

**A WEB BASED MENTAL HEALTH CARE PLATFORM TO
PROVIDE CONVENIENT AND PERSONALIZED SERVICE FOR
CITIZEN OF BANGLADESH**

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FINAL YEAR DESIGN PROJECT REPORT

This Report Presented in Partial Fulfillment of the Requirements for the
Degree of Bachelor of Science in Computer Science and Engineering

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DAFFODIL INTERNATIONAL UNIVERSITY

DHAKA, BANGLADESH

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APPROVAL

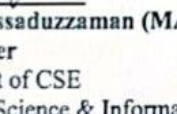
APPROVAL

This Project titled "A WEB BASED MENTAL HEALTH CARE PLATFORM TO PROVIDE CONVENIENT AND PERSONALIZED SERVICE FOR CITIZEN OF BANGLADESH", submitted by **Durjoy Kundu** and **Shakirrul Alam** to the Department of Computer Science and Engineering, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on **15-07-2024**.

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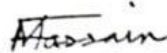

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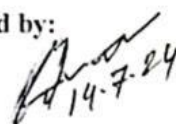
DECLARATION

We hereby declare that this project has been done by us under the supervision of **Dr. Md. Fokhray Hossain**, Professor, Department of Computer Science and Engineering, Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for the award of any degree.

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ABSTRACT

“Mind Bridge: An online mental health care platform”, is a web application. In recent years, the global awareness surrounding mental health issues has heightened, accentuating the necessity for comprehensive and easily accessible support systems. "Mind Bridge" aims to bridge this gap by providing a user-friendly and secure platform that connects individuals seeking mental health assistance with qualified professionals. Three primary user roles are served by the platform: administrators, doctors, and patients. Patients can register, browse, and schedule appointments with mental health professionals, utilizing features such as real-time video calls and live chat for consultations. Patients also can access the use library of mental health care related resources. Patients must pay in advance of consultations in order to expedite the process and guarantee commitment. For mental health professionals, "Mind Bridge" offers a platform to register, manage appointments, and conduct consultations with patients. Through the integration of advanced technology, including secure payment processing and communication channels, the platform ensures a seamless and confidential experience for both patients and professionals. The "Mind Bridge" project is driven by a commitment to improving access to mental health care, enhancing user experience, and promoting overall well-being. The platform seeks to empower people to prioritize their mental health and seek support whenever necessary by utilizing innovation and technology.

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CHAPTER 1

INTRODUCTION

1.1 Overview

The Mind Bridge mental health care platform is an innovative online platform dedicated to providing comprehensive mental health care services. Our mission is to bridge the gap between individuals seeking mental well-being and qualified therapists. Through a user-friendly interface, Mind Bridge connects patients with licensed professionals, offering personalized support and guidance. Key features of Mind Bridge include user registration, therapist profiles, doctor search functionality, appointment booking, and live consultations via video calls or chat. Patients can explore therapist profiles, choose specialists based on their needs, and schedule appointments seamlessly. The platform also integrates secure payment gateways to ensure smooth transactions.

1.2 Background and Present State

The Mind Bridge project was conceived in response to the growing need for accessible and effective mental health care services, particularly in light of barriers such as geographical constraints, long wait times, social stigma, and financial limitations. Traditionally, mental health care has been dominated by in-person therapy sessions, which, while effective, are often inaccessible to many due to location, cost, or scheduling conflicts. With advancements in digital technology, there was a clear opportunity to leverage online platforms to bridge this gap and provide comprehensive mental health support. Mind Bridge was developed to harness these technological advancements, creating a user-friendly and secure platform that connects individuals with licensed therapists for real-time consultations and support. Currently, the platform is in an advanced prototype stage, having undergone extensive testing to ensure robust functionality and performance. The front-end, built with HTML, CSS, Tailwind CSS, and React, offers a seamless user experience, while the back-end, powered by Node.js, Express.js, and MongoDB, ensures efficient and secure data handling. Key features, such as user registration, therapist profiles, appointment scheduling, and live video consultations, are fully operational and have been tested under various conditions to

confirm their reliability. As the project moves forward, focus will shift towards scaling the platform to accommodate a growing user base and integrating additional features to further enhance user engagement and service delivery. The Mind Bridge platform is well-positioned to make a significant impact on the mental health care landscape, providing a scalable, accessible, and sustainable solution for those in need.

1.3 Problem Statement

Millions struggle to access quality mental healthcare due to various obstacles: geographical limitations, long wait times, stigma, and financial constraints. Traditional in-person therapy can be inconvenient, expensive, and inaccessible, particularly for individuals in rural areas or with busy schedules. This lack of access contributes to rising rates of untreated mental health conditions, impacting individuals, families, and communities. The existing mental health care system often falls short in providing timely support. Therefore, there is a critical need for an accessible, user-friendly platform that connects individuals with qualified therapists. The Mind Bridge project aims to bridge this gap by creating an online space where users can find therapists, schedule appointments, and receive real-time consultations. However, it takes careful planning and execution to create a safe and intuitive platform with features like scheduling appointments, accepting payments, and offering video consultations. This project tackles the challenge of building a comprehensive online platform that addresses the critical need for accessible and affordable mental healthcare.

1.4 Objectives

The objective of the "Mind Bridge" project is to develop an online mental health care platform that facilitates easy access to professional support for individuals experiencing mental health challenges. Key goals include improving accessibility to mental health services, enhancing user experience, ensuring confidentiality and security of user data, and promoting overall well-being. 'Mind Bridge' aims to empower people to prioritize their mental health and seek assistance in a timely and convenient manner by integrating modern technology and innovative feature.

1.5 Scope and Limitations

The scope of the Mind Bridge platform encompasses the development and implementation of a comprehensive online system designed to facilitate access to mental health care services. The platform aims to connect individuals with qualified therapists through a user-friendly interface, offering features such as user registration, therapist profiles, search functionality, appointment scheduling, and live consultations via video calls or chat. It also includes secure payment processing to ensure smooth transactions. The platform is designed to address barriers such as geographical limitations, long wait times, and the stigma associated with seeking mental health care, making it particularly valuable for users in remote areas or those with busy schedules.

However, the platform has certain limitations. Firstly, it requires a stable internet connection, which may limit access for users in low-connectivity regions. Secondly, there are significant data privacy and security challenges, given the sensitive nature of mental health information and the need to comply with regulations like GDPR and HIPAA. Additionally, user engagement and retention could be challenging, especially among those who prefer in-person therapy or are not comfortable with digital platforms. The platform also faces scalability issues as it grows, necessitating careful management to maintain performance and service quality. Lastly, navigating cross-border regulatory compliance is complex, requiring adaptations to meet varying legal requirements for mental health services across different regions. Addressing these limitations is crucial for the platform to fulfill its mission effectively and sustainably.

