

# Metro Management System

# Metro management system

## Database System- CD9

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# Metro management system

This project is about creating the database of a Metro management system.

Our idea came after all the struggle that we face in a daily basis, which is arriving late most of the time due to traffic jams or car damages. In addition, recently the damage to the environment has increased due to the society dependence on using the cars completely even in their simple daily tasks. Because of that, we choose subway management system to make it easier to reach our destination in time, reduce the traffic issue and reduce the environment pollution.

station\_name  
arrival\_time  
StationAddress

metro\_num  
availability of seats  
TotalSeats

Passenger →  
← Metro

name  
age  
id  
phone\_num  
city  
reservation\_stat  
seat\_num

TicketId  
reservation\_stat  
seat\_num  
date

# Business rules

The Metro Management database is a system that facilitates the reservation of trains for travelers, inquiring about available trains by source and destination, as well as booking and canceling tickets and inquiring about the status of the ticket, keeping records of different trains and passengers. One or more passenger must has one Ticket. One station must has many ticket. One metro must have one or more passengers One or more passengers might or might not have any or metro or many . One or more metro must go to many stations, One station must has many metro.

Each passenger has Idpass which is unique,first name and last name , more than one phone Number, City,Destination Pass, Source, Reservationstat, seatNum.

Each metro has a unique MetroNome,Availability Of Seats,AriivalTime, Total Seat.

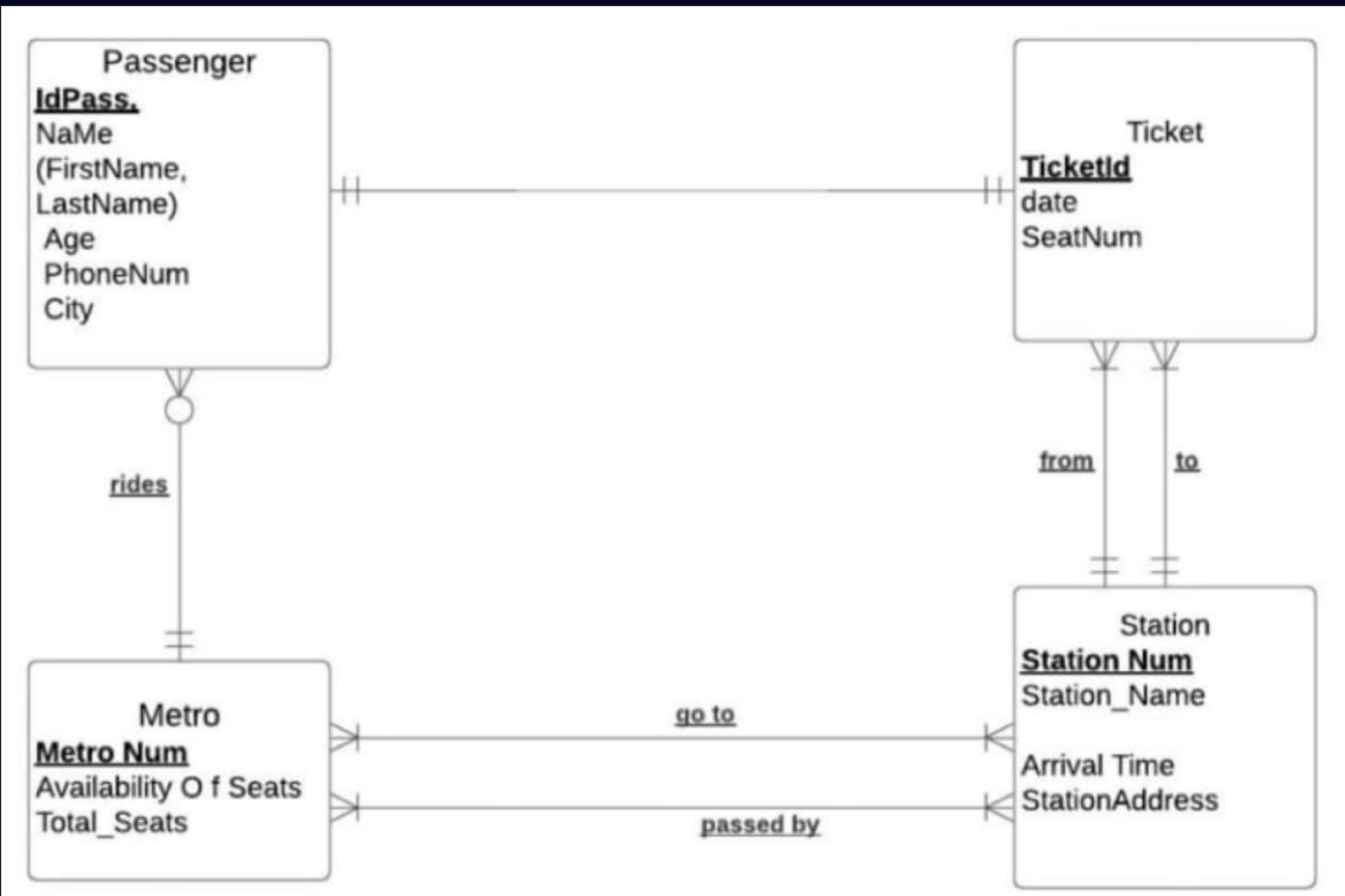
Each station has a unique StationNum, StationName,MetroNum as a FK, ArrivalTime, StationAdress.

