Coding Challenge - Car Rental System – SQL

Instructions

- Coding Challenge submissions should be done through the partcipants' 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)
```

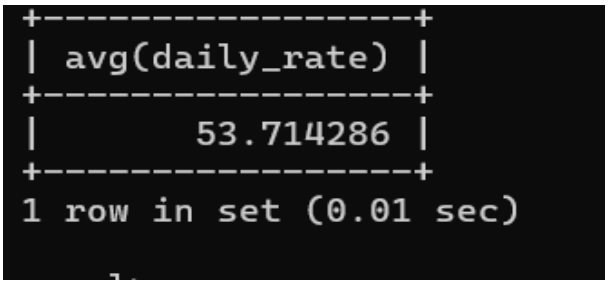
5. select count(*) as active_leases from lease where cust_id = (select cust_id from customers where cust_id=7) end_date >= curdate();

```
+---------------+
| 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;

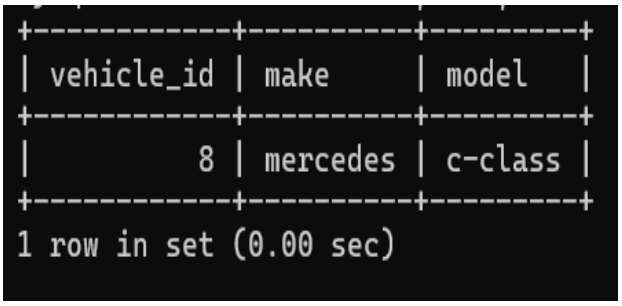
```
+------------+-----------------+---------+
| payment_id | transactionDate | amount  |
+------------+-----------------+---------+
|          3 | 2023-03-12      |   75.00 |
|          6 | 2023-06-18      | 1200.00 |
|          9 | 2023-09-09      |   80.00 |
+------------+-----------------+---------+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

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



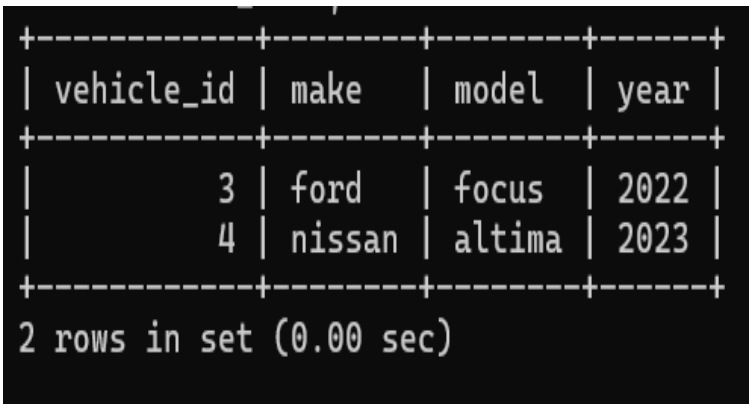
```
+------------------+
| avg(daily_rate) |
+------------------+
|       53.714286 |
+------------------+
1 row in set (0.01 sec)
```

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



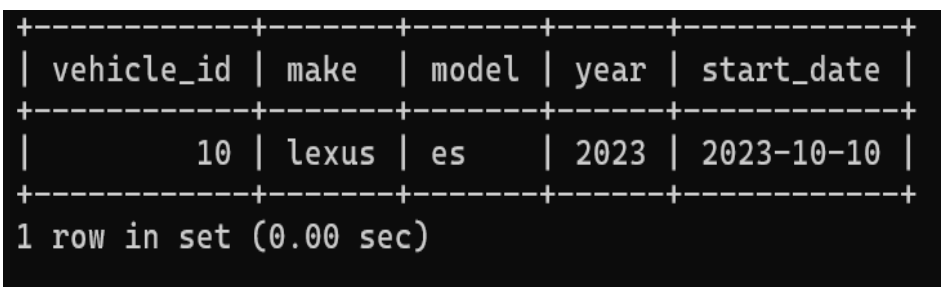
```
+------------+---------+---------+
| vehicle_id | make    | model   |
+------------+---------+---------+
|          8 | mercedes | c-class |
+------------+---------+---------+
