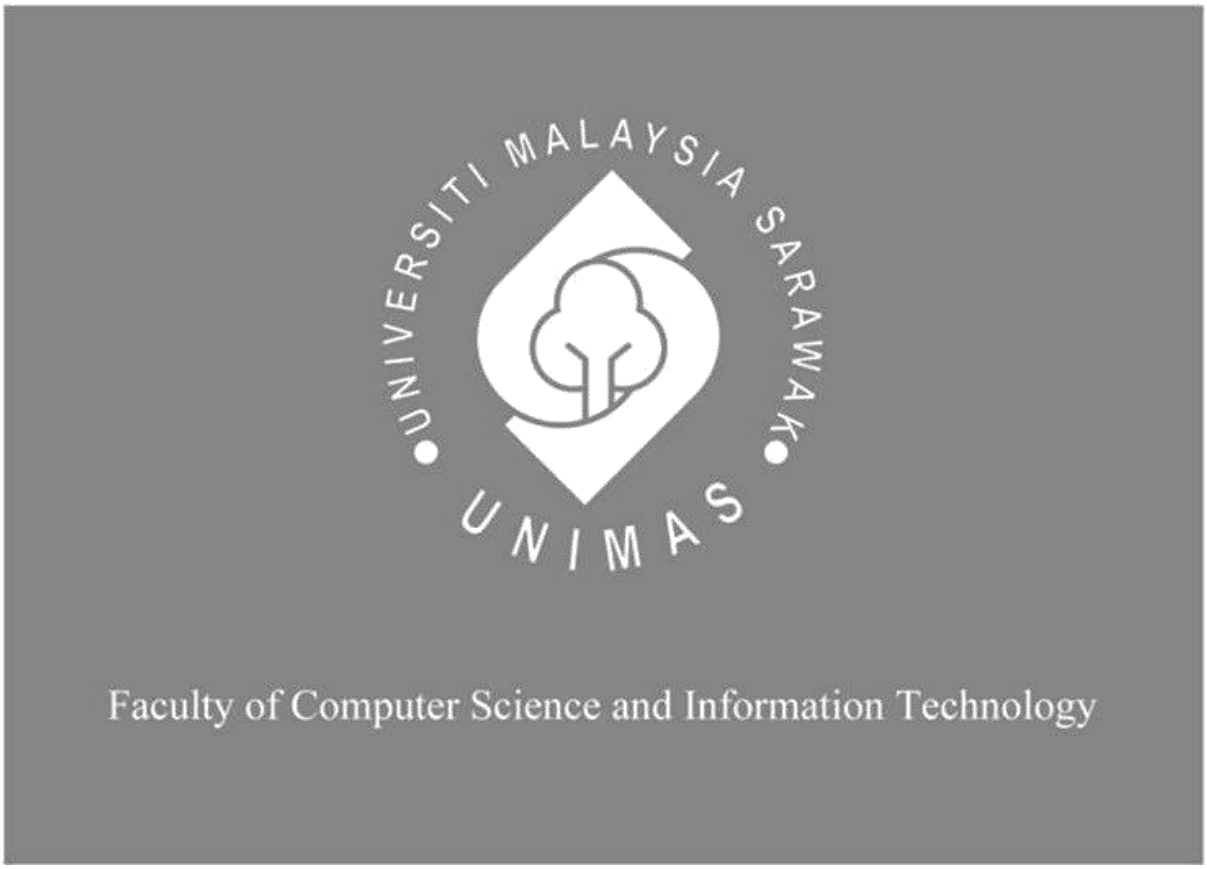

MindFullness: UNIMAS Mental Health Assessment and Support System

Nasha Aziqa Binti Shairini

Bachelor of Computer Science with Honours (Software Engineering)

2025

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NASHA AZIQA BINTI SHAIRINI

This project is submitted in partial fulfilment of the
requirements for the degree of
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Project ini merupakan salah satu keperluan untuk
Ijazah Sarjana Muda Kejuruteraan Perisian dengan Kepujian

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2025

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This project carries deep personal meaning, as it was inspired by real-life experiences. Over the past years, I have witnessed my close friends struggle silently with mental health challenges, some of whom I never knew were suffering until it was too late. These events, coupled with my own experiences of dealing with mental health issues privately, served as a profound motivation to develop *MindFullness*. The aim of this system is to provide a small but meaningful solution that supports university students who may be facing similar struggles in silence.

Finally, I would like to extend my heartfelt thanks to my family and friends for their unwavering encouragement and belief in my abilities. I am especially grateful to my close friends and peers for their valuable insights, moral support, and continued motivation throughout this journey.

Abstract

Mental health challenges among university students are a growing concern, often exacerbated by limited mental health literacy, where symptoms of depression, anxiety, and stress are misunderstood as typical academic pressures. Untreated mental health issues can significantly impact students' academic performance, social relationships, and overall well-being. To address this pressing issue, MindFullness: UNIMAS Mental Health Assessment & Support System was developed to provide a comprehensive, accessible, and user-friendly platform tailored to the needs of UNIMAS students. The platform integrates the Depression, Anxiety, and Stress Scale (DASS-21) to help users assess their mental well-being and offers actionable insights. Additionally, it includes a community forum for peer support, educational blogs to promote mental health awareness, and a helpline directory connecting users to professional resources. By fostering an inclusive and supportive environment, the system aims to bridge the gap between students and accessible mental health care. Built using the System Development Life Cycle (SDLC) methodology, the platform emphasizes scalability, reliability, and accessibility, ensuring seamless operation across various devices. This holistic approach seeks to empower students to recognize, understand, and address their mental health challenges while fostering a sense of community and shared resilience

Keywords: Mental Health, Assessment and Support System, DASS-21

Abstrak

Cabaran kesihatan mental dalam kalangan pelajar universiti semakin menjadi perhatian, sering kali diperburuk oleh literasi kesihatan mental yang terhad, di mana simptom seperti kemurungan, kebimbangan, dan tekanan disalah anggap sebagai tekanan akademik biasa. Masalah kesihatan mental yang tidak dirawat boleh memberi kesan serius terhadap prestasi akademik, hubungan sosial, dan kesejahteraan keseluruhan pelajar. Untuk menangani isu ini, MindFullness: Sistem Penilaian dan Sokongan Kesihatan Mental UNIMAS telah dibangunkan untuk menyediakan platform yang komprehensif, mudah diakses, dan mesra pengguna yang disesuaikan dengan keperluan pelajar UNIMAS. Platform ini mengintegrasikan Alat Skala Kemurungan, Kebimbangan, dan Tekanan (DASS-21) untuk membantu pengguna menilai kesejahteraan mental mereka dan menawarkan maklum balas yang berguna. Selain itu, ia merangkumi forum komuniti untuk sokongan rakan sebaya, blog pendidikan untuk meningkatkan kesedaran kesihatan mental, dan direktori talian bantuan yang menghubungkan pengguna kepada sumber profesional. Dengan mewujudkan persekitaran yang inklusif dan menyokong, sistem ini bertujuan untuk merapatkan jurang antara pelajar dan penjagaan kesihatan mental yang boleh diakses. Dibangunkan menggunakan metodologi Kitar Hayat Pembangunan Sistem (SDLC), platform ini menekankan skalabiliti, kebolehpercayaan, dan kebolehcapaian, memastikan operasi yang lancar di pelbagai peranti. Pendekatan holistik ini bertujuan untuk memperkasa pelajar dalam mengenali, memahami, dan menangani cabaran kesihatan mental mereka sambil mewujudkan rasa komuniti dan daya tahan bersama.

Kata Kunci: Kesihatan Mental, Sistem Penilaian dan Sokongan, DASS-21

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List of Abbreviations

AMD	Advanced Micro Devices
CAPS	Counselling and Psychological Services
CSS	Cascading Style Sheets
CPU	Central Processing Units
DASS	Depression, Anxiety, and Stress Scale
GUI	Graphical User Interface
HCI	Human Computer Interaction
HTML	Hypertext Markup Language
IDE	Integrated Development Environment
IIUM	International Islamic University Malaysia
JS	JavaScript
MaHIR	Mental Health Information & Research
MySQL	My Structured Query Language
OS	Operating System
PBIs	Product Backlog Items
PDF	Portable Document Format
PHP	Hypertext Preprocessor
RAM	Random Access Memory
SDLC	System Development Life Cycle
SQL	Structured Query Language
UI	User Interface
UTM	Universiti Teknologi Malaysia
UNIMAS	Universiti Malaysia Sarawak
UX	User Experience
WHO	World Health Organization
XAMPP	Cross-Platform, Apache, MySQL, PHP, and Perl

Chapter 1: Introduction

1.1. Introduction

Mental health challenges have become a significant concern among university students, yet many have limited mental health literacy, often misinterpreting symptoms such as depression, anxiety, and stress as typical aspects of student life rather than recognizing them as conditions requiring support or treatment (Lattie et al., 2019). Early intervention and accessible mental health resources are crucial, as untreated psychological issues can result in lasting consequences on academic performance, interpersonal relationships, and overall well-being (Collins et al., 2011). This project is deeply rooted in personal experiences and observations of the silent struggles faced by many university students in managing their mental health. Over the years, I have witnessed close peers grapple with mental health challenges, often without seeking help or disclosing their distress until it was too late. These experiences, alongside my own journey in navigating mental health issues privately, have highlighted the urgent need for accessible and stigma-free support mechanisms. Consequently, this inspired the development of MindFullness, a platform designed to offer a supportive, and informative environment for students who may be enduring similar challenges in silence. In response to these needs, the MindFullness: UNIMAS Mental Health Assessment & Support System was developed to provide a holistic digital solution that incorporates mental health self-assessment, peer interaction, and access to educational resources. Guided by the Depression, Anxiety, and Stress Scale (DASS), the platform includes a self-evaluation tool to help students gain insights into their mental health status. Electronic assessment tools, as noted by Bradford & Rickwood (2015), can facilitate greater disclosure of sensitive issues by reducing perceived judgment and increasing user control over the experience. Furthermore, integrated platforms that combine assessment and community features have been shown to enhance user engagement, foster a sense of support, and encourage proactive mental health management. Developed using the System Development Life Cycle (SDLC) methodology, MindFullness is designed to be scalable, reliable, and accessible across various devices. It aims to serve as a supportive system that empowers students to understand and manage their mental health while fostering a sense of connection and community within the university environment.

1.2. Problem Statement

Mental health challenges have been increasingly recognized as a significant concern among university students as university years mark a challenging transition into adulthood, where untreated mental health issues can impact academic achievement, productivity, and social relationships (Hunt & Eisenberg, 2010). The pressures of adapting to a new environment create significant stress and students are often under immense pressure to excel in their studies, manage time effectively, and meet the expectations set by exams, assignments, and other academic commitments (Beiter et al., 2015). This constant strain can take a toll on students' mental health, potentially leading to anxiety, depression, stress and in extreme cases, suicidal thoughts or actions. In Malaysia, the rising number of suicide cases among university students has become a significant concern (Jusnani et al., 2020). For instance, several incidents have been covered by news outlets, including the tragic death of a female university student from Sarawak, who took her own life due to pressures from online classes. This highlights the alarming trend of suicides among university students, underscoring the urgent need for increased attention and support to address mental health issues in this group.

Although most campus counselling centres are generally equipped to provide mental health care, many are still under-resourced, lack personalization and effective engagement tools, face challenges in reaching students in need, and operate at full capacity for much of the academic year (Lattie et al., 2019). The rising prevalence of mental health issues, particularly among university students, underscores the urgent need for accessible and effective tools to assess and support their mental well-being. Unfortunately, existing systems often fall short by overlooking the importance of integrating clinical evaluation with peer support and accessible resources. Furthermore, many digital solutions lack essential features such as interactivity, modularity, and scalability, which significantly hinders user engagement and overall effectiveness. Hence, this project aims to address these gaps by developing a comprehensive, software-engineered solution that combines mental health assessments, a supportive community forum, and educational resources.

1.3. Scope

The system scope is designed exclusively for UNIMAS students, providing a mental health support platform tailored to their needs. The platform includes user registration, enabling secure login and personalized profile management. A key feature is the DASS-21 mental health

assessment tool, which offers insightful feedback based on user responses to help students understand their mental health status. The system also features a community forum that fosters engagement among students, allowing them to share experiences, seek peer support, and cultivate a sense of belonging and mutual assistance. Complementing this, an educational blogs section that offers insightful articles, practical tips, and valuable resources to promote mental health awareness and encourage effective self-care practices will be implemented.

Next, to ensure accessibility to professional support, the platform provides a helpline directory connecting users to external mental health resources and services. Administrators have access to an admin panel, allowing them to manage forum content, moderate discussions, and update blog posts to maintain a supportive and respectful environment. Furthermore, the platform will be fully responsive, ensuring a seamless and user-friendly experience across devices, including desktops, tablets, and smartphones. This tailored scope aims to address the unique mental health challenges faced by UNIMAS students while fostering a supportive and informed community.

1.4. Aims and Objectives

1. To design a platform that assesses students' mental health and provides them with relevant knowledge and support.
2. To develop a web-based system that can allow students to participate and engage in community forums for support.
3. To provide a list of mental health resources, such as blogs and helplines to offer users valuable information and support through external links.

1.5. Methodology

This system is developed using the Software Development Life Cycle (SDLC) and follows an Agile approach, specifically using the Scrum framework. Agile development is an approach to software development that emphasizes flexibility, adaptability, and iterative progress through short development cycles, continuous feedback, and team collaboration (Highsmith & Cockburn, 2001). It provides a dynamic and adaptable approach to software development, emphasizing iterative and incremental processes to enhance efficiency and adaptability in response to evolving requirements (Anwer et al., 2017). Within Agile, the Scrum framework is

used as it is particularly effective for managing complex projects. Scrum organizes development into "sprints" that include short, time-boxed cycles focused on completing specific, prioritized tasks. Each sprint includes planning, development, review, and retrospective phases, allowing for rapid feedback and continuous refinement of the system. This sprint-based structure supports frequent evaluations and adjustments, making it especially suitable for personal projects where evolving requirements and changes are common. Scrum's flexibility and adaptability thus support a responsive and refined development process, aligning well with the objectives of this project. Figure 1.1 below illustrates the development process using the Agile framework.

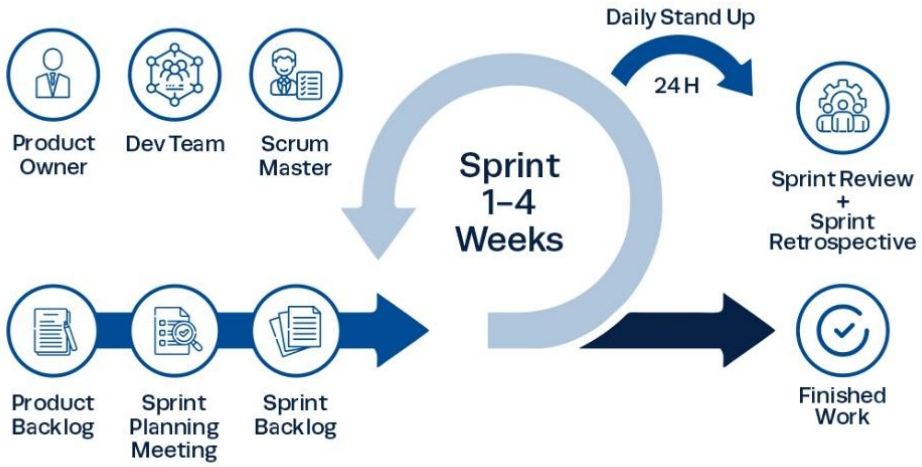

Figure 1.1: Scrum Process ("What is Scrum Methodology?", n.d.)

Outlined below are the steps for tailoring Scrum to suit this project.

1. Sprint Planning

Sprint Planning defines clear goals for each sprint, allowing the developer to focus on specific tasks from the Product Backlog. As a solo developer, this phase is essential for prioritizing tasks, breaking them into manageable steps, and ensuring alignment with overall project objectives. For instance, an initial sprint might focus on setting up the basic structure and user registration module, while later sprints could focus on assessment functionality, forum integration, or responsive design.

2. Daily Scrum

A brief daily check-in helps the developer review progress, identify any blockers, and plan the day's activities. This regular self-reflection fosters accountability keeps tasks on track and supports steady progress toward sprint goals.

3. Sprint Review

The Sprint Review allows the developer to assess completed tasks and confirm they meet project requirements. This step ensures alignment with user needs and project goals, maintaining quality and addressing any functional gaps. For this project, this review could involve testing newly developed features, such as the assessment tool's interface or the forum functionality, and ensuring they meet user needs.

4. Sprint Retrospective

In each Sprint Retrospective, the developer reflects on successes and areas for improvement. For example, if user feedback shows navigation challenges within the community forum, this phase would prompt adjustments to improve user flow. This practice helps identify recurring issues, reinforce effective strategies, and refine the workflow to improve efficiency in future sprints.

5. Sprint (Development Cycle)

The Sprint is the core development period in which planned tasks are completed to produce a working increment of the project. By focusing on one increment at a time, the developer can develop, test, and refine the project in stages, building a cohesive and well-structured final product.

1.6. Significance of Project

MindFullness: UNIMAS Mental Health Assessment & Support System provides university students with a crucial self-assessment tool, enabling them to gain insights into their mental health and recognize areas where they may need support or intervention. By using the DASS-21 assessment, the platform offers evidence-based feedback that empowers users to understand their current mental state, contributing to early detection and proactive mental health management (Lovibond & Lovibond, 1995). Additionally, the platform also includes a community forum that cultivates a sense of connection and belonging, which is essential for

enhancing mental well-being. For students dealing with mental health challenges, having a space to interact with peers provides a valuable support network where they can share their experiences, receive validation, and reduce feelings of isolation. Peer interactions in such forums can be particularly impactful, as students often find comfort in realizing they are not alone in their struggles. In this supportive environment, they can openly discuss their concerns, learn from others' insights, and seek guidance, which can collectively help in alleviating stigma and fostering resilience. Finally, the platform plays an educational role by promoting mental health literacy, providing users with accessible resources and content that improve their understanding of mental health issues. Increased mental health literacy helps students distinguish between typical stress and more serious mental health concerns, making them more likely to seek appropriate support. Digital interventions, especially those tailored for youth, have shown to be effective in improving mental health literacy and engagement (Lattie et al., 2019). By combining assessment, community forum, and mental health resources, this system aims to offer a comprehensive solution that encourages informed self-care and community-based support, ultimately contributing to better mental health outcomes for university students.

1.7. Project Schedule

The development of Mindfulness: UNIMAS Mental Health Assessment and Support System is scheduled as shown in Table 1.1 below, to ensure the system is developed in a structured and efficient manner, following the planned timeline.

Table 1.1: Project Schedule

Task	Start Date	End Date	Duration (Days)
Phase 1: Initial Phase	**10/10/2024**	**11/11/2024**	**32**
Define project requirements and objectives	10/10/2024	15/10/2024	5
Create project draft	15/10/2024	17/10/2024	2
Brief proposal	17/10/2024	23/10/2024	6
Final proposal	23/10/2024	11/11/2024	19

Phase 2: Planning Phase	**11/11/2024**	**13/12/2024**	**32**
Create project plan	11/11/2024	15/11/2024	4
Conduct research and deep requirements analysis	15/11/2024	30/11/2024	15
Create comprehensive project plan	30/11/2024	13/12/2024	13
Phase 3: Design and Architecture Phase	**13/12/2024**	**5/1/2025**	**23**
Design system architecture	13/12/2024	16/12/2024	3
Design and develop prototype in figma	16/12/2024	27/12/2024	11
Gain design approval from supervisor	27/12/2024	30/12/2024	3
Final submission for final report and paper	30/12/2024	5/1/2025	6
Phase 4: System Development and Testing Phase	**10/1/2025**	**30/4/2025**	**110**
Start code development	10/1/2025	20/4/2025	100
Develop user interface and design	10/1/2025	20/4/2025	100
Conduct code reviews and testing	10/1/2025	20/4/2025	100
Identify and resolves issues	20/4/2025	30/4/2025	10
Phase 5: Optimization and Feedback Phase	**1/5/2025**	**14/7/2025**	**74**
FYP2 full report	1/5/2025	30/6/2025	60

Preparation for symposium	30/6/2025	4/7/2025	4
Gain feedback from end users	4/7/2025	5/7/2025	1
Make any necessary adjustments	5/7/2025	14/7/2025	9
Phase 6: Project Closure	**14/7/2025**	**18/7/2025**	**4**
Document project outcomes and reflection	14/7/2025	16/7/2025	2
Conduct final review and evaluation	16/7/2025	18/7/2025	2

1.8. Expected Outcomes

After the successful implementation of the MindFullness: UNIMAS Mental Health Assessment and Support System, the university community is anticipated to benefit from various advantages. One of the primary goals of the platform is to offer students a mental health evaluation that allows them to assess their mental well-being. Through a user-friendly interface, the mental health assessment tool will guide students through a series of questions, such as those in the DASS-21, which will provide insights into their emotional state. This assessment not only gives students a clearer understanding of their mental health but also helps identify areas where they might need additional support. The results will serve as a starting point for personal reflection or conversations with mental health professionals, enabling early intervention and better management of mental health challenges.

Another key outcome is fostering a sense of community through a dedicated forum within the platform. This forum will allow students to engage with peers who may share similar experiences, creating an environment where they can seek advice, provide support, and feel validated. By engaging in discussions, sharing personal experiences, and offering encouragement, students will build connections that contribute to a supportive network that enhances their mental health journey. The platform will also contribute to raising mental health awareness by providing students with easy access to educational resources and external links to reliable mental health services. Through informative articles, videos, and self-help tools, users will gain a deeper understanding of mental health issues, helping to break down

misconceptions and stigma. Additionally, by offering direct access to professional mental health services and hotlines, students will be empowered to take the next steps in seeking help. This outcome ensures that mental health literacy is improved, and users feel confident in seeking help, when necessary, thus promoting overall well-being. These expected outcomes work in tandem to create a holistic and supportive environment, making it easier for university students to understand, manage, and improve their mental health.

1.9. Summary

In summary, Chapter 1 introduces the MindFullness: UNIMAS Mental Health Assessment & Support System, developed to address the growing mental health challenges faced by university students, often exacerbated by limited mental health literacy and insufficient support resources. Motivated by personal and observed experiences of silent struggles, the project aims to provide an accessible, stigma-free platform combining self-assessment tools, peer support forums, and educational resources tailored specifically for UNIMAS students. The chapter outlines the problem statement emphasizing the increasing mental health issues and gaps in existing campus services, defines the system scope, and details the use of the Agile Scrum framework within the Software Development Life Cycle for iterative and flexible development.

Chapter 2: Literature Review

2.1. Chapter Overview

Modern life has become increasingly demanding and complex due to rapid urbanization and globalization, leading to a range of psychological and social challenges for individuals, particularly university students (Arifin et al., 2023). These challenges have led to an alarming rise in mental health issues within this demographic, emphasizing the critical need for effective support mechanisms. Subsequently, digital platforms and online interventions have emerged as practical solutions for providing mental health support, especially for those who are hesitant to seek in-person help. This chapter presents a detailed literature review concerning the MindFullness: UNIMAS Mental Health Assessment and Support System project. The primary objective is to explore existing research and systems, analysing their functionalities, methodologies, and effectiveness in addressing mental health challenges. By evaluating the strengths and limitations of these systems, this project seeks to integrate best practices while overcoming gaps in current solutions. The review will also provide insights into various approaches to mental health assessment and support tools, including their ability to offer scalable, inclusive, and user-friendly solutions. Ultimately, these findings will assist the design and development of the proposed system, ensuring it meets the unique needs of its target audience while aligning with best practices in digital mental health support.

2.2.Background Study

Universities are increasingly adopting digital mental health platforms to provide accessible and user-friendly resources for students. These tools are especially effective in addressing mental health challenges such as anxiety and depression. Additionally, systematic reviews like those conducted by Lattie et al. (2019), demonstrate the effectiveness of digital mental health interventions in reducing symptoms of anxiety and depression. It is also found that mental health websites offer an important solution for students in remote areas or with limited availability to traditional in-person services. Their 24/7 accessibility makes them a flexible option, particularly to those who are facing time constraints during regular business hours. These platforms cater to diverse needs by integrating various features such as mental health assessments, coping strategies, educational materials, and direct access to helplines or local mental health professionals. By providing a holistic approach to mental health care, such

websites bridge gaps in traditional services, empowering students to take proactive steps toward better mental well-being.

One prominent feature of mental health platforms is the inclusion of self-assessment tools, such as the DASS test. The DASS consists of two versions: DASS-21 and DASS-42. For this project, the DASS-21 will be employed. The DASS-21 is a structured psychological tool designed to measure the severity of symptoms related to depression, anxiety, and stress. The DASS-21 consists of three scales which include Depression, Anxiety, and Stress where each with 7 items grouped by related themes. The Depression scale evaluates feelings such as hopelessness, low self-worth, lack of interest, reduced pleasure (anhedonia), and fatigue. The Anxiety scale measures physical symptoms like autonomic arousal, muscle tension, situational fear, and subjective anxiety. The Stress scale detects chronic general arousal, including difficulty relaxing, nervousness, irritability, overreaction, and impatience. Scores for each scale are obtained by summing the corresponding items. Users will respond to a series of questions using a rating scale, which is structured as follows: 0 represents "Did not apply to me at all," 1 denotes "Applied to me to some degree or some of the time," 2 indicates "Applied to me to a considerable degree or a good part of the time," and 3 signifies "Applied to me very much or most of the time." This scale allows participants to assess the relevance of each statement based on their personal experience. These tools allow individuals to confidentially evaluate their psychological well-being, enabling them to monitor patterns or changes in their mental health over time. Integrating such tools into mental health platforms encourages users to recognize early warning signs of mental health concerns. This approach not only facilitates timely interventions but also supports personal growth and well-being. Research by Lovibond & Lovibond (1995) emphasizes that providing users with accessible and structured self-assessment tools fosters a sense of awareness and early detection, contributing to improved mental health outcomes. The set of the DASS-21 test questions will be provided in Appendix A for reference.

In addition to self-assessment tools, mental health platforms often feature community forums that create safe, inclusive spaces for users to share experiences, seek guidance, and connect with others who are facing similar challenges. Prior studies underscore the importance of individuals feeling connected and experiencing a sense of belonging within a group. This sense of connection supports emotional well-being and serves as a foundation for mental health management. Community forums also enable participants to exchange personal experiences, which can reduce the feelings of isolation and foster mutual understanding (Naslund et al.,

2016). For university students, online forums can serve as an avenue for discussing academic stress, social challenges, and mental health concerns. This peer-driven interaction has been shown to improve coping mechanisms and emotional resilience, especially for individuals hesitant to seek formal counselling (Rickwood et al., 2015). By fostering a supportive environment, such platforms contribute to the broader mission of reducing stigma and promoting mental health awareness.

Providing external links to mental health articles, research, and helplines is another crucial feature of mental health websites. These links act as a bridge to reliable information, empowering users with knowledge about various mental health conditions, coping strategies, and available treatments (World Health Organization, 2021). For instance, access to articles on stress management can help users implement positive changes in their daily lives. Additionally, integrating direct links to helplines ensures that users in crisis can access immediate professional assistance. Many platforms provide links to national suicide prevention hotlines or mental health organizations, catering to both general and region-specific needs. This feature addresses the gap for users who require urgent help but are unaware of where to seek it.

Hence, MindFullness: UNIMAS Mental Health Assessment and Support System emerges as a comprehensive solution addressing the growing need for accessible and effective mental health support among university students. By incorporating features such as self-assessment tools like the DASS-21, community forums for peer support, and external resources such as articles and helpline directories, the system bridges the gap between students and vital mental health resources. It ensures 24/7 accessibility, fostering a proactive approach to mental health management. This platform not only helps students monitor their well-being but also encourages timely interventions, reducing barriers like geographical constraints or stigma associated with seeking help.

2.3.Review on Existing System

This section examines and compares three existing mental health support systems that include Mental Health Information & Research Centre (MaHIR Centre) IIUM, UTM Counselling Centre (Universiti Teknologi Malaysia), and Monash University Malaysia Counselling and Psychological Services (CAPS). Each system has been evaluated through

direct interaction and exploration of their respective platforms to understand their functionalities and user experience.

These evaluations focus on identifying the strengths and limitations of each system, particularly in areas such as accessibility and functionalities, features offered, and user-friendliness. The findings are then compared with the proposed system, MindFullness: UNIMAS Mental Health Assessment and Support System, to highlight similarities, differences, and areas for improvement. The results of this analysis are presented in a comparative table, providing a clear overview of how the proposed system aims to address gaps in existing solutions while building on their strengths.

2.3.1. Mental Health Information & Research Centre (MaHIR Centre) IIUM

The Mental Health Information & Research Centre (MaHIR Centre) IIUM, a collaboration between the Department of Psychiatry at IIUM and Hospital Tengku Ampuan Afzan, provides a platform for psychiatric research and mental health education. Its aim is to support both researchers and patients by offering resources such as questionnaires and publications, while fostering a research culture in psychiatry. Following an in-depth analysis and observation of this system, its features and functionalities reveal significant alignment with the proposed system's objectives. While certain aspects of the system provide valuable insights and serve as a strong reference point for development, there are specific areas that could benefit from improvement. This evaluation will examine the system's strengths and limitations to highlight its potential as a guiding framework and identify opportunities for enhancement.

The homepage of this system can be seen in Figure 2.1 and as illustrated in Figure 2.2, one of the platform's key features is its variety of self-assessment tools, including the DASS-21, which is available in both English and Malay. This bilingual functionality significantly enhances its accessibility, catering to a broader and more diverse audience. However, for the purposes of this evaluation, the focus will primarily be on the DASS self-assessment tool. The multilingual implementation of the DASS test and the inclusion of optional demographic inputs reflect the platform's commitment to inclusivity and adaptability, catering to a wide range of users. As depicted in Figure 2.3, the platform prompts users to provide specific details, such as gender, age group, marital status, race, occupation, and education level, before initiating the test. Collecting demographic information helps in understanding mental health patterns among different population groups such as analysing how stress levels differ across age groups or

occupations. This feature highlights the platform's thoughtful design in addressing the diverse needs of its audience while also contributing to a broader understanding of mental health demographics.

Next, Figure 2.4 shows that the test questions in the system are visually enhanced by using a color-coded response system, where each answer option is distinguished by a different colour. This colour differentiation not only makes the interface more visually appealing but also contributes to the user-friendly nature of the platform. From HCI perspective, colour coding serves several key purposes such as it helps to organize information visually, guides the user's attention, and provides clear feedback, all of which are essential for creating an intuitive and efficient interaction (Nielsen & Budiu, 2013). On top of that, colour coding in this context supports the concept of cognitive load reduction, a key principle in HCI that suggests interfaces should minimize the mental effort required to complete a task (Sweller, 2011). By using distinct colours for each response option, the system enables users to quickly and easily differentiate between choices, streamlining decision-making and improving task completion speed. This feature aligns with best practices in user experience (UX) design, which emphasizes intuitive navigation and accessibility. The integration of color-coded responses in the DASS-21 test not only adheres to established HCI principles but also contributes significantly to the system's usability, accessibility, and user engagement, ultimately leading to a more positive and efficient experience for users.

Moving on, as shown in Figure 2.6, and Figure 2.7 the website features a blog section that shares educational resources and videos on mental health topics. This section is enriched by a comment feature like shown in Figure 2.8, allowing users to engage in discussions, share opinions, or seek advice. This combination of blogs and comments creates an informal community forum where users can seek advice, connect and support each other through shared experiences and insights. From a psychological perspective, forums like these can help reduce the feelings of isolation and increase emotional well-being by creating an environment where individuals feel heard and supported (Naslund et al., 2016).

After reviewing the MaHIR Centre IIUM, this platform effectively integrates self-assessments, educational resources, and community engagement into one platform. Its focus on accessibility and user interaction makes it a valuable tool for university students seeking mental health support. However, improvements in external resource offerings such as helplines and more robust community features could significantly enhance its impact. Thus, the platform

serves as a useful model for similar initiatives, including the proposed MindFullness: UNIMAS Mental Health Assessment and Support System, which aims to address these gaps while building upon the strengths of IIUM's system.

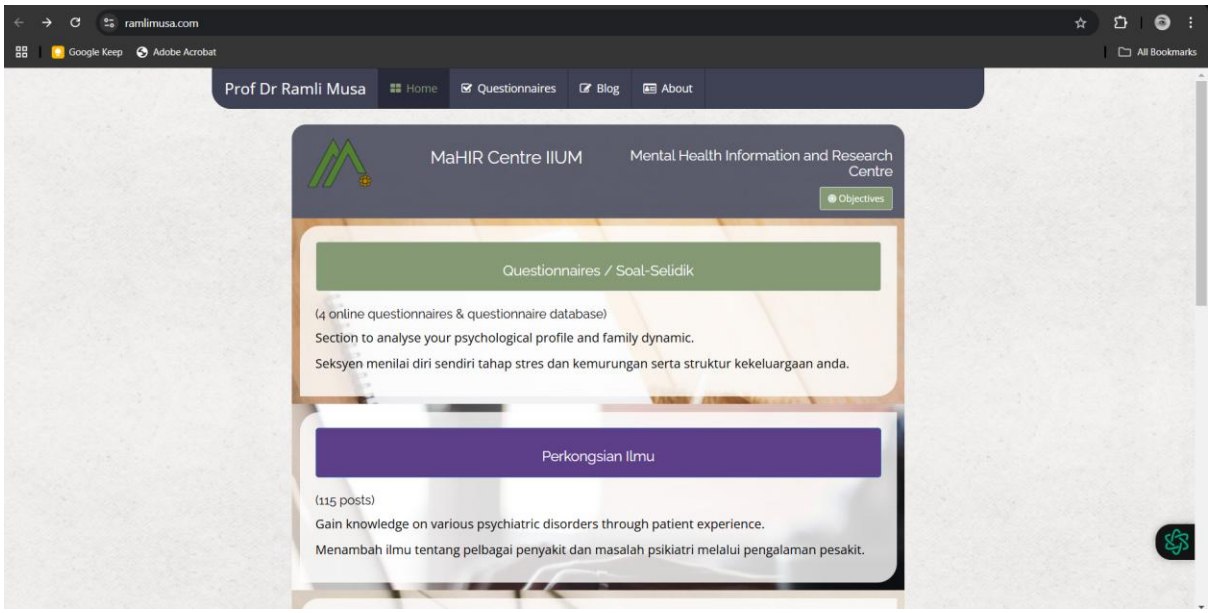

Figure 2.1: Homepage for MaHIR Centre IIUM

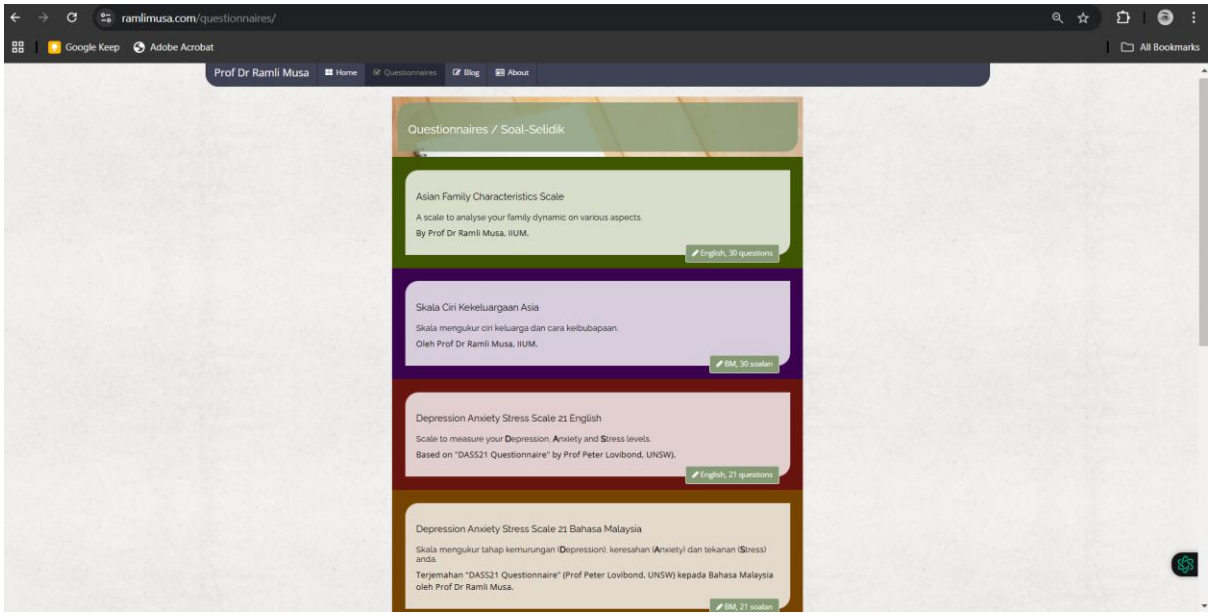

Figure 2.2: List of Questionnaires Section for MaHIR Centre IIUM.

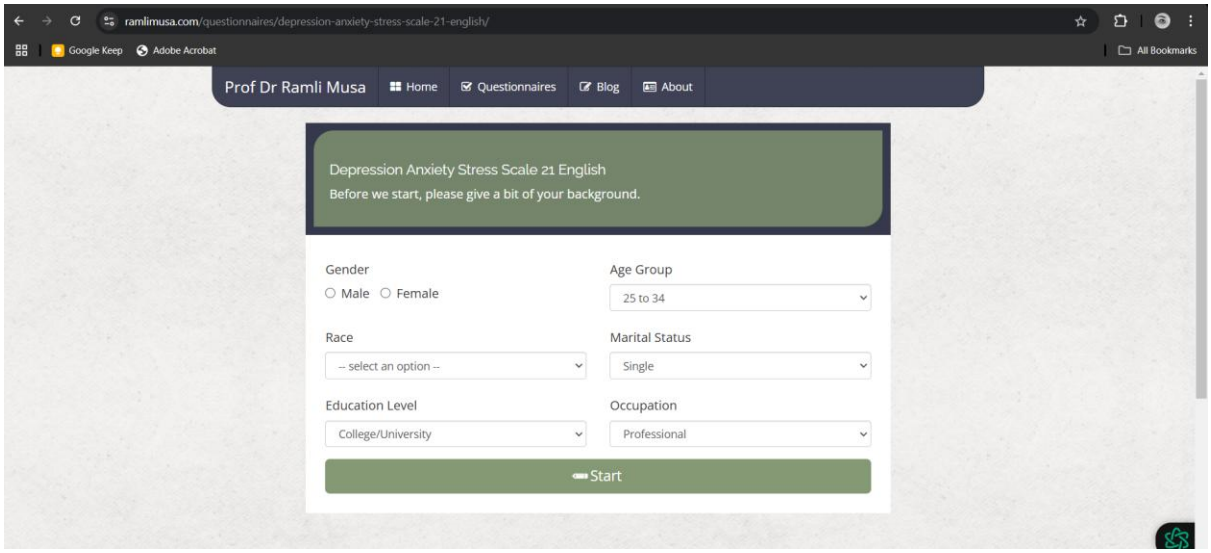

Figure 2.3: User Information Collection Before Starting DASS-21 Assessment.

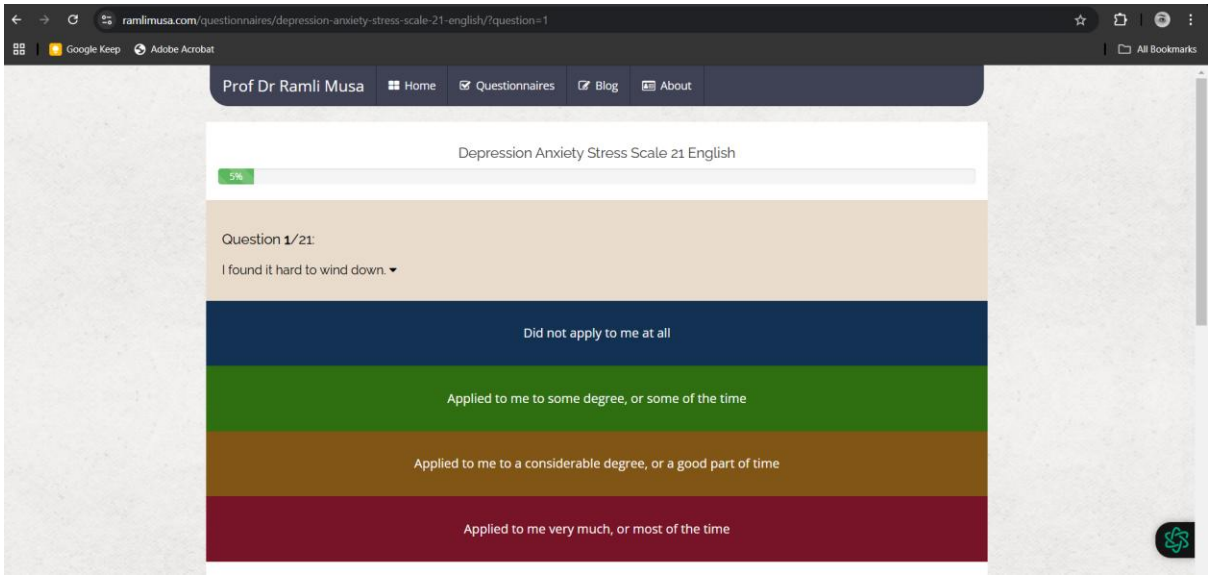

Figure 2.4: DASS-21 Assessment for MaHIR Centre IIUM.

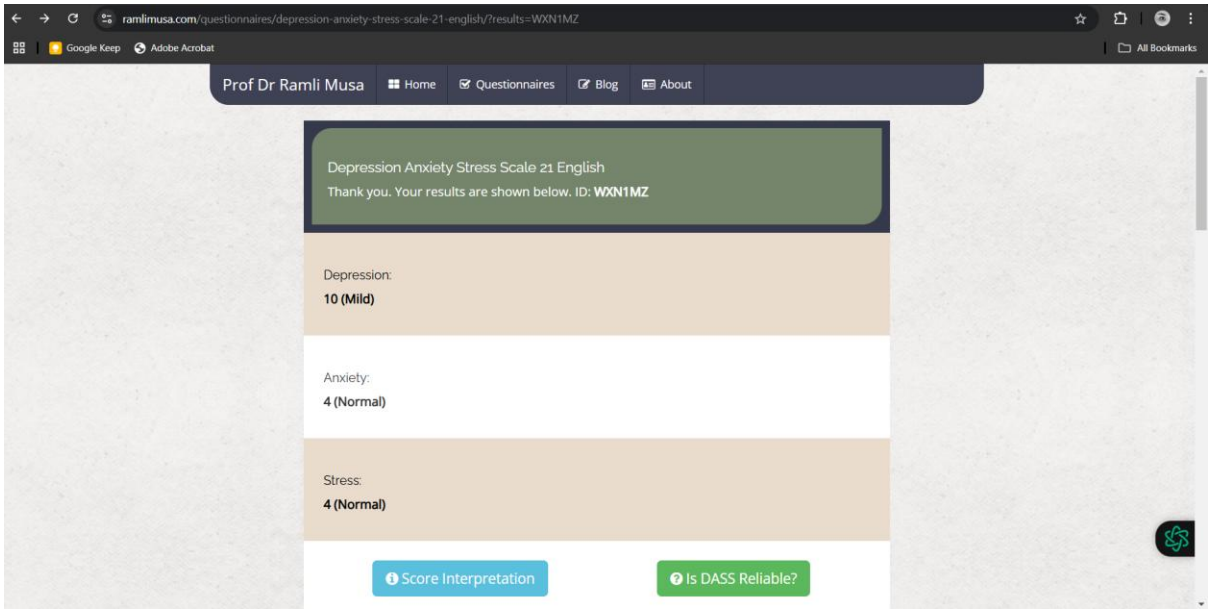

Figure 2.5: Result of DASS-21 Assessment for MaHIR Centre IIUM.

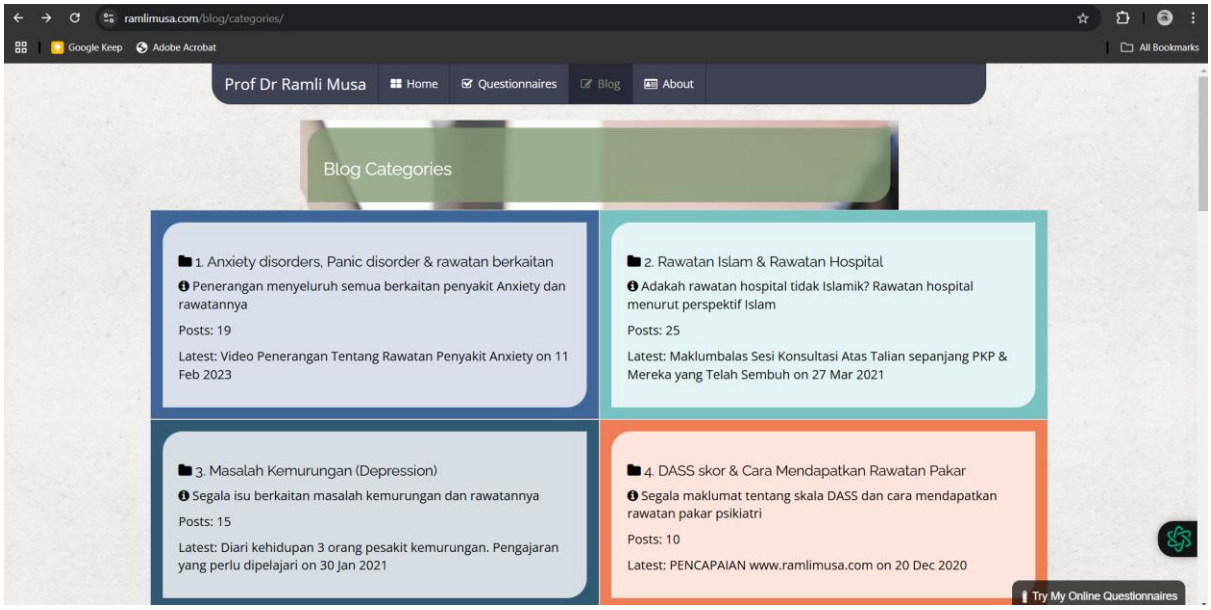

Figure 2.6: Educational Blogs Section for MaHIR Centre IIUM.

