Coding Challenge- 4 - Car Rental System – SQL

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1. Vehicle Table:

• vehicleID (Primary Key)

 • make

• model

• year

• dailyRate

• status (available, notAvailable)

• passengerCapacity

• engineCapacity

2. Customer Table:
   • customerID (Primary Key)
   • firstName
   • lastName
   • email
   • phoneNumber

```
mysql> CREATE TABLE Customer (
    ->     customerID INT PRIMARY KEY,
    ->     firstName VARCHAR(50),
    ->     lastName VARCHAR(50),
    ->     email VARCHAR(100),
    ->     phoneNumber VARCHAR(15)
    -> );
Query OK, 0 rows affected (0.03 sec)

mysql> INSERT INTO Customer (customerID, firstName, lastName, email, phoneNumber)
    -> VALUES
    ->   (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'),
    ->   (5, 'David', 'Lee', 'david@example.com', '555-987-6543'),
    ->   (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');
Query OK, 10 rows affected (0.01 sec)
Records: 10  Duplicates: 0  Warnings: 0

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 |
|          5 | David     | Lee      | david@example.com     | 555-987-6543 |
|          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 |
+------------+-----------+----------+-----------------------+--------------+
```
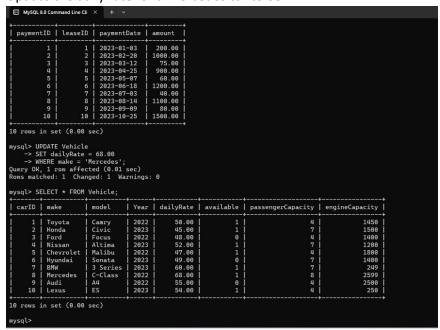
3. Lease Table:
   • leaseID (Primary Key)
    • vehicleID (Foreign Key referencing Vehicle Table)
    • customerID (Foreign Key referencing Customer Table)
   • startDate
   • endDate
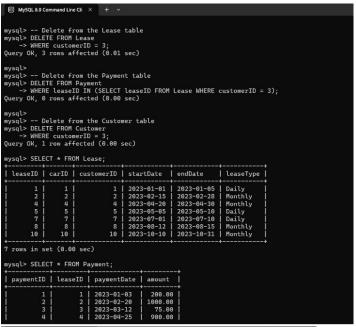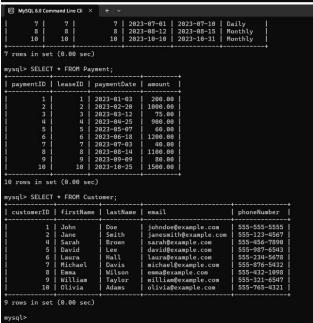   • type (to distinguish between DailyLease and MonthlyLease)

```
mysql> CREATE TABLE Lease (
    ->     leaseID INT PRIMARY KEY,
    ->     carID INT,
    ->     customerID INT,
    ->     startDate DATE,
    ->     endDate DATE,
    ->     leaseType VARCHAR(20)
    -> );
Query OK, 0 rows affected (0.03 sec)

mysql> INSERT INTO Lease (leaseID, carID, customerID, startDate, endDate, leaseType)
    -> VALUES
    ->     (1, 1, 1, '2023-01-01', '2023-01-05', 'Daily'),
    ->     (2, 2, 2, '2023-02-15', '2023-02-28', 'Monthly'),
    ->     (3, 3, 3, '2023-03-10', '2023-03-15', 'Daily'),
    ->     (4, 4, 4, '2023-04-20', '2023-04-30', 'Monthly'),
    ->     (5, 5, 5, '2023-05-05', '2023-05-10', 'Daily'),
    ->     (6, 4, 3, '2023-06-15', '2023-06-30', 'Monthly'),
    ->     (7, 7, 7, '2023-07-01', '2023-07-10', 'Daily'),
    ->     (8, 8, 8, '2023-08-12', '2023-08-15', 'Monthly'),
    ->     (9, 3, 3, '2023-09-07', '2023-09-10', 'Daily'),
    ->     (10, 10, 10, '2023-10-10', '2023-10-31', 'Monthly');
Query OK, 10 rows affected (0.01 sec)
Records: 10  Duplicates: 0  Warnings: 0

mysql> SELECT * FROM Lease;
+---------+-------+------------+------------+------------+-----------+
| leaseID | carID | customerID | startDate  | endDate    | leaseType |
+---------+-------+------------+------------+------------+-----------+
|       1 |     1 |          1 | 2023-01-01 | 2023-01-05 | Daily     |
|       2 |     2 |          2 | 2023-02-15 | 2023-02-28 | Monthly   |
|       3 |     3 |          3 | 2023-03-10 | 2023-03-15 | Daily     |
|       4 |     4 |          4 | 2023-04-20 | 2023-04-30 | Monthly   |
|       5 |     5 |          5 | 2023-05-05 | 2023-05-10 | Daily     |
|       6 |     4 |          3 | 2023-06-15 | 2023-06-30 | Monthly   |
|       7 |     7 |          7 | 2023-07-01 | 2023-07-10 | Daily     |
|       8 |     8 |          8 | 2023-08-12 | 2023-08-15 | Monthly   |
|       9 |     3 |          3 | 2023-09-07 | 2023-09-10 | Daily     |
|      10 |    10 |         10 | 2023-10-10 | 2023-10-31 | Monthly   |
+---------+-------+------------+------------+------------+-----------+
```

