



Faculty of Computer Science and Information Technology

**EMOSIBOT: A WEB-BASED MENTAL HEALTH PLATFORM WITH CHATBOT
INTEGRATION IN MALAY LANGUAGE**

AINA ZUHAIKHA BINTI ROSLI

Bachelor of Software Engineering with Honours

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**EMOSIBOT: PLATFORM KESIHATAN MENTAL BERASASKAN WEB
DENGAN INTEGRASI CHATBOT
DALAM BAHASA MELAYU**

AINA ZUHAIKHA BINTI ROSLI

Projek ini merupakan satu keperluan untuk
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To everyone who has been part of this journey, thank you for walking with me.

ABSTRACT

EmosiBot is a web-based mental health platform designed for university students to help them manage their emotional well-being. This project focuses on providing a safe and accessible space for students to express their emotions, screen their mental state, and access useful mental health resources. The system includes a chatbot developed using Dialogflow that communicates in the Malay language and allows two-way interaction with users.

Currently, many students face emotional struggles but hesitate to seek help due to stigma or lack of access. Therefore, this platform aims to offer an alternative first step towards emotional support. The system was developed using PHP and follows the Prototype model as the development methodology. Comparisons with similar existing systems were conducted to gain better insights and improve system functionality.

Based on testing with the university counsellor, EmosiBot was found to be helpful, particularly for providing a direct link for students to make counselling appointments. Additionally, testing with 11 undergraduate students showed that EmosiBot is easy to use, though users suggested making the chatbot icon more prominent for better visibility. As a result, EmosiBot offers an interactive and systematic approach to supporting students' mental health needs.

ABSTRAK

EmosiBot ialah sebuah platform kesihatan mental berasaskan web yang direka khusus untuk membantu pelajar universiti mengurus kesejahteraan emosi mereka. Projek ini memberi tumpuan kepada penyediaan ruang yang selamat dan mudah diakses untuk pelajar meluahkan emosi, menyaring keadaan mental mereka, serta mengakses sumber-sumber kesihatan mental yang berguna. Sistem ini merangkumi chatbot yang dibangunkan menggunakan Dialogflow dan berinteraksi dalam Bahasa Melayu secara dua hala dengan pengguna. Pada masa kini, ramai pelajar menghadapi tekanan emosi namun berasa segan atau sukar untuk mendapatkan bantuan disebabkan stigma atau kekangan akses. Oleh itu, platform ini bertujuan untuk menjadi langkah pertama alternatif dalam memberikan sokongan emosi. Sistem ini dibangunkan menggunakan PHP dan mengikuti model pembangunan Prototip. Perbandingan turut dibuat dengan sistem sedia ada bagi mendapatkan gambaran yang lebih baik dan menambah baik fungsi sistem.

Berdasarkan ujian bersama kaunselor universiti, EmosiBot didapati membantu terutamanya dalam menyediakan pautan terus untuk pelajar membuat janji temu kaunseling. Ujian bersama 11 orang pelajar prasiswazah pula menunjukkan bahawa EmosiBot mudah digunakan, namun terdapat cadangan untuk membesarkan ikon chatbot agar lebih mudah dilihat. Oleh itu, EmosiBot menawarkan pendekatan interaktif dan sistematik dalam menyokong keperluan kesihatan mental pelajar.

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Chapter 1: Introduction

1.1 Background

The World Health Organization (WHO) defines mental health as a state of well-being that enables individuals to cope with life's stresses, realize their potential, learn effectively, work productively, and contribute to their community. However, various factors, including socioeconomic challenges, environmental changes, work-related stress, and physical health issues, can significantly impact mental health (Arifin et al., 2023).

Following the COVID-19 pandemic, mental health concerns have become especially pressing among Malaysian university students, who face pressures from academics, social issues, and personal struggles. According to the National Health and Morbidity Survey (NHMS) 2022, 16.2% of Malaysian teenagers experience loneliness, 12.9% have restless nights due to worry, and concerning percentages have suicidal thoughts (13.1%), plans (10.0%), and attempts (9.5%). Furthermore, 4.2% report having no close friends, further emphasizing how alone many young people feel.

Many teenagers face barriers to addressing their mental health needs, including limited access to mental health resources, fear of stigma, and pressures from academics. With advancements in modern technology, a growing number of AI-powered chatbots are now readily accessible online, providing new avenues for mental health support. However, most of them are available in English, with limited options in Malay language.

Therefore, EmosiBot: A Web-Based Mental Health Platform with Chatbot Integration in Malay Language aims to develop a web-based system specifically designed for Universiti Malaysia Sarawak (UNIMAS) students, which provides a platform for mental health support by offering a DASS-21 screening tool, scheduling appointments with counsellors, facilitating casual conversations, and enabling mood tracking and journaling.

1.2 Problem Statement

The increasing prevalence of mental health issues among university students, particularly at UNIMAS, is significantly impacting their academic performance, relationships, and future employment prospects. Many students face stress, anxiety, and depression due to academic demands, social pressures, and various life challenges. Compounding these struggles is the limited availability of immediate mental health support, as there is no available system for students to seek help with their mental health apart from the link to book an appointment with

the counsellor in UNIMAS. This leaves many students without timely intervention. Additionally, due to the stigma surrounding mental illness, some students may hesitate to seek help or openly discuss their emotional struggles, resulting in untreated mental health issues. This reluctance can worsen symptoms, potentially escalating into critical situations if not addressed properly. By offering an online platform, we aim to provide accessible support to students, encouraging them to seek assistance in a stigma-free environment. Early intervention through such a platform can prevent unwanted incidents and promote a healthier, more supportive campus community.

1.3 Scope

This project focuses on developing a Web-Based Mental Health Platform with Chatbot Integration in Malay Language which utilizes the DASS-21 as a screening tool which provides students with assessments of depression, anxiety, and stress levels. The main web app part will include the scheduling capabilities to help students make appointments with UNIMAS counsellors, and a mood-tracking journal to allow for self-reflection and progress monitoring. Furthermore, the chatbot's website will offer curated videos on mental health exercises, contributing to overall wellness.

1.4 Objectives

The main objectives of this project are:

1. To design a website integrating an AI-powered Chatbot in Malay that serves as a virtual friend that provides a platform for students.
2. To develop a platform that allows students to express their problems and screen for mental health symptoms.
3. To evaluate the performance and effectiveness of the EmosiBot.

1.5 Significant of Project

This project aims to address the mental health needs of university students, especially for Universiti Malaysia Sarawak (UNIMAS) which provides a Malay-language interface. It also integrates with UNIMAS counselling services, fostering a smooth support system that can enhance the university's overall mental health framework.

1.6 Project Schedule

Figure 1.1 shows the project schedule illustrated in a Gantt Chart Diagram for this project.

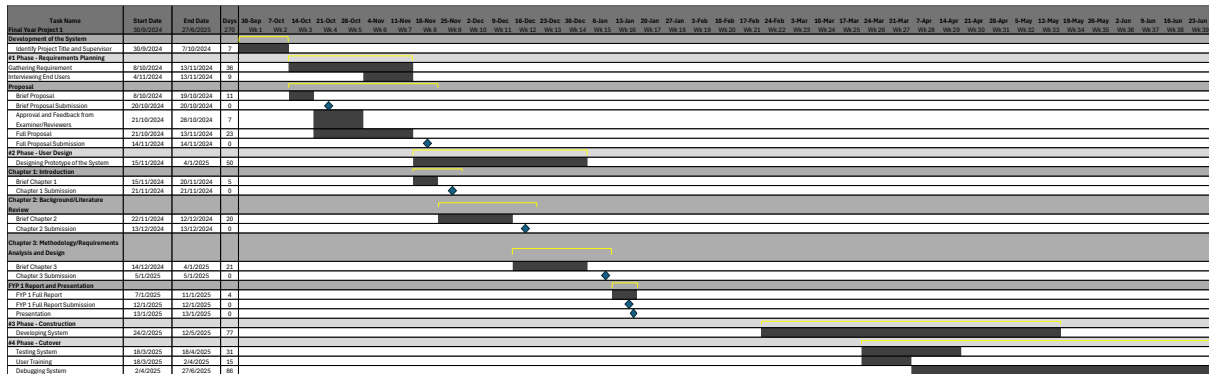


Figure 1. 1: Gantt Chart Diagram for Final Year Project 1

1.7 Expected Outcome

At the end of the project, the expected outcome would be:

1. The website will be successfully designed and developed in Malay, integrating an AI-powered chatbot to provide a safe platform for students to express their problems, screen for mental health symptoms using the DASS-21, and offer features like mood tracking, journaling, and access to mental health resources while ensuring user data privacy and scalability for future enhancements.
2. The performance and effectiveness of EmosiBot will be successfully evaluated and analysis of its accuracy, usability, and impact in providing mental health support and screening

1.8 Project Overview

Chapter 1: Introduction

This chapter provides an overview of the topic, which is EmosiBot: A Web-Based Mental Health System with Chatbot Integration in the Malay Language. This overview includes the problem statement, objectives, methodologies, scope, significance of the project, and expected outcomes. These components will serve as a guide for the project in achieving its objectives and addressing the identified problem.

Chapter 2: Literature Review

This chapter reviews the existing chatbot and findings related to the project, highlighting the key aspects considered while developing the software. It includes comparing current systems

to outline their functionalities and features, helping to identify the strengths and limitations of each system for integration into the proposed solution.

Chapter 3: Methodology

This chapter will present an overview of the requirement analysis, system design, implementation, and evaluation of the proposed system, following the RAD methodology. It will provide detailed insights into the software's design and development, including the system architecture, key components and modules, and the chatbot's integration with existing systems. Additionally, the chapter will discuss the user interface design and address the security and privacy measures incorporated into the development process.

Chapter 2: Literature Review

2.1 Introduction

This chapter reviews and discusses three selected applications that closely align with the objectives of the proposed system by evaluating their main features. The selected applications are Wysa, Youper, and 7Cups. Key criteria for this analysis include each system's features, strengths, weaknesses, and available platforms. This comparison will help to highlight the aspects most relevant to developing a mental health chatbot system.

2.2 Review of Existing System

Currently, no available applications or websites specifically tailored for mental health integrate Malay chatbots like Wysa, Youper, and 7Cups. Therefore, section 2.2.1 will review the AirAsia website, which has integrated a chatbot that can switch to Malay.

2.2.1 AirAsia

AirAsia, operating under Capital A Berhad (MYX: 5099), is a prominent low-cost airline based in Malaysia. Headquartered near Kuala Lumpur, the airline was established in 1993 and began its operations in 1996. Over the years, AirAsia has grown to become the largest airline in Malaysia in terms of fleet size and destinations, offering scheduled domestic and international flights to over 166 destinations across 25 countries (About Us, AirAsia Newsroom, n.d.).

To enhance customer service and streamline user interactions, AirAsia has implemented a virtual assistant named AVA (AirAsia Virtual Allstar). According to Anuar (2023), AVA has been replaced by a new AI-powered chatbot named Ask Bo, which offers improved capabilities and user experience.

Ask Bo supports multiple languages, including Bahasa Melayu, making it accessible to Malaysian users (Figure 2.1). This multilingual support is a significant strength, as it allows the chatbot to cater to a diverse user base. The chatbot can handle a variety of customer service inquiries such as flight bookings, cancellations, and general information. It provides instant responses and can assist with common tasks, improving customer service efficiency. Additionally, Ask Bo offers live updates on flight status, including delays, departures, and boarding information, which is a valuable feature for travelers.

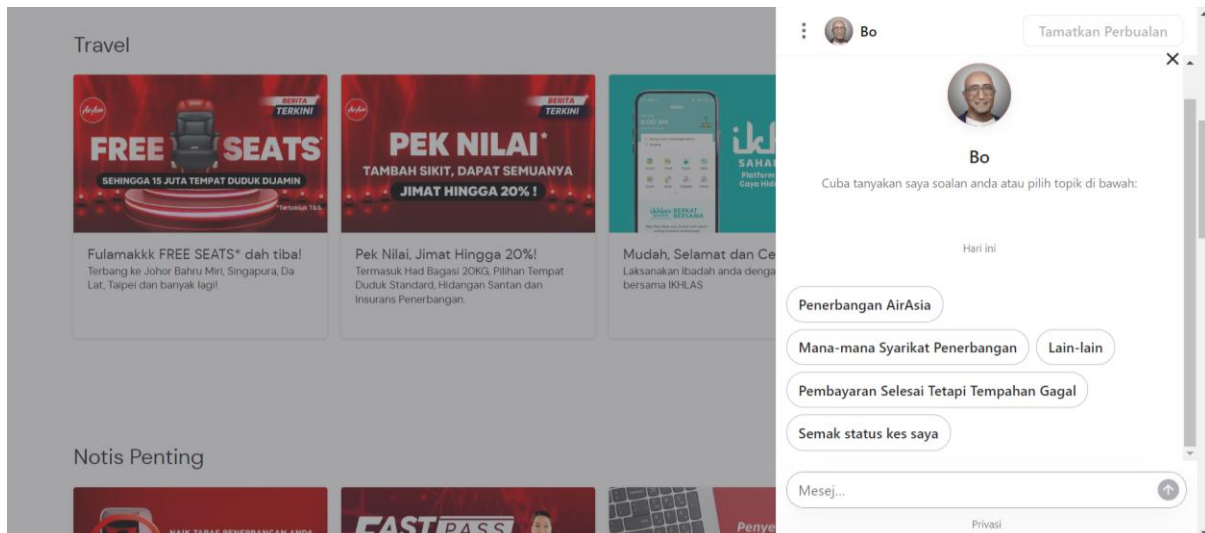


Figure 2. 1: Interface of AirAsia Website

One of the key strengths of Ask Bo is its accessibility. The ability to switch to Bahasa Melayu makes the chatbot user-friendly for Malaysian customers, ensuring that language barriers do not hinder effective communication. The chatbot's instant responses to common questions can save time for users, enhancing their overall experience. Furthermore, the new chatbot offers improved AI and machine learning capabilities, making it more responsive and accurate in handling queries.

2.2.2 Wysa

Wysa is an AI-driven, emotionally intelligent chatbot developed by Touchkin in 2016, designed for mobile platforms to support mental well-being. Using a conversational, text-based interface, Wysa assists users in building mental resilience and expressing themselves positively (Bell, 2024). It promotes self-reflection by offering evidence-based mental health practices such as Cognitive Behavioral Therapy (CBT) and Dialectical Behavior Therapy (DBT), which are known to help with anxiety, depression, and stress. Wysa also includes guided meditations, breathing exercises, and relaxation tools to help users manage stress immediately. Additionally, users can set wellness goals and engage in journaling exercises for further reflection. For those seeking additional support, Wysa provides an option to access certified human therapists via a premium subscription, setting it apart from other AI-based mental health apps (Wysa Ltd, n.d.).

Available for free on both the Google Play Store and the Apple App Store, Wysa offers an optional “Therapist” tab for users to purchase the premium version, which grants access to certified therapy services (Figure 2.2 and Figure 2.3). Premium plans include weekly live

chat sessions with a therapist, priced at RM359.90 quarterly or RM199.90 monthly, with unlimited text-based messaging available. The app also provides single-session options at RM29.99 or RM49.97 (Figure 2.2). Account registration is not required, as users can remain anonymous by simply entering a nickname. Following this, users select their age group. (Figure 2.2).

Chatting is a key feature of Wysa. Users can start a conversation by clicking the "Talk" icon, which shows a penguin image, to begin chatting with the AI chatbot (Figure 2.3). The chatbot then responds to users' input, whether they select preset questions displayed in bubbles or type their questions. At the top of the screen, there is an "SOS" button that provides access to the "Creating a Safety Plan" feature (Figure 2.3). This option helps users prepare for crisis situations by guiding them to list emergency contacts, safe places, and trusted people. Users answer questions to create a personalized safety plan, and the app generates recommendations based on their responses. It also provides professional support or helplines that users can contact based on their location.

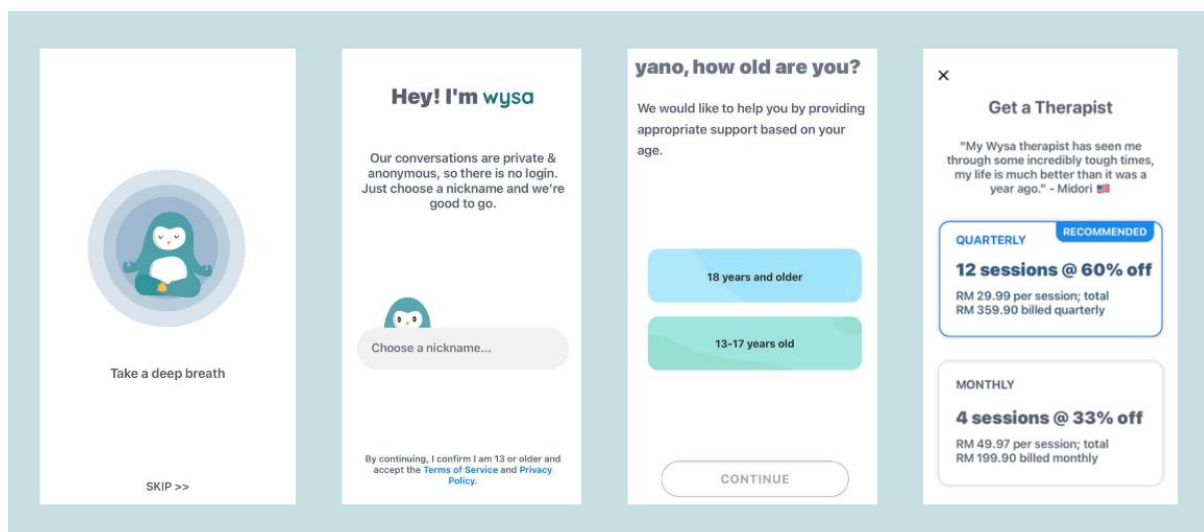


Figure 2. 2: Screen capture of the Landing page and Price for the premium version of Wysa

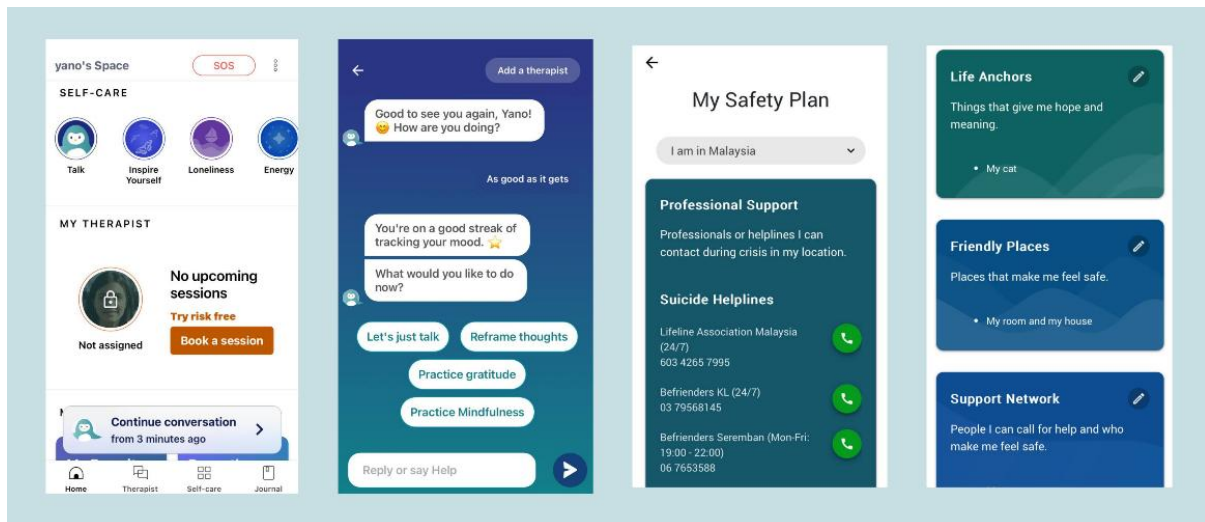


Figure 2. 3: Homepage and My Safety Plan page of Wysa

The app features a “Self-care” tab, which is a library of mental health exercises covering topics like self-esteem, anger management, and more, all guided by AI and video content. Basic access includes one free exercise, while the premium plan unlocks the full library (Figure 2.3).

The “My Journal” section, unlike a traditional journal, logs users' activity history in the app (Figure 2.4). Each exercise entry is timestamped, allowing users to revisit and reflect on previous thoughts. Reviewing these entries enables users to observe their progress over time, gaining valuable insight into their mental health journey.

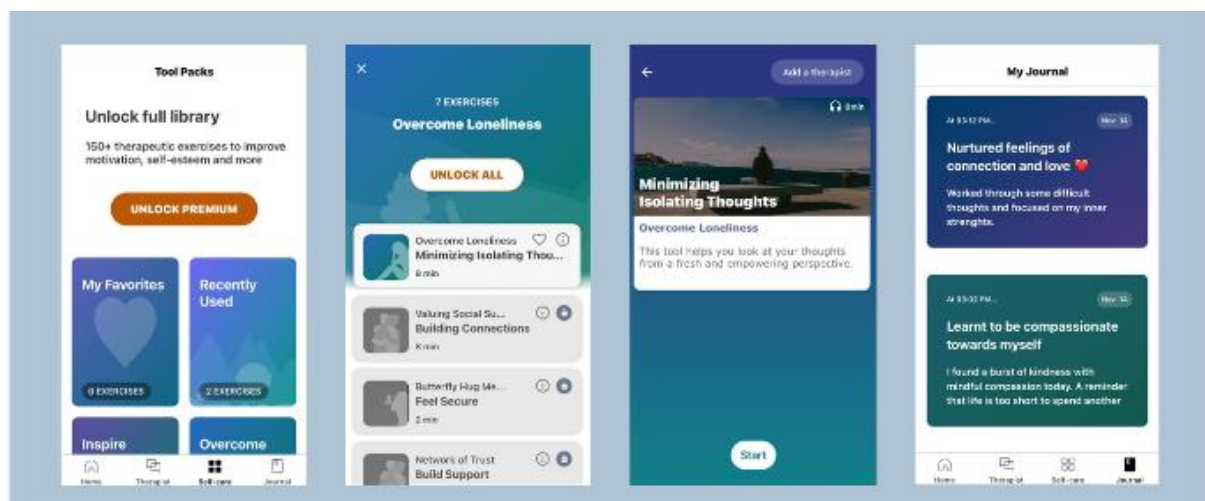


Figure 2. 4: Self-care page and Journal page of Wysa

2.2.3 Youper

Youper is a mental health app co-founded by Dr. Jose Hamilton, Diego Couto, and Thiago Marafon in 2016 that uses AI technology to help users manage their mental well-being. The app features an AI chatbot that conducts daily check-ins using Cognitive Behavioral Therapy (CBT) techniques to track users' moods, thoughts, and feelings. This chatbot guides users through exercises that address anxiety, depression, sleep issues, self-confidence, and more, using CBT strategies to help reframe challenges, find positive perspectives, and boost motivation (MS, 2024). Youper also creates a personalized plan to target specific issues, such as anxiety or depression.

Upon starting, users are welcomed into a chatroom with the AI chatbot, which conducts an initial mental health check. The chatbot asks questions about the user's current state, providing instant responses based on CBT tools and exercises. The chatbot encourages users to complete mental health check-ins, offering a convenient way to track moods and emotions. Through these conversations, Youper supports users with real-time responses, helping them stay mindful of their mental well-being. After the initial free conversation with the chatbot, users are prompted to try the trial version for a 1-week free trial or purchase the premium subscription for continued personalized support at subscription at RM329.90 per year (Figure 2.5 and Figure 2.6).

Figure 2.5 and Figure 2.6 shows the free version of Youper. The "Progress" and "Insights" tabs are only available in the premium version, as illustrated in Figure 2.7 and Figure 2.8.

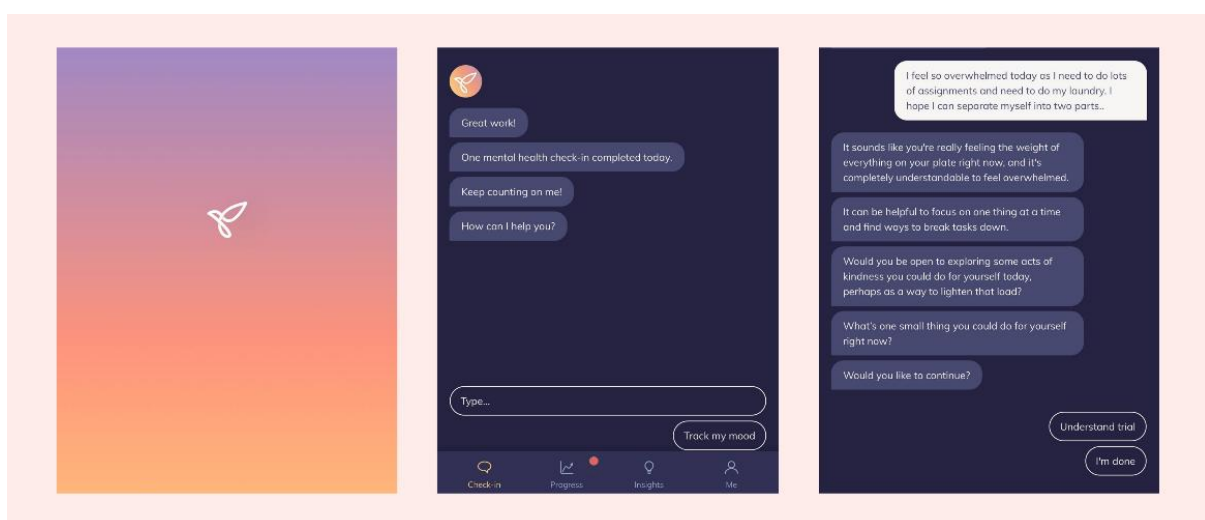


Figure 2. 5: Homepage of Youper

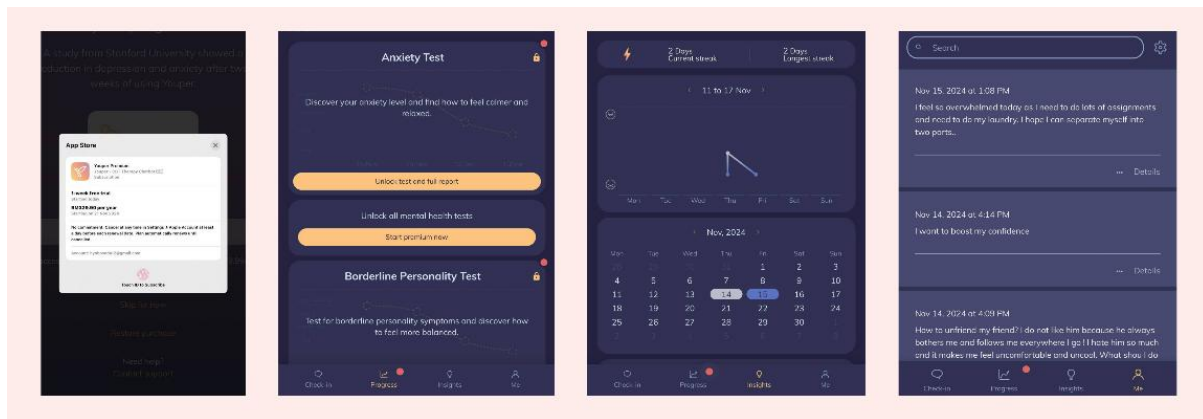


Figure 2. 6: The interface of the free version of Youper

According to MS (2024), who is a reviewer for the premium version of Youper, the app also provides detailed progress monitoring to help users track changes in their mental health over time (Figure 2.7). For instance, the "Anxiety Monitoring" feature visually displays fluctuations in anxiety levels, allowing users to observe trends and improvements. Additionally, Youper offers screening tools for specific conditions, such as the "Borderline Personality Test," which helps users screen for symptoms and gain insights into their mental health. Other tracking features, like the "Depression Monitoring" section, indicate that Youper provides tailored support for a range of conditions, supporting users in making progress toward better mental health.

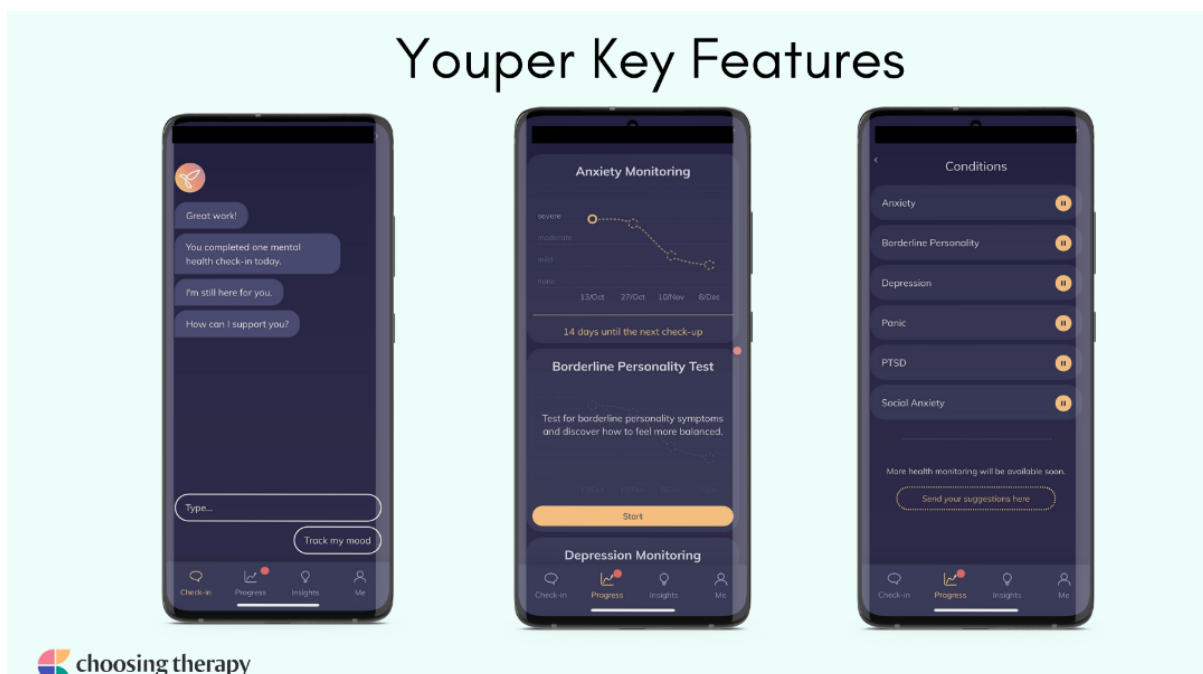


Figure 2. 7: The premium version of Youper shows the "Check-in" and "Progress" tabs ((MS, 2024))

For more targeted assistance, Youper includes a range of condition-specific tools. The app

lists several mental health conditions it addresses, including anxiety, borderline personality, depression, panic, PTSD, and social anxiety. Each condition has dedicated resources and monitoring options, allowing users to focus on areas most relevant to their needs. This personalized approach enables users to address specific mental health challenges, creating a more supportive and customized experience (Figure 2.7).

Figure 2.8 shows the Mood Trackers and Mental Health Assessments features, designed to help users monitor their emotional well-being and gain insights into their mental health. The first screen shows a selection of moods that users can choose from to describe how they feel. The interface presents emotions like "Loving," "Joyful," "Optimistic," "Calm," and "Confident," alongside more challenging feelings such as "Tired," "Anxious," and "Sad." This broad range allows users to capture a nuanced picture of their emotional state, facilitating a more personalized mental health experience.

The second screen expands on this mood-tracking feature by presenting the emotions in a colourful, visually engaging layout, encouraging users to select how they are feeling at any given moment. Each emotion is colour-coded, which not only makes the interface visually appealing but also provides an intuitive way for users to track and categorize their emotions. This selection process helps users reflect on their mental state, identify patterns, and become more aware of their emotional fluctuations over time.

The third screen shows the chatbot interface, where Youper combines Cognitive Behavioral Therapy (CBT) techniques with AI-driven conversations. Here, the chatbot provides information, supportive messages, and relevant mental health resources, such as studies supporting the effectiveness of CBT. It engages users in discussions about how they're feeling and offers feedback designed to improve mood and provide perspective. This interaction serves as a quick mental health check-in, encouraging users to stay engaged in their emotional well-being through a conversational and user-friendly approach.



Figure 2. 8: The premium version of Youper shows the "Mood Trackers" and "Mental Health Assessments" pages ((MS, 2024))

Youper's interface is designed for easy navigation, with a bottom menu offering quick access to different sections like "Check-in," "Progress," "Insights," and "Me" as illustrated in Figure 2.8. This layout makes it simple for users to switch between check-ins, progress tracking, and insights into their mental health journey, creating a user-friendly experience that encourages consistent engagement.

2.2.4 7Cups

7 Cups, launched in 2013, is a free web-based online mental health platform designed to provide emotional support and resources to individuals seeking help founded by Glen Moriarty. It offers various services, including anonymous text or voice chats with trained listeners who are volunteers skilled in active listening. This allows users to confidentially share their thoughts and feelings in a safe space. Users can either log in with their existing account or sign up to create a new one (Figure 2.9).

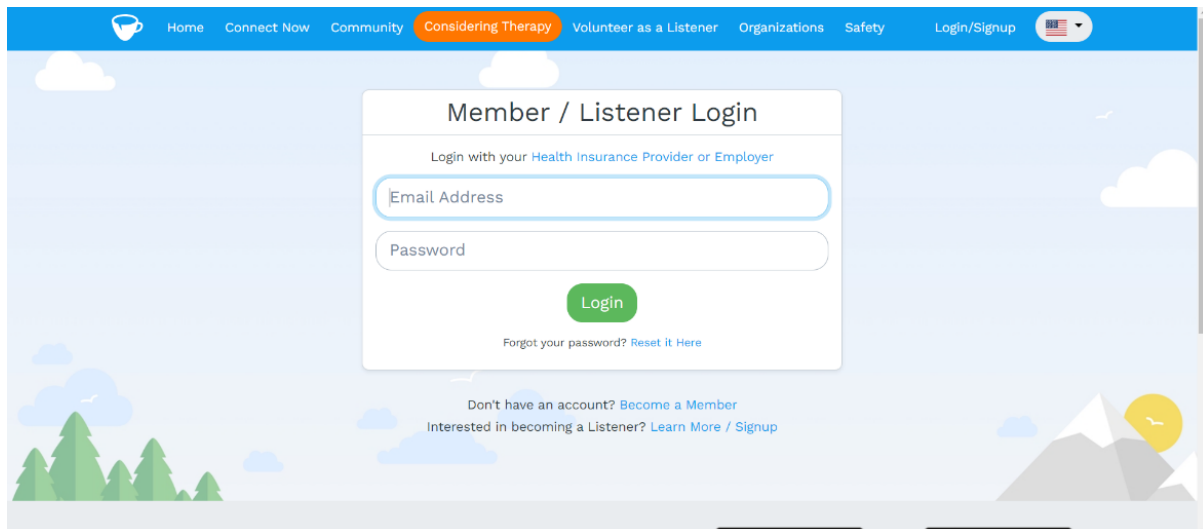


Figure 2. 9: Homepage of 7Cups

Additionally, 7 Cups provides online group chat rooms and forums where users can connect with others facing similar challenges. These communities foster a sense of belonging and allow for mutual support and learning (Figure 2.10). The platform also offers mindfulness exercises and mental health videos to help users manage stress, anxiety, and depression (Figure 2.11).

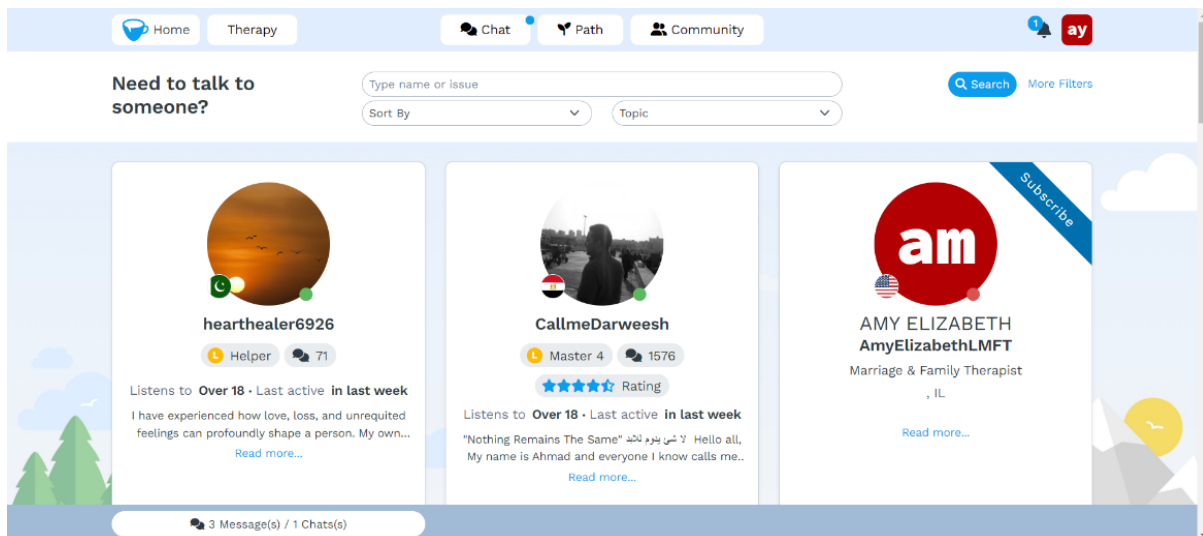


Figure 2. 10: Online group chat in 7Cups

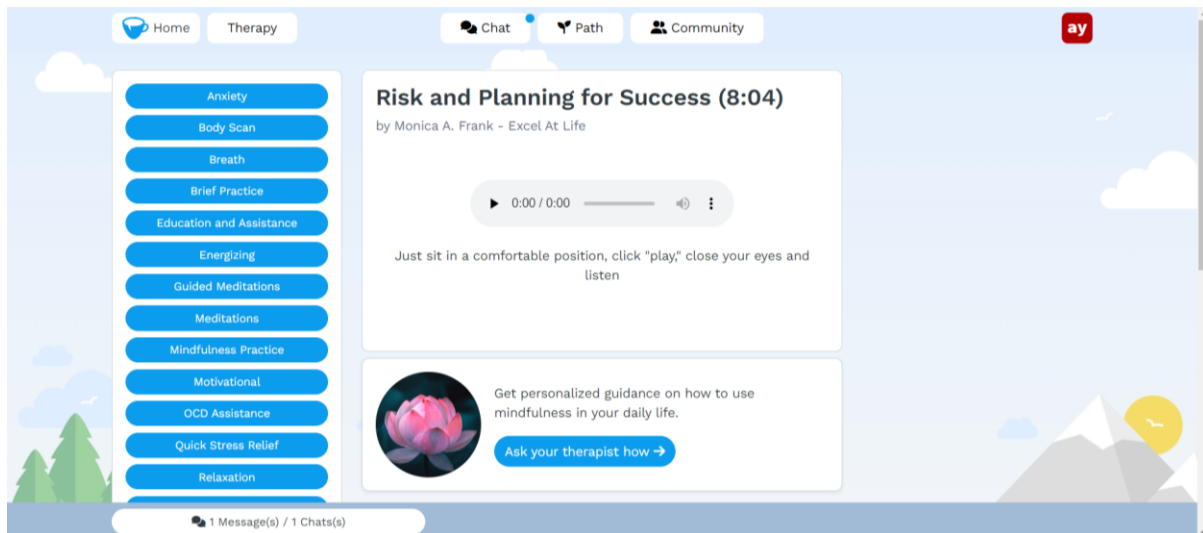


Figure 2. 11: : Links related to mental health exercises

Furthermore, 7 Cups provides a wellness test that can help users assess their mental health strengths and weaknesses. 7 Cups includes a premium membership option, allowing users to connect with licensed therapists for personalized support. The premium plan provides unlimited messaging with therapists, enhancing its value as a mental health resource (Figure 2.12).

