Malnad College Of Engineering

Under the auspices of M.T.E.S ®
(An Autonomous Institution Affiliated to VTU, Belgaum)
P.B. No. 21, Hassan 573 202, Karnataka

Subject: Full Stack Development(23IS553)

Topic – Online Therapist Booking System

Group number: 12

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2025-2026

Date of submission: 27-11-2025

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ABSTRACT

The Online Therapist Booking System is a web-based application developed using the Django framework that provides a seamless digital interface for booking sessions with certified professional therapists. The system addresses challenges faced in traditional appointment booking methods such as long waiting periods, communication gaps, privacy concerns, and manual record handling. Through this platform, patients can easily register, browse available therapists, view their areas of specialization, check real-time availability, and schedule appointments at convenient times. The system ensures the confidentiality of user data through secured authentication and encrypted communication.

Therapists are provided with a dedicated dashboard to manage their schedules, approve or reject patient appointments, update session availability, and maintain records of past sessions. Admins act as system supervisors who verify therapist registrations, manage user accounts, monitor bookings, and generate analytical reports. With optional integration of online video consultation, payment gateway, AI-based recommendations, and chatbot assistance, this system holds potential to evolve into a comprehensive online consultation platform. Overall, the Online Therapist Booking System enhances accessibility, convenience, and efficiency in general therapy and consultation services.

1. INTRODUCTION

In today's fast-growing digital world, people expect quick and convenient access to essential services, including different types of therapeutic care. Whether it is physical therapy, speech therapy, rehabilitation support, occupational therapy, or general wellness sessions, patients often face difficulties in scheduling appointments using traditional methods. Many clinics still rely on phone calls, handwritten registers, or walk-in bookings, which leads to delays, miscommunication, and difficulty in maintaining accurate patient records.

In real-world situations, individuals who require therapy may struggle to identify available professionals, compare their expertise, or find suitable appointment slots without personally visiting multiple centres. This creates inconvenience, especially for patients with mobility issues, busy schedules, or those living far from therapy centres. Existing systems offer limited transparency, lack real-time updates, and depend heavily on manual coordination, which often results in booking errors or long waiting times.

A digital platform designed for therapy appointments can transform this experience by providing a centralized and user-friendly interface. Patients can easily view therapist profiles, check availability, and book sessions instantly from any location. At the same time, therapists gain better control over their schedules, reducing administrative effort and improving service accuracy. By streamlining the entire process, the system enhances accessibility, efficiency, and overall quality of therapeutic care delivery.

2. OBJECTIVES

The project aims to design a reliable and user-friendly system that modernizes the way therapy appointments are managed. It focuses on creating a structured digital platform that benefits patients, therapists, and administrators alike.

- To build an online platform for managing therapist profiles, patient registrations, and appointment bookings.
- To simplify the process of scheduling therapy sessions by providing real-time availability and an easy booking interface.
- To provide users with a convenient and centralized system for searching therapists based on specialization, experience, and timing.
- To automate manual-to-digital conversion of appointment handling, schedule management, and record maintenance.
- To offer secure access to personal information, session details, and communication between patients, therapists, and administrators.
- To improve efficiency and reduce errors in appointment coordination, data management, and day-to-day operational tasks.

