

Web-based Development: Consultation System for Depression Community

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Abstract: An abstract consultation system for depression community is a website that provides mental health support and resources to individuals struggling with depression. It offers support from trained professionals or volunteers, as well as self-help resources like informational articles and coping strategies. The website also connects individuals with similar experiences and offers referrals to local in-person therapy and other mental health services. It may also include mental health assessment tools and a crisis hotline for severe distress or suicidal thoughts. The website aims to provide support and guidance to those struggling with depression.

Keywords: Depression, Web-based, Appointment.

1. Introduction

Depression is a type of mental illness that people experience with deep sadness and sudden loss of interest in things they like. A person is diagnosed with depression when their sadness and depression lasts for two weeks or more. Often feel hopeless or that he is no longer valuable. Sufferers of depression tend to isolate themselves from the crowd and prefer to be in their own world. This happens due to several factors such as not having the courage to see a medical expert, the body always feeling tired and not having the enthusiasm to continue life and not having support from the people they trust.

According to the American Academy of Child & Adolescent Psychiatry, depression affects roughly 5% of children and adolescents at any given moment. Depression can lead to issues including trouble in relationships, difficulty in school, and a general decline in life satisfaction. Suicide, one of the main causes of death among teenagers in the United States, can result from depression at its worst. It is simple to feel helpless about what is happening to children since they live in a world that is governed by adults. In children and teenagers, anger is a significant sign of depression. According to the DSM-IV, anger in children might actually take the place of the depressed mood criteria for major depressive and dysthymic disorders. As a result, it is our responsibility as adults to watch for warning signs and provide support for kids.

There are six types of depression that affect humans, namely major depressive disorder, persistent depressive disorder, seasonal depression, bipolar disorder, postpartum depression and

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psychotic depression. One of the most popular medications for treating depression and anxiety is an antidepressant. However, the most recent study indicates that there is another option for people who have anxiety and depression or depression, one that does not involve the use of medicines. Some people discover that exercise helps them manage with these issues, says Dr. Michael Craig Miller, Assistant Professor of Psychiatry at Harvard Medical School.

2. Related Work

2.1 Comparison with the Existing System

Sanvello, Wysa, and 7Cups, the three currently available applications, will all be compared to the proposed application, Consultation System For Depression Community, in terms of its six features: login, registration, chat room, test evaluation, report generator, internet requirement, and platform. The entire programme will be explained and elaborated via table in this section using comparison and contrast.

2.2 Sanvello

The most effective features of mental health applications are bundled together in Sanvello. It offers tools to assist you in managing your mental health, including coping mechanisms and a mood tracker. As a result, you could try to feel better. Additionally, it provides a community feature that enables communication with others experiencing similar problems and is currently providing coaching and counselling capabilities. Sanvello employs cognitive behavioural therapy principles (CBT). [4]

2.3 Wysa

Wysa is the best option for people who want to talk about their depression, anxiety, stress, or everyday life but aren't ready to do so with a real person. Wysa is an artificially intelligent (AI) chatbot that may instruct people on better managing their daily pressures. Wysa was developed to help with a variety of conditions, such as anxiety, insomnia, depression, and more. [3]

2.4 7 Cups

When suffering with depression and other mental health conditions, users of the anonymous chat programme 7 Cups can interact with others in a number of secure ways. On community forums, in chat rooms, and one-on-one, users can communicate with one another. The software may direct users to a licenced therapist when they require professional support and may also provide mindfulness exercises. [5]

Table 1: System's Comparison

Features/System	Sanvello	Wysa	7 Cups	Consultation System For Depression People
Login Module	Yes	Yes	Yes	Yes
Registration Module	Yes	No	Yes	Yes
Chat Room Module	No	Yes	Yes	Yes
Test Evaluation Module	Yes	No	Yes	Yes
Report Generator	Yes	Yes	Yes	Yes
Internet Requirement	Yes	Yes	Yes	Yes
Platform	Mobile application	Mobile application	Mobile application	Web-based

3. Methodology/Framework

The optimum way of designing, creating, controlling, and delivering a project throughout the continuous implementation process until effective execution and termination is determined by project methodology, which is a set of tightly specified combinations of logically connected techniques, procedures, and processes. It is a methodical, disciplined approach to project planning, execution, and completion that has been empirically validated. As a result, this chapter will describe how the prototype model was used in this project and what was done during each phase. [6]

3.1 Prototyping Model

A prototype is produced, tested, and then modified as necessary until an acceptable result is obtained from which the full system or product can be developed. This approach is known as the prototyping model. In situations where not all of the project needs are known in detail beforehand, this model performs best. Between the engineers and the users, it is an iterative, trial-and-error process.

3.1.1 Requirements Gathering

This procedure denotes the start of the project structure. To finish this phase, a preliminary examination of the project requirements was performed in order to select the project's title. The project is called Consultation system for depressed people. The project report will be published as a result of this process, and it will include information on the project's background, problem statement, objective, scope, and relevance. To ensure that the process improvement system is fully operational, the process improvement process will be carried out using a Gantt chart.

