



Chapter 1

PROJECT DEFINITION

Introduction

The Corona virus Disease (COVID-19) pandemic causes an enormous challenge to the global health system and affects the global economy that makes the government take active preventive measures. In China where the virus started, it has actively taken action to promulgate health information technologies for monitoring, detection, preventive and control, and other tasks. During the outbreak of COVID-19 in Wuhan, China, the government responded by providing a comprehensive medium to prevent and control the spread of the virus.

At present, as the COVID-19 has expanded worldwide, the task of the prevention and control team has become more challenging. The health information community in affected countries has actively taken action to monitor, detect early warning, prevent and control the spread of the virus. Closed monitoring gives a big contribution in preventing the spread of the virus; case investigators need to quickly locate and talk with the patients, assist patients to isolate themselves, and identify people with whom the patient have been in close contact, so that the contact tracer team can locate them. Recognizing the contacts and ensuring they do not interact with others will help the community to protect itself from further spread. If the community failed to isolate patients, rapid increase of COVID-19 in the community is likely possible to happen.



Local Government Units in the Philippines like Taguig City have set up a team to make sure those who test positive are isolating as well as their close contacts. Testing and tracing are vital to the city's effort to tackle coronavirus. The city is using local knowledge to successfully trace the close contact individual. By checking the data collected with their own record using their system, they are able to identify better contact details in some cases.

Polytechnic University of the Philippines – Taguig Branch implemented a manual process of contact tracing and collecting details of the guest - the process involves paper. The process is an explicit system which needs to have an upgrade. This study aims to provide a hassle-free-process system – faster transaction, more accurate data gathering, and more time efficiency, to avoid local transmission.

In this project, we have chosen to upgrade and propose a Clinical Information and Triage System with QR Code for users/guests as identifier and Health Declaration Form for self-assessment, in order to have accurate data and hassle-free transactions.

Statement of the Problem

The main problem why the study was made is that our client, the university nurse of Polytechnic University of the Philippines - Taguig Branch, encountered a problem in sorting data and generating reports using the medium of collecting health declaration reports, which is the Google form. Our client noticed that using the Google form will consume the time in making reports, since there is no option of sorting the data according to the client's needs. Also, the current system used before entering the university is through a manual process of health declaration form.



Problems were noticed, such as wrong information being declared, penmanship not being readable, improper management of data, time consuming, inaccurate gathered data, paper consuming, and human errors. This project aims to create solutions with the help and collaboration of current technology and Agile Software Methodology to develop a system which will be called the Clinical Information and Triage System (CITS).

Theoretical Framework

The study will follow the Theory of Diffusion developed by Rogers in 1962. It explains how over time, an idea gains momentum and diffuses through a specific population. As a part of the Social System, adopt a new idea. Studies have proven that people who adopt innovation earlier have a different characteristic than people who adopt innovation later. This conclusion derives from this study to adopt technologies in gathering health data through the developed system.

Also, the study will focus on the theory of Priscilla Owusu (2020) that digital technologies, together with Artificial Intelligence, have arrived at full force in the fight against the coronavirus COVID-19 pandemic. This theory supported the study of having Health Declaration and QR Code and the use of technologies to avoid community transmission of the virus, and to have an early detection. The expected advantages of the involvement of the technology include speed, specification, and mass reach. Contact tracing is a monitoring process for individuals who have been exposed to individuals with viruses, and are at higher risk of infecting themselves. The use of digital information or mobile software technology for contract tracing is not new.



In fact, in 2010, researchers from the United Kingdom allowed clients to install a mobile software application called Flu Phone that collects information on social encounters using Bluetooth, GPs coordination, and self-reported data.

Amid the outbreak of COVID-19, governments of each country around the globe have used digital technology as an immediate measure to the spread of the coronavirus.

Conceptual Framework

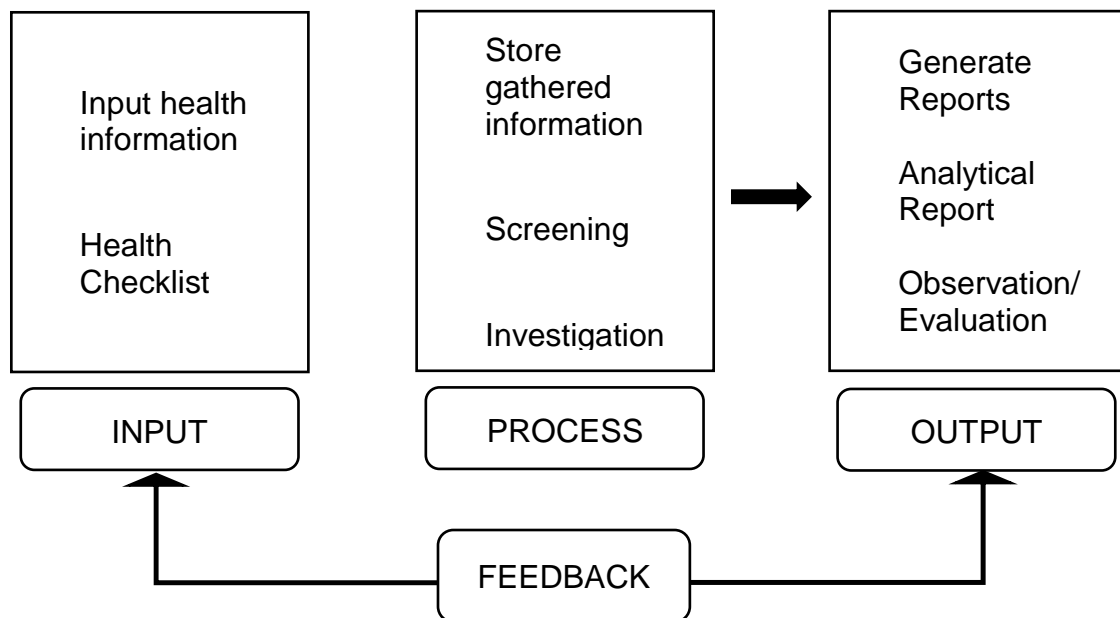


Figure 1. Input-Process-Output model

The study applies the Input Process Output (IPO) Model. The Raw materials or Inputs of the system will be processed to develop the output. All information and data gathered in the input such as the answers of the Health Declaration Checklist will be screened and investigated for further output.



Project Assumptions

Project Name:

Clinical Information and Triage System for Polytechnic University of the Philippines - Taguig Branch in Taguig City.

Project Definition:

The project is an online web application that will generate a QR Code after the successful registration of the users/guests. The project has its four ways of answering the self-assessment or Health Declaration Form: (1) through their account in the system, where in users/guests can access the Health Declaration, (2) through the QR Code placed at the guard house, (3) through an email that will be sent to the guest/users, and (4) through a manual process of Health Declaration. Also, the project has its own scanner for the QR Code generated by the system.



Background of the Organization

Organizational Structure

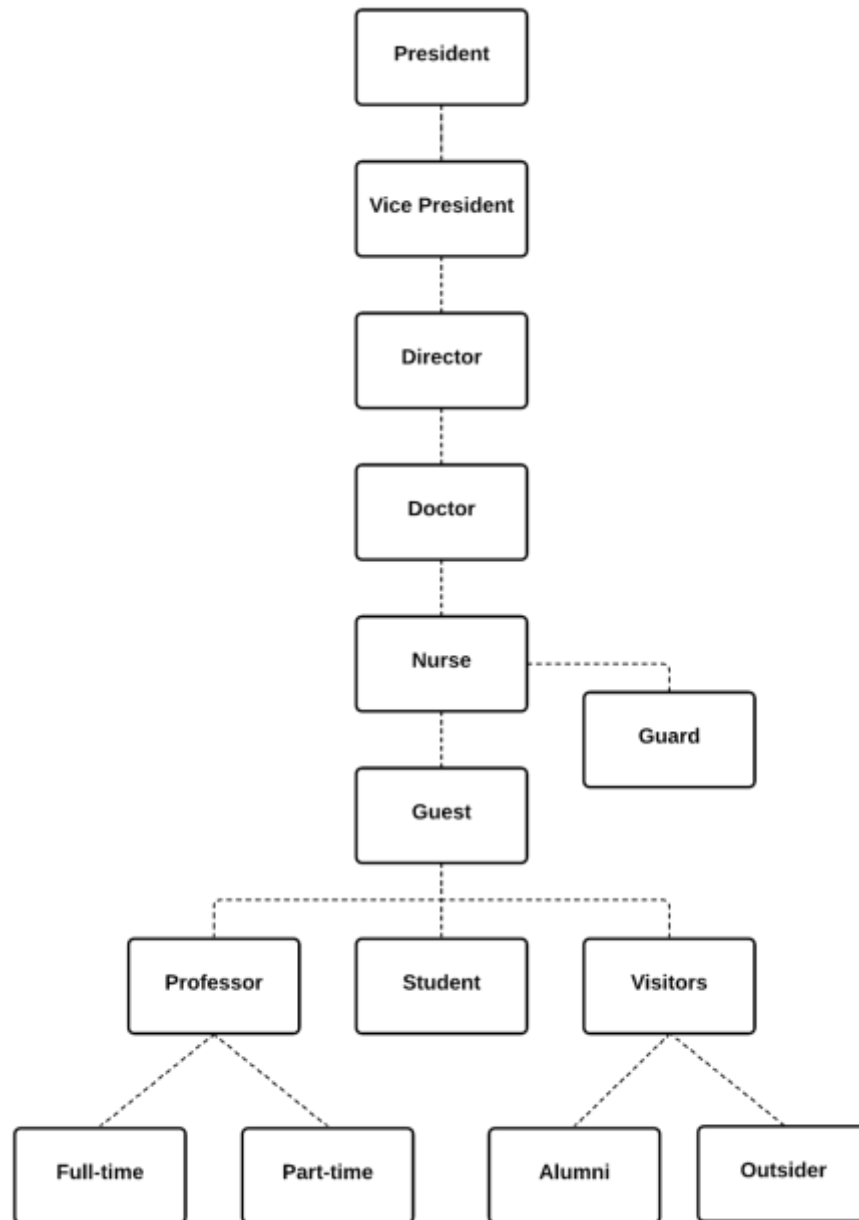


Figure 2. Organizational Structure



Project Overview

Objective

The current system implemented in PUPT involves paper. It means that guests need to fill out and answer the form before they can enter the premises. The project aims to make a hassle-free process for both parties: the guest, and the admin who is the nurse of PUPT.

Goals and Objectives:

General Objective:

To help PUPT, especially the Medical Department, to monitor closely the individuals who will enter the premises. Also, the project aims to help the users or the guests to refrain from the hassle process

Specific Objectives:

The current system in PUPT is done manually, both from the admin and user/guest side. The paperwork is time consuming and costly. But nowadays, technology makes everything possible. The following are the reasons why the current system should be disregarded:

- ☐ Reduce the paperwork.
 - For the guest, with the use of technology, they can answer the health declaration form beforehand.
 - For the nurse, paper works will be lessened, since data collected are computerized, no need to encode everything manually.
- ☐ Takes accurate data



- The data collected from the guest will be closely monitored since everything will be accessible and data is updated day to day.
- Generate specific reports based on the need.
- Guest will be monitored easily
 - Guests need to be triaged and will be urgently assessed.
- Reduce Human Errors.

Significance of the Study

The system will benefit the following users:

For the guest. Instead of filling out the health declaration form manually, they can use the system to fill out the form. Also they can answer the health declaration form beforehand to avoid hassle upon entering the premises, note that they can take the health declaration form or self-assessment within the day of their visit, not before. Also the project prepares a solution for human error, aside from health declaration forms accessible in the system; the researchers will have alternatives to take health declaration forms.

For the guard. Instead of giving and collecting forms of each individual upon their entry in the premises, the guard can use the system's scanner to record the entry of each individual. The scanned records will be directed to the database of the system, and updates data stored in the database.

For the nurse. Instead of manually sorting the data that is needed or one-by-one, administrators can automatically sort according to the required data. The system makes



the work more convenient and accurate, since the system will gather the data from the answered health declaration form automated and stored to the system's database. Also, the system implements paperless transactions. Reports will be easily generated.

Scope and Limitation

Project Scope:

1. Health Declaration Form

The Health Declaration Form will be under the system's clinical information, since the system will collect information about the past activities and involvements of an individual before entering the premises. The project has its four ways of answering the self-assessment or Health Declaration Form: (1) through their account in the system, wherein users/guest can access the Health Declaration, (2) through the QR Code placed at the guard house, (3) through an email that will be sent to the guest/users, and (4) through a manual process of Health Declaration. Note that the second to fourth options are only available for human error, and will be placed at the guard house.

2. Generated QR Code

The system will generate QR Code as a user/guest's identifier, after the successful registration.

3. Scanner and the QR Code

The system will have its own scanner. The scanner is accessible by the guard. It will scan the system generated QR Code.



4. Triage System

The system will have modules for the guests who have symptoms associated to covid-19. There will be a system generated email, Covid-19 guidelines, that will be sent to the user/guest's under the module.

Project Limitation:

Scope

The system will be called the Clinical Information and Triage System or CITS. It is a web application that goes online. Members of the project will not be accountable to the host. The system will handle the collected data from the Health Declaration Form of the system, which will identify the involvements and activities of the guest before their entry in the premises.

The system will be having a scanner for the QR Codes generated by the system. Also, the system will filter guests who have symptoms associated to covid-19 and those who don't. Guests who don't have symptoms will be successfully recognized. On the other hand, guests who have symptoms will be denied entry into the premises, and a system-generated email will be sent. The system will have a module for guests who have symptoms, and it will also allow the admin to update the current status of the guest details.

The system will be dealing with human errors. In case guest filed wrong information about the health declaration form, and insisted that it is only an error, and proven that it is true, the project will provide three (3) options to retake the health declaration form: First, by scanning the QR Code, placed on the guard house. Second,



by requesting an email, and lastly, by a manual process. Note that these options are accessible only at the guard house.

Time of Development

The development duration will take four (4) months from analysis up to systems installation.

Members

The team is composed of four (4) IT students. Each has their own roles and responsibilities which they can handle.

Definition of Terms

- **QR Code** – the QR Code is a system generated, and is used as an identifier of a guest.
- **QR Code Scanner** – the scanner will be used to scan the system-generated QR Code.
- **Guests** – these are the Students, Employers, Faculty, and Visitors who are the users of the system.
- **Health Declaration Form** – it contains questions about the past activities of a guest that involves health. Guests need to take a Health Declaration Form for self-assessment and in order to enter inside the premises.



Chapter 2

FUNCTIONAL SPECIFICATION REPORT

Review of Related Literature and Studies

After the comprehensive and in-depth quest carried out by the proponents, this chapter presents the relevant literature and method of local studies on how the health declaration system is being Implemented and used. It will also discuss here how and what are the different ways to solve and facilitate things using any kind of devices like QR code. The synthesis to fully explain the research to be performed will also be discussed.

Health Declaration

When COVID started in Wuhan China, it also spread rapidly across the globe. Government officials and most of the department concerning health issues began to make some safety protocols such as contact tracing in order to prevent the spontaneous spreading of the virus. With the use of this kind of protocol, it will make sure that the movement of the virus will be well-monitored and in such a way all of the possible cases will be prevented from spreading. Contact tracing is one way to suppress the spreading of the said virus and to prevent all possible causes of infection. In line with this protocol, the person who got infected requires to state most of his/her movement, people he/she made contact with, and all possible places that probably the initial infection begins. With the help of technology, the information of this virus becomes visible to the public and it helps other countries to create helpful and improvised protocols to prevent the spreading



of this virus. Technology has become helpful in making these protocols very useful, especially in terms of contact tracing. Other countries already implemented systematic strategies to locate the origin of the infection and to monitor the movement of the virus at the specific location. In contact tracing, the health officer who is collecting information of the person who became the victim of this virus has its protection in terms of privacy. This is to protect the person who became infected and the people who made contact with the infected individual. Here in the Philippines, Republic Act No. 10173 was implemented, this is an act protecting individuals information in Information Communication Systems in the government and the private sector, creating for this purpose a national privacy commission, and for other purposes. This law will protect people who have a case related to our country's contact tracing. This will support them when they are found or seen to have symptoms of suspected disease. Also for the benefit of those involved in this type of virus.

In order to help the advocates determine the do's and don'ts in creating a health declaration system, these literature are composed of various concepts and implementation of the health system. In China, they are using QR codes. The QR code provides the personal information, health declaration checklist provided by the specific individual. As China encourages people to return to work amid the coronavirus outbreak, a bold mass experiment has begun to use data to control the lives of citizens by forcing them to use software on their smartphones that determines whether subways, malls, and other public spaces should be quarantined or permitted (**By Paul Mozur, Raymond Zhong and Aaron Krolik**). Meanwhile, our system will provide an individual QR code for them to use in day to day when entering school premises.



The students, professors, and visitors are required to sign up the provided system in their mobile phones for them to get their personal QR code. The QR code is scanned before they enter the university; it provides their personal information and their health declaration checklist on the day.

Local Literature Studies

Figure 3. A screenshot from Taguig Response Assessment Covid Emergency Homepage

TRACE – Taguig Contact Tracing System

TRACE - Taguig (Taguig Response Assessment Covid Emergency) is a framework for Taguig City Government that includes digital health declaration form, health status notification, digital QR code recognition, local and national covid tally notifications, activity logs, and announcements. This system aims to assist Taguigeños in monitoring cases in the Taguig area. Also, this system will provide the tally cases of Taguig in day to day monitoring.

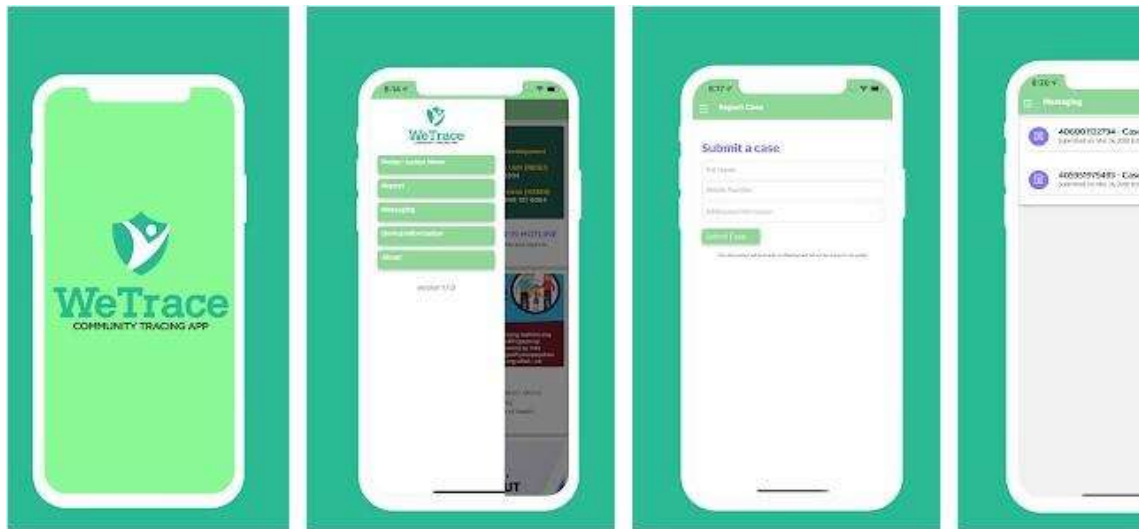


Figure 4. A screenshot from Google Playstore.

WeTrace Contact Tracing Application

WeTrace (Community Tracing App) aims to protect their privacy, WeTrace assigns unique QR codes to every user and uses geo location data for contact tracing. The app does not collect any other information. Every day, when preparing food, you bump into a lot of people on your way to work. Health workers can hit more easily with the WeTrace app when one of them gets infected with COVID-19. The bond that splits the chain. Statistics demonstrate that most cases of COVID-19 start in family clusters. Contact tracing by WeTrace helps shield your family from the individuals you go home to. When more users use it, WeTrace is more effective.

A screenshot of the 'Sign Up' page on the Pasig City Government website. The page has a header with the 'Sign Up' title and a sub-header 'Enter your details to create your account.' Below this, there is a checkbox for 'Tick/Select if registering for a minor'. The form fields include 'Type' (a dropdown menu with 'PasigCity' selected), 'Cuffie' (a text field with a placeholder '[Full (e.g. Smith)]'), 'First Name' (a text field with a placeholder 'First Name'), 'Middle Name' (a text field with a placeholder 'Middle Name'), 'Last Name' (a text field with a placeholder 'Last Name'), and 'Birth Date' (a text field). To the right of the form is the 'PASiG' logo with the tagline 'PILIPINAS ANG SINAGAYA'.

Figure 5. A screenshot from Pasig City Government Home Page.

PasigPass Contact Tracing System

Pasig Pass (Contact Tracing Solution). November 2020, Pasig City unveiled the pass, a QR code-based contact tracing solution for strength contact tracing efforts in the midst of the ongoing coronavirus disease threat (COVID-19). The pass had its pilot run at the City Hall, and its introduction was extended to also include private businesses in the city through an order passed by the City Council last week. Mayor Vico Sotto said that the first establishments in the city to launch in the past were SM Hypermarket and SM East Ortigas. Some business establishments and most city government offices have already begun enforcing a "No Pasig Pass, No Entry" policy, according to the local government. They can also have their QR codes printed by people without smartphones. The mayor ensured that the information gathered in the automated contact tracing solution for the city is safe. At Pasig, pass.pasigcity.gov.ph, individuals can download their QR code. Individuals will have their own QR codes upon registration, which they will use upon admission to city government offices and business establishments within the city.

