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DEPARTMENT OF INFORMATION TECHNOLOGY AND COMUNICATION

DIPLOMA IN INFORMATION TECHNOLOGY
(DIGITAL TECHNOLOGY)

CLINIC MANAGEMENT SYSTEM

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We hereby that declare that the technical report entitled "Clinic management system" is based on original work under supervision and guidance of Puan Izlin Zuraini Binti Ishak except for citations and quotations which have been duly acknowledged. We also declare that it has not been previously and concurrently submitted for any other diploma for award at Polytechnic and other institutions

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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 objective of this project is to improve the business process of the clinic in Malaysia by using the information technology and enhance the current clinic management software in the market. The scope of this project includes 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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1.0 PROJECT PLAN

1.1 INTRODUCTION

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 ways. For example, when the doctor uses manila cards to write the patient's diagnosis record, the manila card needs to be kept in the clinic by put them on the cupboard. The information technology improves a lot today. A lot of computer-based systems can help to manage the business process. 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. 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.

1.2 PROBLEM STATEMENT

The paper-based system currently in use cause many problems to the user. When the patient first visits to the clinic, the nurse is requiring filling in a new medical card for the patient. This include some private information that can be obtain from the patient's identity card such as name. identity card number, date of birth, gender, and mailing address. The nurse will pass this medical card to the doctor. After the patient sees the doctor, some diagnosis information and treatment will be written down on the medical card by the doctor. Once again, this medical card is passing to the dispensatory. After patient getting their medicine, the nurse will keep that medical card on an organized rack based on index of the card. Usually, these medical cards are arranged in alphabetical order according to the patient's name or based on the reference number for each card. This kind of paper-based system is tedious and plaguing. There are a few problems that have been arisen by using manual system.

The medical card is easily exposed to unauthorized user. They can easily get the vital patient information from clinic because the medical cards are just kept on the rack without any security lock. By using medical cards, times are wasted when the medical card need to pass from the nurse to doctor and then to dispensatory. Besides that, clinic also needs to spend times to organize the medical cards from time to time. Clinic needs to provide space to store these medical cards. When the quantity of cards increases every year, they need more and more space to store the cards. Sometimes, a patient can have more than one medical card. This happen when the patient forgot whether he/she have been visiting the clinic or not and people who do the registration did not check properly and just directly use a new medical card. What can be written on the medical card is limited. Doctor cannot include other related information in the card. The card just includes some basic patient information, diagnosis and simple treatment information.

1.3 OBJECTIVE

- To simplify daily operations of the particular clinics
- To assist and helps medical staffs to manage the clinics in finer way
- To provide better services to the patients

1.4 SCOPE

Server describes the relationship between two computer programs in which one program, the client, makes a service request from another program, the server, which fulfills the request. In a network, the client/server model provides a convenient way to interconnect programs that are distributed efficiently across different locations. Computer transactions using the client/server model are very common. In the usual client/server model, one server, sometimes called a daemon, is activated and awaits client requests.

1.5 LITERATURE REVIEW

Based on the research on 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

1.6 METHODOLOGY

To realize this project by using convenience and security features. A step-by-step procedure is carried out so that the project can be completed within the stipulated time. This includes collecting patient data and asking for some feedback from them. There is a problem here because if there is no system implemented, the patient's information is quite difficult to check again.

Doctors also experience a lack of time with the large number of patients. With this, it can save the doctor's time to update patient information. In addition, patients often have to wait a long time to get treatment. This matter needs to be taken seriously. The objective we have done is to provide an online service to make an online reservation to get treatment. A database has also been created to store patient data. Online account registration has also been provided. A password has been provided for the security of user information.

