Coding Challenge - Car Rental System – SQL

Work by –

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```
CREATE DATABASE car_rental_system;
USE car_rental_system;
```

-- Creating vehicle table

```
CREATE TABLE Vehicle(
vehicleID INT PRIMARY KEY,
make VARCHAR(50) NOT NULL,
model VARCHAR(50) NOT NULL,
year INT NOT NULL CHECK (year >= 2000),
dailyRate DECIMAL(10,2) NOT NULL CHECK (dailyRate > 0),
status INT CHECK (status=0 OR status=1) NOT NULL,
passengerCapacity INT NOT NULL CHECK (passengerCapacity > 0),
engineCapacity INT NOT NULL CHECK (engineCapacity > 0)
);
```

-- Creating Customer Table

```
CREATE TABLE Customer (
customerID INT PRIMARY KEY ,
firstName VARCHAR(50) NOT NULL,
lastName VARCHAR(50) NOT NULL,
email VARCHAR(100) UNIQUE NOT NULL,
phoneNumber VARCHAR(15) UNIQUE NOT NULL
);
```

-- Creating Lease Table

```
CREATE TABLE Lease (
leaseID INT PRIMARY KEY ,
vehicleID INT NOT NULL,
customerID INT NOT NULL,
startDate DATE NOT NULL,
endDate DATE NOT NULL ,
type ENUM('DailyLease', 'MonthlyLease') NOT NULL,
FOREIGN KEY (vehicleID) REFERENCES Vehicle(vehicleID) ON DELETE CASCADE,
FOREIGN KEY (customerID) REFERENCES Customer(customerID) ON DELETE CASCADE
);
```

-- Creating Payment Table