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3.1.2 Quick Design Phase

By evaluating the data and process models created during the analysis phase, the system architecture was presented. The Sketches System was intended to be used during the early stages of design. The Unified Modelling Language depicts the interface system and system database more clearly (UML). The Use Case diagram is created to create a system that will accomplish the objectives and goals outlined in this planning phase.

3.1.3 Build Prototype Phase

The implementation process, which is a critical stage in system development, must be put into practise and evaluated. During this phase, the source code for the proposed system is generated in order for system users to test it. Among the activities involved are database testing, programming, module testing, and system testing. The database is put to the test by monitoring the platform from the database. While testing will be performed to ensure that the programme is error-free. The functionality of each module is tested separately. System testing is important because system users are involved.

3.1.4 User Evaluation Phase

At this point, the user is given the opportunity to conduct preliminary testing on the suggested system. This allows the team to more precisely identify the advantages and disadvantages of the

working model. The client conducts research to determine whether or not to proceed. The created prototyping meets the client's requirements (Susanto & Meiryani, 2019). Suggestions and criticisms from users have been considered. Finally, it was compiled and handed over to the developer.

3.1.5 Refining Prototype Phase

If the user is unhappy with the current prototype, the developer will make changes based on their criticisms and suggestions. Users continue to provide feedback while the system is iterated on until it meets their needs. If the user believes the approved prototype is satisfactory, the entire system can be developed.

3.1.6 Implementation and Maintenance Phase

After the product based on the final prototype has been completed, this stage will include the implementation of a ready-to-use system. This phase will also include user, system, and information technology interactions, as well as a learning process, a comparison of new and old systems, and a technical and operational review. Maintenance is performed on the system to reduce downtime and prevent problems.

3.2 System Requirement Analysis

All of the data that was obtained through the established system is studied and researched during the analysis procedure. This procedure seeks to give the system's developers a thorough grasp of the system environment, to provide an innovative system to increase the system's effectiveness using a computer system, and to identify the demands of the system to be produced. Data Flow Diagrams (DFD), Entity Development Charts (ERD), database design, and user interface design are all used in the detailed analysis of systems. Database design and user interface design are also steps in the analysis and design of the web-based information system for inventory management systems.

3.2.1 Functional Requirements

An overview of the services the programme must offer is a functional requirement. A system's interactions with its environment are described in terms of functional requirements. Functional requirements also outline the system's response to various inputs. The list of functional and non-functional needs can be found in **Table 2** and **Table 3**.

Table 2: Functional requirements

No	Module	Description
1.	Registration module	<ul style="list-style-type: none"> • System will allow users to input user's entries. • The system will store the data into the database.
2.	Login module	<ul style="list-style-type: none"> • The user must be able to access the system by entering a registered username and password. • Only users who enter a username and password that are both correct should be able to log in. • The system must notify the user if any input is incorrect. • The system should redirect the user to that respective main menu upon successful login.
3.	Testing module	<ul style="list-style-type: none"> • The system should allow users to answer questions. • The system can evaluate the level of sickness or stress of users. • The system should show the result of the test.
4.	Chatroom module	<ul style="list-style-type: none"> • Users can have a private chatroom with the psychologist. • Users can seek any personal help.

5.	Appointment module	<ul style="list-style-type: none"> Psychologists can set a new date for future meetings if need to.
6.	Report module	<ul style="list-style-type: none"> The system should generate the report automatically.

3.2.1 Non-Functional Requirements

As opposed to defining the exact behaviour or function of the system, non-functional requirements define the criteria that are used to assess how well the system works. The standards and constraints the system must adhere to in order to operate are referred to as non-functional requirements. On this project, there are some needs. The non-functional system requirements are listed in **Table 3**. [7]

Table 3 : Functional requirements

No	Requirements	Description
1.	Usability	<ul style="list-style-type: none"> The user interface of the application must be simple and easy to use.
2.	Performance	<ul style="list-style-type: none"> Users shouldn't have to wait more than one second for the button to respond. The system must never freeze or crash unless there is an operating system fault.
3.	Security and privacy	<ul style="list-style-type: none"> Only authenticated users are able to use the system at any point in time.
4.	Efficiency	<ul style="list-style-type: none"> The entire application must be implemented in explicit English.

3.3 User Requirement Analysis

User needs include things like the user's abilities and expectations for how the system will function. The effectiveness of interactive systems depends on an understanding of user needs, which is also a fundamental aspect of information system design. **Table 4** shows the user requirements for the client, whereas **Table 3** contains the user requirements for the proposed system. [9]

Table 4: User Requirements

No.	User Requirements
1.	Users and psychologists should register and fill out the necessary information.
2.	A legitimate username and password must be entered by each user.
3.	To determine their level of stress, individuals can take a test and evaluate themselves.
4.	Psychologists are available for users to chat with in order to share everything they need to feel safe.
5.	Psychologists can set a new date of further meeting with those users.
6.	The user can view a summary of a psychologist's biography.

