



Coding Challenge - Car Rental System – SQL

Instructions

- Coding Challenge submissions should be done through the participants' Github repository, and the link should be shared with trainers and Hexavarsity.

SQL Schema:

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

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)

4. Payment Table:

- paymentID (Primary Key)
- leaseID (Foreign Key referencing Lease Table)
- paymentDate
- amount

Vehicle Table

| carID | make | model | Year | dailyRate | available | passenger Capacity | 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 | 2499 |



| carID | make | model | Year | dailyRate | available | passenger Capacity | engineCapacity |
|-------|----------|---------|------|-----------|-----------|--------------------|----------------|
| 8 | Mercedes | C-Class | 2022 | 58.00 | 1 | 8 | 2599 |
| 9 | Audi | A4 | 2022 | 55.00 | 0 | 4 | 2500 |
| 10 | Lexus | ES | 2023 | 54.00 | 1 | 4 | 2500 |

Customer Table

| 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 |

Lease Table

| 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 |

Payment Table

| 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 |



| paymentID | leaseID | paymentDate | amount |
|-----------|---------|-------------|---------|
| 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 |

1. Update the daily rate for a Mercedes car to 68.
2. Delete a specific customer and all associated leases and payments.
3. Rename the "paymentDate" column in the Payment table to "transactionDate".
4. Find a specific customer by email.
5. Get active leases for a specific customer.
6. Find all payments made by a customer with a specific phone number.
7. Calculate the average daily rate of all available cars.
8. Find the car with the highest daily rate.
9. Retrieve all cars leased by a specific customer.
10. Find the details of the most recent lease.
11. List all payments made in the year 2023.
12. Retrieve customers who have not made any payments.
13. Retrieve Car Details and Their Total Payments.
14. Calculate Total Payments for Each Customer.
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.
18. List All Cars with Their Current Lease Information.

CODING CHALLENGE ANSWERS

1. update vehicles set daily_rate=68.00 where make='mercedes';

```
mysql> select * from vehicles;
```

| vehicle_id | make | model | year | daily_rate | status | passenger_capacity | engine_capacity |
|------------|-----------|----------|------|------------|--------|--------------------|-----------------|
| 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 | 2499 |
| 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 | 2500 |

10 rows in set (0.00 sec)

2. delete from payment where lease_id=4;
delete from lease where cust_id=4;
delete from customers where cust_id=4;

```
mysql> select * from payment;
```

| payment_id | lease_id | payment_date | amount |
|------------|----------|--------------|---------|
| 1 | 1 | 2023-01-03 | 200.00 |
| 2 | 2 | 2023-02-20 | 1000.00 |
| 3 | 3 | 2023-03-12 | 75.00 |
| 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 |

9 rows in set (0.00 sec)

```
mysql> select * from lease;
```

| lease_id | vehicle_id | cust_id | start_date | end_date | lease_type |
|----------|------------|---------|------------|------------|------------|
| 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 |
| 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 |

9 rows in set (0.01 sec)

```
mysql> select * from customers;
```

| cust_id | first_name | last_name | email_id | phone_number |
|---------|------------|-----------|-----------------------|--------------|
| 1 | john | doe | johndoe@example.com | 555-555-5555 |
| 2 | jane | smith | janesmith@example.com | 555-123-4657 |
| 3 | robert | johnson | robert@example.com | 555-789-1234 |
| 5 | david | lee | david@example.com | 555-987-6543 |
| 6 | laura | hall | laura@example.com | 555-234-5678 |
| 7 | michael | davis | micheal@example.com | 555-876-5432 |
| 8 | emma | wilson | emma@example.com | 555-432-1098 |
| 9 | william | taylor | willam@example.com | 555-321-6547 |
| 10 | olivia | adams | olivia@example.com | 555-765-4321 |

9 rows in set (0.01 sec)

3. alter table payment change payment_date transactionDate date;

```
mysql> select * from payment;
+-----+-----+-----+-----+
| payment_id | lease_id | transactionDate | amount |
+-----+-----+-----+-----+
| 1 | 1 | 2023-01-03 | 200.00 |
| 2 | 2 | 2023-02-20 | 1000.00 |
| 3 | 3 | 2023-03-12 | 75.00 |
| 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 |
+-----+-----+-----+-----+
9 rows in set (0.00 sec)
```

