

# **Cinema DBMS Essential Requirements and Cardinalities**

## **1. Core Entities and Their Relationships**

### **1.1 Movies**

Attributes:

- Movie ID (PK)
- Title
- Duration
- Release Date
- Genre
- Rating
- Director
- Cast Members
- Current Status (Now Showing/Coming Soon/Not Showing)

## **1.2 Theater Halls**

Attributes:

- Hall ID (PK)
- Hall Name/Number
- Seating Capacity
- Screen Type (Regular/IMAX/3D)
- Sound System
- Current Status (Active/Maintenance)

## **1.3 Seats**

Attributes:

- Seat ID (PK)
- Hall ID (FK)
- Seat Number
- Seat Type (Regular/VIP/Couple)
- Row Number
- Status (Available/Occupied/Maintenance)

## **1.4 Show Times**

Attributes:

- Show ID (PK)
- Movie ID (FK)
- Hall ID (FK)
- Date
- Start Time
- End Time
- Show Type (2D/3D/IMAX)
- Price Category
- Available Seats
- Status (Scheduled/Cancelled/Completed)

## **1.5 Customers**

Attributes:

- Customer ID (PK)
- Name
- Email
- Phone Number
- Date of Birth
- Membership Status
- Loyalty Points
- Registration Date

## **1.6 Tickets**

Attributes:

- Ticket ID (PK)
- Show ID (FK)
- Customer ID (FK)
- Seat ID (FK)
- Price
- Purchase DateTime
- Payment Status
- Booking Status (Confirmed/Cancelled)
- Payment Method

## **1.7 Staff**

Attributes:

- Employee ID (PK)
- Name
- Role
- Contact Information
- Schedule
- Employment Status (Active/Inactive)

## **1.8 Concessions**

Attributes:

- Item ID (PK)
- Item Name
- Category (Food/Beverage)
- Price
- Current Stock
- Status (Available/Unavailable)

## **1.9 Promotions**

Attributes:

- Promotion ID (PK)
- Description
- Start Date
- End Date
- Discount Amount
- Status (Active/Inactive)

## **2. Key Relationships with Cardinalities**

### **1. Movies to Show Times**

- One movie HAS MANY show times (1:N)
- One show time MUST HAVE exactly one movie (1:1)

## **2. Theater Halls to Show Times**

- One hall CAN HOST many show times (1:N)
- One show time MUST BE IN exactly one hall (1:1)

## **3. Theater Halls to Seats**

- One hall CONTAINS many seats (1:N)
- One seat BELONGS TO exactly one hall (1:1)

## **4. Customers to Tickets**

- One customer CAN HAVE many tickets (1:N)
- One ticket BELONGS TO exactly one customer (1:1)

## **5. Show Times to Tickets**

- One show time CAN HAVE many tickets (1:N)
- One ticket IS FOR exactly one show time (1:1)



## **6. Seats to Tickets**

- One seat CAN BE ASSIGNED TO many tickets (over time) (1:N)
- One ticket MUST HAVE exactly one seat (1:1)

## **7. Staff to Theater Halls**

- One staff member CAN WORK IN many halls (M:N)
- One hall CAN BE STAFFED BY many staff members (M:N)

## **8. Staff to Show Times**

- One staff member CAN WORK many show times (M:N)
- One show time CAN BE WORKED BY many staff members (M:N)

## **9. Promotions to Movies**

- One promotion CAN APPLY TO many movies (M:N)
- One movie CAN HAVE many promotions (M:N)

## **3. Constraints**

- 1. A show time cannot be scheduled if the hall is already booked for that time period**
- 2. Tickets cannot be sold after the show start time**
- 3. The number of tickets sold cannot exceed hall capacity**
- 4. Loyalty points are earned based on ticket purchases**
- 5. Member discounts apply automatically for eligible customers**
- 6. Cancellations must be made at least 2 hours before show time**
- 7. Staff scheduling must not conflict with their existing assignments**
- 8. Promotions cannot overlap for the same movie/show**

