



विश्वजीवनमृतं ज्ञानम्

**ABV- INDIAN INSTITUTE OF INFORMATION TECHNOLOGY AND MANAGEMENT, GWALIOR**

# DataBase Management System

## MINI PROJECT

**Topic : Movie-Ticket-Booking System**

# TEAM MEMBERS

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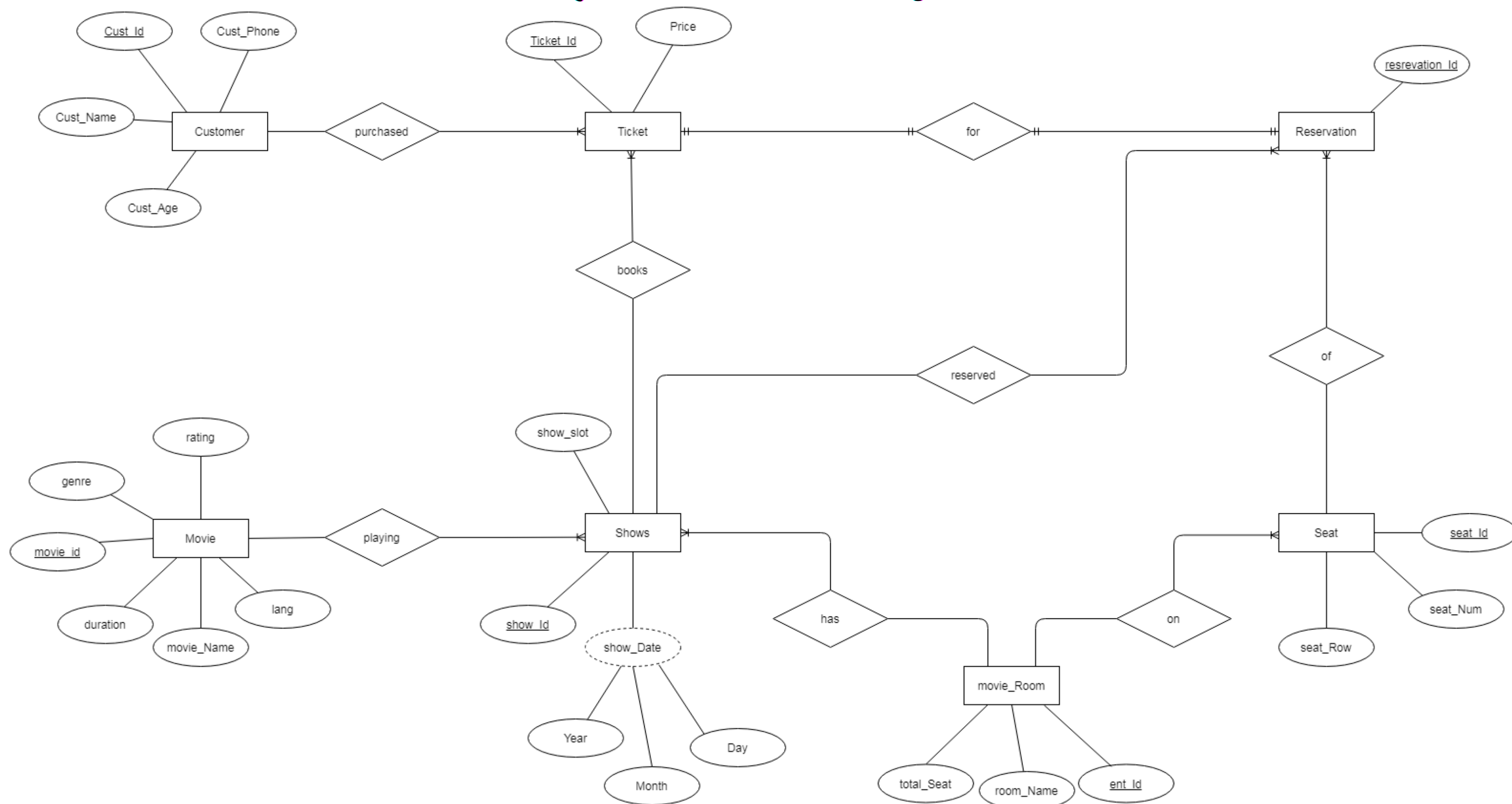
# Introduction

As the name suggests the movie ticket management system is a database management system for a multiplex. This Project aims to provide an insight of such Movie ticket management System. The database is designed to accommodate multiple theater rooms at same time to have a hassle free experience for the customer.