3. SYSTEM REQUIREMENTS

3.1 Software Requirements

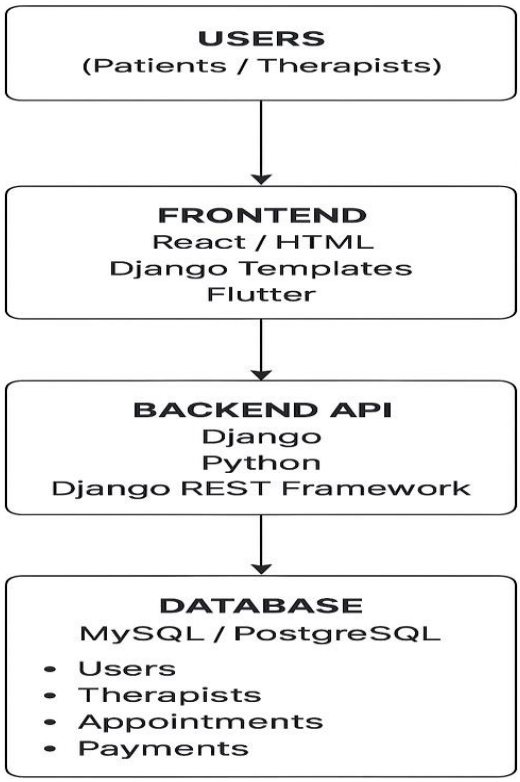
- **Python Version:** Python 3.10 or above
- **Django Version:** Django 4.2 or above
- **IDE Used:** Visual Studio Code / PyCharm / Sublime Text
- **Database Used:** SQLite (default) or MySQL (for deployment)
- **Other Dependencies:** Django REST Framework, HTML, CSS, JavaScript, and authentication libraries for secure login and UI enhancement.

3.2 Hardware Requirements

- **Processor:** Dual Core 2.0 GHz or higher
- **RAM:** Minimum 4 GB (8 GB recommended for smooth development)
- **Storage:** 10–20 GB free disk space
- **Operating System:** Windows 10/11
- Internet connection for browser access and cloud deployment (optional)

4. SYSTEM DESIGN

4.1 Architecture Diagram



4.2 Explanation of Architecture

4.2.1. Block Description

1.Users (Patients/Therapists)
End users who interact with the system using a web browser or mobile app. They perform actions such as register/login, search therapists, view profiles, book/cancel appointments, and view history.

2.Frontend
The user-facing interface. Could be built with React (SPA), plain HTML + Django templates, or a mobile UI (Flutter). Responsibilities:

- Render pages and forms
- Perform client-side validation
- Call backend APIs (HTTPS)
- Show feedback/notifications to users

3.BackendAPI
Server-side application that implements business logic and provides REST endpoints. Typical components shown in the diagram:

- Auth / Authorization — login, JWT/session handling, role checks
- User Controller — profile CRUD, account settings
- Therapist Controller — therapist profiles, availability slots
- Booking Controller — create/modify/cancel appointments, availability checks
- Payments / Records — store transaction status, session notes (if applicable) Django ORM translates model operations into SQL for the database.

4.Database
Relational store holding persistent data:

- Users, Therapist profiles, Appointments, Payments, Reviews, Availability slots Designed for ACID guarantees, queries via the ORM, with indexes on commonly searched fields (e.g., therapist id, appointment date).

4.2.2. Data flow explanation

The overall data movement in the system follows a smooth and structured flow between the User Interface, Backend API, and the Database. The steps below describe how information travels when a user interacts with the system.

1. User Sends a Request

The flow begins when a user performs an action on the interface—such as logging in, booking an appointment, creating an account, or viewing therapists schedules. This action triggers a request from the User Interface layer.

2. Request Reaches the Backend API

The request is sent to the Backend API, which acts as the core processing unit of the system.
Here the system performs:

- Input validation
- Authentication or authorization checks
- Business logic execution
- Routing the request to the correct handler

Examples:

- If the user logs in → API checks credentials
- If a user books an appointment → API verifies time slot availability
- If a user requests therapist list → API fetches records

3. Backend API Interacts with the Database

After processing the user request, the API communicates with the Database to either:

- Retrieve required data (e.g., list of therapists, upcoming appointments)
- Store new data (e.g., new booking details, user registration info)
- Update existing data (e.g., appointment changes, profile updates)

All data is stored in structured tables such as:

- Users
- Therapists
- Appointments

4. Database Sends the Response Back to the API

Once the database query is completed, the results are returned to the Backend API. This may include:

- User authentication results
- Booking confirmation
- List of available therapists
- Appointment history

5. Backend API Formats & Sends Data to UI

The Backend API then:

- Formats the data
- Structures it properly
- Sends it back to the User Interface

6. User Interface Displays Final Output

Finally, the UI presents the processed information to the user, such as:

- Login success message
- Booking confirmation
- Available time slots
- Therapist details
- User dashboard

At this stage, the data flow cycle completes.