3.3 System Analysis

This phase will include the system's analysis progress and who will use the developed system, as well as the process and functions available to the user. The analysis phase demonstrates what the system contains and how well it performs. This section describes the results of the system analysis, which include a data flow diagram and an entity relationship diagram. System analysis is carried out using a systematic approach. [10]

3.3.1 DFD Context Diagram (DFD CD)

The Context Diagram depicts the system under investigation as a high-level process, followed by the relationship of the system to various external entities. **Figure 1** depicts the developed system's context diagram. [8]

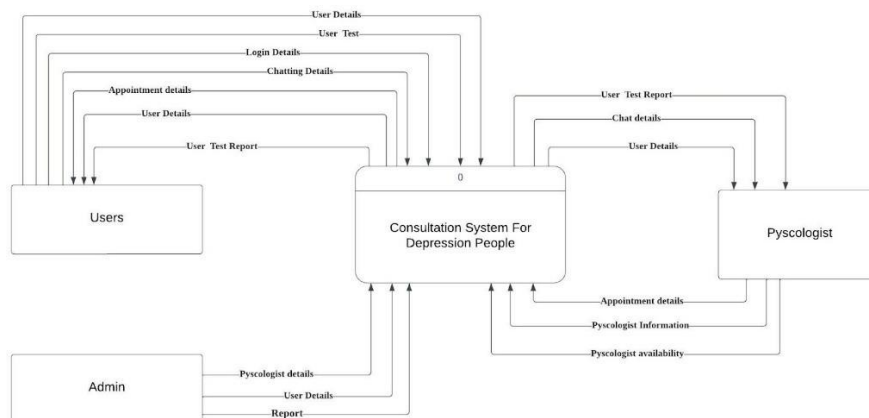


Figure 1: Data Flow Diagram Context Diagram (DFD CD)

3.3.2 DFD Level 0

A Data Flow Diagram (DFD) is a graphical representation of the flow of data or input from one entity to another through a process, which then generates output to another entity or data storage. DFD displays each entity and process's input and output. **Figure 2** depicts the developed system's Level 0 Data Flow Diagram (DFD 0).

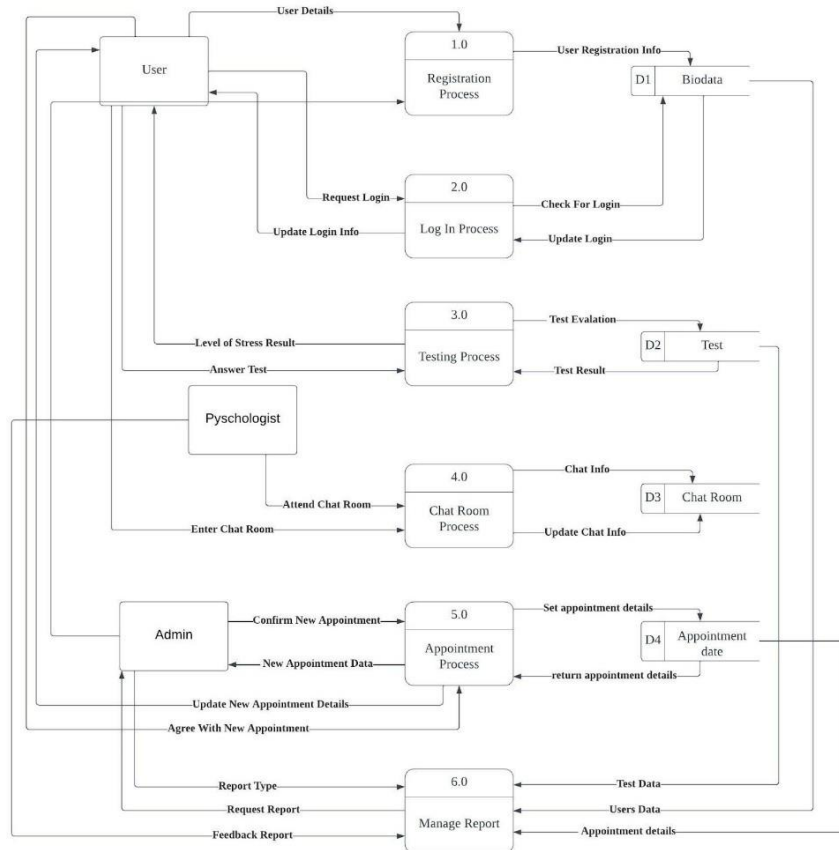


Figure 2: Data Flow Diagram Level 0 (DFD 0)

3.3.3 DFD Level 1

DFD level 1 contains more information than DFD level 0. It is divided into sub processes to explain the process in a more precise form.