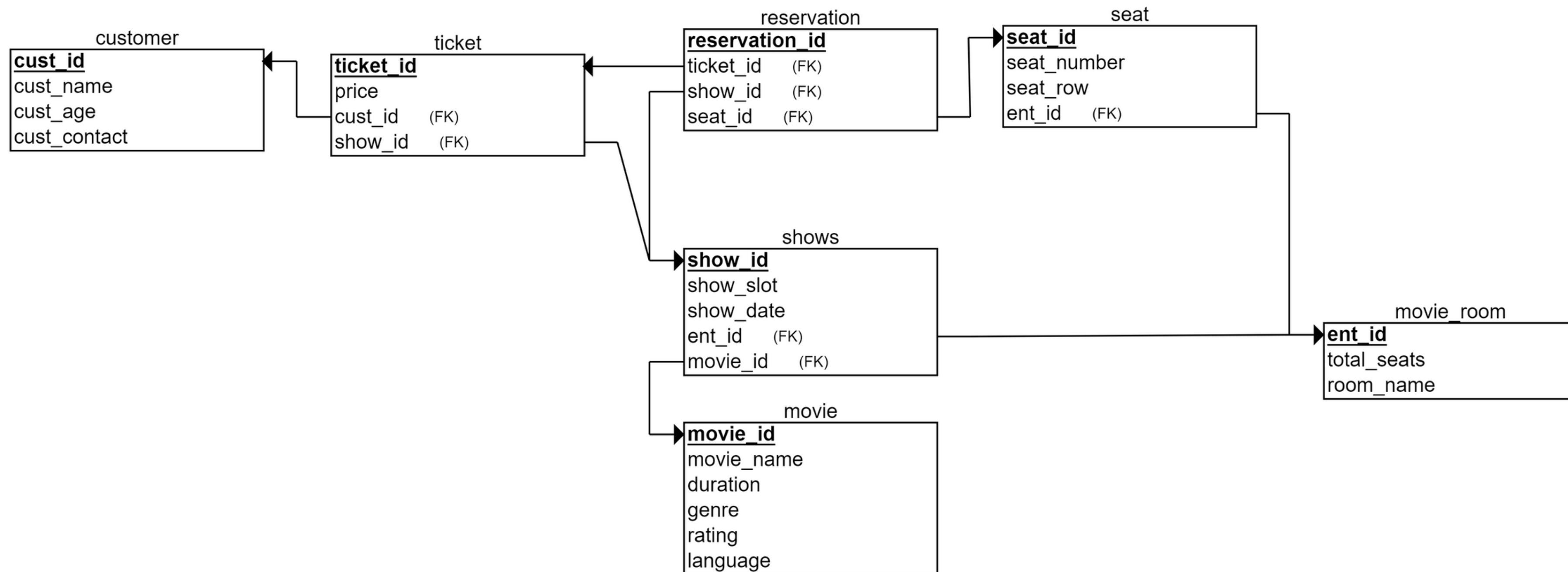
This management system is highly flexible and is well efficient for managing all information about the customer, movie and seats. The key focus is: well management of data and easy retrieval of information. Some key benefits of this projects are :-

Data consistency, Easy to handle, Easy data updating and Easy record keeping, Data redundancy can be avoided to some extent.

# Entity Relationship Model



# Relationship Schema



# FUNCTIONAL DEPENDENCIES

## Customer Entity

Functional Dependency = {cust\_id --> cust\_age, cust\_name, cust\_phone}  
Candidate key = cust\_id

## Movie Entity

Functional Dependency = { movie\_id --> movie\_name, duration, lang, genre, rating}  
{ movie\_name --> duration, genre, rating}  
Candidate key = movie\_id

## Movie Room Entity

Functional Dependency = { ent\_id --> room\_name total\_seats}  
Candidate key = ent\_id

## Reservation Entity

Functional Dependency = { reservation\_id --> ticket\_id, show\_id, seat\_id}  
Candidate key = reservation\_id

# FUNCTIONAL DEPENDENCIES

## Seat Entity

Functional Dependency = { seat\_id --> seat\_number, seat\_row, ent\_id }  
Candidate key = seat\_id

