

Coding Challenge - Car Rental System – SQL

- **Creating the table using the given SQL schema :**

```
create database car_rental;
```

```
use car_rental;
```

```
CREATE TABLE Vehicle (  
    vehicleID INT PRIMARY KEY,  
    make VARCHAR(50),  
    model VARCHAR(50),  
    year INT,  
    dailyRate DECIMAL(5,2),  
    available ENUM('available','notAvailable'),  
    passengerCapacity INT,  
    engineCapacity INT  
);
```

```
CREATE TABLE Customer (  
    customerID INT PRIMARY KEY,  
    firstName VARCHAR(15),  
    lastName VARCHAR(15),  
    email VARCHAR(50),  
    phoneNumber varchar(100)  
);
```

```
CREATE TABLE Lease (  
    leaseID INT PRIMARY KEY,  
    vehicleID INT,  
    customerID INT,  
    startDate DATE,
```

```
endDate DATE,  
type ENUM('DailyLease', 'MonthlyLease'),  
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(7,2),  
    FOREIGN KEY (leaseID) REFERENCES Lease(leaseID)  
);
```

- **Inserting the values into the table using the given values:**

```
INSERT INTO Vehicle (vehicleID, make, model, year, dailyRate, available, passengerCapacity,  
engineCapacity)
```

```
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 (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');
```

```
INSERT INTO Lease (leaseID, vehicleID, customerID, startDate, endDate, type)
```

```
VALUES
```

```
(1, 1, 1, '2023-01-01', '2023-01-05', 'DailyLease'),
(2, 2, 2, '2023-02-15', '2023-02-28', 'MonthlyLease'),
(3, 3, 3, '2023-03-10', '2023-03-15', 'DailyLease'),
(4, 4, 4, '2023-04-20', '2023-04-30', 'MonthlyLease'),
(5, 5, 5, '2023-05-05', '2023-05-10', 'DailyLease'),
(6, 4, 3, '2023-06-15', '2023-06-30', 'MonthlyLease'),
(7, 7, 7, '2023-07-01', '2023-07-10', 'DailyLease'),
(8, 8, 8, '2023-08-12', '2023-08-15', 'MonthlyLease'),
(9, 3, 3, '2023-09-07', '2023-09-10', 'DailyLease'),
(10, 10, 10, '2023-10-10', '2023-10-31', 'MonthlyLease');
```

```
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);

	vehicleID	make	model	year	dailyRate	status	passengerCapacity	engineCapacity
▶	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	68.00	available	8	2599
	9	Audi	A4	2022	55.00	notAvailable	4	2500
	10	Lexus	ES	2023	54.00	available	4	2500

	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

	vehicleID	make	model	year	dailyRate	status	passengerCapacity	engineCapacity
▶	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	68.00	available	8	2599
	9	Audi	A4	2022	55.00	notAvailable	4	2500
	10	Lexus	ES	2023	54.00	available	4	2500

	paymentID	leaseID	transactionDate	amount
▶	1	1	2023-01-03	200.00
	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' and model='c-class';

✔ 11 11:38:18 update vehicle set dailyRate=68.00 where make='mercedes' and model='c-class'

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

select customerID

from customer

where customerID=2;

DELETE FROM Payment

WHERE leaseID IN (SELECT leaseID FROM Lease WHERE customerID = 2);

DELETE FROM Lease

WHERE customerID = 2;

```
✓ 8 11:34:07 DELETE FROM Payment WHERE leaseID IN (SELECT leaseID FROM Lease WHERE customerID = 2)
✓ 9 11:34:23 DELETE FROM Lease WHERE customerID = 2
```

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

alter table Payment

change column paymentDate transactionDate date;

```
✓ 10 11:37:02 alter table Payment change column paymentDate transactionDate date
```

4. Find a specific customer by email.

select *

from customer

where email='emma@example.com';

	customerID	firstName	lastName	email	phoneNumber
▶	8	Emma	Wilson	emma@example.com	555-432-1098

5. Get active leases for a specific customer.

select *

from lease

where leaseID=8;

	leaseID	vehicleID	customerID	startDate	endDate	type
▶	8	8	8	2023-08-12	2023-08-15	MonthlyLease

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

```
select payment.*  
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
▶	1	1	2023-01-03	200.00

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

```
select avg(dailyRate) as avg_rate  
from vehicle;
```

	avg_rate
▶	52.800000

8. Find the car with the highest daily rate.

```
select *  
from vehicle  
order by dailyRate desc  
limit 1;
```

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

9. Retrieve all cars leased by a specific customer.

```
select Vehicle.*  
from Vehicle  
join Lease on Vehicle.vehicleID = Lease.vehicleID  
where Lease.customerID = 7;
```

	vehideID	make	model	year	dailyRate	status	passengerCapacity	engineCapacity
▶	7	BMW	3 Series	2023	60.00	available	7	2499

10. Find the details of the most recent lease.

select *

from lease

order by endDate desc

limit 1;

	leaseID	vehideID	customerID	startDate	endDate	type
▶	10	10	10	2023-10-10	2023-10-31	MonthlyLease

11. List all payments made in the year 2023.

select *

from payment

where year(transactionDate)=2023;

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

12. Retrieve customers who have not made any payments.

select *

from customer

where customerID not in(select distinct customerID from Lease);

	customerID	firstName	lastName	email	phoneNumber
▶	2	Jane	Smith	janesmith@example.com	555-123-4567
	6	Laura	Hall	laura@example.com	555-234-5678
	9	William	Taylor	william@example.com	555-321-6547

