Coding Challenge

Topic: Car Rental System – SQL

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1. **Vehicle Table:**
   • vehicleID (Primary Key)
   • make
   • model
   • year
   • dailyRate
   • status (available, notAvailable)
   • passengerCapacity
   • engineCapacity

```
2 •     select * from vehicle;
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Co

carID	make	model	year	dailyRate	status	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	2499
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

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

```
2 •     select * from customer;
```

Result Grid | Filter Rows: | Edit: | Export/Import:

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	davis@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)

```
13 •    select * from lease;
```

leaseID	carID	customerID	startDate	endDate	leasetype
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	2023-06-10	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

```
23 •    select * from Payment;
24
```

paymentID	leaseID	paymentDate	amount
1	1	2023-01-03	200
2	2	2023-02-20	1000
3	3	2023-03-12	75
4	4	2023-04-25	900
5	5	2023-05-07	60
6	6	2023-06-18	1200
7	7	2023-07-03	40
8	8	2023-08-14	1100
9	9	2023-09-09	80
10	10	2023-10-25	1500

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

```
25 •    UPDATE vehicle SET dailyRate = 68 WHERE make = 'Mercedes';
26
```

carID	make	model	year	dailyRate	status	passengerCapacity	engineCapacity
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	1	8	2599
9	Audi	A4	2022	55.00	0	4	2500
10	Lexus	ES	2023	54.00	1	4	2500
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

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

```
9 •    DELETE FROM Payment
10     WHERE leaseID IN (SELECT leaseID FROM Lease WHERE customerID = 10);
11 •   select * from payment;
```

paymentID	leaseID	transactionDate	amount
1	1	2023-01-03	200
2	2	2023-02-20	1000
3	3	2023-03-12	75
4	4	2023-04-25	900
5	5	2023-05-07	60
6	6	2023-06-18	1200
7	7	2023-07-03	40
8	8	2023-08-14	1100
9	9	2023-09-09	80
NULL	NULL	NULL	NULL

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

```
6 •    alter table payment rename column paymentDate to transactionDate;
7 •    select * from payment;
```

paymentID	leaseID	transactionDate	amount
1	1	2023-01-03	200
2	2	2023-02-20	1000
3	3	2023-03-12	75
4	4	2023-04-25	900
5	5	2023-05-07	60
6	6	2023-06-18	1200
7	7	2023-07-03	40
8	8	2023-08-14	1100
9	9	2023-09-09	80
10	10	2023-10-25	1500

4. Find a specific customer by email.

```sql
7 •    select * from customer where email='michael@example.com';
8
```

customerID	firstName	lastName	email	phoneNumber
7	Michael	Davis	michael@example.com	555-876-5432
NULL	NULL	NULL	NULL	NULL

5. Get active leases for a specific customer.

```sql
3 •    SELECT * FROM Lease
4      WHERE customerID = 3 AND endDate >= CURDATE();
```

leaseID	carID	customerID	startDate	endDate	leasetype
9	3	3	2023-09-07	2025-04-09	Daily
NULL	NULL	NULL	NULL	NULL	NULL

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

```sql
49 •    SELECT * FROM Payment p
50      JOIN Lease l ON p.leaseID = l.leaseID
51      JOIN Customer c ON l.customerID = c.customerID
52      WHERE c.phoneNumber = '555-456-7890'and'555-234-5678';
53 •    select * from customer;
```

paymentID	leaseID	transactionDate	amount	leaseID	carID	customerID	startDate	endDate	leasetype	customerID	firstName	lastName	email	phoneNumber
4	4	2023-04-25	900	4	4	4	2023-04-20	2023-04-30	Monthly	4	Sarah	Brown	sarah@example.com	555-456-7890

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

```sql
17 •    SELECT AVG(dailyRate) AS avg_daily_rate, COUNT(*) AS active_cars
18      FROM Vehicle
19      WHERE status = 1;
20
```

avg_daily_rate	active_cars
53.714285714285715	7

8. Find the car with the highest daily rate.

```
24 •     SELECT * FROM Vehicle ORDER BY dailyRate DESC LIMIT 1;
25
26 •     select * from vehicle;
```

	carID	make	model	year	dailyRate	status	passengerCapacity	engineCapacity
▶	8	Mercedes	C-Class	2022	68	1	8	2599
*	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

9. Retrieve all cars leased by a specific customer.

```
44 •     SELECT * FROM Vehicle v
45       JOIN Lease l ON v.carID = l.carID
46       WHERE l.customerID = 3;
47 •     select * from lease;
```

	carID	make	model	year	dailyRate	status	passengerCapacity	engineCapacity	leaseID	carID	customerID	startDate	endDate	leasetype
▶	3	Ford	Focus	2022	48.00	0	4		1400	3	3	3	2023-03-10	2025-04-08	Daily
	4	Nissan	Altima	2023	52.00	1	7		1200	6	4	3	2023-06-15	2023-06-30	Monthly
	3	Ford	Focus	2022	48.00	0	4		1400	9	3	3	2023-09-07	2025-04-09	Daily

10. Find the details of the most recent lease.

```
42 •     SELECT * FROM Lease ORDER BY endDate DESC LIMIT 1;
43
```

	leaseID	carID	customerID	startDate	endDate	leasetype
▶	9	3	3	2023-09-07	2025-04-09	Daily
*	NULL	NULL	NULL	NULL	NULL	NULL

11. List all payments made in the year 2023.

