CAR RENTAL SYSTEM
CODING CHALLANGE

Name: Srikar G

Creating Tables:

```sql
CREATE TABLE Vehicle(
      vehicleID INT PRIMARY KEY NOT NULL,
      make VARCHAR(20),
      model VARCHAR(20),
      year INT,
      dailyRate FLOAT,
      available BIT,
      passengerCapacity SMALLINT,
      engineCapacity INT);

CREATE TABLE Customer(
      customerID INT PRIMARY KEY NOT NULL,
      firstName VARCHAR(30),
      lastName VARCHAR(30),
      email VARCHAR(50),
      phoneNumber VARCHAR(15));

CREATE TABLE Lease(
      leaseID INT PRIMARY KEY NOT NULL,
      VehicleID INT FOREIGN KEY REFERENCES Vehicle(VehicleID),
      customerID INT FOREIGN KEY REFERENCES Customer(customerID),
      startDate DATE,
      endDate DATE,
      leaseType VARCHAR(10));

CREATE TABLE Payment(
      paymentID INT PRIMARY KEY NOT NULL,
      leaseID INT REFERENCES Lease(leaseID),
      paymentDate DATE,
      amount FLOAT);
```

Inserting Records:

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

```sql
(10, 'Lexus', 'ES', 2023, 54.00, 1, 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,
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');

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);
```

```
/*1. Update the daily rate for a Mercedes car to 68.*/
UPDATE Vehicle
SET dailyRate = 68
WHERE make = 'Mercedes';
SELECT * FROM Vehicle
```

Output: Vehicle Table

	vehicleID	make	model	year	dailyRate	available	passengerCapacity	engineCapacity
1	1	Toyota	Camry	2022	50	1	4	1450
2	2	Honda	Civic	2023	45	1	7	1500
3	3	Ford	Focus	2022	48	0	4	1400
4	4	Nissan	Altima	2023	52	1	7	1200
5	5	Chevrolet	Malibu	2022	47	1	4	1800
6	6	Hyundai	Sonata	2023	49	0	7	1400
7	7	BMW	3 Series	2023	60	1	7	2499
8	8	Mercedes	C-Class	2022	68	1	8	2599
9	9	Audi	A4	2022	55	0	4	2500
10	10	Lexus	ES	2023	54	1	4	2500

```
/*2. Delete a specific customer and all associated leases and
payments.*/
DECLARE @customerID INT = 7
DELETE FROM Payment
WHERE leaseID IN (SELECT leaseID FROM Lease WHERE customerID =
@customerID);

DELETE FROM Lease
WHERE customerID = @customerID;

DELETE FROM Customer
WHERE customerID = @customerID;
```

Output: Payment Table   Lease Table

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

	leaseID	VehicleID	customerID	startDate	endDate	leaseType
1	1	1	1	2023-01-01	2023-01-05	Daily
2	2	2	2	2023-02-15	2023-02-28	Monthly
3	3	3	3	2023-03-10	2023-03-15	Daily
4	4	4	4	2023-04-20	2023-04-30	Monthly
5	5	5	5	2023-05-05	2023-05-10	Daily
6	6	4	3	2023-06-15	2023-06-30	Monthly
7	8	8	8	2023-08-12	2023-08-15	Monthly
8	9	3	3	2023-09-07	2023-09-10	Daily
9	10	10	10	2023-10-10	2023-10-31	Monthly

Customer Table

	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	3	Robert	Johnson	robert@example.com	555-789-1234
4	4	Sarah	Brown	sarah@example.com	555-456-7890
5	5	David	Lee	david@example.com	555-987-6543
6	6	Laura	Hall	laura@example.com	555-234-5678
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

Here, One record (customerID = 7) has been deleted from the tables including the referenced tables.

```
/*3. Rename the "paymentDate" column in the Payment table to
"transactionDate".*/
EXEC sp_rename'Payment.paymentDate', 'transactionDate', 'COLUMN';
```

