LAB – 5 (SQL – Joins: Inner, Outer; Sub queries: Correlated and Uncorrelated)

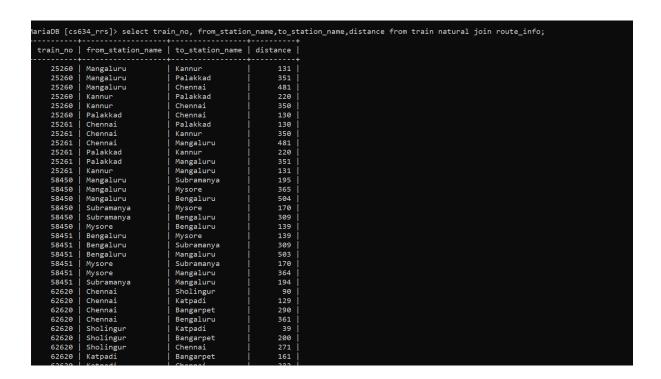| Name:	R Chaitanya Madhav
SRN:	PES1UG20CS634
Section:	K

1.Update price of the ticket.

NATURAL JOIN

2. Retrieve the all stations along route of the Trains along with the distance between the station.

```
MariaDB [cs634_rrs]> select train_no, from_station_name,to_station_name,distance from train natural join route_info;
+----------+-------------------+-----------------+----------+
| train_no | from_station_name | to_station_name | distance |
+----------+-------------------+-----------------+----------+
|    25260 | Mangaluru         | Kannur          |      131 |
|    25260 | Mangaluru         | Palakkad        |      351 |
|    25260 | Mangaluru         | Chennai         |      481 |
|    25260 | Kannur            | Palakkad        |      220 |
|    25260 | Kannur            | Chennai         |      350 |
|    25260 | Palakkad          | Chennai         |      130 |
|    25261 | Chennai           | Palakkad        |      130 |
|    25261 | Chennai           | Kannur          |      350 |
|    25261 | Chennai           | Mangaluru       |      481 |
|    25261 | Palakkad          | Kannur          |      220 |
|    25261 | Palakkad          | Mangaluru       |      351 |
|    25261 | Kannur            | Mangaluru       |      131 |
|    58450 | Mangaluru         | Subramanya      |      195 |
|    58450 | Mangaluru         | Mysore          |      365 |
|    58450 | Mangaluru         | Bengaluru       |      504 |
|    58450 | Subramanya        | Mysore          |      170 |
|    58450 | Subramanya        | Bengaluru       |      309 |
|    58450 | Mysore            | Bengaluru       |      139 |
|    58451 | Bengaluru         | Mysore          |      139 |
|    58451 | Bengaluru         | Subramanya      |      309 |
|    58451 | Bengaluru         | Mangaluru       |      503 |
|    58451 | Mysore            | Subramanya      |      170 |
|    58451 | Mysore            | Mangaluru       |      364 |
|    58451 | Subramanya        | Mangaluru       |      194 |
|    62620 | Chennai           | Sholingur       |       90 |
|    62620 | Chennai           | Katpadi         |      129 |
|    62620 | Chennai           | Bangarpet       |      290 |
|    62620 | Chennai           | Bengaluru       |      361 |
|    62620 | Sholingur         | Katpadi         |       39 |
|    62620 | Sholingur         | Bangarpet       |      200 |
|    62620 | Sholingur         | Chennai         |      271 |
|    62620 | Katpadi           | Bangarpet       |      161 |
|    62620 | Katpadi           | Chennai         |      232 |
```

INNER JOIN (equijoin)

3.Retrieve the Train no of train which is leaving Bengaluru and arriving at Chennai with compartments availability greater than 10.

```
MariaDB [cs634_rrs]> select train.train_no, compartment.availability, train.source, train.destination from train INNER JOIN compartment on train.train_no = compartment.train_number WHERE (compartment.availabilit
y > 10 AND train.source = 'Bengaluru' and train.destination='Chennai');
+----------+--------------+-----------+-------------+
| train_no | availability | source    | destination |
+----------+--------------+-----------+-------------+
|    62621 |           12 | Bengaluru | Chennai     |
+----------+--------------+-----------+-------------+
1 row in set (0.012 sec)

MariaDB [cs634_rrs]>
```

