CODING CHALLENGE-CAR RENTAL SYSTEM

Creating Tables:

```
CREATE TABLE Vehicle (
    vehicleID INT PRIMARY KEY,
    make VARCHAR(50),
    model VARCHAR(50),
    year INT,
    dailyRate DECIMAL(10,2),
status VARCHAR(20), -- 'available' or 'notAvailable'
    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 FOREIGN KEY REFERENCES Vehicle(vehicleID),
    customerID INT FOREIGN KEY REFERENCES Customer(customerID),
    startDate DATE,
    endDate DATE,
    type VARCHAR(20) -- 'Daily' or 'Monthly'
);
CREATE TABLE Payment (
    paymentID INT PRIMARY KEY,
    leaseID INT FOREIGN KEY REFERENCES Lease(leaseID),
    paymentDate DATE,
    amount DECIMAL(10,2)
```

Inserting Data:

```
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);
```

	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	58.00	available	8	2599
9	9	Audi	A4	2022	55.00	not Available	4	2500
10	10	Lexus	ES	2023	54.00	available	4	2500

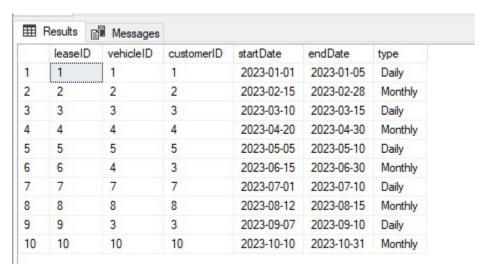
INSERT INTO Customer VALUES

```
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');
```

