# Railway-Management system

Project by-Mr. Raj Patil

Guided by Mr. Samir Warsolkar Sir.

Project for SQL Module

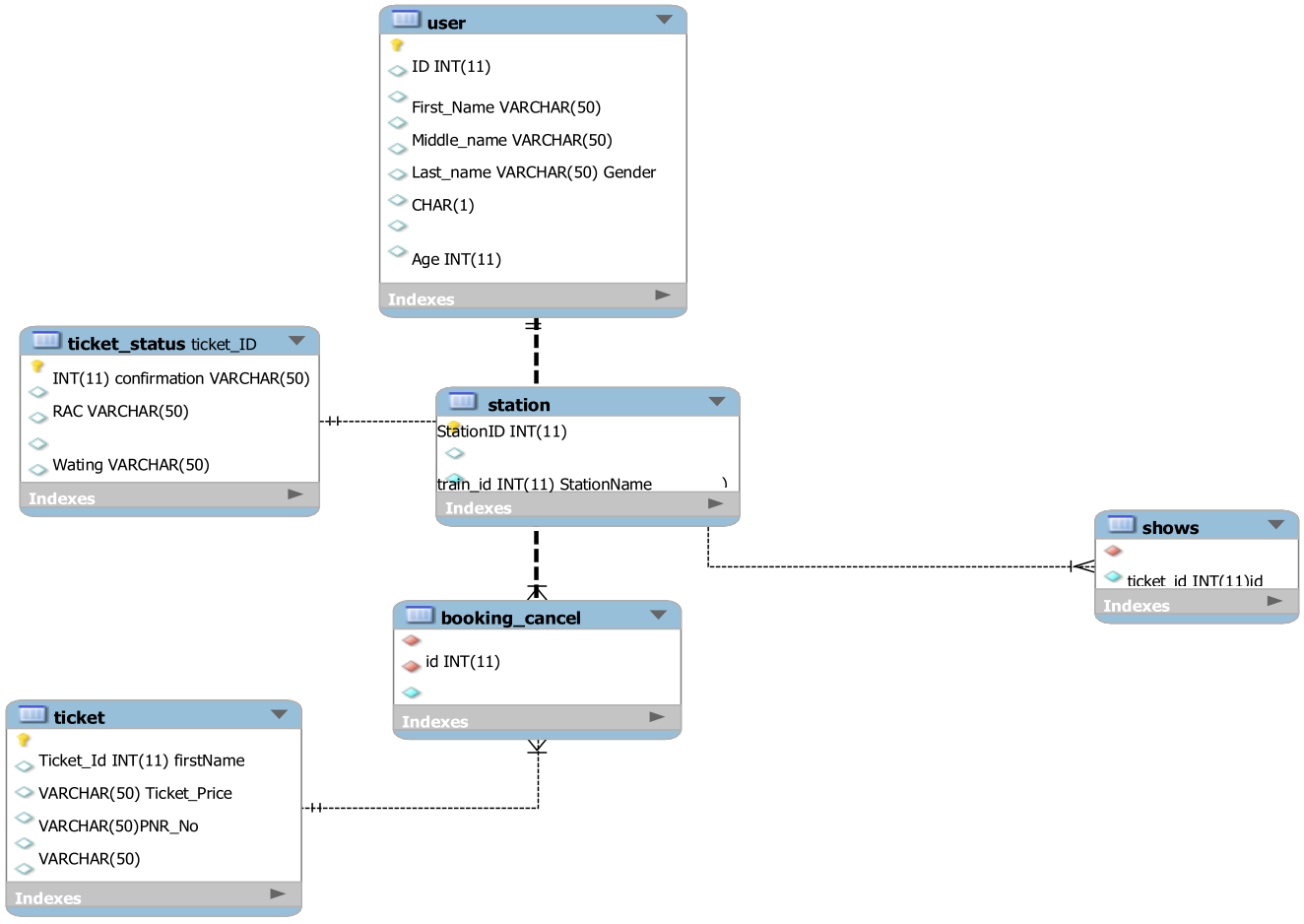
# Abstract

The Railway Reservation System facilitates the passenger's destination, Booking and Cancellation of tickets, enquire about the status of the booked ticket, etc. the aim of case study is to a database maintaining records of different train status and passengers.

## ➢ Description:

- This Project is about creating the database about Railway Reservation System
- The railway reservation system facilitates the passengers to enquire about the trains available on the basis of destination, booking and cancellation of tickets, enquire about the status of the booked ticket, etc. The aim of case study is to design and develop a database maintaining the records of different trains, train status, and users. The record of train includes its number, name, description, capacity, time, destination
- Users can book their tickets for the train in which seats are available. For this, user has to provide the desired train number and the date for which ticket is to be booked. Before booking a ticket for a user, the validity of train number is checked. Once the train number and time are validated, it is checked whether the seat is available. If yes, the ticket is booked with confirm status and corresponding ticket ID is generated which is stored along with other details of the user. The ticket once booked can be cancelled at any time

## ➢ ER-Diagram (Entity Relation -Diagram) for Railway-Management system



## ➢ Table Descriptions:

### ✓ User :

| Field | Type | Null | Key | Default | Extra |
|---|---|---|---|---|---|
| ID | int(11) | NO | PRI | NULL | |
| First_Name | varchar(50) | YES | | NULL | |
| Middle_name | varchar(50) | YES | | NULL | |
| Last_name | varchar(50) | YES | | NULL | |
| Gender | char(1) | YES | | NULL | |
| Age | int(11) | YES | | NULL | |
| Mobile_No | varchar(50) | YES | | NULL | |
| City | varchar(50) | YES | | NULL | |
| State | varchar(50) | YES | | NULL | |
| Pin_Code | varchar(20) | YES | | NULL | |