```
CREATE TABLE Payment (
paymentID INT PRIMARY KEY ,
leaseID INT NOT NULL,
paymentDate DATE NOT NULL ,
amount DECIMAL(10,2) NOT NULL CHECK (amount > 0),
FOREIGN KEY (leaseID) REFERENCES Lease(leaseID) ON DELETE CASCADE
);
```

-- Inserting values in Vehicle table

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

(10, 'Lexus', 'ES', 2023, 54.00, 1, 4, 2500);

-- Inserting values in Customer table

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');

-- Inserting values in Lease table

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');

-- Inserting values in Payment table

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),

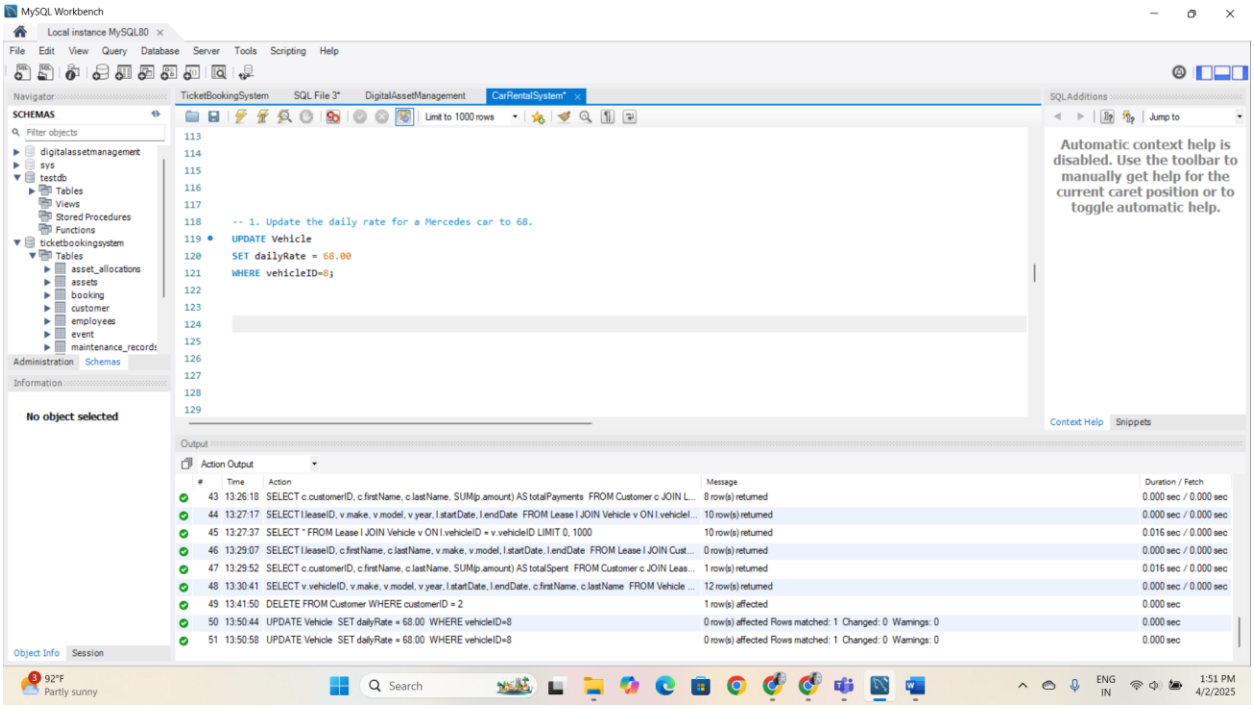
(8, 8, '2023-08-14', 1100.00),

(9, 9, '2023-09-09', 80.00),

(10, 10, '2023-10-25', 1500.00);

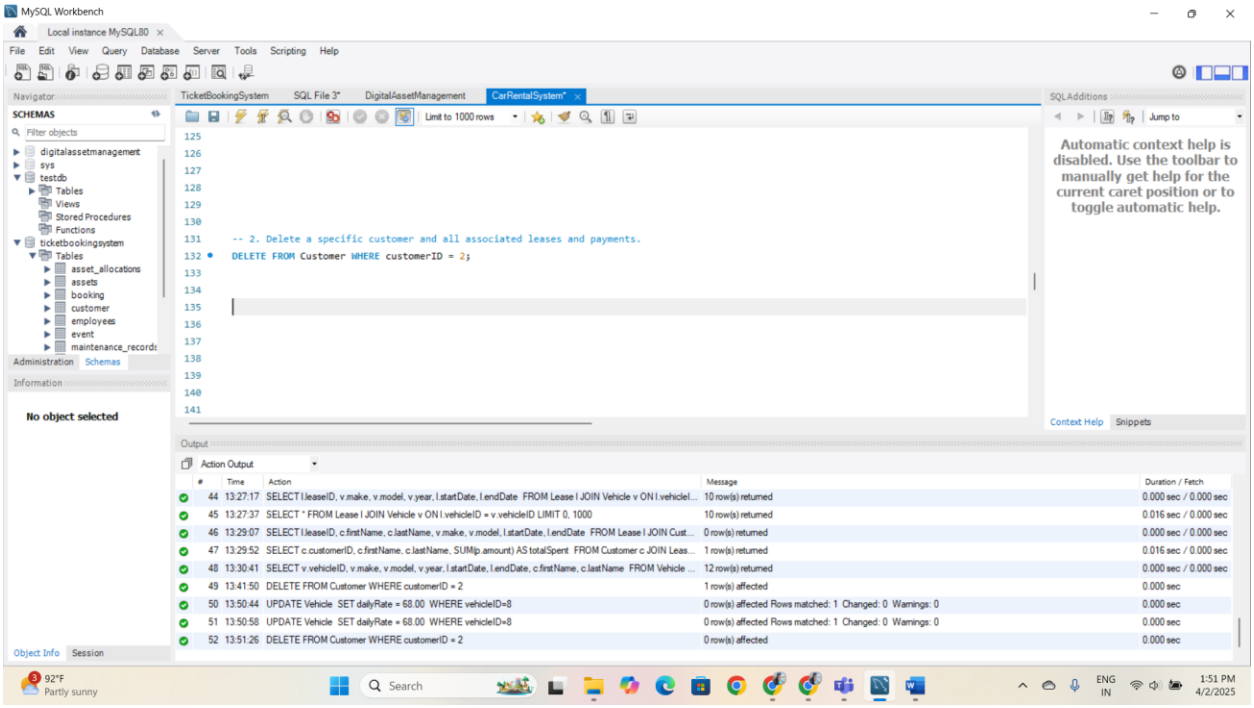
-- 1. Update the daily rate for a Mercedes car to 68.

