RV COLLEGE OF ENGINEERING®, BENGALURU-560059

(Autonomous Institution Affiliated to VTU, Belagavi)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

TITLE OF THE PROJECT

Mental Health Support Platform

Submitted by

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in partial fulfillment for the requirement of 5th Semester

DATABASE MANAGEMENT SYSTEMS (CD252IA)

Under the Guidance of

Dr. Pavithra H

Assistant professor

Department of Computer Science and Engineering

Academic Year 2024 - 2025

RV COLLEGE OF ENGINEERING®, BENGALURU 560059

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CERTIFICATE

Certified that the project work titled **'Online Mental Health Support Platform'** is carried out by Anant Tewari(1RV22CD005), Kiran R Aithal(1RV22CD022), Shridhar Bhat(1RV22CD056), who are Bonafide students of R. V. College of Engineering, Bengaluru, in partial fulfillment of the curriculum requirement of 5th Semester **Database Management Systems (CD252IA)** Laboratory Mini Project during the academic year **2024-2025**. It is certified that all corrections/suggestions indicated for the internal Assessment have been incorporated in the report. The report has been approved as it satisfies the academic requirements in all respect laboratory mini-project work prescribed by the institution.

Signature of Faculty In-charge **Head of Dept CSE**
Department

External Examination

Name of Examiners	Signature with date
1	
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Acknowledgement

We are indebted to our Faculty (Theory)**, Dr. Pavithra H,** Assistant Professor**, Dept of CSE, RV College of Engineering** for her wholehearted support, suggestions and invaluable advice throughout our project work and helped in the preparation of this report.

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We thank all the **teaching staff and technical staff** of Computer Science and Engineering department, RVCE for their help.

Lastly, we take this opportunity to thank our **family** members and **friends** who provided all the backup support throughout the project work.

Abstract

Mental health plays a crucial role in overall well-being, yet many individuals face challenges in accessing structured support. The Mental Health Support System is designed to bridge this gap by providing an intuitive platform for patients and therapists to manage virtual therapy sessions, appointments, and self-care resources efficiently.

The system enables user registration and authentication, allowing both patients and therapists to create and manage their profiles securely. Patients can schedule, reschedule, or cancel therapy appointments, while therapists can view and manage their session schedules. A session management module allows therapists to record and update session notes, ensuring continuity in treatment. Additionally, a feedback system allows patients to share their experiences, helping therapists improve care quality.

To promote self-care, the platform includes a resource library, where therapists can upload mental health articles, exercises, and tools for patients to access. A payment tracking module ensures that patients can manage their therapy session fees effectively. Automated notifications and reminders help minimize missed appointments, improving engagement between patients and therapists.
This system is developed using Python Flask for the backend and MySQL for database management, ensuring a scalable and efficient architecture. The current implementation is designed for local deployment, with the potential for cloud-based expansion in the future.

By digitizing and streamlining mental health support, this platform enhances accessibility, improves patient engagement, and facilitates efficient communication between therapists and patients, contributing to better mental well-being.

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1. INTRODUCTION

The Online Mental Health Support System is an advanced Database Management System (DBMS) designed to empower mental health professionals in delivering effective virtual therapy sessions. As mental health becomes an increasingly critical focus in today's world, the need for accessible, efficient, and secure solutions is paramount. This system leverages the robust capabilities of MySQL, a trusted relational database management system, to ensure seamless management of critical patient data, therapy session records, and progress tracking.

This platform provides a comprehensive solution that centralizes essential information, enabling therapists to manage their caseloads effectively. By storing patient profiles, session notes, treatment plans, and progress metrics in a structured and secure database, mental health professionals can dedicate more time to personalized care. Patients also benefit from features like access to curated self-care resources, appointment scheduling, and progress monitoring tools.

Beyond fundamental patient management, the platform integrates analytical tools to generate insightful reports, helping mental health professionals identify trends, refine treatments, and improve patient outcomes. The system ensures usability and security, offering role-based access control and encryption to safeguard sensitive data. By addressing the needs of both therapists and patients, the Online Mental Health Support System bridges the gap between accessibility and quality in mental health care. With its comprehensive features, this system promotes better mental health management and support on a global scale.

1.1 Objectives

1. **Develop a Centralized Patient Database:** Create a secure and organized system to store patient profiles, diagnoses, and therapy goals, enabling therapists to access and manage patient information effectively.

2. **Implement Appointment Scheduling and Tracking:** Provide a streamlined interface for therapists to schedule and track appointments, ensuring effective time management and adherence to session schedules.

3. **Enable Appointment Notifications:** Automate reminders and updates for upcoming appointments, improving communication and reducing missed sessions for both patients and therapists.

4. **Facilitate Feedback Collection:** Incorporate a system to gather patient feedback after each session, including ratings and comments, to assess therapy quality and areas for improvement.

5. **Integrate Payment Management:** Build a system to track payments for each session, recording payment details and methods for efficient financial management.

6. **Ensure Enhanced Security Measures:** Incorporate role-based access control, data encryption, and other security protocols to safeguard sensitive patient information and maintain confidentiality.

1.2 Scope

The Online Mental Health Support System is designed to serve mental health professionals, including therapists, counsellors, and psychiatrists, by offering a structured and efficient way to manage virtual therapy sessions. The system encompasses multiple functionalities, from patient data management to session tracking and financial oversight. It is designed to be scalable, accommodating single practitioners as well as large mental health institutions. Key features include secure authentication, encrypted data storage, analytical tools for treatment improvement, and seamless teletherapy integration. With compliance to data privacy regulations such as HIPAA and GDPR, this system ensures that mental health care providers can deliver high-quality, confidential, and efficient therapy services worldwide.

2. SOFTWARE REQUIREMENT SPECIFICATIONS

2.1 Software Requirements

- **Operating System:**
    - **Server:** Linux-based OS (e.g., Ubuntu Server, CentOS) or Windows Server 2019/2022.
    - **Client Devices:** Windows 10/11, macOS, or Android/iOS for mobile access.
- **Database Management System:**
    - **RDBMS:** MySQL Database (for structured data).
- **Development Tools:**
    - **Programming Languages:** Python (backend), JavaScript (frontend).
    - **Frameworks:**
        - Django/Flask for the backend.
        - React.js or Angular for the frontend.
    - **API Development:** RESTful API for seamless integration.

2.2 Hardware Requirements

- **Desktop or Laptop:**
    - **Processor:** Intel i3 or above (or equivalent).
    - **RAM:** Minimum 4 GB.
    - **Storage:** Minimum 10 GB free disk space.
    - **Display:** Minimum resolution of 1280x720 pixels.

- **Server Requirements:**
    - Dedicated or cloud-based server with sufficient resources to handle concurrent users.
    - Recommended: 8 GB RAM, multi-core processor, SSD storage for optimal performance.

2.3 Functional Requirements

User Registration and Login

- Patients and therapists should be able to register and log in securely.
- Patients provide personal details, contact information, and therapy goals during registration.
- Therapists provide their specialization and contact details.

Appointment Management

- Patients can book, reschedule, or cancel appointments.
- Therapists are notified when a patient books an appointment.
- Patients and therapists can view their schedules.

Notifications

- Patients receive reminders for upcoming appointments.
- Therapists receive notifications for new bookings and changes in patient information.

Data Access and Privacy

- Therapists can only access data (like therapy goals and notes) of their assigned patients to maintain privacy.
- Patients can access their therapy progress and session history.

2.4 Non-Functional Requirements

Availability

- The system should be accessible 24/7 for booking appointments or viewing therapy-related information.

Maintainability

- The system should be modular, allowing for easy updates and maintenance.

Usability

- The system should have an intuitive interface for patients and therapists.
- Mobile-friendly design for ease of access on smartphones.

Security

- Data must be encrypted during transmission and storage.
- Role-based access control ensures data confidentiality.
- Implement measures to prevent unauthorized access, such as two-factor authentication.