### ✓ Station:

| Field | Type | Null | Key | Default | Extra |
|---|---|---|---|---|---|
| StationID | int(11) | NO | PRI | NULL | |
| StationName | varchar(50) | NO | | NULL | |

✓ train:

| Field | Type | Null | Key | Default | Extra |
|---|---|---|---|---|---|
| train_id | int(11) | NO | PRI | NULL | |
| Train_Name | varchar(50) | YES | | NULL | |
| Capacity | int(11) | YES | | NULL | |
| TrainDesc | varchar(50) | YES | | NULL | |
| class | varchar(50) | YES | | NULL | |
| Destination | varchar(50) | YES | | NULL | |
| Arrival_Time | varchar(50) | YES | | NULL | |

✓ ticket:

| Field | Type | Null | Key | Default | Extra |
|---|---|---|---|---|---|
| Ticket_Id | int(11) | NO | PRI | NULL | |
| firstName | varchar(50) | YES | | NULL | |
| Ticket_Price | varchar(50) | YES | | NULL | |
| PNR_No | varchar(50) | YES | | NULL | |
| Train_No | int(11) | YES | | NULL | |
| ID | int(11) | YES | | NULL | |

✓ ticket_status:

| Field | Type | Null | Key | Default | Extra |
|---|---|---|---|---|---|
| ticket_ID | int(11) | NO | PRI | NULL | |
| confirmation | varchar(50) | YES | | NULL | |
| RAC | varchar(50) | YES | | NULL | |
| Wating | varchar(50) | YES | | NULL | |
| id | int(11) | YES | | NULL | |

- ✓ shows:

| Field | Type | Null | Key | Default | Extra |
|---|---|---|---|---|---|
| ticket_id | int(11) | NO | MUL | NULL | |
| id | int(11) | NO | | NULL | |

- ✓ booking cancel;

| Field | Type | Null | Key | Default | Extra |
|---|---|---|---|---|---|
| id | int(11) | NO | MUL | NULL | |
| ticket_ID | int(11) | NO | MUL | NULL | |
| First_name | varchar(50) | NO | | NULL | |

## ➢ Commands

**create table user(**

ID int primary key,

First_Name varchar(50),

Middle_name varchar(50),

Last_name varchar(50),

Gender char,

Age int,

Mobile_No varchar(50),

City varchar(50),

State varchar(50),

Pin_Code varchar(20));

insert into user (ID, First_Name ,Middle_name , Last_name , Gender, Age, Mobile_No,City , State, Pin_Code)VALUES

(1,'Anushka', 'Kumari', 'Gupta', 'F','20', '9890888666', 'Badarpur', 'Delhi','110044'),

(2, 'Harshita', 'Kumari', 'Prajapati', 'F','19','9022336760', 'Roshanara', 'Delhi', '110007'),

(3, 'Khyati', 'Kumari', 'Singh', 'F', '19','9022336563', 'Rohini', 'Delhi', '110087'),

(4, 'Geeta', 'Singh', 'Rajan','F','22','9024566760', 'Shahadra', 'Haryana', '11054'),

(5,'Neha', 'Kumari', 'Sood','F','21','9992336760', 'Sarita Vihar', 'Haryana', '156007'),

(6, 'Muskaan', 'sharma', 'Ranjan','F','20','9023676760', 'Dwarka', 'Punjab', '113407'),

(7,'Aditi', 'Yadav', 'Pran', 'F', '34','9022336444', 'Lajpat Nagar', 'Punjab', '114507'),

(8,'Akash', 'Kumar', 'Baghel', 'M','24','9342336760', 'Nehru place', 'Delhi', '112307'),

(9,'Sarthak', 'Sinha', 'Dagar', 'M','20','8042336760', 'Sangam Vihar', 'Haryana', '101007'),

(10, 'Shiv', 'Kumar', 'Bharti', 'M', '19','9022356112', 'Dwarka', 'Delhi', '110067');

**CREATE TABLE Station (**

StationID INT PRIMARY KEY,

StationName VARCHAR(50) NOT NULL

);

INSERT INTO Station (StationID,StationName)

VALUES

(1, 'Mumbai'),

(2, 'Delhi'),

(3, 'Chennai'),

(4, 'Kolkata'),

(5, 'Bangalore'),

(6, 'Hyderabad'),

(7, 'Ahmedabad'),

(8, 'Pune'),

(9, 'Jaipur'),

(10, 'Lucknow'),

(11, 'Kanpur'),

(12, 'Nagpur'),

(13, 'Patna'),

(14, 'Indore'),

(15, 'Thane'),

(16, 'Bhopal'),

(17, 'Visakhapatnam'),

(18, 'Agra');

**Create table Train (**

train_id int primary key,

Train_Name varchar(50),

Capacity int,

TrainDesc Varchar(50),

class varchar(50),

Destination varchar(50),

Arrival_Time varchar(50));

insert into Train (train_id, Train_Name,Capacity, TrainDesc, class,Destination, Arrival_Time ) VALUES

(1,'AshramExpress', 1021, 700,'Third Class', 'Kolkata', '21:30:00'),

(2,'Shatabdi Express', 1089,600, 'First Class', 'Allahabad', '16:30:00' ),

(3,'Harijan Express', 1290, 3600,'Second Class', 'Madhya Pradesh', '13:00:00' ),

(4,'Jammu Mail Express', 1345,4500,'Third Class', 'Madras', '22:00:00'),

(5,'Delhi Jaipur Double Decker',3000,1234, 'Third Class', 'Jaipur', '22:45:00' ),

