

Mental Health Journal and Mood Tracker System

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Abstract

Mental health has become increasingly important for individuals to manage daily stress, maintain emotional stability, and contribute positively to society. Addressing mental health requires constant monitoring and care, as conditions can fluctuate over time. Therefore, integrating technology into mental health care has become crucial to provide support and improve long-term outcomes for individuals affected. The Mental Health Journal and Mood Tracker System has been developed to enhance communication and data sharing between mental health professionals and their patients. The prototyping methodology has been used to develop this system, with tools such as Visual Studio Code as the source-code editor, along with MySQL, XAMPP, and PhpMyAdmin for database storage. This system includes several key modules: the login and register, manage profile, schedule appointment, assess mental health, track journal and mood, manage medication, and generate report. The system is expected to make a significant contribution to the mental health community, as it enhances communication between professionals and patients by allowing patients to update their condition regularly. Additionally, it reduces reliance on patients' ability to recall and summarize their history before appointments.

1. Introduction

Mental health is a state of well-being enabling individuals to cope with life's stresses, work productively, and contribute to society [1]. Maintaining good mental health is essential for stable emotions, behaviors, and thoughts [2]. However, the nature of mental health issues often requires constant monitoring and care, as conditions can fluctuate over time. Therefore, integrating technology into mental health care is crucial to provide support to improve the long-term results for individuals impacted. The Mental Health System is designed to enhance the connection between mental health professionals and their patients by providing support. In mental health care, the frequency of appointments can vary depending on the patient's condition. Some patients are required to visit every two weeks, while others may only see a professional once a month. These gaps in appointments present challenges for professionals, as it is difficult to be fully informed of their patients' conditions due to the numerous events that may occur between sessions. However, this system aims to address these challenges by providing tools for mood tracking, journaling, and medication management that allow patients to update their healthcare providers to ensure they stay connected to each other. On the other hand, professionals often heavily depend on in-person consultations to evaluate the progress of their patients and adjust the treatment. Through features like

daily mood tracking, journal entries, and medication management, the system allows professionals to stay connected with their patients and monitor their progress. This will help professionals make interventions based on accurate, up-to-date data, even outside of scheduled appointments. Thus, the following paper is organized into several sections. Section 2 focuses on the related work of the developed system by comparing it with another existing system. Next, Section 3 discusses the methodology used in developing the system. Section 4 explains the result and discussion of the system and finally, section 5 consists of the conclusion of the overall work.

2. Related Work

This section explains the current process at Pusat Rawatan Mental Masyarakat (PKMM) Wakaf Tapai, Terengganu, and the existing system that is similar to the developed system. A comparison with other existing systems will also be included in this section.

2.1 Mental Health Journal and Mood Tracker

The Mental Health Journal and Mood Tracker System is designed to enhance the connection between psychiatrists and their patients by providing support. In mental health care, the frequency of appointments can vary depending on the patient's condition. Some patients are required to visit every two weeks, while others may only see a psychiatrist once a month. These gaps in appointments present challenges for psychiatrists, as it is difficult to be fully informed of their patients' condition due to the numerous events that may occur between sessions. However, this system aims to address these challenges by providing tools for mood tracking, journaling, and medication management that allow patients to update their healthcare providers to ensure they stay connected to each other.

2.2 Study of the Existing Related Systems

A few existing systems have been found either similar or related to the developed system that will be discussed further in detail, which are Mentari [3], The Counsel Care System [4], and Breeze [5]. The processes that exist currently will be described and compared to one another.

Mentari is the system that is currently used at the Pusat Rawatan Mental Masyarakat (PKMM) Wakaf Tapai, Terengganu. MENTARI [3] was established to fulfill the requirements of the Mental Health Act 2001, which emphasizes the improvement of community-based services in enhancing the quality of mental health in the population. It is a new approach initiated by the Ministry of Health Malaysia (MOH) to improve outreach and reintegration of people with mental health problems into the community.

The CounselCare System [4] is one of the most effective systems in addressing the key challenges in student mental health within the school setting. It offers a few modules such as login and register modules, Assess Mental Health Module, Manage Assessment Question Module, Manage Cases Module, Manage Psychologist Module, and Manage Accounts of Counsellors and Students Module. The Depression Anxiety Stress Scales (DASS) test which is available in this system, gives the student the opportunity to understand their mental health status better.

Breeze [5] is one of the applications used to track mental health and write a journal. This application is more focused on guiding journaling, self-reflection, and a mental health tracker where users can input their emotions every day and every time they want. This application also allows users to document their moods, thoughts, and goals effortlessly. It also provides helpful features such as mood daily self-care reminders where users can maintain consistent mental health routines.

Table 1: Comparisons Between the Existing System and the Developed System

Features/System	MENTARI [3]	TDCSMHASSM [4]	Breeze [5]	MHJMT (Developed System)
Login and Register	<ul style="list-style-type: none"> Available Using email and password 	<ul style="list-style-type: none"> Available Using IC and password 	<ul style="list-style-type: none"> Available Using email and password 	<ul style="list-style-type: none"> Available Using email and password
Manage Profile	<ul style="list-style-type: none"> Available 	<ul style="list-style-type: none"> Available 	<ul style="list-style-type: none"> Available 	<ul style="list-style-type: none"> Available

- All users can access
- Available for all users

Table 1(cont.): Comparisons Between the Existing System and the Developed System

	<ul style="list-style-type: none"> ● Only available for professionals and admin 	<ul style="list-style-type: none"> ● Only available to admin 		
Schedule an Appointment	<ul style="list-style-type: none"> ● Available ● required to answer the mental health assessment first 	<ul style="list-style-type: none"> ● Not Available ● Manually go to the Mental Health Centre using the reference letter 	<ul style="list-style-type: none"> ● Not Available ● Manually go to the Mental Health Centre 	<ul style="list-style-type: none"> ● Available ● Can book an appointment directly and wait for the psychiatrist's approval
Assess Mental Health	<ul style="list-style-type: none"> ● Available ● Provides 4 types of assessment 	<ul style="list-style-type: none"> ● Available ● DASS test only 	<ul style="list-style-type: none"> ● Available ● Provides 33 types of tests ● must be paid to access the test 	<ul style="list-style-type: none"> ● Available ● 4 types of assessment similar to MENTARI
Manage Medication	<ul style="list-style-type: none"> ● Available ● Manual prescription and adjustment during a face-to-face appointment 	<ul style="list-style-type: none"> ● Not Available 	<ul style="list-style-type: none"> ● Not Available 	<ul style="list-style-type: none"> ● Available ● Can add new and adjust prescriptions in the system ● CRUD operation
Generate Report	<ul style="list-style-type: none"> ● Available ● Manually recorded in the report card ● Manually input into the system 	<ul style="list-style-type: none"> ● Available ● Only available to admin 	<ul style="list-style-type: none"> ● Available ● Only available to admin 	<ul style="list-style-type: none"> ● Available ● Can be accessed by a psychiatrist and an admin

1. MENTARI
2. TDCSMHASSM: The Development of CounselCare: Student Mental Health Assessment for SM Stella Maris.
3. BREEZE
4. MHJMT: Mental Health Journal and Mood Tracker

3. Methodology/Framework

The prototyping model is a software development model in which a prototype is built, tested, and reworked until an acceptable prototype is achieved [6]. There are a total of eight phases in the Prototyping Model to develop The Mental Health Journal and Mood Tracker System, which are requirement analysis, design, prototyping, customer evaluation, review and refine, development, testing, and release. In this project, there are two iterations. The first iteration is focused on developing prototype I, covering the interface of the first three modules in the system. The second iteration focused on the other modules and the database. Table 2 shows the phases in the prototyping methodology of the Mental Health Journal and Mood Tracker System.

