Database Systems Design Phase 2 Report

CINEMA BOOKING SYSTEM

Team Number:2

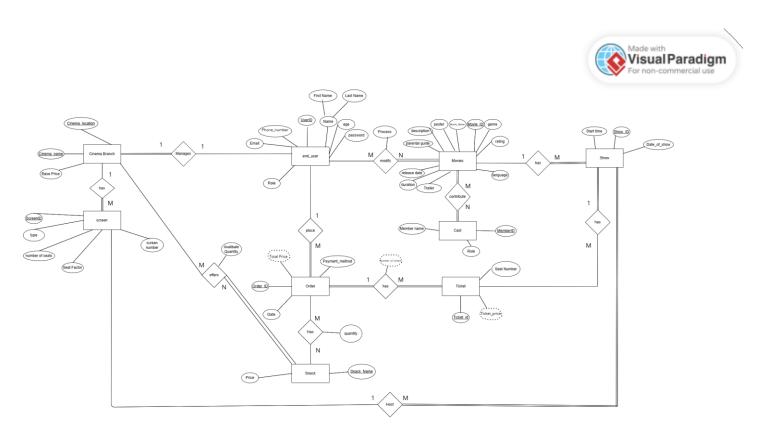
Adham Walid Said 23P0024 Eslam Mohamed Fawzy 23p0052 Carol Kamal Magdy 23P0328 Hassan Ismail 23p0152 Loay Mahmoud 23p0419 Toka Elsayed 23P0044

TA: Eng Esraa Karam

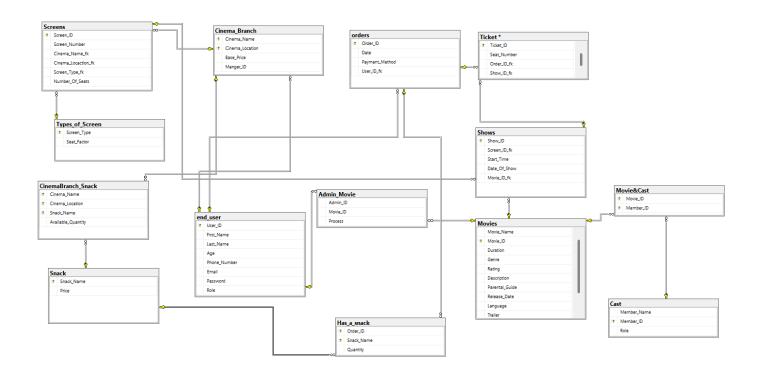
Introduction:

This report documents a Cinema Booking System database schema and GUI implementation, designed to manage movie screenings, ticket sales, and admin operations. The system tracks customer bookings (orders, tickets, snacks), movie details (casts, showtimes), and admin activities (movie updates, user management) across multiple cinema branches. The relational database ensures efficient data handling while the GUI provides intuitive access for users and administrators

1-Entity-Relationship Diagram(CORRECTED)



2-Schema(CORRECTED)