(6,'Jaipur Delhi Double Decker', 1453,8000, 'Third Class', 'Patna', '09:30:00' ),

(7,'Delhi Chandigarh Shatabdi', 1678,2400, 'Second Class', 'Chandigarh', '20:30:00'),

(8,'Chandigarh Delhi Shatabdi', 1276,3000,'First Class', 'Jammu Kashmir', '14:00:00');

**Create table Ticket**(

Ticket_Id int primary key,

firstName varchar(50),

Ticket_Price varchar(50),

PNR_No varchar (50),

Train_No int,

ID int

);

insert into ticket (Ticket_Id, firstName,Ticket_Price,PNR_No,Train_No,ID) values

(109900, 'Chandigarh', '200', '2346712891','1678',1),

(109834,'Delhi', '300' ,'4566278123' ,'2341',2),

(106734, 'Jaipur', '156','3467345672','9043',3);

```
create table ticket_status(
ticket_ID int primary key,
confirmation varchar (50),
RAC varchar (50),
Wating varchar (50),
id int
);
insert into ticket_status(ticket_id, confirmation,RAC,Wating,id) values
(109900, 'Yes','No', 'No', 1),
(109834,'No', 'Yes', 'No',2),
(106734, 'yes', 'Yes', 'No',3);

drop table ticket_status;
describe ticket_status;
select * from ticket_status;

create table shows (
ticket_id int not null,
id int not null,
foreign key (ticket_ID) references ticket_status(ticket_ID)
);
```


```
insert into shows (ticket_id,id) values
(109900,1),
(109834,2),
(106734,3);

INSERT INTO booking_cancel(id,ticket_ID,First_Name) VALUES
(1,109900,'Chandigarh'),
(2,109834,'Delhi'),
(3,106734,'Jaipur');
```

## Data Retrieval Using Select Statement

- **select * from Station;**

| StationID | StationName |
|---|---|
| 1 | Mumbai |
| 2 | Delhi |
| 3 | Chennai |
| 4 | Kolkata |
| 5 | Bangalore |
| 6 | Hyderabad |
| 7 | Ahmedabad |
| 8 | Pune |
| 9 | Jaipur |
| 10 | Lucknow |
| 11 | Kanpur |
| 12 | Nagpur |
| 13 | Patna |
| 14 | Indore |
| 15 | Thane |
| 16 | Bhopal |
| 17 | Visakhapatnam |
| 18 | Agra |

- **select * from user;**

| ID | First_Name | Middle_name | Last_name | Gender | Age | Mobile_No | City | State | Pin_Code |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Anushka | Kumari | Gupta | F | 20 | 9.89E+09 | Badarpur | Delhi | 110044 |
| 2 | Harshita | Kumari | Prajapati | F | 19 | 9.02E+09 | Roshanara | Delhi | 110007 |
| 3 | Khyati | Kumari | Singh | F | 19 | 9.02E+09 | Rohini | Delhi | 110087 |
| 4 | Geeta | Singh | Rajan | F | 22 | 9.02E+09 | Shahadra | Haryana | 11054 |
| 5 | Neha | Kumari | Sood | F | 21 | 9.99E+09 | Sarita Vihar | Haryana | 156007 |
| 6 | Muskaan | sharma | Ranjan | F | 20 | 9.02E+09 | Dwarka | Punjab | 113407 |
| 7 | Aditi | Yadav | Pran | F | 34 | 9.02E+09 | Lajpat Nagar | Punjab | 114507 |
| 8 | Akash | Kumar | Baghel | M | 24 | 9.34E+09 | Nehru place | Delhi | 112307 |
| 9 | Sarthak | Sinha | Dagar | M | 20 | 8.04E+09 | Sangam Vihar | Haryana | 101007 |
| 10 | Shiv | Kumar | Bharti | M | 19 | 9.02E+09 | Dwarka | Delhi | 110067 |

- **select * from train;**

| train_id | Train_Name | Capacity | TrainDesc | class | Destination | Arrival_Time |
|---|---|---|---|---|---|---|
| 1 | AshramExpress | 1021 | 700 | Third Class | Kolkata | 21:30:00 |
| 2 | Shatabdi Express | 1089 | 600 | First Class | Allahabad | 16:30:00 |
| 3 | Harijan Express | 1290 | 3600 | Second Class | Madhya Pradesh | 13:00:00 |
| 4 | Jammu Mail Express | 1345 | 4500 | Third Class | Madras | 22:00:00 |
| 5 | Delhi Jaipur Double Decker | 3000 | 1234 | Third Class | Jaipur | 22:45:00 |
| 6 | Jaipur Delhi Double Decker | 1453 | 8000 | Third Class | Patna | 9:30:00 |
| 7 | Delhi Chandigarh Shatabdi | 1678 | 2400 | Second Class | Chandigarh | 20:30:00 |
| 8 | Chandigarh Delhi Shatabdi | 1276 | 3000 | First Class | Jammu Kashmir | 14:00:00 |

- **select * from ticket;**

| Ticket_Id | firstName | Ticket_Price | PNR_No | Train_No | ID |
|---|---|---|---|---|---|
| 106734 | Jaipur | 156 | 3.47E+09 | 9043 | 3 |
| 109834 | Delhi | 300 | 4.57E+09 | 2341 | 2 |
| 109900 | Chandigarh | 200 | 2.35E+09 | 1678 | 1 |