Table 2: Phases in Prototyping Methodology

Phase	Task	Output
Requirement Analysis	<ul style="list-style-type: none">• Define project title and objectives.• Interview session with the stakeholders.• Identify the user requirement.• Create basic diagrams, such as workflows and system layouts.	<ul style="list-style-type: none">• Project proposal.• Gantt Chart.• Functional and non-functional requirements.• Flowchart• Use Case Diagram• Activity diagram

Table 2(cont.): Phases in Prototyping Methodology

		<ul style="list-style-type: none"> • Sequence diagram • Class Diagram • Requirement Definition
First Iteration		
Design	<ul style="list-style-type: none"> • Interface for the three use cases 	<ul style="list-style-type: none"> • User interface
Prototyping	<ul style="list-style-type: none"> • Develop a prototype I • Implement prototype I 	<ul style="list-style-type: none"> • Prototype I
Customer Evaluation	<ul style="list-style-type: none"> • Share the prototype with customers for their insights. • Gather comments and suggestions for improvement. 	<ul style="list-style-type: none"> • Test Cases • Feedback Report
Review and Refine	<ul style="list-style-type: none"> • Revise the prototype based on feedback. • Optimize the design and address key issues. 	<ul style="list-style-type: none"> • Revised prototype I
Second Iteration		
Design	<ul style="list-style-type: none"> • Interface for another remaining module. • Database 	<ul style="list-style-type: none"> • Interface • Data dictionary • Schema table
Prototyping	<ul style="list-style-type: none"> • Develop prototype II • Add improved features and update the database structure. 	<ul style="list-style-type: none"> • Prototype II
Customer Evaluation	<ul style="list-style-type: none"> • Present the refined prototype to the customers. • Obtain detailed feedback for further refinement. 	<ul style="list-style-type: none"> • Comprehensive feedback report based on advanced prototype evaluation.
Review and refine	<ul style="list-style-type: none"> • Use feedback to finalize the design. • Make final changes and prepare for development. 	<ul style="list-style-type: none"> • Finalized system design and updated prototype.
Development	<ul style="list-style-type: none"> • Development of the full system. 	<ul style="list-style-type: none"> • A fully operational system with integrated features.
Testing	<ul style="list-style-type: none"> • Perform thorough testing, including functional testing and acceptance testing. • Identify bugs and resolve issues. 	<ul style="list-style-type: none"> • Outcomes of the test cases in iteration I
Release	<ul style="list-style-type: none"> • Finalize documentation. • Deploy the system for operational use. 	<ul style="list-style-type: none"> • Fully deployed system. • Complete user and system documentation.

3.1 System Requirement Analysis

System requirements can be divided into functional and non-functional requirements. In this section, the use case diagram, class diagram, use case specification, and associated activity and sequence diagram will be further discussed. Other than that, the requirement definition will also be covered in this section.

3.1.1 Use Case Diagram

Fig. 1 shows the use case diagram for the Mental Health Journal and Mood Tracker System that represents the overall process within the system. There are 3 users in this system which are the psychiatrist, patients, and admin.

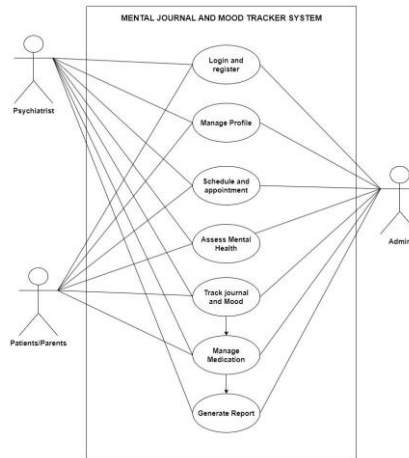


Fig. 1: Use Case Diagram of Mental Health Journal and Mood Tracker System

The use case specification and associated activity and sequence diagram for each use case are attached in the Appendix.

3.1.2 Class Diagram

The class Diagram is attached in the Appendix.

3.1.3 Requirement Definition

The requirement definition of the Mental Journal and Mood Tracker System will be listed in Table 3.

Table 3: Requirement Definition of the Mental Health Journal and Mood Tracker System

Requirement ID	Description
MHJMT_REQ_100	Login and Register
FR01_01	The system shall allow the user to choose a role before filling out the login form.
FR01_02	The user must enter a valid email and password to log in.
FR01_03	The system shall validate user credentials.
FR01_04	The system shall provide a message for successful login and redirect to the dashboard.
FR01_05	The system shall provide an error message for invalid credentials.
FR01_06	The system shall allow for user to reset the password.
FR01_07	The system shall allow the user to register account.
FR01_08	The system shall validate the user registration input field.
FR01_09	The system shall validate the correct email format.
FR01_10	The system shall require users to use a strong password.
FR01_11	The system shall prevent duplicate email registration.
CR01_01	The system shall now allow the user to submit an empty text field.
QR01_01	While an exception occurs. The system shall return to its previous state.
MHJMT_REQ_200	Manage Profile
FR02_01	The system shall allow a psychiatrist to create, update a patient’s profile.
FR02_02	The system shall restrict patients from updating profiles only in specific fields.
FR02_03	The system shall allow the admin to manage users.
CR02_01	The system shall allow patients to set preferred contact methods (email/SMS).
QR02_01	Profile updates shall be saved and reflected within 1 second.

Table 3(cont.): Requirement Definition of the Mental Health Journal and Mood Tracker System

MHJAMT_REQ_300	Schedule an Appointment
FR03_01	The system shall allow the patient/parent to request appointment.
FR03_02	The system shall notify the psychiatrist of the new appointment request.
FR03_03	The system shall allow a psychiatrist to accept/reject an appointment request.
FR03_04	The system shall send a notification to the patient/parent of the psychiatrist shall respond.
FR03_05	The system shall allow patients to cancel an appointment for a valid reason.
CR03_01	The system shall allow patients to request a reschedule
QR03_01	Appointment notifications shall be sent within 10 seconds of a status change.
MHJAMT_REQ_400	Assess Mental Health
FR04_01	The system shall allow patients to choose the type of mental health assessment.
FR04_02	The system shall display the chosen assessment question type to the patient.
FR04_03	The system shall allow the patient to answer the assessment question.
FR04_04	The system shall allow the patient to submit only completely answered assessment questions.
FR04_05	The system shall calculate and display the result automatically.
FR04_06	The system shall save the result.
FR04_07	The system shall allow the psychiatrist to review the assessment result.
FR06_06	The system shall automatically generate bar graph to display medication adherence.
FR06_07	The system shall notify patients to update their medication adherence.
CR06_01	The system shall allow psychiatrist to view medication history for the past 30 days
QR06_01	Medication adherence notifications shall be sent at the patient's preferred time
MHJAMT_REQ_700	Generate Report
FR07_01	The system shall allow psychiatrists and admin to generate individual patient reports.
FR07_02	The system shall allow psychiatrist and admin to select date and specific patient for report generation.
FR07_03	The system shall allow admin to generate report on user logins to the system.
FR07_04	The system shall include summary details in the system patient report.
FR07_05	The system shall allow download report in PDF format.
FR07_06	The system shall allow to print report in the system
FR07_07	The system shall provide role-based access for generate report.
CR07_01	The system shall allow filtering reports by date range
QR07_01	PDF reports shall be generated within 5 seconds for standard reports

3.2 Design

This section will discuss the design of the Mental Health Journal and Mood Tracker.