3. ER DIAGRAM

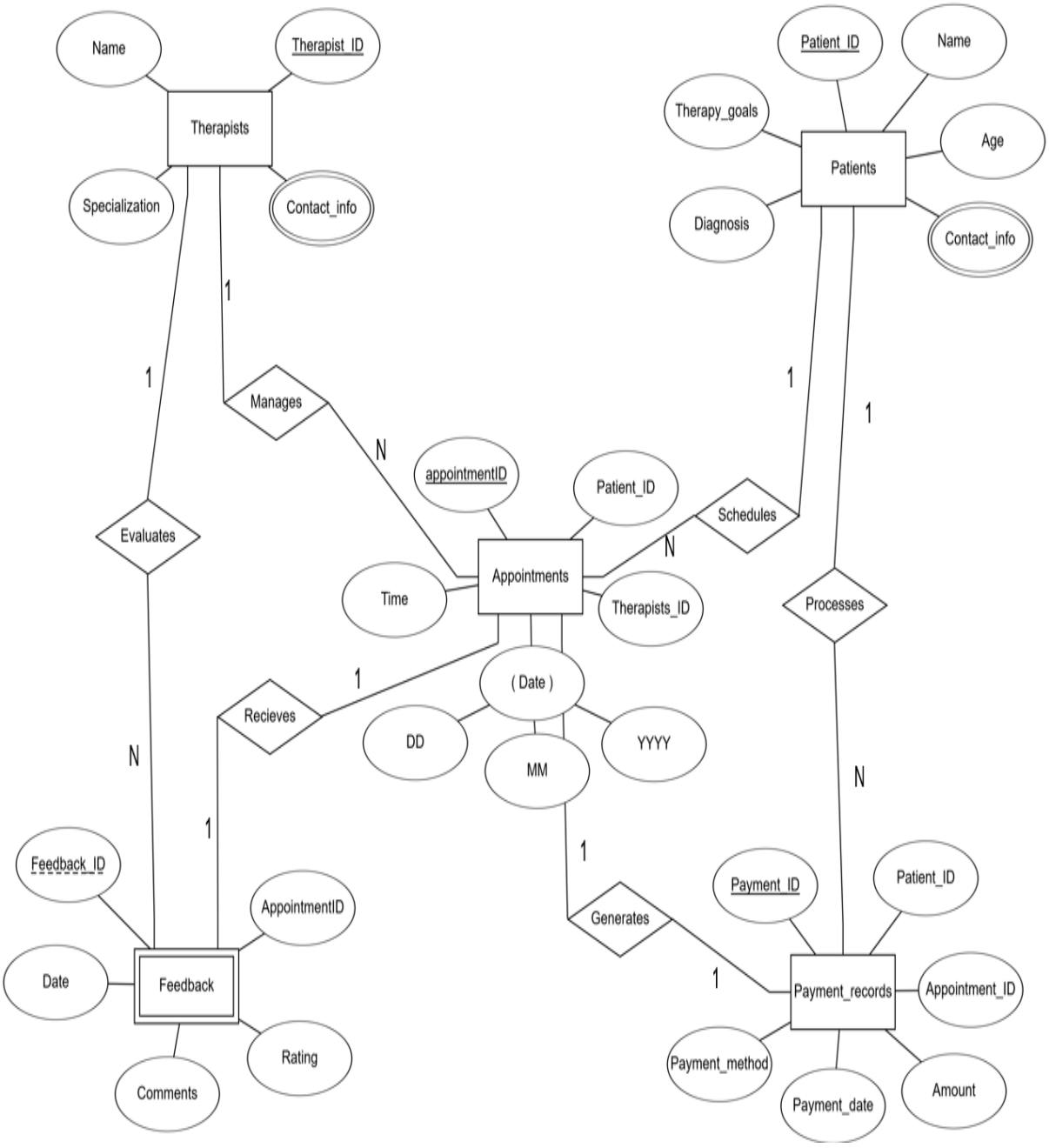

Fig 3.1 Entity-Relationship (ER) Diagram

ER diagram has 5 entities namely Therapists, Patients, Appointments, Feedback and Payment records where the Feedback is the weak entity which is depended on appointments.

Entities and Attributes:

1. **Patients**
    - Attributes: Patient_ID, Name, Age, Contact_info, Therapy_goals, Diagnosis
    - A patient can schedule multiple appointments and make multiple payments.
2. **Therapists**
    - Attributes: Therapist_ID, Name, Specialization, Contact_info
    - A therapist manages multiple appointments and receives feedback from multiple patients.
3. **Appointments**
    - Attributes: AppointmentID, Patient_ID, Therapist_ID, Date (DD, MM, YYYY), Time
    - Links patients and therapists, representing their scheduled meetings.
4. **Payment Records**
    - Attributes: Payment_ID, Patient_ID, Appointment_ID, Payment_method, Payment_date, Amount
    - Each appointment generates a payment record.
5. **Feedback**
    - Attributes: Feedback_ID, Appointment_ID, Date, Comments, Rating
    - Each appointment receives one feedback entry.

Relationships:

1. **One-to-Many (1: N) Relationships:**
    - **Patients → Appointments:** A patient can schedule multiple appointments, but each appointment is linked to only one patient.
    - **Therapists → Appointments:** A therapist can manage multiple appointments, but each appointment is associated with one therapist.

- **Patients → Payment Records:** A patient can make multiple payments for different appointments.
- **Therapists → Feedback:** A therapist can receive multiple feedback entries from different appointments.

2. **One-to-One (1:1) Relationships:**
   - **Appointments → Feedback:** Each appointment is linked to only one feedback entry.
   - **Appointments → Payment Records:** Each appointment is associated with only one payment record.

4. Data Flow Diagram

1. Actors and External Entities

Patients:

- Register and log in to the system.
- Book, reschedule, or cancel appointments.
- Provide feedback after sessions.
- Access self-care resources.

Therapists:

- Register and log in to the system.
- View appointments.
- Add session notes.
- Upload self-care resources for patients.

Admin:

- Manage user accounts and monitor activities.

2. Processes

User Registration and Login:

- Patients and therapists register, providing personal information.
- Authenticate users during login with username and password.

Appointment Management:

- Patients book, reschedule, or cancel appointments.

- Therapists receive notifications of booked appointments.

Session Management:

- Therapists create and update session notes for appointments.
- Patients view session notes shared by therapists.

Feedback Collection:

- Patients provide feedback with ratings and comments after appointments.

Payment Management:

- Patients pay for appointments and track payment history.
- The system records payment details.

Notifications:

- Reminders for upcoming appointments are sent to patients and therapists.

Resource Access:

- Therapists upload self-care resources.
- Patients browse and access these resources.

3. Data Stores

User Data: Stores patient and therapist profiles (names, contact information, roles).

Appointment Data: Stores details of appointments (dates, times, status).

Session Notes: Stores therapists' notes about sessions.

Feedback Data: Stores ratings and comments from patients.

Payment Data: Stores payment details, such as amounts and dates.

Resources: Stores links or files for self-care materials uploaded by therapists.