1.6 Report Organization

- ✓ Chapter-1 describes about Overview, background and present state, problem statement, objectives, scope and Limitations and report organization of the project.
- ✓ Chapter-2 describes the related works, Comparison between existing works and open issues of the project
- ✓ Chapter-3 describes the requirement analysis, system design and Project Management and Financial Analysis
- ✓ Chapter-4 describes the prototype design and system testing.

- ✓ Chapter-5 describes the simulation result and performance of the project.
- ✓ Chapter-6 describes impact on life, impact on society and environment, ethical aspects, sustainability plan.
- ✓ Chapter-7 describes the further suggested works, limitations and conclusion.

1.7 Summary

Mind Bridge is an online platform connecting individuals seeking mental health support with qualified therapists. Features include user registration, therapist profiles, appointment booking, and real-time consultations. The platform prioritizes accessibility and user-friendly design. Existing mental health services face challenges due to stigma, geographical limitations, and lack of comprehensive resources. Mind Bridge aims to address these gaps and provide timely support. Increasing awareness, lessening stigma, and empowering users are some of the goals. The project encompasses user experience, therapist profiles, appointment systems, payment integration, and privacy compliance. Scalability and future enhancements are considered. Mind Bridge aims to improve access to mental health care, reduce stigma, and enhance user well-being. It aspires to positively impact society by bridging emotional gaps.

CHAPTER 2

LITERATURE REVIEW

2.1 Overview

The purpose of literature review is to analyze the existing or previous application that are already offering services to the same client. Reviewing the previous works allows one to determine the advantages, disadvantages, and services provided by other platforms. With the help of these items, a better application that offers services on par with current ones while ensuring more intriguing features and mitigating their drawbacks can be developed. However, the primary objective of a literature study is to more precisely pinpoint the issues and offer customers a better solution. Finally, by examining everything that was previously discussed, Mind Bridge hopes to enhance these by adding more necessary services and streamlining the user experience.

2.2 Related Works

When we made the decision to create a website and then to create an online mental health care app. We took inspiration from many well-known ready-made projects and followed their activities and work policies. The following websites are all accessible and widely recognized to us: MONER BONDDU, DOCTIME and so on. Fig 2.1 represents the site MONER BONDDU, which is one of the biggest online learning platforms. MONER BONDDU assisted me in constructing my concept as it was being developed. I mostly used three to four websites in the globe to construct my proposal. But I'll just represent one here:

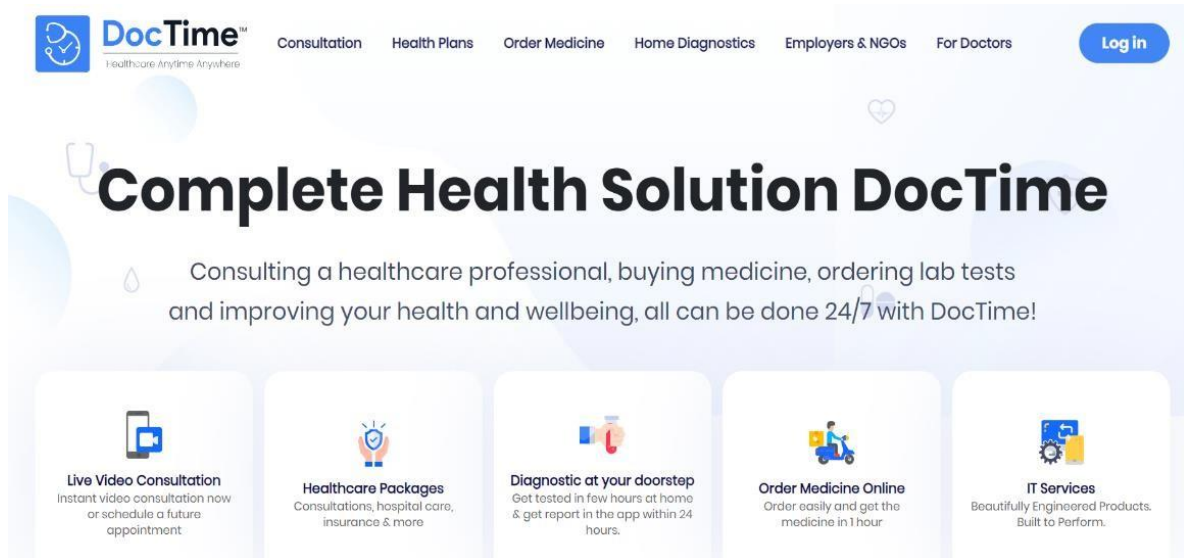


Figure 2.2.1: Doctime

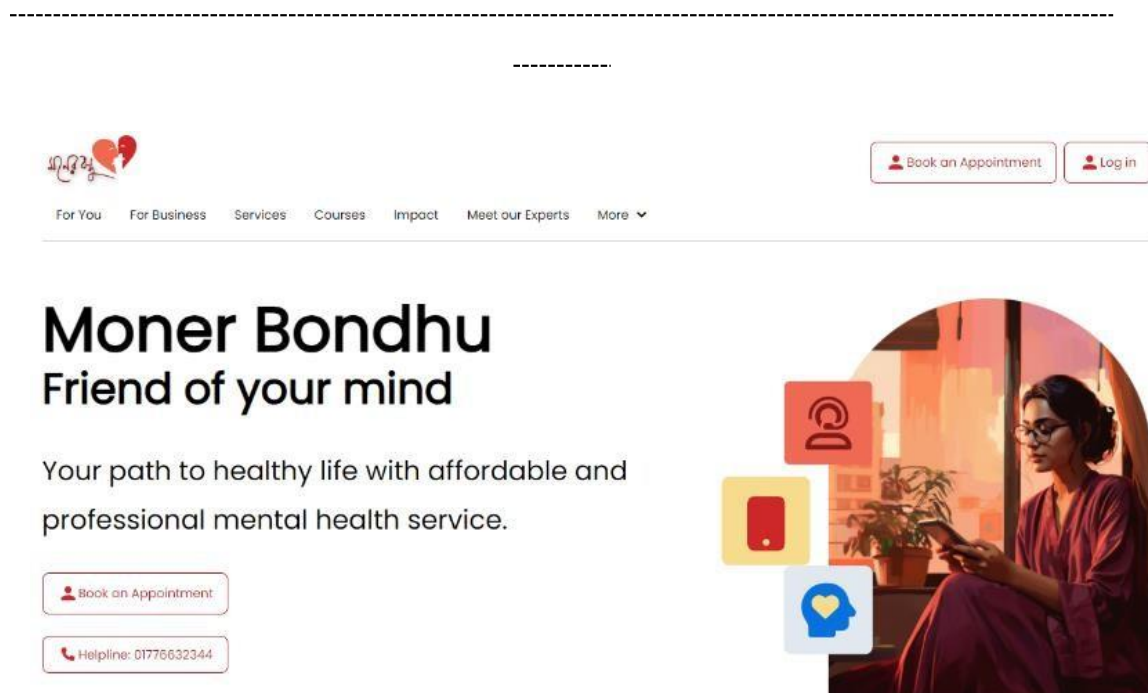


Figure 2.2.2: Moner Bondhu

We gained up knowledge from such websites:

