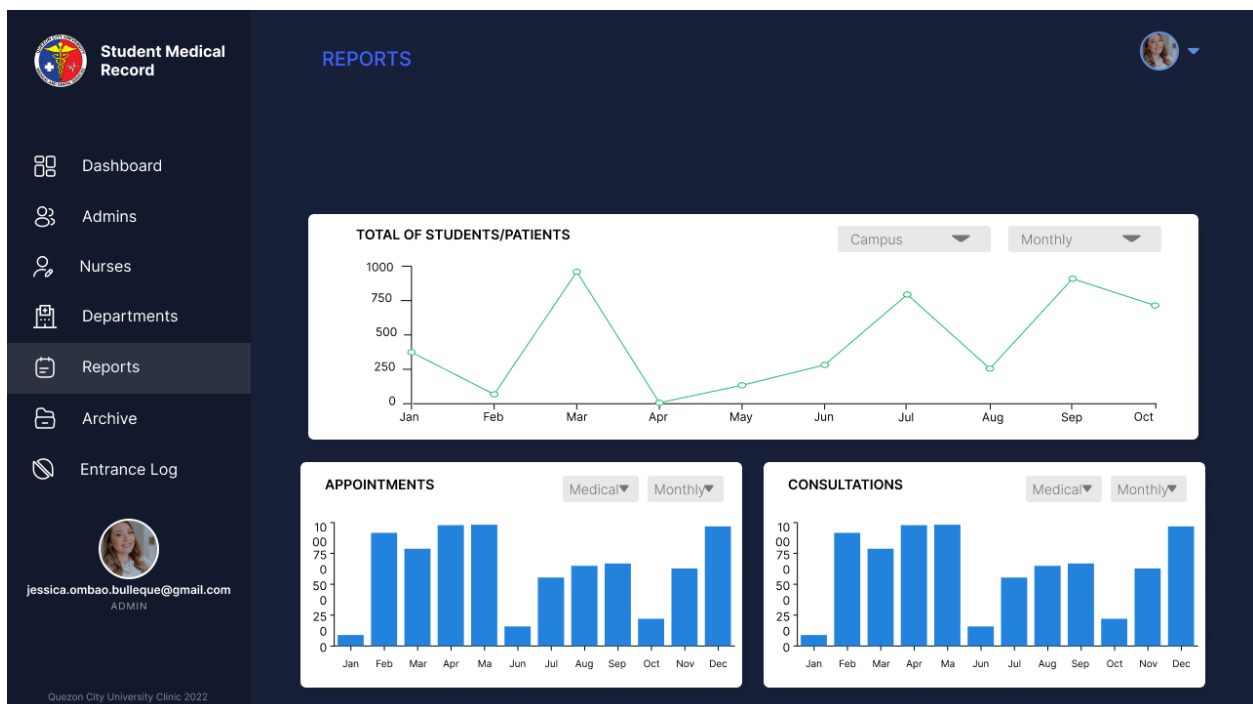
FIGURE 4.28 REPORTS

In this form, the admin can view the reports arranged analytically.

FIGURE 4.29 ARCHIVE

This form will show the completed processes of students and/or staff.

FIGURE 4.30 ENTRANCE LOG

Entrance Log form where the Admin can view the time and date when the users tapped their QR Code.

Design of Software, Systems, Product and/or Processes

Results and Discussion