4.1 DFD Level 0

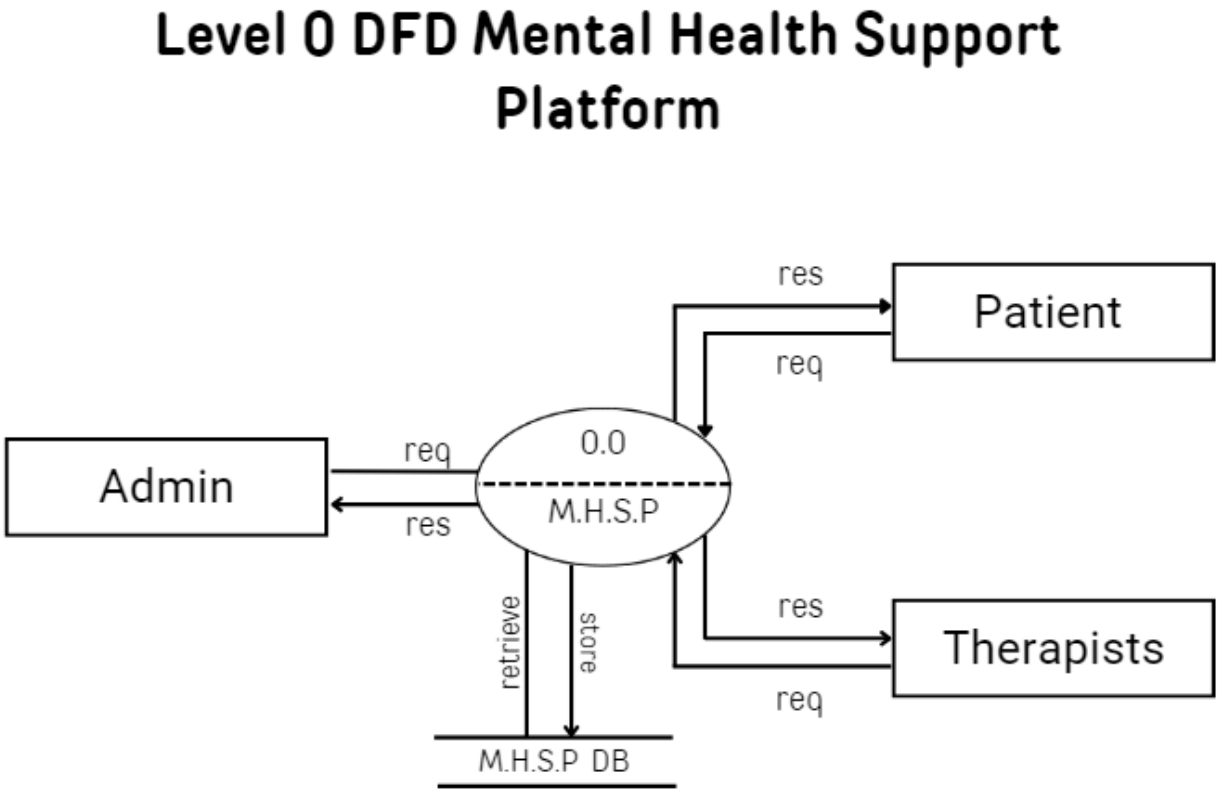

Fig 4.1 DFD Level 0

4.2 DFD Level 1

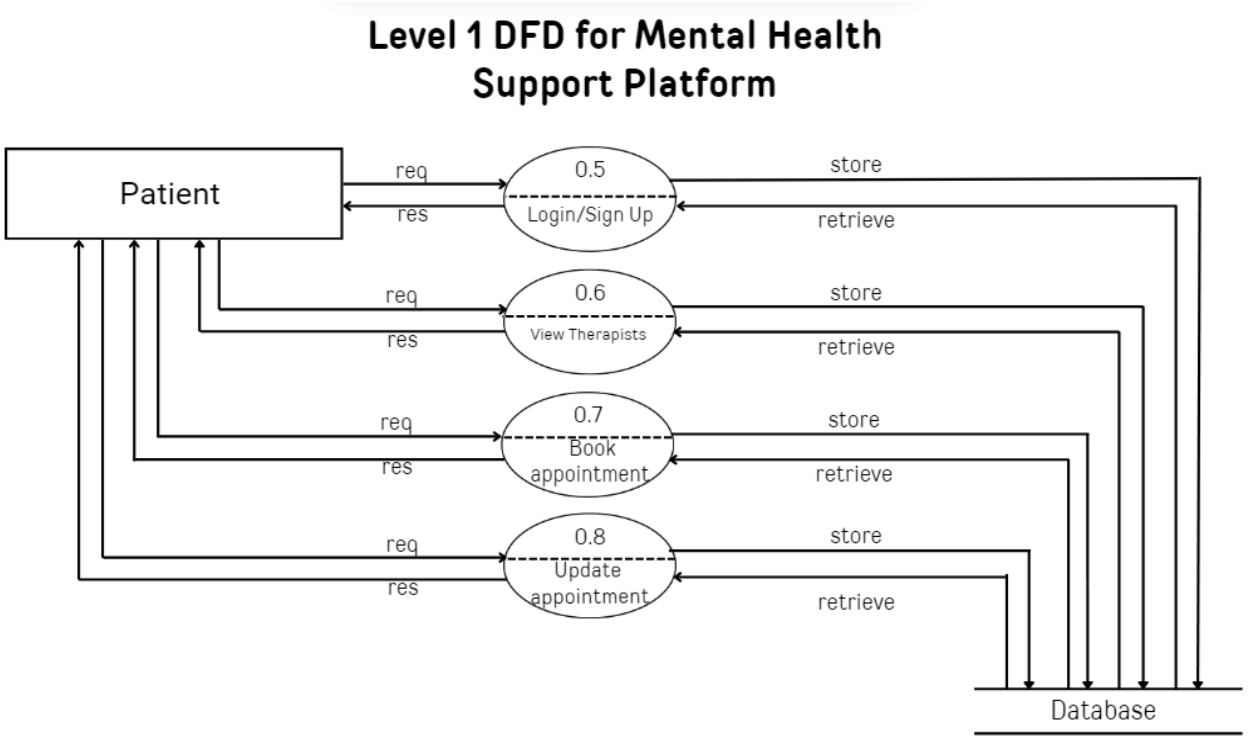

Fig 4.3 DFD Level 1

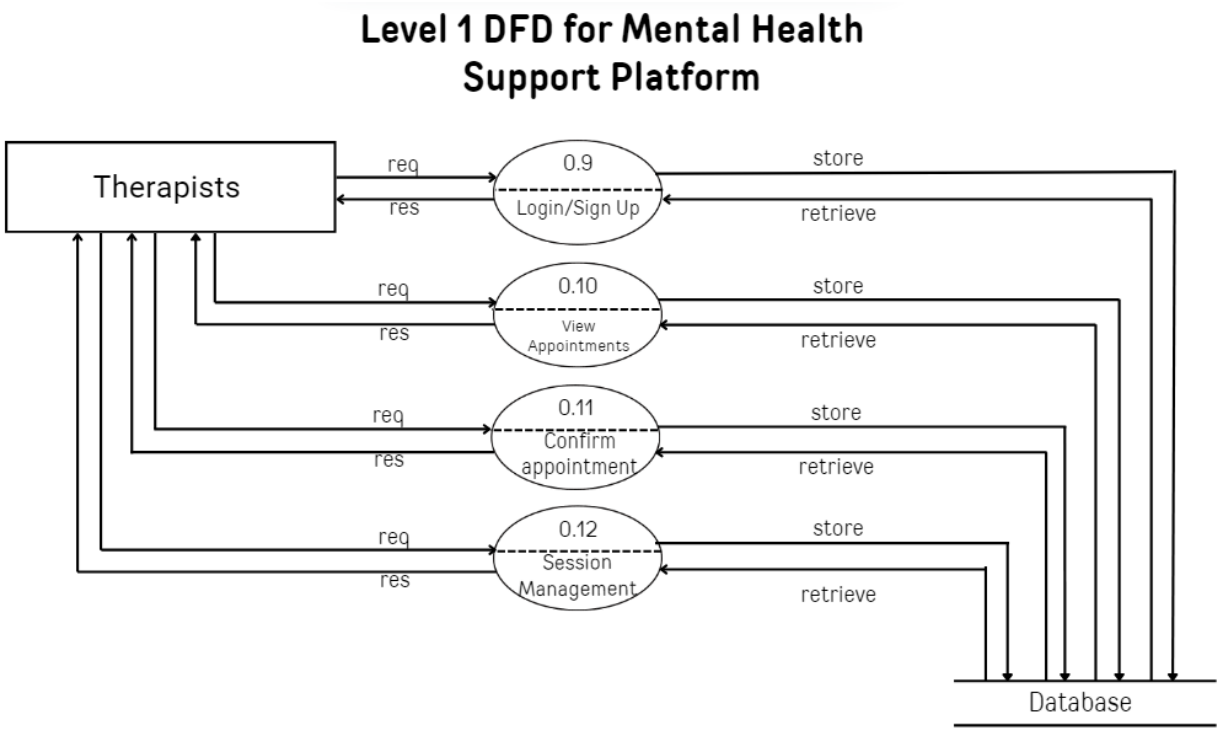

Fig 4.4 DFD Level 1

4.3 DFD Level 2

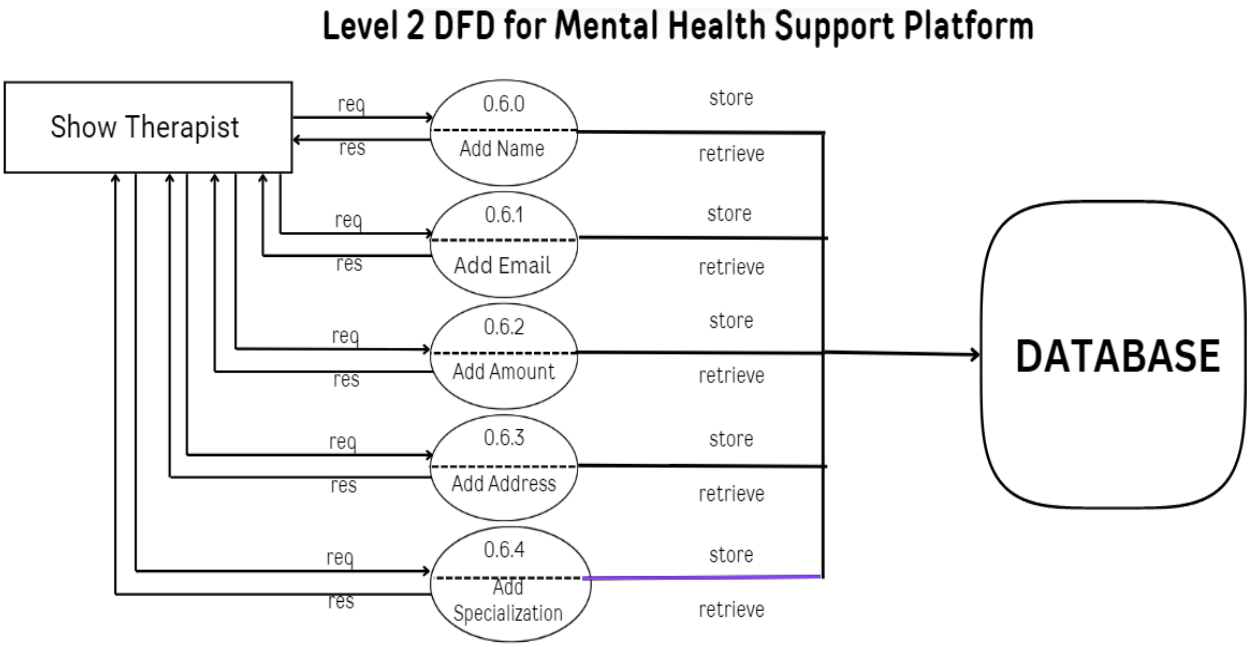

Fig 4.5 DFD Level 2

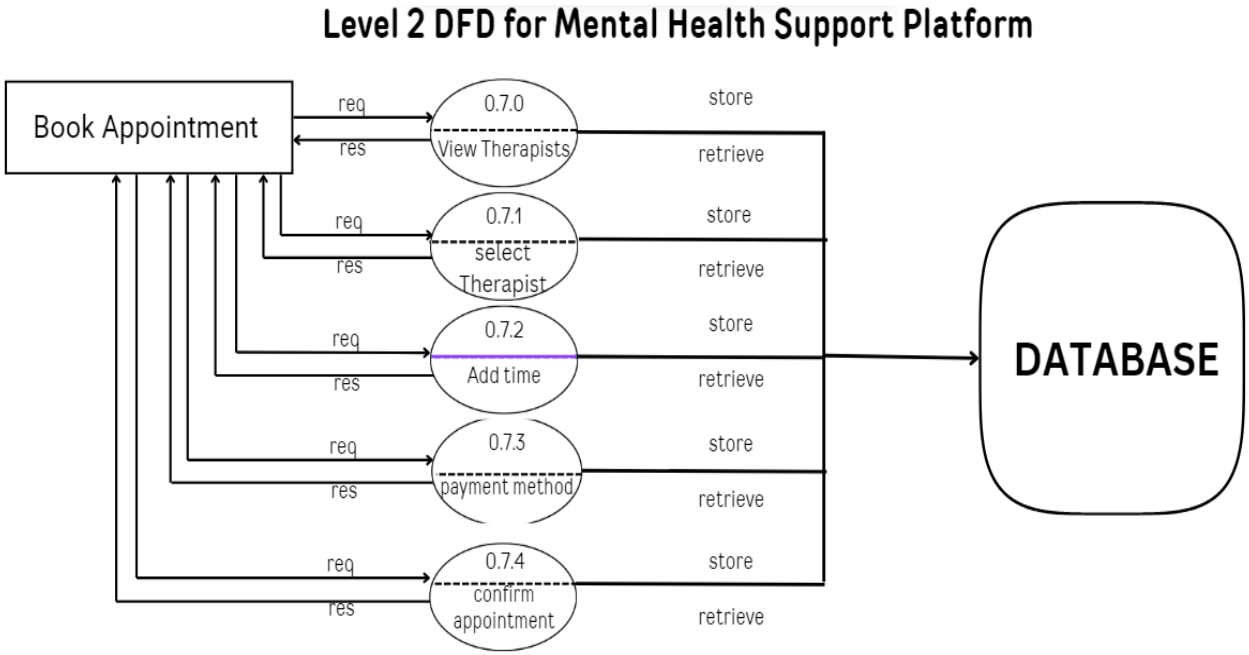

Fig 4.6 DFD Level 2

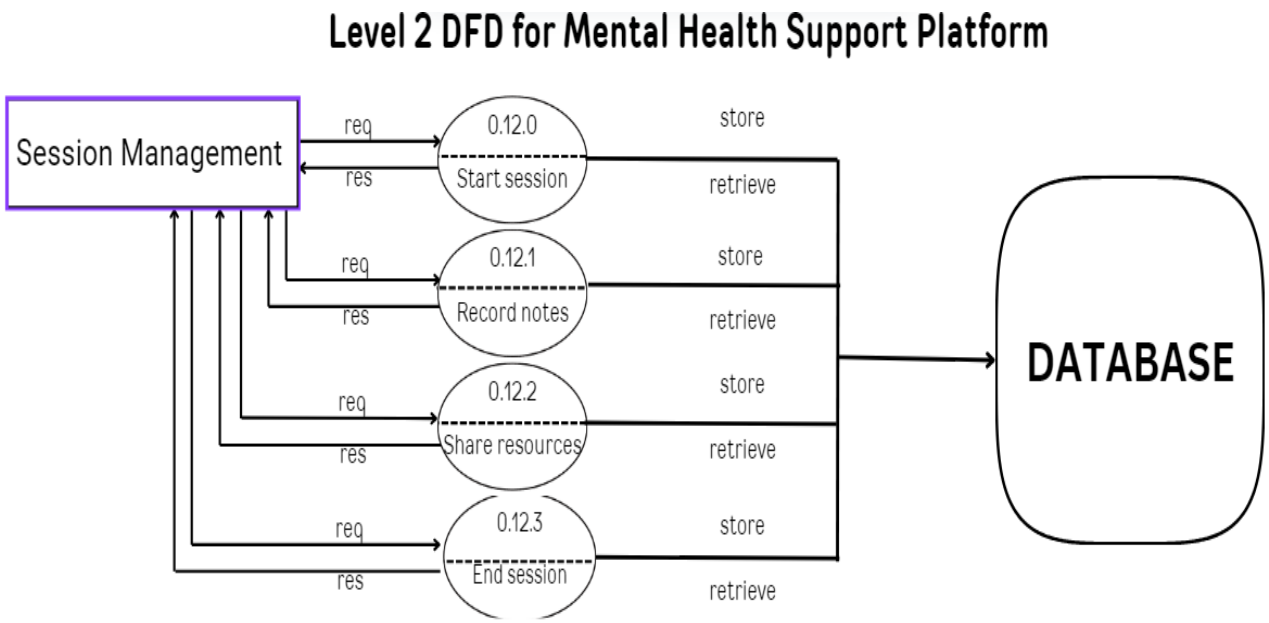

Fig 4.7 DFD Level 2