- Appropriate activities
- Well –structured
- Ensure that privacy and security are appropriate

2.3 Comparison between existing works

Case study	Doctime	Moner Bondhu	Mind Bridge
Registration & Login for user and admin	Yes	Yes	Yes
24-hour live services	Yes	Yes	Yes
Discount/offer	Yes	Yes	Yes
Mental health resources	No	Yes	Yes
Virtual Support Group	No	No	Yes
Real time communication	Yes	Yes	Yes

Table 1. Comparative analysis with previous work

2.4 Open Issues

Despite the promising scope and capabilities of the Mind Bridge platform, several open issues remain that need to be addressed to ensure its success and sustainability. One major concern is data privacy and security, given the sensitivity of mental health information. Ensuring robust encryption, secure data storage, and compliance with privacy regulations like GDPR and HIPAA is critical, yet challenging. User engagement and retention is another significant issue; effectively encouraging long-term use and maintaining the platform's relevance to users requires continuous innovation and understanding of user behavior. Accessibility also presents an ongoing challenge, particularly for individuals in areas with limited internet connectivity or those who are not technologically inclined. Additionally, cross-border regulatory compliance poses complexities, as mental health services are governed by different

laws in various regions, necessitating a flexible and adaptable framework. Finally, the integration of diverse therapy modalities to cater to a wide range of mental health needs while maintaining a seamless user experience is a sophisticated task. Addressing these open issues is crucial for the Mind Bridge platform to provide effective, secure, and inclusive mental health care services.

2.5 Summary

The "Mind Bridge" project is able to obtain important insights into user demands, technological solutions, legal requirements, and best practices in the field of online mental health care by combining findings from the literature study, related work, and comparison between current works. This knowledge serves as a foundation for the design, development, and implementation of a user-centered, evidence-based platform that addresses the evolving needs of individuals seeking mental health support.

CHAPTER 3

REQUIREMENT ANALYSIS AND DESIGN SPECIFICATION

3.1 Overview

The "Mind Bridge" project's methodology, requirement analysis, and system design serve as its pillars, guaranteeing an organized and methodical approach to its development. In order to comprehend user needs, define project objectives, and create a blueprint for the design and functioning of the platform, a number of essential tasks are included in this phase. Through the use of a systematic approach, requirement analysis, and thorough system design, the "Mind Bridge" project aims to establish a strong basis for the development and execution of successful projects.

3.2 Requirement Collection and Analysis

3.2.1. Stakeholder Identification

- Patients: Individuals seeking mental health services.
- Therapists: Licensed professionals providing mental health care.
- Administrators: Staff managing platform operations and user accounts.
- Platform Developers: Technical team responsible for building and maintaining the system.

3.2.2 Requirement Collection Methods

- Interviews and Surveys: Conducted with patients, therapists, and administrators to understand their needs, preferences, and pain points,
- Groups: Group discussions with potential users to gather qualitative insights and identify common requirements.
- Market Research: Analysis of existing digital mental health platforms to identify best practices and gaps in current solutions.
- User Stories and Use Cases: Detailed descriptions of user interactions with the platform, capturing specific functionalities and user goals.

3.3 Functional and non-functional requirements

Functional Requirements

- User Registration and Login
- Therapist Registration and Profiles
- Doctor Search
- Appointment Booking
- Real-time Consultations
- Payment Integration
- Resource Center

Non-Functional Requirements:

- Performance
- Security
- Scalability
- Availability
- Usability
- User Experience
- Support and Maintenance

3.4 System Design

3.4.1 Front-end Design:

The front-end design of the Mind Bridge mental health care platform is meticulously crafted to provide a seamless, intuitive, and engaging user experience. Leveraging the MERN stack, the front-end is developed using React, HTML, CSS, and Tailwind CSS. React's component-based architecture allows for dynamic and efficient rendering, facilitating a highly responsive interface that adapts fluidly to user interactions. HTML and CSS form the foundational structure and styling of the platform, ensuring robust and clean code. Tailwind CSS is employed for its utility-first approach, enabling rapid and precise styling with minimal custom CSS. This combination streamlines the development process and maintains consistency across the user interface. Overall, the front-end design of Mind Bridge is geared towards providing a high-quality, user-centric experience that supports and enhances the delivery of mental health services online.

3.4.2 Back-end design:

The back-end design of the Mind Bridge platform is built using Node.js and Express.js, providing a robust, scalable, and efficient server-side environment. Node.js, with its non-blocking I/O model, allows for handling numerous simultaneous connections, making it ideal for the platform's requirements, such as real-time consultations and appointment scheduling. Express.js, a lightweight and flexible Node.js framework, streamlines the development of server-side applications, offering a comprehensive set of features for building robust APIs. These APIs facilitate seamless communication between the front-end and the server, managing data retrieval, user authentication, appointment scheduling, and payment processing.

For data storage and management, MongoDB is utilized as the database solution. Its schema-less nature is well-suited for the diverse data requirements of the platform, such as user profiles, therapist information, session records, and transactional data. MongoDB's scalability and flexibility ensure that the platform can efficiently handle growing data volumes and adapt to changing requirements without extensive reconfiguration. Data interactions are optimized through well-defined models and schemas, ensuring consistency and integrity across the application.

Overall, the back-end design of Mind Bridge is engineered to support high performance, reliability, and security. It efficiently manages the complex interactions and data operations required to deliver a seamless and responsive user experience in a secure online mental health care environment.

