विश्वजीवनामृतं ज्ञानम्

ABV- INDIAN INSTITUTE OF INFORMATION TECHNOLOGY AND MANAGEMENT, GWALIOR

DataBase Management System
MINI PROJECT

Topic : Movie-Ticket-Management System

Under the guidance of Dr. Debanjan Sadhya

TEAM MEMBERS

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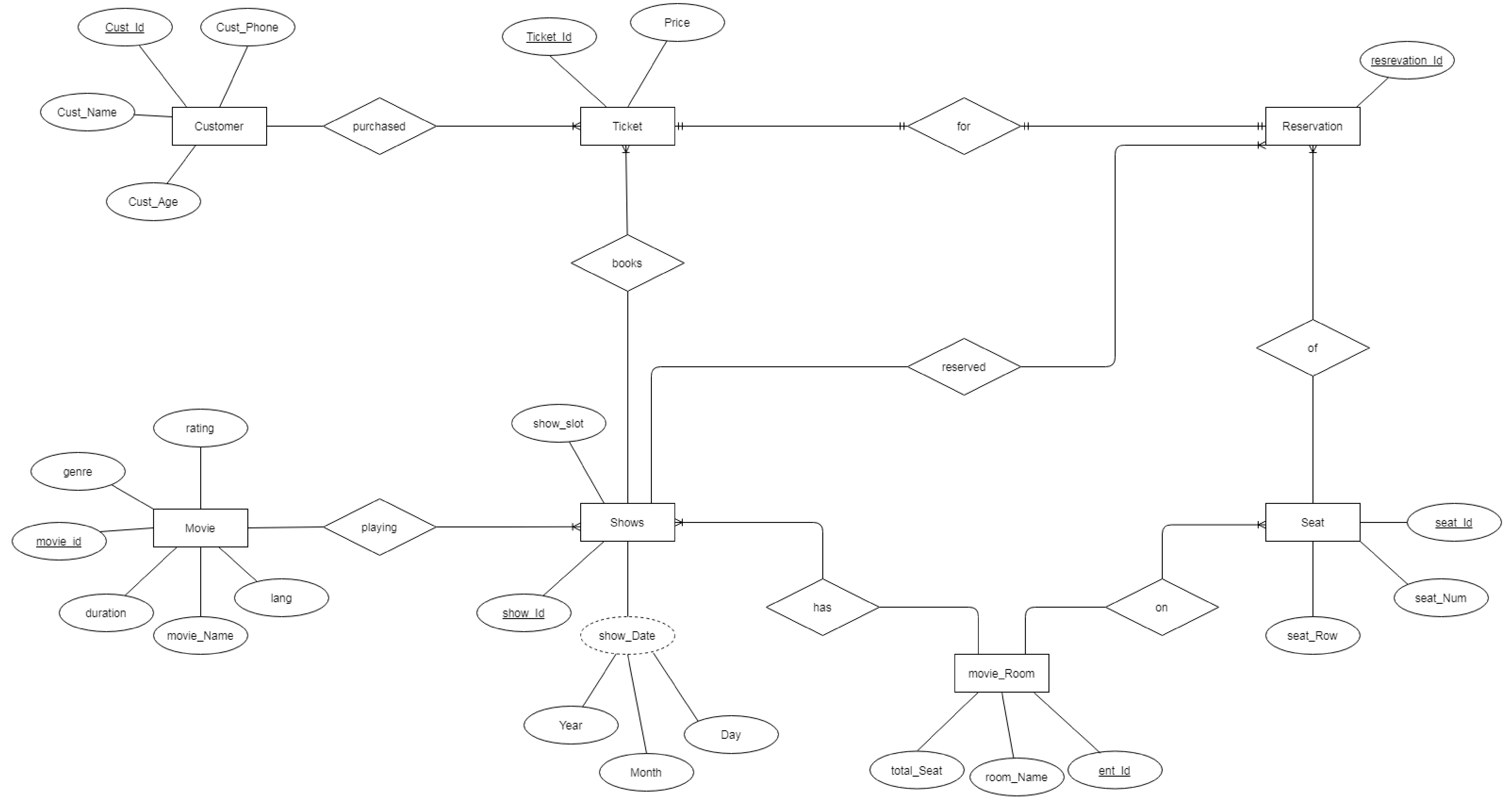
Introduction

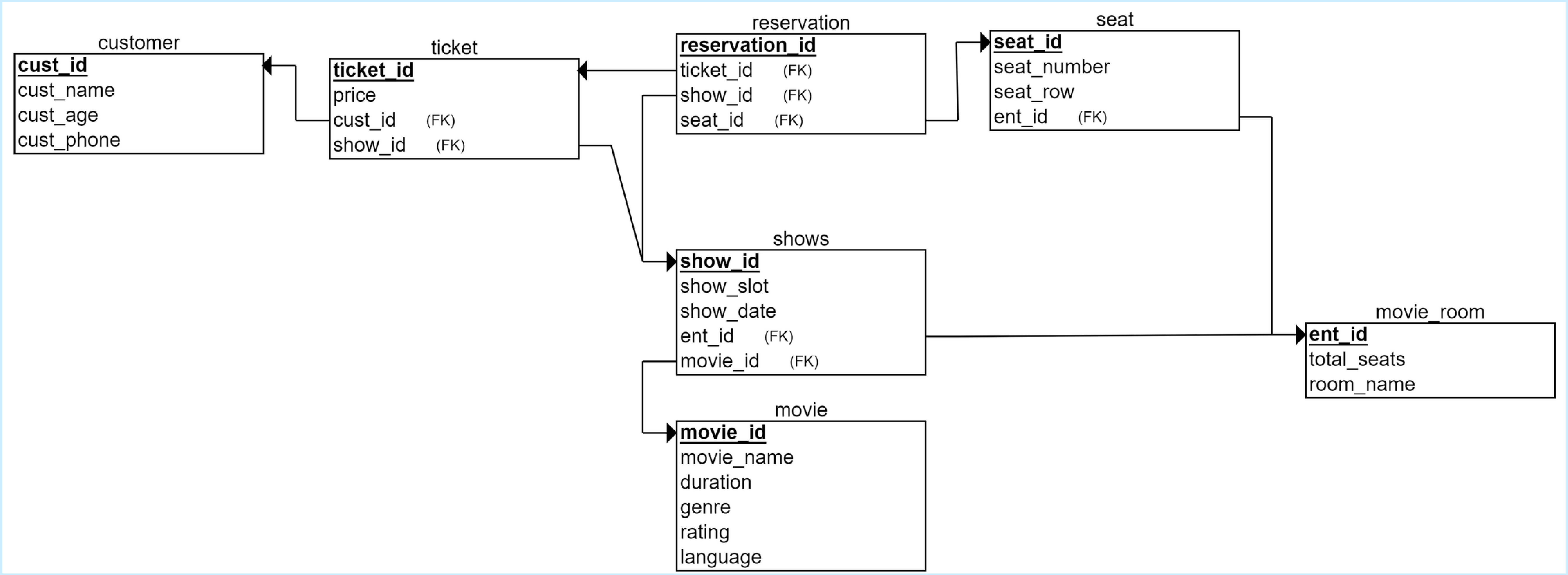
As the name suggests the movie ticket management system is a database management system for a multiplex. This Project aims to provide an insight of Movie ticket management System. The database is designed to accommodate multiple theater rooms at same time to have a hassle free experience for the customer.

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 any subset 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

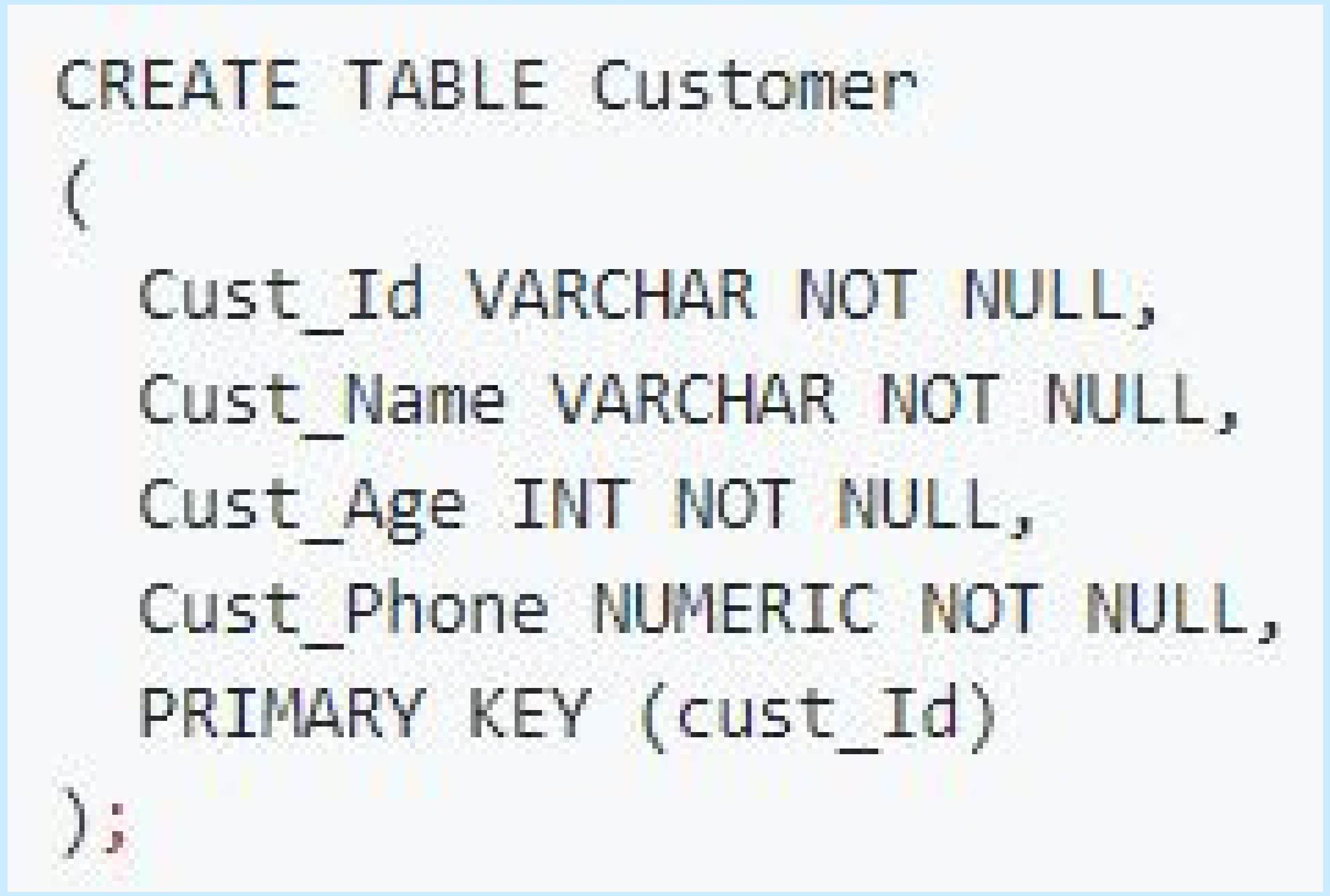
Normalisation

- 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.

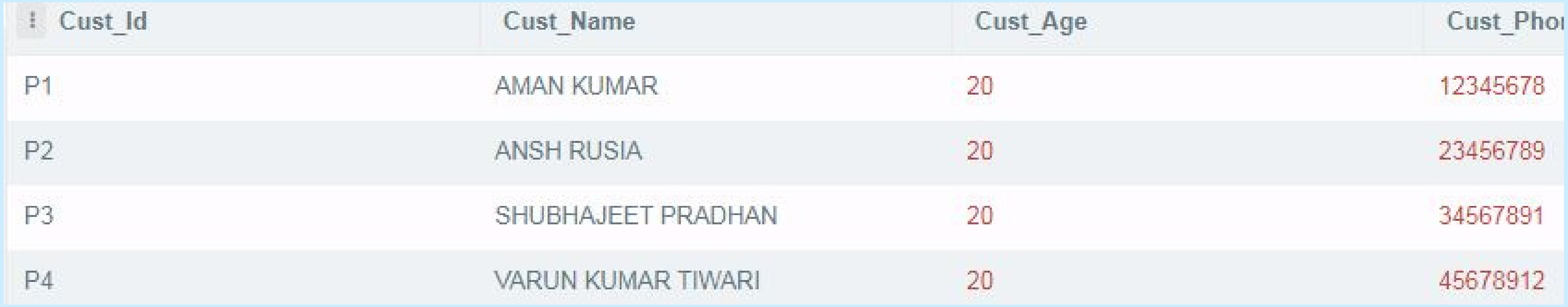
- **BCNF** - Since, each and every functional dependency has super key on left as well as they follows 3NF therefore, it is in Boyce–Codd Normal Form.

