

CLINIC MANAGEMENT SYSTEM
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DECLARATION OF ORIGINALITY

I declare that this report entitled “_____” is my own work except as cited in the references. The report has not been accepted for any degree and is not being submitted concurrently in candidature for any degree or other award.

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ABSTRACT

This project is a clinic management system that will be used to solve the current problems that facing by the local clinic in Malaysia. Clinic Management System is a web-based platform system. The main objectives of this project is to improve the business process of the clinic in Malaysia by using the information technology and also enhance the current clinic management software in the market. The scope of this project include systematic scheduling in queue list, appointment module with SMS notification, patient's registration using MyKad reader and generate medical certificate (MC) to print out. Systematic scheduling can sort the patient in the queue fairly and display the waiting time of each patient. Patient can make appointment and notification will be send to their phone. Besides, patient can use MyKad during the registration at the counter which is quite convenient and save time. Other than that, MC can be generated and print out on the paper and doctor just need to sign the MC and chop with his name. As this is a web-based platform system, C# is the programming language and the project is developed under ASP.Net framework. The software development methodology that used in this project is phased development because of fast implementation and short time schedule. The clinic management system can divide into few phases and each phase consist of few modules which can easily develop and build up the system in short time.

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LIST OF ABBREVIATION

API	Application Programming Interface
IC	Identity Card
IE	Internet Explorer
IT	Information Technology
MC	Medical Certificate
NRD	National Registration Department
PDF	Portable Document Format
RAD	Rapid Application Design
SDK	Software Development Kit

1.0 Introduction

1.1 Motivation and Problem Statement

1.1.1 Motivation

Nowadays, there are a lot of clinics in Malaysia. People who suffer from sick or pain will visit the clinic which nearby their location. However, most of the staff in the clinic still using paper works in their workflows. Those paper works such as patient registration using form, patient record using manila card, open bill statement using handwriting, record appointment using book and so on. Because of these manual operations are done by few nurses in a clinic, it may slow down the procedure in many way. For example, when the doctor uses manila cards to write the patient's diagnosis record, the manila card need to be keep in the clinic by put them on the cupboard. Once the clinic operates for few years, there will be a lot of manila cards on the cupboard. So when a patient comes to the clinic, the nurse maybe need use 3 to 5 minutes to find the patient's record card which is quite wasting time.

The information technology improves a lot today. A lot of computer based systems can help to manage the business process. Michael Hammer and James Champy define a business process as a collection of activities that take one or more kinds of input and create an output that is value to the customer (Mathias Weske, 2012, p.4). Once a system can manage the business process, a lot of works are able to automation and no need manual operation. Clinic management system is one of the software that available in the market and able to help the business process of a clinic.

In Malaysia, there are many clinics no matter in public sector or private sector. However, not all of them are using the clinic management system especially private sector. The main reason is because the system is not that popular in Malaysia. A lot of private sector clinics will choose for the traditional manual operation. They feel it is not a need for a clinic to purchase a system as it is not that reliable for them. For example,

everything that can be done in the system is actually just replace the paperwork. As doctor and nurse are not technical people, therefore they need to learn and know how the system works. They prefer to stay with the old way which is paperwork and it is quite convenient to them. Data inconsistency is also another reason they think about. Most of the staff worry about the power failure and hardware failure of the computer which may cause the data loss.

Another reason of not using clinic management system is most of the doctors and nurses don't aware of the information technology can manage their data efficiently. For example, appointment that made by patient is record either in a book or on a piece of paper, it doesn't notify the patient or doctor about the appointment unless the nurse reminds them.

From the above stated points, we can know that there are a lot of problems that exist in the traditional manual operations and available systems in the market.



Figure 1-1 Nurse uses a book to do record

1.1.2 Problem Statement

Nowadays, doctor and nurse worry about the available system is because it is not quite popular and it required some specific skills in order to install or operate it. The functionality of the system can actually replace using the traditional way which is the paperwork in their mind. The current clinic management system that available in the market is just replace the paperwork by using computer and store the data into the database. The normal functionalities include the patient record management module, inventory module and billing module. There is not much new functionality that available in the system. In this project, I intend to solve the problem that the doctor and nurse worry about in the available system and add in new innovations that help the patient and staff of clinic in my own developed system.

Compare with the available system, there are a lot of modules inside. I will focus the problems in these three modules which are appointment, registration and queue list.

Module	Problem
Appointment module	Patient always forget or remember wrong the date and time for the appointment they made with the clinic. It will make extra troubles for the staff of the clinic to rearrange the appointment with doctor again.
Registration module	When a patient first time visits the clinic, he/she need to register into the system. Nurse needs to type the details of patient into the system which may slow down the process of registration and typo will be occurred sometimes.
Queue list module	The simple queue list system without any schedule system makes the patient wait longer. Patient will get frustrated easily since they are in sick and feel disappointed and won't visit the clinic next time.

Table 1-1 Problem Statement in Appointment, Registration and Queue List Module

1.2 Project Scope

This project aims to develop a clinic management system for the clinic that located in Malaysia which is still using the manual operation – paperwork. This system can be used by doctor and nurse. It suits for any ages of patients especially the old folks. The clinic management system includes a combination of modules and most of the basic modules already done in the available system in the market. In order to attract more clinics to use the system, from the problem statement that I mentioned above, I would like to focus on 3 modules here which are:

Appointment module – Patient is able to make appointment through the phone and the staff will record it in the system. After that, system will use the SMS feature to notify the patient on the day of appointment.

Registration module – When a patient comes to the clinic, he/she needs to register first if it is the first time visitation. The registration processes will use the IC (MyKad) by insert into reader to get the basic information such as IC number, full name, address, gender, race from the chip and store into database. However, if the patient’s age is under 12 or not Malaysian citizen, manually key in the information is needed.

Queue list module – When a patient wants to see a doctor, first he/she needs to inform the counter and the nurse will add the patient into queue list. The queue list module will comes with a time tracking for each patient to know how long they are waiting in the clinic.

Moreover, doctor can type the diagnosis report for each patient during each visitation. If there is a need, doctor can print the report as a reference. Besides, doctor can generate MC and print it out to the patient when the patient is quite serious for illness.

1.3 Project Objectives

The main objectives of clinic management system is to improve the current available system that lack some innovations which are more likely required in the clinic.

Objectives	Problems
1) To provide a systematic schedule system.	1) Patients get frustrated for waiting longer in the clinic because there is no system keep tracks their waiting time. 2) Some patients which are quite suffer and making appointment with doctor cannot be schedule properly.
2) To provide an appointment system with SMS notification.	1) Making appointment through phone call may cause misinformation with wrong information received. 2) Patient may forget their appointment.
3) To reduce the workloads and mistakes made by the nurse by providing information received from IC (MyKad).	1) Filling up the patient details manually consumes a lot of time. 2) The nurse might key in the wrong details of patient.
4) Provide a computer generated documents for MC and diagnosis report which minimal the workload of doctor.	1) Using pen to write the details of patient on MC is time consuming for a doctor. 2) Doctor or nurse need to find the historical diagnosis report which is quite time consuming.

Table 1-2 Table of Main Objectives and Problems

1.4 Impact, significance and contribution

At the end of this project, the new functionality in each module will be able to solve many of the problems. By having these modules in the system, patient that suffer in sick no need to waste a lot of time in the clinic to see a doctor. This system is able to decrease the time of a patient waiting in the clinic and also reduce the workloads for a nurse and doctor when serving the patients.

In addition, with the appointment module that integrated SMS notification, it also helps to prevent the patient for not being miss the appointment with doctor. Through this feature, patients no need to worry about they missed out for the appointment and need to rearrange appointment again.

1.5 Background Information

1.5.1 What is health care? How IT helps in this industry?

Health care is the diagnosis, treatment, and prevention of disease, illness, injury, and other physical and mental impairments in human beings. Health care is delivered by practitioners in dentistry, medicine, optometry, pharmacy, psychology and other care providers. (Freebase, n.d.) When IT starts to be mature, it actually helps to reduce the workloads and process time for the business process in the health care industry. The business process includes the patient registration, appointment, billing, inventory and so on. Nowadays, some of the IT technologies are used to research those new diseases. With the help of the IT, health care industry is having a very bright future in developing of health care system that can actually help the patients over the world.

1.5.2 Project Title

The title of Clinic Management System in this project is clear enough because the title is simple for users understanding. Clinic management system would help to solve the problems by replacing the traditional way of paper works to information system. However, the title is not specific enough because it is too general as people have different views regarding the system. For instance, some users might think that this is the system that let the doctor and nurse use smart phone or tablet to work in the clinic. Instead, this system uses computer to do those administration tasks with new innovations such as systematic schedule, SMS notification and MyKad reader.

2.0 Literature Review

Based on the research in the internet, there are a lot of clinic management systems around the world. However based on Malaysia, there are only a few clinic management systems in the market. Three of the existing benchmarked systems that available in the market will be chosen as my literature review by compare their features in three modules which are appointment, registration and queue list that I stated above. Besides, some of the problem domains will be studied independently.

2.1 First Benchmarked System – SoftClinic

SoftClinic is a software system that available in the market. Their company JVS Group founded in USA but currently office located at India. SoftClinic software designed keeping in mind all the physicians is currently being used by over 500 doctors every day in India and other countries. Awarded one of the Best Hospital Management Software by various Physicians & Surgeons Association, SoftClinic can be used by all physicians, small hospitals & nursing homes for computerizing their entire facility. (JVS Group, n.d.)

Strengths

Basic modules is included in the system which simplify the workflows of the clinics. Most of the paper works are able to replace by this computerized system. Simple interface with the left navigation which increase the ease of use of this software. User may able to find what they want using the left navigation easily.

Weaknesses

All the modules I intend to solve is included in this system. However, their display way is not that user-friendly. For example, the appointment module with a list of different colors in each row is quite unprofessional. Besides, a lot of fields need to be fill

in the registration form and it might take some times for the nurses to key in based on the details on IC (MyKad).

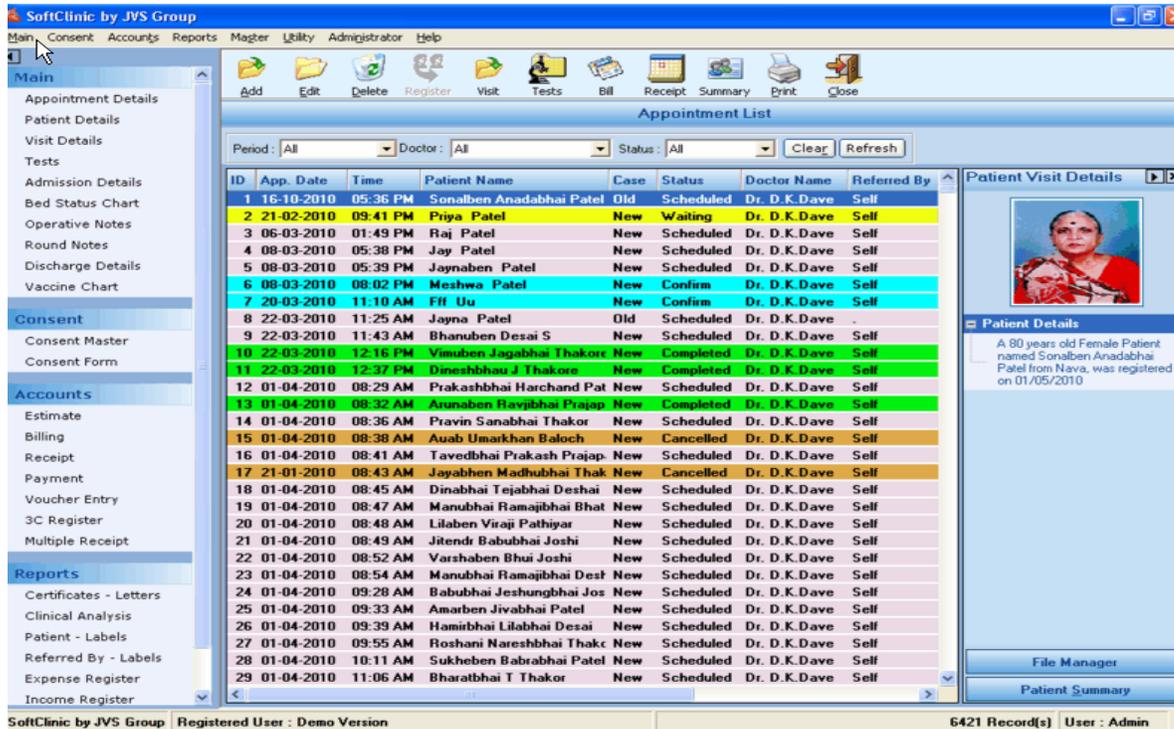


Figure 2-1 Appointment System in SoftClinic

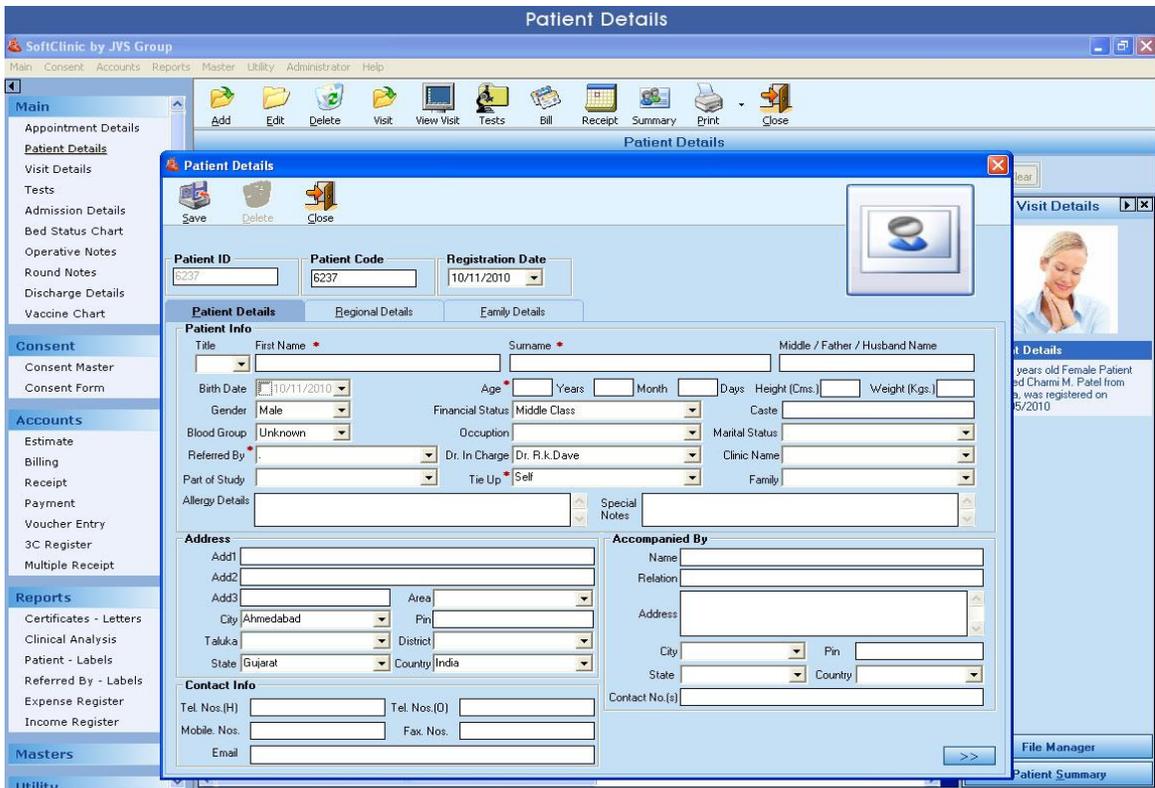


Figure 2-2 Patient Registration Form in SoftClinic

Solve the weaknesses

Design is another way that we need to take note because too colorful design may bring unprofessional look. Moreover, to save the time of the task that filling the basic details of patient, IC reader (MyKad reader) need to be use and we can direct get their information from the chip without manually type in.

