DJANGO REPORT

Train Ticket Booking System

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Train Ticket Booking System

1. Abstract

The Train Ticket Booking System is a web-based application designed to automate and digitize the traditional railway reservation system in India. It offers a modern, user-friendly interface for passengers to search for trains, check availability, calculate fares, and book tickets online. The platform also provides administrative capabilities such as managing stations, routes, and train schedules. Built with Django, HTML, CSS, and SQLite, the project is inspired by the functionalities of the IRCTC platform. The goal is to enhance convenience, reduce manual errors, and make railway reservations accessible anytime, anywhere.

2. Major Modules

a. User Registration and Login

This module is the entry point for any user who wants to interact with the Train Ticket Booking System.

Registration Process:

New users can sign up by providing their name, phone number, email, and password. Django's built-in user model is extended to store additional details like gender and date of birth.

Login Process:

Existing users can log in using their email/username and password. Django's secure authentication system verifies credentials using password hashing (PBKDF2 by default), ensuring that raw passwords are never stored.

Session Management:

Once logged in, Django uses session cookies to keep the user authenticated across different pages. Users cannot access booking or profile pages without being logged in.

Security Features:

- CSRF protection for all forms
- Strong password validation rules
- Django's built-in login throttling helps protect from brute-force attacks

Redirects and Feedback:

After successful registration or login, users are redirected to the home or dashboard with a success message popup like *"Signed in successfully"*.

b. Train Management

This module is handled primarily by the **admin user** and is critical for populating the available trains in the system.

Add Train:

Admin can add new trains by providing:

- Train number (unique)
- Train name
- Operating days (e.g., Mon, Wed, Fri)
- Available travel classes (General, Sleeper, AC)

Edit/Delete Train:

Trains can be edited or removed through the admin panel as needed.

Train Status:

Each train entry may also include operational status (Active/Inactive) to allow for temporary deactivation without deletion.

Importance:

The train database acts as a master list. All ticket searches and bookings depend on valid train entries.

Tech Used:

Django Admin Panel or custom CBVs with ModelForms

c. Route and Station Management

This module enables the admin to define how trains move between different stations.

•**Station List**:

Admin can add a list of all stations (e.g., Delhi, Mumbai, Chennai) to the database. Each station has a name and a unique ID.

•**Add Route**:

Admin can define a route by selecting:

- •Source Station
- •Destination Station
- •Distance (in kilometers)

This mapping is stored in the Add_route table.

•**Dropdown Sorting**:

Stations are shown in sorted dropdowns for better user experience.

•**Fare Dependency**:

The defined distance between any two stations becomes the base factor for fare calculation.

•**Flexibility**:

Admin can update distances, add new station pairs, or delete outdated routes at any time.

d. Ticket Booking System

This is the **core feature** from the user's perspective.

- **Search Trains**:

Users input:

- Source station
- Destination station
- Date of travel

The system checks which trains run on that route and match the selected date using the data from the Add_Train and Add_route models.

- **Available Trains Page**:

Matching trains are shown with:

- Train name
- Departure time
- Available class options
- Fare (based on selected class)
- "Book Now" button

- **Passenger Details Form**:

Once the user selects a train and class, they're asked to enter:

- Passenger name(s)
- Age and gender
- Contact number
- Number of tickets

3. Minor Modules (Expanded Explanation)

a. User Profile Management

This module gives users the ability to manage their personal information from a centralized profile page.

View Profile:

Logged-in users can view their personal details including:

- Full name
- Email address
- Mobile number
- Gender
- Date of Birth
- Address

Edit Profile:

Users can update their personal information if there are changes in phone number, address, or other fields. The form is prefilled with existing data for ease of editing.

Validation:

Input validation ensures:

1. Mobile number is exactly 10 digits
2. DOB format is valid
3. No blank fields are submitted

c. Admin Dashboard

The **Admin Dashboard** is powered by **Django's built-in admin interface**, which has been customized to manage various components of the project.