each Ticket has a unique TicketId , reservation\_stat, seatNum,Metro\_Num as a FK,date.

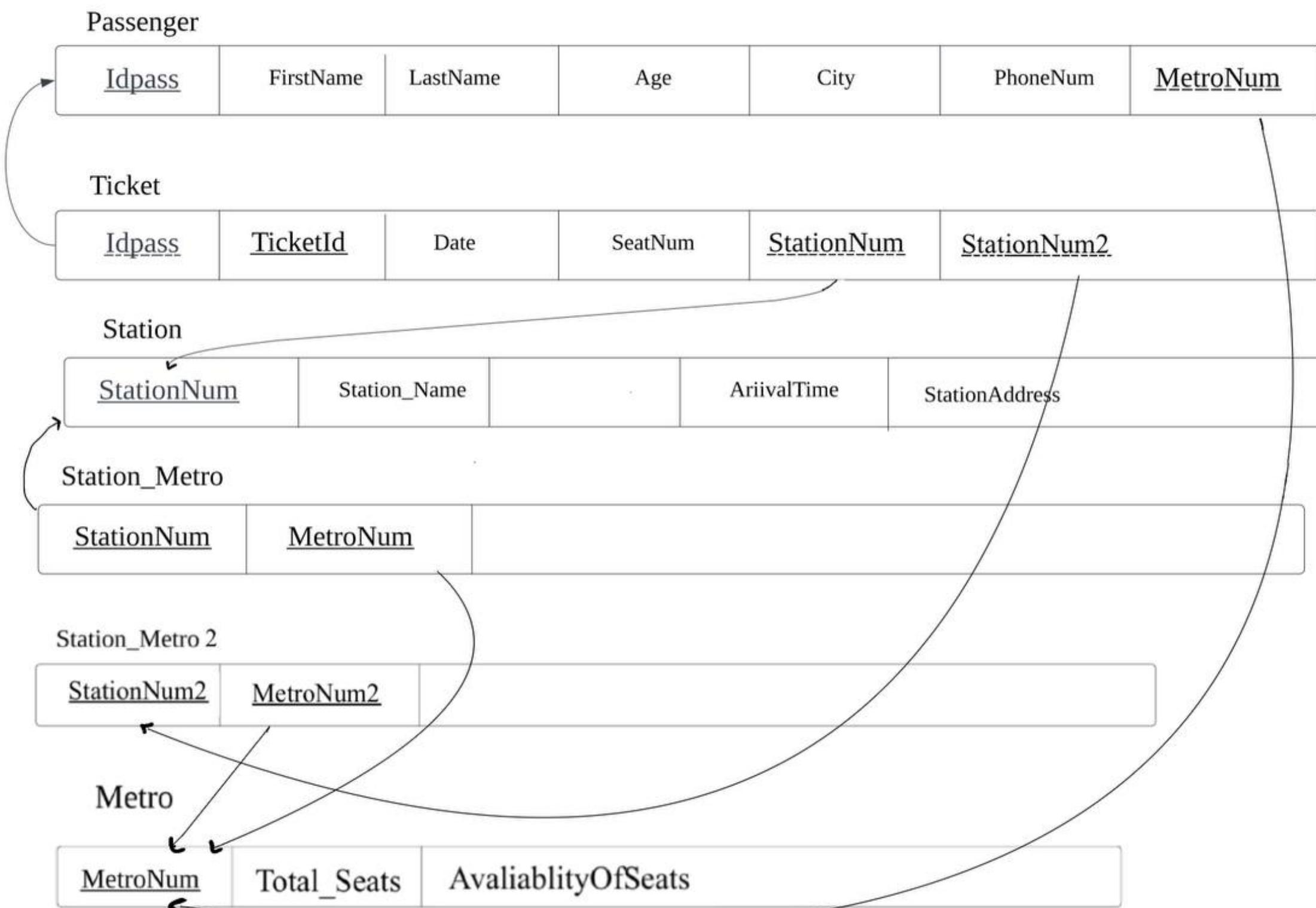
# entities and attributes description

ENTITES	ATTRIBUTES
Passenger	<u>IdPass</u> Name(FirstName, LastName) Age PhoneNum City
Metro	<u>MetroNum</u> AvailabilityOfSeats TotalSeat
Station	<u>StationNum</u> StationName ArrivalTime StationAddress
Ticket	<u>TicketId</u> SeatNum date