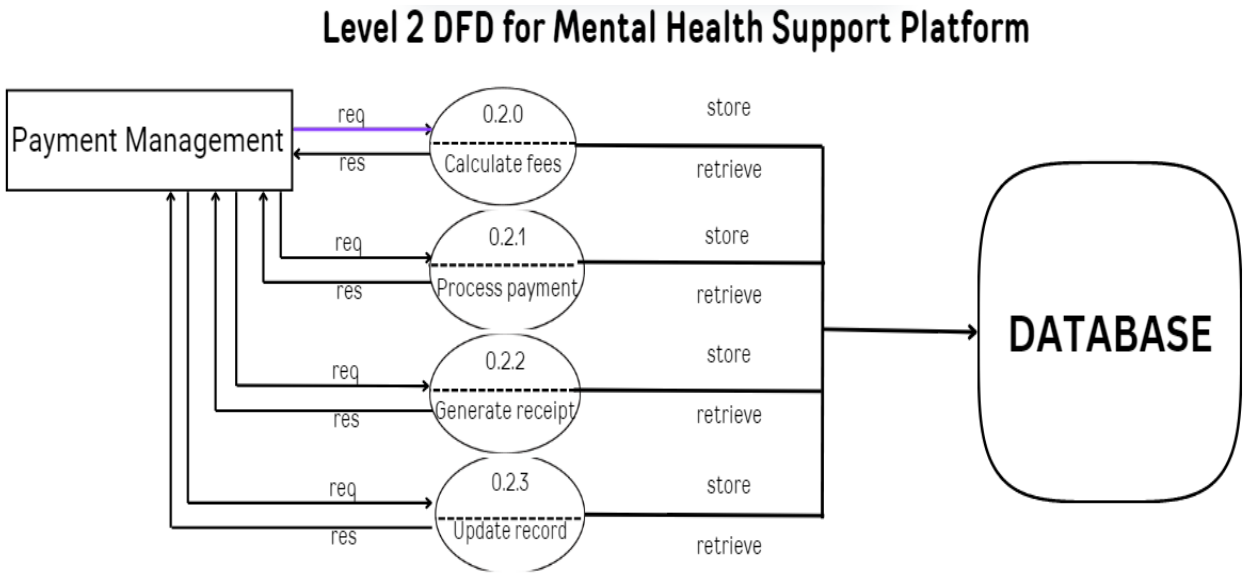

Fig 4.8 DFD Level 2

5. Relational database structure (Schema)

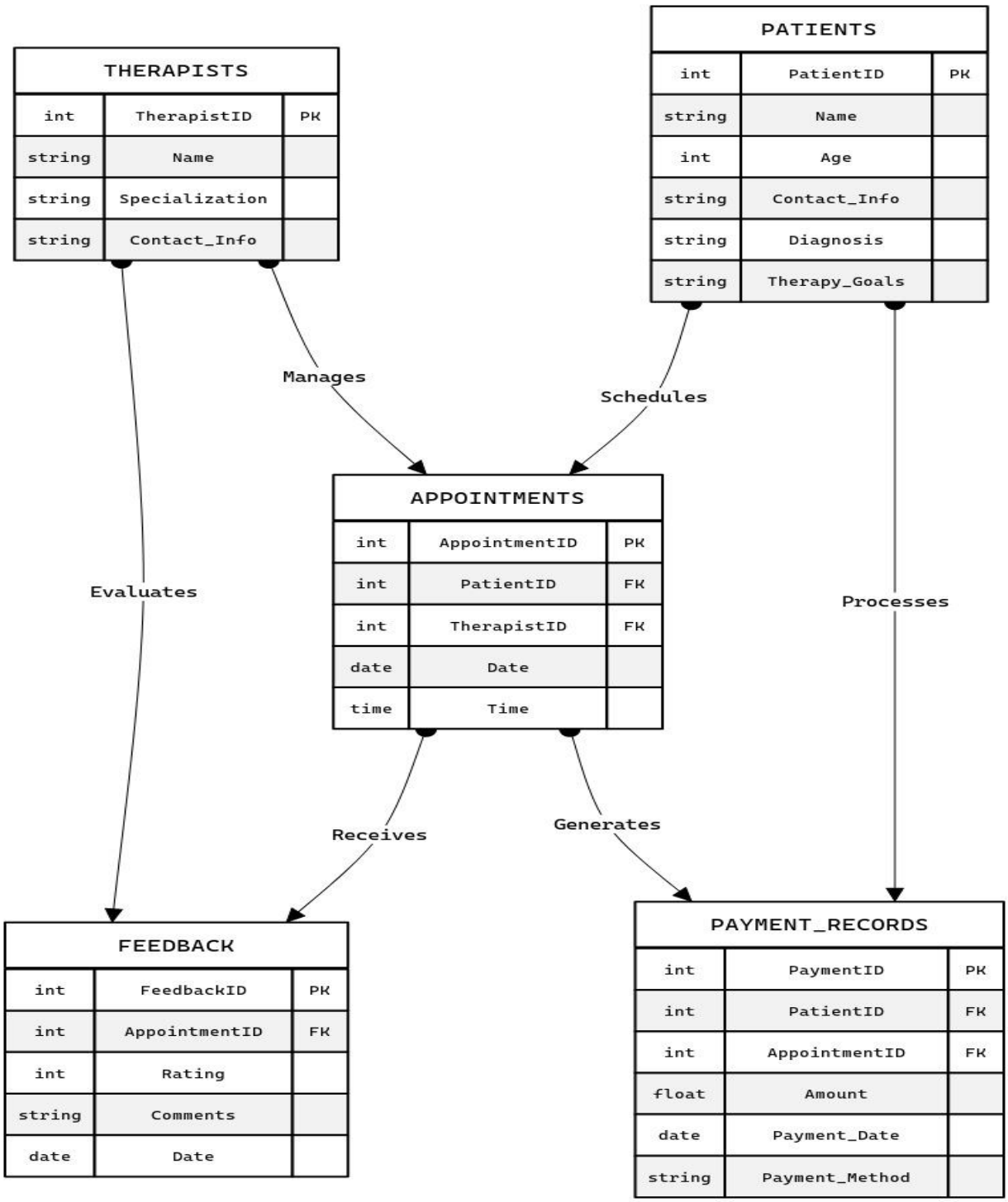

Fig 5.1 Relational Database Schema

This relational schema represents the structure of a therapy management system. It defines the tables, attributes, and relationships required to manage therapists, patients, appointments, feedback, and payments effectively.