2.2 Second Benchmarked System – ClinicPlus

ClinicPlus by TRM NETT SYSTEMS (M) SDN. BHD is a complete clinic management software in the market. This user friendly yet comprehensive software solution will save tremendous amount of work load for the clinics. With this tool, clinics can drastically reduce the administration and management hassle and dedicate their time to providing quality healthcare services. (TRM NETT SYSTEMS (M) SDN. BHD., n.d.)

Strengths

With the basic features in the software, it simplifies the workflow processes of a nurse and doctor in a clinic. Moreover, all the data in the clinic no matter record, inventory and bill are recorded and stored in database and able to retrieve anytime efficiently.

Weaknesses

From the three modules I choose to improve, there is only 2 modules that available in this system which is the patient registration and queue list. Appointment modules is not available in the system, so the nurse need to take down the appointment details using paperwork.

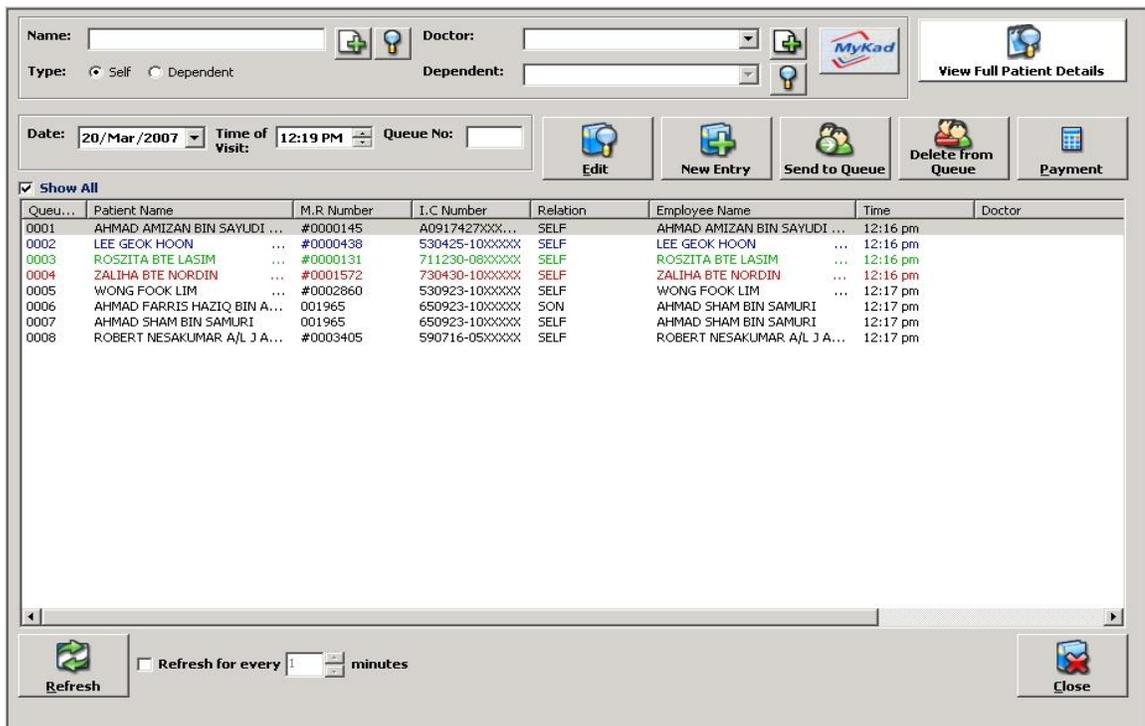


Figure 2-3 Queue List in ClinicPlus

The queue list module is not sufficient enough to improve the workflow of the process. From the screenshot in Figure 4, nurse still needs to add the patient manually to the queue list. Only the time in is stated, but there is no any time out in the system, and we can't know which queue is considered visitation or appointment.

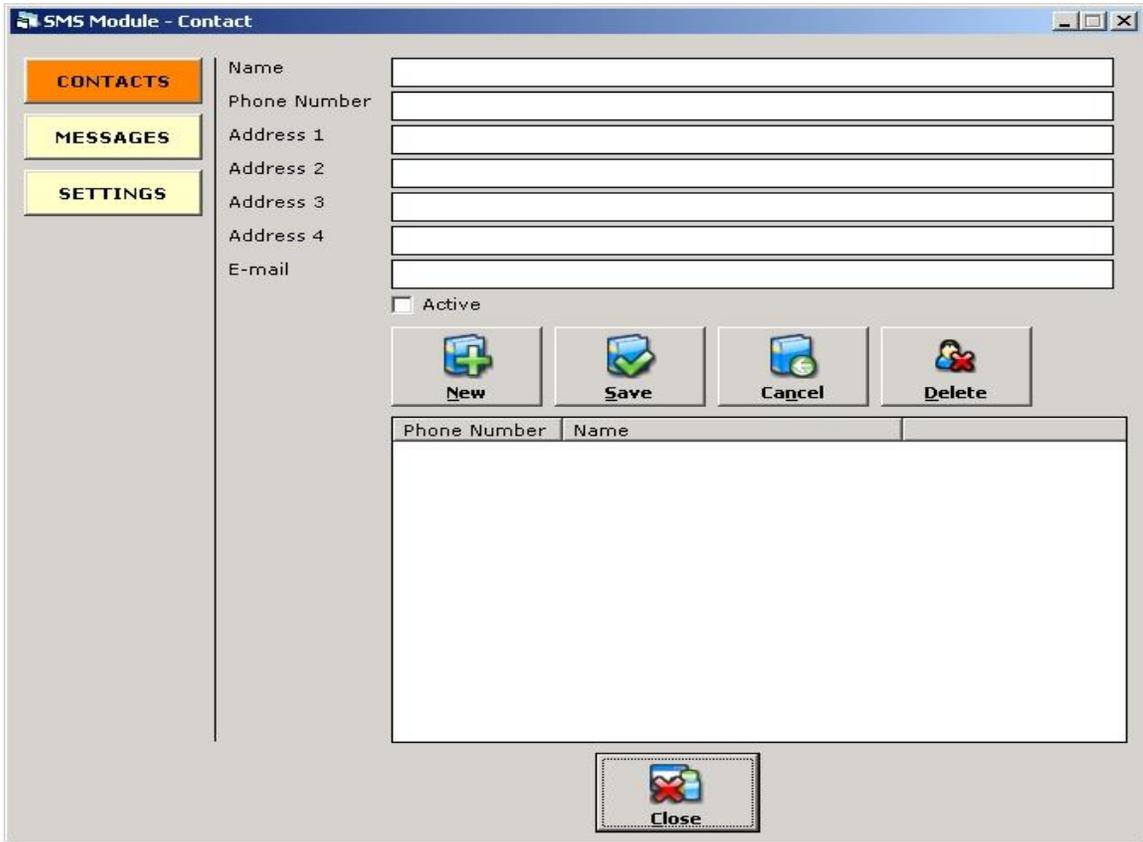


Figure 2-4 SMS Notification in ClinicPlus

In Figure 5, it is the screenshot of SMS notification in the ClinicPlus system. Although there is no any appointment module in this system, the SMS notification function still available in the system to let doctor or nurse use to inform patient about what they want to deliver. However, this module needs manually add the phone number and name of the patient and also type the message.

Solve the weaknesses

To solve the weaknesses which stated above in ClinicPlus system, appointment module is needed to add in the system. Besides, both of the queue list module and SMS notification need to be improved, such as queue list module should able to track down the time that a patient waits how long in the clinic and SMS notification should have predefined template when sending appointment notification to the patients.

2.3 Third Benchmarked System – Vanda Clinical Management Systems

Magicsoft Asia Systems Sdn Bhd is a company that founded in Singapore. The company has branch offices which are located in Indonesia and Malaysia. The company developed a system which called Vanda Clinical Management Systems and it is used by doctors, nurses, pharmacist, dispensers or whoever holds an operational or managerial pose in the clinic, pharmacy, office and etc. It provides solutions which significantly increase the clinical efficiency, allowing doctors/nurses to spend more time with patients and less time with paperwork. (Magicsoft Asia Systems, n.d.)

Strengths

Vanda Clinical Management Systems comprises the basic features of the modules that a clinic needs. All the modules I intend to improve are inside the system. Their SMS feature already comes with templates and is able to auto notify the patients that make appointment with the clinic. Moreover, appointment system can be view in day or months which produce a clearer understanding for the nurse and doctor.

Weaknesses

Some of the weaknesses in the queue list module can be found. Although the module includes time in, time out and the status of patient, it is still lack the time tracking system that state how long the patient waits in the clinic.

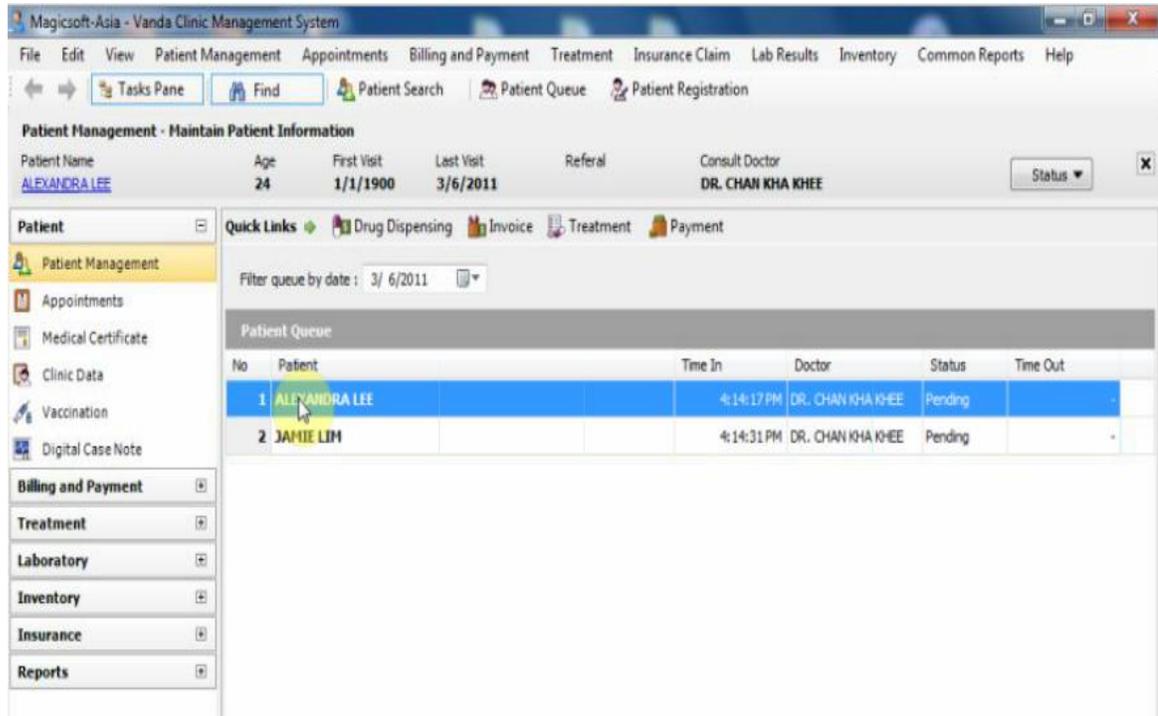


Figure 2-5 Queue List Module in Vanda Clinical Management System

Solve the weaknesses

To improve the queue list module, total waiting time is needed to add in to state how long a patient waits. Besides, we need to make a highlight to the nurse if a patient is waiting too long such as 1 hour outside the room. It is important because the nurse don't know how long the patient need to wait after 1 hour. Sometimes the patients that make appointment may join the queue earlier. So it is better for nurse to ask the patients come back in the next few hours or at least inform them that they need to wait longer time.

2.4 Studies on SMS Implementation

Some of the patients might forget the appointment because of too busy in daily life. Therefore, to solve this problem, it is a need to implement the Short Message Service (SMS) in the appointment module to notify patient before each of the appointment time. The reason of using SMS is because SMS can easily reach people when the person has a mobile device with him. SMS doesn't require any of the mobile application or mobile data network. It is convenient to all of the mobile devices.

In order to implement the SMS feature in the appointment system, SMS provider is needed. There are a few SMS provider companies that located in Malaysia. I had chosen one of the company which is One Way SMS that located in Kuala Lumpur. It is a company that established since 2009 and with years of experience, they have a good technical support. (One Way SMS, n.d.)

Based on the official website, there are three methods to send SMS to user, which include using their web system, email to SMS and Application Programming Interface (API).

Method	Advantage	Disadvantage
Web system	User friendly, functions that provided in One Way SMS can easily use by users inside the web system panel.	Time consuming as users need to go into their web system and send the message.
Email	Suitable for business people as it transform the text inside an email to SMS and send to people.	-
API	Used to integrate with own developed system with available API that provide by One Way SMS.	Hard to implement especially for normal user.

Table 2-1 Table of Method that provided by One Way SMS

From the above table, API will be selected as our method as it gives us flexibility to inform the patients. Besides, it fulfills the scenario which we need to integrate with the clinic management system in this project. The documentation of API in One Way SMS will be studied and lastly, the problem will be solved once it can send SMS notification to the patients using the system in this project.

2.5 Studies on MyKad Reader

To avoid typo occurred and the process time during patient registration, MyKad reader is being selected as a tool to help improve the business process. MyKad is an

identity card for Malaysia citizen aged 12 and above. The basic details inside the MyKad include name, address, date of birth and IC number. As the system is developed and used in Malaysia, therefore MyKad reader is choose to improve the processing time during patient registration. However, the limitation of MyKad reader is that citizens below 12 and foreigner can't use it as they don't have MyKad.

The National Registration Department (NRD) mentioned that the MyKad Reader is selling around RM 52 to RM 2800 depends on the functionalities. (Lee Yen Mun, 2013) After research on the internet, there are several suppliers in the market. One of the suppliers which named MyKad Solution claimed that they are selling the MyKad reader device with the Software Development Kit (SDK) together at RM 200. Besides, the SDK that provided for web-based platform only ActiveX, which mean user need to use Internet Explorer (IE) to use the MyKad reader. (MyKadPro Solutions, n.d.)

Although the drawback of the SDK is limit to IE, but it is still very important to implement in this project as it improve the process time. Compared to human typing speed, MyKad reader can get the details in few seconds without any typo.

2.6 Studies on iTextSharp Library

In order to print the diagnosis report and MC on paper, a study is conducted and found that a PDF file can be print out on web browser directly. Therefore, iTextSharp Library is selected as one of our tool that going to use in the printing feature. iTextSharp is a PDF library that allows people to create, adapt, inspect and maintain documents in the Portable Document Format (PDF). With the functions that provided in the library, it can generate any kind of documents or reports in PDF file format. It can dynamically generate the PDF file that interact with the data in database as well. (iTextSharp, n.d.)

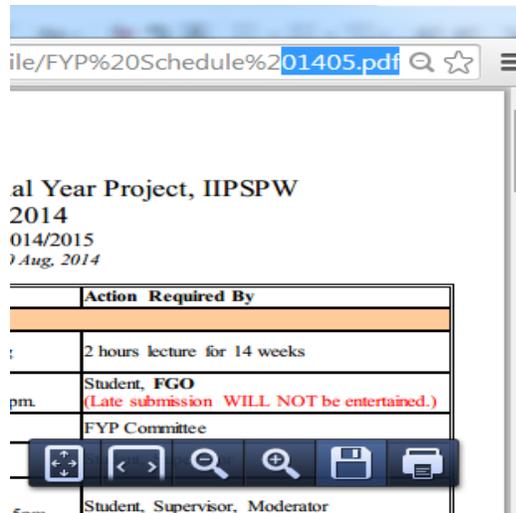


Figure 2-6 Sample Screenshot of Print Function inside PDF File

In this project, the system can print out two type of documents which is the diagnosis report and MC. Both of the functions should implement with iTextSharp Library in order to generate the PDF file and print out. At the end of this project, the system can print the documents with correct data and this may decrease the time consuming for doctor in paperwork.

