APPLIED INFORMATION TECHNOLOGY AND COMPUTER SCIENCE
e-ISSN: 2773-5141

AITCS

Vol. 6 No. 2 (2025) 1436-1458
https://publisher.uthm.edu.my/periodicals/index.php/aitcs

MindCare: Development of Mobile Application on Mental Health Monitoring for Pusat Kesihatan Universiti UTHM

Muhammad Asyraf Ahmad[1], Mohd Zanes Sahid[1]*

[1] *Fakulti Sains Komputer dan Teknologi Maklumat,*
Universiti Tun Hussein Onn Malaysia, Parit Raja, Batu Pahat, 86400, MALAYSIA

*Corresponding Author: zanes@uthm.edu.my
DOI: https://doi.org/10.30880/aitcs.2025.06.02.077

Article Info

Received: 15 June 2025
Accepted: 20 November 2025
Available online: 30 November 2025

Keywords

Mental Health, Mobile Application, Android Development, Journaling, Mood Tracking, Mental Health Monitoring

Abstract

Mental health is essential, but many avoid addressing it due to stigma, low awareness, and limited support access. The UTHM Health Centre relies on time-consuming, traditional in-person processes and lacks an efficient student mental health tracking method, while existing apps often lack personalized and holistic features. The project addresses the problem of inefficient mental health monitoring, which often causes delays in intervention, undetected emotional distress, and a decline in student well-being. This project uses Flutter to develop a cross-platform mobile app addressing these challenges and the app includes mood tracking, journaling, personalized self-care suggestions, and mental health resources to help students monitor and enhance their well-being. The application has been designed for the UTHM Health Centre to replace manual mental health tracking with a digital solution that improves monitoring and support. Therefore, it offers insights into student well-being, enabling better resource allocation, early interventions, and proactive mental health practices.

1. Introduction

Mental health is a vital aspect of well-being, yet many individuals struggle to address it due to stigma, lack of awareness, and limited access to support [1]. The challenges worsened during the COVID-19 pandemic, which highlighted the growing prevalence of stress, anxiety, and depression [2]. Currently, the UTHM Health Centre lacks an efficient method to track students' mental health, relying on traditional in-person processes that are time-consuming and limited. While mental health apps exist, most lack personalized insights and holistic features.

The project addresses the problem of inefficient mental health monitoring [3], which often causes delays in intervention, undetected emotional distress, and a decline in student well-being. To overcome these challenges, the project employs a mobile application development approach using Flutter to build an Android based app [4]. The application features daily mood tracking, journaling, tailored self-care suggestions, and access to mental health resources, providing students with tools to monitor and improve their well-being.

The application is tailored for the UTHM Health Centre, enabling the institution to transition from manual mental health tracking processes to a digital solution that enhances monitoring and support capabilities for students. Therefore, the application provides the UTHM Health Centre with a valuable insight into student well-being, enabling more efficient resource allocation and earlier interventions to support students' mental health needs

This is an open access article under the CC BY-NC-SA 4.0 license.

while also promoting proactive mental health practices among students by providing mental health management system.

The remainder of the paper is organized as follows: Section 2 provides an overview of the study background, the technology used, and the results of the comparative analysis. Section 3 provides details of the chosen Agile methodology, along with the results from the analysis and design phases and the functional and non-functional requirements of the project. Section 4 concludes the paper by summarizing the current progress of the project.

2. Related Work

In this section, the background of the study, the technology used and result of the comparative analysis are discussed.

2.1 UTHM Health Centre Work Process

The UTHM Health Centre, located at Universiti Tun Hussein Onn Malaysia in Parit Raja, Batu Pahat, Johor, plays a key role in providing healthcare services to students and staff. Its responsibilities encompass both physical and mental health care within the campus community. However, the current process for mental health support is entirely manual, requiring students to visit the center in person, register with their name, student ID, and details of their condition, and wait for their turn to see the doctor. This approach is time-consuming, inefficient, and lacks a system for continuous mental health monitoring.

To address these challenges, the MindCare application was developed in collaboration with the UTHM Health Centre. This project presents an opportunity to implement a customized digital solution that streamlines the center's processes, enhances efficiency, and improves mental health support for students. By addressing the current inefficiencies, the system aims to improve the health center's capacity to monitor student well-being trends, allocate resources effectively, and deliver timely interventions, ultimately fostering a healthier and more proactive student community.

2.2 Flutter

Flutter, a cross-platform framework developed by Google and first released in 2016, facilitates the development of high-performance mobile applications that run seamlessly across multiple platforms, including Android and iOS [5]. A key advantage of Flutter is its use of the Dart programming language, enabling developers to write a single codebase that is Ahead-of-Time (AOT) compiled into native platform architecture. This compilation method ensures optimal speed and performance for Flutter applications [6].

Flutter also offers a rich set of customizable widgets, empowering developers to create visually appealing and responsive user interfaces. Its hot-reload feature enhances the development process by allowing real-time changes without requiring app restarts. These capabilities make Flutter an ideal choice for developing applications in this project.

2.3 Android Studio

Android Studio is an integrated development environment (IDE) developed by Google for building Android applications. It offers advanced features for developing, debugging, and packaging Android apps, with a comprehensive Java-integrated development environment [7]. Despite previous criticisms regarding its performance, recent versions of Android Studio have introduced significant improvements, including the ability to configure memory usage for the IDE and its background processes, optimizing its performance on systems with larger RAM capacities [8].

The IDE also includes powerful tools such as a visual layout editor, a code editor with real-time suggestions, and integrated debugging capabilities. These features make Android Studio an indispensable tool for developing robust Android applications, which is crucial for this project's requirements of efficient debugging and deployment.

2.4 Comparative Analysis

Three existing applications similar to the mobile application to be developed were chosen for comparison. The three applications are Mood Tracker Journal , BetterHelp , and Daylio. Table 1 shows the comparison between existing applications and the proposed application.

A comparative analysis was conducted based on the following key features: Daily Mood Tracking, Journaling, Personalized Advice, Emotional Trend Analysis, Mental Health Resources, Community Support, Professional Support, and Cost-Free Basic Features.

Table 1: Application Comparison

Feature/ Modules	Mood Tracker Journal	Better Help	Daylio	MindCare
Daily Mood Tracking	✓	X	✓	✓
Journaling	✓	X	X	✓
Personalized Advice	X	X	X	✓
Emotional Trend Analysis	✓	X	✓	✓
Mental Health Resources	X	✓	X	✓
Community Support	X	X	X	✓
Professional Support	X	✓	X	✓
Cost-Free Basic Features	✓	X	✓	✓

As shown in Table 1, none of the three existing applications offer a Personalized Self-Care Suggestion feature. In contrast, the proposed application includes this feature, enabling it to provide more targeted support based on users' emotional trends. Furthermore, while the existing applications lack Community Support, the proposed application incorporates this functionality, allowing users to share their experiences and thoughts, and receive encouragement from the community. These additional features make the MindCare application more engaging and effective in supporting mental health monitoring compared to the existing alternatives.