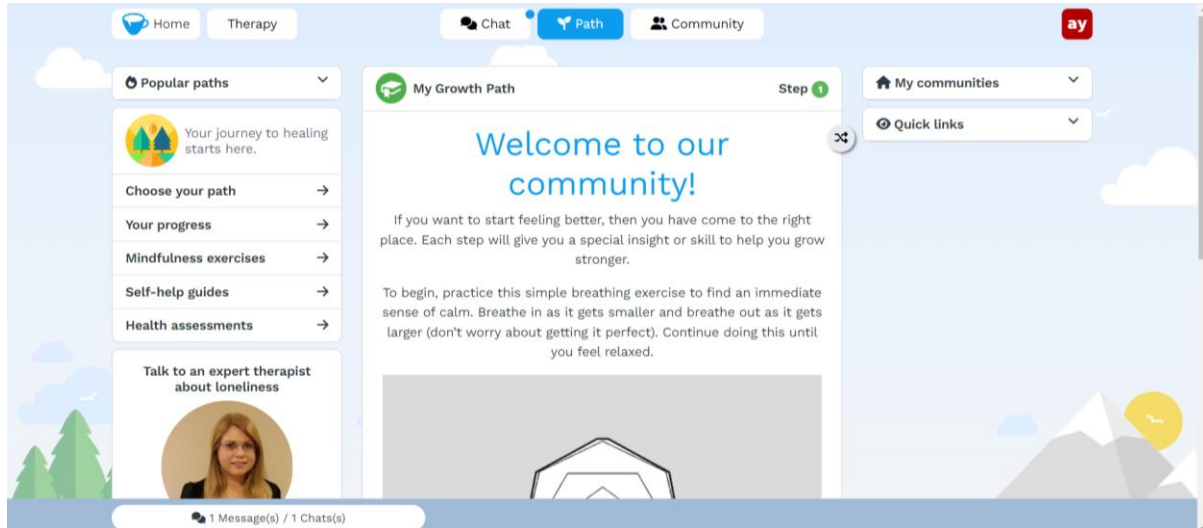


Figure 2. 12: Path page where users can purchase the premium plan of 7Cups

7 Cups has integrated an AI chatbot named Noni (Figure 2.13). This chatbot is designed to provide initial support and guidance to users. It can engage in basic conversations, offer coping strategies, and direct users to appropriate resources. It's designed to be a supplementary tool to assist users in their mental health journey (Krouse, 2023).



Figure 2. 13: Screen capture of chatting with Noni, the chatbot

2.3 Summary of Existing System

Table 2.1 shows the summary table comparing Wysa, Youper, and 7Cups, highlighting their features and functionalities.

Table 2. 1: Summary of Existing System

Feature	Wysa	Youper	7Cups
Developer/Founder	Touchkin	Dr. Jose Hamilton, Diego Couto, and Thiago Marafon	Glen Moriarty
Key Purpose	Support mental well-being through AI-driven chatbot, self-help tools, and optional therapist access.	Help users manage mental health with AI chatbot, mood tracking, and CBT-based exercises.	Provide emotional support via anonymous chats, forums, and mindfulness exercises.
Key Techniques	Cognitive Behavioral Therapy (CBT), Dialectical Behavior Therapy (DBT), guided meditations,	Cognitive Behavioral Therapy (CBT) techniques, and real-time chatbot conversations.	Active listening, mindfulness exercises, and community forums.

	breathing exercises, and relaxation tools.		
Premium Subscription Cost	RM359.90 quarterly, RM199.90 monthly, or RM29.99/RM49.97 for single sessions.	RM329.90 per year after a 1-week free trial.	Premium membership for unlimited therapist messaging.
Free Features	Basic mental health exercises, anonymous usage, journaling feature with timestamped entries, and AI chatbot conversations.	Initial chatbot conversation, daily mood tracking, and limited CBT exercises.	Anonymous text/voice chats with listeners, group chats, forums, and mindfulness resources.
Premium Features	Access to certified human therapists, full self-care exercise library, and advanced journaling features.	Progress tracking, insights, mood trackers, anxiety and depression monitoring, and condition-specific tools (e.g., Borderline Personality Test).	Unlimited therapist messaging and additional mental health resources.
Chatbot Features	Emotionally intelligent responses, "Talk" button for starting conversations, and SOS button for safety planning.	AI-driven daily check-ins with personalized recommendations based on CBT.	Noni, an AI chatbot for initial support, coping strategies, and directing users to resources.
Special Tools	"Creating a Safety Plan" feature for	Personalized mental health plans for	Wellness test for assessing strengths

	crisis preparedness.	specific conditions and visually engaging mood-tracking interfaces.	and weaknesses, plus community-driven group chats.
Targeted Conditions	Anxiety, depression, stress management, and overall mental resilience.	Anxiety, depression, sleep issues, self-confidence, and other mental health challenges.	General emotional support and stress management.
Interface Design	Penguin-themed chatbot interface, organized tabs for Self-care, My Journal, and chat features.	Bottom menu for easy navigation across Check-in, Progress, Insights, and Me sections.	Simple web interface with tabs for chats, forums, and wellness tools.
Accessibility	Anonymous usage via nickname, no account registration required.	Requires account creation for full functionality.	Login is required for accessing most features.
Community Features	Not applicable.	Not applicable.	Group chats and forums for connecting with others facing similar challenges.

2.4 Comparison between Existing System

Table 2.2 shows the comparison between the existing system mental health chatbots (Wysa, Youper, and 7Cups) and the proposed system, EmosiBot.

Table 2. 2: Comparison features between the existing system and the proposed system.

Features	Existing Mental Health Chatbots			Proposed System
	Wysa	Youper	7Cups	EmosiBot

Available Platform	Mobile (Android, iOS)	Mobile (Android, iOS)	Mobile (Android, iOS) Online Platform	Online Platform
Available Language	Primarily English	English only	Primarily English	Malay only
Target Audience	Teens and adults (13+), self-help seekers	Adults, mental health trackers	Teens (13–17) and adults, peer support seekers	University Students
AI Chatbot Support	Yes	Yes	Yes	Yes
Human Therapist Access	Premium subscription	Premium subscription	Free listeners Premium subscription	Access with PYSCON
Provide Medical Helplines	Yes	Yes	No	Yes
Paid Service	Yes	Yes	Yes	No
Evaluate mental health conditions	Yes	Yes	No	Yes
Guided Exercises	Yes	Yes	Yes	Yes
Journaling	No	No	No	Yes

2.5 Summary of Proposed System

The proposed system, EmosiBot is a web-based mental health platform designed especially

for university students in UNIMAS in Malay language. It provides free access to AI chatbot support, mental health evaluations, and guided exercises, ensuring comprehensive care tailored to its users. EmosiBot uniquely integrates journaling features and offers therapist access through PYSCON without requiring a paid subscription. Additionally, it includes medical helplines to support users in crisis, making it a holistic and accessible solution for mental health needs in the targeted demographic.

2.6 Selected Instrument

The Depression, Anxiety, and Stress Scale 21 (DASS-21) is a widely used self-report questionnaire designed to assess the levels of depression, anxiety, and stress experienced by individuals and will be included in the proposed system. It consists of 21 items, divided equally into three subscales, with each subscale measuring one of the emotional states. Respondents rate the extent to which they have experienced symptoms over the past week on a 4-point Likert scale ranging from "Did not apply to me at all" to "Applied to me very much, or most of the time." The DASS-21 is a shorter version of the original DASS-42 and provides an efficient, validated tool for screening mental health concerns in both clinical and non-clinical settings. It is particularly useful in identifying patterns of emotional distress and informing intervention strategies.

2.7 Review of Tools and Technologies

2.7.1 Dialogflow

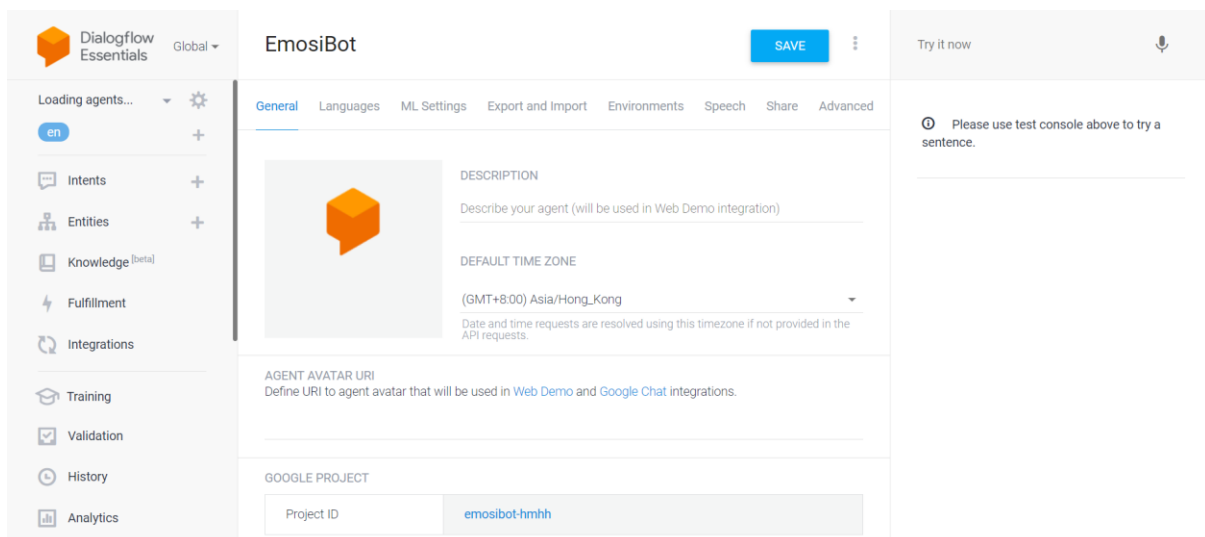


Figure 2. 14: Screenshot of Dialogflow console

Dialogflow is a Google-owned platform (Figure 2.13) that provides natural language understanding (NLU) and conversational AI tools to build intelligent chatbots. It enables

developers to create conversational agents capable of understanding and processing user input in multiple languages. For the development of EmosiBot, Dialogflow can be used to design and train the chatbot to handle various mental health-related queries, such as assessing emotional well-being, providing coping strategies, and offering guided exercises. With its built-in machine learning capabilities, Dialogflow can be fine-tuned to understand Malay language input. Furthermore, Dialogflow allows the creation of intents, entities, and contexts to handle specific user interactions, which can be tailored to the unique needs of the EmosiBot, such as conducting DASS-21 screenings or providing mental health tips.

Integration Framework and Architecture: To integrate Dialogflow into the EmosiBot system, microservices architecture will be used. This architecture will consist of the following components:

- i. Frontend Interface: A web-based or mobile application where users interact with EmosiBot.
- ii. Dialogflow Agent: The core component that processes user inputs and generates responses.
- iii. Backend Services: Microservices that handle specific tasks such as database interactions, user authentication, and external API calls.
- iv. Database: A centralized database to store user data, past interactions, and mood-tracking information.
- v. API Gateway: A gateway to manage and route requests between the frontend, Dialogflow agent, and backend services.

Dialogflow also supports seamless integration with external services and APIs, which is crucial for expanding the functionality of EmosiBot. For instance, it can be linked with the system's database to retrieve personalized user data, such as past interactions or mood tracking, and provide tailored responses based on this information. Additionally, Dialogflow can integrate with other services like Google Cloud for advanced features such as sentiment analysis, enabling the chatbot to detect the emotional tone of the user's input and adjust responses accordingly. This integration can make EmosiBot more interactive and responsive, offering users a more engaging mental health support experience.

Another key feature of Dialogflow is its ability to handle context-aware conversations. This means the chatbot can remember the user's previous responses and maintain the flow of the

conversation, making interactions feel more natural and personalized. For EmosiBot, this is especially useful for managing ongoing mental health assessments like the DASS-21 screening, where the chatbot can follow up on previous answers and provide relevant advice. Dialogflow's analytics and reporting tools also allow for tracking user interactions, which can help refine the chatbot's performance over time. This data-driven approach will enable EmosiBot to continuously improve, ensuring it remains effective in supporting university students especially in UNIMAS with mental health challenges.

2.8 MySQL

MySQL is a widely used, open-source relational database management system (RDBMS) that allows users to store, organize, and manage data efficiently. It uses Structured Query Language (SQL) to create, read, update, and delete data in tables, which are structured to ensure organized storage (Talend, n.d.). MySQL is known for its speed, reliability, and flexibility, making it an ideal choice for web applications, businesses, and developers who need to manage large volumes of data. It supports a wide range of features such as data indexing, transactions, and security, which help ensure the integrity and performance of data storage.

As a relational database, MySQL organizes data into tables that are linked through relationships, making it easier to retrieve and manipulate information. It is compatible with multiple programming languages like PHP, Python, and Java, and integrates well with various frameworks, including Laravel and Node.js. MySQL's scalability makes it suitable for both small projects and large-scale applications, and its large community of users and developers continuously improve its features and performance. Whether used for simple websites or complex enterprise applications, MySQL provides a robust and effective solution for managing structured data.

2.9 Summary

Chapter 2 discussed a comparison between existing systems related to mental health, including chatbot applications (Wysa and Youper) and a website with chatbot integration (7Cups), and the AirAsia website, which has integrated a multilingual chatbot and the proposed system, EmosiBot. Tools and technologies such as Dialogflow and MySQL, which will be used for the development of the proposed system, are also reviewed in this chapter. The analysis of existing mental systems and tools serves as supporting material to achieve the goals of the proposed system's development.

Chapter 3: Requirements Analysis and Design

3.1 Introduction

This chapter discusses the methodology used to develop the proposed system, focusing on the Rapid Application Development (RAD) model, an agile project management strategy in software development. Created in 1980, RAD is a flexible software development method that focuses on creating prototypes and getting feedback quickly with less emphasis on specific planning (Kissflow, 2024). This flexibility allows for ad-hoc requirements to be incorporated as the chatbot project is developed, where developers can rapidly create multiple versions and update the software without starting from scratch, ensuring that the final product aligns closely with end-user needs (Chien, 2020). The RAD methodology comprises four phases: Requirement Analysis, User Design, Rapid Construction, and Cutover. Figure 3.1 illustrates the steps of the RAD methodology.

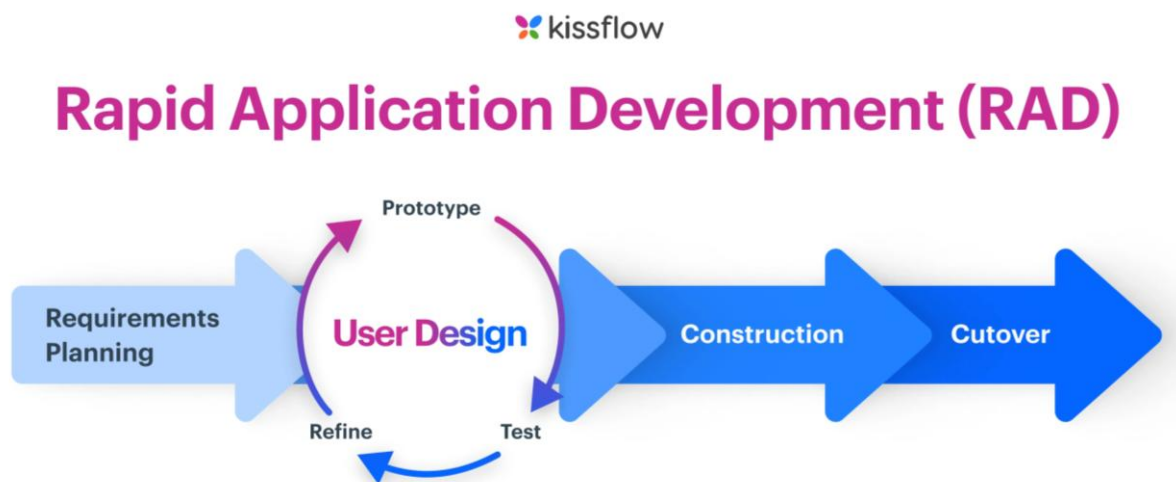


Figure 3. 1: Rapid Application Development Methodology (Kissflow, 2024)

1. Planning Requirements: The first step is planning the project requirements. This initial stage involves making a basic plan for the requirements. This project focuses on Universiti Malaysia Sarawak (UNIMAS) students, and the requirements are gathered through interviews with Miss Ummikhaira Sofea binti Ja'afar, a Psychological Officer at UNIMAS.
2. User Design: Prototype, Test, and Refine: In the second step, known as the user design cycle, where three phases will take place: prototype, test, and refine. The chatbot prototype will be designed using Figma to create an interactive mock-up. Once the prototype is finished and presented to the stakeholders, testing will be

conducted to gather feedback and enhance the prototype based on the received input. The development will then proceed with refining the chatbot criteria. This process will be repeated as the project progresses.

3. Construction: This chapter discusses the third step, rapid construction. In this step, the chatbot prototype that was created in the design phase is constructed into a functionally working model that involves several steps, including preparation, programming and application development, coding, and testing.
4. Cutover: Lastly, the fourth step is cutover, which focuses on launching the completed product of the chatbot to the stakeholders. This phase involves data conversion, testing, and changeover to the new systems. Additionally, user training is provided to ensure smooth adoption. During this stage, any necessary adjustments are made while developers and clients remain vigilant in identifying and addressing any remaining issues within the chatbot.

This chapter discusses three main sections:

- i. Section 3.2 summarizes the process of distributing questionnaires to potential users to gather feedback on the system prototype.
- ii. Section 3.3 presents the System Architecture and Unified Modelling Language (UML) diagrams, including Use Case Diagrams, Sequence Diagrams, and Class Diagrams, and the database design process.
- iii. Section 3.4 showcases the system prototype, providing a visual representation of the proposed user interface.

This chapter also presents the outcomes of the system's analysis and design, highlighting how each phase was systematically implemented to achieve the desired results. The purpose of requirement analysis is to gather valuable data to ensure that the proposed system meets the needs of its intended users, primarily UNIMAS students. To obtain feedback, a prototype of the system was presented to 27 UNIMAS students, who were asked to provide their thoughts through a Google Form survey. Their responses are crucial for evaluating the system's functionality and its suitability for addressing mental health support. This feedback process serves as an opportunity to refine the system based on user input, ensuring it aligns with students' expectations and provides an effective tool for mental health support. The feedback collected will guide further improvements to the system.

3.2 Questionnaire and Feedback

The first part of the Google Form is aimed at collecting basic information about the user, such as their gender and which faculty they belong to at UNIMAS. It also includes a couple of important questions to understand how familiar users are with digital tools for mental health and how they perceive their current mental well-being. The second part of the form is focused on gathering feedback about the system prototype. It asks users to share their thoughts on how easy and comfortable the system is to use, as well as their overall experience with it. Additionally, this Google Form is provided in Bahasa Melayu, with the same questions translated into English in italics below the Bahasa Melayu questions. For a comprehensive view, the complete questionnaire consisting of 14 questions is shown in Appendix A.

Jantina Gender
27 responses

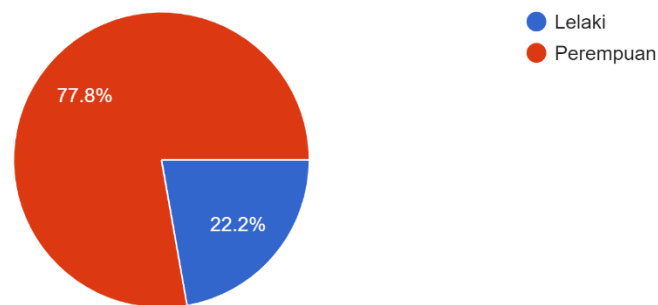


Figure 3. 2: Respondent's gender

Figure 3.2 shows that out of 27 respondents who answered the questionnaire, 77.8% (21) are female and 22.2% (6) are male.

Fakulti Faculty
27 responses

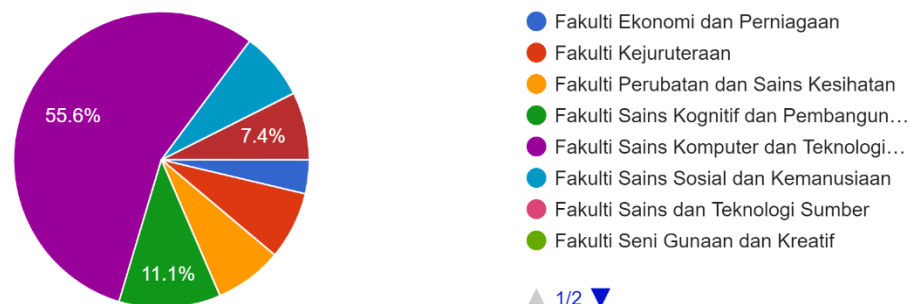


Figure 3. 3: Respondent's faculty at UNIMAS

Figure 3.3 shows that most of the respondents are from the Faculty of Computer Science and Information Technology (55.6%). The second highest group is from the Faculty of Cognitive Sciences and Human Development (11.1%), followed by the Faculty of Language and Communication (7.4%). Respondents from the Faculty of Medicine and Health Sciences, the Faculty of Engineering, and the Faculty of Social Sciences and Humanities each represent 7.4%, while the Faculty of Economics and Business has the smallest percentage of respondents at 3.7%.

Seberapa kerap anda menggunakan alat digital (digital tools) untuk kesihatan mental? (eg: Apps/Website) How often do you use digital tools for mental health? (eg: Apps/Websites)
27 responses

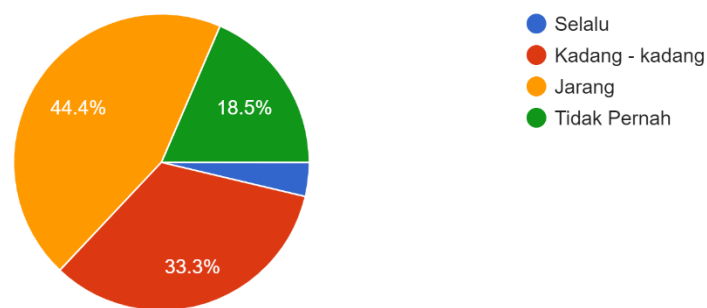


Figure 3. 4: Questions on the respondent's experience with other mental health tools

Figure 3.4 illustrates the respondents' experiences with other mental health tools, specifically addressing the question: 'How often do you use digital tools for mental health?' Most respondents answered 'rarely' (44.4%), followed by 'sometimes' (33.3%). Additionally, 18.5% selected 'never,' and 3.7% indicated 'always'.

Bagaimana anda menilai keadaan kesihatan mental anda secara keseluruhan? How would you evaluate your overall mental health situation?
27 responses

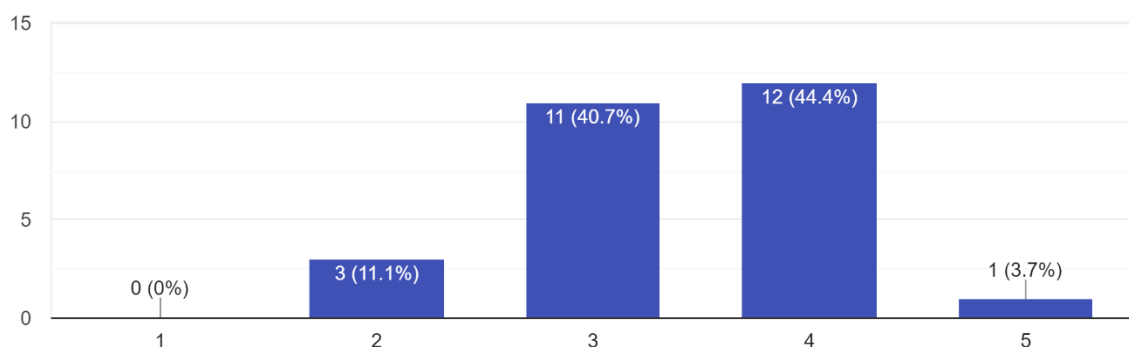


Figure 3. 5: Respondent's answers for their mental health situation

Figure 3.5 illustrates how respondents evaluated their overall mental health situation with a scale ranging from '1' (very bad) to '5' (very excellent). A total of 44.4% rated it as 'excellent,' 40.7% selected 'neutral,' 11.1% rated it as 'bad,' and 3.7% described it as 'very excellent.'

Seberapa mudah ntuk anda menavigasi prototaip ini? How easy is it for you to navigate this prototype?

27 responses

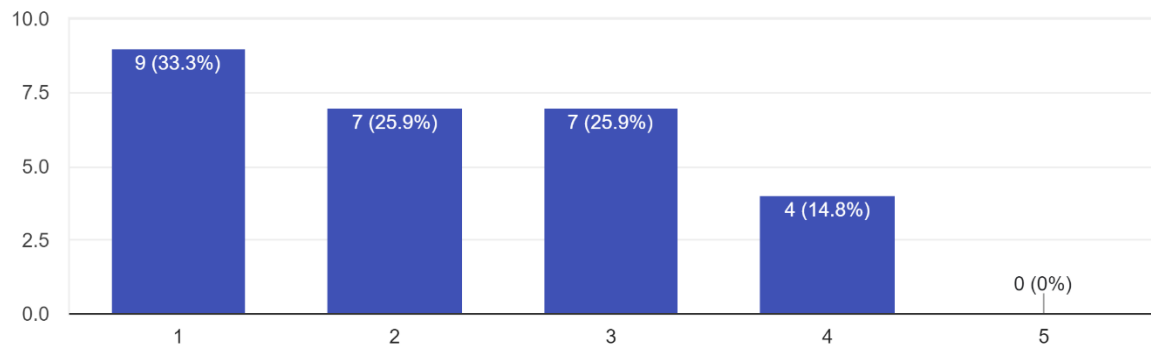


Figure 3. 6: Respondents' answers for navigating the prototype

Figure 3.6 illustrates how respondents evaluated the ease of navigating the prototype using a scale from '1' (very easy) to '5' (very difficult). The majority, 33.3%, rated it as 'very easy,' while 25.9% selected 'easy,' and another 25.9% chose 'neutral.' Additionally, 14.8% rated the navigation as 'difficult.'

Adakah prototaip chatbot mudah digunakan dan dicari? Is the chatbot prototype easy to use and find?

27 responses

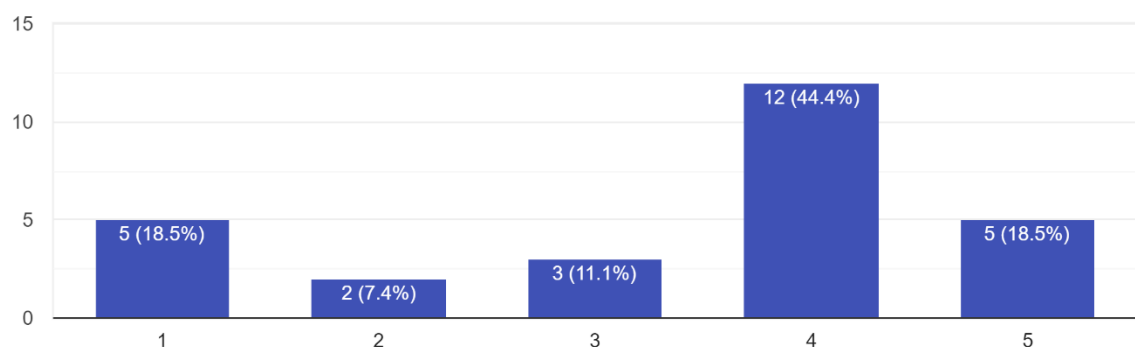


Figure 3. 7: Respondents' answer for finding the EmosiBot

Figure 3.7 illustrates how respondents evaluated the ease of finding EmosiBot using a scale from '1' (very difficult) to '5' (very easy). A total of 44.4% rated it as 'easy,' 18.5% as 'very easy,' 11.1% as 'neutral,' 7.4% as 'difficult,' and 18.8% as 'very difficult.'

Ciri manakah yang paling membantu anda? Which feature helped you the most?

27 responses

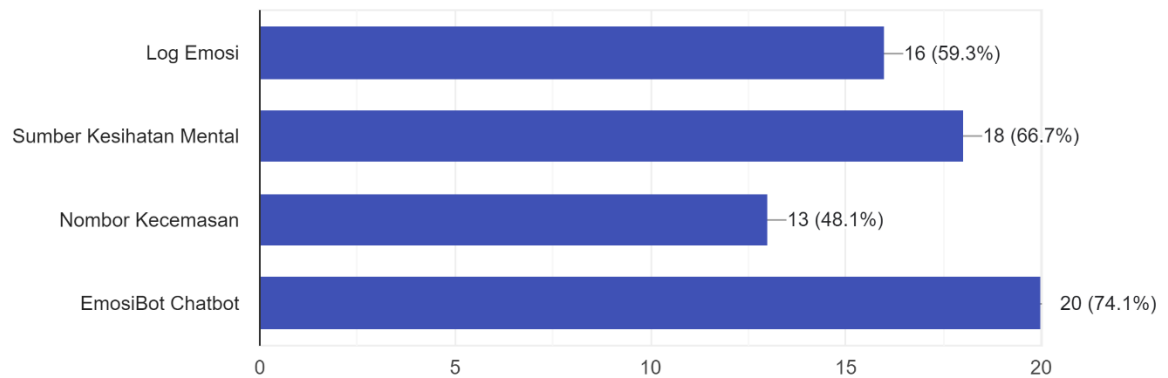


Figure 3. 8: Respondents' answers for the most helpful feature

Figure 3.8 illustrates the respondents' choices for the most helpful feature. The majority selected the EmosiBot chatbot at 74.1%, followed by Mental Health Tips at 66.7%, Log Mood at 59.3%, and Emergency Contact Numbers as the least helpful at 48.1%.

Adakah terdapat ciri yang tidak berfungsi seperti yang diharapkan? Are there features that aren't working as expected?

27 responses

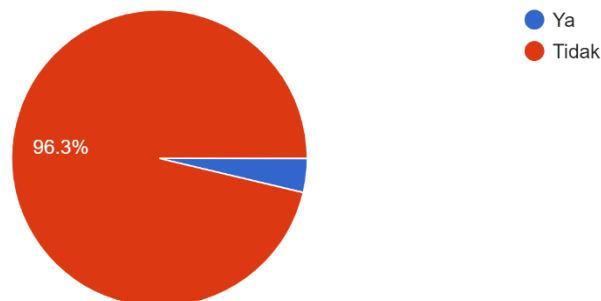


Figure 3. 9: Respondents' answers for features were not working

Jika Ya, nyatakan kenapa

If Yes, state why

27 responses

-
Tiada
tiada
Selepas menekan "menangani depresi" di bahagian sumber, dia pergi semula ke bahagian daftar masuk
.
.
no
No
-

Figure 3. 10: Respondents' answers based on the question in Figure 3.9

Figure 3.10 shows the respondents' answers to whether any features were not working as expected. The majority, 96.3%, answered 'No,' while only 3.7% answered 'Yes.' Figure 9 provides further details on the issue reported, where a user stated, 'After clicking on "menangani depresi" in the "Sumber" page, it redirected back to the register new account page'. This issue is likely due to the prototype interactions not functioning as intended.

Adakah terdapat ciri atau fungsi tambahan yang anda ingin lihat?

Are there additional features or functions you would like to see?

27 responses

tiada
Tiada
-
Tambahan emosi yang lain
Perkongsian cerita dari pengguna lain berkenaan cara mengawal emosi dan menjaga kesihatan mental
video kucing
for there to be english version
So far okay..
make back button more visible
saya nak fungsi butang yang boleh merekodkan emosi saya setiap masa
Tidak
Bantuan fizikal
List of professional counsellors for counsellings
-
ya, tiada menu untuk navigation (contoh: arrow untuk back, or back home)
Perkongsian bersama rakan-rakan seperti "streak"
Butang Log Emosi, Sumber, Bantuan dan Log Keluar boleh di kelaskan ke menu bar di side bar.
Saya ingin memuat naik gambar di log emosi

Figure 3. 11: Respondents' answers for additional features

Figure 3.11 shows the respondents' answers to the question of whether there are any additional features or functions they would like to see such as:

- additional emotion categories
- user story sharing about how they manage their emotions and mental health
- English language version

- visible and accessible back button
- the ability to log emotions at any time
- access to physical/onsite support
- a list of professional counsellors for counselling sessions
- improved navigation menu (e.g., back arrow or home button)
- social sharing or streak tracking with friends
- clearer categorisation for sidebar buttons (Log Emotion, Resources, Help, Logout)
- the option to upload pictures in the emotion log
- and even light-hearted suggestions like “cat videos”

Some respondents also stated that they were satisfied with the current version, replying with comments like “So far okay” and “None.”

Adakah bahasa yang digunakan sesuai dan mudah difahami? Is the language used appropriate and easy to understand?

27 responses

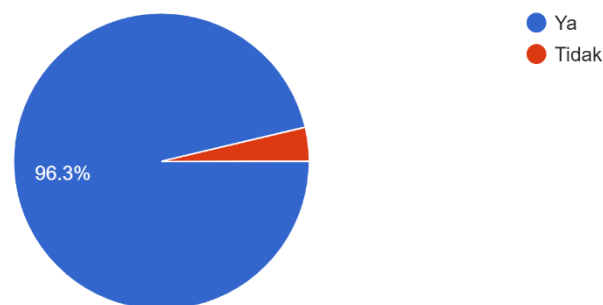


Figure 3. 12: Respondents' answer regarding the language used in the system

Figure 3.12 shows the respondents' answers to whether the language used is appropriate and easy to understand. Most respondents answered 'Yes,' with only one respondent answering 'No.'

Adakah prototaip EmosiBot mudah untuk digunakan? Is the EmosiBot prototype easy to use?
27 responses

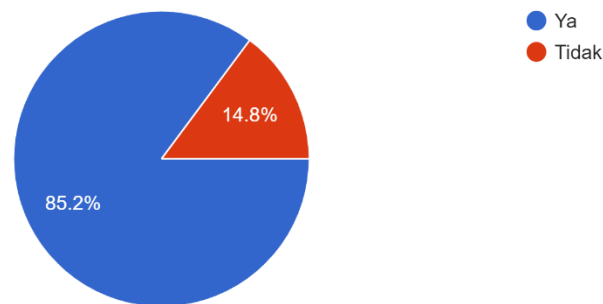


Figure 3. 13: Respondents' answers for the overall prototype

Figure 3.13 illustrates whether the EmosiBot prototype is easy to use. 85.2% of respondents answered Yes, while 14.8% answered No. Figure 14 provides further details on the issue reported.

Jika tidak, apakah masalah yang dihadapi?

If No, what is the problem?

27 responses



Figure 3. 14: Respondents' answer for the problem that they faced

Figure 3.14 shows the respondents' answers regarding any problems they faced while using the EmosiBot system. Most users did not report any major issues, with some responses like "Tiada masalah" (No problem) or "Nil" (None) indicating overall satisfaction. However, a

few participants highlighted specific interface concerns, particularly about the navigation layout. Some found the navigation “messy,” suggesting that a sidebar layout would be more intuitive. One user mentioned they did not notice the EmosiBot feature at the bottom of the screen, possibly due to its placement. Others commented that the layout appeared too small or that the back navigation button was not prominent enough.

Bagaimana anda menilai reka bentuk prototaip EmosiBot? How would you rate the EmosiBot prototype design?

27 responses

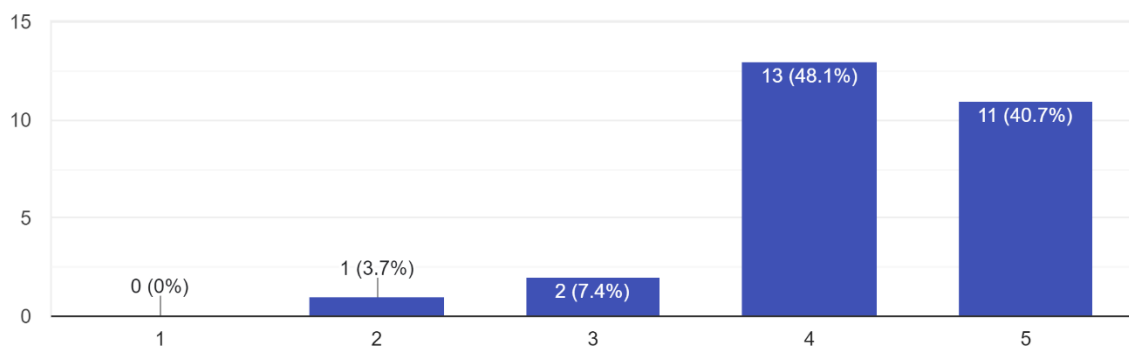


Figure 3. 15: Respondents' rating for the EmosiBot prototype design

Figure 3.15 shows the respondents' ratings for the EmosiBot prototype design, using a scale from '1' (very bad) to '5' (very good). 3.7% rated it as bad, 7.4% as neutral, 48.1% as good, and 40.7% as very good.

3.3 System Design

This section describes the overall design of the EmosiBot system, focusing on four main components that define its structure and functionality. These include the Use Case Design (3.3.1), Use Case Specification (3.3.2), Sequence Diagram (3.3.3), and Class Diagram (3.3.4), which will be discussed in the following subsections.