- **select * from ticket_status;**

| ticket_ID | confirmation | RAC | Wating | id |
|---|---|---|---|---|
| 106734 | yes | Yes | No | 3 |
| 109834 | No | Yes | No | 2 |
| 109900 | Yes | No | No | 1 |

- **select * from shows;**

| ticket_id | id |
|---|---|
| 109900 | 1 |
| 109834 | 2 |
| 106734 | 3 |
| 109900 | 1 |
| 109834 | 2 |
| 106734 | 3 |

- **select * from booking_cancel;**

| id | ticket_ID | First_name |
|---|---|---|
| 1 | 109900 | Chandigarh |
| 2 | 109834 | Delhi |
| 3 | 106734 | Jaipur |
| 1 | 109900 | Chandigarh |
| 2 | 109834 | Delhi |
| 3 | 106734 | Jaipur |

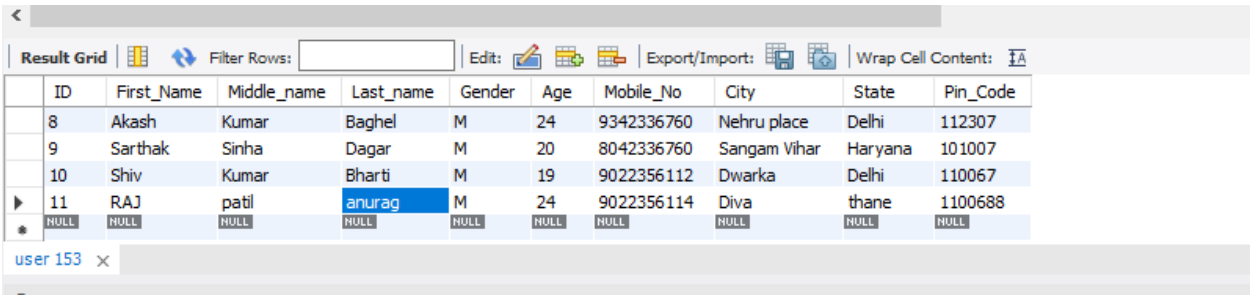
## Describe Statement

- describe Station;
- describe user;
- describe train;
- describe ticket;
- describe ticket_status;
- describe shows;
- describe booking_cancel;

## ➢ SQL Query

1) **inserting**:

insert into user value (11, 'RAJ', 'patil', 'anurag', 'M', '24','9022356114', 'Diva', 'thane', '1100688');



Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

| ID | First_Name | Middle_name | Last_name | Gender | Age | Mobile_No | City | State | Pin_Code |
|---|---|---|---|---|---|---|---|---|---|
| 8 | Akash | Kumar | Baghel | M | 24 | 9342336760 | Nehru place | Delhi | 112307 |
| 9 | Sarthak | Sinha | Dagar | M | 20 | 8042336760 | Sangam Vihar | Haryana | 101007 |
| 10 | Shiv | Kumar | Bharti | M | 19 | 9022356112 | Dwarka | Delhi | 110067 |
| 11 | RAJ | patil | anurag | M | 24 | 9022356114 | Diva | thane | 1100688 |
| NULL | NULL | NULL | NULL | NULL | NULL | NULL | NULL | NULL | NULL |

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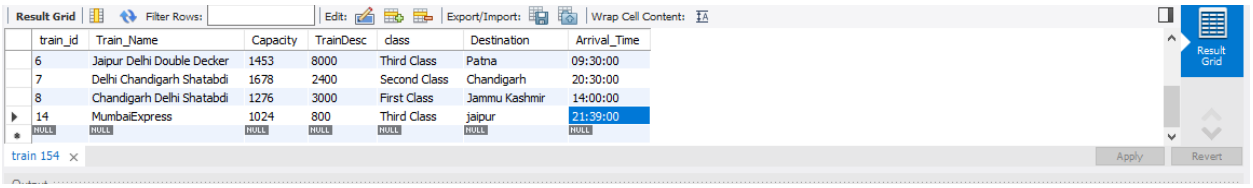
2) insert into train values (14,'MumbaiExpress', 1024, 800,'Third Class', 'jaipur','21:39:00');



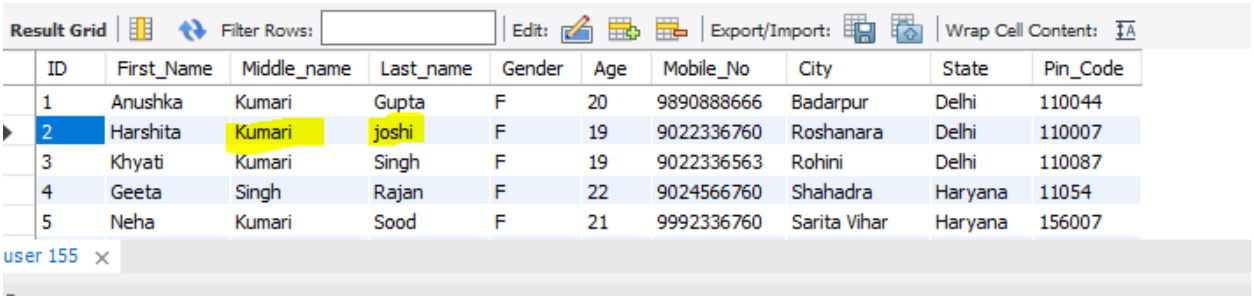
Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