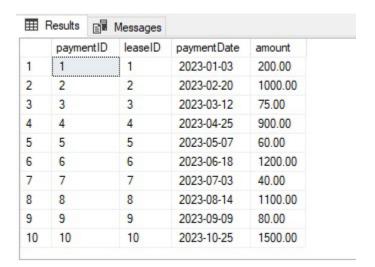
	customerID	firstName	lastName	email	phoneNumber
1	1	John	Doe	johndoe@example.com	555-555-5555
2	2	Jane	Smith	janesmith@example.com	555-123-4567
3	3	Robert	Johnson	robert@example.com	555-789-1234
4	4	Sarah	Brown	sarah@example.com	555-456-7890
5	5	David	Lee	david@example.com	555-987-6543
6	6	Laura	Hall	laura@example.com	555-234-5678
7	7	Michael	Davis	michael@example.com	555-876-5432
8	8	Emma	Wilson	emma@example.com	555-432-1098
9	9	William	Taylor	william@example.com	555-321-6547
10	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);
```

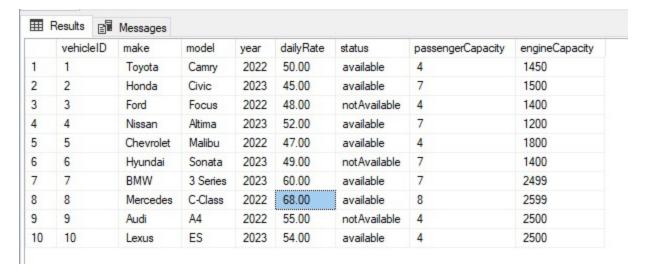


SQL Queries:

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

UPDATE Vehicle SET dailyRate = 68 WHERE make = 'Mercedes';

SELECT * FROM Vehicle;



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

DECLARE @customerID INT = 3;

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

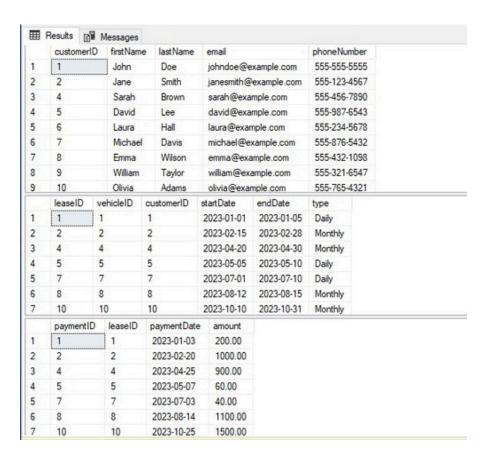
DELETE FROM Lease WHERE customerID = @customerID;

DELETE FROM Customer WHERE customerID = @customerID;

SELECT * FROM Customer;

SELECT * FROM Lease;

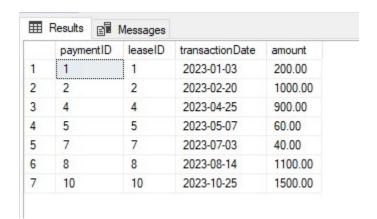
SELECT * FROM Payment;



3.Rename the "paymentDate" column to "transactionDate"

EXEC sp_rename 'Payment.paymentDate', 'transactionDate', 'COLUMN';

SELECT * FROM Payment;



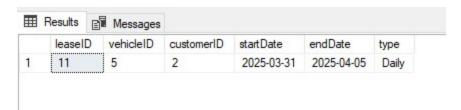
4. Find a specific customer by email

SELECT * FROM Customer WHERE email = 'johndoe@example.com';



5)Get active leases for a specific customer.

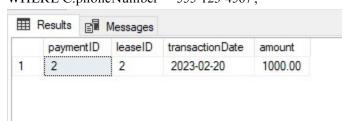
INSERT INTO Lease VALUES (11, 5, 2, '2025-03-31', '2025-04-05', 'Daily'); SELECT * FROM Lease WHERE customerID = 2 AND endDate >= GETDATE();



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';



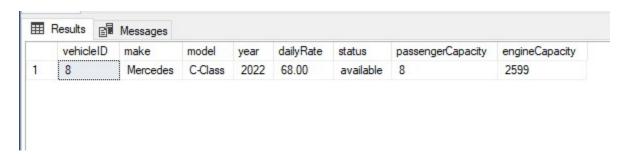
7) Calculate the average daily rate of all available cars.

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



8) Find the car with the highest daily rate.

SELECT TOP 1 * FROM Vehicle ORDER BY dailyRate DESC;



9)Retrieve all cars leased by a specific customer.

SELECT V.* FROM Vehicle V

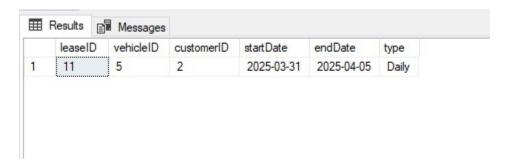
JOIN Lease L ON V.vehicleID = L.vehicleID

WHERE L.customerID = 2:

	vehicleID	make	model	year	dailyRate	status	passengerCapacity	engineCapacity
1	2	Honda	Civic	2023	45.00	available	7	1500
2	5	Chevrolet	Malibu	2022	47.00	available	4	1800

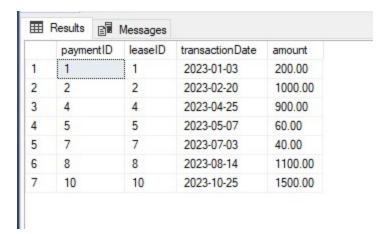
10) Find the details of the most recent lease.

SELECT TOP 1 * FROM Lease ORDER BY startDate DESC;



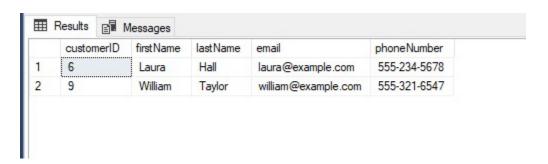
11)List all payments made in the year 2023.

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



12) Retrieve customers who have not made any payments.

SELECT * FROM Customer WHERE customerID NOT IN (SELECT DISTINCT customerID FROM Lease WHERE leaseID IN (SELECT leaseID FROM Payment));



13) Retrieve Car Details and Their Total Payments.

SELECT V.*, ISNULL(SUM(P.amount), 0) AS TotalPayments

FROM Vehicle V

LEFT JOIN Lease L ON V.vehicleID = L.vehicleID

LEFT JOIN Payment P ON L.leaseID = P.leaseID