1.7 GANTT CHART

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 briefly

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1					WEEK1	WEEK2	WEEK3	WEEK4	WEEK5	WEEK6	WEEK7	WEEK8	WEEK9	WEEK10	WEEK11	WEEK12	WEEK13	WEEK14	WEEK15
2		DURATION	START	FINISH															
3		10 Days	Mon 12.09.2022	Fri 23.09.2022															
4	1	20 Days	Mon 26.09.2022	Fri 21.10.2022															
5	2	15 Days	Mon 24.10.2022	Fri 11.11.2022															
6	3	20 Days	Mon 14.11.2022	Fri 9.12.2022															
7	/ logbook / Final presentati	10 Days	Mon 12.12.2022	Fri 23.12.2022															

2.0 REQUIREMENT SPECIFICATION

2.1 FUNCTIONAL REQUIEMENTS

There are few of the functional requirements in the system. First, the system should be 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 be 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 be 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.

2.2 NON-FUNCTIONAL REQUIREMENTS

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. The system must fulfil 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. The system must respond every request 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. The system should be reliable all the time. The functions in the system should produce the correct output to the user

2.3 HARDWARE AND SOFTWARE REQUIREMENTS

The HUAWEI MateBook D 15 R5 is powered by an AMD Ryzen™ 5 3500U Mobile Processor, Radeon™ Vega 8 Graphic graphics, 8GB DDR4 2400MHz RAM and a 256GB NVMe PCIe SSD.

2.4 SYSTEM CONFIGURATION

2.4.1 DATABASE AND MAIN COMPONENT

1. Start Apache and MySQL by clicking the start button in the Control Panel.Xampp. Wait

for Apache and MySQL to turn green.

FIGURE 2.4.1 XAMPP CONTROL PANEL

2. Click the Admin button on MySQL to go to the PhpMyAdmin page

FIGURE 2.4.1 XAMPP CONTROL PANEL

FIGURE 2.4.1 PHPMYADMIN

✔ Showing rows 0 - 0 (1 total, Query took 0.0006 seconds.)

SELECT * FROM `register`

☐ Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

☐ Show all | Number of rows: 25 ⌄ | Filter rows: Search this table

Extra options

			id	username	ic	gender	email	phone
☐	✏ Edit	⧉ Copy ⊖ Delete	1	MUHD AMRIE	2147483647	m	amrieismail15@gmail.com	1163965836

↑ ☐ Check all   With selected: ✏ Edit   ⧉ Copy   ⊖ Delete   Export

☐ Show all | Number of rows: 25 ⌄ | Filter rows: Search this table

Query results operations

🖨 Print   ⧉ Copy to clipboard   Export   📊 Display chart   Create view

Bookmark this SQL query

Label: [   ]   ☐ Let every user access this bookmark

Bookmark this SQL query

FIGURE 2.4.2 DATABASE PHPMYADMIN

2.5 SECURITY REQUIREMENT/EXCEPTIONAL HANDLING

1. Encryption

The password encrypts for more high security. The password decrypt when the user input the same with user database.

2. Exception Handling

When the user input wrong password there will go stay at login page until the password correct to go to the main page.
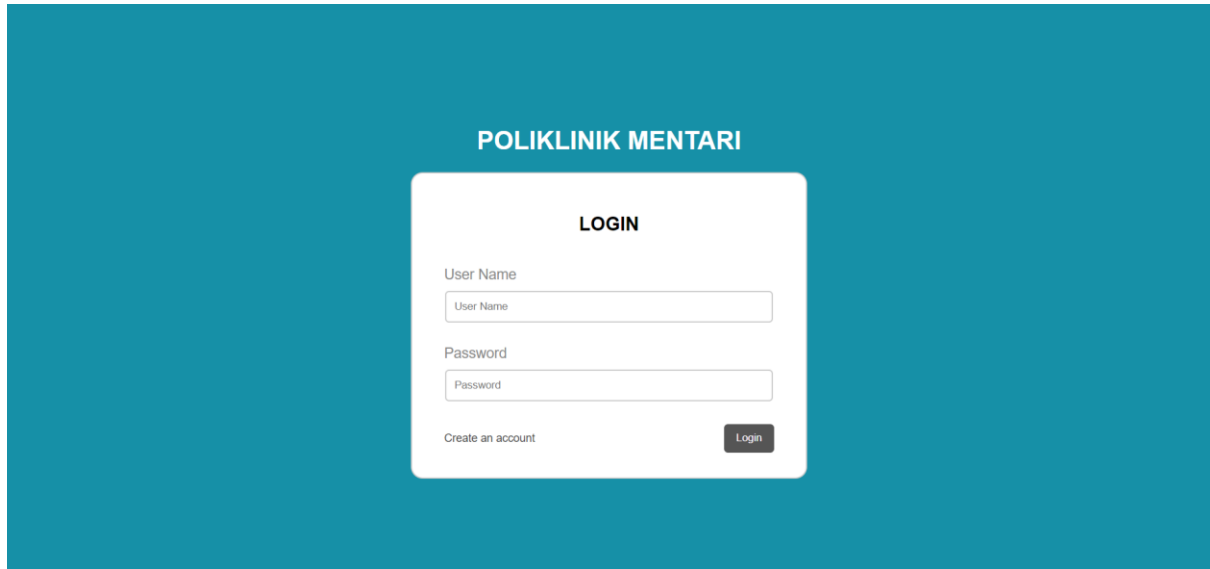
3. Form Validation

