UNIVERSITI TEKNOLOGI MARA | Cawangan Terengganu
Kampus Kuala Terengganu

FACULTY OF COMPUTER AND MATHEMATICAL SCIENCES

Details to be completed by students :

Course Code	**ISP250 – INFORMATION SYSTEMS DEVELOPMENT**	**Lecturer**	**MADAM SHARIFAH NURULHIKMAH SYED YASIN**
Project Title	**MyPenawar - Online Clinic Management System**		
Group	**T5CS1104D**	**Due Date**	26/5/2022

Students' declaration

I declare that:

- ***I understand what is meant by plagiarism.***
- ***This assignment is all my own work and I have acknowledged any use of the published or unpublished works of other people.***
- ***I hold a copy of this assignment which I can produce if the original is lost or damaged***

TO BE COMPLETED BY STUDENTS		
NAME	**ID NUMBER**	**SIGNATURE**
1. ADAM TAUFIQ BIN SHAHRUL AFFENDI	2020890794	adam
2. MUHAMMAD AKMAL BIN AHMAD SUHAIMI	2020479526	akmal
3. AYU NAJWA BINTI KHAIRUL AZWAN	2020868666	ayu
4. NUR IWANINA BINTI ADNAN	2020833648	iwanina
1. NURUL SYAFIQAH BINTI ROSHISHAM	2020882482	syaf

Assessment Criteria	**Mark Allocated**	**Mark Derived**

TOTAL		
PERCENTAGE		

Lecture's comment	

Lecturer has, and may exercise, the right <u>NOT TO MARK</u> this assignment if the above declaration has NOT BEEN SIGNED and if the above declaration is FOUND TO BE FALSE, appropriate action will be taken which would lead to ZERO marks being awarded for this assignment.

MyPenawar - Online Clinic Management System
Software Requirement Specifications

Version 2.0

SEMESTER OCTOBER 2021 – FEBRUARI 2022

GROUP: T5CS1104D

2020890794, ADAM TAUFIQ BIN SHAHRUL AFFENDI

2020479526, MUHAMMAD AKMAL BIN AHMAD SUHAIMI

2020868666, AYU NAJWA BINTI KHAIRUL AZWAN

2020833648, NUR IWANINA BINTI ADNAN

2020882482, NURUL SYAFIQAH BINTI ROSHISHAM

Revision History

Date	Version	Description	Author
11/05/22	<1.0>	Fact Finding Techniques	Mohd Akmal Suhaimi Ayu Najwa Khairul Azwan
16/05/22	<2.0>	Storyboard	Nurul Syafiqah Roshisham
22/05/22	<3.0>	Data Modeling	Nur Iwanina Adnan
25/05/22	<4.0>	System Specification	Adam Taufiq Shahrul Affendi

Table of Contents

Software Requirement Specifications

1. Fact-Finding Techniques

Interview is the fact-finding technique that we chose for this project. The interview aims to start a conversation where clients and developers can exchange information about the system we want to build. The interview aims to verify and clarify facts, motivate end-users involved, identify requirements, and collect ideas and opinions. The interviewer, a system analyst, and the interviewee, a system owner or user, play roles in the interview. The interviewing technique necessitates good communication skills for interaction between system analysts and users. Our objectives are as follows:

1. Compared to other techniques, information obtained through interviews is more likely to be accurate. The on-the-spot interviewer can clarify the seemingly incorrect or irrelevant answers by clarifying the questionnaire to the informant.
2. The interviewer has some control over who answers the questions.
3. The interview method allows for a variety of capabilities that assist in on-the-spot adjustments; as a result, a rich response material can be ensured. In other words, the personal interview method can deliver complex questions more effectively.
4. The question-and-answer session speech can be suited to the interviewee's ability or educational level. As a result, it is relatively simple to avoid misinterpretations or misleading questions.
5. The interview is better for obtaining data about complex, emotion-driven topics or probing the sentiments underlying an expressed opinion.