Output: Payment Table

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

```
/*4. Find a specific customer by email.*/
DECLARE @email VARCHAR(20)= 'sarah@example.com';
SELECT * FROM Customer
WHERE email = @email
```

Output:

	customerID	firstName	lastName	email	phoneNumber
1	4	Sarah	Brown	sarah@example.com	555-456-7890

```sql
/*5. Get active leases for a specific customer.*/
SELECT * FROM Lease
WHERE customerID = 3;
```

Output:

	leaseID	VehicleID	customerID	startDate	endDate	leaseType
1	3	3	3	2023-03-10	2023-03-15	Daily
2	6	4	3	2023-06-15	2023-06-30	Monthly
3	9	3	3	2023-09-07	2023-09-10	Daily

```sql
/*6. . Find all payments made by a customer with a specific phone
number*/
CREATE PROCEDURE FindPayment
        @PhoneNo VARCHAR(12)
AS
BEGIN

    SELECT

            P.paymentID,
            P.leaseID,
            P.amount,
            P.transactionDate
    FROM Payment P
    JOIN Lease L ON P.leaseID = L.leaseID
    JOIN Customer C ON C.customerID = L.customerID
    WHERE C.phoneNumber = @PhoneNo
END;
EXEC FindPayment @PhoneNo = '555-555-5555';
```

Output:

	paymentID	leaseID	amount	transactionDate
1	1	1	200	2023-01-03

```sql
/*7. Calculate the average daily rate of all available cars.*/
SELECT ROUND(AVG(dailyRate), 2) AvgDailyRate FROM Vehicle
WHERE available = 1;
```

Output:

	AvgDailyRate
1	53.71

```sql
/*8. Find the car with the highest daily rate.*/
SELECT TOP 1
```

```
      make+' '+model Vehicle, dailyRate
FROM Vehicle
ORDER BY dailyRate DESC;
```

Output:

	Vehicle	dailyRate
1	Mercedes C-Class	68

```
/*9. Retrieve all cars leased by a specific customer.*/
SELECT V.* FROM Vehicle V
JOIN Lease L ON L.VehicleID = V.vehicleID
WHERE L.customerID = 3
```

Output:

	vehicleID	make	model	year	dailyRate	available	passengerCapacity	engineCapacity
1	3	Ford	Focus	2022	48	0	4	1400
2	4	Nissan	Altima	2023	52	1	7	1200
3	3	Ford	Focus	2022	48	0	4	1400

```
/*10. Find the details of the most recent lease*/
SELECT TOP 1 * FROM LEASE
ORDER BY startDate DESC;
```

Output:

	leaseID	VehicleID	customerID	startDate	endDate	leaseType
1	10	10	10	2023-10-10	2023-10-31	Monthly

```
/*11. List all payments made in the year 2023.*/
SELECT * FROM Payment
WHERE YEAR(transactionDate) = 2023;
```

Output:

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

```
/*12. Retrieve customers who have not made any payments.*/
SELECT * FROM Customer
WHERE customerID NOT IN(
        SELECT customerID FROM Lease)
```

Output

	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

```
                                                        _ments*/
SELECT V.vehicleID, V.make, V.model,
        SUM(P.amount) TotalPayments
FROM Vehicle V
JOIN LEASE L ON L.VehicleID = V.vehicleID
JOIN Payment P ON P.leaseID = L.leaseID
GROUP BY V.vehicleID, V.make, V.model;
```

Output:

	vehicleID	make	model	TotalPayments
1	1	Toyota	Camry	200
2	2	Honda	Civic	1000
3	3	Ford	Focus	155
4	4	Nissan	Altima	2100
5	5	Chevrolet	Malibu	60
6	8	Mercedes	C-Class	1100
7	10	Lexus	ES	1500

```
/*14. Calculate Total Payments for Each Customer.*/
SELECT
        C.customerID,
        C.firstName, C.lastName,
        SUM(P.amount)
FROM Customer C
JOIN Lease L ON L.customerID = C.customerID
JOIN Payment P ON P.leaseID = L.leaseID
GROUP BY C.customerID, C.firstName, C.lastName
```