| train_id | Train_Name | Capacity | TrainDesc | class | Destination | Arrival_Time |
|---|---|---|---|---|---|---|
| 6 | Jaipur Delhi Double Decker | 1453 | 8000 | Third Class | Patna | 09:30:00 |
| 7 | Delhi Chandigarh Shatabdi | 1678 | 2400 | Second Class | Chandigarh | 20:30:00 |
| 8 | Chandigarh Delhi Shatabdi | 1276 | 3000 | First Class | Jammu Kashmir | 14:00:00 |
| 14 | MumbaiExpress | 1024 | 800 | Third Class | jaipur | 21:39:00 |
| NULL | NULL | NULL | NULL | NULL | NULL | NULL |

train 154 | Result Grid | Apply | Revert

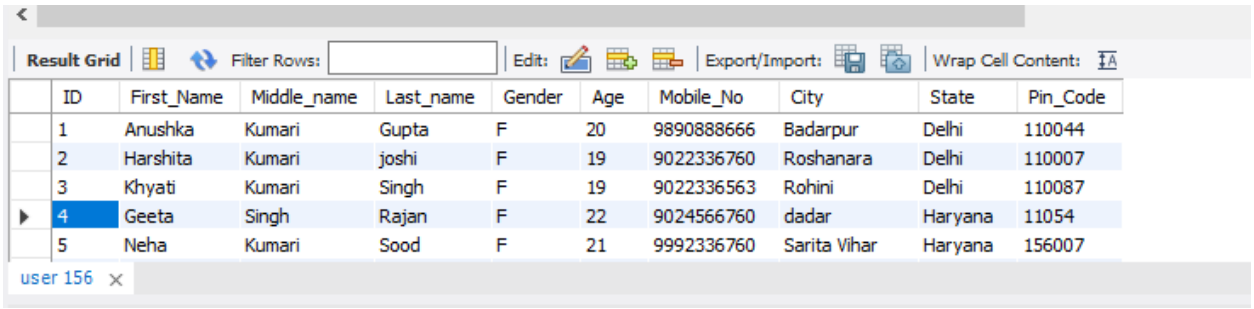
### 3) Updating

1) update user set last_name= 'joshi'where id =2;
   select * from user;



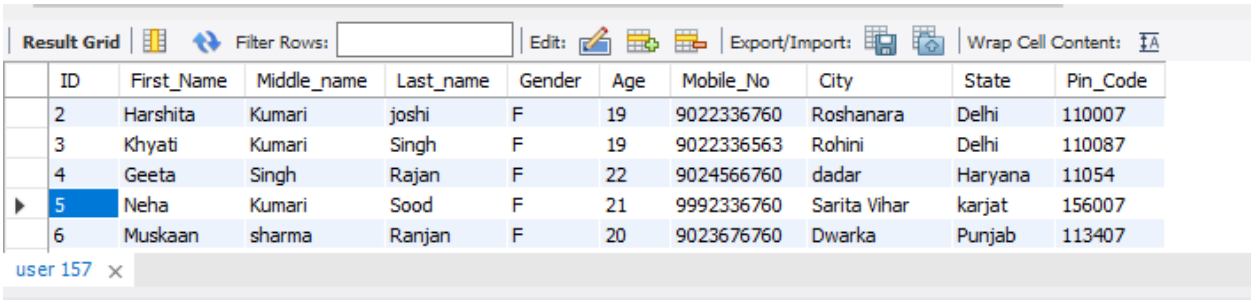
| ID | First_Name | Middle_name | Last_name | Gender | Age | Mobile_No | City | State | Pin_Code |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Anushka | Kumari | Gupta | F | 20 | 9890888666 | Badarpur | Delhi | 110044 |
| 2 | Harshita | Kumari | joshi | F | 19 | 9022336760 | Roshanara | Delhi | 110007 |
| 3 | Khyati | Kumari | Singh | F | 19 | 9022336563 | Rohini | Delhi | 110087 |
| 4 | Geeta | Singh | Rajan | F | 22 | 9024566760 | Shahadra | Haryana | 11054 |
| 5 | Neha | Kumari | Sood | F | 21 | 9992336760 | Sarita Vihar | Haryana | 156007 |

4) update user set city= 'dadar'where id =4;
   select * from user;



| ID | First_Name | Middle_name | Last_name | Gender | Age | Mobile_No | City | State | Pin_Code |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Anushka | Kumari | Gupta | F | 20 | 9890888666 | Badarpur | Delhi | 110044 |
| 2 | Harshita | Kumari | joshi | F | 19 | 9022336760 | Roshanara | Delhi | 110007 |
| 3 | Khyati | Kumari | Singh | F | 19 | 9022336563 | Rohini | Delhi | 110087 |
| 4 | Geeta | Singh | Rajan | F | 22 | 9024566760 | dadar | Haryana | 11054 |
| 5 | Neha | Kumari | Sood | F | 21 | 9992336760 | Sarita Vihar | Haryana | 156007 |