3. Methodology

The methodology outlines the systematic approach used to design and develop the MindCare application. A structured process is followed to ensure the successful implementation of features that address the challenges faced by the UTHM Health Centre. The development process incorporates iterative feedback and continuous improvement, allowing the application to evolve in response to real-world requirements [9]. Key stages of the methodology include requirements gathering, system design, implementation, testing, and deployment, ensuring a comprehensive approach that meets the needs of both users and stakeholders.

For this project, Agile Methodology has been chosen due to its flexibility and iterative nature. Agile emphasizes collaboration, adaptability, and incremental progress, making it ideal for a dynamic project like the MindCare application. Each iteration, or sprint, focuses on delivering specific features or functionalities, allowing for continuous feedback from stakeholders and users [10]. This approach ensures that the application evolves to meet actual needs and delivers a product that aligns with the UTHM Health Centre's expectations. By using Agile, the project remains adaptable to changes, ensuring the delivery of a functional, user-centered mental health monitoring system. Figure 3 shows the Agile Model and the outcomes of the five phases in Agile Model is discussed in Appendix A.

Applied Information Technology and Computer Science Vol. 6 No. 2 (2025) p. 1436-1458

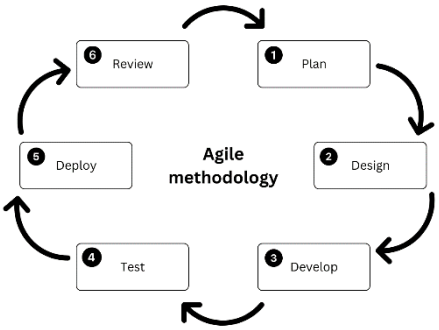


Figure 3: Agile Model

3.1 Planning Phase

The planning phase involves managing tasks, defining schedules, and gathering requirements to ensure the project stays on track. A detailed Gantt chart has been created to outline the project timeline, including milestones such as requirement gathering, system design, implementation, testing, and deployment phases. This visual guide aids in organizing tasks, estimating durations, and tracking progress to ensure timely completion.

This phase included gathering requirements for the UTHM Health Centre by an interview session with Ms. Nurulasyikin Binti Mohd Shah (Setiausaha Pejabat N29, Pusat Kesihatan Universiti, UTHM). The interview focus on identifying current challenges and specific needs related to mental health monitoring. Initial requirement checklist was created based on the findings, as shown in Table 2.

Table 2: Initial Requirement Checklist

Item	**Description**
Type of Application	Health Care
Objective	• To design a mental health monitoring application by utilizing object-oriented approaches. • To develop a mobile application on mental health monitoring system for Pusat Kesihatan Universiti UTHM. • To test the usability, functionality and effectiveness of the application in improving users' mental health management by analyzing user acceptance testing.
Target platform	Android-Based
Target Device	Smartphone
Content	Mental Health Monitoring
Technology used	Flutter

3.2 Requirement Gathering and Analysis

In this phase, the needs of the stakeholders is identified. Key activities included collecting requirements and analyses the current working procedure is conducted. This phase also analyzes the structure of the application to

be developed. Table 3 shows the Functional Requirements while Table 4 shows the Non-Functional Requirements of the system. The system use case diagram, activity diagram, sequence diagram, and class diagram shown in Appendix B to E.

3.2.1 Functional Requirement

The functional requirements define the essential operations and behaviors that the MindCare application must perform to fulfill the objectives of the system. These requirements are centered around the core modules that provide features such as user authentication, mental health tracking, real-time communication, and report generation. Key functionalities include allowing students and doctors to register and log into the application, enabling students to create journal entries and track their moods daily, providing personalized self-care advice, and facilitating communication through a chat module and support community section. Table 3 below shows the Functional Requirements.

Table 3: Functional Requirements

Modules	**Functionalities**
Login	• The user should be able to register and login into the system.
Chat	• The student and doctor should be able to exchange messages in real time. • This module automatically assigns students to doctors for consultations.
Journal	• This module allows students to create journal entries. • Display a list of past journal entries for review.
Mood Tracking	• The student should be able to log daily moods using predefined options. • Display a history of logged moods with timestamps.
Personalize Advice	• Provide personalized advice based on student's mental health category. • Update the advice section daily with new suggestions.
Community Support	• Allow students to create posts to share experiences. • Allow students to comment on posts with moderation for banned words. • Display a forum of posts sorted by most recent activity.
Resources Library	• Allow users to browse and view resources. • Allow doctors to add, edit, and delete resources.
Patient Management	• Allow doctors to view list of assigned students.

	• Provide detailed mental health reports and student data to doctors.
Report Management	• Allow students to view their mental health trends from journals and mood tracking. • Provide detailed trend reports for students and doctors • Allow doctors to view average trends across all students.

3.2.2 Non-functional Requirement

Non-functional requirements specify the quality attributes and constraints of the MindCare application that influence the overall user experience and system performance. These include performance, operational availability, and security considerations. The system is designed with key operations such as login, chat, and data saving maintaining a response time of less than 2 seconds. The application is expected to remain operational 24/7, except during planned maintenance. It is compatible with Android devices running version 8.0 or higher. These non-functional requirements ensure the system remains reliable, efficient, and secure for end users. Table 4 below shows the non-functional requirements.

Table 4: Non-Functional Requirements

Requirements	**Description**
Performance	• The application must handle 1000 concurrent users without significant degradation in performance. • Response time for key operations (e.g., login, chat, saving journal entries) should not exceed 2 seconds.
Operational	• The application should be available 24/7, except during maintenance. • The application must be compatible with Android (minimum version 8.0).
Security	• All sensitive user data must be encrypted. • The password must be longer than 6 characters.

3.2.3 Use Case Diagram

The use case diagram provides a visual representation of the interactions between users and the system. It illustrates the functional scope of the MindCare application by depicting how students and doctors interact with various modules. Key use cases include student login and registration, mood tracking, journaling, chatting with doctors, receiving personalized advice, and accessing community support. For doctors, the diagram highlights functionalities such as managing patients, sending messages, and reviewing mental health reports. This diagram serves as a foundational tool in the analysis and design phase, enabling clear understanding of system functionality and user roles. It ensures that all necessary interactions are identified and modeled appropriately to

support the system's objectives. The use case diagram for the MindCare system is shown in Figure 4 in Appendix B.

3.3 Design Phase

The design phase focuses on developing the system's architecture and user interface prototypes to translate requirements into a functional blueprint. This includes specifying the frontend and backend architecture, defining data flow between modules, and creating wireframes and UML diagrams to visualize the application structure. These tools ensure a user-friendly design that meets technical requirements for seamless operation while providing a clear understanding of feature integration within the system.

4. Results and Discussion

The MindCare mobile application was successfully implemented and tested, resulting in a functional prototype that addresses the mental health monitoring needs of the UTHM Health Centre. Each module was developed according to the specifications identified during the requirement gathering phase and integrated into a cohesive system using Flutter and Firebase. The application allows students to log moods, write journals, and receive personalized advice based on their emotional trends. Doctors can monitor students' mental health status through detailed reports and communicate with them via a real-time chat system. The integration of a community forum and resource library further enhances the user experience by providing support and educational content.