3.4.3 Flowchart

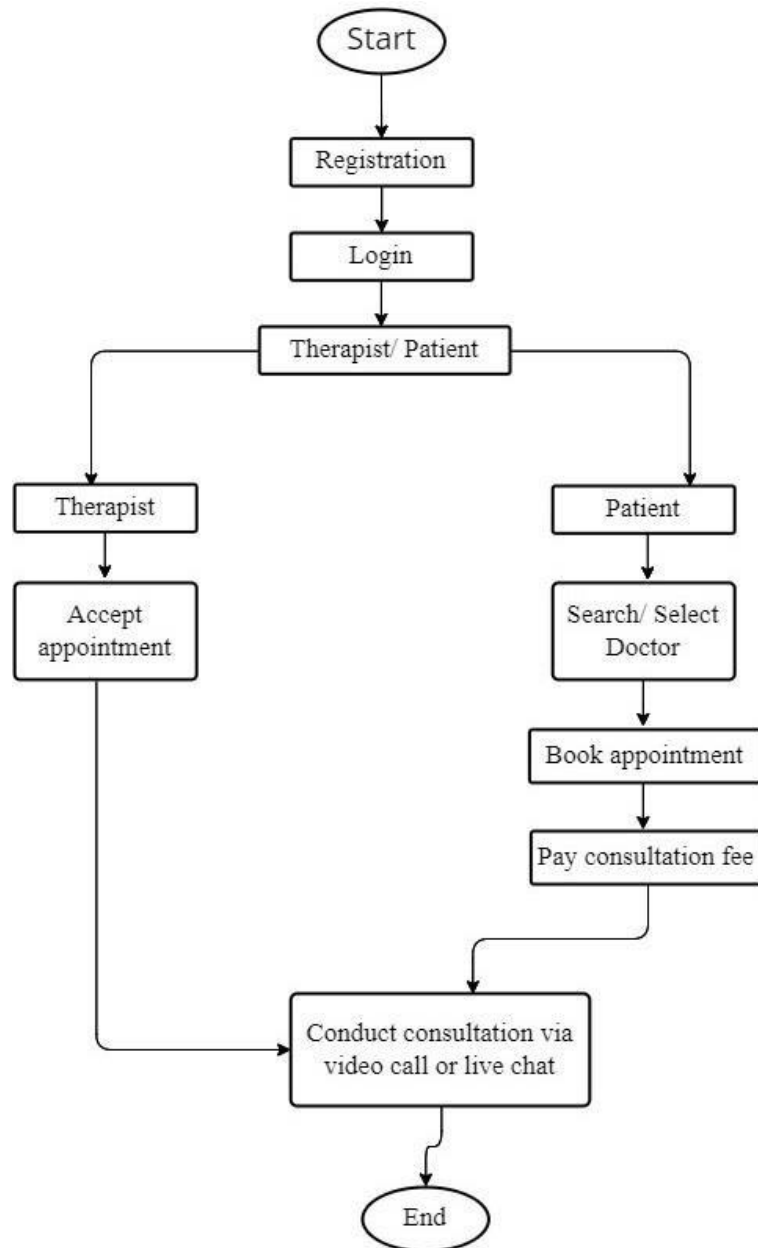


Figure 3.4.3: Flow diagram of this project

Figure: 3.4.3 represents the Flow diagram of Mind Bridge. This flowchart outlines the main processes and decision points within the "Mind Bridge" platform, including user registration, login, dashboard navigation, appointment booking, payment processing, appointment acceptance, and consultation initiation.

3.4.4 MVC Architecture:

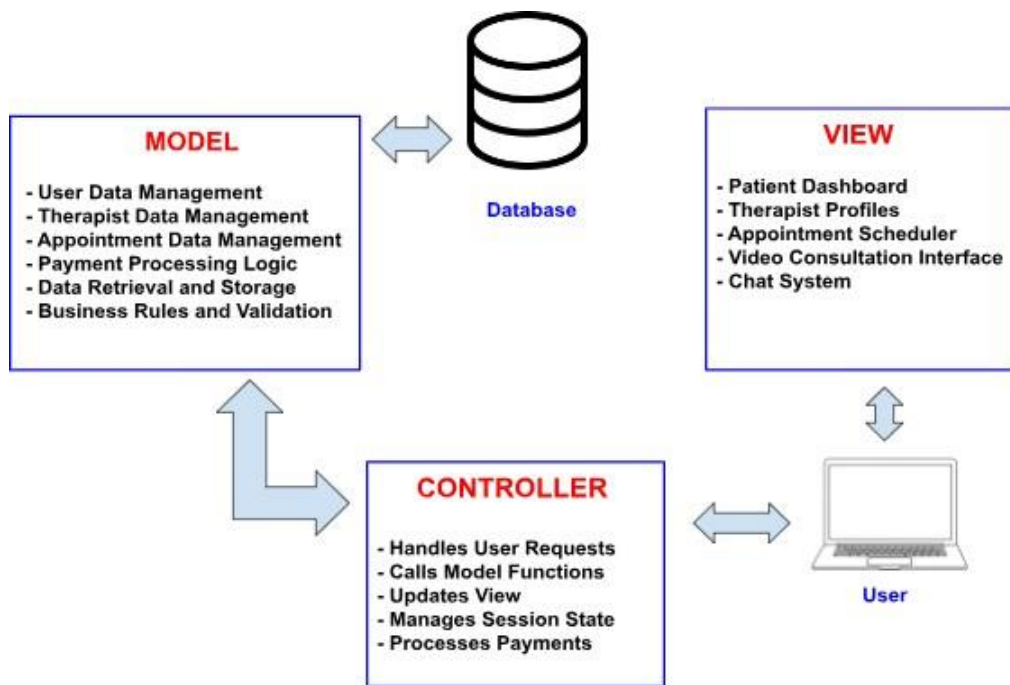


Figure 3.4.4: Model View Controller (MVC) of this project

Figure: 3.4.4 represents the Model View Controller (MVC) of Mind Bridge.