4.Retrieve first and last name of users who have booked a ticket with price greater than 500.

```
MariaDB [cs634_rrs]> select train_user.firstname, train_user.lastname, tp.Price from train_user inner join (select ticke
t.passenger_id, payment_info.price from ticket inner join payment_info on ticket.pnr = payment_info.pnr) as tp on train_
user.user_id = tp.passenger_id where tp.price > 500;
+-----------+----------+---------+
| firstname | lastname | price   |
+-----------+----------+---------+
| Muhammed  | Ali      | 1008.00 |
| Arjun     | Allu     |  582.00 |
| Narendra  | Modi     | 2172.00 |
| Manmohan  | Singh    |  962.00 |
| Droupadi  | Murmu    |  582.00 |
| Narendra  | Modi     | 2166.00 |
| Droupadi  | Murmu    |  870.00 |
| Muhammed  | Ali      | 2012.00 |
| Manmohan  | Singh    |  962.00 |
+-----------+----------+---------+
9 rows in set (0.001 sec)
```

LEFT OUTER JOIN:

5. Retrieve the first name, last name, DOB and ticket PNR if they've bought it for all users.

```
MariaDB [cs634_rrs]> select train_user.firstname, train_user.lastname, train_user.dob, ticket.pnr from train_user left o
uter join ticket on ticket.passenger_id = train_user.user_id;
+-----------+----------+------------+--------+
| firstname | lastname | dob        | pnr    |
+-----------+----------+------------+--------+
| Narendra  | Modi     | 1989-04-14 | PNR001 |
| Narendra  | Modi     | 1989-04-14 | PNR002 |
| Droupadi  | Murmu    | 1990-04-14 | PNR007 |
| Droupadi  | Murmu    | 1990-04-14 | PNR008 |
| Manmohan  | Singh    | 1991-04-08 | PNR003 |
| Manmohan  | Singh    | 1991-04-08 | PNR004 |
|   Ajit    | Ullal    | 1971-01-01 | NULL   |
| Muhammed  | Ali      | 2000-10-09 | PNR005 |
| Muhammed  | Ali      | 2000-10-09 | PNR006 |
| Sai Deepak| Reddy    | 1996-12-12 | NULL   |
| Rudra     | Agarwal  | 1996-12-13 | NULL   |
| Rahul     | Khanna   | 1997-12-14 | NULL   |
| Nirmala   | Seturaman| 1998-12-15 | NULL   |
| Smriti    | Irani    | 1999-12-16 | PNR010 |
| Ajit      | Sethi    | 1966-04-14 | PNR011 |
| Arjun     | Allu     | 1967-04-08 | PNR012 |
| Samanta   | Prabhu   | 1968-04-14 | PNR014 |
| Kiran     | Bedi     | 1969-04-14 | NULL   |
| Rahul     | Gandhi   | 1970-04-08 | PNR015 |
| Rashkit   | Shetty   | 1971-04-14 | NULL   |
| Rishi     | Sunak    | 1972-04-14 | NULL   |
| Vedavalli | Srinath  | 1973-04-14 | NULL   |
| Subbu     | Saravana | 1974-04-14 | NULL   |
| Sheela    | Dixit    | 1975-04-08 | NULL   |
| Margaret  | Alva     | 1976-04-14 | NULL   |
| Arun      | Kumar    | 1977-04-14 | NULL   |
| Anshu     | Bhardwaj | 1978-04-14 | NULL   |
| Suma      | Sampat   | 1979-04-08 | NULL   |
| Srihari   | Udupa    | 1980-04-14 | NULL   |
| Satish    | Kotian   | 1981-04-14 | NULL   |
| Shradha   | Nayar    | 1982-04-08 | NULL   |
| Manisha   | Solanki  | 1983-04-08 | NULL   |
| Bharti    | Devgan   | 1984-04-14 | NULL   |
| Roopa     | Ram      | 1985-04-14 | NULL   |
| Pallavi   | Ram      | 1986-04-08 | NULL   |
| Ravi      | Naik     | 1987-04-14 | NULL   |
| Virat     | Murthy   | 1988-04-14 | NULL   |
+-----------+----------+------------+--------+
37 rows in set (0.011 sec)
```

