# School of Information Technology and Engineering

# Database Management Systems - Project

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## Using MySQL

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### Railway Reservation System

**Train** (train Number, name, source, destination, start_time, reach_time, traveltime, distance, class, days, type)

**Ticket** (PNRNo, Transactionid, from_station, To_station, date_of_journey, class date_of_booking, total_ticket_fare, train number)

**Passenger** (PNR No, Serial no, Name, Age, Reservation_status)

**Train_Route** (Train_No, route_no, station_code, name, arrival_time, depart_time, distance, day)

**Train_Ticket_fare** (Train_No, class, base_fare, reservation_charge, superfast_charge, other_charge, tatkal_charge, service_tax)

Create all the tables specified above.

Make underlined columns as primary key. (Use number, number (m, n), varchar(n), date, time, timestamp datatypes appropriately)

Insert at least 5 rows to each table. (Check www.irctc.co.in website for actual data)

### Creating tables:

```
CREATE TABLE Train(
train_number number(5) constraint trn_pk primary key,
Train_name varchar(80) not null unique,
Sourcee varchar(30) not null ,
destination varchar(30) not null,
start_time timestamp(0),
reach_time timestamp(0),
travel_time interval day to second,
```

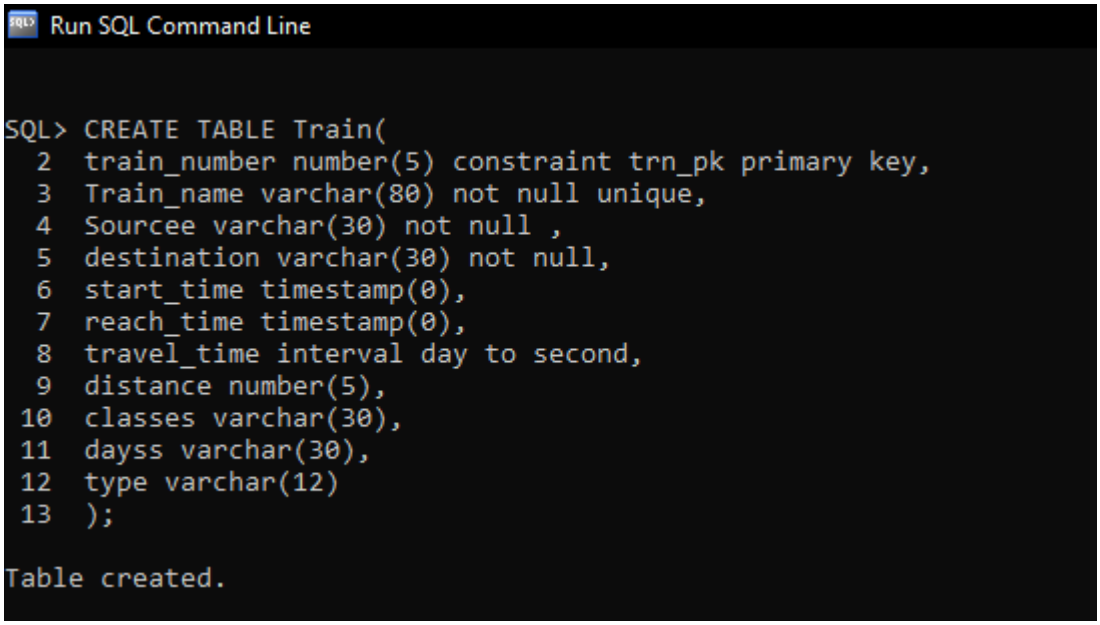
distance number(5),

classes varchar(30),

dayss varchar(30),

type varchar(12)

);




CREATE TABLE Ticket(

PNR_no varchar(11) constraint tkt_pk primary key,

Transactionid number(18) not null constraint tkt_unq

unique,

from_station varchar(20),

To_station varchar(30),

date_of_journey date,

classid varchar(8),

date_of_booking date,

total_ticket_fare number(5),

train_number constraint tkt_fk references Train );

```
SQL> CREATE TABLE Ticket(
  2  PNR_no varchar(11) constraint tkt_pk primary key,
  3  Transactionid number(18) not null constraint tkt_unq
  4  unique,
  5  from_station varchar(20),
  6  To_station varchar(30),
  7  date_of_journey date,
  8  classid varchar(8),
  9  date_of_booking date,
 10  total_ticket_fare number(5),
 11  train_number constraint tkt_fk references Train );

Table created.
```

CREATE TABLE Passenger(

PNR_no constraint psngr_fk

references Ticket,

Serial_no number(2),

Passenger_Name varchar(30),

Age number(3),

Reservation_status varchar(10),

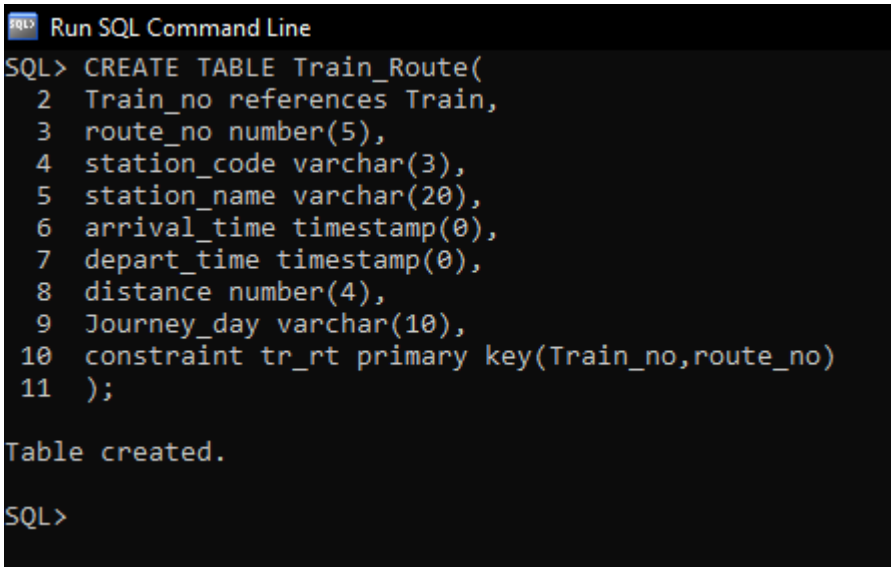
constraint psngr_pk primary key

(pnr_no,serial_no)

);

```
SQL> CREATE TABLE Passenger(
  2  PNR_no constraint psngr_fk
  3  references Ticket,
  4  Serial_no number(2),
  5  Passenger_Name varchar(30),
  6  Age number(3),
  7  Reservation_status varchar(10),
  8  constraint psngr_pk primary key
  9  (pnr_no,serial_no)
 10  );

Table created.
```

```
CREATE TABLE Train_Route(
Train_no references Train,
route_no number(5),
station_code varchar(3),
station_name varchar(20),
arrival_time timestamp(0),
depart_time timestamp(0),
distance number(4),
Journey_day varchar(10),
constraint tr_rt primary key(Train_no,route_no)
);
```




```
CREATE TABLE Train_Ticket_fare(
train_no CONSTRAINT tnrtktfr_fk references
Train, class varchar(8),
base_fare number(4),
reservation_charge number(3),
superfast_charge number(3),
other_charge number(3),
tatkal_charge number(3),
service_tax number(3),
```

CONSTRAINT tnrtktfr_pk primary key(train_no,class)

);

```
Run SQL Command Line
SQL> CREATE TABLE Train_Ticket_fare(
  2  train_no CONSTRAINT tnrtktfr_fk references
  3  Train, class varchar(8),
  4  base_fare number(4),
  5  reservation_charge number(3),
  6  superfast_charge number(3),
  7  other_charge number(3),
  8  tatkal_charge number(3),
  9  service_tax number(3),
 10  CONSTRAINT tnrtktfr_pk primary key(train_no,class)
 11  );

Table created.
```

**Describing tables:**

```
Run SQL Command Line

SQL> desc train
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 TRAIN_NUMBER                              NOT NULL NUMBER(5)
 TRAIN_NAME                                NOT NULL VARCHAR2(80)
 SOURCEE                                   NOT NULL VARCHAR2(30)
 DESTINATION                               NOT NULL VARCHAR2(30)
 START_TIME                                         TIMESTAMP(0)
 REACH_TIME                                         TIMESTAMP(0)
 TRAVEL_TIME                                        INTERVAL DAY(2) TO SECOND(6)
 DISTANCE                                           NUMBER(5)
 CLASSES                                            VARCHAR2(30)
 DAYSS                                              VARCHAR2(30)
 TYPE                                               VARCHAR2(12)

SQL> desc ticket
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 PNR_NO                                    NOT NULL VARCHAR2(11)
 TRANSACTIONID                             NOT NULL NUMBER(18)
 FROM_STATION                                       VARCHAR2(20)
 TO_STATION                                         VARCHAR2(30)
 DATE_OF_JOURNEY                                    DATE
 CLASSID                                            VARCHAR2(8)
 DATE_OF_BOOKING                                    DATE
 TOTAL_TICKET_FARE                                  NUMBER(5)
 TRAIN_NUMBER                                       NUMBER(5)

SQL> desc passenger
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 PNR_NO                                    NOT NULL VARCHAR2(11)
 SERIAL_NO                                 NOT NULL NUMBER(2)
 PASSENGER_NAME                                     VARCHAR2(30)
 AGE                                                NUMBER(3)
 RESERVATION_STATUS                                 VARCHAR2(10)

SQL> desc train_route
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 TRAIN_NO                                  NOT NULL NUMBER(5)
 ROUTE_NO                                  NOT NULL NUMBER(5)
 STATION_CODE                                       VARCHAR2(3)
 STATION_NAME                                       VARCHAR2(20)
 ARRIVAL_TIME                                       TIMESTAMP(0)
 DEPART_TIME                                        TIMESTAMP(0)
 DISTANCE                                           NUMBER(4)
 JOURNEY_DAY                                        VARCHAR2(10)

SQL> desc train_ticket_fare
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 TRAIN_NO                                  NOT NULL NUMBER(5)
 CLASS                                     NOT NULL VARCHAR2(8)
 BASE_FARE                                          NUMBER(4)
 RESERVATION_CHARGE                                 NUMBER(3)
 SUPERFAST_CHARGE                                   NUMBER(3)
 OTHER_CHARGE                                       NUMBER(3)
 TATKAL_CHARGE                                      NUMBER(3)
 SERVICE_TAX                                        NUMBER(3)

SQL>
```

**Inserting values in the tables:**

**Table- Train**

- insert into train values(12164,'Chennai Express','Chennai Egmore','Dadar',to_timestamp('06:45','hh24:mi'),to_timestamp('06:00','hh24:mi'),to_dsinterval('000 23:15:00'),1274,'Sleeper','Monday,Tuesday','Express');
- Insert into train values (12556,'Sapt Kranti Express','New Delhi','Muzaffarpur', to_timestamp('23:25','hh24:mi'),to_timestamp('05:55','hh24:mi'),to_dsinterval('000 07:15:08'),540,'1A,2A,3A,SLEEPER','Monday,Tuesday','Express');
- insert into train values(12434,'masbca sf exp','Chennai Central','Mumbai Central',to_timestamp('12:30','hh24:mi'),to_timestamp('10:00','hh24:mi'),to_dsinterval('000 21:30:00'),1250,'1A,2A,Sleeper','Monday,Wednesday,Friday','Superfast');
- insert into train values(11018,'km ltt weekly express','Karaikal','LokmanyaTilak',to_timestamp('14:00','hh24:mi'),to_timestamp('23:45','hh24:mi'),to_dsinterval('001 01:40:00'),1266,'3A,2A,Sleeper','Monday','Express');
- Insert into train values(12673,'Duronto Express','New Delhi','Calicut',to_timestamp('12:45','hh24:mi'),to_timestamp('10:25','hh24:mi'),to_dsinterval('003 07:11:24'),1580,'1A,2A,3A,SLEEPER','Wednesday', 'RAJDHANI');

```
SQL> insert into train values(12164,'Chennai Express','Chennai Egmore','Dadar',to_timestamp('06:45','hh24:mi'),to_timest
amp('06:00','hh24:mi'),to_dsinterval('000 23:15:00'),1274,'Sleeper','Monday,Tuesday','Express');

1 row created.

SQL> Insert into train values (12556,'Sapt Kranti Express','New Delhi','Muzaffarpur', to_timestamp('23:25','hh24:mi'),to
_timestamp('05:55','hh24:mi'),to_dsinterval('000 07:15:08'),540,'1A,2A,3A,SLEEPER','Monday,Tuesday','Express');

1 row created.

SQL> insert into train values(12434,'masbca sf exp','Chennai Central','Mumbai Central',to_timestamp('12:30','hh24:mi'),t
o_timestamp('10:00','hh24:mi'),to_dsinterval('000 21:30:00'),1250,'1A,2A,Sleeper','Monday,Wednesday,Friday','Superfast')
;

1 row created.

SQL> insert into train values(11018,'km ltt weekly express','Karaikal','LokmanyaTilak',to_timestamp('14:00','hh24:mi'),t
o_timestamp('23:45','hh24:mi'),to_dsinterval('001 01:40:00'),1266,'3A,2A,Sleeper','Monday','Express');

1 row created.
```

```
SQL> Insert into train values(12673,'Duronto Express','New Delhi','Calicut',to_timestamp('12:45','hh24:mi'),to_timestamp
('10:25','hh24:mi'),to_dsinterval('003 07:11:24'),1580,'1A,2A,3A,SLEEPER','Wednesday', 'RAJDHANI');

1 row created.
```

**Table- Ticket**

- insert into ticket values(1928091842,7845632159,'Bangalore Cantt','Mumbai Central',to_date('24-11-21','dd-mm-yyyy'),'2A',to_date('04-08-21','dd-mm-yy'),1800,12434);
- insert into ticket values(8674920651,7896354865,'Karaikal','Lokmanya Tilak',to_date('12-11-21','dd-mm-yy'),'2A',to_date('19-09-21','dd-mm-yy'),3500,11018);
- insert into ticket values(2345127890,7835682186,'Vellore','Akola',to_date('12-12-21','dd-mm-yy'),'Sleeper',to_date('18-07-21','dd-mm-yy'),400,12164);
- insert into ticket values(2895127890,7835682142,'Kanpur','Delhi',to_date('22-12-21','dd-mm-yy'),'3A',to_date('16-08-21','dd-mm-yy'),1750,12556);
- insert into ticket values(2345168590,7835423186,'Agra','Wayanad',to_date('14-12-21','dd-mm-yy'),'1A',to_date('18-10-21','dd-mm-yy'),3000,12673);
-

```
SQL>
SQL> insert into ticket values(1928091842,7845632159,'Bangalore Cantt','Mumbai Central',to_date('24-11-21','dd-mm-yyyy')
,'2A',to_date('04-08-21','dd-mm-yy'),1800,12434);

1 row created.

SQL> insert into ticket values(8674920651,7896354865,'Karaikal','Lokmanya Tilak',to_date('12-11-21','dd-mm-yy'),'2A',to_
date('19-09-21','dd-mm-yy'),3500,11018);

1 row created.
```

```
Run SQL Command Line

SQL> insert into ticket values(2345127890,7835682186,'Vellore','Akola',to_date('12-12-21','dd-mm-yy'),'Sleeper',to_date(
'18-07-21','dd-mm-yy'),400,12164);

1 row created.

SQL> insert into ticket values(2895127890,7835682142,'Kanpur','Delhi',to_date('22-12-21','dd-mm-yy'),'3A',to_date('16-08
-21','dd-mm-yy'),1750,12556);

1 row created.

SQL> insert into ticket values(2345168590,7835423186,'Agra','Wayanad',to_date('14-12-21','dd-mm-yy'),'1A',to_date('18-10
-21','dd-mm-yy'),3000,12673);

1 row created.

SQL>
```

```
PNR_NO      TRANSACTIONID FROM_STATION         TO_STATION
----------- ------------- -------------------- ------------------------------
DATE_OF_J CLASSID  DATE_OF_B TOTAL_TICKET_FARE TRAIN_NUMBER
--------- -------- --------- ----------------- ------------
1928091842     7845632159 Bangalore Cantt      Mumbai Central
24-NOV-21 2A       04-AUG-21              1800        12434

8674920651     7896354865 Karaikal             Lokmanya Tilak
12-NOV-21 2A       19-SEP-21              3500        11018

2345127890     7835682186 Vellore              Akola
12-DEC-21 Sleeper  18-JUL-21               400        12164


PNR_NO      TRANSACTIONID FROM_STATION         TO_STATION
----------- ------------- -------------------- ------------------------------
DATE_OF_J CLASSID  DATE_OF_B TOTAL_TICKET_FARE TRAIN_NUMBER
--------- -------- --------- ----------------- ------------
2895127890     7835682142 Kanpur               Delhi
22-DEC-21 3A       16-AUG-21              1750        12556

2345168590     7835423186 Agra                 Wayanad
14-DEC-21 1A       18-OCT-21              3000        12673
```

**Table- Passenger**

- insert into passenger values(1928091842,01,'Kinap',68,'CNF');
- insert into passenger values(8674920651,02,'Holly',44,'CNF');
- insert into passenger values(2345127890,10,'Kishore',32,'NOT CNF');
- insert into passenger values(2895127890,04,'Jaydev',19,'CNF');
- insert into passenger values(2345168590,12,'Madhav',23,'CNF');

```
Run SQL Command Line


SQL>
SQL> insert into passenger values(1928091842,01,'Kinap',68,'CNF');

1 row created.

SQL> insert into passenger values(8674920651,02,'Holly',44,'CNF');

1 row created.

SQL> insert into passenger values(2345127890,10,'Kishore',32,'NOT CNF');

1 row created.

SQL> insert into passenger values(2895127890,04,'Jaydev',19,'CNF');

1 row created.

SQL> insert into passenger values(2345168590,12,'Madhav',23,'CNF');

1 row created.

SQL> select* from passenger;

PNR_NO       SERIAL_NO PASSENGER_NAME                        AGE RESERVATIO
---------- ---------- ------------------------------ ---------- ----------
1928091842          1 Kinap                                  68 CNF
8674920651          2 Holly                                  44 CNF
2345127890         10 Kishore                                32 NOT CNF
2895127890          4 Jaydev                                 19 CNF
2345168590         12 Madhav                                 23 CNF

SQL>
```