3.3.1 Use Case Design

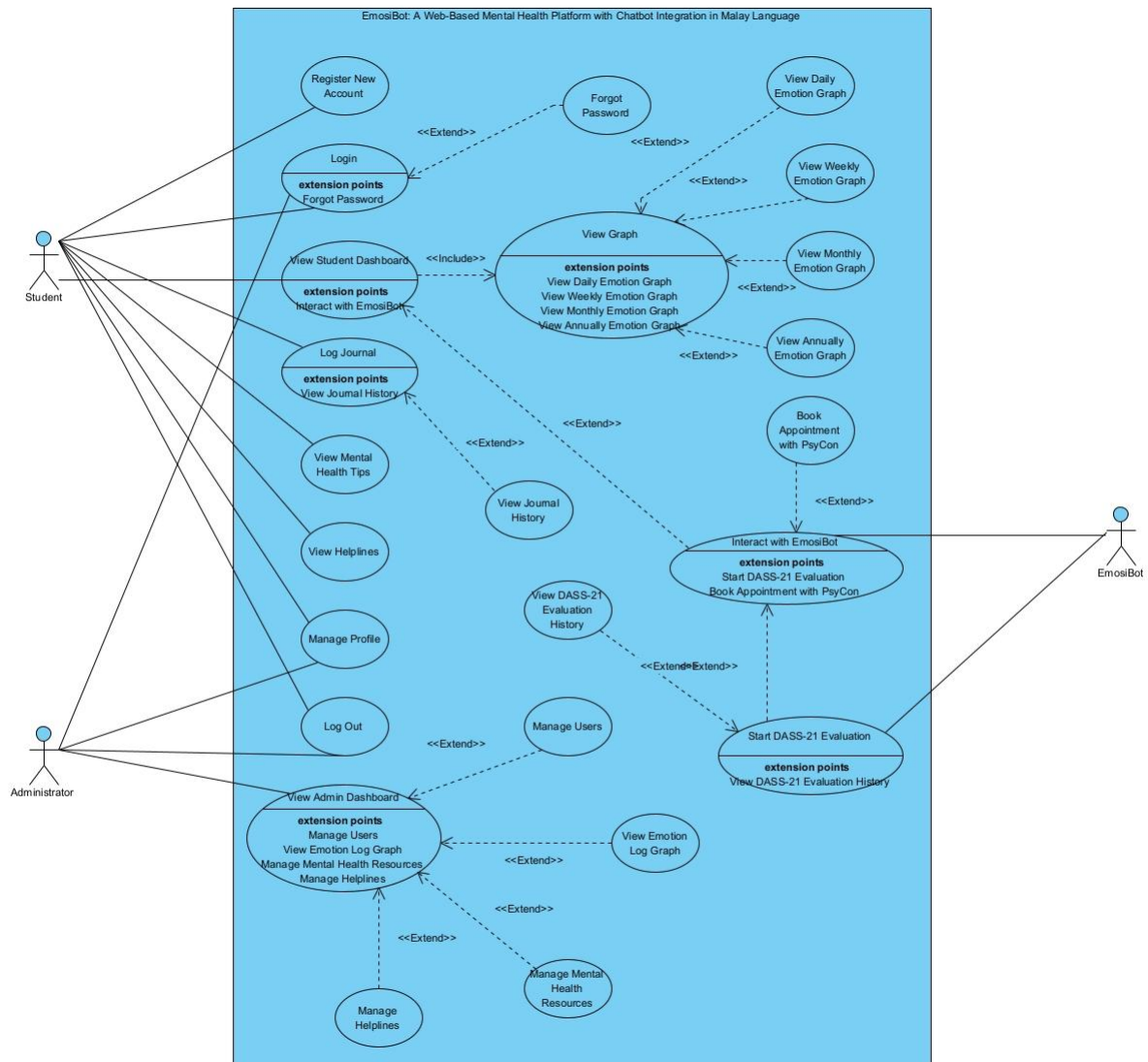


Figure 3. 16: Use Case Diagram of the proposed system

3.3.2 Use Case Specification

Table 3. 1: Use Case Specification for Login

Use Case	Login
Short Description	To allow the Student and Administrator to log into the system.
Actor(s)	Student, Administrator
Pre-Condition(s)	1. A web browser device with an active and stable internet connection is required. 2. The actor must have an account registered in the system.
Post-Condition(s)	The actor has successfully logged into the system and is

	redirected to the homepage after logging in
Main Flow(s)	1. (A1) The system requests that the actor enter their username and password. 2. The actor enters their username and password. 3. The system validates the entered username and password and logs the actor into the system.
Alternative Flow(s)	(A1) The actor does not have a registered account and thus needs to register a new account.
Exception Flow(s)	N/A

Table 3. 2: Use Case Specification for Forgot Password

Use Case	Forgot Password
Short Description	To allow the Student and Administrator to reset their password if they forgot it.
Actor(s)	Student, Administrator
Pre-Condition(s)	1. The actor must have an existing account in the system. 2. The actor must provide a valid email address associated with their account.
Post-Condition(s)	1. The actor receives a password reset email. 2. The actor's password reset process is initiated.
Main Flow(s)	1. The actor clicks on the "Lupa kata laluan? Klik sini" link on the login page. 2. The system displays the "Lupa Kata Laluan" form, prompting the actor to enter their registered email address. 3. The actor enters their email address and submits the form. 4. The system validates the provided email address. 5. (A1) If the email is valid: • The system sends the reset link to the actor's registered email (E1). 6. The system displays a confirmation message to the actor indicating that a reset email has been sent.
Alternative Flow(s)	(A1) If the provided email address is not valid or does not exist in the system, the system displays an error message prompting the actor to try again.
Exception Flow(s)	(E1) If the system fails to send the reset email, the system displays an error.

Table 3. 3: Use Case Specification for Register New Account

Use Case	Register New Account
Short Description	To allow the Student to register a new account.
Actor(s)	Student
Pre-Condition(s)	1. A web browser device with an active and stable internet connection is required. 2. The actor has access to the registration page.
Post-Condition(s)	1. A new user account is created, and the actor is redirected to the login page. 2. The actor's account details are saved in the system database.
Main Flow(s)	1. The actor navigates to the registration page by clicking the “Pengguna baharu? Daftar Disini” link. 2. The system displays the registration form with fields such as: • Nickname • Email • Username • Password • Gender • Profile Picture (optional) 3. The actor enters valid information in the form. 4. The actor clicks the “Daftar Akaun” button. 5. (A1) (A2) The system validates the input: • Ensures the email is unique and valid. • Ensures the password meets security requirements. • Ensures all mandatory fields are filled. 6. The system creates a new user account and stores the details in the database. 7. The system redirects the user to the login page.
Alternative Flow(s)	1. (A1) If the actor provides invalid information, the system displays an appropriate error message. 2. (A2) If the email is already registered in the system, the system notifies the actor that the email is already in use and suggests recovering the password or using a different email.
Exception Flow(s)	N/A

Table 3. 4: Use case Specification for View Student Dashboard

Use Case	View Student Dashboard
Short Description	To allow the Student to view the dashboard of the system.

Actor(s)	Student
Pre-Condition(s)	1. A web browser device with an active and stable internet connection is required. 2. The actor has successfully logged into the system.
Post-Condition(s)	1. The actor can view the mood graph for the last 7 days on the homepage. 2. The actor can interact with the chatbot.
Main Flow(s)	1. The actor is being redirected to the dashboard after logging in. 2. The system displays a mood graph (E1). 3. The actor can click on the chatbot icon at the bottom of the homepage.
Alternative Flow(s)	N/A
Exception Flow(s)	(E1) If the actor has never logged their mood, the graph will not show anything.

Table 3. 5: Use Case Specification for View Graph

Use Case	View Graph
Short Description	To allow the Student to view the graph of their mood.
Actor(s)	Student
Pre-Condition(s)	1. A web browser device with an active and stable internet connection is required. 2. The actor has successfully logged into the system. 3. The actor has accessed the dashboard.
Post-Condition(s)	The actor can view the mood graph on the homepage.
Main Flow(s)	1. The actor is being redirected to the homepage after logging in. 2. The system displays a mood graph (E1). 3. The actor can choose to view the graph by time range: • Daily (E2) • Weekly (E3) • Monthly (E4) • Annually (E5) 4. The system loads and displays the corresponding emotion graph based on the selected range.
Alternative Flow(s)	N/A
Exception Flow(s)	1. (E1) If the actor has never logged their mood, the graph will not show anything. 2. (E2) (E3) (E4) (E5) If the selected time range (Daily, Weekly, Monthly, or Annually) has no data, the system displays a message: "No mood log data available for the selected time range."

Table 3. 6: Use Case Specification for View Daily Emotion Graph

Use Case	View Daily Emotion Graph
Short Description	To allow the Student to view their daily mood graph.
Actor(s)	Student
Pre-Condition(s)	1. A web browser device with an active and stable internet connection is required. 2. The actor has successfully logged into the system. 3. The actor has accessed the dashboard.
Post-Condition(s)	The actor can view the mood graph showing data for the current day.
Main Flow(s)	1. The actor selects the option to view the Daily emotion graph. 2. The system filters the mood logs by the current date. 3. The system displays the graph based on the mood entries logged on that day.
Alternative Flow(s)	N/A
Exception Flow(s)	1. (E1) If the actor has not logged any mood entries for the current day, the graph will not show anything.

Table 3. 7: Use Case Specification for View Weekly Emotion Graph

Use Case	View Weekly Emotion Graph
Short Description	To allow the Student to view their weekly mood graph.
Actor(s)	Student
Pre-Condition(s)	1. A web browser device with an active and stable internet connection is required. 2. The actor has successfully logged into the system. 3. The actor has accessed the dashboard.
Post-Condition(s)	The actor can view the mood graph showing data for the current week.
Main Flow(s)	1. The actor selects the option to view the Weekly emotion graph. 2. The system filters the mood logs by the current week. 3. The system displays the graph based on the mood entries logged during the week.
Alternative Flow(s)	N/A
Exception Flow(s)	1. (E1) If the actor has not logged any mood entries for

	the current week, the graph will not show anything.
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Table 3. 8: Use Case Specification for View Monthly Emotion Graph

Use Case	View Monthly Emotion Graph
Short Description	To allow the Student to view their monthly mood graph.
Actor(s)	Student
Pre-Condition(s)	1. A web browser device with an active and stable internet connection is required. 2. The actor has successfully logged into the system. 3. The actor has accessed the dashboard.
Post-Condition(s)	The actor can view the mood graph showing data for the current month.
Main Flow(s)	1. The actor selects the option to view the Monthly emotion graph. 2. The system filters the mood logs by the current month. 3. The system displays the graph based on the mood entries logged during the month.
Alternative Flow(s)	N/A
Exception Flow(s)	1. (E1) If the actor has not logged any mood entries for the current month, the graph will not show anything.

Table 3. 9: Use Case Specification for View Annually Emotion Graph

Use Case	View Annually Emotion Graph
Short Description	To allow the Student to view their annual mood graph.
Actor(s)	Student
Pre-Condition(s)	1. A web browser device with an active and stable internet connection is required. 2. The actor has successfully logged into the system. 3. The actor has accessed the dashboard.
Post-Condition(s)	The actor can view the mood graph showing data for the current month.
Main Flow(s)	1. The actor selects the option to view the Annually emotion graph. 2. The system filters the mood logs by the current year. 3. The system displays the graph based on the mood entries logged during the year.

Alternative Flow(s)	N/A
Exception Flow(s)	1. (E1) If the actor has not logged any mood entries for the current year, the graph will not show anything.

Table 3. 10: Use Case Specification for Interact with EmosiBot

Use Case	Interact with EmosiBot
Short Description	To allow the Student to interact with a chatbot that provides a menu of topics such as Chat, Book Appointment with PsyCon, and DASS-21 Evaluation Form. Based on the selected topic, the chatbot will either respond directly or recommend and redirect the student to a relevant page.
Actor(s)	Student
Pre-Condition(s)	1. A web browser device with an active and stable internet connection is required. 2. The actor has successfully logged into the system. 3. The actor has access to EmosiBot within the system interface.
Post-Condition(s)	1. The actor receives helpful feedback based on their interaction with EmosiBot.
Main Flow(s)	1. The actor accesses EmosiBot by navigating to the chat interface. 2. E1) (The chatbot responds by displaying a menu with the following options: • Chat • Book Appointment with PsyCon • Start DASS-21 Evaluation 3. The actor selects a topic from the menu. 4. Based on the selected topic: • (E2) If Chat is selected, the chatbot continues with casual conversation directly. • If Start DASS-21 Evaluation is selected, the user will be redirected to the DASS-21 Evaluation page. • If Book Appointment with PsyCon is selected, a link to the official website to PsyCon will be given. 5. The actor may exit the interaction by closing the chat.
Alternative Flow(s)	N/A
Exception Flow(s)	1. (E1) If the chatbot service is unavailable, an error message is displayed. 2. (E2) If the student enters an unrecognized input, the

	chatbot responds with an error message.
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Table 3. 11: Use case Specification for Book Appointment with PsyCON

Use Case	Book Appointment with PsyCON
Short Description	To allow the Student to book an appointment with the counsellor through the chatbot interaction.
Actor(s)	Student
Pre-Condition(s)	1. A web browser device with an active and stable internet connection is required. 2. The actor has successfully logged into the system. 3. The actor has access to EmosiBot within the system interface.
Post-Condition(s)	The actor has successfully booked an appointment with PsyCON.
Main Flow(s)	1. The actor accesses EmosiBot by navigating to the chat interface. 2. The actor selects the “Book Appointment with PsyCon” option from the chatbot menu. 3. The EmosiBot will provide a link to book an appointment with the available counsellor in PsyCON. 4. The actor clicks on the link and will be redirected to the website to book an appointment.
Alternative Flow(s)	N/A
Exception Flow(s)	N/A

Table 3. 12: Use Case Specification for Start DASS-21 Evaluation

Use Case	Start DASS-21 Evaluation
Short Description	To allow the Student to evaluate their mental health condition using the DASS-21 scales to assess their levels of depression, anxiety, and stress.
Actor(s)	Student
Pre-Condition(s)	1. A web browser device with an active and stable internet connection is required. 2. The actor has successfully logged into the system. 3. The actor has access to EmosiBot within the system interface.
Post-Condition(s)	1. The actor is presented with the DASS-21 evaluation questions and can complete the psychometric

	evaluation. - The system records the actor's responses and calculates the score for depression, anxiety, and stress levels. - The actor receives feedback based on their scores.
Main Flow(s)	- The actor accesses EmosiBot by navigating to the chat interface. - The actor selects the "Start DASS-21 Evaluation" option from the chatbot menu. - The EmosiBot redirected the user to the DASS-21 Evaluation page. - The user answers the evaluation. - The system will calculated the score of the DASS-21 Evaluation.
Alternative Flow(s)	N/A
Exception Flow(s)	N/A

Table 3. 13: Use Case Specification for View DASS-21 Evaluation History

Use Case	View DASS-21 Evaluation History
Short Description	To allow the User to view the history of their DASS-21 evaluations.
Actor(s)	User
Pre-Condition(s)	- A web browser device with an active and stable internet connection is required. - The actor has successfully logged into the system and interacting with EmosiBot.
Post-Condition(s)	- The system displays a history of the actor's previous DASS-21 evaluations, including their scores and the date of each evaluation. - The actor can review their mental health progress and trends based on the evaluations.
Main Flow(s)	- The actor interacts with EmosiBot and requests to view their DASS-21 evaluation history by asking, "Sejarah DASS-21" or similar queries. (A1) The EmosiBot retrieves the actor's DASS-21 evaluation history from the database, including: - The date of each evaluation. - The scores for depression, anxiety, and stress from each evaluation. - A brief interpretation or status for each score. - The actor reviews the evaluation history, comparing their past scores to identify trends or improvements in their mental health. - The EmosiBot asks if the actor would like to take any

	further actions. 5. The actor may exit the interaction by closing the chat or selecting an option to stop.
Alternative Flow(s)	(A1) If the actor has not completed any DASS-21 evaluations before, the system will display nothing.
Exception Flow(s)	N/A

Table 3. 14: Use Case Specification for Log Journal

Use Case	Log Journal
Short Description	To allow the Student to log their mood and write a journal entry.
Actor(s)	Student
Pre-Condition(s)	1. A web browser device with an active and stable internet connection is required. 2. The actor has successfully logged into the system. 3. The actor has access to the mood logging page via the “Log Emosi” page.
Post-Condition(s)	1. The actor’s mood is successfully logged and stored in the system. 2. The actor is redirected to the homepage after saving the mood entry. 3. The system updates the mood graph on the homepage to reflect the new mood entry.
Main Flow(s)	1. The actor navigates to the “Log Emosi” page by clicking the button in the sidebar. 2. The system displays the “Log Emosi” page, presenting emojis that represent various moods and a text box. 3. The actor clicks on an emoji based on their current mood and enters text in the text box. 4. (A1) (A2) The actor clicks on the save button to submit their mood entry. 5. The system records the mood entry in the database and updates the actor’s mood history. 6. The system updates the actor’s mood graph on the homepage to reflect the newly logged mood.
Alternative Flow(s)	1. (A1) If the actor does not want to add text and attempts to save, the system will display an error message asking the actor to enter text before proceeding. 2. (A2) If the actor decides not to log their mood, they can exit the “Log Emosi” page without saving their entry by clicking the “Batal” button, and the system will not store any data.

Exception Flow(s)	N/A
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Table 3. 15: Use Case Specification for View Journal History

Use Case	View Journal History
Short Description	To allow the Student to view their past mood entries and journals.
Actor(s)	Student
Pre-Condition(s)	1. A web browser device with an active and stable internet connection is required. 2. The actor has successfully logged into the system. 3. The actor has access to the mood logging page via the “Log Emosi” page. 4. The actor has at least one mood entry and journal text saved in the system.
Post-Condition(s)	1. The system displays the actor’s mood history, including the dates, moods, and journal text entered. 2. The actor can review their emotional trends and reflect on past mood entries and their corresponding journal entries.
Main Flow(s)	1. The actor navigates to the "Log Emosi" page and clicks the "Lihat Sejarah Journal" button at the top right of the page. 2. (A1) The system retrieves the actor’s mood history from the database, including the mood selections and the corresponding journal text entered by the user. 3. The system displays the mood history in a chronological list. 4. The actor reviews their mood history and journals. 5. The actor can return to the "Log Emosi" page by clicking the “Log Jurnal” button.
Alternative Flow(s)	(A1) If the actor has not logged any moods or journal entries, the system displays a message saying "Tiada sejarah” or a similar message, informing the actor that no entries have been logged yet.
Exception Flow(s)	N/A

Table 3. 16: Use Case Specification for View Mental Health Tips

Use Case	View Mental Health Tips
Short Description	To allow the Student to access mental health tips to manage

	and improve overall well-being.
Actor(s)	Student
Pre-Condition(s)	1. A web browser device with an active and stable internet connection is required. 2. The actor has successfully logged into the system. 3. The actor has access to the mental health tips page via the “Sumber” page.
Post-Condition(s)	1. The system displays a list of mental health tips. 2. The actor can view the activities and exercises suggested.
Main Flow(s)	1. The actor navigates to the “Sumber” page by clicking the button in the sidebar. 2. The system displays a list of mental health tips. Each tip is accompanied by a brief description and suggested activities. 3. The actor can search specific mental health tips using the search bar at the top of the page. 4. The actor browses through the tips and reads the details of each activity.
Alternative Flow(s)	N/A
Exception Flow(s)	N/A

Table 3. 17: Use Case Specification for View Helplines

Use Case	View Helplines
Short Description	To allow the Student to view a list of available mental health helplines.
Actor(s)	Student
Pre-Condition(s)	1. A web browser device with an active and stable internet connection is required. 2. The actor has successfully logged into the system. 3. The actor has access to the “Bantuan” page.
Post-Condition(s)	1. The system displays the list of available mental health tips. 2. The Actor can view and search available helpline information.
Main Flow(s)	1. The actor navigates to the “Batuan” page by clicking the button in the sidebar. 2. The system displays a list of available helplines in Malaysia (e.g., name, contact number, type of service) 3. The actor uses the search bar to find specific helplines by name or keyword. 4. The system filters and displays results based on the

	search input.
Alternative Flow(s)	N/A
Exception Flow(s)	N/A

Table 3. 18: Use Case Specification for Logout

Use Case	Logout
Short Description	To allow the Student and Administrator to log out from the system.
Actor(s)	Student, Administrator
Pre-Condition(s)	1. A web browser device with an active and stable internet connection is required. 2. The actor has successfully logged into the system.
Post-Condition(s)	The actor has successfully logged out from the system.
Main Flow(s)	1. The actor navigates to the sidebar. 2. The actor clicks on the “Log Keluar” button at the bottom of the sidebar. 3. The actor is redirected to the login page.
Alternative Flow(s)	N/A
Exception Flow(s)	N/A

Table 3. 19: Use Case Specification for Manage Profile

Use Case	Manage Profile
Short Description	To allow the Student and Administrator to manage their profile.
Actor(s)	Student, Administrator
Pre-Condition(s)	1. A web browser device with an active and stable internet connection is required. 2. The actor has successfully logged into the system.
Post-Condition(s)	The updated profile details are saved into the database.
Main Flow(s)	1. The actor navigates to the “Profil” page by clicking the button in the sidebar. 2. The system displays a form containing the actor’s current profile information. 3. (A1) The actor updates fields such as: • Nickname • Email • Profile picture • Password

	4. The actor clicks the “Kemaskini Profil” button (E1). 5. The system validates the inputs and saves the updated profile information. 6. The system displays a success message confirming the changes.
Alternative Flow(s)	(A1) The actor chooses not to make any changes and navigates away from the page.
Exception Flow(s)	(E1) If the required fields are left blank, the system shows an error message.

Table 3. 20: Use Case Specification for View Admin Dashboard

Use Case	View Admin Dashboard
Short Description	To allow the Administrator to view the dashboard of the system.
Actor(s)	Administrator
Pre-Condition(s)	1. A web browser device with an active and stable internet connection is required. 2. The actor has successfully logged into the system. 3. The actor has accessed to the dashboard.
Post-Condition(s)	The actor can view emotion statistics and navigate to related pages.
Main Flow(s)	1. The actor is being redirected to the dashboard after logging in. 2. The system displays the following cards with statistics and is clickable (A1). • Total Users (Jumlah Pengguna), links to the “Pengguna” page. • Total Emotion Logs (Jumlah Log Emosi), links to the “Emosi” page. • Active Resources (Sumber Aktif), links to the “Sumber” page. • Active Helplines (Talian Bantuan Aktif), links to the “Talian Bantuan” page. 3. The system displays a graph showing the emotional trends based on all users’ mood logs. 4. The system displays a breakdown card “Pecahan Log Emosi” showing each emotion type and number of times it has been logged.
Alternative Flow(s)	(A1) If the actor clicks on a card, they will be redirected to the respective page.

Exception Flow(s)	N/A
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Table 3. 21: Use Case Specification for Manage User

Use Case	Manage Users
Short Description	To allow the Administrator to manage the users registered in the system.
Actor(s)	Administrator
Pre-Condition(s)	1. A web browser device with an active and stable internet connection is required. 2. The actor has successfully logged into the system. 3. The actor has accessed the Manage Users page.
Post-Condition(s)	The users records are viewed, updated, or deleted as requested.
Main Flow(s)	1. The actor navigates to the “Pengguna” page by clicking button from the sidebar. 2. The system displays a list of all registered users with their basic details such as: • ID • Username • Email • Nickname • Date Registered On • Last Login 3. The actor can perform the following actions: • (A1) View: Click on a user to view full details. • (A2) Update: Click the button to edit a user record, modify the information, and save changes (E1) (E2). • (A2) Delete: Click “Delete” on a user record and confirm deletion (E1) (E2) (E3).
Alternative Flow(s)	1. (A1) The actor filters or searches the user list using keywords on a searchbar. 2. (A2) The actor cancels any operation before saving.
Exception Flow(s)	1. (E1) If the required fields are empty, the system shows an error message. 2. (E2) If the server error during save/delete, the system shows an error message. 3. (E3) If the deletion fails, the system shows an error message.

Table 3. 22: Use Case Specification for Manage Emotion Log Graph

Use Case	Manage Emotion Log Graph
Short Description	To allow the Administrator to view and filter the emotion log graphs for specific users by time range (daily, weekly, monthly, annually)
Actor(s)	Administrator
Pre-Condition(s)	1. A web browser device with an active and stable internet connection is required. 2. The actor has successfully logged into the system. 3. The actor has accessed the Emotion Log Graph page.
Post-Condition(s)	The filtered graph data is displayed based on the selected user and time range.
Main Flow(s)	1. The actor navigated to the “Emosi” page by clicking the button from the sidebar. 2. (A1) The system displays a dropdown to select a user. 3. The actor selects a specific user to view their emotion log. 4. The actor selects a time range: • Daily • Weekly • Monthly • Annually 5. The system displays the emotion graph based on the selected filters (E1) (E2).
Alternative Flow(s)	(A1) The actor changes the selected user or time range to view a different graph.
Exception Flow(s)	1. (E1) If no logs are available for the selected user or time range, the system shows an error messages. 2. (E2) If the data fails to load, the system shows an error message.

Table 3. 23: Use Case Specification for Manage Mental Health Resources

Use Case	Manage Mental Health Resources
Short Description	To allow the Administrator to create, view, update, delete, and control the visibility of mental health resources for users using a toggle button.
Actor(s)	Administrator
Pre-Condition(s)	1. A web browser device with an active and stable internet connection is required. 2. The actor has successfully logged into the system. 3. The actor has accessed the Resource Management page.
Post-Condition(s)	Resources are created, updated, deleted, or marked as available/unavailable for users.
Main Flow(s)	1. The actor navigates to the “Sumber” page by clicking button from the sidebar. 2. The system displays a list of existing mental health resources. 3. (A1) (A2) The actor can perform the following actions (E1): • Create a new resource by clicking the button at the top of the page and the save button. • View full details of a specific resource. • Update an existing resource’s details by clicking edit, then modifying fields and clicking the save button. • Delete a resource by clicking the Delete button and confirming the action. • Toggle Availability by clicking on a switch to make a resource visible or hidden from users.
Alternative Flow(s)	1. (A1) The actor searches or filters resources by keywords. 2. (A2) The actor cancels a create or edit action before saving.
Exception Flow(s)	(E1) If the required fields missing during create/update, the system shows an error message.

Table 3. 24: Use Case Specification for Manage Helplines

Use Case	Manage Helplines
Short Description	To allow the Administrator to create, view, update, delete, and control the visibility of mental health helplines for users

	using a toggle button.
Actor(s)	Administrator
Pre-Condition(s)	1. A web browser device with an active and stable internet connection is required. 2. The actor has successfully logged into the system. 3. The actor has accessed the Helpline Management page.
Post-Condition(s)	Helplines records are created, updated, deleted, or marked as available/unavailable for users.
Main Flow(s)	1. The actor navigates to the “Talian Bantuan” page by clicking button from the sidebar. 2. The system displays a list of existing helplines with details such as name, contact number, and organization. 3. (A1) (A2) The actor can perform the following actions (E1): • Create a new helpline by clicking the button at the top of the page and the save button. • View full details of a specific helpline. • Update an existing helpline's details by clicking edit, then modifying fields and clicking the save button. • Delete a helpline by clicking the Delete button and confirming the action. • Toggle Availability by clicking on a switch to make a helpline visible or hidden from users.
Alternative Flow(s)	1. (A1) The actor searches or filters helpline by keywords. 2. (A2) The actor cancels a create or edit action before saving.
Exception Flow(s)	(E1) If the required fields missing during create/update, the system shows an error message.

3.3.3 Sequence Diagram

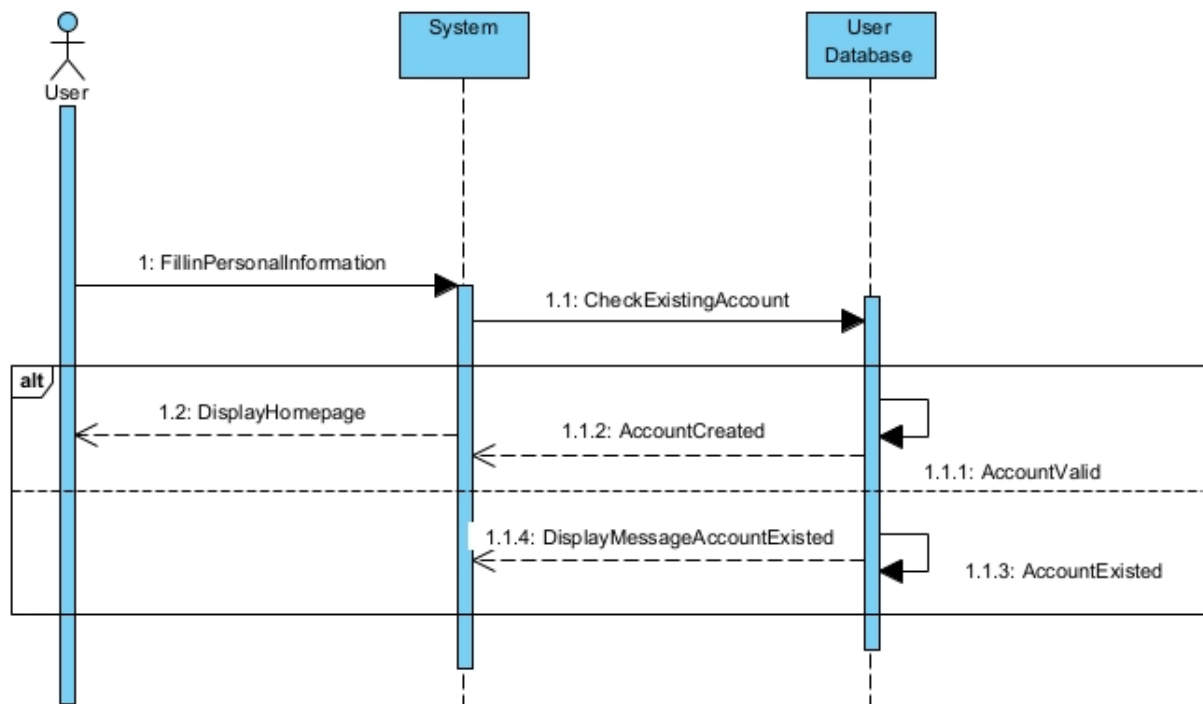


Figure 3. 17: Sequence Diagram for Login

Figure 3.17 illustrates the Login sequence diagram. The user must log into their existing user account. After the credentials are entered, an API call is made to the user database to validate the user's identity. If the verification is successful, a success message is displayed, and the user is redirected to the homepage. If the credentials are incorrect, the system prompts the user to either click "Forgot Password" for assistance or retry entering the correct information.

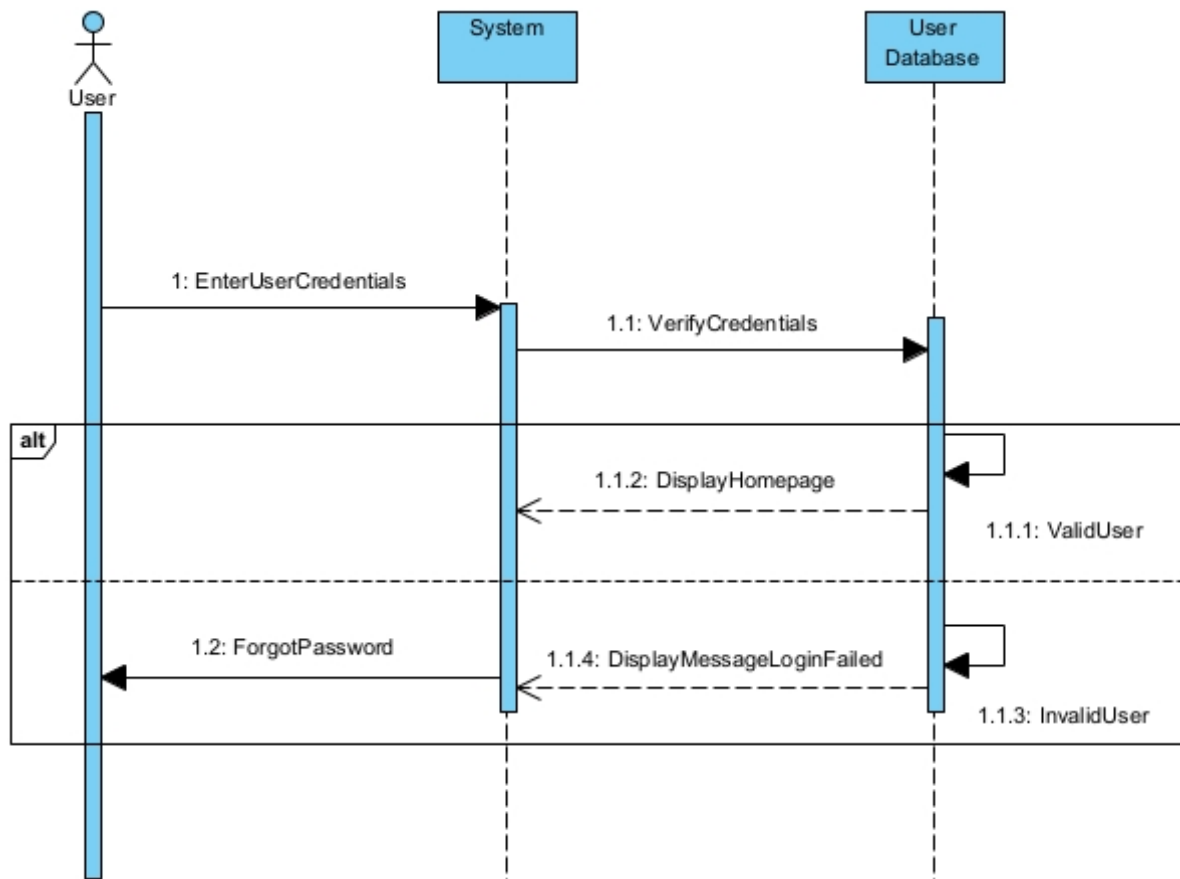


Figure 3. 18: Sequence Diagram for Register New Account

Figure 3.18 illustrates the Register New Account sequence diagram. The user must enter their personal information such as email address, username, name, password, gender, and age. When the user clicks the "Daftar Masuk" button, the system validates the provided personal information. If all details are accurate and complete, a success message confirms the user has been successfully registered. Otherwise, an error message is displayed, indicating issues such as missing information, incorrect input format, or an email address already associated with an existing account.

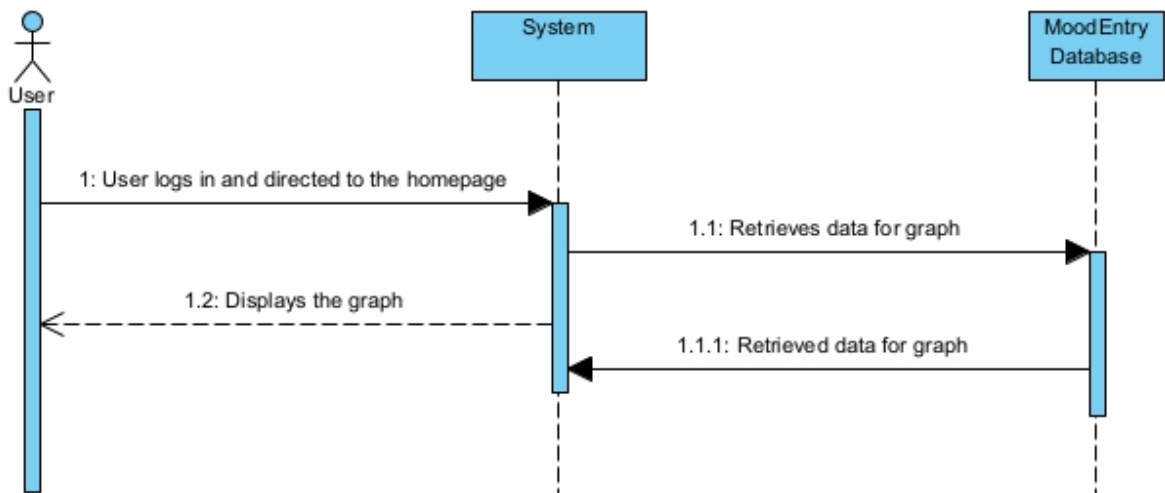


Figure 3. 19: Sequence Diagram for View Graph

Figure 3.19 illustrates the View Graph sequence diagram. After successfully logging into the system, the user is directed to the homepage, where a graph of their logged mood, retrieved from the database, is displayed.

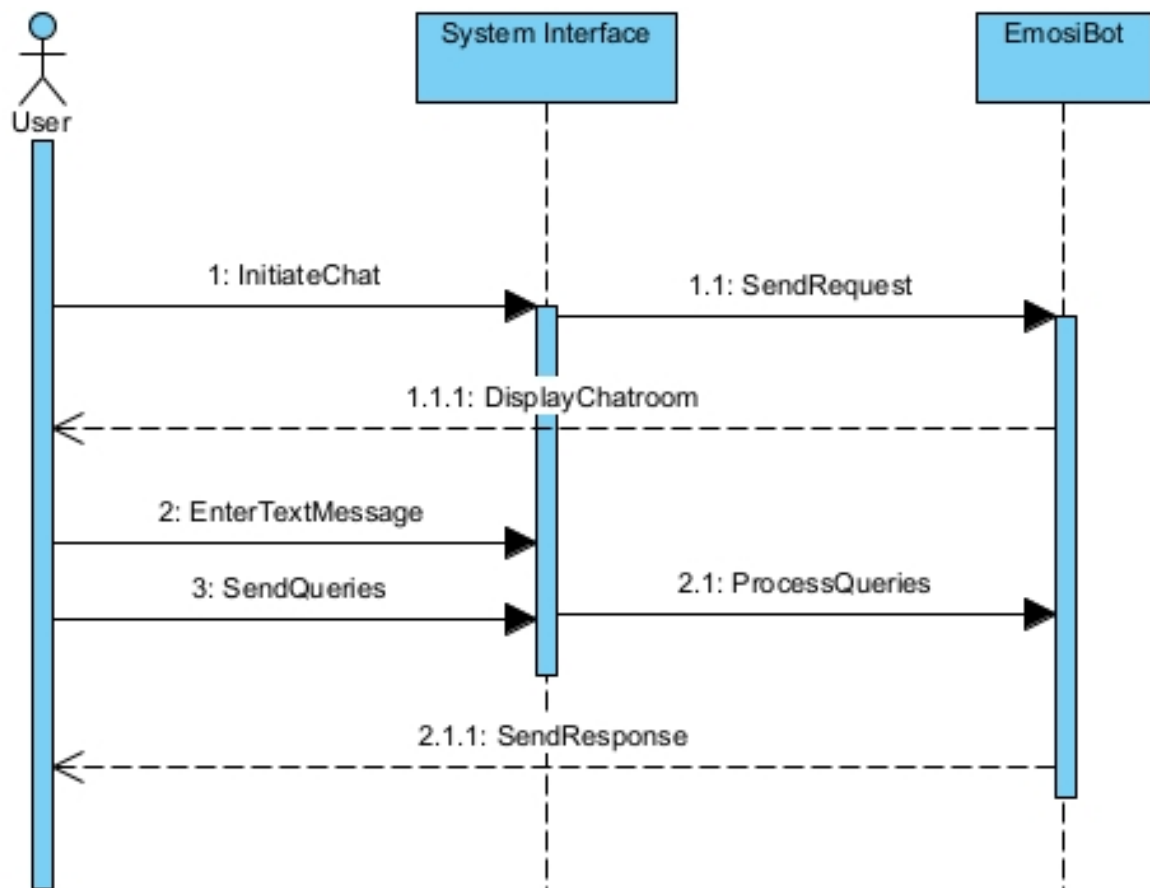


Figure 3. 20: Sequence Diagram for Interact with EmosiBot

Figure 3.20 illustrates the Interact with EmosiBot sequence diagram. To begin interacting with EmosiBot, the user must click on the EmosiBot icon. The chatbot will then initiate the conversation and respond to the user's queries or inputs

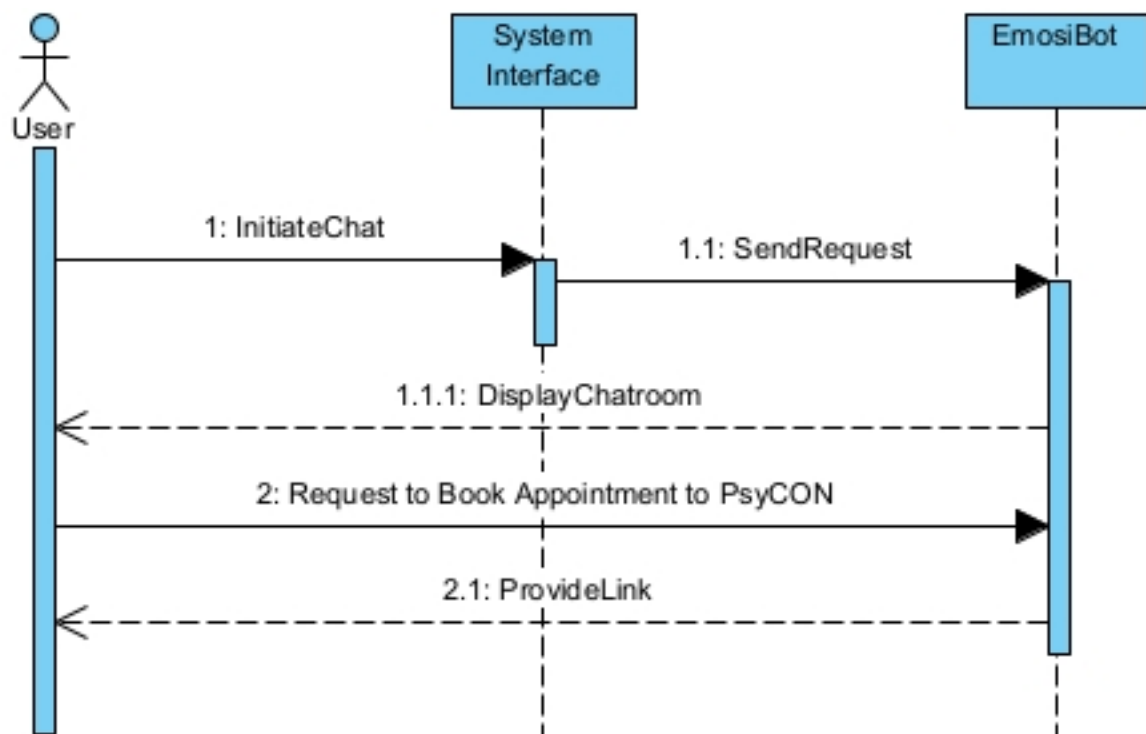


Figure 3. 21: Sequence Diagram for Book Appointment with PsyCON

Figure 3.21 illustrates the Book Appointment with PsyCON sequence diagram. The user can request EmosiBot to assist with booking an appointment with a counsellor at UNIMAS. The chatbot will then provide the official link, which the user can click to complete the appointment booking process.