4.1 System Implementation

This section explains the implementation of each module in the MindCare application. Each module was developed using the Flutter framework and integrated with Firebase services to support authentication, data storage, and real-time communication. The following subsections describe the core modules of the system and the functionalities available to users.

4.1.1 Login Module

The Login module enables users to securely access the MindCare application. Users are required to enter their email and password to log in to the system. For new users, a registration option is provided, allowing them to create an account by supplying the necessary personal details. Doctors are required to input an additional Admin Code to verify their role during registration. Once logged in, users are directed to the homepage where they can access other modules. This module uses Firebase Authentication to manage user credentials and ensure secure access control across the platform. Figure 4.1 and Figure 4.2 shows Login interface and Register interface.

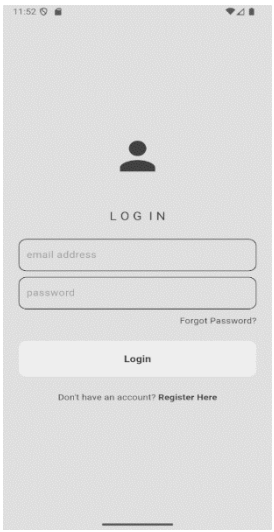


Figure 4.1: Login interface

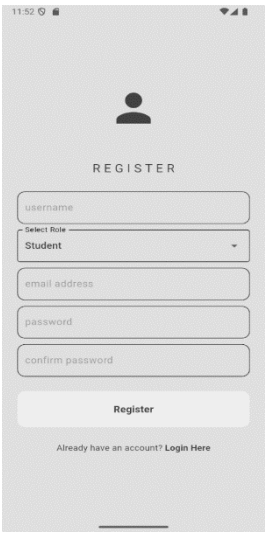


Figure 4.2 Register interface

Applied Information Technology and Computer Science Vol. 6 No. 2 (2025) p. 1436-1458

4.1.2 Chat Module

The Chat module facilitates communication between students and doctors through a real-time messaging system. This module allows students to initiate a conversation by clicking the "Talk with Doctor" button, which checks if any doctor is currently available for consultation. If a doctor is available, the system creates a chat room where both users can exchange text messages. Doctors can manage their availability status from their profile settings. This module uses Firebase Cloud Firestore to store and synchronize chat messages in real-time, ensuring seamless interaction. Figure 4.3, Figure 4.4, and Figure 4.5 showing student chat page, doctor chat page and chatroom page.

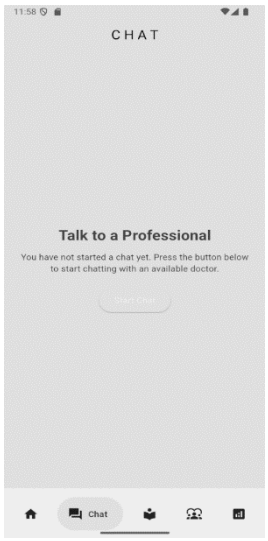


Figure 4.3: Student Chat Page

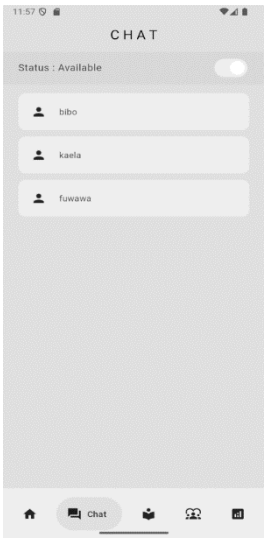


Figure 4.4: Doctor Chat Page

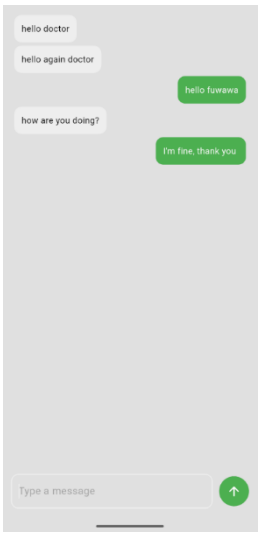


Figure 4.5: Chatroom

4.1.3 Journal Module

The Journal module allows students to record their daily thoughts and emotional reflections. Students can create new journal entries by selecting the appropriate option and entering text into the provided input field. Each journal is timestamped and stored in the database for future reference. Users can also view a list of previous entries, promoting self-awareness and helping them track personal growth over time. The journal entries can later be analyzed in the Report Management module. Figure 4.6, Figure 4.7, and Figure 4.8 presents shows the Daily journal widget in home page, Journal entry box when user input write journal, and Journal page.

Figure 4.6: Daily Journal Widget

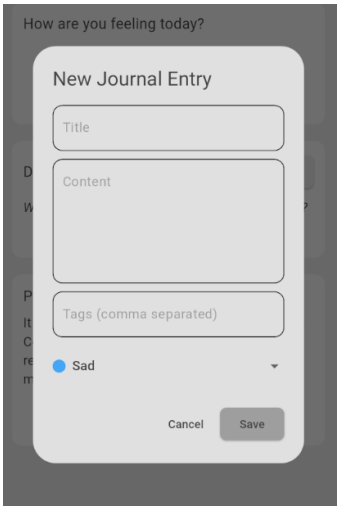


Figure 4.7: Journal Entry Box

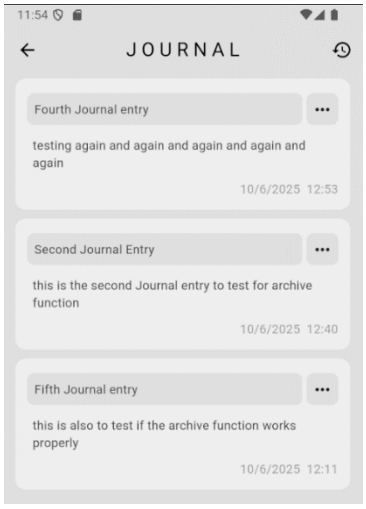


Figure 4.8: Journal page

4.1.4 Mood Tracking Module

The Mood Tracking module provides students with a simple way to log their emotional state on a daily basis. Users can choose from predefined mood icons representing various emotions such as happy, sad, angry, or anxious. Each selection is recorded along with the date and time, allowing students to build a mood history over time. This information is later used in the Report Management module to generate mood trend graphs and support mental health analysis. The module is designed to be user-friendly and encourages daily engagement. Figure 4.9, Figure 4.10, and Figure 4.11 shows the mood tracking selection phase, activity tag entry phase, and cooldown phase.

