

23CCE212

DATABASE MANAGEMENT SYSTEMS LABORATORY

Project Report on

Movie Ticket Booking System

Submitted by

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Abstract

In the modern digital era, traditional or conventional method of booking movie tickets such as standing in long queues is not feasible, inefficient and time-consuming. This project aims to develop a Movie Ticket Booking System, a web-based application that enables users to seamlessly book movie tickets, select seats and make payments from the comfort of their homes. The system aims to enhanced the customer experience by introducing a new feature that can be used to cancel a ticket and rebook the ticket for the same movie for a different show on the same date without any convenience fee or charges. The technology stack includes Database – MySQL; Backend – Express.js, Node.js; Frontend - HTML, CSS, JavaScript. The system features and functionalities include User Registration/Login, Movie Listings & Show Timings, Seat Selection, new cancellation policy, payment, secure and encryption for passwords. The Movie Ticket Booking System simplifies the ticket reservation process, providing a smooth and secure booking experience for users while assisting theatre administrators in efficient ticket management. Future enhancements could include movie recommendations based on previous history and reviews, mobile app development, and multi-language support to further enhance user experience.

Motivation

In today's fast-paced world, traditional movie ticket booking methods—such as standing in long queues or relying on manual reservation systems—are outdated and inefficient. With the increasing demand for digital solutions and contactless services, a Movie Ticket Booking System is essential to enhance user convenience, streamline operations, and improve the overall movie-going experience. In the present conventional way, if a user wants to cancel, they often must go through a long process of refund and rebooking separately. Unlike traditional booking systems, our platform introduces an innovative cancellation and instant rebooking feature. We have tried to build a system that not only improves user experience but also optimizes operations for theatres, making up for revenue losses due to refunds.

Objectives

- To provide a user-friendly Movie Ticket Booking System which is an efficient and secure platform for booking movie tickets.
- To implement a user-authentication system, ensuring secure login, user-account protection.
- To automate the movie ticket reservation process, so that human errors can be avoided.
- To allow users to track seat selection and availability for user preference and convenience.
- To enable cancellation and rebooking functionalities, giving users flexibility in case of change of plans.
- To enhance security measures, preventing fraudulent activities such as double booking or unauthorised access.
- To support multiple theatres and screens ensuring that the system is scalable.

Introduction

In today's modern world, the traditional methods of booking movie tickets are highly inefficient. With the raising demand for convenience, automation and updating cancellation terms, a Movie Ticket Booking System is essential to improve user experience and streamline ticket management.

This system aims to improve the overall user experience by allowing customers to browse movies, check seat availability, and instantly book tickets. Additionally, it introduces a unique ticket cancellation and rebooking feature, allowing users to switch to another showtime on the same day based on seat availability without any additional charges or fees – something not commonly offered in traditional booking systems.

Basic Working of the System

- **User Registration & Login**

New users can create an account or existing users can log in using their respective credentials. Secure authentication is ensured for data privacy and security.

- **Movie Selection & Seat Booking**

Users can browse available movies, select one and move ahead to pick for a preferred theatre and showtime. Seat selection and availability, users can choose their seats and proceed with booking.

- **Payment Processing**

Users can proceed to Payment, secure payment is ensured to assure safe transactions

- **Ticket Cancellation & Rebooking Feature**

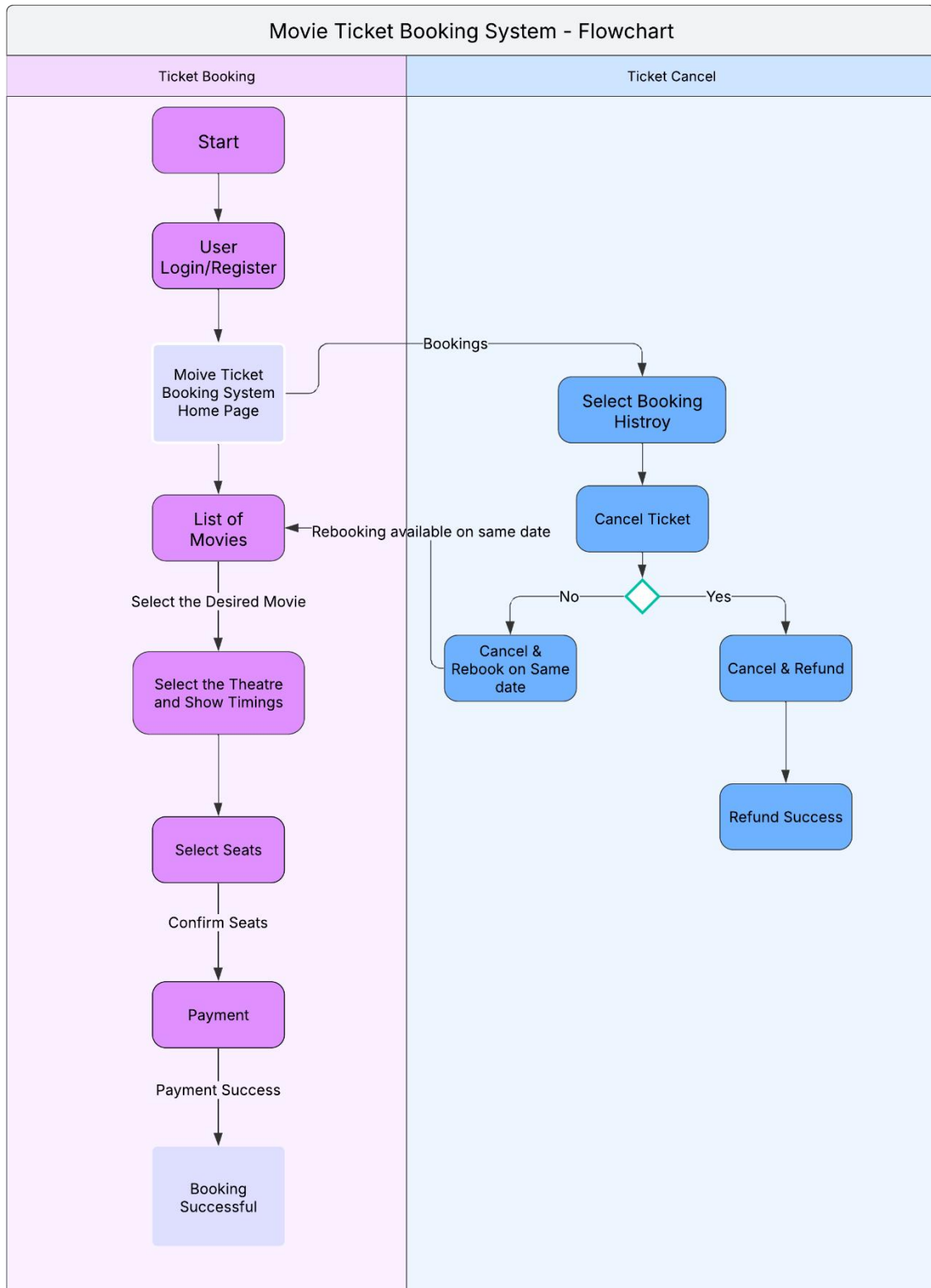
Users can cancel their booking and get an instant refund to their wallet, or if desired they can rebook for another show on the same day, considering the factor of seat availability.