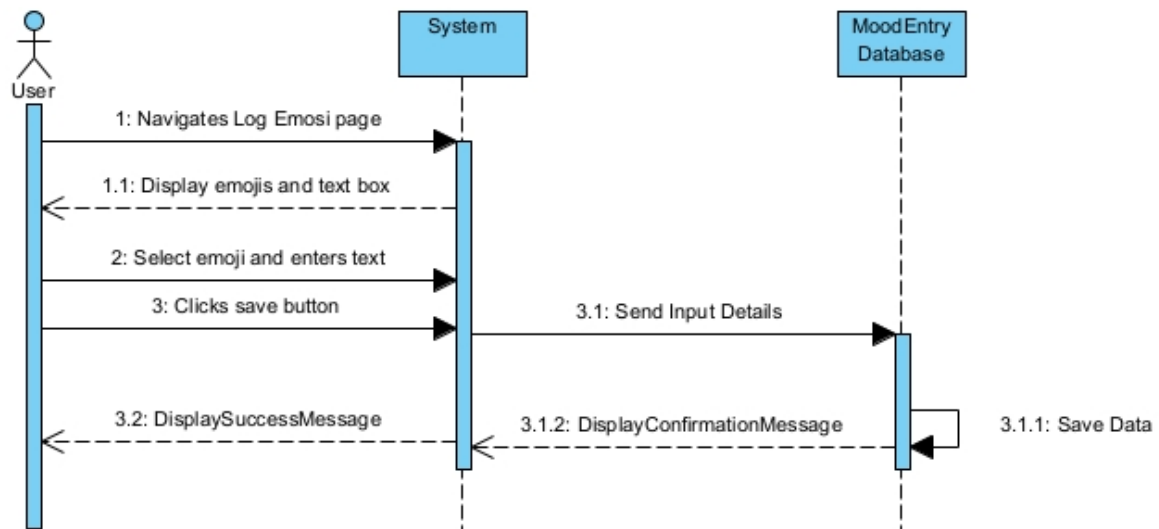


Figure 3. 22: Sequence Diagram for Log Journal

Figure 3.22 illustrates the Log Mood sequence diagram. The user needs to navigate to the “Log Emosi” page, where the system will display five emojis for the user to select based on their mood for the day, along with a text box for the user to fill in their journal entry. Once the "Simpan" button is clicked, the entry is saved in the database, and a message “Berjaya simpan” will appear, indicating that the entry has been successfully saved.

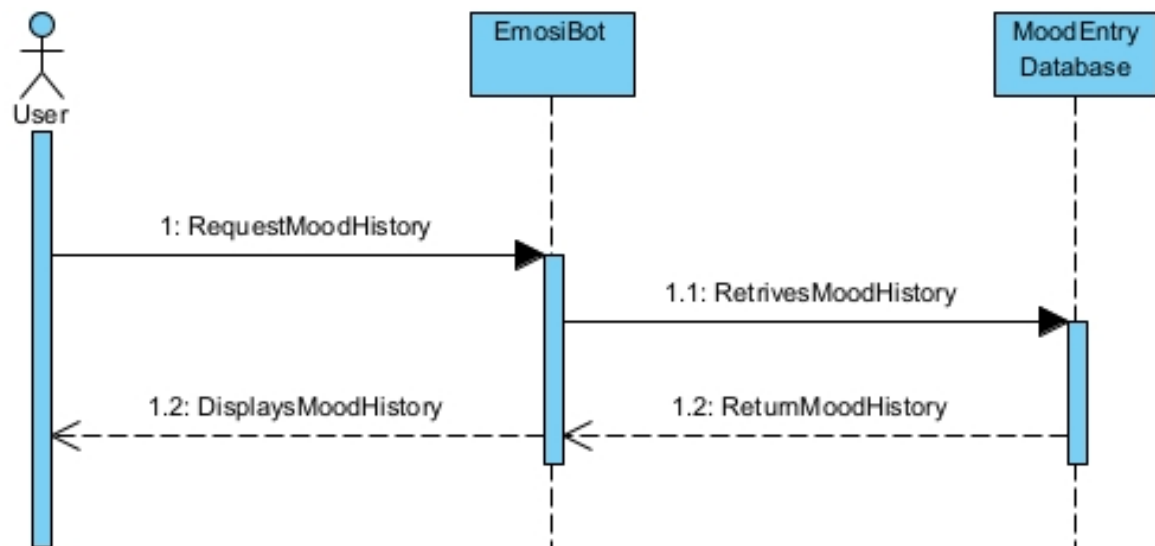


Figure 3. 23: Sequence Diagram for View Journal History

Figure 3.23 illustrates the View Journal History sequence diagram. The user can view the history of their logged mood and journal when they click on "Lihat Sejarah Jurnal" on the "Log Emosi" page. The user will then be redirected to the page to view their history, where the system retrieves the data from the database.

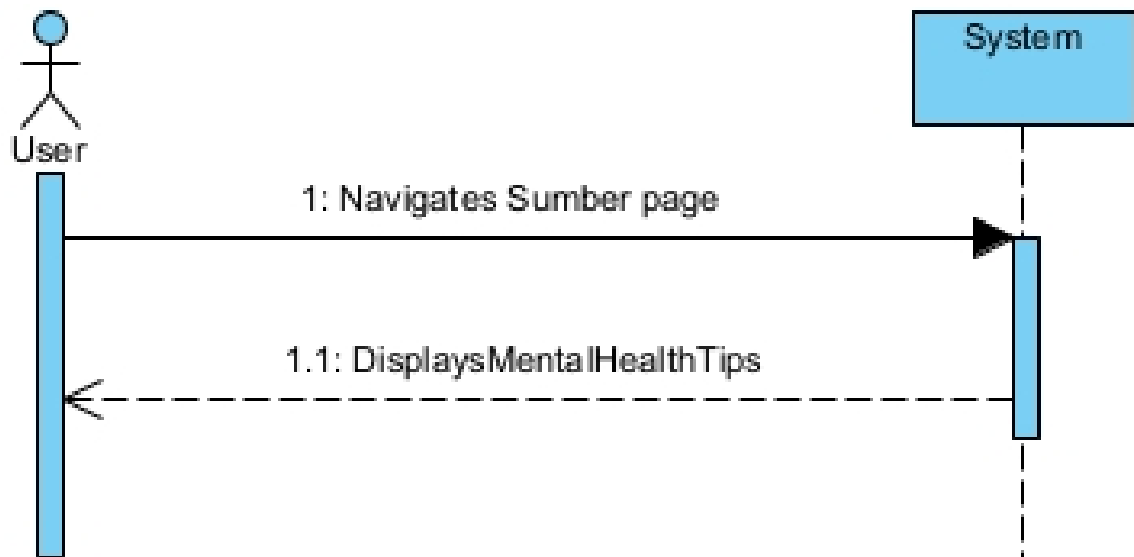


Figure 3. 24: Sequence Diagram for View Mental Health Tips

Figure 3.24 illustrates the View Mental Health Tips. The user can view mental health tips on this page, where they can see suggested activities and coping strategies for various mental health issues, such as depression, stress, or anxiety. The system presents a list of tips aimed at improving mental well-being, offering guidance on how to manage and cope with these challenges.

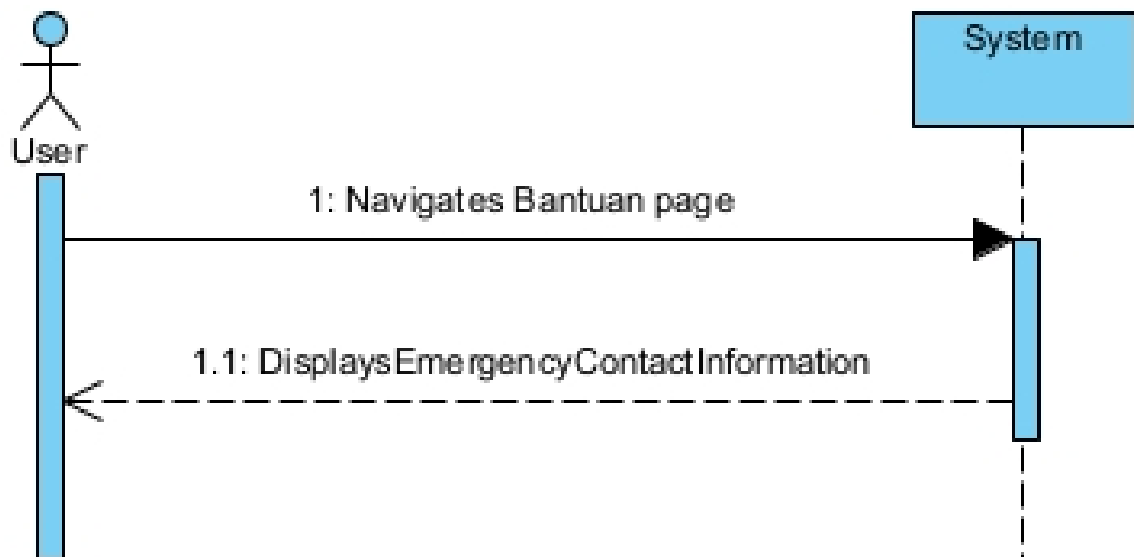


Figure 3. 25: Sequence Diagram for View Helplines

Figure 3.25 illustrates the View Helplines sequence diagram. The user can navigate to the "Bantuan" page, where the system displays the available helplines related to mental health.

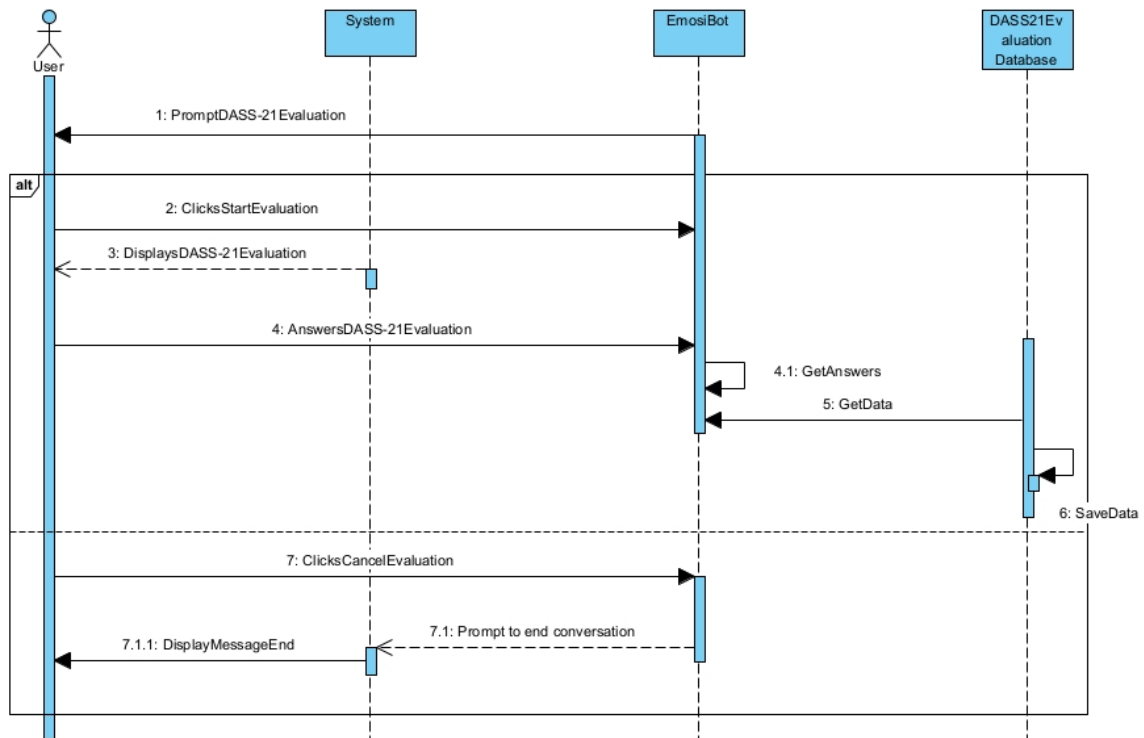


Figure 3. 26: Sequence Diagram for Start DASS-21 Evaluation

Figure 3.26 illustrates the Start DASS-21 Evaluation sequence diagram. EmosiBot will prompt the user to take the DASS-21 evaluation form. If the user agrees, the evaluation will begin, and upon completion, the user will submit the form, which will then be saved in the database. If the user cancels the evaluation, EmosiBot will prompt to end the conversation.

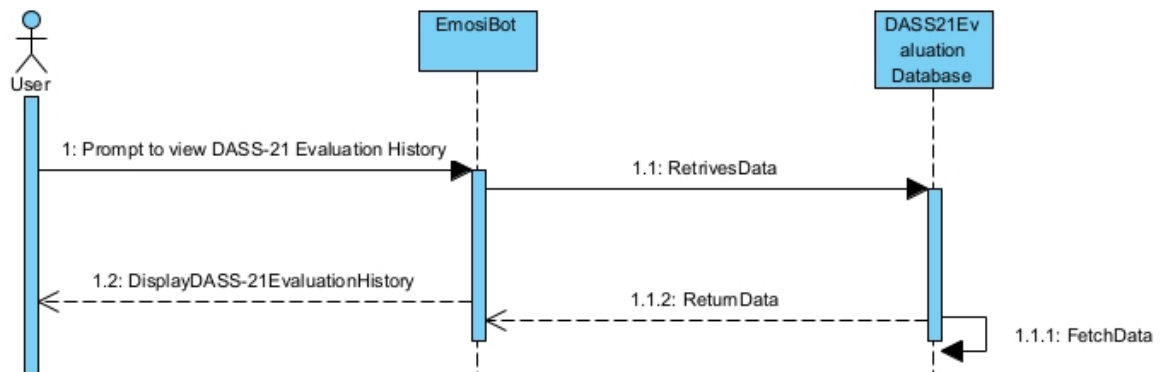


Figure 3. 27: Sequence Diagram for View DASS-21 Evaluation History

Figure 3.27 illustrates the View DASS-21 Evaluation History sequence diagram. The user prompts EmosiBot to view their DASS-21 evaluation history, and EmosiBot retrieves the data from the database and displays it to the user.

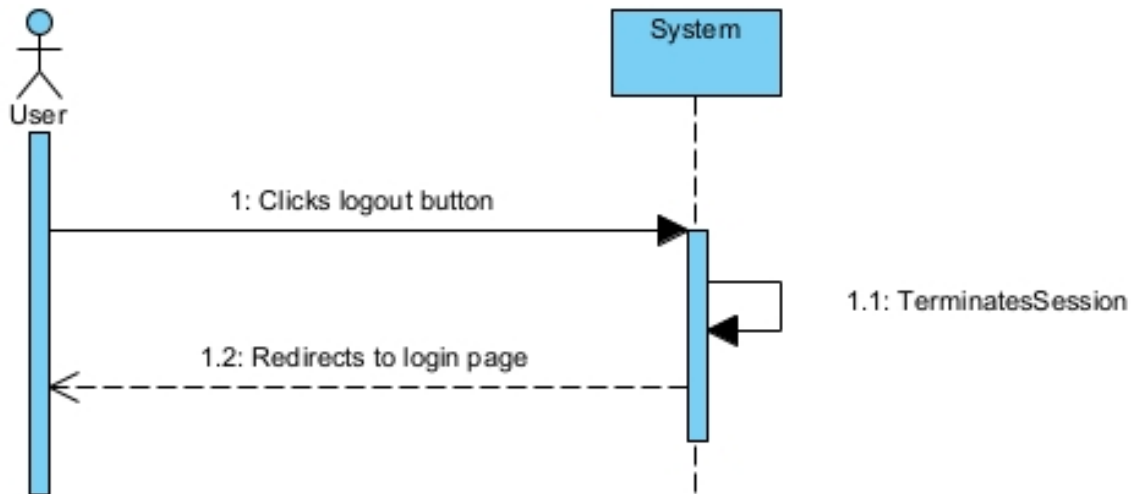


Figure 3. 28: Sequence Diagram for Logout

Figure 3.28 illustrates the Logout sequence diagram. When the user clicks on the “Log Keluar” button, the user will be redirected to the login page.

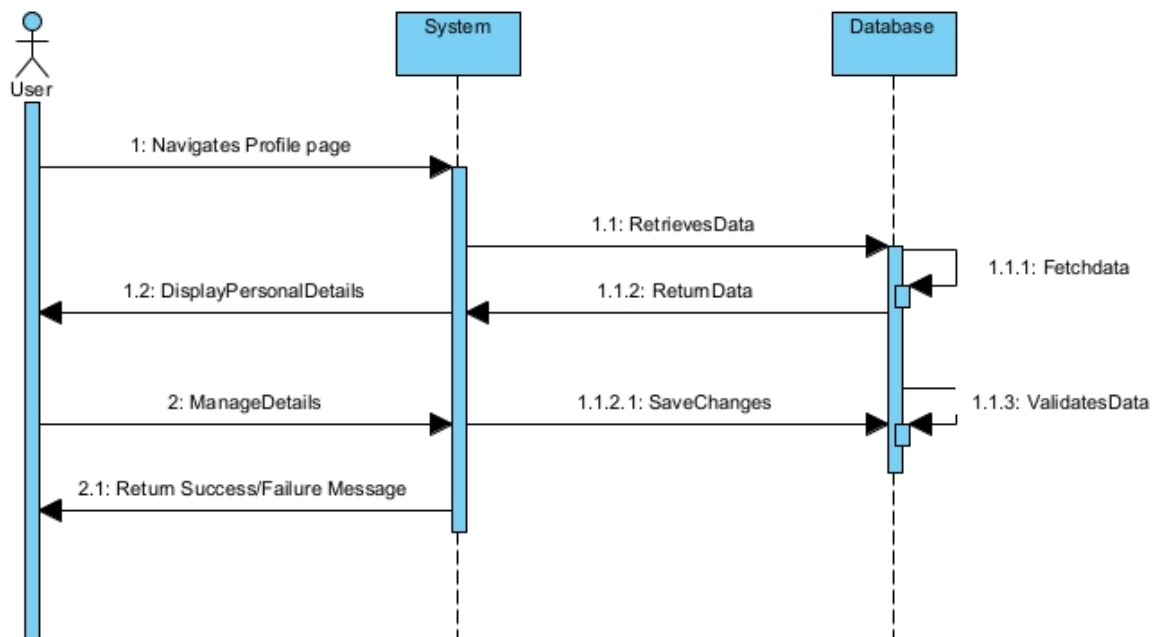


Figure 3. 29: Sequence Diagram for Manage Profile

Figure 3.29 illustrates the Manage Profile sequence diagram for Users (Student and Administrator). The user can navigate to the “Profil” page, where the system displays their information. The user can perform the update by modifying their profile details and clicking the save button, after which the system will validate the input and update the information in the database.

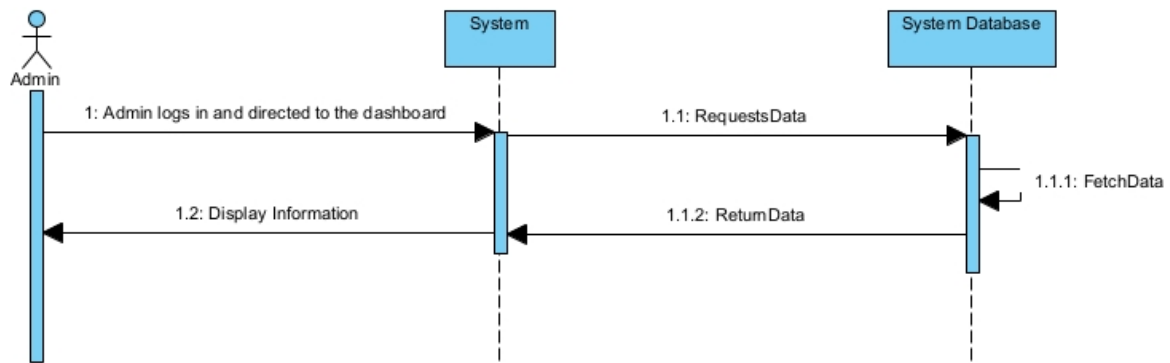


Figure 3. 30: Sequence Diagram for View Admin Dashboard

Figure 3.30 illustrates the View Admin Dashboard sequence diagram. After successfully logging into the system, the administrator is directed to the dashboard, where the system displays cards with statistics such as total users, total emotion logs, active resources, and active helplines. It also displays a graph showing emotional trends based on all users' mood logs, along with a breakdown card that shows each emotion type and the number of times it has been logged.

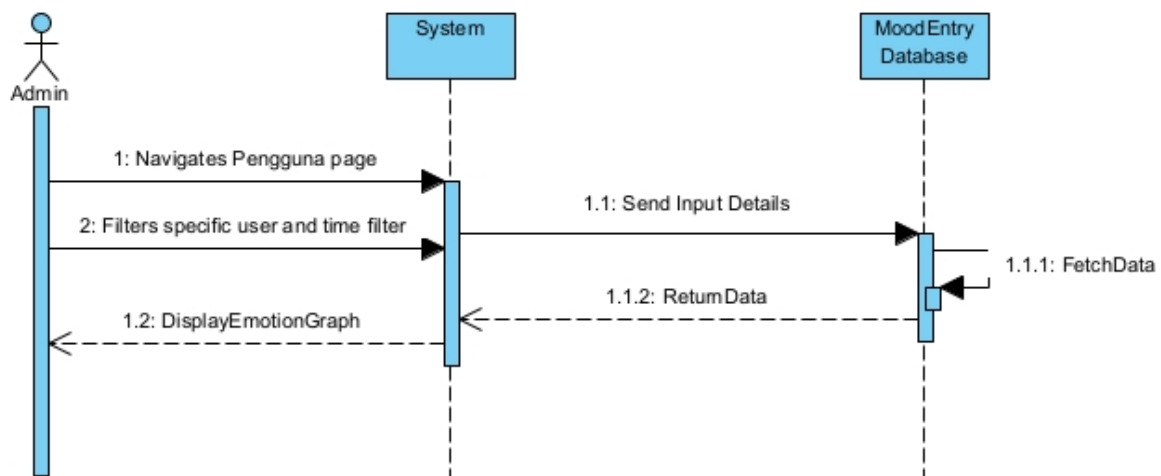


Figure 3. 31: Sequence Diagram for View Emotions Log Graph

Figure 3.31 illustrates the View Emotion Log Graph sequence diagram. The administrator selects a specific user and a time range (daily, weekly, monthly, or annually) to view their emotion log graph. The system retrieves the relevant emotion data from the database and generates a visual graph to display the selected user's emotional trends over the specified period.

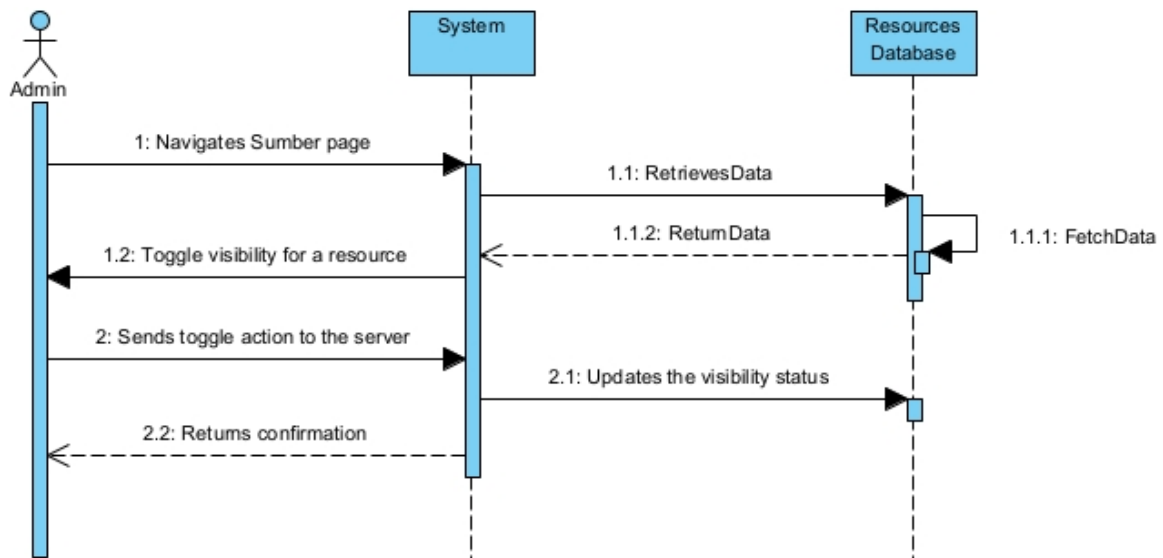


Figure 3. 32: Sequence Diagram for Manage Mental Health Resources

Figure 3.32 illustrates Manage Mental Health Resources sequence diagram. This sequence shows how the administrator interacts with the system to perform Create, Read, Update, and Delete (CRUD) operations on mental health resources. The administrator navigates to the "Sumber" page, where the system displays a list of existing mental health sources. After each action, the system validates the request, updates the database accordingly, and provides feedback.

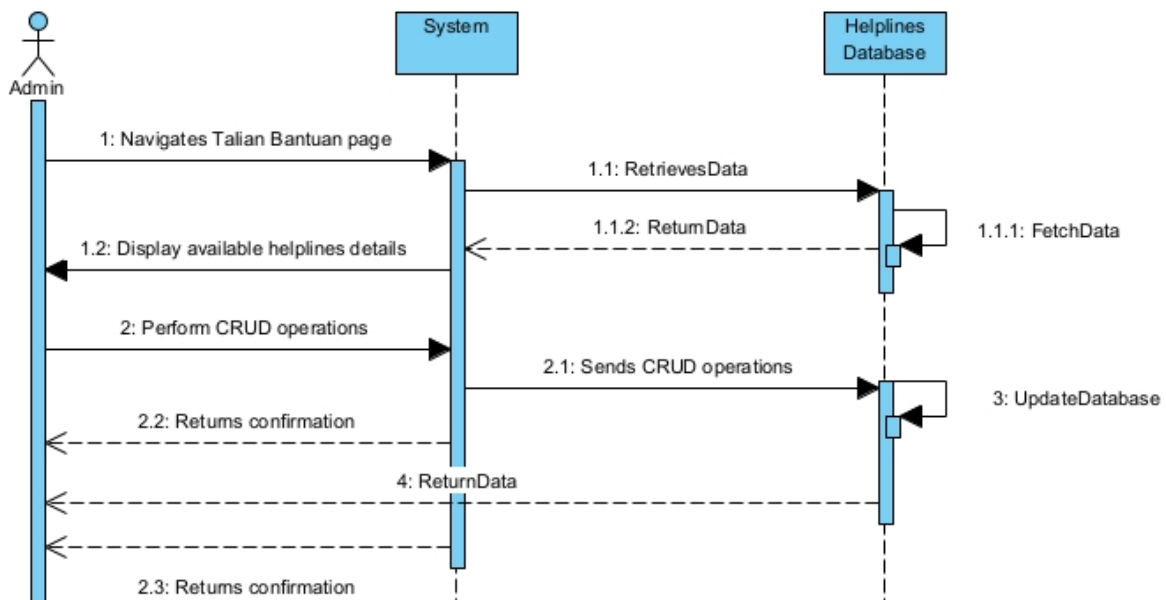


Figure 3. 33: Sequence Diagram for Manage Helplines

Figure 3.33 illustrates Manage Helplines sequence diagram. This sequence diagram represents the interaction between the administrator and the system when managing helpline

information. Upon navigating to the “Talian Bantuan” page, the system retrieves and displays a list of existing helplines, including their names, contact numbers, descriptions, and status (active/inactive). After each operation, the system confirms the action and refreshes the list to reflect the changes.

3.3.4 Class Diagram

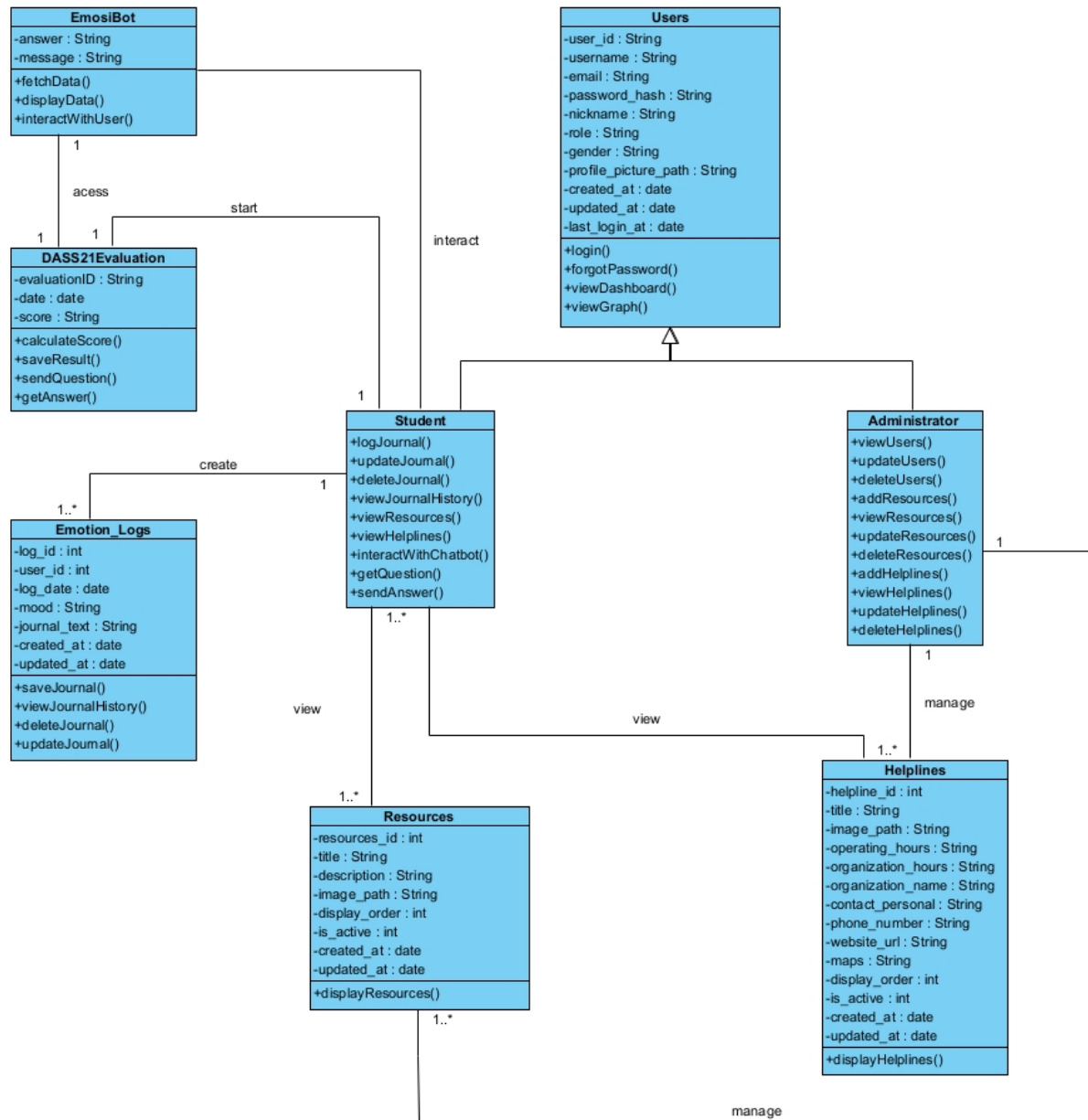


Figure 3. 34: Class Diagram of the proposed system

Figure 3.34 illustrates the class diagram and describes the relationships and dependencies between classes in the source code, highlighting the interaction among the user, EmosiBot, and the features available in the system.

3.4 Database Diagram

3.4.1 Entity Relationship Diagram

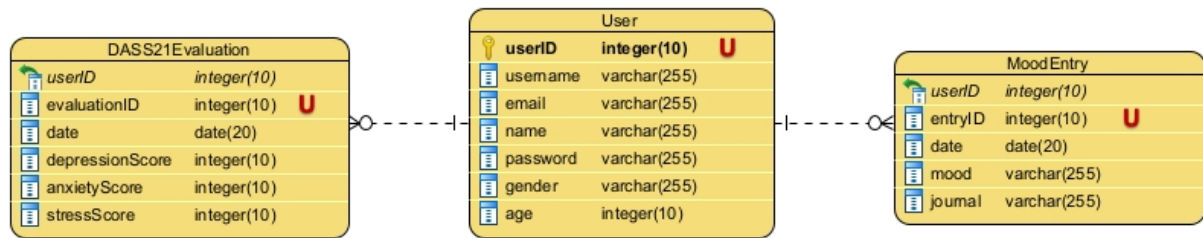


Figure 3. 35: Entity Relationship Diagram (ERD) of the proposed system

Figure 3.35 illustrates the ERD of the proposed system, defining the business rules and logic for the system. It shows the relationships between the tables, allowing data to flow to and from the data storage. These relationships guide the development of the backend, ensuring that the system's core functionalities are achieved to maintain simplicity and, the data attributes are designed to be straightforward. The proposed system consists of three primary entities: User, MoodEntry, and DASS21Evaluation. The User database stores all of the user's personal information, while the MoodEntry database tracks the user's mood data and journal. Meanwhile, the DASS21Evaluation database holds the user's input and results from the DASS-21 psychometric evaluation.

3.4.2 Data Dictionary

The data dictionary is a centralized repository that defines the structure, meaning, and relationships of the data used in the proposed system. It provides detailed descriptions of data elements, including their names, types, allowed values, and how they are used within the system, ensuring consistency and clarity in how data is stored, processed, and accessed. The data dictionary for the proposed system is presented in Tables 3.25, 3.26 and 3.27 below, where these definitions are outlined in detail.

Table 3. 25: User table

Field Name	Field Type	Constraints
userID	integer (10)	Primary Key, Auto Increment, Not Null
username	varchar (255)	Not Null
email	varchar (255)	Not Null
name	varchar (255)	Not Null
password	varchar (255)	Not Null
gender	varchar (255)	Not Null
age	integer (10)	Not Null

Table 3. 26: DASS21Evaluation table

Field Name	Field Type	Constraints
userID	integer (10)	Foreign Key
evaluationID	integer (10)	Primary Key, Auto Increments, Not Null
date	date (20)	Not Null
depressionScore	integer (10)	Not Null
anxietyScore	integer (10)	Not Null
stressScore	integer (10)	Not Null

Table 3. 27: MoodEntry table

Field Name	Field Type	Constraints
userID	integer (10)	Foreign Key
entryID	integer (10)	Primary Key, Auto Increments, Not Null
date	date (20)	Not Null
mood	varchar (255)	Not Null
journal	varchar (255)	Not Null

3.5 User Interfaces

The proposed system is designed with a minimalistic and clean interface to cater to mental health needs. The design prioritizes simplicity, avoiding unnecessary clutter or flashy elements, to provide users with a clear and intuitive experience. Every page of the system features a navigation bar on the left side of the screen, allowing users to easily access different sections of the system. Each button on the navigation bar is hyperlinked to its designated page. The system uses Malay as the primary language, aligning to make mental health support more accessible to Malay-speaking users.

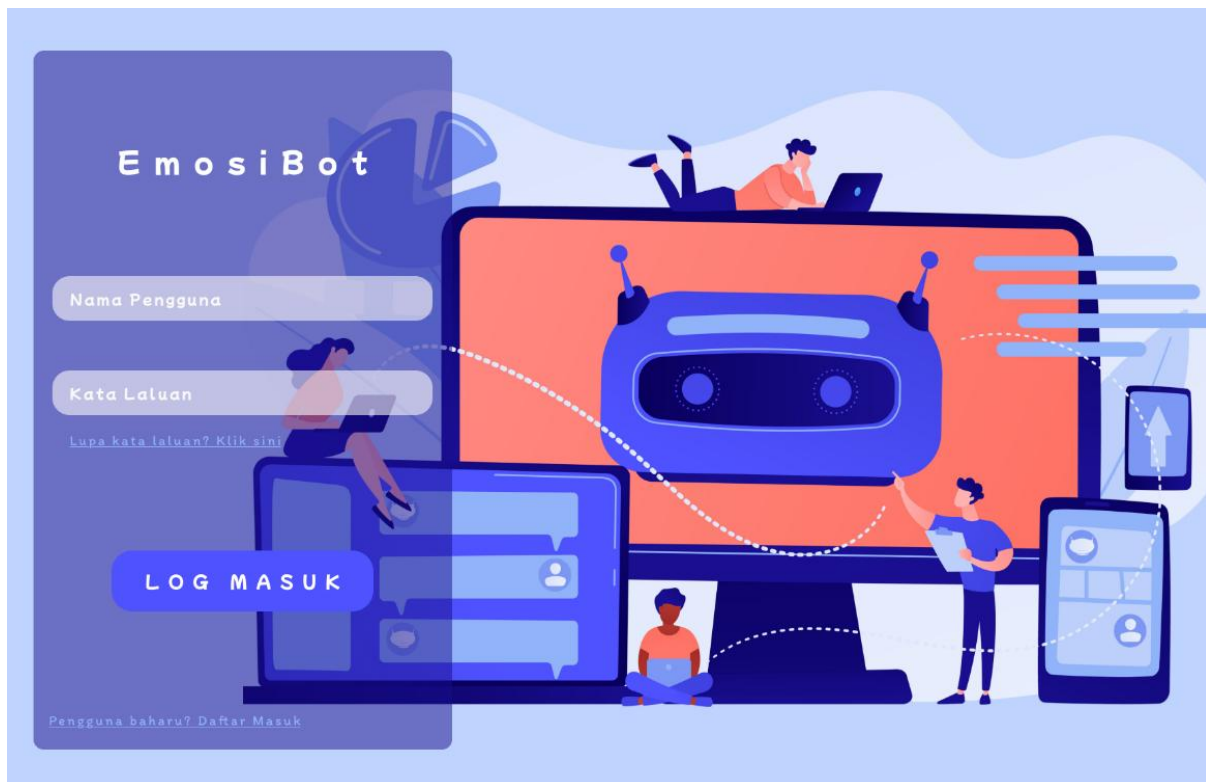


Figure 3. 36: Login Page

When users want to access the system, they begin at the login page, as shown in Figure 3.36. This page requires users to enter their registered credentials, including a username and password, to securely access the system. If a user forgets their password, they can click on the 'Lupa kata laluan? Klik sini' link to initiate a password recovery process, ensuring they can regain access to the system.