3.2.1 System Architecture

The system architecture that is used in this system is Three-Tier Architecture. Fig. 2 shows the architecture diagram for the Mental Health Journal and Mood Tracker.

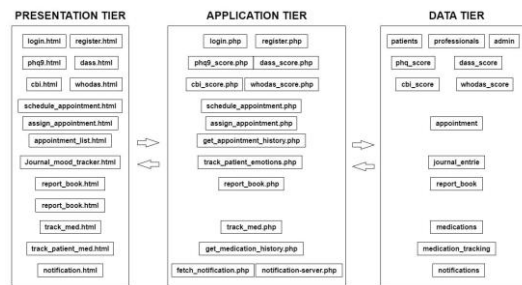


Fig. 2: System architecture of Mental Health Journal and Mood Tracker

3.2.2 Schema Table

Table 4 discusses the schema table of Mental Health Journal and Mood Tracker System from the database that has been designed and extracted from the class diagram. They were created using a MySQL database.

Table 4: Schema Table of Mental Health Journal and Mood Tracker

Table Name	Details
Patients	(id, first_name, last_name, <u>identity card</u> , phone_number, date_of_birth, gender, <u>email</u> , password, created_at, race, religion, address, emergency_contact_name, emergency_contact_phone, occupation, consent_data_sharing, consent_crisis_contact, preferred_communication_method, marital_status, living_situation, mental_health_diagnoses, past_psychiatric_treatments, current_medications, family_history_mental_illness, physical_health_conditions, sleep_patterns, substance_use, exercise_habits, diet_nutrition, is_approved)
Professionals	(id, first_name, last_name, <u>identity card</u> , phone_number, date_of_birth, gender, <u>email</u> , password, <u>mmc license no</u> , created_at)
Admin	(id, first_name, last_name, <u>identity card</u> , phone_number, date_of_birth, gender, <u>email</u> , password, <u>admin code</u> , created_at)
phq9_result	(id, patient_id, submission_date, q1, q2, q3, q4, q5, q6, q7, q8, q9, total_score, severity)
dass_score	(id, patient_id, submission_date, q1, q2, q3, q4, q5, q6, q7, q8, q9, q10, q11, q12, q13, q14, q15, q16, q17, q18, q19, q20, q21, depression_score, anxiety_score, stress_score)
cbi_result	(id, patient_id, submission_date, q1, q2, q3, q4, q5, q6, q7, q8, q9, q10, q11, q12, q13, q14, q15, q16, q17, q18, q19, personal_burnout_score, work_burnout_score, client_burnout_score)
whodas_result	(id, patient_id, submission_date, q1, q2, q3, q4, q5, q6, q7, q8, q9, q10, q11, q12, q13, q14, q15, q16, q17, q18, q19, q20, q21, q22, q23, q24, q25, q26, q27, q28, q29, q30, q31, q32, q33, q34, q35, q36, understanding_communicating, getting_around, household_activities, work_school_activities, participation, total_score, interpretation)
appointments	(id, patient_id, professional_id, appointment_date, appointment_time, message, status, cancellation_reason, created_at, purpose)
journal_entries	(id, patient_id, entry_date, mood, journal_text)
report_book	(id, patient_id, report_date, blood_pressure, report, created_at)
medications	(id, patient_id, depression_type, medication_type, medication_name, dose_intake, dose_per_day, meal_time)
medication_tracking	(id, patient_id, medication_id, dose_number, intake_date, taken)
notifications	(id, message, status, created_at)

4. Result and Discussion

This section will show the outcome of implementation and testing for the developed system.

4.1 Implementation

This section will present the design of the system and the implementation of the developed system using Hypertext Preprocessor (PHP) language, Hypertext Markup Language (HTML), and MySQL.

4.1.1 Interface of Login and Register User

Fig. 3 and Fig. 4 show the interface and code segment of Login and Register, which allows users to choose their role in the system. Then, users need to input their email and password to have access to the system. Users may reset the password as well by clicking on the “Forgot Password?” text below the password text field. For the first users, users may register their personal details through the “Sign Up here” text.

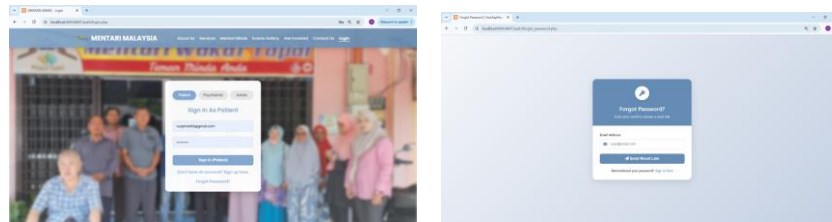


Fig. 3: Interface (a) Login; (b) Forgot Password



Fig. 4: Code Segment (a) Login; (b) Forgot Password

Next, Fig. 5 to Fig. 6 shows the Signup interface and the code segment. For each role, the users need to input different details in the registration form to ensure the right user registers for the right role. Fig. 6 shows the self-login interface for patients and psychiatrists only. The admin needs to be registered in the system by the existing admin. After registration, patients and psychiatrists need to wait for approval from the admin before they can proceed to log in to the system.

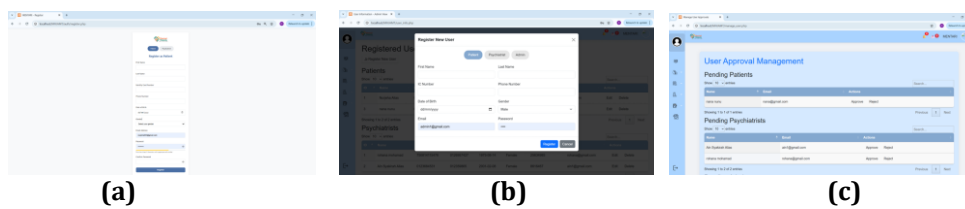


Fig. 5: Interface (a) New User Self-Registration; (b) Admin Register User; (c) Admin Approve User

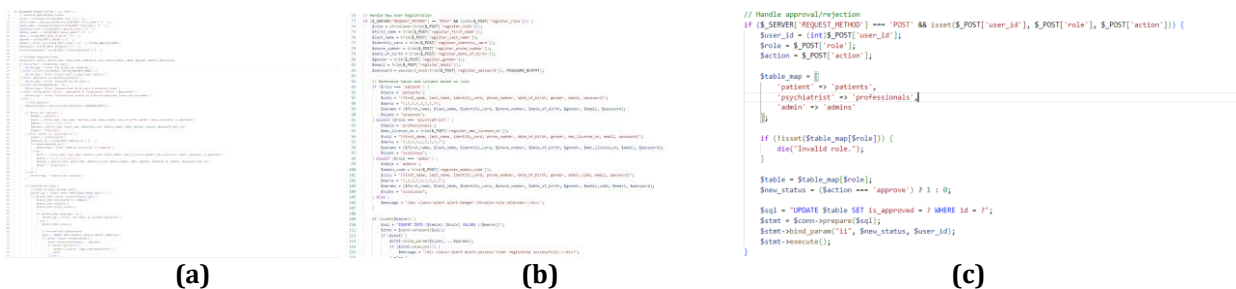


Fig. 6: Code Segment (a) New User Self-Registration; (b) Admin Register User; (c) Admin Approve User

4.1.2 Interface of Manage Profile

After users sign in, users will be directed to the Homepage. Patients can only edit their profiles in the allowed section only and others must be edited by the psychiatrist. However, for psychiatrists, the homepage allows them to search for the patients' profiles by searching for patients' identity numbers and filling in the additional information of the patients. The interface of the manage profile is shown in Fig. 7.