1. Therapists

- Attributes:
    - TherapistID (Primary Key): Unique identifier for each therapist.
    - Name: Name of the therapist.
    - Specialization: Area of expertise (e.g., cognitive behavioral therapy, family therapy).
    - Contact_Info: Contact details.
- Purpose: Stores information about therapists, their specializations, and contact details.
- Relationships:
    - Connected to Appointments via TherapistID to indicate the therapist managing each appointment.

2. Patients

- Attributes:
    - PatientID (Primary Key): Unique identifier for each patient.
    - Name: Name of the patient.
    - Age: Age of the patient.
    - Contact_Info: Contact details.
    - Diagnosis: Description of the patient's condition.
    - Therapy_Goals: Therapy objectives.
- Purpose: Captures details about patients, including contact information and therapy goals.
- Relationships:
    - Connected to Appointments via PatientID to track patient-scheduled appointments.
    - Connected to Payment_Records via PatientID to associate payments with patients.

3. Appointments

- Attributes:
    - AppointmentID (Primary Key): Unique identifier for each appointment.
    - PatientID (Foreign Key): References PatientID in Patients.

- TherapistID (Foreign Key): References TherapistID in Therapists.
- Date: Appointment date.
- Time: Appointment time.

- Purpose: Manages scheduling of appointments between therapists and patients.
- Relationships:
  - Connected to Patients to track who scheduled the appointment.
  - Connected to Therapists to identify the responsible therapist.
  - Connected to Feedback to link feedback to appointments.
  - Connected to Payment_Records to associate payments with appointments.

4. Feedback

- Attributes:
  - FeedbackID (Primary Key): Unique identifier for each feedback entry.
  - AppointmentID (Foreign Key): References AppointmentID in Appointments.
  - Rating: Numeric rating provided by the patient.
  - Comments: Additional feedback.
  - Date: Feedback submission date.
- Purpose: Records patient feedback for appointments to assess satisfaction and therapist performance.
- Relationships:
  - Connected to Appointments via AppointmentID to associate feedback with specific appointments.

5. Payment_Records

- Attributes:
  - PaymentID (Primary Key): Unique identifier for each payment.
  - PatientID (Foreign Key): References PatientID in Patients.
  - AppointmentID (Foreign Key): References AppointmentID in Appointments.

    - Amount: Payment amount.
    - Payment_Date: Date of payment.
    - Payment_Method: Method of payment (e.g., cash, credit card).
- Purpose: Tracks payments for appointments, including amount, method, and associated patient and appointment.
- Relationships:
    - Connected to Patients to link payments to patients.
    - Connected to Appointments to link payments to appointments.

This schema efficiently manages all aspects of the therapy system, ensuring data consistency and operational integrity.

Normalisation

The database schema is fully normalized up to 3NF, ensuring optimal data integrity and minimal redundancy.

1NF (First Normal Form):

- All attributes are atomic (no multi-valued attributes).
- No repeating groups or redundant data.

2NF (Second Normal Form):

- Already in 1NF.
- No partial dependencies; every non-key attribute is fully functionally dependent on the primary key.

3NF (Third Normal Form):

- Already in 2NF.
- No transitive dependencies; all non-key attributes depend only on the primary key, not on other non-key attributes.

The schema is fully normalized, reducing redundancy and ensuring efficient data integrity, retrieval, and consistency. It eliminates insertion, deletion, and update anomalies, making it well-structured for practical use. This ensures efficient querying, avoids insertion, update, and deletion anomalies, and maintains data consistency.

6. Conclusion

The mental health support platform is designed to provide an organized, efficient, and user-friendly solution for managing therapy services. By integrating a robust relational database schema, the platform ensures seamless coordination between therapists, patients, appointments, feedback, and payments.

This system facilitates effective management of patient records, appointment scheduling, feedback collection, and payment processing, creating a comprehensive ecosystem for mental health care. The ability to link all data points—such as associating feedback and payments with appointments ensures data consistency and enhances the overall user experience.

Furthermore, the platform empowers therapists by allowing them to focus on their specialization while managing their appointments efficiently. Patients benefit from personalized care, clear communication, and streamlined processes for scheduling and payments.

In conclusion, this mental health support platform serves as a reliable tool to improve access to mental health services, promote data integrity, and foster a collaborative environment for both therapists and patients. By prioritizing usability and functionality, the platform contributes to better mental health outcomes and supports the growing demand for accessible mental health care.

7. References

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8. Appendix: Snapshots

Fig 8.1 Website Interface

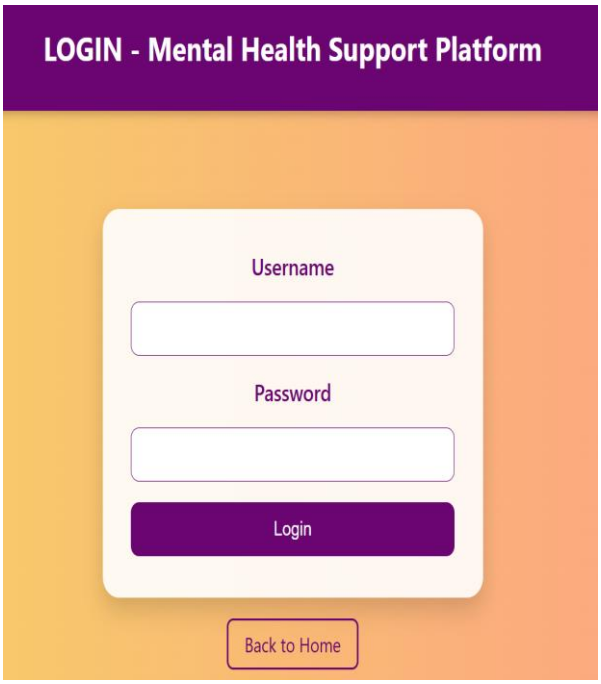


Fig 8.2 Login Portal

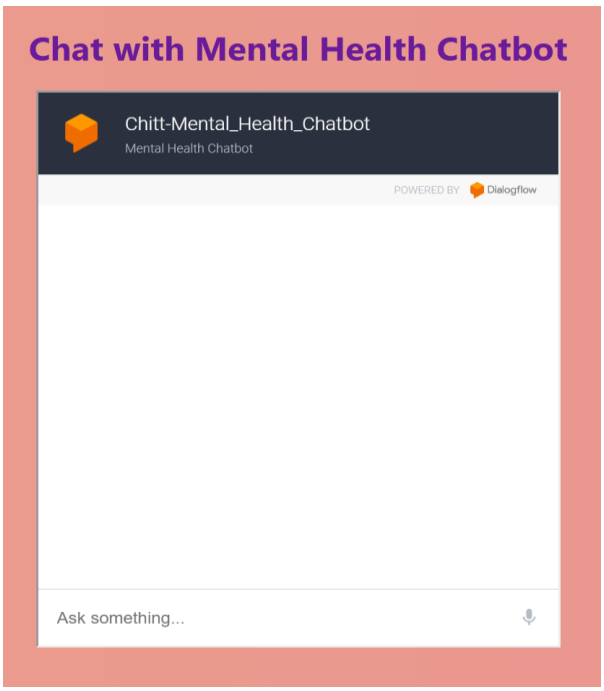


Fig 8.3 Chatbot Interface

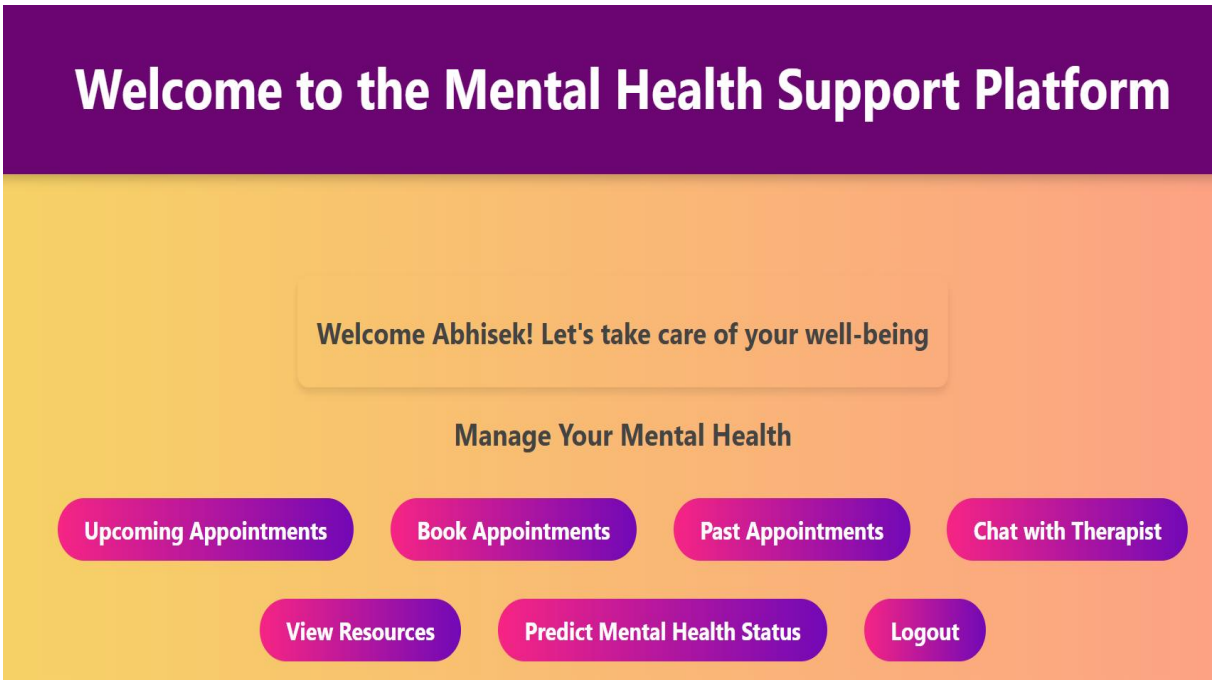


Fig 8.4 Patient Dashboard

Name	Address	Specialization	Email	Amount	Select
Dr. Sarah Lee	123 Elm St	Cognitive Behavioral Therapy	shridharbhat04@gmail.com	Rs 1000.00	○
Dr. David Clark	321 Maple Rd	Family Therapy	david@example.com	Rs 800.00	○
Dr. James Parker	987 Cedar Dr	Behavioral Therapy	james@example.com	Rs 950.00	○
Dr. William Johnson	101 Pine St, Houston, TX 77002	Anxiety and Depression Therapy	william.johnson@example.com	Rs 950.00	○
Dr. Smith	202 Cedar Ln, Miami, FL 33101	Trauma and PTSD Counseling	shridharbhat04@gmail.com	Rs 1250.00	○