3.4.5. Use case Diagram

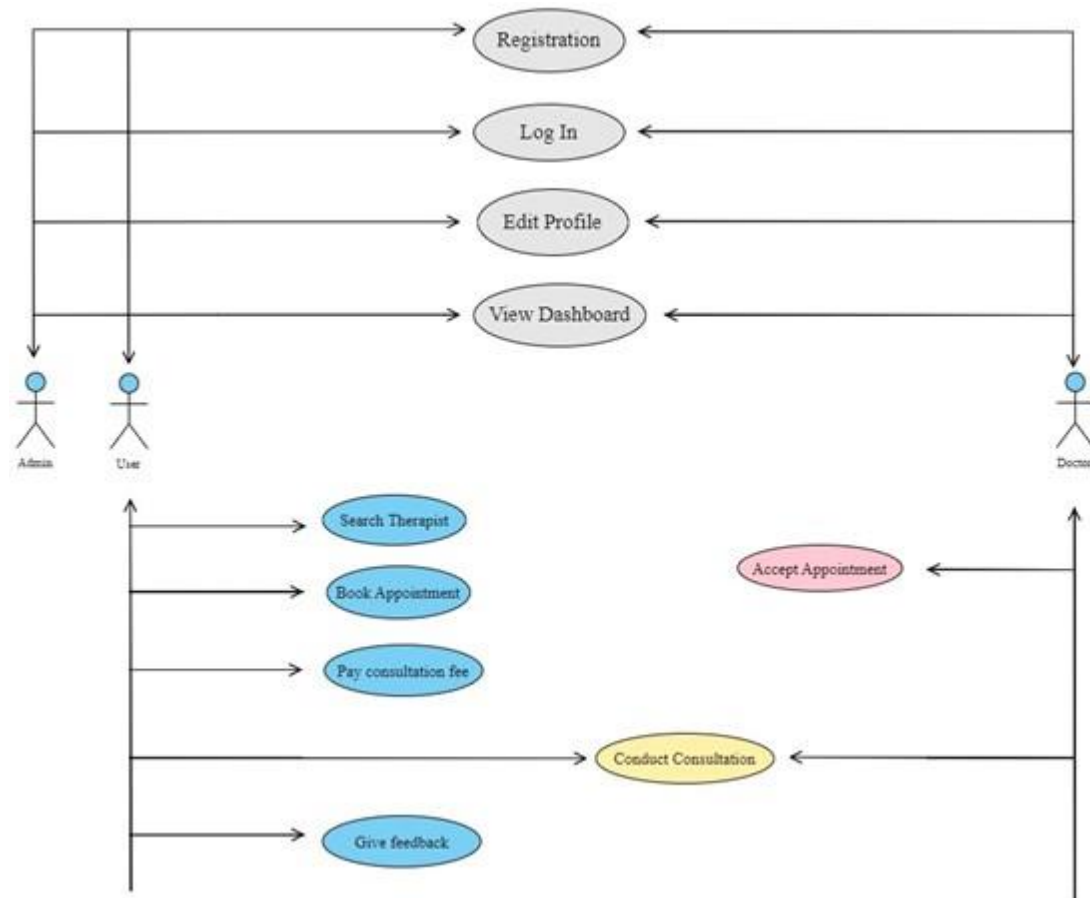


Figure 3.4.5: Use case diagram of this project

Figure: 3.4.5 represents the Use case diagram of Mind Bridge. This model illustrates the primary processes involved in the "Mind Bridge" platform, including user registration, login, dashboard navigation, appointment booking, payment processing, appointment acceptance, consultation initiation, and conclusion

3.4.6. Business process model (BPM)

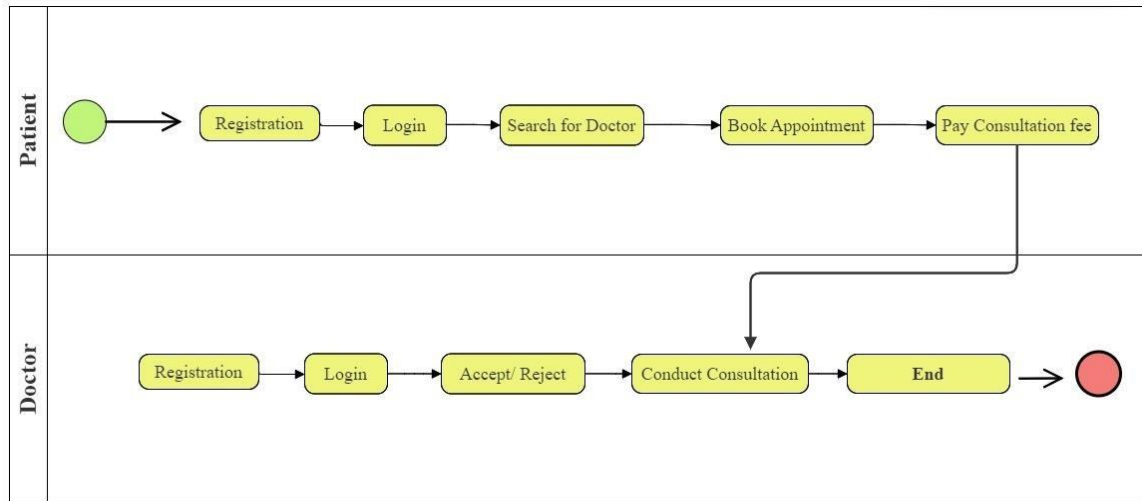


Figure 3.4.6: Business process model (BPM) of this project

Figure: 3.4.6 represents the business process model of Mind Bridge. This model illustrates the primary processes involved in the "Mind Bridge" platform, including user registration, login, dashboard navigation, appointment booking, payment processing, appointment acceptance, consultation initiation, and conclusion

3.5 Hardware & Software Requirement

3.5.1 Hardware

- Personal Computers
- Internet Connectivity

3.5.2 Software Development Tools

- Express.js Framework: Used for backend development.
- React: Employed for frontend development, facilitating the creation of interactive user interfaces
- Git and GitHub: Utilized for version control, collaboration, and tracking changes across the project.
- Visual Studio Code: Primary Integrated Development Environment (IDE) for writing, debugging, and managing code.

3.5.3 Documentation and References:

- Express.js documentation: Referred to for guidance on backend setup, configuration, and usage of Express.js features.
- React Documentation: Consulted for frontend development best practices, component creation, and state management.
- Tailwind CSS documentation: Referred to for guidance on tailwind css setup, configuration, and usage of Tailwind CSS features.

3.6 Project Management and Financial Analysis

There are many items we can take into consideration for development of our project. These also need proper management and financial aid. The initial investment for the "Mind Bridge" project encompasses the costs associated with software development, infrastructure setup, and operational expenses required to launch the online mental health care platform. This includes expenditures on development resources such as personnel, technology stack licenses, and development tools, as well as infrastructure costs for hosting, domain registration. Here it is depicted shortly:

SL	Components	Estimated Cost (BDT)
1	Hardware/Infrastructure	100000 – 110,000
2	Software and tools	1,000 – 1,500
3	Hosting & Domain registration	15,000 – 20,000
4	Documentation and Report Writing	500-1,000
5	Miscellaneous (e.g., licenses, tools)	500-1,000

	Total	117,000 – 133,500
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Table 2. Financial analysis

These are the market prices of the instruments given based on March 2024. Prices may vary depending on the market.

3.7 Summary

The "Mind Bridge" project employed a structured methodology and comprehensive system design to develop an innovative online mental health care platform. The MERN (MongoDB, Express, React, and Node.js) stack was used in the project process; it was selected for its adaptability, speed, and scalability. This method made it easier to integrate frontend and backend components seamlessly, iterate quickly, and prototype quickly. The requirements are analyzed carefully. The system design phase focused on creating a robust architecture, data models, and user interfaces to support the platform's functionalities. MongoDB was chosen as the database for its flexibility and scalability, while Node.js and Express.js provided the backend infrastructure for server-side logic and API development. React.js was employed for frontend development, enabling the creation of dynamic and interactive user interfaces. Agile approaches were used throughout the project lifecycle to support frequent collaboration, iterative development, and continuous improvement.