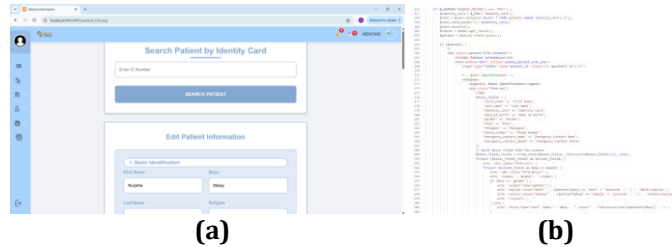


Fig. 7: Manage Profile (a) Interface; (b) Code segment

4.1.3 Interface of Schedule an Appointment

The interface of the Schedule Appointment Module will be shown in Fig. 8 and Fig. 9. This page allows patients to request an appointment by submitting the appointment request form. This page also allows patients to cancel their appointments by submitting the cancellation form. Additionally, the page allows psychiatrists to directly assign an appointment to the patients

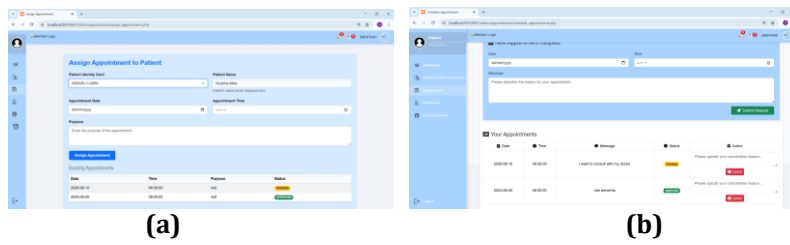


Fig. 8: Interface (a) Request Appointment; (b) Cancel Appointment

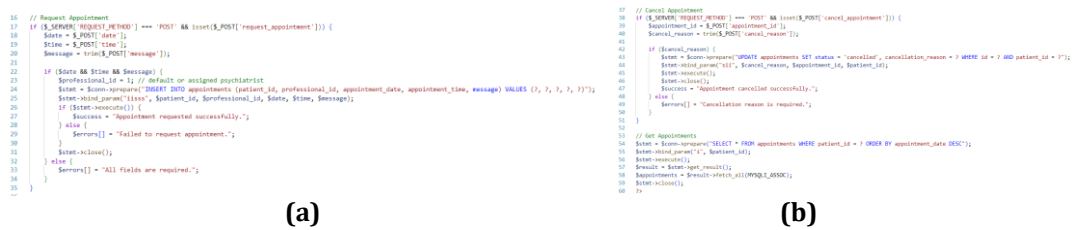


Fig. 9: Code Segment (a) Request Appointment; (b) Cancel Appointment

4.1.4 Interface of Assess Mental Health

Fig. 10 and Fig. 11 show the Assess Mental Health Interface with the code segment. This page allows users to choose which assessment to answer, and it will automatically provide the result after completing the assessment. Psychiatrists can also review the results of the patients to ensure a smooth treatment plan.

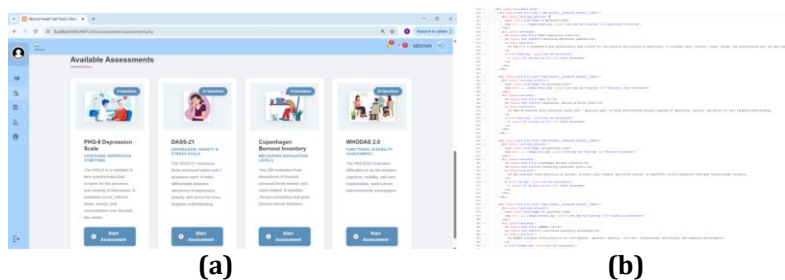
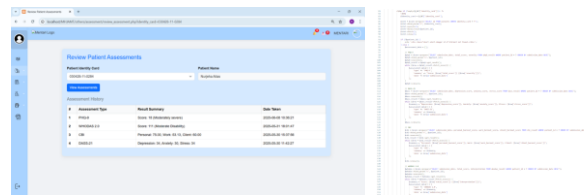


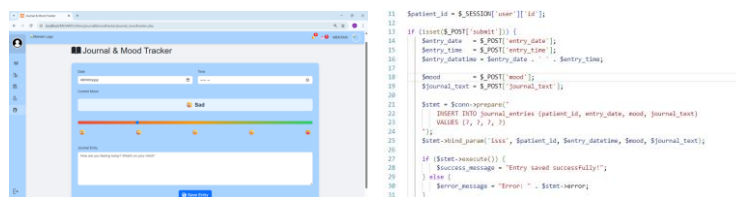
Fig. 10: Assess Mental Health (a) Interface; (b) Code Segment



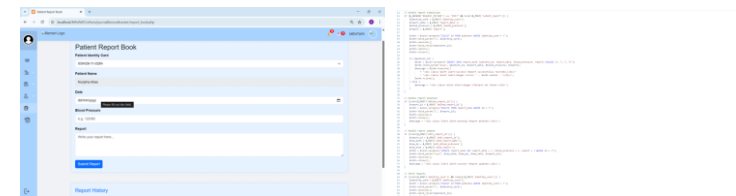
(a) **(b)**
Fig. 11: Psychiatrist View Assessment Result (a) Interface; (b) Code Segment

4.1.5 Interface of Journal and Mood Tracker

Patients can track their mood and write a journal on the “Journal & Mood Tracker” page, as shown in Fig. 12. Psychiatrists and Admin also view the input of the Patients. A psychiatrist can also write a report on a report book page, as shown in Fig. 13.



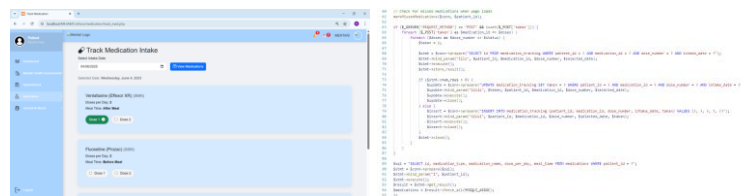
(a) **(b)**
Fig. 12: Log Journal and Mood (a) Interface; (b) Code Segment



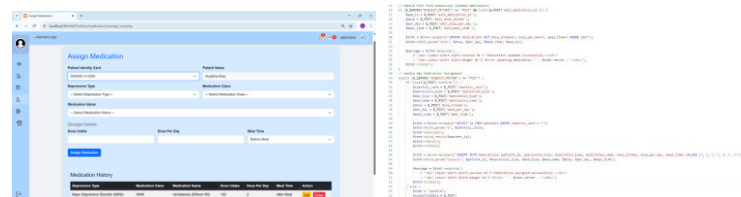
(a) **(b)**
Fig. 13: Report Book (a) Interface; (b) Code Segment

4.1.6 Interface of Manage Medication

Fig. 14 shows that patients can manage their medication and track their medication adherence at the “Medication Management Page”. The psychiatrist can also add a prescription of the medication for their patients, as shown in Fig. 15.