## Shows Entity

Functional Dependency = { show\_id --> show\_slot, show\_date, ent\_id, movie\_name }  
Candidate key = show\_id

## Ticket Entity

Functional Dependency = { ticket\_id --> price, cust\_id, show\_id }  
Candidate key = ticket\_id



# Normalisation

- **1 NF** - In our management system, Customer, Ticket, Reservation, Seat, Movie Room, Shows and Movie has no attribute is multi-valued or composite attribute. Therefore, it is in First Normal Form.
- **2 NF** - As there is no non-prime attribute defined by set of candidate key therefore, it is in Second Normal Form.
- **3 NF** - In our entire relation there is no transitive dependency(i.e. no non-prime attribute determining another non-prime attribute), but in case of Movie entity there is transitive dependency i.e.

**movie\_id --> movie\_name --> duration, genre, rating**

so, we'll decompose the relation to normalize data.

**movie\_id --> movie\_name, lang**

**movie\_name --> duration, genre, rating**



# Normalisation

- Now it is in 3 NF also as well as every super key is present on the left side of the functional dependency so, it is in 3 NF.
- **BCNF** - Since, each and every functional dependency has super key on left as well as they follows 3NF therefore, it is in Boyce–Codd Normal Form.

# TABLES -

# Customer Table

```
CREATE TABLE Customer
(
    Cust_Id VARCHAR NOT NULL,
    Cust_Name VARCHAR NOT NULL,
    Cust_Age INT NOT NULL,
    Cust_Phone NUMERIC NOT NULL,
    PRIMARY KEY (cust_Id)
);
```

Cust_Id	Cust_Name	Cust_Age	Cust_Phone
P1	AMAN KUMAR	20	12345678
P2	ANSH RUSIA	20	23456789
P3	SHUBHAJEET PRADHAN	20	34567891
P4	VARUN KUMAR TIWARI	20	45678912

# Ticket Table

```
CREATE TABLE Ticket
(
    ticket_Id VARCHAR NOT NULL,
    price INT NOT NULL,
    Cust_Id VARCHAR NOT NULL,
    show_Id VARCHAR NOT NULL,
    PRIMARY KEY (ticket_Id),
    FOREIGN KEY (Cust_Id) REFERENCES Customer(Cust_Id),
    FOREIGN KEY (Show_Id) REFERENCES Shows(show_Id)
);
```

ticket_Id	price	Cust_Id	show_Id
TCK1	750	P1	SHW1
TCK2	300	P2	SHW2
TCK3	925	P3	SHW3
TCK4	1030	P4	SHW4

# Reservation Table

```
CREATE TABLE Reservation
(
  reservation_Id VARCHAR NOT NULL,
  ticket_Id VARCHAR NOT NULL,
  show_Id VARCHAR NOT NULL,
  seat_Id VARCHAR NOT NULL,
  PRIMARY KEY (reservation_Id),
  FOREIGN KEY (ticket_Id) REFERENCES Ticket(ticket_id),
  FOREIGN KEY (show_Id) REFERENCES Shows(show_id),
  FOREIGN KEY (seat_Id) REFERENCES Seat(seat_id)
);
```

! ticket_Id	price	Cust_Id	show_Id
TCK1	750	P1	SHW1
TCK2	300	P2	SHW2
TCK3	925	P3	SHW3
TCK4	1030	P4	SHW4

# Seat Table

```
CREATE TABLE seat
(
  seat_Id VARCHAR NOT NULL,
  seat_Number INT NOT NULL,
  seat_Row VARCHAR NOT NULL,
  ent_Id VARCHAR NOT NULL,
  PRIMARY KEY (seat_Id),
  FOREIGN KEY (ent_Id) REFERENCES movie_room(ent_Id)
);
```

! seat_Id	seat_Number	seat_Row	ent_Id
E1S1	1	R1	ENT1
E1S2	2	R1	ENT1
E1S3	3	R2	ENT1
E1S4	4	R2	ENT1
E1S5	5	R3	ENT1
E2G1	1	R1	ENT2
E2G2	2	R1	ENT2
E2G3	3	R2	ENT2
E2G4	4	R2	ENT2
E2G5	5	R3	ENT2
E3E1	1	R1	ENT3
E3E2	2	R1	ENT3
E3E3	3	R2	ENT3
E3E4	4	R2	ENT3
E3E5	5	R3	ENT3