CHAPTER 4

IMPLEMENTATION

4.1 Overview

Chapter 4 explores the crucial stages of prototype design and system testing in the development of the Mind Bridge platform. This chapter details the initial creation of a functional prototype, which utilizes front-end technologies such as HTML, CSS, Tailwind CSS, and React to provide a clean and intuitive user interface, and back-end technologies like Node.js, Express.js, and MongoDB to ensure secure and efficient data management. The prototype encapsulates core features including user registration, therapist search, appointment scheduling, and live video consultations, allowing stakeholders to visualize and interact with the envisioned final product. Following the prototype phase, the chapter delves into the comprehensive system testing process, which rigorously evaluates the platform's performance, functionality, and security. Various tests, including load, functional, and stress tests, are conducted to simulate real-world conditions and ensure the platform's stability and reliability. This chapter underscores the importance of these phases in refining the platform and preparing it for deployment, ultimately ensuring that Mind Bridge delivers a robust, user-friendly, and secure service experience.

4.2 Prototype Design

The prototype design of the Mind Bridge platform serves as a preliminary version that illustrates the core functionalities and user experience of the final product. Utilizing HTML, CSS, Tailwind CSS, and React for the front-end, the prototype presents a clean, intuitive interface that allows users to register, browse therapist profiles, schedule appointments, and engage in live video consultations. The back-end, powered by Node.js and Express.js, manages server-side operations and integrates with MongoDB to handle secure data storage and retrieval. This prototype focuses on creating a seamless flow for users, from initial sign-up through to the booking and payment processes, ensuring that each feature works harmoniously. Key interactions and UI components are meticulously designed to provide a responsive and user-friendly experience, allowing stakeholders to visualize and interact with the platform's

functionality early in the development process. This prototype not only demonstrates the feasibility of the Mind Bridge platform but also provides a foundation for further development and refinement based on user feedback and testing outcomes.

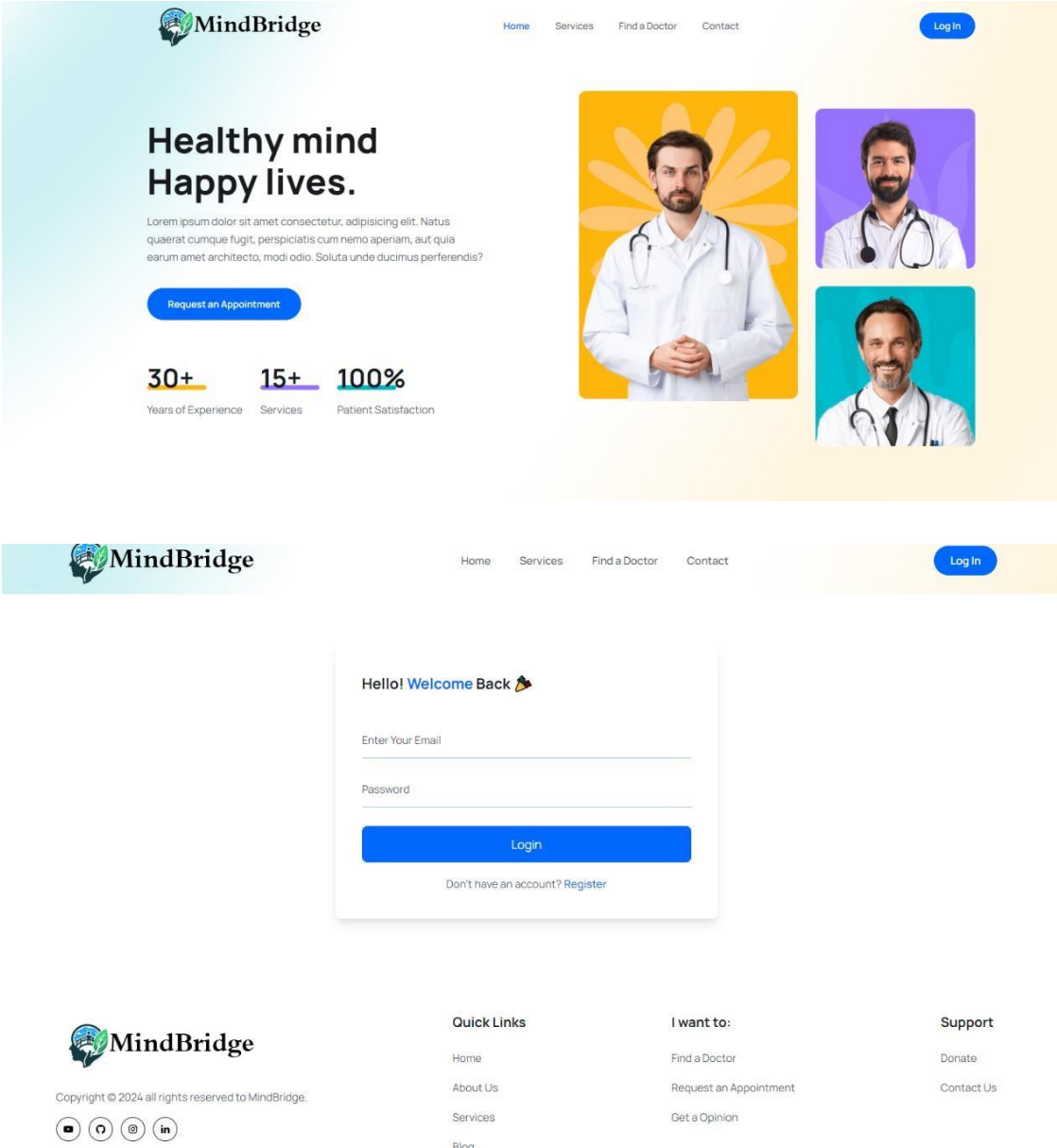


Figure 4.2: Prototype Design

4.3 System Testing

Here is the testing report for MindBridge, where we are performed functional testing to test all the functionality are working properly or not.