4.2.3 User request flow

1. Views

The view is the main controller. It performs the following

- Business logic
- Calls database using Models
- Prepares context data for templates
- Returns the final response

2. Models

Views interact with Models to retrieve or save data.

Examples:

User → Authentication Model

Therapist → Therapist Model

Appointment → Appointment Model

Payment → Payment Model

3. Template

The view sends data as context to an HTML template

Template displays the data to the user

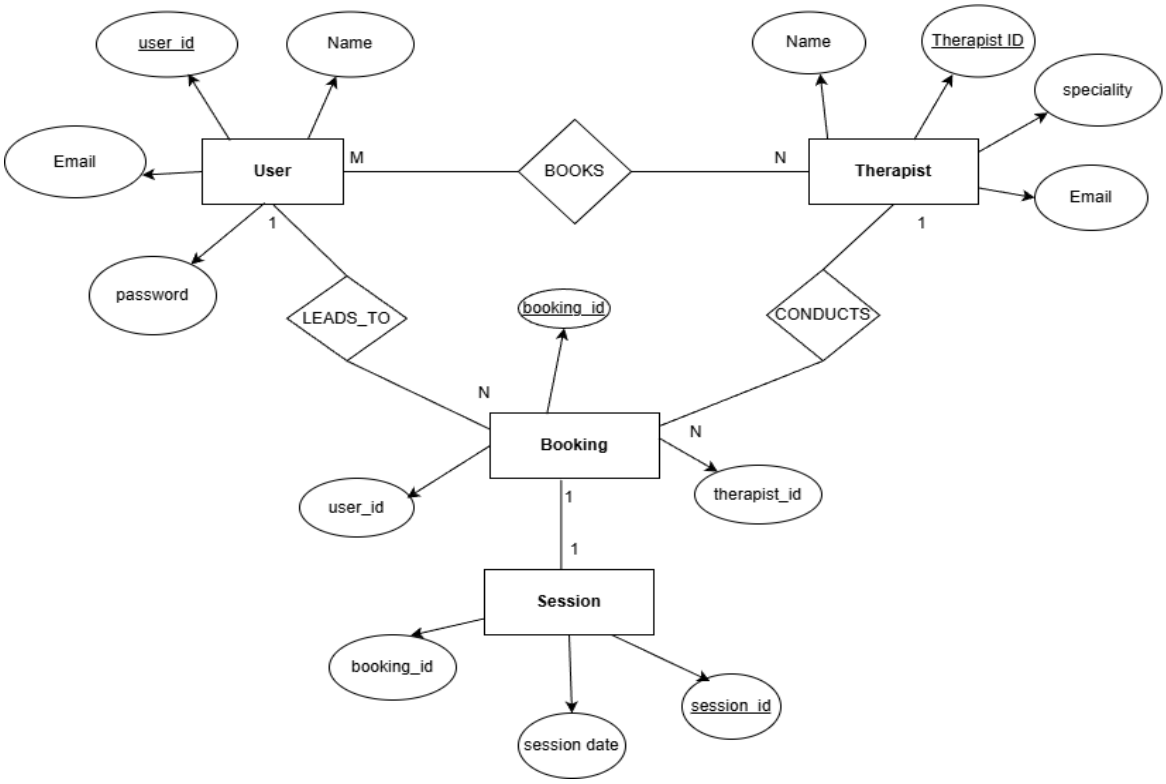
Example: therapists.html loops through objects and displays them

4.2.4 Interaction with database

- The Backend API sends queries to the database whenever user actions require data retrieval or updates.
- The database stores structured information such as user accounts, therapist details, appointment records, and availability schedules.
- When the API requests data, the database processes the query and returns the required results.
- The Backend API receives this data, applies necessary business logic, and sends formatted results back to the user interface.
- All database interactions ensure data accuracy, secure access, and real-time updates for both users and therapists.
- Database transactions are logged to maintain an audit trail, supporting accountability and troubleshooting.
- Backup and recovery mechanisms are implemented to prevent data loss and ensure system reliability.
- Optimized queries and indexing are used to improve performance and reduce response time for frequent database operations.

