Coding Challenge - Car Rental System – SQL

1. Update the daily rate for a Mercedes car to 68:

update vehicle set dailyRate=8 where make="Mercedes"

```
mysql> update vehicle set dailyRate=8 where make="Mercedes";
Query OK, 0 rows affected (0.00 sec)
Rows matched: 1  Changed: 0  Warnings: 0

mysql> select * from vehicle;
+-----------+-----------+----------+------+-----------+-------------+-------------------+----------------+
| vehicleID | make      | model    | year | dailyRate | status      | passengerCapacity | engineCapacity |
+-----------+-----------+----------+------+-----------+-------------+-------------------+----------------+
|         1 | Toyota    | Camry    | 2022 |     50.00 | available   |                 4 |           1450 |
|         2 | Honda     | Civic    | 2023 |     45.00 | available   |                 7 |           1500 |
|         3 | Ford      | Focus    | 2022 |     48.00 | notAvailable |                 4 |           1400 |
|         4 | Nissan    | Altima   | 2023 |     52.00 | available   |                 7 |           1200 |
|         5 | Chevrolet | Malibu   | 2022 |     47.00 | available   |                 4 |           1800 |
|         6 | Hyundai   | Sonata   | 2023 |     49.00 | notAvailable |                 7 |           1400 |
|         7 | BMW       | 3 Series | 2023 |     60.00 | available   |                 7 |           2499 |
|         8 | Mercedes  | C-Class  | 2022 |      8.00 | available   |                 8 |           2599 |
|         9 | Audi      | A4       | 2022 |     55.00 | notAvailable |                 4 |           2500 |
|        10 | Lexus     | ES       | 2023 |     54.00 | available   |                 4 |           2500 |
+-----------+-----------+----------+------+-----------+-------------+-------------------+----------------+
10 rows in set (0.00 sec)
```

2. Delete a specific customer and all associated leases and payments:

delete from payment where leaseId in (select leaseId from lease where customerId = 5);

delete from lease where customerId = 5;

delete from customer where customerId = 5;

```
mysql> delete from payment where leaseId in (select leaseId from lease where customerId = 5);
Query OK, 1 row affected (0.01 sec)

mysql> delete from lease where customerId = 5;
Query OK, 1 row affected (0.01 sec)

mysql> delete from customer where customerId = 5;
Query OK, 1 row affected (0.00 sec)

mysql> select * from customer;
+------------+-----------+----------+-----------------------+--------------+
| customerID | firstName | lastName | email                 | phoneNumber  |
+------------+-----------+----------+-----------------------+--------------+
|          1 | John      | Doe      | johndoe@example.com   | 555-555-5555 |
|          2 | Jane      | Smith    | janesmith@example.com | 555-123-4567 |
|          3 | Robert    | Johnson  | robert@example.com    | 555-789-1234 |
|          4 | Sarah     | Brown    | sarah@example.com     | 555-456-7890 |
|          6 | Laura     | Hall     | laura@example.com     | 555-234-5678 |
|          7 | Michael   | Davis    | michael@example.com   | 555-876-5432 |
|          8 | Emma      | Wilson   | emma@example.com      | 555-432-1098 |
|          9 | William   | Taylor   | william@example.com   | 555-321-6547 |
|         10 | Olivia    | Adams    | olivia@example.com    | 555-765-4321 |
+------------+-----------+----------+-----------------------+--------------+
9 rows in set (0.00 sec)
```