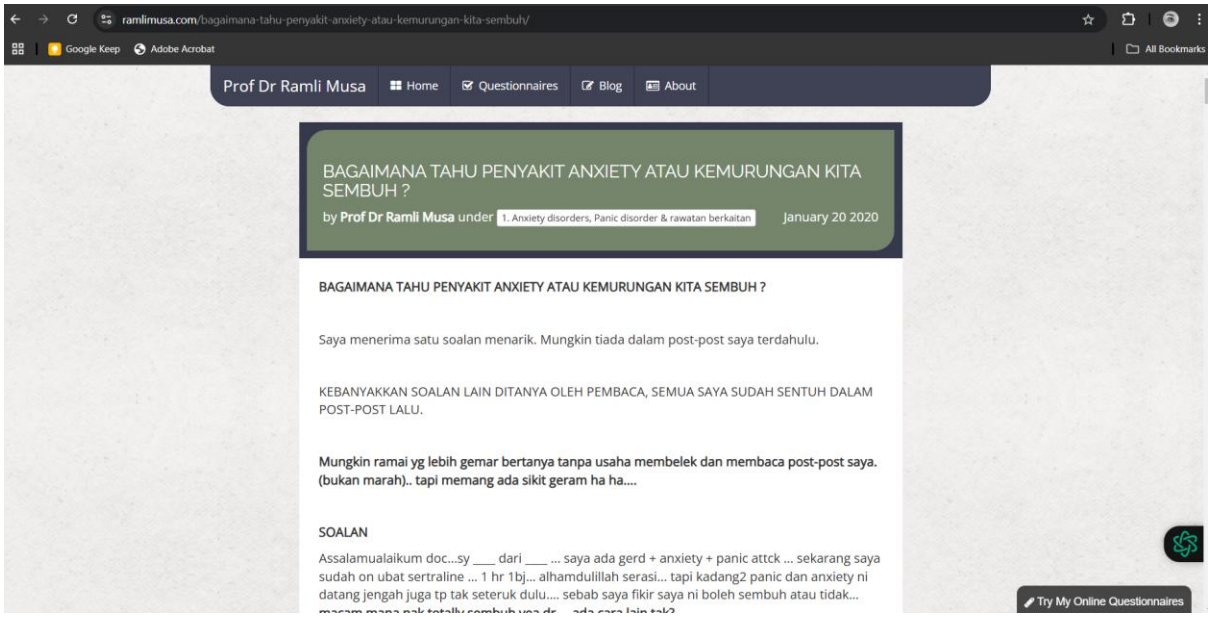

Figure 2.7: Educational Blogs Post for for MaHIR Centre IIUM.

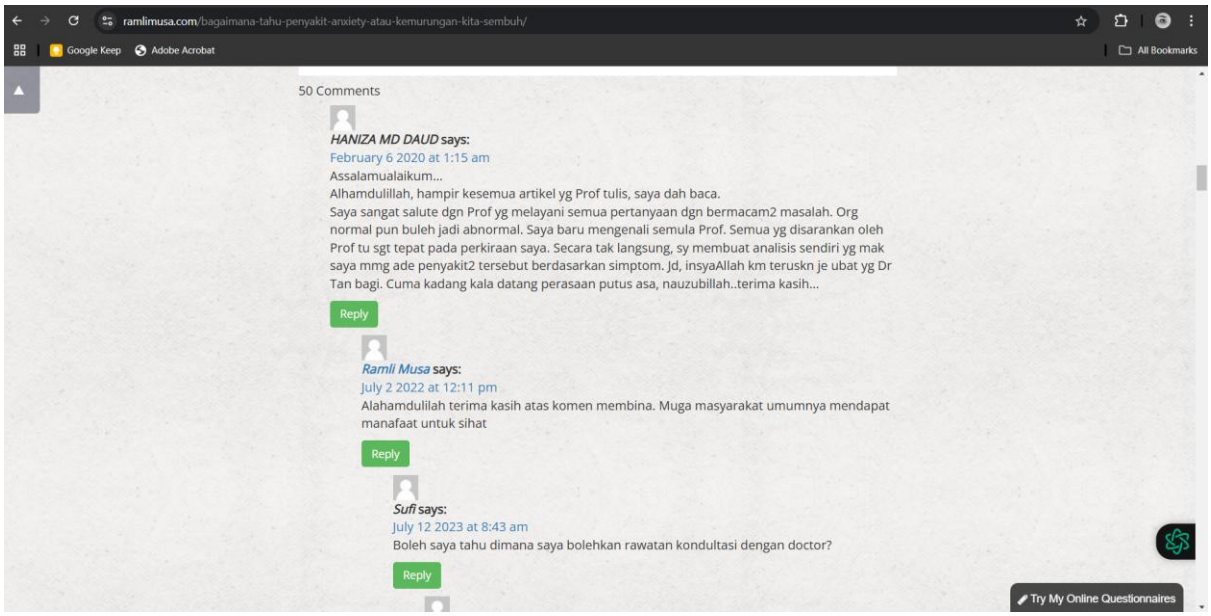

Figure 2.8: Comment Section in Blog Post for MaHIR Centre IIUM.

2.3.2. Universiti Teknologi Malaysia (UTM) - The Counseling Center

The UTM Counselling Centre website primarily targets the UTM student and staff community, providing psychological and counselling services. It emphasizes personal growth, quality of life improvement, and addressing individual or family challenges. The platform aims to achieve these goals through various tools and resources. As shown in Figure 2.9, UTM

Counselling Centre's homepage offers four key options: Forms/Downloads, Tips and Guidance, Online System, and Gallery.

Selecting the "Online System" will redirects users to a page (Figure 2.10) where they can book counselling appointments and access self-assessment tools, including the DASS-21 test. It was observed that the DASS-21 test is administered through Google Forms, as illustrated in Figure 2.11. The form is divided into two sections: Section A (shown in Figure 2.12) and Section B (shown in Figure 2.13). Before commencing the assessment, users are required to provide detailed demographic information, including their name, matriculation or staff ID, phone number, and faculty affiliation in section A. This approach highlights the platform's primary focus on catering to UTM's internal community, emphasizing localized engagement and tailored support for its members. While functional, this approach lacks the seamless integration found in dedicated system interfaces. The use of Google Forms may diminish the platform's engagement and user-friendliness compared to systems specifically designed for mental health assessments. From a HCI perspective, effective platforms prioritize cohesive, visually appealing, and user-friendly interfaces that enhance both accessibility and engagement (Norman, 2013). By adopting these principles, the platform can more effectively reach and support its target audience, particularly individuals facing mental health challenges.

Next, "Tips and Guidance" section hosts mental health blogs and articles but exhibits low user engagement and updates, with most comment sections showing "0" interactions. As illustrated in Figure 2.14, the section features a minimalist and straightforward design. While this approach ensures functionality, it could benefit significantly from enhancements inspired by HCI principles. This lack of participation may stem from outdated content and design limitations. Thus, improvements such as intuitive navigation, visually appealing elements, and dynamic features could foster engagement, making the platform more interactive and appealing to users (Norman, 2013).

After a thorough evaluation of the UTM Counselling Centre platform, several areas for improvement have been identified. These findings offer essential guidance for shaping the development of the proposed system. By analysing the platform's strengths such as its focus on localized community support and addressing its limitations, including outdated content and limited interactivity, the proposed system can leverage best practices and innovative design to deliver a more robust, engaging, and user-centric experience. Incorporating these

improvements will ensure the proposed system effectively addresses the diverse needs of its target audience while aligning with the project's objectives.

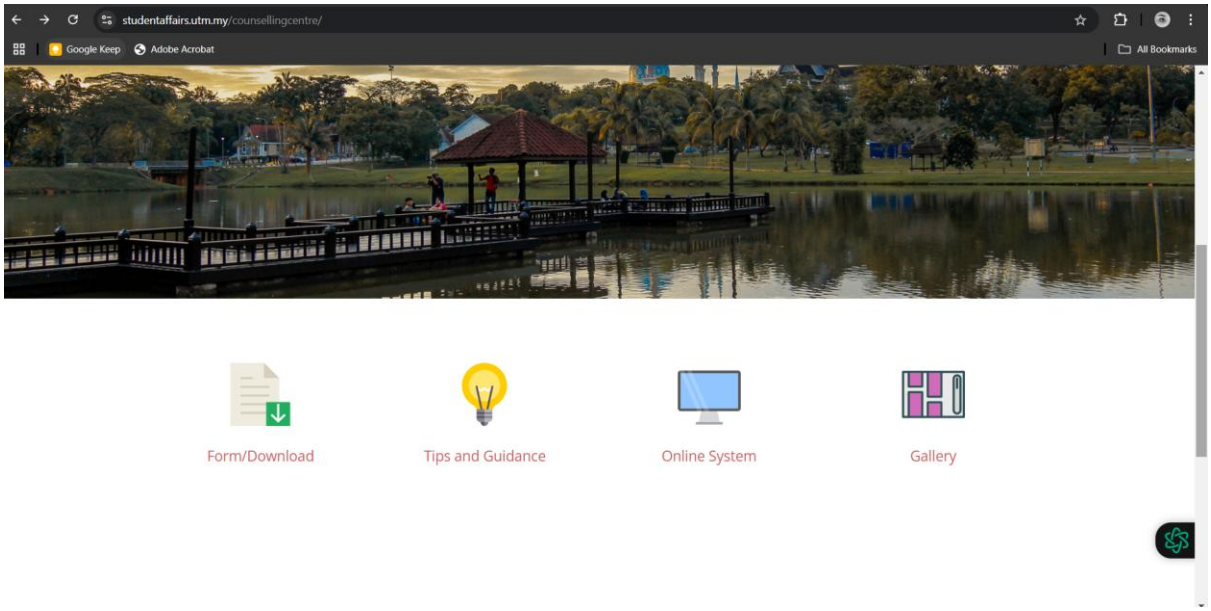

Figure 2.9: Homepage for UTM Counselling Centre website.

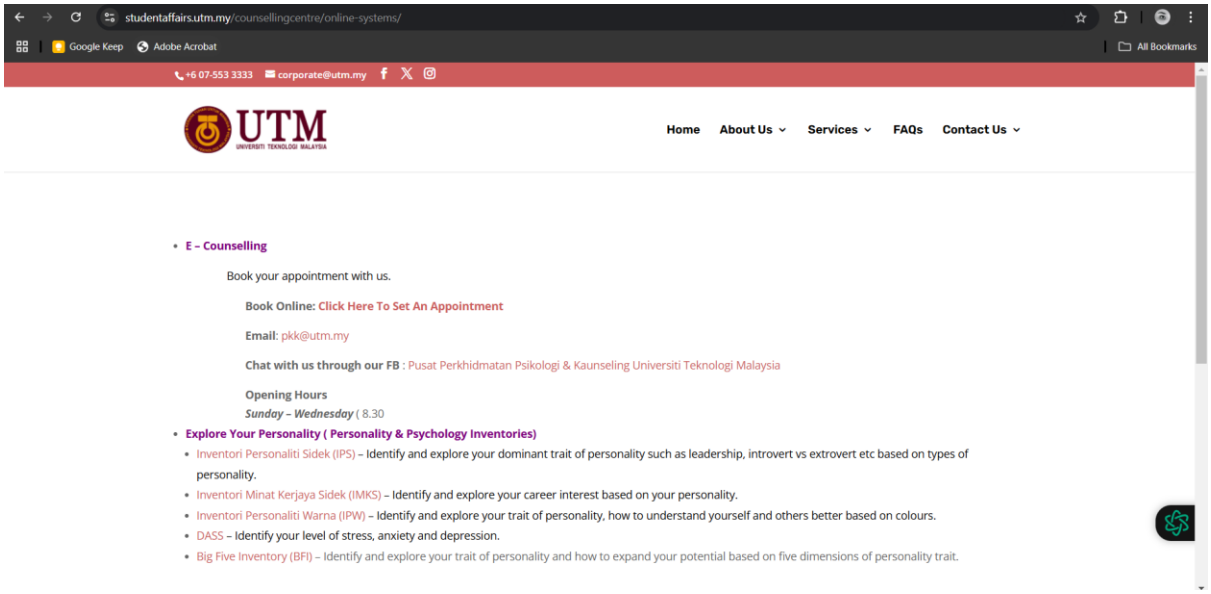

Figure 2.10: List of Self-Assessment Tools for UTM Counselling Centre website.

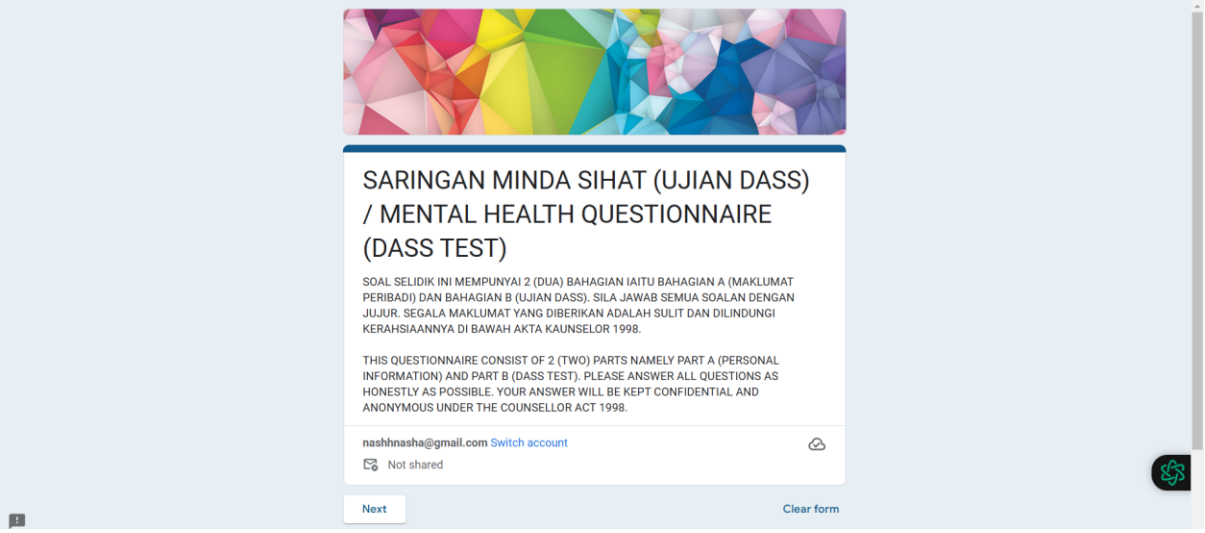

Figure 2.11: Google Form for DASS-21 Assessment.

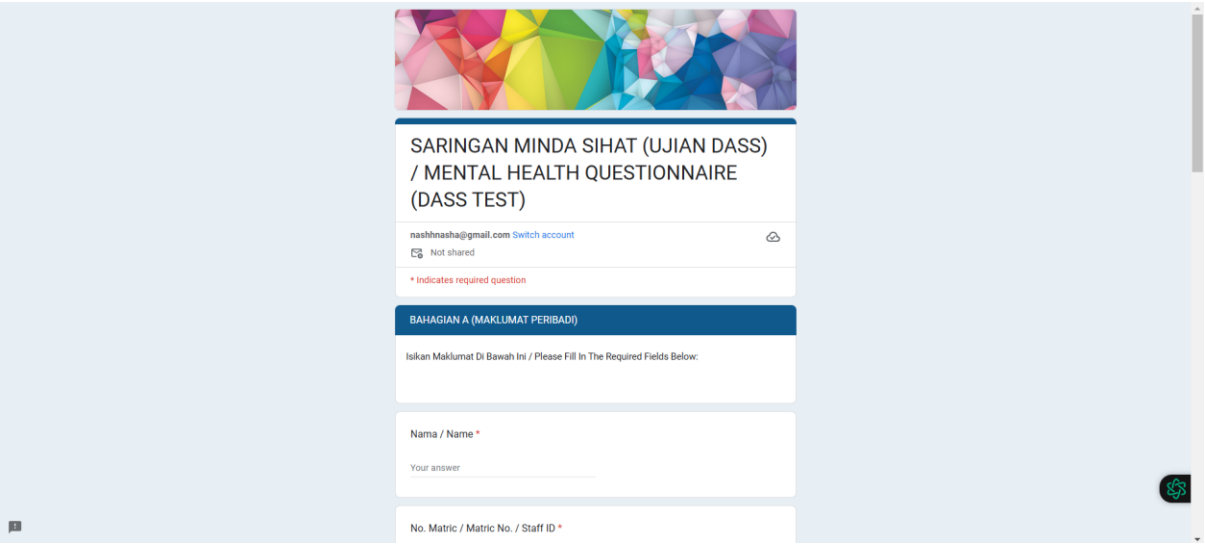

Figure 2.12: User Information Section in Google Form for DASS-21 Assessment.

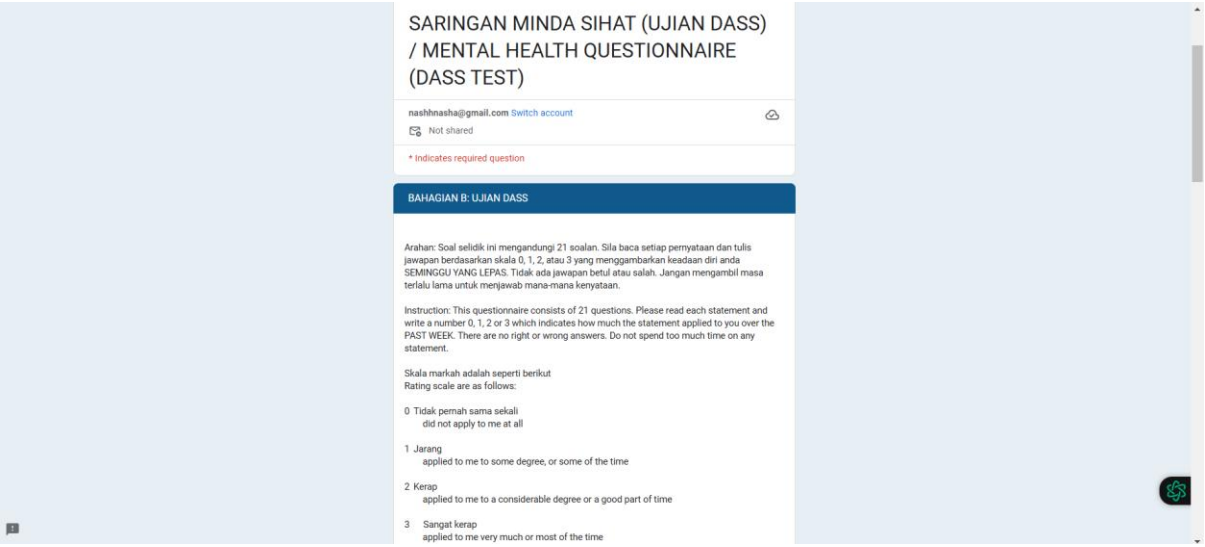

Figure 2.13: Assessment Questions Section in Google Form for DASS-21.

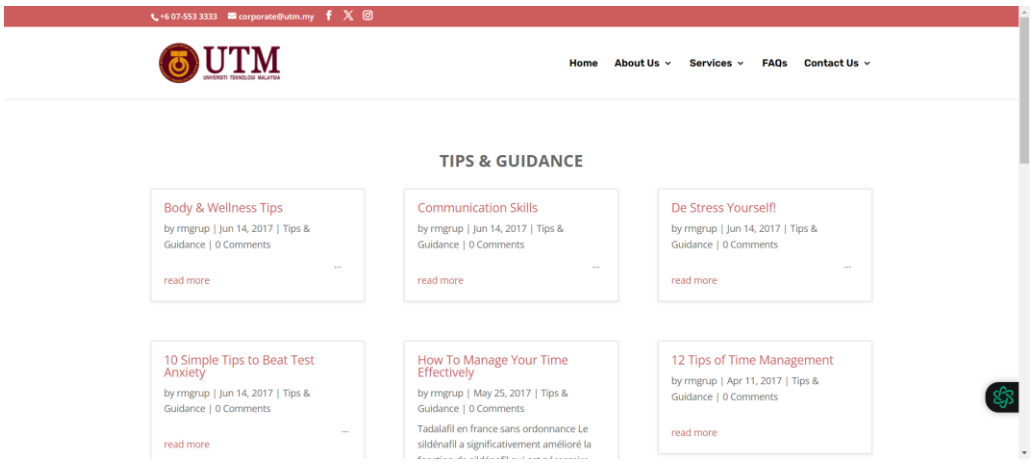

Figure 2.14: Tips and Guidance Blogs for UTM Counselling Centre website.

2.3.3. Monash University Malaysia Counselling and Psychological Services (CAPS)

The Monash University Malaysia Counselling and Psychological Services (CAPS) platform provides comprehensive mental health support services for students, focusing on confidentiality and accessibility. As shown in Figure 2.15, the service includes personalized support through peer student supporters, which is a unique feature of the platform. By offering a list of available peer supporters, the system allows users to directly contact their peers for assistance. This peer-to-peer support model can significantly reduce the stigma associated with seeking professional help and provides students with a relatable, empathetic support network.

Users can simply click on a peer's name to view their persona and contact details, making it easier to reach out for support like shown in Figure 2.16.

Next, the platform features a range of self-help resources, including educational articles under the "Self-Help Resources" section as shown in Figure 2.18. These resources, which cover various short articles related to academics and self-growth, are essential for empowering students with knowledge to manage their well-being. However, the platform lacks a self-assessment tool, such as the DASS, which is a cornerstone of the proposed Mindfulness: UNIMAS Mental Health Assessment and Support System. Incorporating the DASS assessment aligns with one of the main objectives of this project, offering users a structured and reliable means of evaluating their mental health status.

While the CAPS platform offers peer support and self-growth educational resources, which are beneficial in fostering a supportive community environment and mental health literacy, the inclusion of a diagnostic tool like DASS would significantly elevate the platform's ability to address the varied mental health needs of users. Incorporating available self-assessment tools alongside peer support and educational contents could enhance the accessibility, responsiveness, and overall effectiveness of the mental health platforms for university students (Andersson et al., 2014). Overall, the CAPS platform offers valuable insights through its educational articles for self-growth and its peer support network, which connects students with trained volunteers providing emotional support.

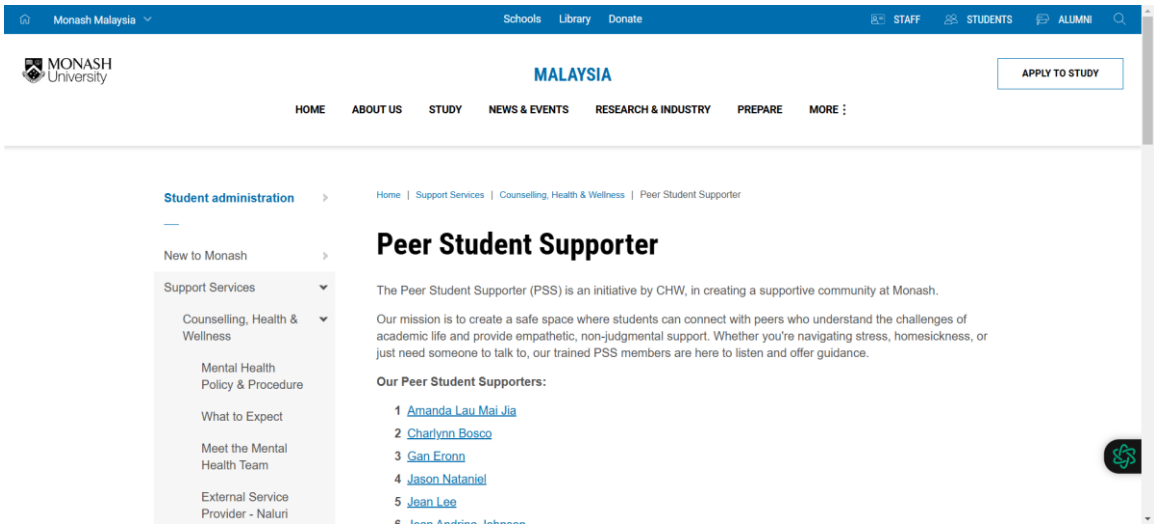

Figure 2.15: List of Peer Student Supporters Available for CAPS.

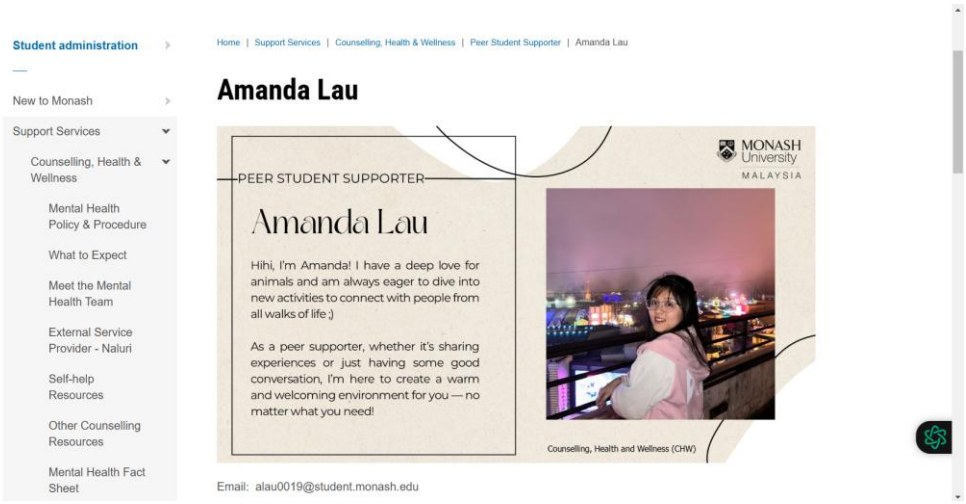

Figure 2.16: Example of Available Student Supporters for CAPS.

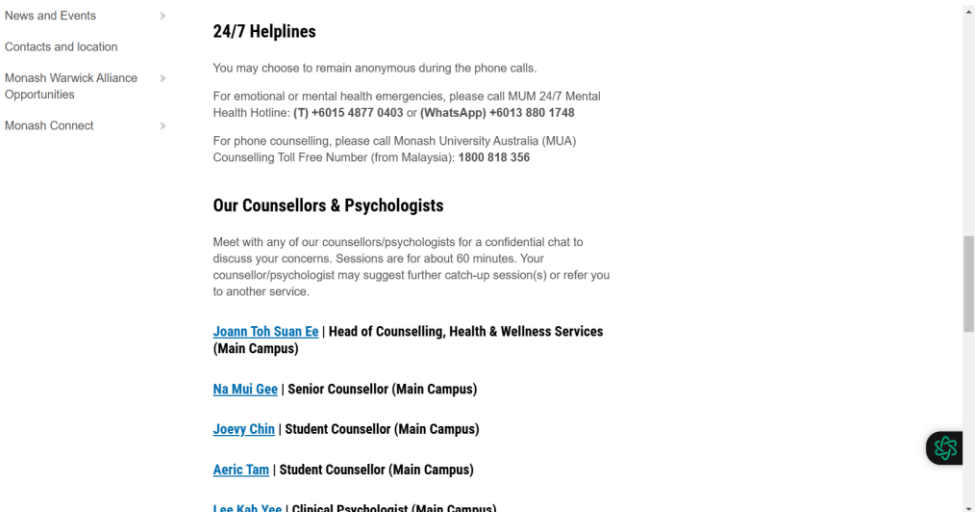

Figure 2.17: List of Internal Helplines for CAPS.

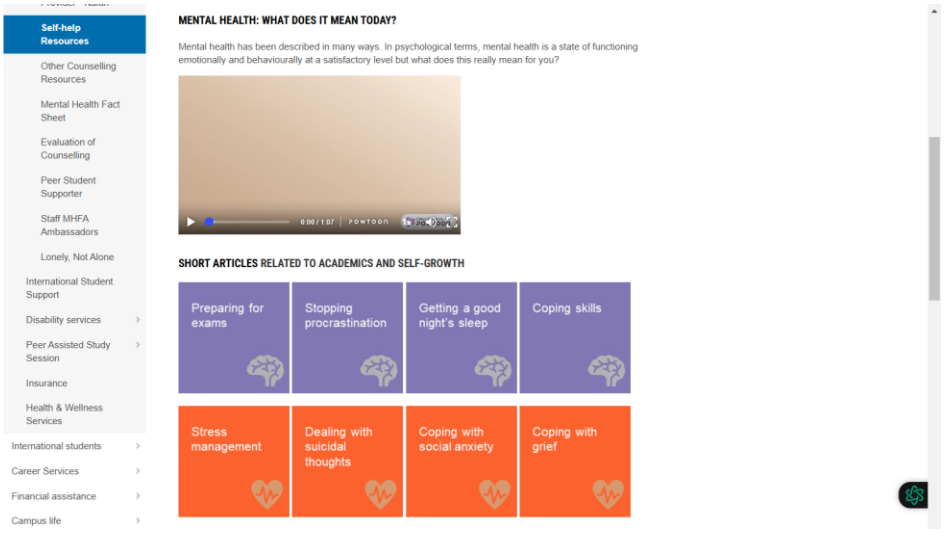

Figure 2.18: List of Short Articles Related to Academic and Self-Growth for CAPS.

2.4. Comparison between Existing System and Proposed System

Table 2.1 below presents a comparison between existing systems and the proposed system. It serves to highlight the strengths and limitations of current solutions while demonstrating how the proposed system addresses identified gaps and offers enhanced features to better meet user needs.

Table 2.1: Comparison between Existing System and Proposed System

Features	**Existing System**			**Proposed System**
	MaHIR Centre IIUM	**UTM Counselling Centre**	**CAPS Monash**	
DASS-21 Self-Assessment Test	✓	✓ (Via google form	✗	✓
Community Forum for User Interaction and Support	✓	N/A	✗	✓
Educational Blogs and Articles	✓	N/A	✓	✓

Mental Health Helplines Integration	✗	✗	✓ (Internal Only	✓
Mobile-Responsive Design	✓	✓	✓	✓

***Notes: N/A means that the features cannot be found or unclear.**

After reviewing and comparing the existing systems with the proposed system in Table 2.1, the proposed system addresses the limitations of current platforms while introducing innovative features to enhance mental health support, engagement, and user satisfaction. The proposed system improves upon the strengths of the MaHIR Centre, UTM Counselling Centre, and CAPS Monash by integrating essential elements like the DASS-21 self-assessment tool, a community forum for peer support, external helplines, and resources for educational materials. These additions aim to provide a more holistic and effective approach to mental health care for university students.

One significant advancement is the seamless integration of the DASS-21 self-assessment tool. While MaHIR Centre and UTM Counselling Centre include this feature, UTM relies on a Google Form format, which lacks interactivity and engagement. CAPS Monash does not offer such a tool. The proposed system aims to incorporate this assessment directly within its interface, providing immediate, detailed feedback to users in a user-friendly environment. This approach aligns with research emphasizing the importance of integrated digital tools for early mental health intervention (Andersson et al., 2014).

Educational blogs and articles are another critical component. Existing platforms like MaHIR Centre, UTM Counselling Centre and CAPS Monash provide resources but suffer from outdated content and low engagement. The proposed system ensures regular updates with visually appealing and interactive content to engage users effectively. This enhancement leverages HCI principles, making information more accessible and engaging (Norman, 2013). Furthermore, the proposed system will integrate a comprehensive directory of mental health helplines, catering to diverse user needs. Unlike CAPS Monash, which only provides internal helplines, this system ensures broader access to professional support during crises, reflecting the importance of accessible emergency resources (Rickwood et al., 2007).

Overall, the proposed system combines advanced technology and user-centred design to provide comprehensive mental health support. By addressing the gaps in existing systems, it offers a more engaging, accessible, and effective platform for promoting mental well-being among university students. These innovations ensure the proposed system meets its objectives of supporting mental health more comprehensively.

2.5. Summary

In summary, this chapter highlights how the proposed system addresses the limitations of existing platforms like MaHIR Centre, UTM Counselling Centre, and CAPS Monash by introducing key enhancements to improve mental health support for university students. Notably, it integrates an interactive DASS-21 self-assessment tool directly within the platform, providing immediate and personalized feedback, an improvement over less engaging formats currently used. The system also offers regularly updated, engaging educational content designed with human-computer interaction principles to boost user involvement. Additionally, it features a comprehensive directory of external helplines, ensuring wider access to professional crisis support compared to the limited resources offered by existing systems. By combining these innovations with a user-centered design, the proposed system delivers a more holistic, accessible, and effective mental health support solution that better meets student needs.

Chapter 3: Requirement Analysis and Design

3.1. Chapter Overview

This chapter discusses the development methodology for the system, which follows the Software Development Life Cycle (SDLC) with an Agile approach, using Scrum as the framework. Agile methodologies are known for their flexibility and iterative cycles, making them ideal for managing complex projects that require continuous improvement (Pressman, 2019). Next, scrum structures work into time-boxed sprints, which help prioritize tasks and encourage regular feedback (Schwaber & Sutherland, 2020). This chapter also covers the methods used to gather system requirements, including a questionnaire survey conducted with students from different faculties at UNIMAS. Additionally, it highlights the use of modeling tools, such as use case, sequence and activity diagrams, to ensure the system meets both user needs and scalability requirements.

3.2. Overall Methodology

Chapter 3 outlines the specific methodology employed in developing the system, which follows the Agile principles and utilizes Scrum as the development framework. As mentioned earlier, scrum structures the project into iterative sprints, each lasting a predefined period, during which the team focuses on completing prioritized tasks. This approach enhances collaboration, provides regular feedback loops, and allows the project to adapt to changing needs. Not only that, but the scrum methodology also ensures flexibility throughout the project's lifecycle. Regular check-ins and sprints enable the development team to adjust the design based on continuous feedback, ensuring that the final product supports both functional and user-centric requirements. This iterative process, combined with rigorous testing and user input, guarantees that the system will meet its objectives and adhere to best practices in software development.

Next, to effectively capture user requirements, a questionnaire survey was administered to students at UNIMAS. The feedback collected was analyzed to identify critical system features and functionalities. Additionally, several modeling tools, including use case diagrams, sequence diagrams, and activity diagrams, were created to represent the system's structure and behavior (Sommerville, 2020). These visual aids ensure that the system is aligned with user expectations, while also allowing for future scalability.

3.3. Scrum Framework

Scrum is an Agile framework designed to manage complex projects by emphasizing collaboration, flexibility, and iterative progress (Schwaber & Sutherland, 2020). It breaks development into short, time-boxed cycles called sprints, during which specific tasks from the Product Backlog are completed to deliver increments of a working system. For this project, Scrum ensures a structured yet flexible approach to building the system, enabling iterative development, frequent feedback, and continuous improvement. There are three roles, 3 artefacts and 5 events in scrum. The following sections provide a detailed explanation of each, highlighting their relevance to the project.

1. **Scrum Roles**
   a. **Product Owner**

      Manages the Product Backlog by prioritizing features based on user needs and project goals. In this project, the role focuses on ensuring the system delivers value, such as optimizing assessment tools and community features for mental health support.

   b. **Scrum Master**

      Facilitates the process and removes obstacles to ensure smooth development. As a solo developer, this role is self-managed to address challenges and maintain focus on sprint objectives. The Scrum master manages the project's obstacles and collaborates with the Product Owner.

   c. **Scrum Team**

      Responsible for completing tasks, delivering increments, and implementing system features. In this project, the developer will act as the Development Team, handling the design and coding of user registration, assessment modules, and forum integration, as it is a solo endeavour.

2. **Scrum Artefacts**
   a. **Product Backlog**

      A dynamic list of tasks and features prioritized based on user requirements, such as implementing responsive design and creating an interactive community forum for the proposed system.

b. Sprint Backlog

A subset of tasks from the Product Backlog chosen for completion during a sprint, such as developing the DASS-21 assessment functionality or testing the helpline directory.

c. Increment

A tangible, usable deliverable produced at the end of a sprint, such as a fully functional user registration module or a working mental health assessment tool.

3. Scrum Events

a. Sprint Planning

Defines clear goals for each sprint. For example, an initial sprint may involve setting up the system's foundational structure, while subsequent sprints could focus on specific features like forum integration or assessment tools (Schwaber & Sutherland, 2020).

b. Daily Scrum

A brief daily check-in for reviewing progress, identifying blockers, and planning tasks. This fosters accountability and steady progress, especially important for self-managed development.

c. Sprint Review

At the end of a sprint, completed tasks are assessed against project requirements. For instance, testing the forum functionality ensures it aligns with user needs and project goals.

d. Sprint Retrospective

Reflection on successes and areas for improvement after each sprint. For navigation issues arise in the forum, this phase drives adjustments for better user flow.

e. Sprint (Development Cycle)

The core period for completing planned tasks. By focusing on one increment at a time, the system is built iteratively, ensuring functionality and refinement in stages.

Scrum's iterative process ensures each feature of the proposed mental health support system is developed, tested, and refined systematically. For example, the assessment tool can be iteratively enhanced based on user feedback, while the community forum benefits from regular reviews to address usability concerns. The self-managed approach promotes agility, ensuring timely delivery and alignment with the project's mental health support objectives.

This proposed system is designed as an individual project with the primary goal of promoting mental health literacy and support within the UNIMAS community, particularly among students. Unlike systems with external clients, this project is self-contained, with the developer assuming all roles within the Scrum framework. The development methodology draws on findings from a comparative analysis of existing systems discussed in Chapter 2, emphasizing current demands and gaps in mental health support systems. The application of the Scrum methodology provides a structured yet flexible approach to guide the development process effectively.

In Scrum, the roles of Product Owner, Scrum Master, and Development Team are critical. The Product Owner and Scrum Master are typically chosen at the beginning of the process (Henderson, 2020). In this project, the researcher fulfils all three roles, reflecting the nature of an individual Final Year Project. The Product Owner is responsible for prioritizing the Product Backlog, the Scrum Master ensures the framework's implementation, and the Development Team executes the tasks required to build the system.

Next, before development begins, the Product Backlog is created, listing all necessary functionalities based on the demands identified through comparative analysis of existing systems. This includes features like the DASS-21 mental health assessment tool, the community forum, educational blogs, and the helpline directory. Sprint Planning follows, where specific Product Backlog Items (PBIs) are selected for completion during a sprint. These PBIs are organized into the Sprint Backlog, with the developer determining the sprint length and tasks to be completed during each cycle.

Daily Scrums are conducted as short evaluations to monitor progress, identify potential blockers, and adjust plans for the next 24 hours. These sessions help ensure steady progress toward achieving the Sprint Goal. The Scrum framework's incremental approach is applied throughout the development process, with each sprint producing a functional increment, such as a working mental health assessment module or a responsive design layout. These increments

are reviewed and refined during the Sprint Review, where feedback is provided by the project supervisor, Dr. Muhammad Asyraf bin Khairuddin, acting as a stand-in for a traditional client. His feedback ensures alignment with project goals and addresses potential gaps.

The Sprint Retrospective is conducted at the end of each sprint to reflect on the process, identify successes, and pinpoint areas for improvement. This iterative cycle is repeated, incorporating feedback and refining the system until all functionalities are completed and the system is ready for end-users. This iterative and incremental approach ensures the proposed system meets the identified needs of the UNIMAS community. The use of Scrum methodology allows for structured progress, continuous refinement, and adaptability, even in the absence of an external client. By leveraging the roles, artifacts, and events within Scrum, the system is developed efficiently, with each sprint bringing it closer to completion.

3.4. Requirement Analysis

The requirements gathered from the questionnaire, along with UML diagrams such as use case, sequence, and activity diagrams, are used to illustrate the system's structure and functionality. These diagrams serve as a visual roadmap, illustrating how the system is expected to function, how its various components interact, and the sequence of activities and operations required for effective execution. By combining user input with the technical designs depicted in the UML diagrams, the project ensures a comprehensive approach, aligning the system's structure. In addition, a visualization of the key components of the system, through wireframes, will be presented to further clarify the interface design.

3.4.1. Requirement Elicitation from Questionnaire

The requirements elicitation process was conducted through the distribution of a structured questionnaire using Google Forms. This survey was specifically targeted at UNIMAS students, as they represent the primary user group and focus of the mental health platform. The questionnaire was organized into two sections: Section A gathered demographic information as shown in Figure 3.1 to Figure 3.5, while Section B as shown in Figure 3.6 to Figure 3.16 explored students' preferences and expectations regarding the platform. For reference, the complete set of survey questions is included in Appendix A. The data collected was systematically analysed, and the findings were presented through graphical visualizations,

as illustrated below, to provide a comprehensive understanding of student requirements and preferences.

3.4.1.1. Section A: Demographic Information

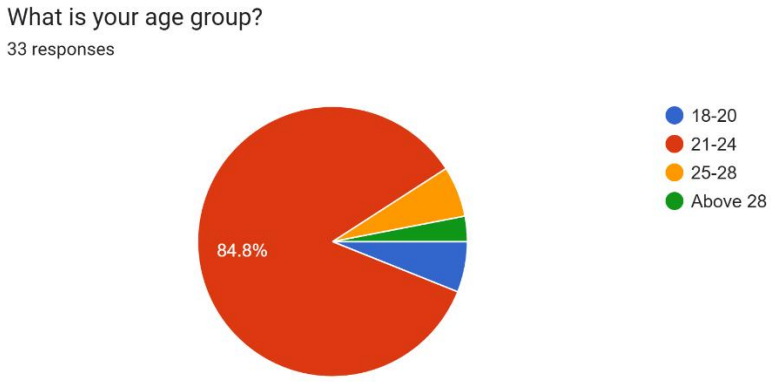

Figure 3.1: Age Group.

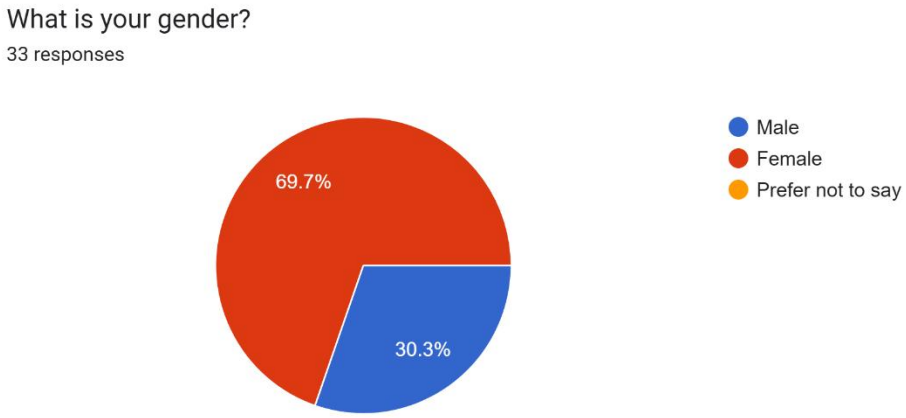

Figure 3.2: Gender

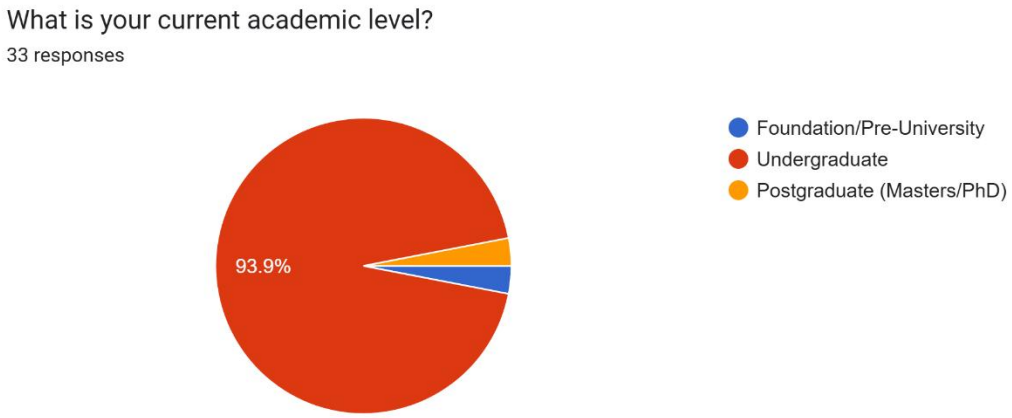

Figure 3.3: Academic Level.

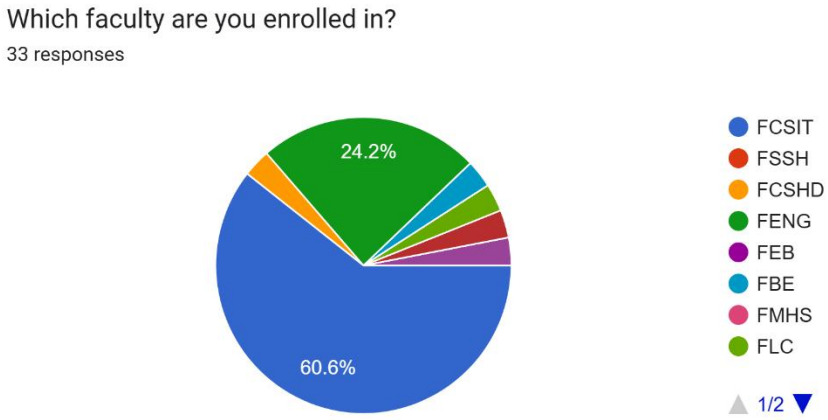

Figure 3.4: Enrolled Faculty.