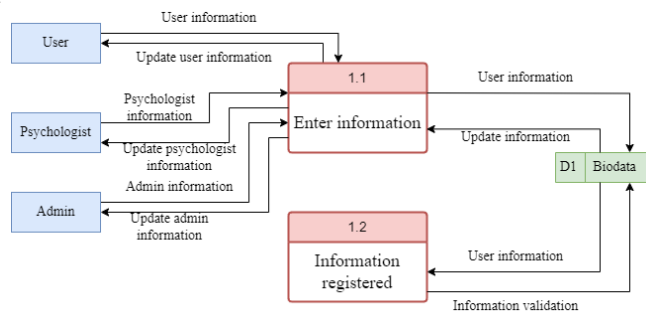


Figure 3: Registration Process

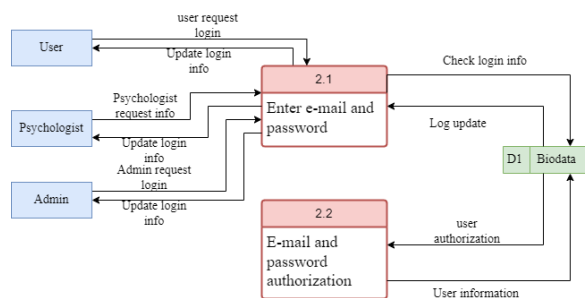


Figure 4: Login Process

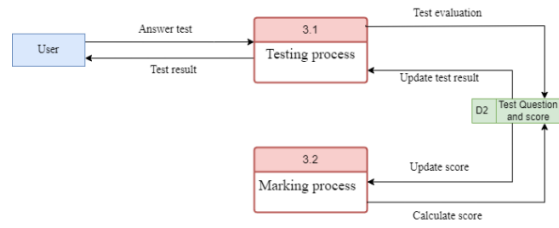


Figure 5: Testing Process

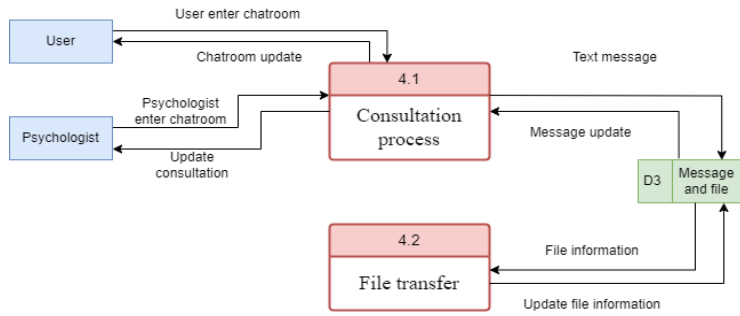


Figure 6: Chat room Process

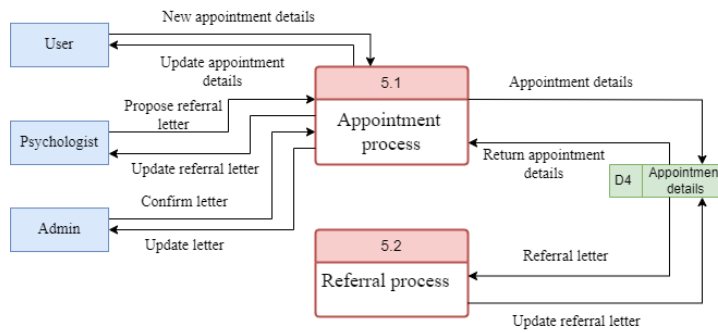


Figure 7: Appointment Process

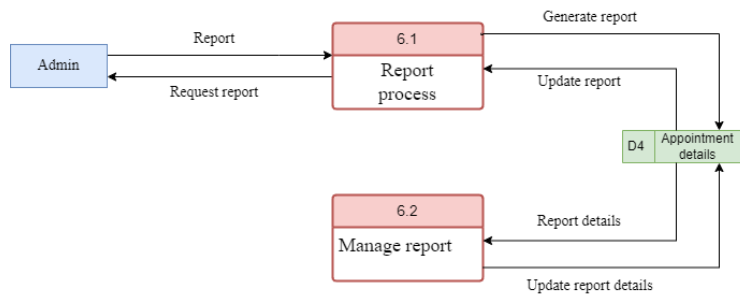


Figure 8: Report Process

3.4 Entity Relationship Diagram (ERD)

An entity-relationship diagram (ERD) is a data modeling technique that graphically depicts the entities and relationships of an information system. An ERD, which is a conceptual and representational data model, represents the entity framework infrastructure. As shown in **Figure 9** [2]