TABLES -

Customer Table

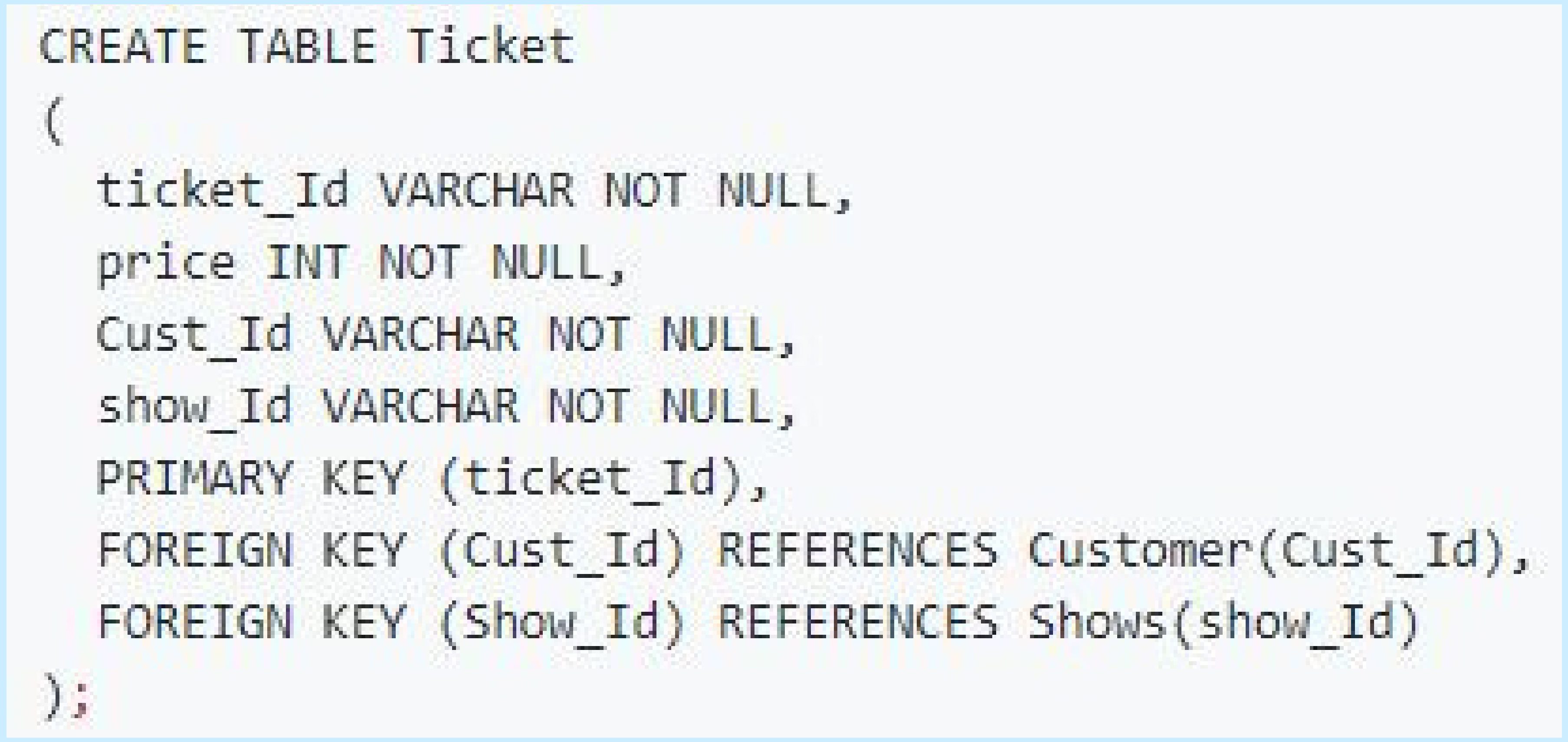


```
CREATE TABLE Customer
(
  Cust_Id VARCHAR NOT NULL,
  Cust_Name VARCHAR NOT NULL,
  Cust_Age INT NOT NULL,
  Cust_Phone NUMERIC NOT NULL,
  PRIMARY KEY (cust_Id)
);
```

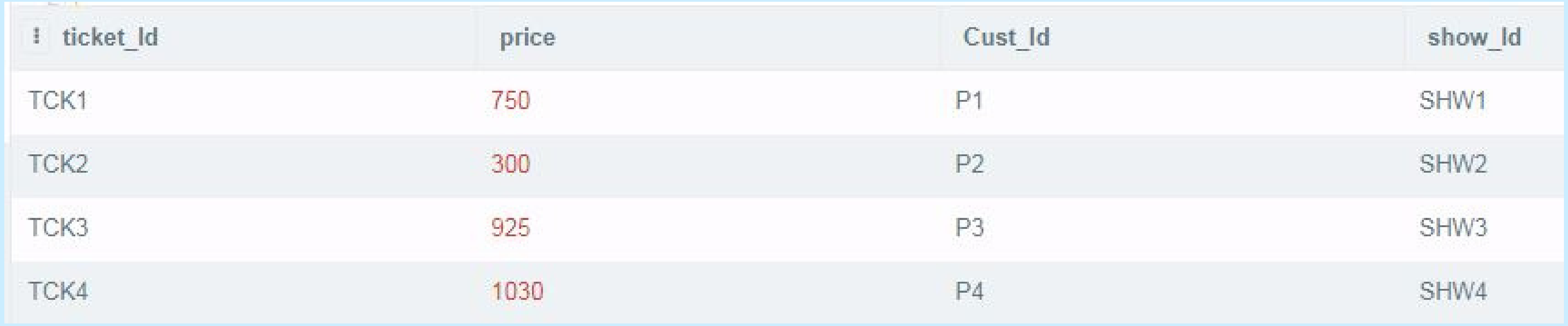


Cust_Id	Cust_Name	Cust_Age	Cust_Phoı
P1	AMAN KUMAR	20	12345678
P2	ANSH RUSIA	20	23456789
P3	SHUBHAJEET PRADHAN	20	34567891
P4	VARUN KUMAR TIWARI	20	45678912

Ticket Table

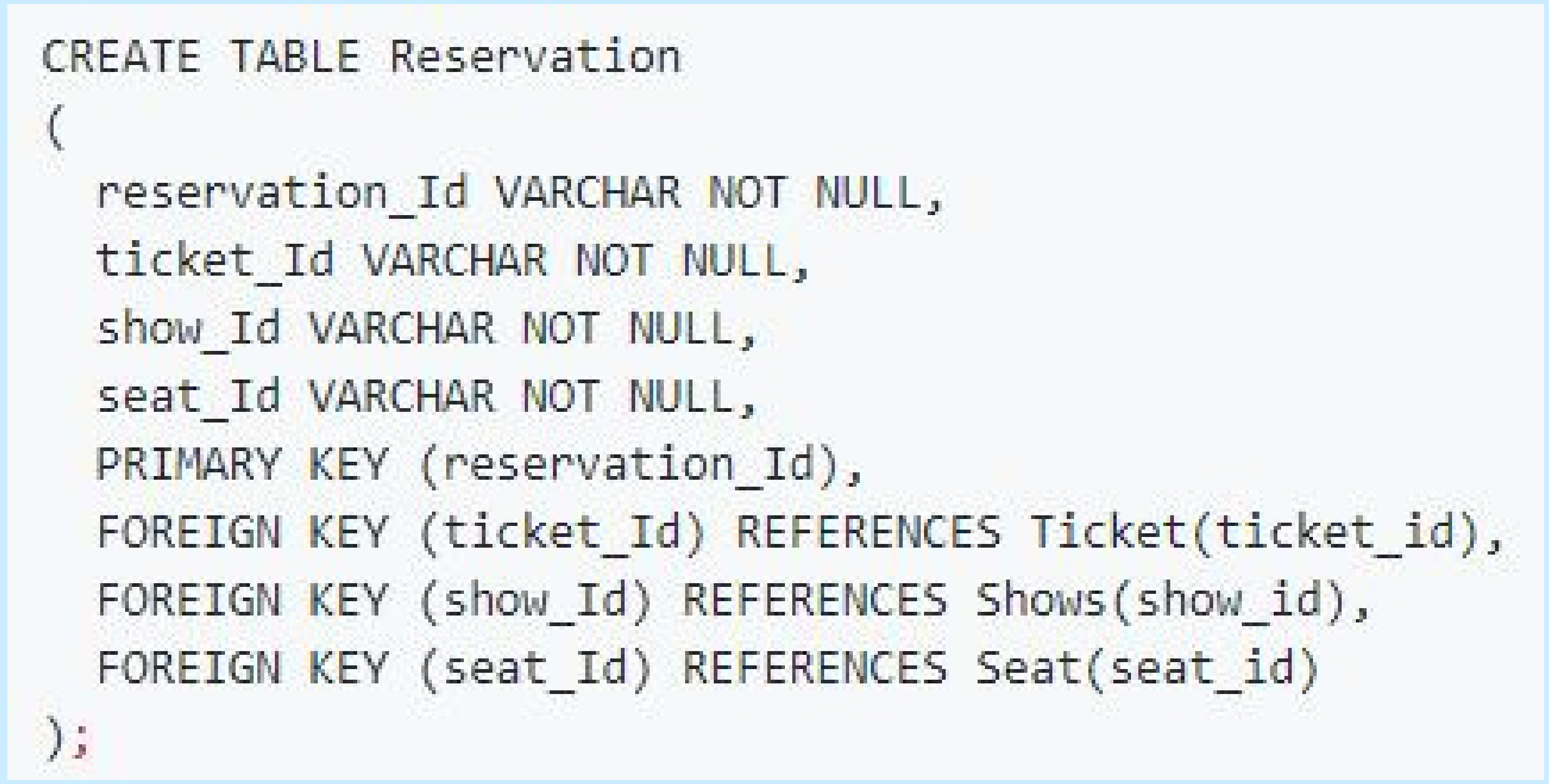


```
CREATE TABLE Ticket
(
  ticket_Id VARCHAR NOT NULL,
  price INT NOT NULL,
  Cust_Id VARCHAR NOT NULL,
  show_Id VARCHAR NOT NULL,
  PRIMARY KEY (ticket_Id),
  FOREIGN KEY (Cust_Id) REFERENCES Customer(Cust_Id),
  FOREIGN KEY (Show_Id) REFERENCES Shows(show_Id)
);
```

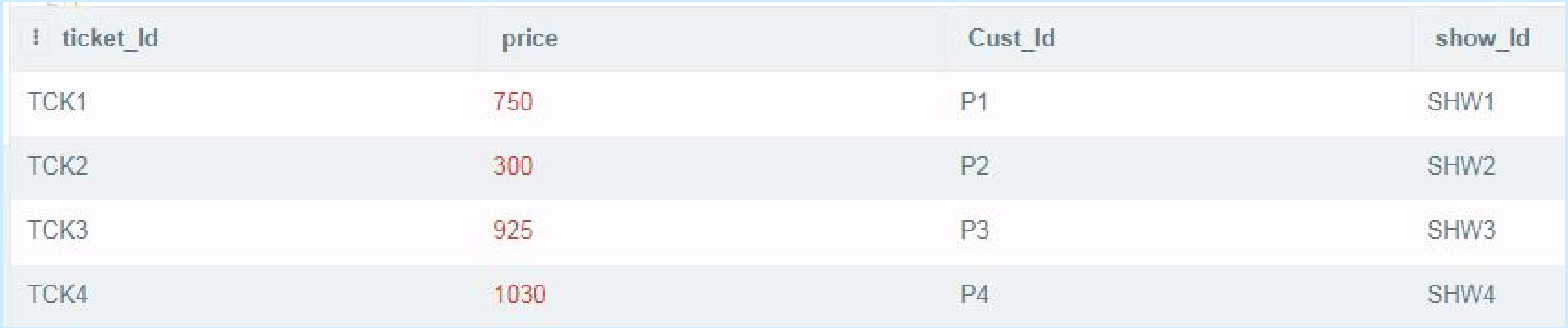


ticket_Id	price	Cust_Id	show_Id
TCK1	750	P1	SHW1
TCK2	300	P2	SHW2
TCK3	925	P3	SHW3
TCK4	1030	P4	SHW4