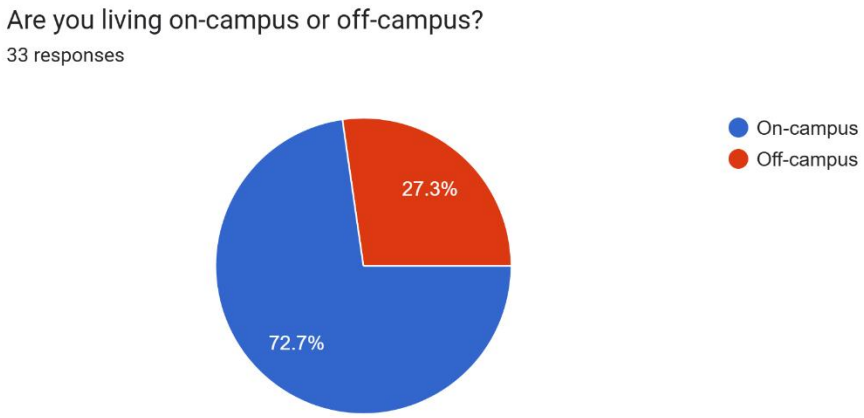

Figure 3.5: Living on-campus or off-campus.

The survey involved a total of 33 students, providing valuable insights into the target demographic for the mental health support system. As depicted in Figure 3.1, most respondents (84.8%) fall within the age group of 21-24 years, aligning with the typical university student age range. Next, figures 3.1 and 3.2 illustrate the gender distribution and academic levels of the respondents. Of the 33 participants, 30.3% (10 respondents) identified as male, while 69.7% (23 respondents) identified as female, highlighting a higher participation rate among female students. Additionally, many respondents (93.9%) are pursuing their undergraduate studies. In terms of faculty representation as shown in Figure 3.4, the survey shows that the Faculty of Computer Science and Information Technology (FCSIT) had the highest number of participants at 60.6%, followed by the Faculty of Engineering (FENG) at 24.2%.

3.4.1.2. Section B: Understanding Students/Users Preferences

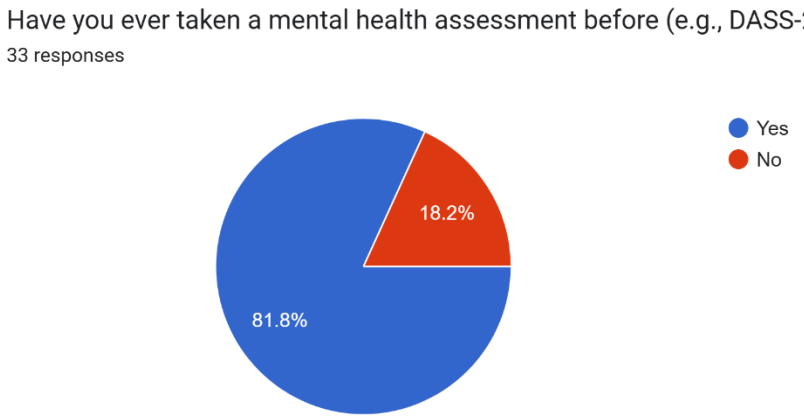

Figure 3.6: Percentage of students have taken DASS-21 assessments.

As shown in Figure 3.6, out of the 33 respondents, 27 (81.8%) indicated that they have taken the DASS-21 assessment, while 6 (18.2%) stated that they have not. This indicates that a significant majority of students are familiar with the DASS-21 assessment, reflecting its relevance and potential utility in the proposed mental health support system. For the minority who have not taken the assessment, the system serves as an excellent introduction to this structured evaluation tool, promoting broader mental health awareness and accessibility. This mix of familiarity and potential new users underlines the importance of ensuring the system is user-friendly and inclusive for all students.

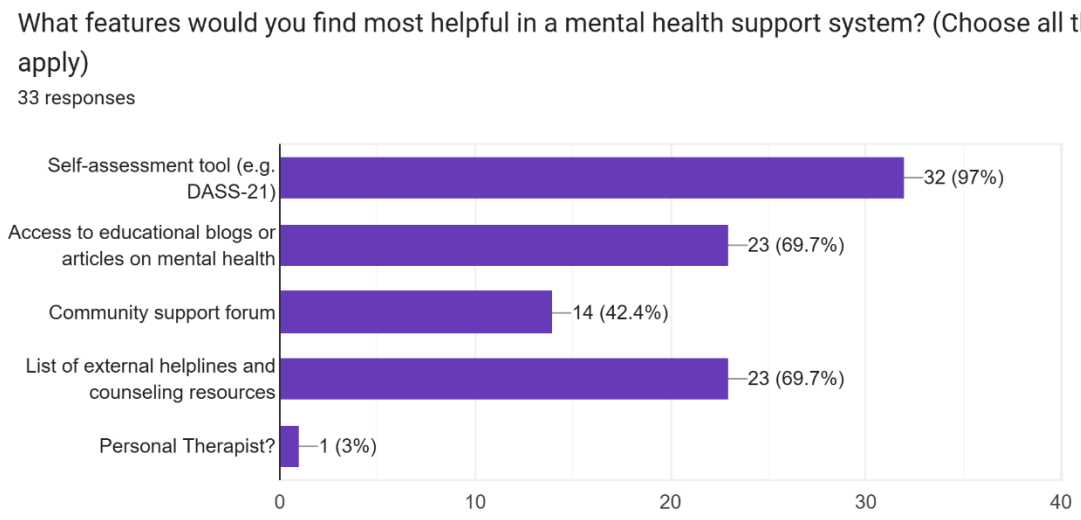

Figure 3.7: Most Helpful Features in a Mental Health Website.

As shown in Figure 3.7, Among the 33 students surveyed, an overwhelming 32 (97%) found the inclusion of the DASS-21 self-assessment tool to be a valuable feature in the system, demonstrating its strong relevance in addressing mental health needs. Additionally, 23 respondents (69.7%) expressed that access to educational blogs or articles on mental health would enhance the system by providing valuable information and promoting awareness.

Next, 14 students (42.4%) indicated that a community support forum could be beneficial, fostering peer interaction and mutual support. Similarly, 23 respondents (69.7%) considered a directory of external helplines and mental health resources to be helpful, connecting users to professional assistance when needed. Notably, one respondent suggested adding a personal therapist feature, highlighting a potential area for future system enhancement to provide more individualized mental health support. This feedback underscores the importance of addressing diverse user needs in the system's design.

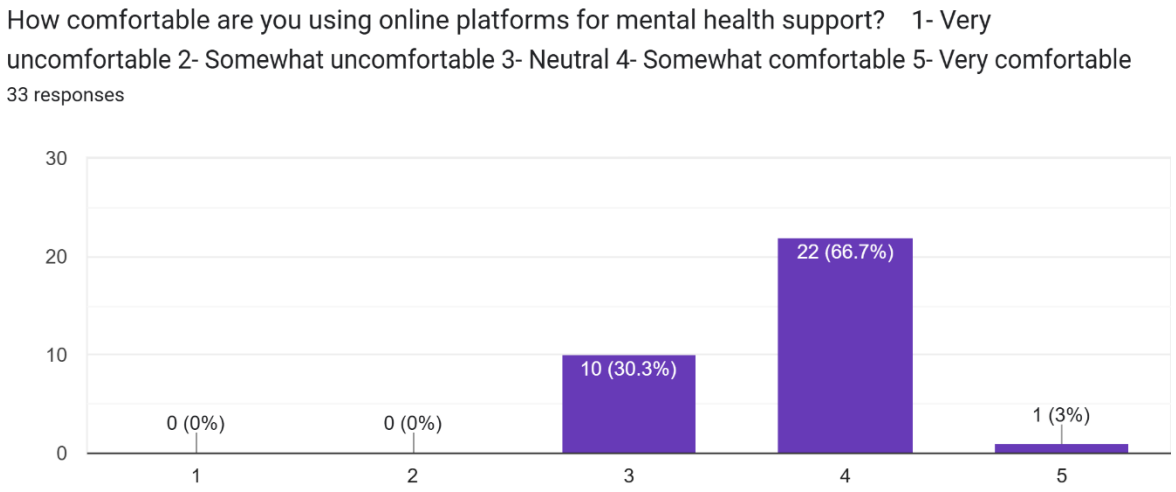

Figure 3.8: How Comfortable Students Are in Using Mental Health Website.

For the question regarding students' comfort level in using a mental health website illustrated in Figure 3.8 above, 22 respondents (66.7%) selected somewhat comfortable, indicating a general openness to using such a platform. 1 respondent (3%) chose very comfortable, reflecting a strong positive attitude toward engaging with the website. Meanwhile, 10 respondents (30.3%) opted for a neutral response, suggesting either uncertainty or a lack of strong opinion. Notably, none of the respondents selected somewhat uncomfortable or very uncomfortable, signifying an overall favourable reception and willingness to consider the platform. These responses underscore the need for a system that is intuitive, supportive, and user-centric to enhance comfort levels further and encourage broader usage among students.

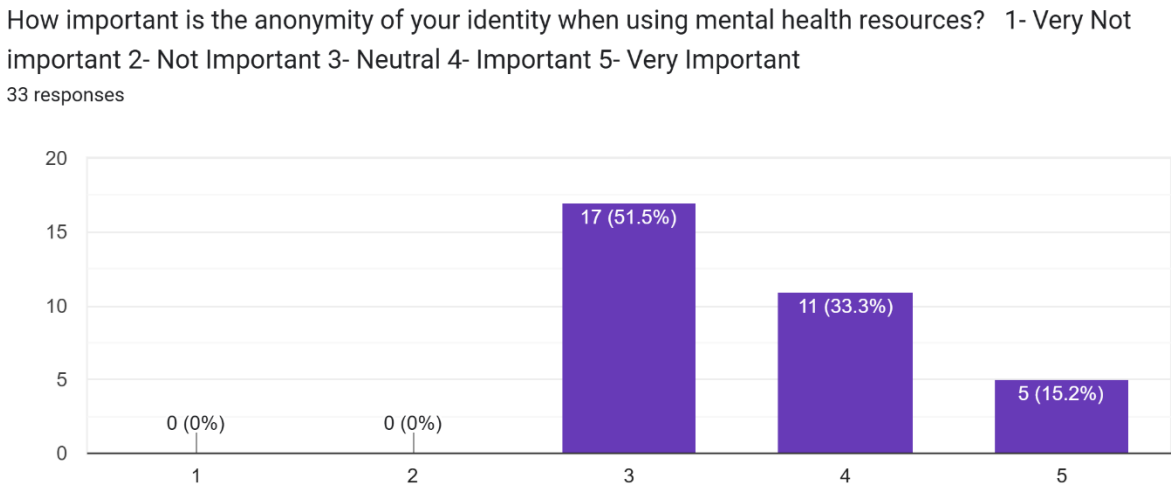

Figure 3.9: How Important Anonymity is in Using Mental Health Website

The responses to the question, "How important is anonymity in using a mental health website?" in Figure 3.9 reveal that 11 participants (33.3%) find anonymity to be important, while 5 participants (15.2%) consider it very important. A larger portion, 17 participants (51.5%), expressed a neutral stance, neither prioritizing nor dismissing its importance. Interestingly, none of the respondents selected "not important" or "very not important," indicating that anonymity is not viewed negatively by any participant. This suggests that while opinions on the importance of anonymity vary, a subset of users values it significantly, and no one dismisses it outright. These findings emphasize the need to incorporate anonymity features in the platform to build trust and provide a secure environment for users who prioritize privacy, while ensuring flexibility for those who feel indifferent about anonymity. This approach can enhance user experience by addressing diverse preferences effectively.

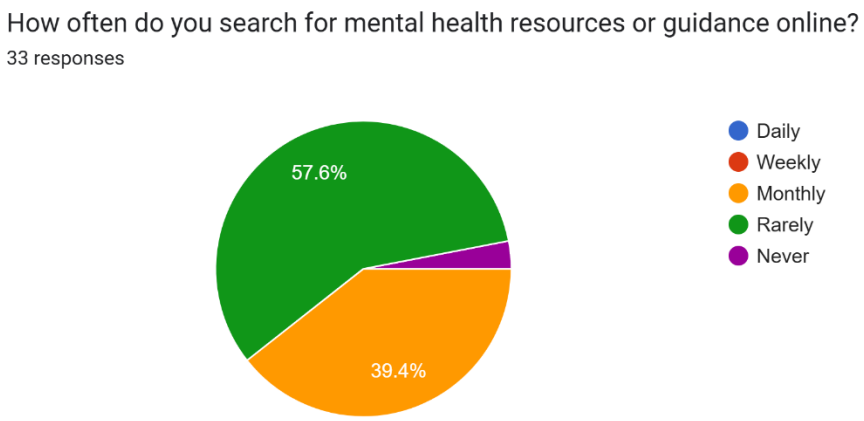

Figure 3.10: How Often Do Users Search for Mental Health Resources or Guidance Online.

In Figure 3.10, the responses to the question, "How often do users search for mental health resources or guidance online?" provide valuable insights from 33 respondents. Among them, 19 participants (57.6%) indicated they search for such resources rarely, while 13 participants (39.4%) reported doing so monthly. Only a few respondents mentioned they never search for mental health resources, and notably, none selected weekly or daily as their frequency. This distribution suggests that while many users occasionally seek mental health guidance online, it is not a regular habit for the majority. The lack of frequent engagement could stem from factors such as limited awareness, perceived stigma, or barriers to access and trust. These findings underscore the need for a user-centric platform that raises awareness about the importance of mental health, provides accessible resources, and fosters regular engagement by addressing potential obstacles and highlighting the value of consistent support.

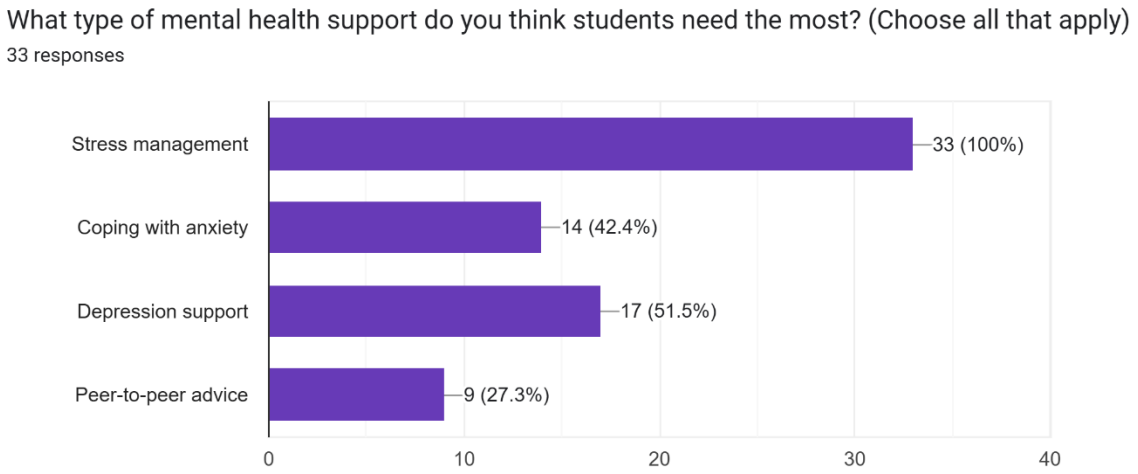

Figure 3.11: Most Needed Type of Mental Health Support.

In the question regarding the "Most Needed Type of Mental Health Support," all 33 respondents (100%) selected stress management as their top priority as shown in Figure 3.11, indicating that stress is a universal concern among the participants. Furthermore, 14 respondents (42.4%) expressed a need for support in coping with anxiety, suggesting that anxiety is another significant issue faced by a portion of the group. Additionally, 17 respondents (51.5%) indicated that they required support for depression, highlighting the importance of addressing mental health conditions such as depression within the group. Lastly, 9 respondents (27.3%) selected peer-to-peer advice, which implies that a section of the group values the benefit of shared experiences and mutual support among peers. This data reflects the diverse mental health needs of the participants, with stress management being the most critical concern, followed by anxiety and depression, and a moderate interest in peer support.

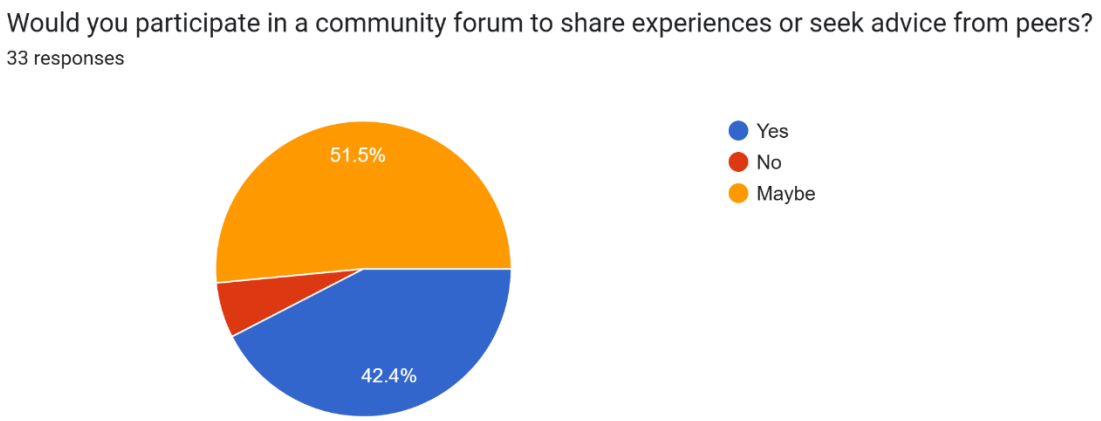

Figure 3.12: Would Students Participate in a Community Forum.

As shown in Figure 3.12, in response to the question asking whether students would participate in a community forum to share experiences or seek advice from peers, 51.5% of respondents selected "maybe," indicating a level of uncertainty or hesitation about engaging in such a forum. Meanwhile, 42.4% of respondents expressed a willingness to participate, selecting "yes," suggesting that a significant portion of the group is open to the idea of a peer-based support system. A smaller percentage, marked by the "no" response, indicates that some students are either not interested or do not feel comfortable sharing in a community forum. This data reveals that while there is considerable interest in peer support, a large proportion of students may need more encouragement or assurance regarding the forum's purpose and its benefits. The mixed responses highlight the importance of creating a safe, supportive environment that fosters trust and encourages active participation.

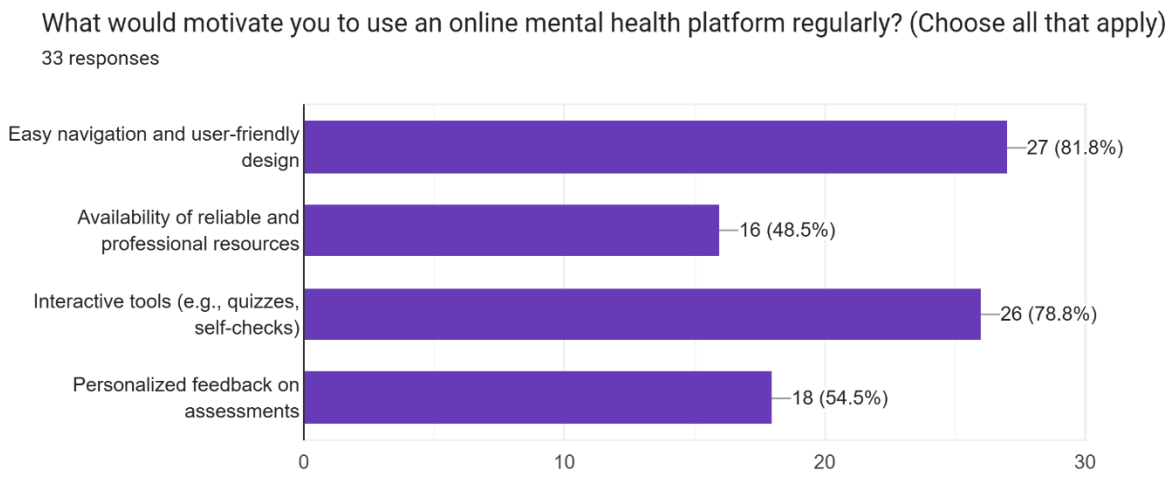

Figure 3.13: What Would Motivate Student to Use Online Mental Health Platform.

In response to the Google Form question on what would motivate students to use an online mental health platform shown in Figure 3.13, 27 (81.8%) of respondents selected "easy navigation and user-friendly design," suggesting that students highly value simplicity and accessibility when engaging with digital platforms. This emphasizes the importance of creating a platform that is intuitive and easy to navigate to ensure that students can quickly find the resources and support they need. Additionally, 16 (48.5%) of respondents expressed the need for "availability of reliable and professional resources," indicating that students seek credible and expert-driven content to address their mental health concerns. Furthermore, 26 (78.8%) selected "interactive tools such as quizzes and self-checks," showing a strong preference for engaging features that allow students to assess and monitor their mental well-being actively. Lastly, 18 (54.5%) indicated that "personalized feedback on assessments" would be a motivating factor, highlighting the value students place on tailored guidance that speaks directly to their unique needs. These results demonstrate that students are looking for a comprehensive, interactive, and personalized mental health platform that is easy to use, offers reliable resources, and provides engaging tools to help them manage their mental health effectively.

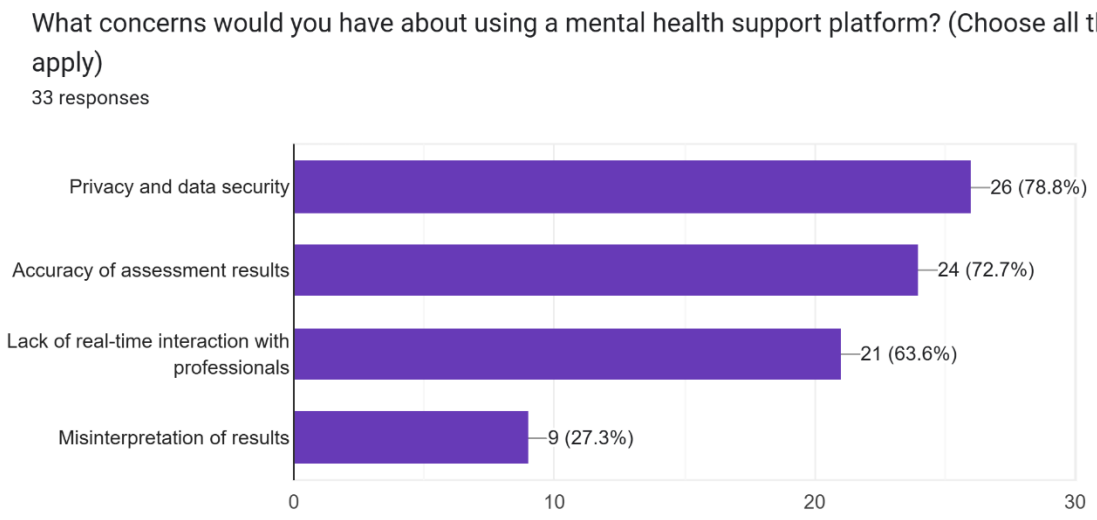

Figure 3.14: What Concerns Do Students Have Regarding Online Mental Health Platform.

In response to the question about concerns students have regarding an online mental health platform as shown in Figure 3.14, 26 (78.8%) of respondents selected "privacy and data security," indicating that safeguarding personal information is a primary concern for users when engaging with digital mental health services. This highlights the need for robust security measures to protect user data and ensure confidentiality. Additionally, 24 (72.7%) expressed concerns about the "accuracy of assessment results," suggesting that students are wary of receiving reliable and trustworthy feedback from the platform's tools and assessments. Another 21 (63.6%) were concerned about the "lack of real-time interaction with professionals," underscoring the importance of having access to live support or guidance from mental health professionals for more immediate and personalized care. Finally, 9 (27.3%) of respondents worried about the "misinterpretation of results," indicating that some students fear that the platform might misread or misunderstand their responses, potentially leading to ineffective or inappropriate recommendations. These concerns emphasize the need to build a platform that not only ensures privacy and accuracy but also offers real-time professional support and addresses potential issues with the interpretation of results.

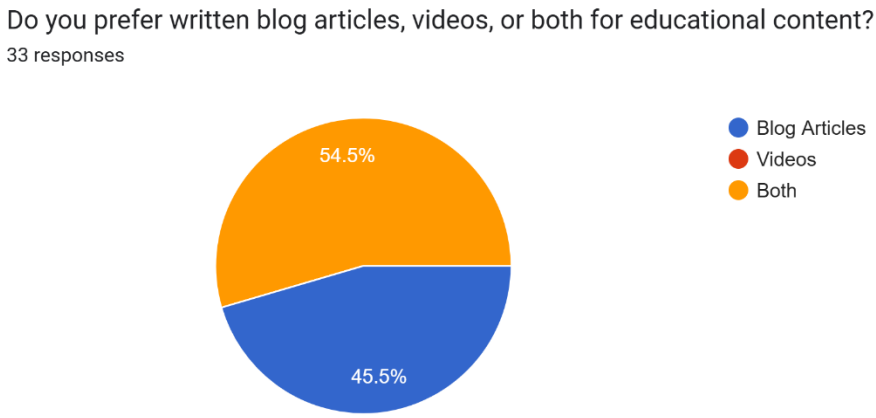

Figure 3.15: Students Preferences for Educational Content.

In response to the Google Form question regarding students' preferences for educational content as shown in Figure 3.15, 45.5% of respondents selected "blog articles," indicating a strong preference for reading informative written content. Additionally, 54.5% of students opted for "both," suggesting that many students are open to a combination of content formats, likely valuing the flexibility of accessing both written and other types of educational materials. Interestingly, no respondents selected "videos," highlighting that video content may not be as favored or accessible for this group when it comes to educational resources. This data suggests that students appreciate content they can read at their own pace and may prefer written formats, but there is also an openness to diverse content types, excluding videos, which might require further investigation to understand the specific reasons behind this preference.

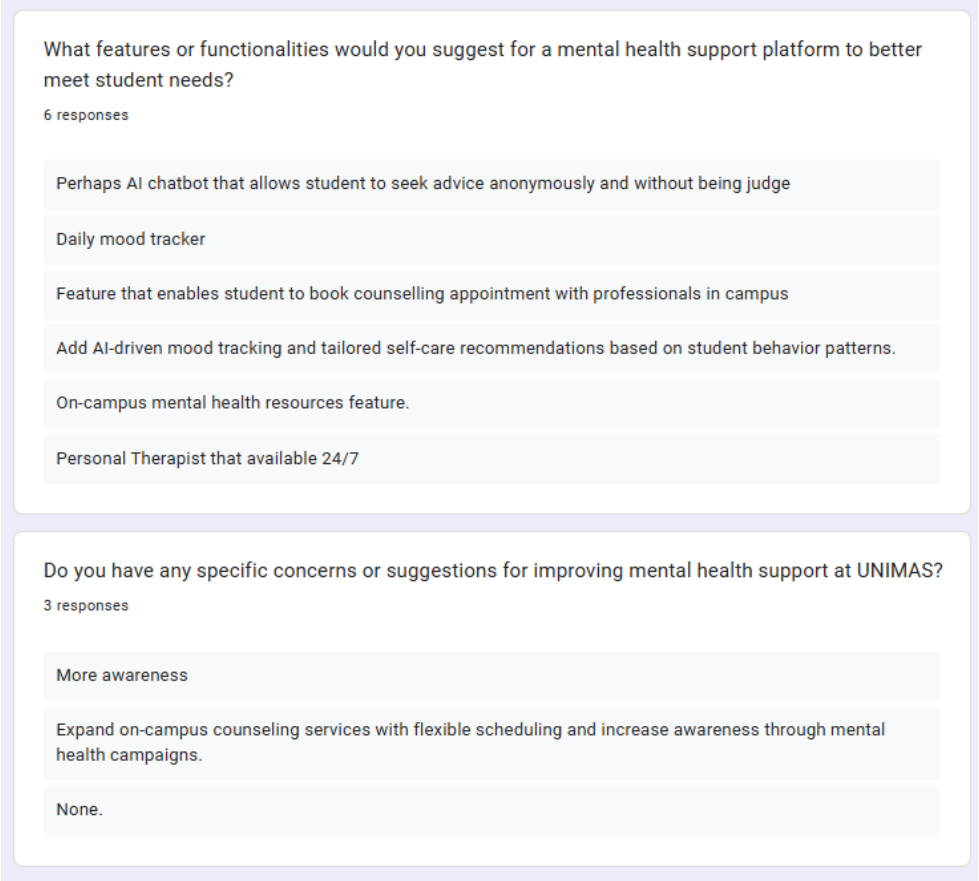

Figure 3.16: Suggested Features and Functionalities for Mental Health Support Platform and Specific Concerns for Improvement.

As shown in Figure 3.16, six responses were provided to the question regarding suggested features or functionalities for improving a mental health support platform for students. One student proposed the integration of an AI chatbot, which would allow students to seek advice anonymously, ensuring they feel comfortable without fear of judgment. Another suggestion was the inclusion of a daily mood tracker to help students regularly monitor their emotional well-being. Additionally, a feature that would enable students to easily book counseling appointments with on-campus professionals was recommended, offering greater convenience and access to support. Another response suggested incorporating AI-driven mood tracking, along with personalized self-care recommendations tailored to individual student behavior patterns. Furthermore, the addition of a feature that highlights on-campus mental health resources was proposed, ensuring students can easily locate available services. Lastly, a suggestion was made for a personal therapist who would be available 24/7, providing

continuous support for students whenever they need it. These responses reflect a strong desire for personalized, accessible, and flexible mental health services to better meet student needs.

For the question regarding specific concerns or suggestions for improving mental health support at UNIMAS, three responses were received. One response emphasized the need for increased awareness of mental health issues, suggesting the importance of mental health campaigns. Another response called for expanding the on-campus counselling services, with a particular focus on offering flexible scheduling to better accommodate students' varying timetables. The final response indicated no additional concerns or suggestions, reflecting that the existing support might already meet some students' needs. These responses highlight the need for greater accessibility, personalization, and awareness in improving mental health support at UNIMAS.

To summarize, the survey's thorough collection of student feedback offers invaluable insights that will directly inform the design and development of the proposed system. By capturing a wide range of needs, preferences, and concerns, the survey provides a detailed roadmap for creating a platform that aligns closely with students' mental health requirements. This data-driven approach will ensure that the system is not only relevant but also responsive to the unique challenges students face, fostering a more supportive, accessible, and effective mental health environment. Ultimately, the survey's findings will play a pivotal role in shaping a platform that is personalized, user-friendly, and capable of making a meaningful impact on students' well-being.

3.5. Software Requirements

Table 3.1 presents the key software requirements for developing the Mindfulness: UNIMAS Mental Health Assessment and Support System. The development process utilizes Windows 10 as the operating system, ensuring a stable and up-to-date platform for all development tasks. Windows 10, a Microsoft operating system, is designed for personal computers, tablets, embedded systems, and Internet of Things (IoT) devices. It comes in six distinct versions, each tailored to meet specific computing needs (Fritsche, 2015).

Table 3.1: List of Software Requirements

Software	Requirement

Operating System	Windows 10
Development Software	XAMPP, Visual Studio Code, Visual Paradigm, Lucidchart
Scripting Language	HTML, PHP, JavaScript
Database	MySQL

XAMPP is then utilized to establish a local server environment, as it is a compact and lightweight Apache distribution that integrates essential web development technologies into a single package. Its minimal size, portability, and comprehensive features make it an ideal tool for students working on PHP and MySQL-based applications (Dvorski, 2007). Next, Visual Studio Code will be used to enhance code editing efficiency. According to Heller (2022), Visual Studio Code is a free, lightweight yet powerful source code editor that operates on desktop and web platforms, supporting Windows, macOS, Linux, and Raspberry Pi OS. It includes built-in support for JavaScript, along with a vast ecosystem of extensions for additional programming languages. This makes it well-suited for the development of this system, which utilizes PHP, JavaScript, CSS, and HTML.

Effective system and database design play a crucial role in the success of this project, necessitating the use of tools such as Visual Paradigm and Lucidchart. These tools enable developers to create precise and comprehensive system models, flowcharts, and database schemas, ensuring a well-structured and logically planned system architecture. Lucidchart, a free online diagramming tool, simplifies the process of constructing complex visual representations. Its user-friendly interface, along with a vast library of templates and design elements, enhances the efficiency of visual mapping (Faulkner, 2018).

For the technical implementation, HTML structures the web content, PHP manages dynamic content and facilitates database interactions, JavaScript introduces interactive features to enhance user experience. Meanwhile, MySQL is employed for data storage and retrieval, ensuring robust data management. These technologies collectively streamline the development process, enhance maintainability, and optimize system performance for the developer.

3.6. Hardware Requirements

Table 3.2 highlights the essential hardware requirements for developing the Mindfulness: UNIMAS Mental Health Assessment and Support System. A laptop equipped with an AMD Ryzen 5 7530U processor with Radeon Graphics (2.00 GHz), 16 GB of RAM and 466 GB of storage is used to ensure efficient performance.

Table 3.2: List of Hardware Requirements

Software	Requirement
Laptop	Support XAMPP, Visual Studio Code, Visual Paradigm and Lucidchart
Processor	AMD Ryzen 5 7530U with Radeon Graphics
RAM	16 GB
Storage	466

The AMD Ryzen 5 7530U processor with its multi-core architecture and integrated graphics, provides the power needed for running resource-intensive tools like XAMPP, Visual Paradigm, and Lucidchart while supporting multitasking without lag. The 16 GB of RAM enables smooth handling of multiple processes, large files, and IDEs such as Visual Studio Code. The 466 GB of storage ensures adequate space for software installations, project files, databases, and backups, supporting seamless development and file management. These specifications ensure a reliable and efficient environment for building a high-performance mental health support system.

3.7. Use Case Diagram

A use case diagram is a type of behavioural diagram that visually represents the functional requirements of a software system. It provides an overview of how the system is intended to function by illustrating the interactions between users and the system (Fauzan, Siahaan, Rochimah, & Triandini, 2021). In this project, the use case diagram plays a crucial role in mapping out the key interactions within the MindFullness: UNIMAS Mental Health Assessment and Support System that involves two key actors: students and administrators. The use case model incorporates a total of ten use cases that represent the interactions and

functionalities associated with these actors. For students, the use cases include actions such as registering, logging in, managing accounts, taking the DASS-21 assessment, participating in forums, browsing educational blogs and available helplines. For administrators, the use cases focus on managing community forums, blog posts, and the available helpline directory. Each use case is thoroughly detailed in the use case descriptions provided in Section 3.6.1, outlining the steps, flows, and outcomes associated with each interaction. What follows is the use case diagram for MindFullness: UNIMAS Mental Health Assessment and Support System. The following Figure 3.17 is the use case diagram for this system.

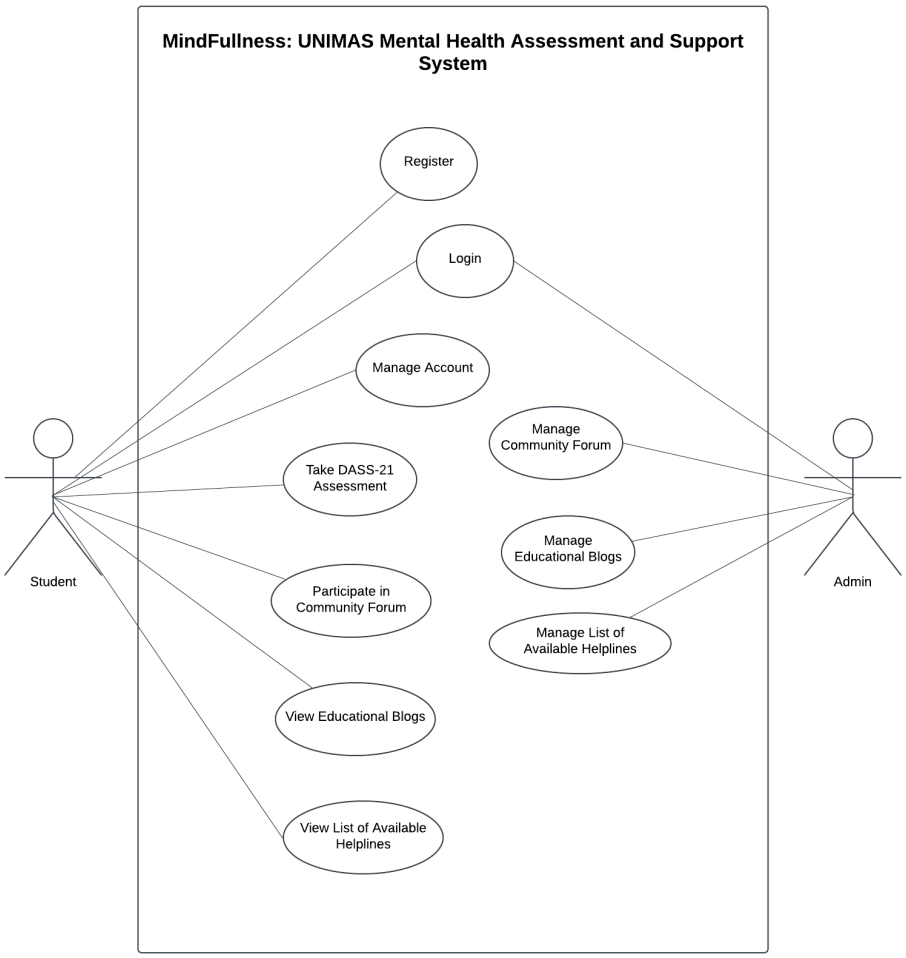

Figure 3.17: Use Case Diagram for MindFullness: UNIMAS Mental Health Assessment and Support System

3.7.1. Use Case Description

The use case descriptions provide comprehensive details of the interactions and step-by-step processes required to achieve specific functionalities within the system for both students and administrators, as presented in Tables 3.3 to 3.12. below. Each use case outlines

essential components, including the actors involved, preconditions, postconditions, main flow, alternative flows, and exception flows. Note that the "Manage Account" feature for students includes the option to update demographic information such as age group, gender, marital status, and education level. This integration ensures a streamlined user experience, eliminating the need for students to repeatedly provide demographic details when completing the DASS-21 Assessment. When a student submits their answers for the DASS-21 Assessment, the system will fetch their demographic information from the database to link it with their assessment responses. By pre-filling this information, the system enhances convenience and promotes efficient navigation for students. Overall, this structured approach to use cases provides a clear framework for understanding how each actor interacts with the system to perform their roles and responsibilities, while also accounting for various scenarios that may occur during the system's operation.

Table 3.3: Use Case Description for Register Account.

Use Case	Register Account
Description	To allow students to register an account for taking the DASS-21 assessment and participating in the community forum.
Actor(s)	Students
Pre-condition(s)	1. A device installed with web browser and equipped with active and secure Internet connection. 2. Landed to the main page.
Post-condition(s)	Students can complete the DASS-21 assessment and contribute by adding new topics or comments in the community forum.
Main Flow	1. Student clicks on the "Register" button at the top right-side of the page. 2. The student is then directed to a "Create Account" form where they are required to include their details such as Name, Contact Info, Age, Gender, Password, etc. [E1]

	3. The student clicks “Sign Up” button at the centre bottom of the form. A pop-up message will appear which notifies the student that they have successfully registered for an account. [E2]
Alternative flow(s)	[A1] Student clicks on “Cancel” button, system redirects to Main Page.
Exception Flow(s)	[E2] Pop-up appears which notifies the student that some of the text box for the user details are still empty, hence user needs to click on “I Understand” and will remain on the same page (system does not proceed to submit the “Register Account” form). [E3] The system shows the error to inform student that the system is disconnected, hence student needs to check the internet connection and try to reload to page again.

Table 3.4: Use Case Description for Login.

Use Case	Login
Short Description	To allow student and administrator to log into the system
Actor(s)	Student, Administrator
Pre-condition(s)	1. A functional web browser on a platform, along with a secure and active internet connection, is required. 2. The administrator needs to log in successfully to access the administrative section’s page. 3. The student must successfully log in to take the DASS-21 assessment and participate in the forum sections.
Post-condition(s)	1. The system validates the login credentials and grants the user access to their designated portal (student or administrator). 2. The user is redirected to the dashboard relevant to their role.

Main Flow	1. The user navigates to the login page on the system's website. 2. The user enters their email and password in the designated fields. 3. The system validates the entered credentials by querying the database. 4. If the credentials are valid, the system grants access and redirects the user to their respective dashboard: • Student: Dashboard for accessing assessments, forums, educational content and available helplines. • Administrator: Dashboard for managing forums, blogs, and helpline links.
Alternative Flow(s)	[A2] If the user enters invalid login credentials, the system displays an error message prompting the user to re-enter their details.
Exception Flow(s)	[E1] The administrator has forgotten their login details and must contact the developer to recover their login credentials.

Table 3.5: Use Case Description for Manage Account.

Use Case	Manage Account
Short Description	To allow students to manage (view/edit) account's details.
Actor(s)	Student
Pre-condition(s)	1. A device installed with web browser and equipped with active and secure Internet connection. 2. Student logged in as registered user.
Post-condition(s)	Student can view updated details upon confirmation.
Main Flow	1. Student navigates to profile details and click on "Manage Account" button. 2. Student lands on "Manage Account" page and modifies desired details (Name, Contact Info, Age, Gender, Password, etc.)

	3. Student clicks on “Save Changes” button at the centre bottom of the page. [E1] 4. System saves the updated information.
Alternative flow(s)	[A2] Student clicks on “Cancel” button, system redirects to registered user page (system does not proceed to submit the edited details).
Exception Flow(s)	[E1] The system shows the error to inform student that the system is disconnected, hence student needs to check the internet connection and try to reload to page again.

Table 3.6: Use Case Description for Take DASS-21 Assessment.

Use Case	Take DASS-21 Assessment
Short Description	Students access the system to complete the DASS-21 assessment, which evaluates their mental health status. The system calculates results based on their responses and provides a summary.
Actor(s)	Student
Pre-condition(s)	1. A device installed with web browser and equipped with active and secure Internet connection. 2. Student logged in as registered user.
Post-condition(s)	1. The student’s responses are calculated. 2. The system displays a personalized mental health summary based on their scores.
Main Flow	1. The student logs into the system and navigates to the “Take Assessment” section. 2. The system displays the DASS-21 questionnaire with Likert scale options for each question and click next after each question.

	3. The student answers all 21 questions and submits the form. 4. The system calculates the scores for depression, anxiety, and stress. 5. The results are displayed to the student along with suggested resources (e.g., contact helplines or access blogs).
Alternative flow(s)	[A2] The student can cancel the process by clicking "Cancel" button and will be redirected to the homepage. [A3] If the user skips mandatory questions, the system alerts them to complete the missing sections before proceeding to the next question.
Exception Flow(s)	[E1] The system shows the error to inform student that the system is disconnected, hence student needs to check the internet connection and try to reload to page again.

Table 3.7: Use Case Description for Participate in Community Forum.

Use Case	Participate in Community Forum
Short Description	The student can engage in the community forum to share experiences, seek advice, and provide emotional support to peers.
Actor(s)	Student
Pre-condition(s)	1. A device installed with web browser and equipped with active and secure Internet connection. 2. Student logged in as registered user. 3. The forum is available and active. 4. The student has access to the appropriate forum groups based on topics of interest.
Post-condition(s)	1. The student has successfully posted a comment or question in the forum.

	2. The forum content has been updated with the student's post.
Main Flow	1. The student logs into the system and navigates to the "Forum" section. 2. The student reads existing posts and discussions. 3. The student creates a new post or reply on an existing post. 4. The system updates the forum with the new content. 5. The student can view feedback or replies from other community members.
Alternative flow(s)	[A2] If the student wants to view posts about a specific topic, they can filter forum posts by topic.
Exception Flow(s)	[E1] The system shows the error to inform student that the system is disconnected, hence student needs to check the internet connection and try to reload to page again.

Table 3.8: Use Case Description for View Educational Blogs.

Use Case	View Educational Blogs
Short Description	The student accesses and reads educational blogs on mental health topics, resources, and other relevant subjects to support their well-being.
Actor(s)	Student
Pre-condition(s)	1. A device installed with web browser and equipped with active and secure Internet connection. 2. There is at least one blog post available for viewing.
Post-condition(s)	1. The student successfully accesses the blog's content.
Main Flow	1. The student logs into the system and navigates to the "Blog" section. 2. The student browses the list of available blog posts.

	3. The student selects a blog post of interest. 4. The system displays the full blog content. 5. The student reads the blog.
Alternative flow(s)	[A2] If the student wants to read more blogs on a similar topic, they can apply filters or search keywords related to the topic.
Exception Flow(s)	[E1] The system shows the error to inform student that the system is disconnected, hence student needs to check the internet connection and try to reload to page again.

Table 3.9: Use Case Description for View Available Helplines.

Use Case	View Available Helplines
Short Description	The student accesses a list of available mental health helplines, that they can contact for immediate support.
Actor(s)	Student
Pre-condition(s)	1. A device installed with web browser and equipped with active and secure Internet connection. 2. The helpline directory is accessible from the platform. 3. The system has an updated list of helplines.
Post-condition(s)	1. The student has viewed the helplines and may choose to contact a helpline.
Main Flow	1. The student logs into the system and navigates to the “Helpline Directory” section. 2. The system displays a list of available helplines, categorized by type (e.g., mental health, emergency, general support). 3. The student selects a helpline and views additional information, such as contact details and available support services.

	4. The student can either call, message, or visit the helpline's website, depending on the contact options provided.
Alternative flow(s)	N/A
Exception Flow(s)	[E1] The system shows the error to inform student that the system is disconnected, hence student needs to check the internet connection and try to reload to page again.

Table 3.10: Use Case Description for Manage Community Forum.

Use Case	Manage Community Forum
Short Description	Admins manage the community forum by managing posts, including creating, viewing, and removing content, while ensuring the discussions remain relevant and appropriate. They also facilitate user engagement and interaction within the forum.
Actor(s)	Admin
Pre-condition(s)	1. A device installed with web browser and equipped with active and secure Internet connection. 2. The admin must be logged into the system. 3. The forum must be active, with posts and discussions ongoing.
Post-condition(s)	1. New posts are created or modified by admin. 2. Inappropriate or irrelevant content has been removed or flagged. 3. User activity is monitored, and content is organized by topic or relevance.
Main Flow	1. The admin logs into the system and navigates to the community forum section. 2. The admin selects the action they wish to take (create or reply to a post, or remove posts, etc.). 3. The admin selects a post to view or creates a new one.