Login-Only Access:
Only superusers (admin accounts) can access the Django Admin Panel.

Management Capabilities:
Admin can:
- View/Add/Edit/Delete Users
- Manage Trains
- Manage Stations and Routes
- View Booking Records
- Monitor Passenger data

Customizations:
Trains, Stations, and Routes are displayed with key fields
Searchable and filterable columns
Admin list views enhanced with custom display fields (e.g., train name and number together)

Admin Security:
Protected with strong admin login and session handling

Importance:
The dashboard reduces the need to manually edit the database, ensuring a safe and efficient admin workflow.

d. UI Enhancements

The user interface is designed not just for function, but also to offer a visually engaging and responsive experience.
Background Image Slideshow:

- A carousel of HD Indian railway images fades on the login and signup pages
- Enhances the visual feel of the platform

Indian Railways Theme:
Uses the **Indian tricolor** (saffron, white, and green) in headers, footers, and buttons
Includes the Indian Railways logo on login and signup pages, with a professional heading layout

Modern Form Design:
Rounded input fields, hover effects, and smooth transitions
Bootstrap or custom CSS used for responsiveness across devices

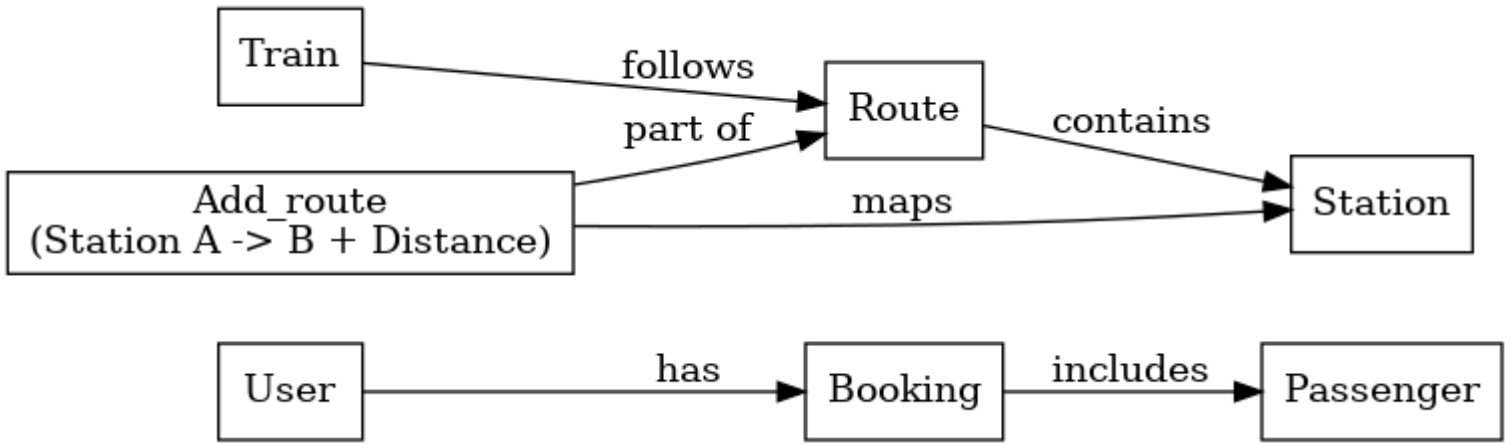
Dropdown Sorting:
All station selections in forms are alphabetically sorted to help users quickly find the desired station

4. Tools Used

Tool/Framework	Purpose
Django (Python)	Backend server and business logic
HTML/CSS	UI design and styling
dbSQLite	Lightweight DB for development
PyCharm / VSCode	IDEs used for coding
Git/GitHub	Version control
Google Chrome/Firefox	Browser for testing

6. ER Diagram

- One **User** → can have many **Bookings**
- One **Train** → follows a **Route** containing multiple **Stations**
- One **Booking** → has multiple **Passengers**
- **Add_route** maps **Station A** to **Station B** with **distance**



7. Description This section can include the flow of your project:

•**Home page introduction** :-The home page is the first screen users see. It includes a clean and modern UI with a background image slideshow and the Indian Railways tricolor theme. It provides quick access to login, sign-up, and train search features.