13. Retrieve Car Details and Their Total Payments.

select Vehicle.*, sum(amount) as total_payments

from vehicle

left join Lease on Vehicle.vehicleID = Lease.vehicleID

left join Payment on Lease.leaseID = Payment.leaseID

group by Vehicle.vehicleID;

	vehicleID	make	model	year	dailyRate	status	passengerCapacity	engineCapacity	total_payments
▶	1	Toyota	Camry	2022	50.00	available	4	1450	200.00
	2	Honda	Civic	2023	45.00	available	7	1500	NULL
	3	Ford	Focus	2022	48.00	notAvailable	4	1400	155.00
	4	Nissan	Altima	2023	52.00	available	7	1200	2100.00
	5	Chevrolet	Malibu	2022	47.00	available	4	1800	60.00
	6	Hyundai	Sonata	2023	49.00	notAvailable	7	1400	NULL
	7	BMW	3 Series	2023	60.00	available	7	2499	40.00
	8	Mercedes	C-Class	2022	68.00	available	8	2599	1100.00
	9	Audi	A4	2022	55.00	notAvailable	4	2500	NULL
	10	Lexus	ES	2023	54.00	available	4	2500	1500.00

14. Calculate Total Payments for Each Customer.

select Customer.*, SUM(amount) as total_payments

from Customer

left join Lease on Customer.customerID = Lease.customerID

left join Payment on Lease.leaseID = Payment.leaseID

group by Customer.customerID;

	customerID	firstName	lastName	email	phoneNumber	total_payments
▶	1	John	Doe	johndoe@example.com	555-555-5555	200.00
	2	Jane	Smith	janesmith@example.com	555-123-4567	NULL
	3	Robert	Johnson	robert@example.com	555-789-1234	1355.00
	4	Sarah	Brown	sarah@example.com	555-456-7890	900.00
	5	David	Lee	david@example.com	555-987-6543	60.00
	6	Laura	Hall	laura@example.com	555-234-5678	NULL
	7	Michael	Davis	michael@example.com	555-876-5432	40.00
	8	Emma	Wilson	emma@example.com	555-432-1098	1100.00
	9	William	Taylor	william@example.com	555-321-6547	NULL
	10	Olivia	Adams	olivia@example.com	555-765-4321	1500.00

15. List Car Details for Each Lease.

```
select lease.*, vehicle.make, vehicle.model
from lease
join vehicle on lease.vehicleID = vehicle.vehicleID;
```

	leaseID	vehideID	customerID	startDate	endDate	type	make	model
▶	1	1	1	2023-01-01	2023-01-05	DailyLease	Toyota	Camry
	3	3	3	2023-03-10	2023-03-15	DailyLease	Ford	Focus
	4	4	4	2023-04-20	2023-04-30	MonthlyLease	Nissan	Altima
	5	5	5	2023-05-05	2023-05-10	DailyLease	Chevrolet	Malibu
	6	4	3	2023-06-15	2023-06-30	MonthlyLease	Nissan	Altima
	7	7	7	2023-07-01	2023-07-10	DailyLease	BMW	3 Series
	8	8	8	2023-08-12	2023-08-15	MonthlyLease	Mercedes	C-Class
	9	3	3	2023-09-07	2023-09-10	DailyLease	Ford	Focus
	10	10	10	2023-10-10	2023-10-31	MonthlyLease	Lexus	ES

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

```
select lease.*, vehicle.make, vehicle.model, customer.firstname, customer.lastname
from lease
join vehicle on lease.vehicleid = vehicle.vehicleid
join customer on lease.customerid = customer.customerid
where endDate >= CURDATE();
```

leaseID	vehideID	customerID	startDate	endDate	type	make	model	firstname	lastname
---------	----------	------------	-----------	---------	------	------	-------	-----------	----------

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

```
select customer.*, SUM(amount) as total_payments
```

```
from customer
```

```
join lease on customer.customerid = lease.customerid
```

```
join payment on lease.leaseid = payment.leaseid
```

```
group by customer.customerid
```

```
order by total_payments desc
```

```
limit 1;
```

	customerID	firstName	lastName	email	phoneNumber	total_payments
▶	10	Olivia	Adams	olivia@example.com	555-765-4321	1500.00

18. List All Cars with Their Current Lease Information.

```
select vehicle.*, lease.*
```

```
from vehicle
```

```
left join Lease on vehicle.vehicleID = lease.vehicleID
```

```
and lease.endDate >= CURDATE();
```

	vehicleID	make	model	year	dailyRate	status	passengerCapacity	engineCapacity	leaseID	vehicleID	customerID	startDate	endDate	type
▶	1	Toyota	Camry	2022	50.00	available	4	1450	NULL	NULL	NULL	NULL	NULL	NULL
	2	Honda	Civic	2023	45.00	available	7	1500	NULL	NULL	NULL	NULL	NULL	NULL
	3	Ford	Focus	2022	48.00	notAvailable	4	1400	NULL	NULL	NULL	NULL	NULL	NULL
	4	Nissan	Altima	2023	52.00	available	7	1200	NULL	NULL	NULL	NULL	NULL	NULL
	5	Chevrolet	Malibu	2022	47.00	available	4	1800	NULL	NULL	NULL	NULL	NULL	NULL
	6	Hyundai	Sonata	2023	49.00	notAvailable	7	1400	NULL	NULL	NULL	NULL	NULL	NULL
	7	BMW	3 Series	2023	60.00	available	7	2499	NULL	NULL	NULL	NULL	NULL	NULL
	8	Mercedes	C-Class	2022	68.00	available	8	2599	NULL	NULL	NULL	NULL	NULL	NULL
	9	Audi	A4	2022	55.00	notAvailable	4	2500	NULL	NULL	NULL	NULL	NULL	NULL
	10	Lexus	ES	2023	54.00	available	4	2500	NULL	NULL	NULL	NULL	NULL	NULL