- **Booking History**

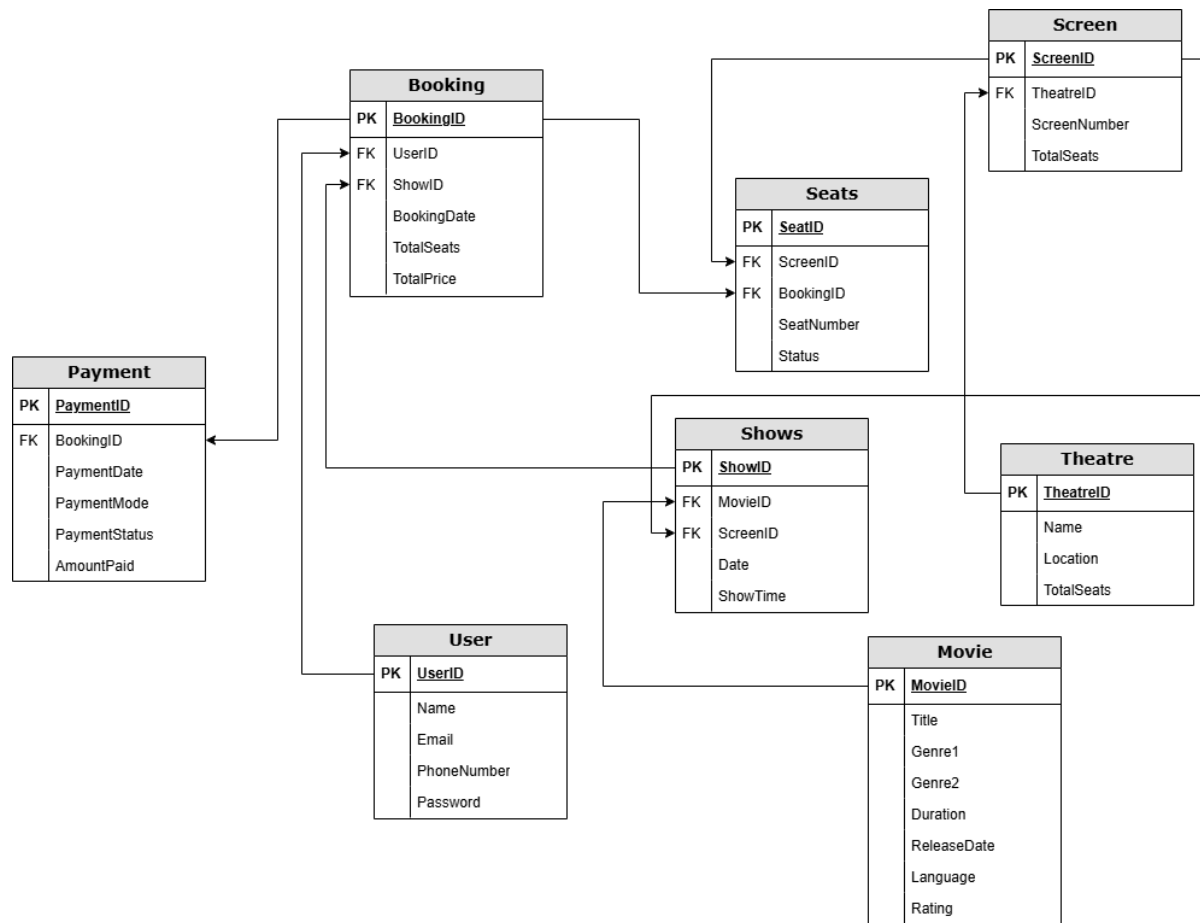
Users can get to know their booking history, where they can cancel the tickets if desired.