# Movie Room Table

```
CREATE TABLE movie_room
(
    ent_Id VARCHAR NOT NULL,
    total_Seats INT NOT NULL,
    room_Name VARCHAR NOT NULL,
    PRIMARY KEY (ent_Id)
);
```

ent_Id	total_Seats	room_Name
ENT1	5	Silver
ENT2	5	Gold
ENT3	5	Executive



# Show Table

```
CREATE TABLE shows
(
  show_Id VARCHAR NOT NULL,
  show_slot VARCHAR NOT NULL,
  show_Date DATE NOT NULL,
  ent_Id VARCHAR NOT NULL,
  movie_id VARCHAR NOT NULL,
  PRIMARY KEY (show_Id),
  FOREIGN KEY (ent_Id) REFERENCES movie_room(ent_Id),
  FOREIGN KEY (movie_id) REFERENCES movie(movie_id)
);
```

! show_Id	show_slot	show_Date	ent_Id	movie_id
SHW1	slotA	2021-09-07	ENT1	MV3
SHW2	slotB	2021-08-05	ENT2	MV1
SHW3	slotC	2021-06-11	ENT3	MV2
SHW4	slotD	2021-06-23	ENT3	MV2

# Movie Table

```
CREATE TABLE movie
(
  movie_id VARCHAR NOT NULL,
  movie_Name VARCHAR NOT NULL,
  duration VARCHAR NOT NULL,
  genre VARCHAR NOT NULL,
  rating VARCHAR NOT NULL,
  lang VARCHAR NOT NULL,
  PRIMARY KEY (movie_id)
);
```

! movie_id	movie_Name	duration	genre	rating	lang
MV1	Inception	148	Thriller	5	E
MV2	Iron-Man 2	100	Sci-Fi	5	E
MV3	The Eternals	157	Sci-Fi	4	E
MV4	The Eternals	157	Sci-Fi	4	H
MV5	Iron-Man 2	100	Sci-Fi	5	H

# SQL Queries -

1. Show all the details of people who booked movie for only "Executive Class".

```
SELECT cust_name, cust_phone, cust_age  
FROM customer NATURAL JOIN ticket NATURAL JOIN shows NATURAL JOIN movie_room  
WHERE room_name = 'Executive';
```

cust_name	cust_phone	cust_age
SHUBHAJEET PRADHAN	34567891	20
VARUN KUMAR TIWARI	45678912	20

(2 rows)

2. Show all the details of peoples who booked for a movie whose price is greater than 925.

```
SELECT cust_name, cust_phone, cust_age  
FROM customer NATURAL JOIN ticket  
WHERE price < 925;
```

cust_name	cust_phone	cust_age
AMAN KUMAR	12345678	20
ANSH RUSIA	23456789	20
(2 rows)		

**3. Show the age of all customers who are watching the movie "The Eternals" in "English".**

```
SELECT Cust_Age FROM Customer
WHERE Cust_Id =
(
  SELECT Cust_Id FROM Ticket
  WHERE show_id =
    (
      SELECT show_id FROM Shows
      WHERE movie_id =
        (
          SELECT movie_id FROM movie
          WHERE movie_name = 'The Eternals' AND lang = 'E'
        )
      )
    )
);
```

```
cust_age
-----
          20
(1 row)
```

4. Show seat id of customer whose name is "ANSH RUSIA".

```
SELECT seat_Id FROM Reservation
WHERE ticket_Id =
(
  SELECT ticket_Id FROM ticket
  WHERE Cust_Id =
    (
      SELECT Cust_Id FROM Customer
      WHERE Cust_Name = 'ANSH RUSIA'
    )
);
```

```
seat_id
-----
E1S2
(1 row)
```



### 5. Show all the Customers who is watching "Iron-Man 2" in "English"

```
SELECT cust_id, cust_name, cust_phone, cust_age, show_slot, price
FROM customer NATURAL JOIN ticket NATURAL JOIN shows NATURAL JOIN movie
WHERE movie_name = 'Iron-Man 2' AND lang = 'E';
```

cust_id	cust_name	cust_phone	cust_age	show_slot	price
P3	SHUBHAJEET PRADHAN	34567891	20	slotC	925
P4	VARUN KUMAR TIWARI	45678912	20	slotD	1030
(2 rows)					