3.0 System Design

3.1 Chosen Methodology

There are a lot of software methodologies in the world and each methodology has their own advantage and disadvantage. Figure 8 shows the software methodologies available nowadays and it compares all the six methodologies to find out which methodology is the best for each aspect given.

Usefulness for	Waterfall	Parallel	Phased	Prototyping	Throwaway Prototyping	Extreme Programming
Unclear user requirements	Poor	Poor	Good	Excellent	Excellent	Excellent
Unfamiliar technology	Poor	Poor	Good	Poor	Excellent	Poor
Complex systems	Good	Good	Good	Poor	Excellent	Poor
Reliable systems	Good	Good	Good	Poor	Excellent	Good
Short time schedule	Poor	Good	Excellent	Excellent	Good	Excellent
Schedule visibility	Poor	Poor	Excellent	Excellent	Good	Good

Figure 3-1 Available Software Methodology

Nowadays, the most suitable system development methodology is rapid application design (RAD). RAD is chosen by most of the people because of fast implementation. It can deliver a high quality and faster way results of build up a system compared with other methodologies. Based on Figure 8, there are two methods which are phased development methodology and throwaway prototyping methodology that given a good or excellent in each of the aspects. Two of these methodologies is actually in the RAD category. For this project, I would like to choose the phased development methodology as my development methodology to develop my own system. It is because

the phased development methodology is one of the RAD and it fulfill the requirement of short time schedule.

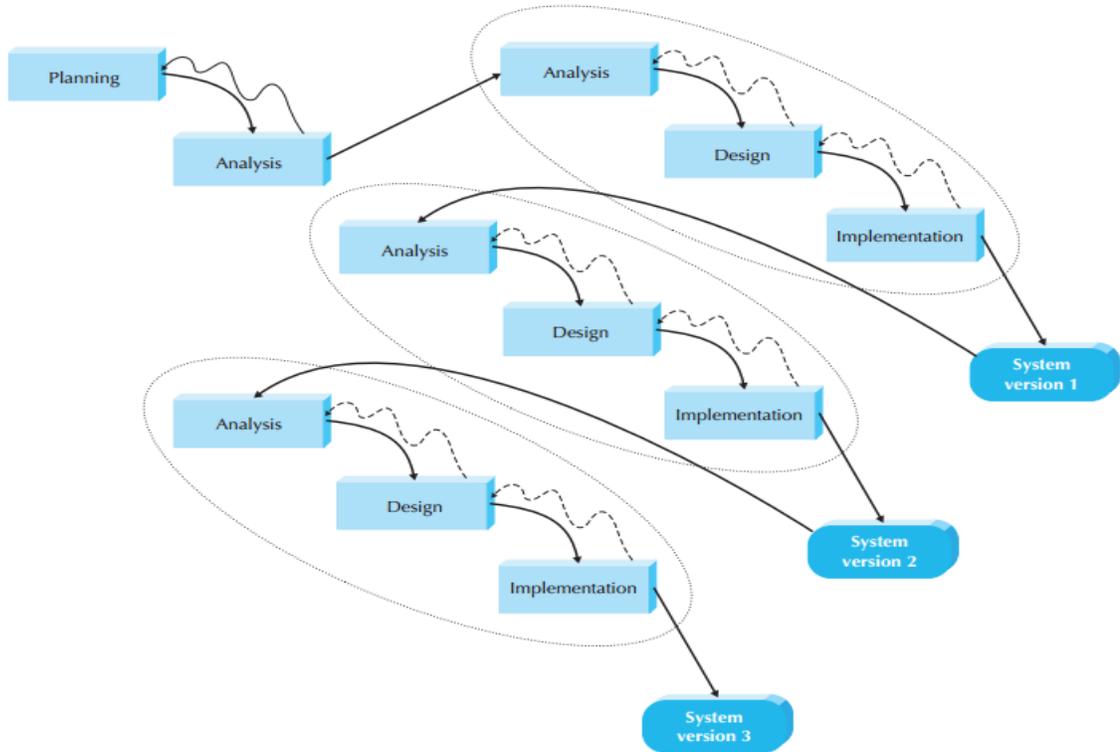


Figure 3-2 Phased Development Methodology

Figure 9 shows that a phased development methodology way. Basically there are 4 general phases involving in System Development Life Cycle (SDLC) which are planning, analysis, design and implementation. In phased development-based methodology, it breaks an overall system into a series of versions, which are developed sequentially. It takes short time on the planning phase which identifies the project plan, state the objectives and scope and develop the work plan. After that, the analysis phase identifies the overall system concept and then categorize the requirements into series of versions. The most important and fundamental requirements are bundled into the first version of the system, followed by design and implementation and a system version 1 will be implemented. This system version can let the users test and get their feedback. Additional analysis is required after version 1 and combined with new requirements and

issues that given by the users. Version 2 will be designed and implemented based on version 1 and this process will be continue until the system is complete or no longer use. (Dennis, Wixom and Tegarden, 2010, p.11)

The advantage of phased development-based methodology is users can get the useful system in the hand very soon although it is not a complete developed system. After that, users can generate some new ideas based on the system version and improve in the next version till the end of the project.

Based on the project I wish to develop, first I will focus on the patient registration module and queue list module as the first system version. Patient registration and queue list is the very fundamental module as it is required and related to other modules that I wish to develop. After that, appointment module will be implemented into the second system version. Lastly, generate MC and report module will be implemented into the third system version. After this, a system that I wish to develop will fully implemented and presented. During the way of developing, I will seek advice from my supervisor as well as my friends in order to generate new ideas and get some feedbacks from them to improve in every next system version. By doing this, the mistakes and failures that I made will be reduced.