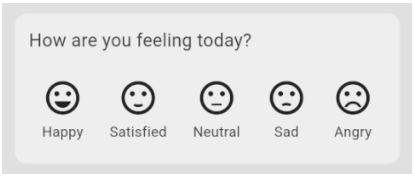


Figure 4.9: Mood Selection

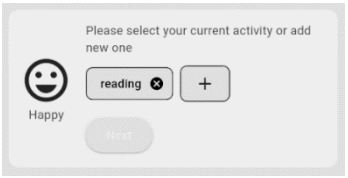


Figure 4.10: Activity Tag

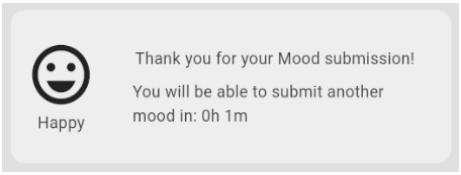


Figure 4.11: Cooldown Time

4.1.5 Personalized Advice Module

The Personalized Advice module offers tailored self-care suggestions based on the student's recent mood patterns and mental health screening test score. The system analyzes the emotional trends and categorizes users into specific mental health categories. Based on these categories, the module provides appropriate daily advice such as motivational tips, self-reflection prompts, or relaxation techniques. These suggestions aim to support the user's emotional well-being and promote healthy coping strategies. Figure 4.12, Figure 4.13, and Figure 4.14 shows the personalized advice widget in home page, screening test page, and test result widget.

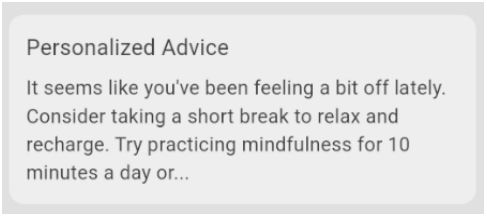


Figure 4.12: Personalized Advice Widget

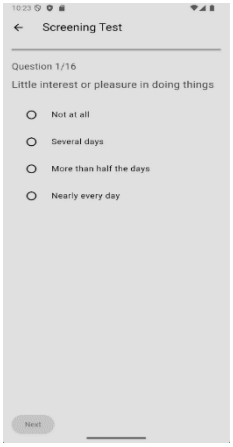


Figure 4.13: Screening Test Page

Figure 4.14: Test Result widget

4.1.6 Community Support Module

The Community Support module serves as a platform for peer-to-peer interaction and emotional encouragement. Students can create posts to share their experiences, express their thoughts, or offer advice to others. Other users may comment on these posts, fostering a supportive online community. A filtering mechanism is implemented to detect and prevent the use of inappropriate or banned words. The forum is organized by recent activity to encourage active participation. This module helps reduce feelings of isolation and promotes collective well-being. Figure 4.15 and Figure 4.16 shows community support page and post page.

Applied Information Technology and Computer Science Vol. 6 No. 2 (2025) p. 1436-1458

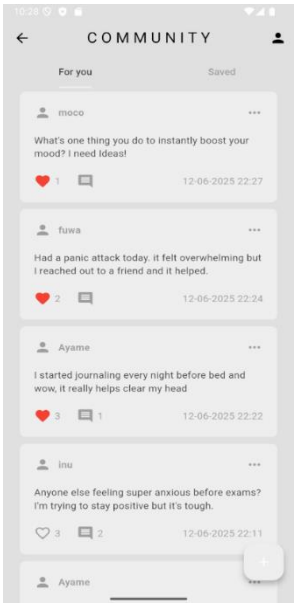


Figure 4.15: Community Support Page

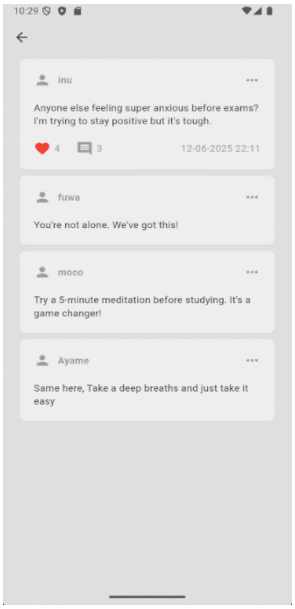


Figure 4.16: Individual Post Page

4.1.7 Resource Library Module

The Resource Library module provides access to curated mental health resources, including articles, videos, and infographics. Students can browse the available resources and view the content to gain insights into various mental health topics. Doctors have the ability to manage the resources by adding new content, editing existing entries, or deleting outdated information. This module ensures that users have continuous access to reliable and up-to-date mental health information. Figure 4.17, Figure 4.18 and Figure 4.19 shows resources library page, resource list page, and the resource page.

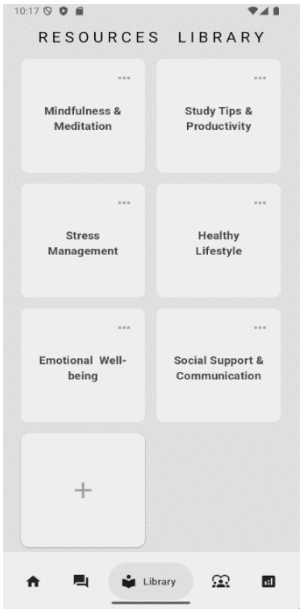


Figure 4.17: Resource Library Page

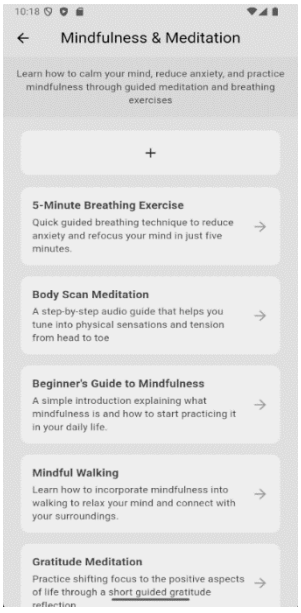


Figure 4.18: Resource List Page

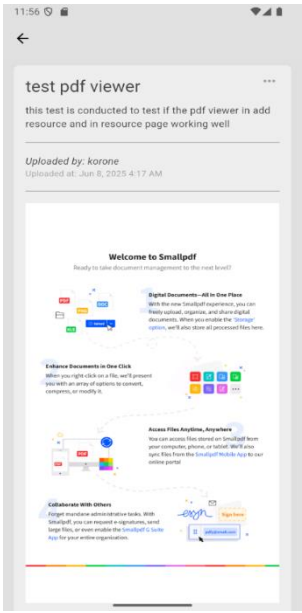


Figure 4.19: Resource Page

4.1.8 Patient Management Module

The Patient Management module is accessible only to doctors and is used to monitor the mental health status of students under their care. Doctors can view a list of assigned students and access detailed reports for each individual, including mood tracking history and journal entries. This allows doctors to understand the emotional progress of students and provide appropriate feedback or interventions when necessary. The module is designed to support clinical oversight and improve student-doctor engagement. Figure 4.20 and Figure 4.21 below shows the assigned student widget for user with role doctor and assigned student page after user click on one of the student name.