**Table- Train_Route**

- insert into train_route values(12164,01235,'EM','Chennai Egmore',to_timestamp('06:35','hh24:mi'),to_timestamp('06:45','hh24:mi'),1335,'Mon');
- insert into train_route values(12434,03453,'KPD','Chennai Central',to_timestamp('15:35','hh24:mi'),to_timestamp('15:40','hh24:mi'),1245,'Wed');
- insert into train_route values(12556,03435,'NZM','New Delhi',to_timestamp('23:25','hh24:mi'),to_timestamp('23:45','hh24:mi'),1084,'Tue');
- insert into train_route values(11018,02768,'KKL','Karaikal',to_timestamp('14:35','hh24:mi'),to_timestamp('14:40','hh24:mi'),1436,'Mon');
- insert into train_route values(12673,01785,'KMR','Nizamuddin Terminus',to_timestamp('12:45','hh24:mi'),to_timestamp('12:50','hh24:mi'),2556,'Wed');

```
Run SQL Command Line
SQL>
SQL> insert into train_route values(12164,01235,'EM','Chennai Egmore',to_timestamp('06:35','hh24:mi'),to_timestamp('06:4
5','hh24:mi'),1335,'Mon');

1 row created.

SQL> insert into train_route values(12434,03453,'KPD','Chennai Central',to_timestamp('15:35','hh24:mi'),to_timestamp('15
:40','hh24:mi'),1245,'Wed');

1 row created.

SQL>
SQL> insert into train_route values(12556,03435,'NZM','New Delhi',to_timestamp('23:25','hh24:mi'),to_timestamp('23:45','
hh24:mi'),1084,'Tue');

1 row created.

SQL> insert into train_route values(11018,02768,'KKL','Karaikal',to_timestamp('14:35','hh24:mi'),to_timestamp('14:40','h
h24:mi'),1436,'Mon');

1 row created.

SQL>
SQL>
SQL> insert into train_route values(12673,01785,'KMR','Nizamuddin Terminus',to_timestamp('12:45','hh24:mi'),to_timestamp
('12:50','hh24:mi'),2556,'Wed');

1 row created.
```

```
Run SQL Command Line
1 row created.

SQL> select * from train_route;

  TRAIN_NO   ROUTE_NO STA STATION_NAME
---------- ---------- --- --------------------
ARRIVAL_TIME
-------------------------------------------------------------------------------
DEPART_TIME
-------------------------------------------------------------------------------
  DISTANCE JOURNEY_DA
---------- ----------
     12164       1235 EM  Chennai Egmore
01-AUG-21 06.35.00 AM
01-AUG-21 06.45.00 AM
      1335 Mon


  TRAIN_NO   ROUTE_NO STA STATION_NAME
---------- ---------- --- --------------------
ARRIVAL_TIME
-------------------------------------------------------------------------------
DEPART_TIME
-------------------------------------------------------------------------------
  DISTANCE JOURNEY_DA
---------- ----------
     12434       3453 KPD Chennai Central
01-AUG-21 03.35.00 PM
01-AUG-21 03.40.00 PM
      1245 Wed
```

**Table- Train_Ticket_Fare**

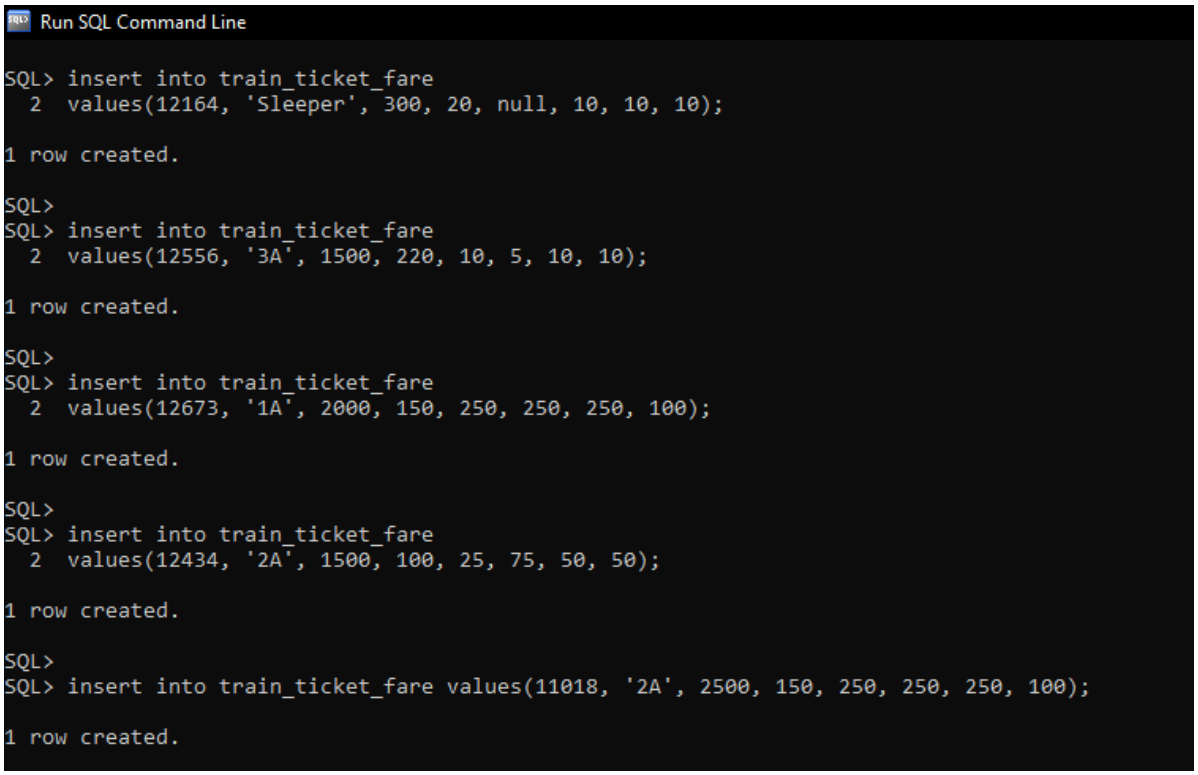
- insert into train_ticket_fare
  values(12164, 'Sleeper', 300, 20, null, 10, 10, 10);

- insert into train_ticket_fare
  values(12556, '3A', 1500, 220, 10, 5, 10, 10);

- insert into train_ticket_fare
  values(12673, '1A', 2000, 150, 250, 250, 250, 100);

- insert into train_ticket_fare
  values(12434, '2A', 1500, 100, 25, 75, 50, 50);

- insert into train_ticket_fare
  values(11018, '2A', 2500, 150, 250, 250, 250, 100);



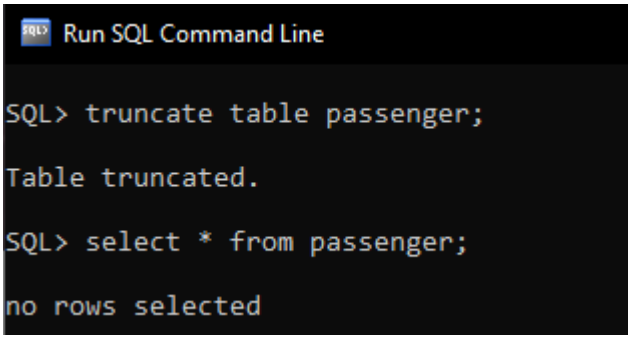
```
SQL> select*from train_ticket_fare;

  TRAIN_NO CLASS     BASE_FARE RESERVATION_CHARGE SUPERFAST_CHARGE OTHER_CHARGE
---------- -------- ---------- ------------------ ---------------- ------------
TATKAL_CHARGE SERVICE_TAX
------------- -----------
     12164 Sleeper         300                 20                           10
           10          10

     12556 3A             1500                220               10            5
           10          10

     12673 1A             2000                150              250          250
          250         100


  TRAIN_NO CLASS     BASE_FARE RESERVATION_CHARGE SUPERFAST_CHARGE OTHER_CHARGE
---------- -------- ---------- ------------------ ---------------- ------------
TATKAL_CHARGE SERVICE_TAX
------------- -----------
     12434 2A             1500                100               25           75
           50          50

     11018 2A             2500                150              250          250
          250         100


SQL>
```

**simple DDL/DML Queries to**

1. **Remove all the rows from Passenger table permanently.**

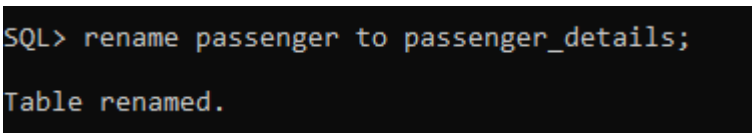
truncate table passenger;

select*from passenger;




2. **Change the name of the Passenger table to Passenger_Details.**

rename passenger to passenger_details;




3. **List all train details.**

select train_number,train_name,sourcee,classes from train;

```
Run SQL Command Line

SQL> select train_number,train_name,sourcee,classes from train;

TRAIN_NUMBER
------------
TRAIN_NAME
--------------------------------------------------------------------------------
SOURCEE                        CLASSES
------------------------------ ------------------------------
       12673
Duronto Express
New Delhi                      1A,2A,3A,SLEEPER

       12164
Chennai Express
Chennai Egmore                 Sleeper

TRAIN_NUMBER
------------
TRAIN_NAME
--------------------------------------------------------------------------------
SOURCEE                        CLASSES
------------------------------ ------------------------------

       12556
Sapt Kranti Express
New Delhi                      1A,2A,3A,SLEEPER

       12434
masbca sf exp

TRAIN_NUMBER
------------
TRAIN_NAME
--------------------------------------------------------------------------------
SOURCEE                        CLASSES
------------------------------ ------------------------------
Chennai Central                1A,2A,Sleeper

       11018
km ltt weekly express
Karaikal                       3A,2A,Sleeper
```

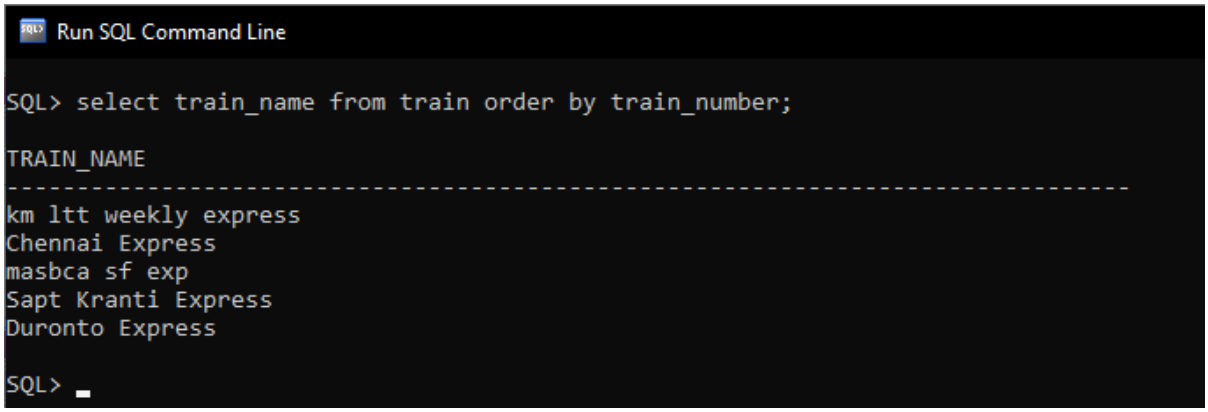
**4. List all passenger details.**

select passenger_name,age from passenger_details;

```
Run SQL Command Line

SQL> select passenger_name,age from passenger_details;

PASSENGER_NAME                      AGE
------------------------------ ----------
Kinap                                  68
Holly                                  44
Kishore                                32
Jaydev                                 19
Madhav                                 23
```

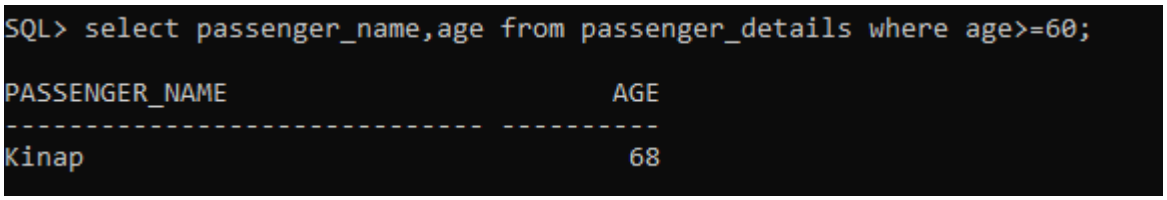
**5. Give a list of trains in ascending order of number.**

select train_name from train order by train_number;



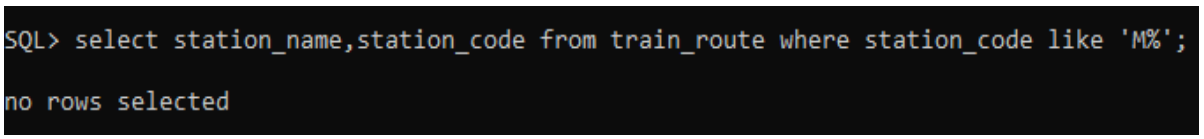

**6. List the senior citizen passenger's details.**

select passenger_name,age from passenger_details where age>=60;



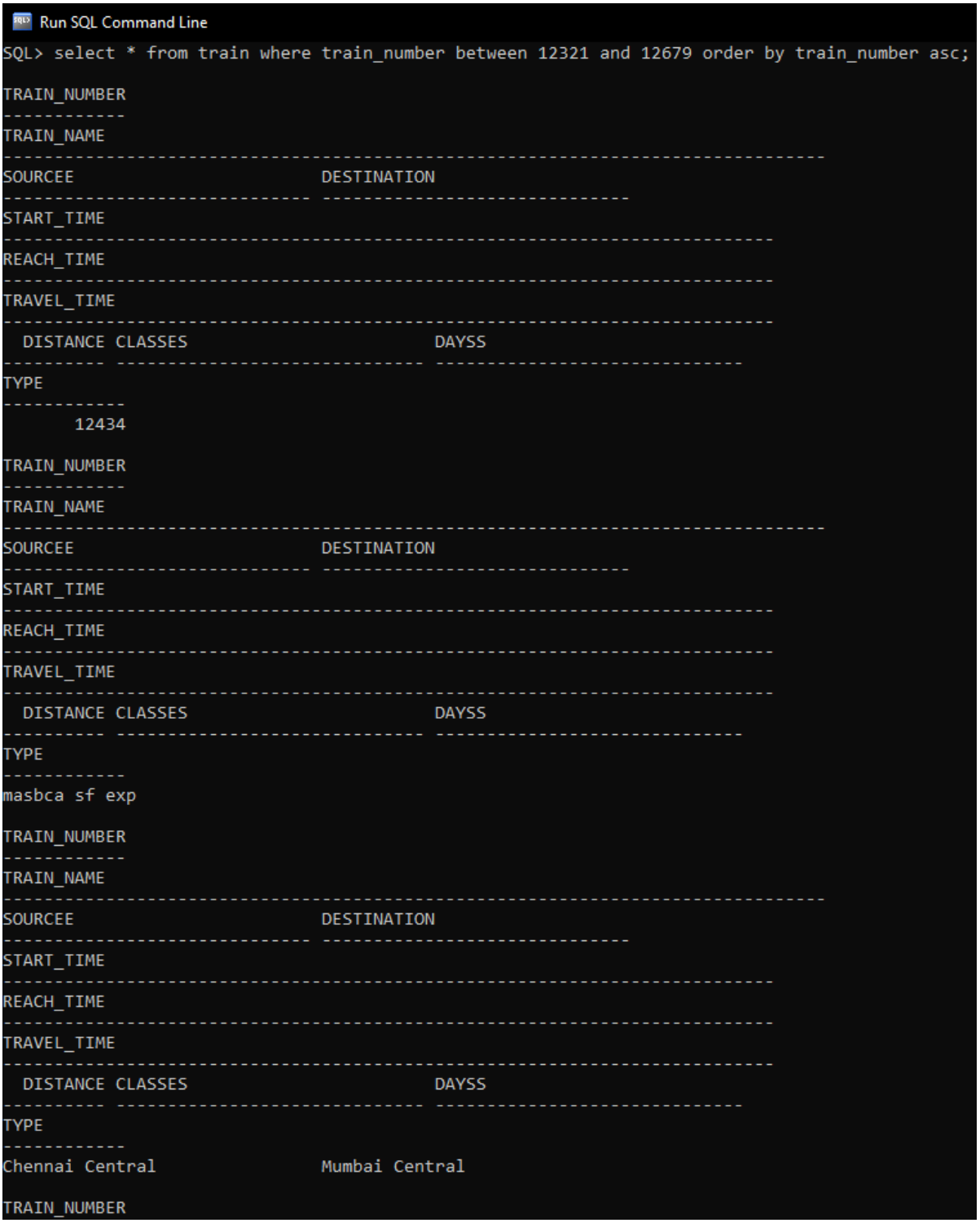

**7. List the station names where code starts with 'M'.**

select station_name,station_code from train_route where station_code like 'M%';