3.2 System Design and Analysis

3.2.1 Use Case Diagram

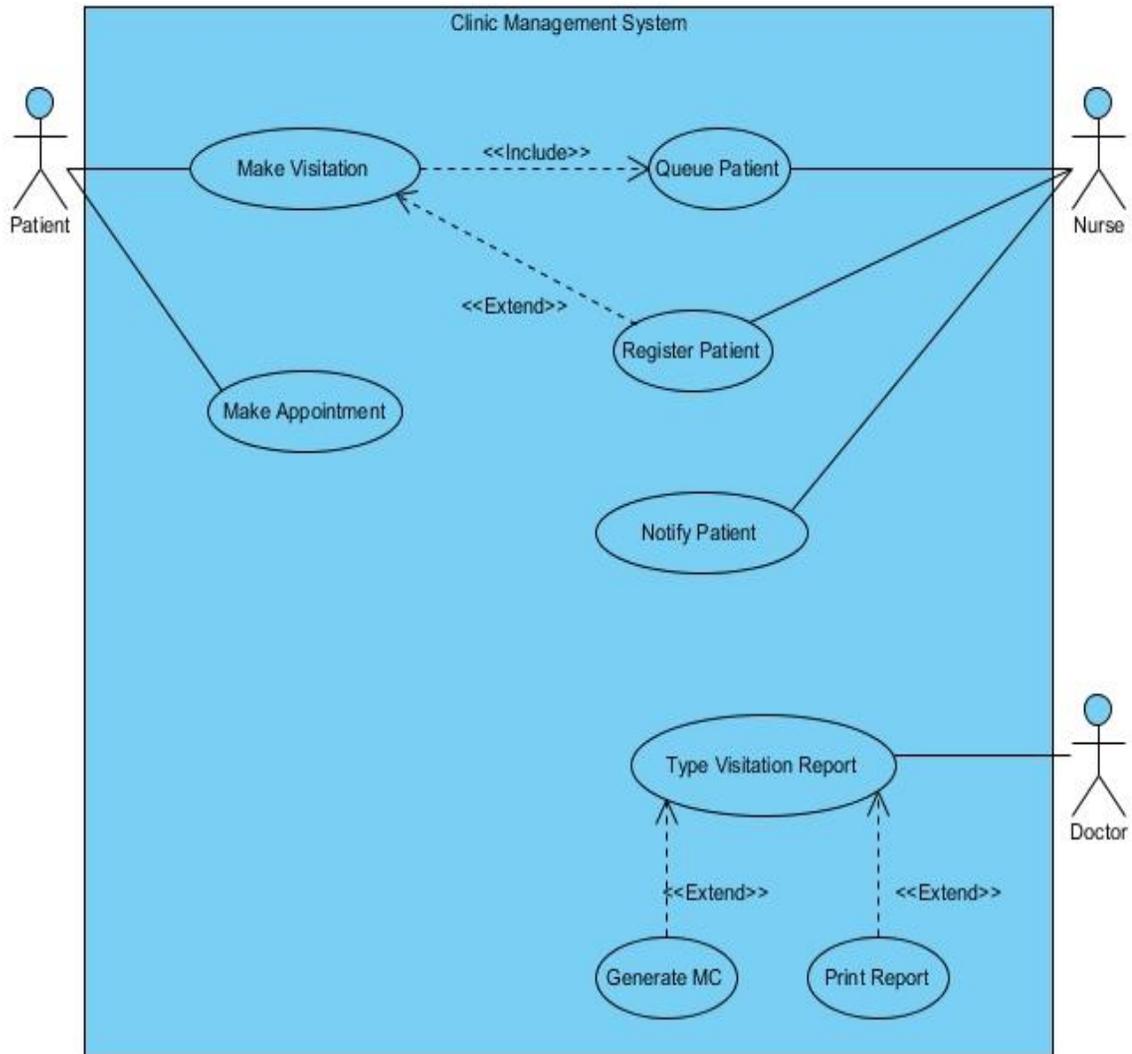


Figure 3-3 Clinic Management System Use Case Diagram

3.2.2 Activity Diagram

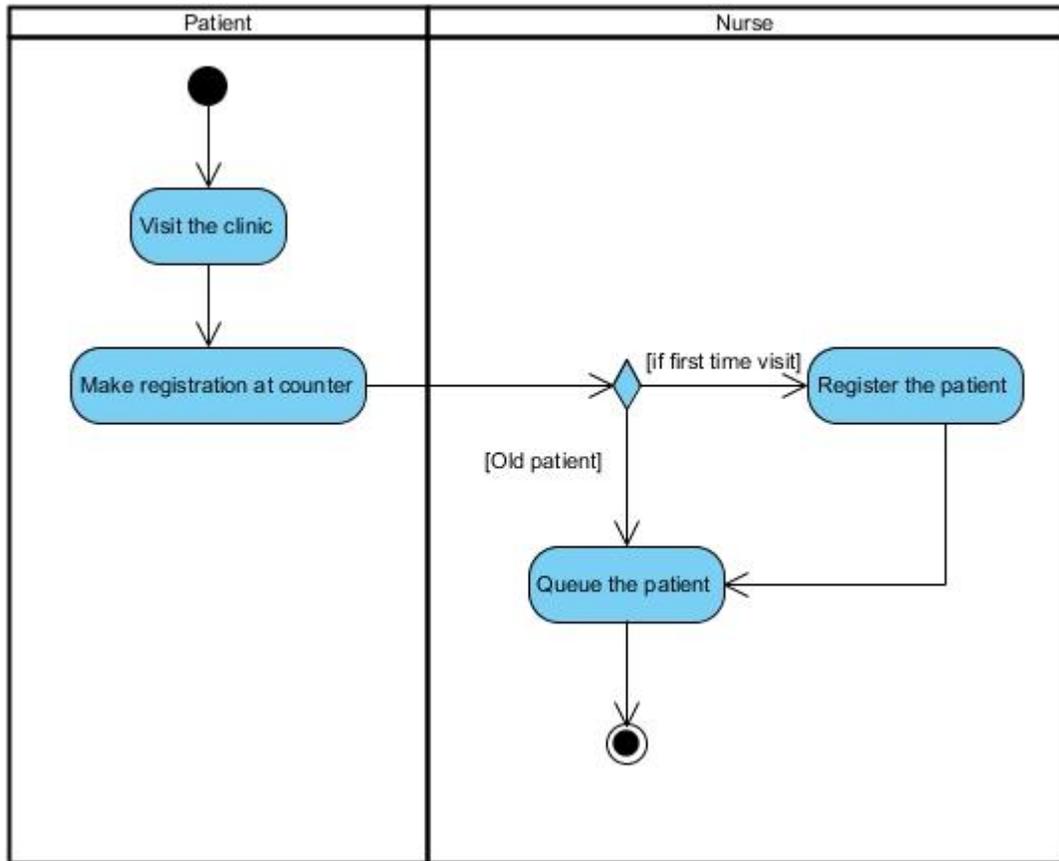


Figure 3-4 Activity Diagram for Make Visitation

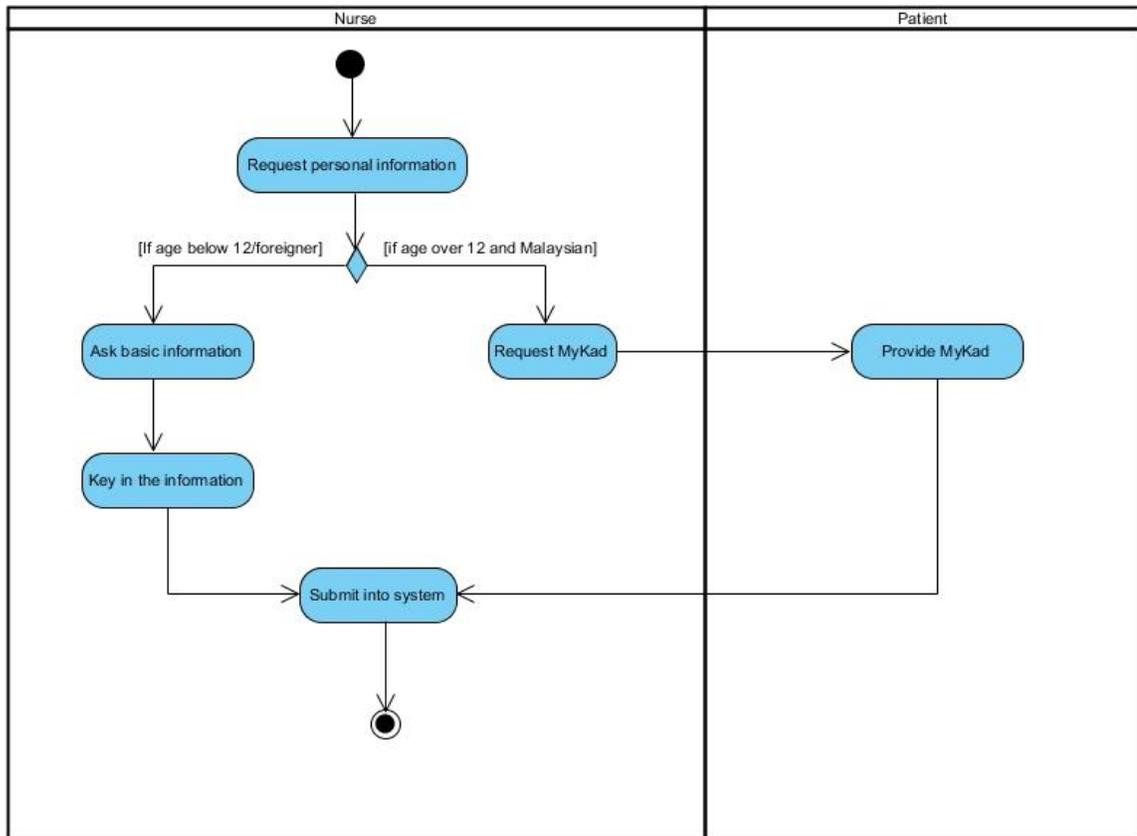


Figure 3-5 Activity Diagram for Register Patient

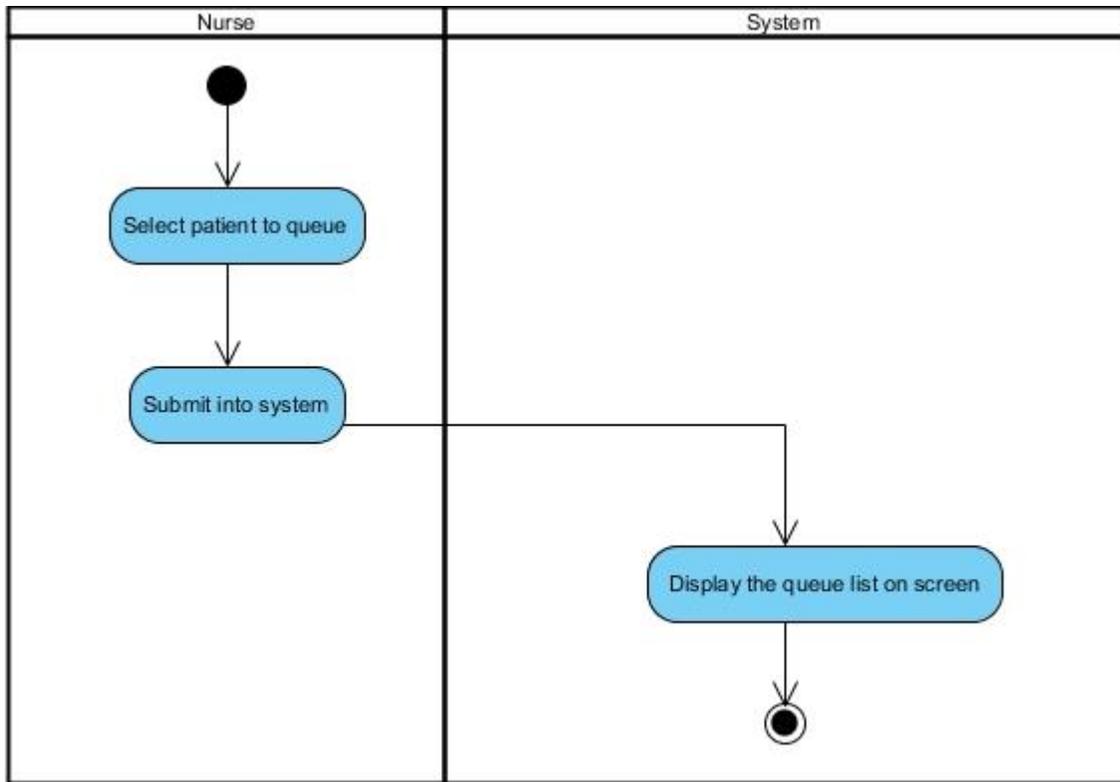


Figure 3-6 Activity Diagram for Queue Patient

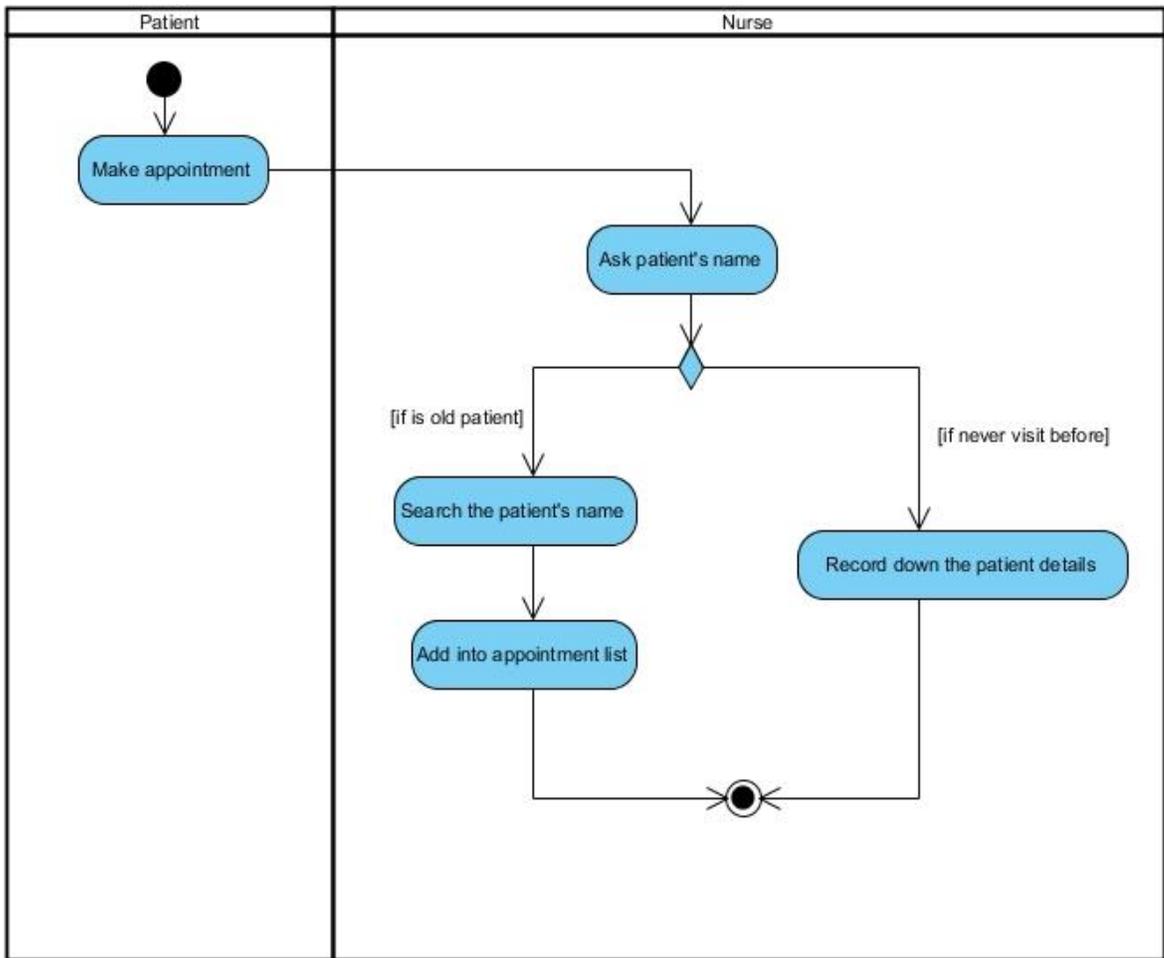


Figure 3-7 Activity Diagram for Make Appointment

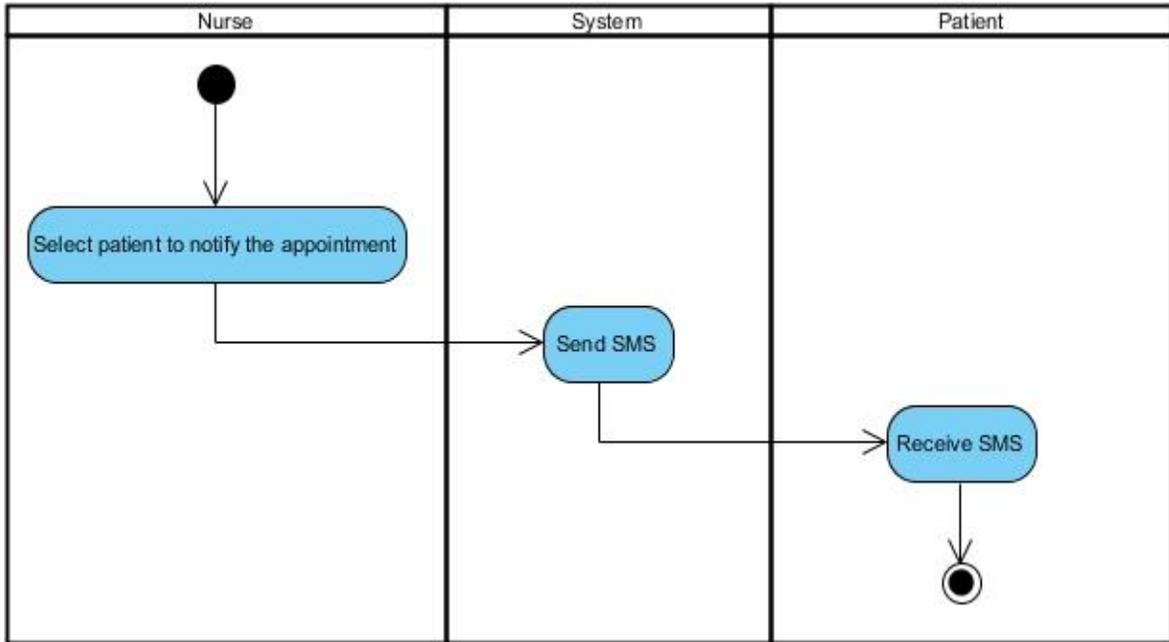


Figure 3-8 Activity Diagram for Notify Patient

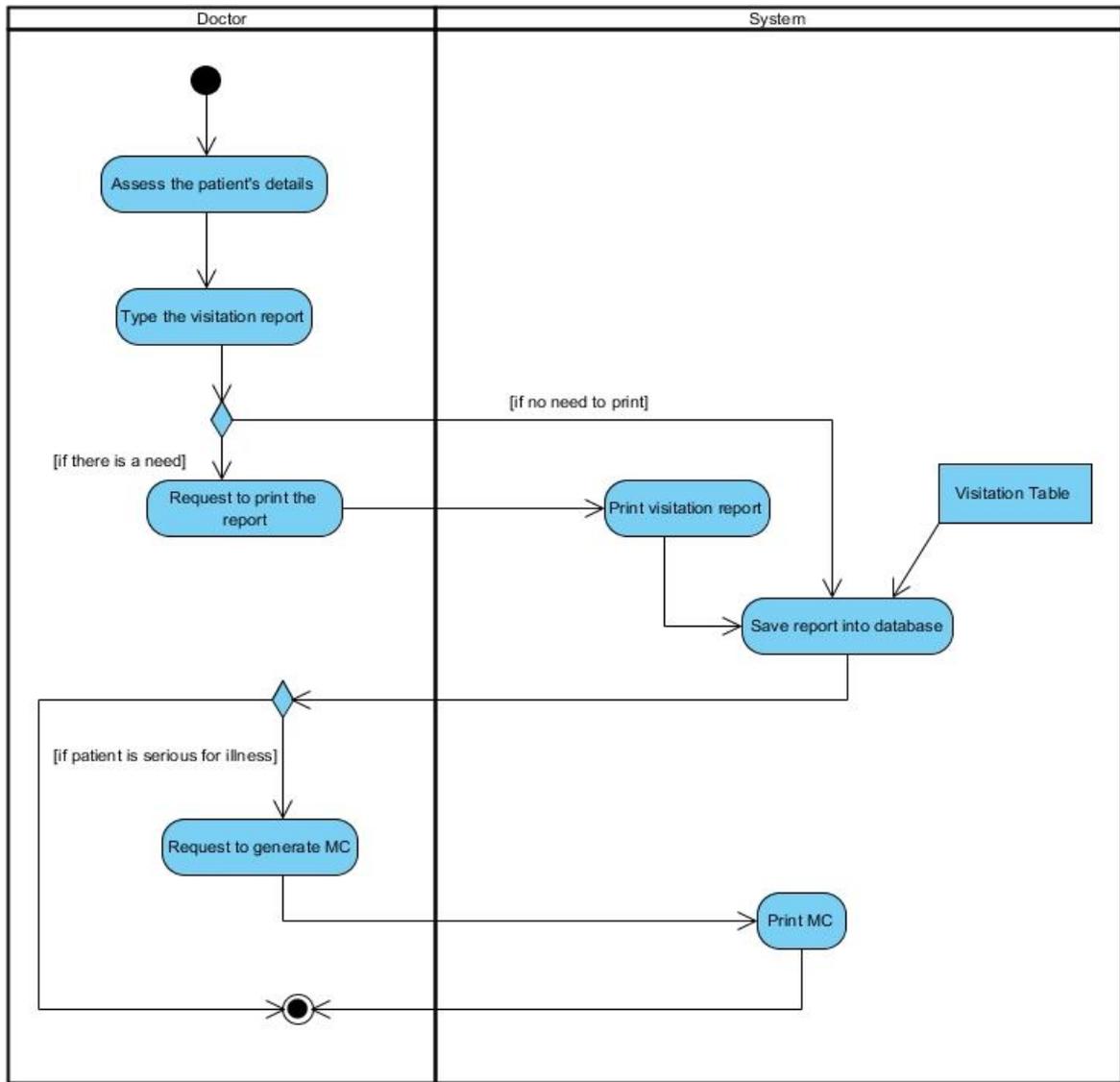


Figure 3-9 Activity Diagram for Type Visitation Report

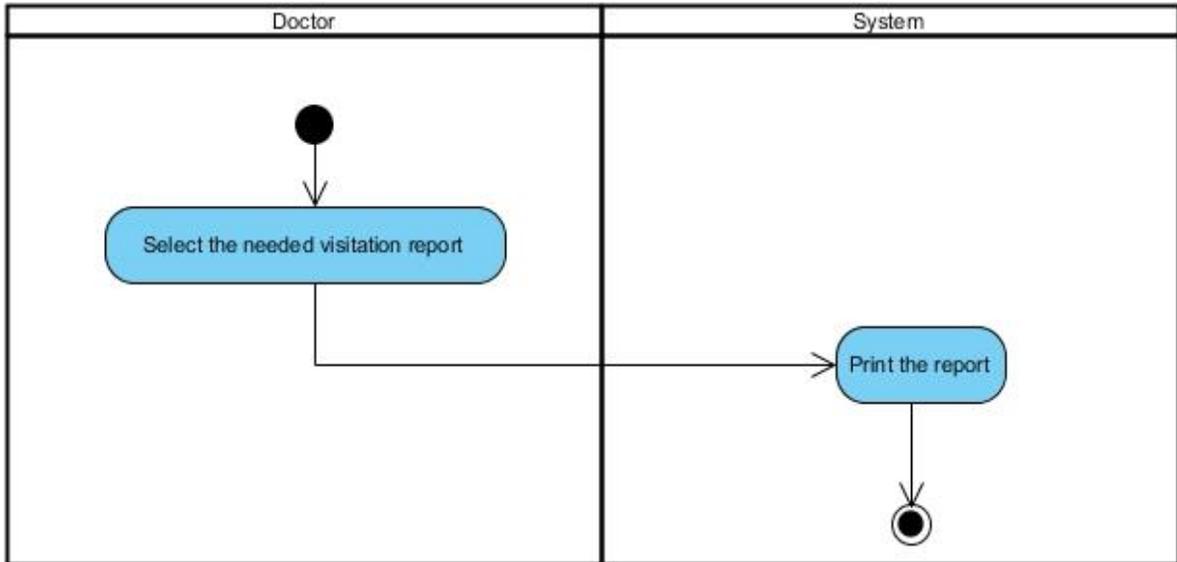


Figure 3-10 Activity Diagram for Print Report

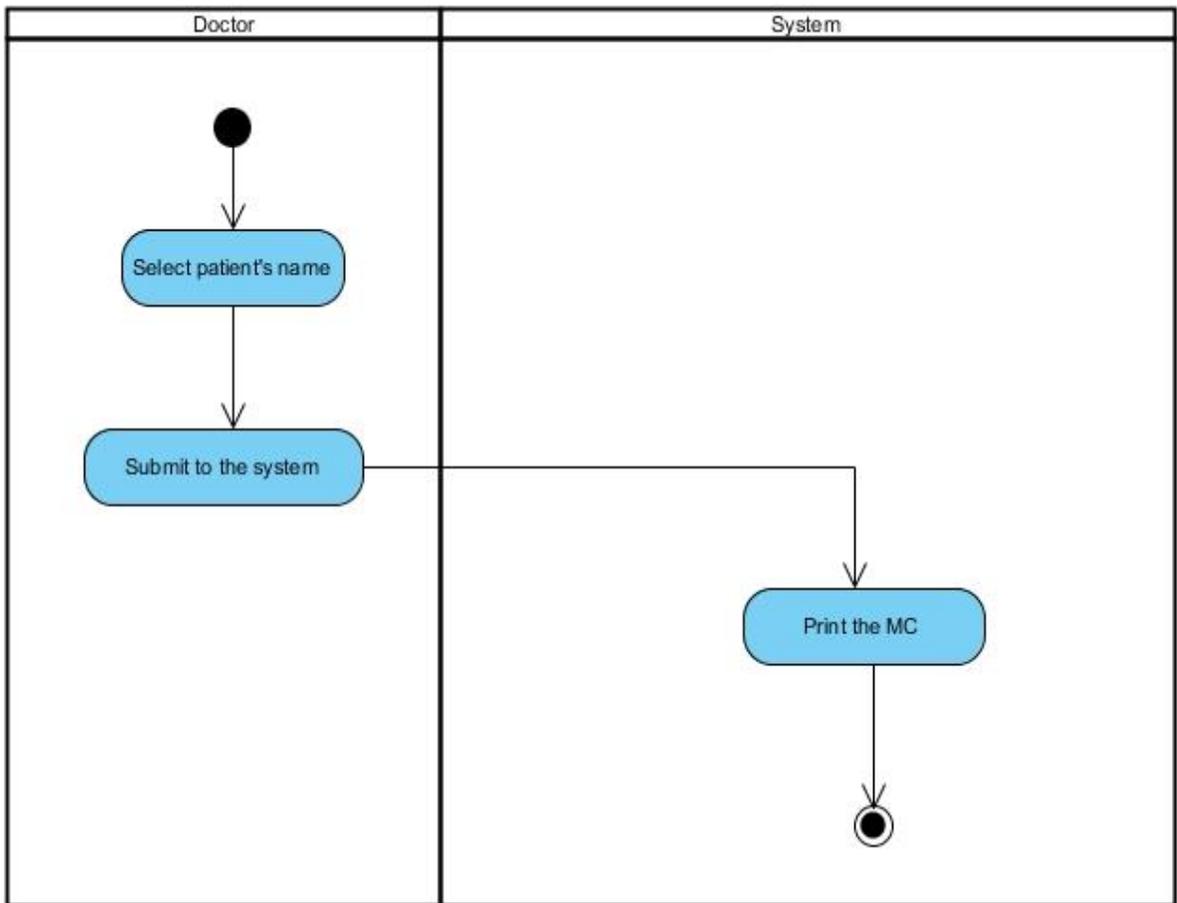


Figure 3-11 Activity Diagram for Generate MC

3.2.3 Sequence Diagram

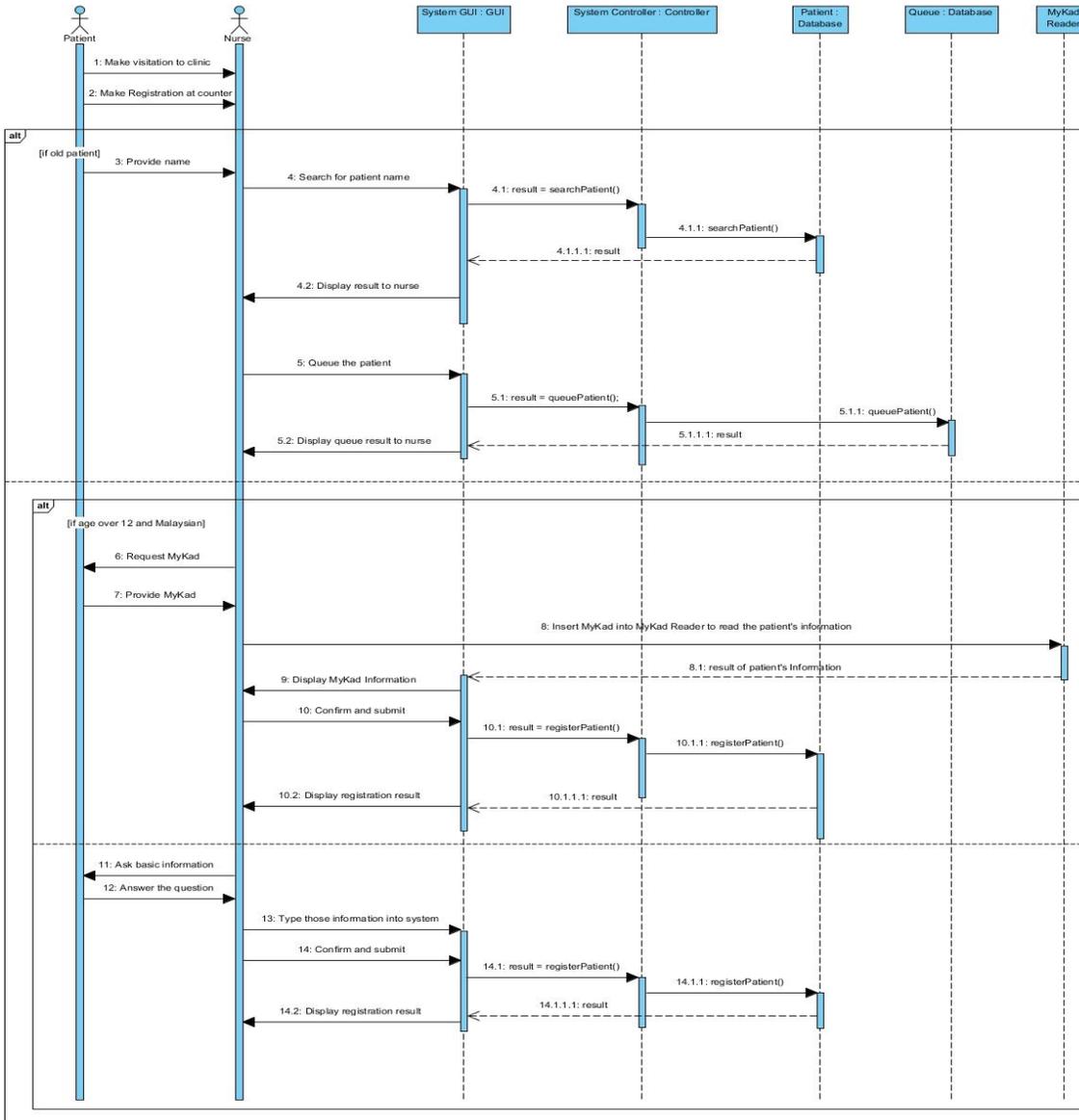


Figure 3-12 Sequence Diagram for Make Visitation

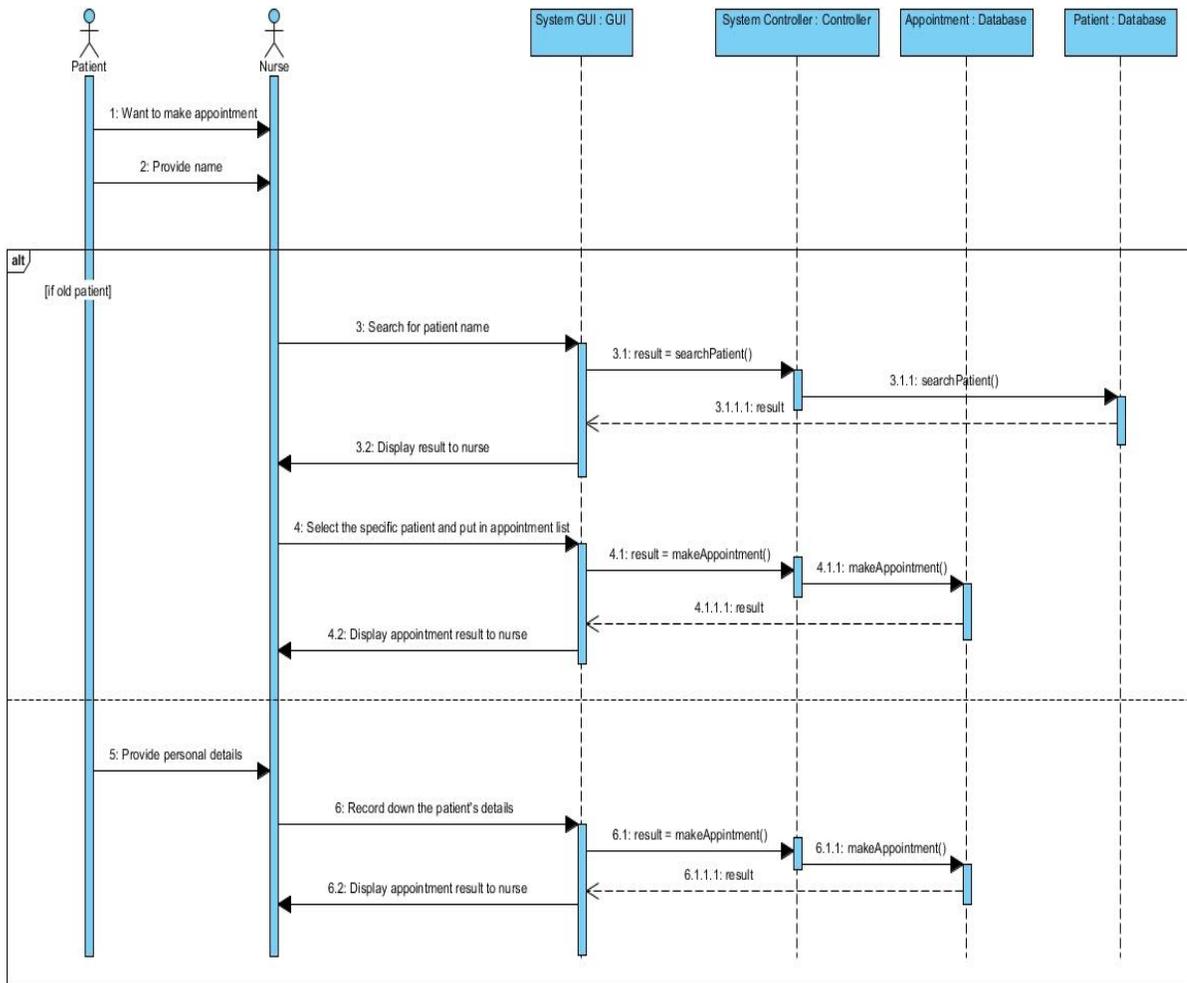


Figure 3-13 Sequence Diagram for Make Appointment

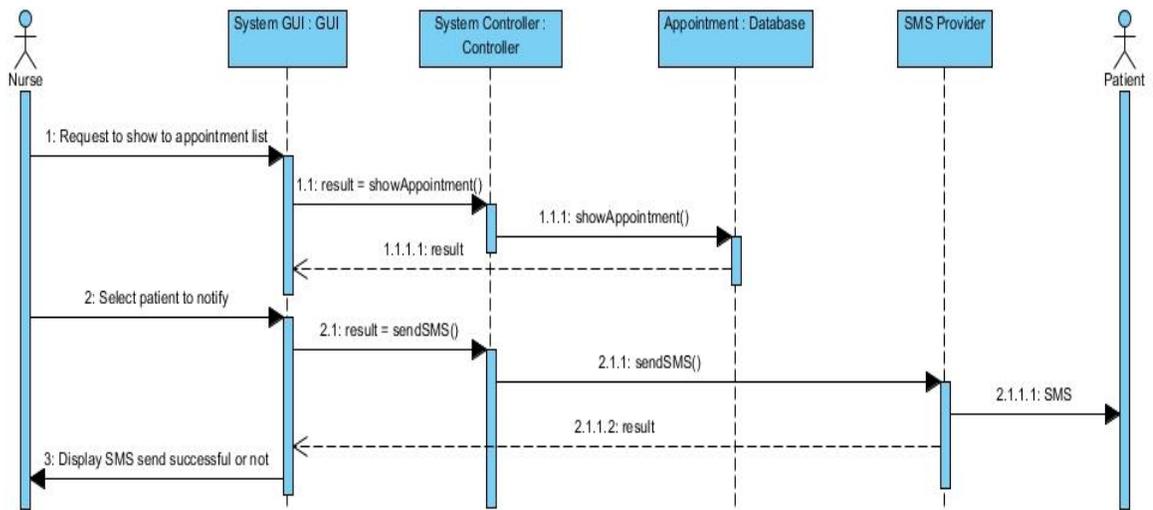


Figure 3-14 Sequence Diagram for Notify Patient

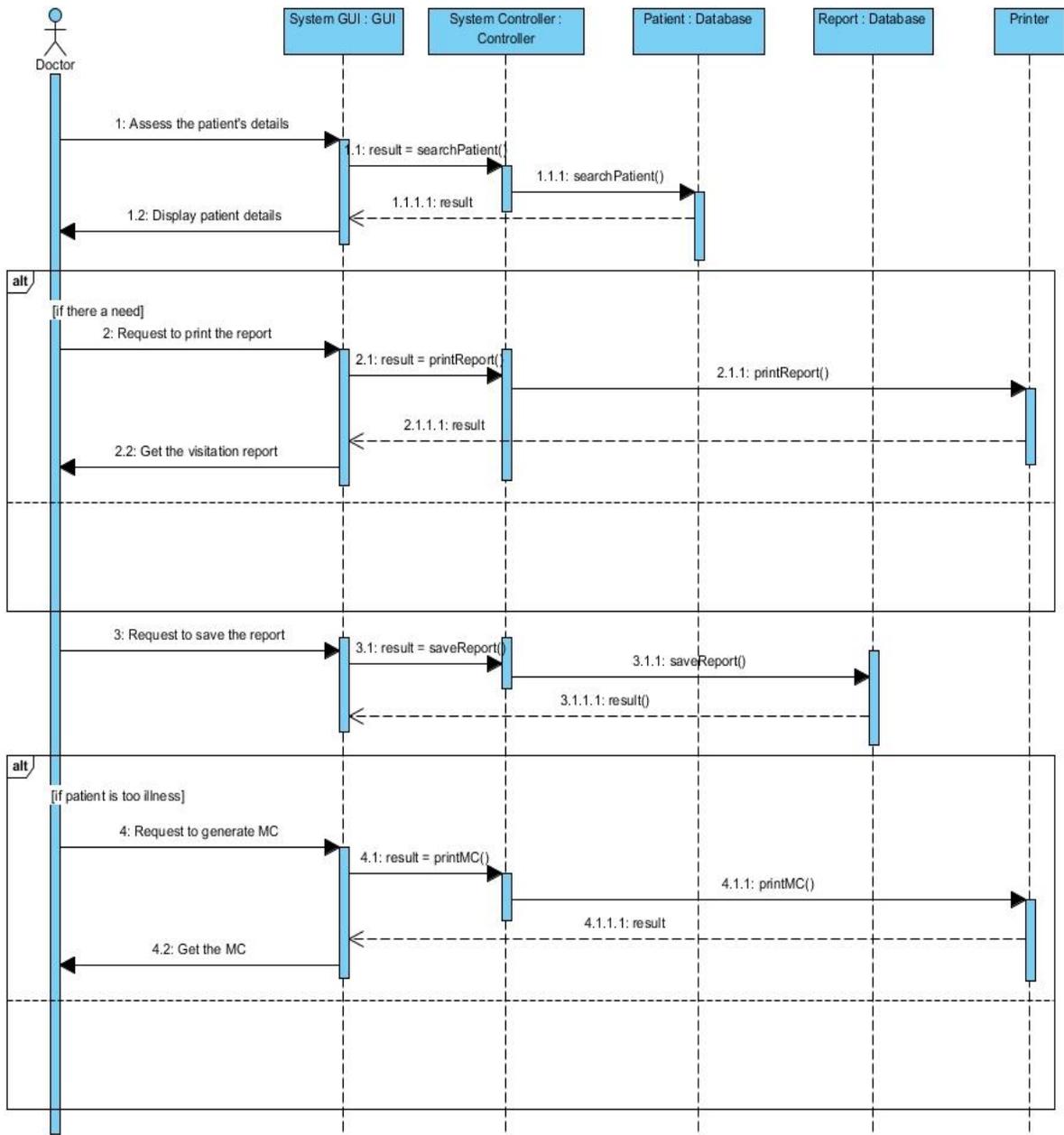


Figure 3-15 Sequence Diagram for Type Visitation Report

3.2.4 Entity Relationship Diagram (ERD)

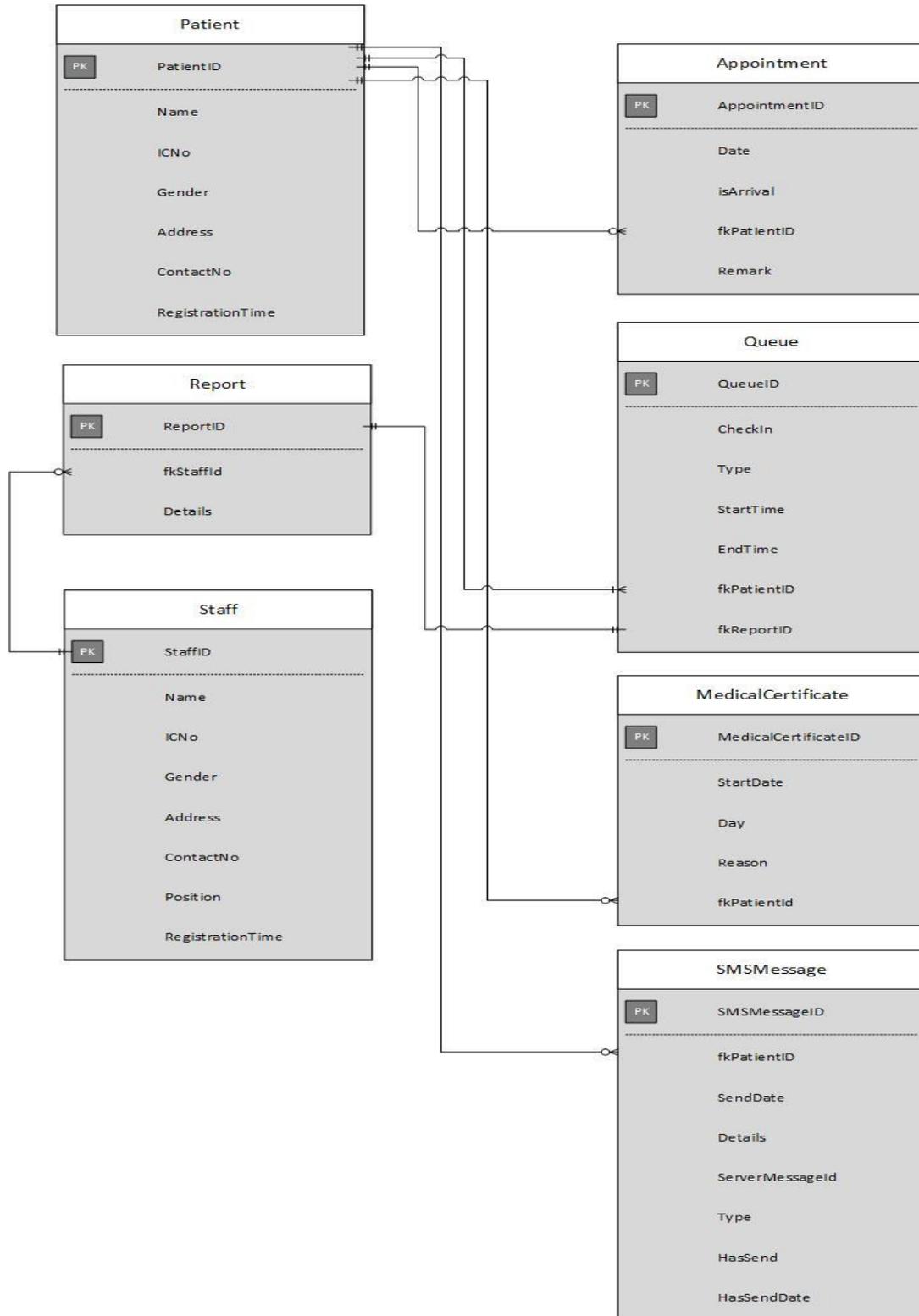


Figure 3-16 Clinic Management System Entity Relationship Diagram

3.3 Timeline

In this project, gantt chart will be used for illustrating the project timeline. Gantt chart is a visual tool that illustrate the project flow measured against time and give people the overview of the schedules for the whole project at a glance. (Tantry, n.d.)



Figure 3-17 Gantt Chart for Final Year Project 1

4.0 Interface Design and Requirements

4.1 Graphical User Interface Design

In this system, since it is an internal system, therefore it is being design in a very simple layout. The system is using blue and white color in the design since it gives clearer layout to the people as nurse and doctor need to face the screen for the whole long working hour.



Figure 4-1 Logo Design

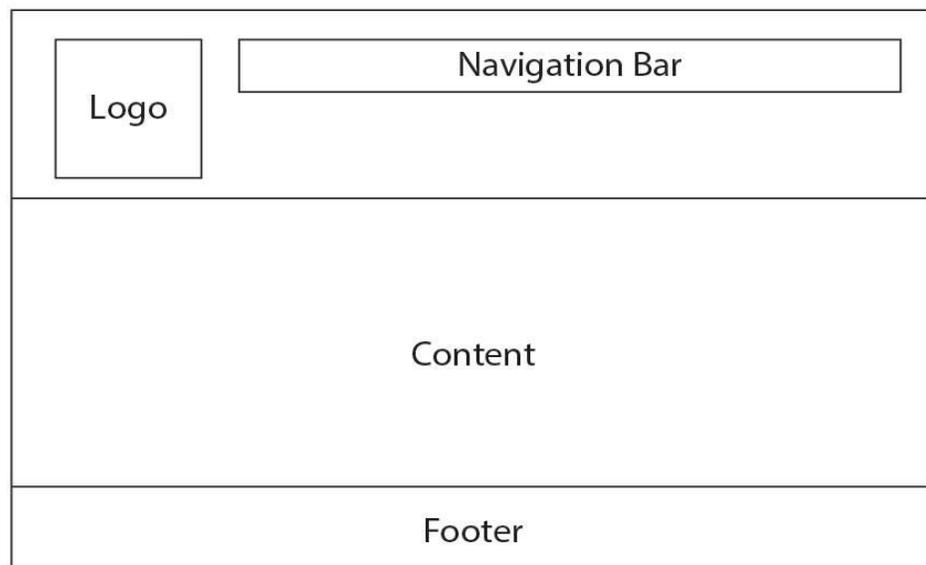


Figure 4-2 Layout Design

Dashboard Patient Appointment SMS Visitation MC System

Welcome, admin | Change Password | Logout

Rapid clinic

Rapid Clinic - Clinic Management System

NO.	NAME	IC NO.	VISIT ON	TOTAL TIME WAITING	TYPE*	CHECK IN
1	ANG HWEE KWAN	930308016203	2:50 PM	496 minutes		Check In

Note:

- Red: Appointment | Yellow: Queue

Developed by Ang Hwee Kwan for Final Year Project.

Figure 4-3 Overview of System Layout

4.2 Functional Requirement

There are few of the functional requirements in the system. First, the system should able to store and record the details of the patient accurately. To achieve this, system will let the nurse to insert the MyKad into the MyKad Reader and read the data from the chips. It will decrease the typo from the nurse.

Second, system should perform a systematic scheduling in the queue list. First come first serve is being used in the system to make sure it is fair to all the patients.

Third, system should able to make notification to the patient when appointment is coming on date. SMS notification is the primary way to notify the patient since most of the people are having mobile phone.

Last, system should able to generate PDF file for the visitation report and also MC. This may bring convenience to the nurse as well as doctor in the documentation process.

4.3 Non-Functional Requirement

Since the system is used in a clinic, it is a must to ensure that everything is doing well especially performance during the working hours. Few non-functional requirements are found and listed below:

- Usability

The system must fulfill its' own objectives. All the modules and functions of the system should be usable. It is important to ensure that every function is meaningful to the system.