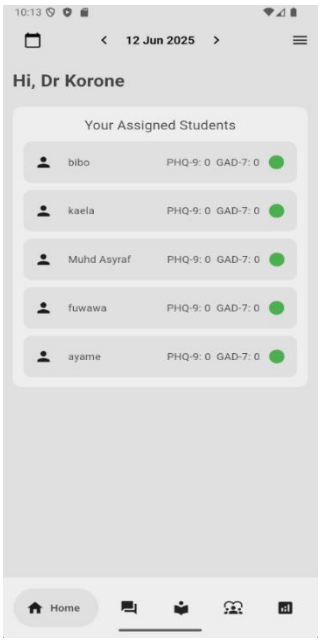


Figure 4.20: Assigned Student Widget

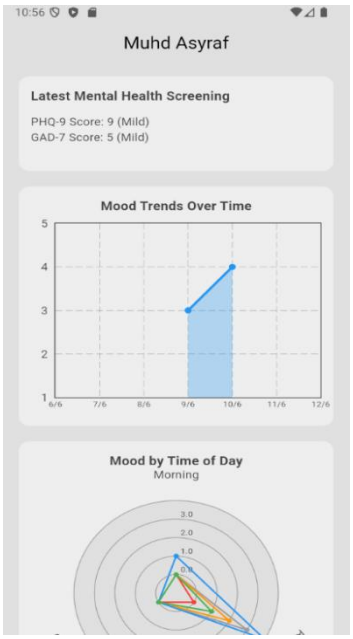


Figure 4.21: Assigned Student Page

4.1.9 Report Management Module

The Report Management module compiles and visualizes data from the mood tracking and journal modules to provide insights into the user's mental health trends. Students can view graphs that depict their emotional state over time, helping them recognize patterns and triggers. Doctors can also access aggregated reports to assess trends across multiple students. These insights are crucial for evaluating the effectiveness of self-care strategies and planning appropriate support measures. Figure 4.23 shows report page for student with pie chart and bar chart while Figure 4.24 shows report page for doctor with line chart and radar chart.

Applied Information Technology and Computer Science Vol. 6 No. 2 (2025) p. 1436-1458

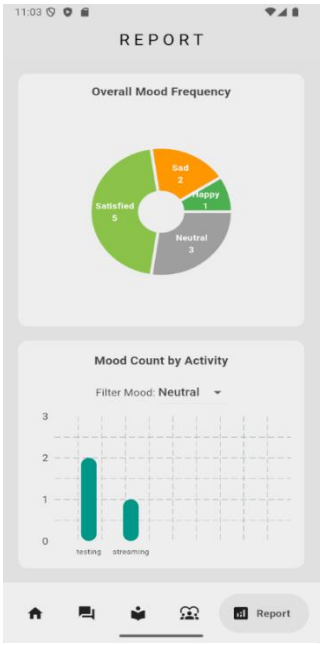


Figure 4.23: Student Report Page

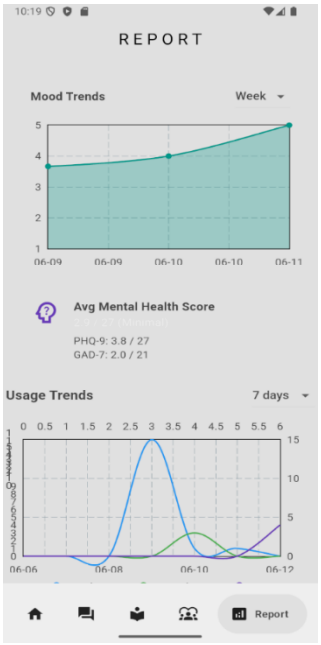


Figure 4.24: Doctor Report Page

4.2 Testing

The testing phase was conducted to verify the functionality, usability, and stability of the MindCare application. Two main types of testing were performed are Functional Testing and User Acceptance Testing (UAT). Functional testing involved checking each module to ensure it behaved as expected according to the system requirements. Fifteen test cases were executed, covering features such as user registration, login, mood tracking, journal entry, real-time chat, personalized advice, community interaction, and report generation. All test cases passed successfully, indicating that the system met the required functional criteria.

4.2.1 Functional Testing

Table 5 *Functional Testing*

Test Case ID	Test Case	Expected Outcome	Actual Outcomes	Pass/Fail
TC-01	User registers with valid student credentials	User account is successfully created an	As expected	Pass

		d redirected to the log in page		
TC-02	User logs in with valid credentials	User is redirected to home page	As expected	Pass
TC-03	Doctor logs in with valid admin code	Doctor is logged in and doctor home page is displayed	As expected	Pass
TC-04	User logs mood for today	Mood is saved and appears in the mood his	As expected	Pass

		tory		
TC-05	User writes and saves a journal entry	Entry is saved with timestamp and displayed in the journal list	As expected	Pass
TC-06	App displays daily personalized advice	Personalized advice is shown based on recent mood data	As expected	Pass
TC-07	User opens Community Support and creates a post	Post is published and visible in the	As expected	Pass

		forum		
TC-08	Student sends message to available doctor	Chat window opens and messages are sent/received in real-time	As expected	Pass
TC-09	Doctor changes availability status	Status is updated and visible in Chat page	As expected	Pass
TC-10	Doctor views a student's report	Student's mood and trend is displayed	As expected	Pass
TC-	User browses mental health resources	Resourc	As expe	Pass

11		e is saved and becomes visible to all users	ct ed	
TC-12	User logs in with wrong password	Login fails and error message is shown	As expected	Pass
TC-13	User attempts to submit empty journal entry	Warning message appears and submission is blocked	As expected	Pass
TC-14	Student opens report section	Graphical summary of mood	As expected	Pass

		/journal trends is shown		
TC-15	Doctor adds a new resource to the library	Resource is saved and becomes visible to all users	As expected	Pass

4.2.2 User Acceptance Testing (UAT)

Table 6 User Acceptance Testing

No.	Section	Number of Question	Rating (1 -5)
1	Usability and Interface	3	4.51
2	Functionality	8	4.56
3	Performance and Reliability	3	4.4
4	Overall Satisfaction	2	4.5

5. Conclusion

The development of the MindCare mobile application represents a significant step toward improving mental health monitoring and support services at the UTHM Health Centre. By integrating features such as mood tracking, journaling, personalized advice, real-time chat, and community support, the application offers a comprehensive and user-friendly solution for both students and healthcare providers. The successful implementation of the system, supported by positive results from both functional and user acceptance testing, confirms that the application meets its intended objectives.

Acknowledgement

The authors would like to thank the Faculty of Computer Science and Information Technology, Universiti Tun Hussein Onn Malaysia for its support.

Conflict of Interest

Authors declare that there is no conflict of interests regarding the publication of the paper.

Author Contribution

This journal requires that all authors take public responsibility for the content of the work submitted for review. The contributions of all authors must be described in the following manner:

The authors confirm contribution to the paper as follows: ***study conception and design:*** *Muhd Asyraf Ahmad, Zanes Mohd Sahid;* ***data collection:*** *Muhd Asyraf Ahmad* ***analysis and interpretation of results:*** *Muhd Asyraf Ahmad, Zanes Mohd Sahid;* ***draft manuscript preparation:*** *Muhd Asyraf Ahmad, Zanes Mohd Sahid. All authors reviewed the results and approved the final version of the manuscript.*

References

[1] Jackman, P. C., Jacobs, L., Hawkins, R. M., & Sisson, K. (2022). Mental health and psychological wellbeing in the early stages of doctoral study: a systematic review. European Journal of Higher Education, 12(3), 293-313.