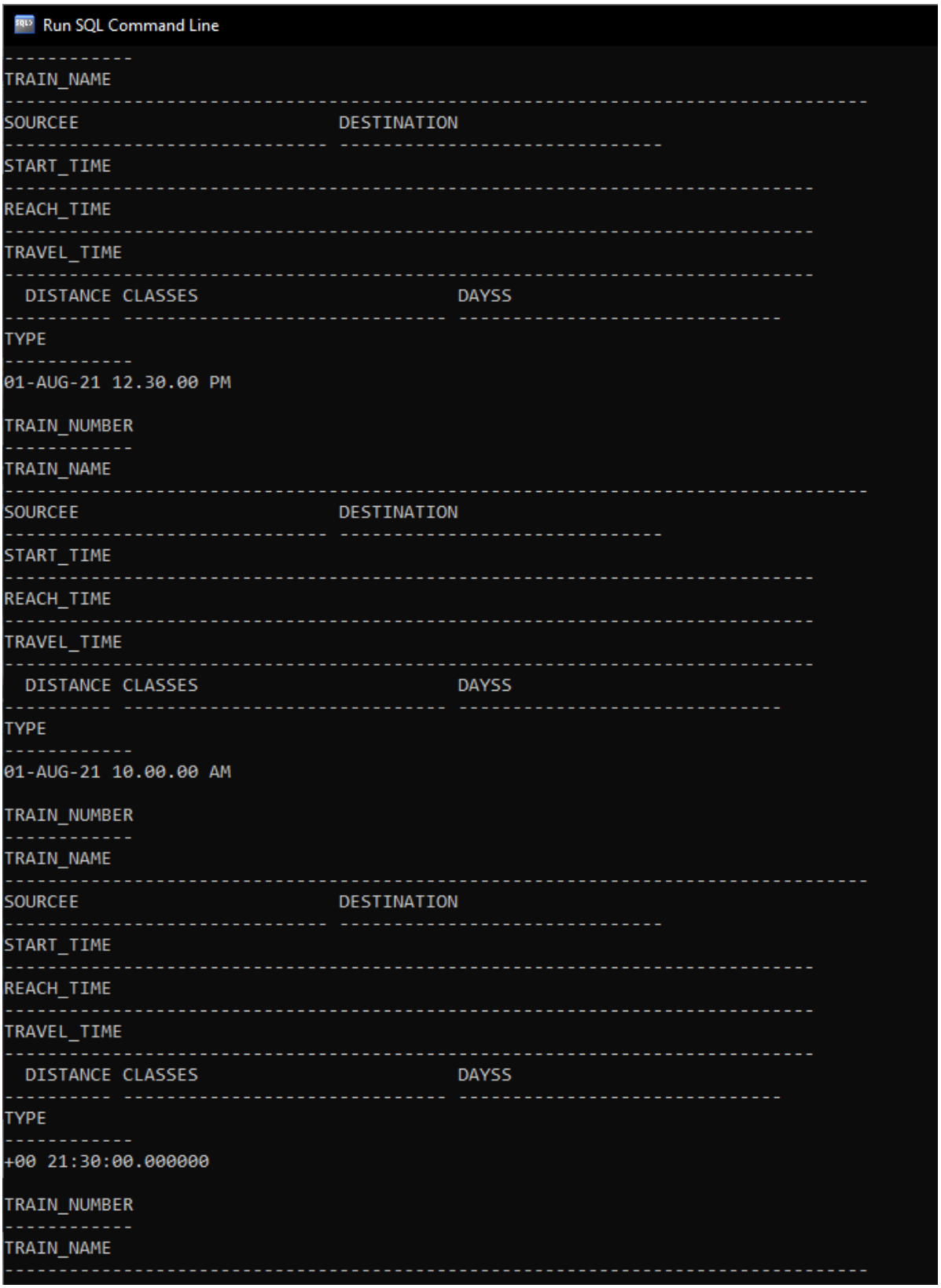


**8. List the train details within a range of numbers.**

select * from train where train_number between 12321 and 12679 order by train_number asc;

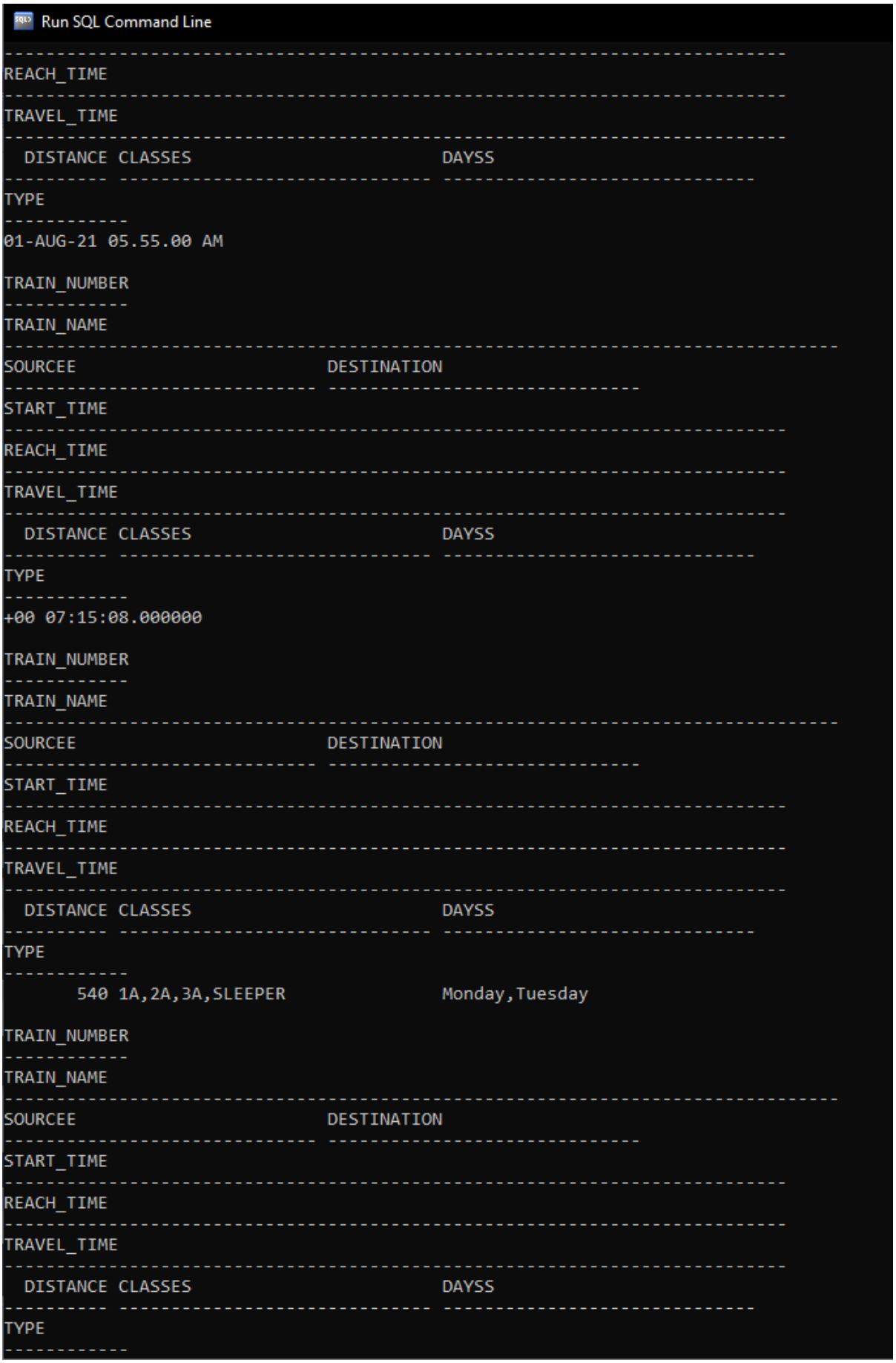


```
Run SQL Command Line
SQL> select * from train where train_number between 12321 and 12679 order by train_number asc;

TRAIN_NUMBER
------------
TRAIN_NAME
--------------------------------------------------------------------------------
SOURCEE                        DESTINATION
------------------------------ ------------------------------
START_TIME
--------------------------------------------------------------------------------
REACH_TIME
--------------------------------------------------------------------------------
TRAVEL_TIME
--------------------------------------------------------------------------------
  DISTANCE CLASSES                        DAYSS
---------- ------------------------------ ------------------------------
TYPE
------------
       12434

TRAIN_NUMBER
------------
TRAIN_NAME
--------------------------------------------------------------------------------
SOURCEE                        DESTINATION
------------------------------ ------------------------------
START_TIME
--------------------------------------------------------------------------------
REACH_TIME
--------------------------------------------------------------------------------
TRAVEL_TIME
--------------------------------------------------------------------------------
  DISTANCE CLASSES                        DAYSS
---------- ------------------------------ ------------------------------
TYPE
------------
masbca sf exp

TRAIN_NUMBER
------------
TRAIN_NAME
--------------------------------------------------------------------------------
SOURCEE                        DESTINATION
------------------------------ ------------------------------
START_TIME
--------------------------------------------------------------------------------
REACH_TIME
--------------------------------------------------------------------------------
TRAVEL_TIME
--------------------------------------------------------------------------------
  DISTANCE CLASSES                        DAYSS
---------- ------------------------------ ------------------------------
TYPE
------------
Chennai Central                Mumbai Central

TRAIN_NUMBER
```


Run SQL Command Line
TRAIN_NAME
SOURCEE DESTINATION
START_TIME
REACH_TIME
TRAVEL_TIME
DISTANCE CLASSES DAYSS
TYPE
01-AUG-21 12.30.00 PM
TRAIN_NUMBER
TRAIN_NAME
SOURCEE DESTINATION
START_TIME
REACH_TIME
TRAVEL_TIME
DISTANCE CLASSES DAYSS
TYPE
01-AUG-21 10.00.00 AM
TRAIN_NUMBER
TRAIN_NAME
SOURCEE DESTINATION
START_TIME
REACH_TIME
TRAVEL_TIME
DISTANCE CLASSES DAYSS
TYPE
+00 21:30:00.000000
TRAIN_NUMBER
TRAIN_NAME

```
Run SQL Command Line
SOURCEE                        DESTINATION
------------------------------ ------------------------------
START_TIME
--------------------------------------------------------------------------------
REACH_TIME
--------------------------------------------------------------------------------
TRAVEL_TIME
--------------------------------------------------------------------------------
  DISTANCE CLASSES                        DAYSS
---------- ------------------------------ ------------------------------
TYPE
------------
      1250 1A,2A,Sleeper                  Monday,Wednesday,Friday
```

```
Run SQL Command Line
       12556

TRAIN_NUMBER
------------
TRAIN_NAME
--------------------------------------------------------------------------------
SOURCEE                        DESTINATION
------------------------------ ------------------------------
START_TIME
--------------------------------------------------------------------------------
REACH_TIME
--------------------------------------------------------------------------------
TRAVEL_TIME
--------------------------------------------------------------------------------
  DISTANCE CLASSES                        DAYSS
---------- ------------------------------ ------------------------------
TYPE
------------
Sapt Kranti Express

TRAIN_NUMBER
------------
TRAIN_NAME
--------------------------------------------------------------------------------
SOURCEE                        DESTINATION
------------------------------ ------------------------------
START_TIME
--------------------------------------------------------------------------------
REACH_TIME
--------------------------------------------------------------------------------
TRAVEL_TIME
--------------------------------------------------------------------------------
  DISTANCE CLASSES                        DAYSS
---------- ------------------------------ ------------------------------
TYPE
------------
New Delhi                      Muzaffarpur

TRAIN_NUMBER
------------
TRAIN_NAME
--------------------------------------------------------------------------------
SOURCEE                        DESTINATION
------------------------------ ------------------------------
START_TIME
--------------------------------------------------------------------------------
REACH_TIME
--------------------------------------------------------------------------------
TRAVEL_TIME
--------------------------------------------------------------------------------
  DISTANCE CLASSES                        DAYSS
---------- ------------------------------ ------------------------------
TYPE
------------
01-AUG-21 11.25.00 PM

TRAIN_NUMBER
------------
TRAIN_NAME
--------------------------------------------------------------------------------
SOURCEE                        DESTINATION
------------------------------ ------------------------------
START_TIME
```


Run SQL Command Line
REACH_TIME
TRAVEL_TIME
DISTANCE CLASSES DAYSS
TYPE
01-AUG-21 05.55.00 AM
TRAIN_NUMBER
TRAIN_NAME
SOURCEE DESTINATION
START_TIME
REACH_TIME
TRAVEL_TIME
DISTANCE CLASSES DAYSS
TYPE
+00 07:15:08.000000
TRAIN_NUMBER
TRAIN_NAME
SOURCEE DESTINATION
START_TIME
REACH_TIME
TRAVEL_TIME
DISTANCE CLASSES DAYSS
TYPE
540 1A,2A,3A,SLEEPER Monday,Tuesday
TRAIN_NUMBER
TRAIN_NAME
SOURCEE DESTINATION
START_TIME
REACH_TIME
TRAVEL_TIME
DISTANCE CLASSES DAYSS
TYPE

**9. Change the superfast charge value in train fare as zero, if it is null.**

update train_ticket_fare set superfast_charge = 0 where train_no=12434;

select * from train_ticket_fare where superfast_charge=0;

```
Run SQL Command Line

SQL> update train_ticket_fare set superfast_charge = 0 where train_no=12434;

1 row updated.
```

```
SQL> select * from train_ticket_fare where superfast_charge=0;

  TRAIN_NO CLASS     BASE_FARE RESERVATION_CHARGE SUPERFAST_CHARGE OTHER_CHARGE
---------- -------- ---------- ------------------ ---------------- ------------
TATKAL_CHARGE SERVICE_TAX
------------- -----------
     12434 2A             1500                100                0           75
           50          50
```

**10. List the passenger names whose tickets are not confirmed.**

select passenger_name from passenger_details where reservation_status= 'NOT CNF';

```
SQL> select passenger_name from passenger_details where reservation_status= 'NOT CNF';

PASSENGER_NAME
------------------------------
Kishore
```

**CONSTRAINTS**

**11. Create (Alter table to add constraint) the necessary foreign keys by identifying the relationships in the table.**

alter table ticket add constraint fk_1 foreign key(train_number) references train;

alter table passenger_details add constraint fk_2 foreign key (PNR_no) references ticket;

alter table train_ticket_fare add constraint fk_3 foreign key (train_no) references train;

alter table train_route add constraint fk_4 foreign key (train_no) references train;

**already during table creation, I had made constraints for foreign key so when the commands run, the compiler says that a similar constraint already exists:**

1. CREATE TABLE Ticket(

   PNR_no varchar(11) constraint tkt_pk primary key,

   Transactionid number(18) not null constraint tkt_unq

   unique,

   from_station varchar(20),

   To_station varchar(30),

   date_of_journey date,

   classid varchar(8),

   date_of_booking date,

   total_ticket_fare number(5),

   train_number constraint tkt_fk references Train );

2. CREATE TABLE Passenger(
   PNR_no constraint psngr_fk
   references Ticket,
   Serial_no number(2),
   Passenger_Name varchar(30),
   Age number(3),
   Reservation_status varchar(10),
   constraint psngr_pk primary key
   (pnr_no,serial_no)
   );

3. CREATE TABLE Train_Ticket_fare(

   train_no CONSTRAINT tnrtktfr_fk references

   Train, class varchar(8),

   base_fare number(4),

   reservation_charge number(3),

   superfast_charge number(3),

   other_charge number(3),

   tatkal_charge number(3),

service_tax number(3),

CONSTRAINT tnrtktfr_pk primary key(train_no,class)

);

4. CREATE TABLE Train_Route(

Train_no references Train,

route_no number(5),

station_code varchar(3),

station_name varchar(20),

arrival_time timestamp(0),

depart_time timestamp(0),

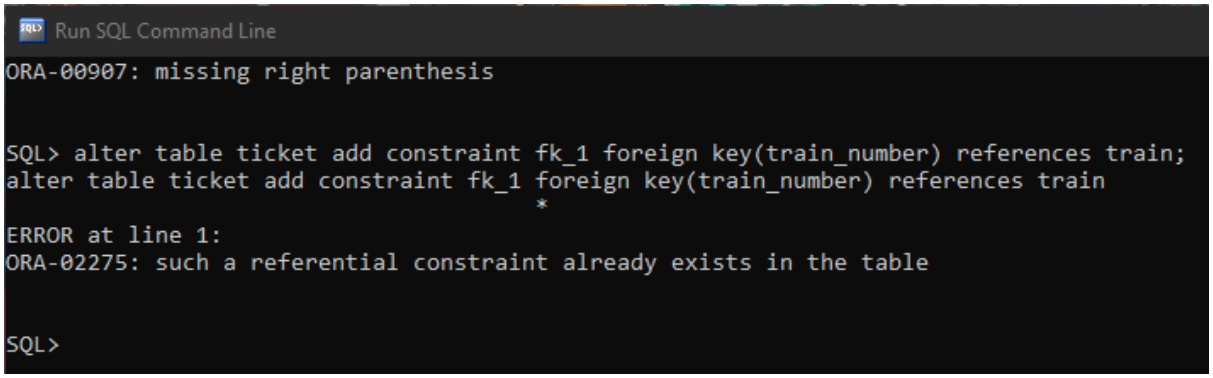
distance number(4),

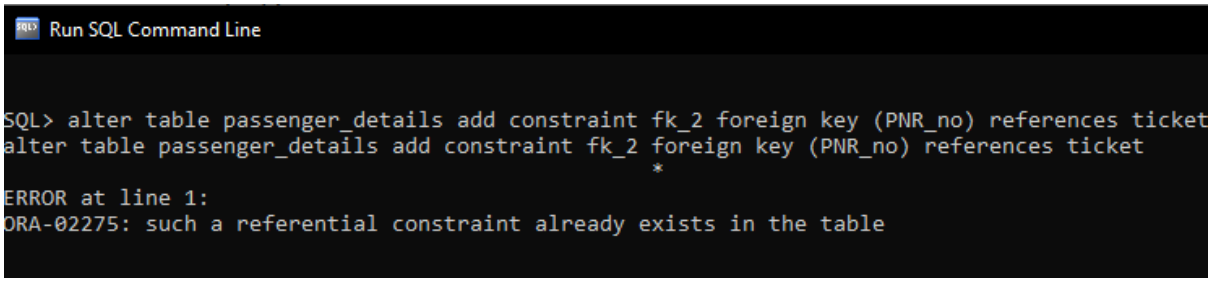
Journey_day varchar(10),

constraint tr_rt primary key(Train_no,route_no)

);

thus, using alter command I get:



```
Run SQL Command Line
SQL> alter table train_ticket_fare add constraint fk_3 foreign key (train_no) references train;
alter table train_ticket_fare add constraint fk_3 foreign key (train_no) references train
                                             *
ERROR at line 1:
ORA-02275: such a referential constraint already exists in the table


SQL>
```

```
SQL> alter table train_route add constraint fk_4 foreign key (train_no) references train;
alter table train_route add constraint fk_4 foreign key (train_no) references train
                                           *
ERROR at line 1:
ORA-02275: such a referential constraint already exists in the table
```

**12. Add a suitable constraint to train table to always have train no in the range 10001 to 99999.**

alter table train add constraint train_chk check(train_number between 10001 and 99999);

```
SQL> alter table train add constraint train_chk check(train_number between 10001 and 99999);

Table altered.
```