Appointment Date

dd-mm-yyyy

Appointment Time

--:--

Payment Method

Cash

Book Appointment

Fig 8.5 Book Therapy Appointment

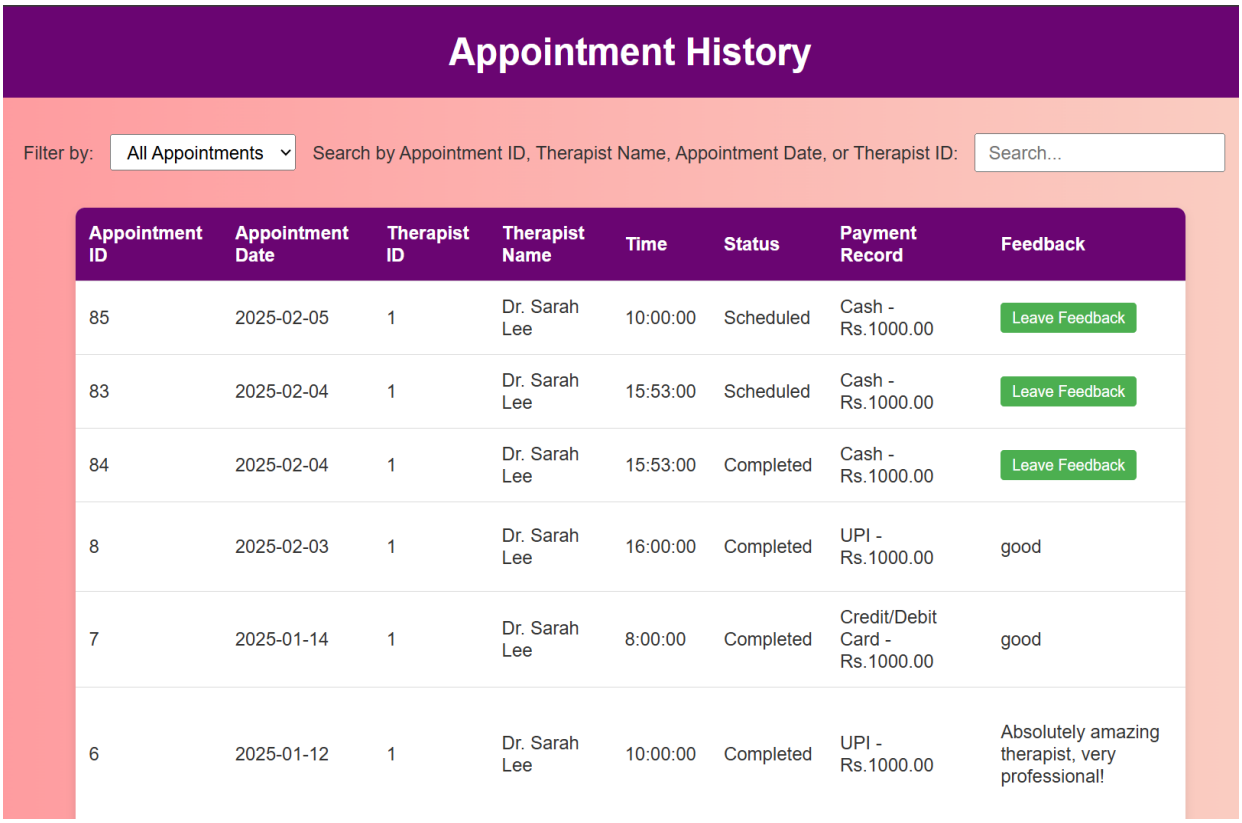


Fig 8.6 Appointment History

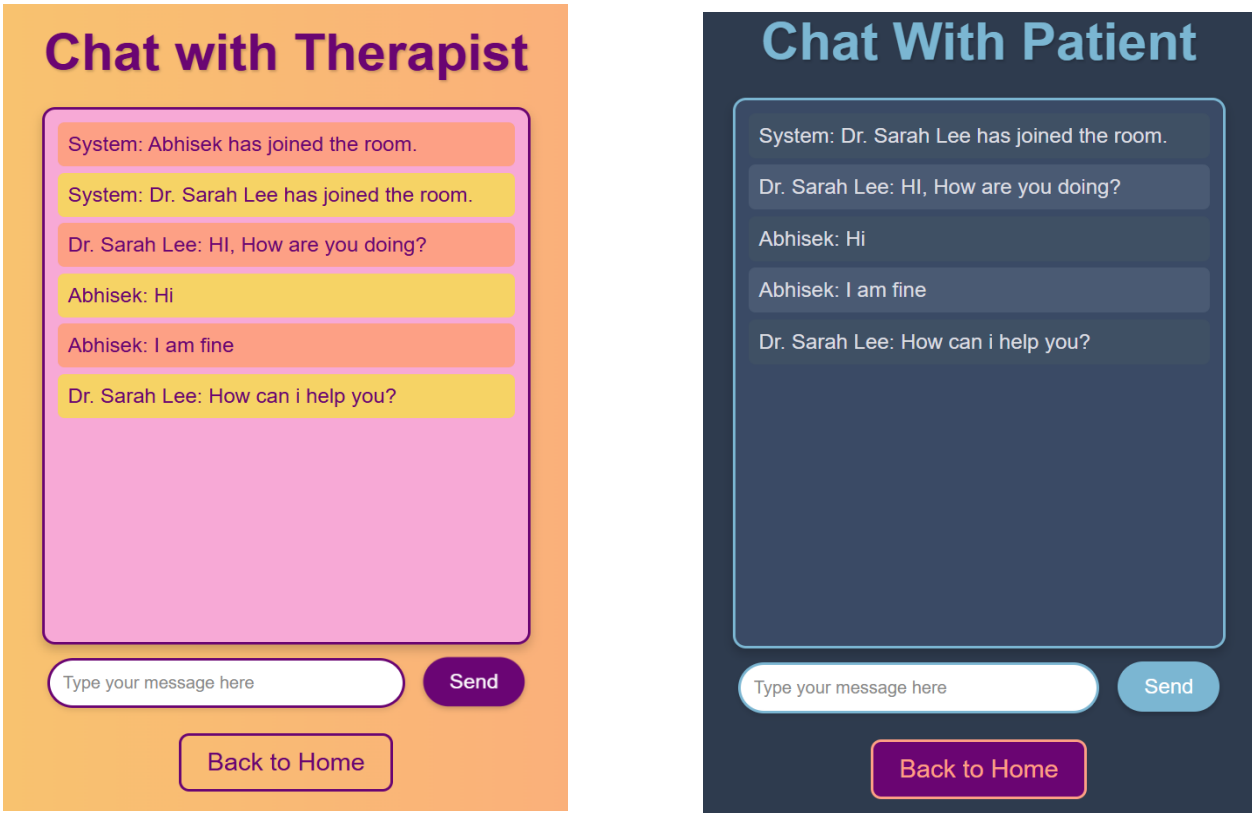


Fig 8.7 Live Chat Interface between Patient and Therapist

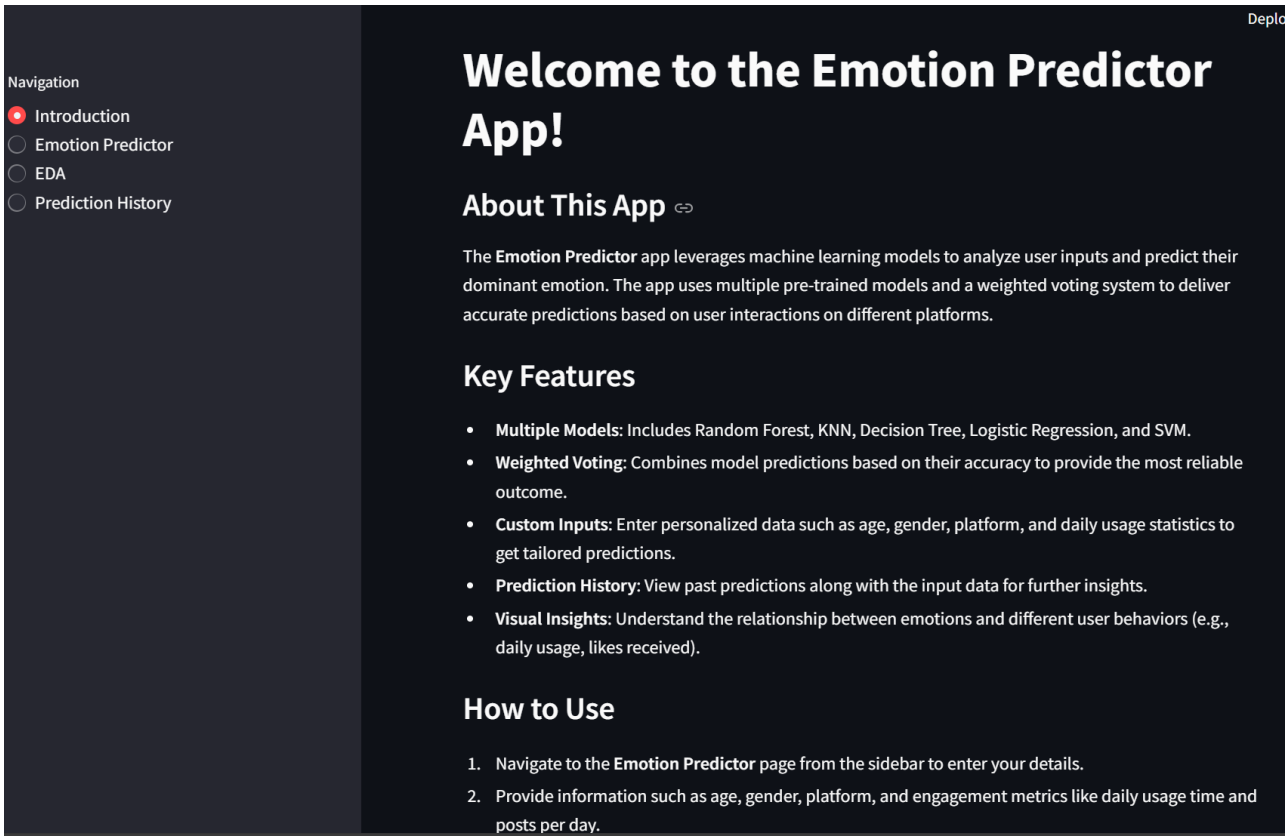


Fig 8.8 Emotion Predictor Interface

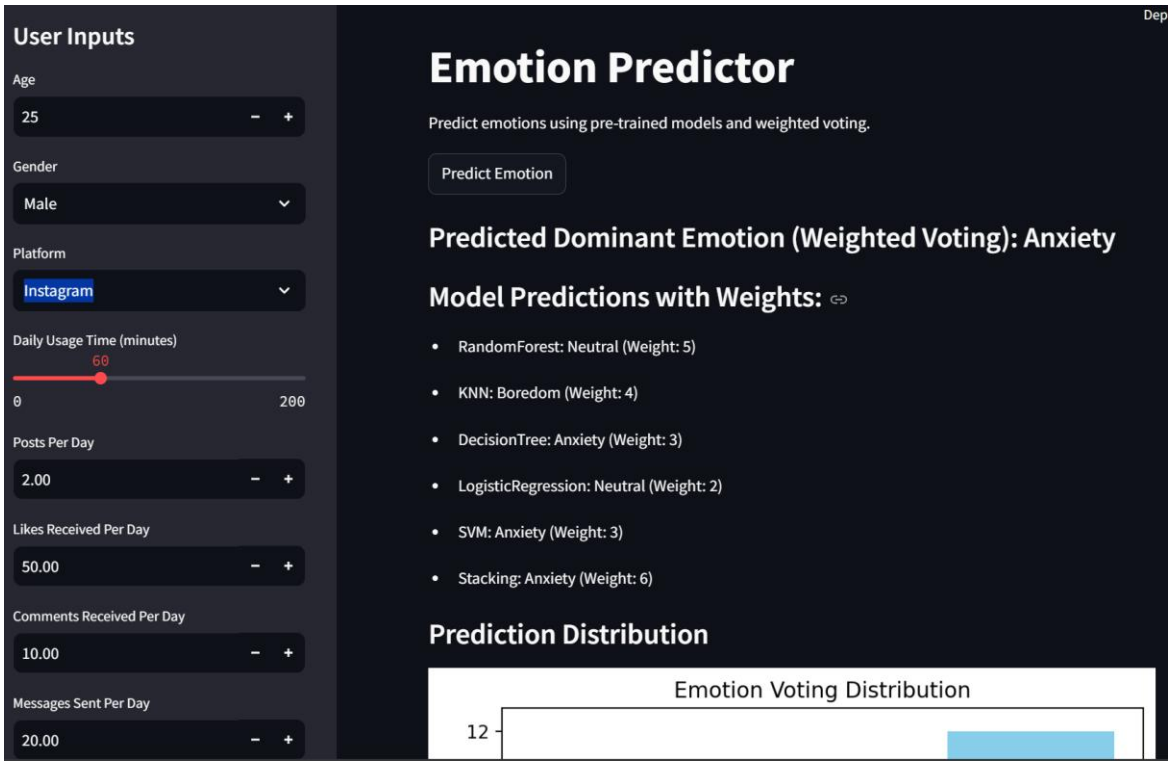