Test Case ID	Description	Expected Result	Actual Result	Status
TC-001	User Registration	User successfully registers with valid details	User registered successfully	Pass
TC-002	User Login	User logs in with correct credentials	User logged in successfully	Pass
TC-003	User Login	User logs in with wrong credentials	User can't log in	Pass
TC-004	Search for Therapist	Search results display therapists based on user criteria	Therapists displayed as per search criteria	Pass
TC-004	Book Appointment	Appointment booked with selected therapist	Appointment booked and confirmation sent	Pass
TC-005	Secure Payment Processing	Payment processed without errors	Payment processed successfully	Pass
TC-006	Live Video Consultation	User connects to therapist via video call	Video call initiated and connected successfully	Pass
TC-007	Profile Update	User updates profile information	Profile updated and saved correctly	Pass
TC-008	Feedback Submission	User submits feedback after session	Feedback submitted and saved successfully	Pass
TC-009	Feedback Submission	User submits feedback after session	Feedback submitted and saved successfully	Pass
TC-010	Data Privacy and Security	User data remains secure during transactions	No data breaches, all data remains secure	Pass
TC-011	Error Handling and Notifications	System displays appropriate error messages	Error messages displayed correctly when needed	Pass
TC-012	User logs out of the system	User logs out of the system	User logged out successfully	Pass

Table 3: Testing Report

4.4 Summary

The prototype design of the Mind Bridge platform is a crucial step in visualizing and testing the core functionalities and user experience before full-scale development. It utilizes front-end technologies like HTML, CSS, Tailwind CSS, and React to create a responsive and intuitive interface, allowing users to perform essential tasks such as registration, browsing therapist profiles, scheduling appointments, and conducting live video consultations. System testing follows, ensuring that all components of the platform work together seamlessly under realistic conditions. This phase rigorously evaluates the integrated system's performance, functionality, and security, simulating various user scenarios and stress conditions. It confirms that the platform can handle high traffic loads, protect sensitive data, and maintain stability and usability, thereby validating the readiness of the Mind Bridge platform for deployment. Through these processes, the platform's design and functionality are refined, setting a solid foundation for delivering robust and user-friendly mental health services.

CHAPTER 5

RESULT AND ANALYSIS

5.1 Overview

Chapter 5 presents a detailed examination of the Mind Bridge platform's simulation results and performance metrics. This chapter highlights the outcomes of various tests conducted to assess the platform's functionality and reliability under realistic conditions. Through rigorous simulation testing, the platform's ability to handle high volumes of concurrent users and perform critical tasks like real-time consultations and secure transactions was validated. Additionally, the performance analysis provides insights into the system's responsiveness, scalability, and efficiency in managing user interactions and data processing. These findings confirm the platform's readiness for real-world deployment and its capacity to deliver robust and effective mental health care services.

5.2 Simulation Result

In assessing the performance and functionality of the Mind Bridge platform, various experimental and simulation tests were conducted to ensure its readiness for real-world deployment. The platform was subjected to load testing to evaluate its ability to handle high volumes of concurrent users and transactions, maintaining response times well within acceptable limits. Functional testing was also performed to verify that all core features, such as user registration, appointment scheduling, video consultations, and secure payment processing, operated correctly under different scenarios. User interactions with the platform were simulated using automated scripts to mimic diverse user journeys, ensuring robustness and resilience. Additionally, stress testing was conducted to identify potential breaking points and the platform's recovery mechanisms, highlighting the system's ability to maintain stability under extreme conditions. The integration of real-time data handling and the efficiency of backend processes were validated through data throughput analysis, confirming the seamless and fast retrieval and storage of user data. Overall, the experimental and simulation

results underscore the platform's capability to provide reliable, secure, and efficient services to users, meeting the high standards required for effective mental health care delivery

5.3 Performance

The performance of the Mind Bridge platform is a critical aspect of its success in delivering effective mental health care services. The platform leverages the MERN stack (MongoDB, Express.js, React, and Node.js) to provide a robust, scalable, and responsive environment. Key performance metrics include system responsiveness, which ensures that users experience minimal lag during interactions, especially important during real-time video consultations. Scalability is another vital metric; the platform is designed to handle an increasing number of users and data without degradation in service quality. Load balancing and efficient data handling are implemented to maintain high performance under heavy traffic conditions, ensuring that users can access services reliably. Data retrieval speed from MongoDB and the quick rendering of components in React contribute to a smooth user experience. Additionally, the platform's secure and fast payment processing minimizes transaction times and enhances user trust. Continuous monitoring and optimization are in place to address any performance bottlenecks, ensuring that Mind Bridge operates efficiently and meets the evolving needs of its users

5.4 Summary

The Mind Bridge platform's performance and readiness were rigorously evaluated through comprehensive testing. Utilizing the MERN stack, the platform demonstrated robust responsiveness, scalability, and efficient data handling, essential for maintaining a seamless user experience during peak usage and real-time consultations. Experimental and simulation results revealed that the system could effectively manage core functionalities such as user interactions, appointment scheduling, and secure payment processing. Load, functional, and stress tests confirmed the platform's stability, efficiency, and ability to handle high volumes of user activity and transactions. These findings highlight Mind Bridge's capability to deliver reliable and secure mental health services, ensuring it meets the high standards required for its users

CHAPTER 6

IMPACT ON SOCIETY, ENVIRONMENT AND SUSTAINABILITY

6.1 Impact on Life

The Mind Bridge mental health care platform has the potential to profoundly impact individual lives by providing accessible, personalized, and timely mental health support. By leveraging digital technology, Mind Bridge can bridge the gap for individuals who face barriers to traditional therapy, such as geographical limitations, financial constraints, or social stigma. This accessibility empowers users to prioritize their mental health, leading to improved overall well-being, reduced symptoms of mental health conditions, and a better quality of life. The platform's user-friendly interface and personalized care options ensure that individuals can find the support they need in a convenient and effective manner.

6.2 Impact on Society & Environment

On a societal level, Mind Bridge can contribute to a more inclusive and supportive environment for mental health. By increasing awareness and reducing the stigma associated with mental health issues, the platform can encourage more people to seek help and discuss their mental health openly. This societal shift can lead to stronger, more resilient communities where mental health is prioritized and supported. Additionally, by reducing the need for physical travel to therapy appointments, Mind Bridge can decrease the carbon footprint associated with mental health care delivery, contributing to environmental sustainability. The platform's ability to provide remote consultations and support also means that individuals in underserved or rural areas can access care without the environmental impact of long-distance travel.

6.3 Ethical Aspects

Ethical considerations are central to the development and operation of Mind Bridge. The platform must ensure the confidentiality and privacy of user data, adhering to strict data protection regulations and ethical standards. Transparent communication about how user data is collected, used, and stored is essential to build trust with users. Additionally, Mind

Bridge must address issues of accessibility and equity, ensuring that all individuals, regardless of socioeconomic status or location, have the opportunity to benefit from its services. The platform should also be vigilant about preventing biases in its algorithms and maintaining cultural sensitivity in its content and service delivery.