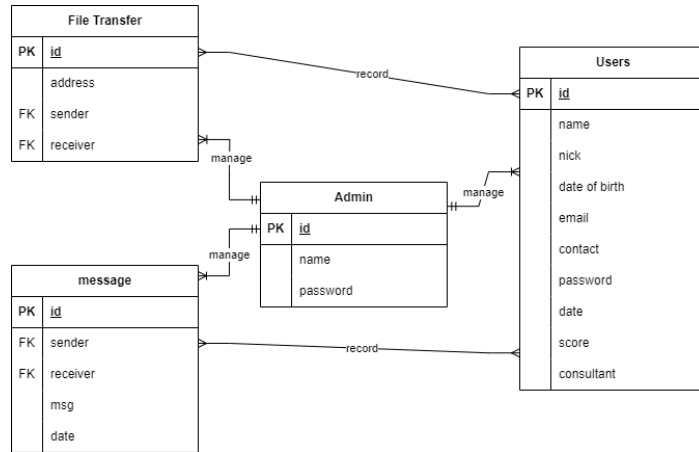


Figure 9: Entity Relationship Diagram

3.5 Flowchart

A flowchart is a visual representation of a series of steps. Because it shows steps in a sequential order, it is commonly used to present the flow of algorithms, workflows, or processes. A flowchart frequently depicts processes as various types of boxes, with arrows connecting them in the correct order. [1]

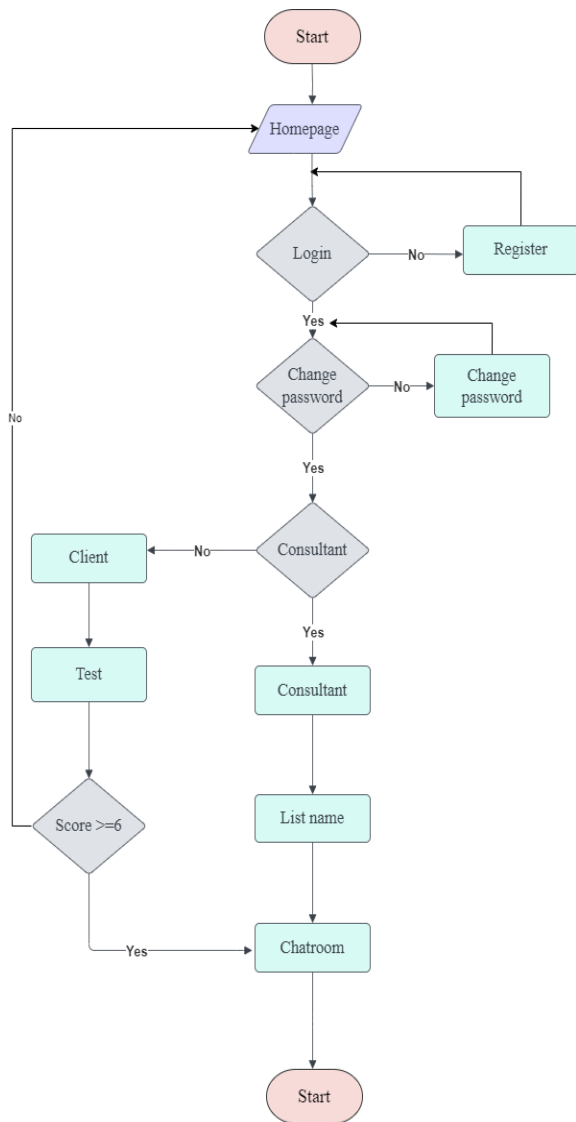


Figure 10: Flowchart for consultant and client

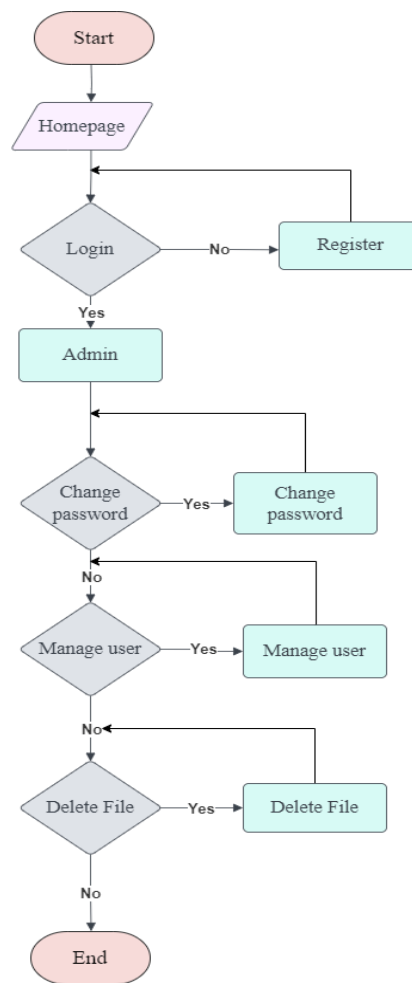


Figure 11: Flowchart for admin

4. Implementation

During the implementation phase, the primary focus is on coding and developing the actual prototype in accordance with the user's requirements. It is crucial to incorporate feedback, make necessary corrections, and perform repairs to ensure that the application meets the user's expectations. Rather than relying on theoretical assumptions, the system is designed to include specifications for a fully functional application. All functional modules are meticulously developed to meet the specific user requirements. At this stage, the database is activated and commences proper operation. PHP serves as the programming language for system development, while the XAMPP server functions as the web server to establish a seamless connection with the MySQL database. A visual representation of the interface for the web-based Consultation system for the depression community, can be observed in **Figure 12, Figure 13, Figure 14, Figure 15, Figure 16, Figure 17, Figure 18, Figure 19, Figure 20, Figure 21, Figure 22.**