Fig 8.9 Emotion Predictor based on Social Media Usage

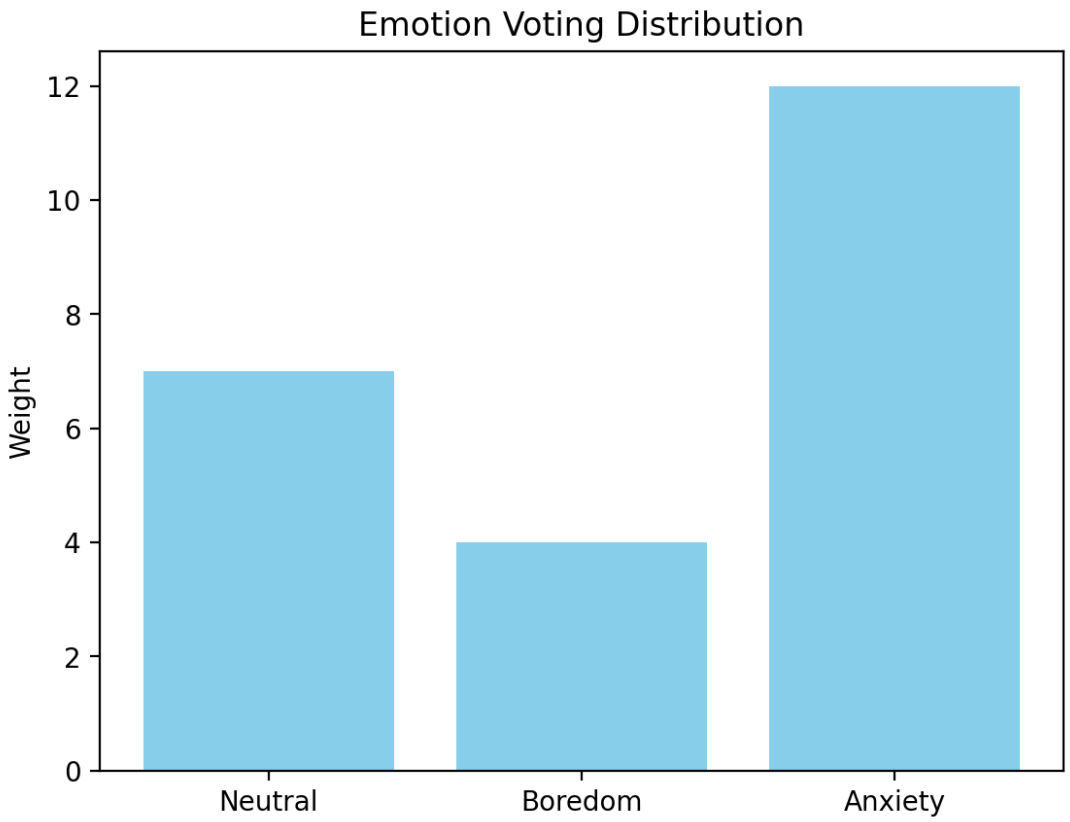


Fig 8.10 Weighted Majority Voting of Predictions

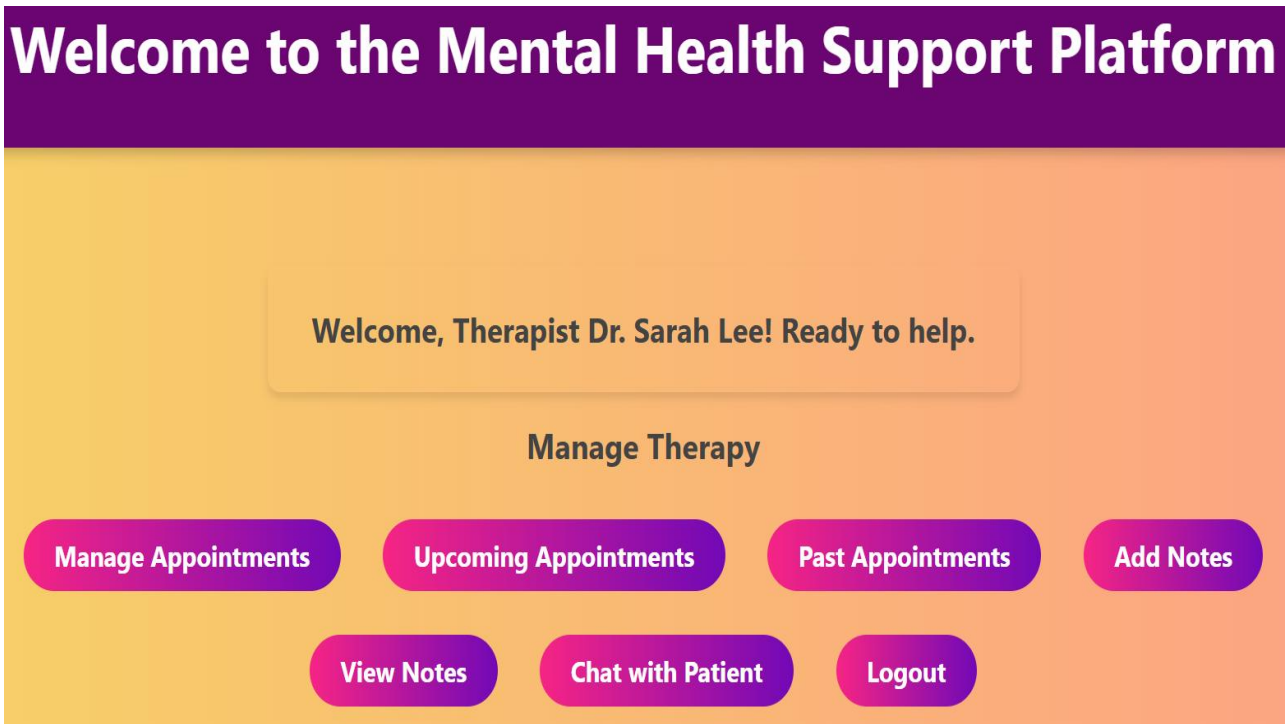
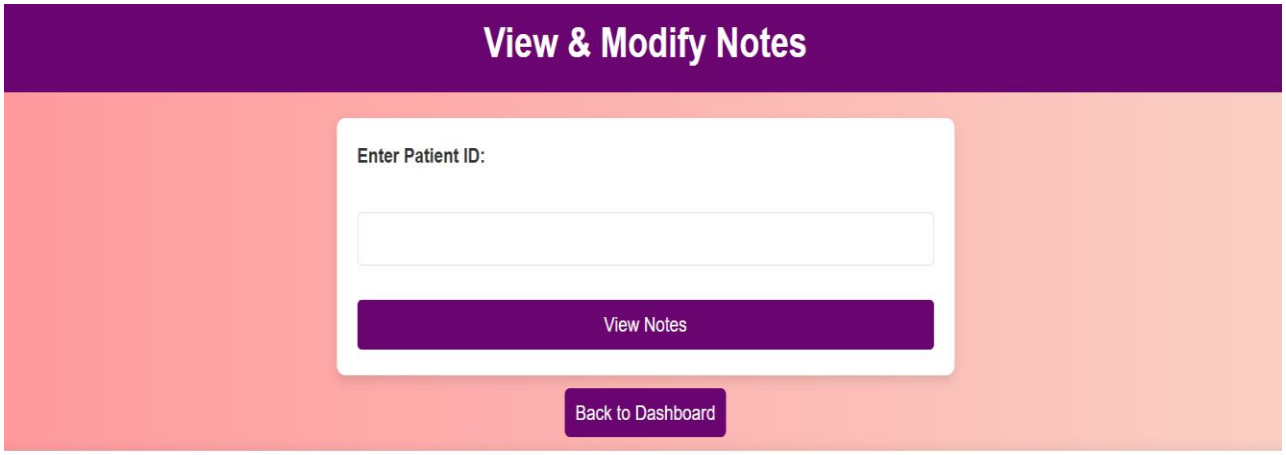


Fig 8.11 Therapist Dashboard

Fig 8.12 Therapist Manage Appointments



Notes for Patient #1

Appointment Date	Appointment Time	Note	Date Created	Actions