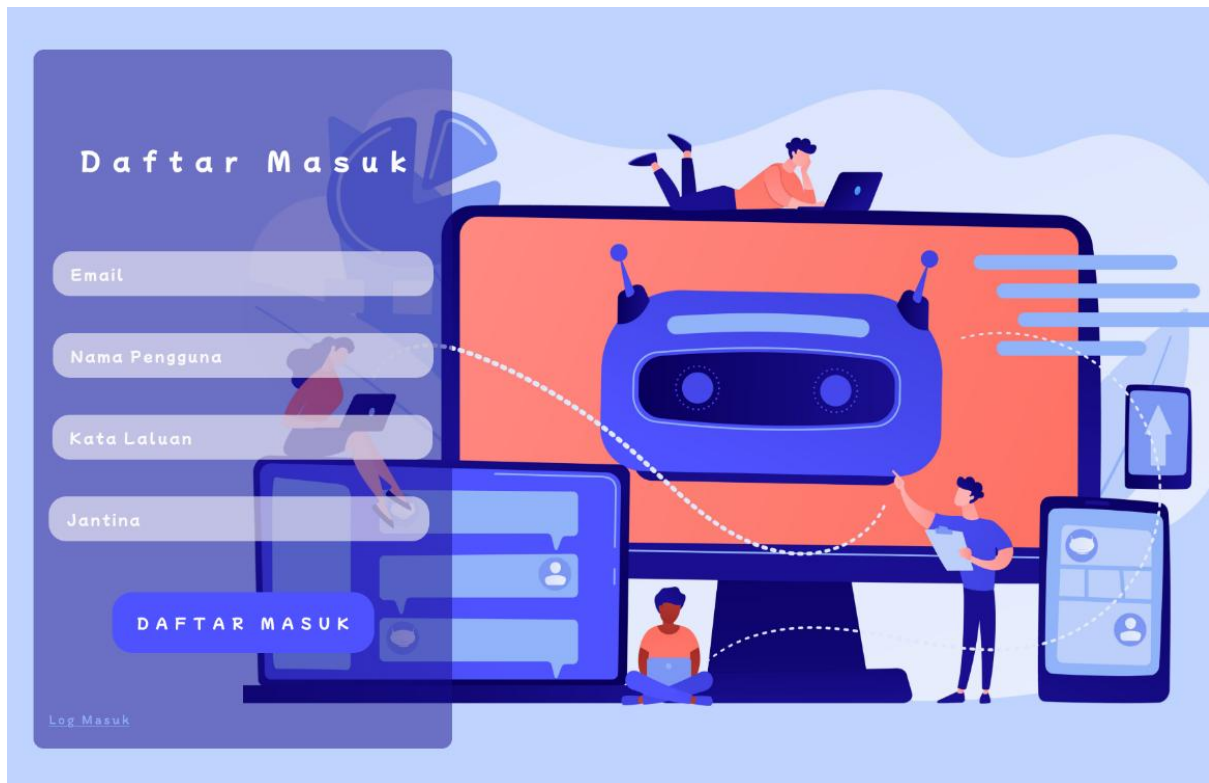


Figure 3. 37: Register New Account Page

If a user does not have an account registered in the system, they must create a new account by clicking the 'Daftar Masuk' link. This will redirect the user to the register new account page, where they will be prompted to input the required information, as shown in Figure 3.37.

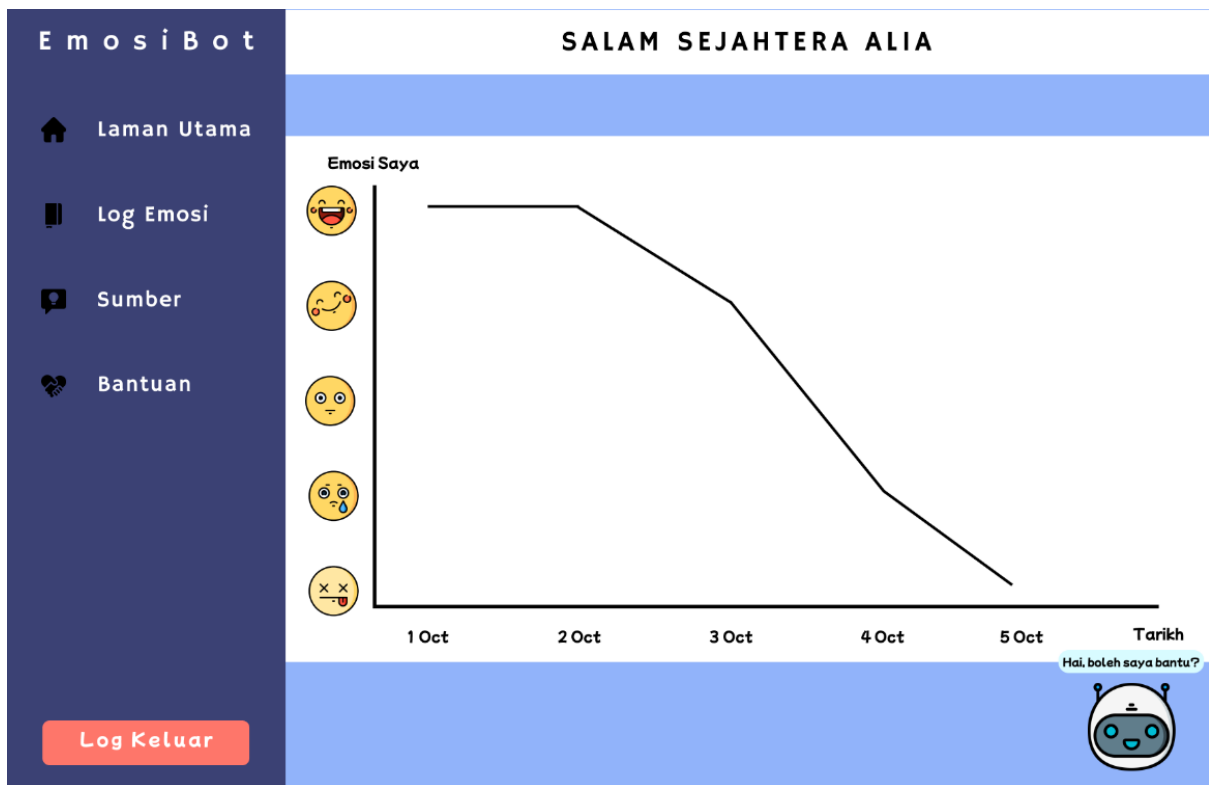


Figure 3. 38: Student Homepage

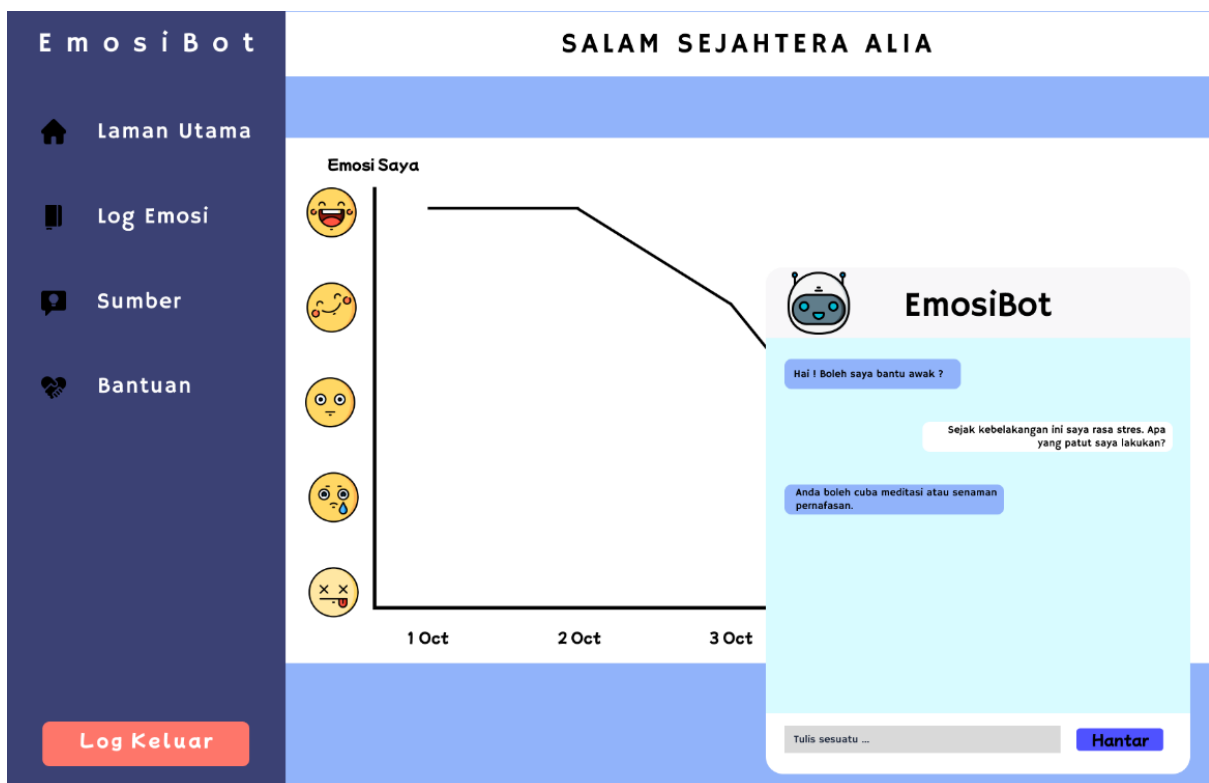


Figure 3. 39: Student Homepage where the EmosiBot icon is clicked

After successfully logging into the system, the user will be redirected to the homepage, where a graph displaying their previously logged moods is shown, as illustrated in Figure 3.38. At

the bottom of the homepage, the EmosiBot icon is available, allowing the user to click on it and start interacting with the chatbot, as depicted in Figure 3.39.

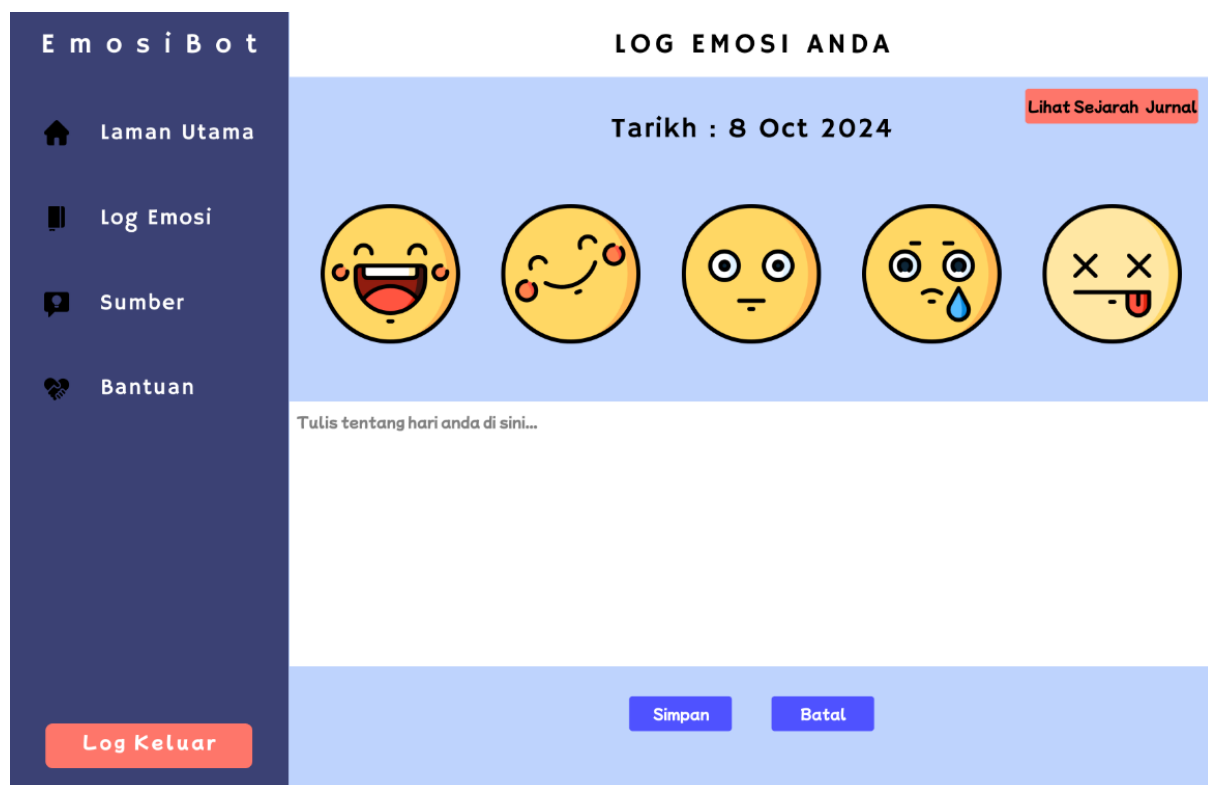


Figure 3. 40: Log Journal Page

Figure 3.40 shows the “Log Emosi” page where users can log their emotions and document their thoughts. The system then displays a selection of emojis representing various moods and provides a text box for journal. The user selects an emoji that reflects their current mood and enters relevant text in the text box. Afterwards, they click the save button to submit their mood entry. The system records entry in the database, updates the user's mood history, and redirects them back to the homepage. The mood graph on the homepage is updated accordingly to reflect the newly logged mood.



Figure 3. 41: Log Journal History page

Figure 3.41 shows the “Sejarah Emosi dan Jurnal” page that allow the users to review their past mood entries and journal logs. The system retrieves the user's mood history from the database, including the selected moods and corresponding journal entries, and displays them in a chronological list.

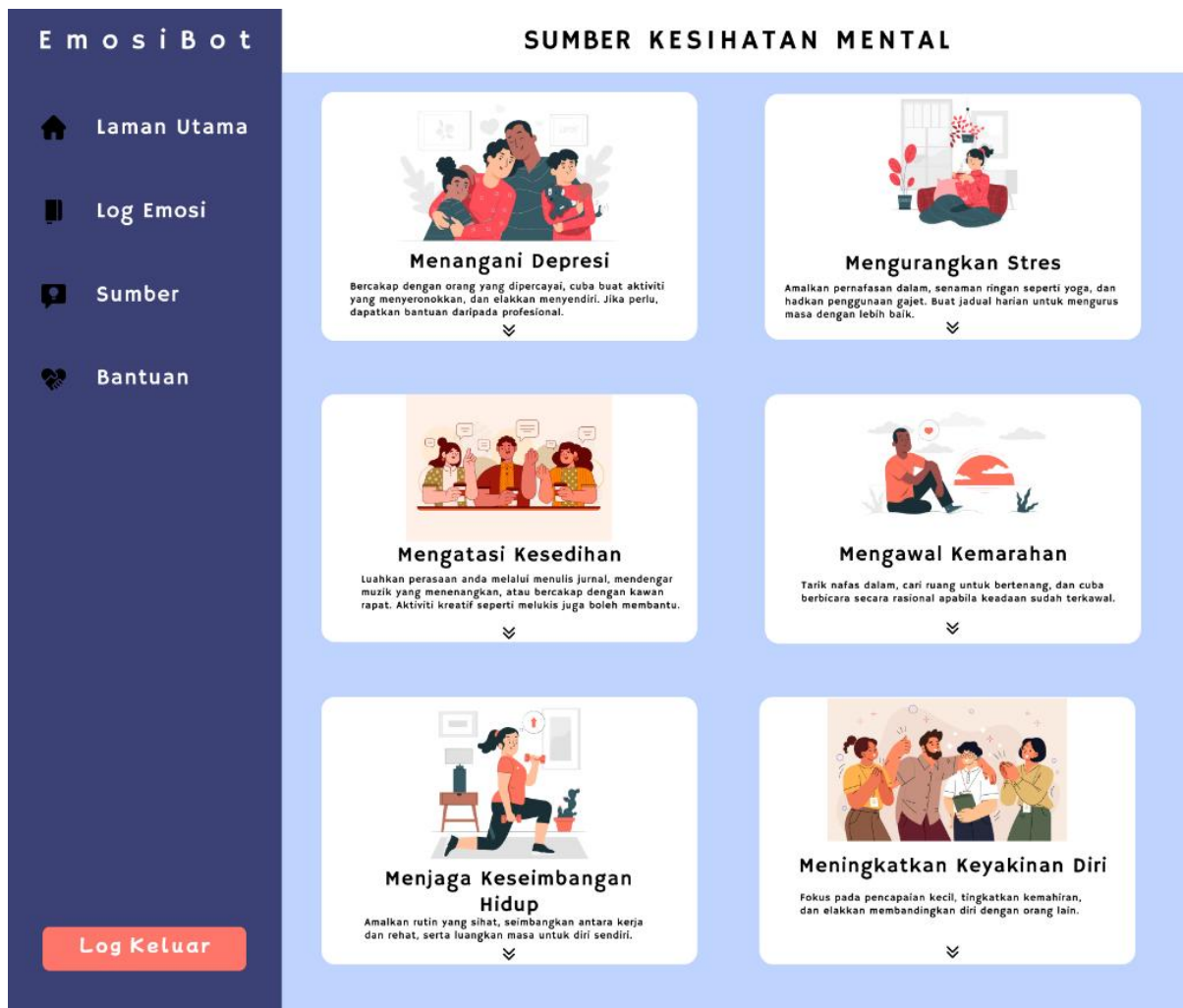


Figure 3. 42: Mental Health Tips

Figure 3.42 shows the “Sumber Kesehatan Mental” page that allow users to explore helpful tips for maintaining mental well-being. The system then displays a list of mental health tips, each accompanied by a brief description and suggested activities. The user can browse through the tips and read the details of each activity.

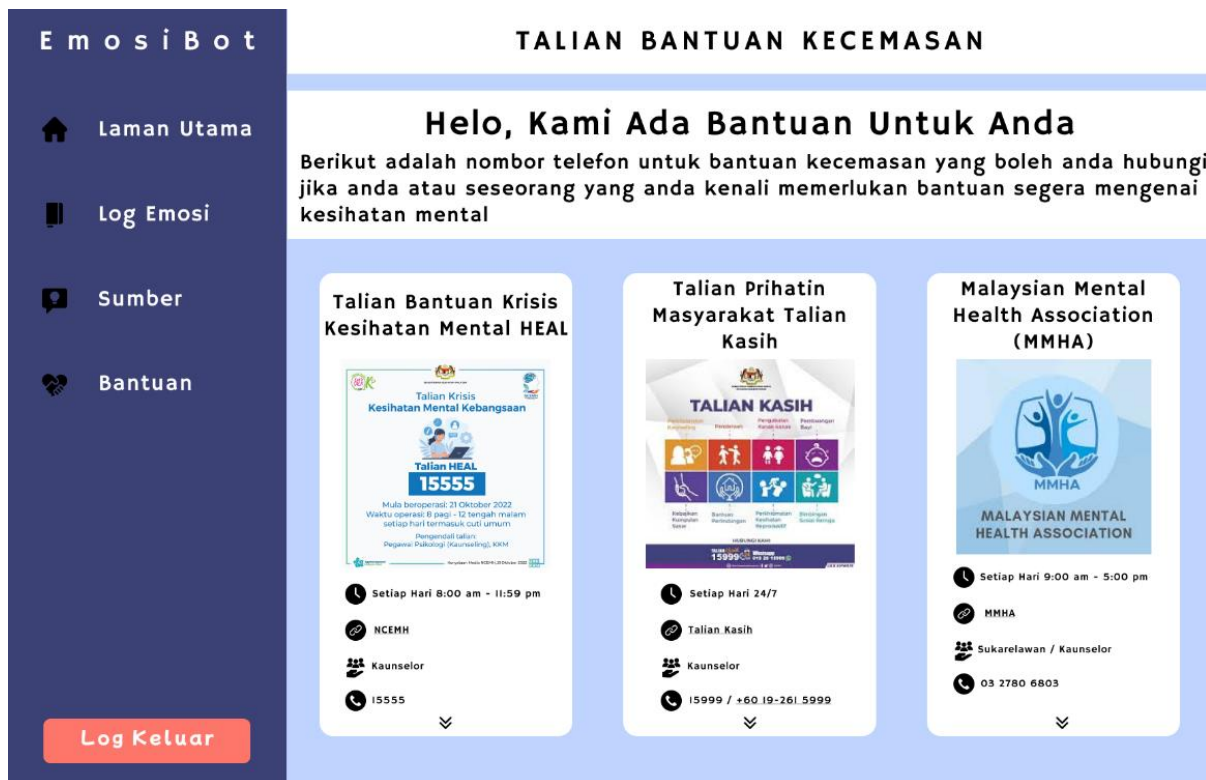


Figure 3. 43: Helplines page

Figure 3.43 shows the “Talian Bantuan Kecemasan” page which provides users with access to essential emergency services. The system then displays a list of available emergency contact services. The user can click on the name of an emergency service to view more detailed information. The system presents detailed information about the selected service, including service hours, contact numbers, background information, and the types of issues that can be addressed. Additionally, the user can click on a website link that redirects them to the official website of the emergency service.

3.6 Summary

Chapter 3 outlines the methodology employed in developing the proposed system, emphasizing the use of the Rapid Application Development (RAD) model. The logical design of the prototype framework focuses on analyzing the system's behavior through diagrams such as the Use Case Diagram, Sequence Diagram, and Class Diagram.

Chapter 4: Implementation

4.1 Introduction

This chapter describes the implementation of the proposed system, which is developed based on the methodology outlined in the previous chapter to ensure it meets the expected outcomes. It also identifies the tools to facilitate a smooth implementation and development process.

This chapter discusses two main sections:

- i. Section 4.2 discusses the development tools that need to be installed and configured, including XAMPP, Visual Studio Code, and Dialogflow for the development process of the proposed system.
- ii. Section 4.3 discusses the interfaces of the proposed system, which implement the functionalities that users will utilise.

4.2 Software Installation and Development Tools

Before the development begins, there are several software development tools that need to be installed and configured. The development tools that will be used for the development process of the proposed system are XAMPP, Visual Studio Code, and Dialogflow.

4.2.1 XAMPP

XAMPP is a PHP development environment and acts as a localhost for development (Naik, 2023). The application is a free and open-source software package that provides a development environment for building and testing web applications. The application contains MariaDB, PHP and File Transfer Protocol (FTP).

To start the XAMPP application, firstly download the software from the official website <https://www.apachefriends.org/> and choose the installer based on user operating system. Once the installation has been done, there will be a control panel for XAMPP which provides full control to users. Figure 4.1 shows the layout of the XAMPP control panel after successfully installed.

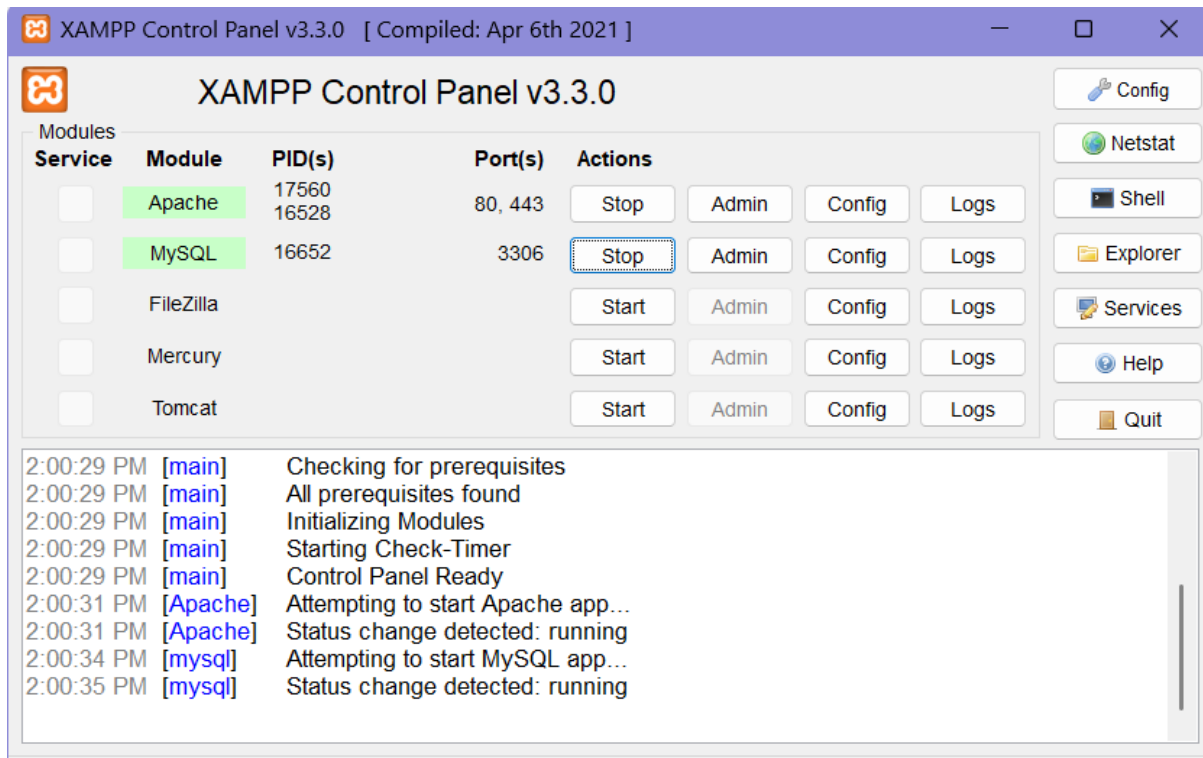


Figure 4. 1: XAMPP Control Panel

4.2.2 Visual Studio Code

Visual Studio Code, a free code editor used to write and push code to GitHub, was installed on the computer from the official website (<https://code.visualstudio.com/Download>), (Heller, 2022).

After writing the code, changes are committed using Git, and the local repository is connected to a remote repository on GitHub (Figure 4.3). The code is then pushed using Visual Studio Code's built-in Git features to ensure the project is backed up, version-controlled, and accessible for collaboration.

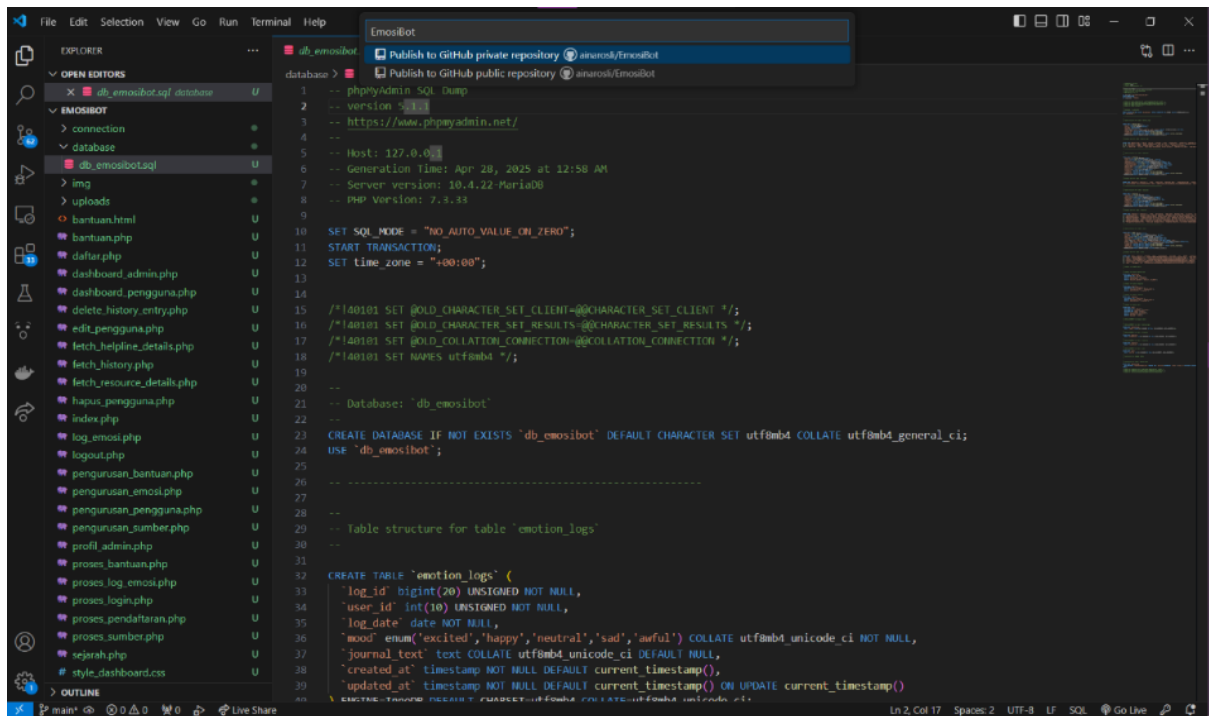


Figure 4. 2: Interface of Visual Studio Code

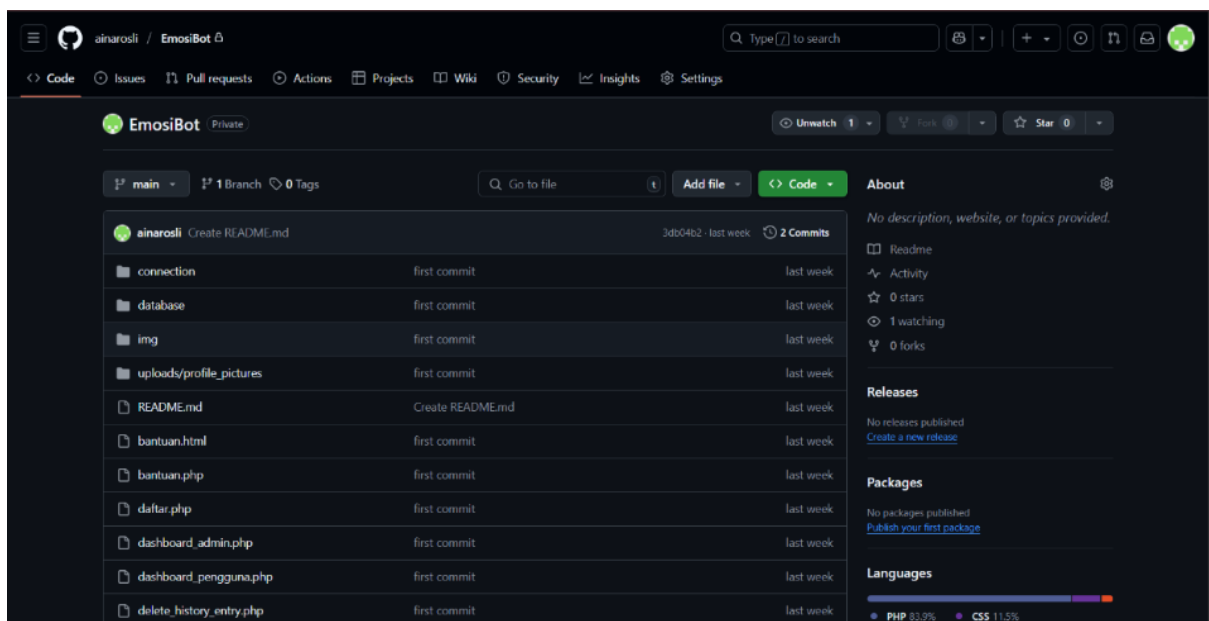


Figure 4. 3: Interface of GitHub

4.2.3 Dialogflow

Dialogflow, a cutting-edge conversational AI platform, is revolutionizing the development of chatbots (GeeksforGeeks, 2023). Powered by Google, Dialogflow enables developers to create intelligent and natural language interfaces for a wide range of applications. With its advanced natural language understanding (NLU) capabilities, Dialogflow allows chatbots to comprehend and respond to user queries effectively.

Figure 4.4 depicts Dialogflow console for creating chatbot agent contains possible questions asked by the user and replies from the chatbot agent. All questions and answers will be defined in this console.

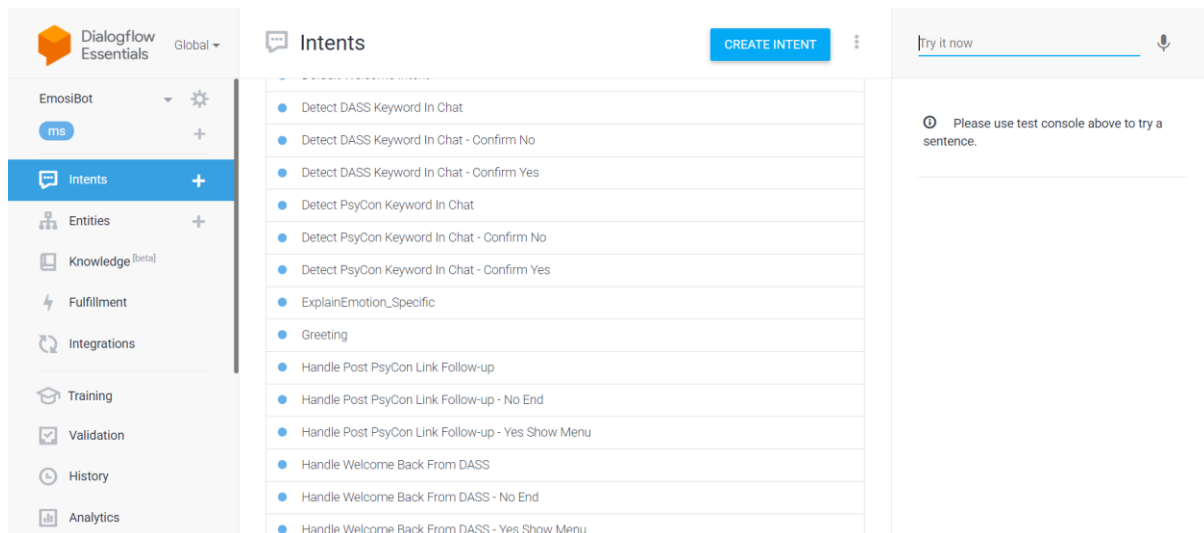


Figure 4. 4: Dialogflow console

4.3 Proposed System User Interfaces

4.3.1 Coherent Interface

The system includes two types of users, which are students and administrators. Each type of user has their own dedicated interface pages to access and manage the functionalities specific to their roles. The system also features coherent interfaces such as:

i. Sidebars

In the Student view, five buttons navigate to other pages, such as:

- a. Laman Utama (Dashboard) – Redirects User after successfully logging into the system, where it displays the moods graph (Daily, Weekly, Monthly, Yearly) and includes a chatbot interface.
- b. Log Emosi (Emotional Log) – Redirects User to the Mood Entry Page.
- c. Informasi (Information) – Redirects User to the mental health tips page.
- d. Khidmat Bantuan (Helplines Service) – Redirects User to the available helplines page.

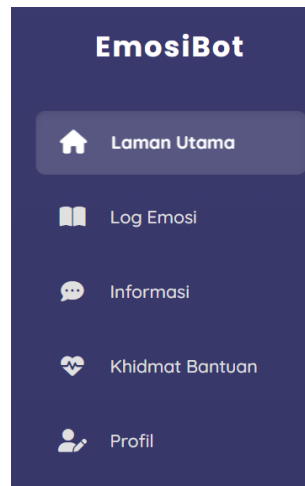


Figure 4. 5: Sidebar for Student view

Meanwhile, in the Administrator view, six buttons navigate to other pages, such as:

- a. Dashboard – Redirects Administrator after successfully logging into the system.
- b. Pengguna (Users) – Redirects Administrator to the page of the list of users registered in the system.
- c. Carta Emosi (Emotional Chart) – Redirects Administrator to the user emotion chart page.
- d. Informasi (Information) – Redirects Administrator to the mental health tips management page.
- e. Khidmat Bantuan (Helplines Services) – Redirect Administrator to the helplines management page.
- f. Profil (Profile) – Redirects Administrator to the profile page of the Administrator.

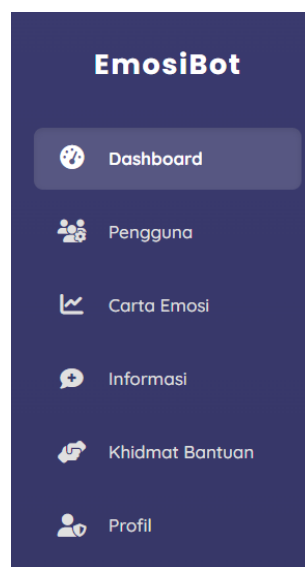


Figure 4. 6: Sidebar for Administrator view

ii. Logging Out

To log out of the system, users (Students and Administrators) can click the "Log Keluar" button located at the bottom of the sidebar. Clicking the logout button will end the current session and redirect the user to the login page.

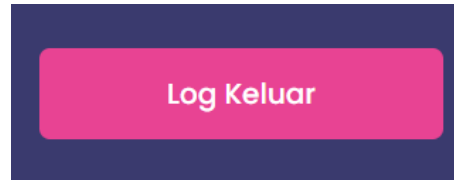


Figure 4. 7: Logout button

iii. Landing Page/Log in Page

To access the system, users (Students and Administrators) must enter their username (Nama Pengguna) and password (Kata Laluan). Upon successful login, they will be directed to their respective Dashboard page.



Figure 4. 8: Landing Page/Log in Page

iv. Register New Account Page

If users do not have an account yet, they must register before accessing the system by clicking the "Pengguna baharu? Daftar di sini" link on the login screen. They will then need to complete the registration form, which includes fields for nickname, email, username, password, gender, and an optional profile picture (nama panggilan, email, nama pengguna, kata laluan, jantina, gambar profil). After filling in the form, users must click the "Daftar Akaun" button to submit their details. If the registration is successful, the system will redirect them to the login page, where they can log in using their registered username and password.

If any required information is missing or invalid, an error message will appear, prompting the user to correct the input.