Reservation Table

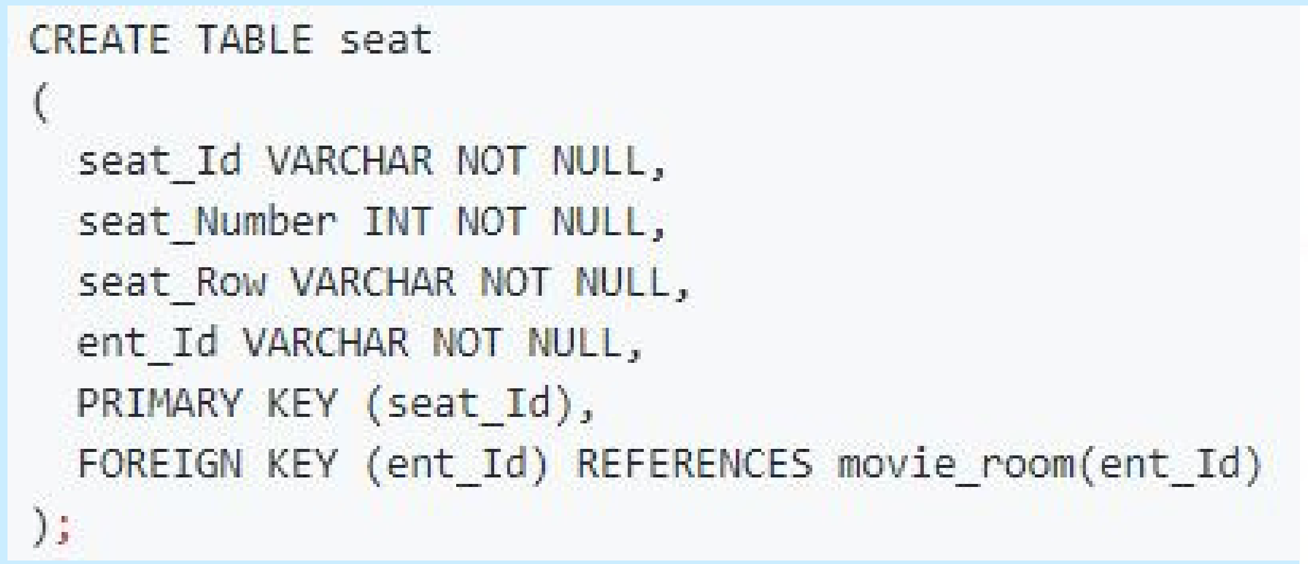


```
CREATE TABLE Reservation
(
  reservation_Id VARCHAR NOT NULL,
  ticket_Id VARCHAR NOT NULL,
  show_Id VARCHAR NOT NULL,
  seat_Id VARCHAR NOT NULL,
  PRIMARY KEY (reservation_Id),
  FOREIGN KEY (ticket_Id) REFERENCES Ticket(ticket_id),
  FOREIGN KEY (show_Id) REFERENCES Shows(show_id),
  FOREIGN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

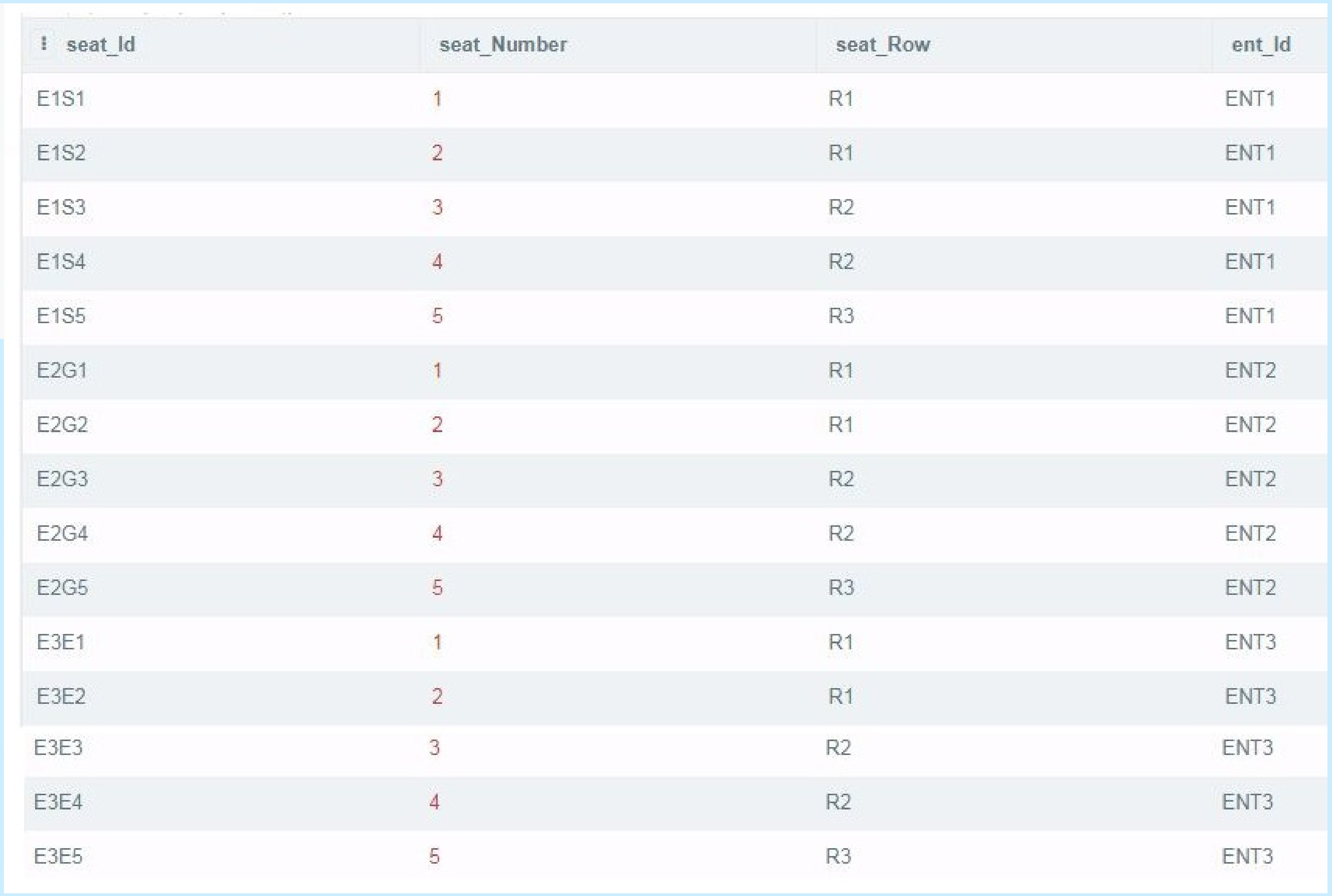


ticket_Id	price	Cust_Id	show_Id
TCK1	750	P1	SHW1
TCK2	300	P2	SHW2
TCK3	925	P3	SHW3
TCK4	1030	P4	SHW4

Seat Table

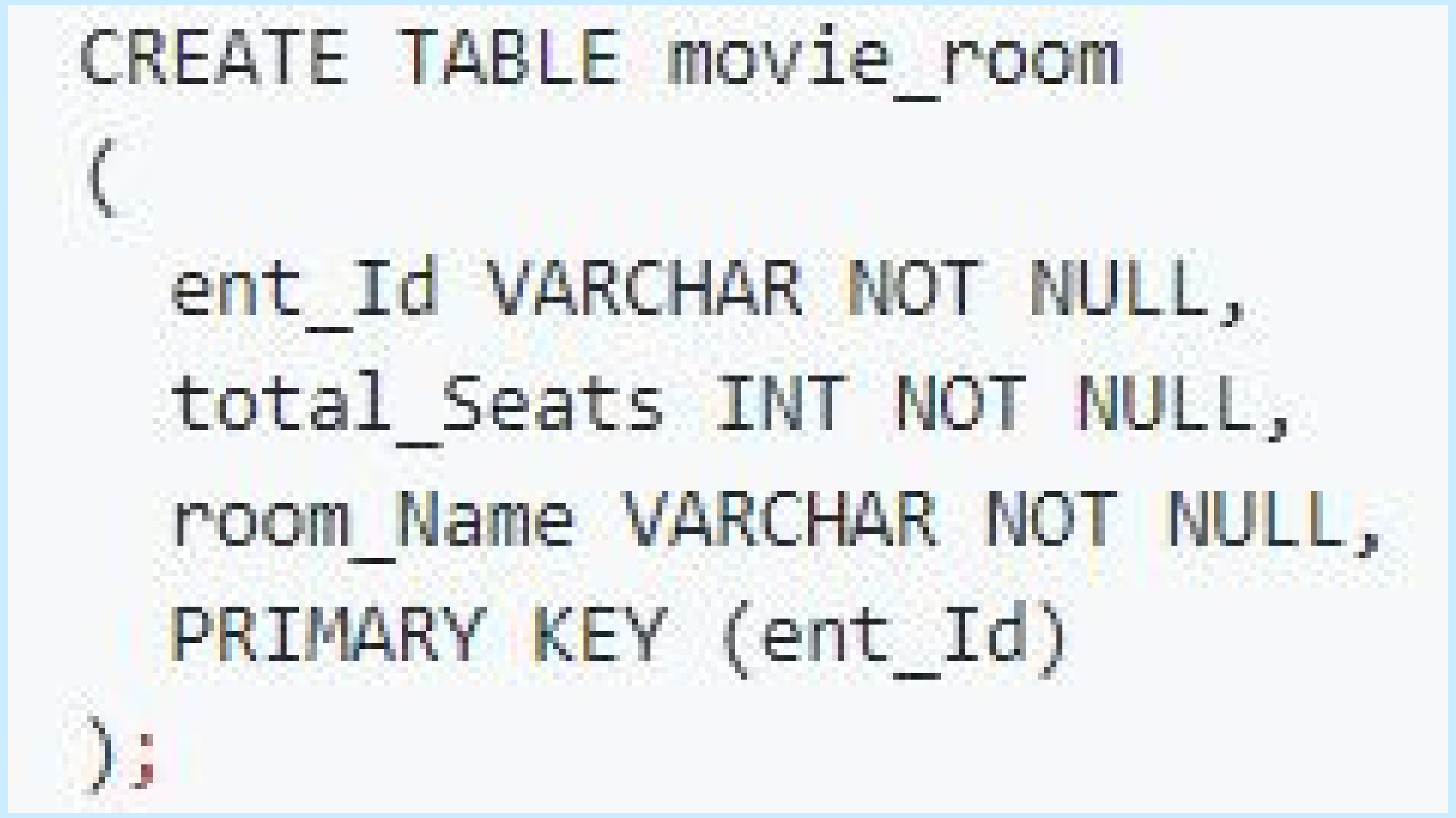