Methodology: -

Flow of the System (Flowchart)



Schema & Database Design



Description of Schema Diagram

The schema diagram represents the relational structure or database design of the Movie Ticket Booking System highlighting the tables/relations, attributes, keys and relationships.

The tables and their uniquely identifying attributes are listed below

1. User (PK - UserID)
2. Movie (PK - MovieID)
3. Theatre (PK - TheatreID)
4. Shows (PK - ShowID)
5. Screen (PK - ScreenID)
6. Seats (PK – SeatID)
7. Booking (PK - BookingID)
8. Payment (PK - PaymentID)

The schema consists of eight tables that manage users, movies, theatres, screens, shows, bookings, payments and seat allocations. The following tables functionality and uses are described below briefly

1. User

Stores user information such as name, email, phone number and password, identifies each user uniquely with primary key.

2. Movie

Stores details about movies and movie details.

3. Theatre

This table represents different theatres and location of them where the movies are screened.

4. Screen

Represents different screens in a theatre.

5. Shows

Describes specific showtime for movies, each show associated with a movie and a screen.

6. Booking

Stores the booking details made by the users.

7. Seat

Manages the seat allocation.

8. Payment

Stores payment and transaction related to bookings of desired seats.

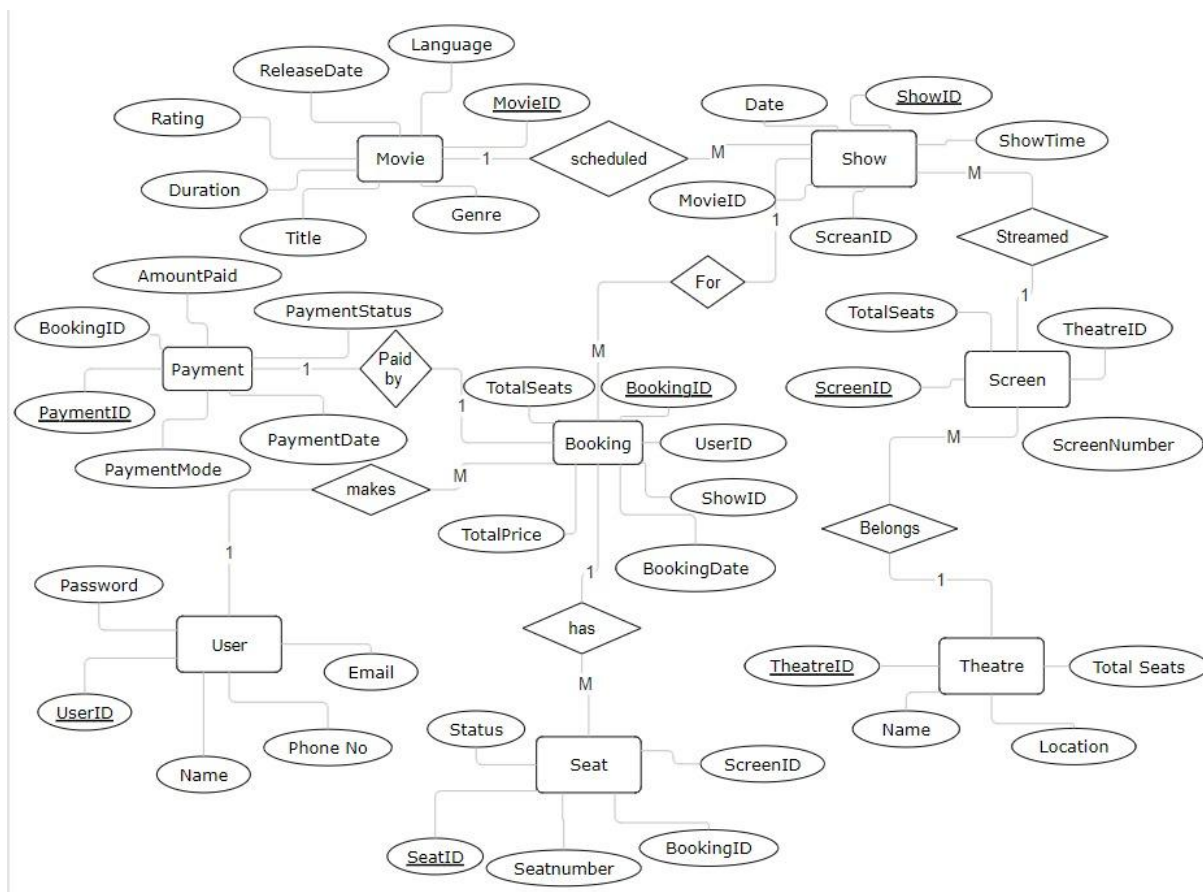
Foreign Key References in Each Table

- TheatreID(Screen) → TheatreID(Theatre) – Associates screens with a specific theatre.
- ScreenID(Shows) → ScreenID(Screen) – Links a show to a screen.
- MovieID(Shows) → MovieID(Movie) – Associates a show with a specific movie.
- UserID(Booking) → UserID(User) – Identifies which user has made the booking.
- ShowID(Booking) → ShowID(Shows) – Links a booking to specific show.
- BookingID(Seat) → BookingID(Booking) – Associates a seat with a specific booking.

