Database Design Document for Theater Ticket Management System

Initial ERD link : Inital ERd.drawio

Business Problems Addressed

This database is designed to solve several business problems facing traditional theaters, including inefficient ticket sales, seat management, and customer feedback collection. It aims to digitize the ticket booking process, streamline seat and maintenance management, and enhance user engagement through reviews and feedback. By addressing these issues, the theater can improve operational efficiency, customer satisfaction, and ultimately, profitability.

Entities and Relationships

1. Users: Central to the database, distinguishing between customers, clerks, and managers, and including contact information and notes for personalized communication and role-based access control.
    Relationships: Users can purchase tickets, submit feedback, and for customers, write movie reviews.
2. Studios: Represents individual screening rooms, categorized by screen type (e.g., IMAX, 3D) to offer diverse viewing experiences.
    Relationships: Linked to Seats for managing seating arrangements and to Screening Schedules to organize movie showings.
3. Seats: Details the seating within studios, including availability and condition, crucial for booking and maintenance management.
    Relationships: Tied to Studios and part of Tickets for booking specific seats.
4. Movie Library: Stores essential metadata about movies, allowing for a rich selection of genres and actor-led films.
    Relationships: Connected to Screening Schedules for showing arrangements and to Movie Reviews for customer feedback.
5. Screening Schedule: Schedules showings, linking Movies to Studios with specific times and prices, the foundation of ticket sales.
    Relationships: Integrates Movies, Studios, and Tickets to facilitate bookings.
6. Tickets: Records details of transactions, including seating and customer/clerk information, managing the sale and condition (e.g., refunded).
    Relationships: Links Users, Seats, and Screening Schedules for complete booking details.
7. Movie Review: Enables registered customers to share their movie experiences, contributing to a community-driven rating system.
    Relationships: Associates Users with Movies for personalized feedback.

8. Feedback: Collects general comments about the cinema experience, offering valuable insights for service improvements.
Relationships: Optionally linked to Users for authenticated feedback.

9. Genres: To store different genres of a movie for a movie library to choose from. One movie may contain several genres.
Relationships: one mandatory movie connects to many optional genres

10. Payments: To keep track of users' transactions, including the amount, payment method, date and time.
Relationships: One payment is associated with many tickets, and one payment is associated with one user

11. Events: To keep track of special events happening in this facility, including events of special movie schedules.
Relationships: One event is associated with one mandatory manager, and it's optional to be associated with one movie.

Key Design Decisions

- Multi-Role Users: Differentiating users by role (customer, clerk, manager) allows for tailored functionalities and access control within the system.
- Modular Studios and Seats: Separating Studios and Seats enables flexible management of screening rooms and individual seats, including maintenance tracking.
- Comprehensive Movie Library: Including detailed movie metadata (e.g., actors, genres) supports dynamic content management and enhances user browsing experience.
- Integrated Screening Schedule: Central to operations, this entity facilitates the organization of showtimes, prices, and studio assignments.
- Transactional Tickets: Reflects real-world ticketing processes, with conditions to manage the lifecycle of a ticket from sale to potential refund.
- Engagement Through Reviews: Encouraging movie reviews and general feedback supports community building and provides valuable customer insights.

This design document lays the foundation for a comprehensive theater management system, addressing key business challenges through a structured and relational database approach. The inclusion of detailed entities and relationships ensures a scalable and user-centric solution, promoting efficiency, engagement, and operational excellence in theater management.