5. DATABASE DESIGN

1. ER Diagram



2. Tables with Attributes

Table Name	Attributes	Key Type	Description
USER	USER_ID, NAME, EMAIL, PASSWORD	USER_ID: Primary Key	Stores basic user (patient) details.
THERAPIST	THERAPIST_ID, NAME, SPECIALITY, EMAIL	THERAPIST_ID: Primary Key	Stores therapist information.
BOOKING	BOOKING_ID, USER_ID, THERAPIST_ID,	BOOKING_ID: Primary Key USER_ID: Foreign Key THERAPIST_ID: Foreign Key	Stores user–therapist bookings.
SESSION	SESSION_ID, BOOKING_ID, SESSION_DATE	SESSION_ID: Primary Key BOOKIN_ID: Foreign Key	Stores session details for a booking.

3. Keys Used

The database schema of the Online Therapist Booking System uses primary keys and foreign keys to maintain data integrity and define relationships between the tables.

• Primary Keys (PK):

Each table contains a unique primary key that distinctly identifies its records:

- USER_ID in the USER table
- THERAPIST_ID in the THERAPIST table
- BOOKING_ID in the BOOKING table
- SESSION_ID in the SESSION table

• Foreign Keys (FK):

Foreign keys connect the related tables and establish meaningful relationships:

- USER_ID in the BOOKING table → references USER(USER_ID)
- THERAPIST_ID in the BOOKING table → reference THERAPIST(THERAPIST_ID)
- BOOKING_ID in the SESSION table references BOOKING(BOOKING_ID)

4. Explanation of Tables

1. USER Table

- Purpose: Stores the basic information and login credentials of all patients registered in the system.
- Role: Helps identify patients uniquely and manage their access to the system.

2. THERAPIST Table

- Purpose: Contains information about therapists available for consultations.
- Role: Allows the system and patients to select therapists based on their speciality and contact them when needed.

3. BOOKING Table

- Purpose: Records appointments made by users with therapists.
- Role: Connects patients with therapists and manages scheduling of consultations.

4. SESSION Table

- Purpose: Stores each therapy session associated with a booking.
- Role: Tracks when appointments occur and links them to the corresponding booking for management and notifications.

6. IMPLEMENTATION

1. Models Overview

- The system includes models for Users, Therapists, Appointments, and Availability.
- User model stores login credentials, personal details, and user type (patient/therapist/admin).
- Therapist model maintains specialization, experience, qualification, and profile details.
- Appointment model handles booking information such as date, time, status, and linked patient–therapist IDs.
- Availability model defines the slots that therapists can set or update for patient bookings.

2. URL Routing Overview

- The routing structure connects user actions to the appropriate views using a clean and modular URL pattern.
- Separate routes exist for user authentication, therapist listing, appointment booking, dashboard management, and admin operations.
- Each route maps to a specific view function or class-based view that processes the request.
- The routing is organized to keep user, therapist, and admin functionalities clearly separated.