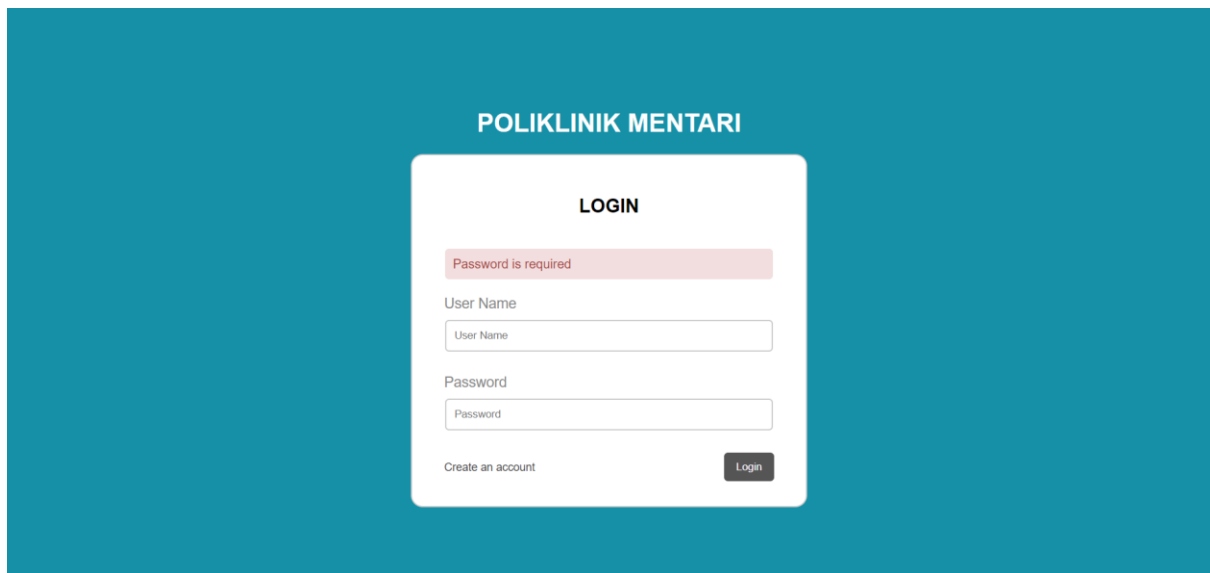When user input leave blank in the textbox, there will pop up a message for fill the blank space.