[2] Gavin, B., Lyne, J., & McNicholas, F. (2020). Mental health and the COVID-19 pandemic. Irish journal of psychological medicine, 37(3), 156-158.

[3] Gopalakrishnan, A., Venkataraman, R., Gururajan, R., Zhou, X., & Genrich, R. (2022). Mobile phone enabled mental health monitoring to enhance diagnosis for severity assessment of behaviours: a review. PeerJ Computer Science, 8, e1042.

[4] Mamoun, R., Nasor, M., & Abulikailik, S. H. (2021, February). Design and development of mobile healthcare application prototype using flutter. In 2020 International Conference on Computer, Control, Electrical, and Electronics Engineering (ICCCEEE) (pp. 1-6). IEEE.

[5] Tashildar, A., Shah, N., Gala, R., Giri, T., & Chavhan, P. (2020). Application development using flutter. International Research Journal of Modernization in Engineering Technology and Science, 2(8), 1262-1266.

[6] Dagne, L. (2019). Flutter for cross-platform App and SDK development.

[7] Erni, E., Adetiya, W., & Yuberti, Y. (2021). Development of Android-Based Mobile Learning Media Using Android Studio on Natural Science Subject in Elementary School. JIP Jurnal Ilmiah PGMI, 7(2), 101-108.

[8] Smyth, N. (2020). Android Studio 4.0 Development Essentials-Kotlin Edition. eBookFrenzy.

[9] Guerrero-Ulloa, G., Rodríguez-Domínguez, C., & Hornos, M. J. (2023). Agile methodologies applied to the development of Internet of Things (IoT)-based systems: A review. Sensors, 23(2), 790.

[10] Al-Saqqa, S., Sawalha, S., & AbdelNabi, H. (2020). Agile software development: Methodologies and trends. International Journal of Interactive Mobile Technologies, 14(11).

Appendix A: Agile Methodology

Table 5: Application Development Workflow

Phase	Activities	Outputs
Requirement Gathering and Analysis	• Collect requirements through stakeholder discussions. • Analyze the current processes of the UTHM Health Center. • Define the scope and objectives of the project.	• Documented functional and non-functional requirements. • Identified gaps in mental health monitoring. • Aligned scope and objectives with user and stakeholder expectations.
System Design	• Create user interface prototypes for the application. • Specify frontend and backend architecture. • Visualize application structure using design tools.	• UML diagrams, wireframes, and system architecture documentation. • Defined data flow between modules and system components.

		• Functional blueprint for the application.
Implementation	• Develop the application using the Flutter framework. • Integrate Firebase for data storage and authentication. • Implement modules iteratively in sprints.	• Fully implemented features such as mood tracking, journaling, and report generation. • Secure backend setup. • Working application modules aligned with the Agile methodology.
Testing	• Perform unit testing, integration testing, and user acceptance testing. • Test individual modules (e.g., mood tracking, journaling) and their integration. • Incorporate feedback from users and stakeholders.	• Verified system functionality and usability. • Resolved issues identified during testing phases. • Improved features based on user and stakeholder feedback.
Deployment	• Configure the application on devices and set up backend systems. • Train administrators to manage data and monitor mental health trends. • Conduct a pilot run and full-scale release.	• Fully functional application ready for release. • Documentation and training materials for administrators. • Smooth transition from physical to digital mental health monitoring.

Appendix B: Use Case Diagram

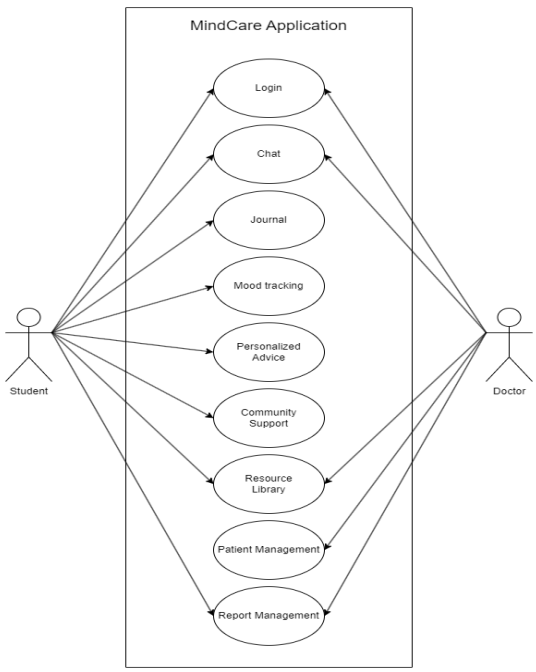


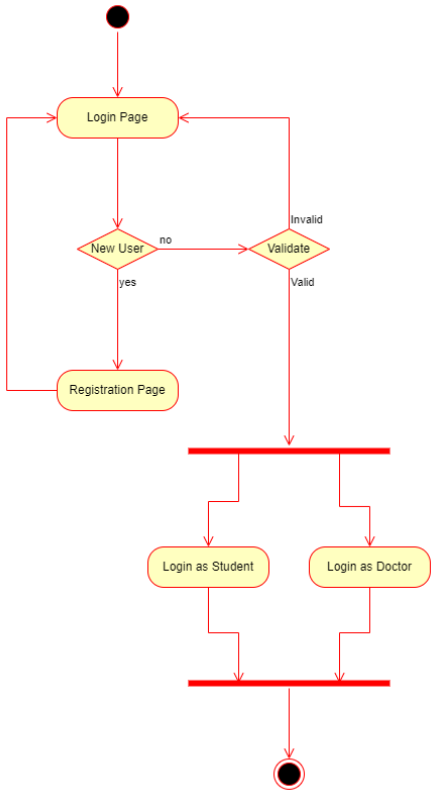
Figure 4: Use Case Diagram

Appendix C: Activity Diagram

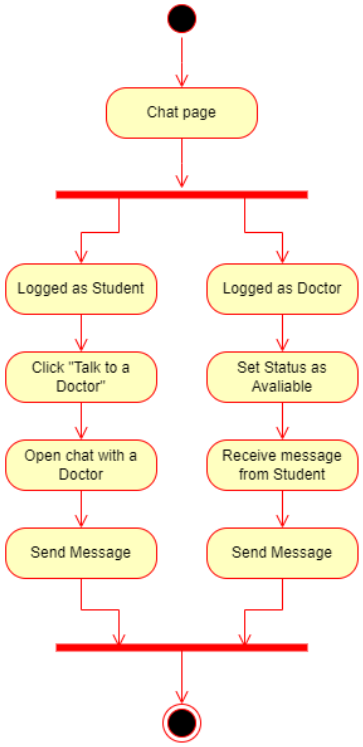
Table 6: Activity Diagram of the proposed application

Applied Information Technology and Computer Science Vol. 6 No. 2 (2025) p. 1436-1458