3. Important Functionalities

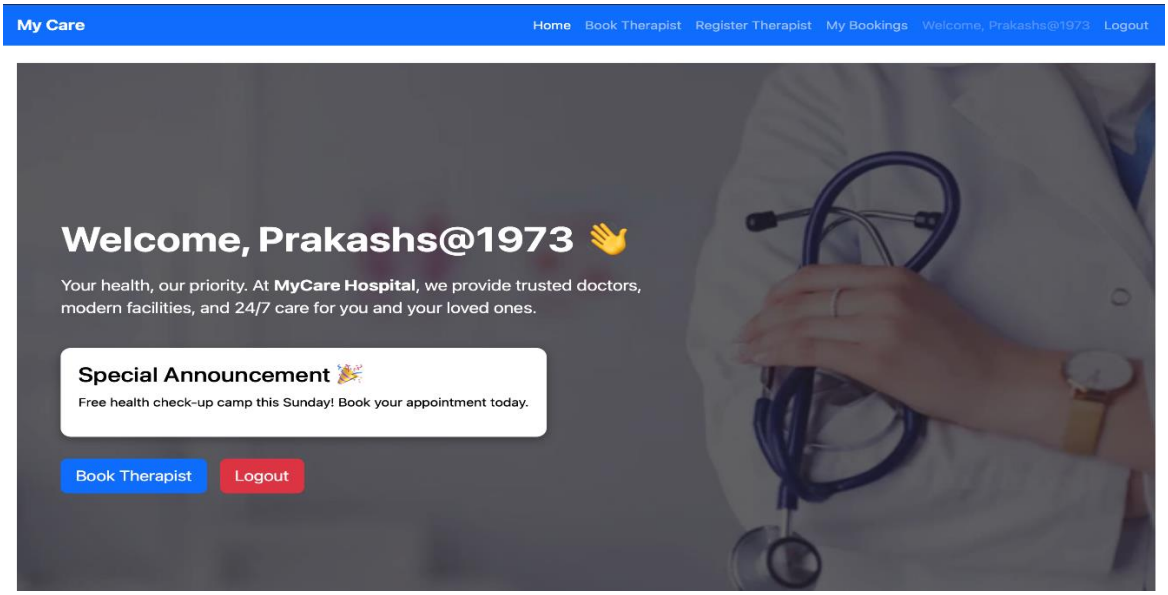
- User Registration & Login: Secure authentication for patients and therapists.
- Therapist Browsing: Patients can view therapists by specialization, availability, or experience.
- Appointment Booking: Real-time slot checking and booking confirmation.
- Therapist Dashboard: Schedule management, appointment approval/rejection, and session updates.
- Admin Panel: Verification of therapist profiles, monitoring activities, and managing user accounts.
- Notifications & Status Updates: Users get booking status and schedule changes instantly.

4. Special Logic Implemented

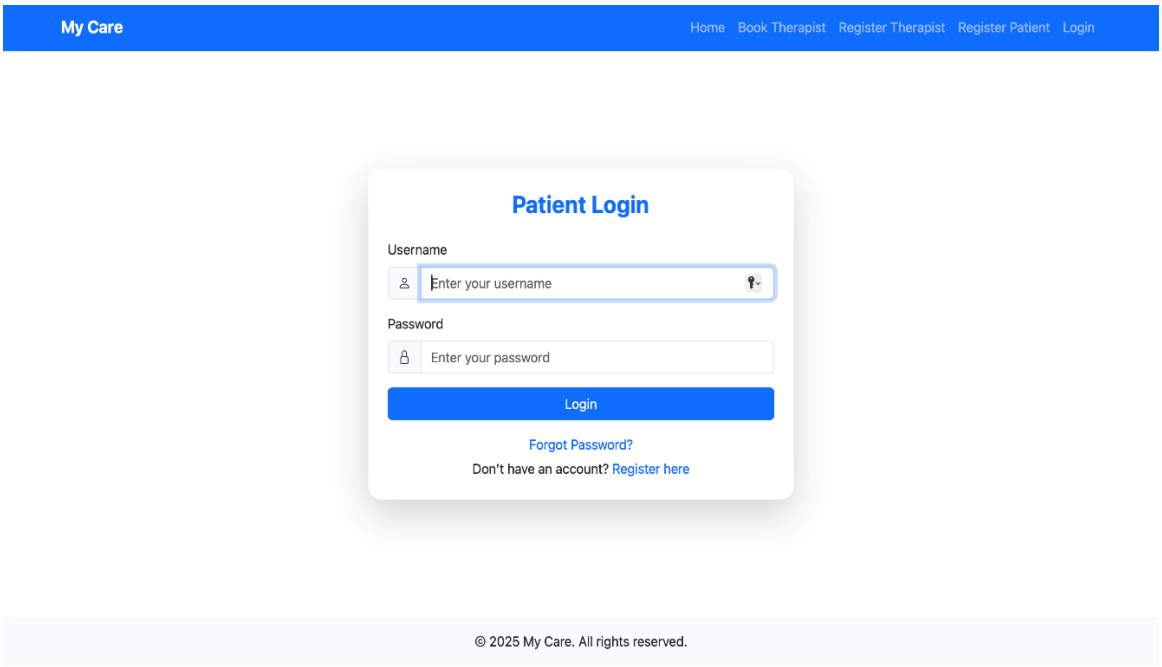
- Real-time availability checking ensures that no two patients book the same therapist slot.
- Role-based access control restricts features based on whether the user is a patient, therapist, or admin.
- Conflict avoidance logic prevents overlapping appointments.