6. Retrieve the first name, last name,of the Users who have not bought a ticket.

```
MariaDB [cs634_rrs]> select train_user.firstname, train_user.lastname, ticket.pnr from ticket left outer join train_user
 on ticket.passenger_id = train_user.user_id;
+-----------+----------+--------+
| firstname | lastname | pnr    |
+-----------+----------+--------+
| Narendra  | Modi     | PNR001 |
| Narendra  | Modi     | PNR002 |
| Droupadi  | Murmu    | PNR007 |
| Droupadi  | Murmu    | PNR008 |
| Manmohan  | Singh    | PNR003 |
| Manmohan  | Singh    | PNR004 |
| Muhammed  | Ali      | PNR005 |
| Muhammed  | Ali      | PNR006 |
| Smriti    | Irani    | PNR010 |
| Ajit      | Sethi    | PNR011 |
| Arjun     | Allu     | PNR012 |
| Samanta   | Prabhu   | PNR014 |
| Rahul     | Gandhi   | PNR015 |
+-----------+----------+--------+
13 rows in set (0.001 sec)

MariaDB [cs634_rrs]>
```

RIGHT OUTER JOIN

7. Retrieve the ticket PNR, Train number, travel date and along with all users first name and last name.

```
MariaDB [cs634_rrs]> select ticket.pnr, ticket.train_no, ticket.travel_date, train_user.firstname, train_user.lastname f
rom ticket right outer join train_user on train_user.user_id = ticket.passenger_id;
+--------+----------+------------+------------+-----------+
| pnr    | train_no | travel_date | firstname  | lastname  |
+--------+----------+------------+------------+-----------+
| PNR001 |    62621 | 2022-08-07 | Narendra   | Modi      |
| PNR002 |    62620 | 2022-08-14 | Narendra   | Modi      |
| PNR007 |    62621 | 2022-08-07 | Droupadi   | Murmu     |
| PNR008 |    62620 | 2022-08-02 | Droupadi   | Murmu     |
| PNR003 |    25261 | 2022-08-01 | Manmohan   | Singh     |
| PNR004 |    25260 | 2022-08-15 | Manmohan   | Singh     |
| NULL   |     NULL | NULL       | Ajit       | Ullal     |
| PNR005 |    58451 | 2022-08-03 | Muhammed   | Ali       |
| PNR006 |    58450 | 2033-08-04 | Muhammed   | Ali       |
| NULL   |     NULL | NULL       | Sai Deepak | Reddy     |
| NULL   |     NULL | NULL       | Rudra      | Agarwal   |
| NULL   |     NULL | NULL       | Rahul      | Khanna    |
| NULL   |     NULL | NULL       | Nirmala    | Seturaman |
| PNR010 |    25260 | 2022-08-19 | Smriti     | Irani     |
| PNR011 |    62621 | 2022-08-22 | Ajit       | Sethi     |
| PNR012 |    58451 | 2022-08-11 | Arjun      | Allu      |
| PNR014 |    25260 | 2022-08-17 | Samanta    | Prabhu    |
| NULL   |     NULL | NULL       | Kiran      | Bedi      |
| PNR015 |    25260 | 2022-08-05 | Rahul      | Gandhi    |
| NULL   |     NULL | NULL       | Rashkit    | Shetty    |
| NULL   |     NULL | NULL       | Rishi      | Sunak     |
| NULL   |     NULL | NULL       | Vedavalli  | Srinath   |
| NULL   |     NULL | NULL       | Subbu      | Saravana  |
| NULL   |     NULL | NULL       | Sheela     | Dixit     |
| NULL   |     NULL | NULL       | Margaret   | Alva      |
| NULL   |     NULL | NULL       | Arun       | Kumar     |
| NULL   |     NULL | NULL       | Anshu      | Bhardwaj  |
| NULL   |     NULL | NULL       | Suma       | Sampat    |
| NULL   |     NULL | NULL       | Srihari    | Udupa     |
| NULL   |     NULL | NULL       | Satish     | Kotian    |
| NULL   |     NULL | NULL       | Shradha    | Nayar     |
| NULL   |     NULL | NULL       | Manisha    | Solanki   |
| NULL   |     NULL | NULL       | Bharti     | Devgan    |
| NULL   |     NULL | NULL       | Roopa      | Ram       |
| NULL   |     NULL | NULL       | Pallavi    | Ram       |
| NULL   |     NULL | NULL       | Ravi       | Naik      |
| NULL   |     NULL | NULL       | Virat      | Murthy    |
+--------+----------+------------+------------+-----------+
37 rows in set (0.001 sec)
```