```
CREATE TABLE seat
(
  seat_Id VARCHAR NOT NULL,
  seat_Number INT NOT NULL,
  seat_Row VARCHAR NOT NULL,
  ent_Id VARCHAR NOT NULL,
  PRIMARY KEY (seat_Id),
  FOREIGN KEY (ent_Id) REFERENCES movie_room(ent_Id)
);
```

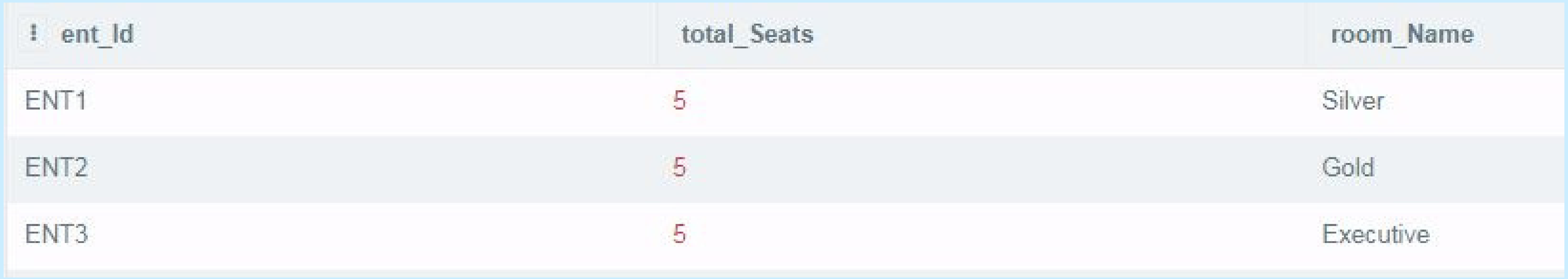


seat_Id	seat_Number	seat_Row	ent_Id
E1S1	1	R1	ENT1
E1S2	2	R1	ENT1
E1S3	3	R2	ENT1
E1S4	4	R2	ENT1
E1S5	5	R3	ENT1
E2G1	1	R1	ENT2
E2G2	2	R1	ENT2
E2G3	3	R2	ENT2
E2G4	4	R2	ENT2
E2G5	5	R3	ENT2
E3E1	1	R1	ENT3
E3E2	2	R1	ENT3
E3E3	3	R2	ENT3
E3E4	4	R2	ENT3
E3E5	5	R3	ENT3

Movie Room Table

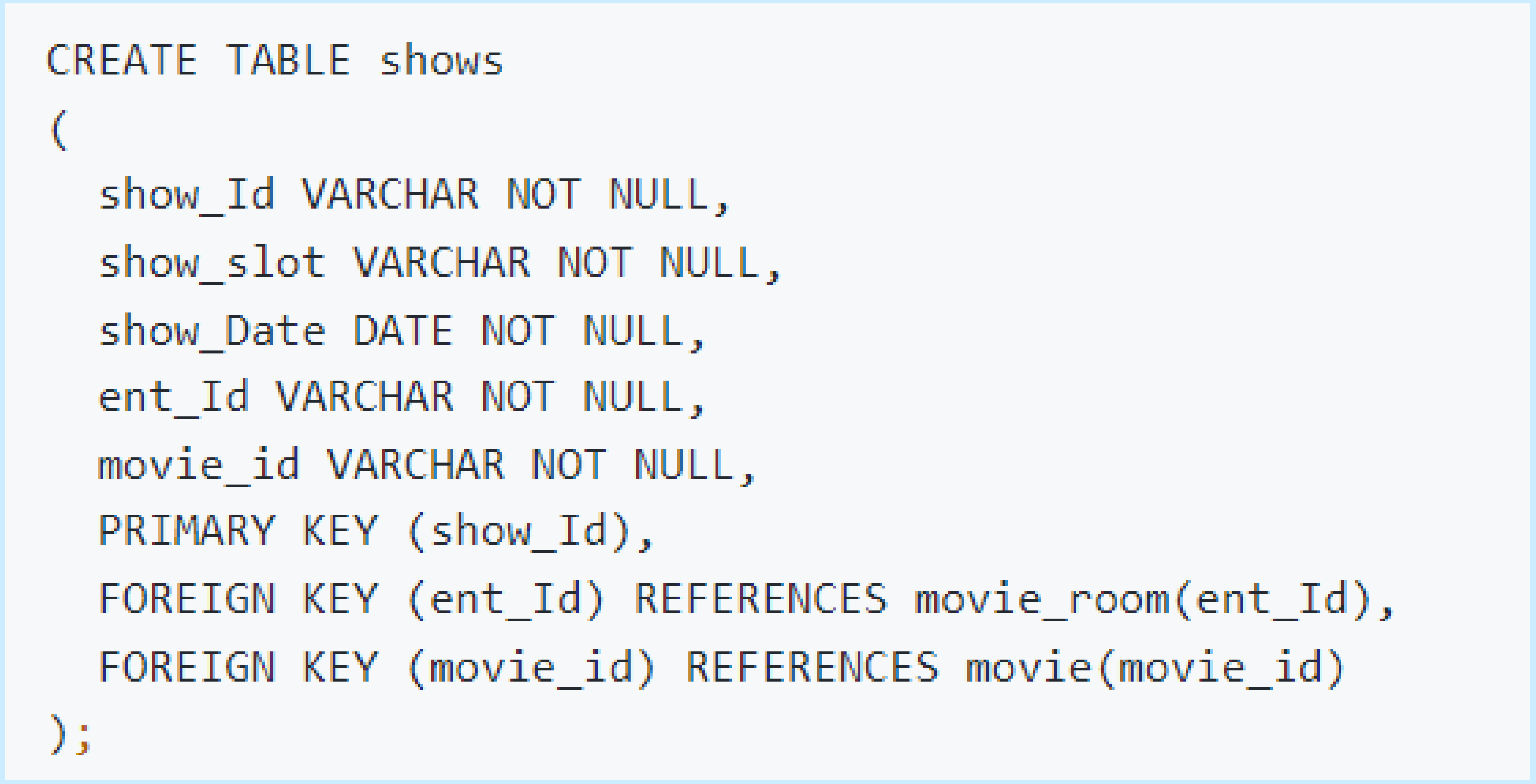


```
CREATE TABLE movie_room
(
  ent_Id VARCHAR NOT NULL,
  total_Seats INT NOT NULL,
  room_Name VARCHAR NOT NULL,
  PRIMARY KEY (ent_Id)
);
```

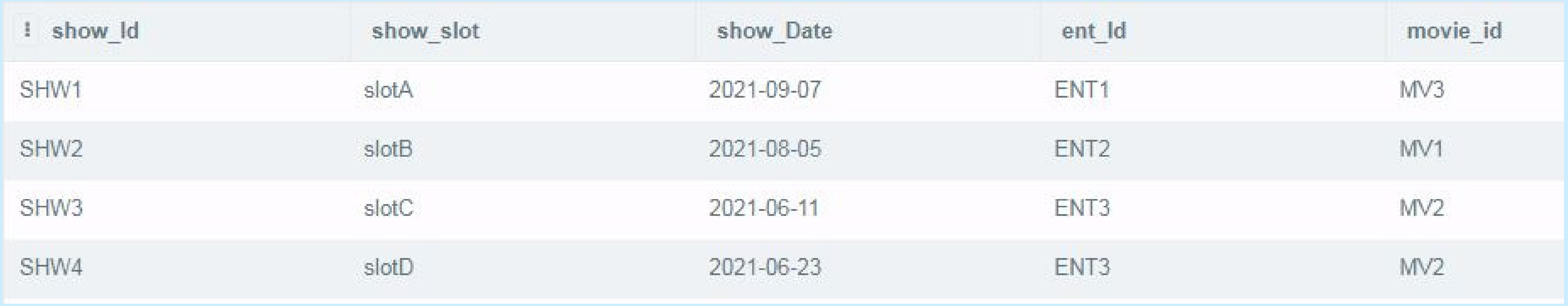


ent_Id	total_Seats	room_Name
ENT1	5	Silver
ENT2	5	Gold
ENT3	5	Executive

Show Table



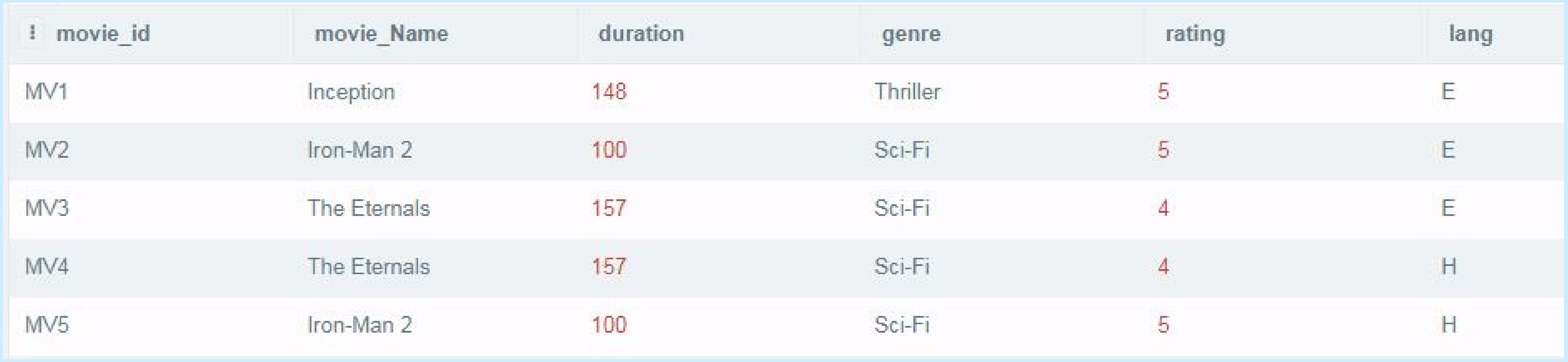
```
CREATE TABLE shows
(
  show_Id VARCHAR NOT NULL,
  show_slot VARCHAR NOT NULL,
  show_Date DATE NOT NULL,
  ent_Id VARCHAR NOT NULL,
  movie_id VARCHAR NOT NULL,
  PRIMARY KEY (show_Id),
  FOREIGN KEY (ent_Id) REFERENCES movie_room(ent_Id),
  FOREIGN KEY (movie_id) REFERENCES movie(movie_id)
);
```



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

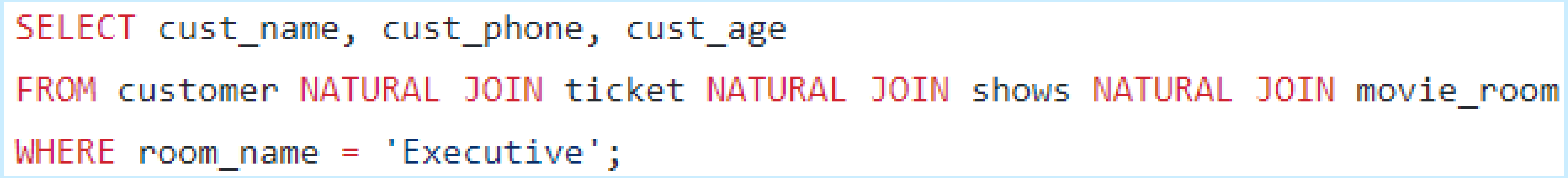
```
CREATE TABLE movie
(
  movie_id VARCHAR NOT NULL,
  movie_Name VARCHAR NOT NULL,
  duration VARCHAR NOT NULL,
  genre VARCHAR NOT NULL,
  rating VARCHAR NOT NULL,
  lang VARCHAR NOT NULL,
  PRIMARY KEY (movie_id)
);
```



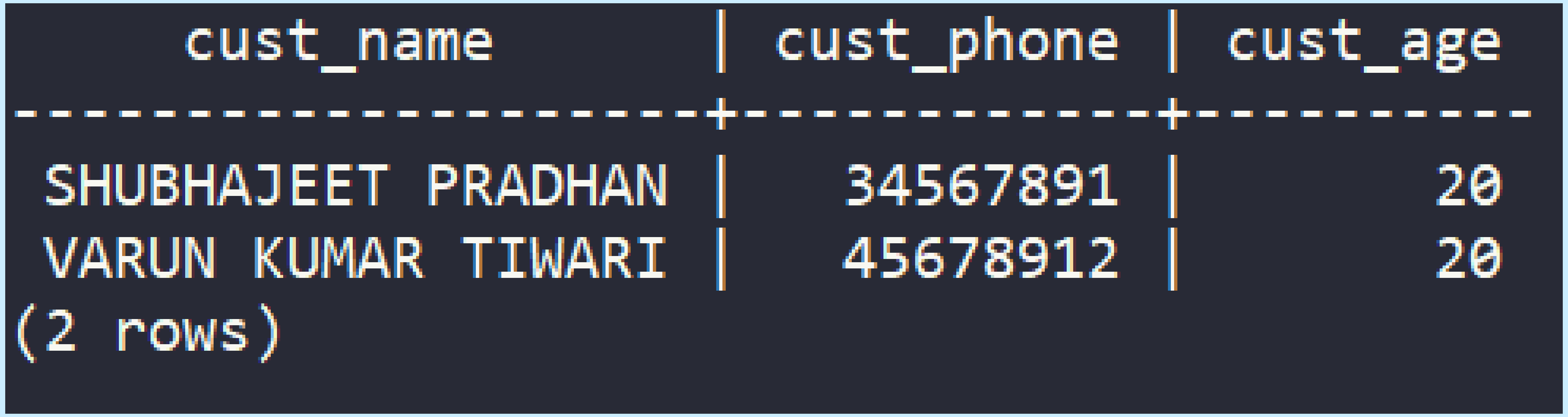
movie_id	movie_Name	duration	genre	rating	lang
MV1	Inception	148	Thriller	5	E
MV2	Iron-Man 2	100	Sci-Fi	5	E
MV3	The Eternals	157	Sci-Fi	4	E
MV4	The Eternals	157	Sci-Fi	4	H
MV5	Iron-Man 2	100	Sci-Fi	5	H

SQL Queries -

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

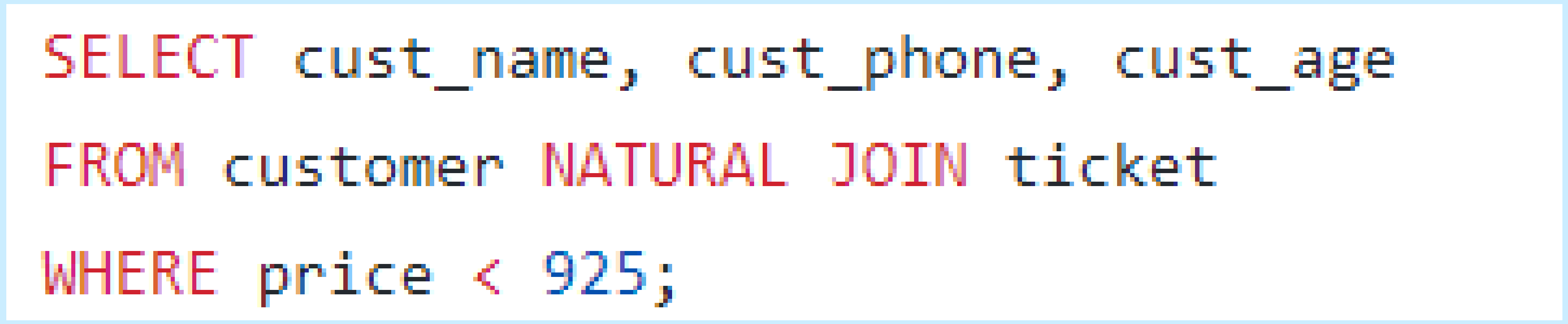