- ScreenID(Seat) → ScreenID(Screen) – Ensures that seats are correctly assigned to a screen.
- BookingID(Payment) → BookingID(Booking) – Links a transaction to booking.

Entity – Relationship Diagram

The Entity-Relationship Diagram (ER) visually represents the database structure of the Movie Ticket Booking System. It illustrates the entities (tables), attributes (fields), and relationships between them, ensuring a structured and efficient database design. This ER Diagram helps in understanding how different entities interact, how data is stored, and how transactions are managed.



Explanation of the ERD Components

- Entities (Rectangles): Represent real-world objects such as users, movies, theaters, screens, shows, bookings, seats, and payments.
- Attributes (Ovals): Represent properties of entities, like Name, ShowTime, PaymentMode, etc.
- Relationships (Diamonds): Show interactions between entities, such as makes (User-Booking), scheduled (Movie-Show), and paid by (Booking-Payment).
- Primary Keys (Underlined Attributes): Unique identifiers for each entity, such as UserID, MovieID, and BookingID.
- Foreign Keys (Connecting Lines): Establish relationships between different entities, ensuring data integrity.

Relationship Between Tables

- 1) User to Booking – One user can make multiple bookings (1:M relationship).
- 2) Movie to Shows – One movie can have multiple showtimes (1:M relationship).
- 3) Theater to Screens – One theater has multiple screens (1:M relationship).
- 4) Screen to Shows – One screen can host multiple shows (1:M relationship).
- 5) Shows to Booking – One show can have multiple bookings (1:M relationship).
- 6) Booking to Seat – One booking can have multiple seats (1:M relationship).
- 7) Booking to Payment – One booking has one payment record (1:1 relationship).

Entities and Attributes

❖ User

User	
PK	<u>UserID</u>
	Name
	Email
	PhoneNumber
	Password

- a) UserID (Primary Key)
- b) Name
- c) Email
- d) Phone No
- e) Password

❖ Movie

Movie	
PK	<u>MovieID</u>
	Title
	Genre1
	Genre2
	Duration
	ReleaseDate
	Language
	Rating

- MovieID (Primary Key)
- Title
- Genre
- Duration
- ReleaseDate
- Language
- Rating

❖ Theater

Theatre	
PK	<u>TheatreID</u>
	Name
	Location
	TotalSeats

- TheaterID (Primary Key)
- Name
- Location
- Total Seats

❖ Screen

Screen	
PK	<u>ScreenID</u>
FK	TheatreID
	ScreenNumber
	TotalSeats

- ScreenID (Primary Key)
- ScreenNumber
- TotalSeats
- TheaterID (Foreign Key referencing Theater)

❖ **Show**

Shows	
PK	<u>ShowID</u>
→ FK	MovieID
→ FK	ScreenID
	Date
	ShowTime

- ShowID (Primary Key)
- ShowTime
- Date
- MovieID (Foreign Key referencing Movie)
- ScreenID (Foreign Key referencing Screen)

❖ Booking

Booking	
PK	<u>BookingID</u>
→ FK	UserID
→ FK	ShowID
	BookingDate
	TotalSeats
	TotalPrice

- BookingID (Primary Key)
- UserID (Foreign Key referencing User)
- ShowID (Foreign Key referencing Show)
- BookingDate
- TotalSeats
- TotalPrice

❖ Seats

Seats	
PK	<u>SeatID</u>
→ FK	ScreenID
→ FK	BookingID
	SeatNumber
	Status

- SeatID (Primary Key)
- SeatNumber
- Status
- ScreenID (Foreign Key referencing Screen)
- BookingID (Foreign Key referencing Booking)

❖ Payment

Payment	
PK	<u>PaymentID</u>
FK	BookingID PaymentDate PaymentMode PaymentStatus AmountPaid

- PaymentID (Primary Key)
- BookingID (Foreign Key referencing Booking)
- PaymentDate
- PaymentMode
- PaymentStatus
- AmountPaid

DBMS Concepts in Movie Ticket Booking System

1. Database Schema and Normalization

Database Schema defines the logical structure of the database, including tables, attributes, data types, and relationships.

The database follows Normalization principles (1NF, 2NF, 3NF, BCNF) to eliminate redundancy and maintain data integrity.

- 1NF → Each table has unique rows, and all columns have atomic values
- 2NF → Ensures that every non-key attribute is fully functionally dependent on the primary key.
- 3NF → Eliminates transitive dependencies to ensure data consistency.

2. Entity Relationship Model

The ER Model visually represents the structure of the database, including entities (tables), attributes, and relationships.

The ER Diagram for this project consists of key entities such as User, Movie, Theater, Show, Booking, Payment, and Seat, with relationships ensuring referential integrity.

3. Primary and Foreign Key Constraints

Primary Key (PK): A unique identifier for each record in a table (e.g., UserID in the User table).

Foreign Key (FK): A field that references a primary key in another table to maintain referential integrity (e.g., MovieID in the Show table references MovieID in the Movie table).

4. Relationship & Cardinality

One-to-Many (1:M):

- One user can make multiple bookings, but each booking belongs to one user.
- One movie can have multiple shows, but a show belongs to only one movie.