- Responsiveness

The system must responds every requests from the user in very few seconds in order to decrease the waiting time of the patient as well as doctor and nurse. Responsiveness is one of main concern during the system implementation.

- Reliability

The system should be reliable all the time. The functions in the system should produce the correct output to the user.

4.4 Hardware Specification

This system is developed under ASP .Net, it will be hosted locally and need an internet connection in order to send SMS notification to patients, therefore the minimum hardware requirement are:

Operating System: Windows XP, Windows 7 or above

Processor: Intel Core 2 Duo Processor

RAM: 2GB or above

Disk Space: 100GB or above

Internet Connection: At least 1Mbps

BIS (Hons) Information Systems Engineering

Faculty of Information and Communication Technology (Perak Campus), UTAR

5.0 Implementation and Testing

5.1 Tools/Technology Involved

To develop this clinic management system, Microsoft Visual Studio is required as it will be the main tools to coding. C# is the main programming language and it will be used to write applications in the ASP .NET framework. Besides, MSSQL is selected as the database storage.

In order to get the details from the MyKad, MyKad reader will be used for the system development as well. Moreover, a server is needed as it will be used as local host to run the system during the working hours in the clinic. Internet connection is a must in order to communicate with SMS provider through online to send notification to patients.

5.2 Implementation Issues and Challenges

Clinic management system is a system that will developed under ASP .Net framework as a web-based platform. The first implementation issue will be the programming language, which need to use some time to research and digest on C#. In order to make sure the system works well, a lot of testing is needed. The second implementation issues will be MyKad reader. As it is a device that need to purchase, communicate with the suppliers is a must in order to get student discount price.

The implementation challenges in this project include implementation of SMS in appointment module and MyKad reader SDK because both of these functions need code study in order to integrate to the own developed system. Another challenge will be combining all the modules together as it may arise some bugs or problems which need time to fix them.

5.3 User Manual

5.3.1 Login Module



Figure 5-1 Login Interface

Before using the functionality of the system, nurse or doctor needs to login with their own account. There are two types of account, which are nurse and doctor. Both of the accounts have different functionalities to use. The account can be requested through the system administrator.

5.3.2 Dashboard Module



Figure 5-2 Dashboard Interface

After nurse or doctor login into the system, the first page will be the dashboard module. The dashboard will display today's queue list in the clinic. It is using the first come first serve to schedule. The appointment will show on top of the list then goes with normal visitation. With this, patient may know when is his or her turn correctly.

5.3.3 Patient Registration Module

The screenshot shows the 'Patient > Register Patient' page. At the top, there is a navigation menu with buttons for 'DashBoard', 'Patient', 'Queue Patient', 'Appointment', 'SMS', 'Visitation', and 'System'. The user is logged in as 'admin6' with options for 'Change Password' and 'Logout'. The page title is 'Rapid Clinic - Clinic Management System'. The main content area contains a form for patient registration with the following fields:

- MyKad Reader:** A blue button labeled 'Read MyKad' is positioned above the 'Name*' field.
- Name*:** A text input field.
- ICNO*:** A text input field.
- Gender*:** A dropdown menu currently showing 'Male'.