```sql
SELECT cust_name, cust_phone, cust_age
FROM customer NATURAL JOIN ticket NATURAL JOIN shows NATURAL JOIN movie_room
WHERE room_name = 'Executive';
```

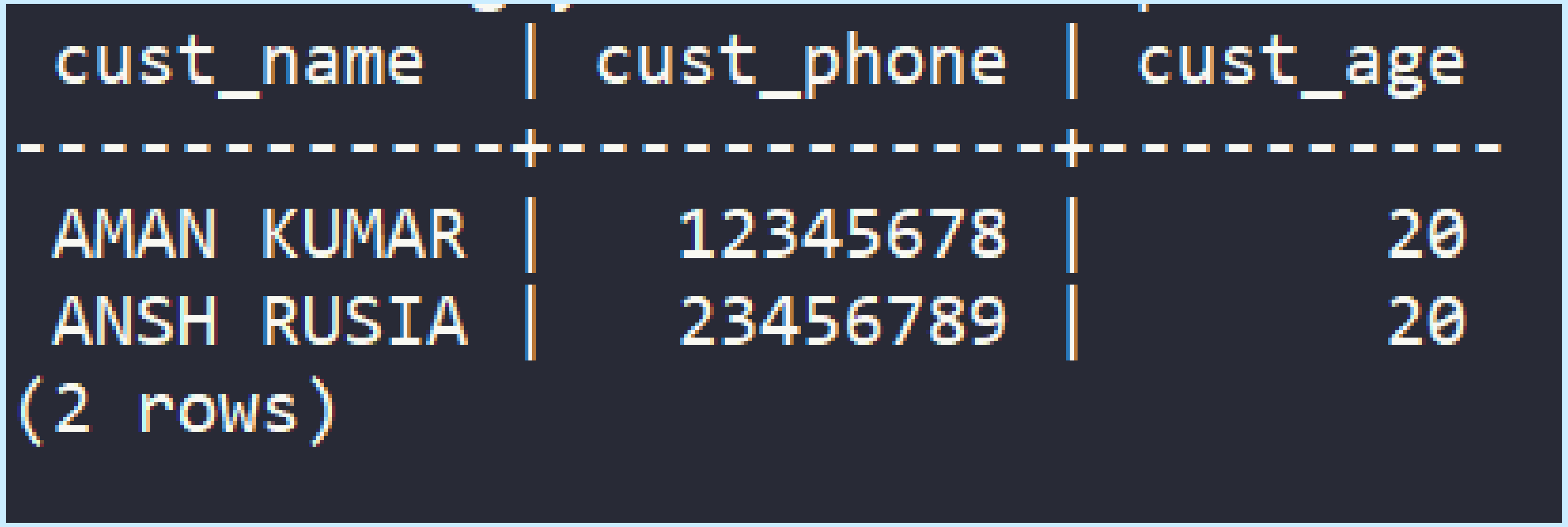


```
     cust_name      | cust_phone | cust_age
--------------------+------------+----------
 SHUBHAJEET PRADHAN |   34567891 |       20
 VARUN KUMAR TIWARI |   45678912 |       20
(2 rows)
```

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

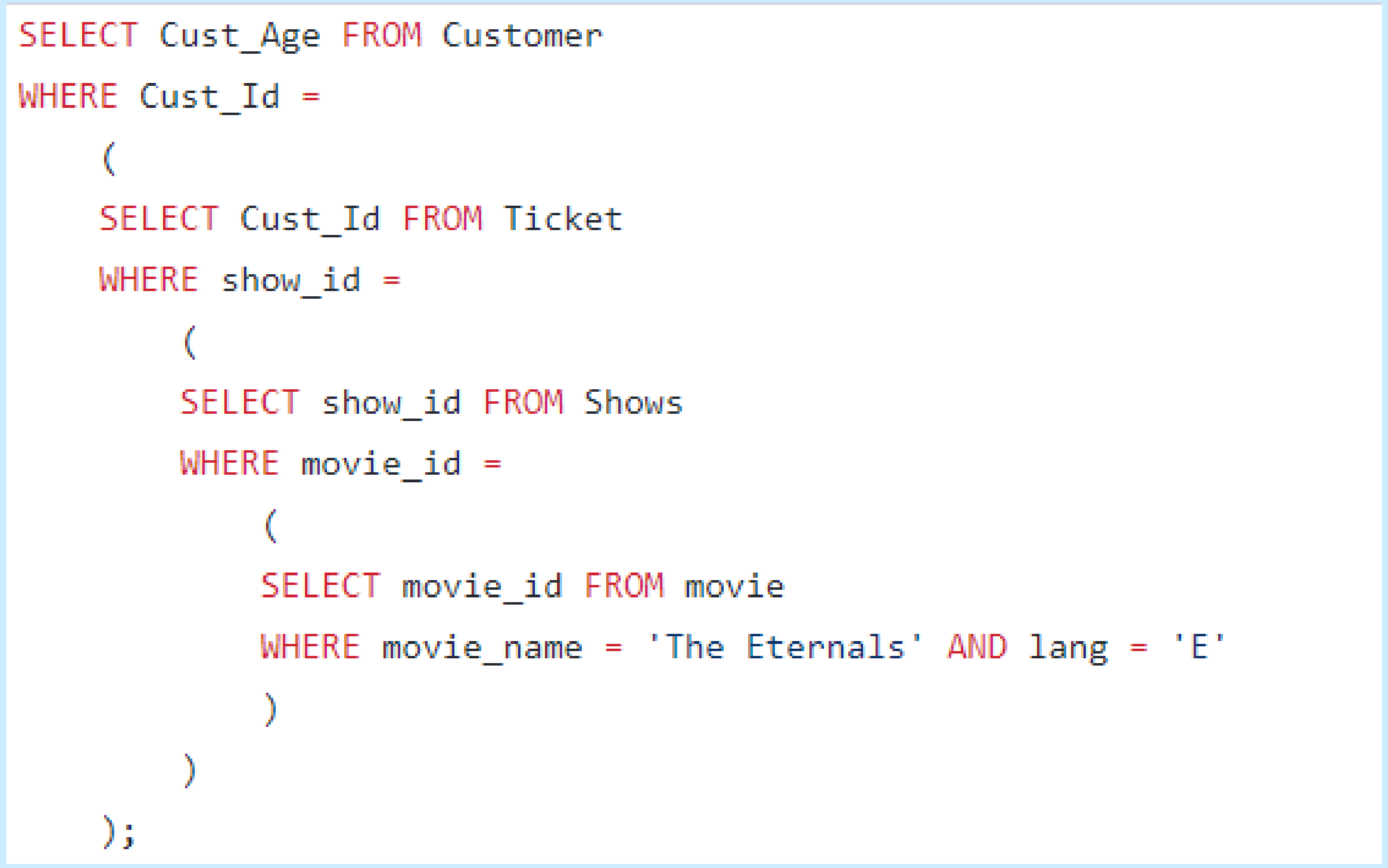


```
SELECT cust_name, cust_phone, cust_age
FROM customer NATURAL JOIN ticket
WHERE price < 925;
```

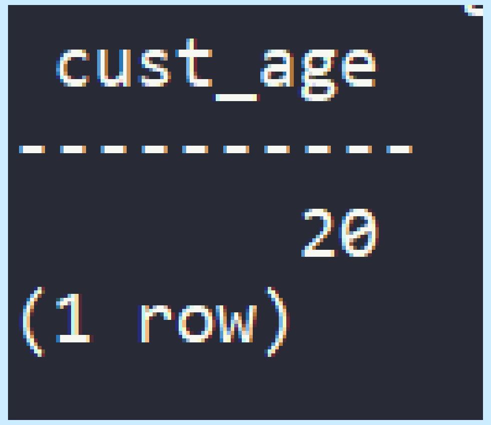


