**Assignment:**

**BookMyShow Problem Solving:**

#### **Step 1: Identify Entities and Attributes**

Based on the scenario, we’re dealing with a ticketing platform like BookMyShow, where users can book movie tickets for shows at a theatre on specific dates. From the image, we see theatres, movies, showtimes, and dates. Let’s identify the entities and their attributes:

1. **Theatre**
   * Attributes: TheaterID (unique identifier), TheaterName, Location
   * The theatre is the venue where movies are shown (e.g., PVR: Nexus).
2. **Movie**
   * Attributes: MovieID (unique identifier), MovieName, Language, Certification (e.g., UA)
   * Movies are the films being shown (e.g., "Dasara", "Kisi Ka Bhai Kisi Ki Jaan").
3. **Show**
   * Attributes: ShowID (unique identifier), TheaterID (foreign key), MovieID (foreign key), ShowDate, ShowTime
   * A show represents a specific screening of a movie at a theatre on a given date and time (e.g., "Dasara" at 12:15 PM on April 25).
4. **Date**
   * While dates are shown in the calendar (April 25 to May 1), they’re already part of the Show entity as ShowDate. We don’t need a separate Date entity unless we’re tracking additional date-specific details (e.g., holidays), which isn’t required here.

Here’s how the tables will look:

1. **Theatre Table**
   * TheaterID (Primary Key)
   * TheaterName
   * Location
2. **Movie Table**
   * MovieID (Primary Key)
   * MovieName
   * Language
   * Certification
3. **Show Table**
   * ShowID (Primary Key)
   * TheaterID (Foreign Key referencing Theater)
   * MovieID (Foreign Key referencing Movie)
   * ShowDate (Date of the show)
   * ShowTime (Time of the show)

These tables are normalized:

* Each table has a primary key.
* There are no partial dependencies (2NF) or transitive dependencies (3NF).
* Foreign keys (TheaterID, MovieID in the Show table) ensure referential integrity.
* BCNF is satisfied because the determinants (primary keys) are candidate keys.

**Create Tables :**



| -- Create Theater Table CREATE TABLE Theater (  TheaterID INT PRIMARY KEY AUTO\_INCREMENT,  TheaterName VARCHAR(100) NOT NULL,  Location VARCHAR(100) NOT NULL );  -- Create Movie Table CREATE TABLE Movie (  MovieID INT PRIMARY KEY AUTO\_INCREMENT,  MovieName VARCHAR(100) NOT NULL,  Language VARCHAR(50) NOT NULL,  Certification VARCHAR(10) NOT NULL );  -- Create Show Table CREATE TABLE Show (  ShowID INT PRIMARY KEY AUTO\_INCREMENT,  TheaterID INT NOT NULL,  MovieID INT NOT NULL,  ShowDate DATE NOT NULL,  ShowTime TIME NOT NULL,  FOREIGN KEY (TheaterID) REFERENCES Theater(TheaterID),  FOREIGN KEY (MovieID) REFERENCES Movie(MovieID) |
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| ); |
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**Insert Sample Data:**

| -- Insert into Theater Table INSERT INTO Theater (TheaterName, Location) VALUES ('PVR: Nexus', 'Hyderabad');  -- Insert into Movie Table INSERT INTO Movie (MovieName, Language, Certification) VALUES ('Dasara', 'Telugu', 'UA'), ('Kisi Ka Bhai Kisi Ki Jaan', 'Hindi', 'UA'), ('Tu Jhoothi Main Makkaar', 'Hindi', 'UA'), ('Avatar: The Way of Water', 'English', 'UA');  -- Insert into Show Table INSERT INTO Show (TheaterID, MovieID, ShowDate, ShowTime) VALUES (1, 1, '2023-04-25', '12:15:00'), -- Dasara at 12:15 PM (1, 2, '2023-04-25', '01:00:00'), -- Kisi Ka Bhai Kisi Ki Jaan at 1:00 PM (1, 2, '2023-04-25', '04:10:00'), -- Kisi Ka Bhai Kisi Ki Jaan at 4:10 PM (1, 2, '2023-04-25', '07:20:00'), -- Kisi Ka Bhai Kisi Ki Jaan at 7:20 PM (1, 2, '2023-04-25', '10:30:00'), -- Kisi Ka Bhai Kisi Ki Jaan at 10:30 PM (1, 3, '2023-04-25', '01:15:00'), -- Tu Jhoothi Main Makkaar at 1:15 PM (1, 4, '2023-04-25', '01:20:00'); -- Avatar: The Way of Water at 1:20 PM |
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**Let’s assume we want to list all shows at "PVR: Nexus" on April 25, 2023.**

**SQL Query for the same is :**

| SELECT   t.TheaterName,  m.MovieName,  m.Language,  m.Certification,  s.ShowDate,  s.ShowTime FROM   Theater t  JOIN Show s ON t.TheaterID = s.TheaterID  JOIN Movie m ON s.MovieID = m.MovieID WHERE   t.TheaterName = 'PVR: Nexus'  AND s.ShowDate = '2023-04-25' ORDER BY   s.ShowTime; |
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