(a) **(b)**
Fig. 14: Track Medication (a) Interface; (b) Code Segment



(a) **(b)**
Fig. 15: Assign Medication (a) Interface; (b) Code Segment

4.1.7 Interface of Generate Report

The admin and psychiatrist can generate reports in the “Report Page”. The admin can generate reports on the usage of the system. Meanwhile, the psychiatrist can generate reports of their patient’s details in the system, including profiles, mood trackers, assessment results, and medication adherence. The interface and code segment for this module are shown in Fig. 16.

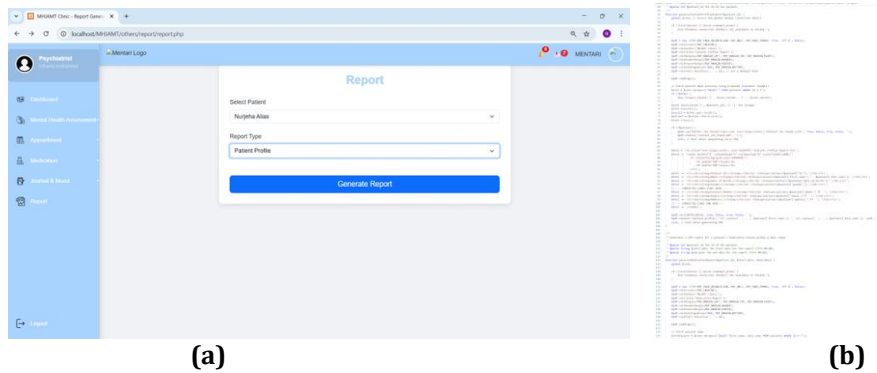


Fig. 16: Generate Report (a) Interface; (b) Code Segment

4.2 Testing

The system is tested by the end user via User Acceptance Testing (UAT) conducted at Pusat Kesehatan Mental Masyarakat (PKMM), Wakaf Tapai, Terengganu. The test cases are prepared according to the requirement definition stated in Table 3. The test cases are executed as shown in Table 5 to compare the actual result with the expected result

Table 5: List of Test Cases

Test Cases	Software Requirement	Description	Status
TC_100	REQ_100	Login and Register	Pass/Fail
TC_100_01	FR01_01, FR01_02, FR01_03, FR01_04, CR01_01	The system allows a user to choose a role, then logs in with valid credentials and redirects to the dashboard.	Pass
TC_100_02	FR01_02, FR01_03, FR01_05	The system displays an error message for invalid login credentials	Pass
TC_100_03	FR01_06, FR01_09	The user requests a password reset, receives a link to their registered email, and successfully sets a new password to log in.	Pass
TC_100_04	FR01_07, FR01_08, FR01_09, FR01_10, CR01_01	The user successfully registers a new account by filling all required fields with valid data, including a strong and correct email format	Pass
TC_100_05	FR01_08, FR01_09, FR01_10, FR01_11, CR01_01	The system prevents user registration with invalid input fields	Pass
TC_100_06	QR01_01	The system returns to its previous stable state and displays an appropriate message when an exception occurs during login or registration.	Pass
TC_200	REQ_200	Manage Profile	Pass/Fail
TC_200_01	FR02_01, FR02_02	A Psychiatrist successfully creates and updates a patient's profile.	Pass
TC_200_02	FR02_03	An Admin successfully deletes a patient's profile.	Pass
TC_200_03	FR02_04	A Patient successfully updates only the specific fields they are allowed to modify	Pass

Table 5(cont.): List of Test Cases

TC_200_04	FR02_04, FR02_06	A Patient is restricted from updating profile fields managed by a psychiatrist or admin	Pass
TC_200_05	FR02_05	An Admin successfully views and manages user accounts	Pass
TC_200_06	FR02_06	Role-based access control functions correctly, preventing unauthorized users (e.g., a Patient trying Admin features) from accessing restricted profile management functions.	Pass
TC_200_07	CR02_01	A Patient successfully sets their preferred contact methods (email/SMS).	Pass
TC_300	REQ_300	Schedule an Appointment	Pass/Fail
TC_300_01	FR03_01, FR03_02	A Patient/Parent successfully requests an appointment with valid date and time inputs.	Pass
TC_300_02	FR03_02, FR03_08	The system prevents a Patient/Parent from submitting an appointment request with an invalid date/time	Pass
TC_300_03	FR03_03, FR03_04, FR03_05	The psychiatrist is notified of a new appointment request and successfully accepts or rejects it, which then notifies the Patient/Parent of the response.	Pass
TC_300_04	FR03_06	A Patient successfully cancels an appointment by providing a valid reason.	Pass
TC_300_05	FR03_07	The system accurately logs all appointment requests and their status changes	Pass
TC_300_06	CR03_01	A Patient successfully requests a reschedule for an existing appointment.	Pass
TC_300_07	QR03_01	Appointment notifications are sent to the relevant parties within 10 seconds of a status change.	Pass
TC_400	REQ_400	Assess Mental Health	Pass/Fail
TC_400_01	FR04_01, FR04_02, FR04_03	A Patient successfully chooses an assessment type, views its questions, and answers them.	Pass
TC_400_02	FR04_04	The system prevents a Patient from submitting an incomplete assessment, requiring all questions to be answered.	Pass
TC_400_03	FR04_04, FR04_05, FR04_06	A Patient successfully submits a completely answered assessment, and the system automatically calculates, displays, and saves the result.	Pass
TC_400_04	FR04_07	A Psychiatrist successfully reviews a patient's assessment results.	Pass
TC_400_05	FR04_08	A Patient is restricted to only accessing their own assessment results.	Pass
TC_400_06	CR04_01	A Patient can save an incomplete assessment as a draft and resume it later.	Pass
TC_500	REQ_500	Track journal and Mood	Pass/Fail
TC_500_01	FR05_01, FR05_02, FR05_04	A Patient successfully inputs and saves journal and mood entries, including a mood scale selection.	Pass
TC_500_02	FR05_03, QR05_01	The system automatically generates and displays a bar graph for mood scale input within 3 seconds of the request.	Pass
TC_500_03	FR05_05	A Psychiatrist successfully reviews a patient's journal and mood entries.	Pass
TC_500_04	FR05_06	A Patient is restricted to only accessing their own journal and mood data.	Pass
TC_500_05	CR05_01	The system successfully sets mood reminders at specific times, and the system sends notifications.	Pass

Table 5(cont.): List of Test Cases

TC_600	REQ_600	Manage Medication	Pass/Fail
TC_600_01	FR06_01, FR06_02, FR06_0	A Psychiatrist successfully adds new, updates existing, and deletes medication prescriptions for patients.	Pass
TC_600_02	FR06_04, FR06_05	A Patient successfully updates their medication intake, and the system accurately tracks their medication adherence.	Pass
TC_600_03	FR06_06	The system automatically generates and displays a bar graph to visualize medication adherence.	Pass
TC_600_04	FR06_07, QR06_01	The system notifies patients to update their medication adherence at their preferred time.	Pass
TC_600_05	FR06_08	Access control correctly restricts psychiatrists to only accessing relevant medication data for their assigned patients.	Pass
TC_600_06	CR06_01	A Psychiatrist successfully views a patient's medication history for the past 30 days.	Pass
TC_700	REQ_700	Generate Report	Pass/Fail
TC_700_01	FR07_01, FR07_02, FR07_07, CR07_01	A Psychiatrist can generate an individual patient report, selecting specific patients and filtering by date range, while adhering to role-based access.	Pass
TC_700_03	FR07_03, FR07_07	An Admin can generate a report on user logins to the system, while other roles are restricted.	Pass
TC_700_04	FR07_04	System-generated patient reports include summary details.	Pass
TC_700_05	FR07_05, FR07_06	The system allows generated reports to be downloaded in PDF format and printed directly from the system.	Pass
TC_700_06	QR07_01	PDF reports are generated within 5 seconds for standard reports.	Pass