•**Registration/Login steps :-**
New users can register by providing details like name, email, phone number, and password. Upon successful registration, users are redirected to the login page. Existing users log in with email and password using Django's secure authentication system.

•**Train Search functionality (input source, destination, date):-** Once logged in, users are shown a train search form. They select the source station, destination station, and journey date. The dropdowns for stations are sorted alphabetically for better usability.

•**Display of matching trains** :- After submitting the search form, the system checks the route model to find trains that run between the selected stations on the given date. The matching trains are displayed along with train number, name, class availability, and fare.

•**Fare logic: distance * rate/class :-** The fare is calculated dynamically based on the distance between the selected stations and the class chosen (General, Sleeper, or AC). Each class has a predefined rate per km (e.g., ₹1 for General, ₹2 for Sleeper, ₹3 for AC).

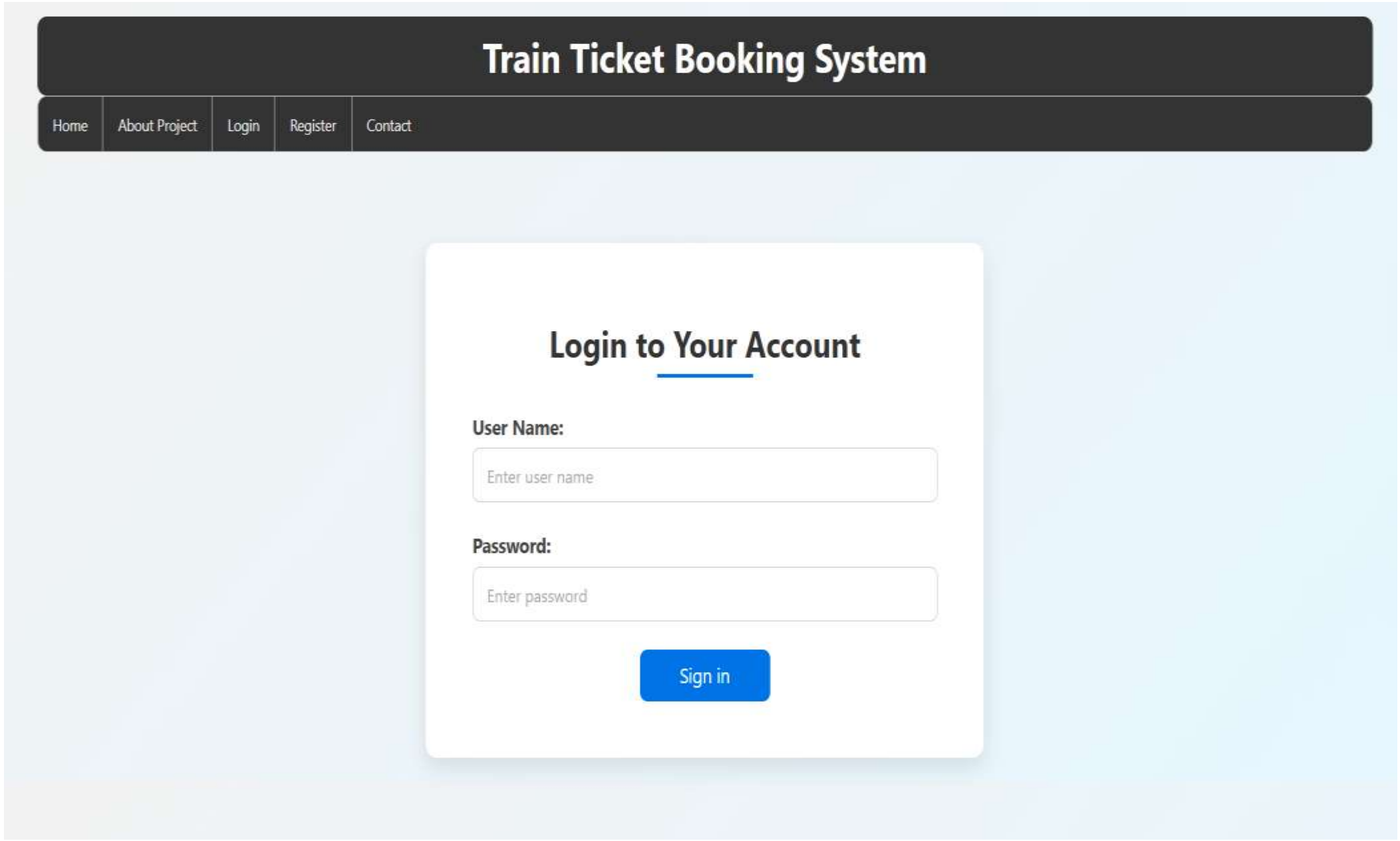
•**Passenger details and booking form** :- Users proceed to book tickets by filling in the passenger details form, including passenger name, age, gender, and seat preference. The user can add multiple passengers before submitting the booking.