3-Script

1-Table Creation:

```
CREATE TABLE Admin_Movie (
     Admin_ID INT NOT NULL,
     Movie_ID INT NOT NULL,
     Process VARCHAR(50)
);
CREATE TABLE Cast (
     Member_Name VARCHAR(50),
     Member_ID INT NOT NULL,
     Role VARCHAR(50),
     CONSTRAINT PK_Cast PRIMARY KEY (Member_ID)
);
CREATE TABLE Cinema_Branch (
     Cinema_Name VARCHAR(50) NOT NULL,
     Cinema_Location VARCHAR(50) NOT NULL,
     Base_Price MONEY,
     Manger ID INT,
     CONSTRAINT PK_Cinema PRIMARY KEY (Cinema_Name, Cinema_Location)
CREATE TABLE CinemaBranch_Snack (
     Cinema_Name VARCHAR(50) NOT NULL,
     Cinema_Location VARCHAR(50) NOT NULL,
     Snack Name VARCHAR(50) NOT NULL,
     Available Quantity INT,
     CONSTRAINT PK_CinemaBranch_Snack PRIMARY KEY (Cinema_Name, Cinema_Location, Snack_Name)
CREATE TABLE end_user (
     User_ID INT NOT NULL,
     First Name VARCHAR(50),
     Last_Name VARCHAR(50),
    Age INT,
     Phone_Number VARCHAR(50),
     Email VARCHAR(50),
     Password VARCHAR(50),
     Role VARCHAR(50),
     CONSTRAINT PK_User PRIMARY KEY (User ID)
):
CREATE TABLE Has_a_snack (
   Order_ID INT NOT NULL
   Snack_Name VARCHAR(50) NOT NULL,
   Ouantity INT.
    CONSTRAINT PK_Has_a_snack PRIMARY KEY (Order_ID, Snack_Name)
CREATE TABLE [Movie&Cast] (
   Movie_ID INT NOT NULL,
   Member_ID INT NOT NULL,
    CONSTRAINT PK_MovieCast PRIMARY KEY (Movie_ID, Member_ID)
CREATE TABLE Movies (
   Movie_Name VARCHAR(50),
Movie ID INT NOT NULL,
   Duration INT,
    Genre VARCHAR(50),
   Rating FLOAT,
   Description VARCHAR(50)
    Parental_Guide VARCHAR(50),
    Release_Date DATE,
    Language VARCHAR(50),
   Trailer VARCHAR(50),
    CONSTRAINT PK_Movies PRIMARY KEY (Movie_ID)
CREATE TABLE orders (
   Order_ID INT NOT NULL,
   Date DATE.
   Payment Method VARCHAR(50),
   User ID fk INT,
    CONSTRAINT PK_Order PRIMARY KEY (Order_ID)
```