1.1 Questionnaires/Sampling/Interview/Document Review

As we choose the interview as our source of collecting the information needed to develop a system, there is a few target user that we are looking to approach, which is the owner, the staff/employee, and the patient(customer). So those are the sample question and the output of the interview session:

Input: How they are doing their day-to-day job?

1. Clinic/staff manager.
2. Doctors.

Typically, the clinic stores its data in a pile of files. First, they tag each with a code of alphanumeric characters and numbers. For example, they tag the file by customers' first name and the four digits of their ic number for patients' data. Next, each file is stored on a shelf categorically arranged by its specific field, such as customer, consultation, registration, treatment, etc. Each field is on a different shelf.

Output: What data can be generated after patients' visitation?

1. Receipt/bills.
2. Consultation report.
3. Revenue and monthly sales.

To access data. Every time they want to look for the customer data, for example, They need to go to that shelf that contained the customer file and start looking for it alphabetically.

Process: What is the process that needs to go through before//current//after visitation?

To calculate monthly sales.

For generating sales, usually, they need to calculate it manually starting from the sales for a day, then conclude it for a week until they complete it for four weeks.

Control/Security: How do you make sure patients' information is protected?

1. Registration to book appointments
2. Profile editing requires password verification
3. The clinic manager can only access patients' information.

The company has already restricted customers' personal information, and it can be used only for internal use. Those data only can be accessed in the clinic and need to be put on the shelf right

after use it. For additional security, the company also put the security camera in the place where all data are manually stored. Furthermore, every time a staff wants to access/take any file, they need to record the uses of the file in a book so the company can track who takes the file and when the file is taken to us, and whether it has been used for what. So that none of the employees will misuse the patient data, and the data will remain confidential.

Performance:

1. **How many patients are accepted in a day?**
2. **How many hours is the clinic open to accept the customer?**
3. **How reliable is clinic the filing system?**

Storing the data manually brings a few technical issues:

1) Limitlessly of data depends on where the data is stored. (Small place, fewer data can be stored).

2) Accessing data will take more unnecessary time because we need to look one by one according to their tag and type of file.

1.2 Business Case/Rules

Statement of the problem

1. Long lines are time-consuming and will reduce productivity.
2. Manual filing can cause data redundancy & inconsistency.
3. Patients must undergo several processes, including registration, consultation, and reporting.
4. Limited physical space to store data. Digitalizing the data can save spaces in the clinic that can be used on more creative matters such as a reading zone or play zone for the children.

Options offered

1. Create a module for receiving scheduled appointments.
2. Create an appointment-acceptance module.
3. Create a database for storing all the physical data.
4. Create a module that can generate company monthly reports.

Recommendation

1. Create a web page/mobile application to check availability by time and day and store patient data (name, address, phone number, passport/IC number, email, types of illness, etc.).
2. Appointments Module - keep track of patients' booking history (date and time).
3. Complete Order Module - Staff checked and accepted appointments for patients, displayed order numbers, and notified customers whether appointments were accepted or rejected (feedback from the system).
4. Develop a new system that can interfere with the old system.
5. Create a Database that can generate output instantly with the current data. Patient data generated manually has decreased clinic productivity.
6. Create a system that can calculate day to day profit automatically.
7. Create a secured database - create a system that can achieve systematic system and restraint access for different users.

1.3 Summary of findings

The information gained after performing the fact-findings in the summary section

is finding out facts, verifying those facts, clarifying these released facts, generating enthusiasm, involving the end-user, identifying requirements, and gathering ideas and opinions. Based on seven sets of interview questions, we can conclude that the current system stores data manually using the traditional filing system. As a result, we develop a database system to store the data in order to avoid data duplication and to save physical space in the clinic. Second, the clinic will be able to generate monthly reports more easily because everything is in one place, preventing any logical errors.