8. Retrieve the user id if they've traveled in a train along with train id and name of all trains

```
MariaDB [cs634_rrs]> select train_user.user_id, tt.train_no, tt.train_name from train_user right outer join (select trai
n.train_no, train.train_name, ticket.passenger_id from train inner join ticket on ticket.train_no = train.train_no) as t
t on train_user.user_id = tt.passenger_id;
+---------+----------+------------------+
| user_id | train_no | train_name       |
+---------+----------+------------------+
| ADM_003 |    25260 | Chennai Mail     |
| USR_007 |    25260 | Chennai Mail     |
| USR_010 |    25260 | Chennai Mail     |
| USR_012 |    25260 | Chennai Mail     |
| ADM_003 |    25261 | Managaluru Mail  |
| USR_002 |    58450 | MAN-BEN Express  |
| USR_002 |    58451 | BEN-MAN Express  |
| USR_009 |    58451 | BEN-MAN Express  |
| ADM_001 |    62620 | CHE-BEN Shatabdi |
| ADM_002 |    62620 | CHE-BEN Shatabdi |
| ADM_001 |    62621 | BEN-CHE Shatabdi |
| ADM_002 |    62621 | BEN-CHE Shatabdi |
| USR_008 |    62621 | BEN-CHE Shatabdi |
+---------+----------+------------------+
13 rows in set (0.012 sec)
```

NESTED QUERIES

9. Retrieve the train no and name of trains whose destination is not Mangaluru and distance is not less than 100km and departure time is not 8:30:00 PM.

```
MariaDB [cs634_rrs]> select t.train_no, t.train_name from train as t, route_info as r where t.destination !="Mangaluru"
and r. distance >100;
+----------+------------------+
| train_no | train_name       |
+----------+------------------+
|    25260 | Chennai Mail     |
|    58450 | MAN-BEN Express  |
|    62620 | CHE-BEN Shatabdi |
|    62621 | BEN-CHE Shatabdi |
|    25260 | Chennai Mail     |
|    58450 | MAN-BEN Express  |
|    62620 | CHE-BEN Shatabdi |
|    62621 | BEN-CHE Shatabdi |
|    25260 | Chennai Mail     |
|    58450 | MAN-BEN Express  |
|    62620 | CHE-BEN Shatabdi |
|    62621 | BEN-CHE Shatabdi |
|    25260 | Chennai Mail     |
|    58450 | MAN-BEN Express  |
|    62620 | CHE-BEN Shatabdi |
|    62621 | BEN-CHE Shatabdi |
|    25260 | Chennai Mail     |
|    58450 | MAN-BEN Express  |
|    62620 | CHE-BEN Shatabdi |
|    62621 | BEN-CHE Shatabdi |
|    25260 | Chennai Mail     |
|    58450 | MAN-BEN Express  |
|    62620 | CHE-BEN Shatabdi |
|    62621 | BEN-CHE Shatabdi |
|    25260 | Chennai Mail     |
|    58450 | MAN-BEN Express  |
|    62620 | CHE-BEN Shatabdi |
|    62621 | BEN-CHE Shatabdi |
|    25260 | Chennai Mail     |
|    58450 | MAN-BEN Express  |
|    62620 | CHE-BEN Shatabdi |
|    62621 | BEN-CHE Shatabdi |
|    25260 | Chennai Mail     |
|    58450 | MAN-BEN Express  |
|    62620 | CHE-BEN Shatabdi |
|    62621 | BEN-CHE Shatabdi |
|    25260 | Chennai Mail     |
|    58450 | MAN-BEN Express  |
|    62620 | CHE-BEN Shatabdi |
```

10. Retrieve the User ID who has spent more ticket price than the average ticket price.

```
MariaDB [cs634_rrs]> select passenger_id from ticket where pnr in (select pnr from payment_info where price > (select av
g(price) from payment_info));
+--------------+
| passenger_id |
+--------------+
| ADM_001      |
| ADM_001      |
| USR_002      |
| USR_002      |
+--------------+
4 rows in set (0.003 sec)

MariaDB [cs634_rrs]>
```