```
UPDATE Vehicle
SET dailyRate = 68.00
WHERE vehicleID=8;
```



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

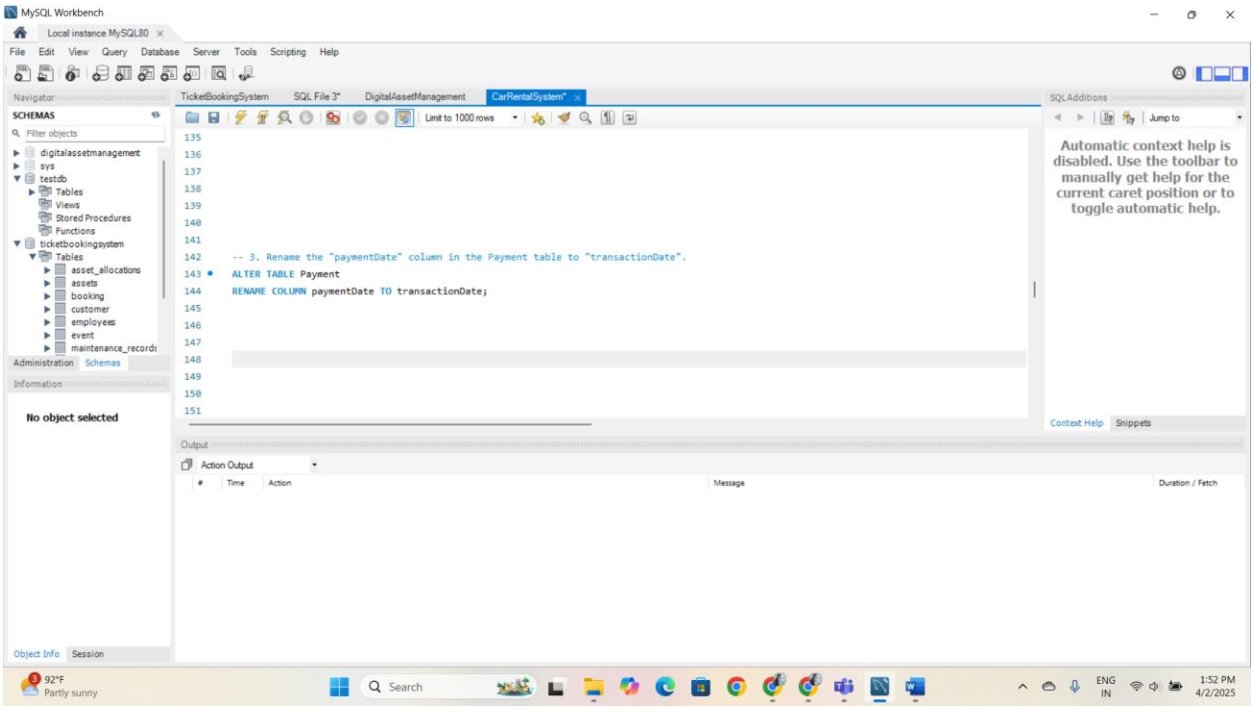
DELETE FROM Customer WHERE customerID = 2;



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

