

Name: Khushi Joshi
Topic: Car Rental System

Coding Challenge: Car Rental System

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);

DELETE FROM Lease
WHERE customerID = 3;

DELETE FROM Customer
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 |

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

```
EXEC sp_rename 'Payment.paymentDate', 'transactionDate', 'COLUMN';
select * from payment;
```

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| Results | | Messages | | |
|---------|-----------|----------|-----------------|---------|
| | 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 = 'sarah@example.com';
```

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

5. Get active leases for a specific customer.

```
DECLARE @currentDate DATE = '2023-05-06';  
SELECT DISTINCT C.customerID, C.firstName, C.lastName, C.email, C.phoneNumber  
FROM Lease L  
JOIN Customer C ON L.customerID = C.customerID  
WHERE @currentDate BETWEEN L.startDate AND L.endDate;
```

| Results | | Messages | | | |
|---------|------------|-----------|----------|-------------------|--------------|
| | customerID | firstName | lastName | email | phoneNumber |
| 1 | 5 | David | Lee | david@example.com | 555-987-6543 |

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

```
DECLARE @phoneNumber NVARCHAR(20) = '555-456-7890';  
SELECT P.paymentID, P.leaseID, P.transactionDate, P.amount  
FROM Payment P  
JOIN Lease L ON P.leaseID = L.leaseID  
JOIN Customer C ON L.customerID = C.customerID  
WHERE C.phoneNumber = @phoneNumber;
```

| Results | | Messages | | |
|---------|-----------|----------|-----------------|--------|
| | paymentID | leaseID | transactionDate | amount |
| 1 | 4 | 4 | 2023-04-25 | 900.00 |

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

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

| Results | | Messages | |
|---------|------------------|----------|--|
| | averageDailyRate | | |
| 1 | 53.714285 | | |

8. Find the car with the highest daily rate.

```
SELECT TOP 1 *
FROM Vehicle
ORDER BY dailyRate DESC;
```

| Results Messages | | | | | | | | |
|------------------|-----------|----------|---------|------|-----------|-----------|-------------------|----------------|
| | 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
JOIN Customer C ON L.customerID = C.customerID
WHERE C.phoneNumber = '555-456-7890';
```

| Results Messages | | | | | | | | |
|------------------|-----------|--------|--------|------|-----------|-----------|-------------------|----------------|
| | 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;
```

| Results Messages | | | | | | |
|------------------|---------|-----------|------------|------------|------------|---------|
| | 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.

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

| | 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, V.year, V.dailyRate,  
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  
ORDER BY V.vehicleID;
```

| | vehicleID | make | model | year | dailyRate | totalPayments |
|----|-----------|-----------|----------|------|-----------|---------------|
| 1 | 1 | Toyota | Camry | 2022 | 50.00 | 200.00 |
| 2 | 2 | Honda | Civic | 2023 | 45.00 | 1000.00 |
| 3 | 3 | Ford | Focus | 2022 | 48.00 | 0.00 |
| 4 | 4 | Nissan | Altima | 2023 | 52.00 | 900.00 |
| 5 | 5 | Chevrolet | Malibu | 2022 | 47.00 | 60.00 |
| 6 | 6 | Hyundai | Sonata | 2023 | 49.00 | 0.00 |
| 7 | 7 | BMW | 3 Series | 2023 | 60.00 | 40.00 |
| 8 | 8 | Mercedes | C-Class | 2022 | 68.00 | 1100.00 |
| 9 | 9 | Audi | A4 | 2022 | 55.00 | 0.00 |
| 10 | 10 | Lexus | ES | 2023 | 54.00 | 1500.00 |

14. Calculate Total Payments for Each Customer.

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```
SELECT C.customerID, C.firstName, C.lastName, C.email, C.phoneNumber,
ISNULL(SUM(P.amount), 0) AS totalPayments
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
ORDER BY C.customerID;
```

| Results | | Messages | | | | |
|---------|------------|-----------|----------|-----------------------|--------------|---------------|
| | customerID | firstName | 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.leaseID, L.vehicleID, L.customerID, L.startDate, L.endDate, L.type AS
leaseType,
V.make, V.model, V.year, V.dailyRate, V.status, V.passengerCapacity,
V.engineCapacity
FROM Lease L
JOIN Vehicle V ON L.vehicleID = V.vehicleID
ORDER BY L.leaseID;
```

