SQL CODING CHALLENGE
CAR RENTAL SYSTEM

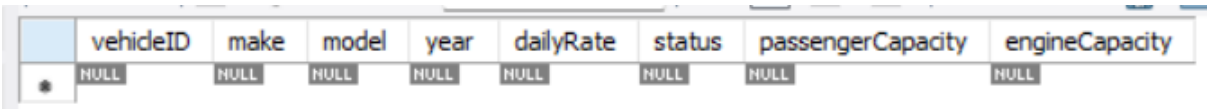
CREATE DATABASE:

```
Create database car_rent;
Use car_rent;
```

CREATE TABLES:

1. VEHICLE

```
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
);
```



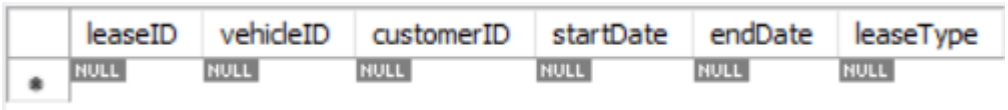
2. CUSTOMER

```
CREATE TABLE Customer (
    customerID INT PRIMARY KEY,
    firstName VARCHAR(50),
    lastName VARCHAR(50),
    email VARCHAR(100),
    phoneNumber VARCHAR(20)
);
```

3. LEASE

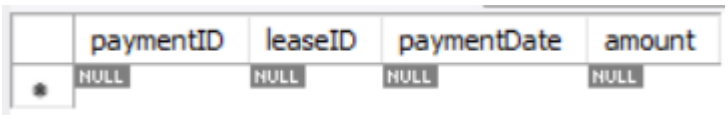
```
CREATE TABLE Lease (
```

```
    leaseID INT PRIMARY KEY,
    vehicleID INT,
    customerID INT,
    startDate DATE,
    endDate DATE,
    leaseType VARCHAR(20), -- Values: 'Daily', 'Monthly'
    FOREIGN KEY (vehicleID) REFERENCES Vehicle(vehicleID),
    FOREIGN KEY (customerID) REFERENCES Customer(customerID)
);
```



4. PAYMENT

```
CREATE TABLE Payment (
    paymentID INT PRIMARY KEY,
    leaseID INT,
    paymentDate DATE,
    amount DECIMAL(10,2),
    FOREIGN KEY (leaseID) REFERENCES Lease(leaseID)
);
```



INSERT RECORDS:

1. VEHICLE

INSERT INTO Vehicle (vehicleID, make, model, year, dailyRate, status, 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);

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	58.00	available	8	2599
9	Audi	A4	2022	55.00	notAvailable	4	2500
10	Lexus	ES	2023	54.00	available	4	2500
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

2. CUSTOMER

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');

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
NULL	NULL	NULL	NULL	NULL

3. LEASE

INSERT INTO Lease (leaseID, vehicleID, customerID, startDate, endDate, leaseType) 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');

leaseID	vehicleID	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
NULL	NULL	NULL	NULL	NULL	NULL

4. PAYMENT

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);

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
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
NULL	NULL	NULL	NULL

QUERIES:

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

UPDATE Vehicle

SET dailyRate = 68

WHERE make = 'Mercedes';

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
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

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

DELETE FROM Payment WHERE leaseID IN (SELECT leaseID FROM Lease WHERE customerID = 1);

DELETE FROM Lease WHERE customerID = 1;

DELETE FROM Customer WHERE customerID = 1;

	paymentID	leaseID	paymentDate	amount
▶	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
*	NULL	NULL	NULL	NULL

	leaseID	vehicleID	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	2023-09-10	Daily
	10	10	10	2023-10-10	2023-10-31	Monthly
*	NULL	NULL	NULL	NULL	NULL	NULL

	customerID	firstName	lastName	email	phoneNumber
▶	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
*	NULL	NULL	NULL	NULL	NULL

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

ALTER TABLE Payment RENAME COLUMN paymentDate TO transactionDate;

paymentID	leaseID	transactionDate	amount
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
NULL	NULL	NULL	NULL

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
NULL	NULL	NULL	NULL	NULL

5. Get active leases for a specific customer.

SELECT * FROM Lease WHERE customerID = 5 AND endDate >= CURDATE();

leaseID	vehicleID	customerID	startDate	endDate	leaseType
NULL	NULL	NULL	NULL	NULL	NULL

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 = ' 555-123-4567';

paymentID	leaseID	transactionDate	amount

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

SELECT AVG(dailyRate) AS avgdailyrate FROM Vehicle WHERE status = 'available';

	avgdailyrate
▶	53.714286

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
*	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

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
▶	4	Nissan	Altima	2023	52.00	available	7	1200

10. Find the details of the most recent lease.

SELECT * FROM Lease ORDER BY startDate DESC LIMIT 1;

	leaseID	vehicleID	customerID	startDate	endDate	leaseType
▶	10	10	10	2023-10-10	2023-10-31	Monthly
*	NULL	NULL	NULL	NULL	NULL	NULL

11. List all payments made in the year 2023.

SELECT * FROM Payment WHERE YEAR(transactionDate) = 2023;

	paymentID	leaseID	transactionDate	amount
▶	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
*	NULL	NULL	NULL	NULL