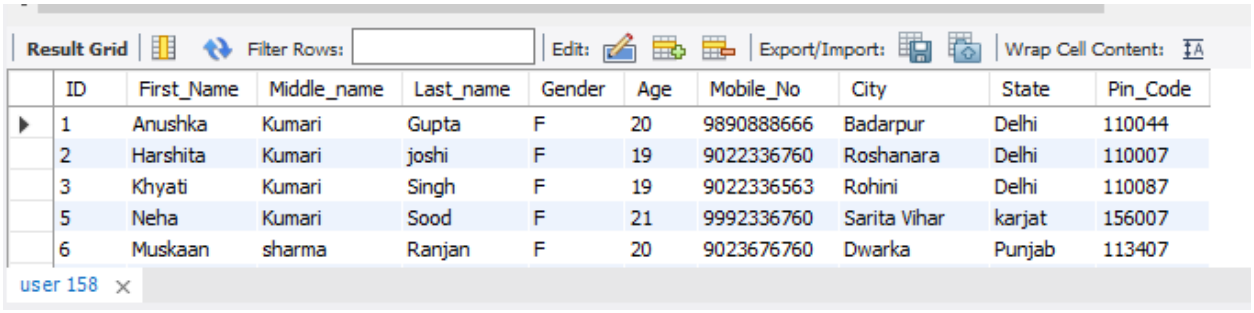
5) update user set state= 'karjat'where id =5;
   select * from user;



| ID | First_Name | Middle_name | Last_name | Gender | Age | Mobile_No | City | State | Pin_Code |
|---|---|---|---|---|---|---|---|---|---|
| 2 | Harshita | Kumari | joshi | F | 19 | 9022336760 | Roshanara | Delhi | 110007 |
| 3 | Khyati | Kumari | Singh | F | 19 | 9022336563 | Rohini | Delhi | 110087 |
| 4 | Geeta | Singh | Rajan | F | 22 | 9024566760 | dadar | Haryana | 11054 |
| 5 | Neha | Kumari | Sood | F | 21 | 9992336760 | Sarita Vihar | karjat | 156007 |
| 6 | Muskaan | sharma | Ranjan | F | 20 | 9023676760 | Dwarka | Punjab | 113407 |

6) **Deleting**

```
delete from user where id ='4';
select * from user;
```



Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

| ID | First_Name | Middle_name | Last_name | Gender | Age | Mobile_No | City | State | Pin_Code |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Anushka | Kumari | Gupta | F | 20 | 9890888666 | Badarpur | Delhi | 110044 |
| 2 | Harshita | Kumari | joshi | F | 19 | 9022336760 | Roshanara | Delhi | 110007 |
| 3 | Khyati | Kumari | Singh | F | 19 | 9022336563 | Rohini | Delhi | 110087 |
| 5 | Neha | Kumari | Sood | F | 21 | 9992336760 | Sarita Vihar | karjat | 156007 |
| 6 | Muskaan | sharma | Ranjan | F | 20 | 9023676760 | Dwarka | Punjab | 113407 |

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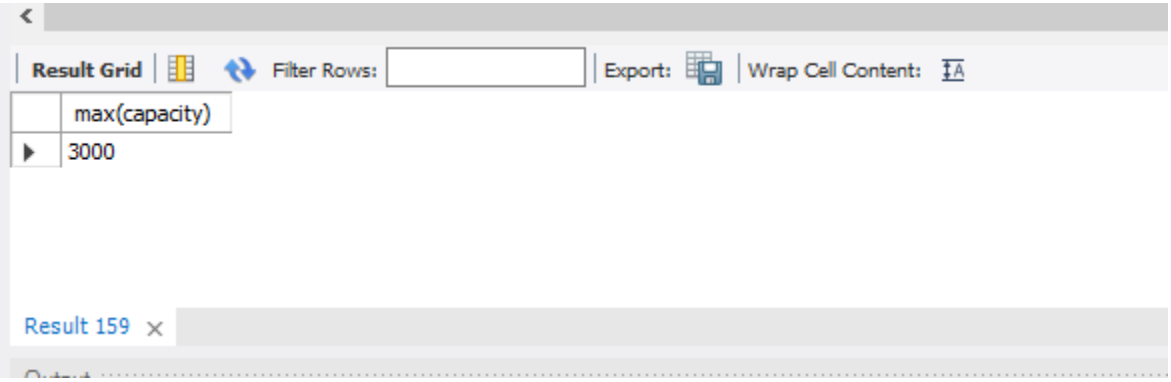
7) Write a query to obtain the maximum cost of all the train capacity.

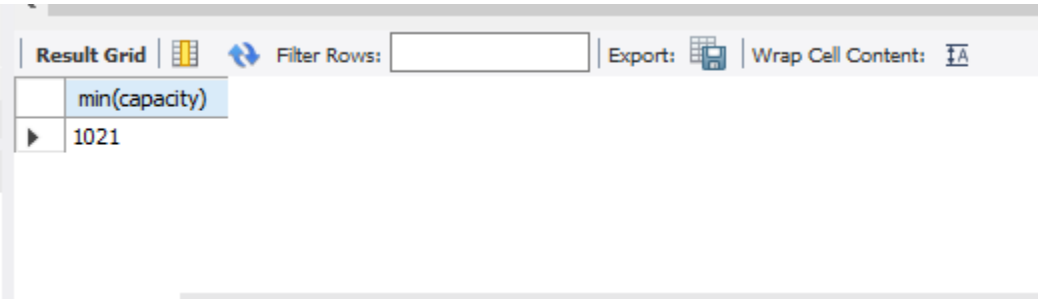
maximum:

```
select max(capacity)
from
train;
```




8) Write a query to obtain the min cost of all the train capacity

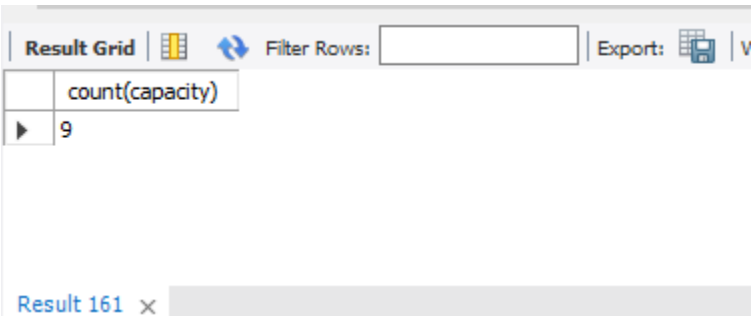
```
select min(capacity)
from
train;
```