4. select * from customers where email_id='david@example.com';

```
mysql> select * from customers where email_id='david@example.com';
+-----+-----+-----+-----+-----+
| cust_id | first_name | last_name | email_id | phone_number |
+-----+-----+-----+-----+-----+
| 5 | david | lee | david@example.com | 555-987-6543 |
+-----+-----+-----+-----+-----+
1 row in set (0.01 sec)
```

5. select count(*) as active_leases from lease where cust_id = (select cust_id from customers where cust_id=7) end_date >= curdate();

```
+-----+
| active_leases |
+-----+
| 0 |
+-----+
1 row in set (0.00 sec)
```

6. select p.payment_id,p.transactionDate,p.amount from customers c join lease l on c.cust_id=l.cust_id join payment p on l.lease_id=p.lease_id where c.cust_id=3;

```
+-----+-----+-----+
| payment_id | transactionDate | amount |
+-----+-----+-----+
| 3 | 2023-03-12 | 75.00 |
| 6 | 2023-06-18 | 1200.00 |
| 9 | 2023-09-09 | 80.00 |
+-----+-----+-----+
3 rows in set (0.00 sec)
```

7. select avg(daily_rate) from vehicles where status=1;

```
+-----+
| avg(daily_rate) |
+-----+
|          53.714286 |
+-----+
1 row in set (0.01 sec)
```

8. select vehicle_id,make,model from vehicles where daily_rate=(select max(daily_rate) from vehicles);

```
+-----+-----+-----+
| vehicle_id | make   | model  |
+-----+-----+-----+
|          8 | mercedes | c-class |
+-----+-----+-----+
1 row in set (0.00 sec)
```

9. select distinct v.vehicle_id,v.make,v.model,v.year from customers c join lease l on c.cust_id=l.cust_id join vehicles v on l.vehicle_id=v.vehicle_id where c.cust_id=3;

```
+-----+-----+-----+-----+
| vehicle_id | make   | model  | year |
+-----+-----+-----+-----+
|          3 | ford   | focus  | 2022 |
|          4 | nissan  | altima | 2023 |
+-----+-----+-----+-----+
2 rows in set (0.00 sec)
```

10. select v.vehicle_id,v.make,v.model,v.year,l.start_date from vehicles v join lease l on v.vehicle_id=l.vehicle_id order by l.start_date desc limit 1;

```
+-----+-----+-----+-----+-----+
| vehicle_id | make   | model  | year | start_date |
+-----+-----+-----+-----+-----+
|          10 | lexus  | es     | 2023 | 2023-10-10 |
+-----+-----+-----+-----+-----+
1 row in set (0.00 sec)
```

11. select * from payment where year(transactionDate)=2023;

| payment_id | lease_id | transactionDate | amount |
|------------|----------|-----------------|---------|
| 1 | 1 | 2023-01-03 | 200.00 |
| 2 | 2 | 2023-02-20 | 1000.00 |
| 3 | 3 | 2023-03-12 | 75.00 |
| 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 |

9 rows in set (0.00 sec)

12. select c.* from customers c left join lease l on c.cust_id=l.cust_id left join payment p on l.lease_id=p.lease_id where p.payment_id is null;

| cust_id | first_name | last_name | email_id | phone_number |
|---------|------------|-----------|--------------------|--------------|
| 6 | laura | hall | laura@example.com | 555-234-5678 |
| 9 | william | taylor | willam@example.com | 555-321-6547 |

2 rows in set (0.00 sec)

13. select v.vehicle_id,v.make,v.model,v.daily_rate,sum(p.amount) as total_amount from vehicles v join lease l on v.vehicle_id=l.vehicle_id join payment p on p.lease_id=l.lease_id group by v.vehicle_id, v.make, v.model, v.year,v.daily_rate;

| vehicle_id | make | model | daily_rate | total_amount |
|------------|-----------|----------|------------|--------------|
| 1 | toyota | camry | 50.00 | 200.00 |
| 2 | honda | civic | 45.00 | 1000.00 |
| 3 | ford | focus | 48.00 | 155.00 |
| 5 | chevrolet | malibu | 47.00 | 60.00 |
| 4 | nissan | altima | 52.00 | 1200.00 |
| 7 | bmw | 3 series | 60.00 | 40.00 |
| 8 | mercedes | c-class | 68.00 | 1100.00 |
| 10 | lexus | es | 54.00 | 1500.00 |