Furthermore, the current clinic system lacks security, so creating a database system will make accessing and tracing data faster and easier. Last but not least, the current system is limited to storing data and is heavily reliant on the location space. More data can be stored in the system if the space is larger. This is inefficient and wastes space; instead, physical data can be digitalized and unnecessary space can be reduced.

1.4 SWOT analysis / Intangible benefits & Tangible benefits

Strength

1. Easy to manage the registration data and treatment data.
2. Providing a platform for employees to conduct patient registration.
3. Store a database of patients' data for data management in one place to avoid data inconsistency.
4. Proving a platform where the patient can book an appointment online.
5. Updates and improvements.
6. User-friendly.
7. High patient satisfaction.

Weaknesses

1. The clinic will prescribe no medication.
2. Not all medical services are available.

Opportunity

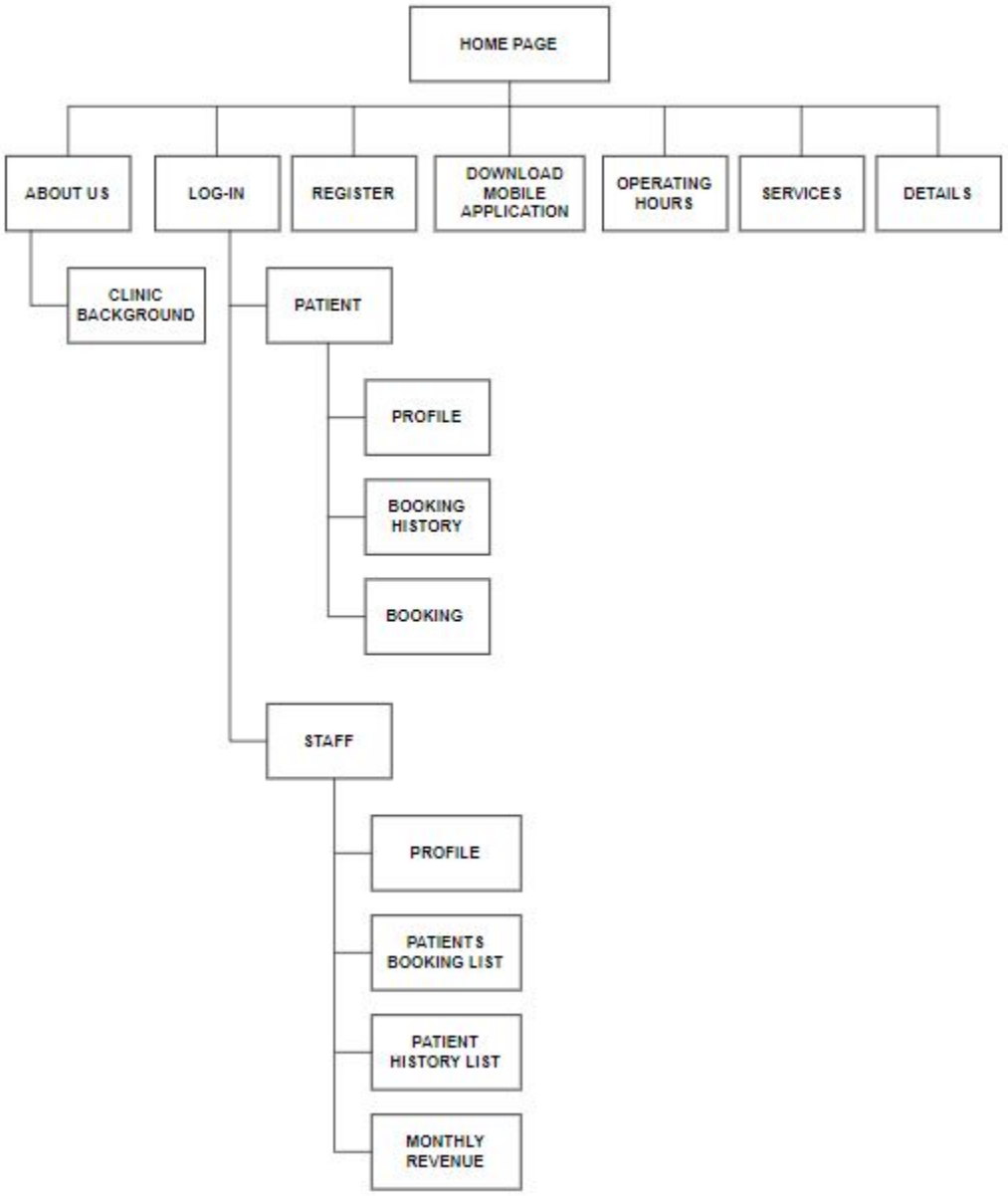
1. Can entice more patients to visit the clinic.
2. The number of potential stakeholders will increase.
3. Increase patient awareness of the services available.