**13. Add a suitable constraint for the column of station name, so that does not take duplicates.**

alter table train_route add constraint trnr_unq1 station_name varchar(20) unique;

alter table ticket add constraint trnr_unq2 from_station varchar(20) unique;

alter table ticket add constraint trnr_unq3 to_station varchar(20) unique;

alter table train add constraint trnr_unq4 sourcee varchar(20) unique;

```
Run SQL Command Line

SQL> alter table train_route add constraint trnr_unq1  station_name varchar(20) unique;
alter table train_route add constraint trnr_unq1  station_name varchar(20) unique
                                                  *
ERROR at line 1:
ORA-01430: column being added already exists in table
```

```
SQL> alter table ticket add constraint trnr_unq2 from_station varchar(20) unique;
alter table ticket add constraint trnr_unq2 from_station varchar(20) unique
                                           *
ERROR at line 1:
ORA-01430: column being added already exists in table


SQL> alter table ticket add constraint trnr_unq3 to_station varchar(20) unique;
alter table ticket add constraint trnr_unq3 to_station varchar(20) unique
                                           *
ERROR at line 1:
ORA-01430: column being added already exists in table
```

```
SQL> alter table train add constraint trnr_unq4 sourcee varchar(20) unique;
alter table train add constraint trnr_unq4 sourcee varchar(20) unique
                                          *
ERROR at line 1:
ORA-01430: column being added already exists in table
```

**14. Add a suitable constraint for the class column that it should take values only as 1A, 2A, 3A, SL, C.**

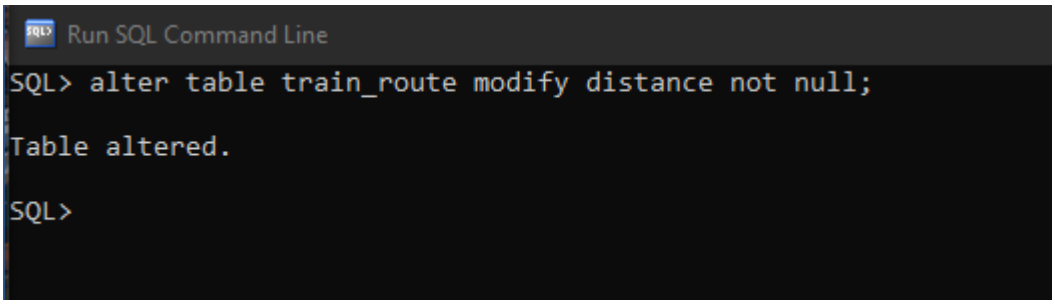
alter table ticket add constraint tkt_chk check(classid in('1A','2A','3A','Sleeper','CC'));

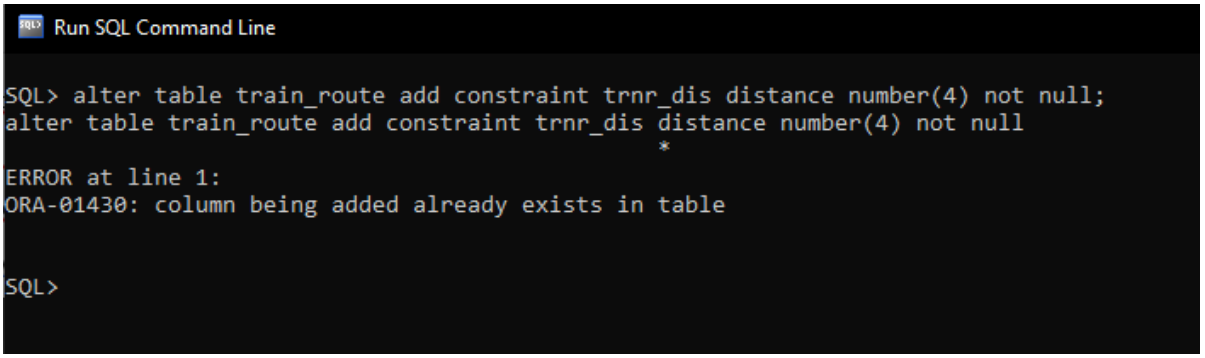
```
Run SQL Command Line

SQL>  alter table ticket add constraint tkt_chk check(classid in('1A','2A','3A','Sleeper','CC'));

Table altered.

SQL>
```

**15. Add a not null constraint for the column distance in train_route.**

alter table train_route modify distance not null;

alter table train_route add constraint trnr_dis distance number(4) not null;


Run SQL Command Line
SQL> alter table train_route modify distance not null;
Table altered.
SQL>


Run SQL Command Line
SQL> alter table train_route add constraint trnr_dis distance number(4) not null;
alter table train_route add constraint trnr_dis distance number(4) not null
*
ERROR at line 1:
ORA-01430: column being added already exists in table
SQL>

**Use SQL PLUS functions for answering the followings:**

1. **Find the passengers whose date of journey is one month from today.**

select passenger_name from passenger_details natural join ticket where to_char(add_months(sysdate,1),'dd-mon-yy')=date_of_journey;

2. **Print the train names in upper case.**

select upper(train_name)"Train name" from train;

```
SQL Plus
SQL> select upper(train_name)"Train name" from train;

Train name                                                                      _journey;
--------------------------------------------------------------------------------
CHENNAI EXPRESS
DURONTO EXPRESS
SAPT KRANTI EXPRESS
KM LTT WEEKLY EXPRESS
MASBCA SF EXP
```

3. **Print the passenger names with left padding character.**

select lpad(passenger_name,30,'#')"Passenger Name" from passenger_details;

```
SQL> select lpad(passenger_name,30,'#')"Passenger Name" from passenger_details;

Passenger Name
--------------------------------------------------------------------------------
########################Kinap
########################Holly
######################Kishore
########################Jaydev
########################Madhav
```

**4. Print the station codes replacing K with M.**

select translate(station_code,'K','M')"Station code" from train_route;

```
SQL> select translate(station_code,'K','M')"Station code" from train_route;

Station code
------------
EM
MPD
NZM
MML
MMR
```

**5. Translate all the LC in class column (Train_fare) to POT and display.**

select replace(class,'LC','POT')"class" from train_ticket_fare;

```
SQL> select replace(class,'LC','POT')"class" from train_ticket_fare;

class
-----------------------
2A
Sleeper
2A
3A
1A
```

**6. Display the fare details of all trains, if any value is ZERO, print as NULL value.**

select base_fare,reservation_charge,superfast_charge,other_charge,service_tax from train_ticket_fare;

select null if (base_fare,0), null if(reservation_charge,0),null if(superfast_charge,0),null if(other_charge,0), null if(service_tax,0) from train_ticket_fare;

| BASE_FARE | RESERVATION_CHARGE | SUPERFAST_CHARGE | OTHER_CHARGE | SERVICE_TAX |
|---|---|---|---|---|
| 300 | 20 | | 10 | 10 |
| 1500 | 220 | 10 | 5 | 10 |
| 2000 | 150 | 250 | 250 | 100 |
| 1500 | 100 | 0 | 75 | 50 |
| 2500 | 150 | 250 | 250 | 100 |

```
SQL> select null if (base_fare,0), null if(reservation_charge,0),null if(superfast_charge,0),null if(other_c
harge,0), null if(service_tax,0) from train_ticket_fare;
```

**7. Display the PNR No and transaction id, if transaction id is null, print 'not generated'.**

alter table ticket modify transactionid char(14);

select pnr_no, nvl(transactionid,'not generated')"Transaction id" from ticket;

```
SQL> alter table ticket modify transactionid char(14);
alter table ticket modify transactionid char(14)
                         *
ERROR at line 1:
ORA-01439: column to be modified must be empty to change datatype
```

```
SQL> select pnr_no, nvl(transactionid,'not generated')"Transaction id" from ticket;
```

**8. Print the date_of_journey in the format '27th November 2010'.**

select to_char(date_of_journey,'ddth month yyyy')"date_of_journey"from ticket;

```
SQL Plus

SQL> select to_char(date_of_journey,'ddth month yyyy')"date_of_journey"from ticket;

date_of_journey
-------------------------------------------
24th november  0021
12th november  2021
12th december  2021
22nd december  2021
14th december  2021
```

**9. Find the maximum fare (total fare).**

select max(total_ticket_fare) from ticket;

```
SQL> select max(total_ticket_fare) from ticket;

MAX(TOTAL_TICKET_FARE)
----------------------
                  3500
```

**10. Find the average age of passengers in one ticket.**

select avg(age) from passenger_details group by pnr_no;

```
SQL> select avg(age) from passenger_details group by pnr_no;

  AVG(AGE)
----------
        68
        44
        32
        19
        23
```

**11. Find the maximum length of station name available in the database.**

select max(length(station_name))from train_route;

```
SQL>  select max(length(station_name))from train_route;

MAX(LENGTH(STATION_NAME))
-------------------------
                       19
```

**12. Print the fare amount of the passengers as rounded value.**

select round(total_ticket_fare)from ticket;

```
SQL> select round(total_ticket_fare)from ticket;

ROUND(TOTAL_TICKET_FARE)
------------------------
                    1800
                    3500
                     400
                    1750
                    3000
```

**13. Add the column halt time to train route.**

alter table train_route add halt_time interval day to second;

```
SQL Plus

SQL> alter table train_route add halt_time interval day to second;

Table altered.
```

**14. Update values to it from arrival time and depart time.**

update train_route set halt_time=depart_time-arrival_time;

commit;

```
SQL> update train_route set halt_time=depart_time-arrival_time;

5 rows updated.

SQL> commit;

Commit complete.
```

**15. Display the arrival time, depart time in the format HH:MI (24 hours and minutes).**

select
to_timestamp(arrival_time,'hh24:mi')"A_time",to_timestamp(depart_time,'hh24:mi')"D_time" from train_route;

```
SQL> select to_timestamp(arrival_time,'hh24:mi')"A_time",to_timestamp(depart_time,'hh24:mi')"D_time" from train_route;
```

```
SQL> select arrival_time,depart_time from train_route;

ARRIVAL_TIME
---------------------------------------------------------------------------
DEPART_TIME
---------------------------------------------------------------------------
01-OCT-21 06.35.00 AM
01-OCT-21 06.45.00 AM

01-OCT-21 03.35.00 PM
01-OCT-21 03.40.00 PM

01-OCT-21 11.25.00 PM
01-OCT-21 11.45.00 PM


ARRIVAL_TIME
---------------------------------------------------------------------------
DEPART_TIME
---------------------------------------------------------------------------
01-OCT-21 02.35.00 PM
01-OCT-21 02.40.00 PM

01-OCT-21 12.45.00 PM
01-OCT-21 12.50.00 PM
```

## Use SET Operators

1. Find the train numbers for which reservation have not yet been made.

**Sol:**

select train_number from train minus select train_number from ticket;

```
SQL Plus
SQL> select train_number from train minus select train_number from ticket;

no rows selected
```

2. Find the train names that do not have a first AC class coach.

**Sol:**

select train_name from train minus select train_name from train,table(train.classes) where column_value='1A';

```
SQL> select train_name from train minus select train_name from train,table(train.classes) where column_v
alue='1A';
select train_name from train minus select train_name from train,table(train.classes) where column_value=
'1A'
                                                              *
ERROR at line 1:
ORA-22905: cannot access rows from a non-nested table item
```

3. Print all the PNR Nos available in the database.

**Sol:**

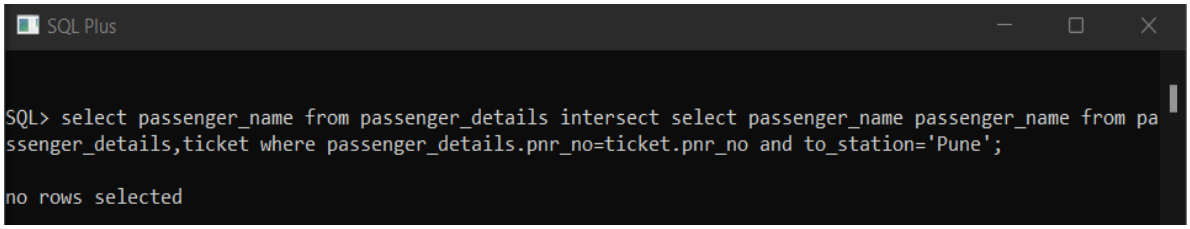
select pnr_no from ticket union select pnr_no from passenger_details;

```
SQL Plus
SQL> select pnr_no from ticket union select pnr_no from passenger_details;

PNR_NO
----------
1928091842
2345127890
2345168590
2895127890
8674920651
```

4. Find passenger names who have booked to 'Pune'.

**Sol:**

select passenger_name from passenger_details intersect select passenger_name passenger_name from passenger_details,ticket where passenger_details.pnr_no=ticket.pnr_no and to_station='Pune';

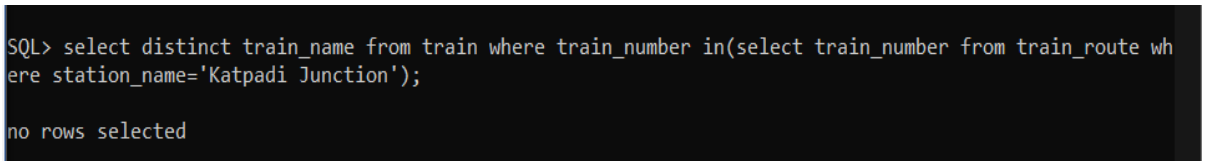



## Use Nested Query (in Operators)

5. Find the train names that stop in 'Katpadi'.

**Sol:**

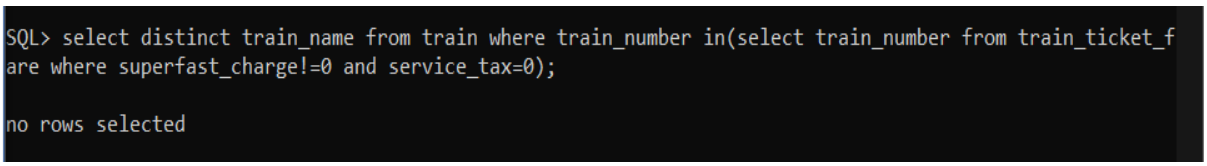
select distinct train_name from train where train_number in(select train_number from train_route where station_name='Katpadi Junction');




6. Find the train names that are superfast and the service tax is zero.

**Sol:**

select distinct train_name from train where train_number in(select train_number from train_ticket_fare where superfast_charge!=0 and service_tax=0);




7. Find the Passenger names who have booked for the train that starts from 'Chennai'.

**Sol:**

select distinct passenger_name from passenger_details where pnr_no in(select pnr_no from ticket where train_number in(select train_number from train where sourcee='Chennai'));

```
SQL Plus
SQL> select distinct passenger_name from passenger_details where pnr_no in(select pnr_no from ticket whe
re train_number in(select train_number from train where sourcee='Chennai'));

no rows selected
```

8. Find the trains names that have all the AC coaches and the base fare is less than 3000 for each case.

**Sol:**

select distinct train_name from train where train_number in(select train_no from train_ticket_fare where base_fare<3000 and classes in('1A','2A','3A'));

```
SQL Plus
SQL> select distinct train_name from train where train_number in(select train_no from train_ticket_fare
where base_fare<3000 and classes in('1A','2A','3A'));

no rows selected
```

**Use Join Query**

9. Find the train names that stop in 'Katpadi'.

**Sol:**

select train.train_name from train join train_route on train.train_number=train_route.train_no where train_route.station_name='Katpadi Junction';

```
SQL Plus


SQL> select train.train_name from train join train_route on train.train_number=train_route.train_no wher
e train_route.station_name='Katpadi Junction';

no rows selected
```

10. Find the train names that are superfast and the service tax is zero.

**Sol:**

select train_name from train, train_ticket_fare where train.train_number=train_ticket_fare.train_no and type='Superfast' and service_tax!=0;

```
SQL Plus

SQL> select train_name from train, train_ticket_fare where train.train_number=train_ticket_fare.train_no
 and type='Superfast' and service_tax!=0;

TRAIN_NAME
--------------------------------------------------------------------------------
masbca sf exp
```

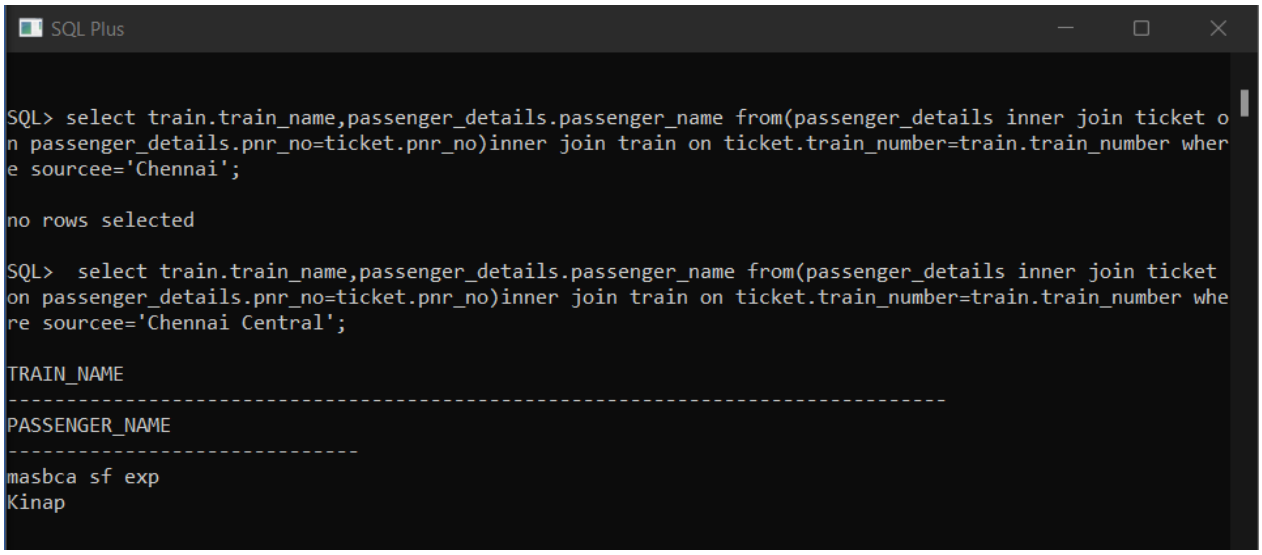
11. Find the Passenger name (and train name) who have booked for the train that starts from 'Chennai'.