8 rows in set (0.00 sec)

14. select c.cust_id,c.first_name,sum(p.amount) as total_amount from customers c join lease l on c.cust_id=l.cust_id join payment p on p.lease_id=l.lease_id group by c.cust_id, c.first_name;

| cust_id | first_name | total_amount |
|---------|------------|--------------|
| 1 | john | 200.00 |
| 2 | jane | 1000.00 |
| 3 | robert | 1355.00 |
| 5 | david | 60.00 |
| 7 | michael | 40.00 |
| 8 | emma | 1100.00 |
| 10 | olivia | 1500.00 |

7 rows in set (0.00 sec)

15. select
l.lease_id,v.vehicle_id,v.make,v.model,v.year,v.daily_rate,v.passenger_capacity,v.engine_capacity from vehicles v join lease l on v.vehicle_id=l.vehicle_id;

| lease_id | vehicle_id | make | model | year | daily_rate | passenger_capacity | engine_capacity |
|----------|------------|-----------|----------|------|------------|--------------------|-----------------|
| 1 | 1 | toyota | camry | 2022 | 50.00 | 4 | 1450 |
| 2 | 2 | honda | civic | 2023 | 45.00 | 7 | 1500 |
| 3 | 3 | ford | focus | 2022 | 48.00 | 4 | 1400 |
| 9 | 3 | ford | focus | 2022 | 48.00 | 4 | 1400 |
| 6 | 4 | nissan | altima | 2023 | 52.00 | 7 | 1200 |
| 5 | 5 | chevrolet | malibu | 2022 | 47.00 | 4 | 1800 |
| 7 | 7 | bmw | 3 series | 2023 | 60.00 | 7 | 2499 |
| 8 | 8 | mercedes | c-class | 2022 | 68.00 | 8 | 2599 |
| 10 | 10 | lexus | es | 2023 | 54.00 | 4 | 2500 |

9 rows in set (0.00 sec)

16. select
l.lease_id,c.first_name,c.last_name,v.make,v.model,v.year,l.start_date,l.end_date
from lease l join customers c on l.cust_id = c.cust_id join vehicles v on
l.vehicle_id=v.vehicle_id where l.end_date>=curdate();

```
mysql> select l.lease_id,c.first_name,c.last_name,v.make,v.model,v.year,l.start_date,l.end_date fr
vehicles v on l.vehicle_id=v.vehicle_id where l.end_date>=curdate();
Empty set (0.01 sec)

mysql>
```

17. select c.cust_id,c.first_name,c.last_name,sum(p.amount) as total_payments from customers c join lease l on c.cust_id=l.cust_id join payment p on p.lease_id=l.lease_id group by c.cust_id,c.first_name,c.last_name order by total_payments desc limit 1;


```

+-----+-----+-----+-----+
| cust_id | first_name | last_name | total_payments |
+-----+-----+-----+-----+
|      10 | olivia    | adams    |          1500.00 |
+-----+-----+-----+-----+
1 row in set (0.05 sec)

```

18. select v.vehicle_id,v.make,v.model,v.year,l.start_date,l.end_date,l.lease_type from vehicles v join lease l on v.vehicle_id=l.vehicle_id where v.status=1 or v.status is null;

```

+-----+-----+-----+-----+-----+-----+-----+
| vehicle_id | make    | model    | year | start_date | end_date | lease_type |
+-----+-----+-----+-----+-----+-----+-----+
|          1 | toyota  | camry    | 2022 | 2023-01-01 | 2023-01-05 | Daily      |
|          2 | honda   | civic    | 2023 | 2023-02-15 | 2023-02-28 | Monthly    |
|          4 | nissan   | altima   | 2023 | 2023-06-15 | 2023-06-30 | Monthly    |
|          5 | chevrolet | malibu   | 2022 | 2023-05-05 | 2023-05-10 | Daily      |
|          7 | bmw     | 3 series | 2023 | 2023-07-01 | 2023-07-10 | Daily      |
|          8 | mercedes | c-class  | 2022 | 2023-08-12 | 2023-08-15 | Monthly    |
|         10 | lexus   | es       | 2023 | 2023-10-10 | 2023-10-31 | Monthly    |
+-----+-----+-----+-----+-----+-----+-----+
7 rows in set (0.00 sec)

```