Many-to-Many (M:M):

- A **user** can book multiple seats, and a **seat** can be booked by multiple users (if not occupied). This is managed using a junction table (Booking Table).

5. Transaction & ACID Properties

A transaction in DBMS ensures that operations such as booking a ticket or making a payment are completed successfully or rolled back in case of failure. Transactions follow ACID properties:

- i. Atomicity: Ensures that either the entire booking and payment process is completed or none of it is processed (no partial bookings).
- ii. Consistency: Guarantees that the database remains in a valid state before and after the transaction.
- iii. Isolation: Ensures that concurrent transactions do not interfere with each other (e.g., two users trying to book the same seat at the same time).
- iv. Durability: Once a transaction is committed (successful payment), the changes are permanently stored in the database.

Functionalities

1. User Registration and Authentication

Functionality:

- Users can create an account by providing their Name, Email, Phone Number, and Password.
- Secure authentication system using hashed passwords ensures data security.
- Login functionality allows registered users to access their dashboard.

Implementation:

- User table stores user details (UserID, Name, Email, etc.).
- Login validation: If credentials match, the user is granted access; otherwise, an error message is displayed.

2. Movie and Show Selection

Functionality:

- Users can browse available movies.
- Each movie has multiple showtimes and screens in different theaters.

Implementation:

- Movie table (MovieID, Title, Genre, etc.) stores movie details.
- Show table (ShowID, MovieID, ScreenID, ShowTime) links movies to available screens and showtimes.

3. Seat Selection & Availability Check

Functionality:

- Users can view the available seats for a selected movie and showtime.
- Once a user selects seats, they are temporarily locked for a short duration to prevent conflicts.

- If the user doesn't complete the booking in time, the seats are released for others.

Implementation:

- Show table (ShowID, Movie Seat table (SeatID, ScreenID, BookingID, Status) manages seat availability.
- Concurrency control techniques (locking mechanism) ensure multiple users don't book the same seat simultaneously.

4. Booking History

Functionality:

- Users can view their past bookings, including movie name, showtime, theater, seat numbers, and payment details.
- The system stores all previous transactions, allowing users to track their booking history.

Implementation:

- Booking table (BookingID, UserID, ShowID, BookingDate, TotalPrice) stores past bookings.
- SQL queries fetch previous transactions based on the UserID.
- Front-end displays a user dashboard with past and upcoming bookings.

5. Ticket Cancellation & Rebooking

Functionality:

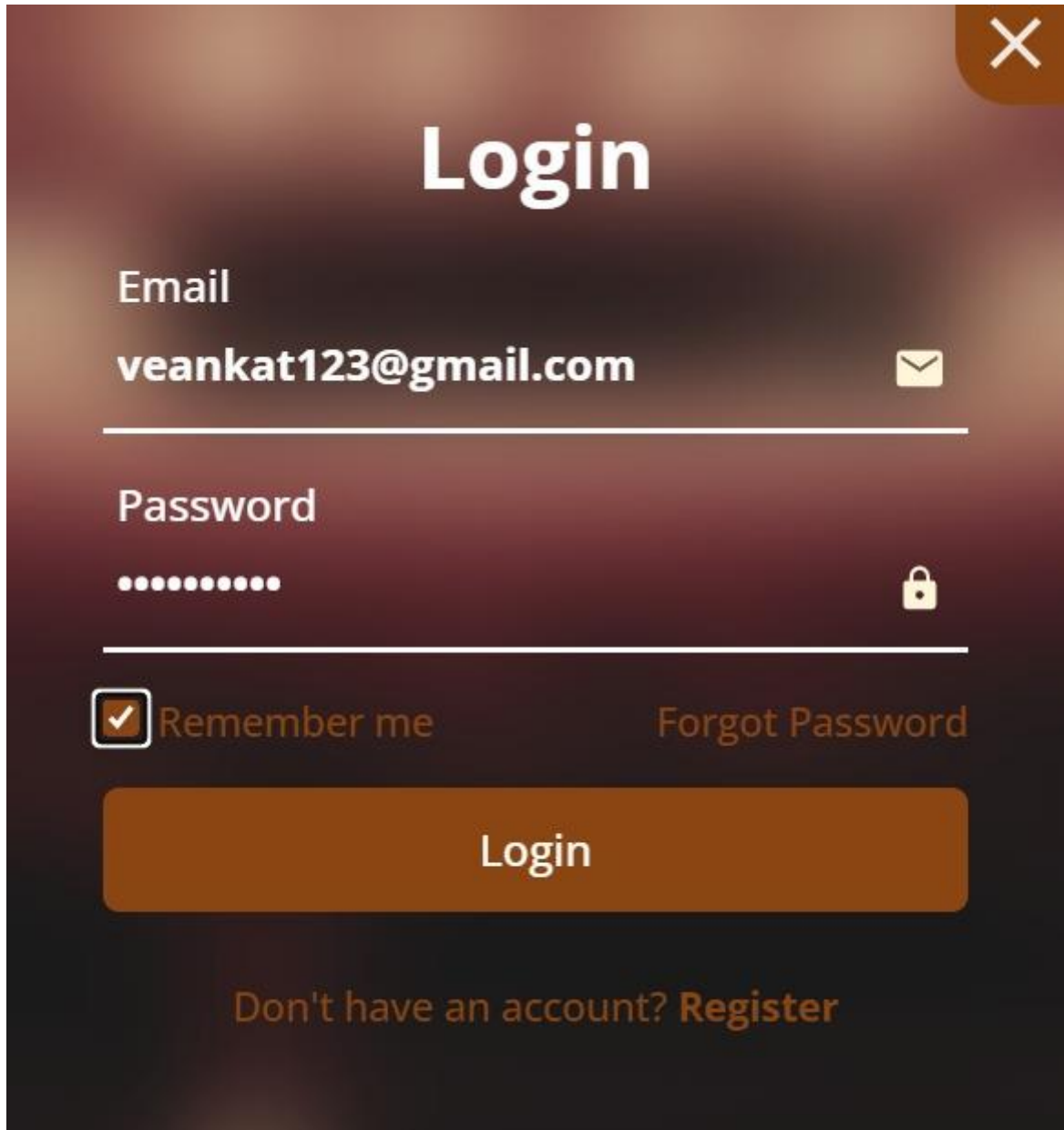
- Users can cancel a ticket if they are unable to attend the show.
- The system offers an option to rebook for the same movie at a different time on the same day, subject to seat availability.

