

Coding Challenge - Car Rental System – SQL

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```
use Car_rental
```

```
create table Vehicle (  
    vehicleID int primary key,  
    make varchar(50),  
    model varchar(50),  
    year int,  
    dailyRate decimal(10, 2),  
    status varchar(20),  
    passengerCapacity int,  
    engineCapacity int  
)
```

```
create table Customer (  
    customerID int primary key,  
    firstName varchar(50),  
    lastName varchar(50),  
    email varchar(100),  
    phoneNumber varchar(20)  
)
```

```
create table Lease (  
    leaseID int primary key,  
    vehicleID int,  
    customerID int,  
    startDate date,  
    endDate date,  
    type varchar(20),  
    foreign key (vehicleID) references Vehicle(vehicleID),  
    foreign key (customerID) references Customer(customerID)  
)
```

```
create table Payment (  
    paymentID int primary key,  
    leaseID int,  
    paymentDate date,  
    amount decimal(10, 2),  
    foreign key (leaseID) references Lease(leaseID)  
)
```

```
insert into Vehicle values
```

```
(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, 58.00, 'available', 8, 2599),  
(9, 'Audi', 'A4', 2022, 55.00, 'notAvailable', 4, 2500),  
(10, 'Lexus', 'ES', 2023, 54.00, 'available', 4, 2500)
```

```
insert into Customer 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')
```

`insert into Lease 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')
```

`insert into Payment 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)
```

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

`update Vehicle set dailyRate = 68.00 where make = 'Mercedes'`

`select * from Vehicle`

	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
5	5	Chevrolet	Malibu	2022	47.00	available	4	1800
6	6	Hyundai	Sonata	2023	49.00	notAvailable	7	1400
7	7	BMW	3 Series	2023	60.00	available	7	2499
8	8	Mercedes	C-Class	2022	68.00	available	8	2599
9	9	Audi	A4	2022	55.00	notAvailable	4	2500
10	10	Lexus	ES	2023	54.00	available	4	2500

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

```
delete from Payment where leaseID in (select leaseID from Lease where customerID = 3)
```

```
select * from Payment
```

	paymentID	leaseID	paymentDate	amount
1	1	1	2023-01-03	200.00
2	2	2	2023-02-20	1000.00
3	4	4	2023-04-25	900.00
4	5	5	2023-05-07	60.00
5	7	7	2023-07-03	40.00
6	8	8	2023-08-14	1100.00
7	10	10	2023-10-25	1500.00

```
delete from Lease where customerID = 3  
select * from Lease
```

	leaseID	vehicleID	customerID	startDate	endDate	type
1	1	1	1	2023-01-01	2023-01-05	Daily
2	2	2	2	2023-02-15	2023-02-28	Monthly
3	4	4	4	2023-04-20	2023-04-30	Monthly
4	5	5	5	2023-05-05	2023-05-10	Daily
5	7	7	7	2023-07-01	2023-07-10	Daily
6	8	8	8	2023-08-12	2023-08-15	Monthly
7	10	10	10	2023-10-10	2023-10-31	Monthly

```
delete from Customer where customerID = 3  
select * from Customer
```

Results		Messages				
	customerID	firstName	lastName	email	phoneNumber	
1	1	John	Doe	johndoe@example.com	555-555-5555	
2	2	Jane	Smith	janesmith@example.com	555-123-4567	
3	4	Sarah	Brown	sarah@example.com	555-456-7890	
4	5	David	Lee	david@example.com	555-987-6543	
5	6	Laura	Hall	laura@example.com	555-234-5678	
6	7	Michael	Davis	michael@example.com	555-876-5432	
7	8	Emma	Wilson	emma@example.com	555-432-1098	
8	9	William	Taylor	william@example.com	555-321-6547	
9	10	Olivia	Adams	olivia@example.com	555-765-4321	

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

```
select * from Payment
```

before updation

	paymentID	leaseID	paymentDate	amount
1	1	1	2023-01-03	200.00
2	2	2	2023-02-20	1000.00
3	4	4	2023-04-25	900.00
4	5	5	2023-05-07	60.00
5	7	7	2023-07-03	40.00
6	8	8	2023-08-14	1100.00
7	10	10	2023-10-25	1500.00

Altering

```
exec sp_rename 'Payment.paymentDate', 'transactionDate', 'COLUMN'
```

```
select * from Payment
```

	paymentID	leaseID	transactionDate	amount
1	1	1	2023-01-03	200.00
2	2	2	2023-02-20	1000.00
3	4	4	2023-04-25	900.00
4	5	5	2023-05-07	60.00
5	7	7	2023-07-03	40.00
6	8	8	2023-08-14	1100.00
7	10	10	2023-10-25	1500.00

4. Find a specific customer by email.

```
select * from Customer where email = 'johndoe@example.com'
```

	customerID	firstName	lastName	email	phoneNumber
1	1	John	Doe	johndoe@example.com	555-555-5555

5. Get active leases for a specific customer.

```
select * from Lease where customerID = 1 and '2023-01-03' between startDate and endDate
```

	leaseID	vehicleID	customerID	startDate	endDate	type
1	1	1	1	2023-01-01	2023-01-05	Daily

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

```
select p.* from Payment p join Lease l on p.leaseID = l.leaseID join
Customer c on l.customerID = c.customerID
where c.phoneNumber = '555-555-5555'
```

	paymentID	leaseID	transactionDate	amount
1	1	1	2023-01-03	200.00

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

```
select avg(dailyRate) as averageDailRate from Vehicle where status =
'available'
```

	averageDailRate
1	53.714285

8. Find the car with the highest daily rate

```
select * from Vehicle where dailyRate = (select max(dailyRate) from Vehicle)
```

	vehicleID	make	model	year	dailyRate	status	passengerCapacity	engineCapacity
1	8	Mercedes	C-Class	2022	68.00	available	8	2599

9. Retrieve all cars leased by a specific customer

```
select V.* from Vehicle V join Lease L on V.vehicleID = L.vehicleID where
L.customerID = 4
```

	vehicleID	make	model	year	dailyRate	status	passengerCapacity	engineCapacity
1	4	Nissan	Altima	2023	52.00	available	7	1200

10. Find the details of the most recent lease.