GROUP BY V.vehicleID, V.make, V.model, V.year, V.dailyRate, V.status, V.passengerCapacity, V.engineCapacity;

	vehicleID	make	model	year	dailyRate	status	passengerCapacity	engineCapacity	TotalPayments
1	1	Toyota	Camry	2022	50.00	available	4	1450	200.00
2	2	Honda	Civic	2023	45.00	available	7	1500	1000.00
3	3	Ford	Focus	2022	48.00	notAvailable	4	1400	0.00
4	4	Nissan	Altima	2023	52.00	available	7	1200	900.00
5	5	Chevrolet	Malibu	2022	47.00	available	4	1800	60.00
6	6	Hyundai	Sonata	2023	49.00	notAvailable	7	1400	0.00
7	7	BMW	3 Series	2023	60.00	available	7	2499	40.00
8	8	Mercedes	C-Class	2022	68.00	available	8	2599	1100.00
9	9	Audi	A4	2022	55.00	notAvailable	4	2500	0.00
10	10	Lexus	ES	2023	54.00	available	4	2500	1500.00

14) Calculate Total Payments for Each Customer.

SELECT C.*, ISNULL(SUM(P.amount), 0) AS Total Payments FROM Customer C

LEFT JOIN Lease L ON C.customerID = L.customerID

LEFT JOIN Payment P ON L.leaseID = P.leaseID GROUP BY C.customerID, C.firstName, C.lastName, C.email, C.phoneNumber;

	customerID	first Name	lastName	email	phoneNumber	TotalPayments
1	1	John	Doe	johndoe@example.com	555-555-5555	200.00
2	2	Jane	Smith	janesmith@example.com	555-123-4567	1000.00
3	4	Sarah	Brown	sarah@example.com	555-456-7890	900.00
4	5	David	Lee	david@example.com	555-987-6543	60.00
5	6	Laura	Hall	laura@example.com	555-234-5678	0.00
6	7	Michael	Davis	michael@example.com	555-876-5432	40.00
7	8	Emma	Wilson	emma@example.com	555-432-1098	1100.00
8	9	William	Taylor	william@example.com	555-321-6547	0.00
9	10	Olivia	Adams	olivia@example.com	555-765-4321	1500.00

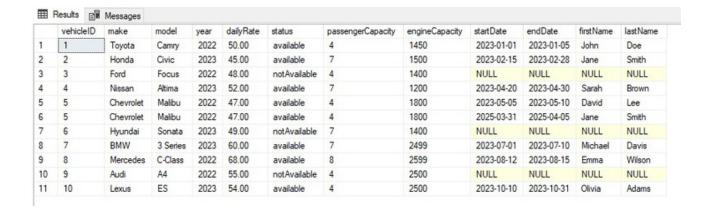
15) List Car Details for Each Lease.

SELECT L.*, C.firstName, C.lastName, V.make, V.model FROM Lease L
JOIN Customer C ON L.customerID = C.customerID
JOIN Vehicle V ON L.vehicleID = V.vehicleID;

	leaseID	vehicleID	customerID	start Date	endDate	type	first Name	lastName	make	model
1	1	1	1	2023-01-01	2023-01-05	Daily	John	Doe	Toyota	Camry
2	2	2	2	2023-02-15	2023-02-28	Monthly	Jane	Smith	Honda	Civic
3	4	4	4	2023-04-20	2023-04-30	Monthly	Sarah	Brown	Nissan	Altima
4	5	5	5	2023-05-05	2023-05-10	Daily	David	Lee	Chevrolet	Malibu
5	7	7	7	2023-07-01	2023-07-10	Daily	Michael	Davis	BMW	3 Series
6	8	8	8	2023-08-12	2023-08-15	Monthly	Emma	Wilson	Mercedes	C-Class
7	10	10	10	2023-10-10	2023-10-31	Monthly	Olivia	Adams	Lexus	ES
8	11	5	2	2025-03-31	2025-04-05	Daily	Jane	Smith	Chevrolet	Malibu

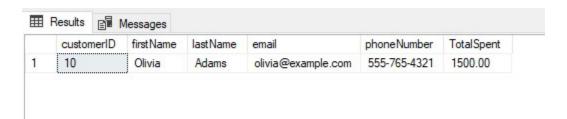
16) Retrieve Details of Active Leases with Customer and Car Information.

SELECT V.*, L.startDate, L.endDate, C.firstName, C.lastName FROM Vehicle V LEFT JOIN Lease L ON V.vehicleID = L.vehicleID LEFT JOIN Customer C ON L.customerID = C.customerID;



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

SELECT TOP 1 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, C.firstName, C.lastName, C.email, C.phoneNumber ORDER BY TotalSpent DESC;



18) List All Cars with Their Current Lease Information.

SELECT V.*, L.leaseID, L.startDate, L.endDate, L.type FROM Vehicle V LEFT JOIN Lease L ON V.vehicleID = L.vehicleID AND L.endDate >= GETDATE();