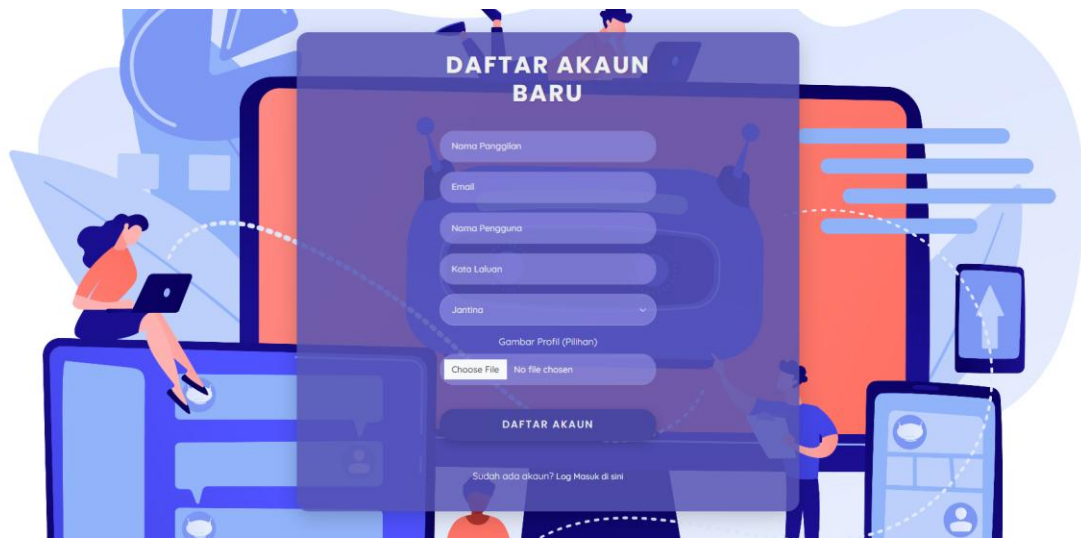


Figure 4. 9: Register New Account Page

v. Forgot Password Page

If the users (Students and Administrators) forget their login credentials, they can retrieve them by entering their registered email address.

2

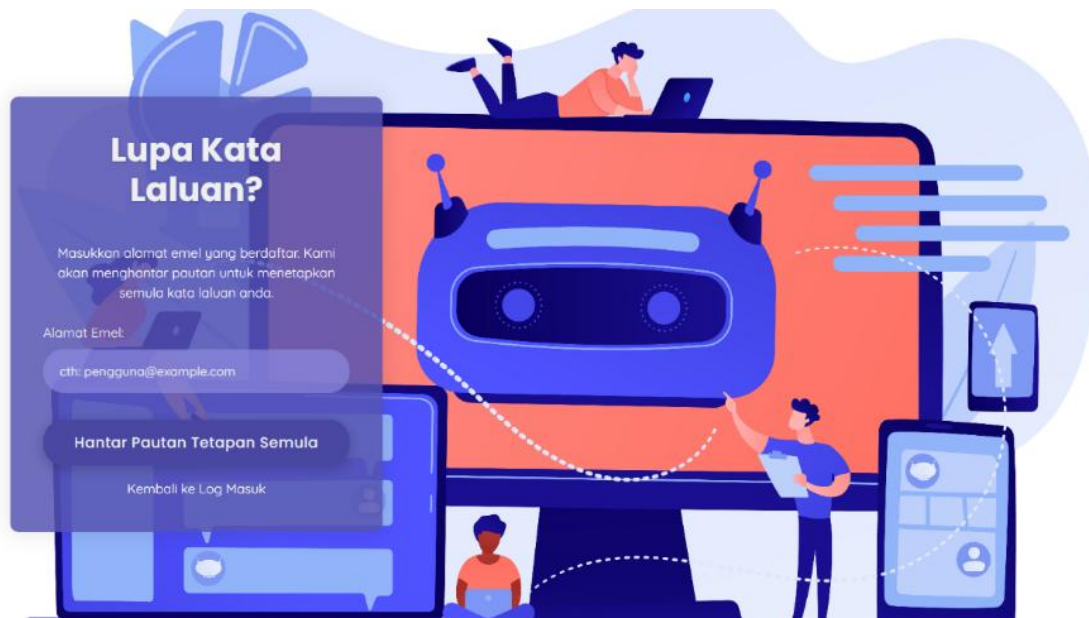


Figure 4. 10: Forgot Password Page

If the email address is registered in the system, a message will pop out and a password reset link will be sent to that address as shown in Figure 4.11.

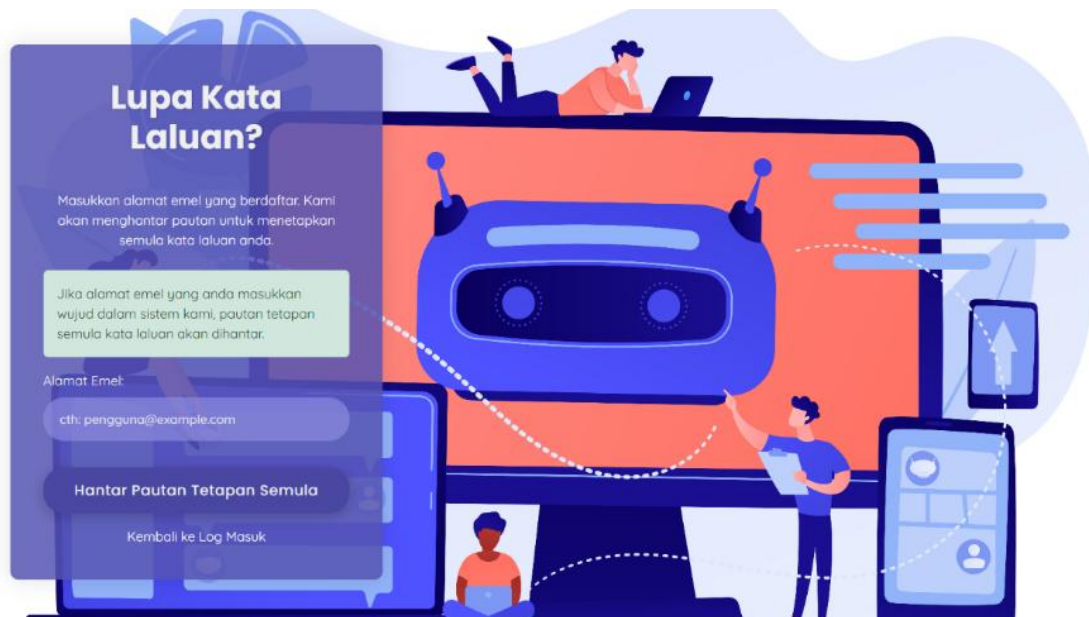


Figure 4. 11: A message will pop out, and a password reset link will be sent to the email address provided

4.3.2 Student View

i. Dashboard Components and EmosiBot Interactions

This page displays the user's mood graph for the past 7 days under the section titled "Jejak Emosi Anda (7 Hari Terakhir)" (Figure 4.12). Users can view their recent emotional trends, represented visually using emoji markers and a line graph. At the top right of the graph section, there is a button labelled "Carta Emosi Keseluruhan", which allows users to view their overall mood chart based on different time filters—daily, weekly, monthly, or yearly (Figure 4.13, Figure 4.14, Figure 4.15, Figure 4.16).

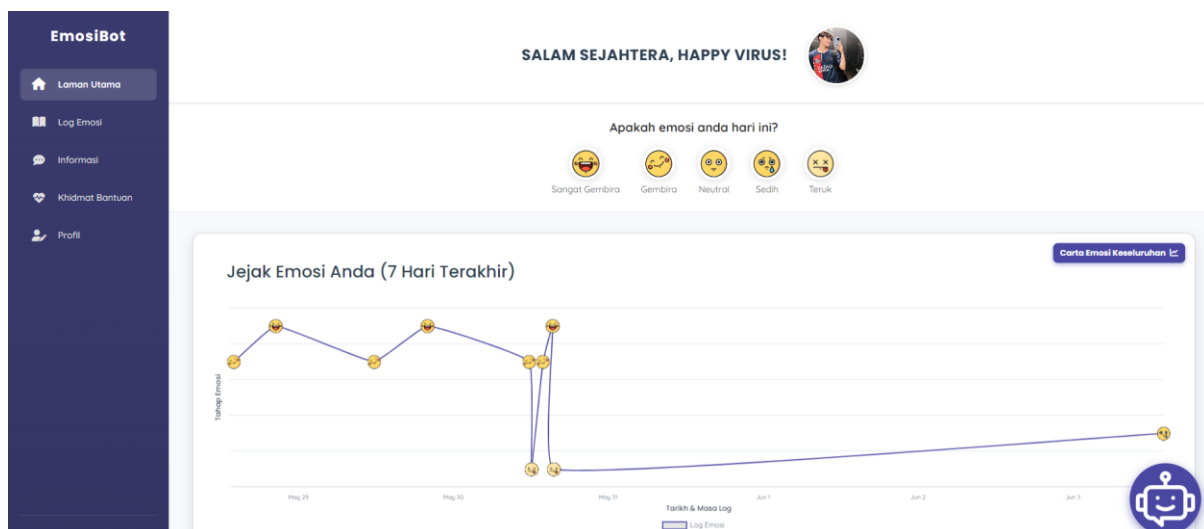


Figure 4. 12: Student Dashboard (Laman Utama) Interface

Above the graph, there is an emoji-based mood selection interface. If the user clicks on any of the emojis (Sangat Gembira, Gembira, Neutral, Sedih, or Teruk), they will be directed to

the “Log Emosi” page.

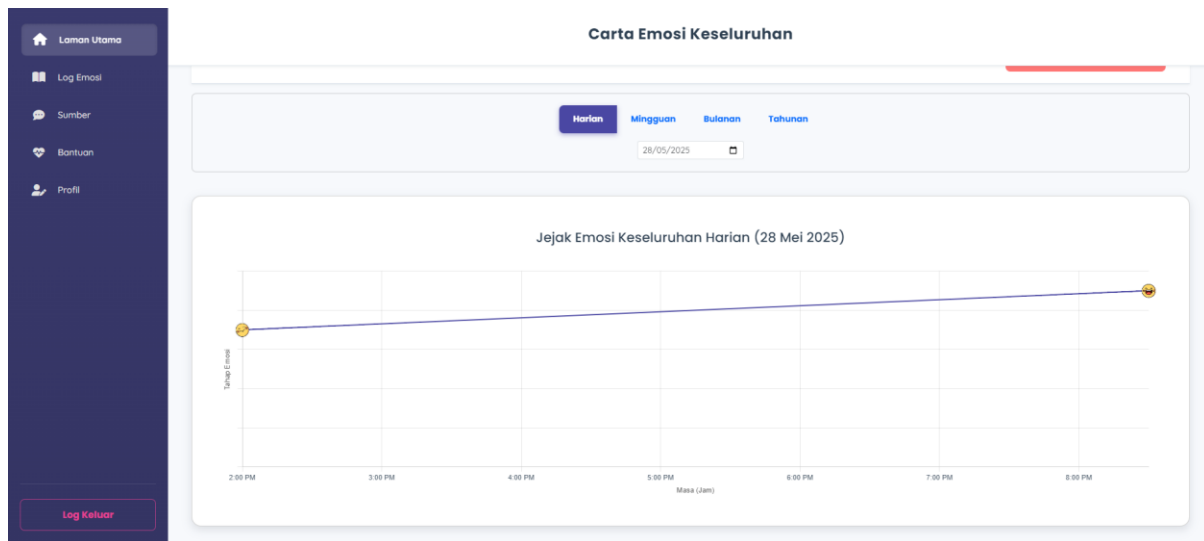


Figure 4. 13: Emotional Graph for specific date

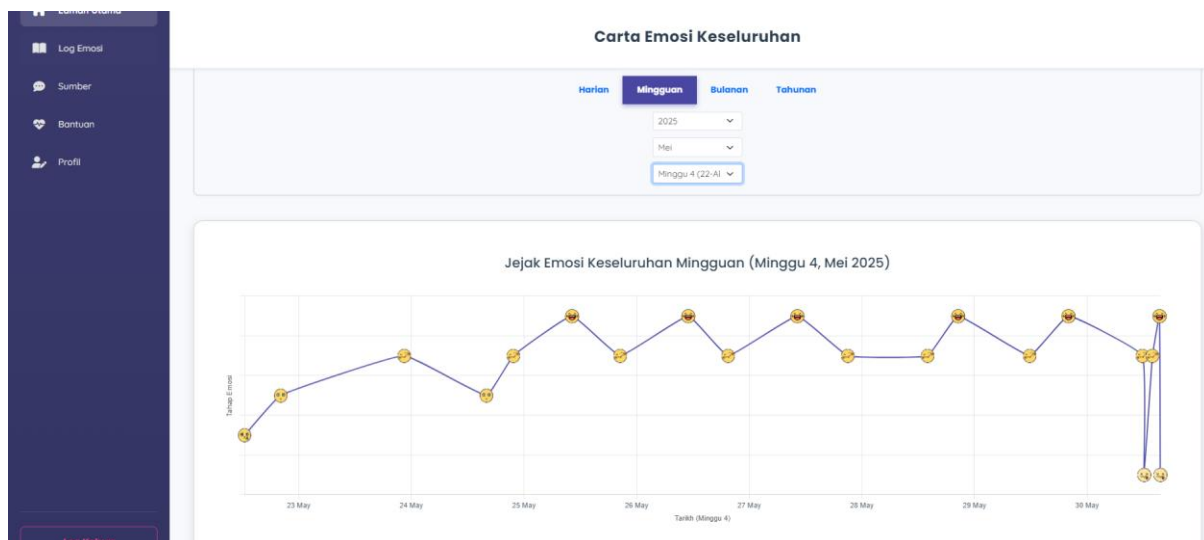


Figure 4. 14: Emotional Graph for specific week

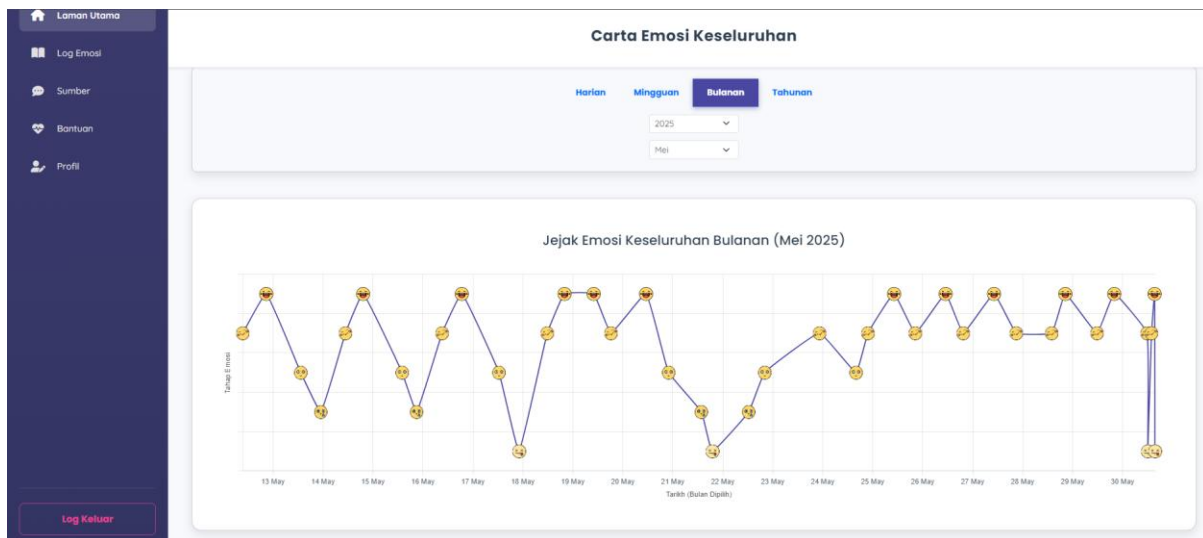


Figure 4. 15: Emotional Graph for specific month

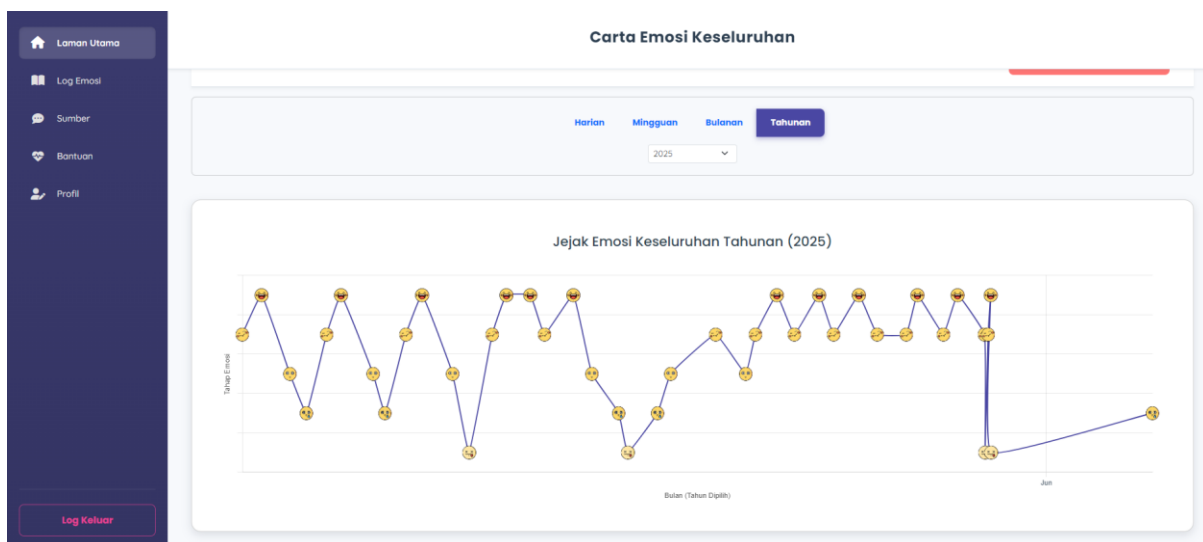


Figure 4. 16: Emotional Graph for a year

In the bottom right corner of the page, there is a chatbot icon representing EmosiBot, which users can interact with for chatting, booking an appointment with PsyCon, or taking the DASS-21 assessment (Figure 4.17, Figure 4.18, Figure 4.19, Figure 4.21).

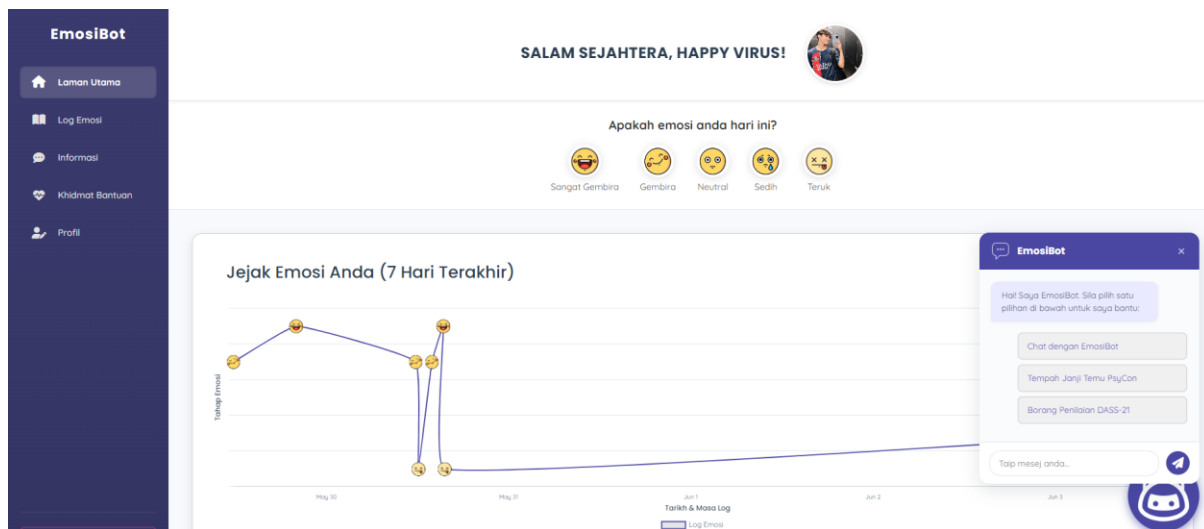


Figure 4. 17: EmosiBot Interface

Figure 4.18 shows the chat interface with EmosiBot when the student selects the first option.

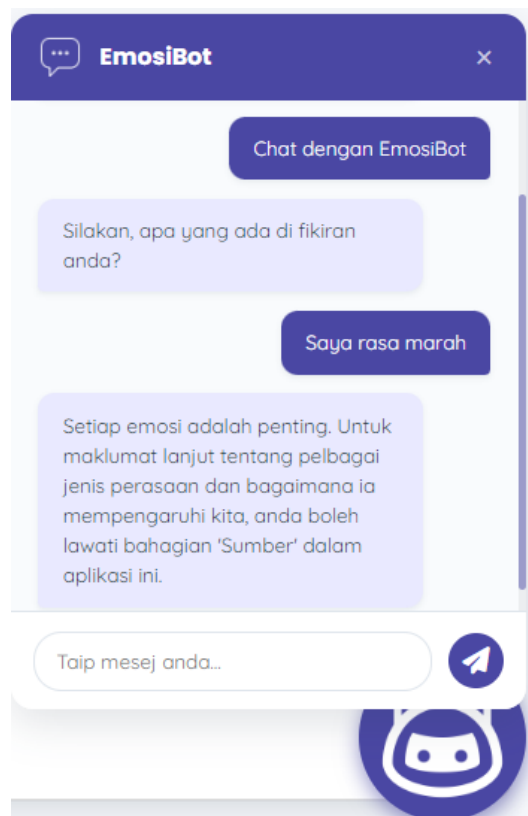


Figure 4. 18: EmosiBot interface for Chatting

If the student clicks on the second option, which is to book an appointment with PsyCon, they will be directed to the official PsyCon link. There, the student must enter their UNIMAS identification number to access the appointment form, as shown in Figure 4.19 and Figure 4.20.

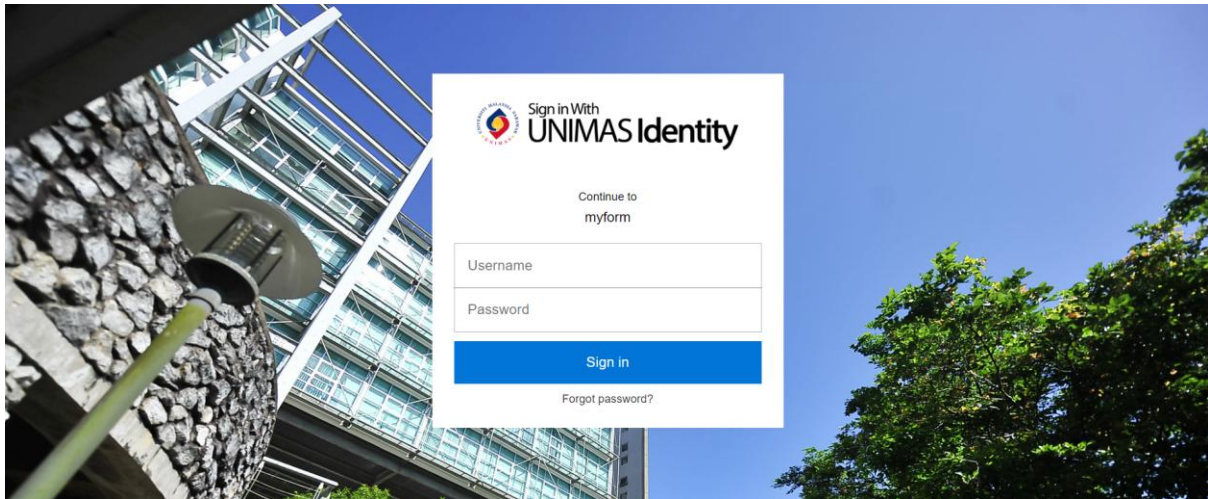


Figure 4. 19: PsyCon appointment link

Figure 4. 20: Form to book an appointment with PsyCon counselor

If the student clicks on the third option, which is to take the DASS-21 assessment, they will be directed to the “Penilaian DASS-21” page (Figure 4.21). On this page, the student can respond to each question based on their current condition.

Figure 4. 21: DASS-21 Assessment Page

Figure 4.22 shows the `penilaian-dass-21.php` code snippet used to implement the DASS-21 assessment within the system, where each question is displayed one at a time to the user. The 21 questions were adapted from the official Bahasa Malaysia version of the DASS-21, available at <https://www.ramlimusa.com/questionnaires/depression-anxiety-stress-scale-dass-21-bahasa-malaysia/> (refer Appendix A). The script handles user authentication, initializes the question session, navigates between questions, validates user input, and calculates the final scores for depression, anxiety, and stress based on predefined scoring groups. Once the user completes all questions, the total scores are doubled (as per DASS-21 guidelines), categorized into severity levels (Normal, Ringan, Sederhana, Teruk, or Sangat Teruk), and stored in the database.

```

// --- DASS-21 Questions & Answer Options ---
// ... (same $dass_questions, $answer_options, subscale item arrays as before) ...
$dass_questions = [
  1 => "Saya dapati diri saya sukar untuk bertenang (Contoh: berasa terlalu gelisah).",
  2 => "Saya sedar mulut saya terasa kering.",
  3 => "Saya tidak dapat melihat apa-apa yang positif pada masa akan datang.",
  4 => "Saya mengalami kesukaran bernafas (Contoh: bernafas terlalu cepat, tercungap-
    cungap walaupun tidak melakukan aktiviti fizikal).",
  5 => "Saya sukar untuk mendapatkan semangat bagi melakukan sesuatu perkara.",
  6 => "Saya cenderung untuk bertindak keterlaluan dalam sesuatu keadaan.",
  7 => "Saya rasa menggeletar (Contoh: pada tangan).",
  8 => "Saya rasa saya menggunakan banyak tenaga dalam keadaan cemas.",
  9 => "Saya bimbang akan keadaan di mana saya mungkin menjadi panik dan melakukan
    perkara yang memalukan/memperbodohkan diri sendiri.",
  10 => "Saya rasa saya tidak mempunyai apa-apa untuk diharapkan.",
  11 => "Saya dapati diri saya semakin gelisah.",
  12 => "Saya rasa sukar untuk relaks/berehat.",
  13 => "Saya rasa sedih dan murung.",
  14 => "Saya tidak dapat menahan sabar dengan perkara yang menghalang saya
    meneruskan apa yang saya lakukan",
  15 => "Saya rasa hampir panik.",
  16 => "Saya tidak bersemangat langsung.",
  17 => "Saya rasa diri saya tidak berharga.",
  18 => "Saya rasa saya mudah tersinggung.",
  19 => "Saya sedar tindakbalas jantung saya walaupun tidak melakukan aktiviti fizikal
    (Contoh: kadar denyutan jantung bertambah laju, denyutan jantung berkurangan).",
  20 => "Saya rasa takut tanpa sebab yang munasabah.",
  21 => "Saya rasa hidup ini tidak bermakna."
];
$answer_options = [
  0 => "Tidak pernah sama sekali / Tidak langsung menggambarkan keadaan saya",
  1 => "Jarang-jarang / Sedikit atau Jarang menggambarkan keadaan saya",
  2 => "Kerap kali / Banyak atau Kerap kali menggambarkan keadaan saya",
  3 => "Sangat kerap / Amat Banyak atau Sangat Kerap menggambarkan keadaan saya"
];
$depression_items = [3, 5, 10, 13, 16, 17, 21];
$anxiety_items = [2, 4, 7, 9, 15, 19, 20];
$stress_items = [1, 6, 8, 11, 12, 14, 18];

// --- Single Question Per Page Logic ---
$total_questions = count($dass_questions); // This is now our total steps
$current_question_number = isset($_REQUEST['question_num']) ?
  (int)$_REQUEST['question_num'] : 1; // Use 'question_num' for clarity
// Can come from POST or GET
// (for previous button links)

// Ensure current_question_number is within bounds
if ($current_question_number < 1) $current_question_number = 1;
if ($current_question_number > $total_questions + 1) $current_question_number =
  $total_questions + 1; // +1 for a summary/submit page

```

Figure 4. 22: Code snippet that plays a crucial role in extracting and processing user responses, mapping questions to corresponding scales, and calculating the final scores for the DASS-21 assessment

Once all 21 questions are answered, the script calculates the final total for each category and stores the results in the database. The processed results are then sent to the “Keputusan Penilaian DASS-21 Anda” page, where the student’s scores for depression, stress, and

anxiety are displayed as shown in Figures 4.23 and 4.24.

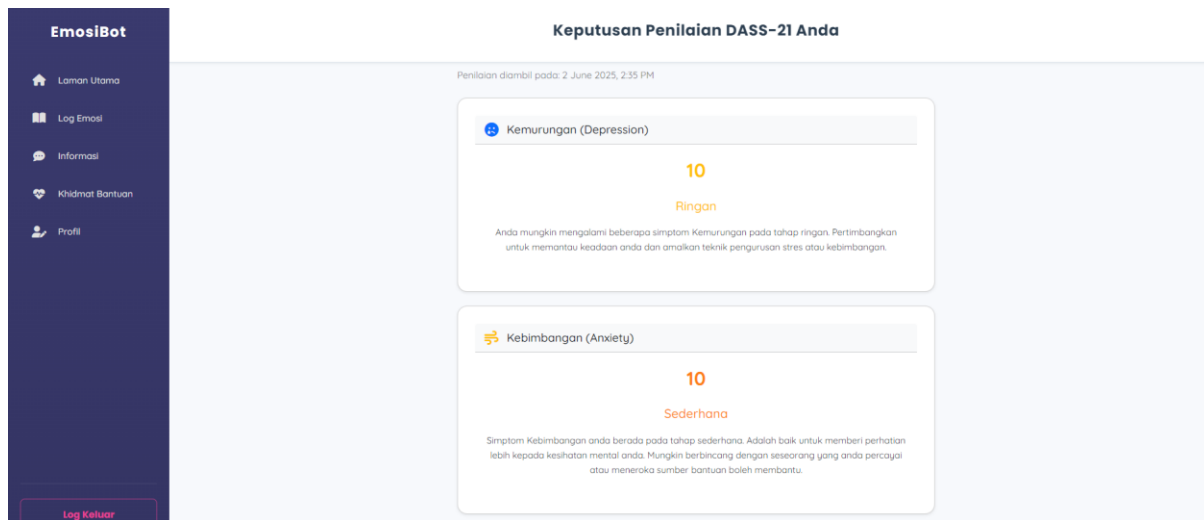


Figure 4. 23: Student's score for DASS-21 Assessment

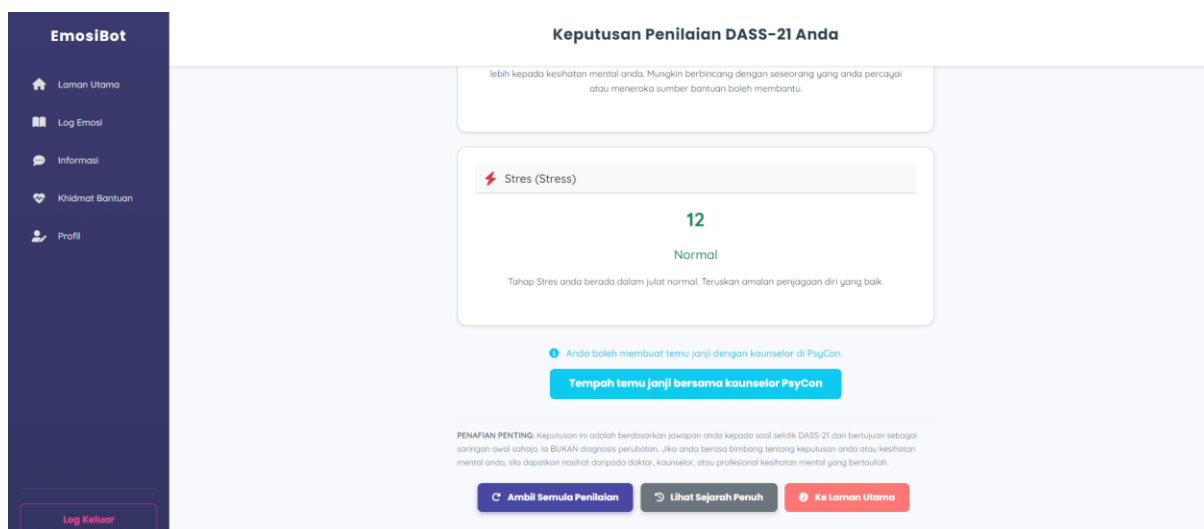


Figure 4. 24: Student's score for DAS-21 Assessment (Continuation)

Once the assessment is completed, the student has several options: they can choose to book an appointment with PsyCon by clicking the “Tempah Temu Janji bersama PsyCon” button at the bottom of the page, retake the assessment by clicking “Ambil Semula Penilaian”, view their assessment history by clicking “Lihat Sejarah Penuh” (Figure 4.25), or return to the dashboard by clicking “Ke Laman Utama” button as shown in Figure 4.24.

EmosiBot

Sejarah Penilaian DASS-21 Anda

Tarikh Semasa : 4 June 2025

[Ambil Penilaian Baru](#)

Papar: 10 rekod setiap halaman

#	Tarikh Penilaian	Kemurungan (D)	Kebimbangan (A)	Stres (S)	Tindakan
1	2 Jun 2025, 2:35 PM	Ringan	Sederhana	Normal	Lihat
2	30 May 2025, 3:22 PM	Teruk	Sangat Teruk	Sederhana	Lihat
3	30 May 2025, 1:52 PM	Teruk	Sangat Teruk	Sederhana	Lihat
4	30 May 2025, 12:04 PM	Ringan	Sederhana	Ringan	Lihat
5	30 May 2025, 9:03 AM	Sederhana	Teruk	Ringan	Lihat
6	29 May 2025, 11:19 PM	Sederhana	Teruk	Sederhana	Lihat

Memaparkan halaman 1 daripada 1

[Sebelumnya](#) [Seterusnya](#)

[Log Keluar](#)

Figure 4. 25: DASS-21 Assessment History Page

ii. Emotional Log (Log Emosi)

This page allows users to record their mood by clicking on the emoji faces and entering text in the provided field. After that, they can click the "Simpan" button at the bottom of the page to submit their entry.

EmosiBot

LOG EMOSI ANDA

Tarikh : 11 May 2025

[Lihat Sejarah Jurnal](#)

Tulis tentang hari anda di sini...

[Log Keluar](#) [Batal](#) [Simpan](#)

Figure 4. 26: Emotional Log Page

Meanwhile, at the top of the page, there is a "Lihat Sejarah Journal" button where users can view their journal history, including the date, their entry, and the emoji selected for each specific day.

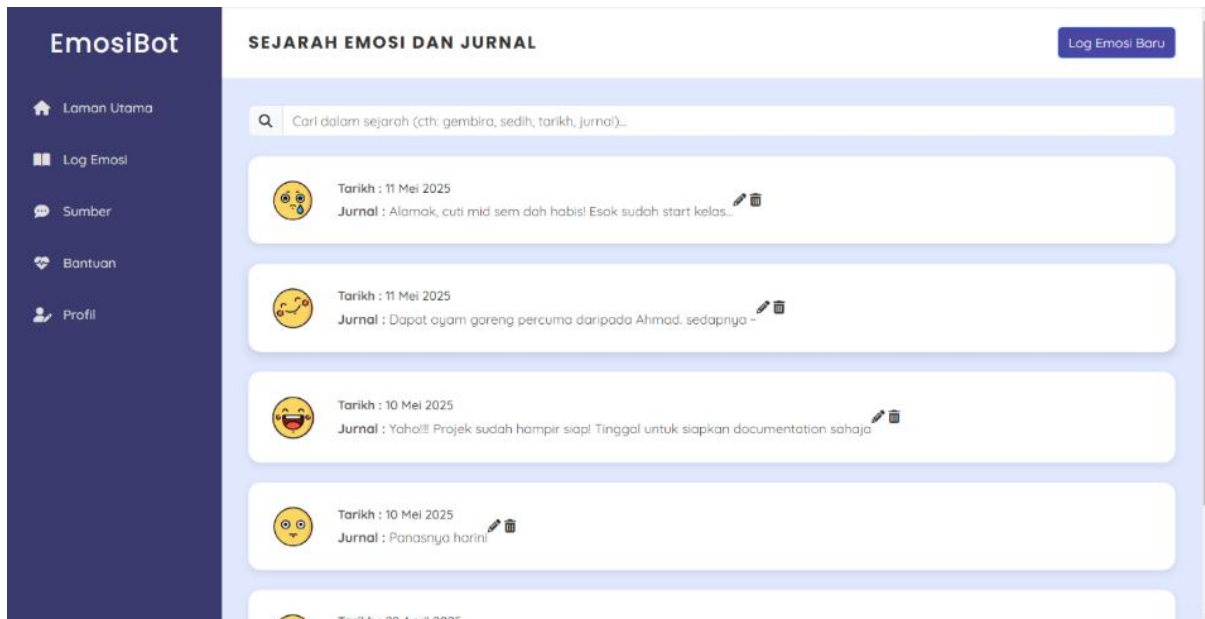


Figure 4. 27: Emotional Log History Page

iii. Information (Informasi)

The page provides users with access to Mental Health Tips. These tips offer valuable information, advice, and tips to help users manage and improve their mental well-being. Additionally, users can use the search bar and filter options to easily find specific keywords based on topics of interest.

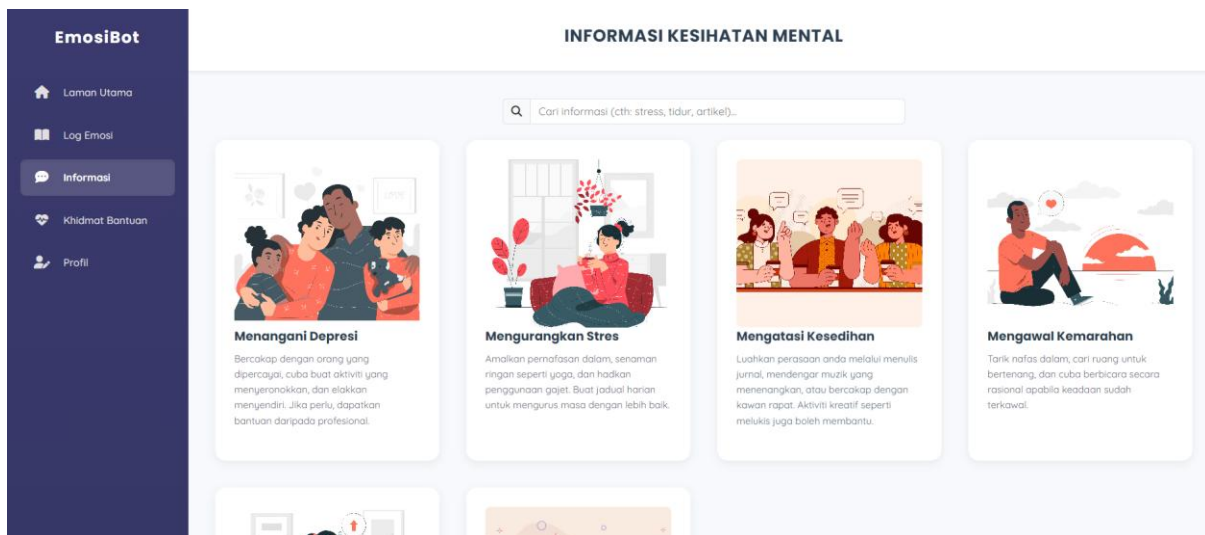


Figure 4. 28: Information of Mental Health Tips Page

iv. Helplines Services (Khidmat Bantuan)

This page provides users with information on helplines for mental health, including contact details for crisis helplines and resources. Users can view a list of available support options for immediate assistance.



Figure 4. 29: Helplines Services Page

Furthermore, users can click on the “Lihat Peta” button to see a map showing the location of the mental health crisis support center.