Output:

	customerID	firstName	lastName	(No column name)
1	1	John	Doe	200
2	2	Jane	Smith	1000
3	3	Robert	Johnson	1355
4	4	Sarah	Brown	900
5	5	David	Lee	60
6	8	Emma	Wilson	1100
7	10	Olivia	Adams	1500

```sql
/*15. List Car Details for Each Lease.*/
SELECT
    l.leaseID,
    v.vehicleID,
    v.make,
    v.model,
    v.year
FROM
    Lease l
JOIN
    Vehicle v ON l.vehicleID = v.vehicleID
```

Output:

	leaseID	vehicleID	make	model	year
1	1	1	Toyota	Camry	2022
2	2	2	Honda	Civic	2023
3	3	3	Ford	Focus	2022
4	4	4	Nissan	Altima	2023
5	5	5	Chevrolet	Malibu	2022
6	6	4	Nissan	Altima	2023
7	8	8	Mercedes	C-Class	2022
8	9	3	Ford	Focus	2022
9	10	10	Lexus	ES	2023

```sql
/*16. Retrieve Details of Active Leases with Customer and Car
Information.*/
SELECT
    C.customerID, C.firstName+' '+C.lastName CustomerName,
    V.vehicleID, V.make+' '+V.model VehicleName
FROM Customer C
JOIN Lease L ON L.customerID = C.customerID
JOIN Vehicle V ON V.vehicleID = L.VehicleID
```

Output:

	customerID	CustomerName	vehicleID	VehicleName
1	1	John Doe	1	Toyota Camry
2	2	Jane Smith	2	Honda Civic
3	3	Robert Johnson	3	Ford Focus
4	4	Sarah Brown	4	Nissan Altima
5	5	David Lee	5	Chevrolet Malibu
6	3	Robert Johnson	4	Nissan Altima
7	8	Emma Wilson	8	Mercedes C-Class
8	3	Robert Johnson	3	Ford Focus
9	10	Olivia Adams	10	Lexus ES

```
/*17. Find the Customer Who Has Spent the Most on Leases.*/
SELECT TOP 1 C.*, P.amount FROM Customer C
JOIN Lease L ON L.customerID = C.customerID
JOIN Payment P ON P.leaseID = L.leaseID
ORDER BY P.amount DESC
```

Output:

	customerID	firstName	lastName	email	phoneNumber	amount
1	10	Olivia	Adams	olivia@example.com	555-765-4321	1500

```
/*18. List All Cars with Their Current Lease Information.*/
SELECT V.*, L.* FROM Vehicle V
JOIN Lease L ON L.VehicleID = V.vehicleID
```

Output:

	vehicleID	make	model	year	dailyRate	available	passengerCapacity	engineCapacity	leaseID	VehicleID	customerID	startDate	endDate	leaseType
1	1	Toyota	Camry	2022	50	1	4	1450	1	1	1	2023-01-01	2023-01-05	Daily
2	2	Honda	Civic	2023	45	1	7	1500	2	2	2	2023-02-15	2023-02-28	Monthly
3	3	Ford	Focus	2022	48	0	4	1400	3	3	3	2023-03-10	2023-03-15	Daily
4	4	Nissan	Altima	2023	52	1	7	1200	4	4	4	2023-04-20	2023-04-30	Monthly
5	5	Chevrolet	Malibu	2022	47	1	4	1800	5	5	5	2023-05-05	2023-05-10	Daily
6	4	Nissan	Altima	2023	52	1	7	1200	6	4	3	2023-06-15	2023-06-30	Monthly
7	8	Mercedes	C-Class	2022	68	1	8	2599	8	8	8	2023-08-12	2023-08-15	Monthly
8	3	Ford	Focus	2022	48	0	4	1400	9	3	3	2023-09-07	2023-09-10	Daily
9	10	Lexus	ES	2023	54	1	4	2500	10	10	10	2023-10-10	2023-10-31	Monthly

Name: Srikar Gadiraju

Coding Challenge: Car Rental System