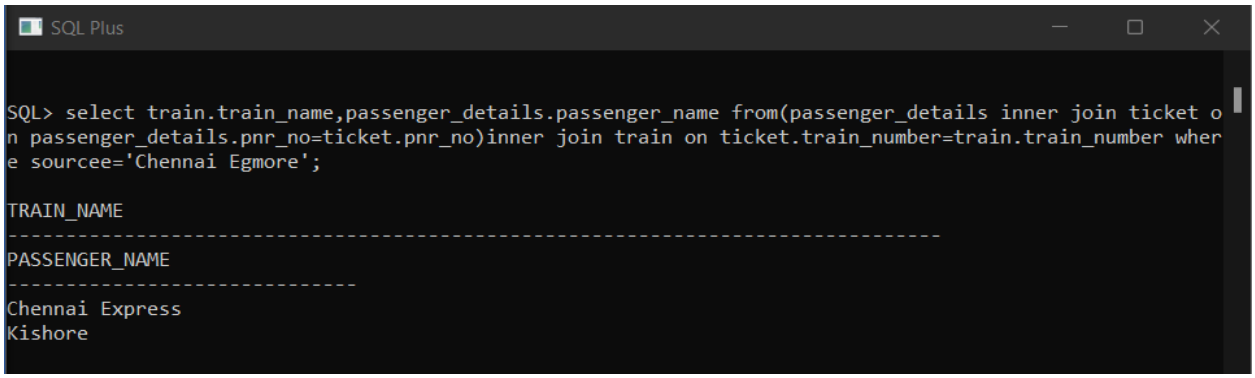
**Sol:**

```
select train.train_name,passenger_details.passenger_name from(passenger_details inner join ticket
on passenger_details.pnr_no=ticket.pnr_no)inner join train on
ticket.train_number=train.train_number where sourcee='Chennai';
```

```
select train.train_name,passenger_details.passenger_name from(passenger_details inner join ticket
on passenger_details.pnr_no=ticket.pnr_no)inner join train on
ticket.train_number=train.train_number where sourcee='Chennai Central';
```

```
select train.train_name,passenger_details.passenger_name from(passenger_details inner join ticket
on passenger_details.pnr_no=ticket.pnr_no)inner join train on
ticket.train_number=train.train_number where sourcee='Chennai Egmore';
```

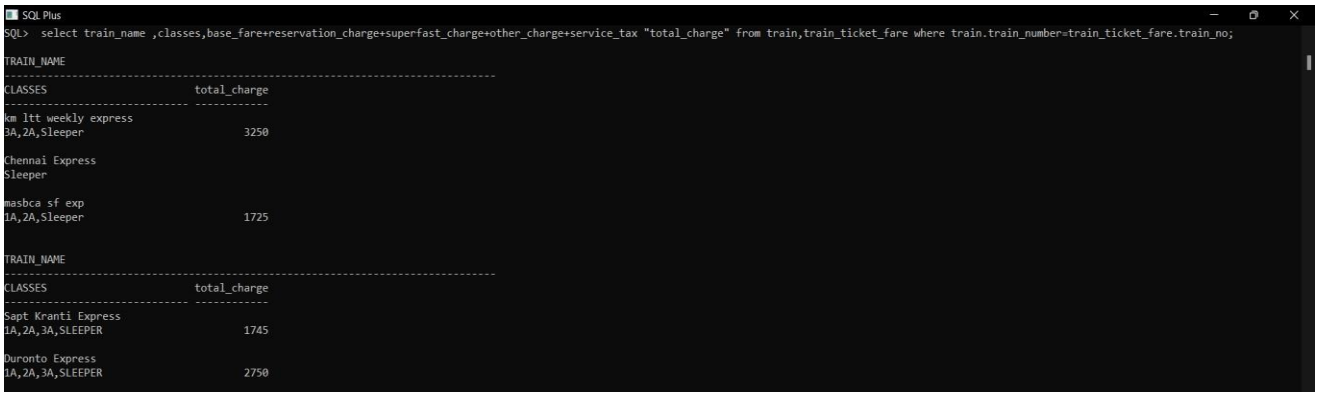


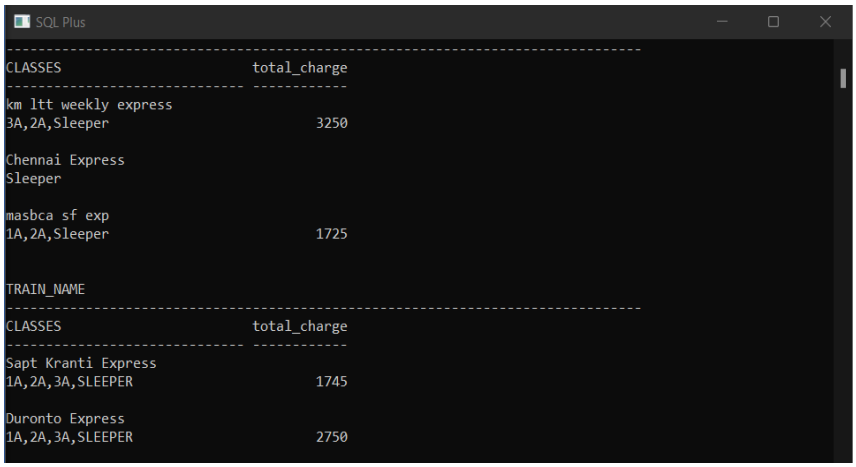



12. Display the trains' names, each type of class and the total fare for each type of class.

**Sol:**

select train_name
,classes,base_fare+reservation_charge+superfast_charge+other_charge+service_tax "total_charge"
from train,train_ticket_fare where train.train_number=train_ticket_fare.train_no;

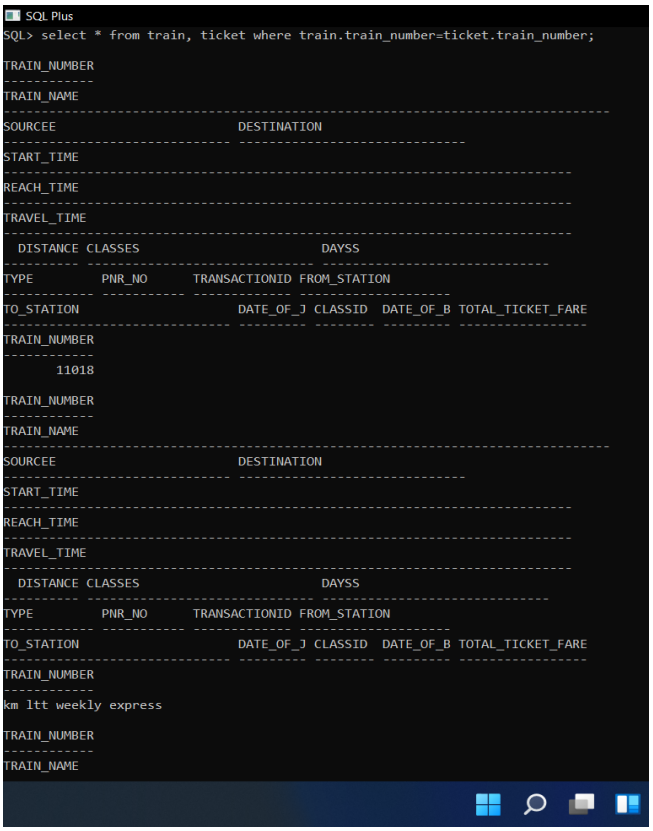


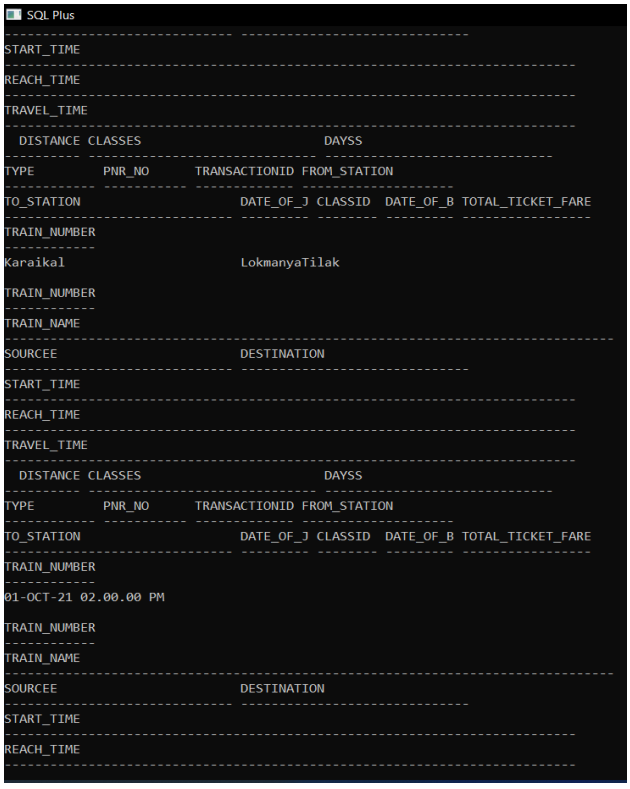



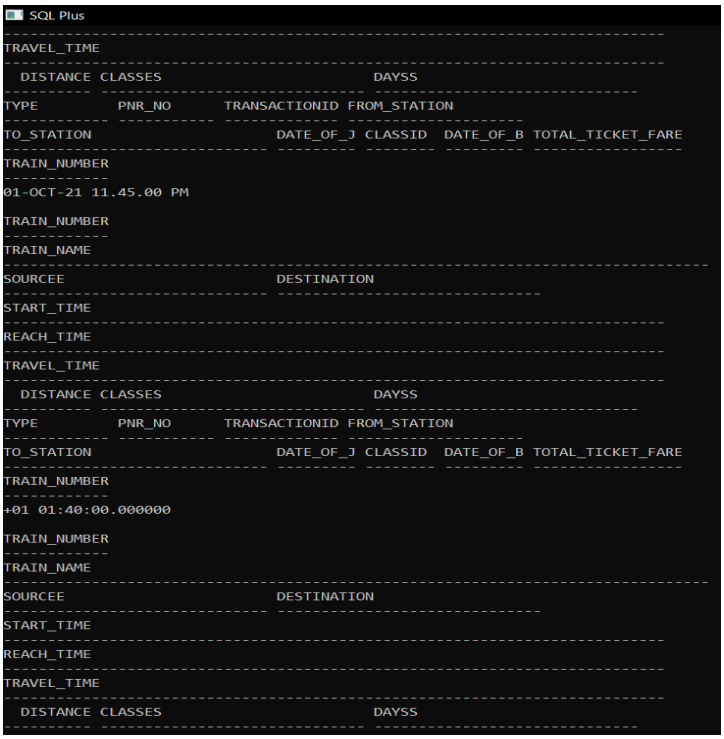

13. Display all the train details and the ticket details (if booked any).

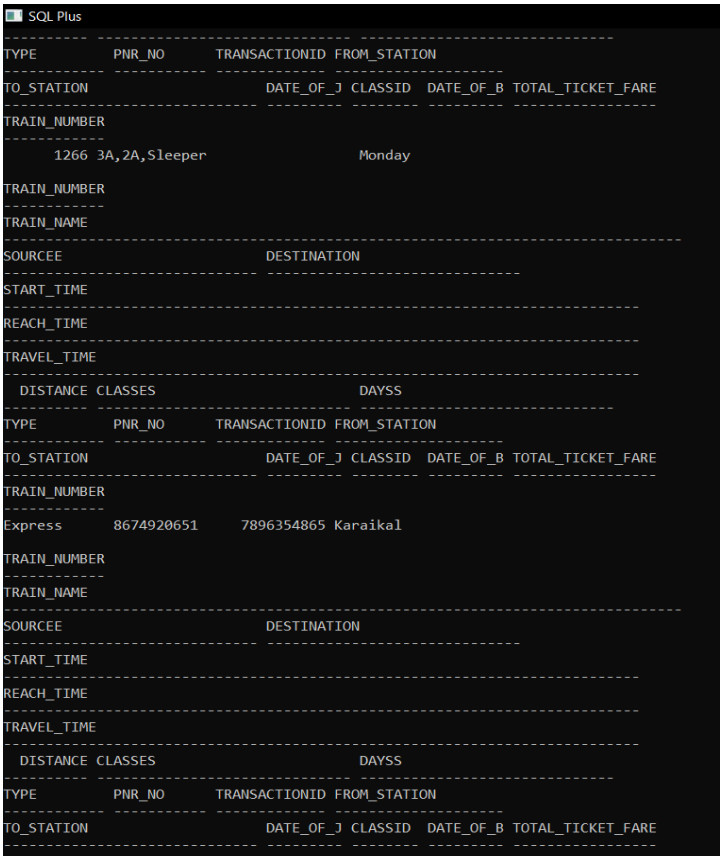
**Sol:**

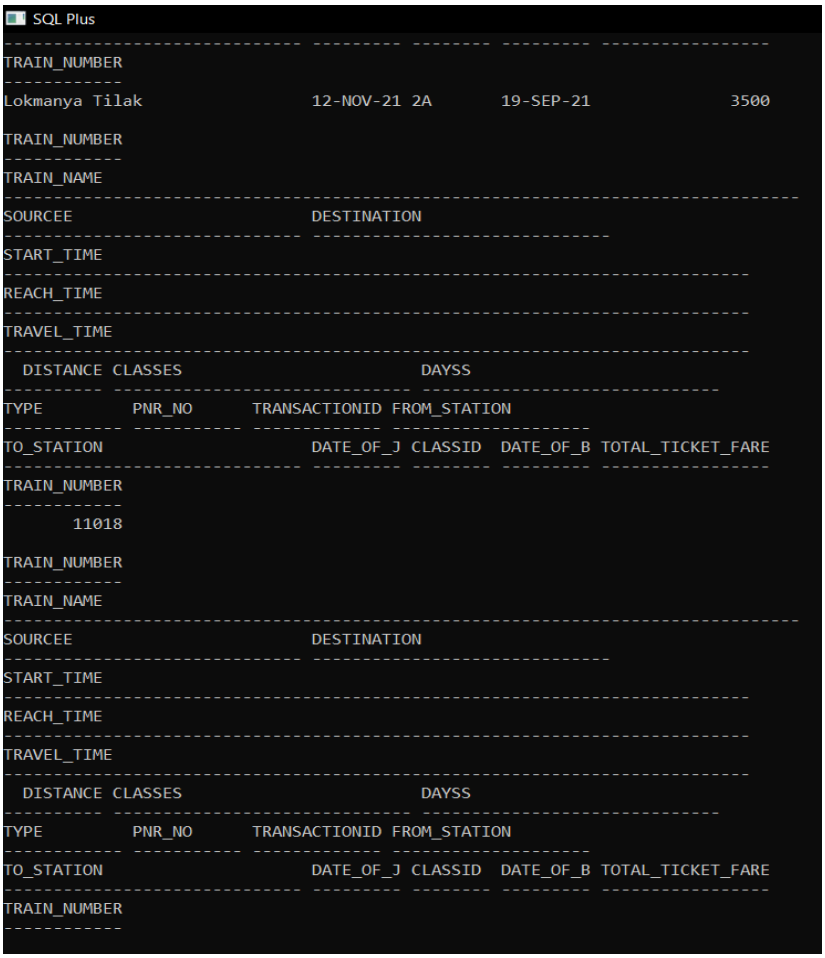
select * from train, ticket where train.train_number=ticket.train_number;

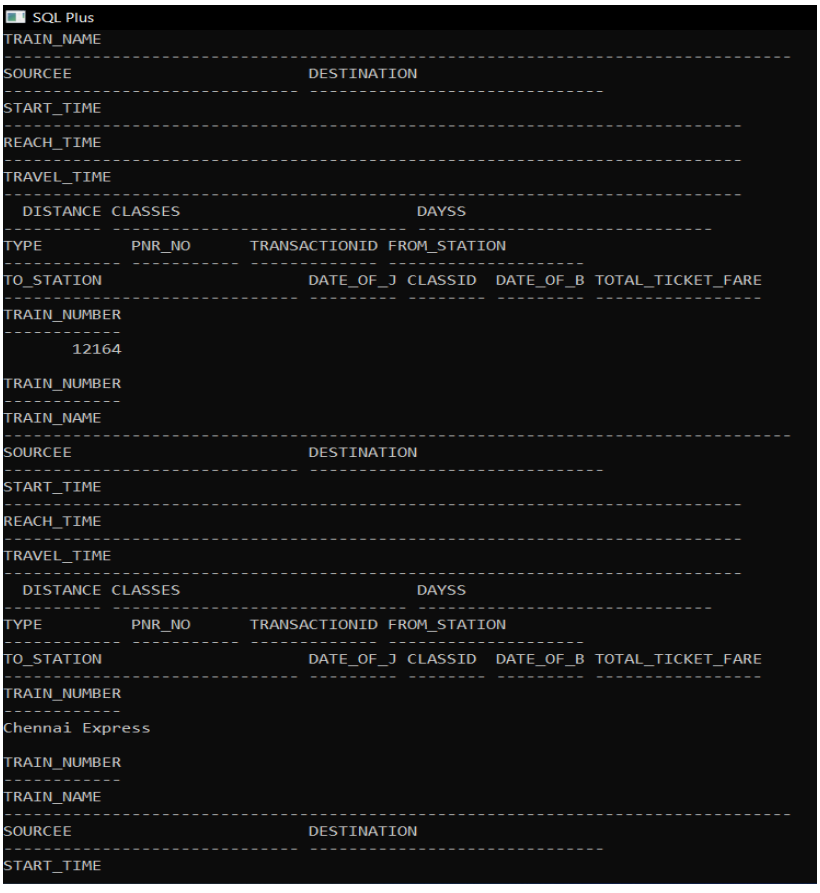

SQL Plus
SQL> select * from train, ticket where train.train_number=ticket.train_number;
TRAIN_NUMBER
TRAIN_NAME
SOURCEE DESTINATION
START_TIME
REACH_TIME
TRAVEL_TIME
DISTANCE CLASSES DAYSS
TYPE PNR_NO TRANSACTIONID FROM_STATION
TO_STATION DATE_OF_J CLASSID DATE_OF_B TOTAL_TICKET_FARE
TRAIN_NUMBER
11018
TRAIN_NUMBER
TRAIN_NAME
SOURCEE DESTINATION
START_TIME
REACH_TIME
TRAVEL_TIME
DISTANCE CLASSES DAYSS
TYPE PNR_NO TRANSACTIONID FROM_STATION
TO_STATION DATE_OF_J CLASSID DATE_OF_B TOTAL_TICKET_FARE
TRAIN_NUMBER
km ltt weekly express
TRAIN_NUMBER
TRAIN_NAME