# RA Expression-

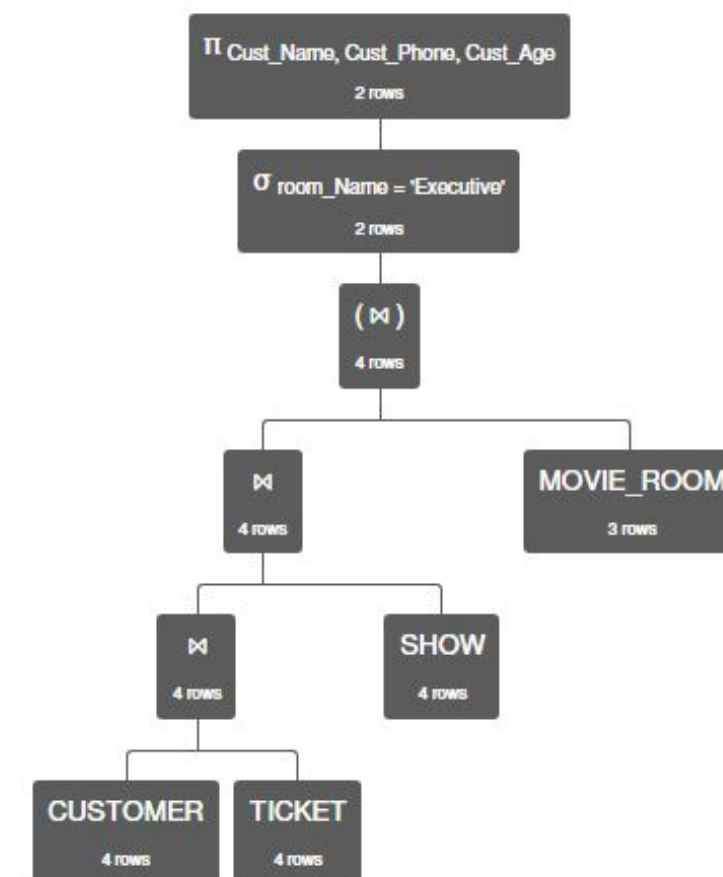
# 1. Show all the details of people who booked movie for only "Executive Class".

```

π Cust_Name, Cust_Phone, Cust_Age (σ room_Name = 'Executive' (CUSTOMER ⋈ TICKET ⋈ SHOW ⋈
MOVIE_ROOM ))

```

CUSTOMER.Cust_Name	CUSTOMER.Cust_Phone	CUSTOMER.Cust_Age
'SHUBHAJEET PRADHAN'	34567891	20
'VARUN KUMAR TIWARI'	45678912	20



```

π Cust_Name, Cust_Phone, Cust_Age (σ room_Name = 'Executive' ( ( ( CUSTOMER ⋈
TICKET ) ⋈ SHOW ) ⋈ MOVIE_ROOM ) )

```

2. Show all the details of peoples who booked for a movie whose price is greater than 925.

$\pi$  Cust\_Name, Cust\_Phone, Cust\_Age ( $\sigma$  price < 925 (CUSTOMER  $\bowtie$  TICKET))

CUSTOMER.Cust_Name	CUSTOMER.Cust_Phone	CUSTOMER.Cust_Age
'AMAN KUMAR'	12345678	20
'ANSH RUSIA'	23456789	20