4. Payment Table:
    • paymentID (Primary Key)
    • leaseID (Foreign Key referencing Lease Table)
    • paymentDate
    • amount

```
mysql> CREATE TABLE Payment (
    ->     paymentID INT PRIMARY KEY,
    ->     leaseID INT,
    ->     paymentDate DATE,
    ->     amount DECIMAL(8, 2)
    -> );
Query OK, 0 rows affected (0.03 sec)

mysql> INSERT INTO Payment (paymentID, leaseID, paymentDate, amount)
    -> VALUES
    -> (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),
    -> (5, 5, '2023-05-07', 60.00),
    -> (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);
Query OK, 10 rows affected (0.01 sec)
Records: 10  Duplicates: 0  Warnings: 0

mysql> SELECT * FROM Payment;
+-----------+---------+-------------+---------+
| paymentID | leaseID | paymentDate | 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 |
|         5 |       5 | 2023-05-07  |   60.00 |
|         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 |
+-----------+---------+-------------+---------+
10 rows in set (0.00 sec)
```

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

```
+-----------+---------+-------------+---------+
| paymentID | leaseID | paymentDate | 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 |
|         5 |       5 | 2023-05-07  |   60.00 |
|         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 |
+-----------+---------+-------------+---------+
10 rows in set (0.00 sec)

mysql> UPDATE Vehicle
    -> SET dailyRate = 68.00
    -> WHERE make = 'Mercedes';
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> SELECT * FROM Vehicle;
+-------+-----------+----------+------+-----------+-----------+-------------------+----------------+
| carID | make      | model    | Year | dailyRate | available | passengerCapacity | engineCapacity |
+-------+-----------+----------+------+-----------+-----------+-------------------+----------------+
|     1 | Toyota    | Camry    | 2022 |     50.00 |         1 |                 4 |           1450 |
|     2 | Honda     | Civic    | 2023 |     45.00 |         1 |                 7 |           1500 |
|     3 | Ford      | Focus    | 2022 |     48.00 |         0 |                 4 |           1400 |
|     4 | Nissan    | Altima   | 2023 |     52.00 |         1 |                 7 |           1200 |
|     5 | Chevrolet | Malibu   | 2022 |     47.00 |         1 |                 4 |           1800 |
|     6 | Hyundai   | Sonata   | 2023 |     49.00 |         0 |                 7 |           1400 |
|     7 | BMW       | 3 Series | 2023 |     60.00 |         1 |                 7 |            249 |
|     8 | Mercedes  | C-Class  | 2022 |     68.00 |         1 |                 8 |           2599 |
|     9 | Audi      | A4       | 2022 |     55.00 |         0 |                 4 |           2500 |
|    10 | Lexus     | ES       | 2023 |     54.00 |         1 |                 4 |            250 |
+-------+-----------+----------+------+-----------+-----------+-------------------+----------------+
10 rows in set (0.00 sec)

mysql>
```