	4. The admin monitors the forum for any inappropriate content or violations and acts when necessary (e.g., deleting posts).
Alternative flow(s)	[A4] If the admin identifies any content that is inappropriate, irrelevant, or violates forum guidelines, they have the option to remove the post from the forum.
Exception Flow(s)	[E1] The system shows the error to inform admin that the system is disconnected, hence admin needs to check the internet connection and try to reload to page again.

Table 3.11: Use Case Description for Manage Educational Blogs.

Use Case	Manage Educational Blogs
Short Description	Admin manages accessible links to external blog posts relevant to mental health, ensuring that students have access to credible and valuable resources.
Actor(s)	Admin
Pre-condition(s)	1. A device installed with web browser and equipped with active and secure Internet connection. 2. The admin must be logged into the system.
Post-condition(s)	1. Relevant blog links are successfully added, updated, or removed from the system. 2. Students can access the curated blog links via the system's interface.
Main Flow	1. Admin logs into the system and accesses the blog management section. 2. Admin selects the option to add, update, or remove an external blog link.

	3. For adding new link, admin inputs the blog title, description, and URL of the external resource. 4. For updating existing blog link, admin selects the specific blog entry, update the title, description, or URL as needed, and saves the changes. 5. For deleting a blog link, admin selects the specific blog entry and confirms the deletion 6. The system updates the database to reflect the changes and displays the updated blog list to students.
Alternative flow(s)	N/A
Exception Flow(s)	[E1] The system shows the error to inform student that the system is disconnected, hence admin needs to check the internet connection and try to reload to page again.

Table 3.12: Use Case Description for Manage Available Helplines

Use Case	Manage Available Helplines
Short Description	Admin manages links to external mental health helpline resources, ensuring that students have access to accurate and up-to-date contact information for professional assistance.
Actor(s)	Admin
Pre-condition(s)	1. A device installed with web browser and equipped with active and secure Internet connection. 2. The admin must be logged into the system.
Post-condition(s)	1. Accurate and relevant helpline links are added, updated, or removed from the system. 2. Students can access an updated and reliable list of external helplines via the system.

Main Flow	1. Admin logs into the system and navigates to the helpline management module. 2. Admin selects the option to add, update, or remove a helpline link. 3. For adding a new helpline link, admin inputs the helpline name, description, contact details (e.g., phone number, email, or website), and the type of service provided. 4. For updating an existing helpline, admin selects the specific helpline entry, edits the relevant details (e.g., contact information or service description), and saves the changes. 5. For deleting a helpline link, admin selects the specific helpline entry and confirms the deletion. 6. The system updates the database to reflect the changes and makes the updated helpline list accessible to students.
Alternative flow(s)	N/A
Exception Flow(s)	[E1] The system shows the error to inform student that the system is disconnected, hence admin needs to check the internet connection and try to reload to page again.

3.7. Sequence Diagram

Sequence diagram is a diagram that illustrates the interaction and message exchange between objects over time. It demonstrates how the events or activities in a use case are translated into operations of object classes within the class diagram (Al-Fedaghi, 2021). The sequence diagram for the MindFullness: UNIMAS Mental Health Assessment and Support System, depicted in Figures 3.18 through 3.27 below, illustrates the dynamic sequence of interactions between various objects or components within the system over time. This diagram visually captures the flow of messages and the order of operations, providing a clear representation of how system elements communicate and collaborate throughout the process.

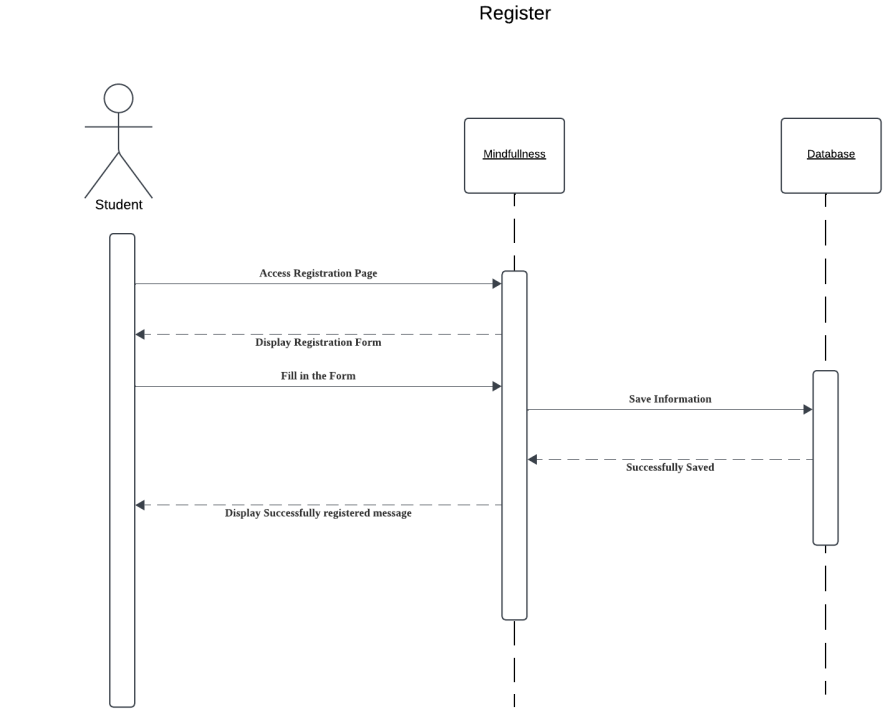

Figure 3.18: Sequence Diagram for Student Registration.

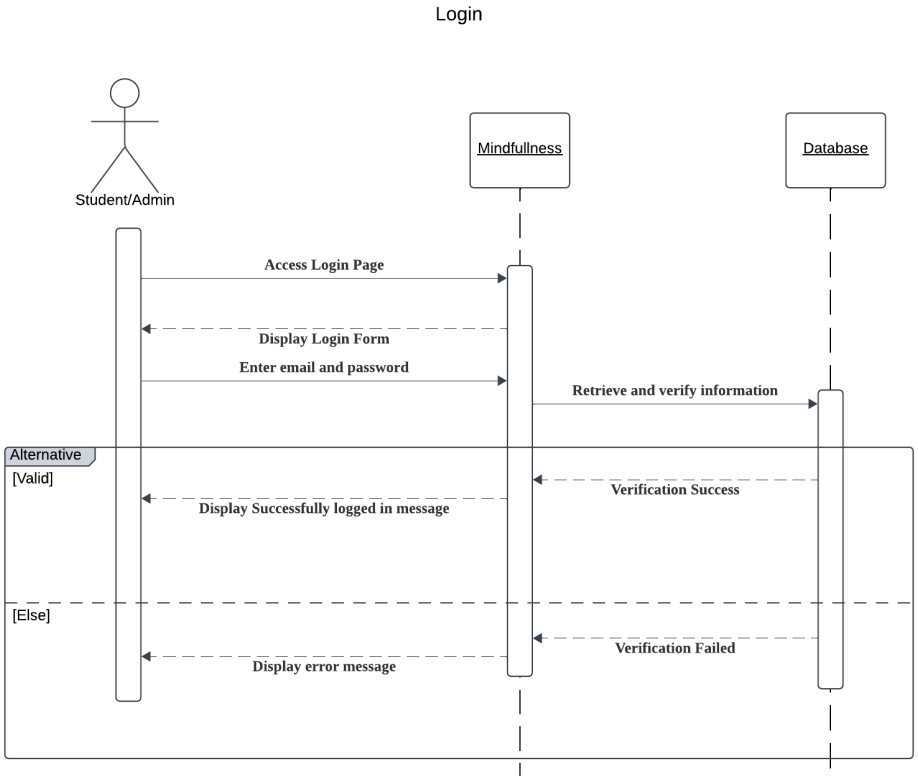

Figure 3.19: Sequence Diagram for Student or Admin login

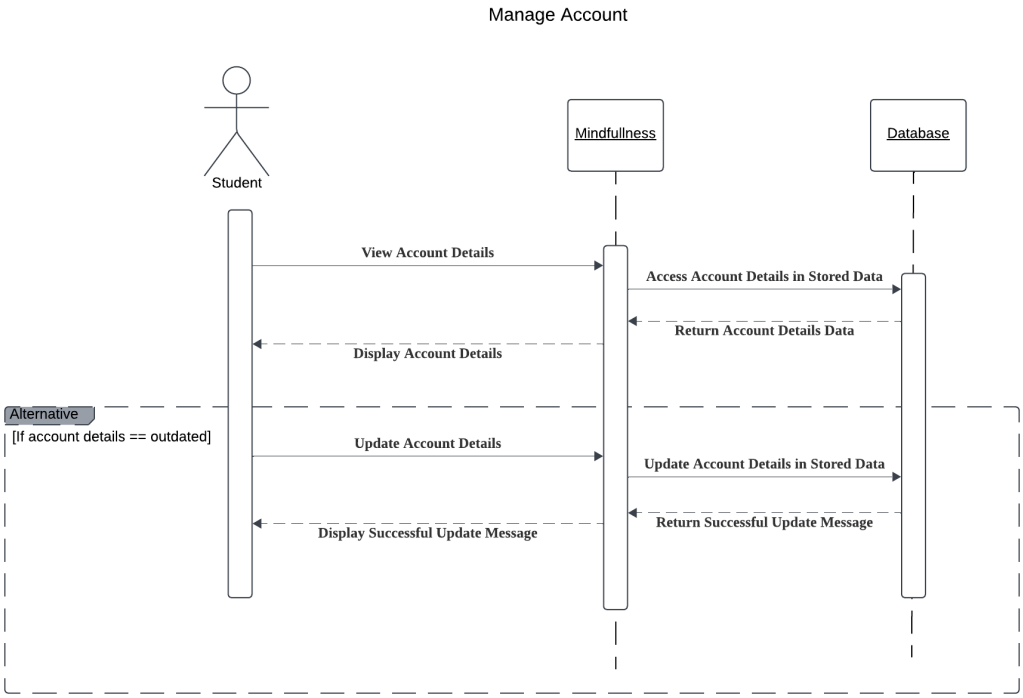

Figure 3.20: Sequence Diagram for Student Manage Account.

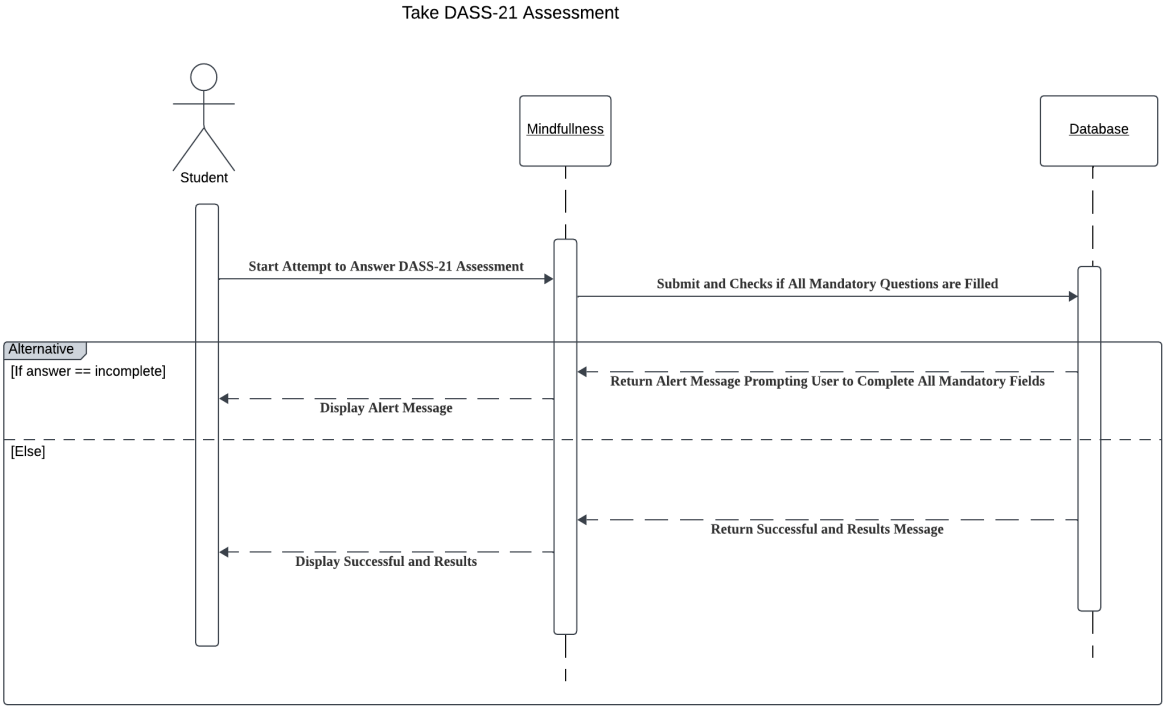

Figure 3.21: Sequence Diagram for Student Take DASS-21 Assessment.

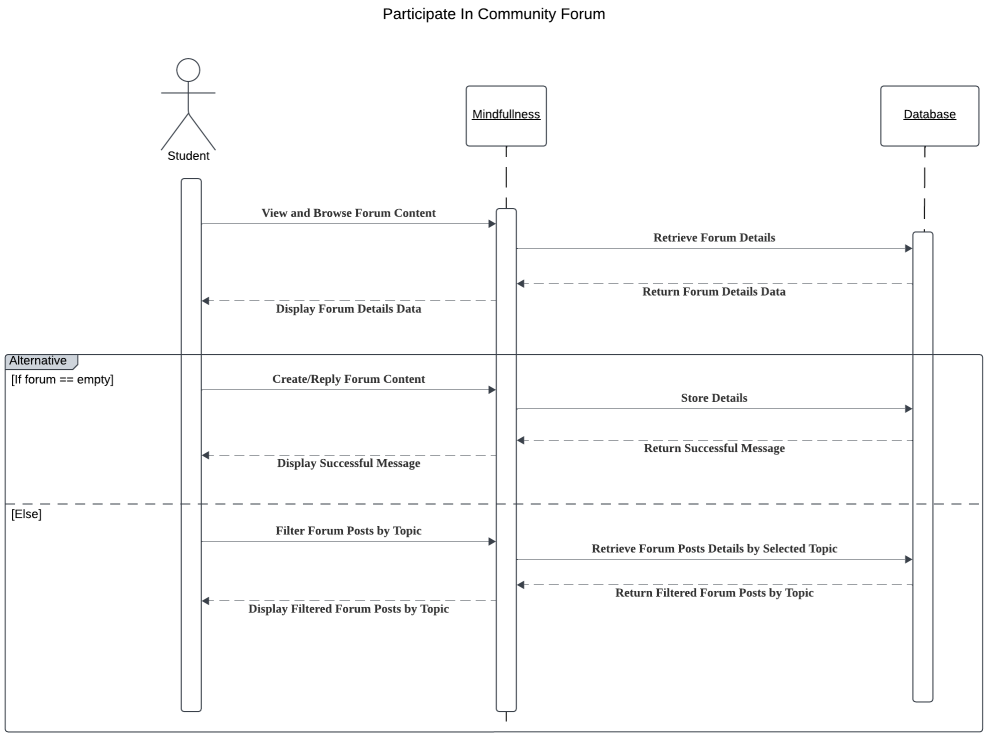

Figure 3.22: Sequence Diagram for Student Participate in Community Forum.

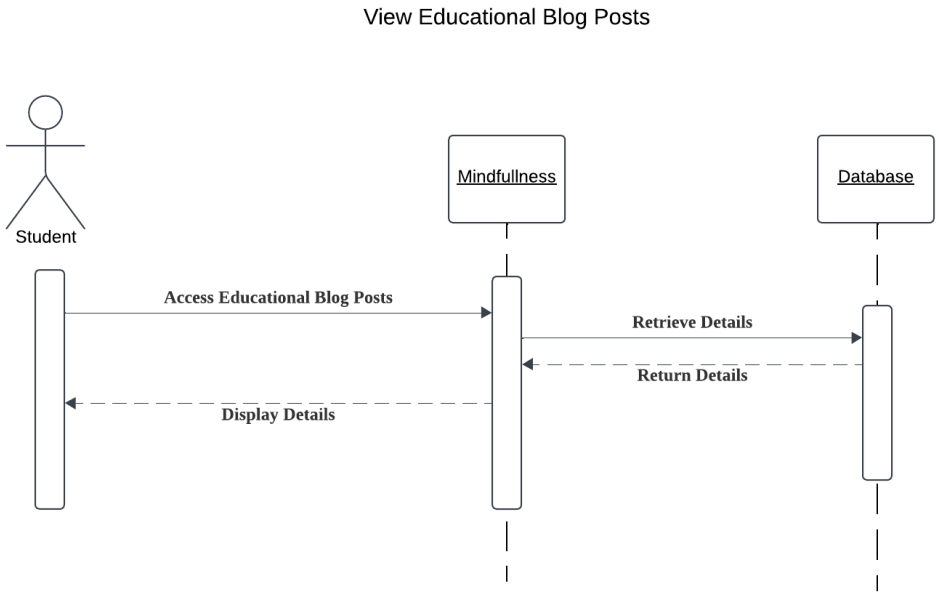

Figure 3.23: Sequence Diagram for Student Access and View Educational Blog Posts.

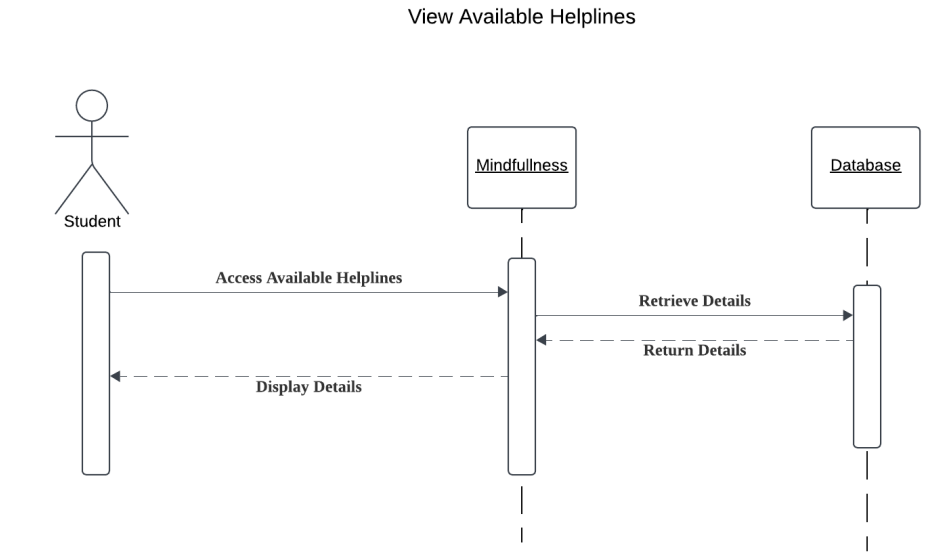

Figure 3.24: Sequence Diagram for Student Access and View Available Helplines.

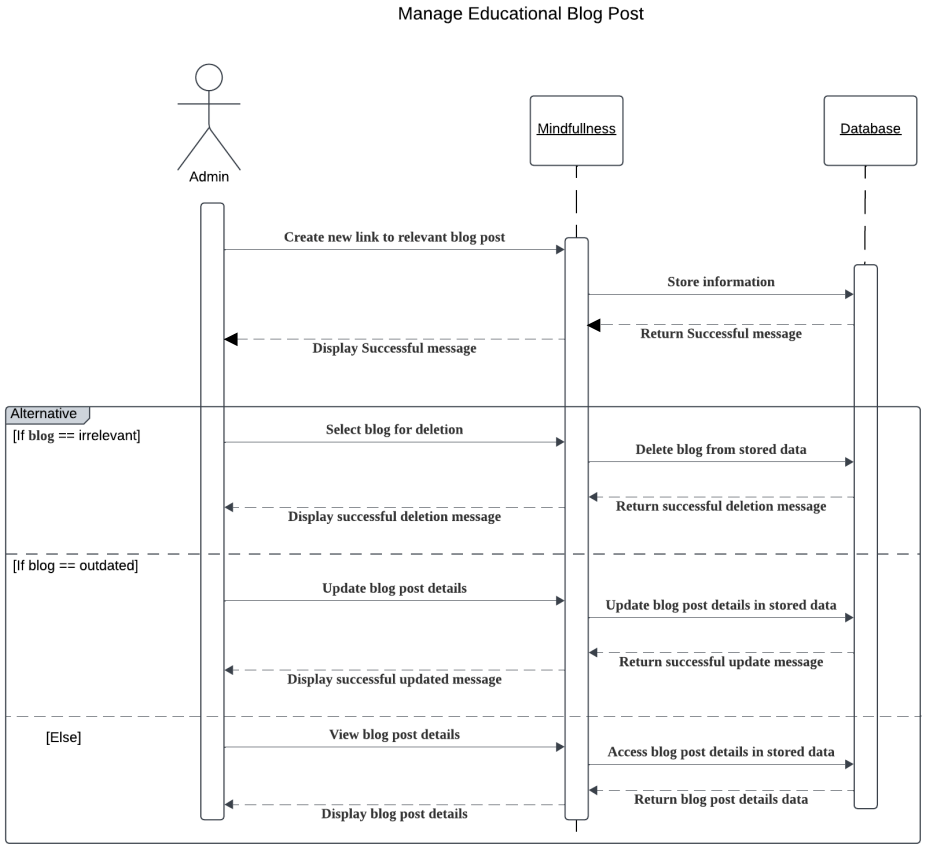

Figure 3.25: Admin Manage Educational Blog Posts.

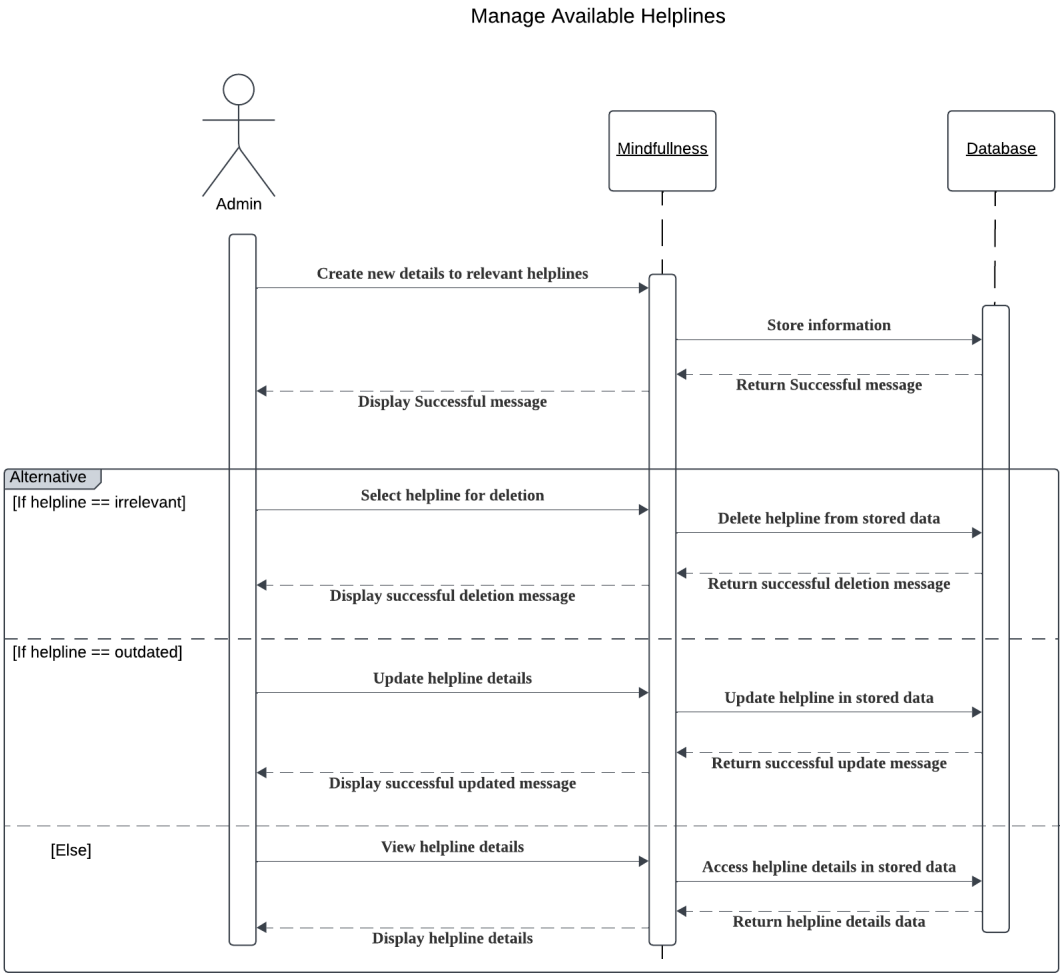

Figure 3.26: Admin Manage Available Helplines.

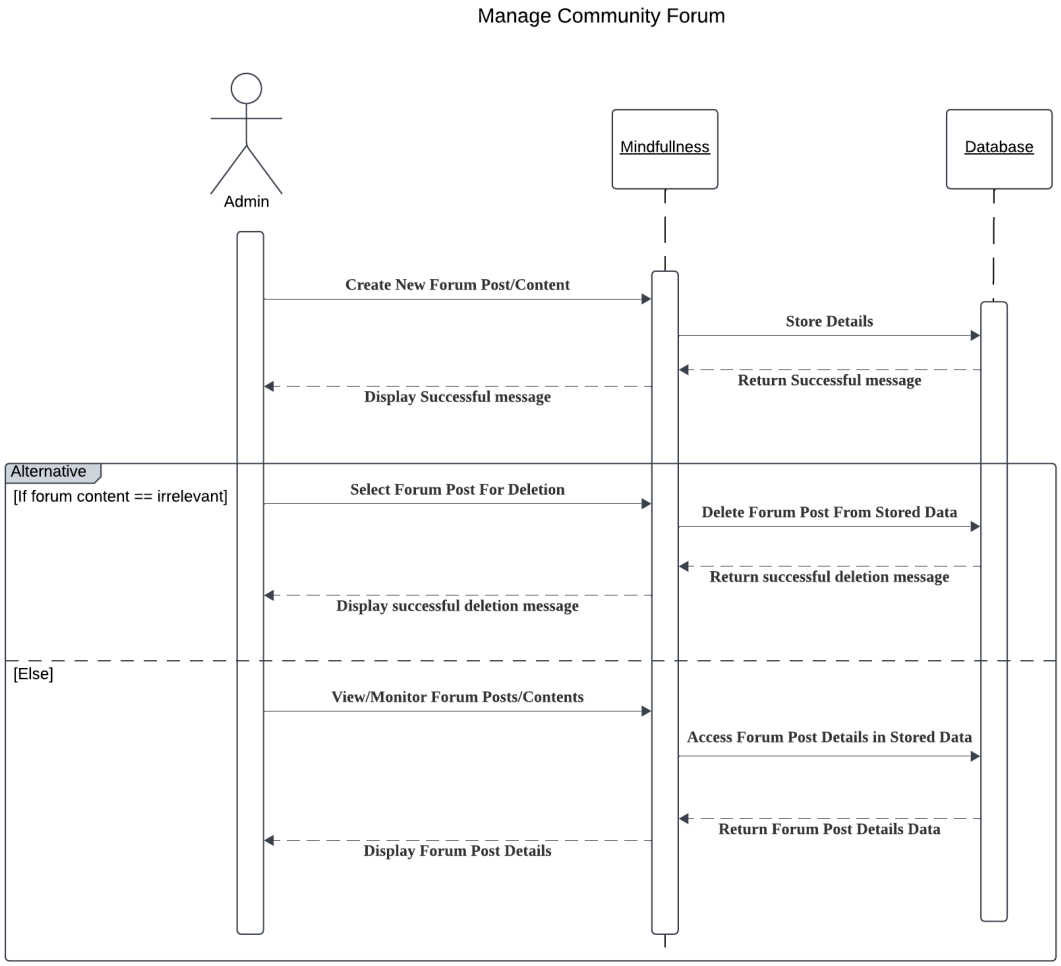

Figure 3.27: Admin Manage Community Forum.

3.8. Activity Diagram

UML activity diagrams are behavioural diagrams that illustrate the internal processes and operations of a system's program using nodes to represent actions or decisions and edges to show the flow of control between them (Touseef, Anwer, Hussain, & Nadeem, 2015). It is crucial in this project as it provides a clear and structured overview of how various components interact, making it easier to understand, design, and optimize the system's processes. The activity diagram for MindFullness: UNIMAS Mental Health Assessment and Support System, illustrated in Figure 3.28 below, effectively visualizes the step-by-step flow of activities, highlighting how the admin, system, and students interact. Each flow represents specific actions or decisions, ensuring that all stakeholders and system processes are comprehensively mapped out. This diagram is instrumental in identifying potential inefficiencies, improving user experience, and ensuring the system meets its intended purpose.

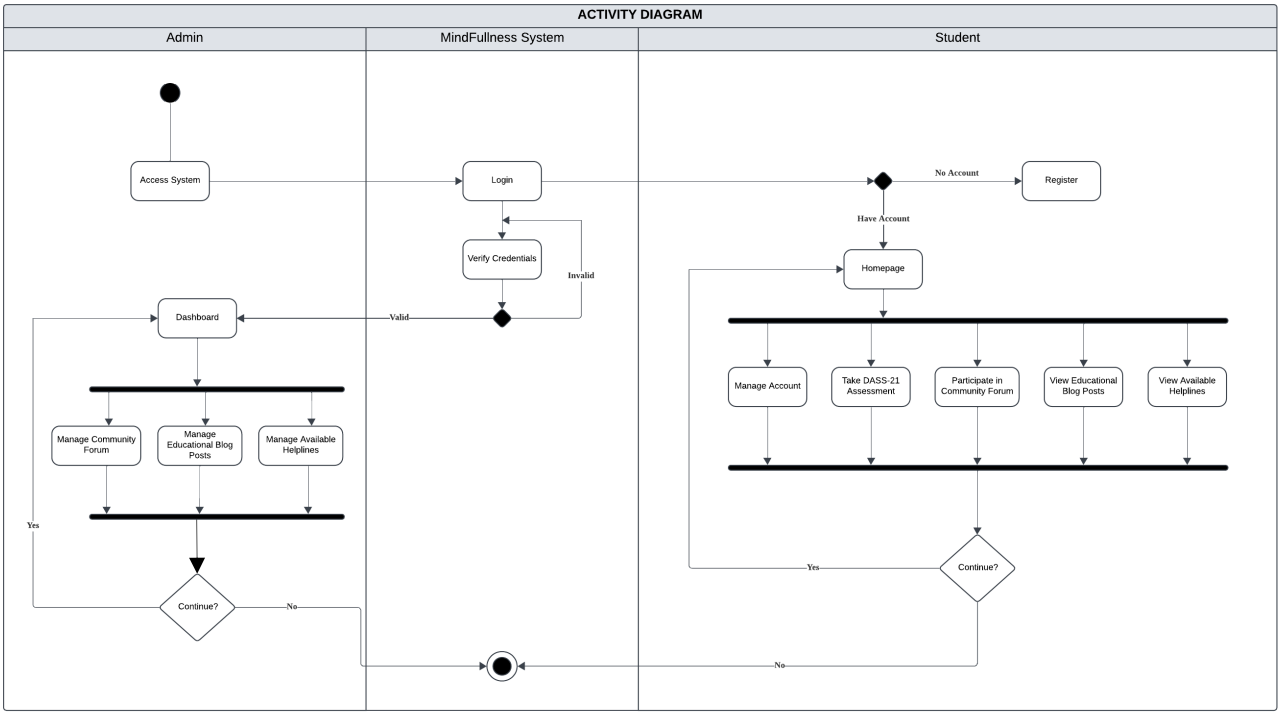

Figure 3.28: Activity Diagram for MindFullness: UNIMAS Mental Health Assessment and Support System

3.9. Wireframes for MindFullness: UNIMAS Mental Health Assessment and Support System.

Wireframes are simplified visual depictions of a web page or app interface, focusing solely on its essential elements (Hannah, 2024). Based on the initial user needs and software requirements, designers typically begin by creating a wireframe of the desired graphical user interface (GUI). This involves selecting simplified visual components with specific functions and determining the layout of these components to support interactions with application data and help users achieve their goals (Chen et al., n.d.).

The Figure 3.29 to 3.33 below presents wireframes for key components and pages of the MindFullness: UNIMAS Mental Health Assessment and Support System, that includes the homepage, the DASS-21 self-assessment page**,** the community forum page, educational blog posts page and the view available helplines directory page. These wireframes serve as a visual blueprint, offering brief overview of the system's layout and user interface for these critical areas. They aim to provide a clear understanding of the design and flow of each page, helping developers, supervisor and examiner for this project visualize how users will interact with the system.

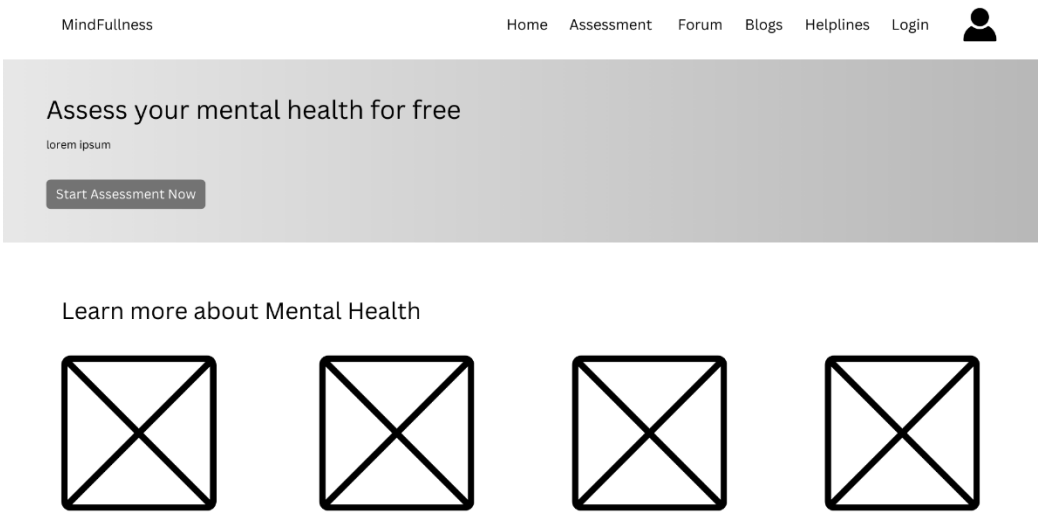

Figure 3.29: Homepage Wireframe.

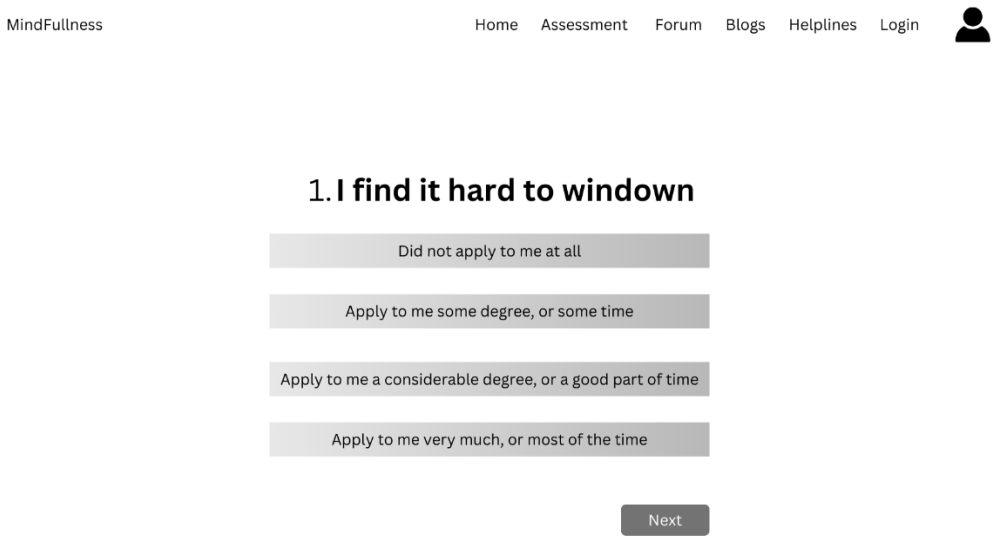

Figure 3.30: DASS-21 Assessment Wireframe.

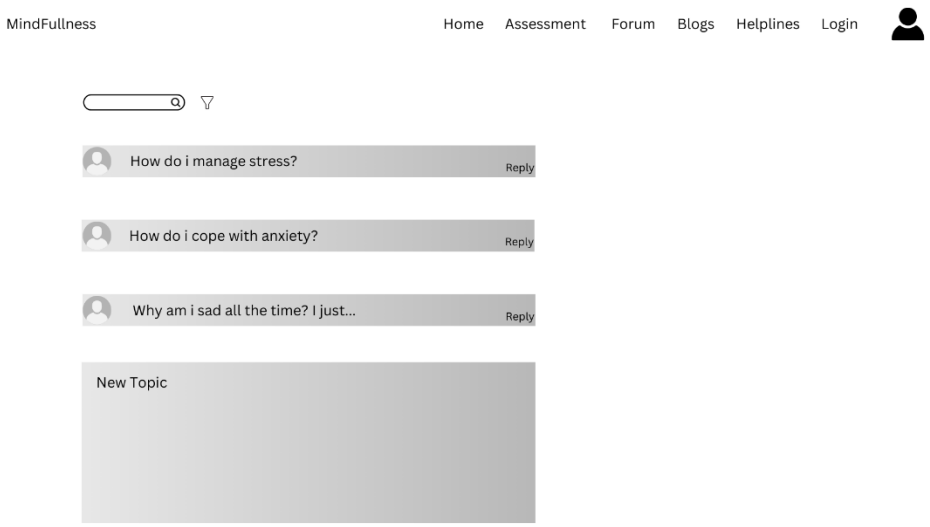

Figure 3.31: Community Forum Wireframe.

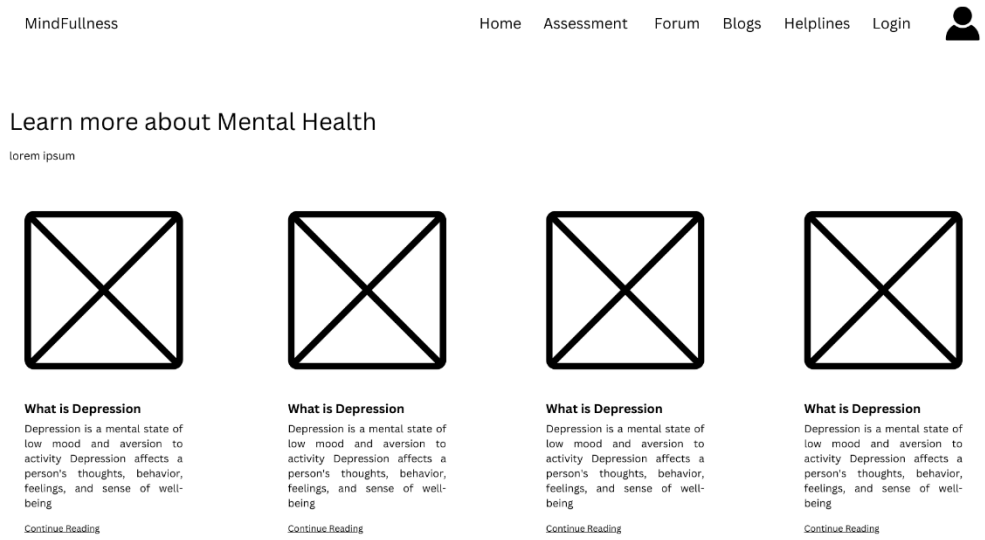

Figure 3.32: Wireframe for View Educational Blogs.

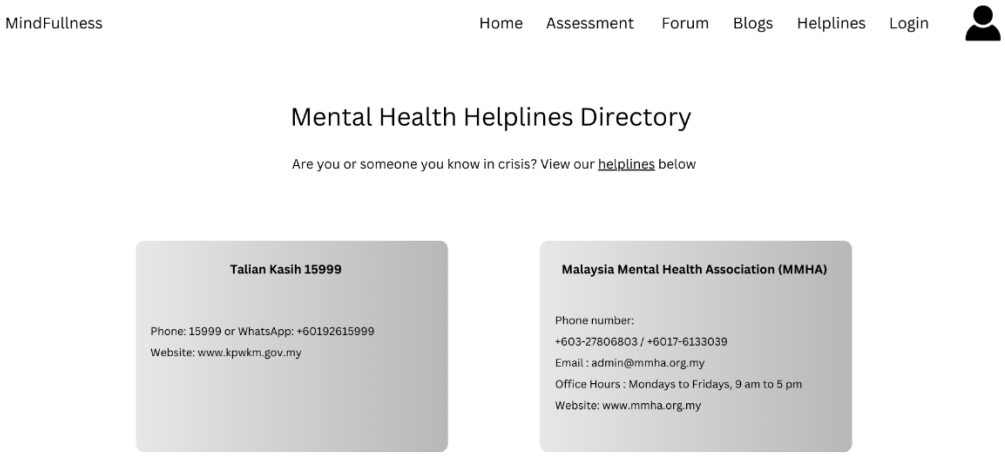

Figure 3.33: Wireframe for List of Available Helpline.

3.10. Summary

In summary, the methodology adopted for this project is Scrum within the Agile framework. Scrum was chosen due to its ability to provide a structured yet flexible approach, making it ideal for managing dynamic projects like this one. The framework facilitates effective task management through sprints, encourages regular team self-assessments, and ensures continuous development and adaptability. This iterative process helps keep the project on track while accommodating any changes as they arise. To gather requirements, a questionnaire was distributed via Google Forms to UNIMAS students, with a total of 33 responses collected. The feedback from the survey was analyzed to extract user requirements, which served as a foundation for system design.

Additionally, this chapter includes various UML models such as use case diagrams and descriptions, sequence diagrams, and activity diagrams. These models play a crucial role in defining the system's behavior, identifying interactions between users and the system, and outlining the structural framework of the proposed solution. Together, these elements provide a comprehensive understanding of the system's design and functionality, ensuring alignment with user needs and project objectives. This structured approach ensures that the system is well-designed, user-focused, and scalable for future enhancements.

Chapter 4: Implementation

4.1. Introduction

Chapter 4 provides a comprehensive explanation of the development process for the MindFullness: UNIMAS Mental Health Assessment and Support System. This chapter elaborates on how the system was constructed based on the system requirements and design specifications outlined in Chapter 3, ensuring that the final product aligns with the intended goals and functionalities. The development tools utilized such as XAMPP for local server deployment and Visual Studio Code for code editing are discussed in detail, including their roles in configuring and integrating the various components of the system. Furthermore, this chapter presents an in-depth walkthrough of the system's structure, supported by screenshots and thorough descriptions of each module and feature to provide a clear understanding of the system's interface, workflow, and functionality.

4.2. Installation and Configuration of System's Component

4.2.1. XAMPP

XAMPP is a free and open-source web server solution package developed by Apache Friends that provides an all-in-one platform for local web development (Apache Friends, n.d.).[1] The acronym stands for Cross-platform, Apache, MySQL, PHP, and Perl, components essential for running dynamic websites and applications. Compatible with Windows, macOS, and Linux, XAMPP simplifies the process of creating a local server environment without requiring complex installation or configuration. It includes the Apache HTTP Server, MySQL for database management, PHP and Perl for server-side scripting, and phpMyAdmin for database administration. For the Final Year Project (FYP), MindFullness: UNIMAS Mental Health Assessment and Support System, XAMPP served as the primary development environment. It allows the developer to build, test, and manage the system locally on my laptop, ensuring smooth performance before deployment. Using XAMPP, I was able to develop core features such as user registration and login, the DASS-21 assessment, community forum, blog pages, and the helpline directory. It enabled efficient testing of PHP and MySQL functions while maintaining user privacy and ensuring the overall functionality of the system. The user-friendly interface and ease of managing databases through phpMyAdmin made XAMPP a practical and

effective tool throughout the development process. Figure 4.1 below shows the XAMPP control panel.

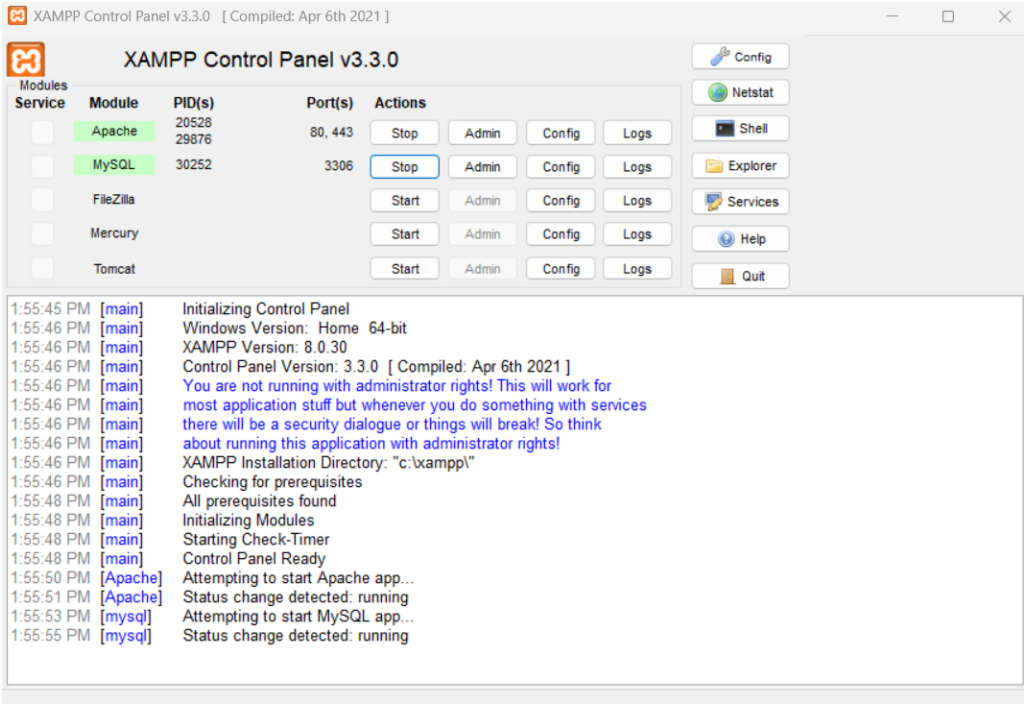

Figure 4.1: XAMPP Control Panel.