6.4 Sustainability Plan

To ensure long-term sustainability, Mind Bridge will implement a multi-faceted plan focusing on financial, operational, and technological stability. Financially, the platform will explore diverse revenue streams, including subscription models, partnerships with healthcare providers, and potential grants or funding from mental health advocacy organizations. Operational sustainability will be supported by continuous user feedback and data-driven improvements to enhance user experience and service quality. Technologically, Mind Bridge will invest in scalable infrastructure and regularly update its platform to incorporate emerging technologies and maintain competitiveness. Additionally, a commitment to ongoing research and adaptation to evolving mental health needs will ensure that Mind Bridge remains a relevant and effective tool for its users.

6.5 Summary

This chapter delves into the significant impacts of the Mind Bridge platform on society, the environment, and its long-term sustainability. Societally, Mind Bridge enhances access to mental health care by providing an inclusive, accessible platform, particularly benefiting those in remote areas or facing social stigma. It reduces environmental impact by minimizing the need for travel, thus lowering carbon emissions associated with traditional in-person therapy sessions. The platform's design promotes sustainability by ensuring robust data security, adaptability to evolving user needs, and compliance with regulatory requirements. By fostering greater inclusivity, supporting environmental responsibility, and maintaining its effectiveness through continuous innovation, Mind Bridge positions itself as a pivotal solution in the modern mental health care landscape.

CHAPTER 7

CONCLUSION AND FUTURE WORK

7.1 Conclusion

In conclusion, the Mind Bridge project represents a significant advancement in digital mental health care, aiming to bridge gaps in accessibility and provide personalized support through innovative technology. Throughout this endeavor, we have explored the current landscape of mental health care, identified critical challenges and barriers, and conducted a thorough requirement analysis to shape our design specifications. The implementation phase saw the development of a robust platform that integrates user-friendly features, secure communication channels, and comprehensive service options. Through rigorous testing and analysis, we have demonstrated the platform's efficacy in enhancing user engagement and improving mental health outcomes. Furthermore, the project's impact on society includes reducing stigma and fostering a supportive environment, while its environmental sustainability is upheld through reduced carbon footprint via remote service delivery. Looking ahead, continued research, user feedback incorporation, and technological advancements will drive ongoing improvements to ensure Mind Bridge remains at the forefront of accessible and effective mental health care solutions.

7.2 Further Suggested Works

❖ **Integration of AI-Powered Features:**

- Incorporate artificial intelligence to enhance user experience, such as chatbots for initial consultation and automated appointment scheduling, as well as sentiment analysis to monitor patient progress and provide personalized recommendations.

❖ **Mobile Application Development:**

- Develop native mobile applications for iOS and Android platforms to increase accessibility and convenience for users, ensuring that patients and therapists can access services on-the-go with improved functionality and user experience.

❖ **Multi-Language Support:**

- Expand the platform to support multiple languages, making it accessible to a broader, diverse user base and ensuring that individuals from different linguistic backgrounds can benefit from mental health services.

❖ **Enhanced Security and Compliance:**

- Continuously improve data security measures to protect sensitive information, and ensure compliance with evolving healthcare regulations and privacy laws.

❖ **Expanded Therapy Services:**

- Broaden the range of available therapy services by including support for group therapy sessions, family counseling, and integration of wellness programs, such as mindfulness and stress management workshops, to cater to a wider array of mental health needs.

7.3 Limitations

- **Internet Dependency:** The platform requires a stable internet connection, which may limit access for users in remote or low-connectivity areas.
- **Data Privacy Concerns:** Handling sensitive mental health data necessitates stringent security measures, posing challenges in safeguarding user privacy against potential breaches.
- **User Acceptance:** Adoption may be hindered by technological reluctance or a preference for in-person therapy, particularly among older or less tech-savvy individuals.
- **Scalability Issues:** As the user base grows, the platform may face challenges in scaling effectively to maintain performance and user experience.
- **Regulatory Compliance:** Navigating varying legal and regulatory requirements across different regions for mental health services can be complex and resource-intensive.

References:

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3. *Science Direct. 2022. Developing, Deploying, and Evaluating Digital Mental Health Interventions in Spaces of Online Help- and Information-Seeking. Available at: <https://doi.org/10.1016/j.procs.2022.09.081> [accessed 14 Oct 23]*

Appendix A

Complex Engineering Problems (EP) and Complex Engineering Activities (EA) Analysis

Title: A Web Based Mental Health Care Platform to Provide Convenient and Personalized Service for Citizen of Bangladesh

Students ID: 201-15-14158, 201-15-13865

CO Description for FYDP

CO	CO Descriptions	PO
CO1	Integrate recently gained and previously acquired knowledge to identify a real-life complex engineering problem for the Final Year Design Project	PO1
CO2	Analyze different aspects of the goals in designing a solution for the Final Year Design Project	PO2
CO3	Explore diverse problem domains through a literature review, delineate the issues, and establish the goals for the Final Year Design Project	PO4
CO4	Perform economic evaluation and cost estimation and employ suitable project management procedures throughout the development life cycle of the Final Year Design Project	PO11

Addressing of COs, Knowledge Profile (K), and Attainment of Complex Engineering Problems (EP):

SN	EP Definition	Attainment	CO	Justification (with Knowledge Profile)	References
1.	EP1: Depth of Knowledge required	Yes	CO1, CO2, and CO3	We have to know the software development fundamentals, web development fundamentals, database management, security principles, networking basics, user experience (UX) design, and MERN stack development which covers K3 and K4 .	Page no: 10-11

				Our project requires the integration of different components and we have designed a web-based front end that covers K5 and K6 .	Page no: 10
				We have studied existing works with similar goals (K8) .	Page no: 05-07
2.	EP2: Range of Conflicting Requirements				
3.	EP3: Depth of analysis required	Yes	CO2	We have conducted requirement analysis and choose a particular development process for our project.	Page no: 09-10
4.	EP4: Familiarity of Issues	Yes	CO3	To understand and study mental health for our project, we need to look into various aspects we were not very familiar with.	Page no: 05-08
5.	EP6: Extends of stakeholders involved and conflicting requirements				

6.	EP7: Interdependence	Yes	CO3	Our project comprises several subsystems that depend on each other. These include tasks such as front-end development, backend development, database integration, user authentication and authorization, payment processing etc.	Page no: 10-11
7.	-	Yes	CO4	We have prepared a budget to evaluate and estimate the cost required for our FYDP.	Page no: 16-17

A WEB BASED MENTAL HEALTH CARE PLATFORM TO PROVIDE CONVENIENT AND PERSONALIZED SERVICE FOR CITIZEN OF BANGLADESH

ORIGINALITY REPORT

15%

SIMILARITY INDEX

13%

INTERNET SOURCES

4%

PUBLICATIONS

11%

STUDENT PAPERS

PRIMARY SOURCES

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