•**Booking confirmation page** :- After booking, users are redirected to a confirmation page. This page shows all booking details including train info, class, fare, and passenger data. A unique booking ID is generated for each transaction.

•**Admin side functions:-**Admins have access to a powerful dashboard through the Django Admin panel. They can add/edit/delete trains, stations, and routes. They can also manage users and view all bookings. The interface is enhanced for efficient data handling.

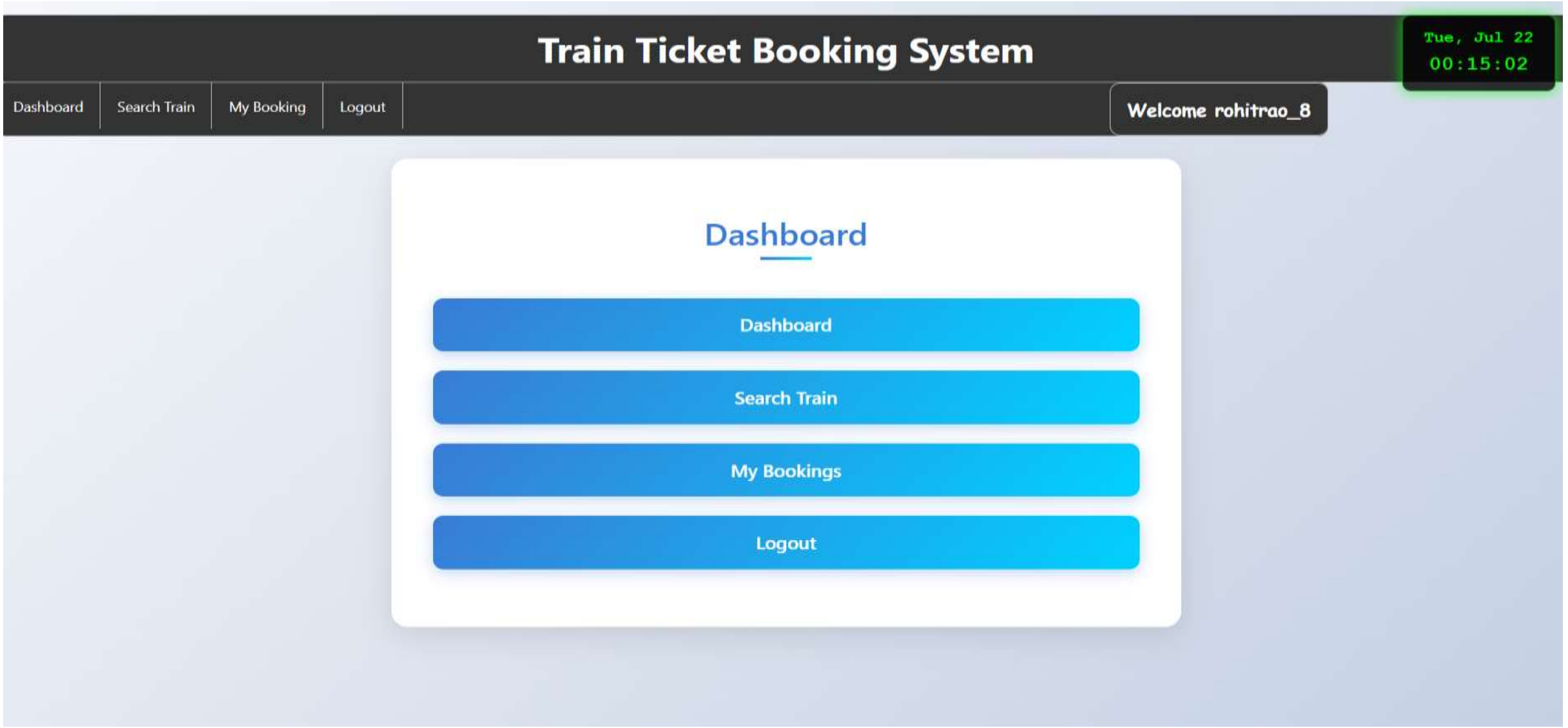
8. Screenshots

Login page


Train Ticket Booking System
Home
About Project
Login
Register
Contact
Login to Your Account
User Name:
Enter user name
Password:
Enter password
Sign in

Register page

Dashboard


Train Ticket Booking System
Tue, Jul 22
00:15:02
Dashboard
Search Train
My Booking
Logout
Welcome rohitrao_8
Dashboard
Dashboard
Search Train
My Bookings
Logout

Search Train

All available Trains

Train Ticket Booking System

All Available Trains

Delhi-Chandigrah Vande Bharat

Train Number: 22447

From: Delhi → To: Chandigrah

Fare: ₹707

None

Book Now

Kalka Shatabdi Express

Train Number: 12005

From: New Delhi Railway Station → To: Chandigrah

Fare: ₹707

None

Book Now

Train Details

Dashboard | Search Train | My Booking | Logout | Welcome rohitrao_8

Train Detail

Train Name: Delhi-Chandigrah Vande Bharat
Train Number: 22447
From City: Delhi
Fare: 707