```
41 •     SELECT * FROM Payment WHERE YEAR(transactionDate) = 2023;
42
```

	paymentID	leaseID	transactionDate	amount
▶	1	1	2023-01-03	200
	2	2	2023-02-20	1000
	3	3	2023-03-12	75
	4	4	2023-04-25	900
	6	6	2023-06-18	1200
	8	8	2023-08-14	1100
	9	9	2023-09-09	80
*	NULL	NULL	NULL	NULL

12. Retrieve customers who have not made any payments.

```
35 •   SELECT * FROM Customer c
36     LEFT JOIN Lease l ON c.customerID = l.customerID
37     LEFT JOIN Payment p ON l.leaseID = p.leaseID
38     WHERE p.paymentID IS NULL;
```

customerID	firstName	lastName	email	phoneNumber	leaseID	carID	customerID	startDate	endDate	leasetype	paymentID	leaseID	transactionDate	amount
6	Laura	Hall	laura@example.com	555-234-5678	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
9	William	Taylor	william@example.com	555-321-6547	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
10	Olivia	Adams	olivia@example.com	555-765-4321	10	10	10	2023-10-10	2023-10-31	Monthly	NULL	NULL	NULL	NULL

13. Retrieve Car Details and Their Total Payments.

```
29 •   SELECT v.make, v.model, SUM(p.amount) AS total_payments
30     FROM Vehicle v
31     JOIN Lease l ON v.carID = l.carID
32     JOIN Payment p ON l.leaseID = p.leaseID
33     GROUP BY v.make, v.model;
```

make	model	total_payments
Toyata	Camry	200
Honda	Civic	1000
Ford	Focus	155
Nissan	Altima	2100
Chevrolet	Malibu	60
BMW	3 Series	40
Mercedes	C-Class	1100

14. Calculate Total Payments for Each Customer.

```
22 •   SELECT c.customerID, c.firstName, c.lastName, SUM(p.amount) AS total_spent
23     FROM Customer c
24     JOIN Lease l ON c.customerID = l.customerID
25     JOIN Payment p ON l.leaseID = p.leaseID
26     GROUP BY c.customerID;
27
28
```

customerID	firstName	lastName	total_spent
1	John	Doe	200
2	Jane	Smith	1000
3	Robert	Johnson	1355
4	Sarah	Brown	900
5	David	Lee	60
7	Michael	Davis	40
8	Emma	Wilson	1100

15. List Car Details for Each Lease.

```sql
17 •    SELECT l.leaseID, l.startDate, l.endDate, v.make, v.model, v.year
18      FROM Lease l
19      JOIN Vehicle v ON l.carID = v.carID;
20
```

leaseID	startDate	endDate	make	model	year
1	2023-01-01	2023-01-05	Toyota	Camry	2022
2	2023-02-15	2023-02-28	Honda	Civic	2023
3	2023-03-10	2025-04-08	Ford	Focus	2022
4	2023-04-20	2023-04-30	Nissan	Altima	2023
5	2023-05-05	2023-05-10	Chevrolet	Malibu	2022
6	2023-06-15	2023-06-30	Nissan	Altima	2023
7	2023-07-01	2023-07-10	BMW	3 Series	2023
8	2023-08-12	2023-08-15	Mercedes	C-Class	2022
9	2023-09-07	2025-04-09	Ford	Focus	2022
10	2023-10-10	2023-10-31	Lexus	ES	2023

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

```sql
11 •    SELECT l.leaseID, l.startDate, l.endDate, c.firstName, c.lastName, v.make, v.model
12      FROM Lease l
13      JOIN Customer c ON l.customerID = c.customerID
14      JOIN Vehicle v ON l.carID = v.carID
15      WHERE l.endDate >= CURDATE();
```

leaseID	startDate	endDate	firstName	lastName	make	model
9	2023-09-07	2025-04-09	Robert	Johnson	Ford	Focus

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

```sql
3 •     SELECT c.customerID, c.firstName, c.lastName, SUM(p.amount) AS total_spent
4       FROM Customer c
5       JOIN Lease l ON c.customerID = l.customerID
6       JOIN Payment p ON l.leaseID = p.leaseID
7       GROUP BY c.customerID
8       ORDER BY total_spent DESC
9       LIMIT 1;
10
```

customerID	firstName	lastName	total_spent
3	Robert	Johnson	1355

18. List All Cars with Their Current Lease Information.

```
17 •   SELECT v.carID, v.make, v.model, v.year, l.startDate, l.endDate, c.firstName, c.lastName
18     FROM Vehicle v
19     LEFT JOIN Lease l ON v.carID = l.carID
20     LEFT JOIN Customer c ON l.customerID = c.customerID;
21
```

carID	make	model	year	startDate	endDate	firstName	lastName
1	Toyota	Camry	2022	2023-01-01	2023-01-05	John	Doe
2	Honda	Civic	2023	2023-02-15	2023-02-28	Jane	Smith
3	Ford	Focus	2022	2023-03-10	2025-04-08	Robert	Johnson
3	Ford	Focus	2022	2023-09-07	2025-04-09	Robert	Johnson
4	Nissan	Altima	2023	2023-04-20	2023-04-30	Sarah	Brown
4	Nissan	Altima	2023	2023-06-15	2023-06-30	Robert	Johnson
5	Chevrolet	Malibu	2022	2023-05-05	2023-05-10	David	Lee
6	Hyundai	Sonata	2023	NULL	NULL	NULL	NULL
7	BMW	3 Series	2023	2023-07-01	2023-07-10	Michael	Davis
8	Mercedes	C-Class	2022	2023-08-12	2023-08-15	Emma	Wilson
9	Audi	A4	2022	NULL	NULL	NULL	NULL
10	Lexus	ES	2023	2023-10-10	2023-10-31	Olivia	Adams