2-Insertions Sample:

```
-- Insert data into end_user table first (includes admins, managers, and regular users)

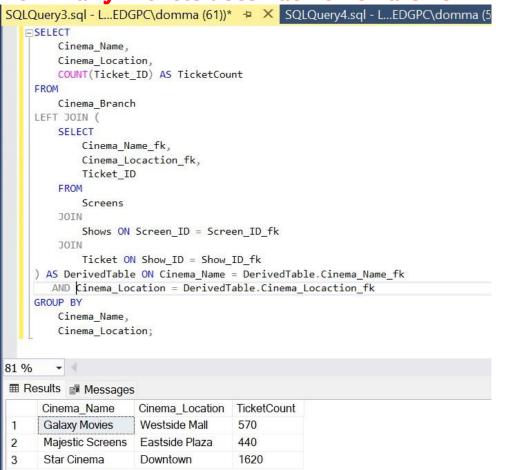
INSERT INTO [dbo].[end_user] ([User_ID], [First_Name], [Last_Name], [Age], [Phone_Number], [Email], [Password], [Role])
  VALUES
  VALUES
(1, 'John', 'Smith', 35, '555-1234', 'john.smith@email.com', 'password123', 'Admin'),
(2, 'Sarah', 'Johnson', 42, '555-2345', 'sarah.j@email.com', 'managerl', 'Manager'),
(3, 'Michael', 'Davis', 38, '555-3456', 'michael.d@email.com', 'manager2', 'Manager'),
(4, 'Robert', 'Wilson', 45, '555-4567', 'robert.w@email.com', 'manager3', 'Manager),
(5, 'James', 'Brown', 29, '555-5678', 'james.b@email.com', 'user1', 'Customer'),
(6, 'Emily', 'Jones', 31, '555-6789', 'emily.j@email.com', 'user2', 'Customer'),
  (0, tanly, ) Soles ) 33, 353-5489 ; emaly.genalitem , users ), (ustomer), (7, 'Thomas', 'Anderson', 27, '555-7890', 'thomas',a@email.com', 'user3', 'Customer'), (8, 'Lisa', 'Miller', 33, '555-8901', 'lisa'.m@email.com', 'user4', 'Customer'), (9, 'Daniel', 'Taylor', 24, '555-9012', 'daniel.t@email.com', 'user5', 'Customer'), (10, 'Jennifer', 'Clark', 30, '555-0123', 'jennifer.c@email.com', 'user6', 'Customer');
  -- Insert data into Cinema Branch table
 ('Star Cinema', 'Downtown', 12.50, 2),
   ('Galaxy Movies', 'Westside Mall', 11.00, 3),
  ('Majestic Screens', 'Eastside Plaza', 13.50, 4);
  -- Insert data into Types_of_Screen table
 INSERT INTO [dbo].[Types_of_Screen] ([Screen_Type], [Seat_Factor])
   ('Standard', 1.0),
   ('IMAX', 1.8),
  ('3D', 1.5),
('VIP', 2.0),
('4DX', 2.2);
   -- Insert data into Screens table
  [INSERT INTO [dbo].[Screens] ([Screen_ID], [Screen_Number], [Cinema_Name_fk], [Cinema_Locaction_fk], [Screen_Type_fk], [Number_0f_Seats])
  VALUES
  (2, 2, 'Star Cinema', 'Downtown', 'IMAX', 180),
(3, 3, 'Star Cinema', 'Downtown', '3D', 100),
  (4, 1, 'Galaxy Movies', 'Westside Mall', 'Standard', 130),
(5, 2, 'Galaxy Movies', 'Westside Mall', 'VIP', 60),
(6, 1, 'Majestic Screens', 'Eastside Plaza', 'Standard', 140),
  (7, 2, 'Majestic Screens', 'Eastside Plaza', '4DX', 80);
   -- Insert data into Movies table with real movies
 INSERT INTO [dbo].[Movies] ([Movie_ID], [Movie_Name], [Duration], [Genre], [Rating], [Description], [Parental_Guide], [Release_Date], [Language], [Trailer], [Poster])
  (1, 'Inception', 148, 'Sci-Fi', 8.8, 'A thief who steals corporate secrets', 'PG-13', '2010-07-16', 'English', 'inception_trailer.mp4', 'inception.jpg'), (2, 'The Dark Knight', 152, 'Action', 9.0, 'Batman fights the Joker', 'PG-13', '2008-07-18', 'English', 'dark_knight_trailer.mp4', 'dark_knight.jpg'),
  (2, 'The Dark Knight', 152, 'Action', 9.0, '8 stman fights the Joker', 'PG-13', '2008-07-10', 'English', 'Inception_trailer.mp4', 'Inception_trail
  -- Insert data into Admin_Movie table (admin managing movies)
  INSERT INTO [dbo].[Admin_Movie] ([Admin_ID], [Movie_ID], [Process])
  VALUES
  (1, 1, 'Added'),
  (1, 2, 'Updated'),
  (1, 3, 'Added'),
  (1, 4, 'Added'),
  (1, 5, 'Updated'),
 (1, 6, 'Added');
  -- Insert data into Cast table with real actors
 INSERT INTO [dbo].[Cast] ([Member_ID], [Member_Name], [Role])
  'Leonardo DiCaprio', 'Actor'),
  (2, 'Christian Bale', 'Actor'),
  (3, 'Heath Ledger', 'Actor'),
(4, 'Kate Winslet', 'Actress'),
  (5, 'Sam Neill', 'Actor'),
  (6, 'Laura Dern', 'Actress'),
  (7, 'Bradley Cooper', 'Actor'),
  (8, 'Zach Galifianakis', 'Actor'),
  (9, 'Vera Farmiga', 'Actress'),
  (10, 'Patrick Wilson', 'Actor');
  -- Insert data into Movie&Cast table (mapping actors to movies)
INSERT INTO [dbo].[Movie&Cast] ([Movie_ID], [Member_ID])
 VALUES
  (1, 1), -- Inception - Leonardo DiCaprio
  (2, 2), -- The Dark Knight - Christian Bale
  (2, 3), -- The Dark Knight - Heath Ledger
  (3, 1), -- Titanic - Leonardo DiCaprio
  (3, 4), -- Titanic - Kate Winslet
  (4, 5), -- Jurassic Park - Sam Neill
  (4, 6), -- Jurassic Park - Laura Dern
  (5, 7), -- The Hangover - Bradley Cooper
  (5, 8), -- The Hangover - Zach Galifianakis
  (6, 9), -- The Conjuring - Vera Farmiga
≟(6, 10); -- The Conjuring - Patrick Wilson
```

3-Queries:

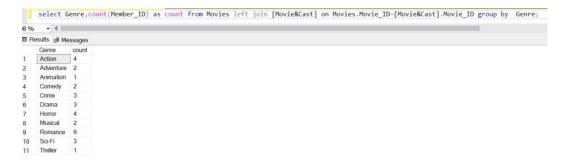
How many shows does each screen have:

⊟select Screen_ID ,Cinema_Name_fk,count(Show_ID) as count from screens left join Shows on Screen_ID=Screen_ID_fk group by Screen_ID, Cinema_Name_fk 107 % - 4 ■ Results Messages Screen_ID Cinema_Name_fk count
1 Star Cinema 5 Star Cinema 2 3 3 Star Cinema 3 4 Galaxy Movies 3 4 5 Galaxy Movies 3 Majestic Screens 2 6 6 Majestic Screens 2

How many Tickets does Each cinema Offer



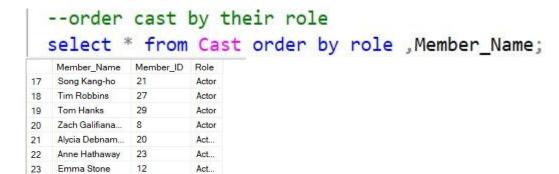
How many members of cast in each genre



Movies listed in order of highest rating to least



Viewing All cast members



Find available snacks at a specific cinema:

```
SELECT CinemaBranch_Snack.Snack_Name, Price, Available_Quantity
  FROM CinemaBranch_Snack
   JOIN Snack ON CinemaBranch_Snack.Snack_Name = Snack.Snack_Name
  WHERE Cinema_Name = 'Star Cinema'
  AND Cinema_Location = 'Downtown
 AND Available_Quantity > 0
Results Messages
  Snack_Name Price Available_Quantity
Candy 4 97
  Hot Doa
                   85
  Ice Cream
  Popcorn Large 8
  Poncorn Small 5
                    196
  Soda Large 6
Soda Small 4
                   118
```

3-Procedures:

```
-CalculateTicketPrice:
```

```
@Show_ID INT,
    @TicketPrice FLOAT OUTPUT
BEGIN
    SET NOCOUNT ON;
   DECLARE @BasePrice FLOAT;
   DECLARE @SeatFactor FLOAT;
        @BasePrice = Base_Price,
        @SeatFactor = Seat_Factor
    FROM
        Shows sh
    JOIN
        Screens ON Screen_ID_fk = Screen_ID
    JOIN
        Cinema_Branch ON Cinema_Name_fk = Cinema_Name
        AND Cinema_Locaction_fk = Cinema_Location
        Types_of_Screen ts ON Screen_Type_fk = Screen_Type
    WHERE
        Show_ID = @Show_ID;
    SET @TicketPrice = @BasePrice * @SeatFactor;
    RETURN;
END
```

-GetUserOrdersWithDetails

```
@UserID INT
AS
BEGIN
    SELECT
        Show_ID as hamada,
        Order_ID,
        Date,
        Payment_Method,
        Movie_Name,
        Movie_ID,
        Date,
        Start_Time,
        Ticket_ID,
        Seat_Number,
        Screen_Number
        Screen_Type_fk,
        Cinema_Name,
        Cinema_Location
    FROM
        orders
    JOIN
        Ticket ON Order_ID = Order_ID_fk
    JOTN
        Shows ON Show_ID_fk = Show_ID
    JOIN
        Movies ON Movie_ID_fk = Movie_ID
    JOIN
        Screens ON Screen_ID_fk = Screen_ID
    JOIN
        Cinema_Branch ON (Cinema_Name_fk = Cinema_Name
                          AND Cinema_Locaction_fk = Cinema_Location)
    WHERE
        orders.User_ID_fk = @UserID;
FND
```

-InsertNewMovie

```
@MovieName VARCHAR(50),
@Duration INT,
@Genre VARCHAR(50),
@Rating FLOAT,
@Description VARCHAR(50),
@Parental_Guide VARCHAR(50),
@Release_Date DATE,
@Language VARCHAR(50)
 @Language VARCHAR(50),
@Trailer VARCHAR(50) = NULL,
@Poster VARCHAR(MAX) = NULL
 SET NOCOUNT ON;
DECLARE @NewMovieID INT;
   -- Get the next available Movie_ID
SELECT @NewMovieID = ISNULL(MAX(Movie_ID), 0) + 1 FROM Movies;
 -- Insert the new movie with all columns INSERT INTO Movies (
       Movie_Name,
Movie_ID,
       Duration.
        Genre,
Rating,
       Description,
Parental_Guide,
Release_Date,
        Trailer,
        Poster
        @MovieName
        @NewMovieID,
@Duration,
        @Genre,
        @Rating,
@Description,
        @Parental_Guide,
@Release_Date,
        @Language,
@Trailer,
        @Poster
  select @NewMovieTD:
```