3.0 FINAL DESIGN

3.1 PHYSICAL DESIGN/EXPERIMANTAL CONCEPT

3.1.1 LOGIN PAGE

FIGURE 3.1.1

FIGURE 3.1.2

3.1.3 SIGN UP

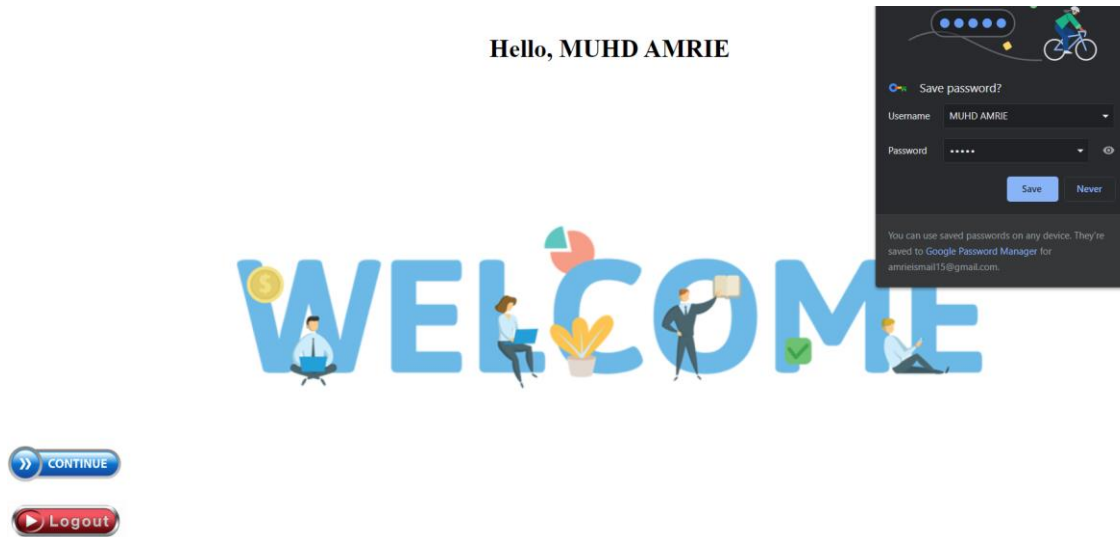FIGURE 3.1.3

FIGURE 3.1.4

4.0 RESULT

4.1 WELCOME PAGE

FIGURE 4.1 WELCOME PAGE

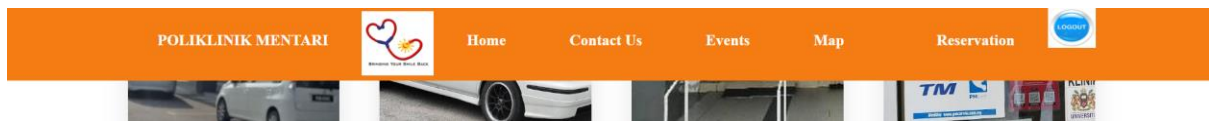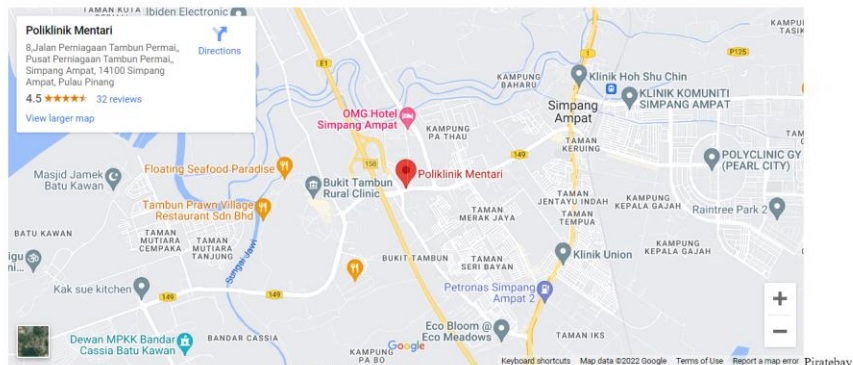## 4.2 MENU PAGE