The summary of overall test cases is recorded in Table 6. A total of 45 test cases have been conducted to test the Mental Health Journal and Mood Tracker System

Table 6: Overall Result of Test Cases

Test Case ID	Total Test Cases	Total Success	Total Fail
TC_100	6	6	0
TC_200	8	8	0
TC_300	7	7	0
TC_400	7	7	0
TC_500	5	5	0
TC_600	6	6	0
TC_700	6	6	0
Total	45	45	0

User Acceptance Testing (UAT) had been undergone from the perspective of the psychiatrist, patients, and nurses. In general, the test is passed successfully. Then, the questionnaire in Google Forms is prepared for all users: psychiatrists, patients, and the admin (nurse). The form is divided into 2 sections, which are the background of the respondent, and experience of using the Mental Health Journal and Mood Tracker System. This questionnaire was filled by 24 respondents, which consisted from 10 patients' views, 6 psychiatrists' views, and 8 admin (nurse) views. The scale that is used in this test is a 1 to 5 scale, where 1 indicates strongly disagreement and 5 indicates strongly agree. Table 7 shows the summary result for this UAT.

Table 7: Summary of User Acceptance Testing

Question	1	2	3	4	5
how easy and intuitive was the process of logging in and registering a new account, including role selection and password reset?	0	0	1	7	18
When managing your profile (or a patient's profile), how user-friendly was the process of creating, updating, and viewing information?	0	0	6	11	9
How useful and relevant were the mental health assessment tools provided by the system for gauging well-being?	0	0	3	8	15
How effectively does the system allow you to schedule, reschedule, cancel, and manage appointments with psychiatrists/patients?	0	0	4	11	11
For managing medications (prescribing for psychiatrists, tracking adherence for patients), how well does the system support these tasks?	0	0	2	6	18
How useful are the generated reports (patient reports, login reports, etc.) for gaining insights and making informed decisions?	0	0	3	11	12
How would you rate the clarity and ease of navigation within the system's interface across different modules	0	0	3	10	13
How would you rate the speed and responsiveness of the system when performing actions like submitting forms, generating graphs, or loading pages?	0	0	1	5	20
How confident are you that your personal health information and other sensitive data are secure within this system?	0	2	8	4	12
Considering all aspects, how satisfied are you with the overall functionality and performance of the system?	0	0	1	12	13
To what extent does this system meet your specific needs as a patient, psychiatrist, or administrator?	0	0	2	12	12

5. Conclusion

In conclusion, the Mental Health Journal and Mood Tracker offer a comprehensive solution to the challenges faced in managing mental health care and maintaining communication between psychiatrists and patients. The system designed with tools such as mood tracking, journaling, and medication management will ensure that psychiatrists can stay updated on their patients' conditions, even between face-to-face appointments. This approach not only enhances the quality of care but also promotes timely interventions and improves patient outcomes. Ultimately, the system addresses the critical gaps in communication and data management to ensure that patients receive the support they need at the right time.

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Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of the paper.

Author Contribution

The authors confirm contribution to the paper as follows: **study conception and design:** Nurjeha Binti Alias, Noraini Binti Ibrahim; **data collection:** Nurjeha Binti Alias; **analysis and interpretation of results:** Nurjeha Binti Alias, Noraini Binti Ibrahim; **draft manuscript preparation:** Nurjeha Binti Alias, Noraini Binti Ibrahim. All authors reviewed the results and approved the final version of the manuscript.

References

- [1] M. Helbich, "Mental Health and Environmental Exposures: An Editorial," *International Journal of Environmental Research and Public Health*, vol. 15, no. 10, p. 2207, 2018, doi: <https://doi.org/10.3390/ijerph15102207>.
- [2] B. Anwar, "The Importance of Mental Health," *Talkspace*, Nov. 24, 2021. <https://www.talkspace.com/blog/why-is-mental-health-important/>
- [3] M. HQ, "About Us - Mentari Malaysia Official Portal," *MENTARI MALAYSIA*, 2014. <https://mentari.moh.gov.my/about-us/>
- [4] NADZREE, N. B. E., & MOHD ZIN, N. A. (2024). The Development of CounselCare: Student Mental Health Assessment for SM Stella Maris. *The Development of CounselCare: Student Mental Health Assessment for SM Stella Maris*, 0(1), 1-20. <https://doi.org/10.30880/aitcs.2024.00.00.000>
- [5] B. TEAM, "Home," *breeze-wellbeing.com*, 2022. <https://breeze-wellbeing.com/>
- [6] Buchanan, E. M., Crain, S. E., Cunningham, A. L., Johnson, H. R., Stash, H., Papadatou-Pastou, M., Isager, P. M., Carlsson, R., & Aczel, B. (2021). Getting Started Creating Data Dictionaries: How to Create a Shareable Data Set. *Advances in Methods and Practices in Psychological Science*, 4(1), 251524592092800. <https://doi.org/10.1177/2515245920928007>
- [7] Chitra Singla, "Functional vs Non-Functional Requirements," *GeeksforGeeks*, Apr. 28, 2020. <https://www.geeksforgeeks.org/functional-vs-non-functional-requirements/>