ALTER TABLE Payment

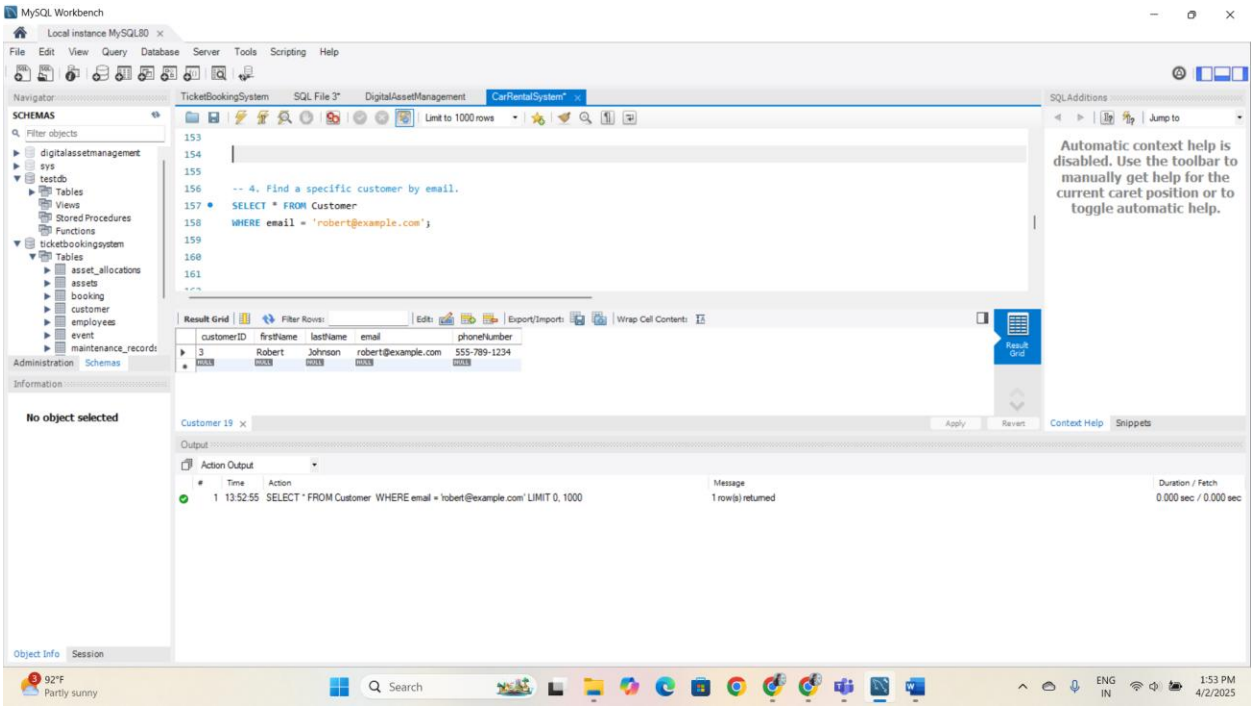
RENAME COLUMN paymentDate TO transactionDate;



-- 4. Find a specific customer by email.

SELECT * FROM Customer

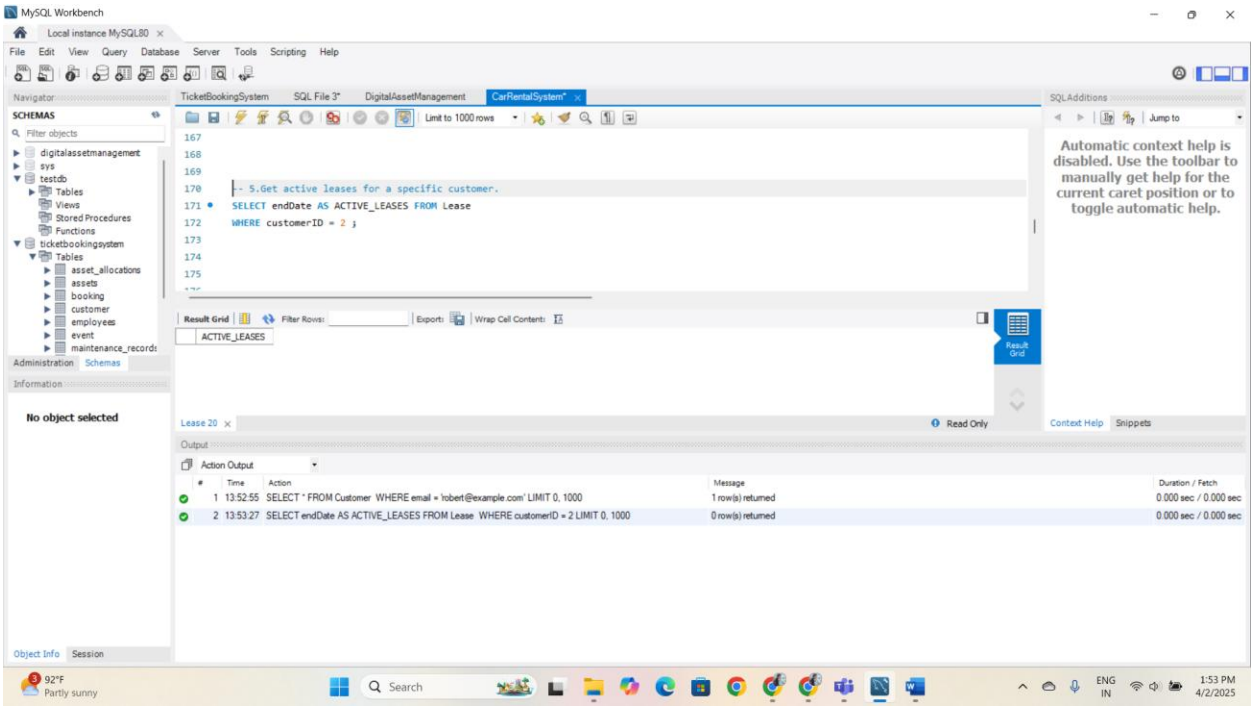
WHERE email = 'robert@example.com';