User Registration Panel

All Fields are Mandatory

Full Name :

Nick Name :

Date of Birth :

Email ID :

Contact No. :

Password :

Re-Type Password :

[BACK](#)

Figure 12: Registration system

Welcome

User Login

Email ID :

Password :

[New User..? Register Here](#)
[Admin Login Click Here](#)

Figure 13: Login system

Natasha Logout

INNER JOURNEY

A website that can help you to help yourself
[Learn More](#)

- PSYCHOLOGIST**
 A psychologist is a trained mental health professional who helps people learn healthy ways to handle mental health challenges.
- MIND**
 There are times when we believe we are capable of handling anything life throws at us. How to use mental strength to overcome obstacles in your life
- INNER PEACE**
 Inner peace, or peace of mind, refers to a state of being mentally and spiritually at peace, with enough knowledge and understanding to keep oneself strong in the face of discord or stress.

Geriatric Depression Scale

1. Are you basically satisfied with your life?

Figure 14: Homepage system

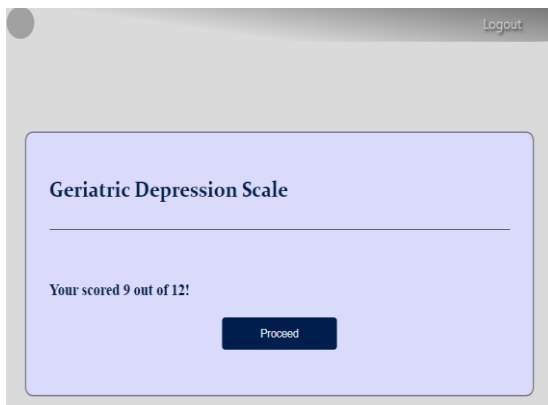


Figure 16: Mark system

Figure 15: Test system

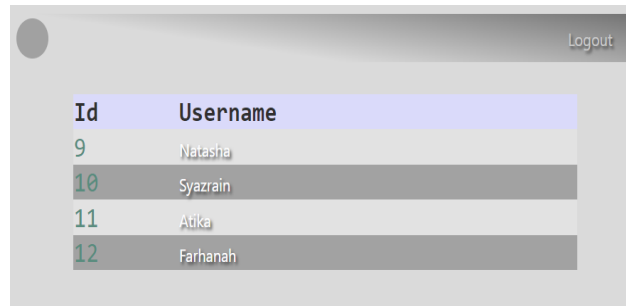


Figure 17: List name system

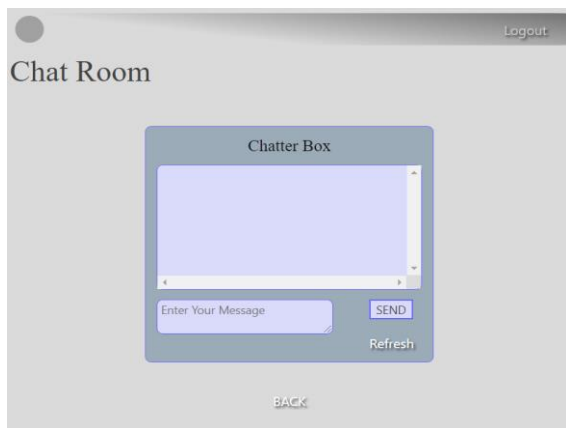


Figure 18: Chatroom system

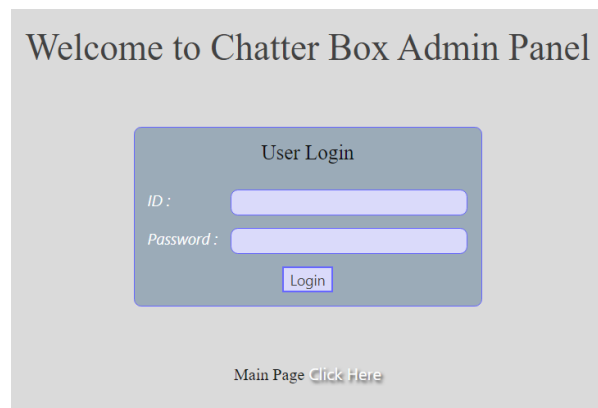


Figure 19: Admin login system

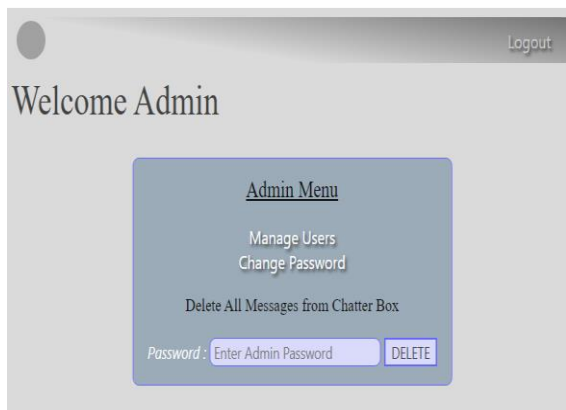


Figure 20: Admin Menu system

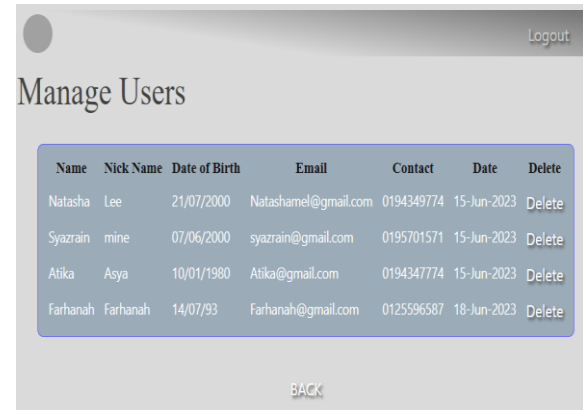


Figure 21: Admin Manage users system

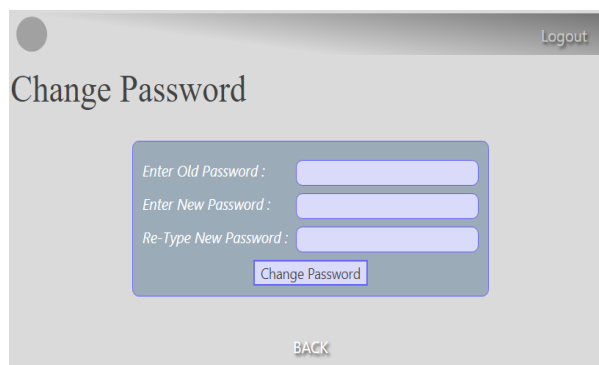


Figure 22: Change password system**5. Testing**

In this phase, the main objective is to ensure the system's integrity by eliminating any potential bugs. If any bugs are discovered, immediate action is taken to rectify them by revising and retesting the code. Rigorous testing is conducted during this phase to evaluate the system's functionality. The primary goal is to verify whether the system fulfills all specified requirements and effectively meets the client's needs.

5.1 Result and discussion