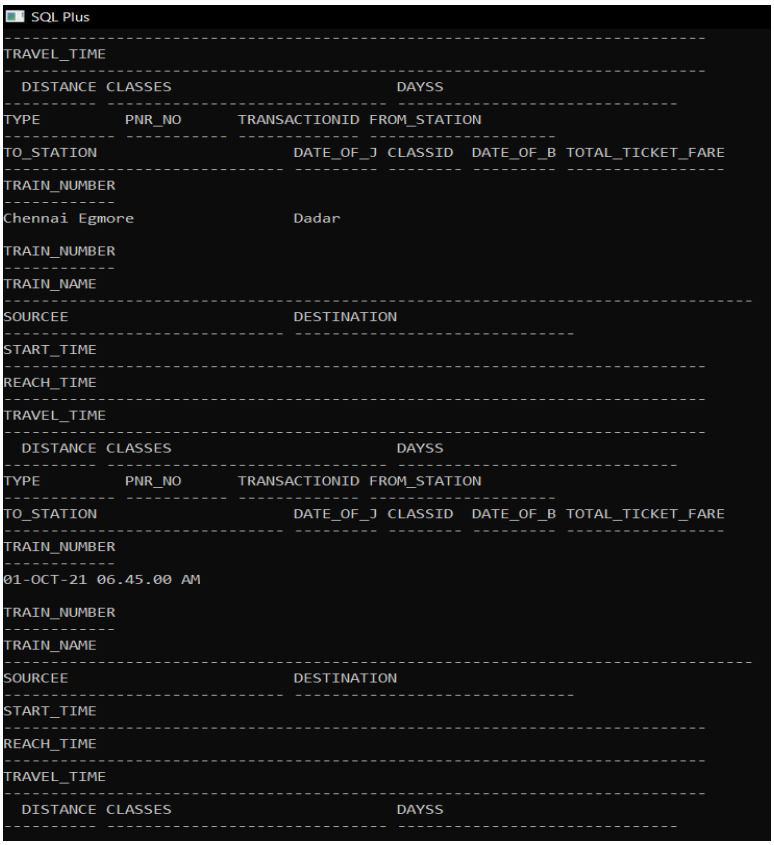

SQL Plus
START_TIME
REACH_TIME
TRAVEL_TIME
DISTANCE CLASSES DAYSS
TYPE PNR_NO TRANSACTIONID FROM_STATION
TO_STATION DATE_OF_J CLASSID DATE_OF_B TOTAL_TICKET_FARE
TRAIN_NUMBER
Karaikal LokmanyaTilak
TRAIN_NUMBER
TRAIN_NAME
SOURCEE DESTINATION
START_TIME
REACH_TIME
TRAVEL_TIME
DISTANCE CLASSES DAYSS
TYPE PNR_NO TRANSACTIONID FROM_STATION
TO_STATION DATE_OF_J CLASSID DATE_OF_B TOTAL_TICKET_FARE
TRAIN_NUMBER
01-OCT-21 02.00.00 PM
TRAIN_NUMBER
TRAIN_NAME
SOURCEE DESTINATION
START_TIME
REACH_TIME

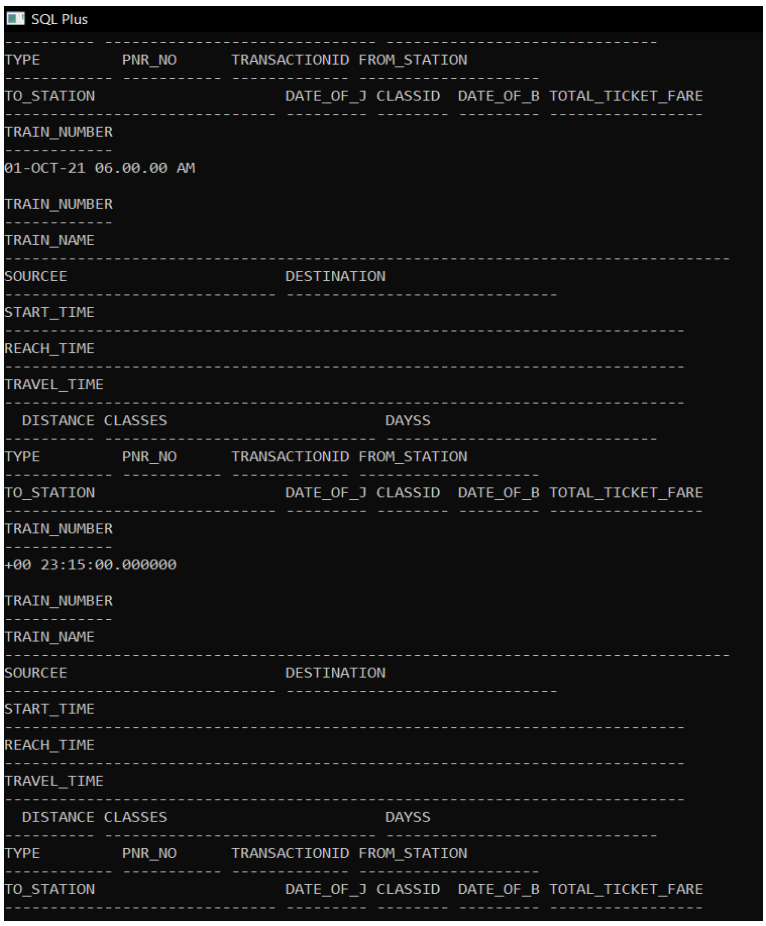

SQL Plus
TRAVEL_TIME
DISTANCE CLASSES DAYSS
TYPE PNR_NO TRANSACTIONID FROM_STATION
TO_STATION DATE_OF_J CLASSID DATE_OF_B TOTAL_TICKET_FARE
TRAIN_NUMBER
01-OCT-21 11.45.00 PM
TRAIN_NUMBER
TRAIN_NAME
SOURCEE DESTINATION
START_TIME
REACH_TIME
TRAVEL_TIME
DISTANCE CLASSES DAYSS
TYPE PNR_NO TRANSACTIONID FROM_STATION
TO_STATION DATE_OF_J CLASSID DATE_OF_B TOTAL_TICKET_FARE
TRAIN_NUMBER
+01 01:40:00.000000
TRAIN_NUMBER
TRAIN_NAME
SOURCEE DESTINATION
START_TIME
REACH_TIME
TRAVEL_TIME
DISTANCE CLASSES DAYSS

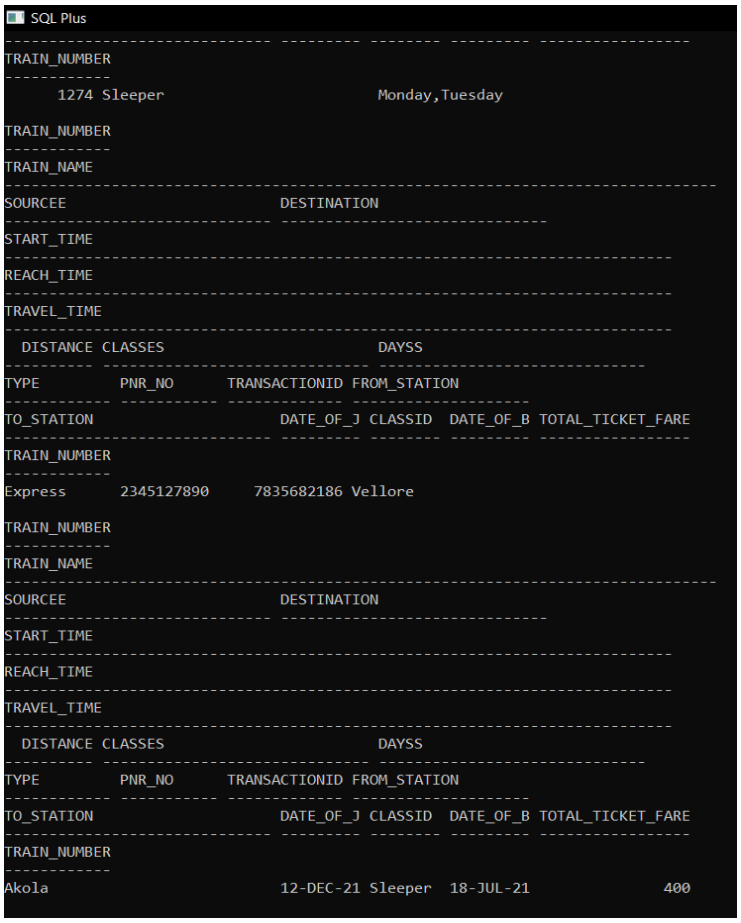

SQL Plus
TYPE PNR_NO TRANSACTIONID FROM_STATION
TO_STATION DATE_OF_J CLASSID DATE_OF_B TOTAL_TICKET_FARE
TRAIN_NUMBER
1266 3A,2A,Sleeper Monday
TRAIN_NUMBER
TRAIN_NAME
SOURCEE DESTINATION
START_TIME
REACH_TIME
TRAVEL_TIME
DISTANCE CLASSES DAYSS
TYPE PNR_NO TRANSACTIONID FROM_STATION
TO_STATION DATE_OF_J CLASSID DATE_OF_B TOTAL_TICKET_FARE
TRAIN_NUMBER
Express 8674920651 7896354865 Karaikal
TRAIN_NUMBER
TRAIN_NAME
SOURCEE DESTINATION
START_TIME
REACH_TIME
TRAVEL_TIME
DISTANCE CLASSES DAYSS
TYPE PNR_NO TRANSACTIONID FROM_STATION
TO_STATION DATE_OF_J CLASSID DATE_OF_B TOTAL_TICKET_FARE

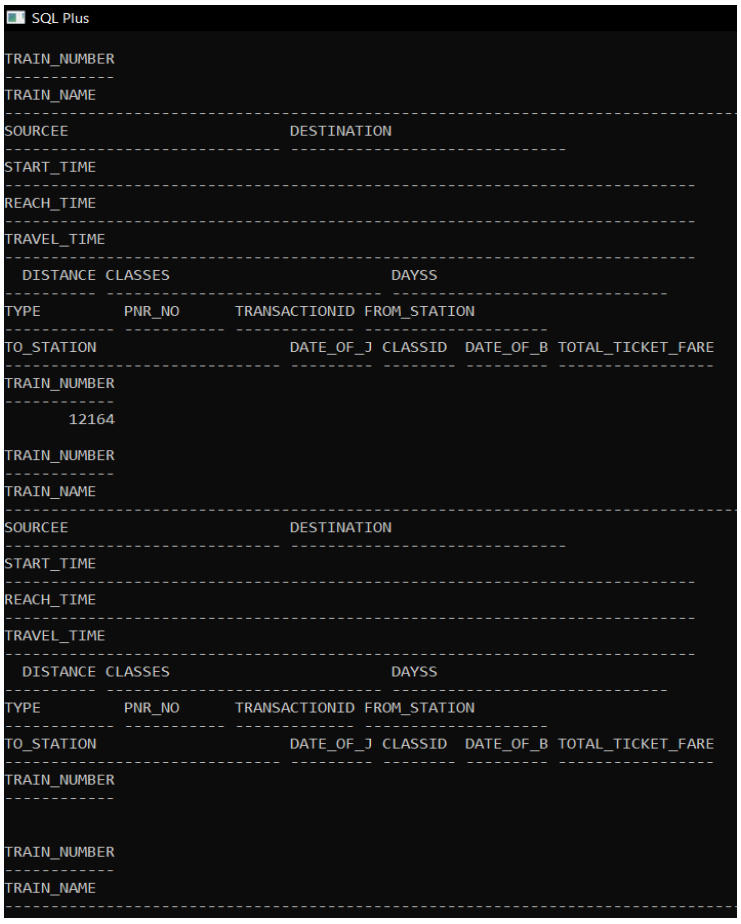

SQL Plus
---------- --------- -------- --------- ----------
TRAIN_NUMBER
------------
Lokmanya Tilak 12-NOV-21 2A 19-SEP-21 3500
TRAIN_NUMBER
------------
TRAIN_NAME
SOURCEE DESTINATION
START_TIME
REACH_TIME
TRAVEL_TIME
DISTANCE CLASSES DAYSS
TYPE PNR_NO TRANSACTIONID FROM_STATION
TO_STATION DATE_OF_J CLASSID DATE_OF_B TOTAL_TICKET_FARE
TRAIN_NUMBER
------------
11018
TRAIN_NUMBER
------------
TRAIN_NAME
SOURCEE DESTINATION
START_TIME
REACH_TIME
TRAVEL_TIME
DISTANCE CLASSES DAYSS
TYPE PNR_NO TRANSACTIONID FROM_STATION
TO_STATION DATE_OF_J CLASSID DATE_OF_B TOTAL_TICKET_FARE
TRAIN_NUMBER
------------


SQL Plus
TRAIN_NAME
SOURCEE DESTINATION
START_TIME
REACH_TIME
TRAVEL_TIME
DISTANCE CLASSES DAYSS
TYPE PNR_NO TRANSACTIONID FROM_STATION
TO_STATION DATE_OF_J CLASSID DATE_OF_B TOTAL_TICKET_FARE
TRAIN_NUMBER
------------
12164
TRAIN_NUMBER
------------
TRAIN_NAME
SOURCEE DESTINATION
START_TIME
REACH_TIME
TRAVEL_TIME
DISTANCE CLASSES DAYSS
TYPE PNR_NO TRANSACTIONID FROM_STATION
TO_STATION DATE_OF_J CLASSID DATE_OF_B TOTAL_TICKET_FARE
TRAIN_NUMBER
------------
Chennai Express
TRAIN_NUMBER
------------
TRAIN_NAME
SOURCEE DESTINATION
START_TIME


SQL Plus
TRAVEL_TIME
DISTANCE CLASSES DAYSS
TYPE PNR_NO TRANSACTIONID FROM_STATION
TO_STATION DATE_OF_J CLASSID DATE_OF_B TOTAL_TICKET_FARE
TRAIN_NUMBER
Chennai Egmore Dadar
TRAIN_NUMBER
TRAIN_NAME
SOURCEE DESTINATION
START_TIME
REACH_TIME
TRAVEL_TIME
DISTANCE CLASSES DAYSS
TYPE PNR_NO TRANSACTIONID FROM_STATION
TO_STATION DATE_OF_J CLASSID DATE_OF_B TOTAL_TICKET_FARE
TRAIN_NUMBER
01-OCT-21 06.45.00 AM
TRAIN_NUMBER
TRAIN_NAME
SOURCEE DESTINATION
START_TIME
REACH_TIME
TRAVEL_TIME
DISTANCE CLASSES DAYSS


SQL Plus
TYPE PNR_NO TRANSACTIONID FROM_STATION
TO_STATION DATE_OF_J CLASSID DATE_OF_B TOTAL_TICKET_FARE
TRAIN_NUMBER
01-OCT-21 06.00.00 AM
TRAIN_NUMBER
TRAIN_NAME
SOURCEE DESTINATION
START_TIME
REACH_TIME
TRAVEL_TIME
DISTANCE CLASSES DAYSS
TYPE PNR_NO TRANSACTIONID FROM_STATION
TO_STATION DATE_OF_J CLASSID DATE_OF_B TOTAL_TICKET_FARE
TRAIN_NUMBER
+00 23:15:00.000000
TRAIN_NUMBER
TRAIN_NAME
SOURCEE DESTINATION
START_TIME
REACH_TIME
TRAVEL_TIME
DISTANCE CLASSES DAYSS
TYPE PNR_NO TRANSACTIONID FROM_STATION
TO_STATION DATE_OF_J CLASSID DATE_OF_B TOTAL_TICKET_FARE


SQL Plus
TRAIN_NUMBER
1274 Sleeper Monday,Tuesday
TRAIN_NUMBER
TRAIN_NAME
SOURCEE DESTINATION
START_TIME
REACH_TIME
TRAVEL_TIME
DISTANCE CLASSES DAYSS
TYPE PNR_NO TRANSACTIONID FROM_STATION
TO_STATION DATE_OF_J CLASSID DATE_OF_B TOTAL_TICKET_FARE
TRAIN_NUMBER
Express 2345127890 7835682186 Vellore
TRAIN_NUMBER
TRAIN_NAME
SOURCEE DESTINATION
START_TIME
REACH_TIME
TRAVEL_TIME
DISTANCE CLASSES DAYSS
TYPE PNR_NO TRANSACTIONID FROM_STATION
TO_STATION DATE_OF_J CLASSID DATE_OF_B TOTAL_TICKET_FARE
TRAIN_NUMBER
Akola 12-DEC-21 Sleeper 18-JUL-21 400


SQL Plus
TRAIN_NUMBER
TRAIN_NAME
SOURCEE DESTINATION
START_TIME
REACH_TIME
TRAVEL_TIME
DISTANCE CLASSES DAYSS
TYPE PNR_NO TRANSACTIONID FROM_STATION
TO_STATION DATE_OF_J CLASSID DATE_OF_B TOTAL_TICKET_FARE
TRAIN_NUMBER
12164
TRAIN_NUMBER
TRAIN_NAME
SOURCEE DESTINATION
START_TIME
REACH_TIME
TRAVEL_TIME
DISTANCE CLASSES DAYSS
TYPE PNR_NO TRANSACTIONID FROM_STATION
TO_STATION DATE_OF_J CLASSID DATE_OF_B TOTAL_TICKET_FARE
TRAIN_NUMBER
TRAIN_NUMBER
TRAIN_NAME