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

```
mysql> -- Delete from the Lease table
mysql> DELETE FROM Lease
    -> WHERE customerID = 3;
Query OK, 3 rows affected (0.01 sec)

mysql>
mysql> -- Delete from the Payment table
mysql> DELETE FROM Payment
    -> WHERE leaseID IN (SELECT leaseID FROM Lease WHERE customerID = 3);
Query OK, 0 rows affected (0.00 sec)

mysql>
mysql> -- Delete from the Customer table
mysql> DELETE FROM Customer
    -> WHERE customerID = 3;
Query OK, 1 row affected (0.00 sec)

mysql> SELECT * FROM Lease;
+---------+-------+------------+------------+------------+-----------+
| leaseID | carID | customerID | startDate  | endDate    | leaseType |
+---------+-------+------------+------------+------------+-----------+
|       1 |     1 |          1 | 2023-01-01 | 2023-01-05 | Daily     |
|       2 |     2 |          2 | 2023-02-15 | 2023-02-28 | Monthly   |
|       4 |     4 |          4 | 2023-04-20 | 2023-04-30 | Monthly   |
|       5 |     5 |          5 | 2023-05-05 | 2023-05-10 | Daily     |
|       7 |     7 |          7 | 2023-07-01 | 2023-07-10 | Daily     |
|       8 |     8 |          8 | 2023-08-12 | 2023-08-15 | Monthly   |
|      10 |    10 |         10 | 2023-10-10 | 2023-10-31 | Monthly   |
+---------+-------+------------+------------+------------+-----------+
7 rows in set (0.00 sec)

mysql> SELECT * FROM Payment;
+-----------+---------+-------------+---------+
| paymentID | leaseID | paymentDate | 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 |
```

```
|       7 |     7 |          7 | 2023-07-01 | 2023-07-10 | Daily     |
|       8 |     8 |          8 | 2023-08-12 | 2023-08-15 | Monthly   |
|      10 |    10 |         10 | 2023-10-10 | 2023-10-31 | Monthly   |
+---------+-------+------------+------------+------------+-----------+
7 rows in set (0.00 sec)

mysql> SELECT * FROM Payment;
+-----------+---------+-------------+---------+
| paymentID | leaseID | paymentDate | 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 |
|         5 |       5 | 2023-05-07  |   60.00 |
|         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 |
+-----------+---------+-------------+---------+
10 rows in set (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 |
|          4 | Sarah     | Brown    | sarah@example.com    | 555-456-7890 |
|          5 | David     | Lee      | david@example.com    | 555-987-6543 |
|          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)

mysql>
```

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

```
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 |
|          4 | Sarah     | Brown    | sarah@example.com       | 555-456-7890 |
|          5 | David     | Lee      | david@example.com       | 555-987-6543 |
|          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)

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 |
|         5 |       5 | 2023-05-07      |   60.00 |
|         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 |
+-----------+---------+-----------------+---------+
10 rows in set (0.00 sec)

mysql>
```

4. Find a specific customer by email.

```
|          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)

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 |
|         5 |       5 | 2023-05-07      |   60.00 |
|         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 |
+-----------+---------+-----------------+---------+
10 rows in set (0.00 sec)

mysql> SELECT *
    -> FROM Customer
    -> WHERE email = 'johndoe@example.com';
+------------+-----------+----------+---------------------+--------------+
| customerID | firstName | lastName | email               | phoneNumber  |
+------------+-----------+----------+---------------------+--------------+
|          1 | John      | Doe      | johndoe@example.com | 555-555-5555 |
+------------+-----------+----------+---------------------+--------------+
1 row in set (0.00 sec)

mysql>
```

5. Get active leases for a specific customer.

```
mysql> SELECT Lease.*, Vehicle.make, Vehicle.model
    -> FROM Lease
    -> JOIN Vehicle ON Lease.carID = Vehicle.carID
    -> WHERE Lease.customerID = 1
    ->    AND Lease.endDate >= CURDATE();
Empty set (0.00 sec)

mysql>
```