The testing phase encompassed two distinct approaches: functional testing and user acceptance testing. Functional testing involved a comprehensive evaluation of all system modules and functions to ensure their precise alignment with the previously defined specifications. Its primary purpose was to identify any errors that might occur during system utilization. To facilitate systematic testing, a detailed test plan was meticulously developed specifically for the system testing phase. As an example, **Table 5** illustrates one of the test plan outcomes obtained for a specific module within the system.

Table 5: Test Plan for Functional and System Behaviour

Test	Expected Result	Actual Result	Corrective Action
Homepage	Navigates to the login page.	Works well as expected.	Not Needed.
Login page	Navigates to the specify page and authorize users.	Works well as expected.	Not Needed.
Registration page	Navigates to the login page and fully functioning collecting the data.	Works well as expected.	Not Needed.
Test page	Test fully functioning with the score.	Works well as expected.	Not Needed.
Chatroom page	Create a new database and functioning as two ways communication.	Works well as expected.	Some may need image as button.
Delete File page	Delete the specific file in the database and in the system.	Works well as expected.	Not Needed.
Manage user page	Edit the specific data in the database.	Works well as expected.	Not Needed.
Admin menu page	Allow admin to manage the system.	Works well as expected.	Not Needed.
Change password page	Changing the specific encryption.	Works well as expected.	Not Needed.
Helpline page	Provide helpline information for users.	Works well as expected	Some may need image as button.

The primary objective of conducting the user acceptance test is to evaluate the functionality of the developed mobile application on an actual device, specifically targeting the intended users. These users are provided with clear instructions regarding the expected behavior of the application. The feedback collected during this test is invaluable as it helps analyze and address any identified bugs or issues within the web-based system prior to its deployment. The results of the feedback analysis are presented below.