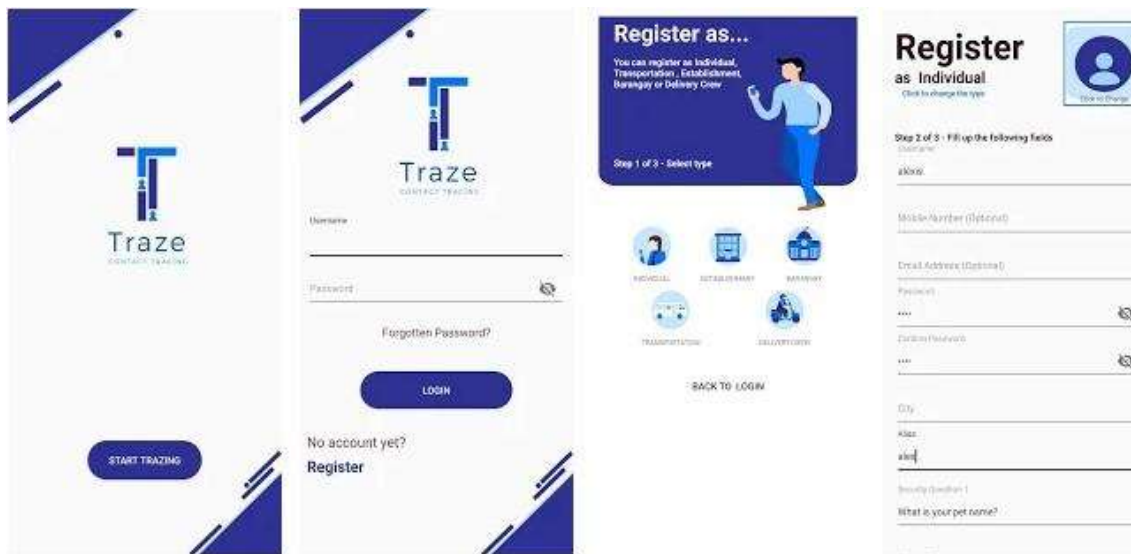


Figure 6. A screenshot from Google Playstore.

TRAZE Contact Tracing Application

TRAZE is a nationwide and unified contact tracing software that uses QR code scanning to simplify manual contact tracing so that the tracing process completed in a few days can now be performed in just a few minutes. An in-app update will be sent to anyone who may have come into contact with an identified positive Covid-19 patient so that, if symptoms arise to protect their families and loved ones, they may observe precautions and begin self-isolation. By providing a reliable and easy communication monitoring tool, the goal is to make Filipinos feel safe and protected against the uncertainty of the pandemic. All Philippine harbour passengers and terminals can use the app to automate touch tracing.



Figure 7. A screenshot from South Cotabato Contact Tracing System Home Page.

Region XII COVID-19 Contact Tracing System

South Cotabato - Contact Tracing System is an application key in the battle against COVID-19. The government can easily perform communication monitoring of people who have entered public institutions through the features and capabilities of this app. Therefore, in this era of pandemic, the government of South Cotabato response is quicker and timelier, keeping South Cotabateños secure. Also, a Privacy Statement is to clarify what information they collect, process, and distribute; why they do it; and what privileges that the guests have regarding their data. In compliance with Republic Act No. 10173 (the 'Data Privacy Act'), your information is processed.



Synthesis of the Reviewed Related Studies

The technology became handy and helpful if the given situation became worse. It will serve a great product especially in this case. A system that serves as a medium of collecting and transferring information from one place to another is a very productive and useful way to provide a service that can lessen the handiwork of an individual. It will also make the job much easier to accomplish in a way of distributing the task from one medium to another. Generating QR codes that serve as a piece of information of an individual. It will need to be polished and more accurate in order to protect not only the interest of the creator but also for the user that will adapt the information from one group to another.

The above analysis highlights the numerous local health systems literature and studies, some of them are using QR code. Also, the proponents gathered different systems and software to help them visualize the graphical user interface of the system and its function.

Current IT Environment / Infrastructure

The elements listed below must be present to help the overall research effort at all levels of the system.

- A.** Software specifications include a computer or laptop that meets the minimum requirements, as well as some kind of internet access source.
- B.** The project requires a test plan, test cases. The project runs on the browser.



Hardware Specifications

- ☐ E-1: The CITS (PHP-Web Application) can operate in a computer with a Windows 10 Operating System up to the latest updated version.
- ☐ OE-2: The CITS (PHP system/Web Application) is accessible in browsers such as Google Chrome and Mozilla Firefox.

Software Specifications

Client on Internet

Web Browser (Google Chrome and Mozilla Firefox), Operating System

Web Server

Operating System (any)

Database Server

MySQL (v. 5.6.30), Microsoft Windows 10 (any version)

Developmental End

Web Application: Code Igniter 4 Framework, HTML, Bootstrap, AdminLTE, PHP, MySQL, XAMPP, JavaScript, JQuery, Ajax

Network Specifications

CI-1: System users on the internet will be using HTTP/HTTPS protocol.



Manpower

Administrator

- The administrator will be able to generate reports based on the request.
- The admin can view and monitor the data gathered by the system.
- The admin can view analytical reports.

User

- Fill out the Health Declaration Form using the system before entering the premises.
- Users can view their own answer after the submission.
- Users can generate Health Declaration QR Code.

Back-up and Recovery

The admin who will use the system can generate a report day by day and he can save it to external drives to have soft copies of the reports once the system goes down.

The admin can print the generated report day to day, for them to have their hard copy and compile it to 1 folder.

Data Requirements

This section will show the Clinical Information and Triage System Logical Data Structures.

Logical Data Structure

Entity Relationship Diagram (ERD)

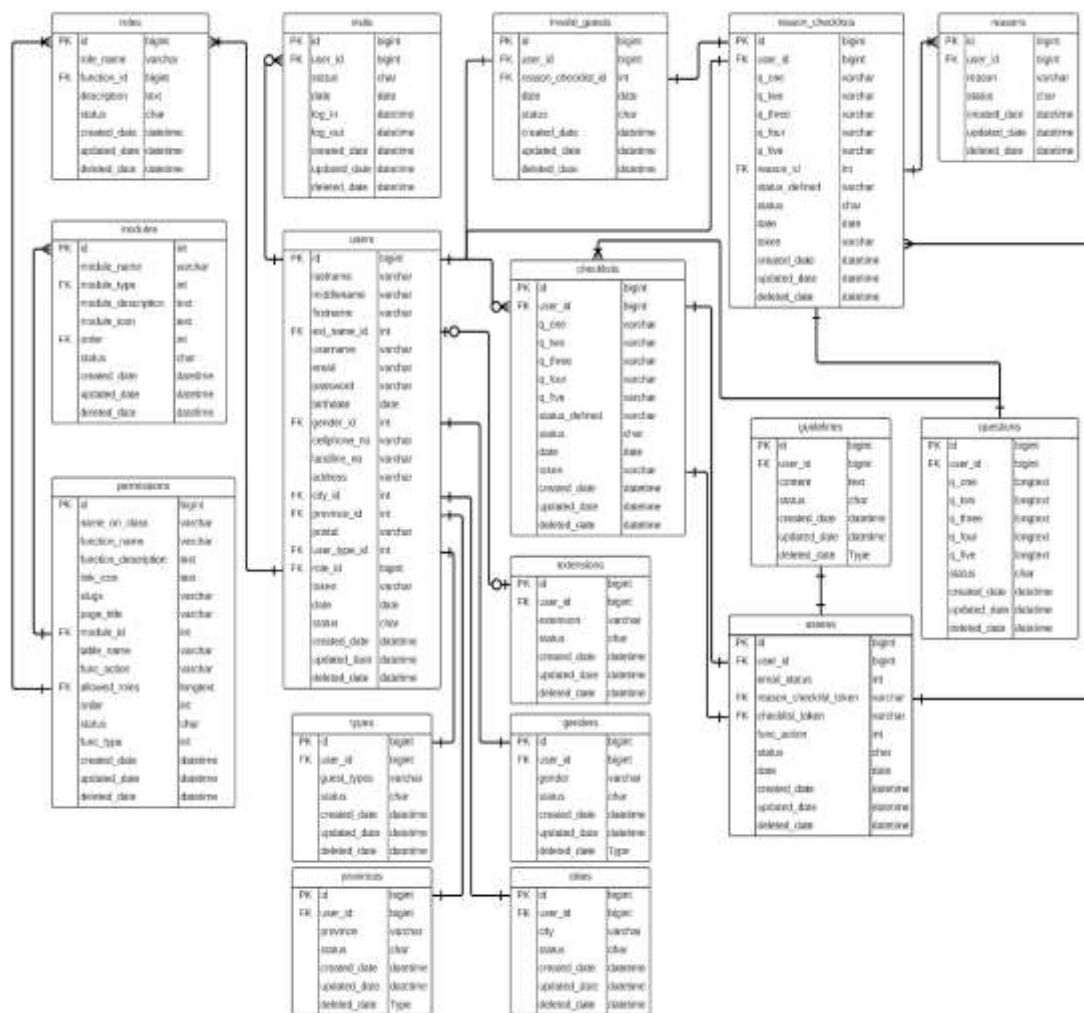


Figure 8. Entity Relationship Diagram



Policies and Procedures

This segment includes the organization's policies and procedures. The Context Diagram, Data Flow Diagram (DFD), and Process Flow Diagram are examples of these.