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

```
mysql> SELECT Payment.*, Customer.firstName, Customer.lastName
    -> FROM Payment
    -> JOIN Lease ON Payment.leaseID = Lease.leaseID
    -> JOIN Customer ON Lease.customerID = Customer.customerID
    -> WHERE Customer.phoneNumber = '555-555-5555';
+-----------+---------+-----------------+--------+-----------+----------+
| paymentID | leaseID | transactionDate | amount | firstName | lastName |
+-----------+---------+-----------------+--------+-----------+----------+
|         1 |       1 | 2023-01-03      | 200.00 | John      | Doe      |
+-----------+---------+-----------------+--------+-----------+----------+
1 row in set (0.00 sec)

mysql>
```

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

```
mysql> SELECT AVG(dailyRate) AS averageDailyRate
    -> FROM Vehicle
    -> WHERE available = 1;
+------------------+
| averageDailyRate |
+------------------+
|        53.714286 |
+------------------+
1 row in set (0.00 sec)

mysql>
```

8. Find the car with the highest daily rate.

```
mysql> SELECT *
    -> FROM Vehicle
    -> ORDER BY dailyRate DESC
    -> LIMIT 1;
+-------+----------+---------+------+-----------+-----------+-------------------+----------------+
| carID | make     | model   | Year | dailyRate | available | passengerCapacity | engineCapacity |
+-------+----------+---------+------+-----------+-----------+-------------------+----------------+
|     8 | Mercedes | C-Class | 2022 |     68.00 |         1 |                 8 |           2599 |
+-------+----------+---------+------+-----------+-----------+-------------------+----------------+
1 row in set (0.00 sec)

mysql>
```

9. Retrieve all cars leased by a specific customer.

```
mysql> SELECT Vehicle.*
    -> FROM Vehicle
    -> JOIN Lease ON Vehicle.carID = Lease.carID
    -> WHERE Lease.customerID = 1;
+-------+--------+-------+------+-----------+-----------+-------------------+----------------+
| carID | make   | model | Year | dailyRate | available | passengerCapacity | engineCapacity |
+-------+--------+-------+------+-----------+-----------+-------------------+----------------+
|     1 | Toyota | Camry | 2022 |     50.00 |         1 |                 4 |           1450 |
+-------+--------+-------+------+-----------+-----------+-------------------+----------------+
1 row in set (0.00 sec)

mysql>
```

10. Find the details of the most recent lease.

```
mysql> SELECT *
    -> FROM Lease
    -> ORDER BY startDate DESC
    -> LIMIT 1;
+---------+-------+------------+------------+------------+-----------+
| leaseID | carID | customerID | startDate  | endDate    | leaseType |
+---------+-------+------------+------------+------------+-----------+
|      10 |    10 |         10 | 2023-10-10 | 2023-10-31 | Monthly   |
+---------+-------+------------+------------+------------+-----------+
1 row in set (0.00 sec)

mysql>
```

11. List all payments made in the year 2023.

```
mysql> SELECT *
    -> FROM Payment
    -> WHERE YEAR(transactionDate) = 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 |
|         5 |       5 | 2023-05-07      |   60.00 |
|         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 |
+-----------+---------+-----------------+---------+
10 rows in set (0.00 sec)

mysql>
```

12. Retrieve customers who have not made any payments.

```
mysql> SELECT Customer.*
    -> FROM Customer
    -> LEFT JOIN Lease ON Customer.customerID = Lease.customerID
    -> LEFT JOIN Payment ON Lease.leaseID = Payment.leaseID
    -> WHERE Payment.paymentID IS NULL;
+------------+-----------+----------+--------------------+--------------+
| 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)

mysql>
```

13. Retrieve Car Details and Their Total Payments

```
    -> LEFT JOIN Payment ON Lease.leaseID = Payment.leaseID
    -> WHERE Payment.paymentID IS NULL;
+------------+-----------+----------+--------------------+--------------+
| 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)

mysql> SELECT
    ->     Vehicle.carID,
    ->     Vehicle.make,
    ->     Vehicle.model,
    ->     SUM(Payment.amount) AS totalPayments
    -> FROM
    ->     Vehicle
    -> LEFT JOIN
    ->     Lease ON Vehicle.carID = Lease.carID
    -> LEFT JOIN
    ->     Payment ON Lease.leaseID = Payment.leaseID
    -> GROUP BY
    ->     Vehicle.carID, Vehicle.make, Vehicle.model;
+-------+-----------+----------+---------------+
| carID | make      | model    | totalPayments |
+-------+-----------+----------+---------------+
|     1 | Toyota    | Camry    |        200.00 |
|     2 | Honda     | Civic    |       1000.00 |
|     3 | Ford      | Focus    |          NULL |
|     4 | Nissan    | Altima   |        900.00 |
|     5 | Chevrolet | Malibu   |         60.00 |
|     6 | Hyundai   | Sonata   |          NULL |
|     7 | BMW       | 3 Series |         40.00 |
|     8 | Mercedes  | C-Class  |       1100.00 |
|     9 | Audi      | A4       |          NULL |
|    10 | Lexus     | ES       |       1500.00 |
+-------+-----------+----------+---------------+
10 rows in set (0.00 sec)

mysql>
```