FIGURE 4.2 MENU PAGE

4.2.1 SHORTCUT BUTTON

FIGURE 4.2.1 SHORTCUT BUTTON

4.2.2 MAP

FIGURE 4.2.2 MAP

4.2.3 FIND US/CONTACT US

FIGURE 4.2.3 FIND US/CONTACT US

4.3 EVENT

FIGURE 4.3 EVENT

4.4 LINK TO POSTER GALLERY

CLICK HERE TO POSTER GALLERY

FIGURE 4.4 LINK TO POSTER GALLERY

4.4.1 POSTER GALLERY

POSTER GALLERY

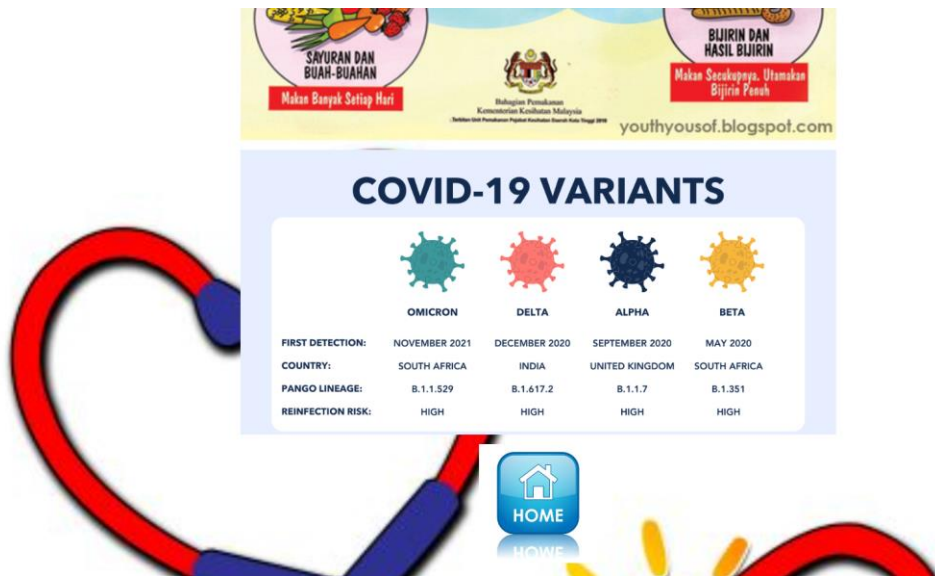FIGURE 4.4.1 POSTER GALLERY

4.4.2 HOME BUTTON

FIGURE 4.4.2 HOME BUTTON

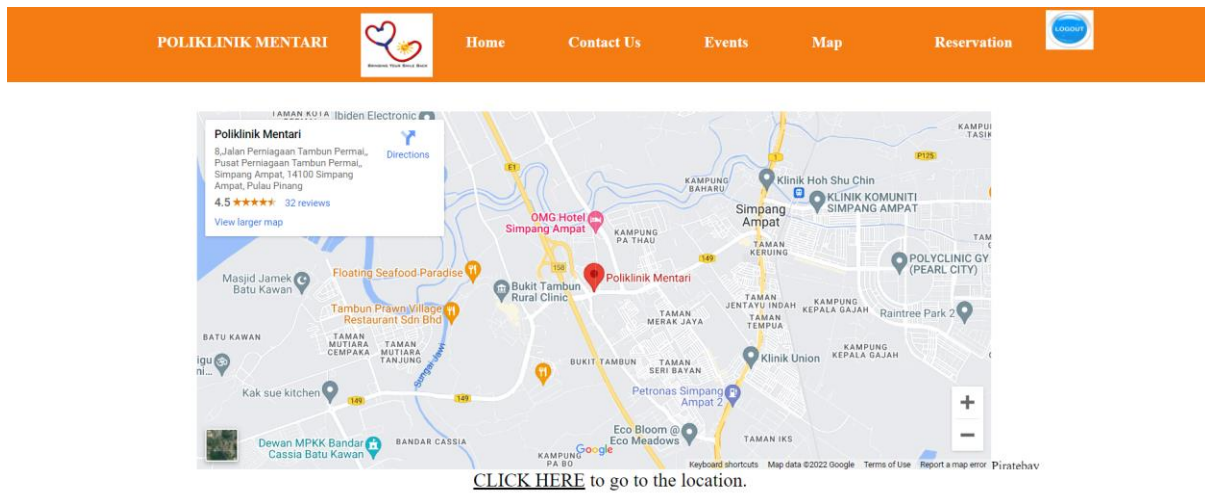## 4.5 DIRECTION MAP FUNCTION

FIGURE 4.5 DIRECTION MAP FUNCTION

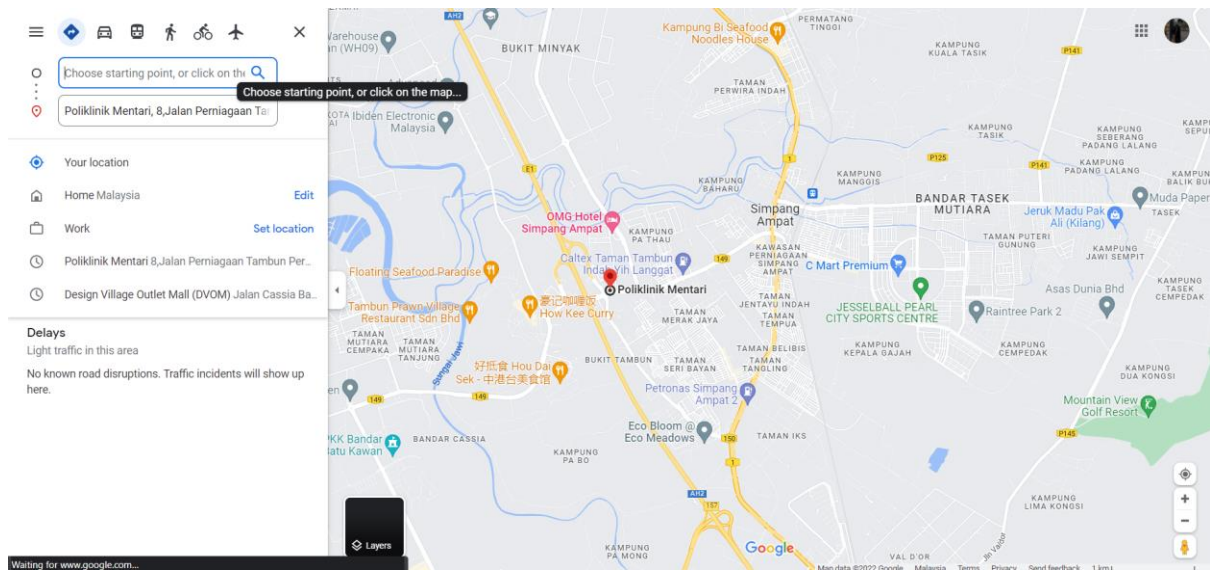## 4.5.1 GOOGLE MAP

FIGURE 4.5.1 GOOGLE MAP

4.6 RESERVATION

FIGURE 4.6 RESERVATION

4.6.1 RESERVATION FORM

FIGURE 4.6.1 RESERVATION FORM

4.6.2 HOME BUTTON

FIGURE 4.6.2 HOME BUTTON

4.8 LOGOUT BUTTON

FIGURE 4.8 LOGOUT BUTTON

5.0 MAJOR FINDINGS AND DISCUSSIONS

5.1 PROJECT ADVANTAGES

The advantage of this project is that all data information about the clinic has been secured. In addition, this system can also be used with a more efficient use where no more paper is used. This system is also able to reduce waiting time. This provides convenience to customers where there are no more problems like not having to queue to see a doctor. An appointment form has been prepared for customers. With this all the problems of misunderstanding can be reduced.

5.2 PROJECT LIMIT

The previous method took a long time and customers had to stand in long queues. With this new method, it can ease their burden.

6.0 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 needs 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 implemented together. At the end of project, good and new features that implement into the system will solve part of the problems of healthcare field.

8.0 Reference

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- https://www.nature.com/articles/s41746-020-0221-y

- https://www.google.com/search?q=major+findings+and+discussions+for+clinic+management+system&oq=Major+Findings+and+Discussions+for+clinic+&aqs=chrome.1.69i57j33i160l4.21953j0j15&sourceid=chrome&ie=UTF-8

- https://www.w3schools.com/

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