Threat

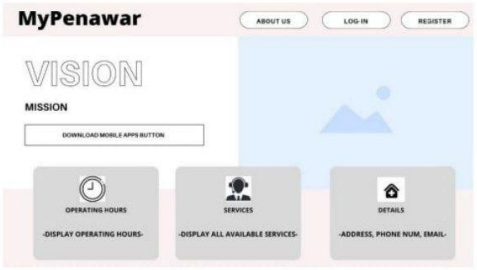
1. The possibility of the system is becoming more complicated.
2. Future conflict with the introduction of new technology or services.
3. Competitors include clinics which offer the same system procedures.

2. Storyboard

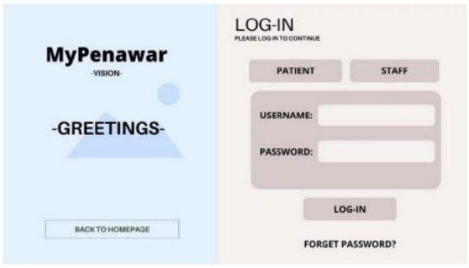
2.1 Storyboard Diagram + Narrative



2.2 Storyboard Sketches + Narrative



HOMESCREEN PAGE



LOG-IN PAGE

REGISTER PAGE

FORGET PASSWORD PAGE

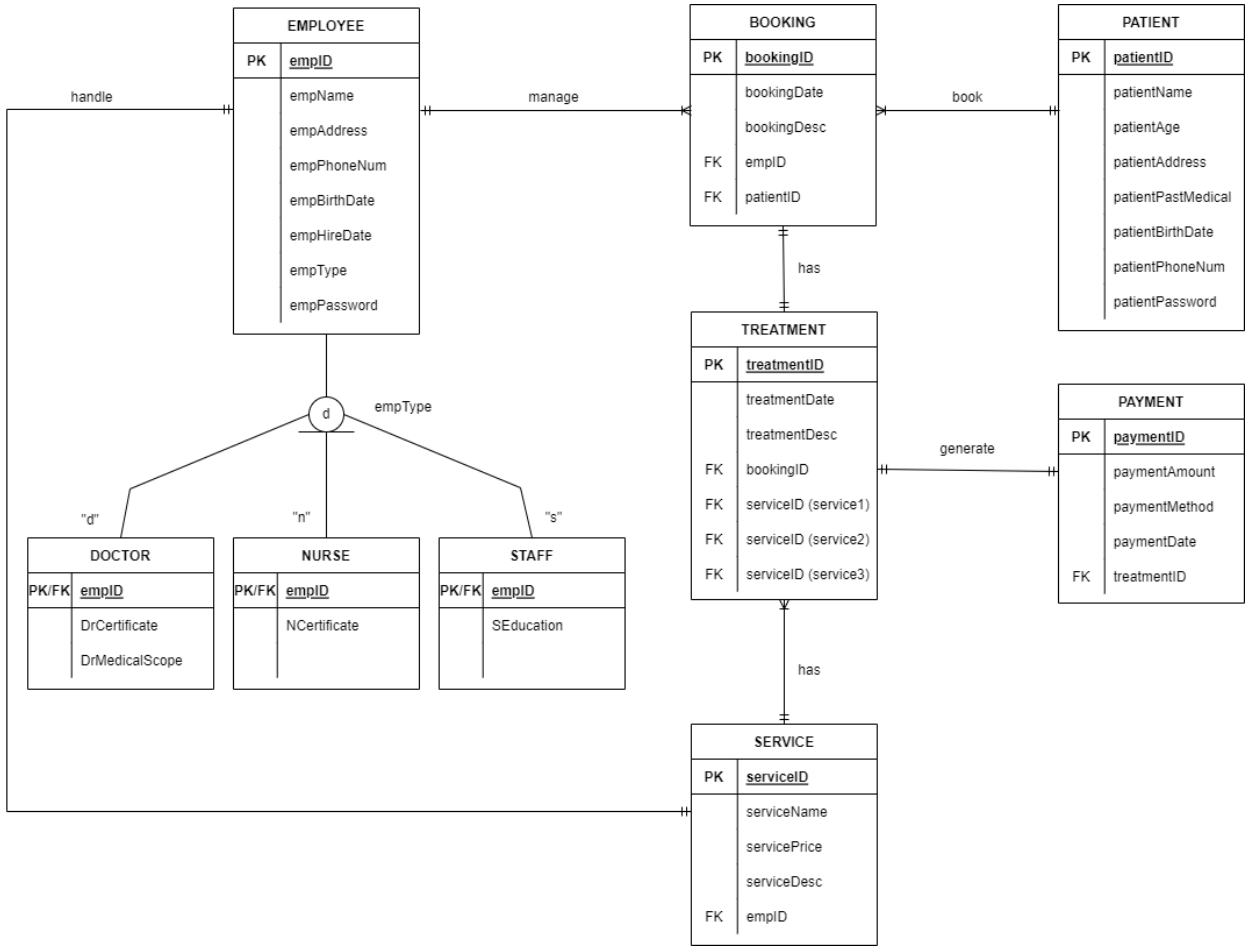
ABOUT US PAGE

PATIENT SELECTION PAGE

STAFF SELECTION PAGE

3. Data Modeling

3.1 Entity Relationship Diagram + Narrative



3.2 Data Dictionary

Entity Name	Entity Description	Column Name	Column Description	Data Type	Length	Primary Key	Nullable	Unique
Employee	An employee is someone who works in the clinic.	empID	Unique identification for the employee.	varchar	10	true	false	true
		empName	Name of the employee.	varchar	50	false	false	false
		empAddress	Home address of the employee.	varchar	100	false	false	false
		empPhoneNum	Phone number of the employee.	varchar	12	false	false	false
		empBirthDate	Birth date of the employee.	date		false	false	false
		empHireDate	Hired date of the employee.	date		false	false	false
		empType	Type of the employee.	varchar	10	false	false	false
		empPassword	Password of the employee to access the online system.	varchar	15	false	false	false