14. Calculate Total Payments for Each Customer.

```
mysql> SELECT
    ->     Customer.customerID,
    ->     Customer.firstName,
    ->     Customer.lastName,
    ->     SUM(Payment.amount) AS totalPayments
    -> FROM
    ->     Customer
    -> LEFT JOIN
    ->     Lease ON Customer.customerID = Lease.customerID
    -> LEFT JOIN
    ->     Payment ON Lease.leaseID = Payment.leaseID
    -> GROUP BY
    ->     Customer.customerID, Customer.firstName, Customer.lastName;
+------------+-----------+----------+---------------+
| customerID | firstName | lastName | totalPayments |
+------------+-----------+----------+---------------+
|          1 | John      | Doe      |        200.00 |
|          2 | Jane      | Smith    |       1000.00 |
|          4 | Sarah     | Brown    |        900.00 |
|          5 | David     | Lee      |         60.00 |
|          6 | Laura     | Hall     |          NULL |
|          7 | Michael   | Davis    |         40.00 |
|          8 | Emma      | Wilson   |       1100.00 |
|          9 | William   | Taylor   |          NULL |
|         10 | Olivia    | Adams    |       1500.00 |
+------------+-----------+----------+---------------+
9 rows in set (0.00 sec)

mysql>
```

15. List Car Details for Each Lease.

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

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

```
mysql> SELECT
    ->     Customer.customerID,
    ->     Customer.firstName,
    ->     Customer.lastName,
    ->     SUM(Payment.amount) AS totalPayments
    -> FROM
    ->     Customer
    -> JOIN
    ->     Lease ON Customer.customerID = Lease.customerID
    -> JOIN
    ->     Payment ON Lease.leaseID = Payment.leaseID
    -> GROUP BY
    ->     Customer.customerID, Customer.firstName, Customer.lastName
    -> ORDER BY
    ->     totalPayments DESC
    -> LIMIT 1;
+------------+-----------+----------+---------------+
| customerID | firstName | lastName | totalPayments |
+------------+-----------+----------+---------------+
|         10 | Olivia    | Adams    |       1500.00 |
+------------+-----------+----------+---------------+
1 row in set (0.00 sec)

mysql>
```

18. List All Cars with Their Current Lease Information.

```
mysql> SELECT
    ->     Vehicle.carID,
    ->     Vehicle.make,
    ->     Vehicle.model,
    ->     Lease.leaseID,
    ->     Lease.startDate,
    ->     Lease.endDate,
    ->     Lease.leaseType,
    ->     Lease.customerID
    -> FROM
    ->     Vehicle
    -> LEFT JOIN
    ->     Lease ON Vehicle.carID = Lease.carID
    -> WHERE
    ->     CURDATE() BETWEEN Lease.startDate AND Lease.endDate
    ->     OR Lease.startDate IS NULL;
+-------+---------+--------+---------+-----------+---------+-----------+------------+
| carID | make    | model  | leaseID | startDate | endDate | leaseType | customerID |
+-------+---------+--------+---------+-----------+---------+-----------+------------+
|     3 | Ford    | Focus  |    NULL | NULL      | NULL    | NULL      |       NULL |
|     6 | Hyundai | Sonata |    NULL | NULL      | NULL    | NULL      |       NULL |
|     9 | Audi    | A4     |    NULL | NULL      | NULL    | NULL      |       NULL |
+-------+---------+--------+---------+-----------+---------+-----------+------------+
3 rows in set (0.00 sec)

mysql>
```