7. SCREENSHOTS

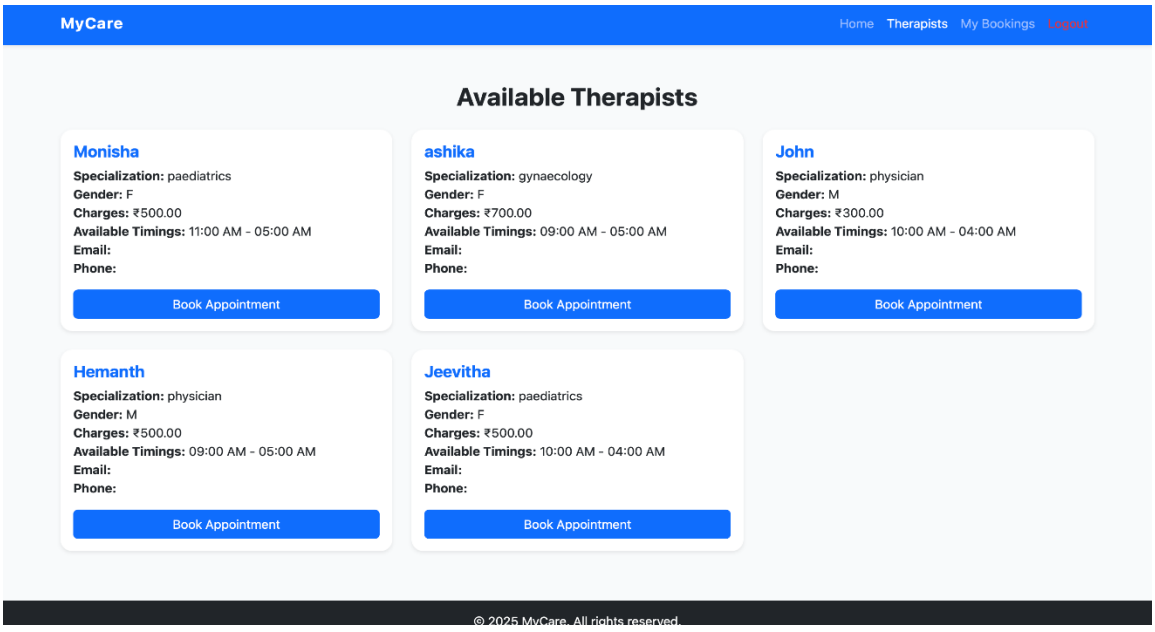
1.Homepage



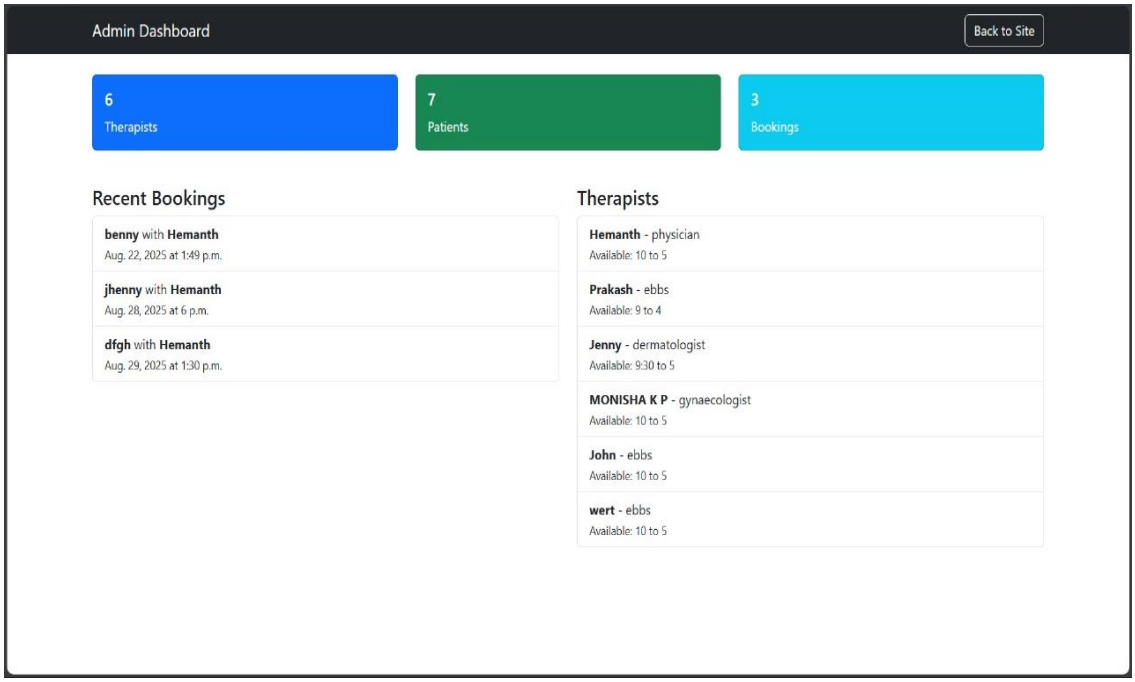
2. Login Page



3. Important pages



4. Admin Panel



8. TESTING

The system was tested with basic test cases to ensure functionality, reliability, and error handling:

- **Form Validation:** Checked all input fields in registration, login, and appointment forms to ensure correct data entry and proper error messages for invalid inputs.
- **Login Functionality:** Verified login for both patients and therapists, including correct authentication, role-based access, and handling of incorrect credentials.
- **CRUD Operations:** Tested Create, Read, Update, and Delete operations for appointments, therapist profiles, and patient records to ensure data is correctly stored and retrieved.
- **Error Handling:** Ensured the system gracefully handles errors, such as missing fields, invalid inputs, or server issues, providing clear messages to the user.
- **Notifications & Reminders:** Checked that automated appointment reminders and notifications are sent correctly via email or in-app alerts.

9. RESULTS

The online therapist booking system streamlines the entire appointment process by efficiently connecting patients with therapists and eliminating manual scheduling issues. It allows users to easily browse, select, and book therapists based on availability, specialization, and feedback, ensuring a convenient experience. The system securely maintains digital records such as appointment history, session notes, and payment details, reducing errors and improving reliability. Automated reminders and notifications help prevent missed appointments while keeping both patients and therapists updated. With support for remote consultations through video or chat, the platform enhances accessibility and continuity of care. Overall, it boosts patient satisfaction, improves therapist efficiency, and provides a scalable foundation for expanding mental health service delivery.