# ER



# Relational schema



# Normalization

1NF

Passenger (IdPass, FirstName, LastName, Age, City, PhoneNum, MetroNum)

Ticket (TicketId, Date, SeatNum, StationNumF, StationNumT, IdPass)

Station (StationNum, StationName, ArriivalTime, StationAddress)

StationMetroF (StationNumF, MetroNum)

StationMetroT (StationNumT, MetroNum2)

Metro ( MetroNum, TotalSeats, AvailablityOfSeats)

# Normalization

2NF

No partial dependencies

3NF

No transitive dependencies

# SQL

The screenshot shows a browser window with a dark theme. At the top, there are several tabs and icons. Below the tabs, the title "Live SQL" is visible, followed by a user icon and the email address "ruwaynun@gmail.com". The main area is labeled "SQL Worksheet". On the right side of the worksheet, there are buttons for "Clear", "Find", "Actions", "Save", and a green "Run" button. The code area contains the following SQL statements:

```
1 Create table passenger (
2     id_pass number(11) ,
3     first_name varchar2(20) not null,
4     last_name varchar2(20) not null,
5     age varchar2(2),
6     city varchar2(20),
7     phone_number Number (11),
8     Metro_number Number(2) ,
9     CONSTRAINT passenger_PK primary KEY(id_pass));
10
11
12 insert into passenger (id_pass, first_name, last_name, age, city, phone_number, Metro_number) values ('11143674839', 'Ahmad', 'Fahad', '19', 'jeddah', '0506032478', 10);
13 insert into passenger (id_pass, first_name, last_name, age, city, phone_number, Metro_number) values ('12458367540', 'sara', 'khalid', '27', 'jeddah', '0506055596', 20);
14 insert into passenger (id_pass, first_name, last_name, age, city, phone_number, Metro_number) values ('12343217653', 'Manar', 'Turki', '39', 'jeddah', '0577492345', 5);
15 insert into passenger (id_pass, first_name, last_name, age, city, phone_number, Metro_number) values ('2256915673', 'Ali', 'Musa', '18', 'jeddah', '0506774458', 50);
16 insert into passenger (id_pass, first_name, last_name, age, city, phone_number, Metro_number) values ('84277745191', 'Manal', 'Osama', '41', 'jeddah', '0558674328', 20);
17 Select* from passenger;
```

SQL Worksheet

Clear Find Actions Save Run

```
1 Create table passenger (
2     id_pass number(11) ,
3     first_name varchar2(20) not null,
4     last_name varchar2(20) not null,
5     age varchar2(2),
6     city varchar2(20),
7     phone_number Number (11),
8     Metro_number Number(2) ,
9     CONSTRAINT passenger_PK primary KEY(id_pass));
10
11
```

ID_PASS	FIRST_NAME	LAST_NAME	AGE	CITY	PHONE_NUMBER	METRO_NUMBER
11143674839	Ahmad	Fahad	19	jeddah	506032478	10
12458367540	sara	khalid	27	jeddah	506055596	20
12343217653	Manar	Turki	39	jeddah	577492345	5
2256915673	Ali	Musa	18	jeddah	506774458	50
84277745191	Manal	Osama	41	jeddah	558674328	20

Download CSV  
5 rows selected.

```
select Metro_number ,first_name , id_pass  
from passenger Natural Join Metro;
```

METRO_NUMBER	FIRST_NAME	ID_PASS
10	Ahmad	11143674839
5	Manar	12343217653

[Download CSV](#)

2 rows selected.

## Worksheet

 Clear

```
Create table Ticket(  
  
    ticket_id number(7,0),  
    Seat_number varchar(5),  
    Station_number Number(20),  
    id_pass number(11,0),  
    CONSTRAINT Ticket_PK primary key (id_pass) );  
  
insert into Ticket (ticket_id, Seat_number,Station_number,id_pass) values ('665500','A3',10,'11143674839');  
insert into Ticket (ticket_id, Seat_number,Station_number,id_pass) values ('126644','B5',12,'12458367540');  
insert into Ticket (ticket_id, Seat_number,Station_number,id_pass) values ('688321','A12',17,'12343217653');  
insert into Ticket (ticket_id, Seat_number,Station_number,id_pass) values ('998327','C6',14,'2256915673');  
insert into Ticket (ticket_id, Seat_number,Station_number,id_pass) values ('459275','C6',16,'84277745191');  
select*from Ticket;  
  
select id_pass,Seat_number  
from Ticket  
where Seat_number like 'A%';
```

1 row(s) inserted.