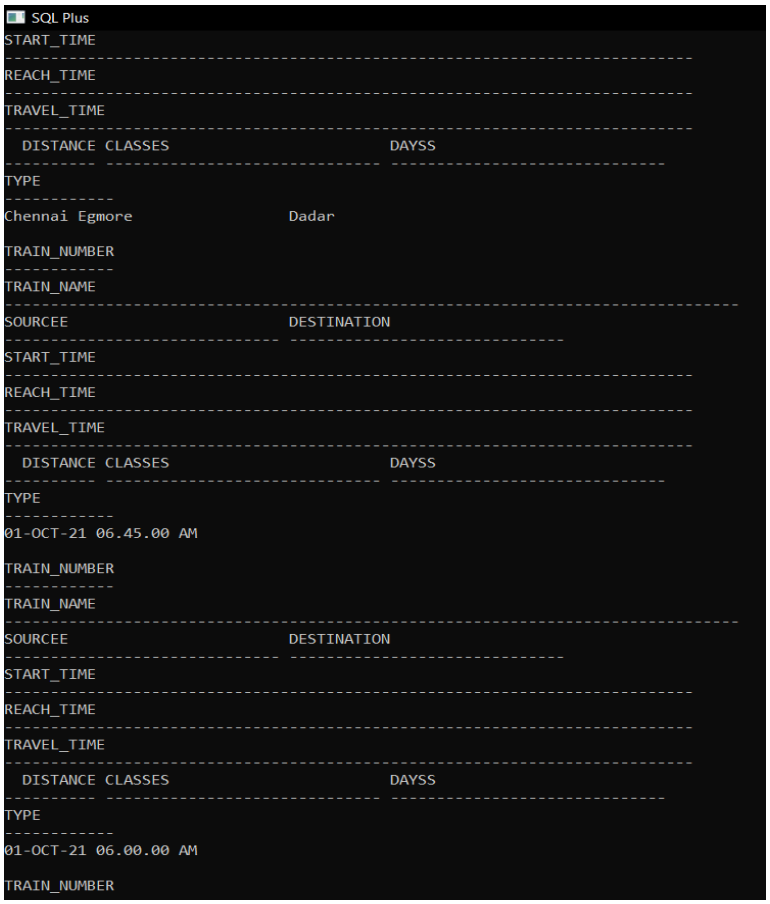
## Complex queries (use group by/group by having/join/nested)

14. Take the start station code and end station code and display the train details.

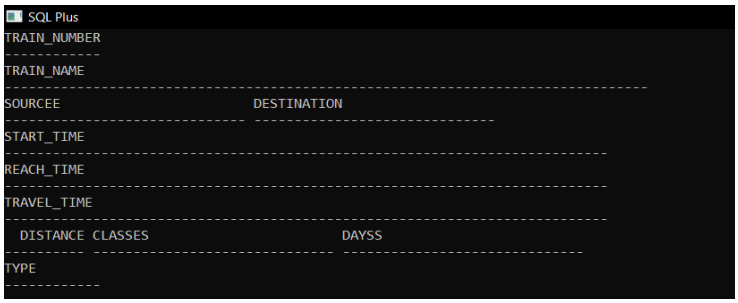
**Sol:**

select * from train where sourcee=&sourcee and destination=&destination;

```
SQL Plus
SQL> select * from train where sourcee=&sourcee and destination=&destination;
Enter value for sourcee: 'Chennai Egmore'
Enter value for destination: 'Dadar'
old   1: select * from train where sourcee=&sourcee and destination=&destination
new   1: select * from train where sourcee='Chennai Egmore' and destination='Dadar'

TRAIN_NUMBER
------------
TRAIN_NAME
--------------------------------------------------------------------------------
SOURCEE                        DESTINATION
------------------------------ ------------------------------
START_TIME
--------------------------------------------------------------------------------
REACH_TIME
--------------------------------------------------------------------------------
TRAVEL_TIME
--------------------------------------------------------------------------------
  DISTANCE CLASSES                        DAYSS
---------- ------------------------------ ------------------------------
TYPE
------------
       12164

TRAIN_NUMBER
------------
TRAIN_NAME
--------------------------------------------------------------------------------
SOURCEE                        DESTINATION
------------------------------ ------------------------------
START_TIME
--------------------------------------------------------------------------------
REACH_TIME
--------------------------------------------------------------------------------
TRAVEL_TIME
--------------------------------------------------------------------------------
  DISTANCE CLASSES                        DAYSS
---------- ------------------------------ ------------------------------
TYPE
------------
Chennai Express

TRAIN_NUMBER
------------
TRAIN_NAME
--------------------------------------------------------------------------------
SOURCEE                        DESTINATION
------------------------------ ------------------------------
START_TIME
```


SQL Plus
START_TIME
REACH_TIME
TRAVEL_TIME
DISTANCE CLASSES DAYSS
TYPE
Chennai Egmore Dadar
TRAIN_NUMBER
TRAIN_NAME
SOURCEE DESTINATION
START_TIME
REACH_TIME
TRAVEL_TIME
DISTANCE CLASSES DAYSS
TYPE
01-OCT-21 06.45.00 AM
TRAIN_NUMBER
TRAIN_NAME
SOURCEE DESTINATION
START_TIME
REACH_TIME
TRAVEL_TIME
DISTANCE CLASSES DAYSS
TYPE
01-OCT-21 06.00.00 AM
TRAIN_NUMBER


SQL Plus
SOURCEE DESTINATION
START_TIME
REACH_TIME
TRAVEL_TIME
DISTANCE CLASSES DAYSS
TYPE
+00 23:15:00.000000
TRAIN_NUMBER
TRAIN_NAME
SOURCEE DESTINATION
START_TIME
REACH_TIME
TRAVEL_TIME
DISTANCE CLASSES DAYSS
TYPE
1274 Sleeper Monday,Tuesday
TRAIN_NUMBER
TRAIN_NAME
SOURCEE DESTINATION
START_TIME
REACH_TIME
TRAVEL_TIME
DISTANCE CLASSES DAYSS
TYPE




15. List the train names and the number of sub stations it has.

**Sol:**

select train.train_name from train,train_route where train.train_number=train_route.train_no group by train.train_name having count(station_code)>=5;

```
SQL> select train.train_name from train,train_route where train.train_number=train_route.train_no group by train.train_name having count(station_code)>=5;

no rows selected
```

16. List the stations where all types of trains stop.

**Sol:**

select station_name from train_route where not exists(select type from train minus select type from train where train.train_number=train_route.train_no);

```
SQL> select station_name from train_route where not exists(select type from train minus select type from train where train.train_number=train_route.train_no);

no rows selected
```

17. List the trains names that has at least four bookings

**Sol:**

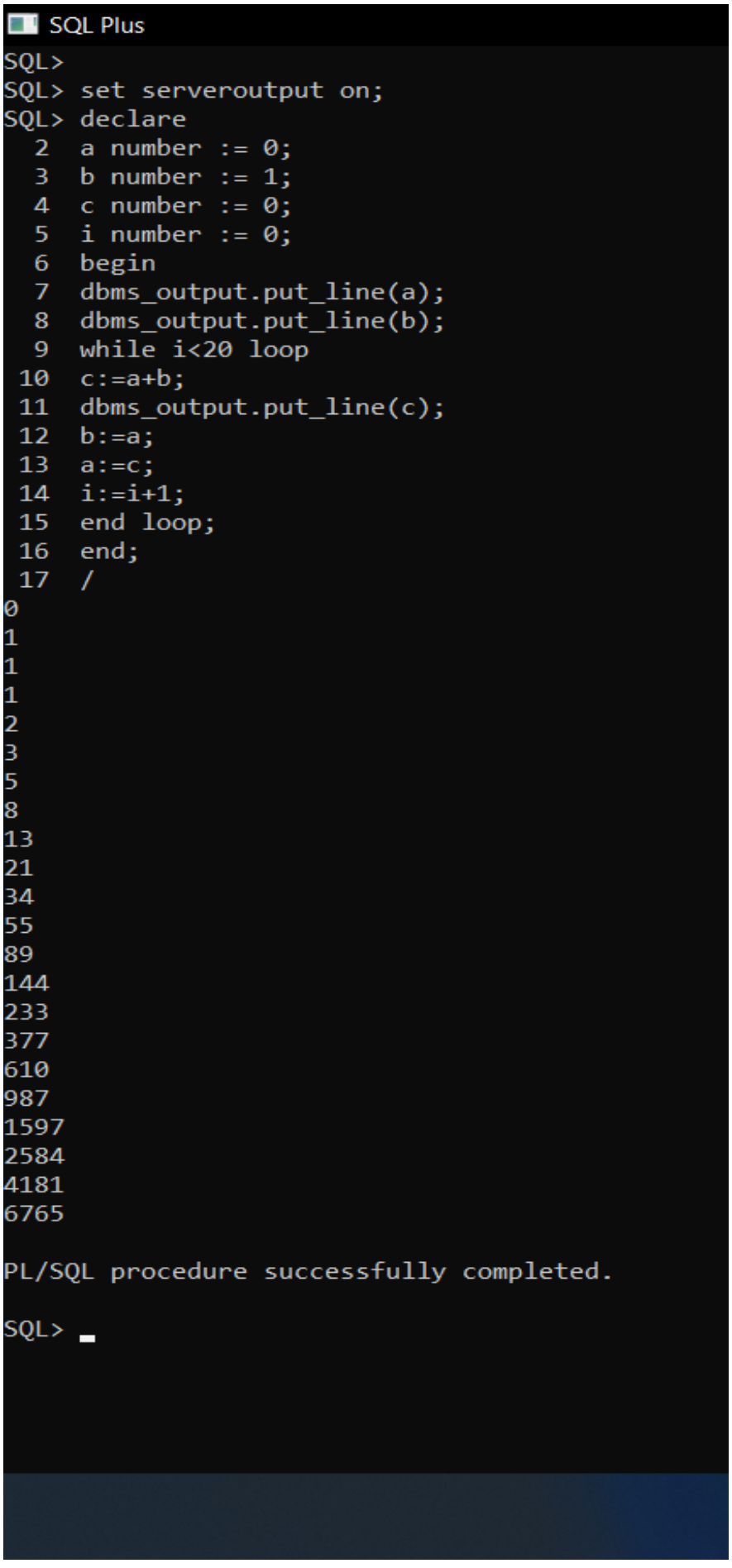
select train_name from train,ticket,passenger_details where train.train_number=ticket.train_number and ticket.pnr_no=passenger_details.pnr_no group by train_name having count(distinct pnr_no)>=5;

```
SQL> select train_name from train,ticket,passenger_details where train.train_number=ticket.train_number and ticket.pnr_no=passenger_details.pnr_no group by train_name having count(distinct pnr_no)>=5;
select train_name from train,ticket,passenger_details where train.train_number=ticket.train_number and ticket.pnr_no=passenger_details.pnr_no group by train_name having count(distinct pnr_no)>=5
                                                                                                                                                                                *
ERROR at line 1:
ORA-00918: column ambiguously defined


SQL>
```

**PL/SQL block to**

**1. Print the Fibonacci series.**

```
set serveroutput on;
declare
a number := 0;
b number := 1;
c number := 0;
i number := 0;
begin
dbms_output.put_line(a);
dbms_output.put_line(b);
while i<20 loop
c:=a+b;
dbms_output.put_line(c);
b:=a;
a:=c;
i:=i+1;
end loop;
end;
/
```


SQL Plus
SQL>
SQL> set serveroutput on;
SQL> declare
2 a number := 0;
3 b number := 1;
4 c number := 0;
5 i number := 0;
6 begin
7 dbms_output.put_line(a);
8 dbms_output.put_line(b);
9 while i<20 loop
10 c:=a+b;
11 dbms_output.put_line(c);
12 b:=a;
13 a:=c;
14 i:=i+1;
15 end loop;
16 end;
17 /
0
1
1
1
2
3
5
8
13
21
34
55
89
144
233
377
610
987
1597
2584
4181
6765
PL/SQL procedure successfully completed.
SQL>

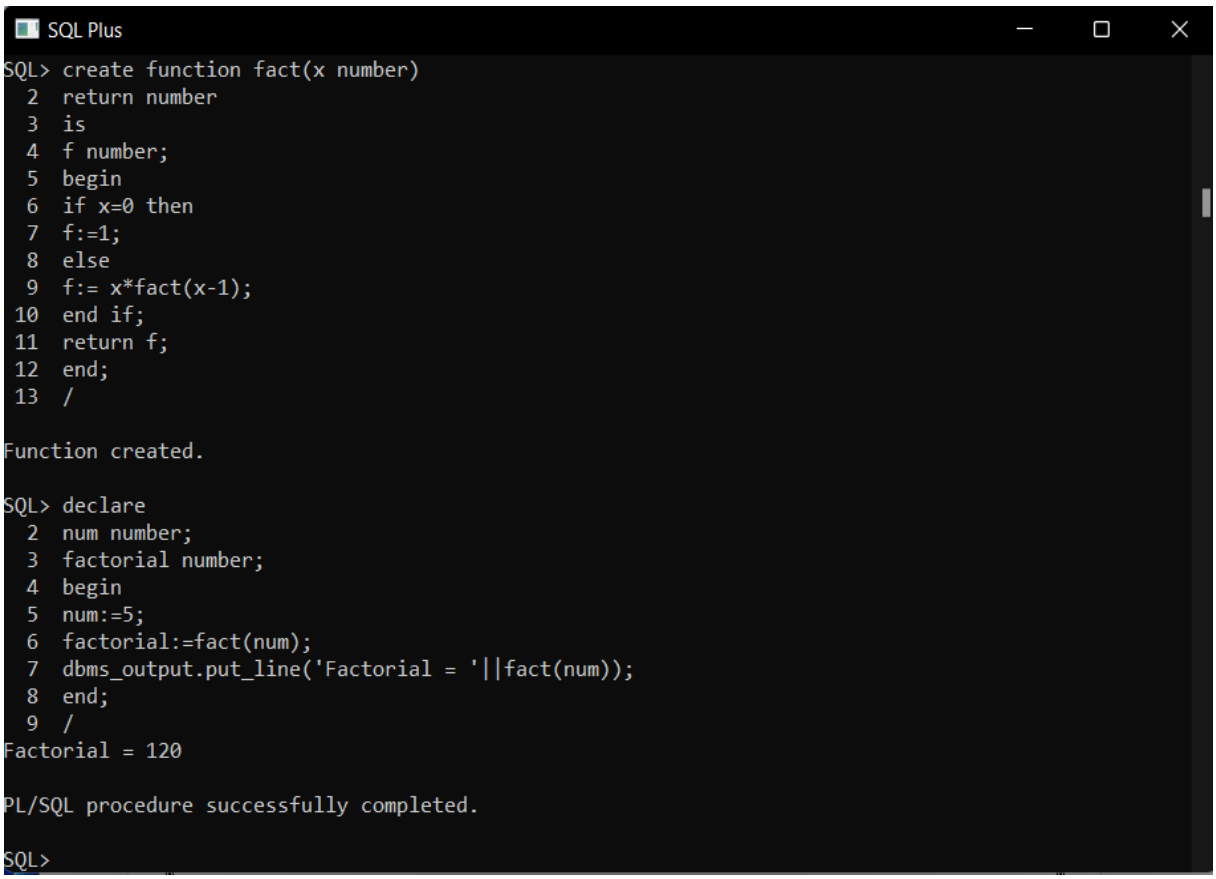
**2. Print the factorial of a given number.**

```
create function fact(x number)
return number
is
f number;
begin
if x=0 then
f:=1;
else
f:= x*fact(x-1);
end if;
return f;
end;
/
```


```
declare
num number;
factorial number;
begin
num:=5;
factorial:=fact(num);
dbms_output.put_line('Factorial = '||fact(num));
```

end;

/




**3. Print 'NOT confirmed' based on the reservation status of a particular passenger.**

set serveroutput on;

declare

cursor pass_cur is

select passenger_name,reservation_status from passenger_details where reservation_status!='CNF';

pass_rec pass_cur%rowtype;

begin

open pass_cur;

loop

fetch pass_cur into pass_rec;

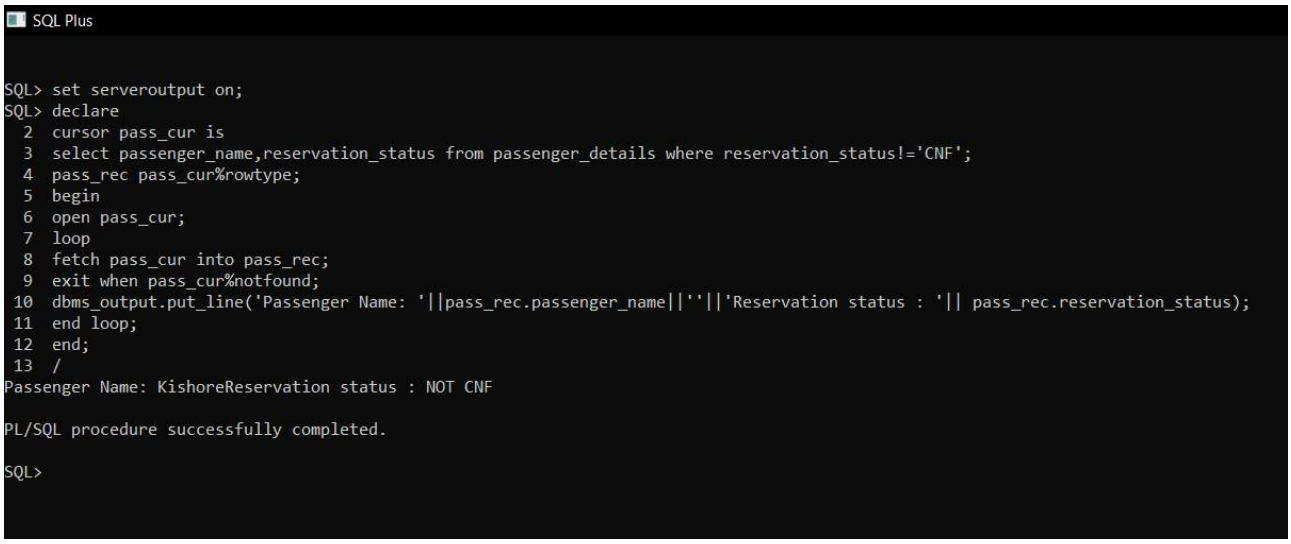
exit when pass_cur%notfound;

dbms_output.put_line('Passenger Name: '||pass_rec.passenger_name||''||'Reservation status : '|| pass_rec.reservation_status);

end loop;

end;

/




**4. Print the total seats available for a particular train and for a particular class. Write a cursor for the following**

alter table train add seat number(5);