Doctor	A clinic employee who conduct consultation and treatment.	empID	Unique identification for the employee.	varchar	10	true	false	true
		DrCertificate	Certificate of the doctor.	varchar	20	false	true	false
		DrMedicalScope	Medical scope specialised by the doctor.	varchar	20	false	true	false
Nurse	A clinic employee who manage appointment and registration.	empID	Unique identification for the employee.	varchar	10	true	false	true
		NCertificate	Certificate of the nurse.	varchar	20	false	true	false
Staff	A clinic employee who	empID	Unique identification for the employee.	varchar	10	true	false	true
		SEducationLevel	Education level of the staff.	varchar	20	false	true	false
Patient	A person who book or get treatment from the clinic.	patientID	Unique identification for the patient.	varchar	12	true	false	true
		patientName	Name of the patient.	varchar	50	false	false	false
		patientAge	Age of the patient.	decimal	3,0	false	false	false
		patientAddress	Home address of the patient.	varchar	110	false	false	false
		patientPastMedical	Past medical details of the patient if any.	varchar	300	false	true	false
		patientBirthDate	Birth date of the patient.	date		false	false	false
		patientPhoneNum	Phone number of the patient.	decimal	12,0	false	false	false
		patientPassword	Password of the patient to access the online system.	varchar	15	false	false	false