```
 cust_name   | cust_phone | cust_age
-------------+------------+----------
 AMAN KUMAR |   12345678 |       20
 ANSH RUSIA |   23456789 |       20
(2 rows)
```

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

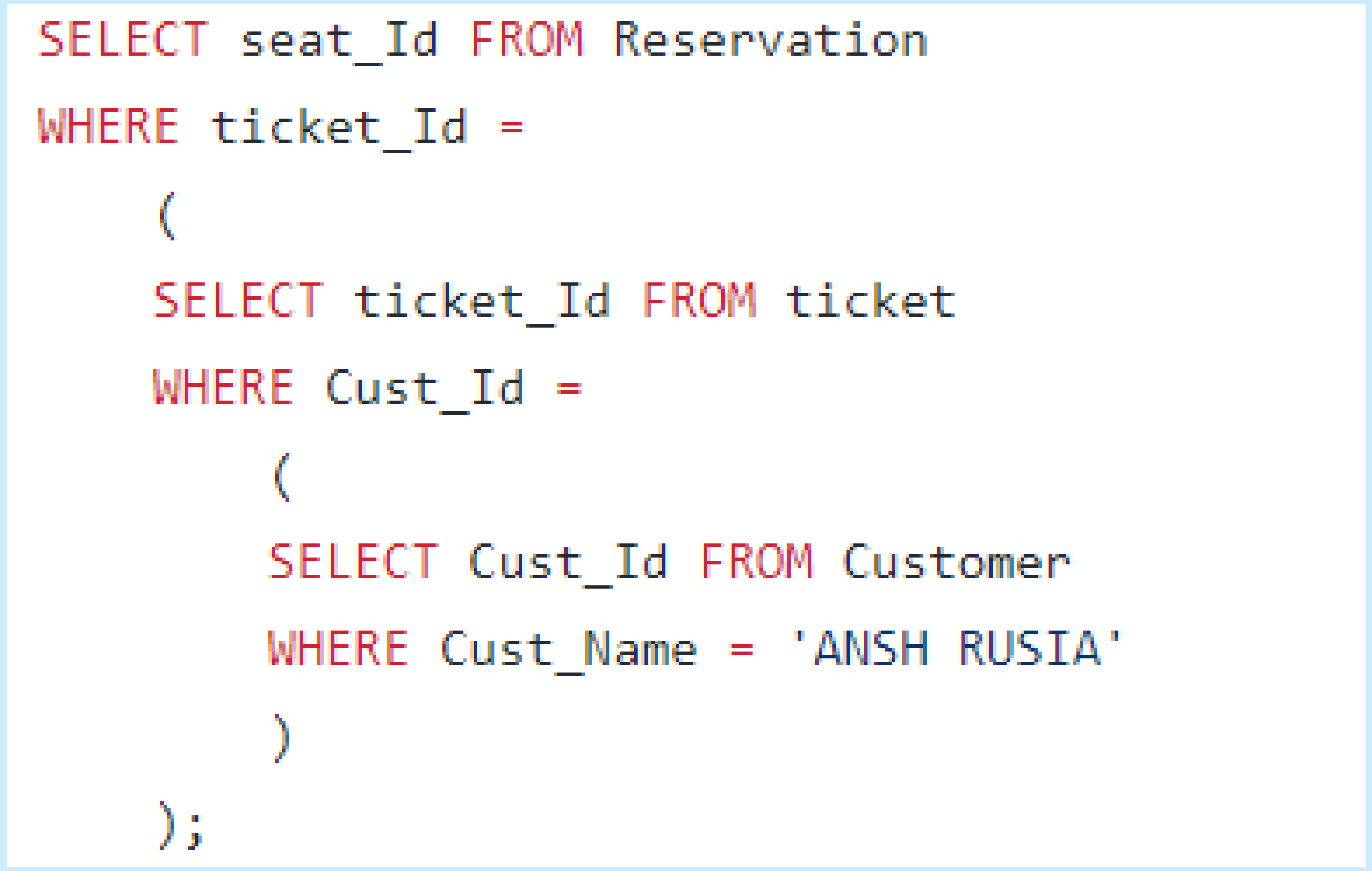


```
SELECT Cust_Age FROM Customer
WHERE Cust_Id =
    (
    SELECT Cust_Id FROM Ticket
    WHERE show_id =
        (
        SELECT show_id FROM Shows
        WHERE movie_id =
            (
            SELECT movie_id FROM movie
            WHERE movie_name = 'The Eternals' AND lang = 'E'
          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

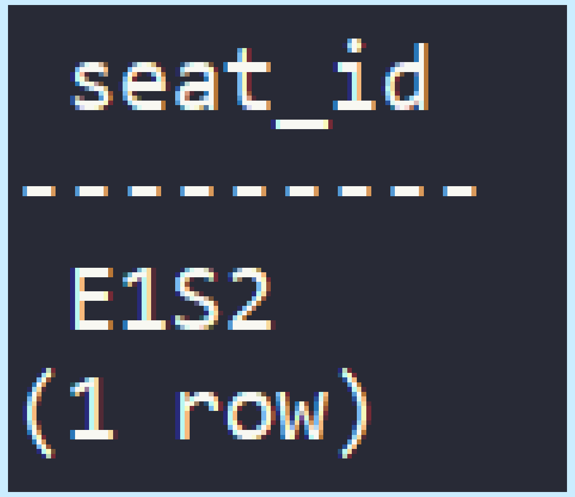


```
 cust_age
----------
       20
(1 row)
```

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

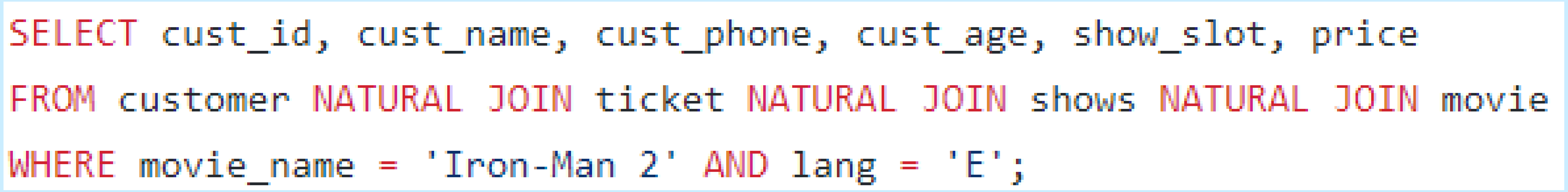


```sql
SELECT seat_Id FROM Reservation
WHERE ticket_Id =
    (
    SELECT ticket_Id FROM ticket
    WHERE Cust_Id =
        (
        SELECT Cust_Id FROM Customer
        WHERE Cust_Name = 'ANSH RUSIA'
        )
    );
```

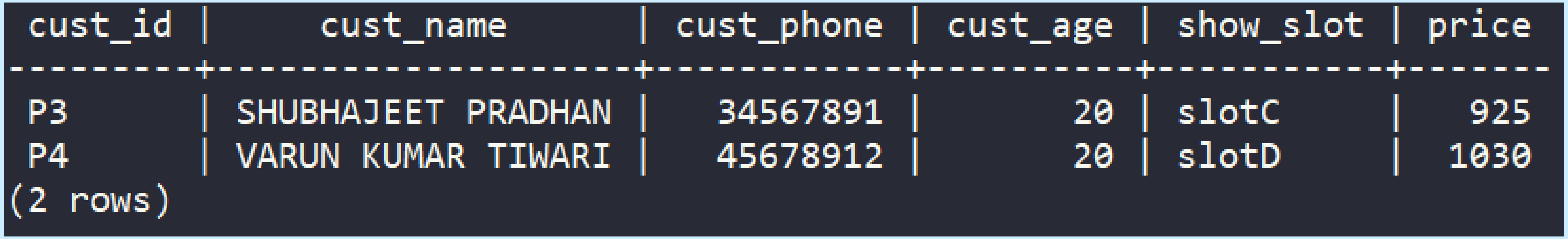


```
 seat_id
----------
 E1S2
(1 row)
```

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



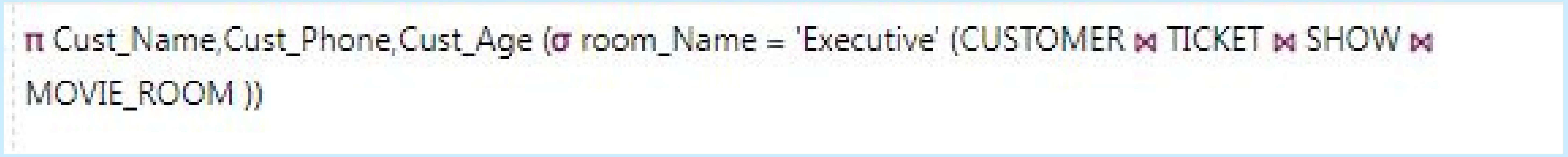
```sql
SELECT cust_id, cust_name, cust_phone, cust_age, show_slot, price
FROM customer NATURAL JOIN ticket NATURAL JOIN shows NATURAL JOIN movie
WHERE movie_name = 'Iron-Man 2' AND lang = 'E';
```