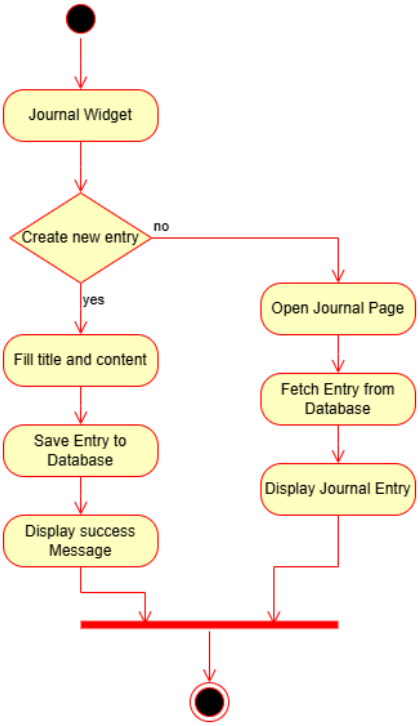
Login



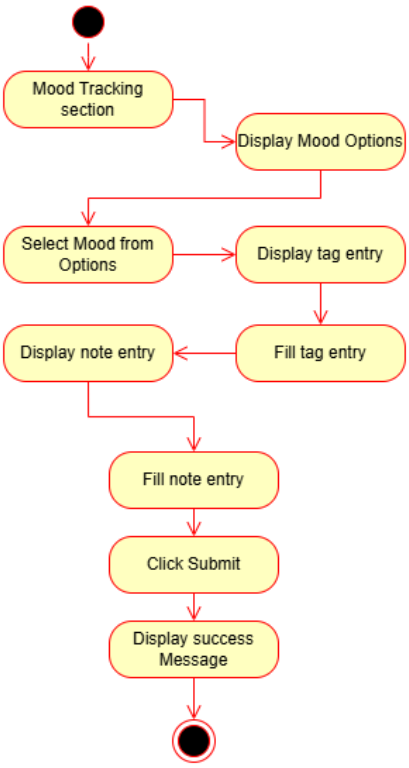
Chat



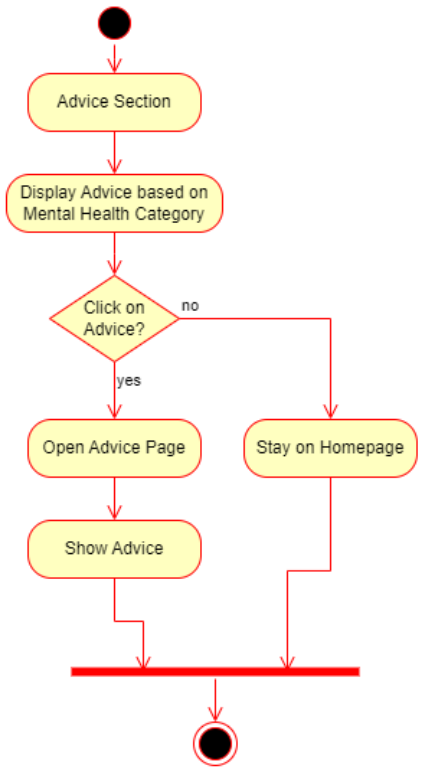
Journal



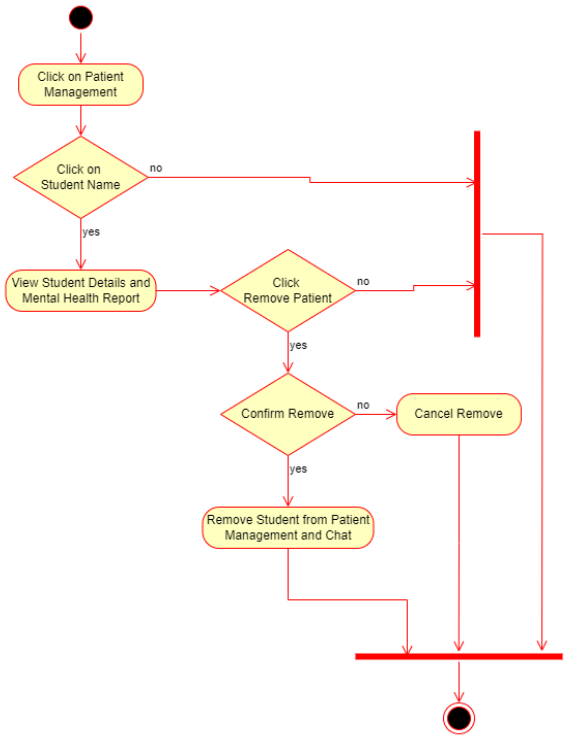
Mood Tracking



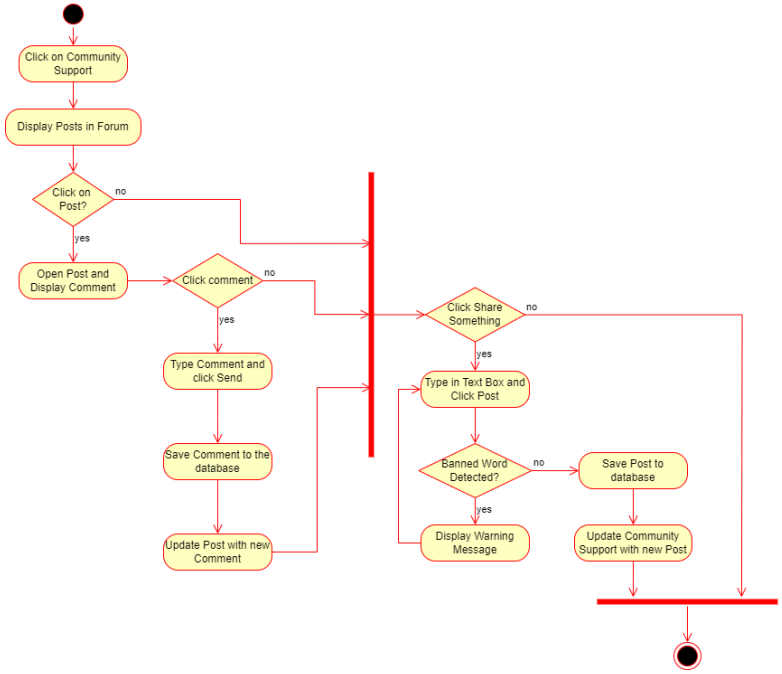
Personalized Advice



Patient Management