12. Retrieve customers who have not made any payments.

```
SELECT * FROM Customer WHERE customerID NOT IN (
SELECT DISTINCT customerID FROM Lease L JOIN Payment P ON L.leaseID = P.leaseID
);
```

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

13. Retrieve Car Details and Their Total Payments.

```
SELECT V.*, 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;
```

vehicleID	make	model	year	dailyRate	status	passengerCapacity	engineCapacity	totalPayments
2	Honda	Civic	2023	45.00	available	7	1500	1000.00
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
7	BMW	3 Series	2023	60.00	available	7	2499	40.00
8	Mercedes	C-Class	2022	68.00	available	8	2599	1100.00
10	Lexus	ES	2023	54.00	available	4	2500	1500.00

14. Calculate Total Payments for Each Customer.

```
SELECT C.*, SUM(P.amount) AS totalPayments
FROM Customer C
JOIN Lease L ON C.customerID = L.customerID
JOIN Payment P ON L.leaseID = P.leaseID
GROUP BY C.customerID;
```

customerID	firstName	lastName	email	phoneNumber	totalPayments
2	Jane	Smith	janesmith@example.com	555-123-4567	1000.00
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
7	Michael	Davis	michael@example.com	555-876-5432	40.00
8	Emma	Wilson	emma@example.com	555-432-1098	1100.00
10	Olivia	Adams	olivia@example.com	555-765-4321	1500.00

15. List Car Details for Each Lease.

```
SELECT L.*, V.*
FROM Lease L
JOIN Vehicle V ON L.vehicleID = V.vehicleID;
```

leaseID	vehicleID	customerID	startDate	endDate	leaseType	vehicleID	make	model	year	dailyRate	status	passengerCapacity	engineCapacity
2	2	2	2023-02-15	2023-02-28	Monthly	2	Honda	Civic	2023	45.00	available	7	1500
3	3	3	2023-03-10	2023-03-15	Daily	3	Ford	Focus	2022	48.00	notAvailable	4	1400
4	4	4	2023-04-20	2023-04-30	Monthly	4	Nissan	Altima	2023	52.00	available	7	1200
5	5	5	2023-05-05	2023-05-10	Daily	5	Chevrolet	Malibu	2022	47.00	available	4	1800
6	4	3	2023-06-15	2023-06-30	Monthly	4	Nissan	Altima	2023	52.00	available	7	1200
7	7	7	2023-07-01	2023-07-10	Daily	7	BMW	3 Series	2023	60.00	available	7	2499
8	8	8	2023-08-12	2023-08-15	Monthly	8	Mercedes	C-Class	2022	68.00	available	8	2599
9	3	3	2023-09-07	2023-09-10	Daily	3	Ford	Focus	2022	48.00	notAvailable	4	1400
10	10	10	2023-10-10	2023-10-31	Monthly	10	Lexus	ES	2023	54.00	available	4	2500

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

```
SELECT L.*, C.*, V.*
FROM Lease L
JOIN Customer C ON L.customerID = C.customerID
JOIN Vehicle V ON L.vehicleID = V.vehicleID
WHERE L.endDate >= CURDATE();
```

leaseID	vehicleID	customerID	startDate	endDate	leaseType	customerID	firstName	lastName	email	phoneNumber	vehicleID	make	model	year	dailyRate	status	passengerCapacity	engineCapacity

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

```
SELECT C.*, SUM(P.amount) AS totalSpent
FROM Customer C
JOIN Lease L ON C.customerID = L.customerID
JOIN Payment P ON L.leaseID = P.leaseID
GROUP BY C.customerID
ORDER BY totalSpent DESC
LIMIT 1;
```

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

18. List All Cars with Their Current Lease Information.

```
SELECT V.*, L.*
FROM Vehicle V
LEFT JOIN Lease L ON V.vehicleID = L.vehicleID;
```

vehicleID	make	model	year	dailyRate	status	passengerCapacity	engineCapacity	leaseID	vehicleID	customerID	startDate	endDate	leaseType
1	Toyota	Camry	2022	50.00	available	4	1450	NULL	NULL	NULL	NULL	NULL	NULL
2	Honda	Civic	2023	45.00	available	7	1500	2	2	2	2023-02-15	2023-02-28	Monthly
3	Ford	Focus	2022	48.00	notAvailable	4	1400	3	3	3	2023-03-10	2023-03-15	Daily
3	Ford	Focus	2022	48.00	notAvailable	4	1400	9	3	3	2023-09-07	2023-09-10	Daily
4	Nissan	Altima	2023	52.00	available	7	1200	4	4	4	2023-04-20	2023-04-30	Monthly
4	Nissan	Altima	2023	52.00	available	7	1200	6	4	3	2023-06-15	2023-06-30	Monthly
5	Chevrolet	Malibu	2022	47.00	available	4	1800	5	5	5	2023-05-05	2023-05-10	Daily
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	7	7	7	2023-07-01	2023-07-10	Daily
8	Merced	Class	2022	68.00	available	8	2599	8	8	8	2023-08-12	2023-08-15	Monthly
9	Audi	A4	2022	55.00	notAvailable	4	2500	NULL	NULL	NULL	NULL	NULL	NULL
10	Lexus	ES	2023	54.00	available	4	2500	10	10	10	2023-10-10	2023-10-31	Monthly