4.2.2. Visual Studio Code

Visual Studio Code (VS Code) is a free, open-source code editor developed by Microsoft that is widely used for software and web development. It supports a variety of programming languages, including HTML, CSS, JavaScript, PHP, and Python, making it a versatile tool for developers. VS Code features a clean and user-friendly interface, along with powerful functionalities such as syntax highlighting, IntelliSense (code completion), debugging tools, integrated terminal, and Git integration. Extensions and plugins are also available through the Visual Studio Code Marketplace, allowing developers to customize their environment based on their project needs. For my Final Year Project (FYP), MindFullness: UNIMAS Mental Health Assessment and Support System, Visual Studio Code was used as the main code editor to develop and organize all system files. It enabled me to efficiently write and manage front-end components such as HTML and CSS for the user interface, as well as back-end PHP scripts for handling user input, processing the DASS-21 assessment, and managing data interactions with MySQL. The real-time error highlighting and integrated terminal allowed me to quickly detect and fix coding issues while working alongside XAMPP's local server. Overall, Visual Studio Code provided a seamless and efficient development experience,

enhancing productivity and ensuring high code quality throughout the development of the MindFullness system. Figure 4.2 below shows the Visual Studio Code interface for code editing.

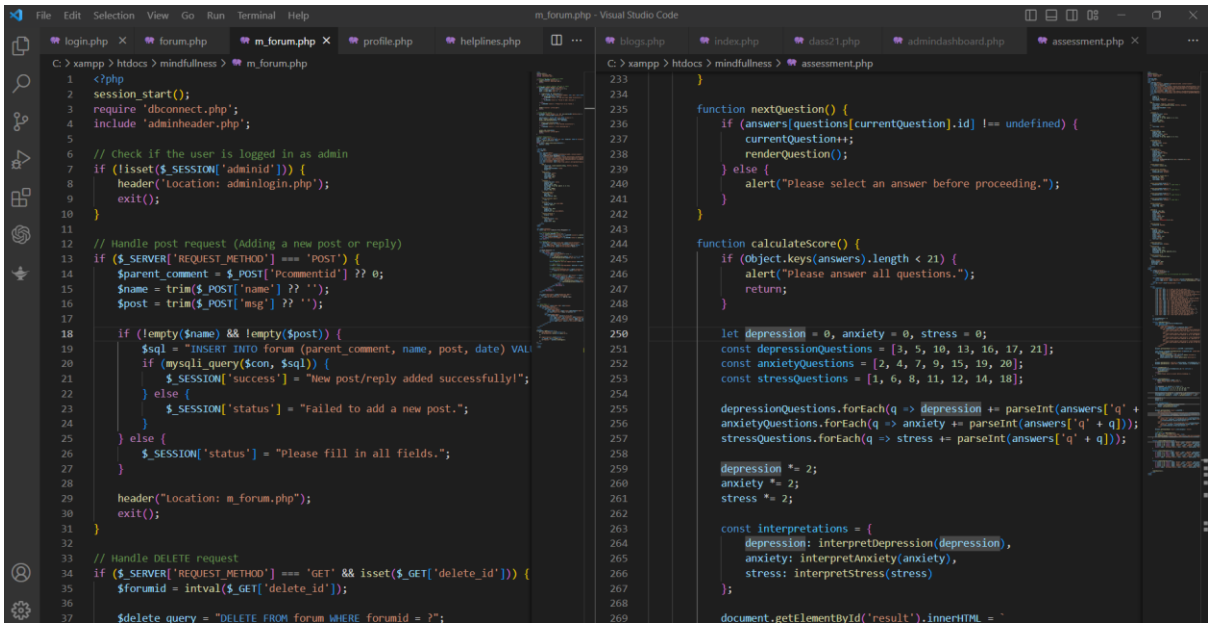

Figure 4.2: Visual Studio Code for Code Editing

4.2.3. Hostinger

Hostinger is a web hosting service provider known for its affordability, reliability, and user-friendly interface, making it a popular choice for individuals and small to medium-sized projects. It offers a range of hosting solutions, including shared hosting, cloud hosting, and VPS, with built-in features such as free SSL certificates, one-click installations, automated backups, and 24/7 customer support. Hostinger also provides a custom control panel (hPanel) that simplifies website and server management, including domain setup, file uploads, database management, and email configuration. For my Final Year Project (FYP), MindFullness: UNIMAS Mental Health Assessment and Support System, Hostinger was used to deploy the system and make it accessible online. After developing the system locally using XAMPP and Visual Studio Code, I uploaded the project files to Hostinger's web server via the File Manager and configured the MySQL database using hPanel. This allowed the system to function as a live website, enabling real users to register, take the DASS-21 assessment, participate in the community forum, and access mental health resources from any device with internet access. Hostinger's reliable uptime and performance ensured that the system remained available and responsive, providing a smooth experience for users and fulfilling the goal of delivering mental

health support through a stable online platform. Figure 4.3 below shows the homepage for Hostinger.

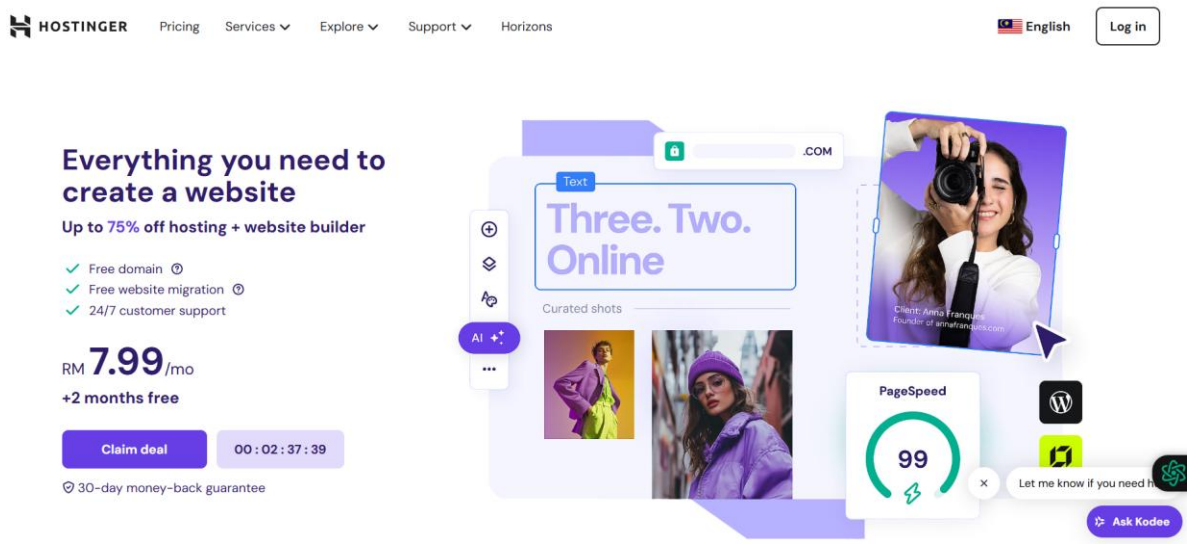

Figure 4.3: Hostinger Homepage

4.3. Implementation of Proposed System

4.3.1. Overview of the System

The MindFullness: UNIMAS Mental Health Assessment and Support System supports two distinct user roles: administrators and users (students). Each role is associated with specific modules and functionalities within the system, as outlined in Table 4.1 below. This table provides a detailed overview of the features available to each user type, highlighting their respective responsibilities and system access. Please note that several adjustments and additional modules have been implemented. For users, new features have been added that allows them to manage their own forum posts. This includes the ability to edit and delete their posts, as well as view the total number of replies. User also can view the history of their assessment results. For the admin, a new module has been introduced that enables user management, specifically allowing the admin to edit and delete user accounts. The updated use case diagram reflecting these changes will be included in the appendix section for reference.

Table 4.1: Module for Each User

No	Actor	Module
1.	User	a. Register b. Login

		c. Take DASS-21 Assessment d. Participate in community forum e. Manage Profile f. Manage Forum Posts g. View DASS-21 Assessment History h. View List of Educational Blogs i. View List of Available Helplines
2.	Administrator	a. Login b. Manage Community Forum c. Manage Educational Blogs d. Manage Available Helplines e. Manage Users

4.3.2. System Main Page

The main entry point of the system is the login page, where users are required to authenticate themselves by entering their registered email address and password, as illustrated in Figure 4.4. Once these credentials are entered, users must click the "Login" button to proceed. If the entered email and password match the records in the system database, the user will be successfully logged in and redirected to their respective user dashboard. Moreover, once logged in, all users could log out of their session. This can be done by clicking the "Log Out" button, which is conveniently located in the header section at the top of each page. This ensures that users can securely exit the system when they are finished using it.

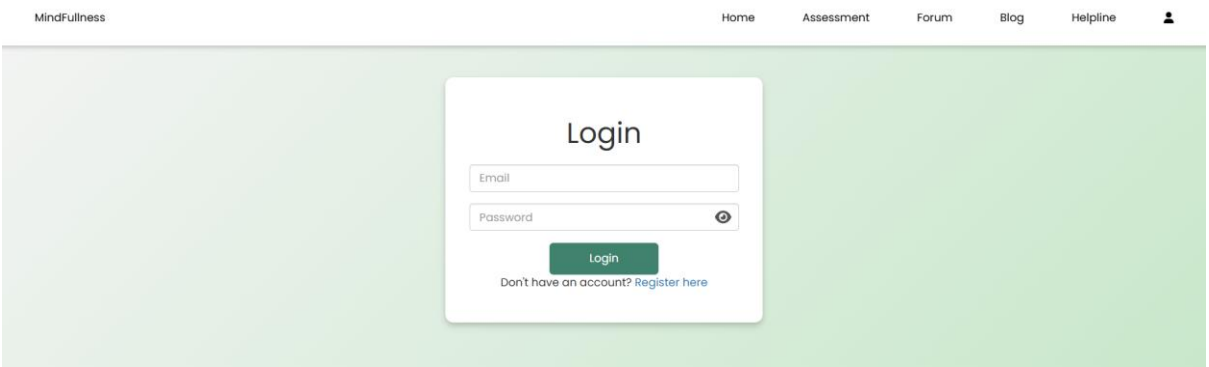

Figure 4.4: Login Page

4.3.3. User Module

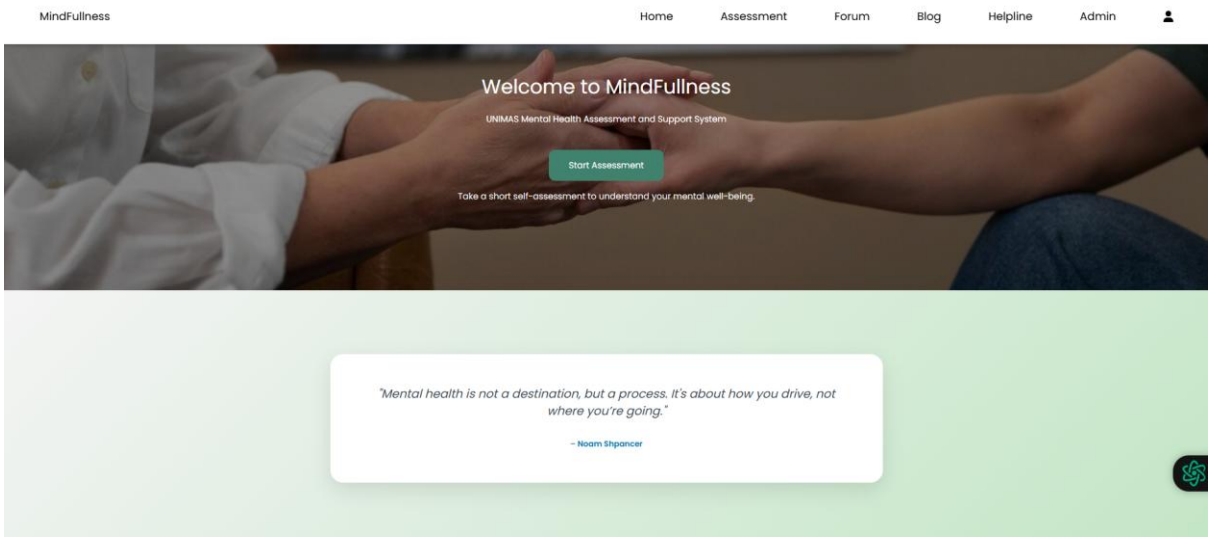

Figure 4.5: Homepage of MindFullness: UNIMAS Mental Health Assessment and Support System

When a user accesses the website, they are first directed to the homepage of the system, MindFullness: UNIMAS Mental Health Assessment and Support System as shown in Figure 4.5 above. At the forefront of this homepage specifically in the hero section, there is a prominently displayed button that redirects users to the DASS-21 mental health assessment. This button is intentionally positioned at the top of the page to immediately capture attention and emphasize the system's core objective which is to help users assess and understand their mental wellbeing in a quick and accessible manner. At the top of the homepage, the header section features the system's name, MindFullness, positioned on the top-left corner, serving as a constant identifier and anchor for the platform. On the top-right corner, there are a series of navigation buttons that provide users with quick access to key features of the system including the DASS-21 Assessment, Forum, Blog, Helpline, and Login Page. This intuitive layout ensures that users can easily explore the platform's main functionalities from any page, enhancing overall accessibility and user experience. Further down the homepage, users will find an interactive card section featuring a rotating display of inspiring and supportive mental health quotes. These quotes are designed to promote self-reflection, provide encouragement, and foster a positive mindset among users as they engage with the system.

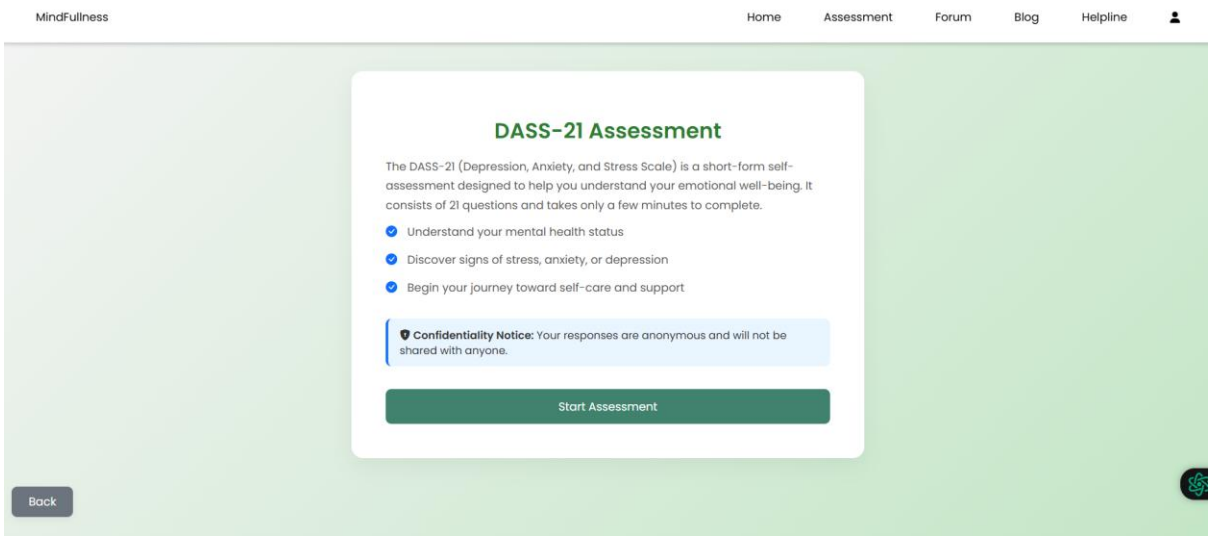

Figure 4.6: Confidentiality Page of MindFullness: UNIMAS Mental Health Assessment and Support System

When a user clicks the "Start Assessment" button located either in the homepage's hero section or the navigation header, they are first directed to a Confidentiality Notice page as shown in Figure 4.6. This page serves an important purpose as it informs users that their responses to the DASS-21 assessment will remain completely private and anonymous, reassuring them that their mental health data is not stored or linked to their identity in any way. At the bottom of this informational card, there is a "Start Assessment" button, which, upon clicking, redirects the user to the actual DASS-21 assessment interface. This two-step approach ensures transparency and helps build trust with users before they proceed with the self-assessment.

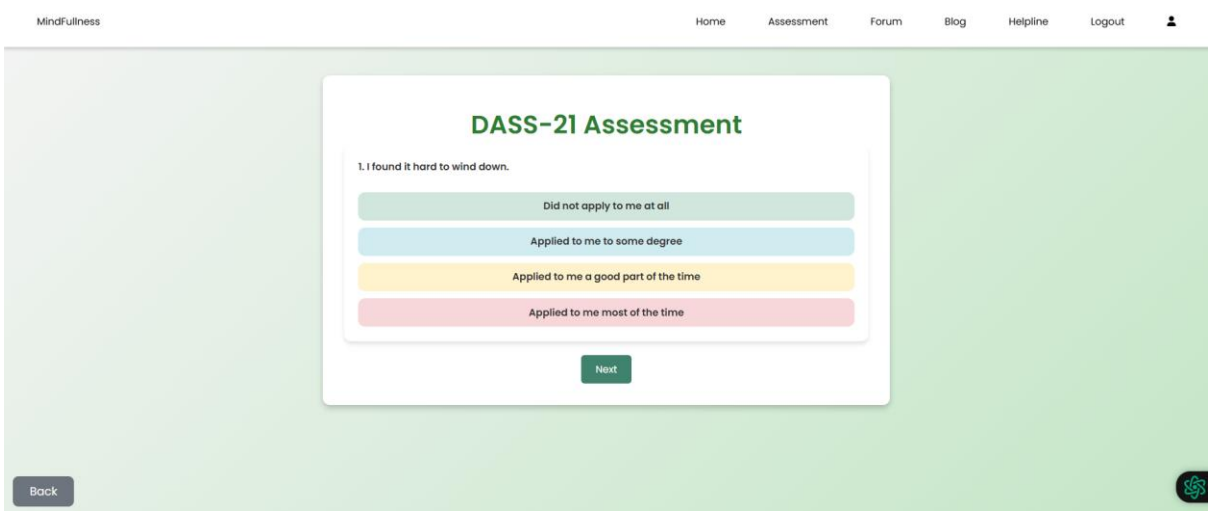

Figure 4.7: First Question of DASS-21 Assessment Page

As illustrated in Figure 4.7, the test questions within the system are designed with a visually enhanced, color-coded response system, where each answer choice is assigned a distinct color. This deliberate use of color not only improves the visual appeal of the assessment interface but also significantly enhances the usability and user-friendliness of the platform. From a Human-Computer Interaction (HCI) perspective, color coding serves multiple crucial functions. It helps visually organize information, guides the user's attention to relevant elements, and offers immediate visual feedback all of which are fundamental for fostering an intuitive and efficient interaction experience (Nielsen & Budiu, 2013).

Furthermore, the use of color supports the principle of cognitive load reduction, as described by Sweller (2011). By presenting response options in clearly differentiated colors, the system minimizes the mental effort users need to distinguish between choices. This simplification facilitates quicker comprehension, aids faster decision-making, and improves overall task completion speed. To proceed through the assessment, a "Next" button is positioned at the bottom of the interface, allowing users to seamlessly navigate to the following question in a linear and straightforward manner.

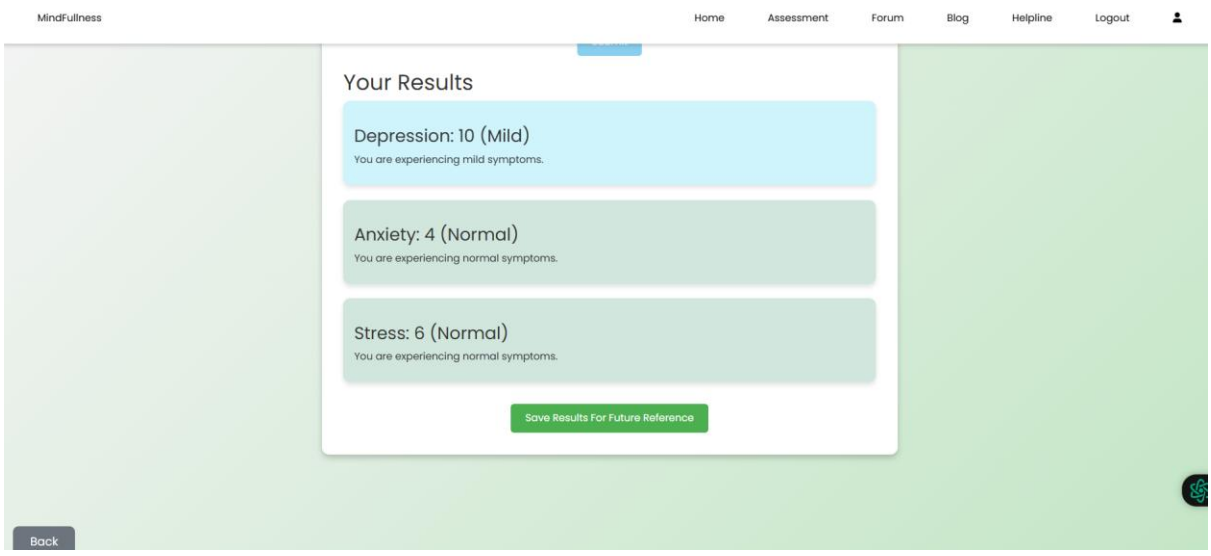

Figure 4.8: Results Page of DASS-21 Assessment

As illustrated in Figure 4.8, once all 21 questions of the assessment have been completed and submitted, the system will generate and display a personalized mental health summary based on the user's scores. This summary is presented in a visually appealing card layout, with clear color-coding to indicate the severity levels of the user's mental health status. Specifically, blue represents mild, yellow indicates moderate, and red signifies extremely

severe conditions. This use of color not only enhances readability but also allows users to quickly interpret their results briefly, promoting better understanding and awareness of their mental well-being.

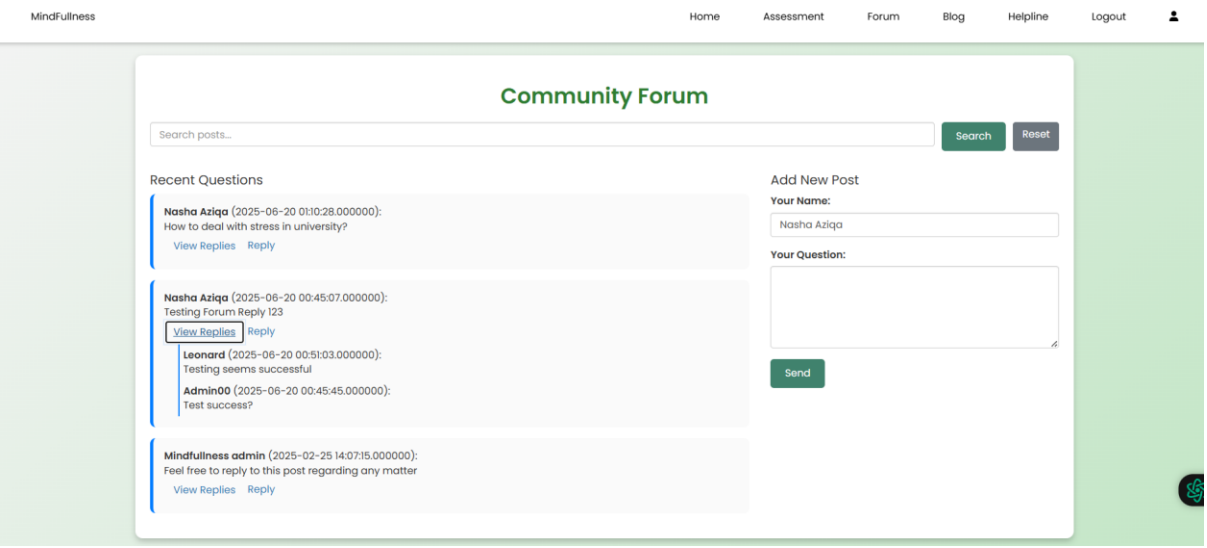

Figure 4.9: Community Forum Page of MindFullness: UNIMAS Mental Health Assessment and Support System

On the Community Forum page, the layout is divided into two main sections for better usability and organization as shown in Figure 4.9. The left side of the interface displays a scrollable list of existing forum topics or discussion posts, allowing users to easily browse through ongoing conversations. On the right side, users will find the section to create a new discussion topic. This section includes fields for the user's name and a text box to input their question or discussion point. Additionally, each forum post includes a reply option, enabling users to actively engage with others by contributing their responses or insights. This design promotes interactive participation and fosters a collaborative environment for users to share and support one another.

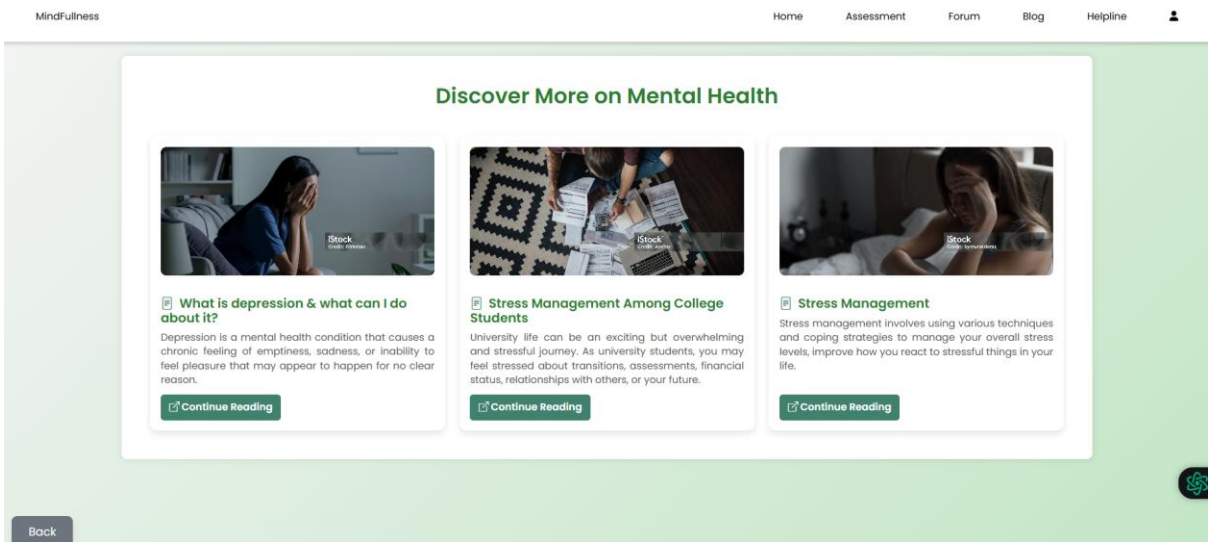

Figure 4.10: List of Available Blogs on Mental Health

In the Mental Health Blog Posts section, each blog entry is presented within a neatly structured container and grid layout that includes the blog image, title, a brief description, and a clickable link for users to access the full content as shown in Figure 4.10. This organized and visually balanced design ensures that users can quickly scan and identify topics of interest, making the browsing experience more engaging and efficient. By combining visual elements with concise textual previews, the layout not only improves the aesthetic appeal of the page but also enhances content discoverability. The clickable links serve as clear call-to-actions, guiding users to deeper, more informative content ultimately supporting the platform's goal of providing accessible and meaningful mental health resources.

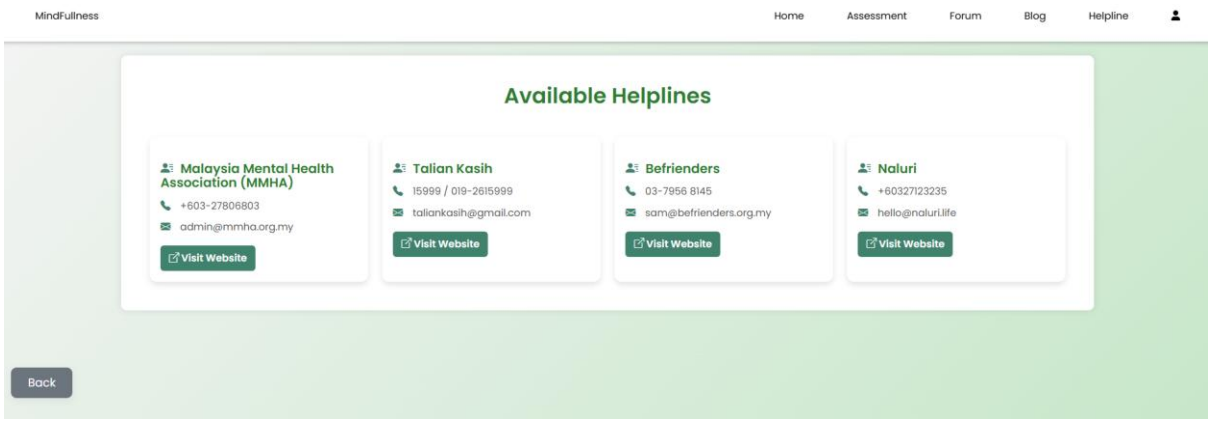

Figure 4.11: List of Available Helplines for MindFullness: UNIMAS Mental Health Assessment and Support System

In the Helpline Directory section, each available helpline is showcased in a grid-based container layout, designed for clarity and ease of access as shown in Figure 4.11. Each container features a recognizable icon representing the type of support offered, along with essential contact details such as the helpline title, phone number, and email address. Additionally, clickable links are provided to direct users to the helpline's official website or online support platform, if available.

This structured presentation not only enhances the visual organization of the information but also ensures that users can quickly identify and reach out to the support services they need. The use of icons aids in intuitive recognition, while the grid layout supports efficient navigation, especially for users seeking urgent assistance. Overall, this design promotes accessibility, responsiveness, and a supportive user experience, in line with the platform's mission to connect students with reliable mental health resources.

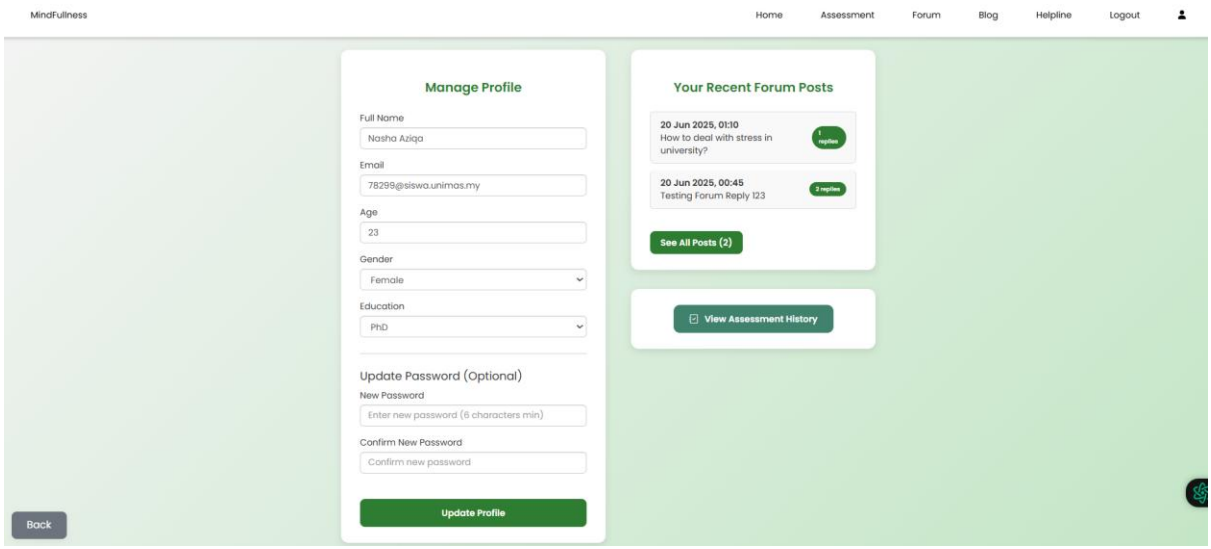

Figure 4.12: Manage Profile Page for MindFullness: UNIMAS Mental Health Assessment and Support System

As shown in Figure 4.12, the "Manage Profile" section is organized using a structured container layout, positioned on the left side of the page. Each input field is clearly labeled to help users easily recognize and fill in the required information. On the right side, two additional containers are displayed: one showing the user's recent forum posts, and another providing a button to access their assessment history. This intuitive and well-balanced design enhances the user experience by minimizing confusion, reducing cognitive load, and allowing users to complete or update their profile efficiently and effortlessly.

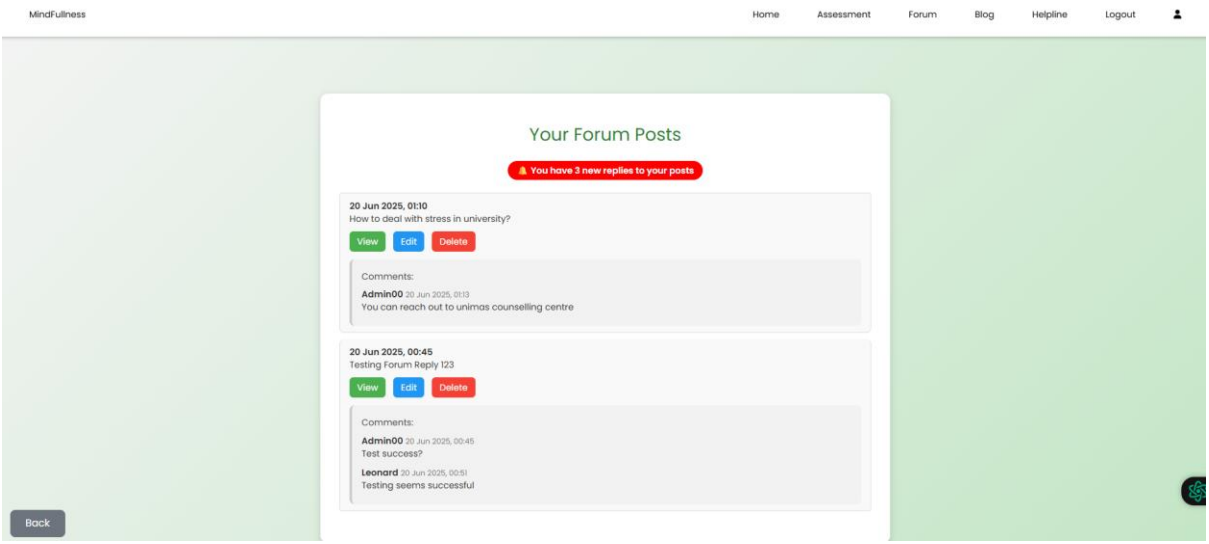

Figure 4.13: Manage Own Forum Posts

Upon clicking the "See All My Posts" button, users are redirected to a page displaying all their own forum posts along with the respective replies as shown in Figure 4.13. A brief notification appears at the top of the container for 5 seconds, informing users of the total number of replies received across their posts. Each post includes action buttons "View" to access the full forum thread, "Edit" to update the post content, and "Delete" to remove the post. This streamlined interface ensures users can easily monitor and manage their forum contributions, enhancing both control and engagement within the platform.

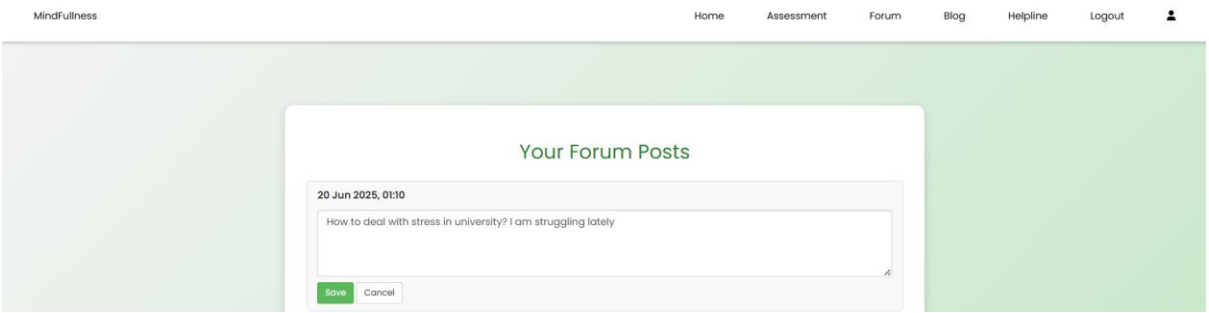

Figure 4.14: Edit Own Forum Content

When users click the "Edit" button on a forum post, the content becomes editable, allowing them to make changes as needed. After editing, they can choose to "save" the updated content or "cancel" the action to discard any changes and revert to the original post as shown in Figure 4.14. This functionality provides flexibility and control, ensuring users can confidently manage their contributions with ease.

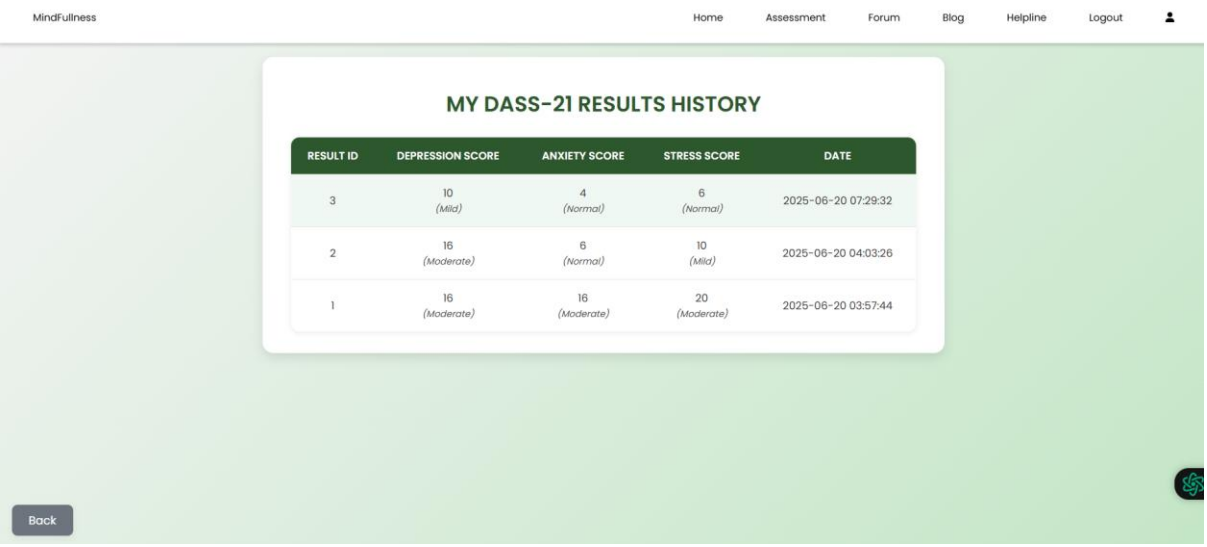

Figure 4.15: View DASS-21 Assessment History

When users click the "View Assessment History" button on the profile page, they are redirected to a page displaying a table of their previously taken DASS-21 assessment results as shown in Figure 4.15. Each entry includes the date taken, the individual scores for depression, anxiety, and stress, as well as an interpretation of the results. This allows users to easily track their mental health over time, reflect on their progress, and gain a better understanding of their emotional well-being.

4.3.4. Administrator Module

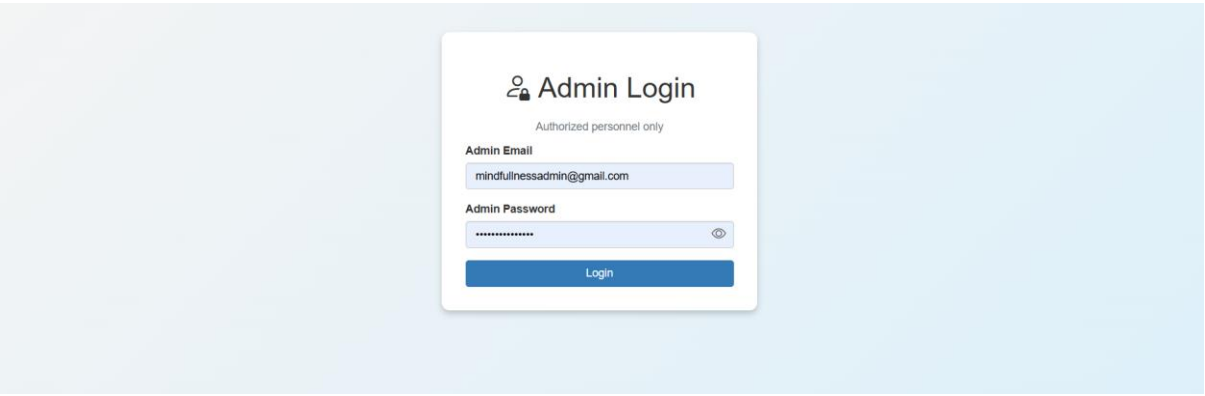

Figure 4.16: Admin Login Page for MindFullness: UNIMAS Mental Health Assessment and Support System

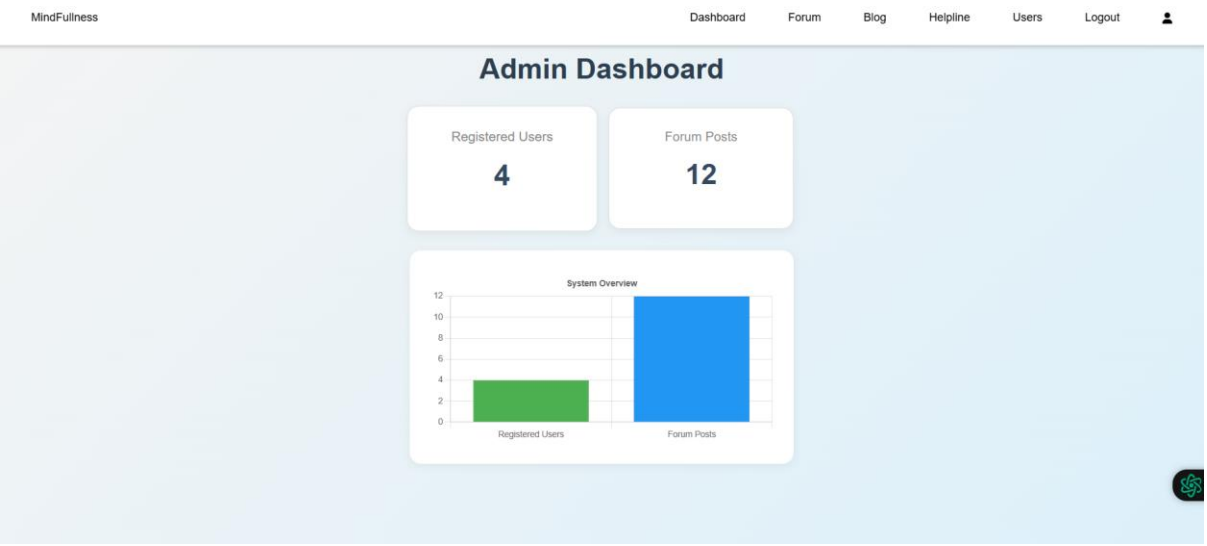

Figure 4.17: Admin Dashboard

Upon successful login with correct credentials as shown in Figure 4.16, the admin is redirected to the admin dashboard as shown in Figure 4.17, where a graphical overview displays the total number of registered users and forum posts. This provides that admin with a quick summary of user activity and engagement within the system, ensuring efficient monitoring and management.

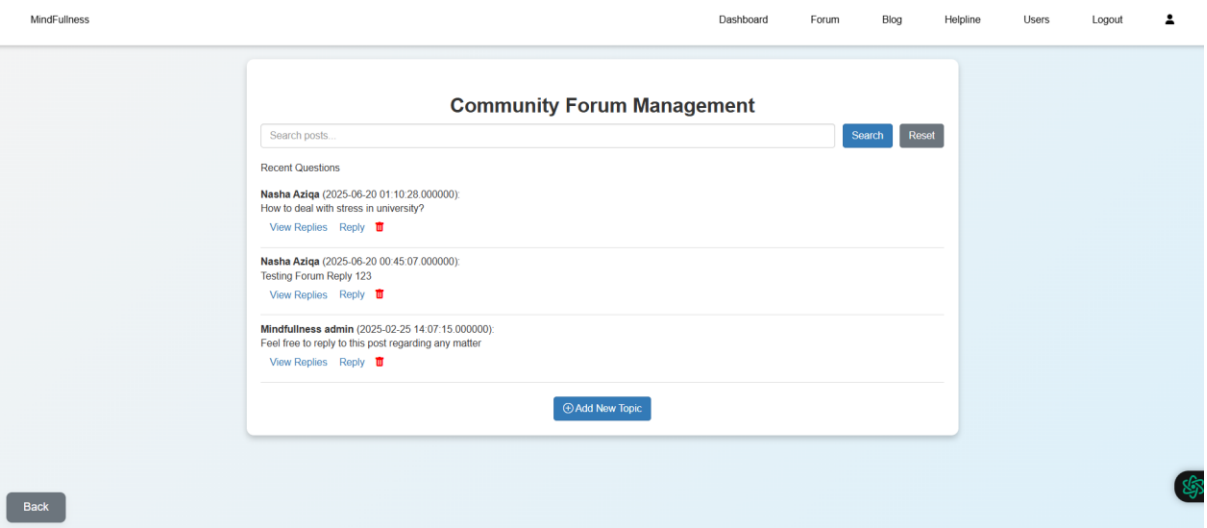

Figure 4.18: Community Forum Management for Admin

In the Community Forum Management section for administrators as shown in Figure 4.18, all user-generated forum posts are displayed for easy monitoring. Each post includes a delete option, enabling the admin to remove inappropriate or irrelevant content as part of the platform's moderation process. To streamline content management, the admin is also provided

with a search functionality, allowing them to quickly locate specific forum posts by keywords or phrases entered into the search box. This feature supports efficient moderation and helps maintain a respectful and relevant discussion environment. Like regular users (students), admins also have the capability to reply to posts made by other users, fostering engagement and providing guidance when necessary. This level of control ensures that the forum remains relevant, respectful, and aligned with the system's goal of supporting students' mental well-being through constructive peer and administrative interaction.