-InsertNewUser

```
@FirstName NVARCHAR(50),
@LastName NVARCHAR(50),
@Age INT,
@PhoneNumber NVARCHAR(20),
@Email NVARCHAR(100),
@Password NVARCHAR(100),
@Role NVARCHAR(20)

AS
BEGIN
SET NOCOUNT ON;

DECLARE @NewUserID INT;

SELECT @NewUserID = ISNULL(MAX(User_ID), 0) + 1 FROM end_user;

INSERT INTO end_user (User_ID, First_name, Last_name, Age, Phone_Number, Email, Password, Role)
VALUES (@NewUserID, @FirstName, @LastName, @Age, @PhoneNumber, @Email, @Password, @Role);
END
```

sp_GetMovieShowtimes

```
@CinemaName NVARCHAR(50),
@CinemaLocation NVARCHAR(50),
@MovieName NVARCHAR(50)

AS
BEGIN

SELECT

s.Show_ID,
s.Start_Time,
s.Date_Of_Show,
sc.Screen_Type_fk AS Screen_Type
FROM Shows s

JOIN Screens sc ON s.Screen_ID_fk = sc.Screen_ID

JOIN Cinema_Branch cb ON (sc.Cinema_Name_fk = cb.Cinema_Name AND sc.Cinema_Location_fk = cb.Cinema_Location)
JOIN Movies m ON s.Movie_ID_fk = m.Movie_ID
WHERE cb.Cinema_Name = @CinemaName
AND cb.Cinema_Location = @CinemaLocation
AND m.Movie_Name = @MovieName
AND s.Date_Of_Show >= CAST(GETDATE() AS DATE)
ORDER BY s.Date_Of_Show, s.Start_Time

END
```

4-Constraints:

ALTER TABLE Users
ADD CONSTRAINT chk_age CHECK (age >= 13);

ALTER TABLE Movies ADD CONSTRAINT CK_Movie_ParentalGuide CHECK (Parental_Guide IN ('G', 'PG', 'PG-13', 'R', 'NC-17'));

-- Ensure seat count is reasonable

ALTER TABLE Screens ADD CONSTRAINT CK_Screen_Seats CHECK (Number_Of_Seats > 0 AND Number_Of_Seats <= 500);

-- Validate screen types

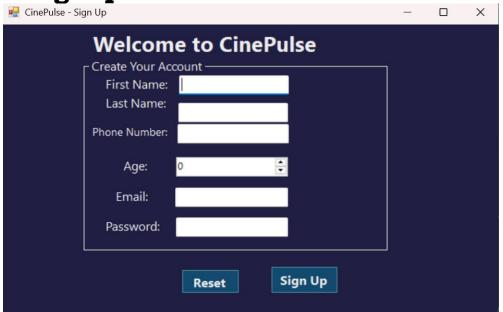
ALTER TABLE Screens ADD CONSTRAINT CK_Screen_Type CHECK (Screen_Type_fk IN ('Standard', 'IMAX', '3D', 'VIP', '4DX'));

ALTER TABLE end_user ADD CONSTRAINT CK_User_Role CHECK (Role IN ('Admin', 'Manager', 'Customer'));

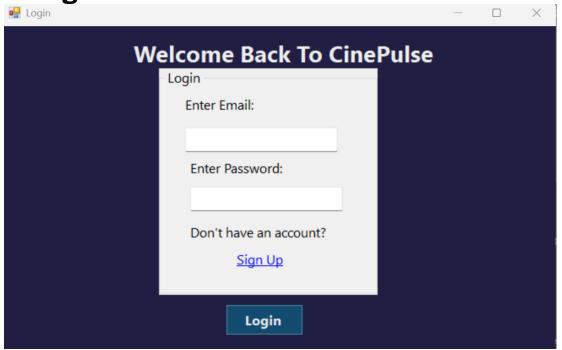
ALTER TABLE Ticket ADD CONSTRAINT CK_Ticket_SeatNumber CHECK (Seat_Number > 0);