Implementation:

- Cancellation feature: Updates the seat status to available and processes refunds.

- Rebooking logic: Checks for seat availability in the same movie and date but a different showtime.
- Triggers and stored procedures manage automatic seat updates.

Outcomes



A login form with a dark background and orange accents. The form includes fields for Email and Password, a Remember me checkbox, a Forgot Password link, a Login button, and a Register link.

Login

Email
veankat123@gmail.com

Password
.....

☒ Remember me [Forgot Password](#)

Login

Don't have an account? [Register](#)



Registration

Username

Arjun Reddy



Email

arjun.reddy@gmail.com



Password

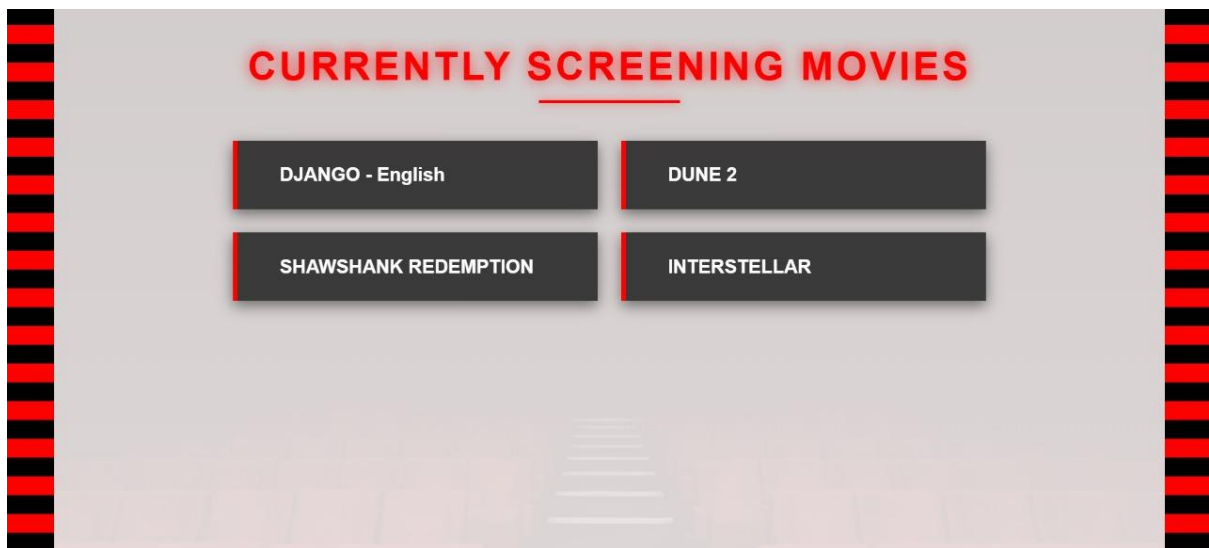
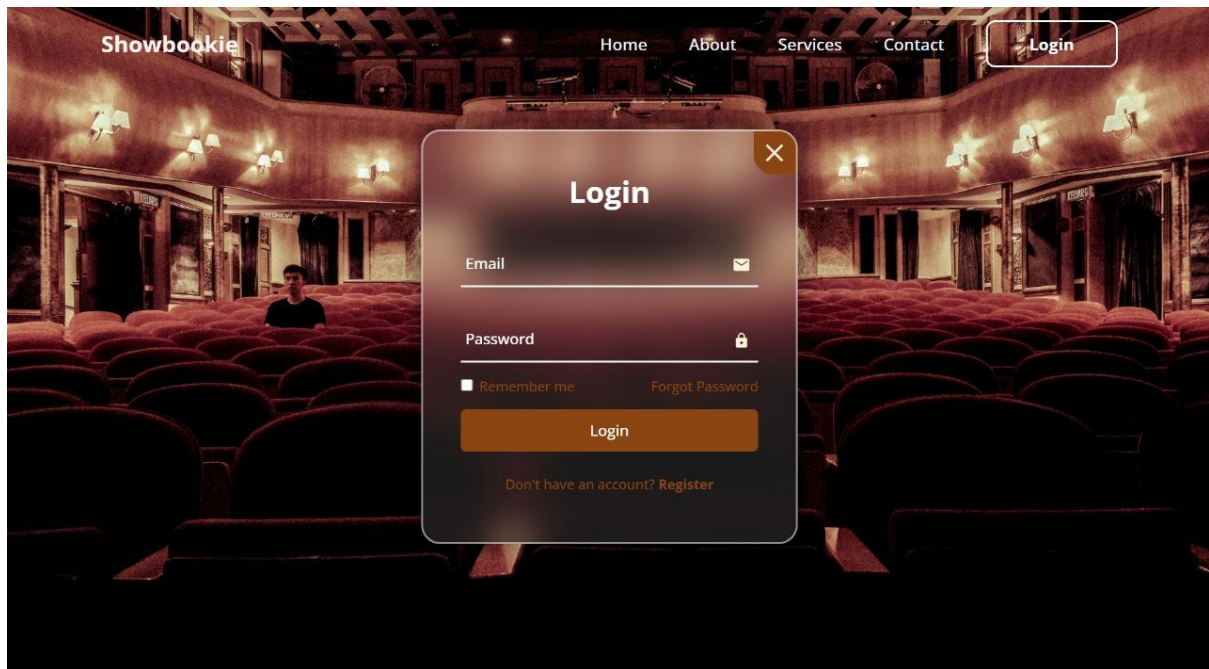
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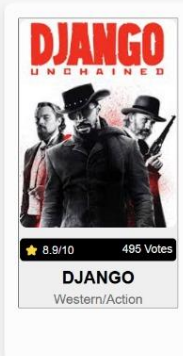
I agree to the terms and conditions