Enter Passenger Details

Passenger Name | Passenger Age | Male | Add

All Added Passengers

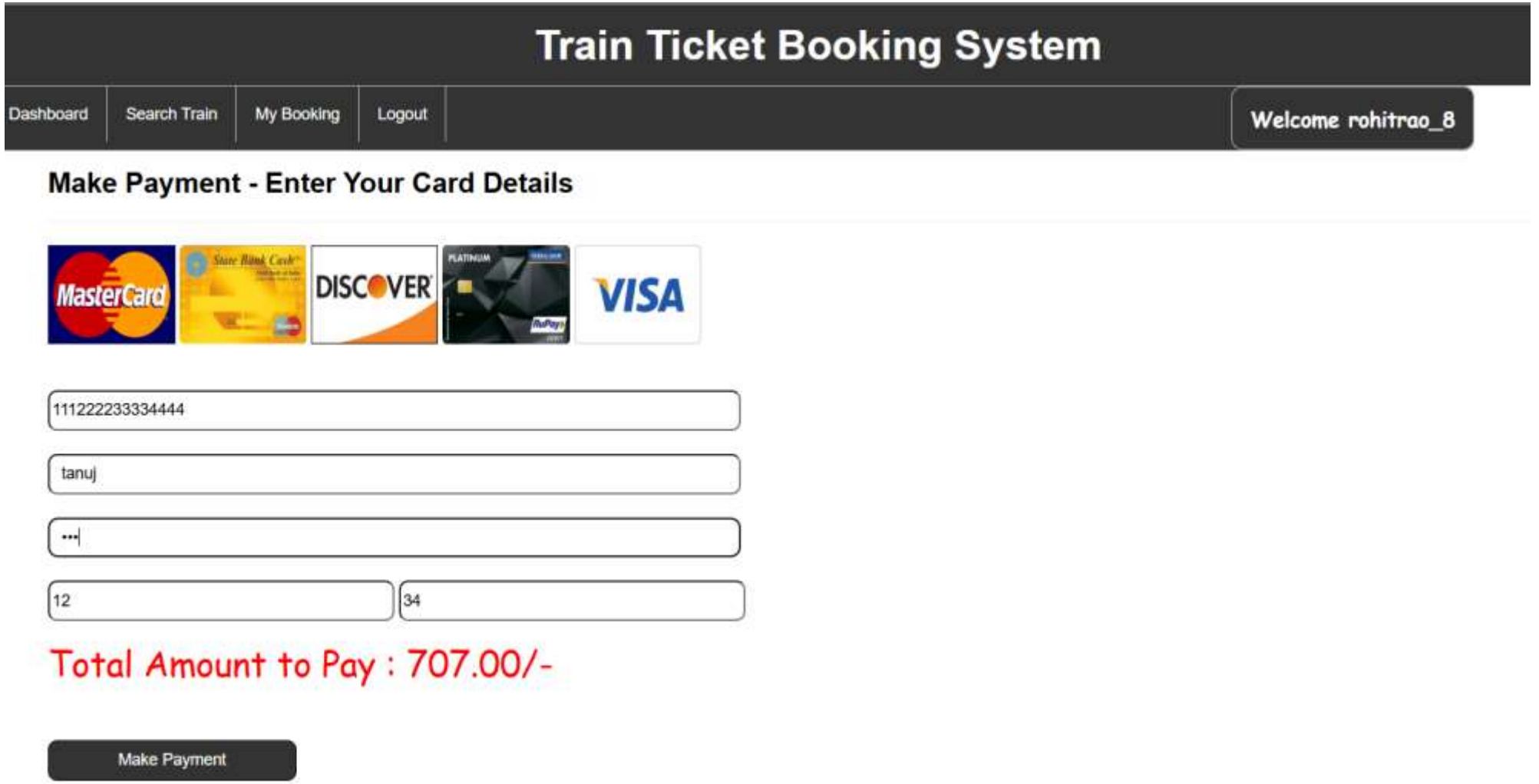
Show 10 entries | Search:

Sr No	Name	Train Name & No.	Age	Gender	Date	Fare	Action
1	tanuj	Delhi-Chandigrah Vande Bharat. 22447	20	Male	July 23, 2025	707	Delete

Showing 1 to 1 of 1 entries | Previous | 1 | Next

Total = 707 Book Now

Payment


Train Ticket Booking System
Dashboard
Search Train
My Booking
Logout
Welcome rohitrao_8
Make Payment - Enter Your Card Details
MasterCard
DISCOVER
PLATINUM
VISA
111222233334444
tanuj
•••
12
34
Total Amount to Pay : 707.00/-
Make Payment

9. Feature Enhancements

-List and explain enhancements you made
-Fare calculation with distance-class matrix
-Tricolor UI theme for Indian Railways look
-Background slideshow on login/signup pages
-Dropdown auto-sort of station list for better UX
-Admin-side data entry for stations and distance
-Pop-up messages for signup/login success

10. Conclusion

The Train Ticket Booking System successfully demonstrates a production-grade railway ticket booking application. It integrates user-friendly design with strong backend logic. Key features like fare logic, OTP reset, and station management make it a robust system. This project helped the developer learn Django's full-stack capabilities, relational data modeling, UI/UX principles, and deployment practices.