3. Rename the "paymentDate" column in the Payment table to "transactionDate":

alter table payment change column paymentDate transactionDate date;

```
mysql> alter table payment change column paymentDate transactionDate date;
Query OK, 0 rows affected (0.02 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> select * from payment;
+-----------+---------+-----------------+---------+
| paymentID | leaseID | transactionDate | amount  |
+-----------+---------+-----------------+---------+
|         1 |       1 | 2023-01-03      |  200.00 |
|         2 |       2 | 2023-02-20      | 1000.00 |
|         3 |       3 | 2023-03-12      |   75.00 |
|         4 |       4 | 2023-04-25      |  900.00 |
|         6 |       6 | 2023-06-18      | 1200.00 |
|         7 |       7 | 2023-07-03      |   40.00 |
|         8 |       8 | 2023-08-14      | 1100.00 |
|         9 |       9 | 2023-09-09      |   80.00 |
|        10 |      10 | 2023-10-25      | 1500.00 |
+-----------+---------+-----------------+---------+
9 rows in set (0.00 sec)
```

4. Find a specific customer by email:

select * from customer where email = 'emma@example.com';

```
mysql> select * from customer where email = 'emma@example.com';
+------------+-----------+----------+------------------+--------------+
| customerID | firstName | lastName | email            | phoneNumber  |
+------------+-----------+----------+------------------+--------------+
|          8 | Emma      | Wilson   | emma@example.com | 555-432-1098 |
+------------+-----------+----------+------------------+--------------+
1 row in set (0.00 sec)
```

5. Get active leases for a specific customer:

select * from lease where customerId = 3 and endDate>=date(now());

```
mysql> select * from lease where customerId = 3 and endDate>=date(now());
+---------+-----------+------------+------------+------------+---------+
| leaseID | vehicleID | customerID | startDate  | endDate    | type    |
+---------+-----------+------------+------------+------------+---------+
|      11 |         6 |          3 | 2024-04-13 | 2024-05-01 | Monthly |
+---------+-----------+------------+------------+------------+---------+
1 row in set (0.00 sec)
```

6. Find all payments made by a customer with a specific phone number:

select * from payment where leaseId in (select leaseId from lease where customerId in

(select customerId from customer where phoneNumber='555-789-1234'));

```
mysql> select * from payment where leaseId in (select leaseId from lease where customerId in (select customerId from customer where phoneNumber='555-789-1234'));
+-----------+---------+-----------------+---------+
| paymentID | leaseID | transactionDate | amount  |
+-----------+---------+-----------------+---------+
|         3 |       3 | 2023-03-12      |   75.00 |
|         6 |       6 | 2023-06-18      | 1200.00 |
|         9 |       9 | 2023-09-09      |   80.00 |
+-----------+---------+-----------------+---------+
```

7. Calculate the average daily rate of all available cars:

select avg(dailyRate) as average from vehicle where status = 'available';

```
mysql> select avg(dailyRate) as average from vehicle where status = 'available';
+------------+
| average    |
+------------+
| 45.142857 |
+------------+
1 row in set (0.00 sec)
```

8. Find the car with the highest daily rate:

select * from vehicle where dailyRate = (select max(dailyRate) from vehicle);

```
mysql> select * from vehicle where dailyRate = (select max(dailyRate) from vehicle);
+-----------+------+----------+------+-----------+-----------+------------------+----------------+
| vehicleID | make | model    | year | dailyRate | status    | passengerCapacity | engineCapacity |
+-----------+------+----------+------+-----------+-----------+------------------+----------------+
|         7 | BMW  | 3 Series | 2023 |     60.00 | available |                7 |           2499 |
+-----------+------+----------+------+-----------+-----------+------------------+----------------+
1 row in set (0.00 sec)
```

9. Retrieve all cars leased by a specific customer:

select * from vehicle where vehicleId in (select vehicleId from lease where customerId = 3);

```
mysql> select * from vehicle where vehicleId in (select vehicleId from lease where customerId = 3);
+-----------+---------+--------+------+-----------+--------------+------------------+----------------+
| vehicleID | make    | model  | year | dailyRate | status       | passengerCapacity | engineCapacity |
+-----------+---------+--------+------+-----------+--------------+------------------+----------------+
|         3 | Ford    | Focus  | 2022 |     48.00 | notAvailable |                4 |           1400 |
|         4 | Nissan  | Altima | 2023 |     52.00 | available    |                7 |           1200 |
|         6 | Hyundai | Sonata | 2023 |     49.00 | notAvailable |                7 |           1400 |
+-----------+---------+--------+------+-----------+--------------+------------------+----------------+
3 rows in set (0.00 sec)
```