Procedures

Context Diagram

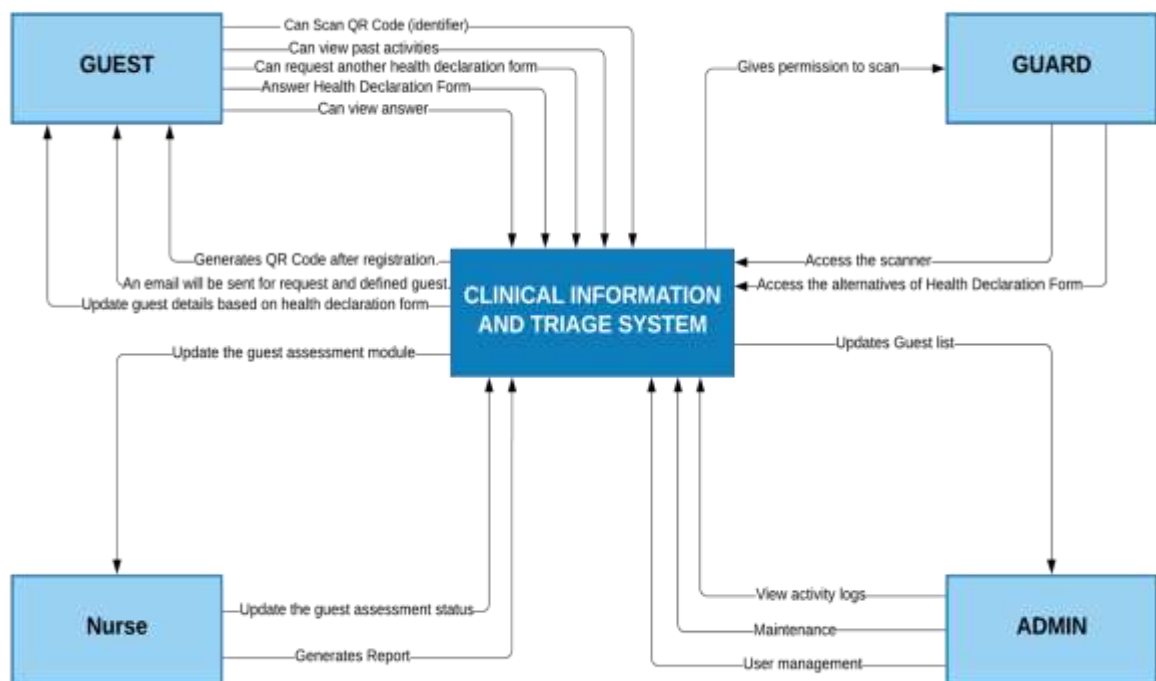


Figure 9. Context Diagram



Data Flow Diagram

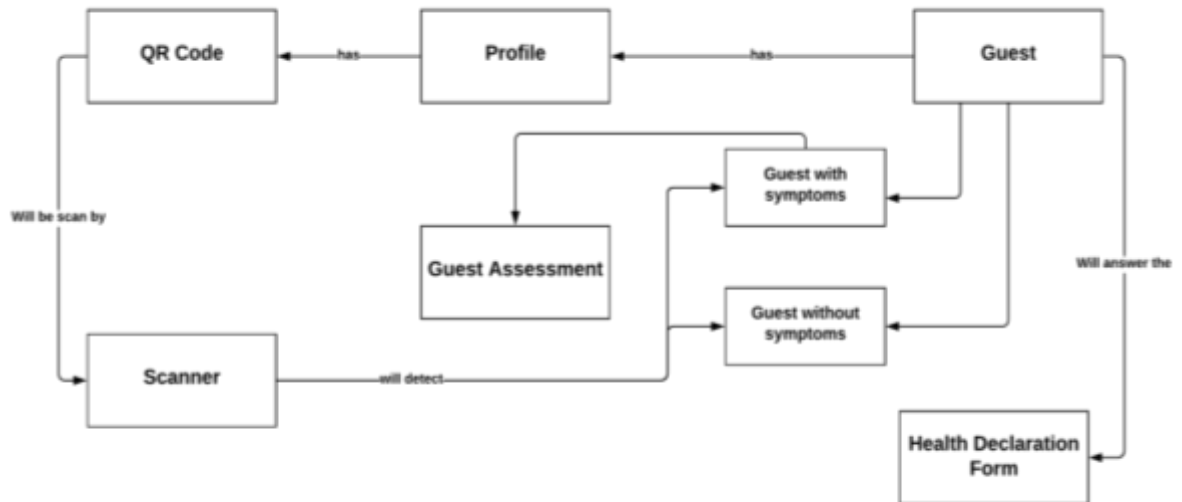


Figure 10. Data Flow Diagram



Process Flow Diagram

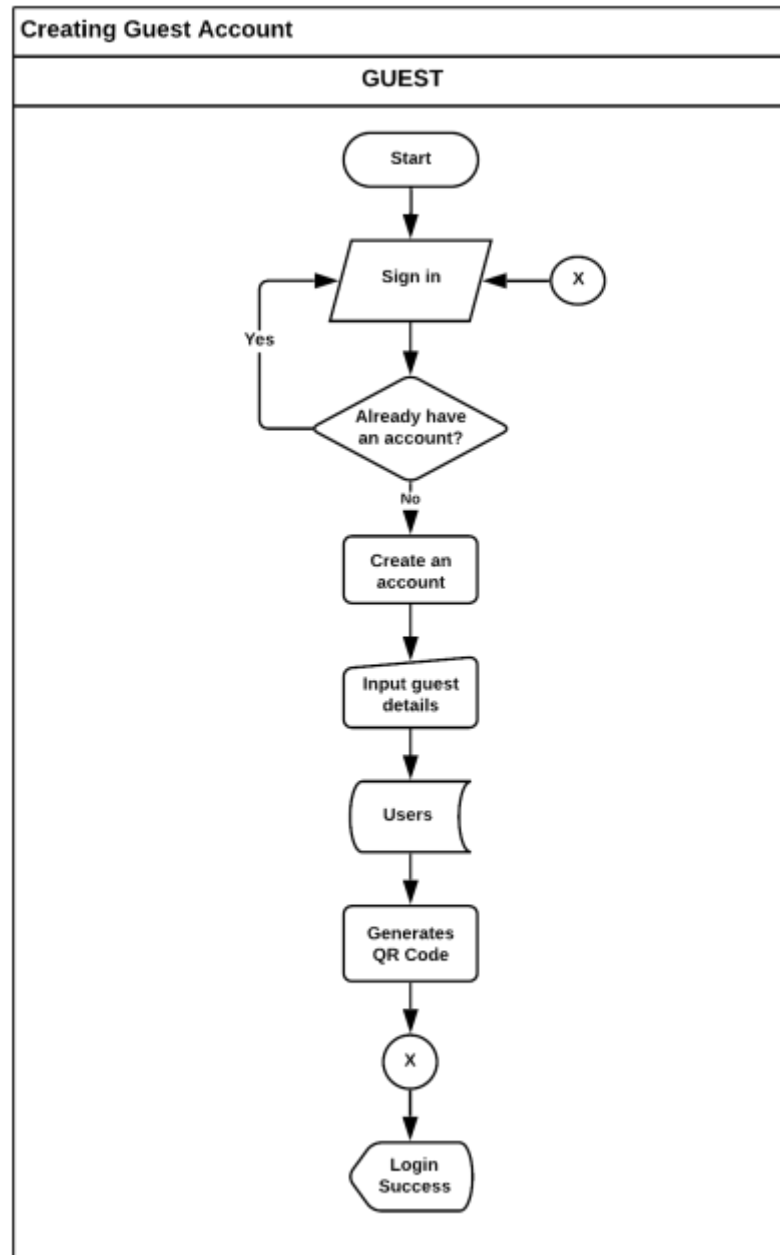


Figure 11. Process Flow for Registration

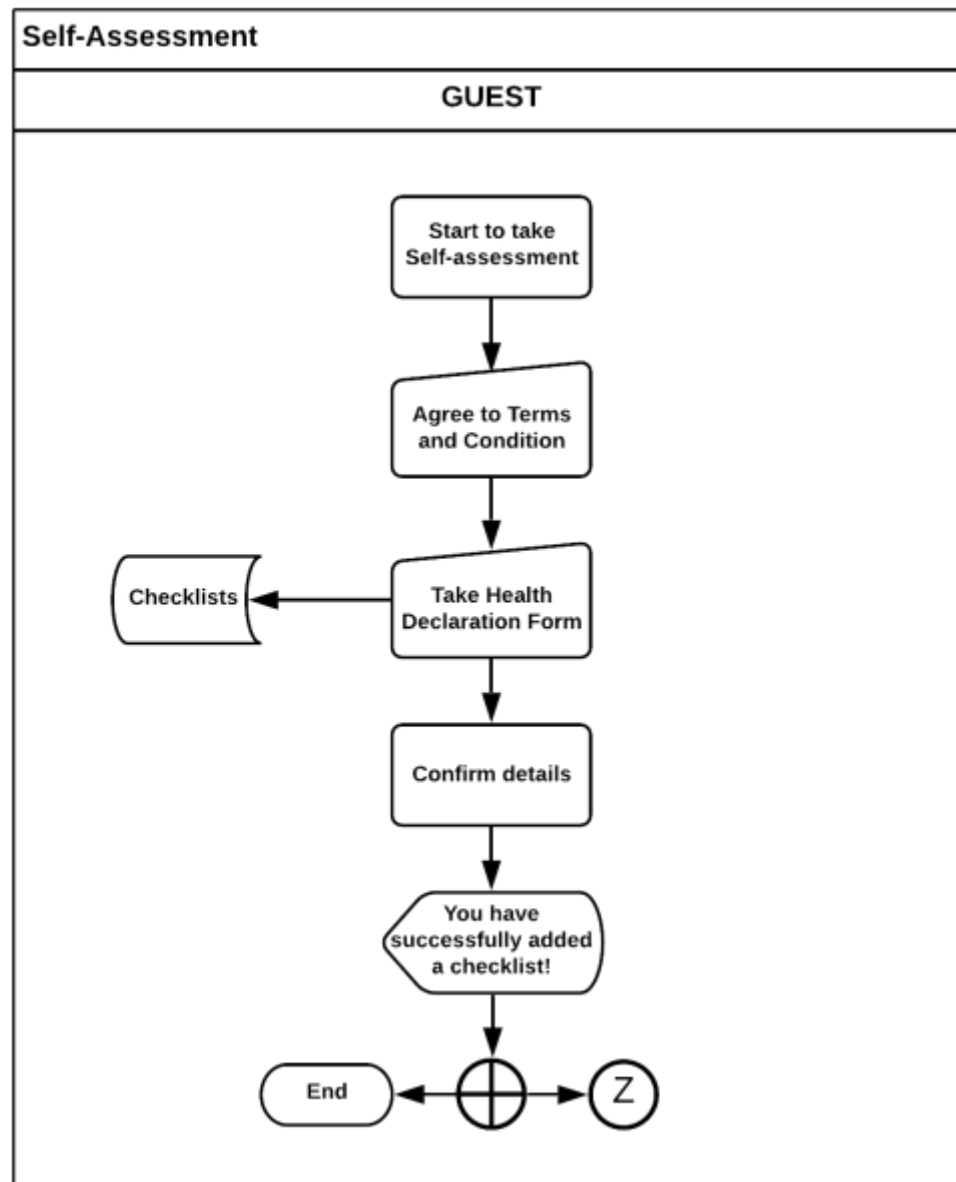


Figure 11.1. Process Flow for Self-Assessment

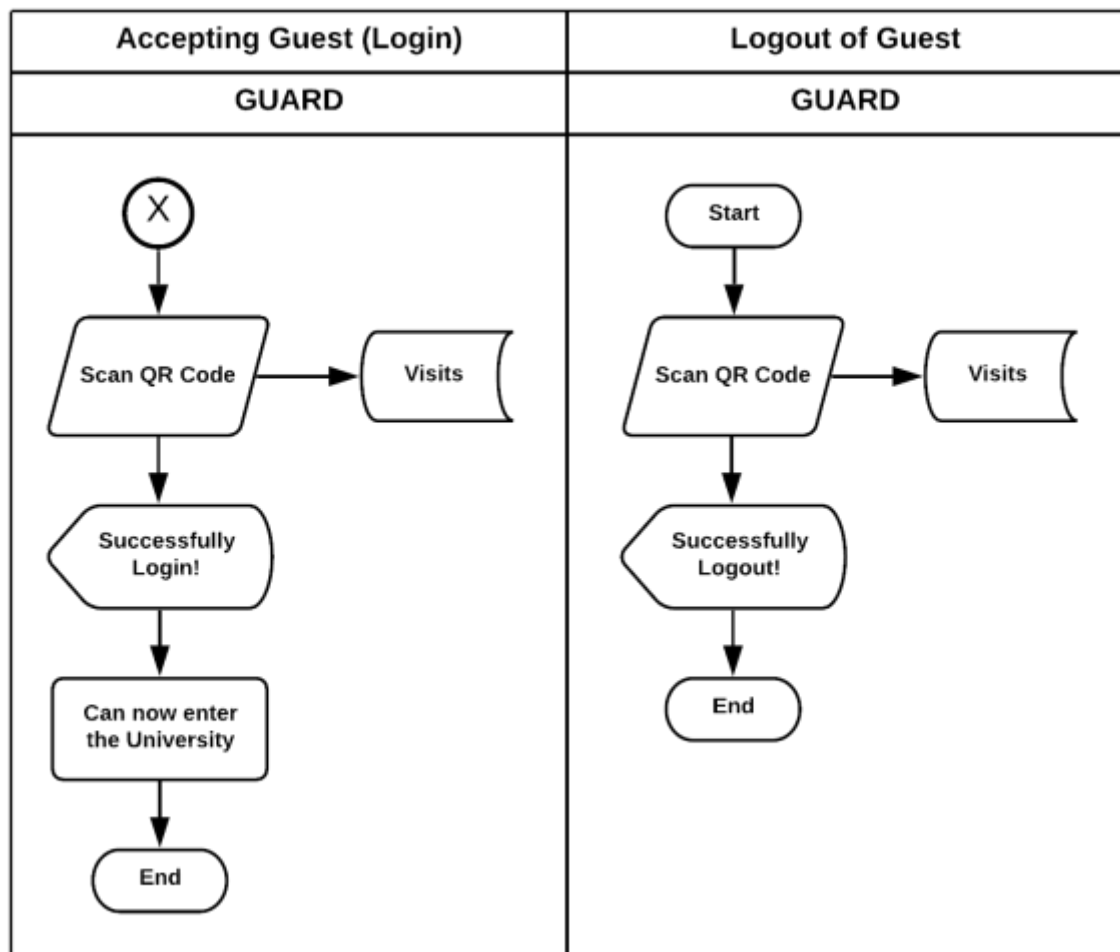


Figure 11.2. Process Flow for Accepting and logout of Guest

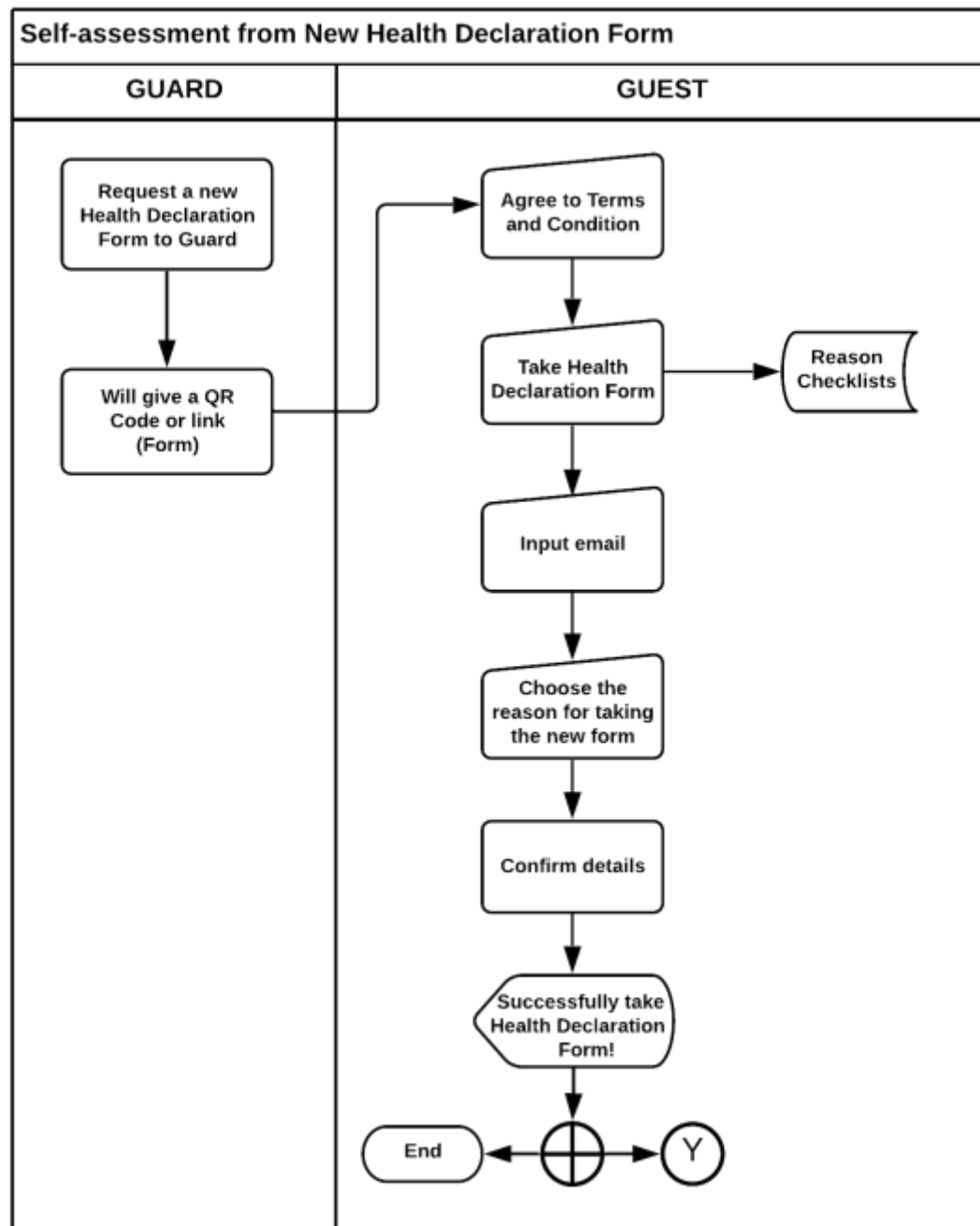


Figure 11.3. Process Flow for Alternative Self-Assessment

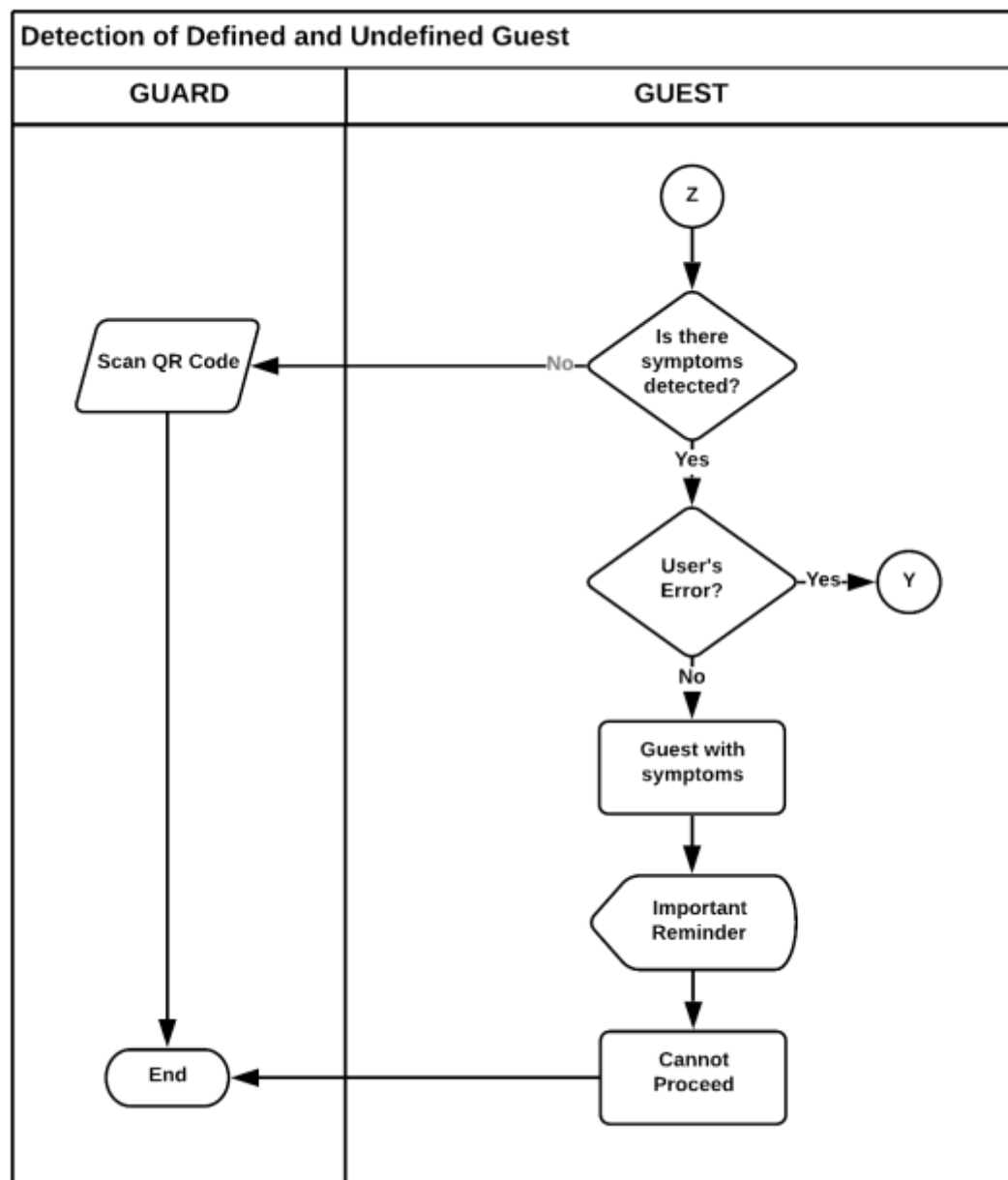


Figure 11.4. Process Flow for Detection of Guest

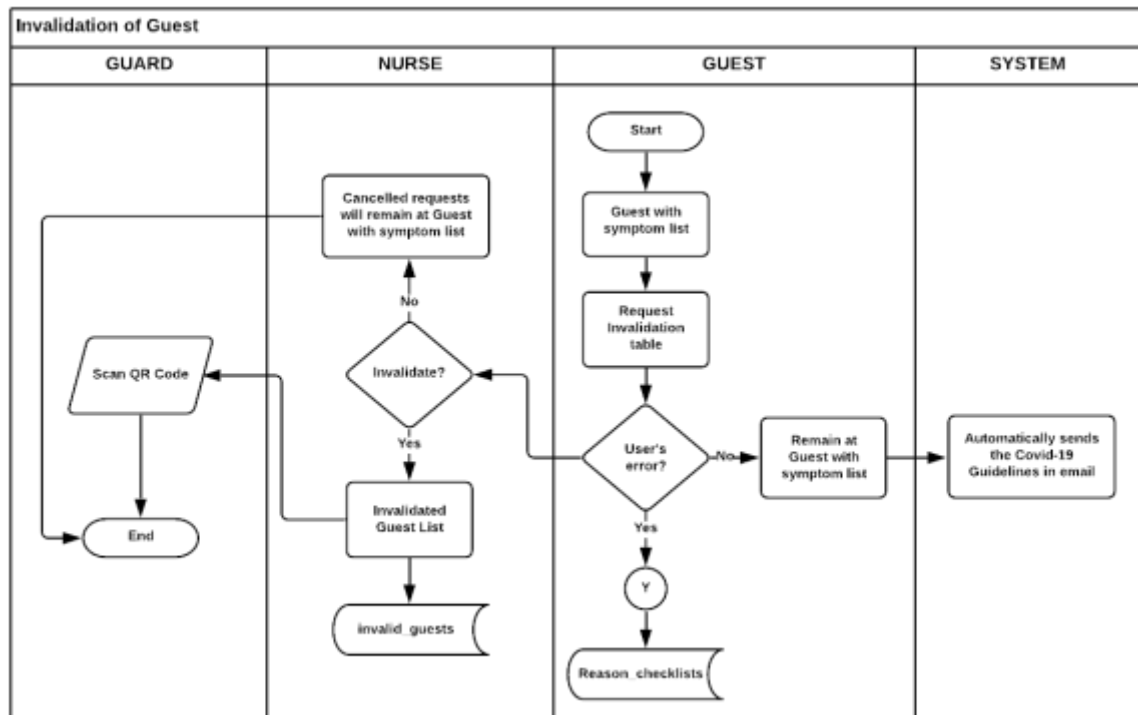


Figure 11.5. Process Flow for Invalidation of Guest

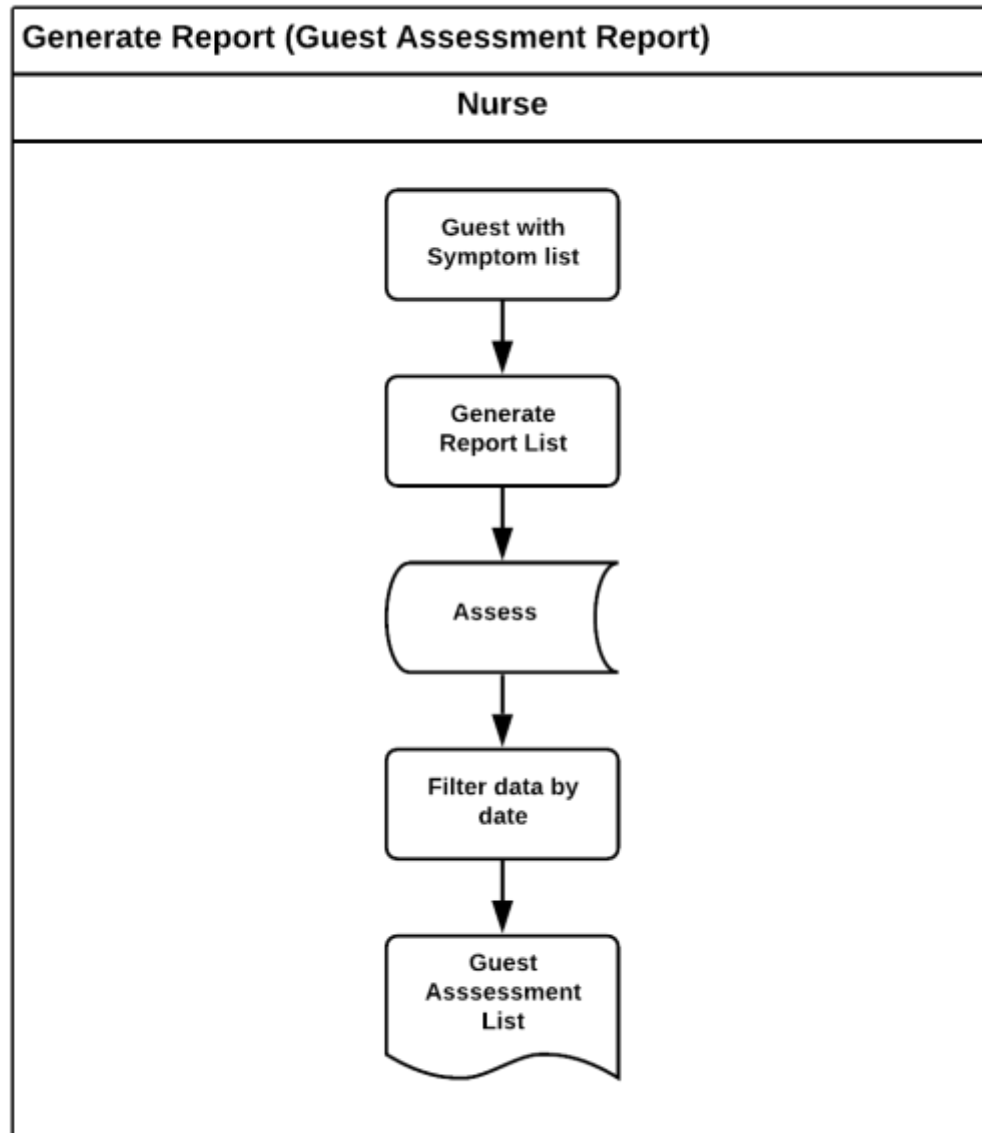


Figure 11.6. Process Flow for Generate Report



Policies

Administrator Account

System Security	
Login	Allows access and manages modules in the account
Logout	Closes the access in the system
Activity Logs	Monitors and Views Logs
Maintenance	Allows the admin to access the maintainable features of the system
User Management	Allows the admin to access the roles of each account.

Table 1. Administrator Account

Guest Account

System Security	
Register	Able to have an account
Login	Access and manages all the modules
Logout	Closes the access in the system
QR Code	Identifier
Health Declaration Form	Answer your own health declaration form, can also be viewed before and after submitting the health declaration.

Table 2. Guests Account



Nurse Account

System Security	
Login	Access and manages modules in the account
Logout	Closes the access in the system
Modules	Dashboard
	Guest
	Visits
	Guest Assessment
View Health Declaration	Allows the nurse to view the answered health declaration form of the user
Approve Pending Status	Allows the nurse to approve pending status of the user such as requesting for invalidating the previous health declaration form, request of email, and also for clearing the account of the user.
Disapprove Pending Status	Allows the nurse to disapprove pending status upon the review of the health declaration form of the user.
Reports	
Generate Report	Printouts documents/reports based on the request.
Settings	
Add guest/user	Allows the nurse to add new guest/user
Edit/Update guest/user	Allows the nurse to edit details of the guest/user
Delete guest/user	Allows the nurse to delete existing guest/user

Table 3. Nurse Account



Guard Account

System Security	
Login	Access and manages all the modules
Logout	Closes the access in the system
Scanner	Scans the QR code of the user/guest
Reason Health Declaration Form	Another form of having a health declaration form in the case of a user's error.

Table 4. Guard Account

Problem Analysis

This segment identifies the issues that arise in the company. This also describes the key issues' root causes. This section is divided into four (4) sections to help you understand the problem: Fishbone Diagram, Problem Requirements, Requirements-Feature Matrix, and Conclusion and Recommendation.

Fishbone Diagram

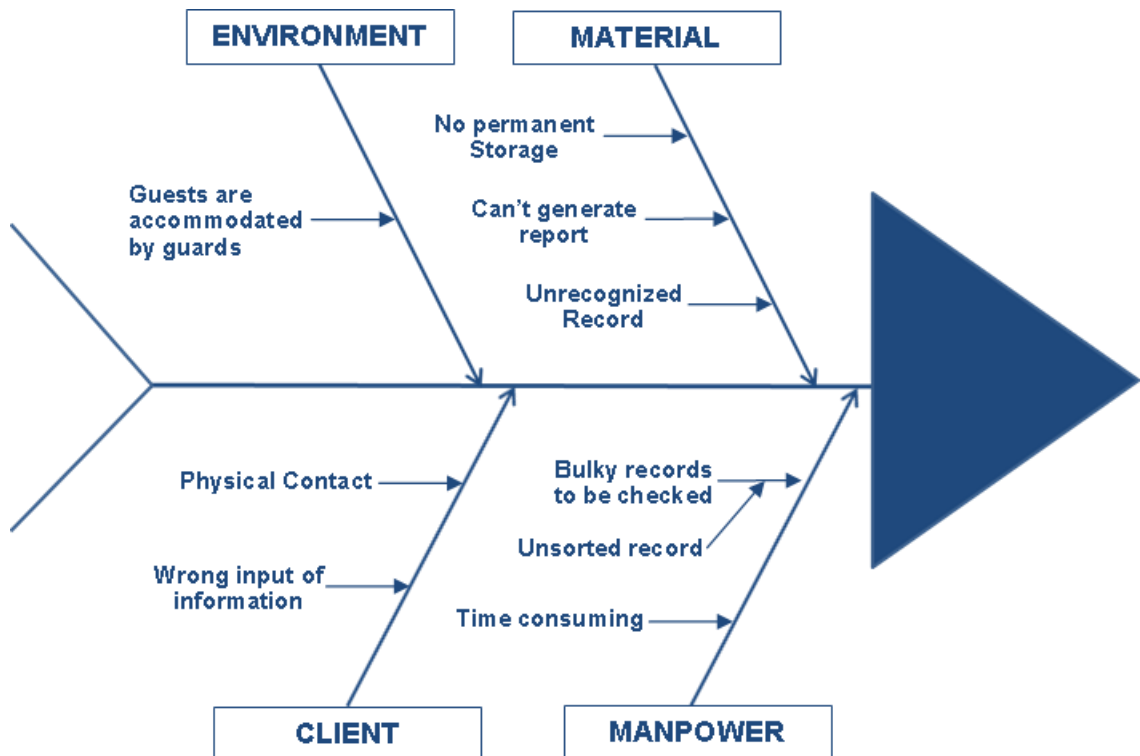


Figure 12. Fishbone Diagram



Problem Requirements

Problem	Requirements
Lost Record	<input type="checkbox"/> Records are collected through paper <input type="checkbox"/> No permanent Storage
Records are not readable	<input type="checkbox"/> Unreadable penmanship
Recording of Data is outdated	<input type="checkbox"/> Collected data are sometimes recorded in an unexact time
Triage not accurate	<input type="checkbox"/> Cannot trace if the guests were defined patient previously
Environment	<input type="checkbox"/> Since the university is located along the highway, it is not safe if volume of guests are stuck outside while answering the health declaration form
Generate of report	<input type="checkbox"/> Generation of reports are made manually
No paper storage	<input type="checkbox"/> Data collected is not properly stored. High possibility of loss of records
Paper works	<input type="checkbox"/> Every transaction use paper

Table 5. Problem Requirements



Requirements-Feature Matrix

Requirements Features	The system must be able to record all the guests' list and information	The system must be able to organize the guests records	The system must be able to generate report
Monitor Guests Information		/	
Add Guests	/		
Generate Report			/

Table 6. Requirements-Feature Matrix

Conclusion and Recommendation

Conclusion

Currently, the Polytechnic University of the Philippines - Taguig Branch doesn't have an electronic system for Health Declaration and managing information of the guests, and every time guests are entering the university, it is too much hassle for them because they need to manually fill out the form.