9) Write a query to obtain the maximum count of all the train capacity

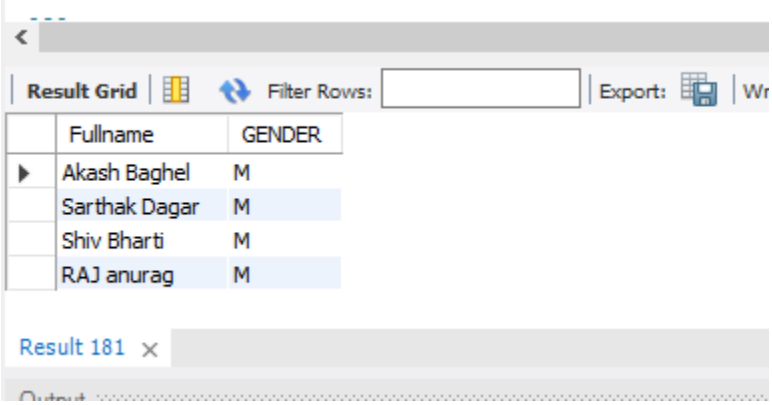
count

```
select count(capacity)
from train;
```



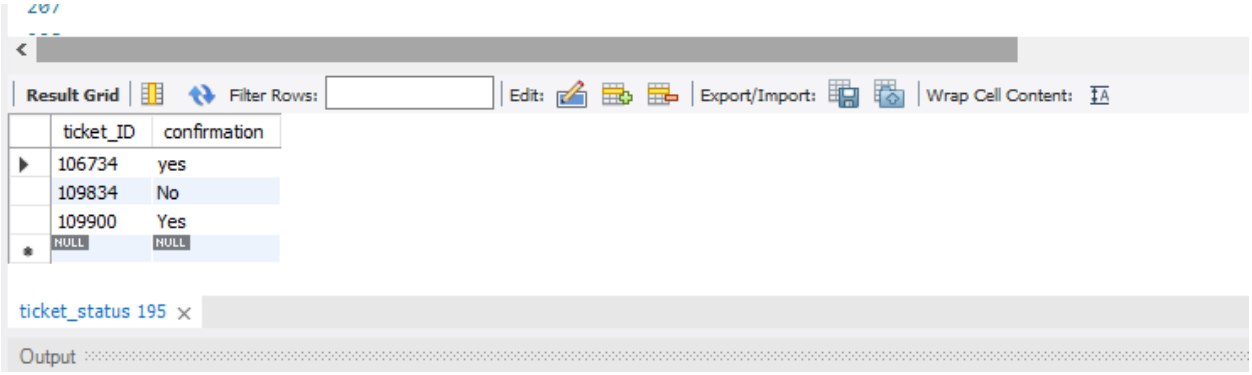
#10 ) . Write a query in SQL to obtain the full name of the user whose gender is male.

```
SELECT CONCAT (first_name,' ',last_name ) AS Fullname,GENDER
FROM user
where GENDER = 'M';
```



#11) Write a query in SQL to find the ticket conformation.

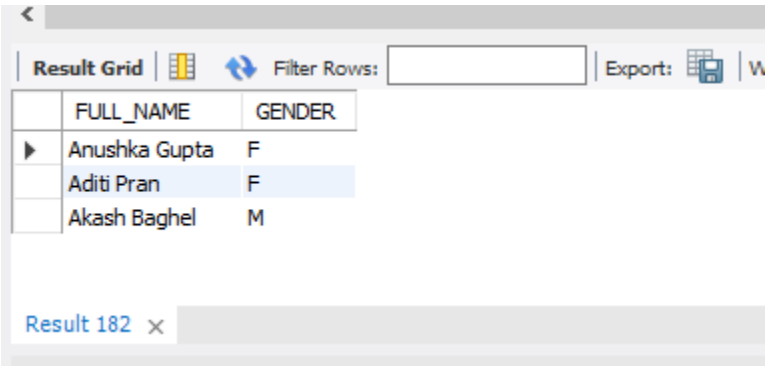
```
SELECT ticket_ID, confirmation
FROM ticket_status;
```



12) Like Operator

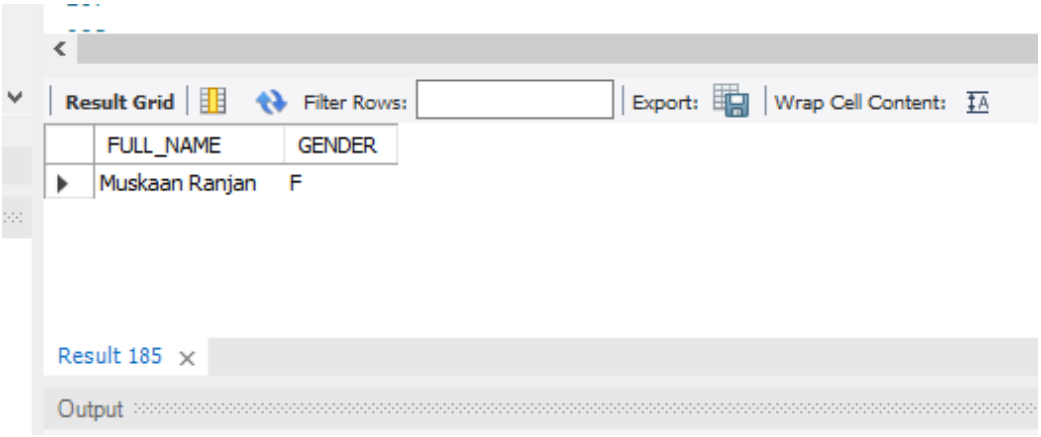
Write a query in SQL to obtain the name of the user starting with letter A

```
SELECT CONCAT(first_name,' ',last_name) AS FULL_NAME,GENDER
from user
WHERE CONCAT(first_name,' ',last_name) LIKE 'A%';
```