Register

Already have an account? **Login**



Recommended Movies



Endless Entertainment Anytime, Anywhere!

DJANGO - English

A 18+ Western/Action

26 MAR 27 MAR 28 MAR

PVR INOX ,Shenoy Nagar

1:00 PM 7:00 PM 11:00 PM

PVR Grand Mall, Velachery

12:25 PM 4:10 PM 6:40 PM

PVR Ampa Mall, Adyar

9:30 PM

localhost:8080 says

You selected 1:00 PM

OK

DJANGO

PVR INOX Shenoy Nagar | 26 Mar, 1:00 PM

Rs. 196 SuperStar

A	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
B	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
C	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

Rs. 160 PLATINUM

A	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
B	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
C	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
G	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

Rs. 140 GoldStar

H	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
I	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
J	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
K	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
L	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
M	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
N	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
O	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
P	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Q	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
R	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

☐ Available ☒ Selected ☐ Sold

Proceed to Payment

Payment

Selected Seats

A5 A6 K6 K7

Payment Details

Card Number:

7865 1248 1990 2457

Expiry Date:

09/31

CVV:

765

Confirm Payment

localhost:8080 says

Payment successful! Redirecting to booking confirmation...

OK

Booking Successful!!

Details

Movie: DJANGO Unchained

Showtime: 1:00 PM

Theater: PVR INOX, Shenoy Nagar

Selected Seats:

A5

A6

K6

K7

Return to Home

ABOUT SHOWBOOKIE

Welcome to ShowBookie, your one-stop destination for booking tickets to the latest movies, concerts, and events. At ShowBookie, we aim to make ticket booking seamless, convenient, and enjoyable for everyone.

With a user-friendly platform and secure payment options, ShowBookie ensures that you can reserve your spot at your favorite events with just a few clicks. Whether you're a movie enthusiast or a concert lover, we've got you covered.

Join us in redefining the way you experience entertainment. ShowBookie – Your ticket to unforgettable moments!

[EXPLORE EVENTS](#)

CONTACT US

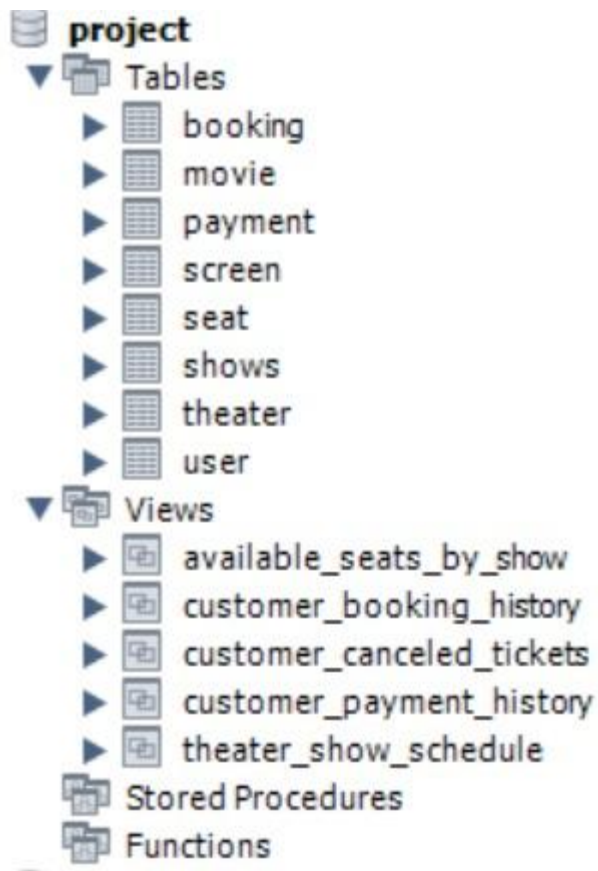
Emergency Contacts

- Customer Support: +91 12345 67890
- Technical Support: +91 98765 43210
- Email: support@pvr.com