The client of this system is having difficulty recording personal information because they only used manual operations for recording, updating, and retrieving files. This sometimes leads to mistakes, which in turn lead to more complicated issues.

They need to follow a modern and structured way to record, update, and respond to current and emerging problems in the organization in order to provide a systematic response to them.



Recommendation

The purpose of this document is to give information and present a detailed description on the Clinical Information and Triage System (CITS). In this document, details, features, and purpose of the system will be explained, including the interfaces of the system, what the system will do, the constraints under which it must operate. This document is intended for both the stakeholders and the developers of the system.

The Clinical Information and Triage System (CITS) is a generic system implemented at Polytechnic University of the Philippines – Taguig Branch (PUPT) which will be used by four (4) stakeholders. The stakeholders are the following: administrator, nurse, guard, and guests. Since the system will be implemented at Polytechnic University of the Philippines – Taguig Branch, the guests are the students, faculty, employees, and visitors of the university.

The system is designed to be used as a web application. The main purpose of the development of the system is in pursuance of replacing the current means of filling out individual health declarations by using Google form and generating reports.



Chapter 3

PROPOSED SYSTEM DEFINITION

Research Design

The research design used in this project is experimental with a quantitative approach. This study is classified as experimental design because it involves manipulating two sets of variables to determine if changes in one variable cause changes in another variable. The independent variable in this study is the system itself, and its functional sustainability, performance efficiency, compatibility, usability, reliability, security, maintainability, and portability.

Sources of Data

Gathered health records from students, professors, and visitors at Polytechnic University of Philippines – Taguig branch was the primary data source of this research. The above-mentioned respondents are the ones who will use the health declaration system as a requirement before entering the university.

Research Instrument

The research instrument that will be used in the study is an online questionnaire. The basis of the survey for the user acceptance testing is the ISO 25010 model to identify the quality characteristics that the system had reached. The qualities needed to be tested are: functional suitability, performance efficiency, compatibility, usability, reliability, security, maintainability, and portability. These will be used by the users after they have tested the system.



Data Generation Procedure

Data of this study will be collected by administering online questionnaires and will be given to the target respondents. The ratings that are gathered from the answered survey form will be tallied and computed.

Ethical Considerations

A formal letter will be given together with the questionnaire that indicates the protection of the privacy of the participants to ensure and reassure that their participation in the research is voluntary and that they were free to withdraw from it at any point and for any reason.

Participants were fully informed regarding the objectives of the study, while they were reassured that their answers were treated as confidential and used only for academic purposes and only for the purposes of the particular research. Except for the above, participants were not harmed or abused, both physically and psychologically, during the conduction of the research. In contrast, the researcher attempted to create and maintain a climate of comfort.

Proposed System Architecture

This figure shows how the users interact with the system (CITS). The users are required to answer the health declaration form before entering the university. There are two ways to register guests and fill out a form checklist – one is through the website and second is through the system's QR Code that will be given by the guard. The system will process the raw data stored in the database to check if the data needed is registered.

Using the QR code scanner, it will retrieve the data provided by the user using the QR code generator and it will save to the database. The nurse will be the one who will manage to assess if the user was identified as having a symptom, but the nurse can invalidate the guest if it was a user's error only. Then the nurse can generate a report that is needed. And, the system will display all the data gathered and shown in the statistical charts.

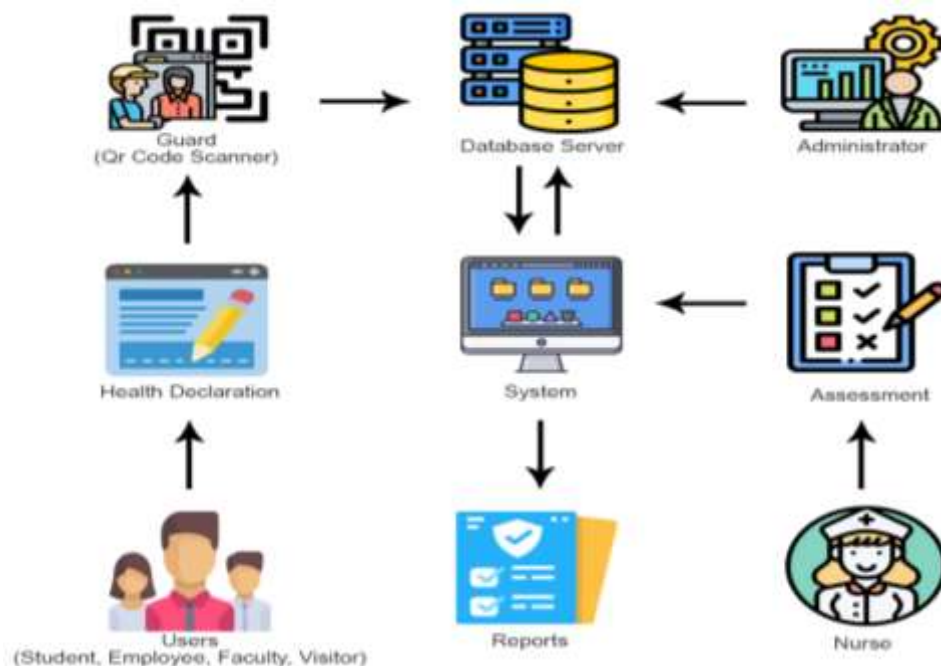


Figure 13. System Architecture

Functional Specifications

This section contains the proposed system's system boundaries, which are represented in the use case diagram, detailed use case diagram, and system flow diagram.

System Boundaries

Based on the data and processes gathered by the group, the Clinical Information and Triage System will be used by the PUP-Taguig branch clinic. This system will handle all the health declaration records. The used cases helped the developers to identify the requirements of the system. It is a clear picture of how each subsystem interacts with each other, all the necessary flow of transactions, and brief descriptions of the system's major functionalities.

System Use Case Diagram

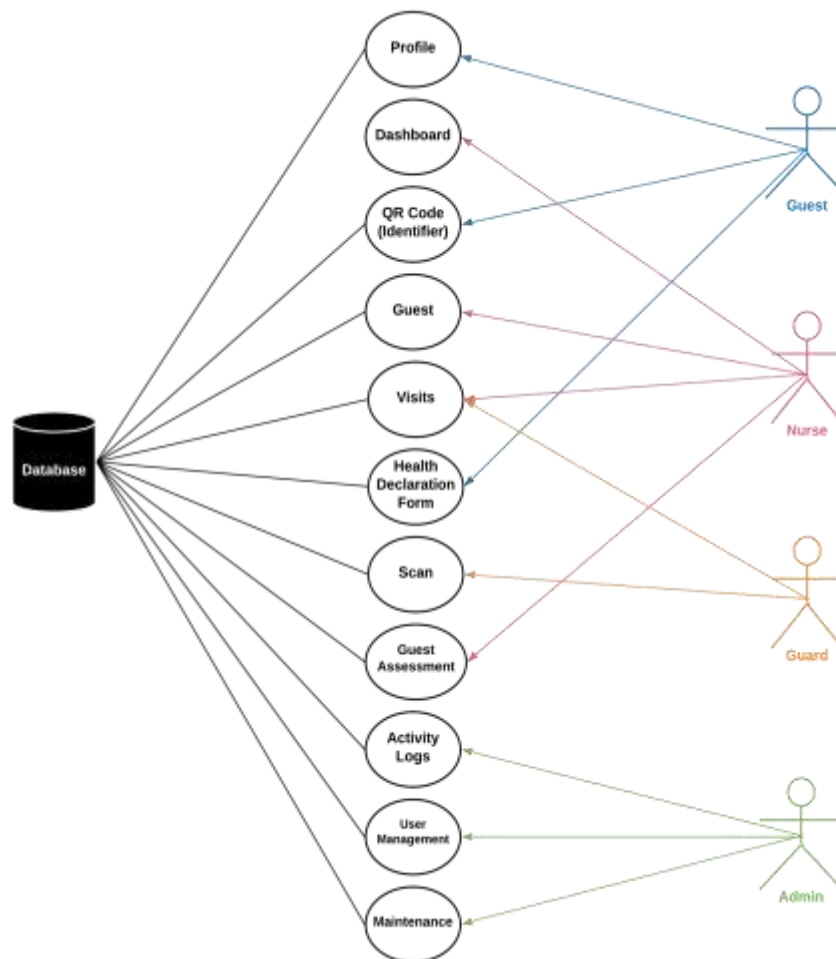


Figure 14. System Use Case Diagram

Detailed Use Case Diagram

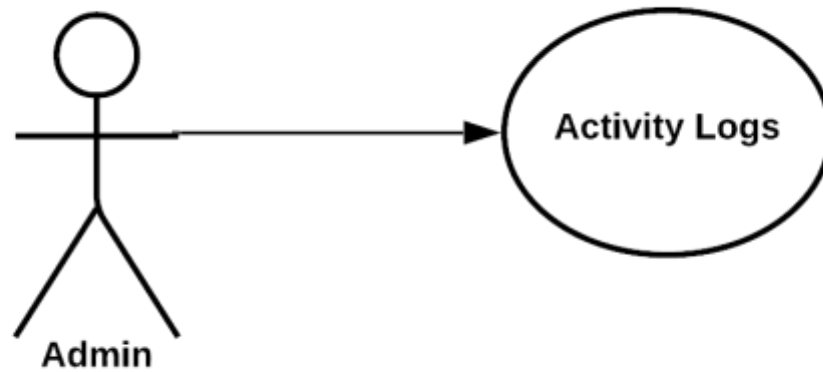


Figure 14.1. Detailed Use Case Diagram

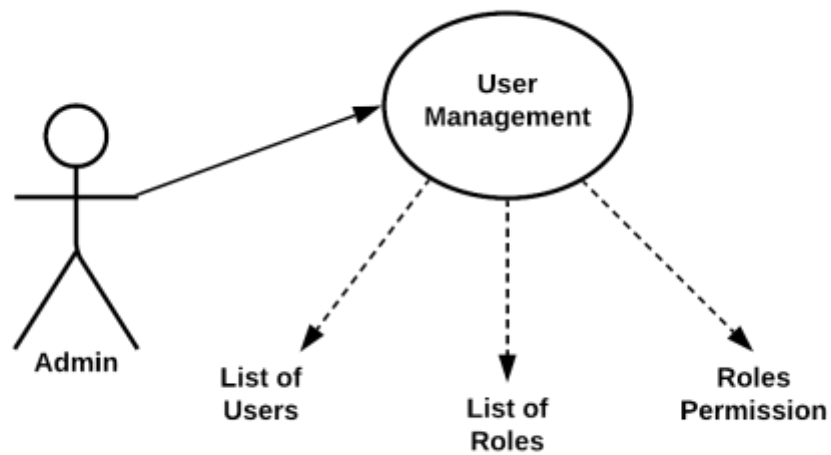


Figure 14.2. Detailed Use Case Diagram

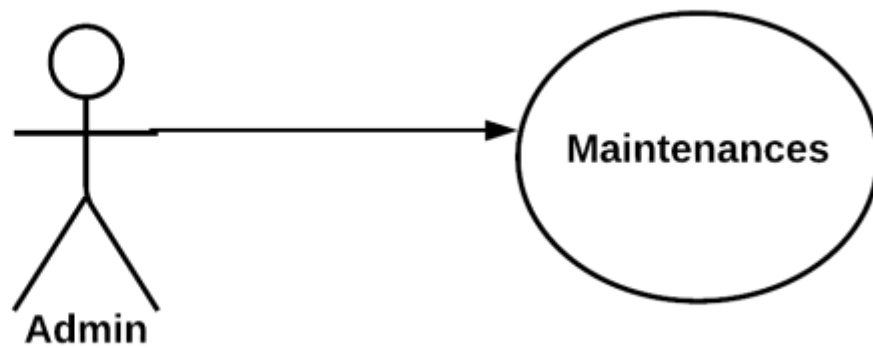


Figure 14.3. Detailed Use Case Diagram

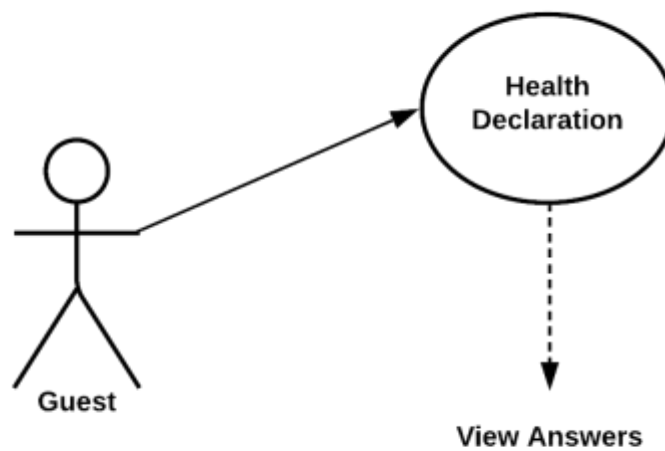


Figure 14.4. Detailed Use Case Diagram

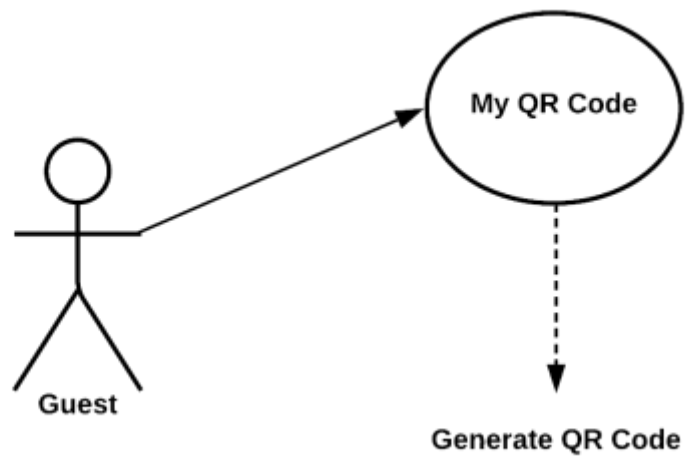


Figure 14.5. Detailed Use Case Diagram

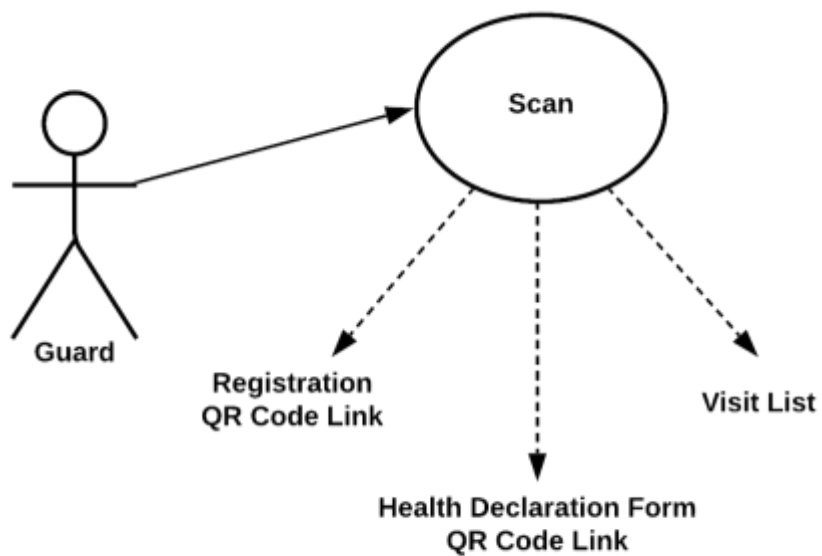


Figure 14.6. Detailed Use Case Diagram

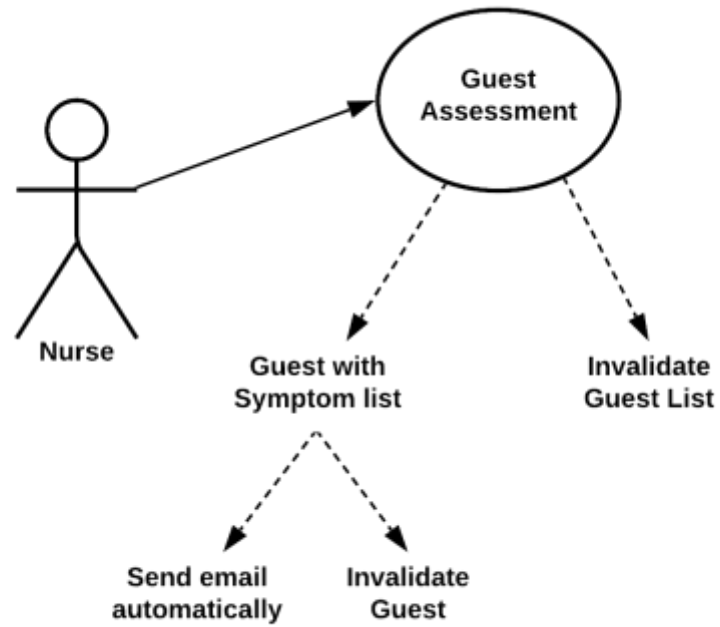


Figure 14.7 Detailed Use Case Diagram



System Flow Diagram

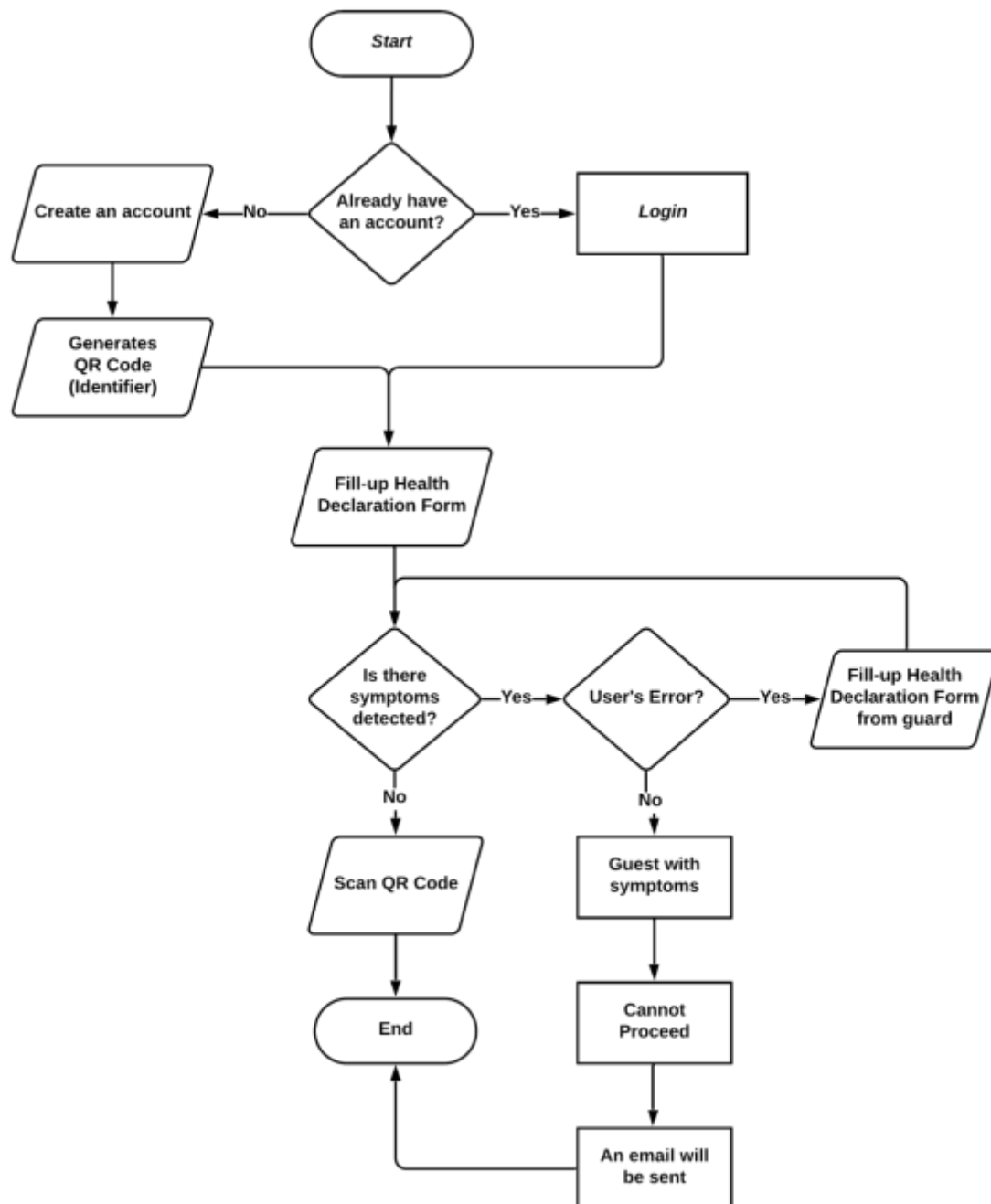


Figure 15. System Flow Diagram

System Prototype

Maintenance

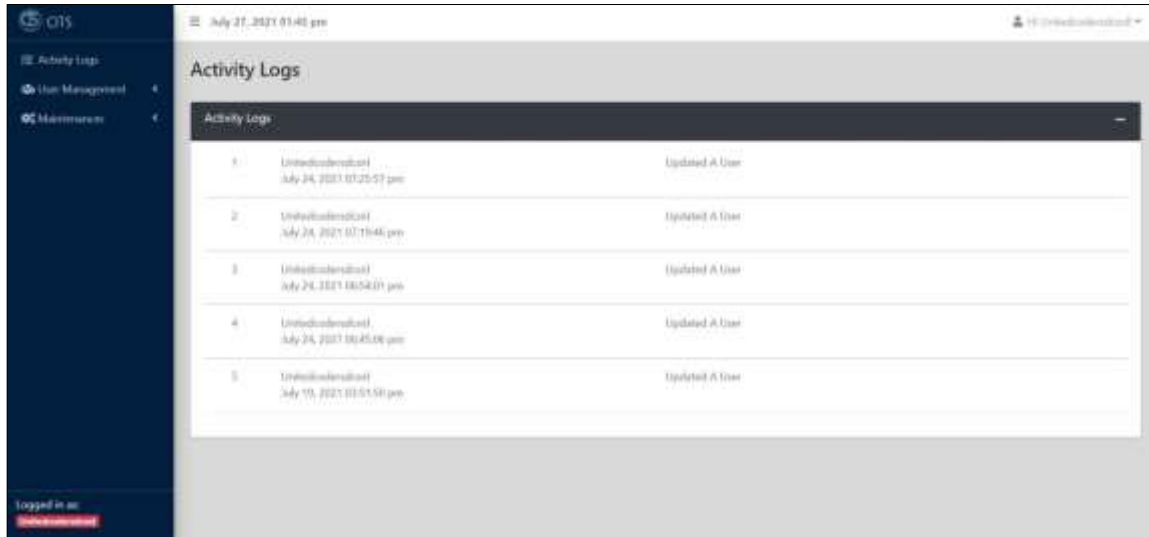


Figure 16. System Prototype: Activity Logs

Name: Activity Logs

Description: This is where the user's list of transactions that was made.