Booking	Details of the customers' booking.	bookingID	Unique identification for patient's booking.	varchar	10	true	false	true
		bookingDate	Date of the patient's booking.	date		false	false	false
		bookingDesc	Description of the patient's booking.	varchar	250	false	true	false
		empID	Unique identification for the employee.	varchar	10	false	false	false
		patientID	Unique identification for the patient.	varchar	12	false	false	false
Treatment	Details of the customer's treatment.	treatmentID	Unique identification for treatment.	varchar	10	true	false	true
		treatmentDate	Date of the treatment.	date		false	false	false
		treatmentDesc	Description of the treatment.	varchar	250	false	true	false
		bookingID	Unique identification for patient's booking.	varchar	10	false	false	false
		serviceID (service1)	Unique identification for service in the clinic.	varchar	10	false	true	false
		serviceID (service2)	Unique identification for service in the clinic.	varchar	10	false	true	false
		serviced (service3)	Unique identification for service in the clinic.	varchar	10	false	true	false
Service	Services that are provided by the clinic.	serviceID	Unique identification for service in the clinic.	varchar	10	true	false	true
		serviceName	Name of the service.	varchar	30	false	false	false
		servicePrice	Price of the service.	decimal	5,2	false	false	false
		serviceDesc	Description of the service.	varchar	250	false	true	false
		empID	Unique identification for the employee.	varchar	10	false	false	false
Payment	Payment of the treatment.	paymentID	Unique identification for the payment.	varchar	10	true	false	true
		paymentAmount	Amount of the payment.	decimal	5,2	false	false	false
		paymentMethod	Method of the payment.	varchar	10	false	false	false
		paymentDate	Date of the payment	date		false	false	false
		treatmentID	Unique identification for treatment.	varchar	10	false	false	false

4. System Specification

4.1 Module/Function + narrative

1. **Patient module** – this module is designed for the Patients. The user will be able to book for an appointment for consultation through the system. By using the system, the patient will be able to save more time as they do not need to book for consultation manually by walk into the clinic. There are 8 sub-modules for the users.

    a. **Sub-module 1: Home screen Page** – In this module, user will be able to choose between the log-in page, sign-up(register) page, the information about the clinic (about us), the page, the services provided page, display operating hours page, etc...

    b. **Sub-module 2: Log-in page** – In this module, the user will choose between the patient and staff log–in page. If the user is a staff, the system will bring the user to the staff page and vice versa. The users are required to enter the username and password

    c. **Sub-module 3: Register Page** – The User (patient) will be able to register for MyPenawar on this page. They will need to fill out some details on this page such as e-mail, phone number, Address etc...

    d. **Sub-module 4: Forgot Password Page** – If the user does not remember their password, they will need to go to this page so that they can renew their password to a new one.

    e. **Sub-module 5: About us Page** – This is where the details of the clinic will be put to. The user will be able to look at the clinic's details such as the logo, clinic background and the view of the clinic

    f. **Sub-module 6: Patient Selection Page** – The users' details will be shown on this page such as their picture, username, and profile. Other than that, they will be able to choose if they want to check on their booking history page or booking page by clicking on the button under their username. The System will then bring them to the page they have chosen.

    g. **Sub-module 7: Booking History Page** – Booking Page History is where the system stores the patient's consultation history.

    h. **Sub-module 8: booking Page** – this page allows the users to book the consultation they need and the system will then check for available dates and doctors based on the users' needs.