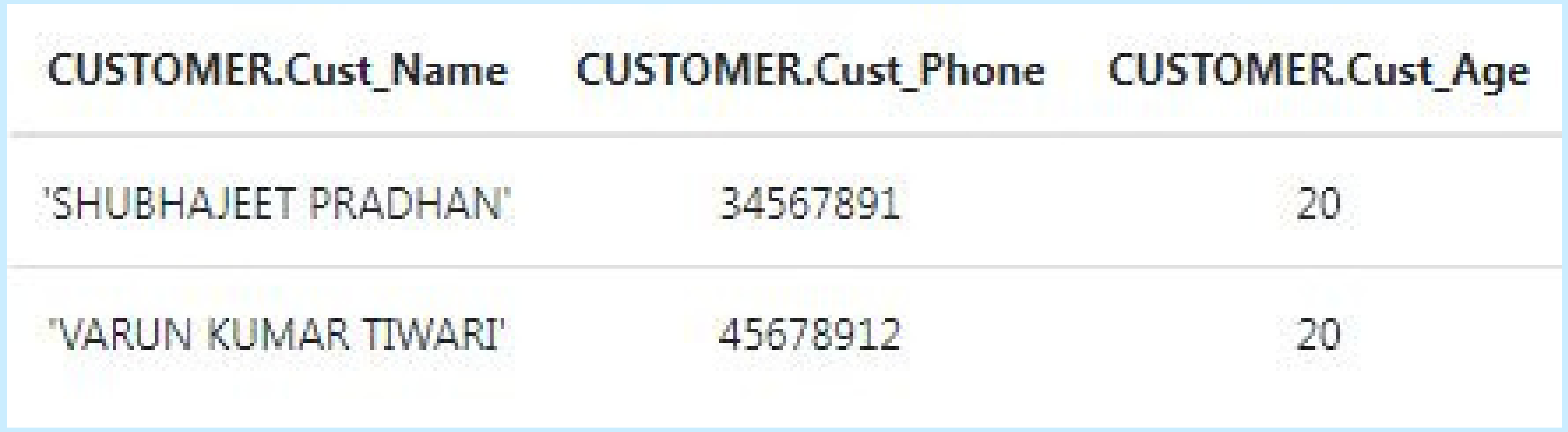
```
 cust_id |      cust_name      | cust_phone | cust_age | show_slot | price
---------+---------------------+------------+----------+-----------+-------
 P3      | SHUBHAJEET PRADHAN  |   34567891 |       20 | slotC     |   925
 P4      | VARUN KUMAR TIWARI  |   45678912 |       20 | slotD     |  1030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

RA Expression-

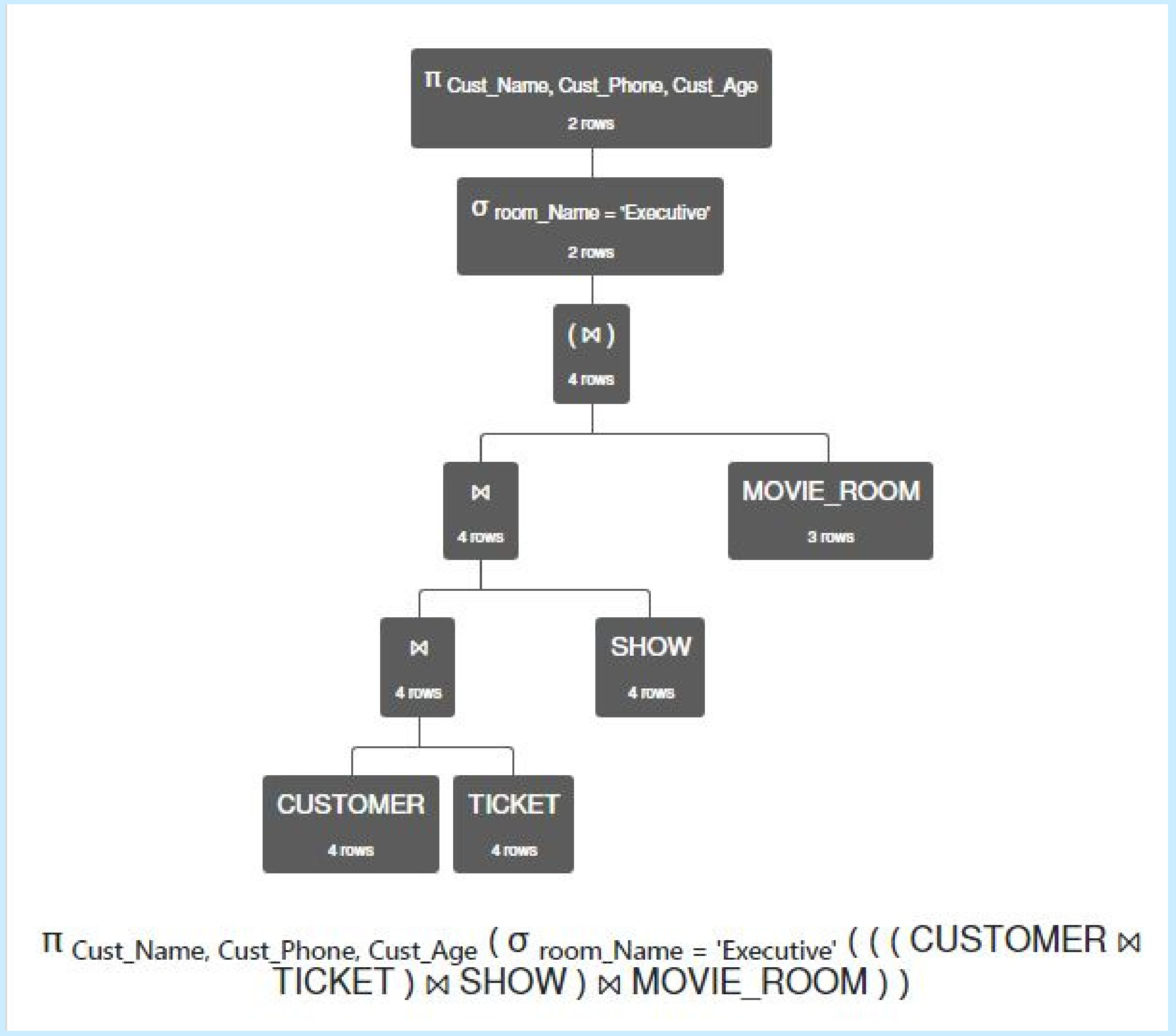
1. Show all the details of people who booked movie for only "Executive Class".



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

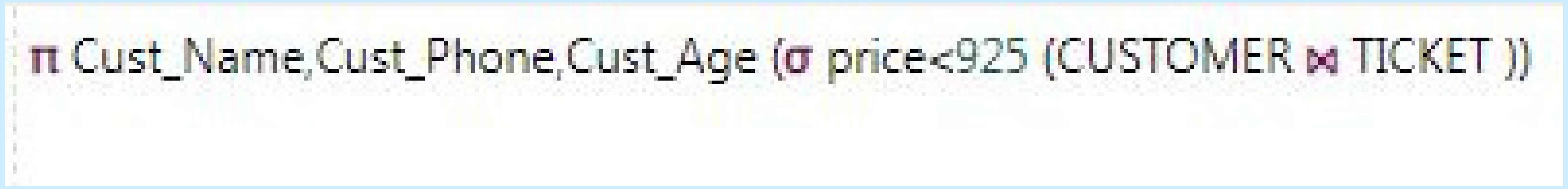


CUSTOMER.Cust_Name	CUSTOMER.Cust_Phone	CUSTOMER.Cust_Age
'SHUBHAJEET PRADHAN'	34567891	20
'VARUN KUMAR TIWARI'	45678912	20

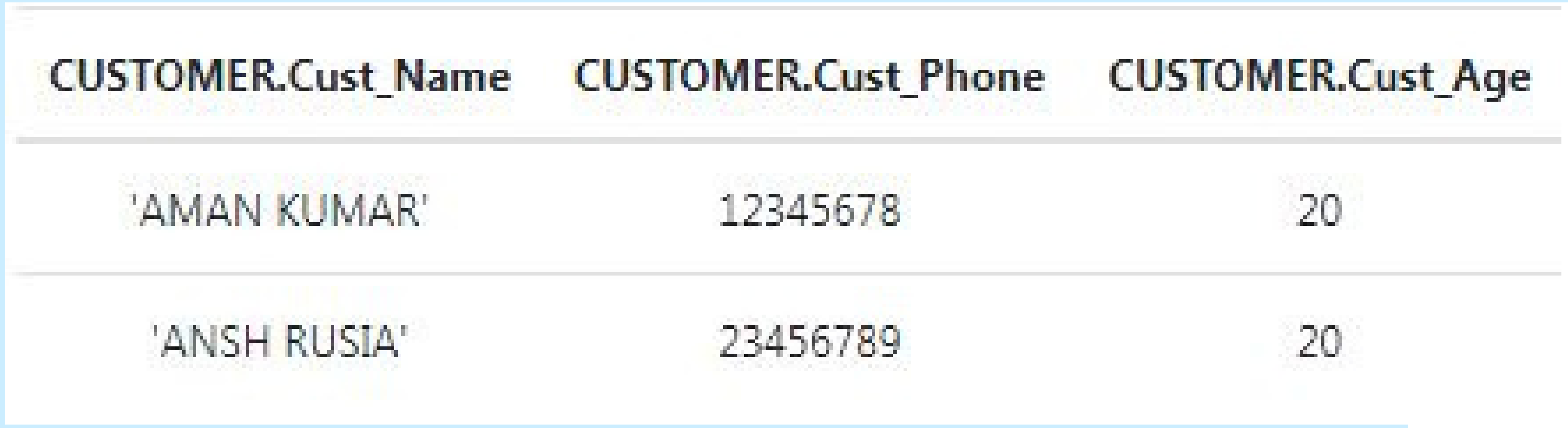


$\pi_{\text{Cust\_Name, Cust\_Phone, Cust\_Age}}\ (\ \sigma_{\text{room\_Name = 'Executive'}}\ (\ (\ (\ \text{CUSTOMER} \bowtie \text{TICKET}\ ) \bowtie \text{SHOW}\ ) \bowtie \text{MOVIE\_ROOM}\ )\ )$

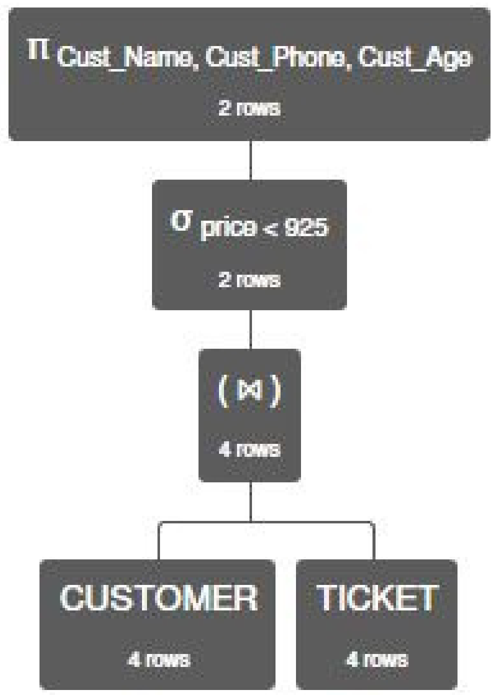
2. Show all the details of peoples who booked for a movie whose price is greater than 925.



π Cust_Name,Cust_Phone,Cust_Age (σ price<925 (CUSTOMER ⋈ TICKET))

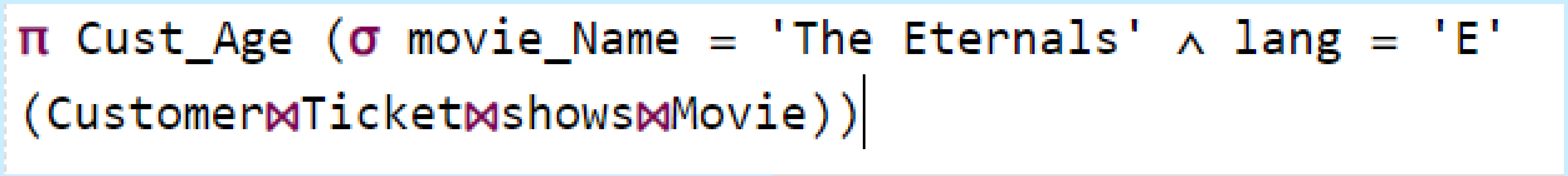


CUSTOMER.Cust_Name	CUSTOMER.Cust_Phone	CUSTOMER.Cust_Age
'AMAN KUMAR'	12345678	20
'ANSH RUSIA'	23456789	20

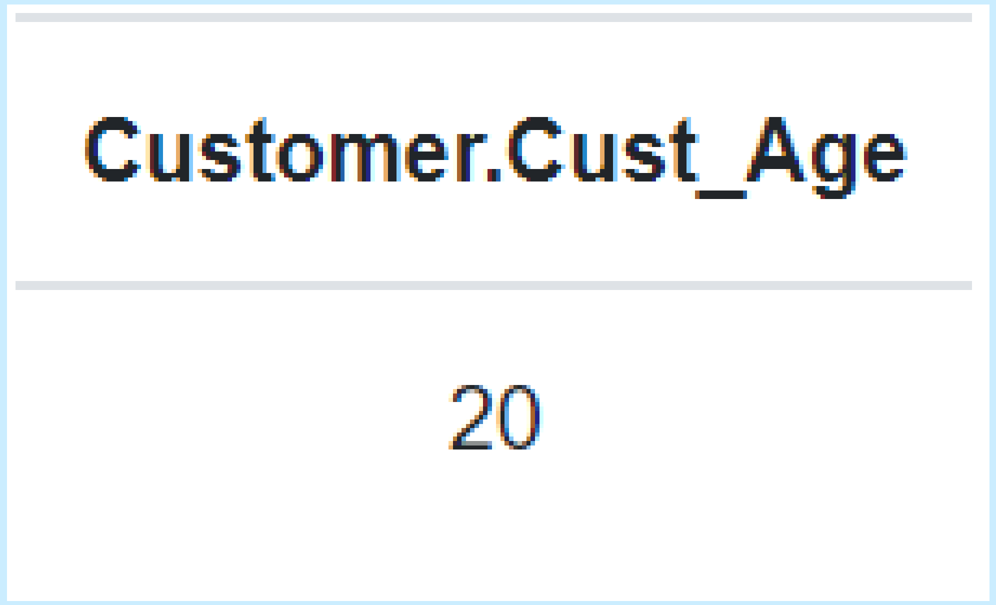


$\pi_{\text{Cust\_Name, Cust\_Phone, Cust\_Age}} (\sigma_{\text{price} < 925} (\text{CUSTOMER} \bowtie \text{TICKET}))$

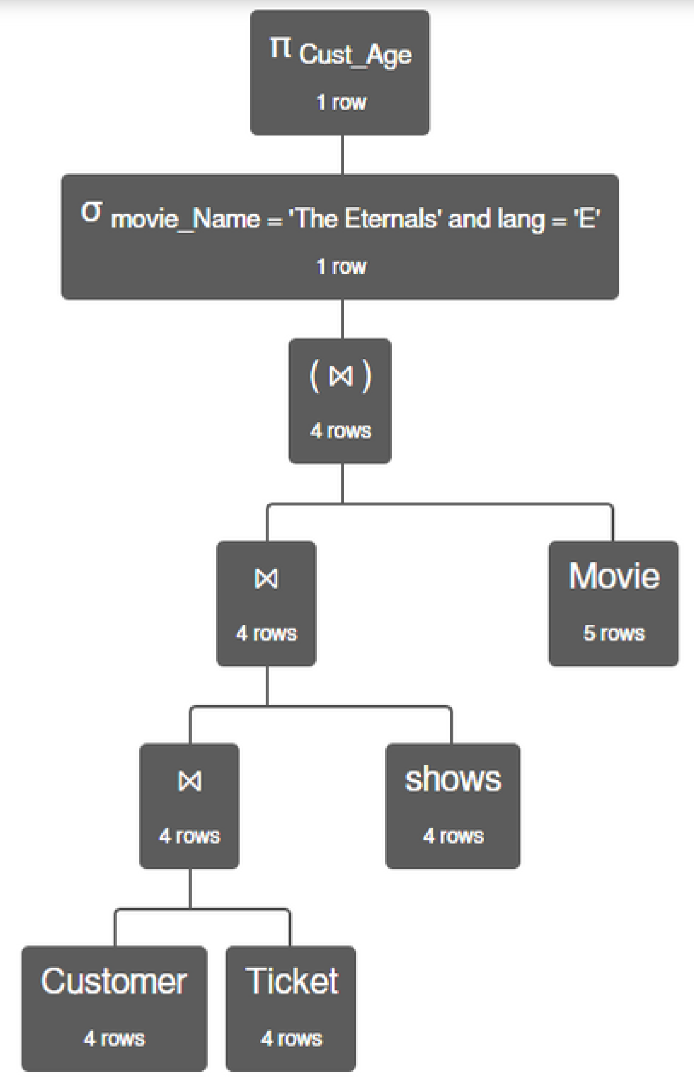
3. Show the age of all customers who are watching the movie "The Eternals" in "English".