- Address:** A large text area for entering the patient's address.
- Contact No.*:** A text input field with a hint 'Eg: 601234567890'.

Below the form is a blue button labeled 'Create Patient'. To the right of the form is a silhouette of a person with the text 'No Photo Available' overlaid on it. At the bottom of the page, it says 'Developed by Ang Hwee Kwan for Final Year Project.'

Figure 5-3 Patient Registration Interface

The patient registration page can store the basic details of the patients such as name, IC number, address, gender and contact number. All the information except the contact number can get from the chips of MyKad using MyKad Reader. The nurse just need to press the “Read MyKad” button after insert patient’s MyKad into the reader. It will took around five to ten seconds to auto fill in the form. MyKad Reader also can read the image of the person and store inside the system. By using MyKad Reader, the typo and process speed during registration may decrease much compared with manually typing.

5.3.4 Patient Edit Module



Dashboard Patient Queue Patient Appointment SMS Visitation System Welcome, admin6 | Change Password | Logout

Rapid Clinic - Clinic Management System

Patient > Edit Patient

MyKad Reader :

Name* :

ICNO* :

Gender* :

Address :

Contact No.* :

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Figure 5-4 Patient Edit Interface

Nurse or doctor can edit the profile of patients to update the latest details. The most probably information that will update is address and contact number.

5.3.5 Search Patient Function



Dashboard Patient Queue Patient Appointment SMS Visitation System Welcome, admin6 | Change Password | Logout

Rapid Clinic - Clinic Management System

Patient > Search Patient

Type :

Value :

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Figure 5-5 Search Patient Interface

Nurse or doctor can search the patient by typing their name or IC number in the text box. This search function can be used when want to edit patient, queue patient, make appointment, list visitation report, notify patient and generate MC.

5.3.6 Queue Patient Module



Figure 5-6 Queue Patient Interface

Nurse can queue the patients when they register themselves at the counter. After registration, the patients will insert in the queue list using first come first serve. Alternatively, nurse can queue the patients directly without register them if they are second time visit to the clinic.

5.3.7 Create Appointment Module

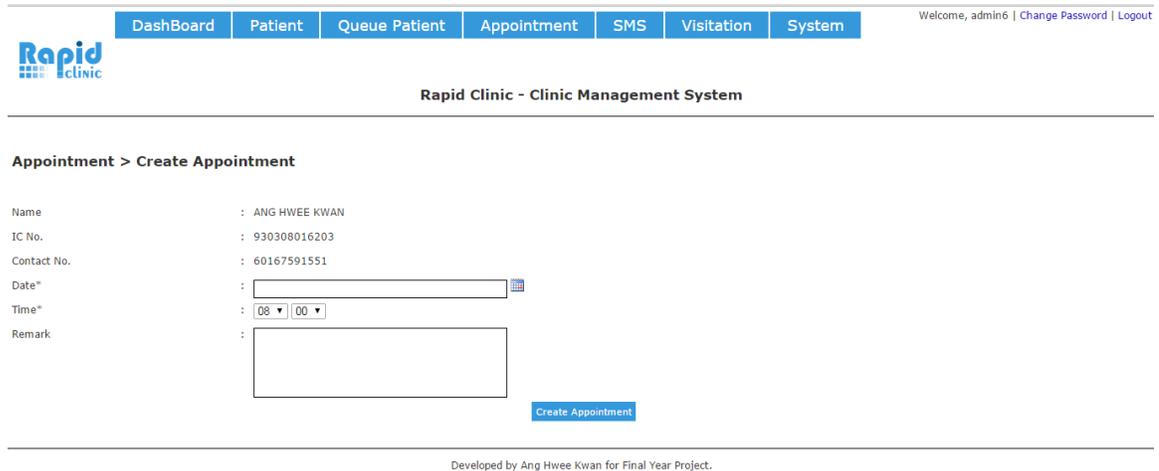


Figure 5-7 Create Appointment Interface

Nurse can create the appointment for patient that book an appointment with the doctor. SMS notification may send out on the appointment day automatically. The SMS template is already predefined in the system.

5.3.8 List Appointment Module

Dashboard Patient Queue Patient Appointment SMS Visitation System Welcome, admin6 | Change Password | Logout

Rapid Clinic - Clinic Management System

Appointment > List Appointment

NO.	NAME	IC NO.	VISIT ON	REMARK	QUEUE
[14-Mar-15]					
1	ANG HWEE KWAN	930308016203	4:00 PM	Medical Check Up.	Queue Appointment
[24-Mar-15]					
1	ANG HWEE KWAN	930308016203	10:00 AM	Injection	-

Developed by Ang Hwee Kwan for Final Year Project.

Figure 5-8 List Appointment Interface

Appointments that insert into the system will be list down in a table. This table will show in a very clear manner on which date who already made appointments. When the patient comes, nurse can queues the patient and it will directly on the top of the queue list.

5.3.9 Custom SMS Module

Dashboard Patient Queue Patient Appointment SMS Visitation System Welcome, admin6 | Change Password | Logout

Rapid Clinic - Clinic Management System

Notification > Notify Patient

Name : ANG HWEE KWAN
 IC No. : 930308016203
 Contact No. : 60167591551
 Send Date* :
 Message* :

[Create Notification](#)

Developed by Ang Hwee Kwan for Final Year Project.