Appendix A: Class Diagrams

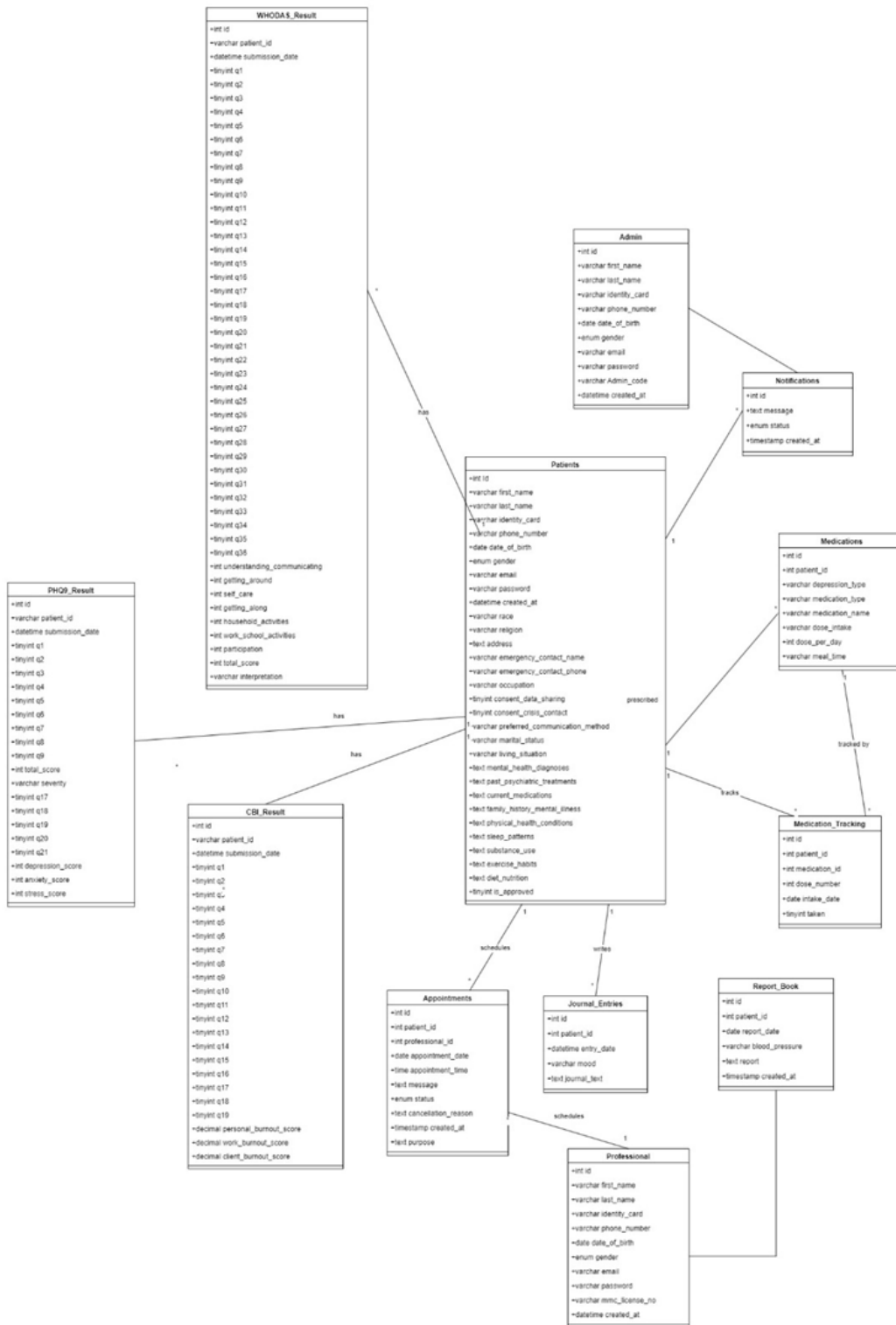


Fig. A.1: Class Diagram of Mental Health Journal and Mood Tracker System

Appendix B: Use Case Specification

Table B.1: Use Case Specifications of Login and Register Module

Use Case ID	UC100		
Use Case Name	Login and register		
Feature	MHJMT_REQ_100 Login and Register		
Created By	Nurjeha Binti Alias	Updated By	Nurjeha Binti Alias
Date Created	5 December 2024	Last Revision Date	11 Jun 2025
Actors	Psychiatrist, Patient/Parent, Admin		
Description	This use case is intended to authenticate the user when entering the system. There are three users involved in the login and registration: the psychiatrist, the patient/parent, and the admin. To login, all users need to login using their email and password and choose their role in the system. If the system fails to authenticate the user, then the user will see an error message,		

Activity Diagram and Sequence Diagram

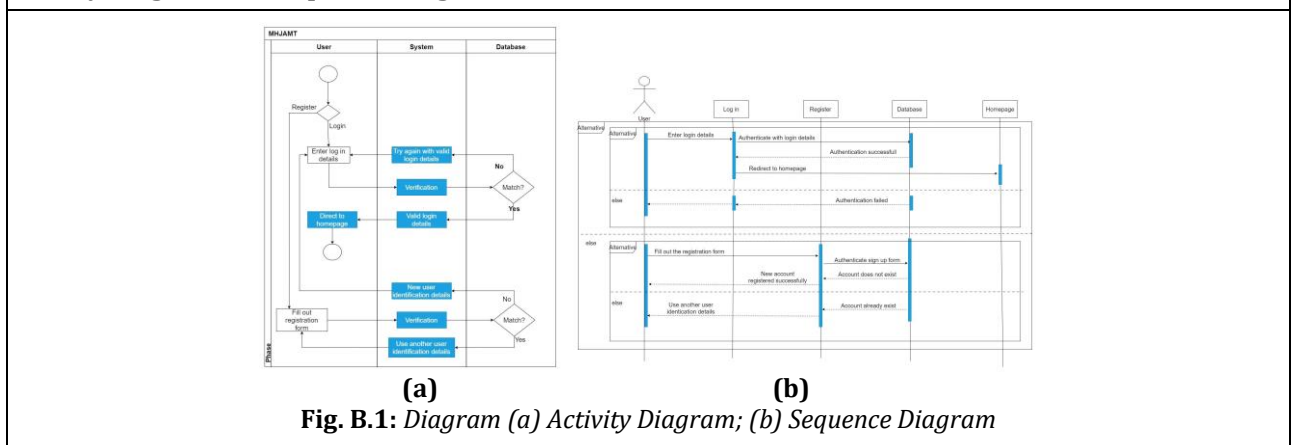


Fig. B.1: Diagram (a) Activity Diagram; (b) Sequence Diagram

Table B.2: Use Case Specifications of Manage Profile Module

Use Case ID	UC200		
Use Case Name	Manage Profile		
Feature	MHJMT_REQ_200 Manage Profile		
Created By	Nurjeha Binti Alias	Updated By	Nurjeha Binti Alias
Date Created	5 December 2024	Last Revision Date	11 Jun 2025
Actors	Psychiatrist, Patient/Parent, Admin		
Description	This use case allows the patients, admin and psychiatrist to edit the profile.		

Activity Diagram and Sequence Diagram

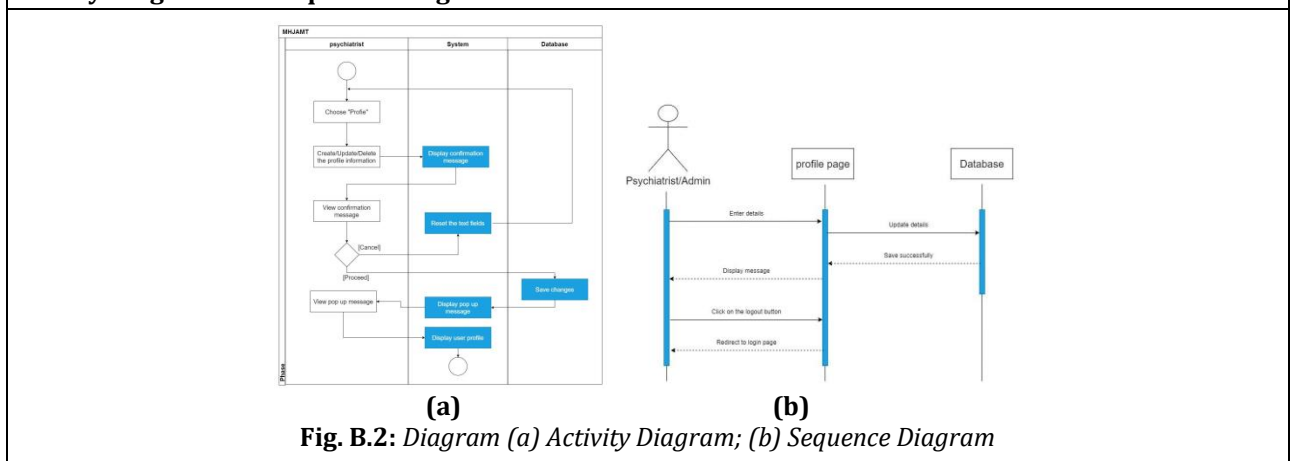


Fig. B.2: Diagram (a) Activity Diagram; (b) Sequence Diagram

Table B.3: Use Case Specifications of Schedule an Appointment Module

Use Case ID	UC300		
Use Case Name	Schedule an Appointment		
Feature	MHJMT_REQ_300 Schedule and Appointment		
Created By	Nurjeha Binti Alias	Updated By	Nurjeha Binti Alias
Date Created	5 December 2024	Last Revision Date	11 Jun 2025
Actors	Psychiatrist, Patient/Parent, Admin		
Description	This use case allows users to schedule appointments. There are two users involved in appointment scheduling: the psychiatrist and the patient/parent. Psychiatrist can set appointments directly or review and accept/reject appointment requests from patients. Patients can cancel appointments for a reason and the system updates the record accordingly.		