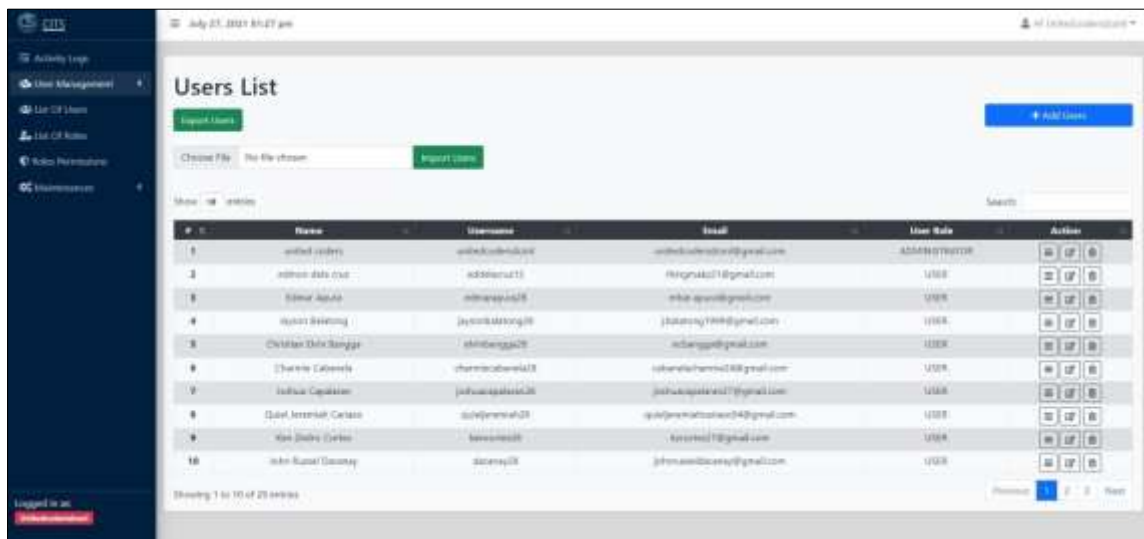


Figure 16.1 System Prototype: User Management

Name: List of Users

Description: This is where admin can view the list of users, import, and export users.

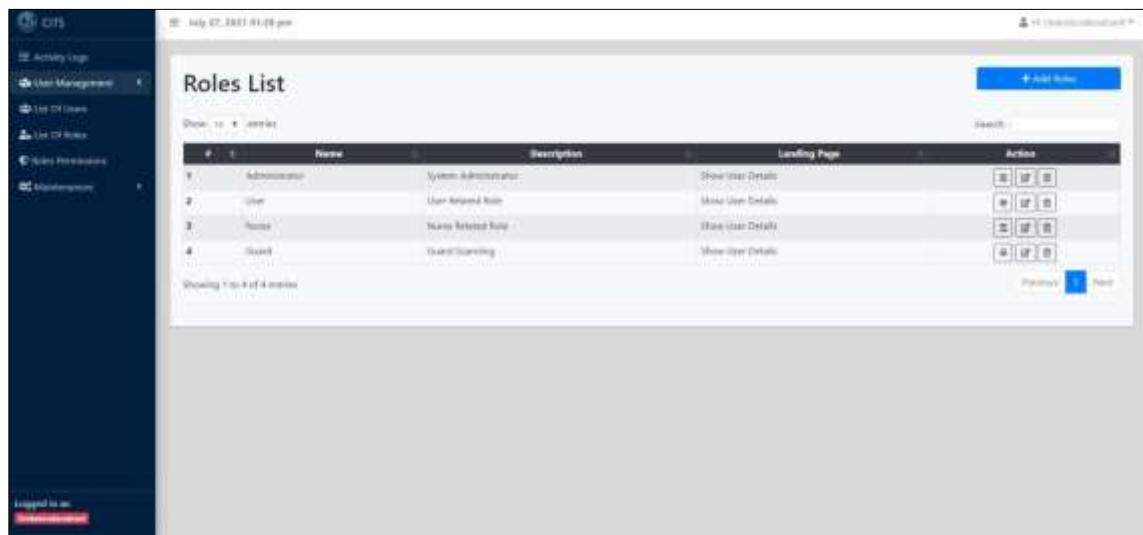


Figure 16.2 System Prototype: User Management

Name: List of Roles

Description: This is where the user is assigned as admin, user, nurse, or a guard.

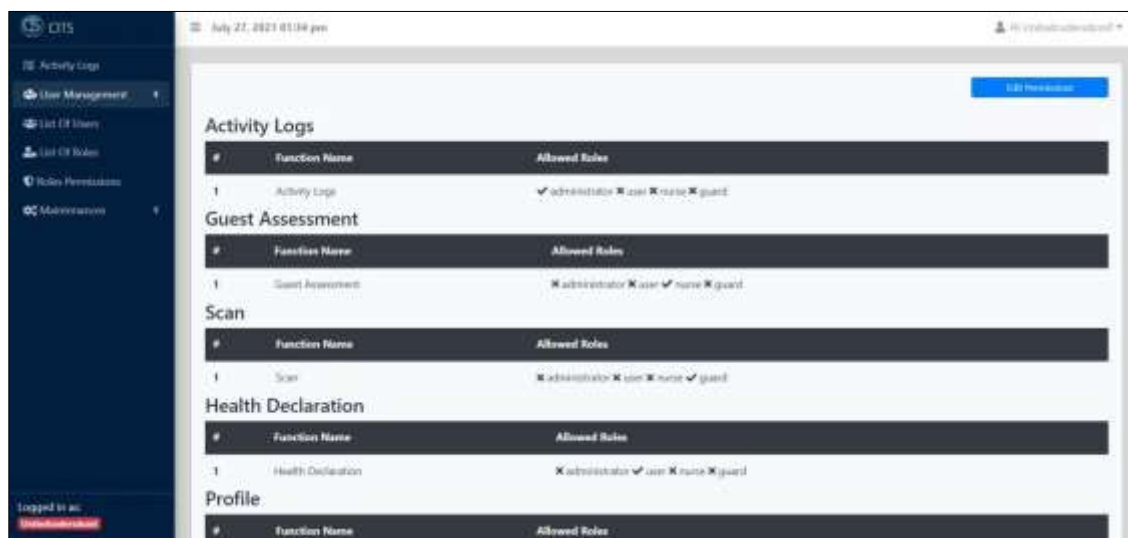


Figure 16.3 System Prototype: User Management

Name: Roles Permission

Description: This is where the admin assigns what permission a user can access.

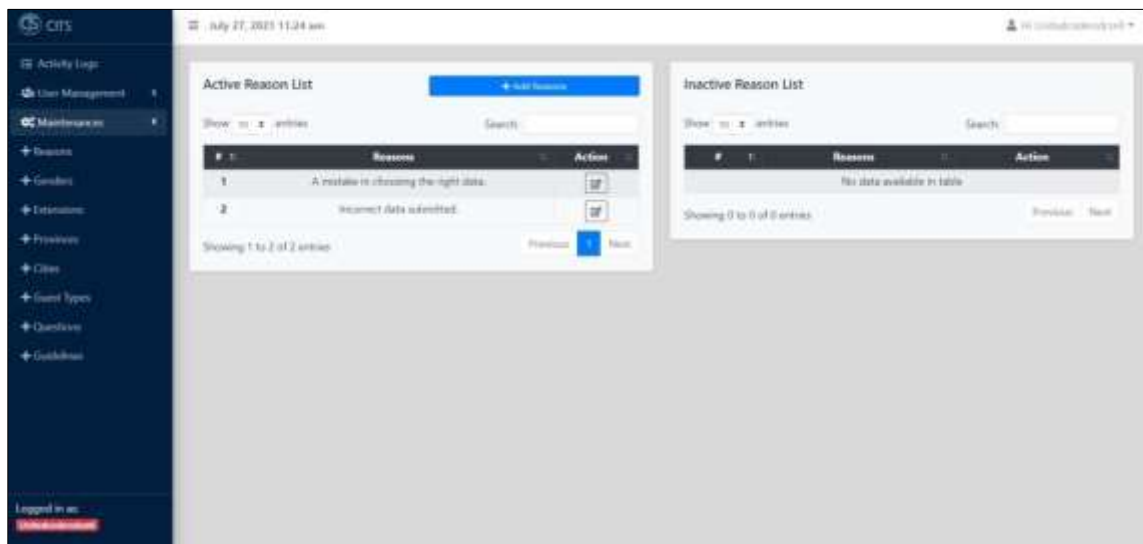


Figure 16.4 System Prototype: Maintenance

Name: Add Reason

Description: This form allows the user to add a reason to Active or Inactive list.

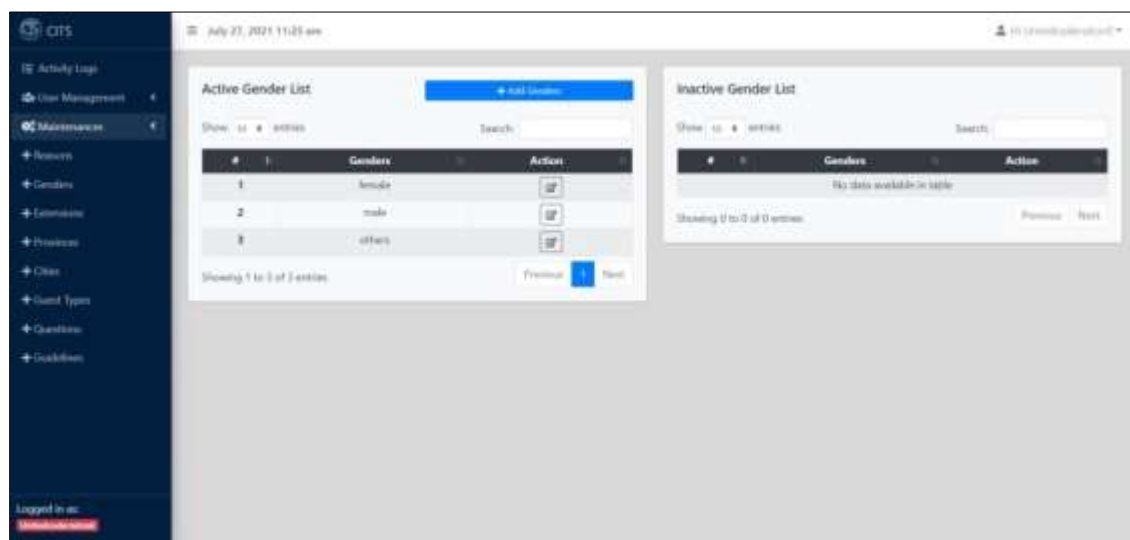


Figure 16.5. System Prototype: Maintenance

Name: Add Gender

Description: This form allows the user to add a gender to an active or inactive list.

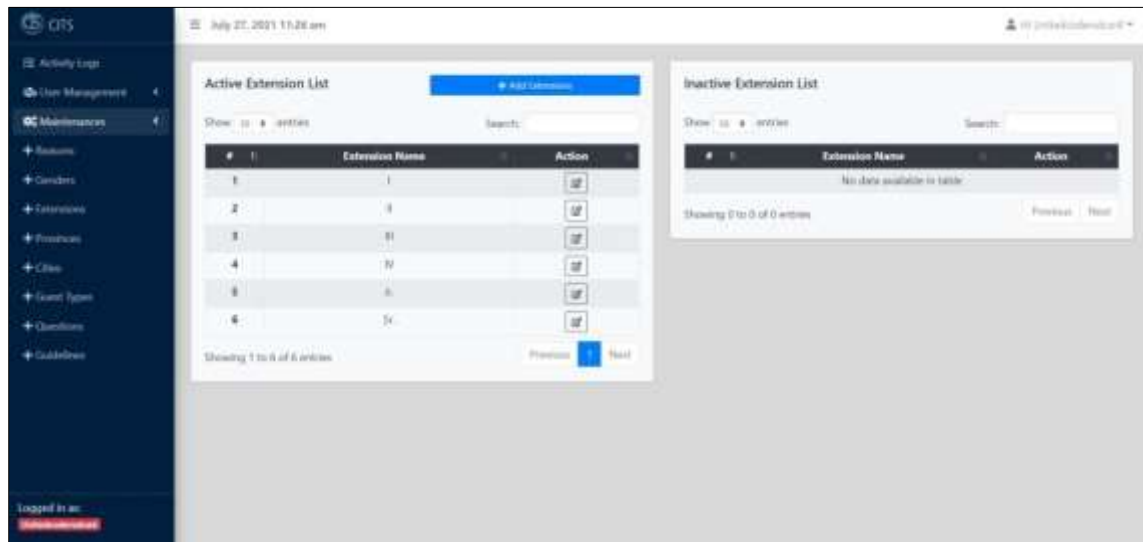


Figure 16.6 System Prototype: Maintenance

Name: Add Extension

Description: This form allows the user to add an extension to Active or Inactive list.

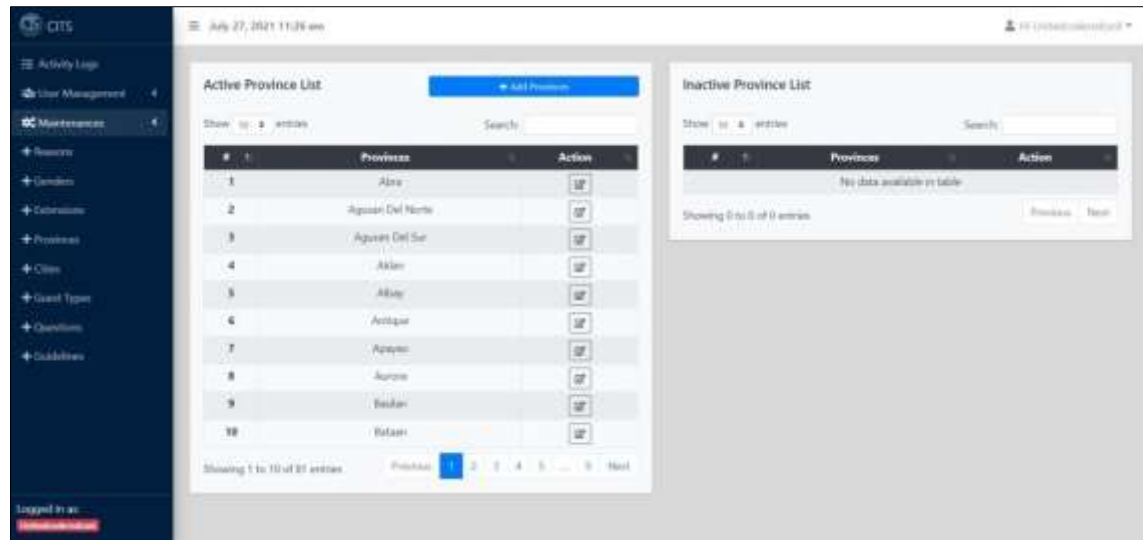


Figure 16.7 System Prototype: Maintenance

Name: Add Province

Description: This form allows the user to add a province to Active or Inactive list.

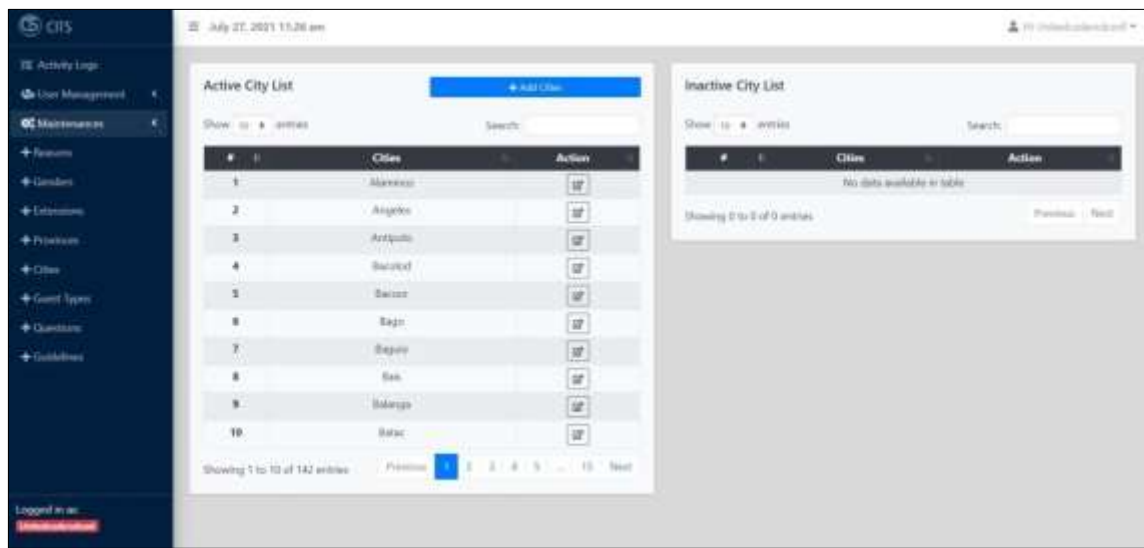


Figure 16.8 System Prototype: Maintenance

Name: Add City

Description: This form allows the user to add a city to Active or Inactive list.

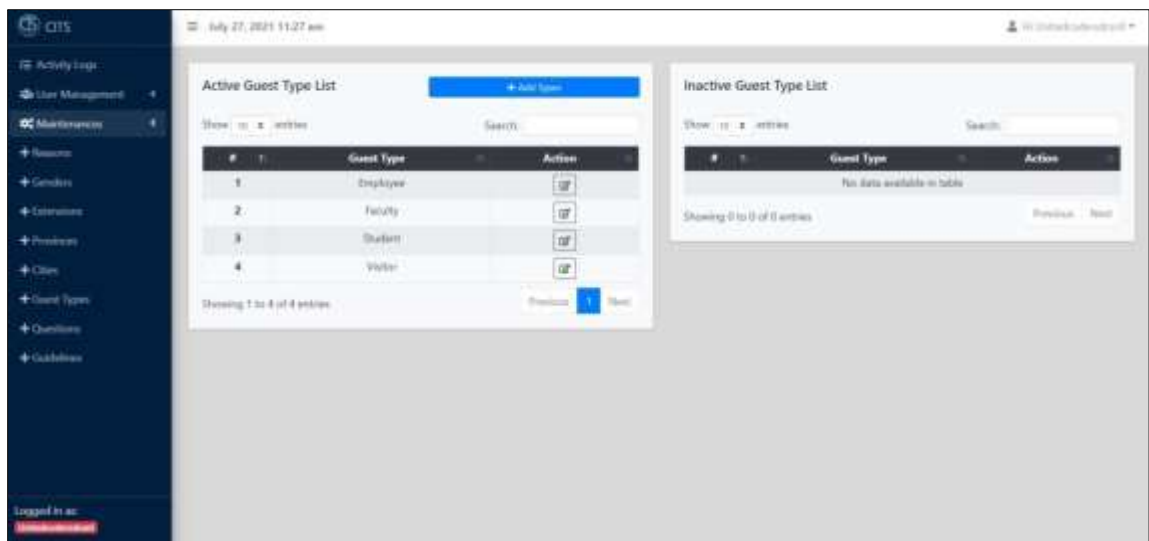
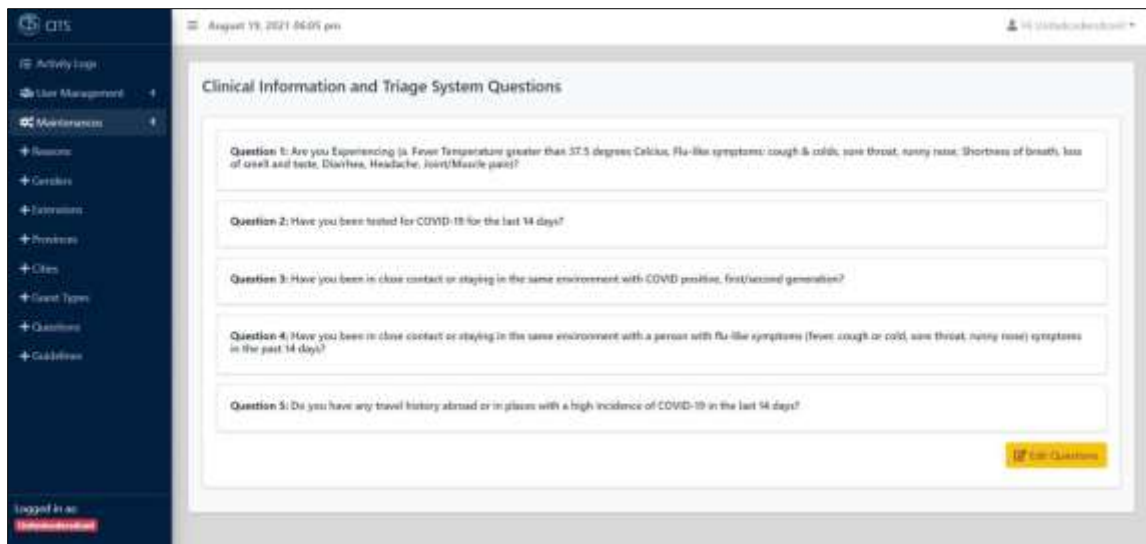


Figure 16.9 System Prototype: Maintenance

Name: Add Guest Type

Description: This form allows the user to add a guest type to Active or Inactive list.