-- 5.Get active leases for a specific customer.

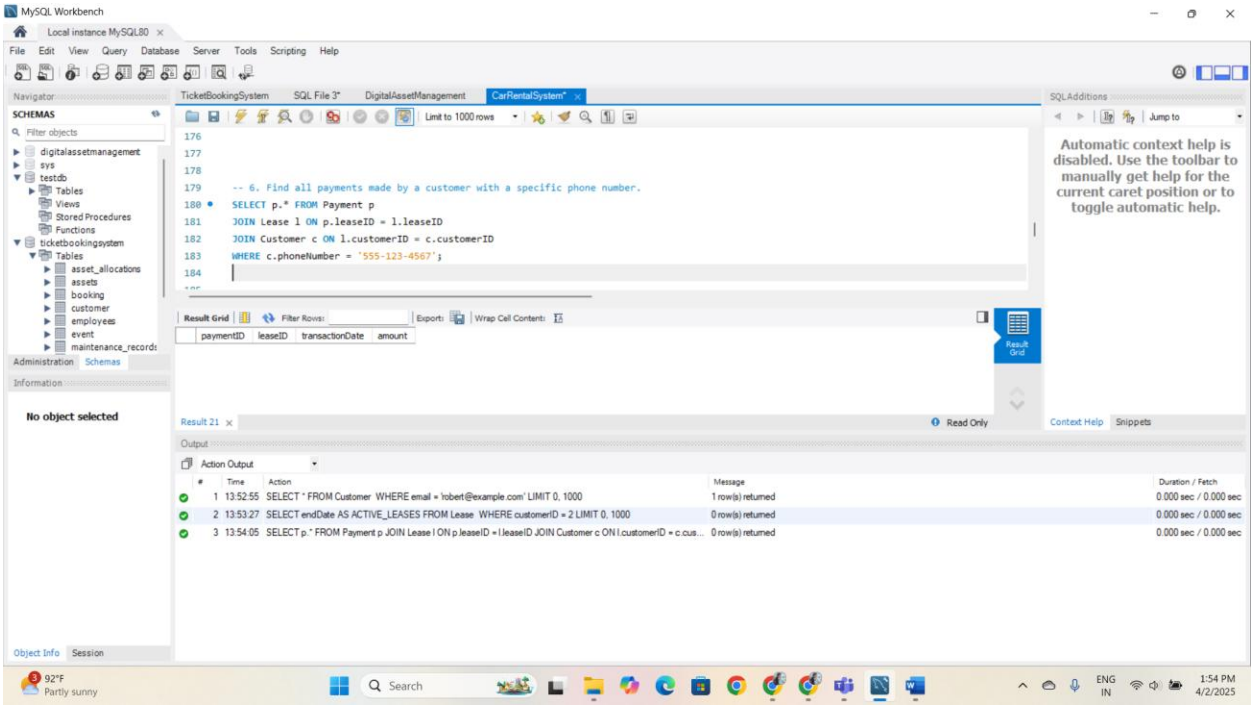
SELECT endDate AS ACTIVE_LEASES FROM Lease

WHERE customerID = 2 ;



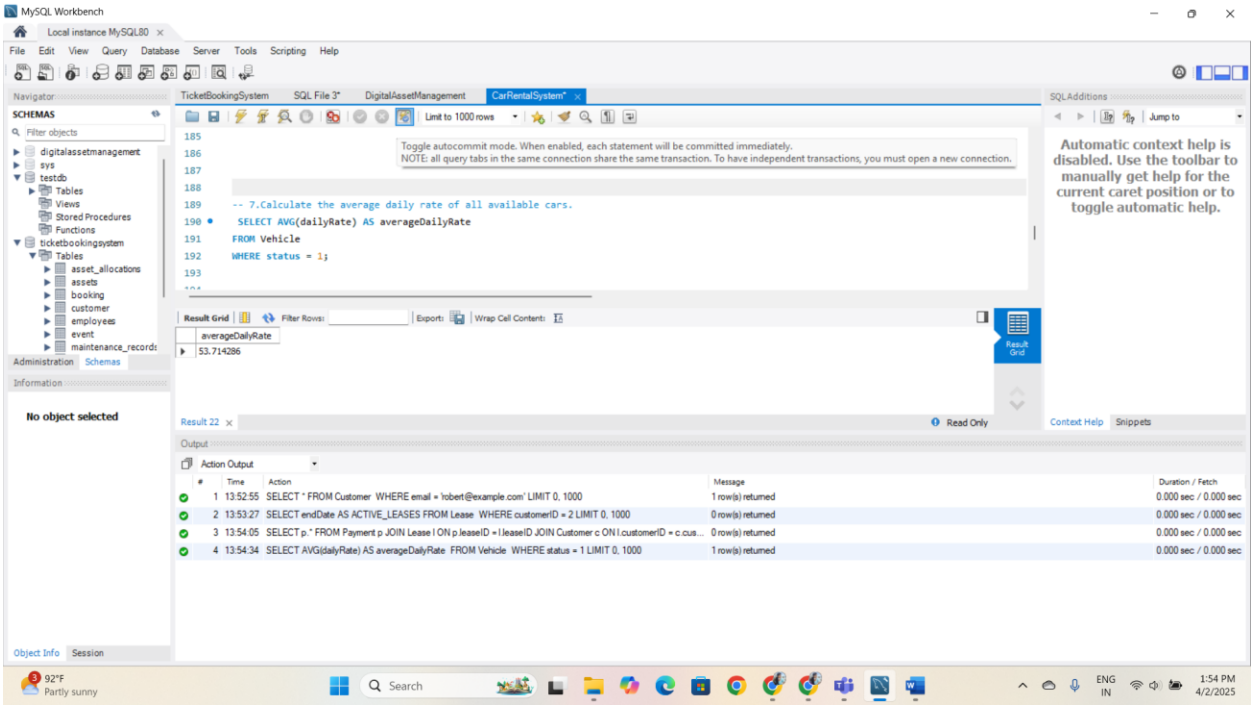
-- 6. Find all payments made by a customer with a specific phone number.

