Cinema Management System

Assigned TA Name: Shamia Magdy

Team id:126

Team members:

نور حاتم محمود حنفي 20241700929

نور الدين محمد مصطفي السيد 20241700927

محمود حسن احمد سليمان 20241700775

لؤي السيد محمد سعد الدين الطيار 20241700653

وعد اشرف علي جادالله 20241700972

ياسمين محمد حسن عبدالعزيز الطحاوي 20241700983

رولا محمد رمضان محمد 20241701080

سارة احمد السيد العربي عبدالمطلب 20241701087

All team members Level 2 General

Assumptions Document – Cinema Ticket Reservation System

1. General Assumptions

Every movie has a unique Movie_ID.

Every showtime has a unique Show_ID.

Each ticket has a unique Ticket_ID.

Every customer has a unique Customer_ID, and every employee has a unique Emp_ID.

All entered data (dates, phone numbers, prices) is assumed to be valid and verified before storage.

The cinema has a fixed number of halls, and each hall is uniquely identified by Hall_Number.

Each seat is unique within its hall (Seat_Number + Hall_Number).

A ticket is considered valid only after a successful payment is completed.

A customer may buy or reserve multiple tickets.

Employees may have multiple phone numbers, so phone numbers are stored in a separate entity.

2. Assumptions for Each Entity

Movies

A movie contains basic information such as title, genre, duration, and release date.

One movie may be shown multiple times in different halls.

Each showtime belongs to one specific movie.

ShowTime

A showtime is linked to one movie and one hall.

A showtime includes a date, start time, and end time.

The end time must always be greater than the start time.

A single showtime may generate multiple tickets.

Halls

Each hall has a defined capacity and screen type.

A hall contains multiple seats.

Multiple employees may work in the same hall.

Seats

A seat has attributes such as row, type (VIP/Regular), and seat number.

Each seat belongs to exactly one hall.

A seat can be associated with multiple tickets across different showtimes, but only one ticket per showtime.

Tickets

A ticket must have a seat, a showtime, a customer, and a payment.

Ticket price and ticket type are stored within the ticket entity.

A ticket reserves exactly one seat for a specific showtime.

Customers

A customer can buy or reserve multiple tickets.

Customers have one phone number stored as a simple attribute.

Payment

Every payment corresponds to exactly one ticket.

A payment includes the amount, payment method, and payment date.

A ticket cannot exist without a linked payment.

Employees

Each employee works in exactly one hall at a time.

Employees may have multiple phone numbers (stored in Emp_Phone_Num).

An employee may supervise other employees.

Employees who do not have a supervisor are considered top-level supervisors.

3. Relationship Assumptions & Cardinalities

1. Movies — Shows_In — Show_Time

Cardinality: 1-to-Many

Assumption: A movie can have many showtimes, but each showtime belongs to one movie.

2. Show_Time — Show_In — Halls

Cardinality: Many-to-1

Assumption: A showtime occurs in one hall, but a hall may host many showtimes at different times.

3. Halls — Hall's Seats — Seats

Cardinality: 1-to-Many

Assumption: Each hall contains several seats; each seat belongs to only one hall.

4. Show_Time — Show Time Has Tickets — Tickets

Cardinality: 1-to-Many

Assumption: A showtime can generate many tickets; a ticket belongs to one showtime only.

5. Customers — Buys — Tickets

Cardinality: 1-to-Many

Assumption: A customer can purchase multiple tickets; a ticket belongs to one customer.

6. Tickets — Reserves — Seats

Cardinality: 1-to-1 (per showtime)

Assumption: A ticket reserves one seat for a specific showtime, and a seat can only be reserved once per showtime.

7. Tickets — Buying Tickets — Payment

Cardinality: 1-to-1

Assumption: A ticket has exactly one payment, and a payment corresponds to one ticket.

8. Employees — Work In — Halls

Cardinality: Many-to-1

Assumption: Multiple employees may work in the same hall; each employee is assigned to only one hall.

9. Employees — Supervision — Employees

Cardinality: 1-to-Many (recursive)

Assumption: One employee may supervise several employees, but each employee has only one supervisor.