The screenshot shows a web application interface for 'CITS'. The left sidebar contains a menu with options: Activity Logs, User Management, Maintenance (selected), Reports, Cancellations, Extensions, Procedures, Cities, Client Types, Questionnaires, and Guidelines. The main content area is titled 'Clinical Information and Triage System Questions'. It displays five questions related to COVID-19 symptoms and testing. A 'Save Questions' button is located at the bottom right of the question list.

Question 1: Are you Experiencing (a. Fever Temperature greater than 37.5 degrees Celsius, Flu-like symptoms: cough & cold, sore throat, runny nose, Shortness of breath, loss of smell and taste, Diarrhea, Headache, Joint/Muscle pain)?

Question 2: Have you been tested for COVID-19 for the last 14 days?

Question 3: Have you been in close contact or staying in the same environment with COVID positive, first/second generation?

Question 4: Have you been in close contact or staying in the same environment with a person with flu-like symptoms (fever, cough or cold, sore throat, runny nose) symptoms in the past 14 days?

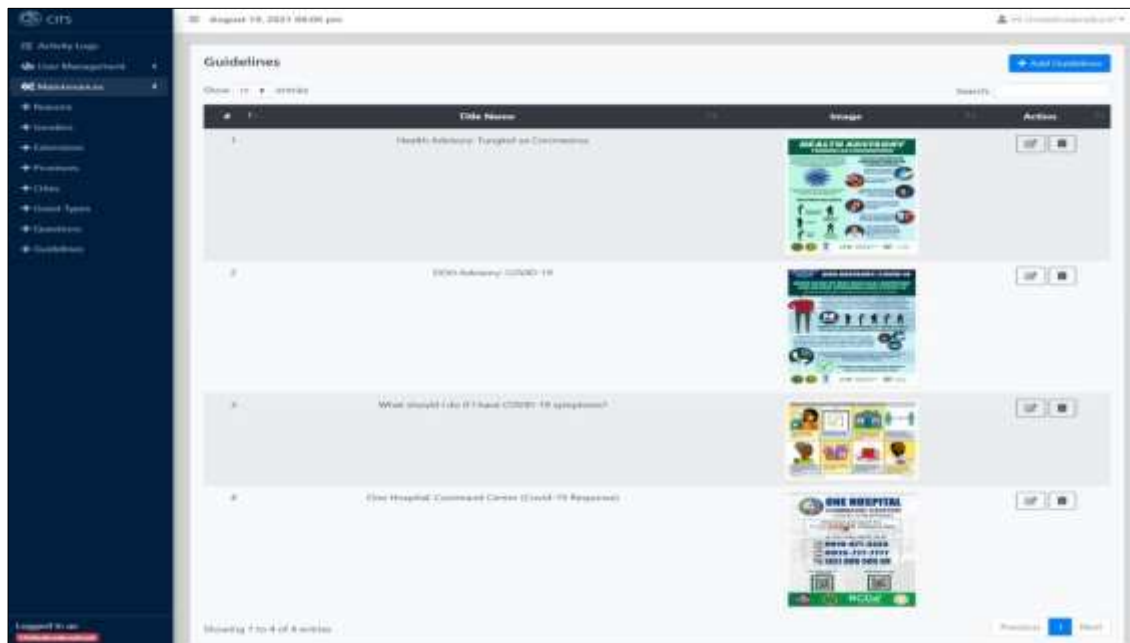
Question 5: Do you have any travel history abroad or in places with a high incidence of COVID-19 in the last 14 days?

[Save Questions](#)





Figure 16.10 System Prototype: Maintenance

Name: Add Question (Health Declaration Form)

Description: This form allows the user to add a question in the Health Declaration Form.



The screenshot shows the 'Guidelines' section of the CITS system. The left sidebar is the same as in Figure 16.10. The main content area is titled 'Guidelines' and features a table with columns: Title, Name, Image, and Action. The table lists four guidelines related to COVID-19. Each row has a corresponding image thumbnail and action buttons (edit and delete). A 'Add Guidelines' button is located at the top right of the table.

Title	Name	Image	Action
Health Advisory: Turnoff on Concomitance			Edit Delete
Health Advisory: COVID-19			Edit Delete
What should I do if I have COVID-19 symptoms?			Edit Delete
One Hospital Command Center (COVID-19 Response)			Edit Delete

Showing 4 to 4 of 4 records

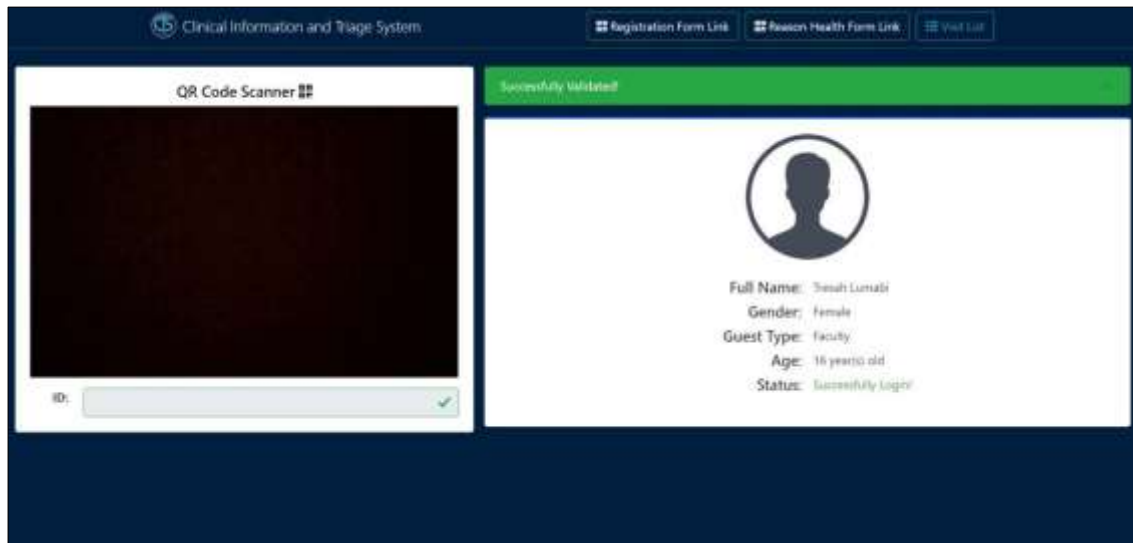
[Previous](#) [Next](#)

Figure 16.11 System Prototype: Maintenance

Name: Add/Edit Guideline

Description: This form allows the user to add or edit the guideline which will be emailed automatically to guests.

Transaction

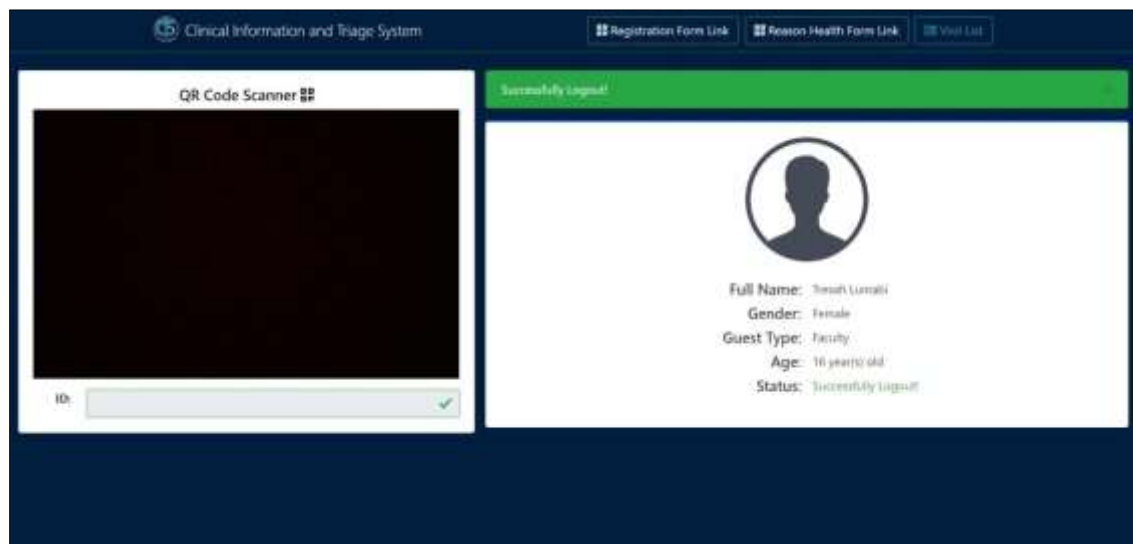


The image shows a web application interface for a 'Clinical Information and Triage System'. At the top, there are three navigation links: 'Registration Form Link', 'Reason Health Form Link', and 'Visit List'. The main content area is split into two panels. The left panel, titled 'QR Code Scanner', contains a large black rectangle representing the scanner and an 'ID:' input field with a green checkmark icon. The right panel, titled 'Successfully Validated', displays a user profile with a silhouette icon and the following details: 'Full Name: Joseph Lumali', 'Gender: Female', 'Guest Type: Faculty', 'Age: 18 years old', and 'Status: Successfully Logged'.

Figure 17. System Prototype: Transaction

Name: Login Transaction

Description: This form allows the user to process a login transaction.



This image is identical to the one above, showing the 'Clinical Information and Triage System' interface. It features the same navigation links, 'QR Code Scanner' panel with an ID input field, and 'Successfully Validated' panel displaying user information for Joseph Lumali.

Figure 17.1 System Prototype: Transaction

Name: Logout Transaction

Description: This form allows the user to process a logout transaction.



Figure 17.2. System Prototype: Transaction

Health Declaration Form
(Required Form for Residents)

I hereby certify that all information is true and complete. I understand that my failure to answer or any false or misleading information given by me may be used as a ground for my serious consequences.

Email: Reason for using self assessment:

1. Is your temperature greater than 100.4 degrees for the past 3 days? ☐ Yes ☐ No

2. Sore throat or persistently swollen lymph nodes (the area of the neck)? ☐ Yes ☐ No

3. Experienced any symptoms commonly associated with COVID-19 (Fever, Cough, Fatigue, Muscle Pain, Difficulty Breathing, Loss of Taste, Loss of Smell)? ☐ Yes ☐ No

4. Have you been in close contact with anyone who has been diagnosed with COVID-19? ☐ Yes ☐ No

5. Have you been in close contact with anyone who has been diagnosed with COVID-19? ☐ Yes ☐ No

Figure 17.3 System Prototype: Transaction

Name: QR Code Reason Health Declaration Form Transaction
(Figure 18.2 & 18.3)

Description: This form allows the user to process an alternative Health Declaration form from a QR code or link.

Reports

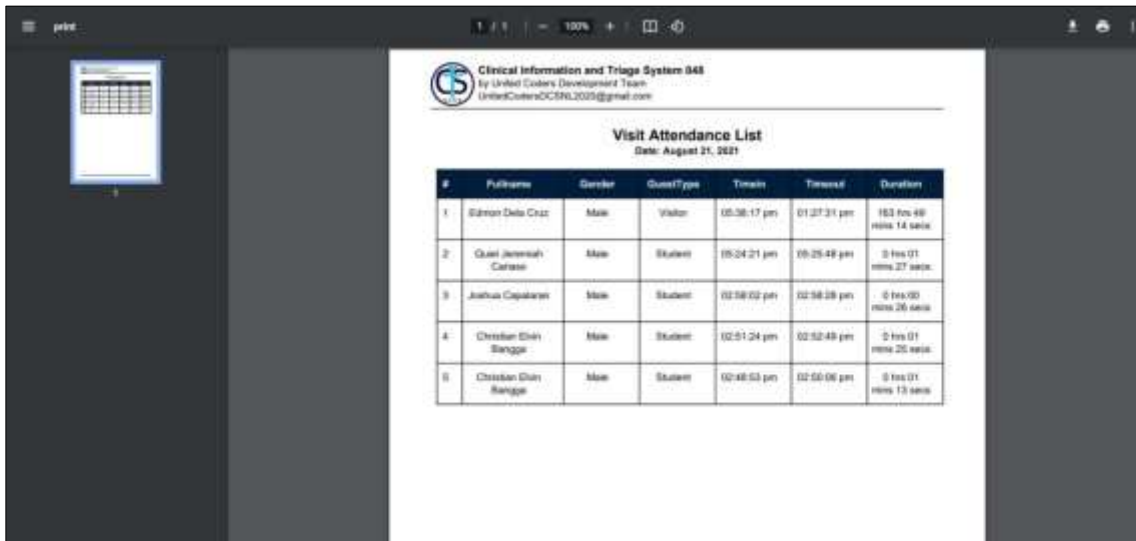


#	Fullname	GuestType	Gender	Email	Phone
1	Ayora, Edgar	Student	Male	edgar.ayora@gmail.com	09211994000
2	Baldong, Jayson	Student	Male	j.baldong1994@gmail.com	09451042641
3	Bangga, Christian Elvin	Student	Male	edrbangga@gmail.com	09774734097
4	Capistrano, Joshua	Student	Male	joshuacapistrano27@gmail.com	09494271642
5	Carasco, Queli Jeremiah	Student	Male	queli.jeremiahcarasco04@gmail.com	09165679682
6	Corles, Ken Zedric	Student	Male	kzenorles27@gmail.com	09602673248
7	Decamay, John Russell	Student	Male	johndecamay27@gmail.com	09617638037
8	Dele Cruz, Edmon	Student	Male	edmondele21@gmail.com	09673104252
9	Exposito, Eugin	Student	Male	eugin13@gmail.com	0994080066
10	Lapitan, Crisologo	Student	Male	crislapitan47@gmail.com	09219089605
11	Larosa, Christian	Student	Male	chrislarosa13@gmail.com	09196312675

Figure 18. System Prototype: Guest List Reports (Nurse Side)

Name: Guest List Report

Description: This report shows the list of guests. The report can be sorted according to its type and gender.

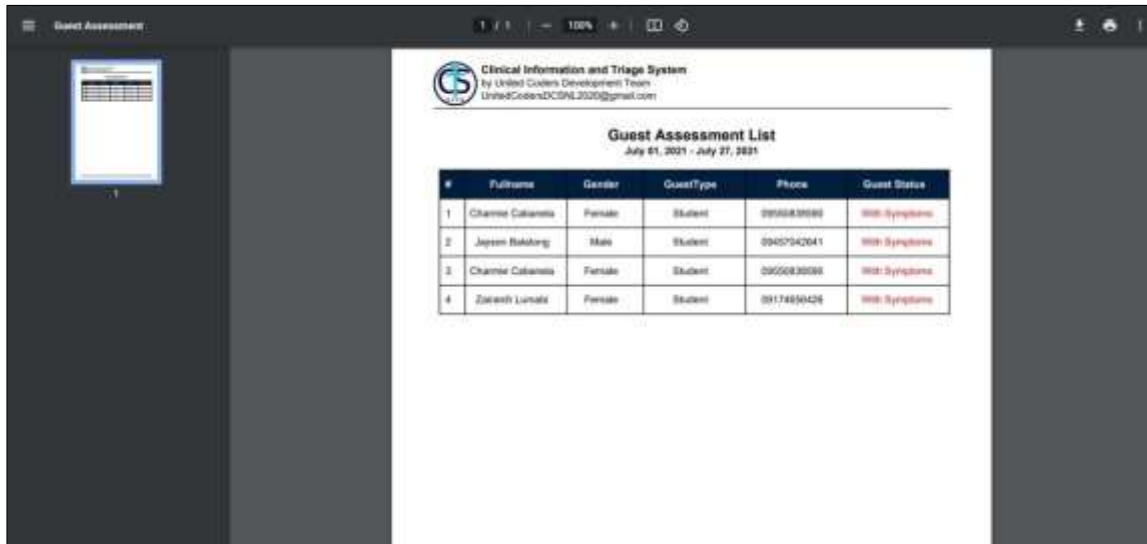


#	Fullname	Gender	GuestType	Timein	Timeout	Duration
1	Edmon Dele Cruz	Male	Visitor	00:38:17 pm	01:27:31 pm	163 hrs 49 mins 14 secs
2	Queli Jeremiah Carasco	Male	Student	00:24:21 pm	00:25:48 pm	0 hrs 01 mins 27 secs
3	Joshua Capistrano	Male	Student	02:58:02 pm	02:58:28 pm	0 hrs 00 mins 26 secs
4	Christian Elvin Bangga	Male	Student	02:51:24 pm	02:52:49 pm	0 hrs 01 mins 25 secs
5	Christian Elvin Bangga	Male	Student	02:48:53 pm	02:50:06 pm	0 hrs 01 mins 13 secs

Figure 18.1. System Prototype: Visit Attendance List Reports (Nurse Side)

Name: Visit Attendance List Report

Description: This report shows the list of guests who enter the university. The report can be sorted according to the date of visit.



Clinical Information and Triage System
by United Coders Development Team
UnitedCodersDCSNL2020@gmail.com

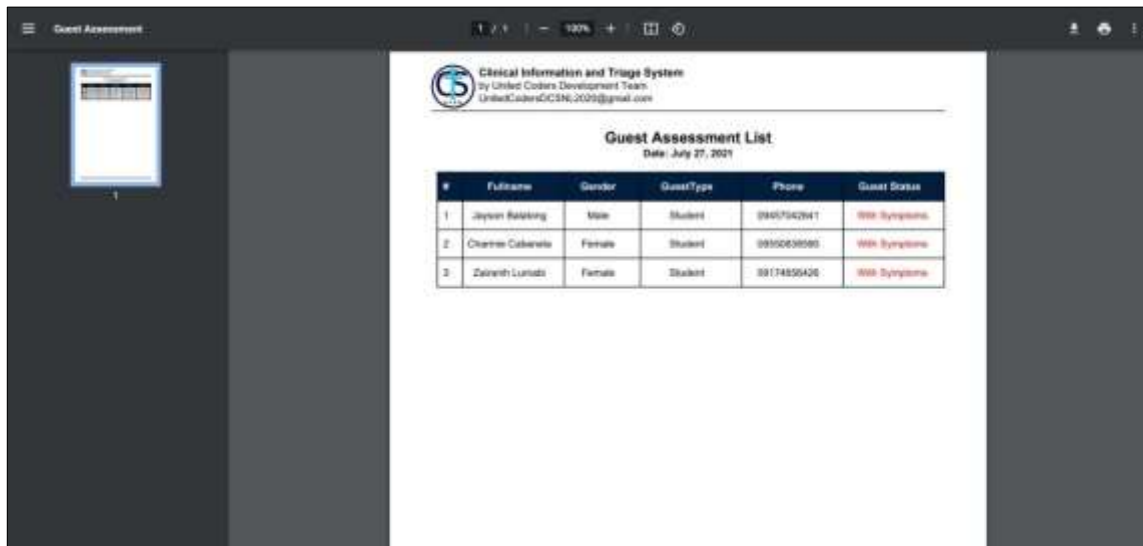
Guest Assessment List
July 01, 2021 - July 27, 2021

#	Fullname	Gender	GuestType	Phone	Guest Status
1	Charmie Cabanosa	Female	Student	0950830585	With Symptoms
2	Jayven Balabang	Male	Student	09457042641	With Symptoms
3	Charmie Cabanosa	Female	Student	0950830585	With Symptoms
4	Zaleneh Lunabi	Female	Student	09174850426	With Symptoms

Figure 18.2. System Prototype: Guest with Symptom Reports (Nurse Side)

Name: Guest Assessment Report

Description: This report shows the list of guests with symptoms which is sorted by the range of the date.



Clinical Information and Triage System
by United Coders Development Team
UnitedCodersDCSNL2020@gmail.com

Guest Assessment List
Date: July 27, 2021

#	Fullname	Gender	GuestType	Phone	Guest Status
1	Jayven Balabang	Male	Student	09457042641	With Symptoms
2	Charmie Cabanosa	Female	Student	0950830585	With Symptoms
3	Zaleneh Lunabi	Female	Student	09174850426	With Symptoms

Figure 18.3. System Prototype: Guest with Symptom Reports (Nurse Side)

Name: Guest Assessment Report

Description: This report shows the list of guests with symptoms which is sorted by a specific date.