```
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.

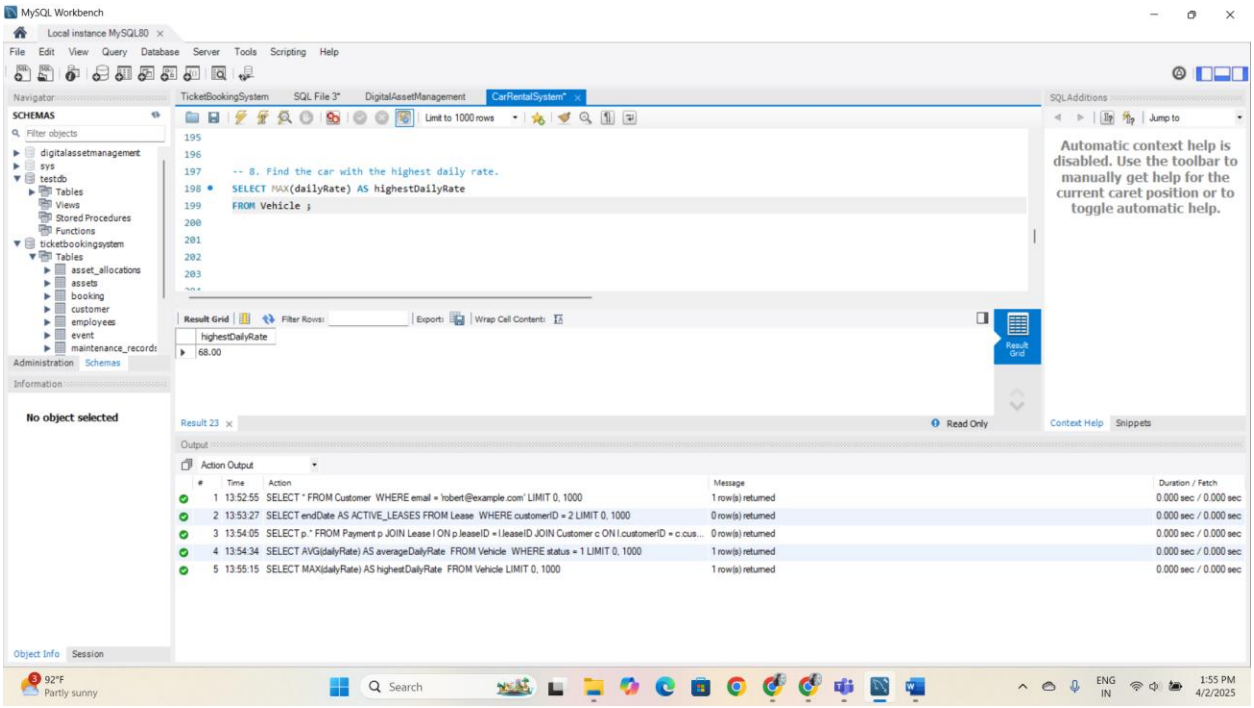
```
SELECT AVG(dailyRate) AS averageDailyRate
FROM Vehicle
WHERE status = 1;
```