10. Find the details of the most recent lease:

select * from lease order by startDate desc limit 1;

```
mysql> select * from lease order by startDate desc limit 1;
+---------+-----------+-------------+-------------+-------------+---------+
| leaseID | vehicleID | customerID | startDate   | endDate     | type    |
+---------+-----------+-------------+-------------+-------------+---------+
|      11 |         6 |           3 | 2024-04-13 | 2024-05-01 | Monthly |
+---------+-----------+-------------+-------------+-------------+---------+
1 row in set (0.00 sec)
```

11. List all payments made in the year 2023:

select * from payment where transactionDate like '%2023%';

```
mysql> select * from payment where transactionDate like '%2023%';
+-----------+---------+-----------------+---------+
| paymentID | leaseID | transactionDate | amount  |
+-----------+---------+-----------------+---------+
|         1 |       1 | 2023-01-03      |  200.00 |
|         2 |       2 | 2023-02-20      | 1000.00 |
|         3 |       3 | 2023-03-12      |   75.00 |
|         4 |       4 | 2023-04-25      |  900.00 |
|         6 |       6 | 2023-06-18      | 1200.00 |
|         7 |       7 | 2023-07-03      |   40.00 |
|         8 |       8 | 2023-08-14      | 1100.00 |
|         9 |       9 | 2023-09-09      |   80.00 |
|        10 |      10 | 2023-10-25      | 1500.00 |
+-----------+---------+-----------------+---------+
9 rows in set (0.00 sec)
```

12. Retrieve customers who have not made any payments:

select * from customer where customerId not in (select customerId from lease where leaseId in (select distinct(leaseId) from payment));

```
mysql> select * from customer where customerId not in (select customerId from lease where leaseId in (select distinct(leaseId) from payment));
+------------+-----------+----------+--------------------+-------------+
| customerID | firstName | lastName | email              | phoneNumber |
+------------+-----------+----------+--------------------+-------------+
|          6 | Laura     | Hall     | laura@example.com  | 555-234-5678 |
|          9 | William   | Taylor   | william@example.com | 555-321-6547 |
+------------+-----------+----------+--------------------+-------------+
2 rows in set (0.00 sec)
```

13. Retrieve Car Details and Their Total Payments:

select v.*,sum(p.amount) as totalPayments from vehicle v

left join lease l on v.vehicleId = l.vehicleId

left join payment p on l.leaseId = p.leaseId group by v.vehicleId;

```
mysql> select v.*,sum(p.amount) as totalPayments from vehicle v
    -> left join lease l on v.vehicleId = l.vehicleId
    -> left join payment p on l.leaseId = p.leaseId group by v.vehicleId;
+-----------+-----------+----------+------+-----------+-------------+-------------------+----------------+---------------+
| vehicleID | make      | model    | year | dailyRate | status      | passengerCapacity | engineCapacity | totalPayments |
+-----------+-----------+----------+------+-----------+-------------+-------------------+----------------+---------------+
|         1 | Toyota    | Camry    | 2022 |     50.00 | available   |                 4 |           1450 |        200.00 |
|         2 | Honda     | Civic    | 2023 |     45.00 | available   |                 7 |           1500 |       1000.00 |
|         3 | Ford      | Focus    | 2022 |     48.00 | notAvailable |                4 |           1400 |        155.00 |
|         4 | Nissan    | Altima   | 2023 |     52.00 | available   |                 7 |           1200 |       2100.00 |
|         5 | Chevrolet | Malibu   | 2022 |     47.00 | available   |                 4 |           1800 |          NULL |
|         6 | Hyundai   | Sonata   | 2023 |     49.00 | notAvailable |                7 |           1400 |          NULL |
|         7 | BMW       | 3 Series | 2023 |     60.00 | available   |                 7 |           2499 |         40.00 |
|         8 | Mercedes  | C-Class  | 2022 |      8.00 | available   |                 8 |           2599 |       1100.00 |
|         9 | Audi      | A4       | 2022 |     55.00 | notAvailable |                4 |           2500 |          NULL |
|        10 | Lexus     | ES       | 2023 |     54.00 | available   |                 4 |           2500 |       1500.00 |
+-----------+-----------+----------+------+-----------+-------------+-------------------+----------------+---------------+
10 rows in set (0.00 sec)
```