2025-01-01	10:00:00	Patient responds well to talk therapy sessions.	2025-01-01 00:10:04	Edit Delete
2025-01-01	10:00:00	Stress levels have decreased slightly after initial sessions.	2025-01-01 00:10:26	Edit Delete

Fig 8.13 Therapist View Notes

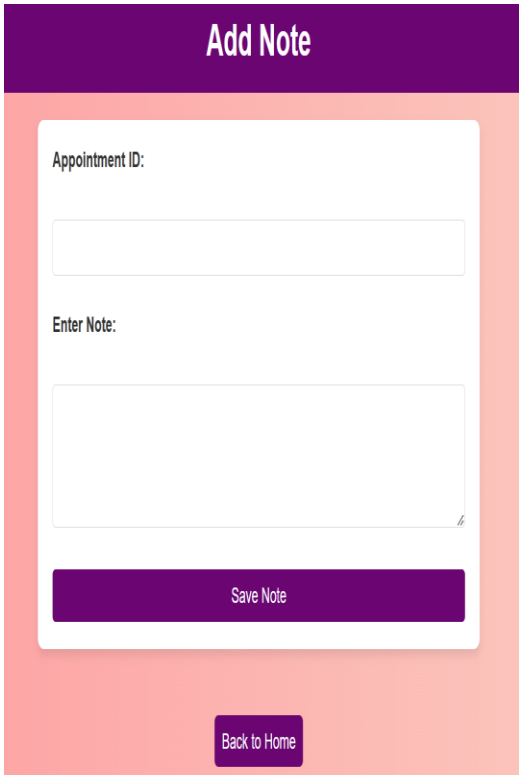


Fig 8.14 Add Notes

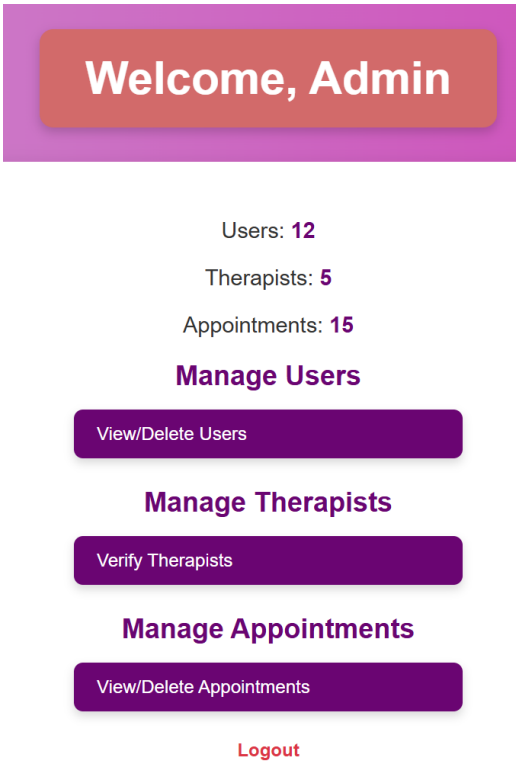


Fig 8.15 Admin Dashboard

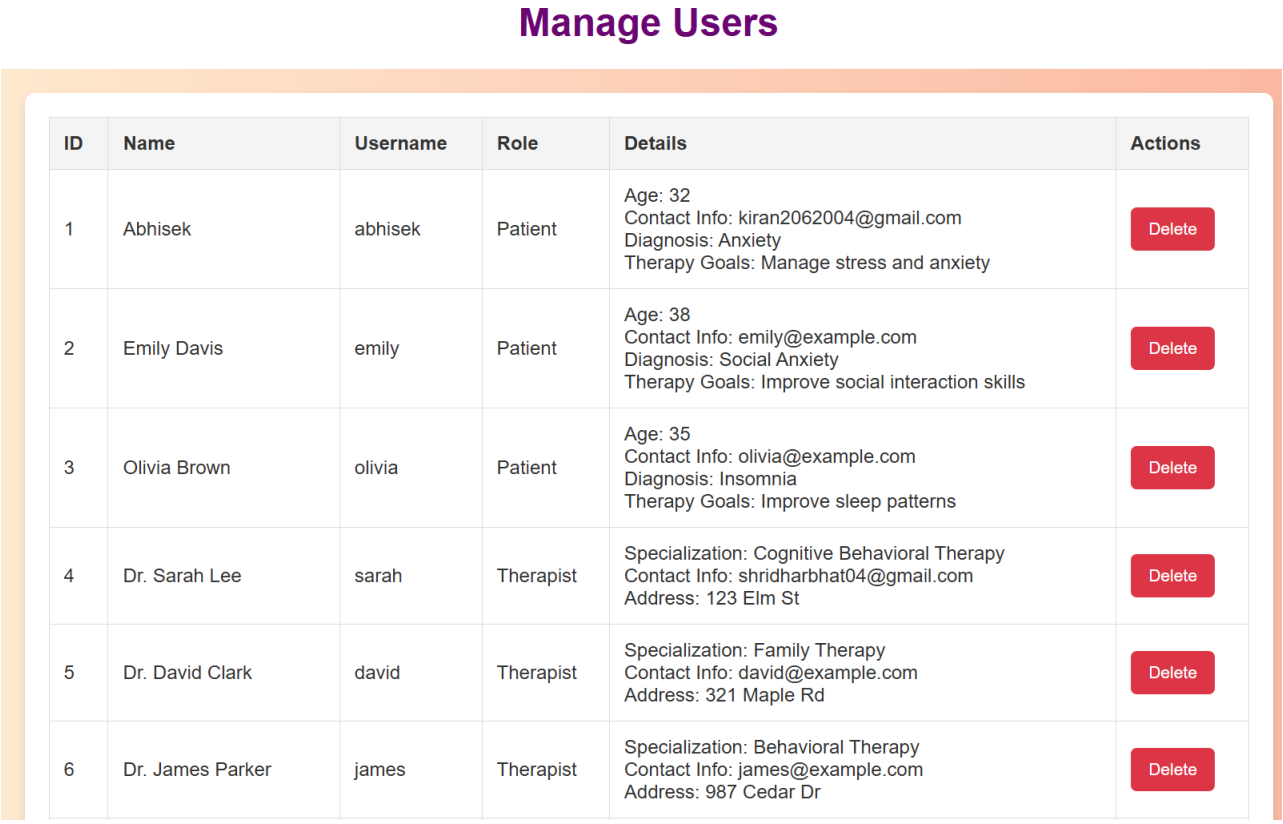


Fig 8.16 Admin Manage Users