Corporate Office

PVR Limited,
Plot No. 1, Sector 18,
Gurgaon, Haryana - 122015
Phone: +91 124 488 5000

Database Outcomes



576 • `select * from customer booking history;`

UserID	CustomerName	Email	BookingID	BookingDate	Movie	ShowTime	Theater	ScreenNumber	TotalSeats
31	Aditya Verma	aditya.verma@gmail.com	3	2024-12-26 08:32:13	Dune 2	2025-03-22 09:00:00	PVR Ampa Mall	S-1	6
14	Revanth Reddy	revanth.reddy@gmail.com	2	2024-10-20 10:37:22	Interstellar	2025-03-26 23:00:00	PVR Ampa Mall	S-2	7
4	Vivaan Sharma	vivaan.sharma@gmail.com	29	2025-02-10 06:32:07	Django	2025-03-21 09:00:00	PVR Ampa Mall	S-3	4
11	Sai Kumar	sai.kumar@gmail.com	7	2024-03-13 07:39:55	Dune 2	2025-03-23 18:00:00	PVR Ampa Mall	S-3	6
22	Anaya Joshi	anaya.joshi@gmail.com	41	2025-01-08 09:31:24	Django	2025-03-21 18:00:00	PVR Ampa Mall	S-4	2
3	Vansh Mehta	vansh.mehta@gmail.com	13	2024-04-07 06:26:02	Django	2025-03-21 09:00:00	PVR Ampa Mall	S-5	8

577 • `select * from available_seats_by_show;`

578

Result Grid							
		Filter Rows:	Export:		Wrap Cell Content:		
	ShowID	ShowTime	Date	Movie	ScreenNumber	SeatNumber	Status
	28	2025-03-22 13:00:00	2025-03-22	Shawshank Redemption	S-2	R16	Available
	50	2025-03-23 09:00:00	2025-03-23	Dune 2	S-2	R16	Available
	21	2025-03-21 13:00:00	2025-03-21	Shawshank Redemption	S-8	K08	Available
	15	2025-03-21 18:00:00	2025-03-21	Django	S-7	V01	Available
	43	2025-03-22 09:00:00	2025-03-22	Interstellar	S-7	V01	Available
	30	2025-03-21 09:00:00	2025-03-21	Django	S-5	J02	Available
	14	2025-03-23 13:00:00	2025-03-23	Shawshank Redemption	S-7	N14	Available
	19	2025-03-23 13:00:00	2025-03-23	Django	S-3	F12	Available
	41	2025-03-23 13:00:00	2025-03-23	Shawshank Redemption	S-3	F12	Available
	11	2025-03-21 13:00:00	2025-03-21	Shawshank Redemption	S-4	W09	Available
	44	2025-03-22 09:00:00	2025-03-22	Dune 2	S-4	W09	Available
	34	2025-03-21 09:00:00	2025-03-21	Interstellar	S-11	L03	Available

576 • `select * from customer canceled tickets;`

Result Grid										
Filter Rows:			Export:		Wrap Cell Content:					
	UserID	CustomerName	Email	BookingID	BookingDate	Movie	ShowTime	Date	Theater	ScreenNumbe
▶	2	Aarav Patel	aarav.patel@gmail.com	30	2024-08-29 23:18:23	Dune 2	2025-03-21 18:00:00	2025-03-21	PVR Grand Mall	S-7
	22	Anaya Joshi	anaya.joshi@gmail.com	1	2024-05-28 18:02:33	Dune 2	2025-03-23 13:00:00	2025-03-23	PVR INOX	S-11
	22	Anaya Joshi	anaya.joshi@gmail.com	14	2024-07-12 18:59:56	Interstellar	2025-03-22 09:00:00	2025-03-22	PVR INOX	S-7
	14	Revanth Reddy	revanth.reddy@gmail.com	42	2024-12-19 12:11:11	Interstellar	2025-03-23 18:00:00	2025-03-23	PVR INOX	S-9
	10	Arjun Reddy	arjun.reddy@gmail.com	26	2024-07-25 14:10:17	Django	2025-03-22 09:00:00	2025-03-22	PVR Grand Mall	S-7

Conclusion

The Movie Ticket Booking System provides a streamlined, efficient, and user-friendly platform for booking movie tickets online. It simplifies the entire ticketing process, from user registration and authentication to seat selection, payment, and booking management. The system ensures secure transactions, real-time seat availability, and flexible ticket cancellation and rebooking options, enhancing user convenience. Additionally, features like booking history tracking further improve the user experience.

Future Scope

As technology evolves, this system can be expanded with advanced features to enhance usability and efficiency:

- AI-Based Movie Recommendations – Implementing machine learning algorithms to suggest movies based on user preferences, past bookings, and ratings.
- Dynamic Pricing Model – Introducing AI-driven pricing strategies that adjust ticket prices based on demand, time, and seating preferences.
- Loyalty and Rewards Program – Adding a points-based reward system where frequent users get discounts, cashback, or free tickets.

By incorporating these future enhancements, the Movie Ticket Booking System can become a fully automated, AI-driven, and user-centric platform that provides an unparalleled movie-going experience.