14. Calculate Total Payments for Each Customer:

select c.*,sum(amount) as totalPayments from customer c

inner join lease l on c.customerId = l.customerId

inner join payment p on l.leaseId = p.leaseId group by c.customerId;

```
mysql> select c.*,sum(amount) as totalPayments from customer c
    -> inner join lease l on c.customerId = l.customerId
    -> inner join payment p on l.leaseId = p.leaseId group by c.customerId;
+------------+-----------+----------+-----------------------+--------------+---------------+
| customerID | firstName | lastName | email                 | phoneNumber  | totalPayments |
+------------+-----------+----------+-----------------------+--------------+---------------+
|          1 | John      | Doe      | johndoe@example.com   | 555-555-5555 |        200.00 |
|          2 | Jane      | Smith    | janesmith@example.com | 555-123-4567 |       1000.00 |
|          3 | Robert    | Johnson  | robert@example.com    | 555-789-1234 |       1355.00 |
|          4 | Sarah     | Brown    | sarah@example.com     | 555-456-7890 |        900.00 |
|          7 | Michael   | Davis    | michael@example.com   | 555-876-5432 |         40.00 |
|          8 | Emma      | Wilson   | emma@example.com      | 555-432-1098 |       1100.00 |
|         10 | Olivia    | Adams    | olivia@example.com    | 555-765-4321 |       1500.00 |
+------------+-----------+----------+-----------------------+--------------+---------------+
7 rows in set (0.00 sec)
```

15. List Car Details for Each Lease:

select l.leaseId,v.* from lease l left join vehicle v on l.vehicleId = v.vehicleId order by leaseId;

```
mysql> select l.leaseId,v.* from lease l left join vehicle v on l.vehicleId = v.vehicleId order by leaseId;
+---------+-----------+----------+----------+------+-----------+--------------+-------------------+----------------+
| leaseId | vehicleID | make     | model    | year | dailyRate | status       | passengerCapacity | engineCapacity |
+---------+-----------+----------+----------+------+-----------+--------------+-------------------+----------------+
|       1 |         1 | Toyota   | Camry    | 2022 |     50.00 | available    |                 4 |           1450 |
|       2 |         2 | Honda    | Civic    | 2023 |     45.00 | available    |                 7 |           1500 |
|       3 |         3 | Ford     | Focus    | 2022 |     48.00 | notAvailable |                 4 |           1400 |
|       4 |         4 | Nissan   | Altima   | 2023 |     52.00 | available    |                 7 |           1200 |
|       6 |         4 | Nissan   | Altima   | 2023 |     52.00 | available    |                 7 |           1200 |
|       7 |         7 | BMW      | 3 Series | 2023 |     60.00 | available    |                 7 |           2499 |
|       8 |         8 | Mercedes | C-Class  | 2022 |      8.00 | available    |                 8 |           2599 |
|       9 |         3 | Ford     | Focus    | 2022 |     48.00 | notAvailable |                 4 |           1400 |
|      10 |        10 | Lexus    | ES       | 2023 |     54.00 | available    |                 4 |           2500 |
|      11 |         6 | Hyundai  | Sonata   | 2023 |     49.00 | notAvailable |                 7 |           1400 |
+---------+-----------+----------+----------+------+-----------+--------------+-------------------+----------------+
10 rows in set (0.00 sec)
```