Figure 5-9 Custom SMS Interface

Custom SMS can be send to the patients when schedule on the specific date. The message don't have any templates and it is being manually typed by the nurse or doctor.

5.3.10 SMS List Module

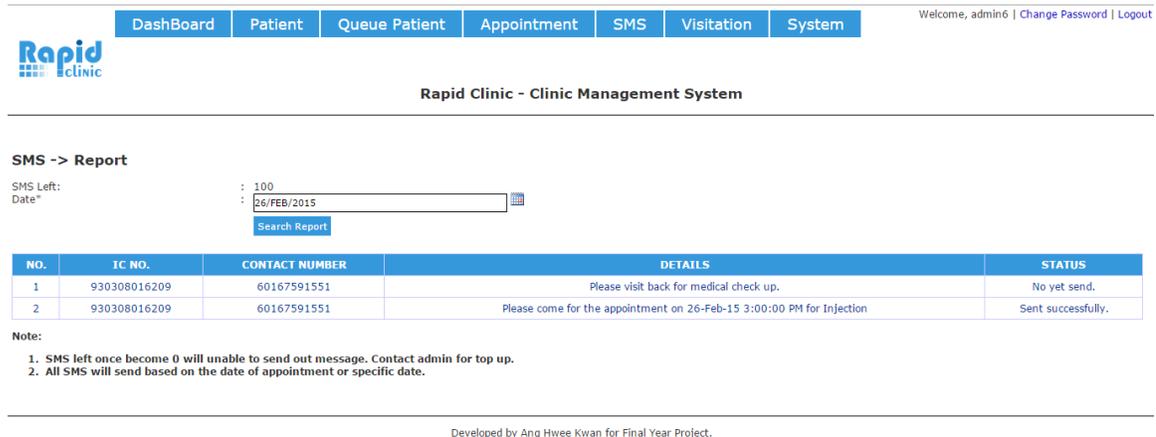


Figure 5-10 SMS List Interface

This module will display simple report for the SMS delivery status. It will also show the credit of SMS that available in the account at the SMS provider. Once credit is not enough, SMS will not able to send out to the patients.

5.3.11 Create Visitation Report Module

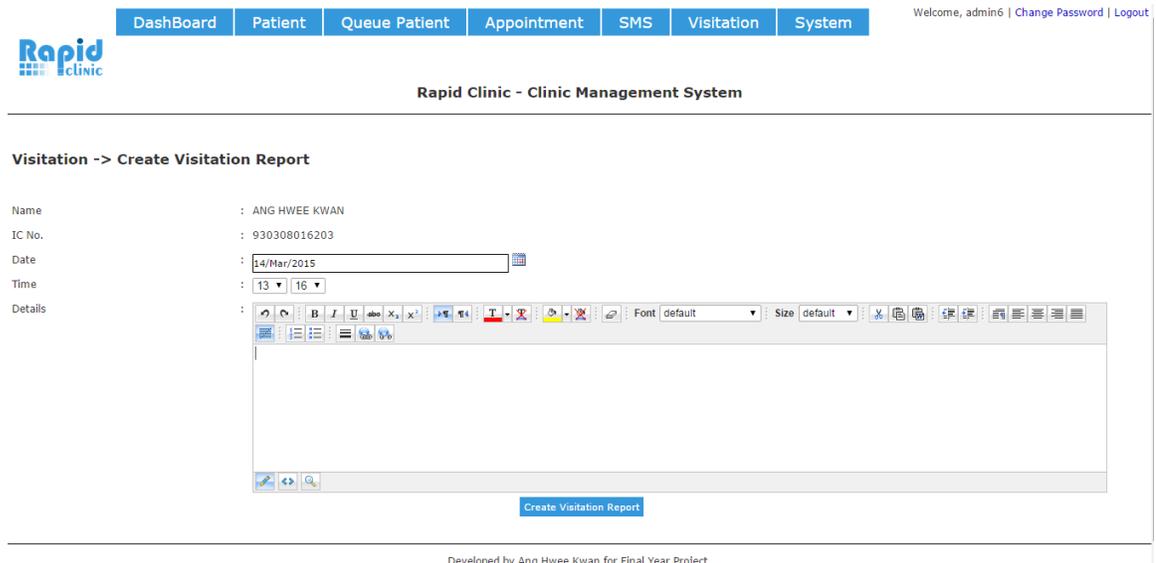


Figure 5-11 Create Visitation Report Interface

After doctor check in the patients, then the system will goes to the create visitation report section. Doctor can type the diagnosis report there as much as they want.

5.3.12 List Visitation Report Module

Visitation > List Visitation Report
Please select Date by using Calendar.
Date* : 14/Mar/2015
[Search Report](#)

NAME	VISIT ON	EDIT REPORT	VIEW / PRINT REPORT
LOH WEI LUN	14-Mar-15 1:20:54 PM	Edit Report	View / Print Report
ANG HWEE KWAN	14-Mar-15 1:20:44 PM	Edit Report	View / Print Report

1

Developed by Ang Hwee Kwan for Final Year Project.

Figure 5-12 List Visitation Report Interface

This module can list out every daily visitation report in the clinic. It gives the nurse and doctor to search who is coming on specific date and what is their report details on that day. Report can be edit and print out individually.

5.3.13 Search Visitation Report Module

Visitation > Search Visitation Report
Name : LOH WEI LUN
IC No. : 930308016209

VISIT DATE	VISIT TIME	EDIT REPORT	VIEW / PRINT REPORT
14-Mar-15	1:20 PM	Edit Report	View / Print Report
06-Mar-15	11:13 AM	Edit Report	View / Print Report
20-Feb-15	10:38 PM	Edit Report	View / Print Report
16-Feb-15	12:33 PM	Edit Report	View / Print Report
16-Feb-15	12:33 PM	Edit Report	View / Print Report

1

Developed by Ang Hwee Kwan for Final Year Project.

Figure 5-13 Search Visitation Report Interface

The visitation report can be searched by using patient's name or IC No. It will list out the specific patients and all the visitation reports the doctor created.

5.3.14 Generate MC Module

Figure 5-14 Generate MC Interface

MC can be generate by the doctor by filling in the date, duration for how many days and reason. The system will automatically generate a .PDF file which is in A4 size and able to print out. Doctor just need to chop and sign with his signature in order to prove it is the original MC.



Figure 5-15 Sample of MC .PDF File

5.3.15 List MC Module

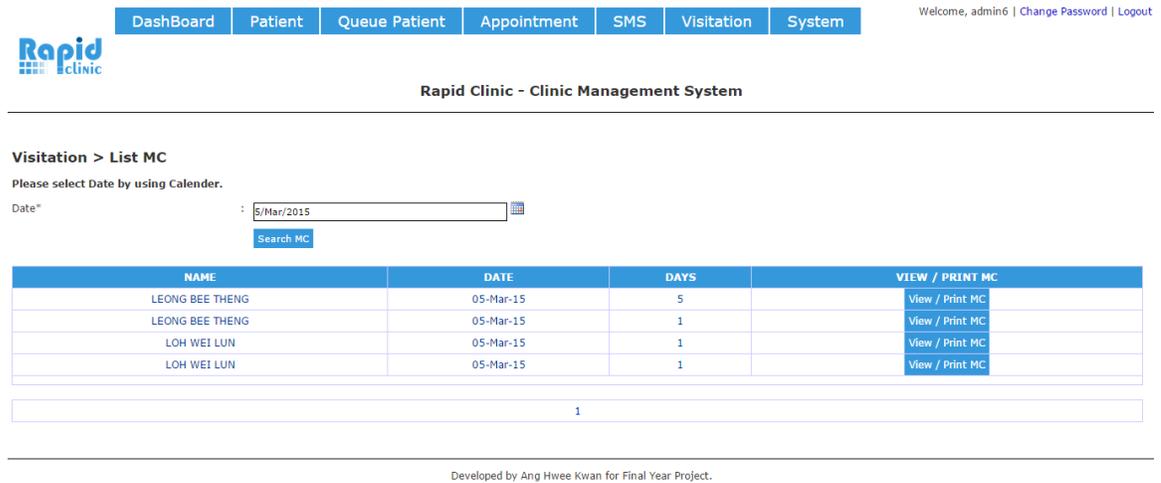


Figure 5-16 List MC Interface

This module will display the MC that has been created on the specific date in a table form. MC can be view and print again anytime.

5.3.16 Clinic Information Module

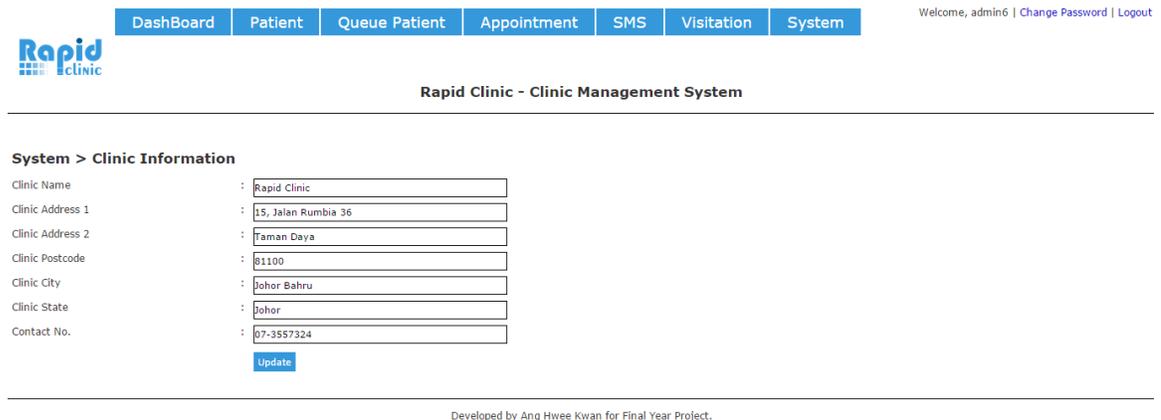


Figure 5-17 Clinic Information Interface

Doctor can update their clinic information. The information is used when generate the MC and visitation report in the PDF file.

5.3.17 Staff Management Module



Figure 5-18 Staff Management Interface

The table lists out all the staff in the clinic that holding a login account. Moreover, it allowed doctor to add new staff or edit staff’s details.

5.3.18 Add Staff Module

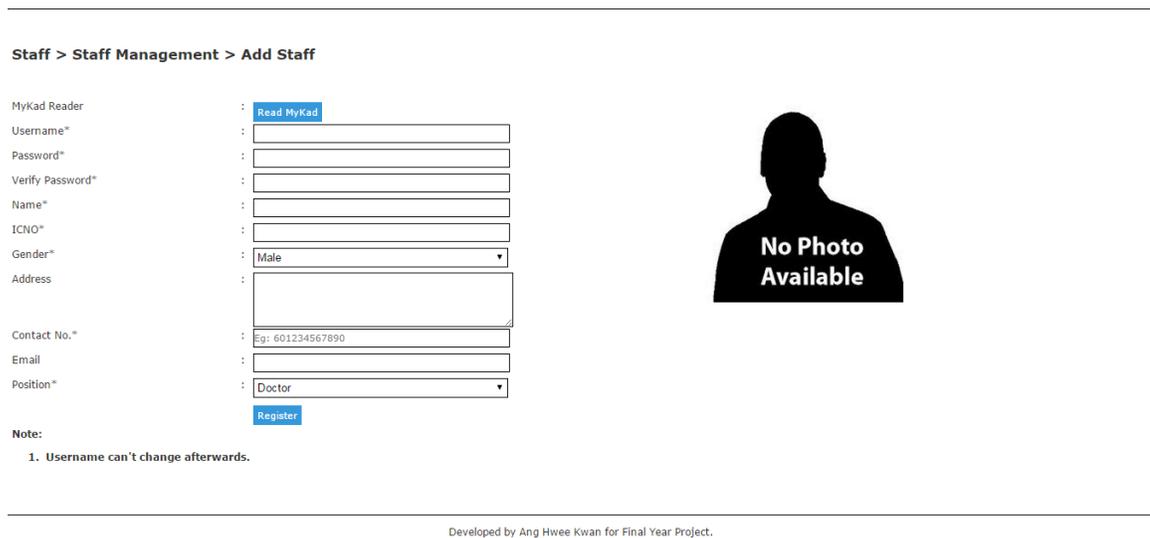


Figure 5-19 Add Staff Interface

Doctor can create an account for the staff to login in this module. The system stores the basic details of the staff. MyKad Reader also being used in this module so it can decrease the typo.

5.3.19 Edit Staff Module

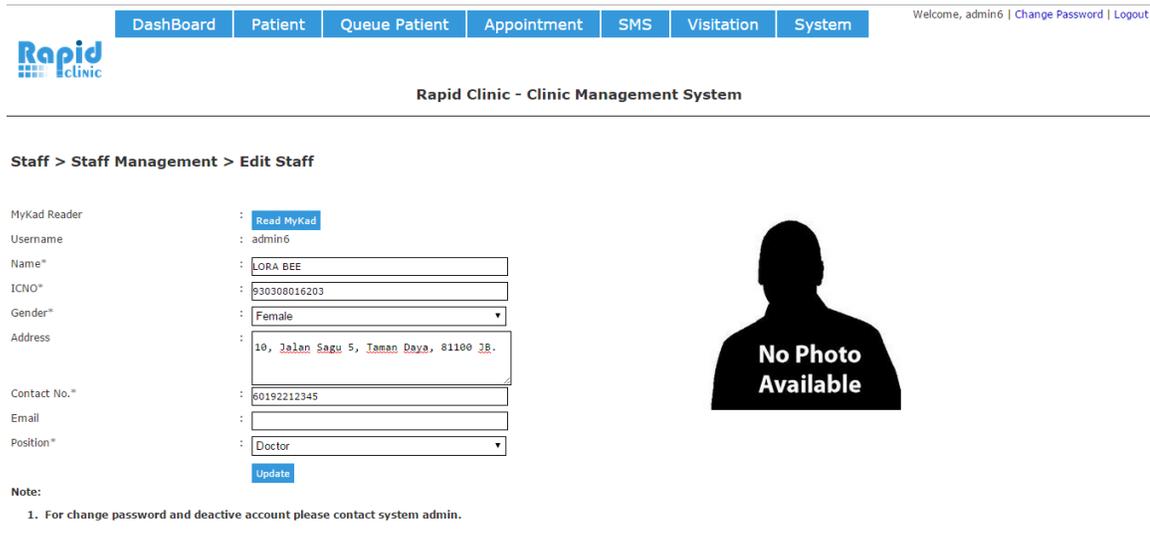


Figure 5-20 Edit Staff Interface

Doctor can edit the staff details such as address and contact number when there is any updates.

5.4 System Testing

5.4.1 Login Module Testing

Objectives: To ensure only authenticated staff can login the system.

No.	Testing Method	Action Done	Expected Result	Result
1	Login with correct account username and password.	Login the user account with correct username and password.	User successfully login into the system.	Pass
2	Login with incorrect username or password.	Login with randomized username and password, such as ABC as username, 123 as password.	User is restricted to login and error message will prompt out.	Pass
3	Leave blank for both of the username and password.	Do not key in anything in the login textbox.	User is restricted to login and asked to key in username and password.	Pass

Table 5-1 Login Module Testing

5.4.2 Dashboard Module Testing

Objective: To ensure specific patient can check in and the queue list is correct all the time.

No.	Testing Method	Action Done	Expected Result	Result
1	Check in the specific patient.	Press the check in button for the specific patient.	Patient successfully remove from the queue after check in.	Pass

Table 5-2 Dashboard Module Testing

5.4.3 Patient Registration Module Testing

Objective: To ensure patient's details is stored inside the database of system.