10. CONCLUSION

The Online Therapist Booking System effectively addresses the challenges of traditional manual appointment methods by providing a digital, user-friendly platform. It improves accessibility through online consultations, ensures secure record-keeping, streamlines appointment management, and enhances communication between patients and therapists. Overall, the system saves time, increases efficiency, and delivers a better experience for both patients and therapists, making mental health services more accessible and organized.

11. FUTURE ENHANCEMENT

1. AI-Based Therapist Recommendation

- Use AI/ML to suggest suitable therapists based on user requirements, past bookings, and reviews.
- Helps patients find the best match quickly.

2. Voice/Video Consultation

- Integrate video conferencing tools (Zoom, Google Meet, WebRTC) for online sessions.
- Enables remote consultation without physical visits.

3. Automated Sentiment Detection and Chat Assistance

- Implement chatbots for basic queries or appointment guidance.
- Sentiment analysis can help flag urgent requests or follow-ups.

4. Emergency Consultation Feature

- Quick access button for urgent or last-minute appointments.
- Notifies available therapists immediately for priority bookings.

5. Payment Gateway Integration

- Secure online payment options for paid consultations.
- Automatic invoicing and payment tracking for both patients and therapists.

6. Enhanced Notification System

Multi-channel notifications (Email, SMS, in-app) for appointment reminders, cancellations, or updates.

12. REFERENCES

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