Activity Diagram and Sequence Diagram

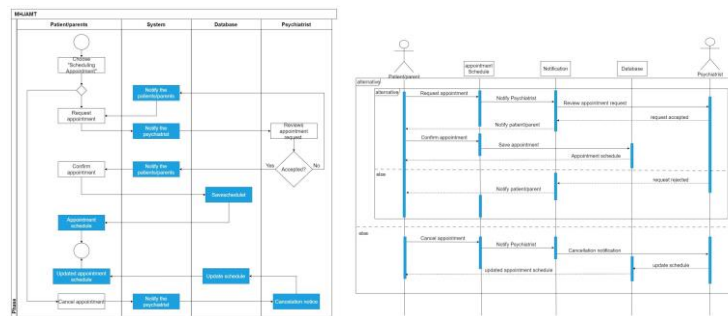


Fig. B.3: Diagram (a) Activity Diagram; (b) Sequence Diagram

Table B.4: Use Case Specifications of Assess Mental Health Module

Use Case ID	UC400		
Use Case Name	Assess Mental Health		
Feature	MHJMT_REQ_400 Assess Mental Health		
Created By	Nurjeha Binti Alias	Updated By	Nurjeha Binti Alias
Date Created	5 December 2024	Last Revision Date	11 Jun 2025
Actors	Psychiatrist, Patient/Parent, Admin		
Description	This use case allows the patient to answer their selected mental health assessment. The system automatically generates the assessment result upon completion. Psychiatrists also can view the results of the patient.		

Activity Diagram and Sequence Diagram

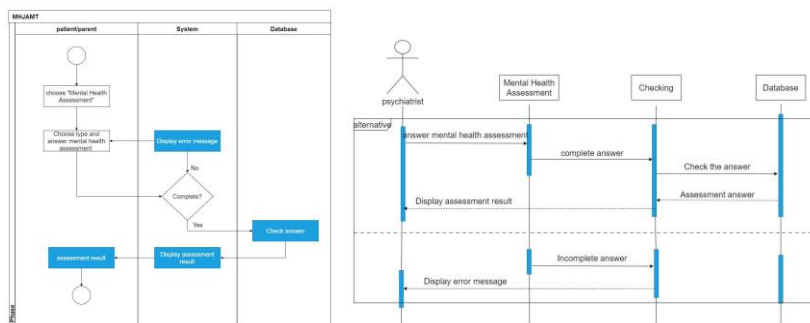


Fig. B.4: Diagram (a) Activity Diagram; (b) Sequence Diagram

Table B.5: Use Case Specifications of Track Journal and Mood Module

Use Case ID	UC500		
Use Case Name	Track Journal and Mood		
Feature	MHJMT_REQ_500 Track Journal and Mood		
Created By	Nurjeha Binti Alias	Updated By	Nurjeha Binti Alias
Date Created	5 December 2024	Last Revision Date	11 Jun 2025
Actors	Psychiatrist, Patient/Parent, Admin		
Description	This use case allows the patient/parent to input their daily mood (unhappy/ sad/ normal/ good/ happy) and write their personal journal entry. The system analyzes mood patterns over time and provides an insight graph. The psychiatrist can view the page to monitor the patient's mood and journal entries.		

Activity Diagram and Sequence Diagram

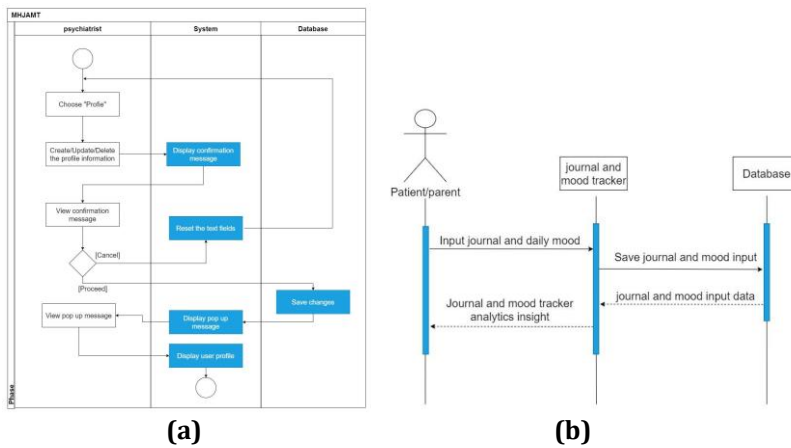


Fig. B.5: Diagram (a) Activity Diagram; (b) Sequence Diagram

Table B.6: Use Case Specifications of Manage Medication Module

Use Case ID	UC600		
Use Case Name	Manage Medication		
Feature	MHJMT_REQ_600 Manage Medication		
Created By	Nurjeha Binti Alias	Updated By	Nurjeha Binti Alias
Date Created	5 December 2024	Last Revision Date	11 Jun 2025
Actors	Psychiatrist, Patient/Parent, Admin		
Description	This use case allows psychiatrists to edit medication prescriptions for patients and allows tracking of adherence by patients. The system provides reminders and updates to ensure adherence and notifies the doctor about the patient's compliance status.		

Activity Diagram and Sequence Diagram

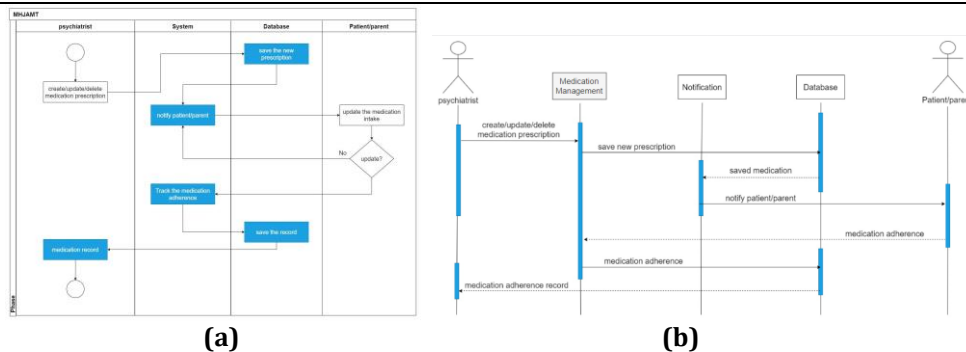


Fig. B.6: Diagram (a) Activity Diagram; (b) Sequence Diagram

Table B.7: Use Case Specifications of Generate Report Module

Use Case ID	UC700		
Use Case Name	Generate Report		
Feature	MHJMT_REQ_700 Generate Report		
Created By	Nurjeha Binti Alias	Updated By	Nurjeha Binti Alias
Date Created	5 December 2024	Last Revision Date	11 Jun 2025
Actors	Psychiatrist, Admin		
Description	This use case allows to generate detailed reports of patient mood tracking data and journal entries, and medication management for analysis. These reports provide insights to the psychiatrist to improve patient care and help the admin monitor the overall system's performance.		

Activity Diagram and Sequence Diagram