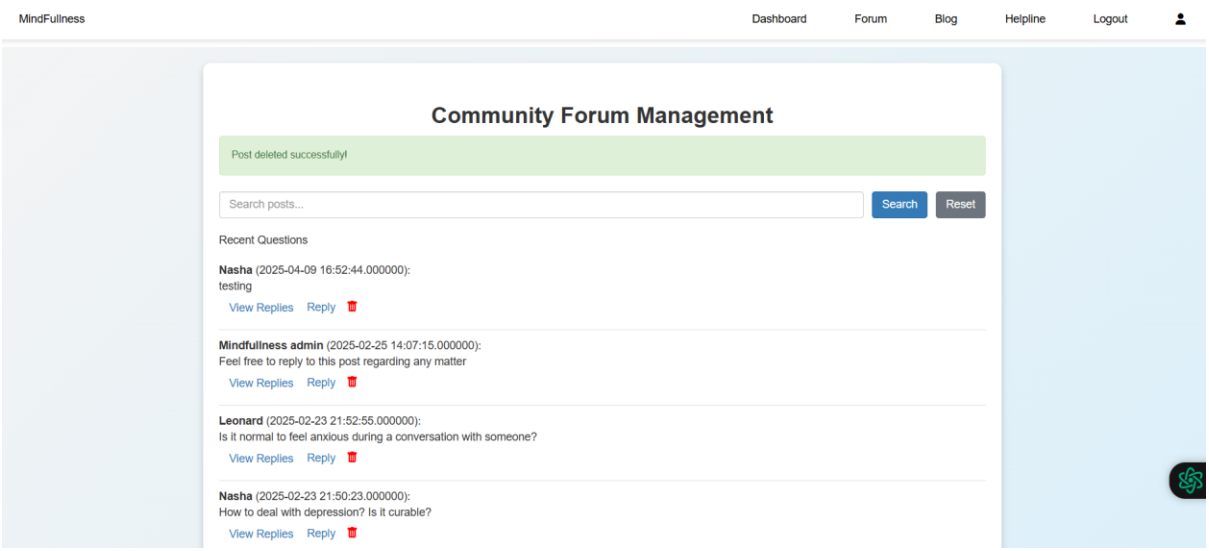

Figure 4.19: Admin Successfully Deleted a Post

When an admin successfully deletes a forum post, a confirmation pop-up message is triggered to notify them of the successful action as shown in Figure 4.19. This immediate visual feedback ensures the admin is aware that the deletion has been processed, enhancing the overall usability and reliability of the system. An example of this confirmation message is illustrated in the figure below.

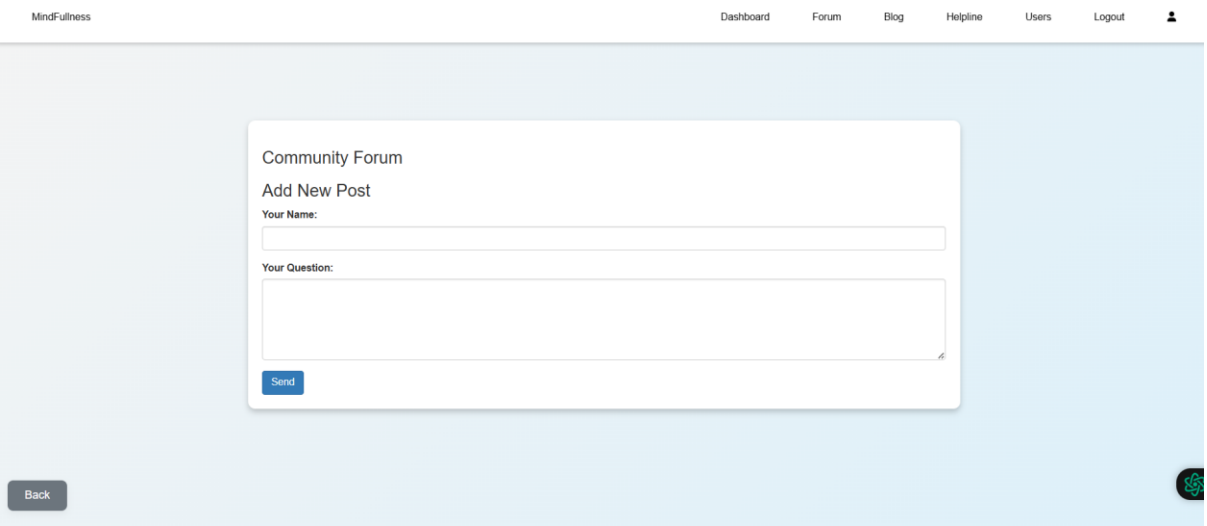

Figure 4.20: Admin Add New Forum Post

When the admin clicks the "Add New Post" button, they are redirected to a dedicated page where they can create a new forum post. Input fields such as Name and Content are displayed for the admin to fill in as shown in Figure 4.20. After entering the necessary information, the admin can click the "Send" button to submit the post, which will then be published to the community forum for users to view and engage with.

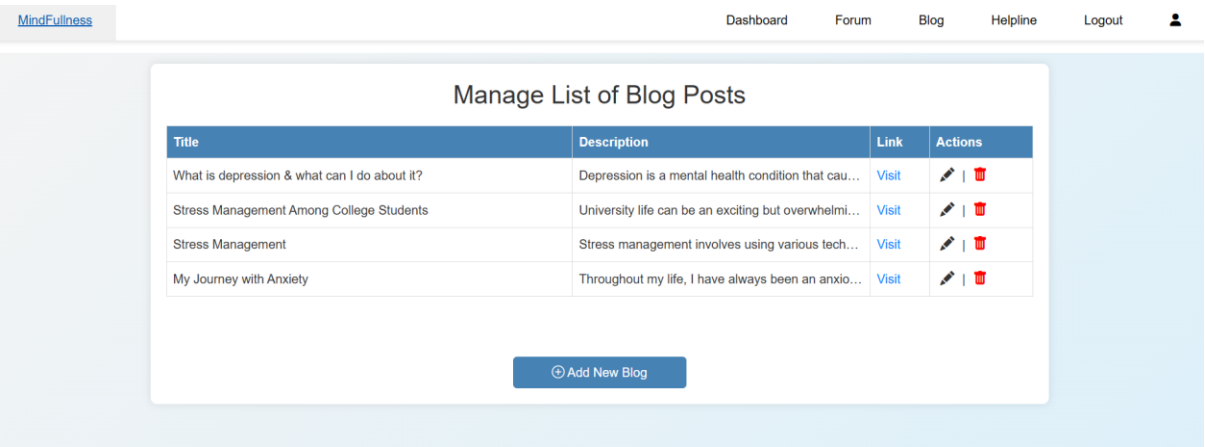

Figure 4.21: Blog Posts Management for Admin

In the "Manage Blog Posts" section, all existing blog entries are presented in a structured table format for clear and organized viewing as shown in Figure 4.21. Each row in the table displays key details of the blog post, including the title, a brief description, the external link to the full blog content, and action buttons for editing or deleting the post. This layout allows the admin to efficiently review and manage content. Additionally, the option to add a new blog post is positioned at the bottom of the page, maintaining a clean interface while

ensuring that the content management tools are easily accessible for ongoing updates and contributions.

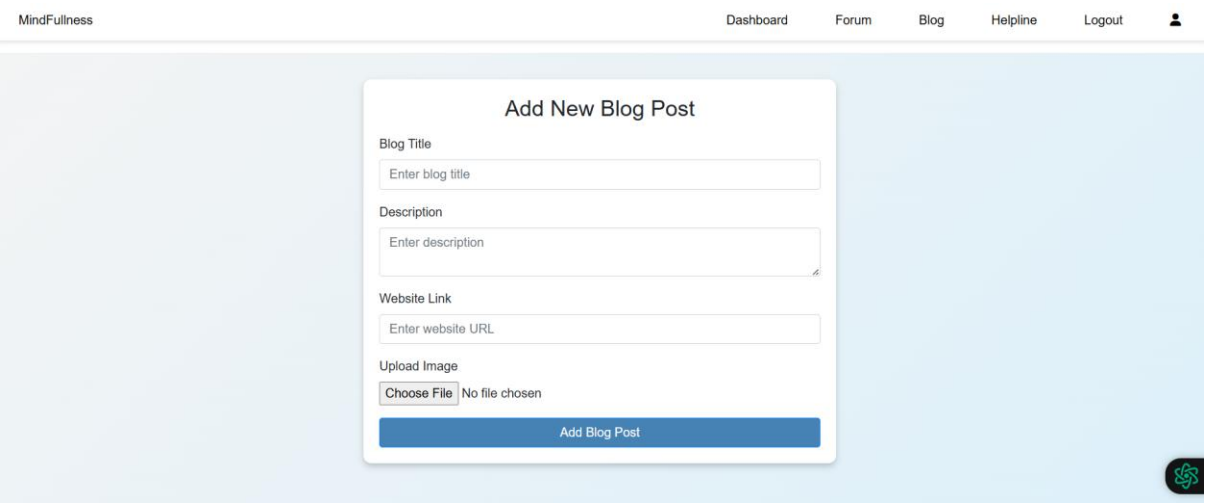

Figure 4.22: Add New Blog for Admin

On the "Add New Blog Post" page, the interface includes clearly labeled input fields for the blog title, description, external link, and an image file upload as shown in Figure 4.22. These labels guide the admin in understanding exactly what content is required for each section, thereby improving usability and reducing the chance of input errors. At the bottom of the form, an "Add" button is prominently placed, allowing the admin to submit the new blog post once all necessary information has been provided. This structured layout ensures a smooth and intuitive content submission process.

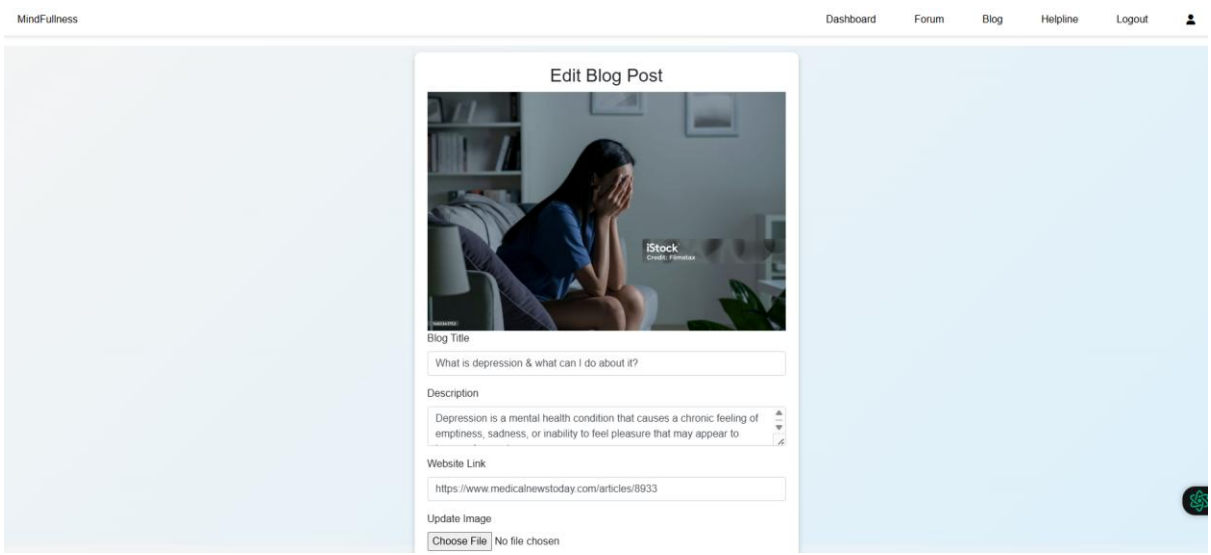

Figure 4.23: Edit Existing Blog Details for Admin

In the "Edit Blog Post" page, the existing image associated with the blog is displayed at the top of the form to indicate that an image has already been uploaded as shown in Figure 4.23. This provides a visual reference for the admin, helping them decide whether a new image upload is necessary. Additionally, the fields for the blog title, description, and link are pre-filled with data retrieved from the database. This ensures that the admin can view the current content and make accurate edits without having to re-enter all the information, thereby streamlining the editing process and reducing the likelihood of errors or data loss.

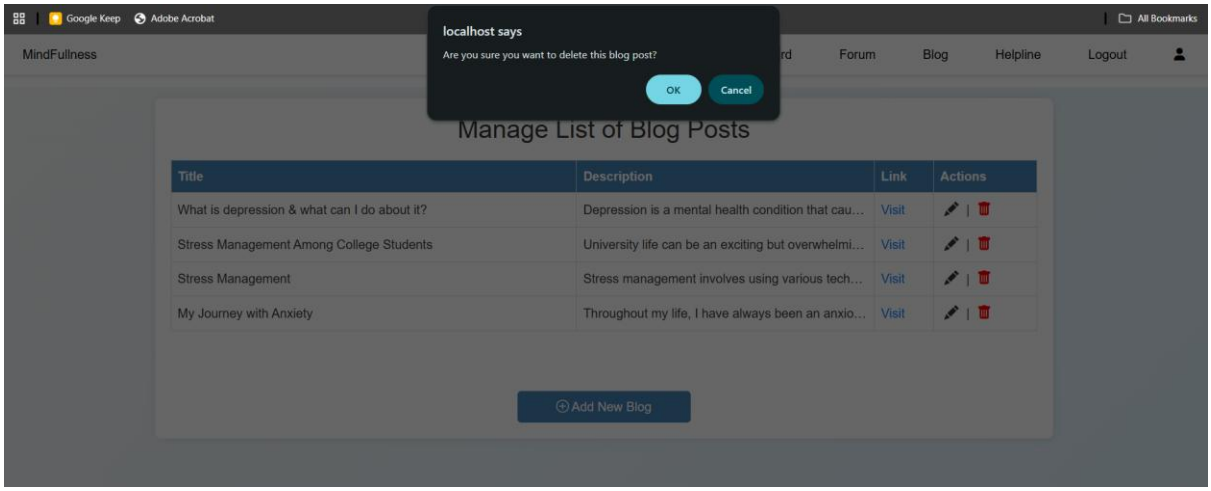

Figure 4.24: Delete Post Confirmation for Admin

For the delete option, a confirmation message is displayed before a blog post is permanently removed as shown in Figure 4.24. This prompt serves as a safeguard, ensuring that the admin intentionally confirms the deletion action and helping to prevent accidental data

loss. By requiring explicit confirmation, the system reinforces responsible content management and enhances overall reliability.

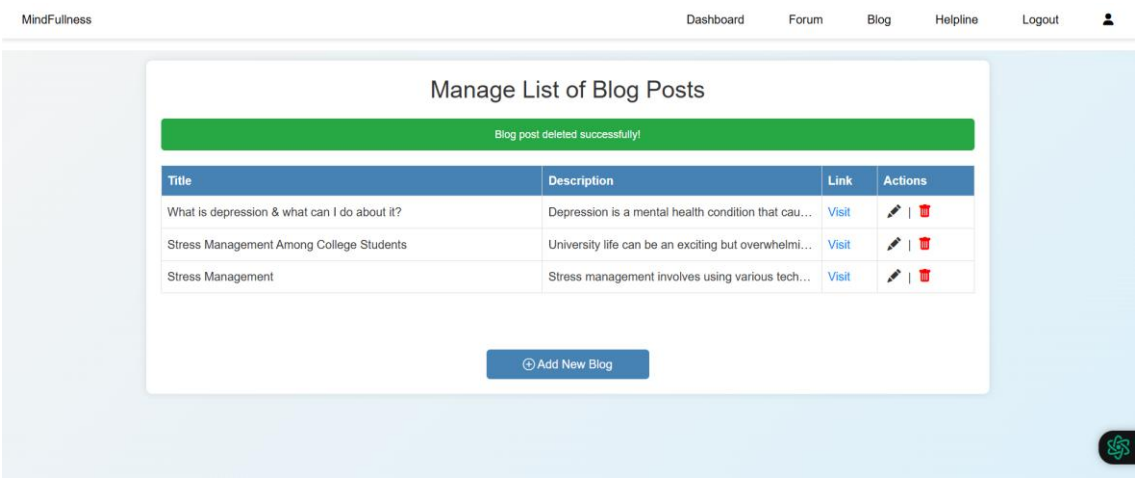

Figure 4.25: Admin Successfully Deleted a Post

After a blog post is successfully deleted, a pop-up notification appears to inform the admin that the deletion was completed successfully, as shown in Figure 4.25. This immediate feedback confirms that the action has been processed. Once confirmed, the deleted blog post is automatically removed from the table view, ensuring that the content list remains up-to-date and reflects only active blog entries. This enhances the system's responsiveness and provides a smooth user experience for the admin.

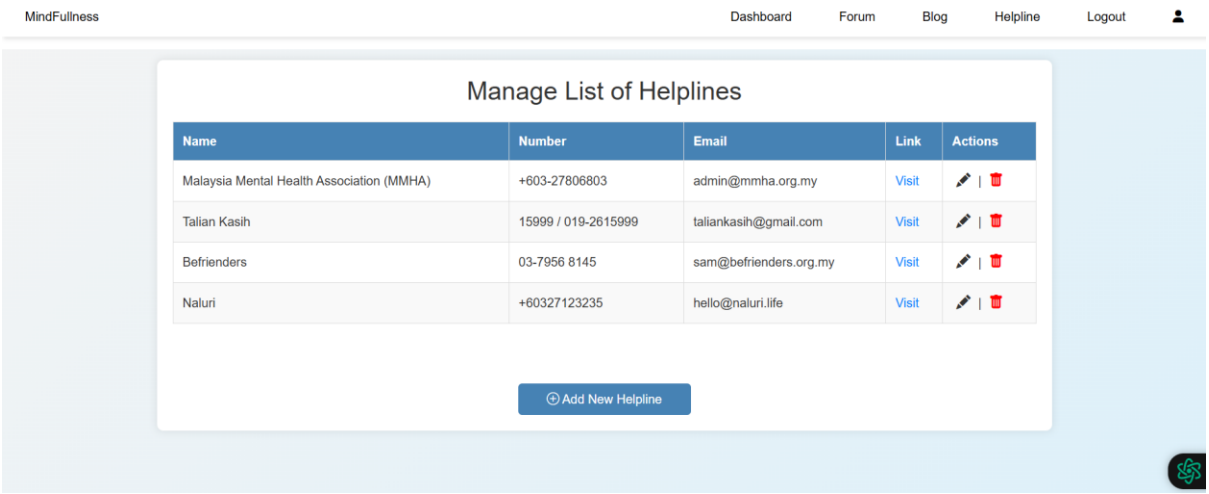

Figure 4.26: Available Helpline Management for Admin

In the "Manage Available Helpline" section, all current helpline entries are displayed in a well-organized table format for easy navigation and management, as shown in Figure 4.26.

Each row contains essential information about the helpline, including its name, contact number, email address, a link to the official website, and action buttons that enable the admin to edit or delete the entry as needed. This structured layout empowers the admin to efficiently oversee and update helpline information. Furthermore, the option to add a new helpline entry is conveniently placed at the bottom of the page, keeping the interface clean and user-friendly while ensuring that content management remains straightforward and accessible.

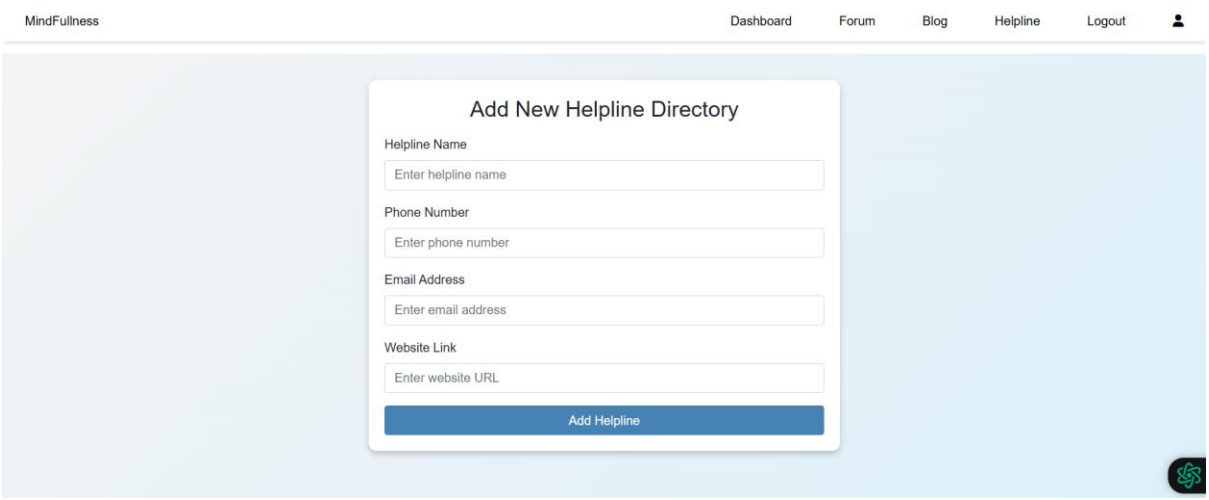

Figure 4.27: Add New Helpline Directory for Admin

As shown in Figure 4.27, the Add New Helpline Directory page features a clean and user-friendly form layout designed to facilitate easy input of helpline information. The form includes clearly labeled fields for entering the helpline's name, contact number, email address, and an external link to the helpline's official website. Each field is distinctly named to ensure users can quickly recognize and provide the required information without confusion. The layout mirrors the design of the blog post addition page to maintain consistency across the platform. At the bottom of the form, a prominently placed "Add" button allows the admin to submit the new helpline entry once all details have been accurately filled in, ensuring a smooth and efficient content management process.

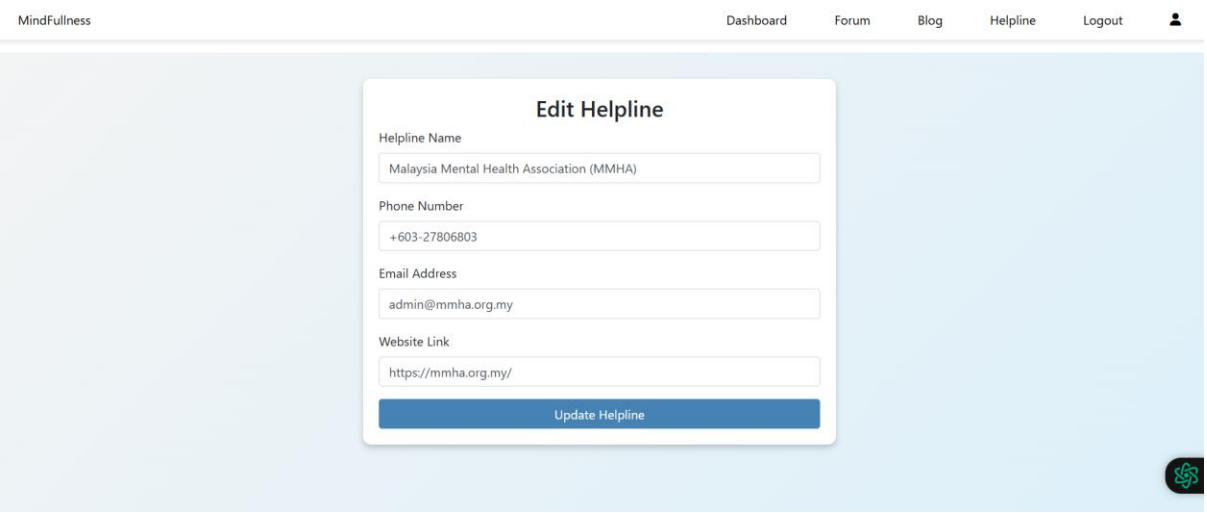

Figure 4.28: Edit Existing Helpline Directory for Admin

The Edit Helpline page provides a straightforward and intuitive form for modifying existing helpline information, as shown in Figure 4.28. The fields for the helpline's name, contact number, email address, and external website link are pre-filled with data retrieved from the database, allowing the admin to easily review and update the current details. Unlike other content management pages, this edit form does not include an option to upload images, as helpline entries rely solely on textual and contact information. The clear labeling of each field ensures that the admin can make precise edits efficiently. Once changes are made, the admin can save the updates using the clearly positioned "Save" button, streamlining the management of helpline resources.

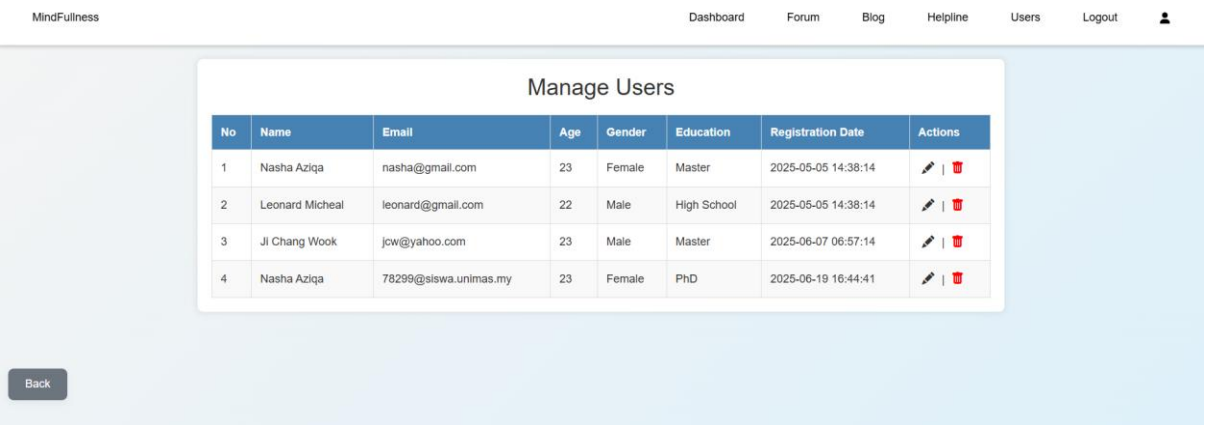

Figure 4.29: Admin Manage Users

In the Manage Users section, the admin can view a list of all registered users presented in a table format, as shown in Figure 4.29. Each row displays user details along with Edit and

Delete icon buttons. The admin can click the Edit icon to update user information or the Delete icon to remove a user from the system. This feature provides a straightforward and efficient way for admins to manage user accounts and maintain the integrity of the platform.

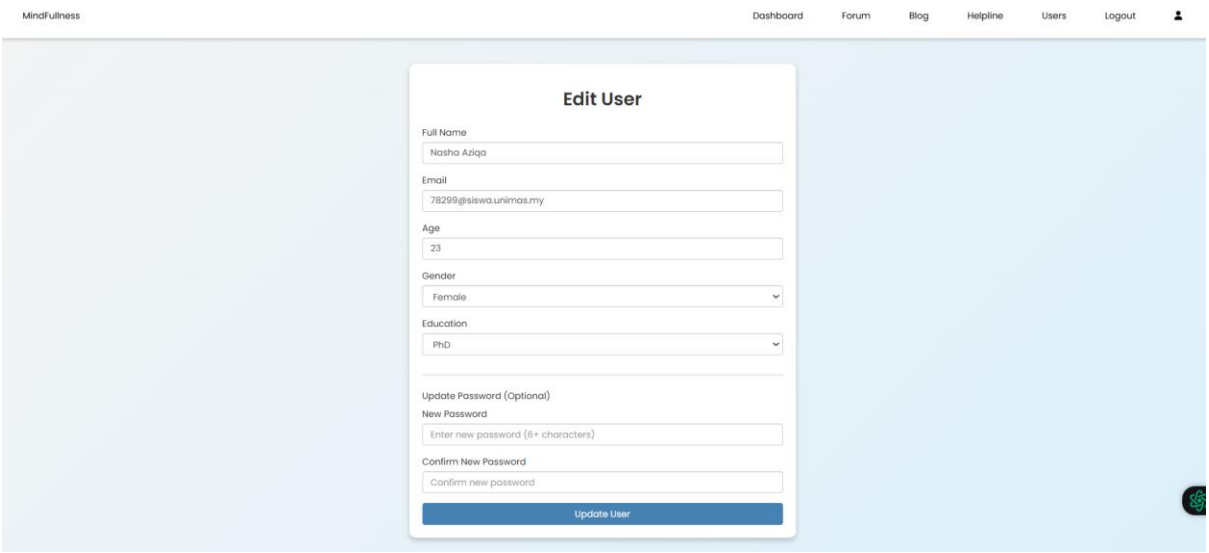

Figure 4.30: Admin Manage User Details

The Edit User Details page offers a straightforward and intuitive form for modifying existing user information. Fields such as the user's name, email address, and account role are pre-filled with data retrieved from the database, allowing the admin to easily review and update the current details, as shown in Figure 4.30. Unlike other content management pages, this form does not include media upload options, as user profiles primarily consist of textual information. Each field is clearly labeled to ensure accuracy and efficiency during editing. Additionally, the admin can reset or change a user's password, especially in cases where the user is unable to log in and has reached out for assistance. Once the necessary changes are made, the admin can save the updates using the prominently positioned “Save” button, streamlining user account management.

4.4. Summary

The system features intuitive and well-organized content management interfaces designed for both users and admins. Community forums display posts on the left with an easy-to-use new topic form on the right, while admins can efficiently moderate content with delete and search functions accompanied by confirmation prompts. Profile management uses clearly

labeled fields to reduce cognitive load for users updating their information. Blog and helpline management sections present entries in structured tables with options to edit or delete, adding or editing blogs includes fields for titles, descriptions, links, and image uploads, whereas helpline entries focus on contact details without images. Consistent use of confirmation messages and notifications throughout the system ensures clear feedback, fostering a seamless and reliable user experience.

Chapter 5: Testing

5.1. Introduction

Testing represents a vital and final stage in the system development lifecycle, where the system is evaluated before being deployed for real-world use. This phase involves multiple stakeholders, and, in this case, two types of users are involved which are administrators and students who interact with the system to identify any issues or inconsistencies. During this stage, bugs, functional errors, interface issues, and usability flaws are detected and addressed based on direct user feedback. MindFullness: UNIMAS Mental Health Assessment and Support System includes various modules aimed at supporting students and administrator in promoting mental well-being. Students can register, log in, manage accounts, complete the DASS-21 assessment, join forum discussions, and access blogs and helplines. Administrators are responsible for managing forum content, blog posts, and the helpline directory. To ensure system quality and reliability, both functional and non-functional testing are applied. Functional Testing focused on verifying whether each feature of the system operates according to its intended purpose. This was done through unit testing, using detailed test case tables to ensure components like registration, forum posting, and assessment features work correctly. Non-Functional Testing, on the other hand, emphasized the usability and user experience aspects of the system. This involved acceptance testing through usability testing questionnaires, completed by actual users. It helped measure how intuitive, accessible, and efficient the system is in a real-use scenario. By conducting both forms of testing, the system's reliability, functionality, and user-friendliness were systematically evaluated and improved before deployment.

5.2. Functional Testing

Functional testing refers to the broader process of validating that the software's functions align with the specified requirements and it plays a crucial role in validating whether each component of the system performs according to its specified requirements. This type of testing ensures that all features operate correctly and consistently under expected conditions. In this project, functional testing was carried out through unit testing, which involved testing individual modules such as user registration, forum participation, and the DASS-21 assessment to confirm that they function as intended. The following section provides a detailed description

of the unit testing process and presents the test cases executed for both user and administrator modules.

5.2.1. Unit Testing

Unit testing is a software testing technique in which individual components or units of a system are tested independently to ensure they function as expected (Jazayeri, 2007). This method typically focuses on testing discrete functions, methods, or procedures before they are integrated into the larger system. By identifying and addressing errors early in the development process, unit testing contributes to the reliability and maintainability of each component. In this project, unit testing was implemented as part of the broader functional testing strategy to validate critical system functionalities such as form submissions, data validation, and content display. This process ensured that each feature operated accurately and consistently prior to full system integration. The following presents the test cases conducted for both user and administrator modules.

5.2.1.1. Test Case on User Module

a. User Registration and Login

Table 5.1 below presents the test cases conducted for the login and registration functionalities. These test cases were designed to validate the system's ability to handle user authentication and account creation processes accurately and securely, ensuring that both features function as intended under various input conditions.

Table 5.1: User Registration and Login Test Case

Module Name: User Registration and Login					
Test Objective: To ensure users can register and log in with valid credentials and receive appropriate error messages for invalid input.					
Test Title	**Test ID**	**Input Data**	**Expected Result**	**Actual Result**	**Pass/Fail**
Register New Account	TC01	Valid name, email, age, gender, education level, password, and confirm	Account is created. "Registration successful" message appears, and user is	As expected.	Pass

		password.	redirected to login page.		
Register - Missing Fields	TC02	Submit with empty name, email, age, gender, education level, password, and confirm password.	"Please fill in all required fields" message shown.	Validation message shown.	Pass
Register - Password Mismatch	TC03	Password and confirm password do not match.	"Passwords do not match" message appears.	Validation message shown.	Pass
Login with Valid Credentials	TC04	Correct registered email and password.	User is redirected to the user homepage.	Login successful.	Pass
Login - Wrong Password	TC05	Valid email but incorrect password.	"Incorrect password" error message is shown.	As expected.	Pass
Login - Unregistered Email	TC06	Email not in the system.	"Email not found" error message is shown.	Validation message shown.	Pass

b. Manage Account

Next, table 5.2 outlines the test cases conducted for the Manage Account feature. These test scenarios were developed to ensure that users can effectively update, view, and manage their personal account information, while also verifying the system's ability to handle changes accurately and maintain data integrity.

Table 5.2: Manage Account Test Case

Module Name: Manage Account					
Test Objective: To verify users can update profile details and passwords with proper validation.					
Test Title	**Test ID**	**Input Data**	**Expected Result**	**Actual Result**	**Pass/Fail**
Edit Profile - Valid	TC01	Update name, email, age, gender, education level, password, and confirm password.	"Profile updated successfully" message shown.	Profile updated.	Pass
Edit Profile - Invalid	TC02	Input invalid email format or empty fields.	"Please enter a valid email address" or "Please fill in all required fields" message shown.	Error message shown.	Pass
Change Password	TC03	Enter current password, new password, confirm new password.	Password is updated. "Password changed successfully" message shown.	Password changed.	Pass

c. Take DASS-21 Assessment

Table 5.3 presents the test cases for the DASS-21 Assessment feature. These tests were conducted to verify that users can complete the assessment smoothly, receive accurate result calculations, and experience a responsive user interface throughout the process. The test cases also ensure proper validation, seamless navigation between questions, and reliable display of the final assessment summary.

Table 5.3: Take DASS-21 Assessment Test Case

Module Name: Take DASS-21 Assessment					
Test Objective: To ensure users view a confidentiality notice and test introduction before beginning the assessment, they must answer each question to proceed, and receive a result summary upon completion.					
Test Title	**Test ID**	**Input Data**	**Expected Result**	**Actual Result**	**Pass/Fail**
Confidentiality Notice Display	TC01	User clicks "Start Assessment".	A page displays confidentiality notice and purpose of the assessment.	Notice is shown.	Pass
Proceed to First Question	TC02	User clicks "I Understand" after reading notice.	User is redirected to Question 1 of the DASS-21 assessment.	First question shown.	Pass
Select Answer and Go to Next	TC03	User selects one option and clicks "Next".	System moves to the next question.	Navigation works.	Pass
Click Next Without Answer	TC04	User clicks "Next" without selecting any answer.	Error message: "Please select an answer before continuing" is displayed.	Validation shown.	Pass
Complete All 21 Questions	TC05	User selects answers for all 21 questions.	"Submit" button becomes active on final question.	Submit button appears.	Pass
Submit Assessment and Show Summary	TC06	User clicks "Submit" after completing all	System displays result summary cards	Summary cards shown.	Pass

		questions.	(Depression, Anxiety, Stress) with severity levels.		

d. Forum Participation

Table 5.4 details the test cases for the Forum Participation feature. These tests were designed to evaluate the system's ability to support user interactions within the community forum, including posting new discussions, replying to existing threads, and viewing forum content.

Table 5.4: Forum Participation Test Case

Module Name: Forum Participation					
Test Objective: To check users can view, create, and comment on forum posts with input validation.					
Test Title	**Test ID**	**Input Data**	**Expected Result**	**Actual Result**	**Pass/Fail**
View Forum Posts	TC01	Logged in user clicks on "Forum".	Forum posts are displayed.	Forum displayed.	Pass
Create New Post	TC02	Enters a valid content, clicks "Submit".	New post appears in the list. "Post submitted successfully" message shown.	Post created.	Pass
Post with Empty Fields	TC03	Submit with empty name or content.	"Name and content cannot be empty" error message appears.	Error shown.	Pass

Reply on Existing Post	TC04	Enter valid comment under a post and click "Comment".	Reply is saved and shown under post with timestamp.	Reply posted.	Pass
View replies on Existing Post	TC05	Click "View Replies" or expand comment thread.	All replies under the selected post are displayed chronologically.	Replies displayed.	Pass

e. Manage Own Forum Posts

Table 5.5 outlines the test cases conducted for the Manage Own Forum Posts feature. These test cases aim to verify that users can effectively view, edit, and delete their own forum contributions. The tests also ensure that proper permissions are enforced, changes are accurately reflected in real-time, and the user interface provides clear feedback during each action to support a seamless and secure user experience.

Table 5.5: Manage Own Forum Posts Test Case

Module Name: Manage Own Forum Posts					
Test Objective: To check that users can view, edit, delete, and view the total number of replies on their own forum posts.					
Test Title	**Test ID**	**Input Data**	**Expected Result**	**Actual Result**	**Pass/Fail**
View Forum Posts	TC01	Logged in user clicks on "Forum".	Forum posts are displayed.	Forum displayed.	Pass
Access My Forum Posts	TC02	User navigates to Profile > My Forum Posts > clicks "See All My Posts"	A list of forum posts created by the logged-in user is displayed.	Posts displayed.	Pass
Edit My Forum Post	TC03	User clicks "Edit" on their	Post is updated with new	Post updated.	Pass

		post, updates content and clicks “Save”.	content and success message is shown.		
Delete My Forum Post	TC04	User clicks “Delete” on their post and confirms deletion.	Post is removed and confirmation message is shown.	Post deleted.	Pass
View Total Replies	TC05	User views “Total Replies” displayed next to each of their forum posts.	Accurate number of replies is shown for each post.	Replies counted.	Pass

f. View DASS-21 Assessment History

Table 5.6 presents the test cases for the View DASS-21 Assessment History feature. These tests were conducted to ensure that users can reliably access their previously saved assessment results, with accurate data retrieval and proper display formatting.

Table 5.6: View DASS-21 Assessment History Test Case

Module Name: View DASS-21 Assessment History					
Test Objective: To verify that users can save their DASS-21 results and view their saved assessment history from the profile section in table format, including date taken.					
Test Title	**Test ID**	**Input Data**	**Expected Result**	**Actual Result**	**Pass/Fail**
Save Assessment Results	TC01	User completes the DASS-21 assessment and clicks "Save Results for	Results are successfully saved to the database.	Results saved.	Pass

		Future Reference".	Confirmation message appears.		
Navigate to Assessment History	TC02	User navigates to Profile > clicks on “Assessment History”.	Assessment history page is loaded.	Page loaded.	Pass
Display Saved Results	TC03	On the Assessment History page, the system retrieves saved results for the logged-in user.	Saved results are displayed in a table format, showing Depression, Anxiety, and Stress scores with date taken.	Results displayed.	Pass

g. Browse Blogs and Helplines

Table 5.7 outlines the test cases for the Browse Blogs and Helplines feature. These test cases were designed to verify that users can effectively navigate and access mental health blog articles and external helpline information.

Table 5.7: Browse Blogs and Helplines Test Case

Module Name: Browse Blogs and Helplines					
Test Objective: To ensure users can access and view blogs and helpline contact details.					
Test Title	**Test ID**	**Input Data**	**Expected Result**	**Actual Result**	**Pass/Fail**
View Educational Blogs	TC01	User navigates to blog section.	List of educational blogs is displayed with titles and content previews.	Blogs displayed.	Pass

Read Blog in Detail	TC02	Clicks on blog or "Continue Reading".	Full content of selected blog is displayed.	Blog opened.	Pass
Access Helpline List	TC03	User clicks on "Helpline" from the header.	List of helpline names, descriptions, and contact numbers are displayed.	Helpline list displayed.	Pass
Click on Helpline link	TC04	User clicks on a helpline website link.	System opens the helpline's official website in a new tab.	Redirect successful.	Pass

5.2.1.2.Test Case on Administrator Module

a. Admin Login

Table 5.8 presents the test cases conducted for the Admin Login functionality. These test scenarios ensure that only authorized administrators can access the system through a secure and validated login process.

Table 5.8: Admin Login Test Case

Module Name: Login					
Test Objective: To verify the administrator authentication.					
Test Title	**Test ID**	**Input Data**	**Expected Result**	**Actual Result**	**Pass/Fail**
Login	TC01	Valid ID and password.	Administrator successfully login and redirects to admin dashboard.	Administrator successfully log into admin dashboard.	Pass
	TC02	Invalid ID and	Administrator	"Login failed.	Pass

		valid password.	fails to login and required to enter valid ID.	Invalid ID or password" message displayed, and administrator needs to enter valid ID.	
	TC03	Valid ID and invalid password.	Administrator fails to login and required to enter correct password.	"Login failed. Invalid ID or password" message displayed, and administrator needs to enter correct password.	Pass
	TC04	Invalid ID and invalid password.	Administrator fails to login and required to enter valid ID and correct password.	"Login failed. Invalid ID or password" message displayed, and administrator needs to enter valid ID and correct password.	Pass
	TC05	Missing required field (ID and password).	Administrator fails to login and required to fill in the missing field.	Administrator fails to login and requires to fill in the missing field.	Pass

b. Manage Community Forum

Table 5.9 outlines the test cases for the Manage Community Forum feature within the admin panel. These tests were conducted to ensure that administrators can effectively monitor and moderate forum content, including the ability to add, view or delete posts that violate community guidelines.

Table 5.9: Manage Community Forum Test Case

Module Name: Manage Community Forum					
Test Objective: To verify that the admin can successfully view, delete, and manage forum posts.					
Test Title	**Test ID**	**Input Data**	**Expected Result**	**Actual Result**	**Pass/Fail**
View Forum Post	TC01	Admin clicks on "Forum"	A list of all forum posts is displayed with usernames, content, and post dates	Forum list displayed correctly	Pass
Delete Forum Post	TC02	Admin clicks on trash icon for a selected post.	A confirmation prompt appears. After confirming, the selected post is removed from the forum list.	Post deleted successfully	Pass
Delete Without Confirm	TC03	Admin clicks "Delete" but cancels the confirmation dialog	Post is not deleted and remains in the forum list.	Post remains in list	Pass

Add New Forum Post	TC04	Admin fills in valid "Post Title" and "Post Content" fields, then clicks "Submit"	Forum post is saved, "Post added successfully" message is shown, and the new post appears in the forum list.	Post successfully added	Pass
Add Comment to Post	TC05	Admin clicks "Add Comment" on an existing post, types a valid comment, and submits	Comment is saved and displayed under the post with admin's name and date. "Comment added successfully" message is shown.	Comment added correctly	Pass

c. Manage Blog Post

Table 5.10 outlines the test cases for the Manage Blog Post functionality. These test scenarios were designed to verify that administrators can efficiently create, edit, publish, and delete blog posts within the platform.

Table 5.10: Manage Blog Post Test Case

Module Name: Manage Blog Post					
Test Objective: To verify that the administrator can view, add, edit, and delete blog posts successfully.					
Test Title	**Test ID**	**Input Data**	**Expected Result**	**Actual Result**	**Pass/Fail**

View Blog Post	TC01	Admin clicks on “Blog”	List of all blog posts is displayed with title, description, link, and options to edit/delete.	Blog list displayed.	Pass
Add New Blog Post	TC02	Admin enters a valid title and blog contents, then clicks “Submit”.	New blog post is saved and displayed in the blog list. “Blog post added successfully” message appears.	Blog added successfully.	Pass
Add Blog Post - Empty Fields	TC03	Admin submits form with empty title or content.	System displays validation error: “Title and content cannot be empty.” Blog is not saved.	Validation shown.	Pass
Edit Blog Post	TC04	Admin edits the title/content of an existing post and clicks “Update”.	Blog post is updated. “Blog post updated successfully” message appears, and changes reflect in the list.	Blog updated correctly.	Pass
Edit Blog Post - Invalid	TC05	Admin clears all fields during edit and clicks “Update”.	System shows validation message. Blog is not updated.	Validation shown.	Pass

Delete Blog Post	TC06	Admin clicks "Delete" on a selected blog post and confirms deletion.	Blog post is removed from the list. "Blog post deleted successfully" message is displayed.	Blog deleted successfully.	Pass
Delete Blog - Cancel	TC07	Admin clicks "Delete" but cancels the confirmation dialog.	Admin clicks "Delete" but cancels the confirmation dialog.	Blog post remains in the list.	Pass

d. Manage Helpline Directory

Table 5.11 details the test cases for the Manage Helpline Directory feature. These test scenarios focus on verifying the administrator's ability to add, update, and remove helpline contact information accurately.