```
select top 1 * from Lease order by endDate desc
```

	leaseID	vehicleID	customerID	startDate	endDate	type
1	10	10	10	2023-10-10	2023-10-31	Monthly

11. List all payments made in the year 2023.

```
select * from Payment where transactionDate between '2023-01-01' and '2023-
12-31'
```

	paymentID	leaseID	transactionDate	amount
1	1	1	2023-01-03	200.00
2	2	2	2023-02-20	1000.00
3	4	4	2023-04-25	900.00
4	5	5	2023-05-07	60.00
5	7	7	2023-07-03	40.00
6	8	8	2023-08-14	1100.00
7	10	10	2023-10-25	1500.00

12. Retrieve customers who have not made any payments.

```
select C.* from Customer C left join Lease L on C.customerID = L.customerID
left join Payment P on L.leaseID = P.leaseID
where P.paymentID is null
```

	customerID	firstName	lastName	email	phoneNumber
1	6	Laura	Hall	laura@example.com	555-234-5678
2	9	William	Taylor	william@example.com	555-321-6547

13. Retrieve Car Details and Their Total Payments.

```
select v.vehicleID, v.make, v.model, sum(P.amount) as totalPayments from
Vehicle v join Lease l on v.vehicleID = l.vehicleID
join Payment P on l.leaseID = P.leaseID
group by v.vehicleID, v.make, v.model
```

	vehicleID	make	model	totalPayments
1	1	Toyota	Camry	200.00
2	2	Honda	Civic	1000.00
3	4	Nissan	Altima	900.00
4	5	Chevrolet	Malibu	60.00
5	7	BMW	3 Series	40.00
6	8	Mercedes	C-Class	1100.00
7	10	Lexus	ES	1500.00

14. Calculate Total Payments for Each Customer.

```
select c.customerID, c.firstName, c.lastName, sum(P.amount) as totalAmountPaid
from Customer c
join Lease l on c.customerID = l.customerID
join Payment P on l.leaseID = P.leaseID
group by c.customerID, c.firstName, c.lastName
```

	customerID	firstName	lastName	totalAmountPaid
1	1	John	Doe	200.00
2	2	Jane	Smith	1000.00
3	4	Sarah	Brown	900.00
4	5	David	Lee	60.00
5	7	Michael	Davis	40.00
6	8	Emma	Wilson	1100.00
7	10	Olivia	Adams	1500.00

15. List Car Details for Each Lease.

```
select l.*, v.make, v.model, v.year, v.dailyRate from Lease l join Vehicle v on  
l.vehicleID = v.vehicleID
```

	leaseID	vehicleID	customerID	startDate	endDate	type	make	model	year	dailyRate
1	1	1	1	2023-01-01	2023-01-05	Daily	Toyota	Camry	2022	50.00
2	2	2	2	2023-02-15	2023-02-28	Monthly	Honda	Civic	2023	45.00
3	4	4	4	2023-04-20	2023-04-30	Monthly	Nissan	Altima	2023	52.00
4	5	5	5	2023-05-05	2023-05-10	Daily	Chevrolet	Malibu	2022	47.00
5	7	7	7	2023-07-01	2023-07-10	Daily	BMW	3 Series	2023	60.00
6	8	8	8	2023-08-12	2023-08-15	Monthly	Mercedes	C-Class	2022	68.00
7	10	10	10	2023-10-10	2023-10-31	Monthly	Lexus	ES	2023	54.00

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

```
select v.* from Lease l join Vehicle v on l.vehicleId=v.vehicleId where  
l.endDate <= '2023-12-03'
```

	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	4	Nissan	Altima	2023	52.00	available	7	1200
4	5	Chevrolet	Malibu	2022	47.00	available	4	1800
5	7	BMW	3 Series	2023	60.00	available	7	2499
6	8	Mercedes	C-Class	2022	68.00	available	8	2599
7	10	Lexus	ES	2023	54.00	available	4	2500

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

```
select top 1 c.* from Customer c join Lease l on c.customerID = l.customerID  
join Payment P on l.leaseID = P.leaseID  
order by P.amount desc
```

	customerID	firstName	lastName	email	phoneNumber
1	10	Olivia	Adams	olivia@example.com	555-765-4321

18. List All Cars with Their Current Lease Information.

```
select v.make, l.* from Lease l join Vehicle v on l.vehicleId=v.vehicleId
```

	make	leaseID	vehicleID	customerID	startDate	endDate	type
1	Toyota	1	1	1	2023-01-01	2023-01-05	Daily
2	Honda	2	2	2	2023-02-15	2023-02-28	Monthly
3	Nissan	4	4	4	2023-04-20	2023-04-30	Monthly
4	Chevrolet	5	5	5	2023-05-05	2023-05-10	Daily
5	BMW	7	7	7	2023-07-01	2023-07-10	Daily
6	Mercedes	8	8	8	2023-08-12	2023-08-15	Monthly
7	Lexus	10	10	10	2023-10-10	2023-10-31	Monthly