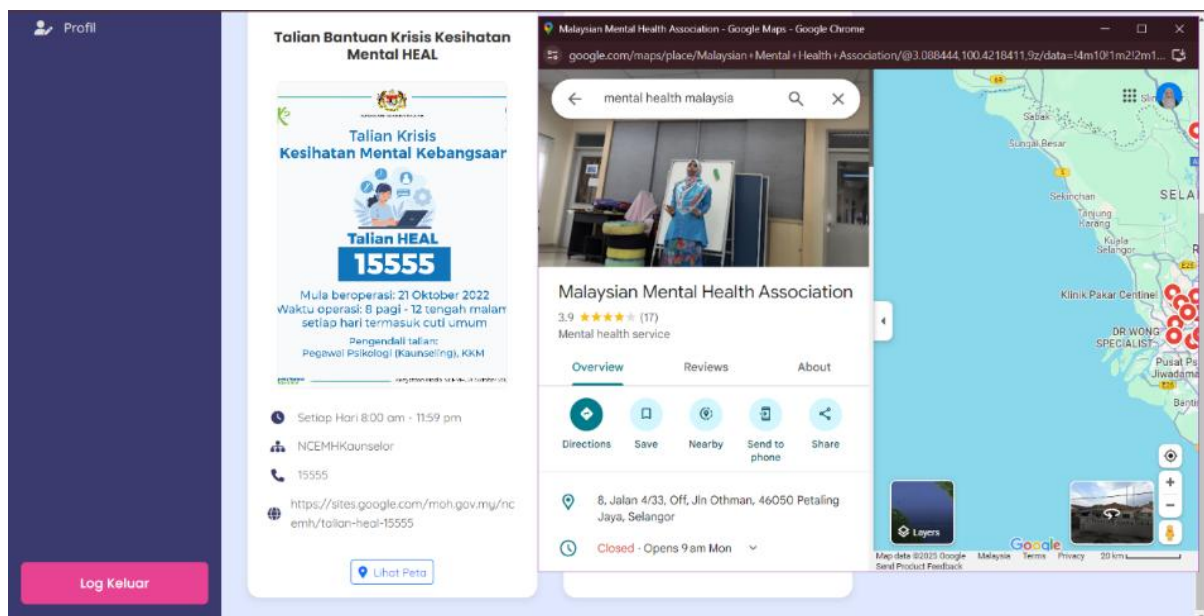


Figure 4. 30: Maps of the Helplines Center

v. Profile (Profil)

This page allows users to view and update their personal information, including their nickname, username, email address, and profile picture. Users can also change their password.

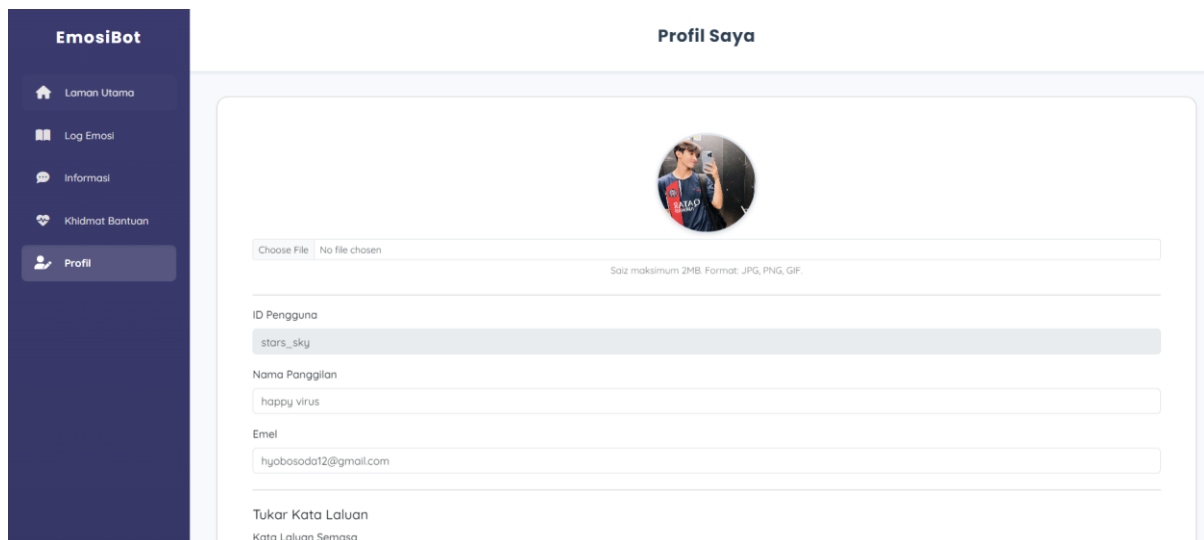


Figure 4. 31: Student Profile Page

4.3.3 Administrator View

i. Dashboard

The Admin Dashboard provides an overview of key system statistics and user activity. It includes the following sections:

- Summary Cards – Four different cards that redirect to different pages.
- Mood Log Breakdown (Pecahan Log Emosi) – Displays the total number of logged emotions from all users in numerical format.
- Mood Log Visualization (Visualisasi Emosi) – Shows a graphical breakdown of logged emotions from all registered users in the system.

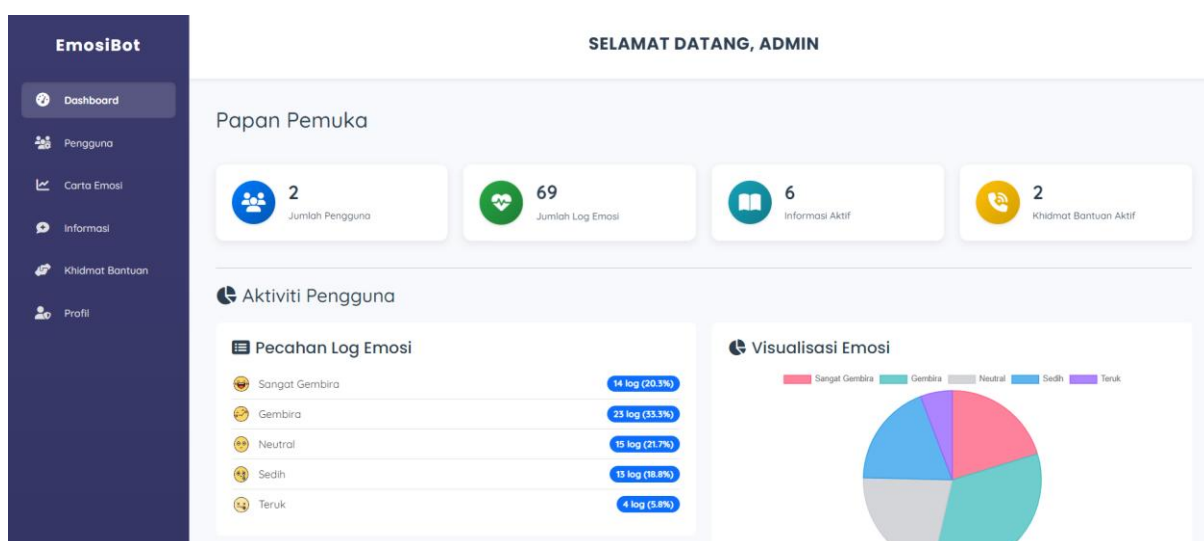


Figure 4. 32: Administrator Dashboard

ii. User (Pengguna)

This page allows administrators to view and manage all registered users in the system. This page displays a list of users along with the following information:

- User ID – A unique identification number for each user.
- Username – The username used to log in.
- Email – The registered email address of the user.
- Nickname – The display name chosen by the user.
- Registered Time – The date and time when the user registered in the system.
- Last Login – The date and time of the user's most recent login.

ID	Nama Pengguna	Email	Nama Penuh	Didaftar Pada	Log Masuk Terakhir	Tindakan
6	stars_sky	hyobasoda12@gmail.com	happy virus	29 May 2025, 22:46	04 Jun 2025, 13:10	✎ ✖
7	seroja	starikjung12@gmail.com	bungaseroja	29 May 2025, 23:51	30 May 2025, 12:12	✎ ✖

Memaparkan halaman 1 daripada 1

Sebelumnya 1 Seterusnya

Figure 4. 33: Users page displaying the list of registered users

In addition to viewing user details, the administrator can:

- Edit user information.
- Delete users from the system if necessary.
- Search and filter users by specific criteria using the search functionality at the top of the page.

Figure 4. 34: The admin can view, edit, or manage user information from this interface

iii. Emotional Graph (Carta Emosi)

This page allows administrators to view detailed emotional graphs for each registered user. The mood trends can be visualized based on different time frames: Daily, Weekly, Monthly, and Yearly (Figure 4.35, Figure 4.36, Figure 4.37, Figure 4.38).

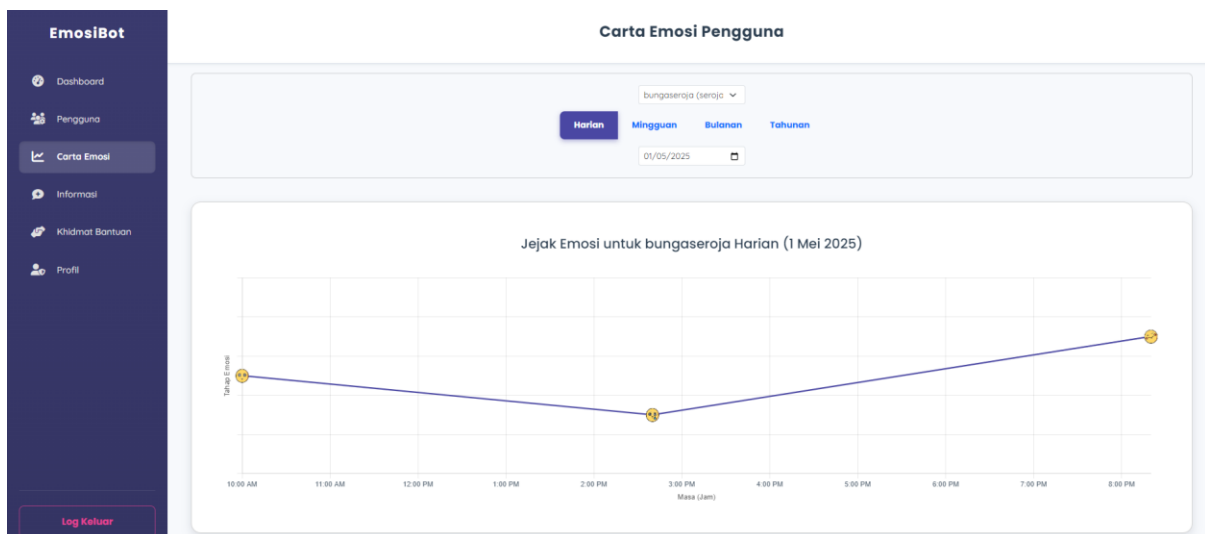


Figure 4. 35: Emotional graph displaying the mood data of user "bungaseroja" for a selected date

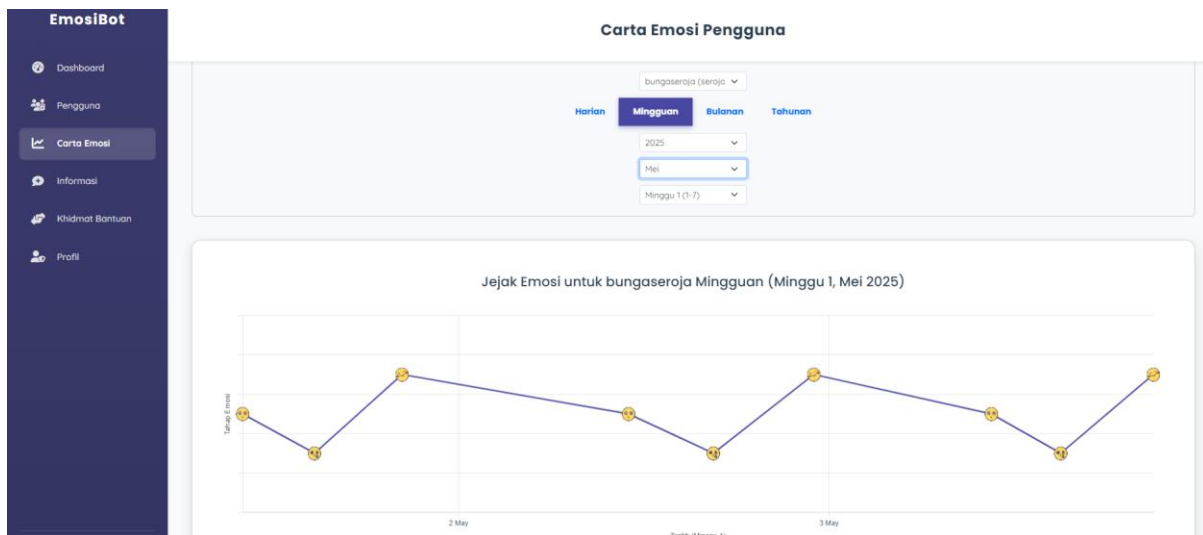


Figure 4. 36: Emotional graph displaying the mood data of user "bungaseroja" for a selected week

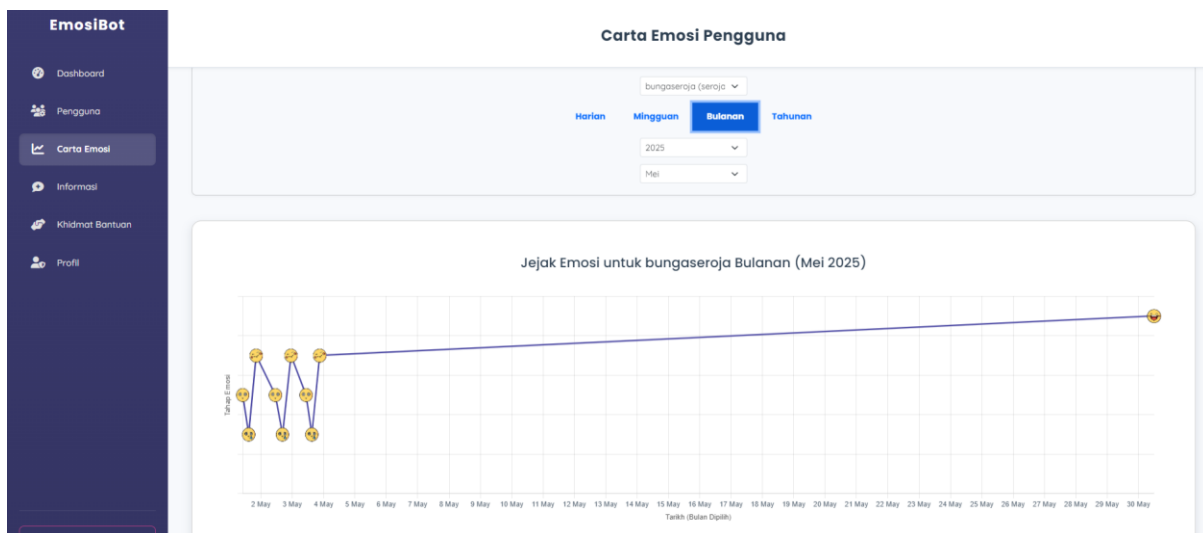


Figure 4. 37: Emotional graph displaying the mood data for user "bungaseroja" for a selected month

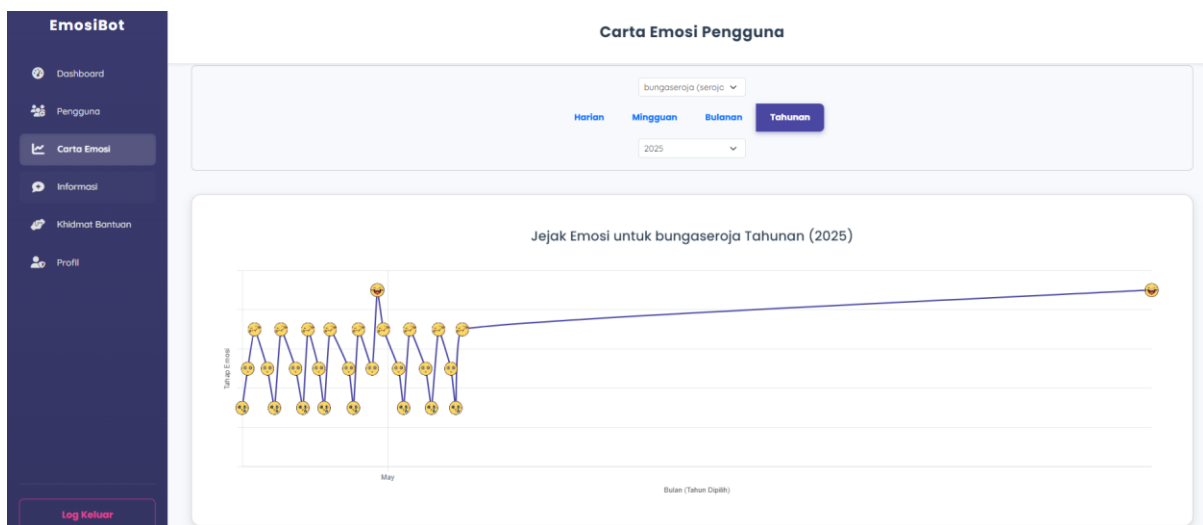


Figure 4. 38: Emotional graph for user "bungaseroja" displaying mood patterns across the selected year

iv. Information (Informasi)

This page allows administrators to manage the mental health tips available in the system. Admins can create, read, update, and delete (CRUD) tips to ensure users have access to relevant and up-to-date information. Additionally, each mental health tip has a toggle option to set its status as Active or Inactive. This allows the admin to control which tips are visible to users. When the tip is marked as Active, it will be available for users to view; when marked as Inactive, the tip will no longer be displayed in the system.

ID	Imej	Tajuk	Order	Status Aktif	Tindakan
1		Menangani Depresi	1	☒	
2		Mengurangkan Stres	2	☒	
3		Mengatasi Kesedihan	3	☒	
4		Mengawal Kemarahan	4	☒	
5		Menjaga Keseimbangan Hidup	5	☒	
6		Meningkatkan Keyakinan Diri	6	☒	

Figure 4. 39: Information of mental health tips page

v. Helplines Services (Khidmat Bantuan)

This page allows administrators to manage the crisis helplines related to mental health support. Admins can add, update, and delete crisis hotline information to ensure that users have access to up-to-date resources. Furthermore, each crisis hotline entry includes a field for “Peta”, where admins can paste a link to the physical location of the helpline or a map. This link helps users quickly access the physical address or find directions to the location.

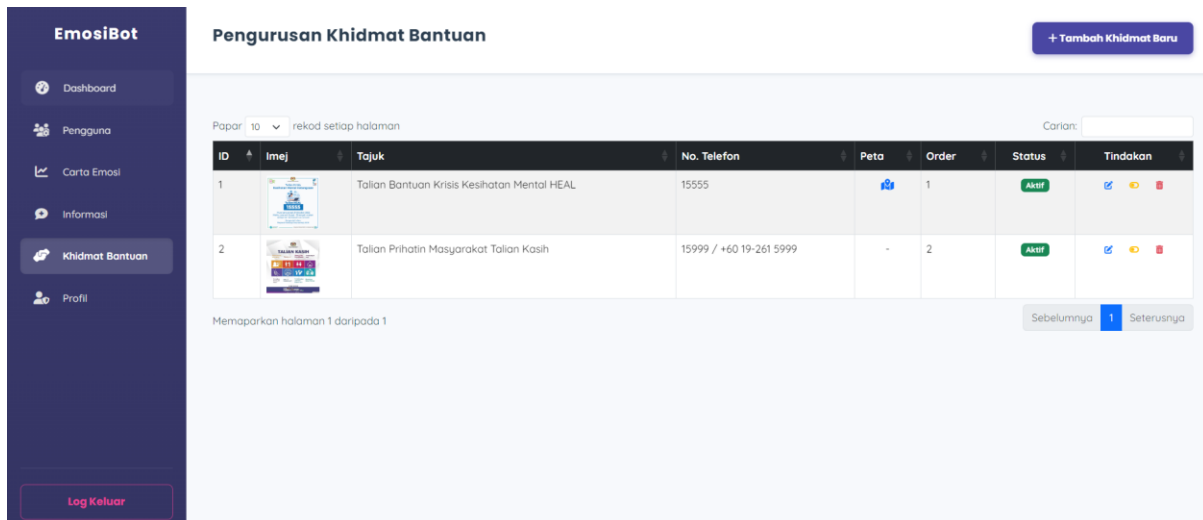


Figure 4. 40: Helplines Services of mental health page

vi. Profile (Profil)

The Admin Profile Page allows administrators to view and update their personal information, including their full name, username, email address, and profile picture. Admins can also change their password for security purposes.

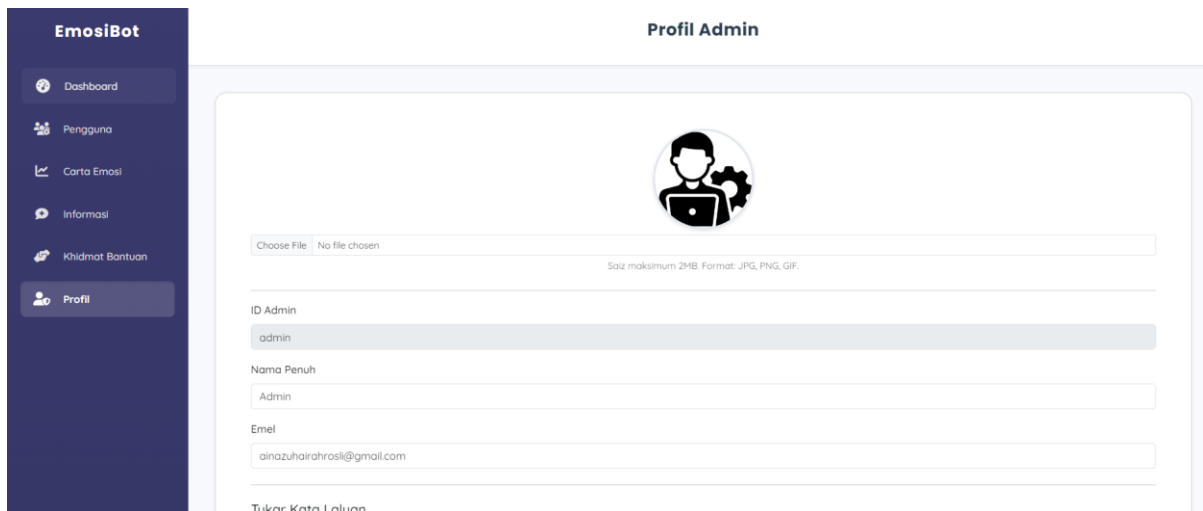


Figure 4. 41: Administrator profile page

4.4 Summary

This chapter presented the implementation of the proposed system based on the designs outlined in the previous chapters. Each section demonstrated the core functionalities of the system through detailed screenshots and descriptions. The implementation covers both the user and admin interfaces, showcasing how features such as user registration, mood logging, chatbot interaction, and data visualization were developed and integrated. The interface design emphasizes usability, functionality, and responsiveness, aligning with the system's goal of supporting mental health monitoring and management.

Chapter 5: Testing and Evaluation

5.1 Introduction

This chapter will discuss the testing process after the system has been implemented. The primary purpose of the testing phase is to ensure that the final proposed system is free from critical issues and functions as intended. This phase also verifies that the system meets the specified requirements outlined during the early stages of development. In alignment with the Rapid Application Development (RAD) methodology, testing is conducted iteratively throughout the development process. Through continuous testing and prototyping, users can review and evaluate the system's functionalities by providing feedback. This approach helps to refine the system incrementally, ensuring accuracy, completeness, and usability before final deployment.

5.2 Functional Testing

Functional testing focuses on verifying that the application or system performs its intended functions correctly. It is conducted to ensure that the system meets the specified requirements and behaves as expected. The primary objective of functional testing is to validate whether the system's features produce the expected results from the user's perspective. This process involves evaluating the application's features, handling of input and output, and its interactions with other system components.

5.2.1 Test Case

This section presents the detailed test cases designed to validate the functionality and reliability of the proposed system. Each test case has been developed based on the system's requirements and user interactions to ensure that all modules perform as expected under various conditions. Functional testing was conducted to ensure these features operate according to the defined specifications and meet user expectations. The test cases cover different modules and user roles to verify input handling, system responses, and user-system interactions. Additionally, each test case includes the test objective, pre-conditions, input data, expected outcomes, and the actual results observed during testing.

5.2.1.1 Register New Account Module

Table 5. 1: Test Cases on Register New Account Module

Module: Register New Account					
Test Objective(s): To test the ability of a user to register an account in the system.					
Pre-Condition(s): The user does not have a registered account in the system.					
Test Case ID	Test Case	Test Steps	Expected Result	Actual Result	Status (Pass/Fail)
TC.M1.01	Students register new account	1. Open the web browser. 2. Click the “Daftar di sini” link on the landing page. 3. Fill in the details (nickname, email, username, password, gender, profile picture). 4. Click on the “Daftar Akaun” button.	Registered account successfully and redirected to the Landing/Login page.	As Expected	Pass

5.2.1.2 Login and Logout Model

Table 5. 2: Test Cases on Login and Logout Module

Module: Login and Logout					
Test Objective(s): To ensure that Users (Student and Administrator) can log in and log out of the system.					
Pre-Condition(s): Users must be registered in the system and have entered valid credentials before attempting to log in and have successfully logged into the system.					
Test Case ID	Test Case	Test Steps	Expected Result	Actual Result	Status (Pass/Fail)
TC.M2.01	Users are on the Landing/Login page	1. Open the web browser. 2. Fill in the username and password. 3. Click on the “Log Masuk” button.	Successfully directed to the dashboard page (Student Dashboard/ Administrator Dashboard)	As Expected	Pass
TC.M2.02	Users fill in the wrong credentials	1. Fill in the wrong username and/or password. 2. Click on the “Daftar Masuk” button.	The system displays an error message.	As Expected	Pass
TC.M2.03	Users log out of the system	1. Click on the “Log Keluar”	Logout successfully and will be	As Expected	Pass

		button from the sidebar.	redirected to the landing page.		
--	--	--------------------------	---------------------------------	--	--

5.2.1.3 Profile Management Module

Table 5. 3: Test Cases on Profile Management Module

Module: Profile Management					
Test Objective(s): To ensure that Users (Student and Administrator) can view, edit, and update their profile information correctly.					
Pre-Condition(s):					
1. The user (Student or Administrator) is successfully logged into the system. 2. Profile information exists in the database for the logged-in user.					
Test Case ID	Test Case	Test Steps	Expected Result	Actual Result	Status (Pass/Fail)
TC.M3.01	User views profile	1. Click “Profil” via the sidebar. 2. Observe profile information.	Users’ profile details are displayed correctly.	As Expected	Pass
TC.M3.02	User updates profile	1. Edit profile fields. 2. Click the save button.	Users’ profile is updated and a confirmation message is displayed.	As Expected	Pass

5.2.1.4 Student Dashboard Module

Table 5. 4: Test Cases on Student Dashboard Module

Module: Student Dashboard					
Test Objective(s): To ensure the student can access and view their dashboard after login and all dashboard components load correctly.					
Pre-Condition(s): The student has successfully logged into the system.					
Test Case ID	Test Case	Test Steps	Expected Result	Actual Result	Status (Pass/Fail)
TC.M4.01	Access Student Dashboard	1. User login as a student.	The system displays the student's nickname, emotional log graph. At the bottom right of the page, the chatbot interface is clickable.	As Expected	Pass
TC.M4.02	Empty mood graph display	1. The student never logged a journal.	The system displays a message indicating that no logged mood was found.	As Expected	Pass
TC.M4.03	Daily graph display	1. The student has logged a journal.	The system displays the daily mood graph correctly.	As Expected	Pass

5.2.1.5 Chatbot Interaction Module

Table 5. 5: Test Cases on Chatbot Interaction Module

Module: Chatbot Interaction					
Test Objective(s): To ensure students can interact with the chatbot, select options, and get redirected or receive appropriate responses.					
Pre-Condition(s): The student has successfully logged in the system and the chatbot must be active.					
Test Case ID	Test Case	Test Steps	Expected Result	Actual Result	Status (Pass/Fail)
TC.M5.01	Start chatbot session	1. The student clicks on the chatbot interface at the bottom right of the dashboard page.	The chatbot displays menu with three options: 1. Chat with EmosiBot 2. Book appointment with PsyCon 3. DASS-21 Assessment	As Expected	Pass
TC.M5.02	Select Chat	Choose the first option.	Chatbot will prompt for chat.	As Expected	Pass
TC.M5.03	Select Book Appointment with PsyCon	Choose the second option.	The user will be directed to the PsyCon link.	As Expected	Pass
TC.M5.04	Select DASS-21 Evaluation option	Choose the third option.	The user will be directed to the DASS-21 Assessment page.	As Expected	Pass

5.2.1.6 Journal Logging and Journal History

Table 5. 6: Test Cases on Journal Logging and Journal History Module

Module: Journal Logging and Journal History					
Test Objective(s): To ensure the student can log their mood using emoji, write a journal, save it correctly, and view journal history.					
Pre-Condition(s): The student has successfully logged in the system.					
Test Case ID	Test Case	Test Steps	Expected Result	Actual Result	Status (Pass/Fail)
TC.M6.01	Log mood successfully	1. Navigate to the “Log Emosi” page. 2. Click on the emoji and write in the text box. 3. Click the save button.	Entry is saved and appears in history and graph in the dashboard.	As Expected	Pass
TC.M6.02	Submit without selecting an emoticon	1. User did not click on the emoji. 2. Click the save button.	The system prompts for emoticon selection.	As Expected	Pass
TC.M6.03	View journal history	1. Click on the “Lihat Sejarah Jurnal” button.	The system displays a list of journal history.	As Expected	Pass

5.2.1.7 Mental Health Resources Module

Table 5. 7: Test Cases on Mental Health Resources Module

Module: Mental Health Resources					
Test Objective(s): To verify that students can view and search available mental health resources.					
Pre-Condition(s): The student has successfully logged in the system.					
Test Case ID	Test Case	Test Steps	Expected Result	Actual Result	Status (Pass/Fail)
TC.M8.01	View the list of mental health resources	1. Navigate to “Informasi” page via sidebar. 2. Observe the displayed list.	The system displays all active mental health resources.	As Expected	Pass
TC.M8.02	Use the search bar	1. Enter a keyword in the search bar.	The system filters and displays matching resources based on the keyword entered.	As Expected	Pass

5.2.1.8 Mental Health Helplines Module

Table 5. 8: Test Cases on Mental Health Helplines Module

Module: Mental Health Helplines					
Test Objective(s): To verify that students can view and search available mental health helplines.					
Pre-Condition(s): The student has successfully logged in the system.					
Test Case ID	Test Case	Test Steps	Expected Result	Actual Result	Status (Pass/Fail)
TC.M7.01	View the list of mental health helplines	1. Navigate to “Khidmat Bantuan” page via sidebar. 2. Observe the displayed list.	The system displays all active mental health helplines in Malaysia.	As Expected	Pass
TC.M7.02	Use the search bar	1. Enter a keyword in the search bar.	The system filters and displays matching helplines based on the keyword entered.	As Expected	Pass

5.2.1.9 Administrator Dashboard Module

Table 5. 9: Test Cases on Administrator Dashboard Module

Module: Administrator Dashboard					
Test Objective(s): To verify that the admin can view system statistics, access graph visualisations, and navigate to other pages via dashboard cards.					
Pre-Condition(s):					
1. The admin has successfully logged in the system. 2. The system contains valid data (registered users, mood logs, active resources, and helplines).					
Test Case ID	Test Case	Test Steps	Expected Result	Actual Result	Status (Pass/Fail)
TC.M9.01	View system statistics cards	1. Login as Administrator.	Cards display statistics (“Jumlah Pengguna”, “Jumlah Log Emosi”, “Info Aktif”, “Khidmat Bantuan Aktif”).	As Expected	Pass
TC.M9.02	View emotion graph visualisation	1. Scroll to the mood log graph.	Graph displays emotion trends based on users’ logs.	As Expected	Pass
TC.M9.03	View emotional log breakdown card	1. Observe the log emotion breakdown card.	Card displays breakdown (“Sanagt Gembira: 10)	As Expected	Pass
TC.M9.04	Click dashboard cards to	1. Click on any card.	The system redirected to the	As Expected	Pass

	navigate pages		corresponding page.		
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5.2.1.10 Helplines Management Module

Table 5. 10: Test Cases on Helplines Management Module

Module: Helplines Management					
Test Objective(s): To ensure that the admin can perform CRUD (create, read, update, and delete) operations and toggle helpline visibility.					
Pre-Condition(s):					
1. The admin has successfully logged in the system. 2. The system contains at least one existing helpline record.					
Test Case ID	Test Case	Test Steps	Expected Result	Actual Result	Status (Pass/Fail)
TC.M10.01	Add a new helpline	1. Navigate to the “Khidmat Bantuan” page via the sidebar. 2. Click “Tambah” button. 3. Fill in helpline details. 4. Click the save button.	New helpline is saved and displayed in the list.	As Expected	Pass
TC.M10.02	Update an existing helpline	1. Click the “Edit” on a helpline. 2. Update details. 3. Click the	Helpline details are updated.	As Expected	Pass

		save button.			
TC.M10.03	Delete a helpline	1. Click “Padam” button”. 2. Confirm the deletion.	Helpline is removed from the list.	As Expected	Pass
TC.M10.04	Toggle helpline availability	1. Click toggle for a helpline.	Helpline becomes active/inactive depending on the toggle status.	As Expected	Pass

5.2.1.11 Resources Management Module

Table 5. 11: Test Cases on Resources Management Module

Module: Resources Management					
Test Objective(s): To ensure that the admin can perform CRUD (create, read, update, and delete) operations and toggle resource visibility.					
Pre-Condition(s):					
1. The admin has successfully logged in the system. 2. The system contains at least one existing resource record.					
Test Case ID	Test Case	Test Steps	Expected Result	Actual Result	Status (Pass/Fail)
TC.M11.01	Add a new resource	1. Navigate to the “Info” page via the sidebar. 2. Click “Tambah” button. 3. Fill in resource details.	New resource is saved and displayed in the list.	As Expected	Pass

		4. Click the save button.			
TC.M11.02	Update an existing resource	1. Click the “Edit” on a resource. 2. Update details. 3. Click the save button.	Resource details are updated.	As Expected	Pass
TC.M11.03	Delete a helpline	1. Click “Padam” button”. 2. Confirm the deletion.	Resource is removed from the list.	As Expected	Pass
TC.M11.04	Toggle helpline availability	1. Click toggle for a resource.	Resource becomes active/inactive depending on toggle status.	As Expected	Pass

5.2.1.12 User Management Module

Table 5. 12: Test Cases on User Management Module

Module: User Management					
Test Objective(s): To ensure that the admin can perform view, update, and delete operations on user accounts in the system.					
Pre-Condition(s):					
1. The admin has successfully logged in the system. 2. The system has an accessible user database.					
Test Case ID	Test Case	Test Steps	Expected Result	Actual Result	Status (Pass/Fail)
TC.M12.01	View list of registered	1. Login as Administrator	The system displays a	As Expected	Pass

	users	- r. 2. Navigate to the “Pengguna” page via the sidebar.	table of all registered users.		
TC.M12.02	Edit existing user information	1. Click “Edit” on a user. 2. Update user information. 3. Click the save button.	User details are updated successfully.	As Expected	Pass
TC.M12.03	Delete a user	1. Click “Padam” on a user. 2. Confirm deletion.	User is removed from the system.	As Expected	Pass
TC.M12.04	Search for a user	1. Enter nickname or username in the search bar.	The system filters and displays matching user(s).	As Expected	Pass

5.3 Usability Testing

Usability testing focuses on evaluating the system's user-friendliness, intuitiveness, and overall experience from the end user's perspective. For the proposed system, usability testing was conducted to assess how effectively students and administrators could interact with the system's interface, access features, and complete tasks with minimal effort. Furthermore, the user testing interview forms can be found in Appendix B and Appendix C for UNIMAS students and PsyCon counselor respectively.

System usability feedback was gathered using user testing interview forms.

- a. Section 5.3.1 details the usability testing conducted with a PsyCon counselor, who evaluated the system from a professional counseling perspective.
- b. Section 5.3.2 describes the testing session carried out with 11 UNIMAS students, who represent the primary target users of the system.

5.3.1 Testing with PsyCon Counselor

An interview and system testing session was conducted on 30th May 2025 with Miss Ummikhaira Sofea binti Ja'afar, a Psychology Officer at PsyCon UNIMAS. The session involved demonstrating the system, allowing her to explore its features, and gathering feedback on various components including the system interface, chatbot functionality, the DASS-21 assessment, and overall user experience. She confirmed that the administrative functions were working effectively but provided several constructive suggestions to enhance the student experience.

Among her recommendations were renaming the "Sumber" page to "Informasi" and the "Talian Bantuan" page to "Khidmat Bantuan" for improved clarity and relevance, both of which have been implemented in the system.

She also suggested adding a banner at the top of the student dashboard, similar to Facebook's "What's on your mind?" input box (Figure 5.1), to encourage students to record their emotions regularly. This replaces the immediate display of the graph upon login, making the interface more engaging.



Figure 5. 1: Facebook status inbox box

Additionally, she proposed providing a direct link to book a PsyCon appointment immediately after completing the DASS-21 assessment, instead of requiring navigation through the chatbot. Lastly, she recommended enhancing the chatbot by expanding its range of intents and, if possible, replacing it with an AI-powered chatbot for more dynamic and natural interactions.

At the end of the session, a Google Form was also provided for her to fill out as part of the usability evaluation process.

5.3.2 Testing with UNIMAS Students

The testing was conducted with a group of UNIMAS students to evaluate the usability and effectiveness of the system from the target user's perspective. A total of eleven students tested the student user part of the system to provide their feedback.

The initial section of the Google Form focused on gathering basic user information, including gender and faculty affiliation at UNIMAS. The results showed that seven respondents were female and four were male (Figure 5.2). All participants were from the Faculty of Computer Science and Information Technology as shown in Figure 5.3.

Jantina Gender
10 responses

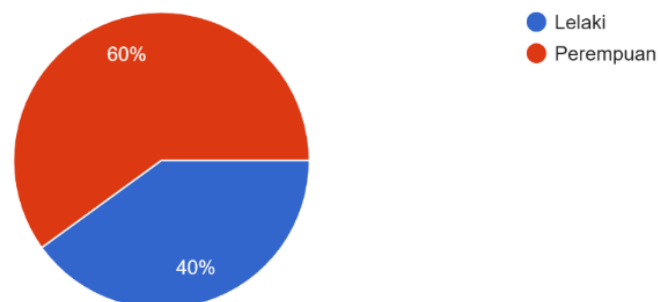


Figure 5. 2: Respondent's gender

Fakulti Faculty
10 responses

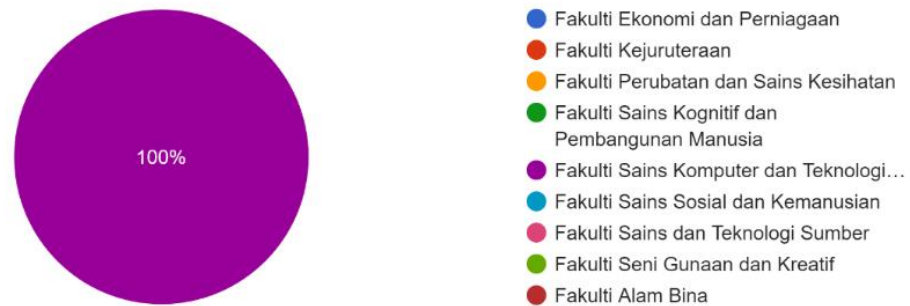


Figure 5. 3: Respondent's faculty at UNIMAS

For Section 2: System Usability (Bahagian 2: Kebolegunaan Sistem), the purpose was to gather user feedback on how easy and effective the system is to use.