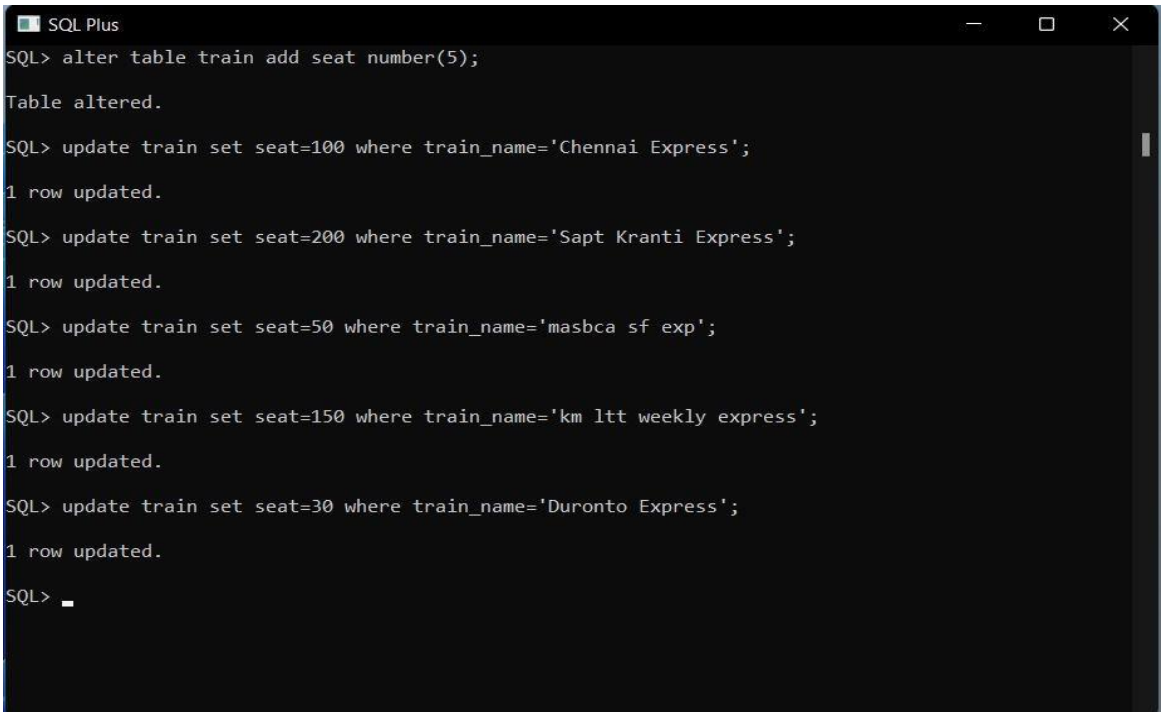
update train set seat=100 where train_name='Chennai Express';

update train set seat=200 where train_name='Sapt Kranti Express';

update train set seat=50 where train_name='masbca sf exp';

update train set seat=150 where train_name='km ltt weekly express';

update train set seat=30 where train_name='Duronto Express';




```
set serveroutput on;
declare
cursor seat is
select train_name,classes,seat from train where classes='1A';
seat_rec seat%rowtype;
begin
open seat;
loop
fetch seat into seat_rec;
exit when seat%notfound;
dbms_output.put_line('Train Name:' ||
seat_rec.train_name||''||'Class:'||seat_rec.classes||'total seats available:'||seat_rec.seat);
end loop;
end;
/
```

SQL Plus

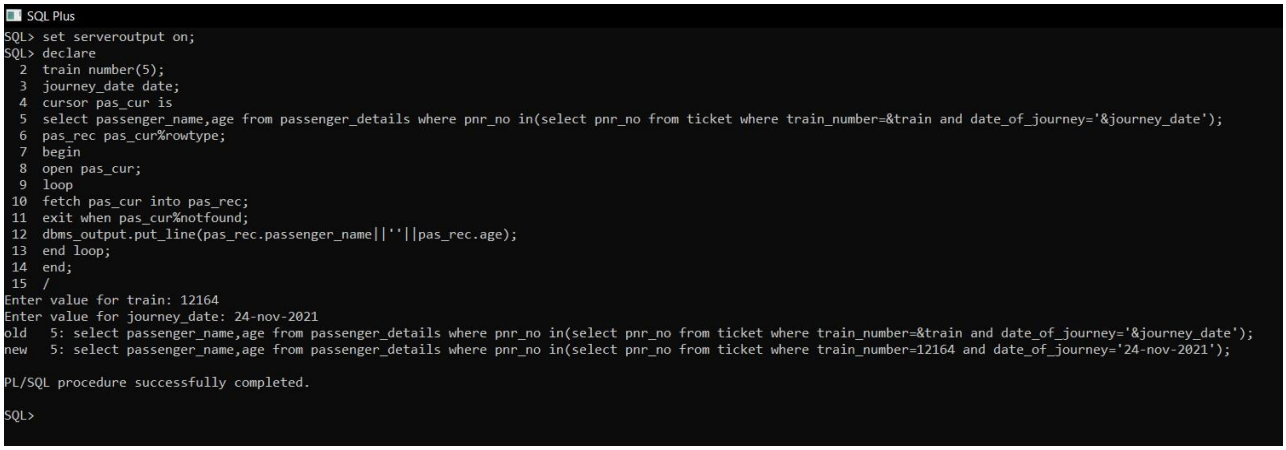
```
SQL> set serveroutput on;
SQL> declare
  2  cursor seat is
  3  select train_name,classes,seat from train where classes='1A';
  4  seat_rec seat%rowtype;
  5  begin
  6  open seat;
  7  loop
  8  fetch seat into seat_rec;
  9  exit when seat%notfound;
 10  dbms_output.put_line('Train Name:' || seat_rec.train_name||''||'Class:'||seat_rec.classes||'total seats available:'||seat_rec.seat);
 11  end loop;
 12  end;
 13  /

PL/SQL procedure successfully completed.
```

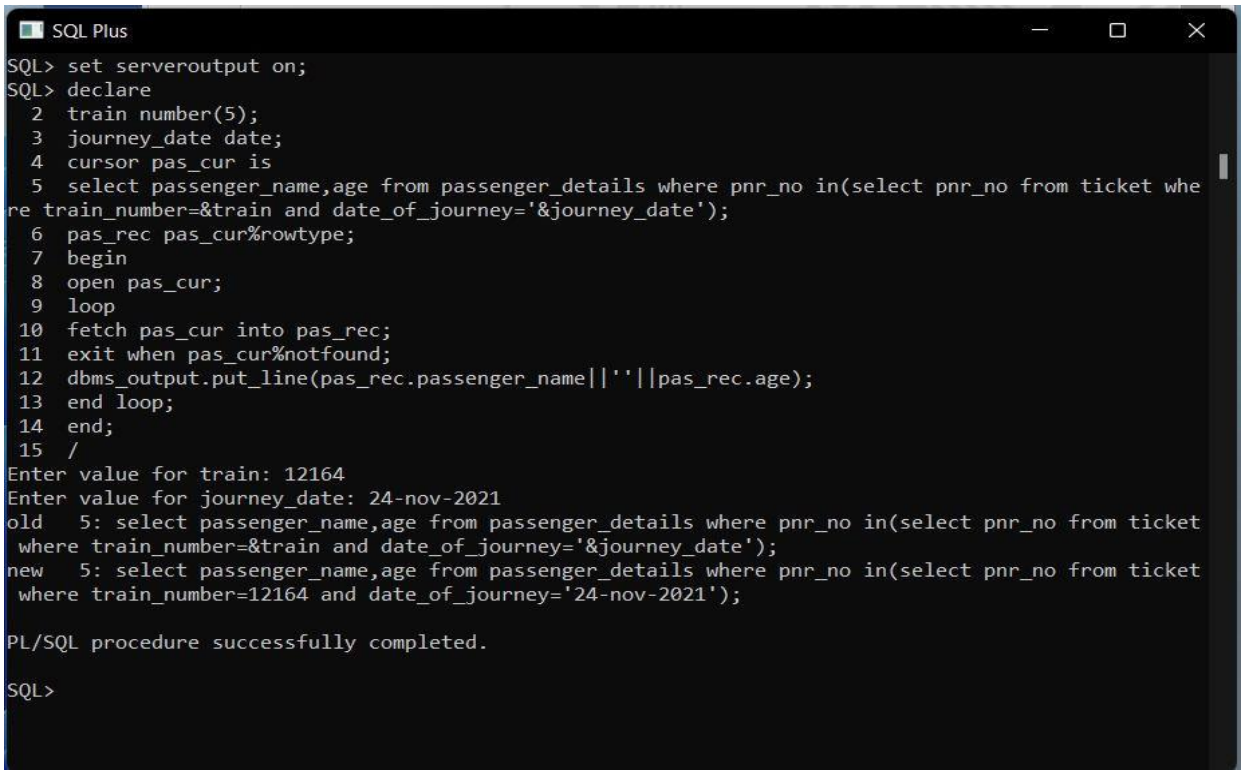
SQL Plus

```
SQL> update train set seat=30 where train_name='Duronto Express';

1 row updated.

SQL> set serveroutput on;
SQL> declare
  2  cursor seat is
  3  select train_name,classes,seat from train where classes='1A';
  4  seat_rec seat%rowtype;
  5  begin
  6  open seat;
  7  loop
  8  fetch seat into seat_rec;
  9  exit when seat%notfound;
 10  dbms_output.put_line('Train Name:' || seat_rec.train_name||''||'Class:'||seat_rec.classes||'to
tal seats available:'||seat_rec.seat);
 11  end loop;
 12  end;
 13  /

PL/SQL procedure successfully completed.
```

**5. Retrieve the passenger details for “x” train number and given journey date.**

```
set serveroutput on;

declare

train number(5);

journey_date date;

cursor pas_cur is

select passenger_name,age from passenger_details where pnr_no in(select pnr_no from ticket where train_number=&train and date_of_journey='&journey_date');

pas_rec pas_cur%rowtype;

begin

open pas_cur;

loop

fetch pas_cur into pas_rec;

exit when pas_cur%notfound;

dbms_output.put_line(pas_rec.passenger_name||''||pas_rec.age);

end loop;

end;

/
```






**6. Display the train name and the substation names.**

```
set serveroutput on;
declare
t train%rowtype;
tr train_route%rowtype;
cursor train1 is select * from train;
n number(10);
cursor t_r is select * from train_route where train_no=n;
begin
for t in train1
loop
n :=t.train_number;
dbms_output.put_line(t.train_name);
for tr in t_r
loop
dbms_output.put_line(tr.station_name);
end loop;
```

end loop;

end;

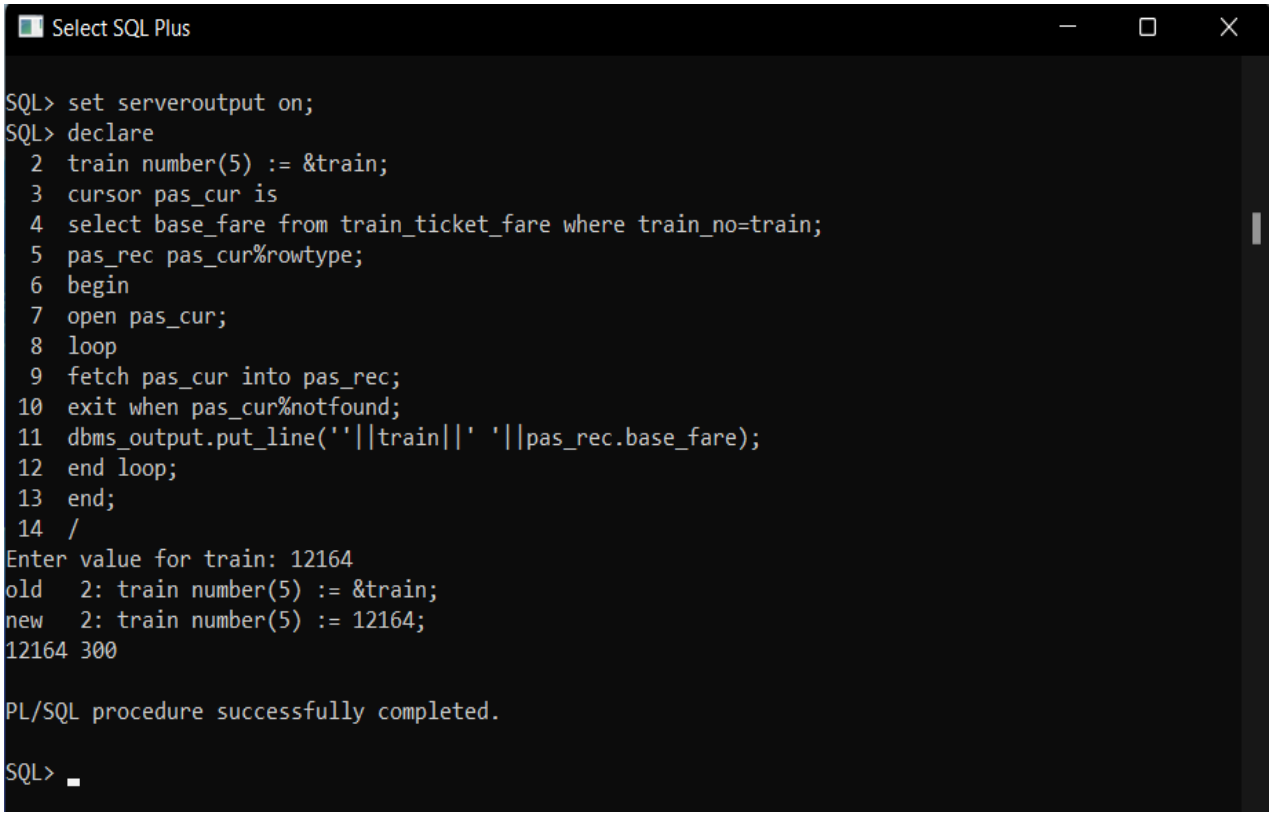
/

SQL Plus

```
SQL>
SQL> set serveroutput on;
SQL> declare
  2  t train%rowtype;
  3  tr train_route%rowtype;
  4  cursor train1 is select * from train;
  5  n number(10);
  6  cursor t_r is select * from train_route where train_no=n;
  7  begin
  8  for t in train1
  9  loop
 10  n :=t.train_number;
 11  dbms_output.put_line(t.train_name);
 12  for tr in t_r
 13  loop
 14  dbms_output.put_line(tr.station_name);
 15  end loop;
 16  end loop;
 17  end;
 18  /
Chennai Express
Chennai Egmore
Sapt Kranti Express
New Delhi
masbca sf exp
Chennai Central
km ltt weekly express
Karaikal
Duronto Express
Nizamuddin Terminus

PL/SQL procedure successfully completed.

SQL>
SQL>
SQL>
```

**7. Display the fare details of a particular train (use basic exceptions)**

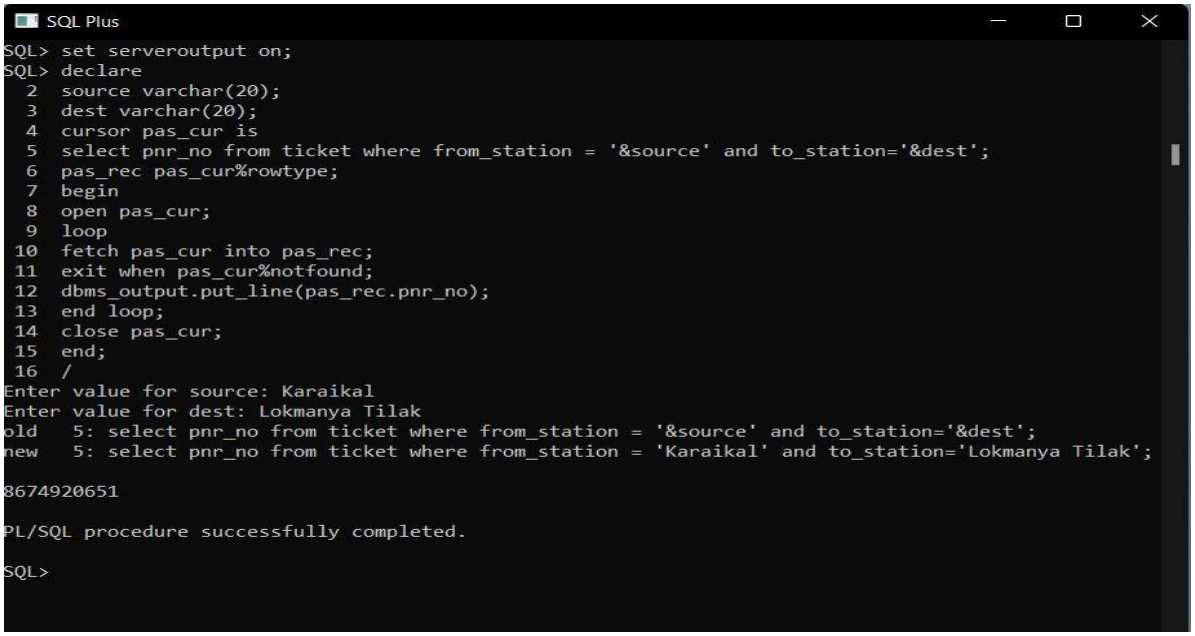
```
set serveroutput on;
declare
train number(5) := &train;
cursor pas_cur is
select base_fare from train_ticket_fare where train_no=train;
pas_rec pas_cur%rowtype;
begin
open pas_cur;
loop
fetch pas_cur into pas_rec;
exit when pas_cur%notfound;
dbms_output.put_line(''||train||' '||pas_rec.base_fare);
end loop;
end;
/
```



**Write a PL/SQL procedure to**

**8. Find PNR No. of a passengers for a given source and a destination.**

```
set serveroutput on;
declare
source varchar(20);
dest varchar(20);
cursor pas_cur is
select pnr_no from ticket where from_station = '&source' and to_station='&dest';
pas_rec pas_cur%rowtype;
begin
open pas_cur;
loop
fetch pas_cur into pas_rec;
exit when pas_cur%notfound;
dbms_output.put_line(pas_rec.pnr_no);
end loop;
close pas_cur;
end;
/
```



**Write a PL/SQL function to**

**9. Get the PNR No and return the total ticket fare**

```
set serveroutput on;
declare
n number(10);
pd ticket%rowtype;
begin
n := &n;
select * into pd from ticket where pnr_no=n;
dbms_output.put_line(pd.total_ticket_fare);
end;
/
```

```
SQL Plus
SQL>
SQL> set serveroutput on;
SQL> declare
  2  n number(10);
  3  pd ticket%rowtype;
  4  begin
  5  n := &n;
  6  select * into pd from ticket where pnr_no=n;
  7  dbms_output.put_line(pd.total_ticket_fare);
  8  end;
  9  /
Enter value for n: 8674920651
old   5: n := &n;
new   5: n := 8674920651;
3500

PL/SQL procedure successfully completed.

SQL>
```