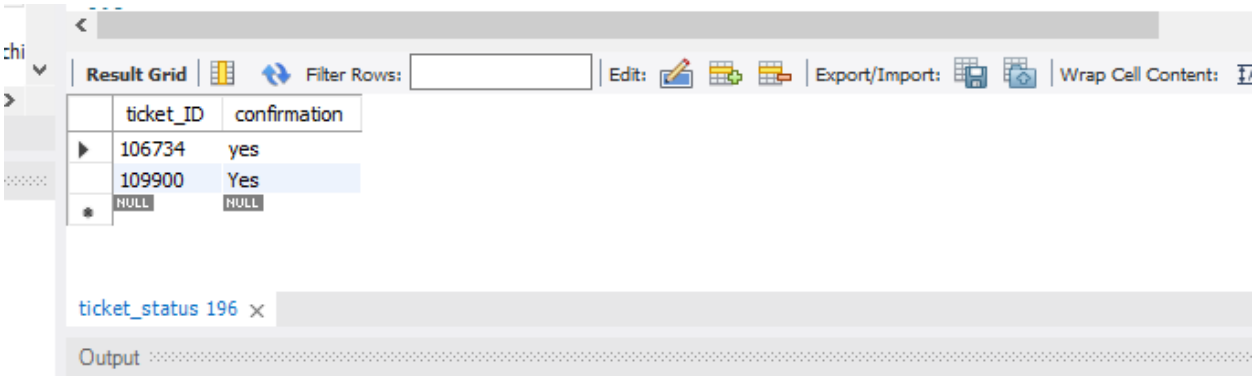
13) Write a query in SQL to obtain the name of the user whose third letter is M.

```
SELECT CONCAT(first_name,' ',last_name) AS FULL_NAME,GENDER
from user
WHERE CONCAT(first_name,' ',last_name) LIKE 'm%';
```



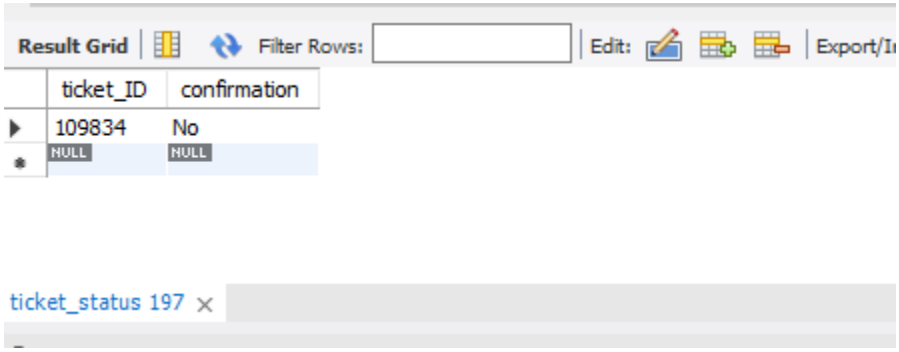
14) Write a query in SQL to find the Booking conformation.

```
SELECT ticket_ID, confirmation
FROM ticket_status
WHERE confirmation = 'Yes';
```



15) Write a query in SQL to find the Booking not confirm.

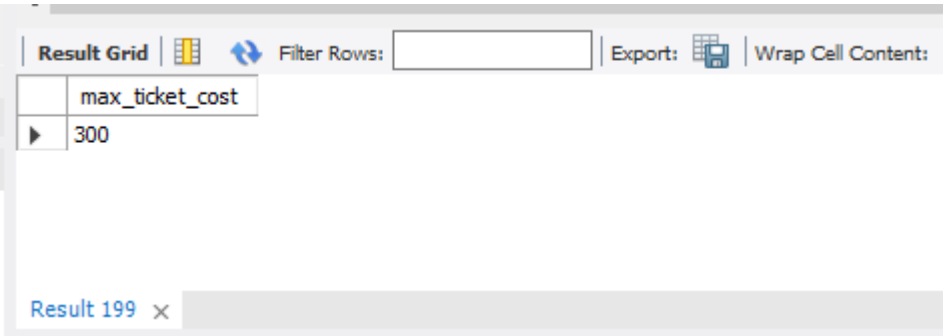
```
ELECT ticket_ID, confirmation
FROM ticket_status
WHERE confirmation = 'no';
```



SUBQUERY

#16. Write a query in SQL to obtain the maximum cost of the ticket.

```
SELECT MAX(Ticket_Price) AS max_ticket_cost
FROM ticket;
```




## Conclusion

Ticket Management: This involves tables to store information about tickets, such as ticket ID, cost, booking status, and possibly cancellation status

User Management: Tables to store information about passengers, including passenger ID, name, contact details, and possibly other relevant information.

Each of these components would require its own set of tables and relationships, and queries would need to be written to retrieve, insert, update, and delete data as necessary to manage the railway system effectively.

Train Management: Tables to store information about trains, including train ID, train name, type, capacity, class, and possibly schedules.

Station Management: Tables to store information about stations, including station ID, name, location, and possibly other details.

THANK YOU!