| Results | | Messages | | | | | | | | | | | |
|---------|---------|-----------|------------|------------|------------|-----------|-----------|----------|------|-----------|-----------|-------------------|----------------|
| | leaseID | vehicleID | customerID | startDate | endDate | leaseType | make | model | year | dailyRate | status | passengerCapacity | engineCapacity |
| 1 | 1 | 1 | 1 | 2023-01-01 | 2023-01-05 | Daily | Toyota | Camry | 2022 | 50.00 | available | 4 | 1450 |
| 2 | 2 | 2 | 2 | 2023-02-15 | 2023-02-28 | Monthly | Honda | Civic | 2023 | 45.00 | available | 7 | 1500 |
| 3 | 4 | 4 | 4 | 2023-04-20 | 2023-04-30 | Monthly | Nissan | Altima | 2023 | 52.00 | available | 7 | 1200 |
| 4 | 5 | 5 | 5 | 2023-05-05 | 2023-05-10 | Daily | Chevrolet | Malibu | 2022 | 47.00 | available | 4 | 1800 |
| 5 | 7 | 7 | 7 | 2023-07-01 | 2023-07-10 | Daily | BMW | 3 Series | 2023 | 60.00 | available | 7 | 2499 |
| 6 | 8 | 8 | 8 | 2023-08-12 | 2023-08-15 | Monthly | Mercedes | C-Class | 2022 | 68.00 | available | 8 | 2599 |
| 7 | 10 | 10 | 10 | 2023-10-10 | 2023-10-31 | Monthly | Lexus | ES | 2023 | 54.00 | available | 4 | 2500 |

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

```
DECLARE @currentDate DATE = '2023-05-06';
SELECT L.leaseID, L.vehicleID, V.make, V.model, V.year, V.dailyRate,
L.customerID, C.firstName, C.lastName, C.email, C.phoneNumber,
L.startDate, L.endDate, L.type AS leaseType
FROM Lease L
JOIN Vehicle V ON L.vehicleID = V.vehicleID
JOIN Customer C ON L.customerID = C.customerID
WHERE @currentDate BETWEEN L.startDate AND L.endDate
ORDER BY L.leaseID;
```

| Results | | Messages | | | | | | | | | | | | |
|---------|---------|-----------|-----------|--------|------|-----------|------------|-----------|----------|-------------------|--------------|------------|------------|-----------|
| | leaseID | vehicleID | make | model | year | dailyRate | customerID | firstName | lastName | email | phoneNumber | startDate | endDate | leaseType |
| 1 | 5 | 5 | Chevrolet | Malibu | 2022 | 47.00 | 5 | David | Lee | david@example.com | 555-987-6543 | 2023-05-05 | 2023-05-10 | Daily |

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

```
SELECT TOP 1
    C.customerID,
    C.firstName,
    C.lastName,
    C.email,
    C.phoneNumber,
    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;
```

| Results | | Messages | | | | |
|---------|------------|-----------|----------|--------------------|--------------|------------|
| | customerID | firstName | lastName | email | phoneNumber | totalSpent |
| 1 | 10 | Olivia | Adams | olivia@example.com | 555-765-4321 | 1500.00 |

18. List All Cars with Their Current Lease Information.

```
declare @date date = '2023-05-06'
SELECT
    V.vehicleID, V.make, V.model, V.year, V.dailyRate, V.status, L.leaseID, L.customerID, L
    .startDate, L.endDate, L.type AS leaseType
FROM Vehicle V
LEFT JOIN Lease L ON V.vehicleID = L.vehicleID
AND @date BETWEEN L.startDate AND L.endDate;
```

| Results | | Messages | | | | | | | | | |
|---------|-----------|-----------|----------|------|-----------|--------------|---------|------------|------------|------------|-----------|
| | vehicleID | make | model | year | dailyRate | status | leaseID | customerID | startDate | endDate | leaseType |
| 1 | 1 | Toyota | Camry | 2022 | 50.00 | available | NULL | NULL | NULL | NULL | NULL |
| 2 | 2 | Honda | Civic | 2023 | 45.00 | available | NULL | NULL | NULL | NULL | NULL |
| 3 | 3 | Ford | Focus | 2022 | 48.00 | notAvailable | NULL | NULL | NULL | NULL | NULL |
| 4 | 4 | Nissan | Altima | 2023 | 52.00 | available | NULL | NULL | NULL | NULL | NULL |
| 5 | 5 | Chevrolet | Malibu | 2022 | 47.00 | available | 5 | 5 | 2023-05-05 | 2023-05-10 | Daily |
| 6 | 6 | Hyundai | Sonata | 2023 | 49.00 | notAvailable | NULL | NULL | NULL | NULL | NULL |
| 7 | 7 | BMW | 3 Series | 2023 | 60.00 | available | NULL | NULL | NULL | NULL | NULL |
| 8 | 8 | Mercedes | C-Class | 2022 | 68.00 | available | NULL | NULL | NULL | NULL | NULL |
| 9 | 9 | Audi | A4 | 2022 | 55.00 | notAvailable | NULL | NULL | NULL | NULL | NULL |
| 10 | 10 | Lexus | ES | 2023 | 54.00 | available | NULL | NULL | NULL | NULL | NULL |