1 row(s) inserted.

TICKET_ID	SEAT_NUMBER	STATION_NUMBER	ID_PASS
665500	A3	10	11143674839
126644	B5	12	12458367540
688321	A12	17	12343217653
998327	C6	14	2256915673
459275	C6	16	84277745191

[Download CSV](#)

5 rows selected.

## Worksheet

 Clear

```
Create table Ticket(  
  
    ticket_id number(7,0),  
    Seat_number varchar(5),  
    Station_number Number(20),  
    id_pass number(11,0),  
CONSTRAINT Ticket_PK primary key (id_pass) );  
  
insert into Ticket (ticket_id, Seat_number,Station_number,id_pass) values ('665500','A3',10,'11143674839');  
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insert into Ticket (ticket_id, Seat_number,Station_number,id_pass) values ('459275','C6',16,'84277745191');  
select*from Ticket;  
  
select id_pass,Seat_number  
from Ticket  
where Seat_number like 'A%';
```

ID_PASS	SEAT_NUMBER
11143674839	A3
12343217653	A12

[Download CSV](#)

2 rows selected.

SQL Worksheet

Actions ▾

Clear Find Save Run

```
1 Create Table Station(
2     Station_number NUMBER(20) NOT NULL,
3     Statton_name varchar2(20),
4     Arrival_Time Number (1),
5     Station_Address VARCHAR2(20),
6     CONSTRAINT Station_PK PRIMARY KEY (Station_number));
7
8 Insert into Station (Station_number, Statton_name, Arrival_Time, Station_Address) VALUES (010, 'ALsaamir', 4 , 'Jeddah');
9 Insert into Station (Station_number, Statton_name, Arrival_Time, Station_Address) VALUES (012, 'ALhamdania', 5 , 'Jeddah');
10 Insert into Station (Station_number, Statton_name, Arrival_Time, Station_Address) VALUES (017, 'ALbawadi', 6 , 'Jeddah');
11 Insert into Station (Station_number, Statton_name, Arrival_Time, Station_Address) VALUES (014, 'ALbalad', 7 , 'Jeddah');
12 Insert into Station (Station_number, Statton_name, Arrival_Time, Station_Address) VALUES (016, 'ALhamdania', 8 , 'Jeddah');
13 Select* from Station;
14
15 SELECT Statton_name, count ( statton_name)
16 from Station
17 group by Statton_name;
```

## SQL Worksheet

Clear

Find

Actions

Save

Re

```
1 Create Table Station(
2   Station_number NUMBER(20) NOT NULL,
3   Statton_name varchar2(20),
4   Arrival_Time Number (1),
```

1 row(s) inserted.

STATION_NUMBER	STATTON_NAME	ARRIVAL_TIME	STATION_ADDRESS
10	ALsaamir	4	Jeddah
12	ALhamdania	5	Jeddah
17	Albwadi	6	Jeddah
14	ALbalad	7	Jeddah
16	Alhamdania	8	Jeddah

[Download CSV](#)

```
4  
5   SELECT Statton_name, count ( Statton_name)  
5     from Station  
7   group by Statton_name;
```

5 rows selected.

STATTON_NAME	COUNT(STATTON_NAME)
ALsaamir	1
Alhamdania	2
Albalad	1
Albwadi	1

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4 rows selected.

```
Create Table Metro(
    Metro_number number(2) not null,
    total_seats varchar2(10),
    availability_of_seats Number(3),
    CONSTRAINT Metro_PK PRIMARY KEY ( Metro_number));
Insert into Metro (Metro_number, total_seats, availability_of_seats) VALUES (10, '100', 10);
Insert into Metro (Metro_number, total_seats, availability_of_seats) VALUES (5, '110', 20);
Insert into Metro (Metro_number, total_seats, availability_of_seats) VALUES (2, '90', 5);
Insert into Metro (Metro_number, total_seats, availability_of_seats) VALUES (6, '160', 50);
Insert into Metro (Metro_number, total_seats, availability_of_seats) VALUES (8, '100', 20);
Select* from Metro;
```

METRO_NUMBER	TOTAL_SEATS	AVALIABLITY_OF_SEATS
10	100	10
5	110	20
2	90	5
6	160	50
8	100	20

[Download CSV](#)  
5 rows selected.

```
Select* from Metro;  
  
Select MAX (total_seats) AS MaxSeats, Min(total_seats) AS MinSeats, AVG (total_seats) AS AvgSeats  
From Metro;
```

MAXSEATS	MINSEATS	AVGSEATS
90	100	112

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