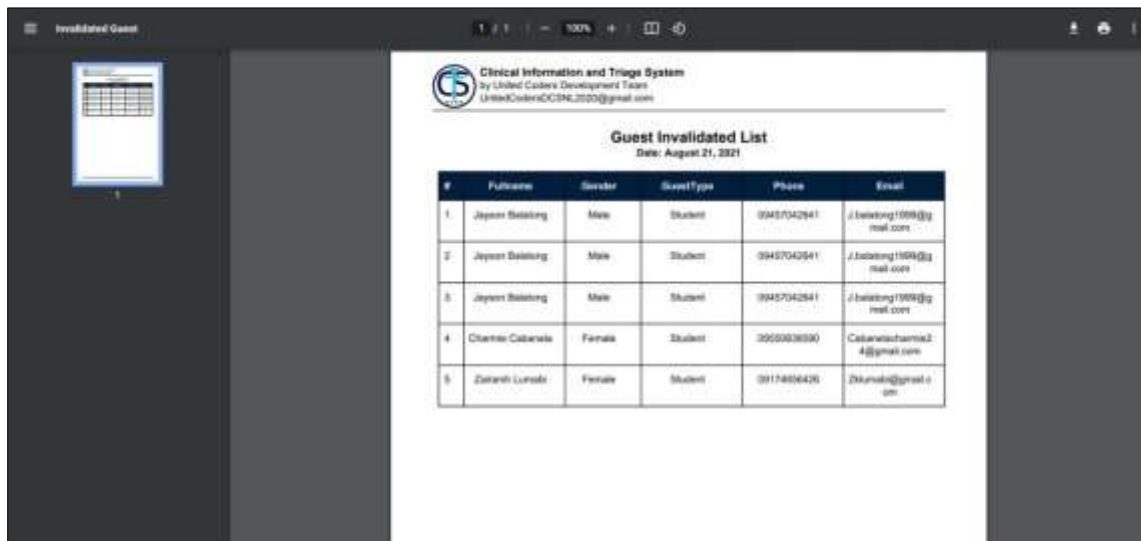


#	Fullname	Gender	GuestType	Phone	Email
1	Jayson Balisong	Male	Student	09457042641	j.balisong1999@gmail.com
2	Jayson Balisong	Male	Student	09457042641	j.balisong1999@gmail.com
3	Jayson Balisong	Male	Student	09457042641	j.balisong1999@gmail.com
4	Charmie Cabanels	Female	Student	09550638500	Cabanelscharmie24@gmail.com
5	Zekarah Lumabi	Female	Student	09174698426	z.lumabi@gmail.com
6	Zekarah Lumabi	Female	Student	09174698426	z.lumabi@gmail.com
7	Zekarah Lumabi	Female	Student	09174698426	z.lumabi@gmail.com
8	Charmie Cabanels	Female	Student	09550638500	Cabanelscharmie24@gmail.com

Figure 18.4. System Prototypes: Guest Invalidated List Reports (Nurse Side)

Name: Guest Invalidated List Report

Description: This report shows the list of guests which are invalidated by the nurse. The report shown was sorted by the range of the date.



#	Fullname	Gender	GuestType	Phone	Email
1	Jayson Balisong	Male	Student	99457042641	j.balisong1999@gmail.com
2	Jayson Balisong	Male	Student	99457042641	j.balisong1999@gmail.com
3	Jayson Balisong	Male	Student	99457042641	j.balisong1999@gmail.com
4	Charmie Cabanels	Female	Student	99550638500	Cabanelscharmie24@gmail.com
5	Zekarah Lumabi	Female	Student	99174698426	z.lumabi@gmail.com

Figure 18.5. System Prototypes: Guest Invalidated List Reports (Nurse Side)

Name: Guest Invalidated List Report

Description: This report shows the list of guests which are invalidated by the nurse. The report shown was sorted by a specific date.



#	Fullname	Gender	GuestType	Timein	Timeout	Duration
1	Jayson Balabang	Male	Student	03:37:03 pm	03:37:11 pm	0 hrs 00 mins 08 secs
2	Edmon Dela Cruz	Male	Visitor	03:31:17 pm	03:35:47 pm	0 hrs 04 mins 30 secs
3	Edmon Dela Cruz	Male	Visitor	03:28:03 pm	03:29:28 pm	0 hrs 01 mins 25 secs
4	Edmon Dela Cruz	Male	Visitor	03:22:14 pm	03:23:50 pm	0 hrs 01 mins 36 secs
5	Edmon Dela Cruz	Male	Visitor	03:13:10 pm	03:21:47 pm	0 hrs 08 mins 37 secs
6	Edmon Dela Cruz	Male	Visitor	02:55:40 pm	02:58:51 pm	0 hrs 01 mins 11 secs

Figure 18.6. System Prototype: Active Visit List Reports (Guard Side)

Name: Active Visit List Report

Description: This report shows the list of guests who entered the university today.

#	Fullname	Gender	GuestType	Timein	Timeout	Duration
1	Jayson Balabang	Male	Student	03:37:03 pm	03:37:11 pm	0 hrs 00 mins 08 secs
2	Edmon Dela Cruz	Male	Visitor	03:31:17 pm	03:35:47 pm	0 hrs 04 mins 30 secs
3	Edmon Dela Cruz	Male	Visitor	03:28:03 pm	03:29:28 pm	0 hrs 01 mins 25 secs
4	Edmon Dela Cruz	Male	Visitor	03:22:14 pm	03:23:50 pm	0 hrs 01 mins 36 secs
5	Edmon Dela Cruz	Male	Visitor	03:13:10 pm	03:21:47 pm	0 hrs 08 mins 37 secs
6	Edmon Dela Cruz	Male	Visitor	02:55:40 pm	02:58:51 pm	0 hrs 01 mins 11 secs

Figure 18.7. System Prototype: Visit History List Reports (Guard Side)

Name: Visit History List Report

Description: This report shows the visits history.

Utilities



The image shows a mobile application prototype for the 'Clinical Information and Triage System'. The screen displays a 'Registration' form with two columns of input fields. The left column includes fields for First Name, Middle Name, Last Name, Extension Name (Optional), Gender (a dropdown menu), Username, Password, Password Re-type, and User Type (a dropdown menu). The right column includes fields for Email, Birthdate (with a calendar icon), Cellphone No., Landline No. (Optional), Address (with a location pin icon), City (a dropdown menu), Province (a dropdown menu), and Postal No. At the bottom of the form is a blue 'Register' button and a link that says 'Already registered? Log In'. The background of the app is a blue-tinted image of a doctor's hands with a stethoscope, overlaid with a hexagonal grid of medical icons.

Figure 19. System Prototype: Create Account

Name: Create account

Description: This form allows creating accounts for the system users.



The image shows a mobile application prototype for the 'Clinical Information and Triage System'. The screen displays a 'Forgot Password' form. At the top, there is a logo with the letters 'CS' and the text 'Clinical Information and Triage System'. Below the logo, the text reads: 'You forgot your password? Here you can easily retrieve a new password.' There is a single input field for the email address, followed by a blue button labeled 'Request Your Password'. The background is the same blue-tinted medical-themed image as the previous figure.

Figure 19.1 System Prototype: Forgot Password

Name: Forgot Password

Description: This form allows users to change the password when forgotten.

Technical Specifications

Database Design

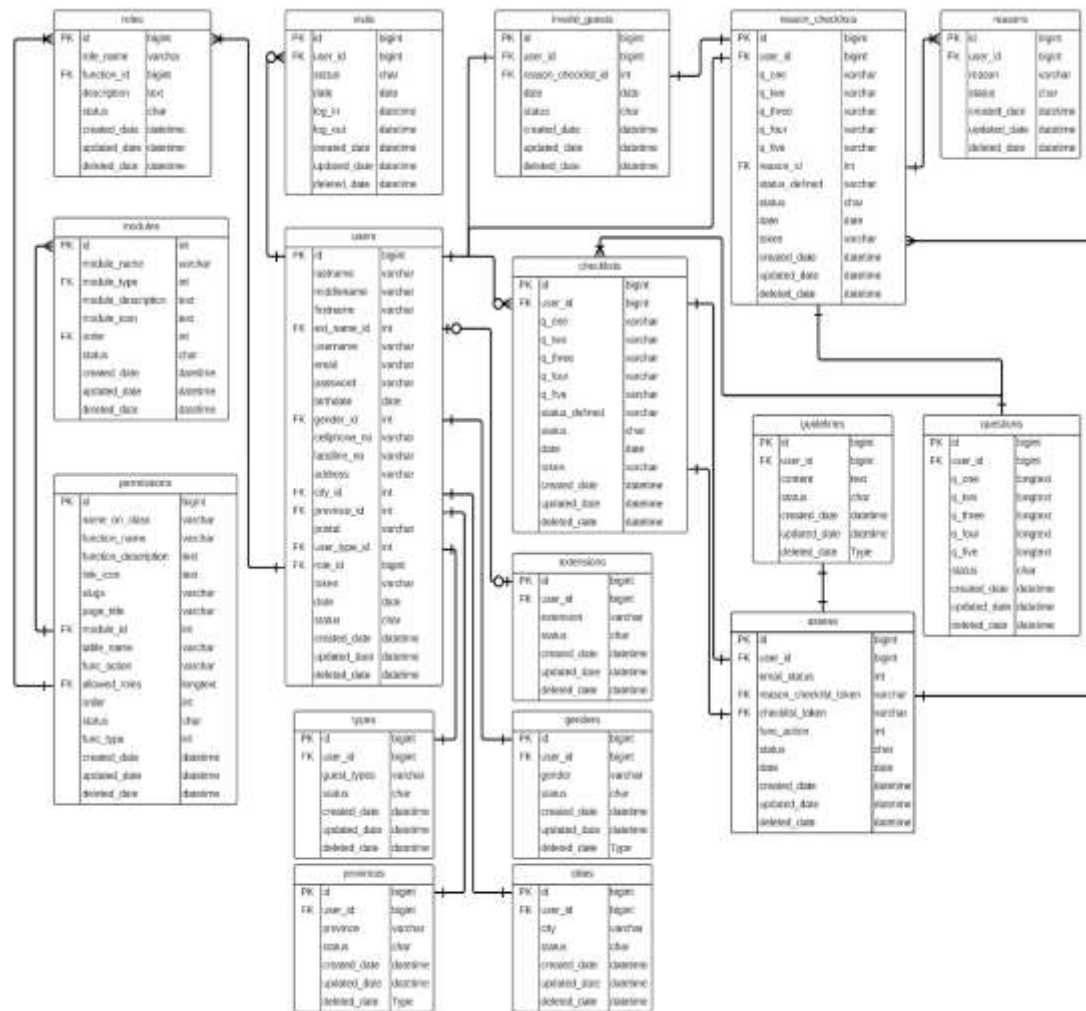


Figure 20. Entity Relationship Diagram



Database Dictionary

Visits				
Data Element	Description	Data Type	Length	Sample Data
id	visits id	bigint	5	2
user_id	id number of the user	bigint	20	22
status	status of the account	char	1	a
date	date when the user login	date		27/07/2021
log_in	date and time when the user login	datetime		27/07/2021 15:43
log_out	date and time when the user logout	datetime		27/07/2021 15:45
created_date	date of creation	datetime		27/07/2021 15:43
updated_date	date last updated	datetime		27/07/2021 15:45
deleted_date	date of soft deletion	datetime		

Table 7. Database Dictionary: Visits



Users				
Data Element	Description	Data Type	Length	Sample Data
id	id number of the user	bigint	20	22
lastname	last name of the user	varchar	50	Lumabi
middlename	middle name of the user	varchar	255	Khusin
firstname	first name of the user	varchar	50	Zairanih
ext_name	extension name of the user	varchar	255	
username	username of the user	varchar	50	Zairanih28
email	email of the user	varchar	50	zklumabi@gmail.com
password	password of the user	varchar	60	ENCRYPTED
birthdate	birthdate of the user	date		07/04/2021
gender_id	gender id of the user	int	1	2
cellphone_no	cellphone number of the user	varchar	255	9174656426
landline_no	landline number of the user	varchar	255	
address	address of the user	varchar	255	Upper Bicutan
city_id	city id of the user	int	11	20
province_id	province id of the user	int	11	79
postal	postal of the user	varchar	255	1633
user_type_id	user type id of the user	int	1	3
role_id	role id of the user	bigint	20	2
token	the token number for the QR code of the user	varchar	32	ENCRYPTED
date	date of registration of the user	date		08/07/2021
status	status of the account of the user	char		a
created_date	date of creation	datetime		08/07/2021 0:43
updated_date	date last updated	datetime		
deleted_date	date of soft deletion	datetime		

Table 8. Database Dictionary: Users



Type				
Data Element	Description	Data Type	Length	Sample Data
id	id number of the guest type	bigint	5	1
guest_type	type of guest	varchar	255	EMPLOYEE
status	status of the account	char	1	a
created_date	date of creation	datetime		07/07/2021 14:26
updated_date	date last updated	datetime		
deleted_date	date of soft deletion	datetime		

Table 9. Database Dictionary: Type

Data Element	Description	Data Type	Length	Sample Data
id	id number of the guest type	bigint	5	2
guest_type	type of guest	varchar	255	FACULTY
status	status of the account	char	1	a
created_date	date of creation	datetime		07/07/2021 14:26
updated_date	date last updated	datetime		
deleted_date	date of soft deletion	datetime		

Table 9.1. Database Dictionary: Type

Data Element	Description	Data Type	Length	Sample Data
id	id number of the guest type	bigint	5	3
guest_type	type of guest	varchar	255	STUDENT
status	status of the account	char	1	a
created_date	date of creation	datetime		07/07/2021 14:26
updated_date	date last updated	datetime		
deleted_date	date of soft deletion	datetime		

Table 9.2. Database Dictionary: Type

Data Element	Description	Data Type	Length	Sample Data
id	id number of the guest type	bigint	5	4
guest_type	type of guest	varchar	255	VISITOR
status	status of the account	char	1	a
created_date	date of creation	datetime		07/07/2021 14:26
updated_date	date last updated	datetime		
deleted_date	date of soft deletion	datetime		

Table 9.3. Database Dictionary: Type



Roles				
Data Element	Description	Data Type	Length	Sample Data
id	id number of roles	bigint	20	1
role_name	type of role	varchar	255	ADMINISTRATOR
function_id		bigint	20	1
description	description of the type of role	text		SYSTEM ADMINISTRATOR
status	status of the account	char		a
created_date	date of creation	datetime		07/07/2021 14:26
updated_date	date of last update	datetime		
deleted_date	date of soft deletion	datetime		

Table 10. Database Dictionary: Roles

Data Element	Description	Data Type	Length	Sample Data
id	id number of roles	bigint	20	2
role_name	type of role	varchar	255	USER
function_id		bigint	20	1
description	description of the type of role	text		USER RELATED ROLE
status	status of the account	char		a
created_date	date of creation	datetime		07/07/2021 14:26
updated_date	date of last update	datetime		
deleted_date	date of soft deletion	datetime		

Table 10.1. Database Dictionary: Roles

Data Element	Description	Data Type	Length	Sample Data
id	id number of roles	bigint	20	3
role_name	type of role	varchar	255	NURSE
function_id		bigint	20	1
description	description of the type of role	text		NURSE RELATED ROLE
status	status of the account	char		a
created_date	date of creation	datetime		07/07/2021 14:26
updated_date	date of last update	datetime		
deleted_date	date of soft deletion	datetime		

Table 10.2. Database Dictionary: Roles



Data Element	Description	Data Type	Length	Sample Data
id	id number of roles	bigint	20	4
role_name	type of role	varchar	255	GUARD
function_id		bigint	20	1
description	description of the type of role	text		GUARD SCANNING
status	status of the account	char		a
created_date	date of creation	datetime		07/07/2021 14:26
updated_date	date of last update	datetime		
deleted_date	date of soft deletion	datetime		

Table 10.3 Database Dictionary: Roles

Reason Checklist				
Data Element	Description	Data Type	Length	Sample Data
id	id in the reason checklist	bigint	5	4
user_id	user id number	bigint	20	22
r_q_one	request question number one	varchar	255	no
r_q_two	request question number two	varchar	255	no
r_q_three	request question number three	varchar	255	no
r_q_four	request question number four	varchar	255	no
r_q_five	request question number five	varchar	255	no
reason_id	reason id number	int	11	1
r_status_define	reason status	varchar	25	
status	status of the account	char	1	a
date	date it is made	date		14/07/2021
r_token		varchar	32	ENCRYPTED
created_date	date of creation	datetime		14/07/2021 13:40
updated_date	date of last update	datetime		
deleted_date	date of soft delete	datetime		

Table 11. Database Dictionary: Reason Checklist



Reason				
Data Element	Description	Data Type	Length	Sample Data
id	reason id number	bigint	5	1
user_id	the user who created the information	bigint	20	22
reason	reason of chosen wrong data	varchar	255	A mistake in choosing the right data
status	status of the account	char	1	a
created_date	date of creation	datetime		07/07/2021 14:26
updated_date	date of last update	datetime		
deleted_date	date of soft deletion	datetime		

Table 12. Database Dictionary: Reason

Province				
Data Element	Description	Data Type	Length	Sample Data
id	province id number	bigint	5	1
user_id	the user who created the information	bigint	20	0
province	province name	varchar	255	Abra
status	status of the account	char	1	a
created_date	date of creation	datetime		07/07/2021 14:26
updated_date	date of last update	datetime		
deleted_date	date of soft deletion	datetime		

Table 13. Database Dictionary: Province



Questions				
Data Element	Description	Data Type	Length	Sample Data
id	question id number	bigint	5	1
user_id	the user who created the information	bigint	20	1
q_one	question number one	longtext		Is your temperature greater than 37.5 degrees for the past 3 days?
q_two	question number two	longtext		Tested positive or presumptively positive with covid-19 (The new Coronavirus or SARS-COV2) or been identified as a potential carrier of the coronavirus?
q_three	question number three	longtext		Experienced any symptoms commonly associated with covid-19 (Fever; Cough; Fatigue or Muscle Pain; Difficulty Breathing; Sore Throat; Lung Infections; Headache; Loss of Taste; or Diarrhea)?
q_four	question number four	longtext		Been in any location/site declared as hazardous with and/or potentially infective with the new coronavirus by a recognized health and regulatory authority?
q_five	question number five	longtext		Been in direct contact with or in the immediate vicinity of any person who tested positive with the new coronavirus or who was diagnosed as possibly being infected by the new coronavirus?
status	status of the account	char	1	a
created_date	date of creation	datetime		07/07/2021 14:26
updated_date	date of last update	datetime		
deleted_date	date of soft deletion	datetime		

Table 14. Database Dictionary: Questions



Permissions				
Data Element	Description	Data Type	Length	Sample Data
id	permission id number	bigint	20	3
name_on_class	class name	varchar	250	index
function_name	function name	varchar	50	list of users
function_description	function description	text		users
link_icon	icon link	text		<i class="fas fa-users"></i>
slugs	slugs	varchar	50	list-user
page_title	title page	varchar	50	list of users
module_id	id of the module	int	11	1
table_name	name of the table	varchar	100	users
func_action	function action	varchar	50	link
allowed_roles	roles allowed	longtext		[1]
order	order	int	11	4
status	status	char	1	a
func_type	function type	int		1
created_date	date of creation	datetime		07/07/2021 14:26
updated_date	date of last update	datetime		
deleted_date	date of soft delete	datetime		

Table 15. Database Dictionary: Permissions



Module				
Data Element	Description	Data Type	Length	Sample Data
id	id number of the module	int	10	1
module_name	name of the module	varchar	250	user management
module_type	type of the module	int	11	1
module_description	description of the module	text		user management
module_icon	icon of the module	text		<i class="fas fa-users-cog"></i>
order	order number of the module	int	11	1
status	status	char	1	a
created_date	date of the created	datetime		07/07/2021 14:26
updated_date	date of the updated	datetime		
deleted_date	date of the deleted	datetime		

Table 16. Database Dictionary: Module

Migration				
Data Element	Description	Data Type	Length	Sample Data
id	id number of migration	int	255	27
version	version	varchar	255	20191121174600
class	class	text		App\Database\Migrations\CreateRole
group	group	varchar	255	default
namespace	namespace	varchar	255	App
time	time	int	11	1625639217
batch	batch	int	11	1

Table 17. Database Dictionary: Migration



Invalid Guest				
Data Element	Description	Data Type	Length	Sample Data
id	id number of invalidation of guest	bigint	5	1
user_id	user id number	bigint	20	10
reason_checklist_id	reason checklist id number	int	20	1
date	date of invalidation	date		08/07/2021
status	status of account	char	1	1
created_date	date of creation	datetime		08/07/2021 0:07
updated_date	date of last update	datetime		
deleted_date	date of soft deletion	datetime		

Table 18. Database Dictionary: Invalid Guest

Gender				
Data Element	Description	Data Type	Length	Sample Data
id	gender id number	bigint	5	1
user_id	the user who created the information	bigint	20	0
gender	gender	varchar	255	male
status	status	char	1	a
created_date	date of creation	datetime		07/07/2021 14:26
updated_date	date of last update	datetime		
deleted_date	date of soft deletion	datetime		

Table 19. Database Dictionary: Gender



Extensions				
Data Element	Description	Data Type	Length	Sample Data
id	extension id number	bigint	5	1
user_id	the user who created the information	bigint	20	0
extension	extension	varchar	255	Jr
status	status	char	1	a
created_date	date of creation	datetime		07/07/2021 14:26
updated_date	date of last update	datetime		
deleted_date	date of soft deletion	datetime		

Table 20. Database Dictionary: Extensions

Cities				
Data Element	Description	Data Type	Length	Sample Data
id	city id number	bigint	5	1
user_id	the user who created the information	bigint	20	0
city	city	varchar	255	Alaminos
status	status	char	1	a
created_date	date of creation	datetime		07/07/2021 14:26
updated_date	date of last update	datetime		
deleted_date	date of soft deletion	datetime		