2. **Employee module** – this module is designed for the employees. The user will be able to

check on the latest booking as the website will be updated frequently. The employees can also track patient's medical record and monthly revenue of the clinic. There are

a. **Sub-module 1: Home screen Page** – In this module, users will be able to choose between the log-in page, sign-up(register) page, the information about the clinic (about us), page, services provided page, display operating hours page, etc...

b. **Sub-module 2: Log-in page** – In this module, the user will choose between the patient and staff log–in page. If the user is a staff, the system will bring the user to the staff page and vice versa. The users are required to enter their username and password.

c. **Sub-module 3: patient's booking page –** the employees can be updated about the latest booking list on this page. The system will keep on track with the latest booking update so that no patient will be ignored and left behind.

d. **Sub-module 4: Patient's History page –** in this module, the patient's medical history list will be shown to the employee who needs their data as references for their upcoming treatment.

e. **Sub-module 5: Report Generation page –**Report generation page is for the employees to calculate the clinic's total profit for a month. Then, the report generated will conclude bill of payment, patient details, the employee on duty details, treatment description and some necessary details that need to be put in the report.

4.2 Purpose of Module / Function

4.2.1 Lists of Input Data

- Login page
- Registration / sign up
- Add new patient medical record

4.2.2 Process Involved

Login: users need to insert their username and password in the input box before they can have access to the system. The username and password will be sent to the authentication server where the information is compared with all the user's credentials on file. When the username and password match is found, the user is authenticated.

Register: this is the page where the user will go when they want to create an account for the system. On this page, the user needs to insert their full name, Identity card, create a unique username and password and they need to re-enter the password. They would also need to fill in their email, phone number and address. When they push the sign-up button, the verification code will be sent to the e-mail and the user needs to click it to verify the user.

Forget your password: the user who forgot their password will go through this page. This page will reset the password. They need to fill in the username box and create a new password and reconfirm it again so that the password will be correct.

Patient selection page: if the users are the patients, the system will bring them to this page and the user will be able to choose between displaying their profile, booking history where they can check on their last appointment and booking page to make a new payment. On the booking page, the user will need to fill in some data such as the date and time they want to book or name and medical history record.

Staff selection page: if the users are the patients, the system will bring them to this page and the user will be able to choose between the patient's booking list where the system store patient's booking, the patient's history list page where the system store all medical history of the patient and also monthly revenue page where the clinic will generate the monthly income of the clinic.

Logout: logout page is the end of the system. When the user clicks the logout button, the system will end and the user will need to log in again to re-enter the system.

4.2.2 Lists of Output Data

- Payment details
- Booking detail
- Treatment detail
- Generate reports.

4.3 User Characteristics

1. User (patient)

- The user will have the access to their own profile after they login to the system
- The user can use the system to book for consultation/treatment
- The user can also check on their booking history to check on their treatment history

2. User (employee)

- The user will have the access to their own profile after they login to the system
- The user can use the system to check on the booking list of the patients
- The user can also check on the patient's treatment history
- Other than that, they can also check and calculate the monthly revenue for the clinic

3. IT Specialist

- They will have access to the back-end coding to debug or fix any problem.
- Usually will do the maintenance to the system once a year

4.4 Safety and Security

Safety and security

1. **Antivirus**

   - Antivirus. Its name implies that it safeguards the system from viruses. Viruses are malicious programmes that trigger unexpected actions on the host or network. Antivirus software will be put on the website to safeguard the data from any malware attacks. To establish whether the file was a virus, the antivirus examined the signatures in its library. the most recent antivirus may detect infections and act against them based on irregularities.

2. **Authentication**

   - Authentication is the process of determining whether someone or something is who or what they claim to be. Authentication technology verifies if a user's credentials match those in a database of authorized users or in a data authentication server. If the password and username are found in the database, the user (patient or staff) will have access to the system.

3. **Firewall**

   - The firewall is the first line of defence for any system or network. Firewalls are classified based on their purpose. For our application, we use web application firewalls to protect our system. The firewall will protect the internal network from the unusual activity and ensure that nothing harmful could get through. Untrusted data is never permitted to enter the system because the technology ensures that the ports are only available for necessary communication.