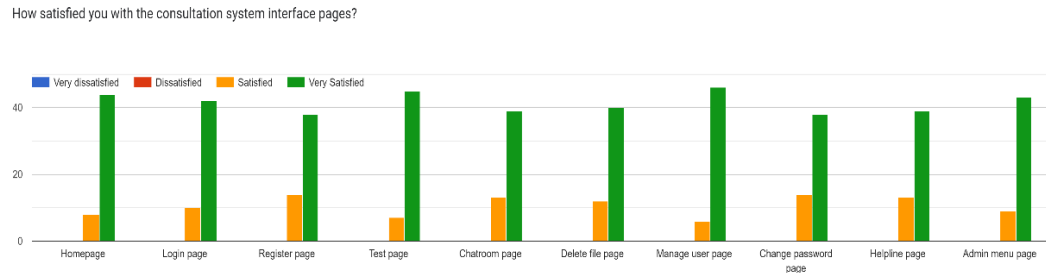


Figure 22: Feedback for user acceptance of the interface

The user feedback form is a valuable tool that allows users to share their opinions, experiences, and suggestions regarding a system or application. It serves as an important means of gathering insightful information about the system's features, usability, and overall performance. By carefully analyzing the feedback received, developers can identify areas for improvement, address any bugs or issues that may arise, and prioritize future updates accordingly. The feedback form plays a critical role in understanding user needs and enhancing the system to meet or exceed user expectations, ultimately leading to a more satisfying user experience.

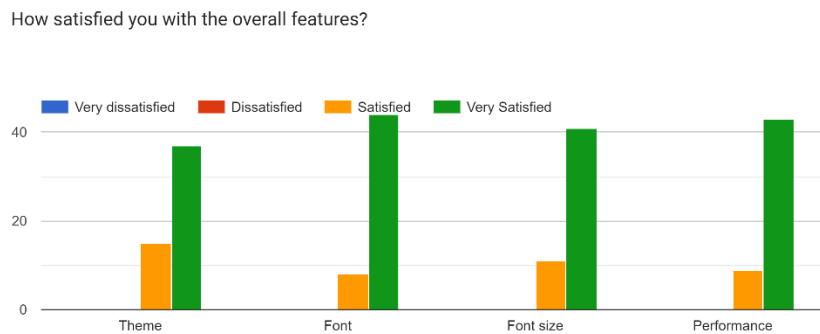


Figure 23: Statistic of Satisfactory for the Consultation system

6. Conclusion

In conclusion, the consultation system designed for the depression community offers numerous benefits that contribute to its effectiveness and user satisfaction. It enables individuals to access professional support from mental health experts, ensures their confidentiality and privacy, provides a cost-effective alternative to in-person consultations, incorporates crisis intervention features, and offers easy accessibility through a user-friendly interface.

However, it is important to acknowledge certain limitations in the system. These include the potential lack of personal connection compared to face-to-face interactions, limitations in providing extensive emotional support that offline sources can offer, and the exclusion of individuals without access to smartphones or reliable internet.

To further enhance the system, we recommend the integration of user feedback channels to

gather valuable insights and improve the application based on user experiences and preferences. Additionally, incorporating real-time chat or video consultations with professionals can enhance the interactive nature of the system. Furthermore, implementing peer support features would foster a sense of community and provide additional sources of understanding and encouragement.

In conclusion, the consultation system for the depression community serves as a valuable tool for individuals seeking support. By addressing the identified limitations and implementing the suggested recommendations, the system can continue to evolve, better meet user needs, and contribute to improved mental well-being.

Acknowledgment

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References

- [1] Busbee, K. L. (2018, December 15). *Flowcharts*. Programming Fundamentals. Retrieved January 11, 2023, from <https://press.rebus.community/programmingfundamentals/chapter/flowcharts/>
- [2] What is entity relationship diagram (ERD)? (n.d.). Retrieved January 11, 2023, from <https://www.visual-paradigm.com/guide/data-modeling/what-is-entity-relationship-diagram/>
- [3] *Everyday Mental Health*. Wya. (n.d.). Retrieved January 10, 2023, from <https://www.wya.io/>
- [4] Sussex Publishers. (n.d.). *The Sanvello App*. Psychology Today. Retrieved January 10, 2023, from <https://www.psychologytoday.com/us/blog/how-do-life/201902/the-sanvello-app>
- [5] *Free care & therapy*. 7 Cups. (n.d.). Retrieved January 10, 2023, from <https://www.7cups.com/>
- [6] Martin, M. (2022, November 19). *Prototype model in software engineering*. Guru99. Retrieved January 10, 2023, from <https://www.guru99.com/software-engineering-prototyping-model.html>
- [7] Martin, M. (2022, November 19). *What is non-functional requirement in software engineering?* Guru99. Retrieved January 11, 2023, from <https://www.guru99.com/non-functional-requirement-type-example.html>
- [8] What is data flow diagram? (n.d.). Retrieved January 11, 2023, from <https://www.visual-paradigm.com/guide/data-flow-diagram/what-is-data-flow-diagram/>
- [9] Ofni Systems. (2014, January 7). *User requirement specifications (user specs, Urs)*. Ofni Systems. Retrieved January 11, 2023, from <http://www.ofnisystems.com/services/validation/user-requirement-specifications/>
- [10] *System analysis and design - overview*. Tutorials Point. (n.d.). Retrieved January 11, 2023, from https://www.tutorialspoint.com/system_analysis_and_design/system_analysis_and_design_overview.htm