4-Gui ScreenShots

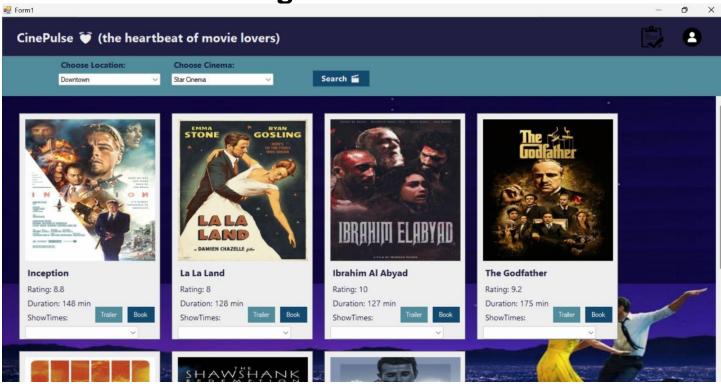
1-Signup



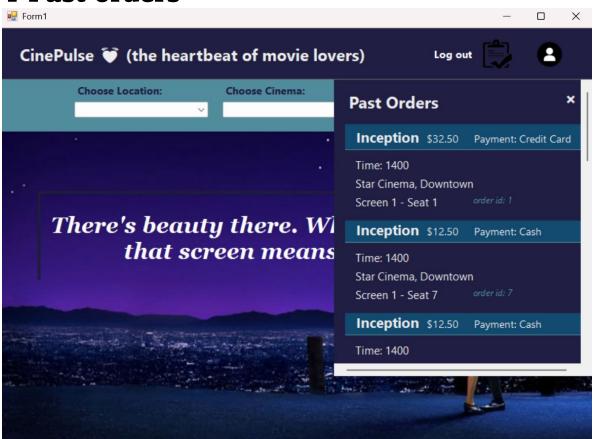
2-Login



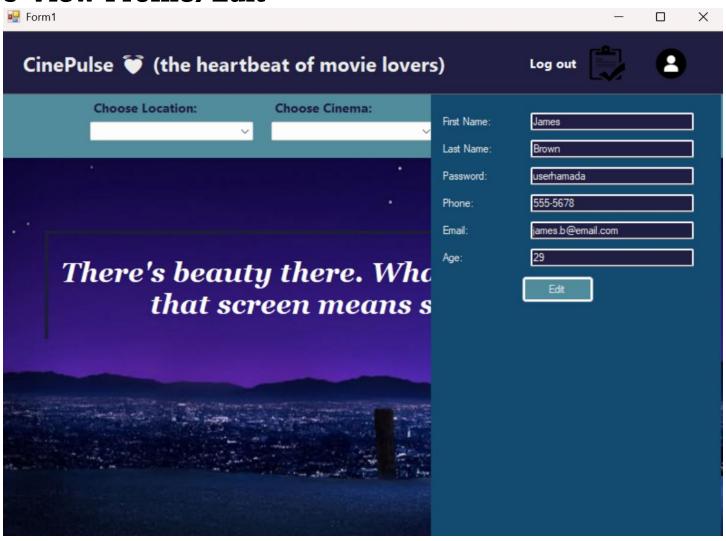
3-Customer HomePage with movies shown



4-Past orders



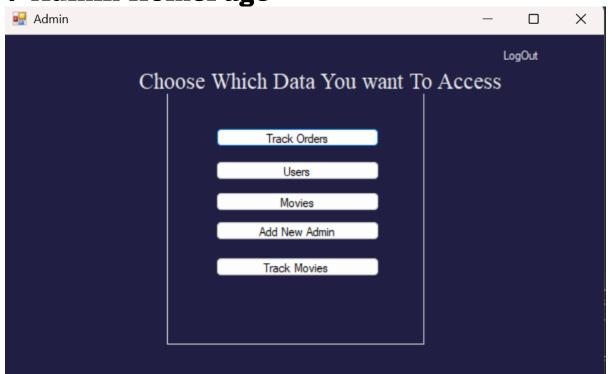
5-View Profile/Edit



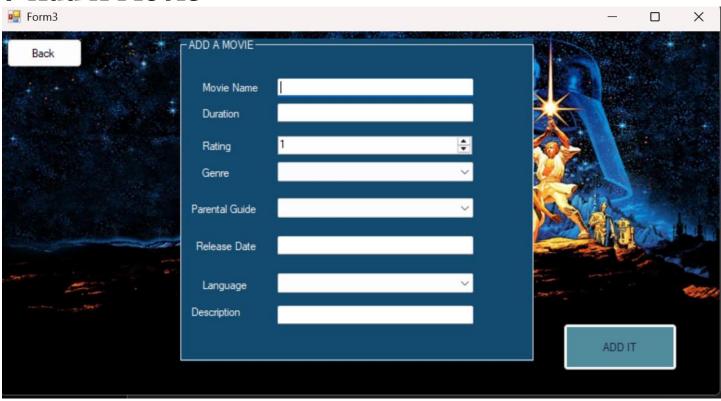
6-Choosing seats/Snacks/Finalizing Order



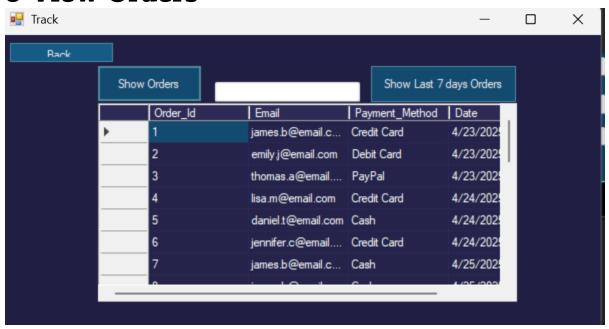
7-Admin HomePage



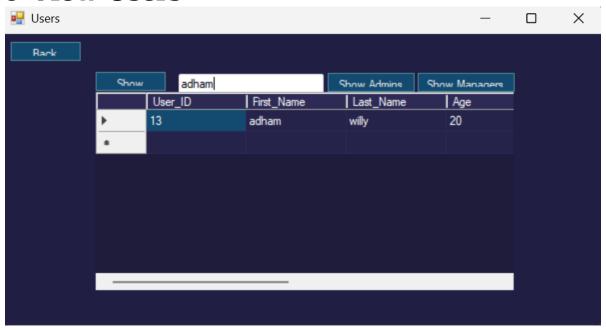
7-Add A Movie



8-View Orders

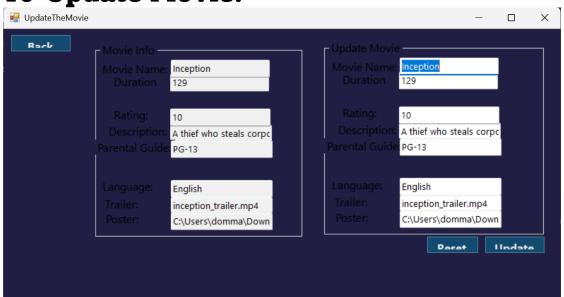


9-View Users



Note: all Admins Functions are mainly view, except only in movies he can add and delete too

10-Update Movie:



5-Scenario:

The cinema booking system provides a user-friendly graphical interface that integrates seamlessly with a backend database to manage user and booking data efficiently. The application begins with a login or sign-up process. When a new user signs up, their information is stored in the database and they are registered as a customer. Upon logging in, the system distinguishes between two types of users: customers and administrators. Customers have access to features such as viewing and editing their personal data, checking their past orders, and browsing available shows. They can select a specific location and choose a cinema to explore available movies and showtimes. Once a show is selected, the customer can proceed to select their preferred seats and snacks before finalizing the order. The completed order is then recorded in the database, the selected seats are marked as reserved, and the order is added to the customer's past orders history. On the other hand, administrators have broader access privileges within the system. After logging in, an admin can view comprehensive data from the database, including orders, users, and movie listings. They also have the authority to manage movies by adding new entries, updating existing ones, or removing outdated films. This structured workflow ensures both user accessibility and administrative control, maintaining system integrity and usability.