Table 5.11: Manage Helpline Directory Test Case

Module Name: Manage Helpline Directory					
Test Objective: To verify that the administrator can view, add, edit, and delete helpline records successfully.					
Test Title	**Test ID**	**Input Data**	**Expected Result**	**Actual Result**	**Pass/Fail**
View Helpline Directory	TC01	Admin clicks on "Helpline"	List of all helpline directories are displayed with name, number, email, link, and options to edit/delete.	Helpline list displayed.	Pass

Add New Helpline Directory	TC02	Admin enters valid name, number, email and website link then clicks “Submit”.	New helpline entry is saved and shown in the list. “Helpline added successfully” message appears.	Helpline added successfully.	Pass
Add Helpline Directory - Empty Fields	TC03	Admin submits form with any empty fields.	System displays validation error: “Fields cannot be empty.” Helpline is not saved.	Validation shown.	Pass
Edit Helpline Directory	TC04	Admin edits the title/content of an existing helpline directory and clicks “Update”.	Entry is updated. “Helpline updated successfully” message appears, and new info is shown.	Helpline updated correctly.	Pass
Edit Helpline Directory - Invalid	TC05	Admin clears all fields during edit and clicks “Update”.	System shows validation message. Helpline is not updated.	Validation shown.	Pass
Delete Helpline Directory	TC06	Admin clicks “Delete” on a selected helpline directory and confirms	Helpline is removed from the list. “Helpline post deleted	Helpline deleted successfully.	Pass

		deletion.	successfully" message is displayed.		
Delete Helpline - Cancel	TC07	Admin clicks "Delete" but cancels the confirmation dialog.	Admin clicks "Delete" but cancels the confirmation dialog.	Helpline remains in the list.	Pass

e. Manage Users

Table 5.12 presents the test cases for the Manage Users feature. These test scenarios were conducted to ensure that administrators can effectively view, modify, or delete user accounts.

Table 5.12: Manage Users Test Case

Module Name: Manage Users					
Test Objective: To verify that admin can view the list of users, and perform edit and delete operations correctly.					
Test Title	**Test ID**	**Input Data**	**Expected Result**	**Actual Result**	**Pass/Fail**
View All Users	TC01	Admin logs in and navigates to the "Users" section.	A table listing all registered users is displayed.	User list displayed.	Pass
Edit User Details	TC02	Admin clicks "Edit" icon on a user, modifies details (e.g., name, email), and clicks "Update User".	User details are updated successfully, and confirmation message is shown.	User updated.	Pass
Delete User Account	TC03	Admin clicks "Delete" icon on	User is removed from the system	User deleted.	Pass

		a user and confirms deletion.	and a confirmation message appears.		
View Updated User List	TC04	Admin revisits the Manage Users section after making changes.	Updated list reflects recent edit/delete actions.	Updated list shown.	Pass
Delete User - Cancel	TC05	Admin clicks “Delete” but cancels the confirmation dialog.	Admin clicks “Delete” but cancels the confirmation dialog.	User remains in the list.	Pass

5.3. Non-Functional Testing

Non-functional testing evaluates how well a software system operates, focusing on quality attributes rather than specific features or functionalities. This testing approach assesses factors such as performance speed, ease of use (usability), system stability (reliability), and data protection (security). For instance, it examines how quickly pages load, how intuitive the interface is, how frequently the system encounters errors, and how effectively it safeguards user information. Unlike functional testing, which verifies what the system does, non-functional testing ensures that the system performs how it should efficiently, consistently, and securely under varying conditions. This is essential for delivering a high-quality user experience and meeting user expectations. In this project, a usability test has been chosen as the primary non-functional testing method. This test aims to assess how user-friendly and intuitive the system is, ensuring that students and administrators can navigate and interact with the platform effectively and without confusion.

5.3.1. Usability Testing

5.3.1.1. Usability Testing on User Module

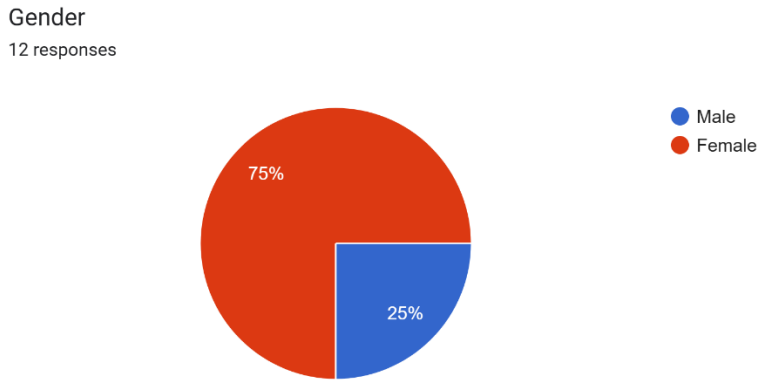

Figure 5.1: Gender Response

Based on the usability testing survey conducted among student end users as shown in Figure 5.1, a total of 12 respondents participated. Of these, 75% were female and 25% were male. This indicates that most of the participants were female, which may reflect either a higher level of interest or willingness among female students to engage in mental health-related systems or topics. It could also suggest that mental health awareness is more prevalent among female students, leading them to be more responsive to participating in such assessments.

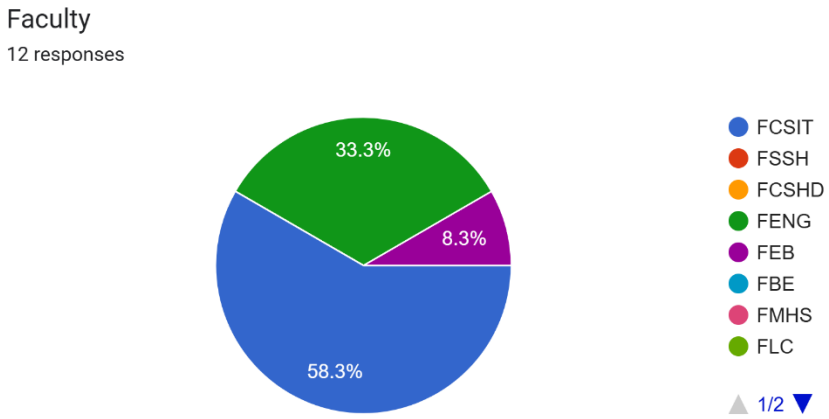

Figure 5.2: Enrolled Faculty

The usability testing survey also captured the distribution of participants based on their faculty shown in Figure 5.2. Among the 12 student respondents, 33.3% were from the Faculty of Engineering (FENG), 8.3% from the Faculty of Economics and Business (FEB), and the majority 58.3% were from the Faculty of Computer Science and Information Technology (FCSIT). This suggests that students from FCSIT showed the highest level of participation, possibly due to their familiarity with or interest in digital systems and technology-based solutions. The representation from FENG and FEB, although smaller, still provides valuable insights across diverse academic backgrounds.

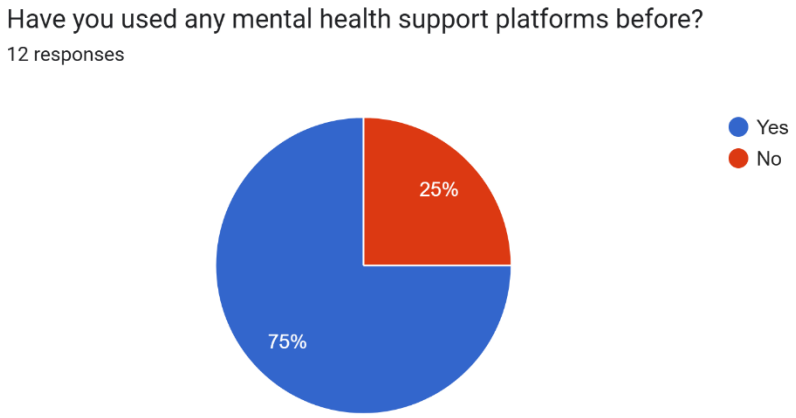

Figure 5.3: Have You Used Mental Health Platform Question

According to the survey results, 25% of the respondents indicated that they have never used any mental health platform before, while the remaining 75% reported that they have had prior experience with such platforms, shown in Figure 5.3. This suggests that most participants were already familiar with mental health systems, which may have influenced their ability to navigate and evaluate the usability of the system more effectively. Meanwhile, the responses from those without prior experience also provide valuable insights into how first-time users interact with the platform.

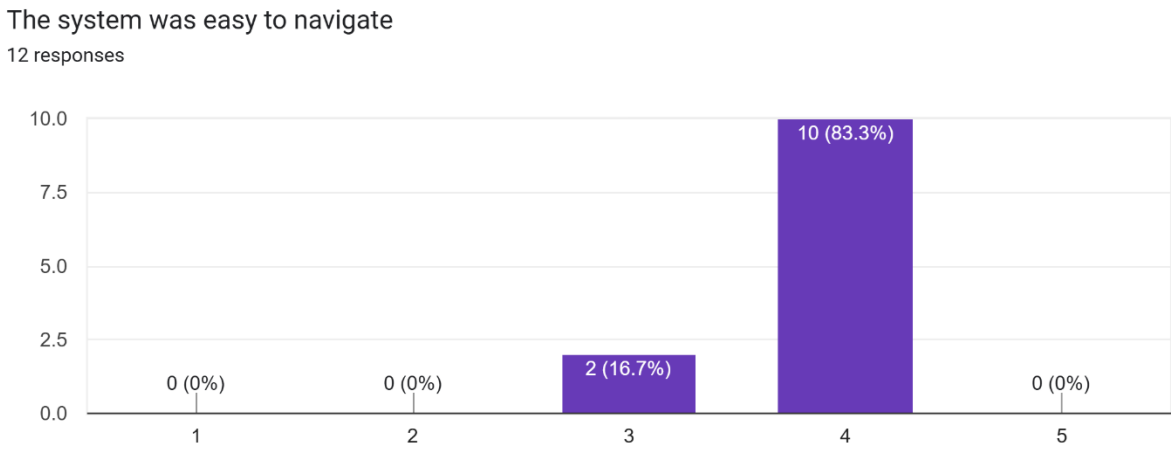

Figure 5.4: The System Was Easy to Navigate

For the Likert scale question "The system was easy to navigate", shown in Figure 5.4, 10 out of 12 respondents selected a rating of 4, indicating that they agreed with the statement. The remaining 2 respondents chose a rating of 3, suggesting a neutral to slightly positive perception. Overall, these results indicate that most users found the system easy to navigate, reflecting a generally positive user experience with minimal usability concerns.

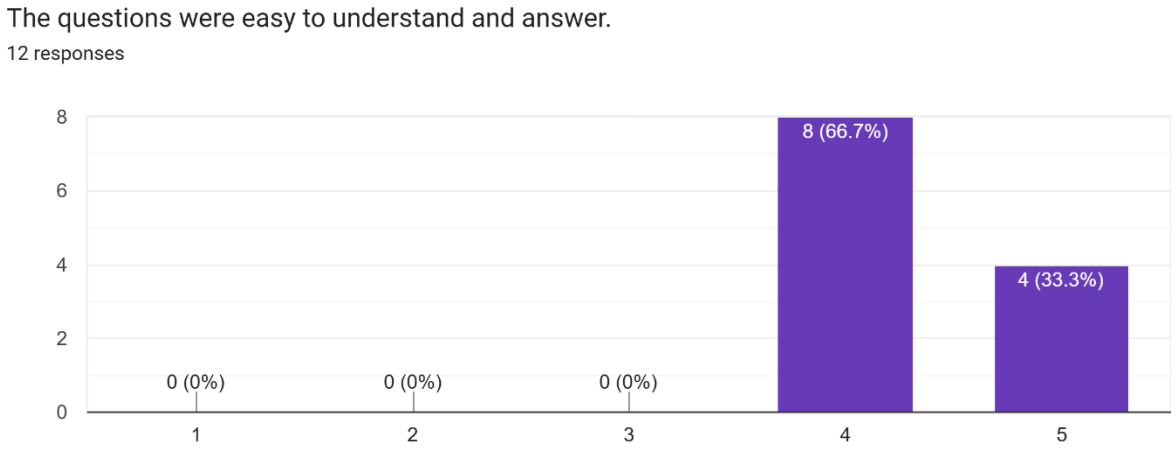

Figure 5.5: Questions were easy to understand and answer

For the statement "The questions were easy to understand and answer" shown in Figure 5.5, 8 out of 12 respondents selected a rating of 4 (agree), while the remaining 4 respondents chose a rating of 5 (strongly agree). This indicates that all participants found the DASS-21 assessment questions clear and straightforward. The unanimous positive feedback suggests that

the wording and structure of the questions were effective and user-friendly, contributing to a smooth and accessible assessment experience for users.

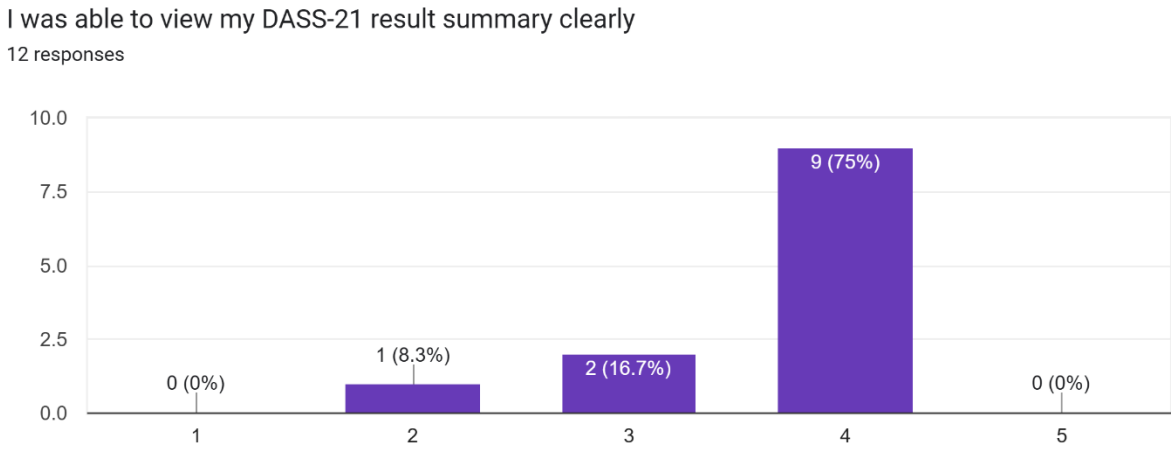

Figure 5.6: Able to View DASS-21 Result Summary

In response to the statement "I was able to view my DASS-21 result summary" shown in Figure 5.6, 9 out of 12 respondents selected a rating of 4 (agree), 2 chose 3 (neutral), and 1 chose 2 (disagree). This suggests that most users successfully accessed and viewed their result summary. However, the responses from a few users indicate that there may be minor usability or visibility issues that could be further improved to ensure a consistent experience for all users.

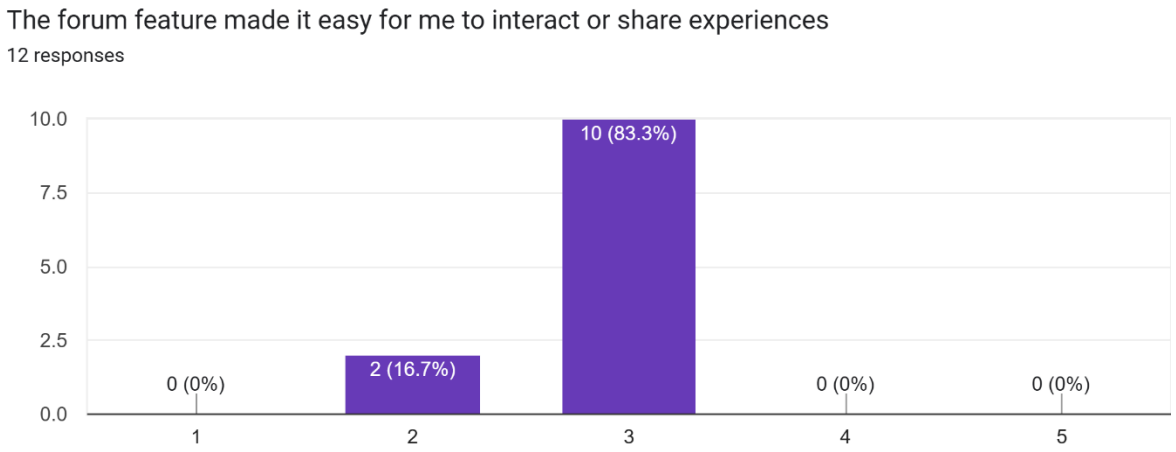

Figure 5.7: Forum Features Were Easy to Interact.

For the statement "The forum feature made it easy for me to interact and share experiences" shown in Figure 5.7, 10 out of 12 respondents selected a rating of 3 (neutral),

while the remaining 2 chose a rating of 2 (disagree). This suggests that most users felt neutral about the forum's effectiveness in facilitating interaction and experience sharing. The absence of higher agreement ratings may indicate that the forum feature needs further improvement in terms of usability, engagement, or visibility to better encourage user participation and peer support.

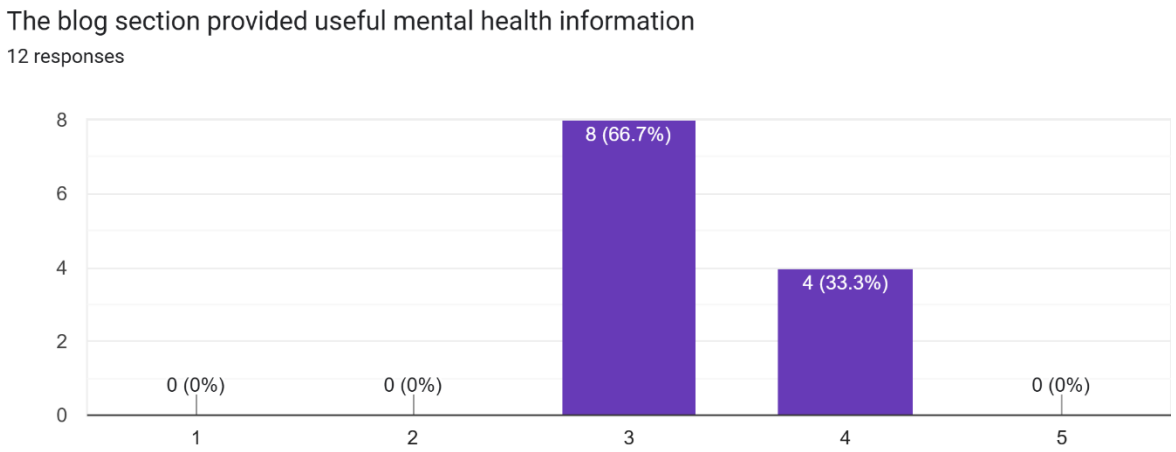

Figure 5.8: Blog Section Provided Useful Mental Health Information

For the statement "The blog section provided useful mental health information" shown in Figure 5.8, 8 out of 12 respondents selected a rating of 3 (neutral), while the remaining 4 chose a rating of 4 (agree). This indicates a moderately positive response overall, with no participants strongly disagreeing or strongly agreeing. The results suggest that while some users found the blog section helpful, the content or presentation may benefit from further enhancement to increase its perceived usefulness and engagement for a broader range of users.

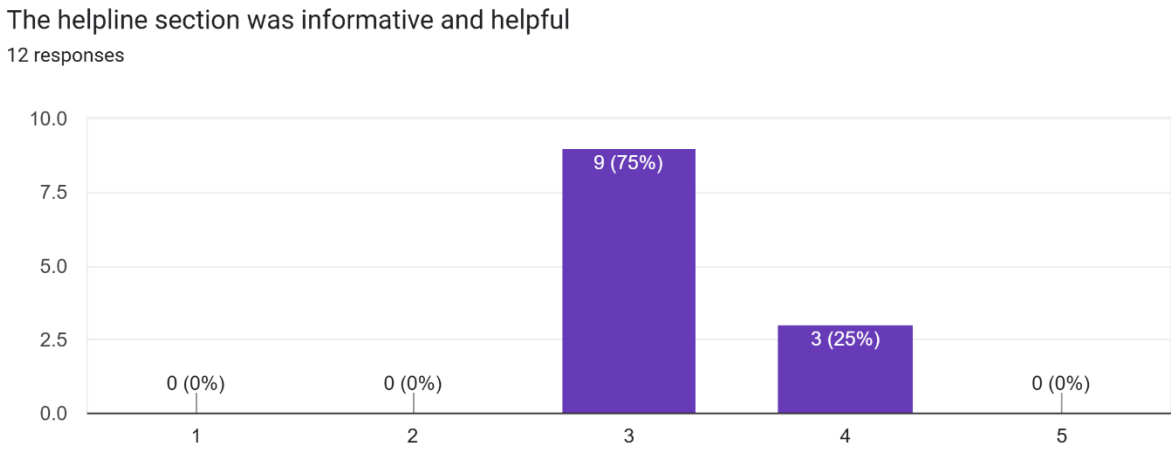

Figure 5.9: Helpline Section Was Informative and Helpful.

For the statement "The helpline section was informative and helpful" shown in Figure 5.9, 9 out of 12 respondents selected a rating of 3 (neutral), while 3 respondents chose a rating of 4 (agree). This suggests that most users felt moderately positive about the helpline section's usefulness, though many were neutral. These results indicate that while the helpline information is generally seen as helpful, there may be opportunities to improve its clarity, accessibility, or the range of resources provided to better meet user needs.

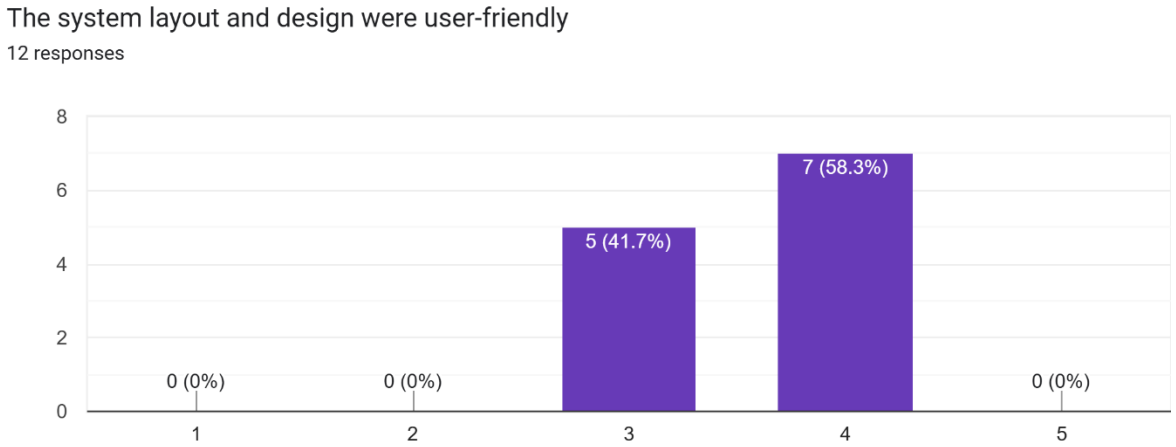

Figure 5.10: System Layout and Design Were User-Friendly

For the statement "System layout and design were user-friendly" shown in Figure 5.10, 7 out of 12 respondents selected a rating of 4 (agree), while 5 chose a rating of 3 (neutral). This indicates that most users found the system's design approachable and easy to use, though a

significant portion felt neutral. These responses suggest that while the overall layout is effective, there is room for further enhancement to improve user satisfaction and ensure a more consistently positive experience across all users.

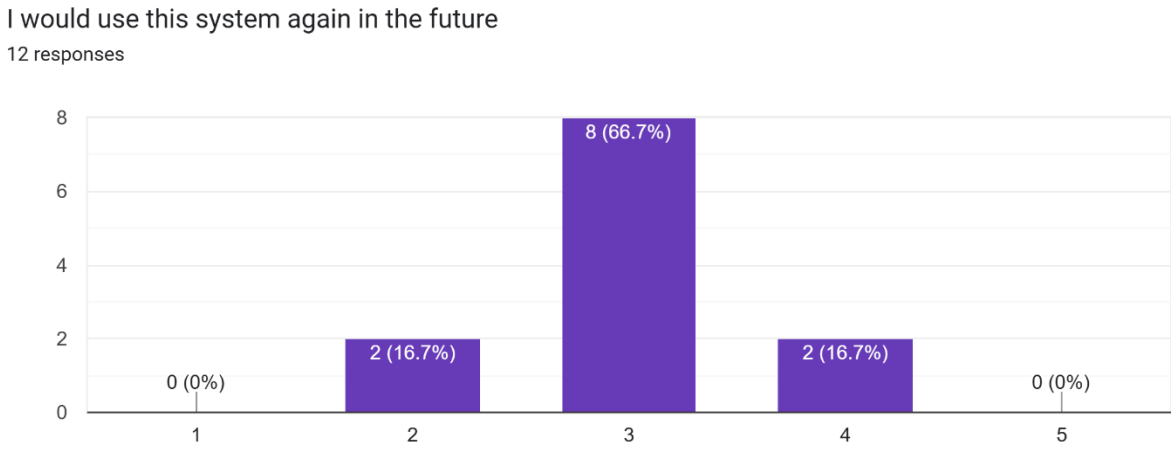

Figure 5.11: I Would Use This System Again in the Future

For the statement "I would use this system again in the future" as shown in Figure 5.11, 8 out of 12 respondents selected a rating of 3 (neutral), 2 chose 2 (disagree), and 2 chose 4 (agree). This distribution suggests a generally mixed or cautious attitude toward future use of the system. While a few users are inclined to use it again, the majority remain neutral, and some expressed slight disagreement. This feedback indicates there may be opportunities to enhance the system's features or user experience to increase users' willingness to engage with it long-term.

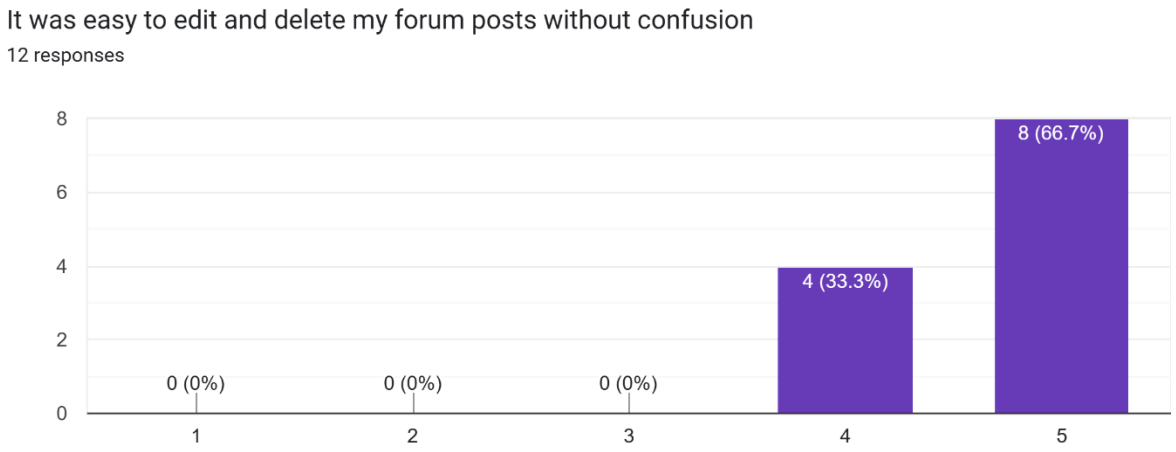

Figure 5.12: User Able to Edit and Delete Forum Posts Without Confusion.

For the statement "User Able to Edit and Delete Forum Posts Without Confusion," as shown in Figure 5.12, 4 out of 12 respondents selected a rating of 4, while 8 respondents chose a rating of 5 (agree). This distribution suggests a generally positive user experience, indicating that most users find the editing and deletion process clear and straightforward, though there is some room for minor improvements to eliminate residual confusion for a few users.

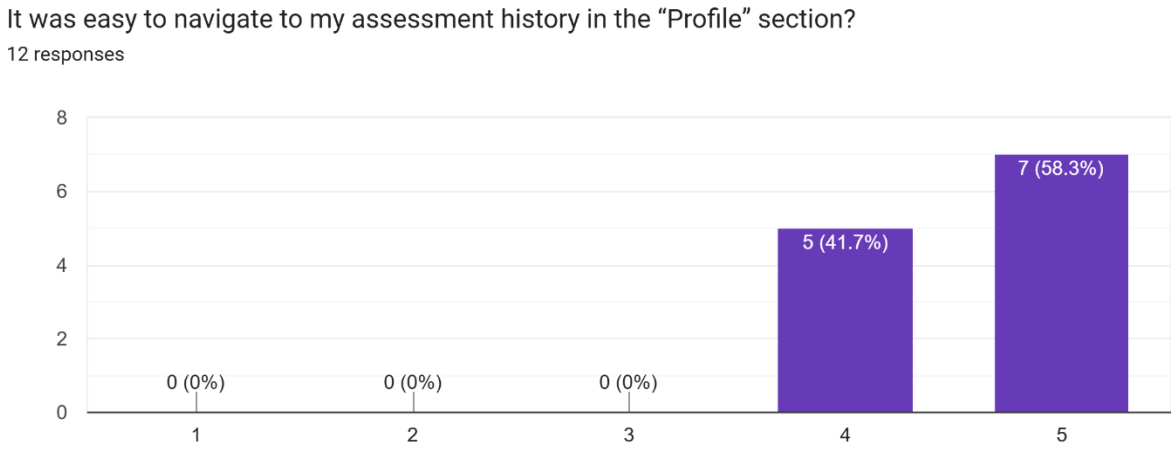

Figure 5.13: User Finds Easy to Navigate to Assessment History

Figure 5.13 shows responses to the statement "User Finds It Easy to Navigate to Assessment History," where 5 respondents selected a rating of 4, and 7 respondents selected a rating of 5 (agree). This indicates that the majority of users find the navigation to their

assessment history intuitive and user-friendly, reflecting positively on the system's design and ease of use.

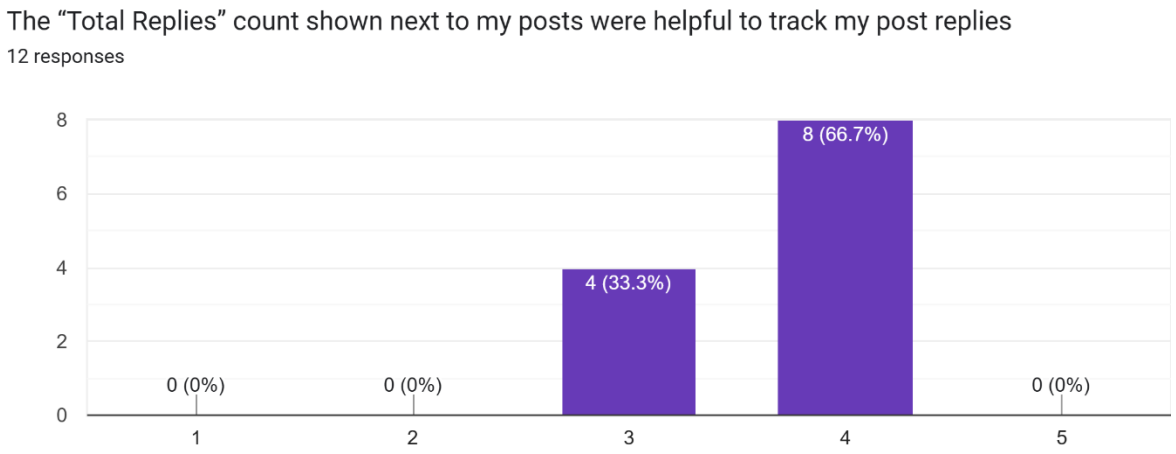

Figure 5.14: Total Replies Count Shown Next to User Posts Are Helpful

Figure 5.14 presents responses to the statement, "Total Replies Count Shown Next to User Posts Are Helpful," where 4 respondents selected a rating of 3 and 8 respondents selected a rating of 4. This distribution suggests that users generally find the display of reply counts next to posts to be a helpful feature, though some users feel there is slight room for improvement.

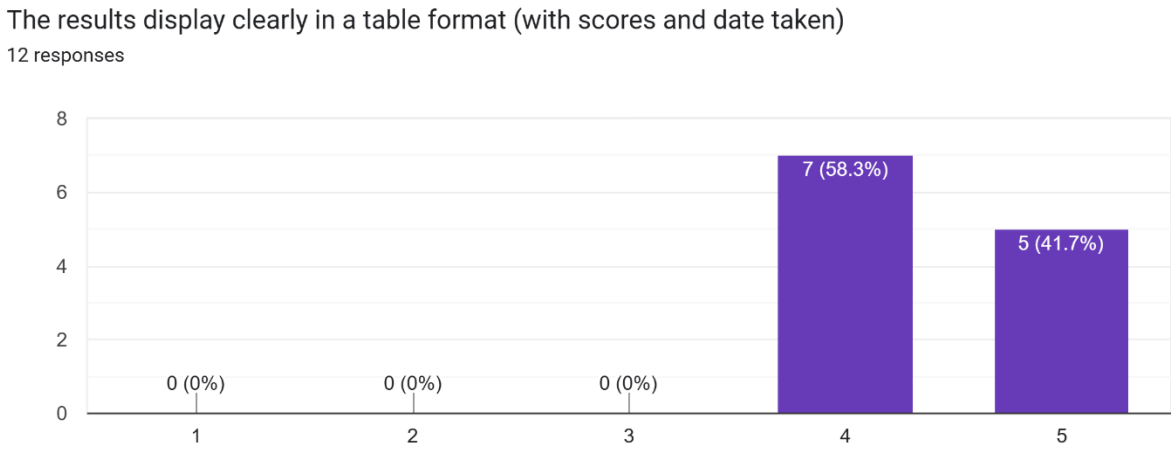

Figure 5.15: Results Are Displayed Clearly in Table Format

Figure 5.15 illustrates responses to the statement, “Results Are Displayed Clearly in Table Format,” with 7 respondents selecting a rating of 4 and 5 respondents selecting a rating of 5 (agree). This distribution indicates that users generally find the presentation of results in a table format to be clear and easy to understand.

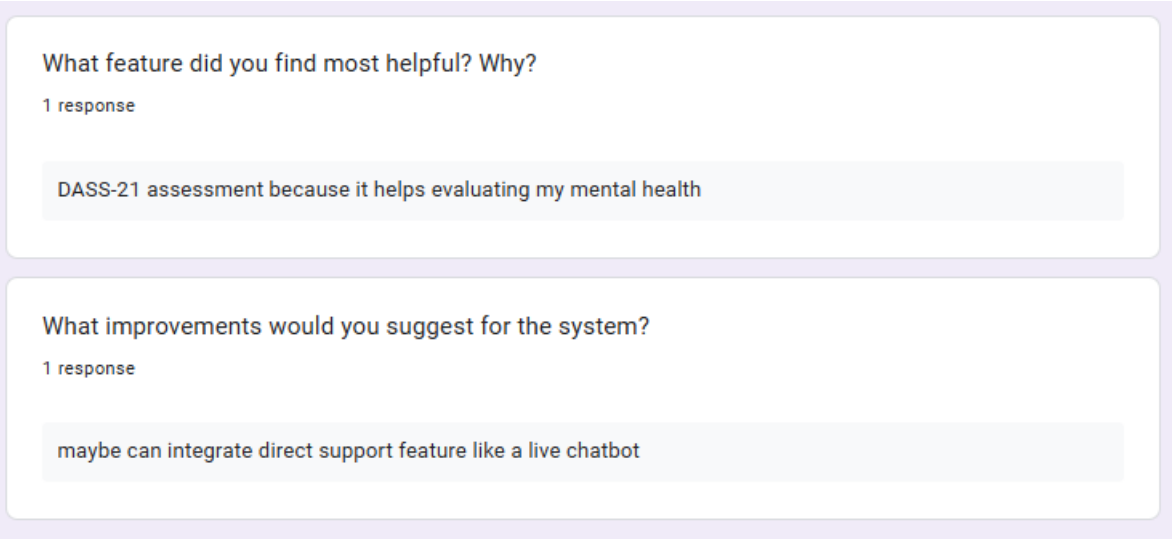

Figure 5.16: Feature That is Most Helpful and Suggestions for Improvements

For the optional open-ended question regarding the most helpful feature and suggestions for improvement, two respondents provided feedback as shown in Figure 5.16. One respondent highlighted that the DASS-21 assessment was the most helpful feature, as it effectively aids in evaluating their mental health. Another respondent suggested integrating a direct support feature, such as a live chatbot, to provide immediate assistance and enhance user engagement. These insights offer valuable directions for further development of the system to better meet user needs.

5.3.1.2. Usability Testing on Admin Module

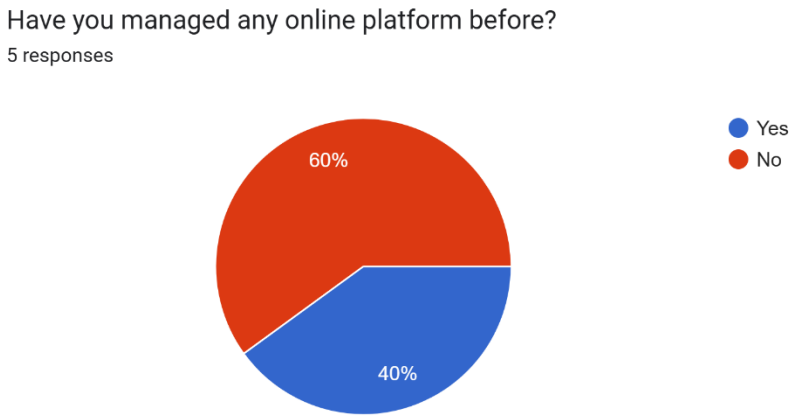

Figure 5.17: Have You Managed Any Online Platform Before

Out of 5 respondents for the admin usability testing, 60% answered "Yes" to the question "Have you managed any online platform before?" while 40% answered "No" as shown in Figure 5.17. This indicates that most of the admin testers had prior experience in managing online platforms, which may have positively influenced their ability to navigate and evaluate the system's admin features. At the same time, feedback from those without prior experience provides useful insight into how intuitive and beginner-friendly the admin interface is.

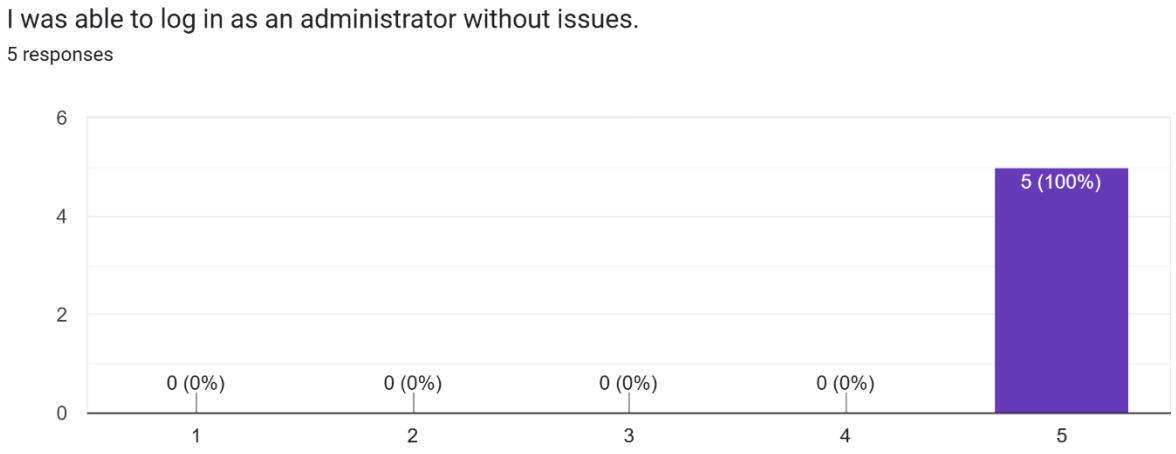

Figure 5.18: Admin Was Able to Login as an Administrator Without Issue

All 5 respondents (100%) selected a rating of 5 (strongly agree) for the statement "Admin was able to log in as an administrator without issue" as shown in Figure 5.18. This indicates that the login functionality for the admin role is working smoothly and reliably, with no technical difficulties reported during testing. The consistent positive feedback reflects a successful and user-friendly authentication process.

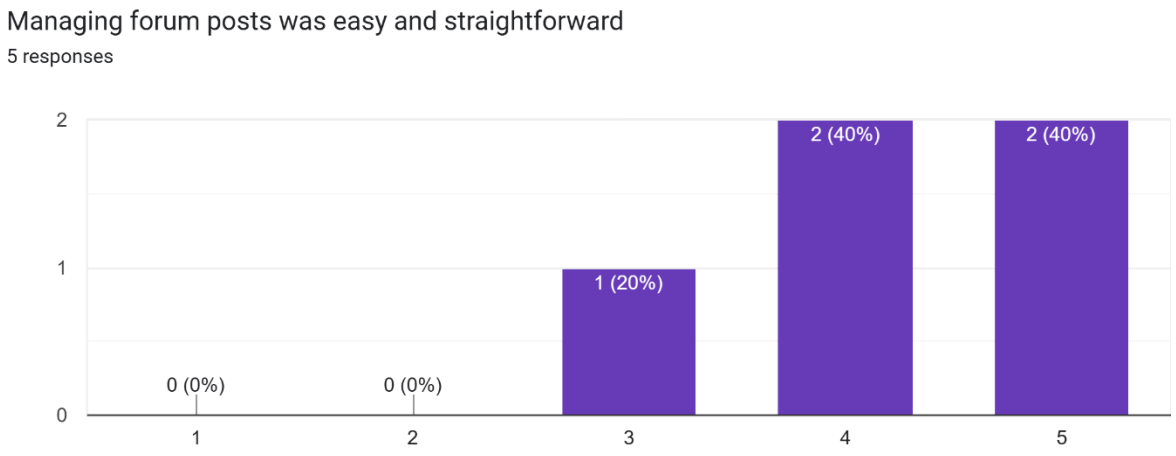

Figure 5.19: Managing Forum Posts Was Easy and Straightforward

For the statement "Managing forum posts was easy and straightforward," 1 respondent selected a rating of 3 (neutral), 2 chose 4 (agree), and 2 chose 5 (strongly agree) as shown in Figure 5.19. This suggests that most admin users found the forum management feature to be clear and manageable. While one user felt neutral, the overall response indicates that the system provides a generally positive and user-friendly experience in handling forum posts.

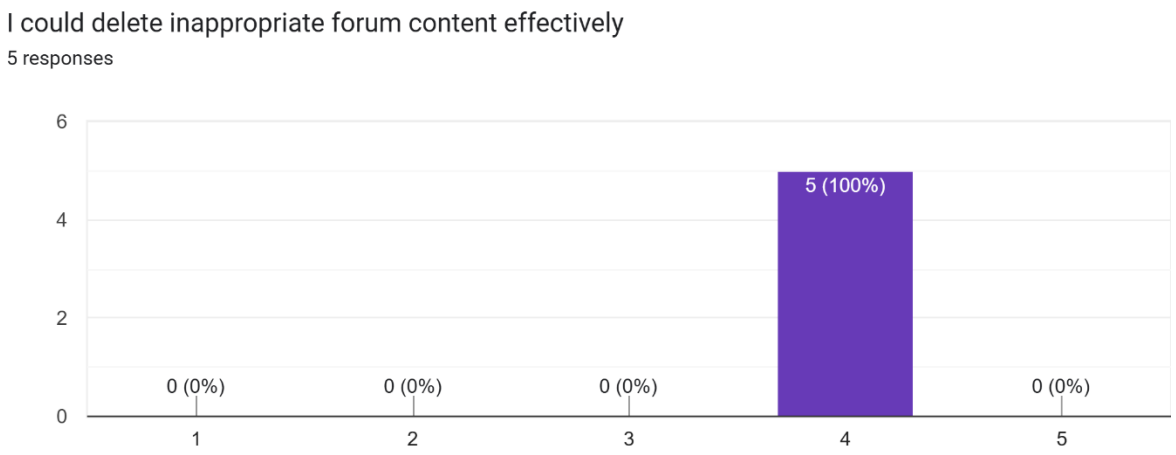

Figure 5.20: Admin Could Delete Inappropriate Forum Content Effectively

For the statement "Admin could delete inappropriate forum content effectively," all 5 respondents selected a rating of 4 (agree) as shown in Figure 5.20. This unanimous agreement indicates that the deletion feature is functioning properly and allows admins to manage and moderate forum content efficiently. While none selected the highest rating, the consistent score suggests a reliable feature that may still have room for further refinement or enhancement.

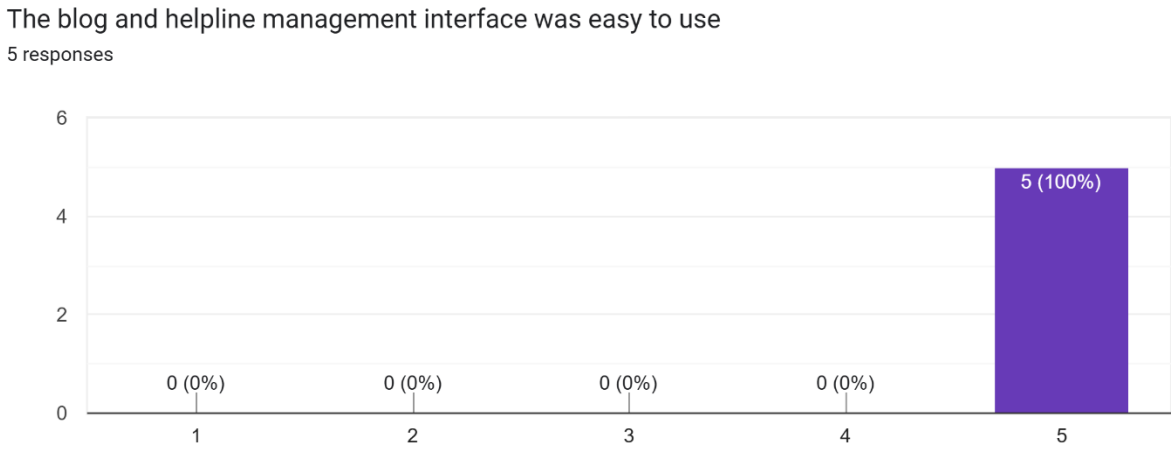

Figure 5.21: The Blog and Helpline Management Interface Was Easy to Use

For the statement "The blog and helpline management interface was easy to use," all 5 respondents selected a rating of 5 (strongly agree) as shown in Figure 5.21. This unanimous and highly positive response indicates that the interface for managing blog and helpline content

is exceptionally user-friendly and intuitive, meeting the expectations of all admin users during the usability testing.