No.	Testing Method	Action Done	Expected Result	Result
1	Use MyKad Reader to get personal details of patient.	Insert the MyKad of patient into MyKad Reader and press the "Read MyKad" button.	Able to get the basic details of patients and fill into relative text boxes.	Pass
2	Use MyKad Reader without connect the device.	Directly press the "Read MyKad" button.	Error will prompt out and asked to check and connect the device properly.	Pass
3	Recreate the patient's details which has visit to the clinic before.	Fill in the details of patients and press "Create Patient" button.	Error will displays and shows duplicate IC No. found, which mean the patient's detail is already inside the system.	Pass
4	Manually type in the patient's details.	Type the patient's details for those who don't have MyKad.	User can key in anything in the text box without any problem.	Pass
5	Insert the data of patient into the system.	Press the "Create Patient" button after all the details are filled.	Patient's details successfully insert into the database.	Pass

Table 5-3 Patient Registration Module Testing

5.4.4 Patient Edit Module Testing

Objective: To ensure patient's details can be edit and save into database.

No.	Testing Method	Action Done	Expected Result	Result
1	Use MyKad Reader to get latest personal details of patient.	Insert the MyKad of patient into MyKad Reader and press the "Read MyKad" button.	Able to get the basic details of patients and fill into relative text boxes.	Pass
2	Manually edit the specific details of patient.	Type the patient's details at specific text box.	User can key in anything in the text box without any problem.	Pass
3	Save the data of patient into the system.	Press the "Update Patient" button after all the details are updated.	Patient's latest details successfully save into the database.	Pass

Table 5-4 Patient Edit Module Testing

5.4.5 Search Patient Function Testing

Objective: To ensure can get the correct patient's detail when searching.

No.	Testing Method	Action Done	Expected Result	Result
1	Search using correct IC No.	Type patient's IC No. in the text box and press "Retrieve" button.	Able to found specific patient.	Pass

2	Search using correct name.	Type patient's name in the text box and press "Retrieve" button.	Able to found specific patient's details. If duplicate names are found, it will show the IC No. to let the user choose which they want to select.	Pass
3	Search with blank input.	No type anything in the text box.	Error will display and ask to type in IC No. or name into text box.	Pass
4	Search with dummy value.	Type dummy value such as ABC as name.	Error will display and show no patient found in the system.	Pass

Table 5-5 Search Patient Function Testing

5.4.6 Queue Patient Module Testing

Objective: To ensure patient successfully queue into queue list.

No.	Testing Method	Action Done	Expected Result	Result
1	Search patient using correct IC No. or name.	Type patient's IC No. or name in the text box and press "Retrieve" button.	Display a message saying that successfully insert into queue list. Queue list in the dashboard will have the patient's details.	Pass

Table 5-6 Queue Patient Module Testing

5.4.7 Create Appointment Module Testing

Objective: To ensure appointment of a patient successfully insert into system and SMS notification will send on time.

No.	Testing Method	Action Done	Expected Result	Result
1	Search patient using correct IC No. or name.	Type patient's IC No. or name in the text box and press "Retrieve" button.	Display a message saying that specific patient successfully insert into appointment list. SMS notification will be scheduled to send on the appointment date.	Pass

Table 5-7 Create Appointment Module Testing

5.4.8 List Appointment Module Testing

Objectives: To list out all the appointments by date to the nurse or doctor.

No.	Testing Method	Action Done	Expected Result	Result
1	Go to List Appointment Module.	Press the List Appointment in the navigation menu.	All the appointments of the patients will list out based on date. Queue appointment link can be press in order to queue the patients into the queue list when patient reach the clinic.	Pass

Table 5-8 List Appointment Module Testing

5.4.9 Custom SMS Module Testing

Objectives: Make custom SMS notification to the patients for any urgent matter.

No.	Testing Method	Action Done	Expected Result	Result
1	Search patient using correct IC No. or name.	Type patient's IC No. or name in the text box and press "Retrieve" button.	Show a form that display patient's name, IC No. and mobile number and ask user to fill in the send date and message details.	Pass
2	Leave blank for both of the date and SMS details.	Do not key in anything in the date and SMS details text box.	Error display and ask user to key in details in two of the text boxes.	Pass
3	Insert with valid date and SMS details.	Key in the specific date that SMS want to send out and the SMS details.	SMS will successfully schedule in the system and send on time.	Pass

Table 5-9 Custom SMS Module Testing

5.4.10 SMS List Module Testing

Objectives: Show the report of SMS notification to the user.

No.	Testing Method	Action Done	Expected Result	Result
1	Search specific date of SMS report.	Select the date using calendar and press “Search Report” button.	A list of SMS notification that has been scheduled will list out with the status. If it is failed, it will be record and can be one of the reference for system administrator to check.	Pass
2	No input any date of SMS report.	Do not select date, directly press the “Search Report” button.	Error will display and ask to insert a specific date.	Pass

Table 5-10 SMS List Module Testing

5.4.11 Create Visitation Report Module Testing

Objective: To ensure every visitation report is saved into the system.

No.	Testing Method	Action Done	Expected Result	Result
1	Insert with correct visitation details.	Doctor types in the visitation details in text boxes that is provided and press “Create Visitation Report” button.	Visitation report is saved into database and can be tracked back.	Pass

Table 5-11 Create Visitation Report Module Testing

5.4.12 List Visitation Report Module Testing

Objective: To list out all the visitation reports by date.

No.	Testing Method	Action Done	Expected Result	Result
1	Search specific date of visitation report.	Select the date using calendar and press “Search Report” button.	A list of visitation report on the specific date will show out. Nurse or doctor can view, print and edit the report when there is a need.	Pass
2	No input any date of visitation report.	Do not select date, directly press the “Search Report” button.	Error will display and ask to insert a specific date.	Pass

Table 5-12 List Visitation Report Module Testing

5.4.13 Search Visitation Report Module Testing

Objective: To list out all the visitation report by patient.

No.	Testing Method	Action Done	Expected Result	Result
1	Search patient using correct IC No. or name.	Type patient’s IC No. or name in the text box and press “Retrieve” button.	The system will list out all the visitation reports with view, print and edit functions for the specific patient.	Pass

Table 5-13 Search Visitation Report Module Testing

5.4.14 Generate MC Module Testing

Objective: To generate MC for patient for a specific time period.

No.	Testing Method	Action Done	Expected Result	Result
1	Search patient using correct IC No. or name.	Type patient's IC No. or name in the text box and press "Retrieve" button.	The system will list out the name and IC No. of the patient and also the form that used to fill in data.	Pass
2	Input blank data for the date and reason.	Don't type in anything in the date and reason text box.	System will display error and ask user to type something in the text box.	Pass
3	Input correct data for the date and reason.	Select the date of MC, type in the reason, and press "Generate MC" button.	System will save the record of MC and pop up one PDF file that used to print out.	Pass

Table 5-14 Generate MC Module Testing

5.4.15 List MC Module Testing

Objective: To list out all the MC by date.

No.	Testing Method	Action Done	Expected Result	Result
1	Search specific date of MC.	Select the date using calendar and press “Search MC” button.	A list of MC on the specific date will show out. Nurse or doctor can view and print the MC when there is a need.	Pass
2	No input any date of MC.	Do not select date, directly press the “Search MC” button.	Error will display and ask to insert a specific date.	Pass

Table 5-15 List MC Module Testing

5.4.16 Clinic Information Module Testing

Objective: To ensure the clinic information can be update.

No.	Testing Method	Action Done	Expected Result	Result
1	Go to Clinic Information Module.	Press the Clinic Information Module in the navigation menu.	The basic details about the clinic will automatically fill in the text box.	Pass

2	Update Clinic Information.	Update any relevant information which need update by changing the text in the text box and press “Update” button.	The latest clinic information will save into the database of the system.	Pass
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Table 5-16 Clinic Information Module Testing

5.4.17 Staff Management Module Testing

Objective: To list out all the staff in the clinic.

No.	Testing Method	Action Done	Expected Result	Result
1	Go to Staff Management Module.	Press the Staff Management Module in the navigation menu.	The basic details about the clinic will automatically fill in the text box.	Pass

Table 5-17 Staff Management Module Testing

5.4.18 Add Staff Module Testing

Objective: To ensure the doctor can add the staff into the system.

No.	Testing Method	Action Done	Expected Result	Result
1	Use MyKad Reader to get personal details of staff.	Insert the MyKad of staff into MyKad Reader and press the “Read MyKad” button.	Able to get the basic details of staff and fill into relative text boxes.	Pass
2	Use MyKad Reader without connect the device.	Directly press the “Read MyKad” button.	Error will prompt out and asked to check and connect the device properly.	Pass
3	Insert the data of staff into the system.	Press the “Register” button after all the details are filled in.	Staff’s details successfully insert into the database.	Pass

Table 5-18 Add Staff Module Testing

5.4.19 Edit Staff Module Testing

Objective: To ensure staff’s details can be edit and save into database.

No.	Testing Method	Action Done	Expected Result	Result
1	Use MyKad Reader to get latest personal details of staff.	Insert the MyKad of staff into MyKad Reader and press the “Read MyKad” button.	Able to get the basic details of staff and fill into relative text boxes.	Pass

2	Manually edit the specific details of staff.	Type the staff's details at specific text box.	User can key in anything in the text box without any problem.	Pass
3	Save the data of staff into the system.	Press the "Update" button after all the details are updated.	Staff's latest details successfully save into the database.	Pass

Table 5-19 Edit Staff Module Testing

6.0 System Limitations and Future Enhancement

6.1 Limitations and Considerations

The limitations of the current system is that it is only workable in Internet Explorer for the MyKad Reader since it needs ActiveX to connect to the device. User cannot use those browsers which they feel convenient such as Google Chrome and Firefox. However, since our system is installed under Windows operating system, Internet Explorer already preinstalled in the system, which also gives convenience to the user.

Another limitations is the SMS notification needs the internet connection since the system is using services that provided by SMS provider. If there is problem for the internet connection, such as can't connect to the internet service provider, then the system may fail to send the SMS to the patients.

Another considerations is that the system needs large disk space in the future if it is running few years as system is keeping the photo of each people from the MyKad, therefore it may take up little amount of the disk space.

6.2 Possible Future Improvement

The system may have better improvement in the future since the current system is being sketched down to few modules. It can be added with more modules such as inventory, billing, data analysis and so on in the future which may help the doctor and nurse to do more tasks with lesser time.

Moreover, the MyKad Reader that required ActiveX can be replaced with Java Applet so that every browser can use it, but by doing this it needs to get support from the MyKad supplier.

Lastly, the system may also improve by implement mobile applications so that user can actually make appointment or checking the queue list by using their smart phone. It makes another convenience to the patients since they can direct interact with the system.

7.0 Conclusion

In a nutshell, clinic management system is an internal web-based platform system. It simplifies the works for nurse and doctor, as well as improve the business process between patient, nurse and doctor. This project aims to solve the problems in the clinic especially in Malaysia. By using this system, the staffs in the clinic should be able to do their works more efficiently and time saving. The waiting time for patients will be decrease as well as most of the business process is done using computer rather than handwriting. Besides, with the implementation of SMS feature, patients will not miss any of the appointment. Moreover, there is a function to generate MC to the patient. Doctor just need to sign the MC rather than writing the details of the patient. Although there are similar systems in the market, but those good functions are not implement together. At the end of project, good and new features that implement into the system will solve part of the problems of healthcare field.

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Appendix A
Final Year Project
Biweekly Report

FINAL YEAR PROJECT WEEKLY REPORT
(Project I / Project II)

Trimester, Year: Jan, 2015	Study week no.: Week 1
Student Name & ID: Ang Hwee Kwan 1201647	
Supervisor: Mr. Soong Hoong Cheng	
Project Title: Clinic Management System	

<p>1. WORK DONE</p> <p>Meet supervisor. Discuss the work about Project 2. Review report that write in Project 1.</p>
<p>2. WORK TO BE DONE</p> <p>Develop the system.</p>
<p>3. PROBLEMS ENCOUNTERED</p> <p>None.</p>
<p>4. SELF EVALUATION OF THE PROGRESS</p> <p>None.</p>

Supervisor's Signature
Name: Mr. Soong Hoong Cheng

Student's Signature
Name: Ang Hwee Kwan

FINAL YEAR PROJECT WEEKLY REPORT
(Project I / Project II)

Trimester, Year: Jan, 2015	Study week no.: Week 3
Student Name & ID: Ang Hwee Kwan 1201647	
Supervisor: Mr. Soong Hoong Cheng	
Project Title: Clinic Management System	

<p>1. WORK DONE</p> <p>Database is created and patient registration module is done for manual fill in, but haven't implement MyKad Reader.</p>
<p>2. WORK TO BE DONE</p> <p>Purchase MyKad Reader.</p>
<p>3. PROBLEMS ENCOUNTERED</p> <p>Need to find supplier that provide MyKad Reader.</p>
<p>4. SELF EVALUATION OF THE PROGRESS</p> <p>Need to purchase the MyKad Reader as soon as possible or the project might get delayed.</p>

Supervisor's Signature
Name: Mr. Soong Hoong Cheng

Student's Signature
Name: Ang Hwee Kwan

FINAL YEAR PROJECT WEEKLY REPORT
(Project I / Project II)

Trimester, Year: Jan, 2015	Study week no.: Week 4
Student Name & ID: Ang Hwee Kwan 1201647	
Supervisor: Mr. Soong Hoong Cheng	
Project Title: Clinic Management System	

<p>1. WORK DONE</p> <p>Purchase the MyKad Reader with SDK. Topup the SMS provider account.</p>
<p>2. WORK TO BE DONE</p> <p>Implement MyKad Reader and also other modules.</p>
<p>3. PROBLEMS ENCOUNTERED</p> <p>None.</p>
<p>4. SELF EVALUATION OF THE PROGRESS</p> <p>Still on track, can be done within submission time.</p>

Supervisor's Signature
Name: Mr. Soong Hoong Cheng

Student's Signature
Name: Ang Hwee Kwan

FINAL YEAR PROJECT WEEKLY REPORT
(Project I / Project II)

Trimester, Year: Jan, 2015	Study week no.: Week 7
Student Name & ID: Ang Hwee Kwan 1201647	
Supervisor: Mr. Soong Hoong Cheng	
Project Title: Clinic Management System	

<p>1. WORK DONE</p> <p>Done the patient management module, appointment module and queue module.</p>
<p>2. WORK TO BE DONE</p> <p>Digest on how to send the SMS using available API from SMS provider. Work on PDF generation about Visitation Report and Medical Certificate (MC).</p>
<p>3. PROBLEMS ENCOUNTERED</p> <p>None.</p>
<p>4. SELF EVALUATION OF THE PROGRESS</p> <p>Need work hard to make sure the system can done within time.</p>

Supervisor's Signature
Name: Mr. Soong Hoong Cheng

Student's Signature
Name: Ang Hwee Kwan

FINAL YEAR PROJECT WEEKLY REPORT
(Project I / Project II)

Trimester, Year: Jan, 2015	Study week no.: Week 9
Student Name & ID: Ang Hwee Kwan 1201647	
Supervisor: Mr. Soong Hoong Cheng	
Project Title: Clinic Management System	

<p>1. WORK DONE</p> <p>Done the system. Do testing and fix some minor bugs.</p>
<p>2. WORK TO BE DONE</p> <p>Start to work on the report.</p>
<p>3. PROBLEMS ENCOUNTERED</p> <p>None.</p>
<p>4. SELF EVALUATION OF THE PROGRESS</p> <p>The documentation need to start to work or else it might delayed.</p>

Supervisor's Signature
Name: Mr. Soong Hoong Cheng

Student's Signature
Name: Ang Hwee Kwan

FINAL YEAR PROJECT WEEKLY REPORT
(Project I / Project II)

Trimester, Year: Jan, 2015	Study week no.: Week 11
Student Name & ID: Ang Hwee Kwan 1201647	
Supervisor: Mr. Soong Hoong Cheng	
Project Title: Clinic Management System	

1. WORK DONE Done the report.
2. WORK TO BE DONE Submit into TurnItIn.
3. PROBLEMS ENCOUNTERED None.
4. SELF EVALUATION OF THE PROGRESS Still on the track.

Supervisor's Signature
Name: Mr. Soong Hoong Cheng

Student's Signature
Name: Ang Hwee Kwan