```
π Cust_Age (σ movie_Name = 'The Eternals' ∧ lang = 'E'
(Customer⋈Ticket⋈shows⋈Movie))
```

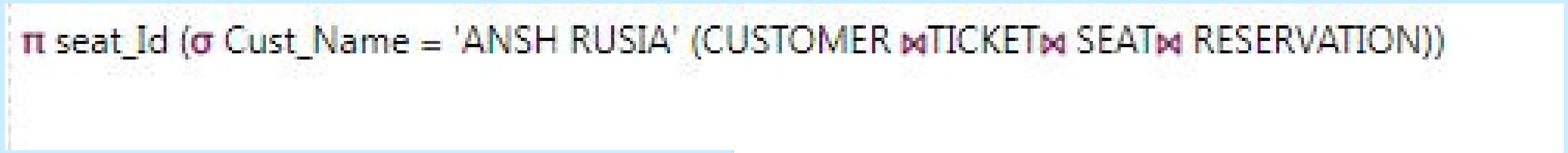


Customer.Cust_Age
20

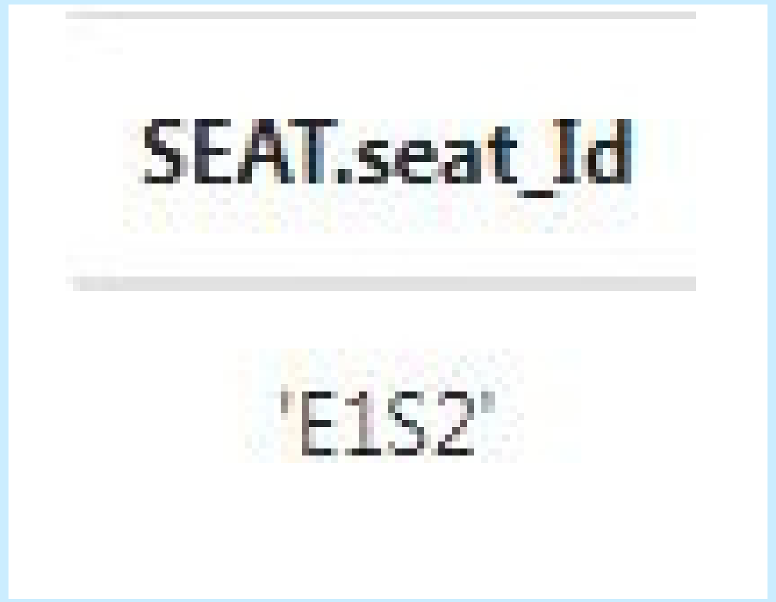


π Cust_Age (σ movie_Name = 'The Eternals' and lang = 'E' (((Customer ⋈ Ticket) ⋈ shows) ⋈ Movie))

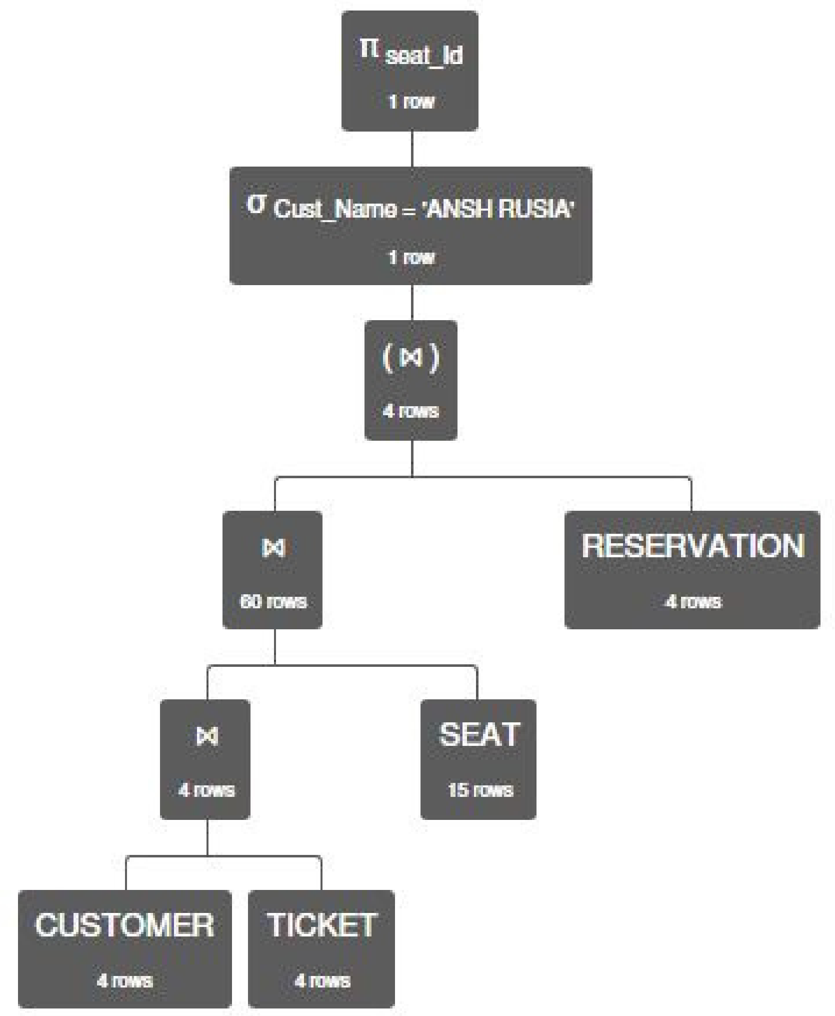
4. Show seat id of customer whose name is "ANSH RUSIA".



π seat_Id (σ Cust_Name = 'ANSH RUSIA' (CUSTOMER ⋈TICKET⋈ SEAT⋈ RESERVATION))



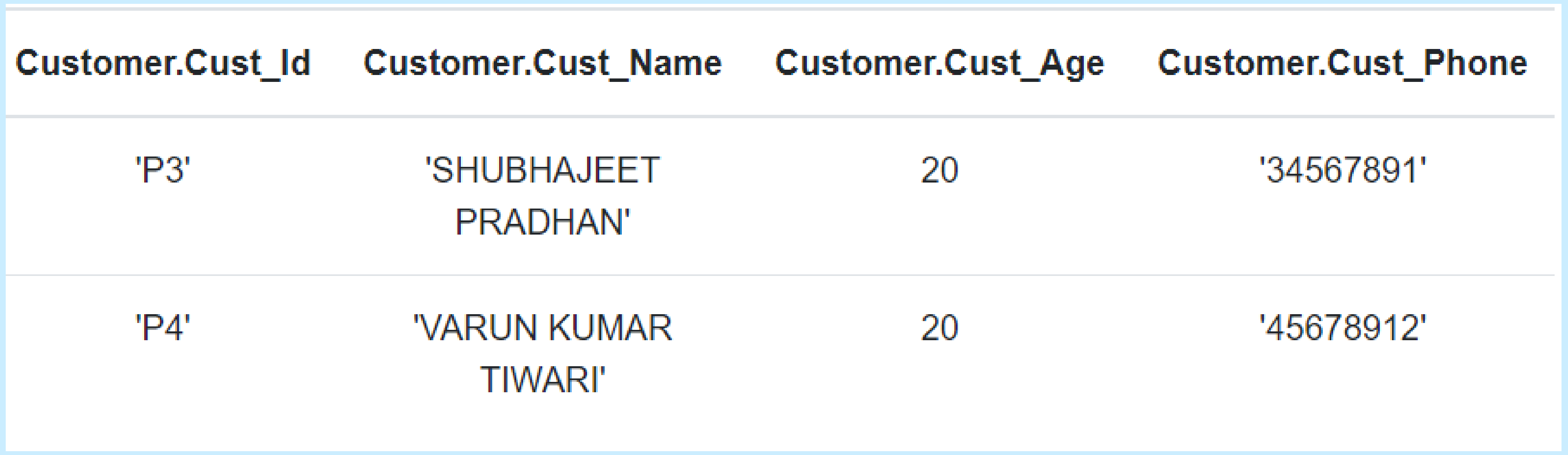
SEAT.seat_Id
'E1S2'



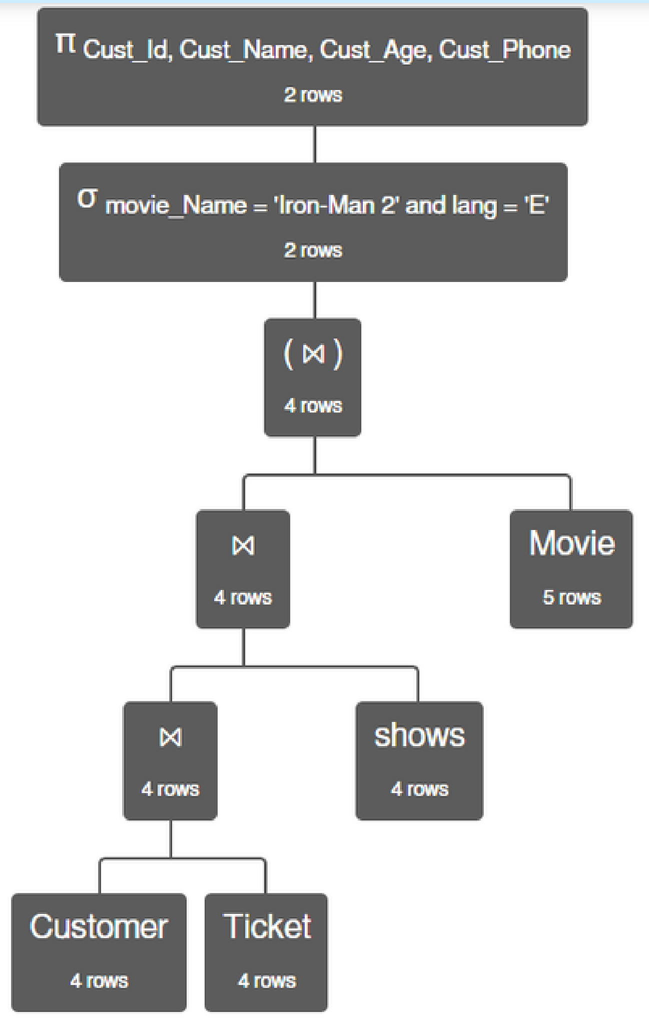
$\pi_{\text{seat\_Id}}$ ($\sigma_{\text{Cust\_Name = 'ANSH RUSIA'}}$ (((CUSTOMER ⋈ TICKET) ⋈ SEAT) ⋈ RESERVATION))

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

```
π Cust_Id, Cust_Name, Cust_Age, Cust_Phone (σ movie_Name = 'Iron-Man 2' ∧
lang = 'E' (Customer⋈Ticket⋈shows⋈Movie))
```



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



π Cust_Id, Cust_Name, Cust_Age, Cust_Phone (σ movie_Name = 'Iron-Man 2' and lang = 'E' (((Customer ⋈ Ticket) ⋈ shows) ⋈ Movie))

ThankYou