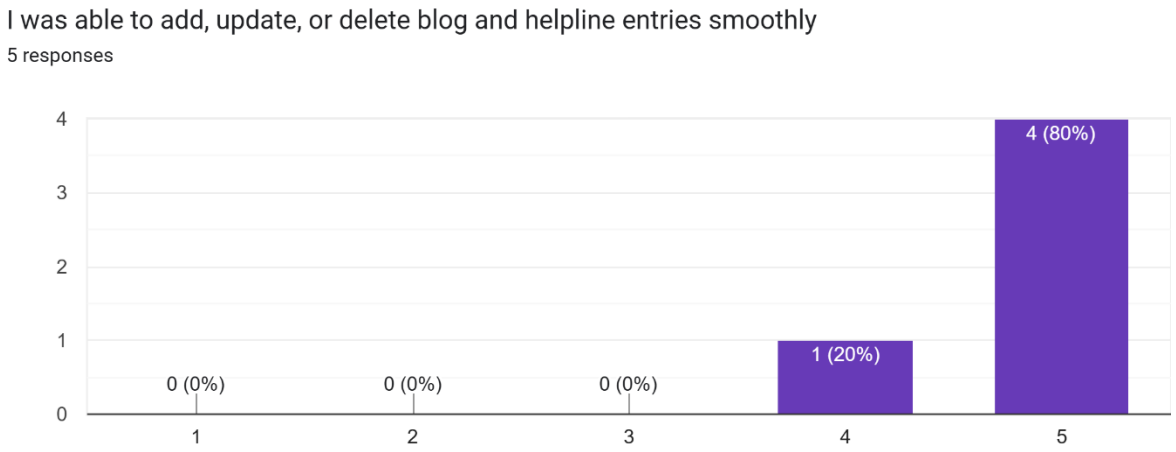

Figure 5.22: I Was Able to Read, Add, Update or Delete Blog and Helpline Entries Smoothly

For the statement "I was able to read, add, update, or delete blog and helpline entries smoothly," 1 respondent selected a rating of 4 (agree) while the remaining 4 chose 5 (strongly agree) as shown in Figure 5.22. This reflects a high level of satisfaction with the system's CRUD (Create, Read, Update, Delete) functionality for blog and helpline entries, indicating that the admin users found these features efficient and easy to use.

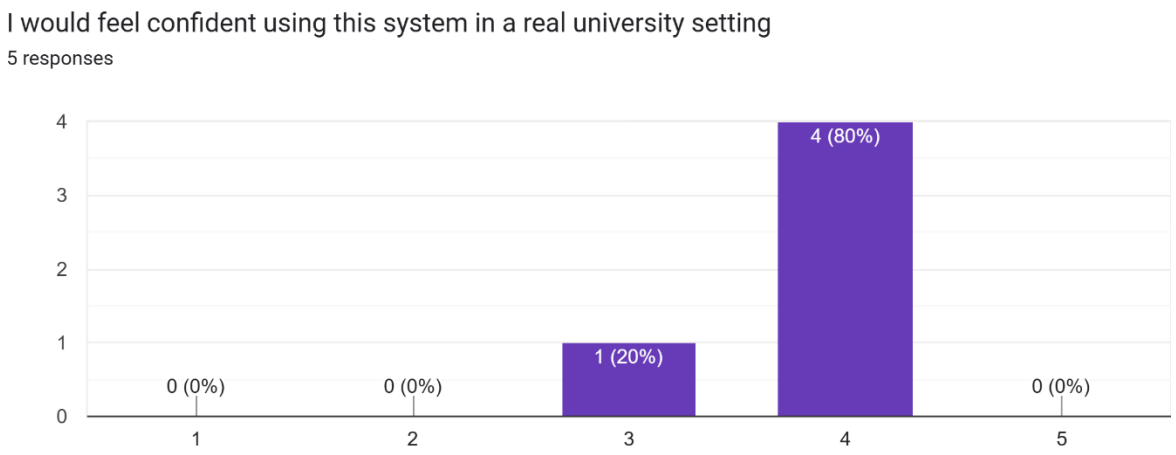

Figure 5.23: I Would Feel Confident Using This System in a Real University Setting

For the statement "I would feel confident using this system in a real university setting," 1 respondent selected a rating of 3 (neutral), while 4 respondents chose 4 (agree) as shown in Figure 5.23. This indicates that most admin users feel reasonably confident in the system's readiness for real-world application within a university environment. The neutral response may suggest a need for minor improvements or additional training to boost confidence among all users.

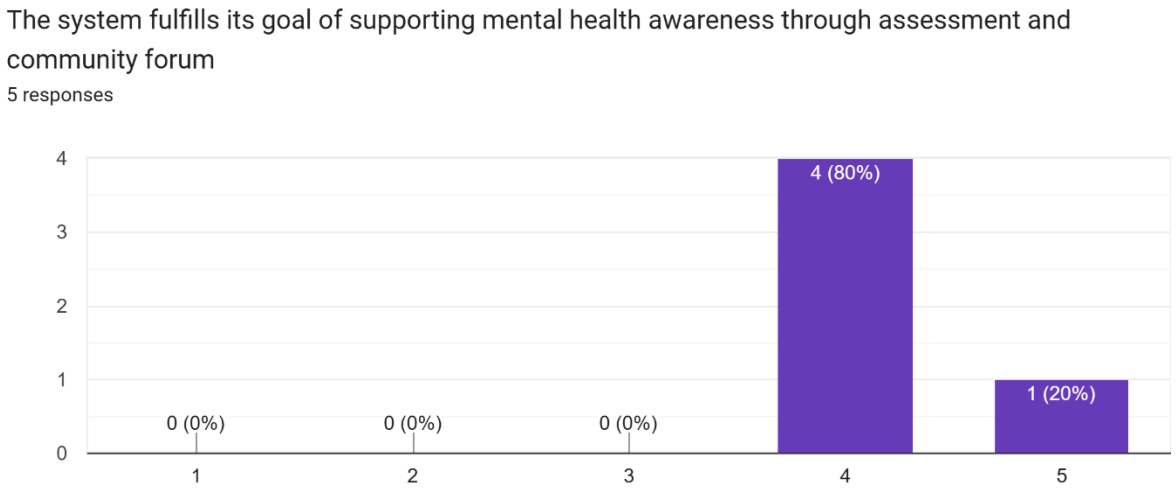

Figure 5.24: The System Fulfil its Goal of Supporting Mental Health Awareness Through Assessment and Community Forum

For the statement “The system fulfills its goal of supporting mental health awareness through assessment and community forum,” 4 respondents selected a rating of 4 (agree), and 1 respondent chose 5 (strongly agree) as shown in Figure 5.24. This indicates a strong overall agreement that the system effectively achieves its intended purpose of promoting mental health awareness through its key features, including the DASS-21 assessment and community forum.

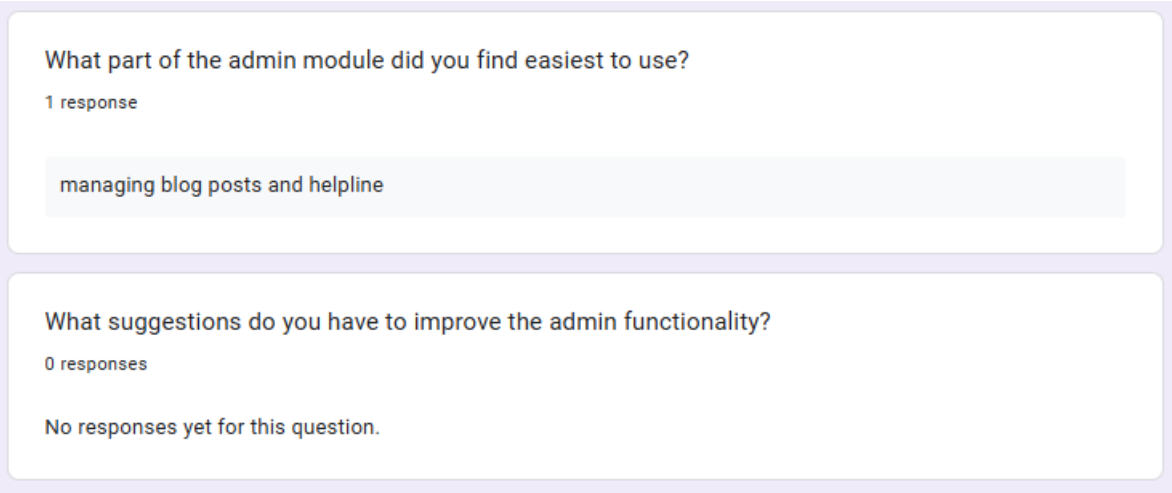

Figure 5.25: Open-Ended Question for Admin.

For the open-ended question “What part of the admin module did you find easiest to use?”, one respondent mentioned managing blog posts and helpline entries as the easiest tasks. No suggestions were provided by respondents regarding improvements for the admin functionality. As can be seen in Figure 5.25 feedback suggests that the current admin features are generally straightforward and user-friendly, though additional input may be needed to identify areas for enhancement.

Chapter 6: Conclusion and Future Work

6.1. Introduction

This chapter presents the concluding insights of the MindFullness: UNIMAS Mental Health Assessment and Support System project. It summarizes the overall development process, highlights key achievements, and reflects on the system's ability to meet its intended objectives. The chapter also discusses the limitations encountered during development and testing, providing context for understanding the scope and constraints of the current implementation. Additionally, this chapter outlines potential directions for future enhancement of the system, including the integration of new features, performance improvements, and broader adoption strategies. These suggestions aim to guide subsequent development phases and ensure the system continues to evolve in response to user needs and technological advancements.

6.2. Objective Achievement

The development of the MindFullness system has been successfully completed in alignment with the defined requirements and objectives. The system effectively addresses the core goals established at the outset of the project, delivering a dependable web-based platform to support students' mental well-being. It enables users to assess their mental health through the DASS-21 tool, access valuable mental health resources such as blogs and helplines, and engage in supportive peer discussions via community forums. These achievements demonstrate the system's potential to promote mental health awareness and provide accessible support to university students. A summary of these accomplishments is provided in Table 6.1.

Table 6.1: Objective Achievement

No.	Objective	Achievement
1.	To develop a platform that assesses students' mental health and provides them with relevant knowledge and support.	The system successfully integrates the DASS-21 assessment tool, allowing users to evaluate their mental health status. Upon completion, users receive a summary of their results.

2.	To develop a web-based system that can allow students to participate and engage in community forums for support.	A responsive and interactive forum feature has been implemented, enabling students to share experiences, offer peer support, and read others' posts anonymously, fostering a sense of community.
3.	To provide a list of mental health resources, such as blogs and helplines to offer users valuable information and support through external links.	The system includes a directory of curated mental health blogs and helplines. These resources are accessible through clearly categorized external links, providing users with credible and immediate support options.

6.3. Project Limitation and Constraints

The development of MindFullness: UNIMAS Mental Health Assessment and Support System was guided by a strong commitment to user privacy and data protection. As a result, one of the key limitations of the system is that individual DASS-21 answers are not stored in the database. This approach protects user confidentiality but restricts the system's ability to offer progress tracking or follow-up assessments over time. Another limitation involves the anonymity of community forum participation. To create a safe and stigma-free environment, user identities are hidden. However, this anonymity also presents challenges for effective moderation, limits accountability, and reduces the potential for building continuous, supportive peer interactions. Additionally, the scope of mental health resources provided in the system is somewhat limited. The blog posts and helpline directory rely on external links, which may interrupt user experience and do not offer real-time or personalized support within the platform itself. From the administrative perspective, functionality is limited to managing forum posts, blog content, and helpline listings. Advanced features such as usage analytics, moderation tools,

or user behavior tracking are not yet implemented. Finally, although the platform is designed with responsive web principles, it has not been fully tested across all devices and browsers, potentially affecting user experience on less common or outdated systems.

6.4. Future Work

To enhance the functionality and impact of MindFullness, several directions for future work are proposed. A key area for improvement is the integration of additional mental health assessment tools, such as the PHQ-9 for depression and GAD-7 for anxiety. These would allow the system to serve a broader user base with more specific psychological concerns. Another significant enhancement would be the development of real-time support features, such as a chatbot or live chat that connects users with university counselors or trained volunteers. This would offer immediate assistance and bridge the gap between assessment and support.

Next, to improve community interaction, the forum could be upgraded with content moderation features, including post reporting, automated keyword filters, and admin alerts to help maintain a safe and respectful environment. The resource directory could also be expanded to include localized, interactive content such as videos, categorized articles, and mental wellness guides. Additionally, creating a dedicated mobile application would increase system accessibility for users who prefer smartphones over desktop platforms. The admin panel could be enhanced with basic analytics to provide insights into platform usage, popular content, and engagement trends, enabling administrators to make data-driven decisions.

A valuable feature to consider is the implementation of a Mental Health Events module. This feature would allow administrators to manage upcoming and completed mental health events, including creating event listings, setting dates, and monitoring participant registration. For users, this module would provide access to event details, the ability to register, and view past event summaries or related resources. This would not only promote engagement but also support UNIMAS's ongoing mental health awareness campaigns by directly integrating them into the platform.

6.5. Summary

In summary, Chapter 6 concludes the development of the MindFullness: UNIMAS Mental Health Assessment and Support System, highlighting the successful achievement of its core

objectives, including mental health assessment via the DASS-21 tool, a community forum for peer support, and access to curated mental health resources. The chapter acknowledges key limitations such as user privacy constraints that prevent data tracking, challenges in forum moderation due to anonymity, and limited administrative functionalities. It also notes that comprehensive testing across all devices remains pending. For future enhancements, the chapter proposes integrating additional assessment tools, implementing real-time support features like chatbots, improving forum moderation capabilities, expanding resource content, developing a mobile app, and adding analytics and event management modules. These improvements aim to increase the platform's usability, effectiveness, and engagement, ensuring it evolves to better support the mental well-being of university students.

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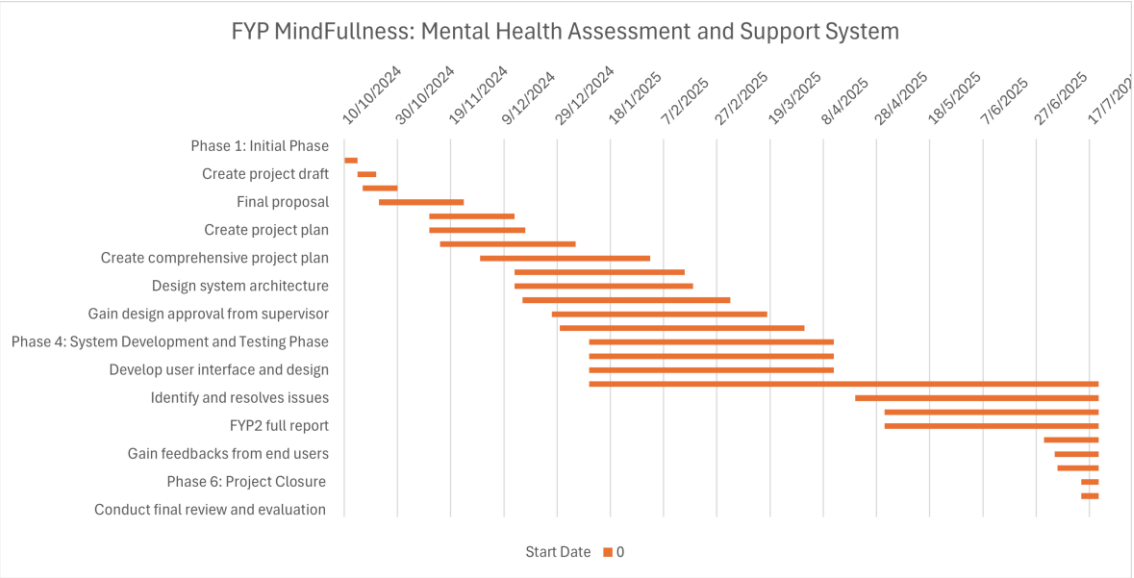
Appendix A


FYP MindFullness: Mental Health Assessment and Support System
10/10/2024
30/10/2024
19/11/2024
9/12/2024
29/12/2024
18/1/2025
7/2/2025
27/2/2025
19/3/2025
8/4/2025
28/4/2025
18/5/2025
7/6/2025
27/6/2025
Phase 1: Initial Phase
Create project draft
Final proposal
Create project plan
Create comprehensive project plan
Design system architecture
Gain design approval from supervisor
Phase 4: System Development and Testing Phase
Develop user interface and design
Identify and resolves issues
FYP2 full report
Gain feedbacks from end users
Phase 6: Project Closure
Conduct final review and evaluation
Start Date
0

Appendix B

DASS21

Name: Date:

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you **over the past week**. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

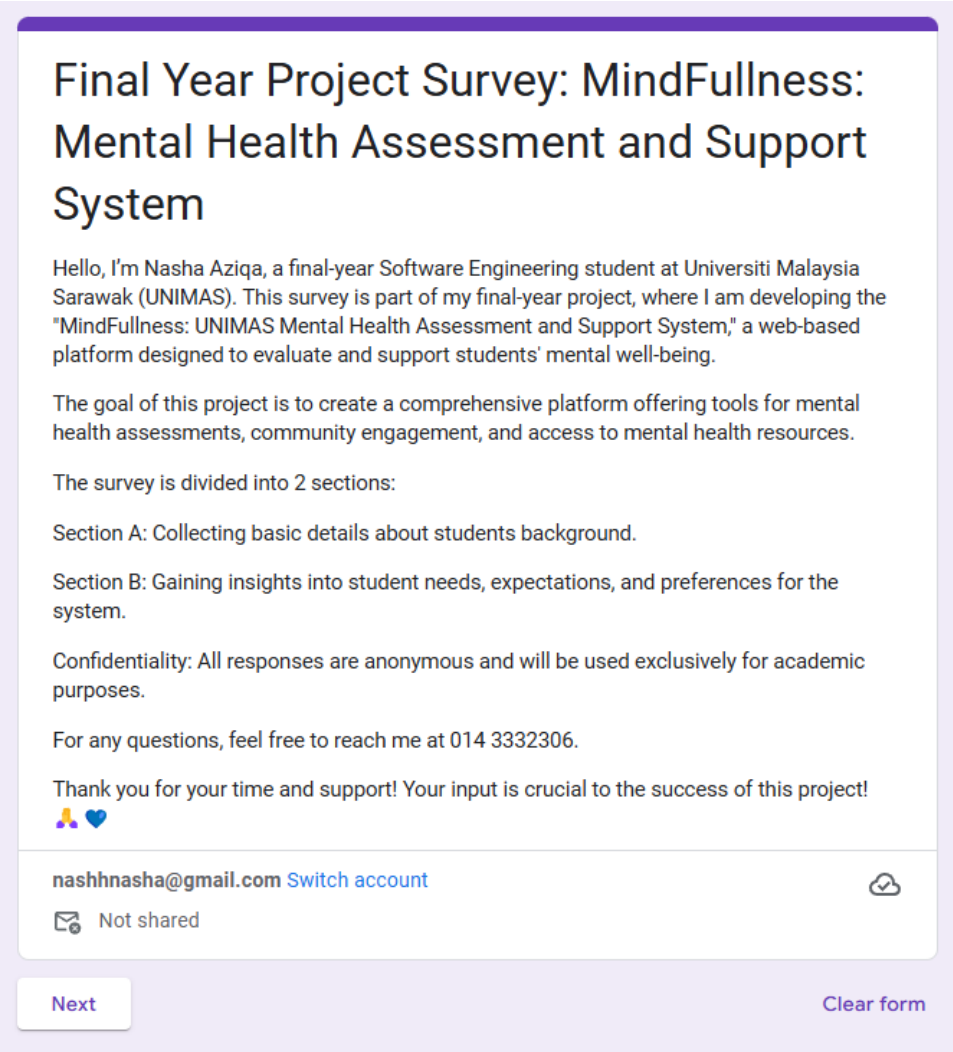
0 Did not apply to me at all
1 Applied to me to some degree, or some of the time
2 Applied to me to a considerable degree or a good part of time
3 Applied to me very much or most of the time

1 (s)	I found it hard to wind down	0	1	2	3
2 (a)	I was aware of dryness of my mouth	0	1	2	3
3 (d)	I couldn't seem to experience any positive feeling at all	0	1	2	3
4 (a)	I experienced breathing difficulty (e.g. excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3
5 (d)	I found it difficult to work up the initiative to do things	0	1	2	3
6 (s)	I tended to over-react to situations	0	1	2	3
7 (a)	I experienced trembling (e.g. in the hands)	0	1	2	3
8 (s)	I felt that I was using a lot of nervous energy	0	1	2	3
9 (a)	I was worried about situations in which I might panic and make a fool of myself	0	1	2	3
10 (d)	I felt that I had nothing to look forward to	0	1	2	3
11 (s)	I found myself getting agitated	0	1	2	3
12 (s)	I found it difficult to relax	0	1	2	3
13 (d)	I felt down-hearted and blue	0	1	2	3
14 (s)	I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3
15 (a)	I felt I was close to panic	0	1	2	3
16 (d)	I was unable to become enthusiastic about anything	0	1	2	3
17 (d)	I felt I wasn't worth much as a person	0	1	2	3
18 (s)	I felt that I was rather touchy	0	1	2	3
19 (a)	I was aware of the action of my heart in the absence of physical exertion (e.g. sense of heart rate increase, heart missing a beat)	0	1	2	3
20 (a)	I felt scared without any good reason	0	1	2	3
21 (d)	I felt that life was meaningless	0	1	2	3

NB Scores on the DASS-21 will need to be multiplied by 2 to calculate the final score.

	Depression	Anxiety	Stress
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely Severe	28+	20+	34+

Appendix C



Final Year Project Survey: MindFullness: Mental Health Assessment and Support System

Hello, I'm Nasha Aziqa, a final-year Software Engineering student at Universiti Malaysia Sarawak (UNIMAS). This survey is part of my final-year project, where I am developing the "MindFullness: UNIMAS Mental Health Assessment and Support System," a web-based platform designed to evaluate and support students' mental well-being.

The goal of this project is to create a comprehensive platform offering tools for mental health assessments, community engagement, and access to mental health resources.

The survey is divided into 2 sections:

Section A: Collecting basic details about students background.

Section B: Gaining insights into student needs, expectations, and preferences for the system.

Confidentiality: All responses are anonymous and will be used exclusively for academic purposes.

For any questions, feel free to reach me at 014 3332306.

Thank you for your time and support! Your input is crucial to the success of this project! 🙏💙

nashhnasha@gmail.com Switch account

Not shared

Next

Clear form

Final Year Project Survey: MindFullness: Mental Health Assessment and Support System

nashhnasha@gmail.com Switch account

Not shared

* Indicates required question

Section 1: Demographic Section

What is your age group? *

- 18-20
- 21-24
- 25-28
- Above 28

What is your gender? *

- Male
- Female
- Prefer not to say

What is your current academic level? *

- ◯ Foundation/Pre-University
- ◯ Undergraduate
- ◯ Postgraduate (Masters/PhD)

Which faculty are you enrolled in? *

Choose

Are you living on-campus or off-campus? *

- ◯ On-campus
- ◯ Off-campus

Back Next Clear form

Section B: Understanding Students/Users Preferences

Have you ever taken a mental health assessment before (e.g., DASS-21)? *

- (●) Yes
- ( ) No

What features would you find most helpful in a mental health support system? * *(Choose all that apply)*

- [ ] Self-assessment tool (e.g. DASS-21)
- [ ] Access to educational blogs or articles on mental health
- [ ] Community support forum
- [ ] List of external helplines and counseling resources
- [ ] Other: _____

How comfortable are you using online platforms for mental health support?

1- Very uncomfortable
2- Somewhat uncomfortable
3- Neutral
4- Somewhat comfortable
5- Very comfortable

1	2	3	4	5
○	○	○	○	○

How important is the anonymity of your identity when using mental health resources? *

1- Very Not important
2- Not Important
3- Neutral
4- Important
5- Very Important

1	2	3	4	5
○	○	○	○	○

How often do you search for mental health resources or guidance online?

- ○ Daily
- ○ Weekly
- ○ Monthly
- ○ Rarely
- ○ Never

What type of mental health support do you think students need the most? *
(Choose all that apply)

- [ ] Stress management
- [ ] Coping with anxiety
- [ ] Depression support
- [ ] Peer-to-peer advice
- [ ] Other: _____

Would you participate in a community forum to share experiences or seek advice from peers? *

- ( ) Yes
- ( ) No
- ( ) Maybe

What would motivate you to use an online mental health platform regularly? *
(Choose all that apply)

- [ ] Easy navigation and user-friendly design
- [ ] Availability of reliable and professional resources
- [ ] Interactive tools (e.g., quizzes, self-checks)
- [ ] Personalized feedback on assessments
- [ ] Other: _____

What concerns would you have about using a mental health support platform? *
(Choose all that apply)

- [ ] Privacy and data security
- [ ] Accuracy of assessment results
- [ ] Lack of real-time interaction with professionals
- [ ] Misinterpretation of results
- [ ] Other: _____

Do you prefer written blog articles, videos, or both for educational content? *

- ( ) Blog Articles
- ( ) Videos
- ( ) Both

What features or functionalities would you suggest for a mental health support platform to better meet student needs?

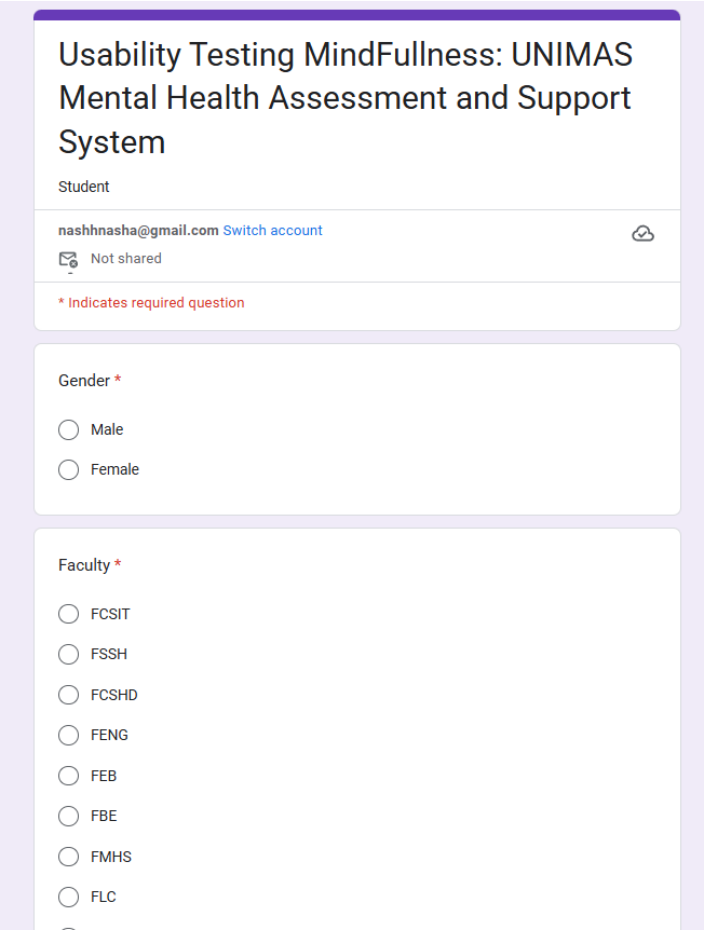
Your answer

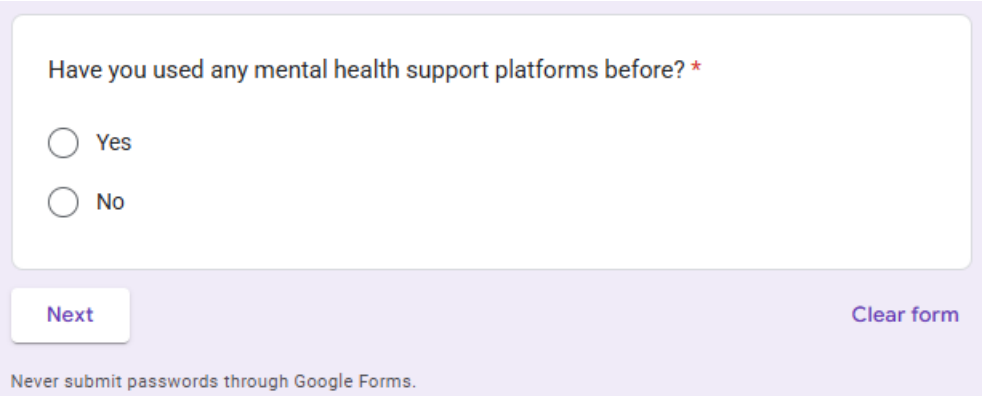
Do you have any specific concerns or suggestions for improving mental health support at UNIMAS?

Your answer

Back Submit Clear form

Appendix D


Usability Testing MindFullness: UNIMAS Mental Health Assessment and Support System
Student
nashhnasha@gmail.com Switch account
Not shared
* Indicates required question
Gender *
Male
Female
Faculty *
FCSIT
FSSH
FCSHD
FENG
FEB
FBE
FMHS
FLC


Have you used any mental health support platforms before? *
Yes
No
Next
Clear form
Never submit passwords through Google Forms.

Usability Testing MindFullness: UNIMAS Mental Health Assessment and Support System

nashhnasha@gmail.com Switch account

Not shared

* Indicates required question

Section 2: System Usability For Student

Please rate the following statements based on your experience.

The system was easy to navigate *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

The questions were easy to understand and answer. *

1	2	3	4	5
○	○	○	○	○

I was able to view my DASS-21 result summary clearly *

1	2	3	4	5
○	○	○	○	○

The forum feature made it easy for me to interact or share experiences *

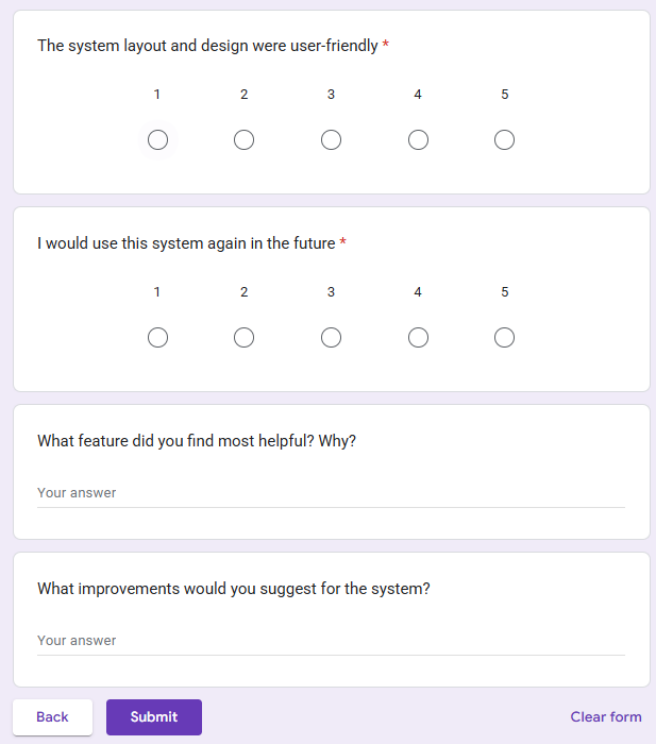
1	2	3	4	5
○	○	○	○	○

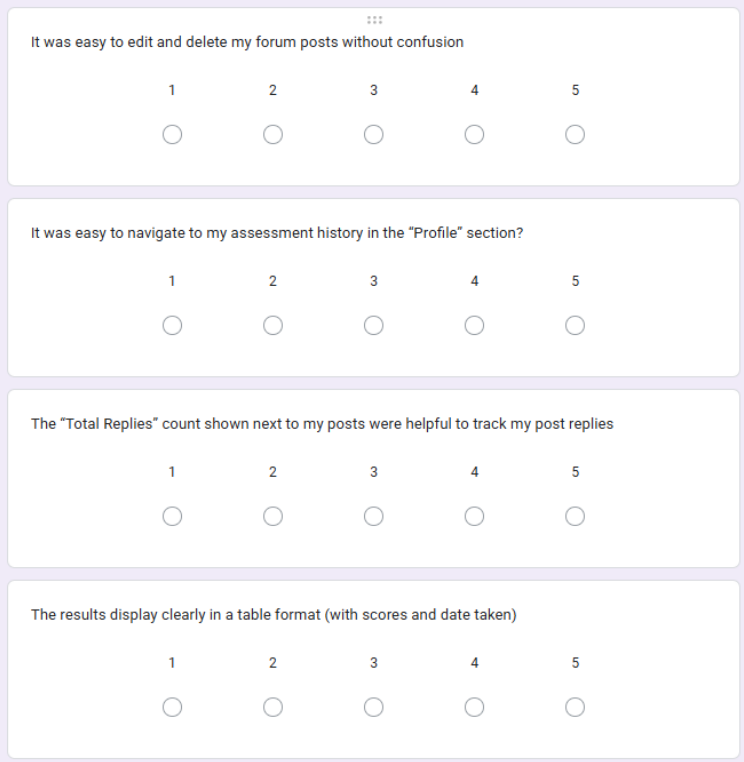
The blog section provided useful mental health information *

1	2	3	4	5
○	○	○	○	○

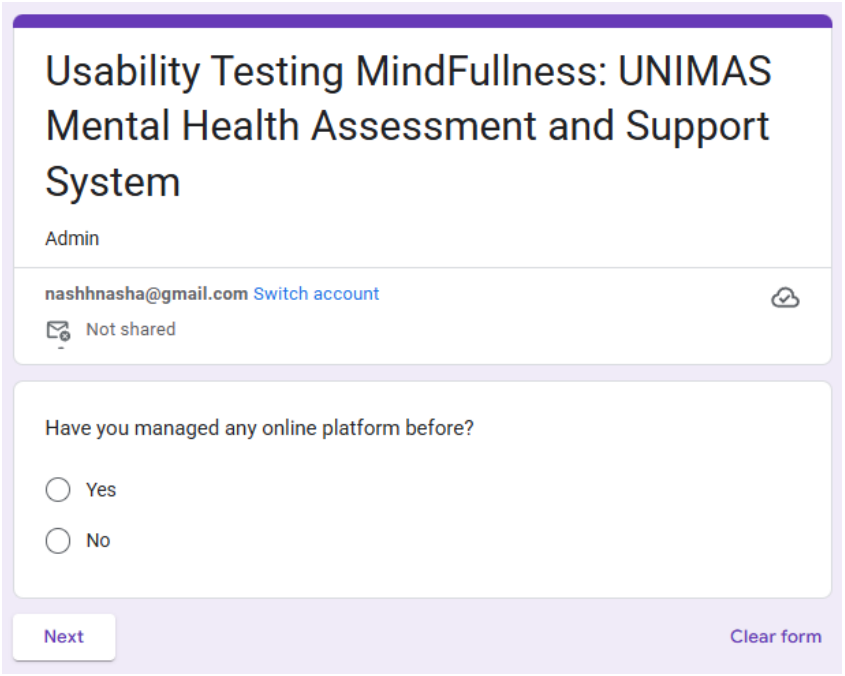
The helpline section was informative and helpful *

1	2	3	4	5
○	○	○	○	○


The system layout and design were user-friendly *
1 2 3 4 5
I would use this system again in the future *
1 2 3 4 5
What feature did you find most helpful? Why?
Your answer
What improvements would you suggest for the system?
Your answer
Back
Submit
Clear form


It was easy to edit and delete my forum posts without confusion
1 2 3 4 5
It was easy to navigate to my assessment history in the "Profile" section?
1 2 3 4 5
The "Total Replies" count shown next to my posts were helpful to track my post replies
1 2 3 4 5
The results display clearly in a table format (with scores and date taken)
1 2 3 4 5

Appendix E



Usability Testing MindFullness: UNIMAS Mental Health Assessment and Support System

Admin

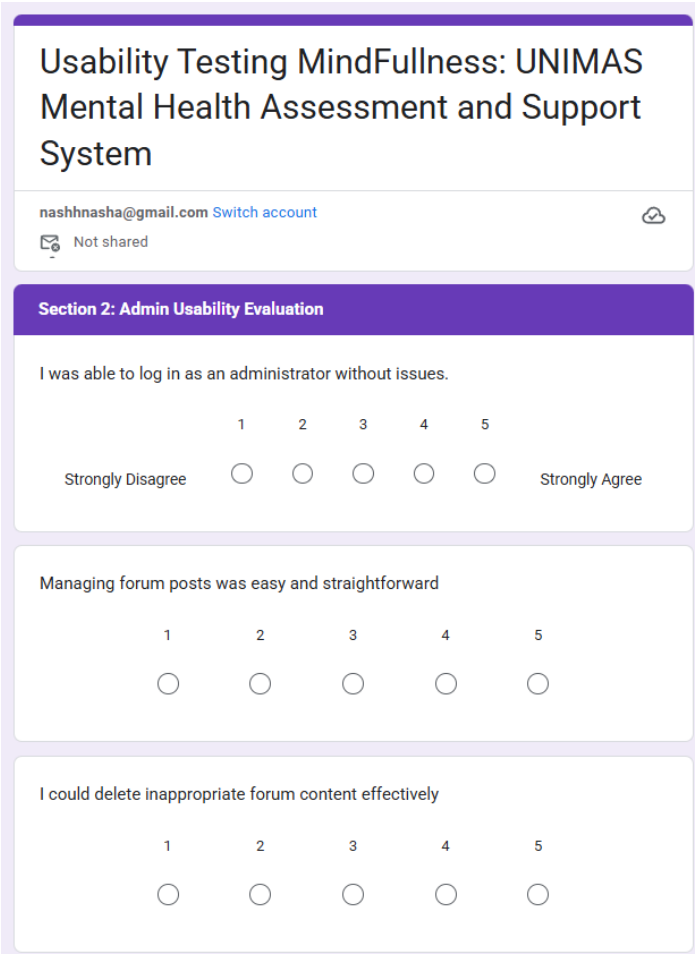
nashhnasha@gmail.com Switch account

Not shared

Have you managed any online platform before?

- Yes
- No

Next Clear form



Usability Testing MindFullness: UNIMAS Mental Health Assessment and Support System

nashhnasha@gmail.com Switch account

Not shared

Section 2: Admin Usability Evaluation

I was able to log in as an administrator without issues.

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

Managing forum posts was easy and straightforward

1	2	3	4	5
○	○	○	○	○

I could delete inappropriate forum content effectively

1	2	3	4	5
○	○	○	○	○

The blog and helpline management interface was easy to use

1 2 3 4 5

I was able to add, update, or delete blog and helpline entries smoothly

1 2 3 4 5

I would feel confident using this system in a real university setting

1 2 3 4 5

The system fulfills its goal of supporting mental health awareness through assessment and community forum

1 2 3 4 5

What part of the admin module did you find easiest to use?

Your answer

What suggestions do you have to improve the admin functionality?

Your answer

Back Submit Clear form

Appendix F

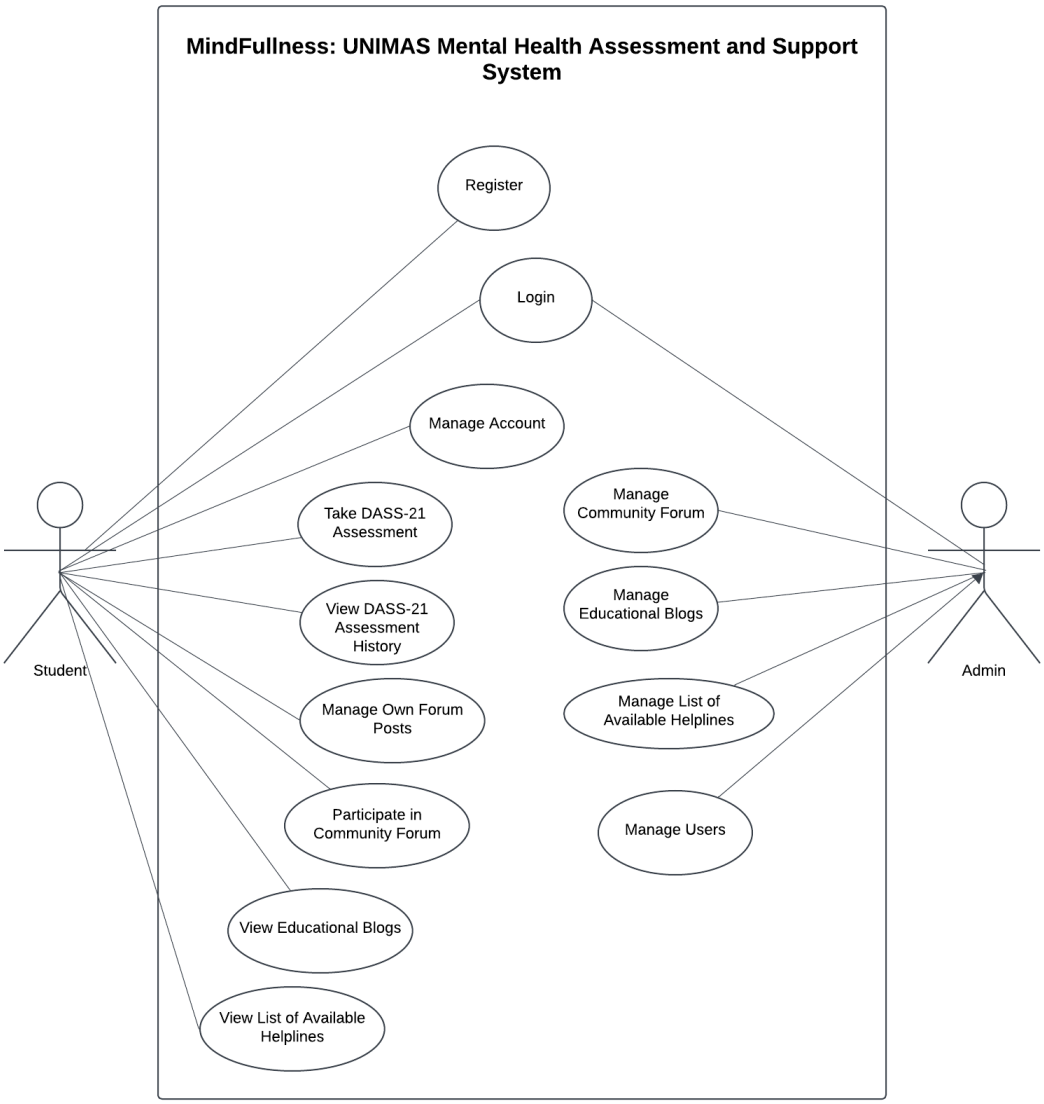
C: > xampp > htdocs > mindfullness > assessment.php

```
            document.querySelector('.next-btn').style.display = currentQuestion === questions.length - 1 ? 'none' : 'inline-block';
            document.querySelector('.submit-btn').style.display = currentQuestion === questions.length - 1 ? 'inline-block' : 'none';
        }

        function nextQuestion() {
            if (answers[questions[currentQuestion].id] !== undefined) {
                currentQuestion++;
                renderQuestion();
            } else {
                alert("Please select an answer before proceeding.");
            }
        }

        function calculateScore() {
            if (Object.keys(answers).length < 21) {
                alert("Please answer all questions.");
                return;
            }

            let depression = 0, anxiety = 0, stress = 0;
            const depressionQuestions = [3, 5, 10, 13, 16, 17, 21];
            const anxietyQuestions = [2, 4, 7, 9, 15, 19, 20];
            const stressQuestions = [1, 6, 8, 11, 12, 14, 18];

            depressionQuestions.forEach(q => depression += parseInt(answers['q' + q]));
            anxietyQuestions.forEach(q => anxiety += parseInt(answers['q' + q]));
            stressQuestions.forEach(q => stress += parseInt(answers['q' + q]));

            depression *= 2;
            anxiety *= 2;
            stress *= 2;

            const interpretations = {
                depression: interpretDepression(depression),
                anxiety: interpretAnxiety(anxiety),
                stress: interpretStress(stress)
            };
```

C: > xampp > htdocs > mindfullness > forum.php

```
// Handle post submission
if ($_SERVER['REQUEST_METHOD'] === 'POST') {
    $parent_comment = $_POST['Pcommentid'] ?? 0;
    $post = trim($_POST['msg'] ?? '');
    $name = trim($_POST['name'] ?? ''); // This allows user to edit their name

    if (!empty($name) && !empty($post)) {
        $sql = "INSERT INTO forum (parent_comment, name, userid, post, date) VALUES (?, ?, ?, ?, NOW())";
        $stmt = $con->prepare($sql);
        $stmt->bind_param("isis", $parent_comment, $name, $userid, $post);

        if ($stmt->execute()) {
            $_SESSION['success'] = "New post/reply added successfully!";
        } else {
            $_SESSION['status'] = "Failed to add a new post.";
        }
    } else {
        $_SESSION['status'] = "Please fill in all fields.";
    }

    header("Location: forum.php");
    exit();
}

// Search functionality
$search = $_GET['search'] ?? '';
$sql = "SELECT * FROM forum WHERE post LIKE ? ORDER BY forumid DESC";
$stmtSearch = $con->prepare($sql);
$searchTerm = "%$search%";
$stmtSearch->bind_param("s", $searchTerm);
$stmtSearch->execute();
$result = $stmtSearch->get_result();

$posts = [];
while ($row = $result->fetch_assoc()) {
    $posts[] = $row;
}
```

Appendix G


MindFullness: UNIMAS Mental Health Assessment and Support System
Register
Login
Manage Account
Take DASS-21 Assessment
View DASS-21 Assessment History
Manage Own Forum Posts
Participate in Community Forum
View Educational Blogs
View List of Available Helplines
Manage Community Forum
Manage Educational Blogs
Manage List of Available Helplines
Manage Users
Student
Admin

Appendix H

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