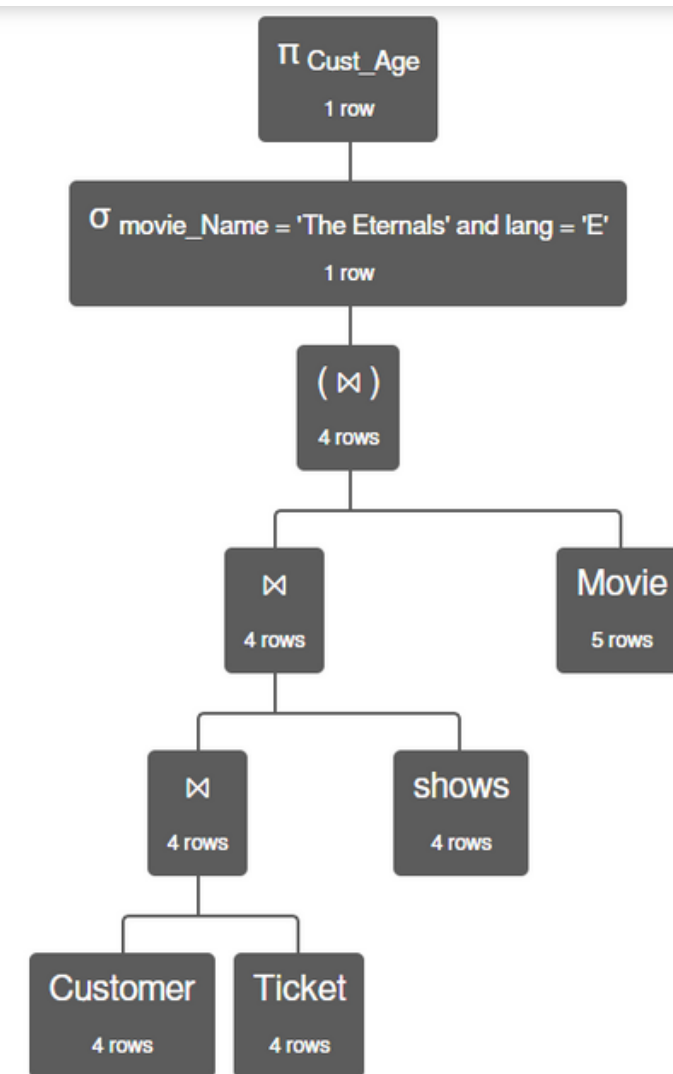
$\pi$  Cust\_Name, Cust\_Phone, Cust\_Age ( $\sigma$  price < 925 (CUSTOMER  $\bowtie$  TICKET))

3. Show the age of all customers who are watching the movie "The Eternals" in "English".

```
 $\pi$  Cust_Age (  $\sigma$  movie_Name = 'The Eternals'  $\wedge$  lang = 'E'
(Customer  $\bowtie$  Ticket  $\bowtie$  shows  $\bowtie$  Movie) )
```

Customer.Cust\_Age

20



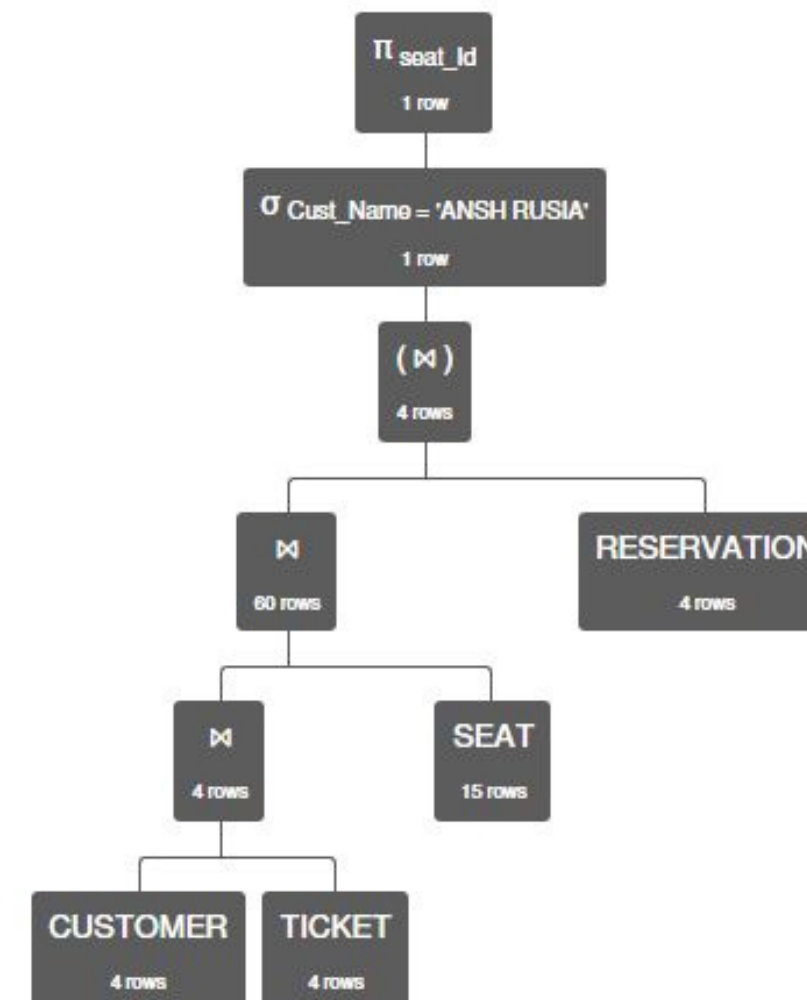
```
 $\pi$  Cust_Age (  $\sigma$  movie_Name = 'The Eternals' and lang = 'E' ( ( ( Customer  $\bowtie$ 
Ticket )  $\bowtie$  shows )  $\bowtie$  Movie ) )
```