16. Retrieve Details of Active Leases with Customer and Car Information:

select l.leaseId,c.*,v.* from lease l

left join customer c on l.customerId = c.customerId

left join vehicle v on l.vehicleId = v.vehicleId where l.endDate>=date(now());

```
mysql> select l.leaseId,c.*,v.* from lease l
    -> left join customer c on l.customerId = c.customerId
    -> left join vehicle v on l.vehicleId = v.vehicleId where l.endDate>=date(now());
+---------+------------+-----------+----------+-----------------+--------------+-----------+--------+--------+------+-----------+--------------+-------------------+----------------+
| leaseId | customerID | firstName | lastName | email           | phoneNumber  | vehicleID | make   | model  | year | dailyRate | status       | passengerCapacity | engineCapacity |
+---------+------------+-----------+----------+-----------------+--------------+-----------+--------+--------+------+-----------+--------------+-------------------+----------------+
|      11 |          3 | Robert    | Johnson  | robert@example.com | 555-789-1234 |         6 | Hyundai | Sonata | 2023 |     49.00 | notAvailable |                 7 |           1400 |
+---------+------------+-----------+----------+-----------------+--------------+-----------+--------+--------+------+-----------+--------------+-------------------+----------------+
1 row in set (0.00 sec)

mysql>
```

17. Find the Customer Who Has Spent the Most on Leases:

select l.customerId,sum(p.amount) as totalSpent from lease l

left join payment p on l.leaseId = p.leaseId

group by l.customerId order by totalSpent desc limit 1;

```
mysql> select l.customerId,sum(p.amount) as totalSpent from lease l
    -> left join payment p on l.leaseId = p.leaseId
    -> group by l.customerId order by totalSpent desc limit 1;
+------------+------------+
| customerId | totalSpent |
+------------+------------+
|         10 |    1500.00 |
+------------+------------+
1 row in set (0.00 sec)
```

18. List All Cars with Their Current Lease Information:

select v.vehicleId,v.model,l.* from vehicle v

left join lease l on v.vehicleId = l.vehicleId;

```
mysql> select v.vehicleId,v.model,l.* from vehicle v left join lease l on v.vehicleId = l.vehicleId;
+-----------+----------+---------+-----------+------------+------------+------------+---------+
| vehicleId | model    | leaseID | vehicleID | customerID | startDate  | endDate    | type    |
+-----------+----------+---------+-----------+------------+------------+------------+---------+
|         1 | Camry    |       1 |         1 |          1 | 2023-01-01 | 2023-01-05 | Daily   |
|         2 | Civic    |       2 |         2 |          2 | 2023-02-15 | 2023-02-28 | Monthly |
|         3 | Focus    |       3 |         3 |          3 | 2023-03-10 | 2023-03-15 | Daily   |
|         3 | Focus    |       9 |         3 |          3 | 2023-09-07 | 2023-09-10 | Daily   |
|         4 | Altima   |       4 |         4 |          4 | 2023-04-20 | 2023-04-30 | Monthly |
|         4 | Altima   |       6 |         4 |          3 | 2023-06-15 | 2023-06-30 | Monthly |
|         5 | Malibu   |    NULL |      NULL |       NULL | NULL       | NULL       | NULL    |
|         6 | Sonata   |      11 |         6 |          3 | 2024-04-13 | 2024-05-01 | Monthly |
|         7 | 3 Series |       7 |         7 |          7 | 2023-07-01 | 2023-07-10 | Daily   |
|         8 | C-Class  |       8 |         8 |          8 | 2023-08-12 | 2023-08-15 | Monthly |
|         9 | A4       |    NULL |      NULL |       NULL | NULL       | NULL       | NULL    |
|        10 | ES       |      10 |        10 |         10 | 2023-10-10 | 2023-10-31 | Monthly |
+-----------+----------+---------+-----------+------------+------------+------------+---------+
12 rows in set (0.00 sec)
```