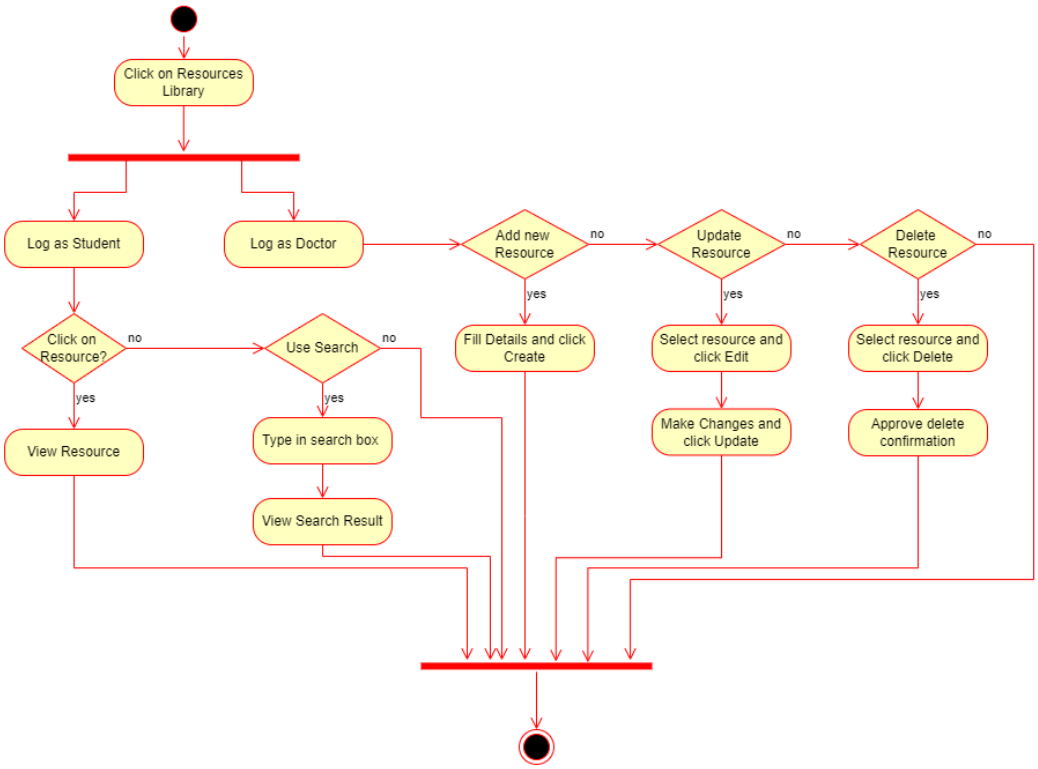


Community Support

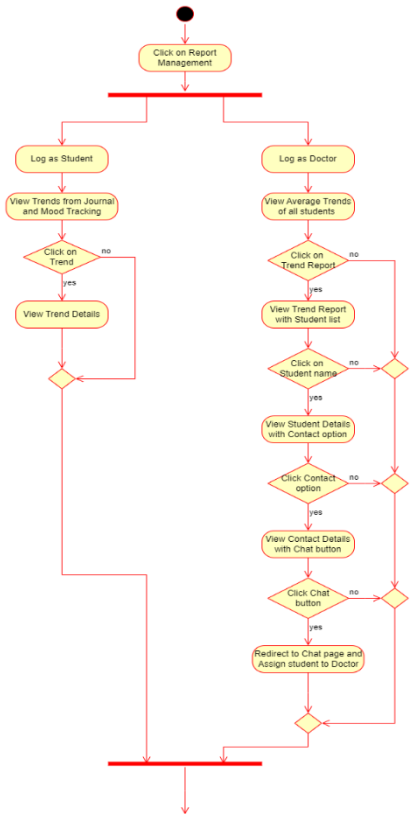


Resources Library

Applied Information Technology and Computer Science Vol. 6 No. 2 (2025) p. 1436-1458



Report Management



Appendix D: Class Diagram

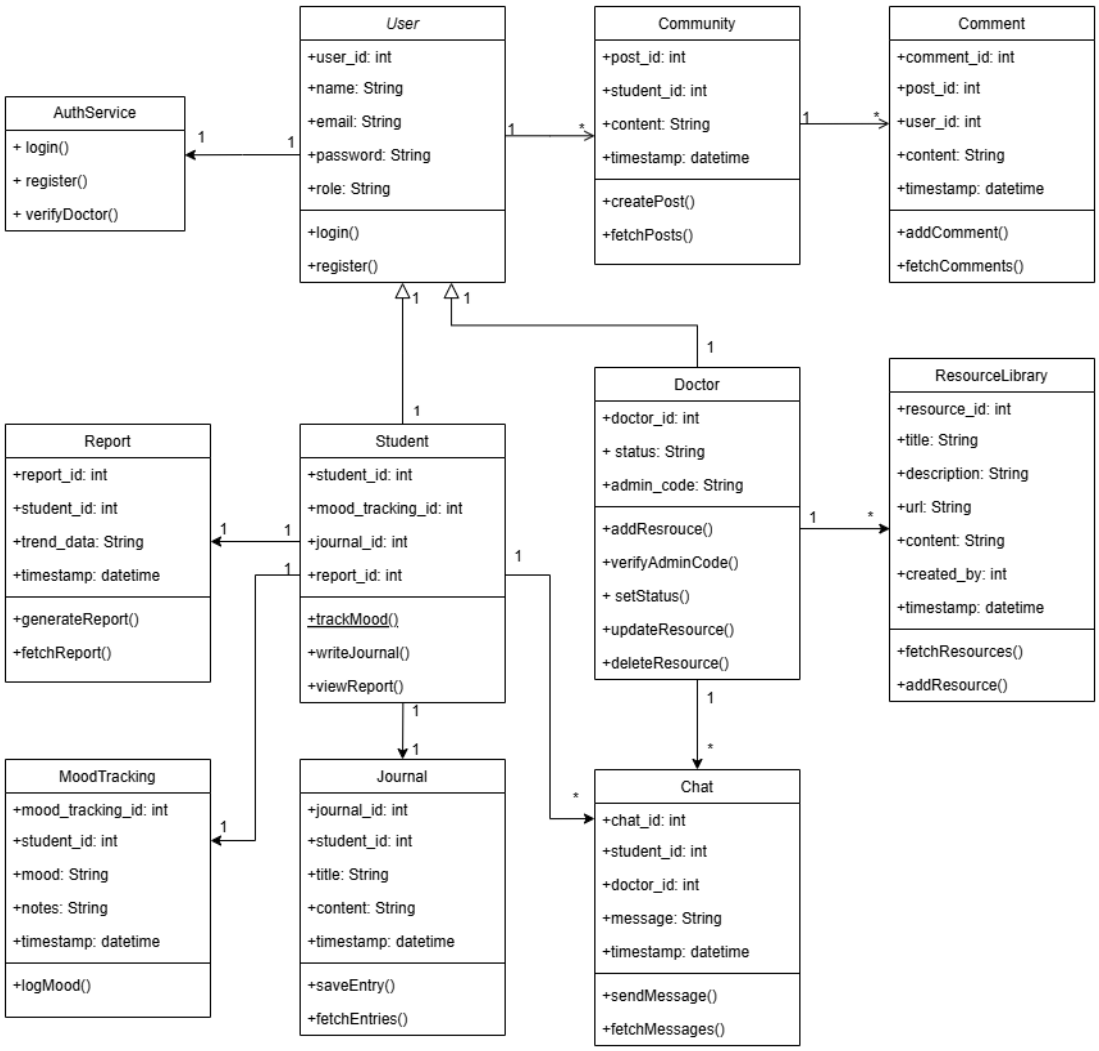


Figure 5: Class Diagram