Table 21. Database Dictionary: Cities



Checklist				
Data Element	Description	Data Type	Length	Sample Data
id	id in the checklist	bigint	5	1
user_id	user id number	bigint	20	22
q_one	question number one	varchar	255	no
q_two	question number two	varchar	255	no
q_three	question number three	varchar	255	no
q_four	question number four	varchar	255	no
q_five	question number five	varchar	255	no
status_defined	user health status	varchar	25	
status	status of the account	char	1	a
date	date it is made	date		27/07/2021
token		varchar	32	ENCRYPTED
created_date	date of creation	datetime		27/07/2021 11:24
updated_date	date of last update	datetime		
deleted_date	date of soft delete	datetime		

Table 22. Database Dictionary: Checklist

Assess				
Data Element	Description	Data Type	Length	Sample Data
id	assess id number	bigint	5	1
user_id	user id number	bigint	20	10
email_status	email status	int	1	1
checklist_token	checklist token	varchar	32	ENCRYPTED
reason_checklist_token	token of reason checklist	varchar	32	ENCRYPTED
func_action	function action	int	11	1
status	status	char	1	d
date	date	date		07/07/2021
created_date	date of creation	datetime		07/07/2021 23:09
updated_date	date of last update	datetime		07/07/2021 23:59
deleted_date	date of soft deletion	datetime		07/07/2021 23:59

Table 23. Database Dictionary: Assess



Screen Design

Screen Inventor



Figure 21. Screen Design: Login form

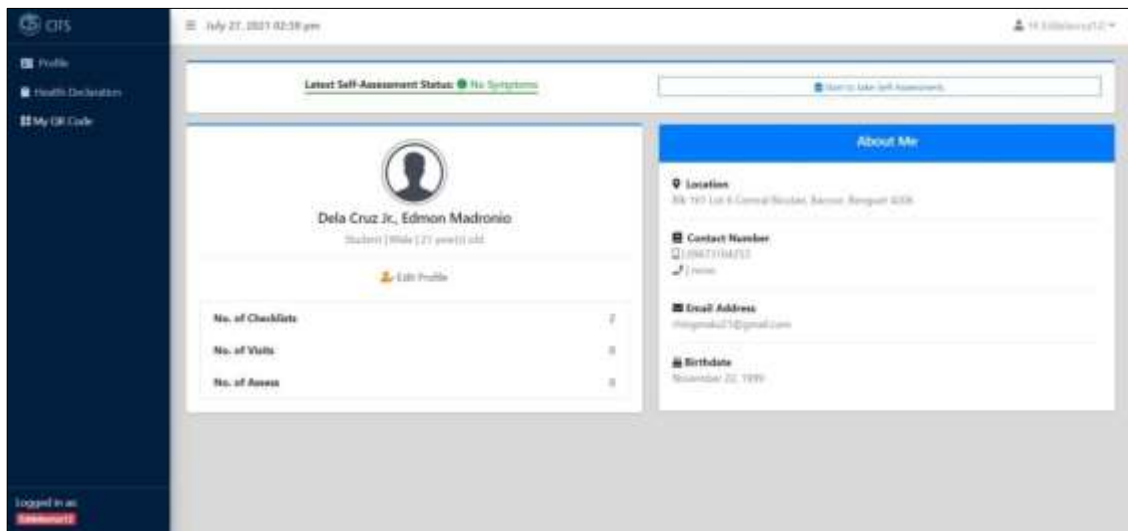


Figure 21.1. Screen Design: Guest Account Profile



Figure 21.2. Screen Design: Guest QR Code (Identifier)

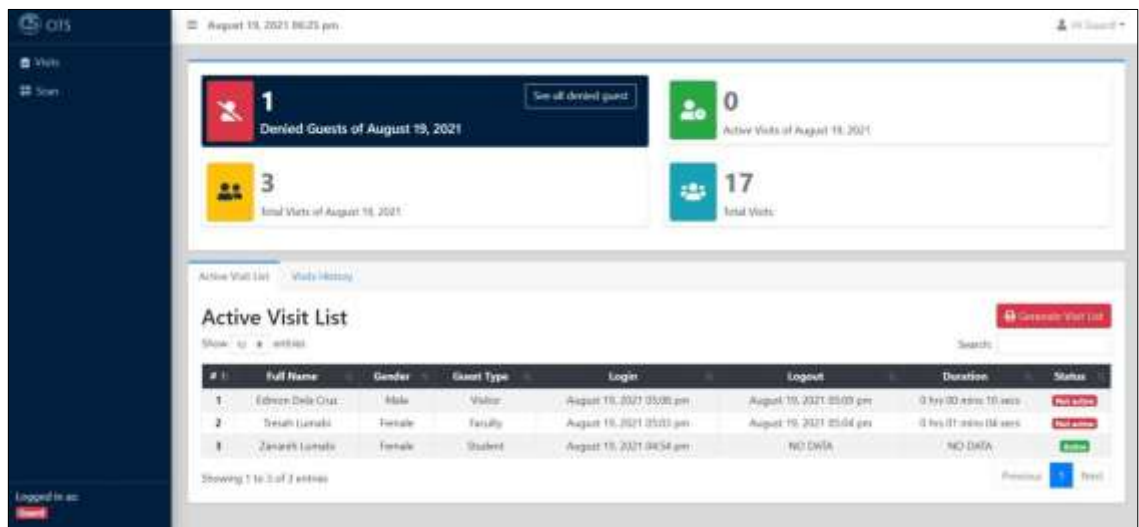


Figure 21.3. Screen Design: Guard Account View

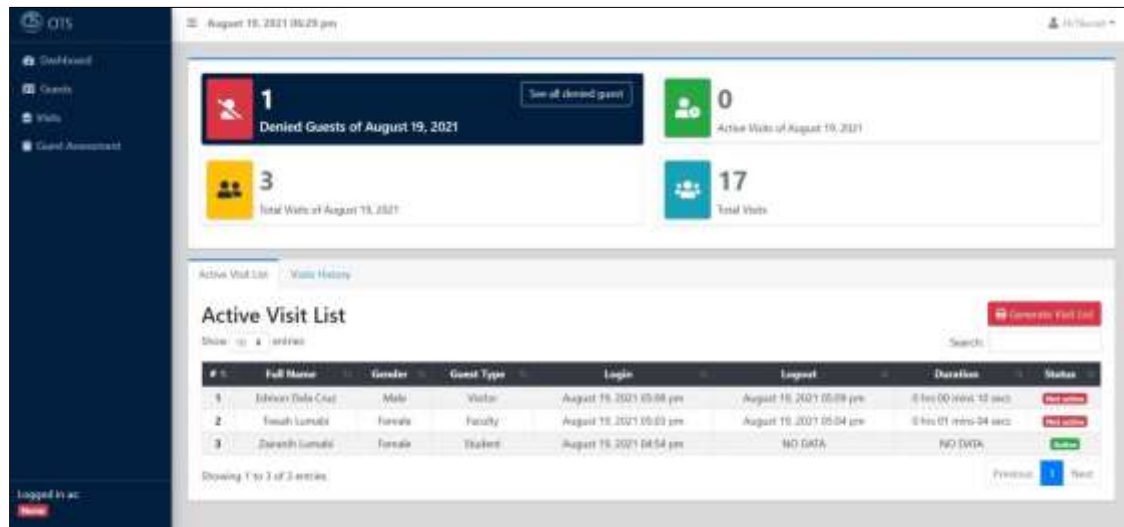


Figure 21.4. Screen Design: Nurse Account View

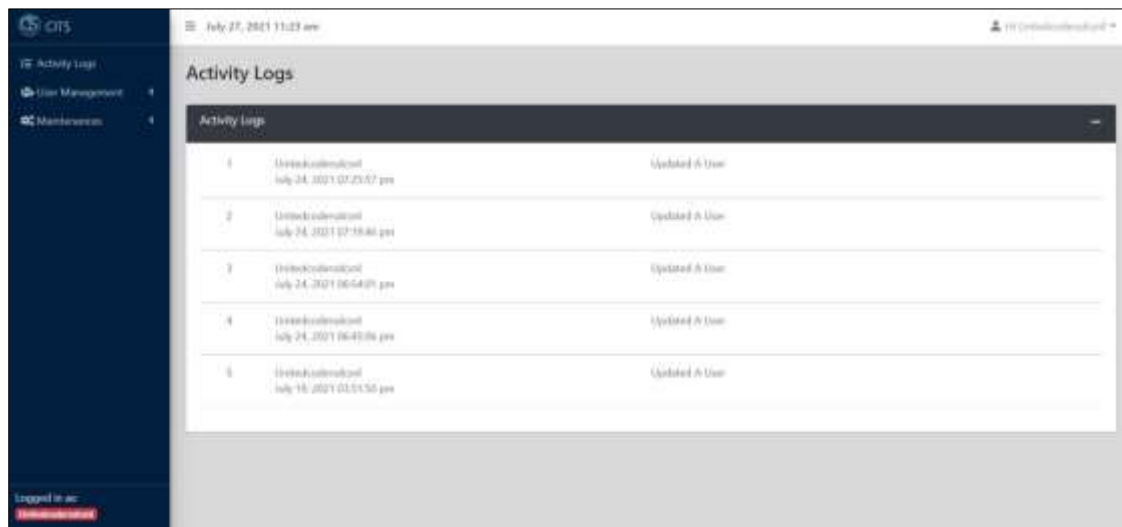


Figure 21.5. Screen Design: Admin Account View



System Requirements

Hardware/Software/Peopleware

	MINIMUM REQUIREMENTS	MAXIMUM REQUIREMENTS
PROCESSOR	1.8 GHz	2.2 GHz above
MEMORY	1GB RAM or higher	
STORAGE	2GB free hard disk	5 GB free hard disk space,
OPERATING SYSTEM	Microsoft Windows 7 up to any newer version	
SOFTWARE/S	Google Chrome and Mozilla Firefox, MySQL Server Atom/Sublime/Visual Studio as IDE	
MONITOR	19" , 12"	

Table 24. Hardware/Software/Peopleware

People ware:

- Students
- Faculty
- Employees
- Guard
- Visitors

3.3.2 Security

- Policies and restrictions to users by the admin.
- Encrypted password for database and system.
- Log-in session in system use/execution

Chapter 4

RESULTS AND DISCUSSIONS

User Interfaces

The following are the screenshots from the capstone project. For each stakeholder, they have different views on the system.

Guest's Login form



Figure 22. User Interface: Login form

The login page of the screen has the necessary security measures to ensure privacy and have the authorized access of the administrators and users.



Guests

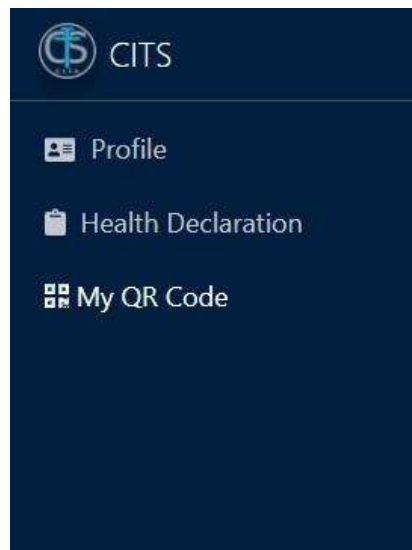


Figure 22.1. User Interface: Guest's Navigation Bar

The guests can only view its profile, QR code as their identifier and the Health Declaration form.

Guard

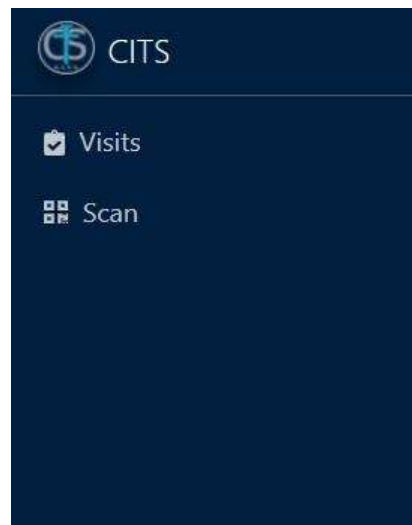


Figure 22.2. User Interface: Guard's Navigation Bar

The guard has two modules only which is the visits module and scan module. Visit lists and visit history can be seen in the visits module while the entry of the guests through the scanner and the links that are needed are in the scan module.



Nurse

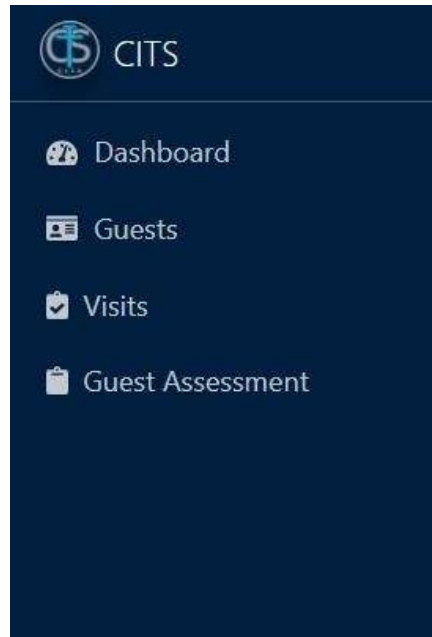


Figure 22.3. Screen Design: Nurse Navigation Bar

The nurse has the authority in validating the guests that can be seen in reason requests in the guest assessment module. Number of the guest entries and defined patients can be seen in the dashboard.



Administrator

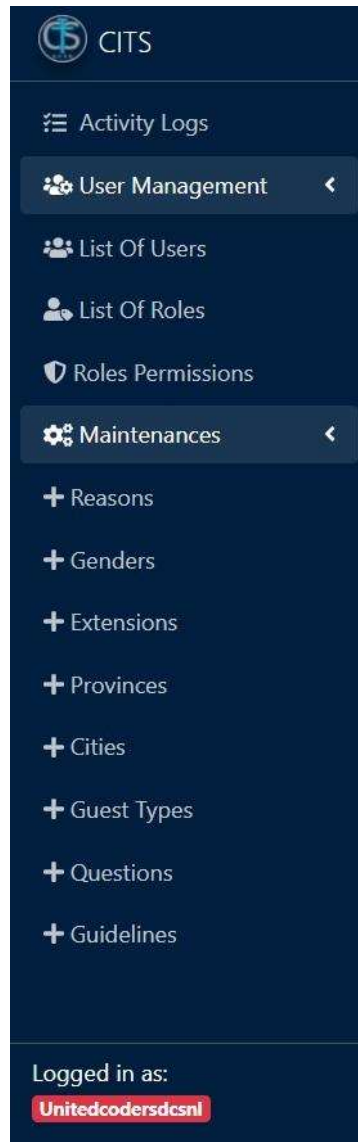


Figure 22.4. Screen Design: Administrator's Navigation Bar

The administrator controls the over-all modules of the system. The navigation bar shows the different areas of the web application from the activity log module, user management module, to the maintenance module.



Guests Home Page

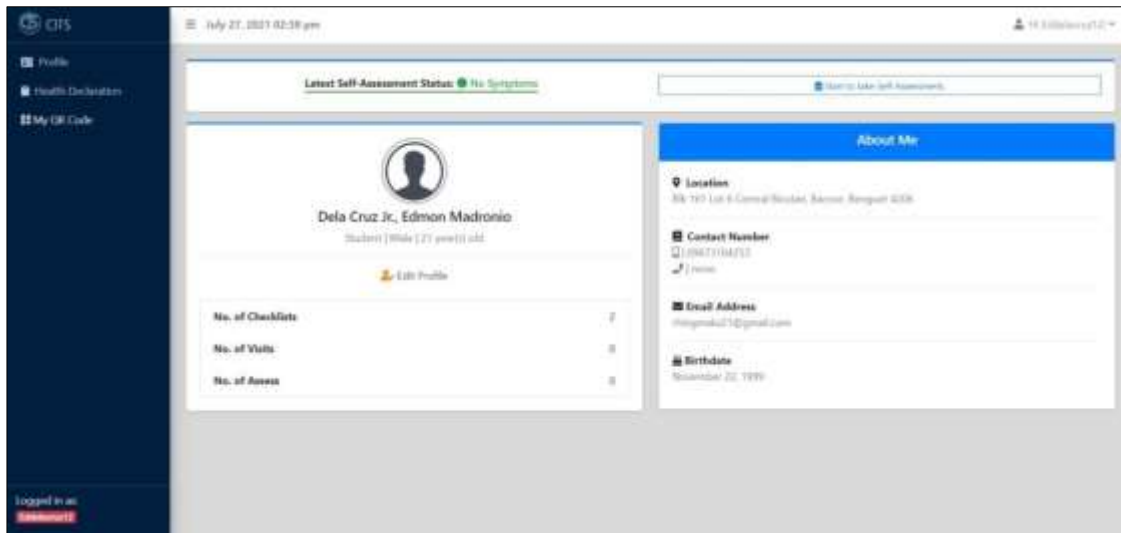


Figure 22.5. Screen Design: Guests Homepage

Guests can see the home page of the web application with this interface. The navigation bar and home page portray the necessary and important information for the users.

Results

The following figures are the results of the findings of the study after testing the system. The survey used was based on the ISO 25010 and rating based on the Likert Scale mentioned below in table 6.

Likert Scale (ISO 25010)

NUMERICAL RATING	INTERPRETATION
4.3 - 5	Strongly Agree
3.5 – 4.2	Agree
2.7 – 3.4	Neither
1.9 – 2.6	Disagree
1- 1.8	Strongly Disagree

Table 25. Likert Scale (ISO 25010)



User Acceptance Testing Results

Three (3) respondents from PUP-Taguig have tested the web application to give feedback and recommendations for the system.

The summary of the gathered data are as follows:

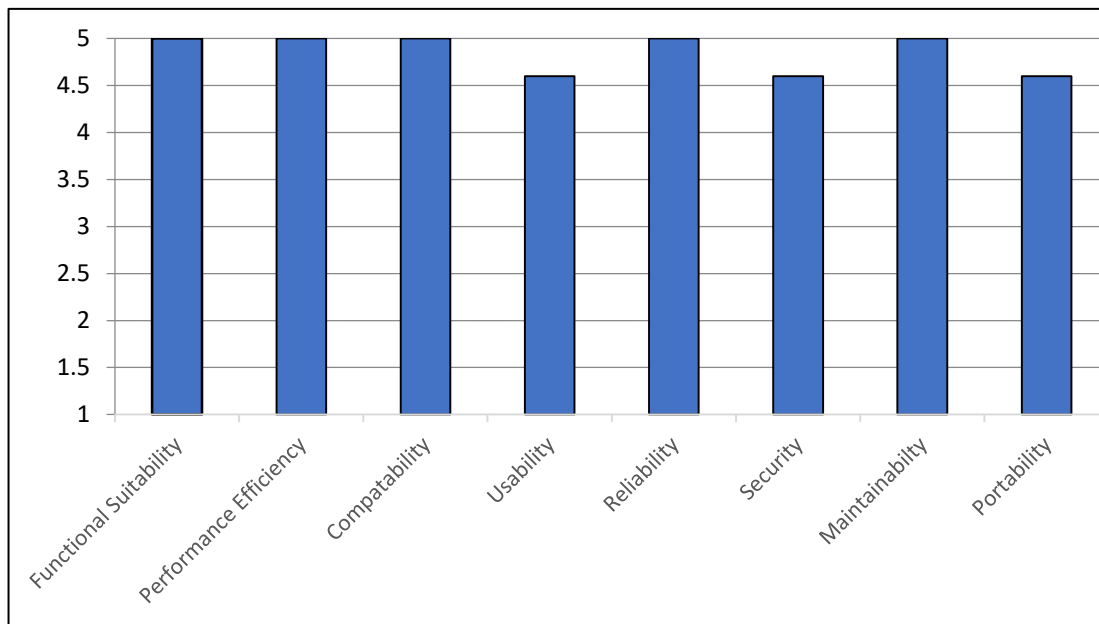


Figure 23. User Acceptance Testing

$$\frac{5 + 5 + 5 + 4.6 + 5 + 4.6 + 5 + 4.6}{8} = 4.85$$

The rating of the system according to the computation is 4.85, equivalent to “Strongly Agree” in the Likert Scale for the User’s Acceptance Testing.



Chapter 5

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

Summary of Findings

With the summary of the results tallied, the users of the web application concluded with the use of the User Acceptance Testing questionnaire. From functionality to portability, the highest rating was 5. This meant that the functionality of the system was met by the researchers, thus appreciated by the users. The lowest ratings were given to the usability, security, and portability aspect. They all received a 4.5 rating.

Although the system's interface designs, user-friendliness, and operational performance are acceptable, users still anticipate improvements. The users were also asked about the system's quality and performance. All users agreed that the system had done its job because all of the prerequisites were there and working properly. They had no problems with the system during its use.



Conclusions

Notwithstanding the system's low ratings for usability, security, and portability, the overall rating is still substantial. The results of the tests show that the system is acceptable to users. The features of the system satisfy the requirements and requests made by the client. The system itself will still undergo changes and enhancements as time goes by. The researchers concluded that further improvements of existing modules and further tests should be made in the future. The system remains efficient and effective, and it is now completely ready for implementation.

Recommendations

The system, as stated in the findings following the system testing, needs to be polished and upgraded in order to improve usability and dependability. We urge that this capstone project be employed by management, particularly by the proponents' university, which is in desperate need of it. Finally, the proponents recommend that this system be fully implemented, and that future owners of this system improve this capstone project.



Reference

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Appendix 1:
SOFTWARE REQUIREMENTS SPECIFICATION



Appendix 2:
SOFTWARE DESIGN SPECIFICATION



Appendix 3:
SOFTWARE TEST REPORT



Appendix 4:
SOFTWARE TEST PLAN