Saya mudah untuk memahami tujuan setiap butang dan ikon. I can easily understand the purpose of each button and icon.

11 responses

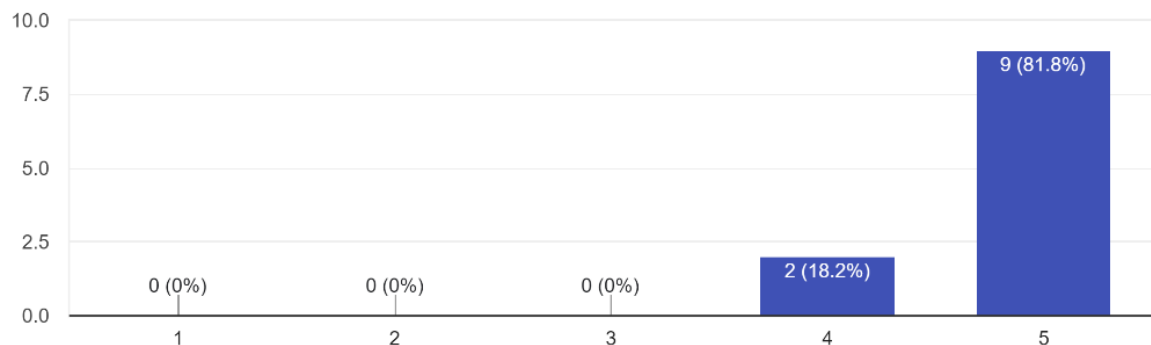


Figure 5. 4: Respondents understanding the purpose of the button and icon

The responses showed that the majority of users found the system very user-friendly, with 8 out of 10 participants selecting "very easy," and the remaining 2 choosing "easy," as illustrated in Figure 5.4.

Antaramuka chatbot senang dicari. The chatbot interface is easy to find.

11 responses

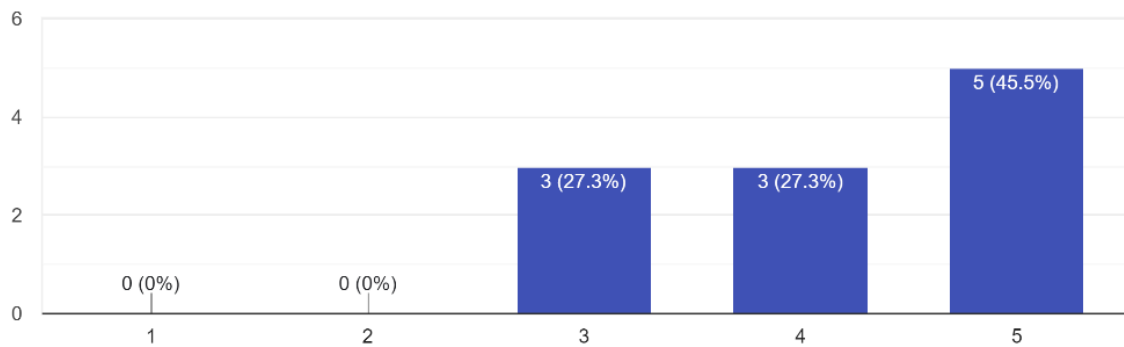


Figure 5. 5: Respondents' answers for the question "The chatbot interface is easy to find."

In terms of the chatbot interface visibility, 4 users said it was very easy to find, 3 said it was easy, and 3 were neutral (Figure 5.5).

Chatbot memberikan maklumat atau cadangan yang berguna. The chatbot provides useful information or suggestions.

11 responses

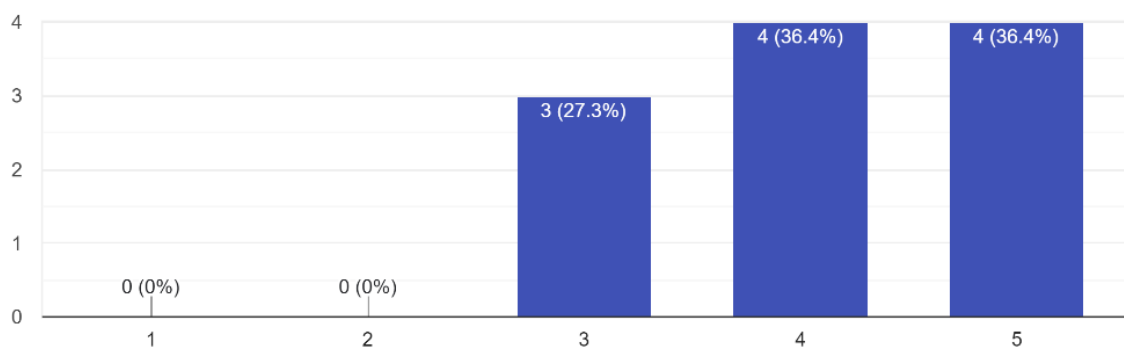


Figure 5. 6: Respondents' answer for "The chatbot provides useful information or suggestions"

When asked if the chatbot provides useful information or suggestions, the responses were similar, with 4 selecting very easy, 3 easy, and 3 neutral (Figure 5.6).

Fungsi log emosi dapat berfungsi dengan baik. The emotion logging feature is functioning well.
11 responses

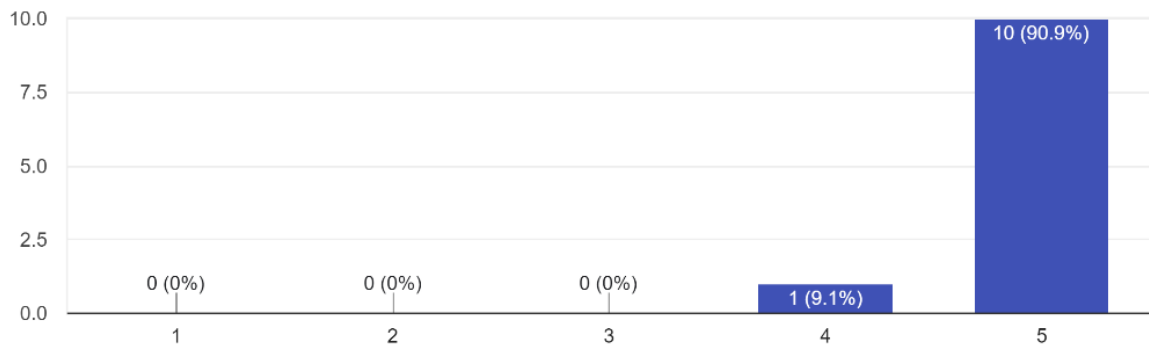


Figure 5. 7: Respondents' answer for "The emotion logging feature is functioning well."

For the emotion logging feature, 1 user rated it as good, while the other 9 rated it very good, indicating high satisfaction with its functionality (Figure 5.7).

Saya mudah untuk mengakses tips kesehatan mental dalam sistem. It is easy for me to access mental health tips in the system.

11 responses

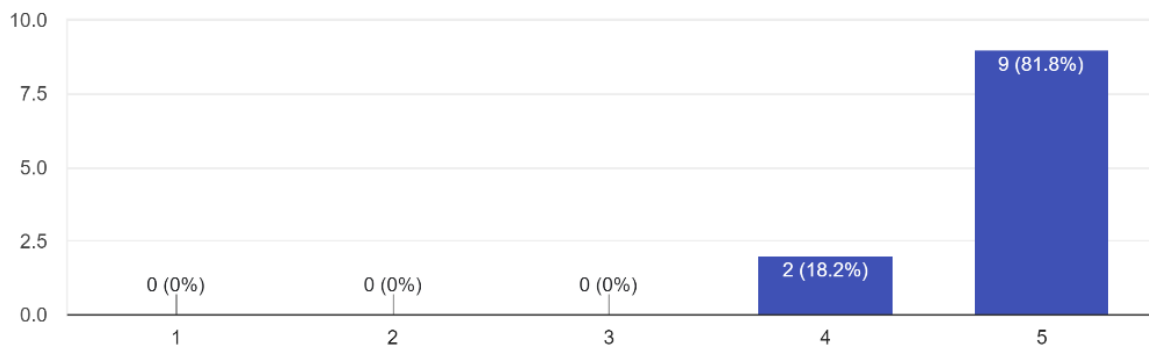


Figure 5. 8: Respondents' answer for "It is easy for me to access mental health tips in the system"

Regarding access to mental health tips, 2 respondents said it was easy and the rest found it very easy (Figure 5.8).

Saya mudah untuk mengakses talian bantuan dalam sistem. It is easy for me to access helplines page in the system.

11 responses

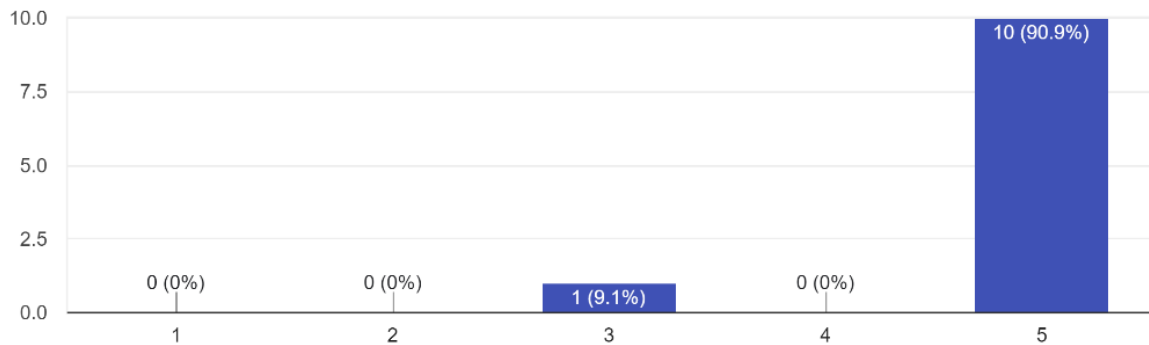


Figure 5. 9: Respondents' answer for "It is easy for me to access the helplines page in the system"

Accessing the helplines page was also rated positively, with only 1 neutral response and the rest choosing very easy (Figure 5.9).

Fungsi penilaian DASS-21 berfungsi dengan baik. The DASS-21 assessment function works well.

9 responses

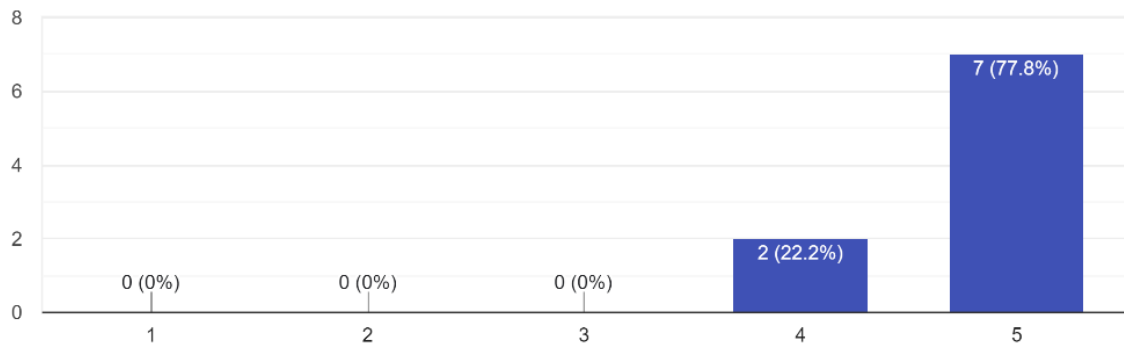


Figure 5. 10: Respondents' answer for "The DASS-21 assessment function works well."

Lastly, for the DASS-21 assessment function, 2 users rated it as good, and the remaining 8 rated it as very good, showing strong approval of its performance (Figure 5.10).

Section 3 Visual Appearance (Bahagian 3: Penampilan Visual) focuses on gathering user feedback regarding the visual design of the system. It includes questions about the attractiveness of the system's design, the readability and clarity of the text, the quality and relevance of the images used, and overall satisfaction with the system interface. This section also provides an open-ended question for users to suggest any visual improvements.

For the question “The system design is interesting” 1 respondent selected Neutral, 1 selected Interesting, while the remaining 9 voted Very Interesting (Figure 5.11).

Reka bentuk sistem adalah menarik. The system design is interesting.

11 responses

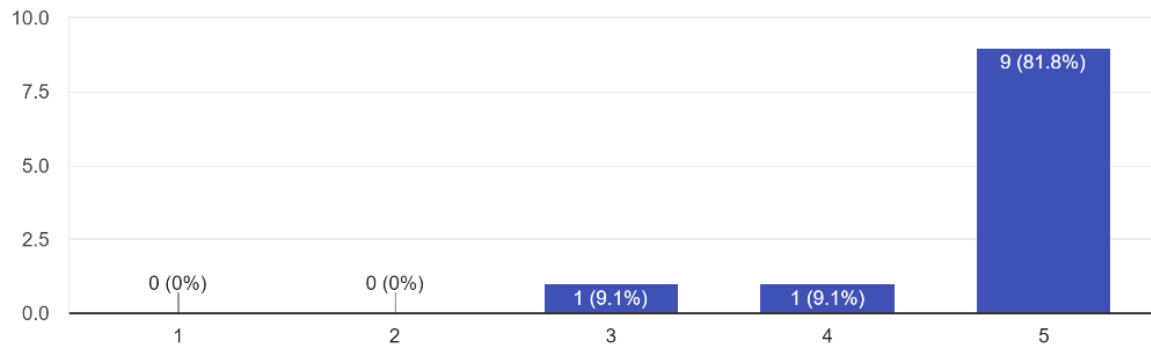


Figure 5. 11: Respondents' answer for "The system design is interesting"

For “The text is readable and understandable” the majority (9 respondents) voted Easy, 1 chose Very Easy, and 1 selected Neutral (Figure 5.11).

Teks boleh dibaca dan difahami. The text is readable and understandable.

11 responses

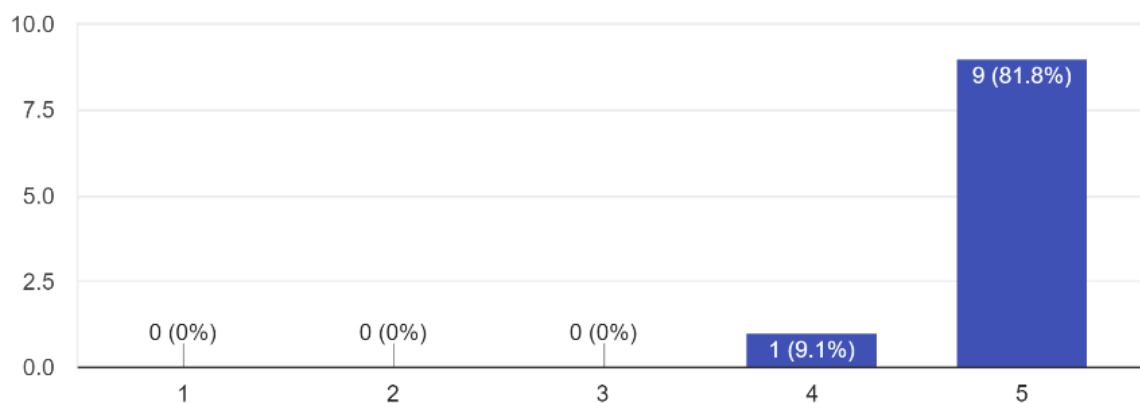


Figure 5. 12: Respondents' answer for “The text is readable and understandable,”

In response to “How would you rate the quality and relevance of images used in the system” 4 respondents voted Good, while the rest chose Very Good (Figure 5.12).

Bagaimana anda menilai kualiti dan kaitan imej yang digunakan dalam sistem. How would you rate the quality and relevance of images used in the system.

11 responses

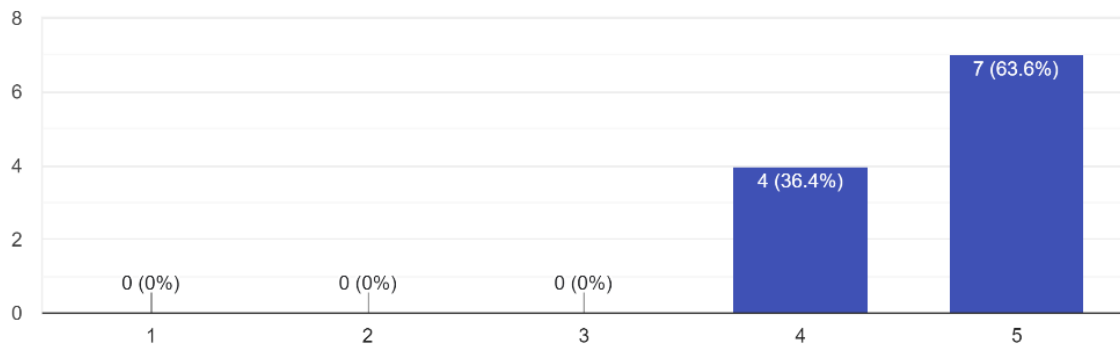


Figure 5. 13: Respondents' answer for "How would you rate the quality and relevance of images used in the system"

For "I am very satisfied with the overall system interface" 3 respondents agreed, and 8 strongly agreed, showing a high level of satisfaction with the visual presentation of the system (Figure 5.13).

Saya sangat berpuas hati dengan keseluruhan antaramuka sistem. I am very satisfied with the overall system interface.

11 responses

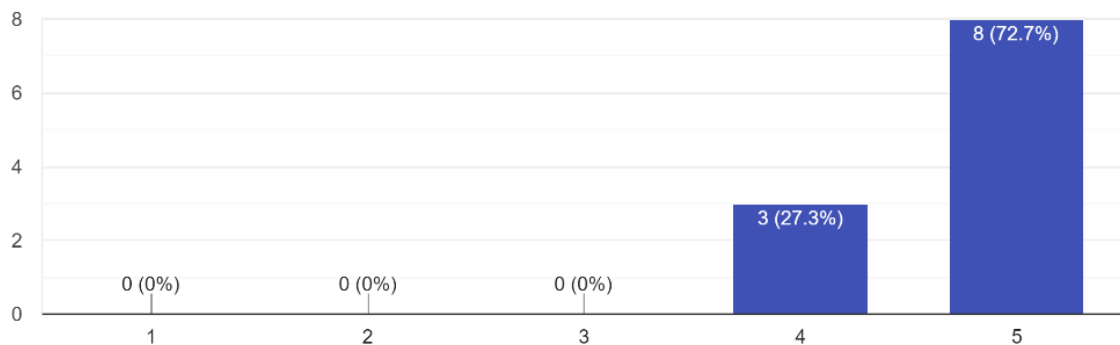


Figure 5. 14: Respondents' answer for "I am very satisfied with the overall system interface"

Figure 5.14 illustrates the respondents' level of satisfaction with the overall system interface. Out of 11 participants, 8 respondents (72.7%) rated their satisfaction at the highest level (score 5), while the remaining 3 respondents (27.3%) gave a score of 4. No respondents gave a rating below 4, indicating that all users were generally pleased with the interface design.

Sebarang cadangan penambahbaikan?
Any suggestions for improvement?

10 responses

Maybe the icons and maybe the emotions can be a bit larger

Tukar warna logo butang chatbot, bukan warna purple so that its easier to be spotted on

tiada

Mungkin boleh besarkan icon chatbox supaya lagi mudah pengguna untuk nampak icon tersebut.

mungkin chatbot icon boleh letak besar sikit ahahha

Gunakan warna lain untuk perkataan dekat dashboard. Bahagian paling bawah carta tak berapa jelas.

Chatbot taknampak

Differentiate the emoticon used for emoticon with different colour so it is easier to look the user's emotions throughout the time period without having the need to zoom in the screen.

more colorful and banyakkan features for bot 🍷

Figure 5. 15: Respondents' answer for "Any suggestions for improvement?"

Figure 5.15 shows a screen capture of the open-ended question “Any suggestions for improvement?”, which allowed respondents to freely express their thoughts or recommend visual and interface-related enhancements to the system. Most of the comments focused on visual enhancements, such as increasing the size of icons and emotion buttons to make them more noticeable. Several users also recommended changing the chatbot button’s color from purple to improve visibility. Other suggestions included using clearer colors on the dashboard, especially at the bottom section of charts, and differentiating emoticons by color for easier emotional tracking. A few respondents also requested more features and visual variety for the chatbot.

5.4 Summary

This chapter has elaborated the testing process performed on the proposed system, EmosiBot. There are two types of tests conducted which are functional testing and usability testing. Test case in functional testing is conducted to identify errors, bugs or defects in the system. Functional testing plays a crucial role to ensure the reliability and functionality of the system. Usability testing is conducted to observe interaction between user and system and improve user experience. It plays a vital role in creating user-friendly systems that meet user

expectations and deliver a positive user experience.

Chapter 6: Conclusion and Future Work

6.1 Introduction

This chapter summarises the findings, results, and outcomes of the proposed system, EmosiBot: A Web-Based Mental Health System with Chatbot Integration. It also highlights the system's key achievements, outlines its limitations, and suggests potential areas for future improvements and development. Lastly, a concluding section is presented at the end of this chapter to summarise the overall project development.

6.2 Project Achievement

The proposed system has successfully achieved its objectives and fulfilled the requirements outlined in Chapter 1 of this project report. Table 6.1 below presents a summary of the initial objectives and the corresponding achievements accomplished through the development of the EmosiBot system.

Table 6. 1: Achievements based on objectives of the proposed system

Objectives	Achievements
To design a website integrating an AI-powered Chatbot in Malay that serves as a virtual friend that provides a platform for students.	A web-based platform was successfully designed and developed, with integration of a chatbot using Dialogflow. Both the system and the chatbot operate in Malay.
To develop a platform that allows students to express their problems and screen for mental health symptoms.	The system includes a chatbot interface that allows students to express their problems through conversation, book an appointment with a PsyCon counselor, and complete the DASS-21 assessment to screen for mental health symptoms.
To evaluate the performance and effectiveness of the EmosiBot.	Usability testing was conducted among students, especially in UNIMAS and a Psychology Officer from PsyCon using Google Forms. Feedback was collected on system navigation, interface design, chatbot response quality, and overall user experience, demonstrating positive user engagement and areas for improvement.

6.3 Project Limitation

Few limitations have been identified in this proposed system as stated in Table 6.2 below:

Table 6. 2: Proposed system's limitations

Limitation	Description
Limited Chatbot Intelligence	The chatbot relies on predefined intents and responses using Dialogflow. As a result, it cannot fully understand or address all types of user input, especially complex or unexpected questions, which may result in repetitive or unnatural conversations. It does not possess real-time learning or adaptive capabilities.
Cannot Provide Real Mental Health Solutions	EmosiBot is not a replacement for a professional mental health counselor or psychologist and lacks deep sentiment analysis or emotion recognition to fully understand users' feelings. It can offer basic screening using the DASS-21 assessment, but it cannot diagnose or solve deep personal or psychological problems.
Language and Context Limitations	Although the chatbot is developed in Malay, it may still misinterpret slang, mixed languages (e.g., Manglish), or emotionally complex statements due to natural language limitations.

6.4 Future Work

There is potential for future work to enhance the proposed system, as discussed in this section. The main goal of future enhancements is to improve functionality to meet evolving user needs and requirements. Several suggestions have been identified to improve the system, based on its current limitations. These are listed as follows:

Table 6. 3: Future work for the proposed system

Future Work	Description
Advanced AI Chatbot Integration	Instead of using intents-based chatbot, a more advanced AI model such as a large language model (LLM) can be integrated to enable more dynamic, natural, and context-aware conversation with users.
Real-Time Human Support	Collaborate with licensed counselors to provide real time support or referral for mental health issues.
Malay Slang and Contextual Understanding	Enhance the chatbot's ability to understand and process Malay slang and colloquial expressions to improve communication and user engagement.

6.5 Conclusion

This chapter concludes that the proposed system successfully achieved all the objectives outlined in Chapter 1. The development and implementation of the system, including the EmosiBot chatbot, effectively met the intended goals of providing students with a platform to express their problems and screen for mental health symptoms. By considering the proposed future works for enhancement, the identified system limitations can be addressed. Therefore, these improvements should be implemented to ensure the system's effectiveness in real-world applications.

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APPENDIX A: Survey form for EmosiBot Prototype Evaluation

Borang Maklum Balas: EmosiBot Prototype Evaluation

Terima kasih kerana mengambil bahagian dalam penilaian **EmosiBot: A Web-Based Mental Health System with Chatbot Integration**.

Saya Aina Zuhairah bt Rosli (78689), pelajar tahun 4 Kejuruteraan Perisian dari Fakulti Sains Komputer dan Teknologi Maklumat (FSKTM), UNIMAS. Borang maklum balas ini adalah sebahagian daripada projek tahun akhir saya, di bawah seliaan Dr. Tan Ping Ping.

Maklum balas anda adalah penting untuk penambakan sistem. Sila jawab soalan berikut dengan jujur berdasarkan pengalaman anda dengan prototaip.

*Thank you for participating in the evaluation of **EmosiBot: A Web-Based Mental Health System with Chatbot Integration**.*

I am Aina Zuhairah bt Rosli (78689), a 4th year Software Engineering student from Faculty of Science Computer and Information Technology (FSCIT), UNIMAS. This feedback form is part of my final year project, under supervision Dr. Tan Ping Ping.

Your feedback is crucial for improving the system. Please answer the following questions honestly based on your experience with the prototype.

hyobosoda12@gmail.com Switch account

 Not shared

* Indicates required question

Jantina *

Gender

☐ Lelaki

☐ Perempuan

Fakulti *

Faculty

☐ Fakulti Ekonomi dan Perniagaan

☐ Fakulti Kejuruteraan

☐ Fakulti Perubatan dan Sains Kesihatan

☐ Fakulti Sains Kognitif dan Pembangunan Manusia

☐ Fakulti Sains Komputer dan Teknologi Maklumat

☐ Fakulti Sains Sosial dan Kemanusiaan

☐ Fakulti Sains dan Teknologi Sumber

☐ Fakulti Seni Gunaan dan Kreatif

☐ Fakulti Bahasa dan Komunikasi

☐ Fakulti Alam Bina

Seberapa kerap anda menggunakan alat digital (*digital tools*) untuk kesihatan mental? (eg: Apps/Website) *

How often do you use digital tools for mental health? (eg: Apps/Websites)

☐ Selalu

☐ Kadang - kadang

☐ Jarang

☐ Tidak Pernah

Bagaimana anda menilai keadaan kesihatan mental anda secara keseluruhan? *

How would you evaluate your overall mental health situation?

1

2

3

4

5

Sangat Rendah

☐

☐

☐

☐

☐

Sangat Cemerlang

Next

Clear form

Borang Maklum Balas: EmosiBot Prototype Evaluation

hybosoda12@gmail.com

Switch account

Not shared

* Indicates required question

Bagian 2: Kebolegunaan dan Pengalaman Pengguna

Part 2: Usability and User Experience

Seberapa mudah ntuk anda menavigasi prototaip ini? *

How easy is it for you to navigate this prototype?

1

2

3

4

5

Sangat Mudah

Sangat Sukar

Adakah prototaip chatbot mudah digunakan dan dicari? *

Is the chatbot prototype easy to use and find?

1

2

3

4

5

Sangat Sukar

Sangat Mudah

Ciri manakah yang paling membantu anda? *

Which feature helped you the most?

☐ Log Emosi

☐ Sumber Kesihatan Mental

☐ Nombor Kecemasan

☐ EmosiBot Chatbot

☐ Other:

Adakah terdapat ciri yang tidak berfungsi seperti yang diharapkan? *

Are there features that aren't working as expected?

☐ Ya

☐ Tidak

Jika Ya, nyatakan kenapa *

If Yes, state why

Your answer

Adakah terdapat ciri atau fungsi tambahan yang anda ingin lihat? *

Are there additional features or functions you would like to see?

Your answer

Adakah bahasa yang digunakan sesuai dan mudah difahami? *

Is the language used appropriate and easy to understand?

☐ Ya

☐ Tidak

Adakah prototaip EmosiBot mudah untuk digunakan? *

Is the EmosiBot prototype easy to use?

☐ Ya

☐ Tidak

Jika tidak, apakah masalah yang dihadapi? *

If No, what is the problem?

Your answer

Bagaimana anda menilai reka bentuk prototaip EmosiBot? *

How would you rate the EmosiBot prototype design?

1

2

3

4

5

Sangat Teruk

Sangat Baik

Back

Next

Clear form

APPENDIX B: Depression Anxiety Stress Scale 21 Bahasa Malaysia

Arahan: Klik/sentuh pada jawapan yang sesuai dan keputusan akan dikira secara automatik.

BAHAGIAN 1

Sila baca kenyataan dan bulatkan jawapan (skala markah 0,1,2,3) yang menggambarkan keadaan anda **SEMINGGU** yang lepas. Tidak ada jawapan yang betul atau salah. JANGAN guna terlalu banyak masa untuk mana-mana kenyataan.

Skala markah adalah seperti berikut:

0 =Tidak pernah 1=Jarang 2=Kerap 3=Sangat Kerap

Bil.	Soalan	Tidak Pernah	Jarang	Kerap	Sangat Kerap
1	Saya rasa susah untuk bertenang	0	1	2	3
2	Saya sedar mulut saya rasa kering	0	1	2	3
3	Saya seolah-olah tidak dapat mengalami perasaan positif sama sekali	0	1	2	3
4	Saya mengalami kesukaran bernafas (contohnya, bernafas terlalu cepat Tercungap-cungap walaupun tidak melakukan aktiviti fizikal)	0	1	2	3
5	Saya rasa tidak bersemangat untuk memulakan sesuatu keadaan	0	1	2	3
6	Saya cenderung bertindak secara berlebihan kepada sesuatu keadaan	0	1	2	3
7	Saya pernah menggeletar (contohnya tangan)	0	1	2	3
8	Saya rasa saya terlalu gelisah	0	1	2	3
9	Saya risau akan berlaku keadaan di mana saya panik dan berkelakuan bodoh	0	1	2	3
10	Saya rasa tidak ada yang saya harapkan (putus harapan)	0	1	2	3
11	Saya dapati saya mudah resah	0	1	2	3
12	Saya merasa sukar untuk relaks	0	1	2	3
13	Saya rasa muram dan sedih	0	1	2	3
14	Saya tidak boleh terima apa jua yang menghalangi saya daripada meneruskan apa	0	1	2	3

	yang saya sedang lakukan				
15	Saya rasa hampir panik	0	1	2	3
16	Saya tidak bersemangat langsung	0	1	2	3
17	Saya rasa diri saya tidak berharga	0	1	2	3
18	Saya mudah tersinggung	0	1	2	3
19	Walaupun saya tidak melakukan aktiviti fizikal, saya sedar akan debaran Jantung saya (contoh: degupan jantung lebih cepat)	0	1	2	3
20	Saya rasa takut tanpa sebab	0	1	2	3
21	Saya rasa hidup ini tidak bermakna lagi	0	1	2	3

BAHAGIAN 2

Panduan Mengira Skor:

Masukkan skala markah jawapan bagi soalan (S) bagi setiap kategori

STRESS (TEKANAN)								
Soalan	S1	S6	S8	S11	S12	S14	S18	Jumlah
Markah								
ANXIETY (KERISAUAN)								
Soalan	S2	S4	S7	S9	S15	S19	S20	Jumlah
Markah								
DEPRESSION (KEMURUNGAN)								
Soalan	S3	S5	S10	S13	S16	S17	S21	Jumlah
Markah								

Selepas dijumlahkan, sila rujuk kepada petak skor jaringan dan terjemahkan jumlah skor untuk mengetahui tahap status kesihatan mental anda

SKOR SARINGAN

	Kemurungan	Anzieti	Stress
Normal	0-5	0-4	0-7
Ringan	6-7	5-6	8-9

Sederhana	8-10	7-8	10-13
Teruk	11-14	9-10	14-17
Sangat Teruk	15+	11+	18+

BAHAGIAN 3

Isikan keputusan (normal, ringan, sederhana, teruk atau sangat teruk) dalam jadual di bawah.

KEPUTUSAN UJIAN DASS

Ujian	Tahap
Stres	
Kerisauan	
Kemurungan	

APENDIX C: Survey form for EmosiBot Usability Testing Feedback (UNIMAS Students)

Borang Maklum Balas: EmosiBot Usability Testing Feedback (Pelajar)

Course: TMF4935 Final Year Project 2

Supervisor: Dr. Tan Ping Ping

Student Name: Aina Zuhairah Rosli (78689)

Final Year Project Title: *EmosiBot: A Mental Health Web Platform with Chatbot Integration in Malay Language*

Terima kasih kerana mengambil bahagian dalam penilaian *EmosiBot: A Web-Based Mental Health System with Chatbot Integration*. Maklum balas anda amat penting untuk menilai keberkesanan sistem EmosiBot dari perspektif pengguna pelajar, serta membantu dalam penambahbaikan sistem pada masa akan datang.

Thank you for participating in the evaluation of EmosiBot: A Web-Based Mental Health System with Chatbot Integration. Your feedback is valuable in assessing the effectiveness of EmosiBot from a student user's perspective and will contribute to further system improvements.

hyobosoda12@gmail.com [Switch account](#)

 Not shared



* Indicates required question

Jantina *

Gender

☐ Lelaki

☐ Perempuan

Fakulti *

Faculty

☐ Fakulti Ekonomi dan Perniagaan

☐ Fakulti Kejuruteraan

☐ Fakulti Perubatan dan Sains Kesihatan

☐ Fakulti Sains Kognitif dan Pembangunan Manusia

☐ Fakulti Sains Komputer dan Teknologi Maklumat

☐ Fakulti Sains Sosial dan Kemanusiaan

☐ Fakulti Sains dan Teknologi Sumber

☐ Fakulti Seni Gunaan dan Kreatif

☐ Fakulti Alam Bina

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Bahagian ini adalah untuk menilai kebolegunaan sistem. Sila nilaikan tahap persetujuan anda dengan soalan berikut menggunakan skala yang disediakan.

Sangat Sukai

1 ☐

2 ☐

3 ☐

4 ☐

5 ☐

Sangat Mudah

Sangat Sukar

1 ☐

2 ☐

3 ☐

4 ☐

5 ☐

Sangat Mudah

Tidak Setuju

1 ☐

2 ☐

3 ☐

4 ☐

5 ☐

Sangat Setuju

Tidak Setuju

1 ☐

2 ☐

3 ☐

4 ☐

5 ☐

Sangat Setuju

Sangat Sukar

1 ☐

2 ☐

3 ☐

4 ☐

5 ☐

Sangat Mudah

Sangat Sukar

1 ☐

2 ☐

3 ☐

4 ☐

5 ☐

Sangat Mudah

Sangat Teruk

1 ☐

2 ☐

3 ☐

4 ☐

5 ☐

Sangat Bagus

Back Next Clear form

Bahagian ini adalah untuk menilai antaramuka pengguna keseluruhan sistem.

This section is to evaluate the overall user interface of the system.

Reka bentuk sistem adalah menarik. *

Tidak Setuju

1 ☐

2 ☐

3 ☐

4 ☐

5 ☐

Sangat Setuju

Teks boleh dibaca dan difahami. ★
The text is readable and understandable.

Tidak Setuju

1 ☐

2 ☐

3 ☐

4 ☐

5 ☐

Sangat Setuju

How would you rate the quality and relevance of images used in the system.

Sangat Teruk

1 ☐

2 ☐

3 ☐

4 ☐

5 ☐

Sangat Bagus

Saya sangat berpuas hati dengan keseluruhan antaramuka sistem.
I am very satisfied with the overall system interface.

Tidak Setuju

1 ☐

2 ☐

3 ☐

4 ☐

5 ☐

Sangat Setuju

Sebarang cadangan penambahbaikan? *

Your answer

Back Submit Clear form

APENDIX D: Survey form for EmosiBot Usability Testing Feedback (PsyCon Counselor)

Borang Maklum Balas: EmosiBot *Usability Testing Feedback (PsyCon)*

Course: TMF4935 Final Year Project 2

Supervisor: Dr. Tan Ping Ping

Student Name: Aina Zuhairah Rosli (78689)

Final Year Project Title: *EmosiBot: A Mental Health Web Platform with Chatbot Integration in Malay Language*

The purpose of this testing and interview is to obtain **professional feedback and opinions from a counselor's perspective** regarding the functionality, appropriateness, and overall effectiveness of **system**. Your insights are extremely valuable in evaluating the strengths and identifying areas for improvement to ensure the chatbot aligns with ethical counseling practices and user needs.

This interview will consist of several short- and long-answer questions and will take approximately **10–15 minutes** to complete.

If you have any questions or require further information, please feel free to contact me:

 **Phone:** [010-261 5430](tel:010-2615430)

 **Email:** 78689@siswa.unimas.my

Thank you for your time and valuable contribution to this study!

hyobosoda12@gmail.com [Switch account](#)

 Not shared



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Borang Maklum Balas:

EmosiBot Usability Testing Feedback (PsyCon)

hyobosoda12@gmail.com

Switch account

Not shared

* Indicates required question

Bahagian 1: Maklumat Kaunselor / Counselor Info

Nama *

Your answer

Jawatan *

Your answer

Pengalaman dalam bidang kaunseling (tahun) *

Counseling Experience (years)

☐ 1-4 tahun

☐ 5-7 tahun

☐ 8-11 tahun

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Bahagian 2: Soalan Penilaian / Assessment Questions

Bagaimana anda menilai kualiti dan kaitan imej yang digunakan dalam sistem.

How would you rate the quality and relevance of images used in the system?

Sangat Teruk:

1 ☐

2 ☐

3 ☐

4 ☐

5 ☐

Sangat Bagus

Saya sangat berpuas hati dengan keseluruhan antaramuka sistem.

I am very satisfied with the overall system interface.

Tidak Setuju

1 ☐

2 ☐

3 ☐

4 ☐

5 ☐

Sangat Setuju

Adakah respons yang diberikan oleh EmosiBot sesuai dari segi etika dan kesesuaian untuk pelajar yang mengalami tekanan emosi?

Are the responses ethically appropriate for students under emotional stress?

Tidak Sesuai

1 ☐

2 ☐

3 ☐

4 ☐

5 ☐

Sangat Sesuai

Adakah anda merasakan maklumat yang disampaikan oleh chatbot ini tepat dan selari dengan prinsip kaunseling asas?

Is the information provided accurate and aligned with counseling principles?

Tidak Sesuai

1 ☐

2 ☐

3 ☐

4 ☐

5 ☐

Sangat Sesuai

Adakah penggunaan bahasa dan istilah dalam chatbot ini sesuai dan mudah difahami?

Is the language used appropriate and easy to understand?

Sangat Sukar

1 ☐

2 ☐

3 ☐

4 ☐

5 ☐

Sangat Mudah

Apakah pandangan anda secara umum terhadap penggunaan chatbot dalam sokongan kesihatan mental?

What is your general opinion on using chatbots in mental health support?

Your answer

Apakah ciri atau fungsi tambahan yang anda rasa perlu ada dalam EmosiBot?

What features or functions should be added to EmosiBot?

Your answer

Adakah anda mempunyai sebarang cadangan untuk menambah baik EmosiBot dari perspektif seorang kaunselor?

Any suggestions for improving EmosiBot from a counselor's point of view?

Your answer

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Submit

Clear form

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