1 row in set (0.00 sec)
```

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

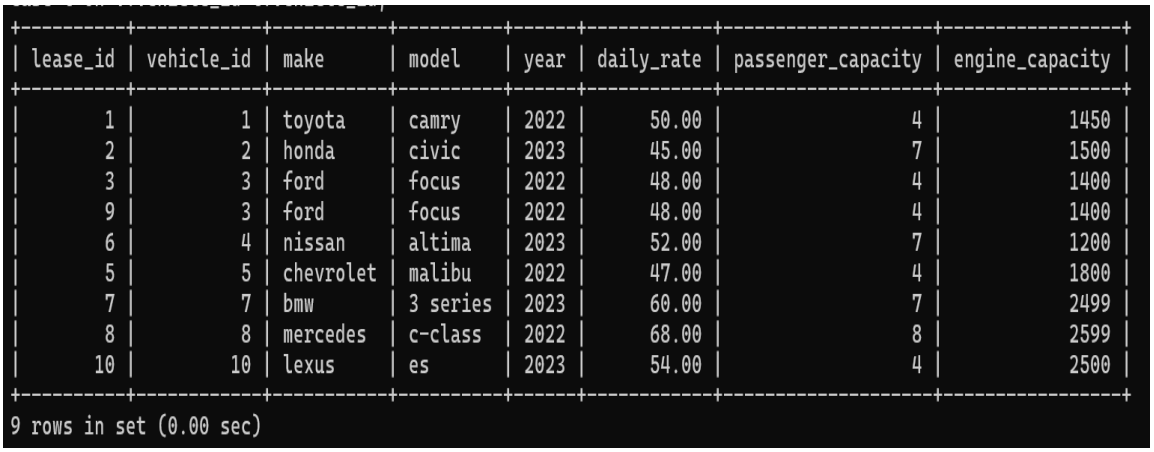
8 rows in set (0.00 sec)

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)

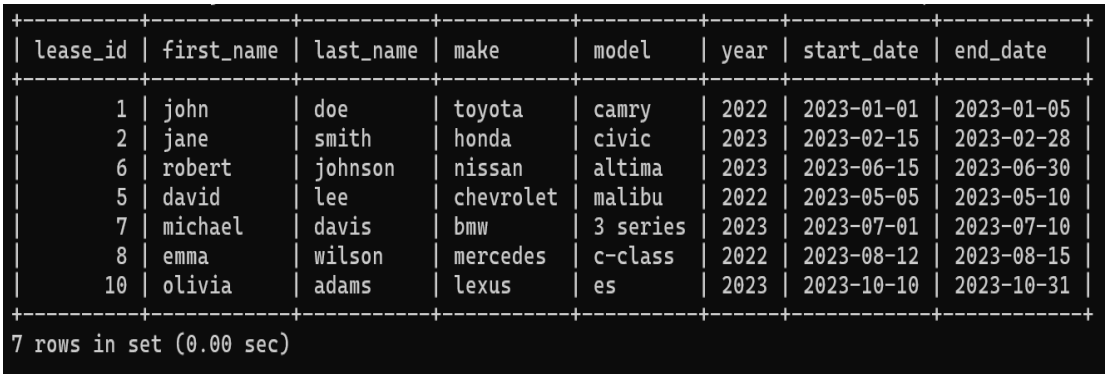
15. select l.lease_id,v.vehicle_id,v.make,v.model,v.year,v.daily_rate,v.passenger_capacity,v.engine_capacity from vehicles v join lease l on v.vehicle_id=l.vehicle_id;



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 v.status=1;



lease_id	first_name	last_name	make	model	year	start_date	end_date
1	john	doe	toyota	camry	2022	2023-01-01	2023-01-05
2	jane	smith	honda	civic	2023	2023-02-15	2023-02-28
6	robert	johnson	nissan	altima	2023	2023-06-15	2023-06-30
5	david	lee	chevrolet	malibu	2022	2023-05-05	2023-05-10
7	michael	davis	bmw	3 series	2023	2023-07-01	2023-07-10
8	emma	wilson	mercedes	c-class	2022	2023-08-12	2023-08-15
10	olivia	adams	lexus	es	2023	2023-10-10	2023-10-31

7 rows in set (0.00 sec)

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 limit 1;

```
+---------+------------+-----------+----------------+
| cust_id | first_name | last_name | total_payments |
+---------+------------+-----------+----------------+
|       7 | michael    | davis     |          40.00 |
+---------+------------+-----------+----------------+
1 row in set (0.00 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)
```