#### 4. Show seat id of customer whose name is "ANSH RUSIA".

$\pi_{\text{seat\_Id}} (\sigma_{\text{Cust\_Name} = \text{'ANSH RUSIA'}} (\text{CUSTOMER} \bowtie \text{TICKET} \bowtie \text{SEAT} \bowtie \text{RESERVATION}))$

SEAT.seat\_Id

'E1S2'

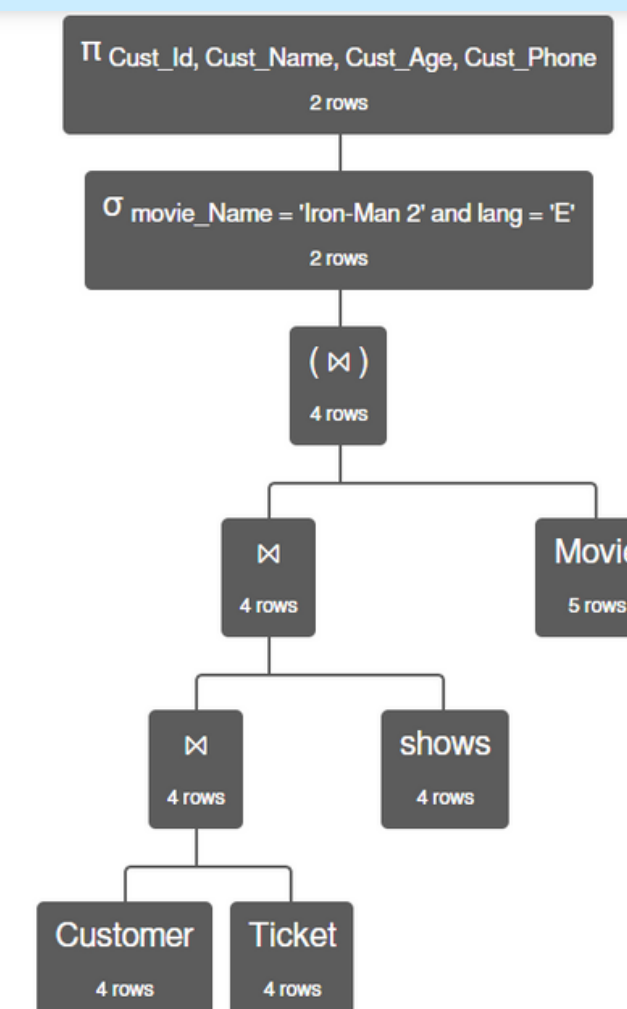


$\pi_{\text{seat\_Id}} (\sigma_{\text{Cust\_Name} = \text{'ANSH RUSIA'}} (((\text{CUSTOMER} \bowtie \text{TICKET}) \bowtie \text{SEAT}) \bowtie \text{RESERVATION}))$

## 5. Show all the Customers who is watching "Iron-Man 2" in "English"

$\pi$  Cust\_Id, Cust\_Name, Cust\_Age, Cust\_Phone ( $\sigma$  movie\_Name = 'Iron-Man 2'  $\wedge$  lang = 'E' (Customer  $\bowtie$  Ticket  $\bowtie$  shows  $\bowtie$  Movie))

Customer.Cust_Id	Customer.Cust_Name	Customer.Cust_Age	Customer.Cust_Phone
'P3'	'SHUBHAJEET PRADHAN'	20	'34567891'
'P4'	'VARUN KUMAR TIWARI'	20	'45678912'



$\pi$  Cust\_Id, Cust\_Name, Cust\_Age, Cust\_Phone ( $\sigma$  movie\_Name = 'Iron-Man 2' and lang = 'E' ( ( ( Customer  $\bowtie$  Ticket )  $\bowtie$  shows )  $\bowtie$  Movie ) )





Thank You