-- 8. Find the car with the highest daily rate.

SELECT MAX(dailyRate) AS highestDailyRate

FROM Vehicle ;

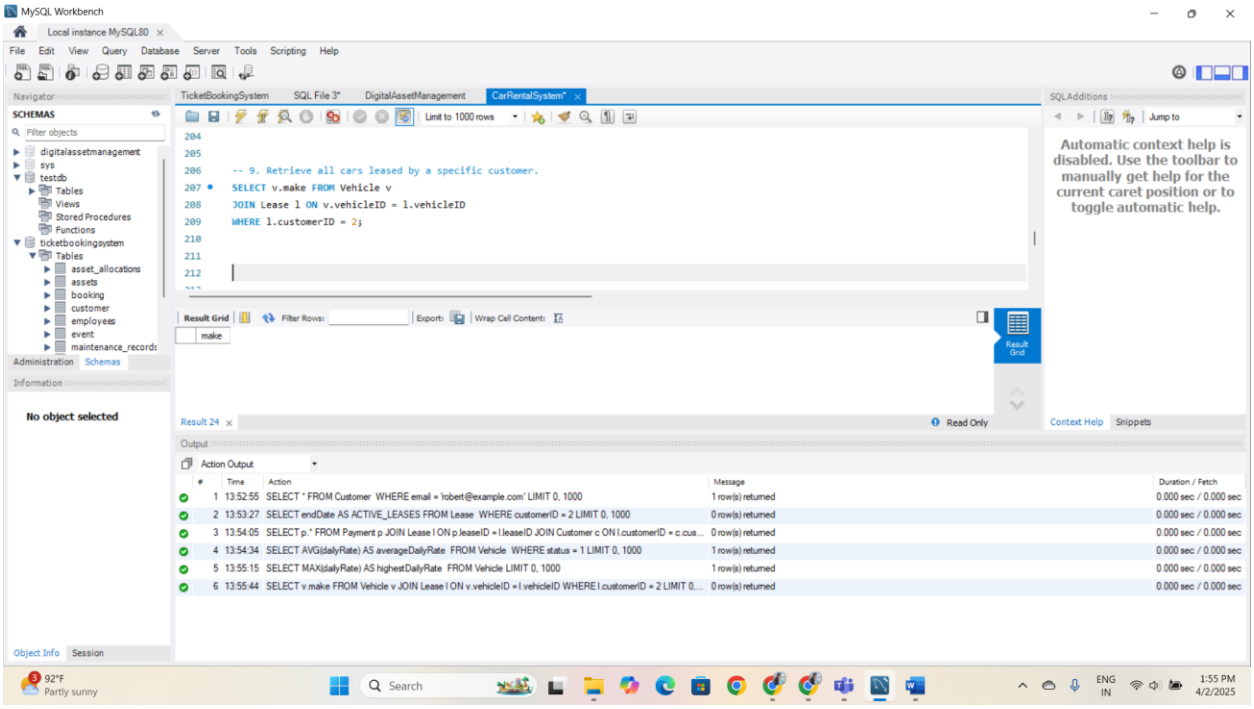


-- 9. Retrieve all cars leased by a specific customer.

SELECT v.make FROM Vehicle v

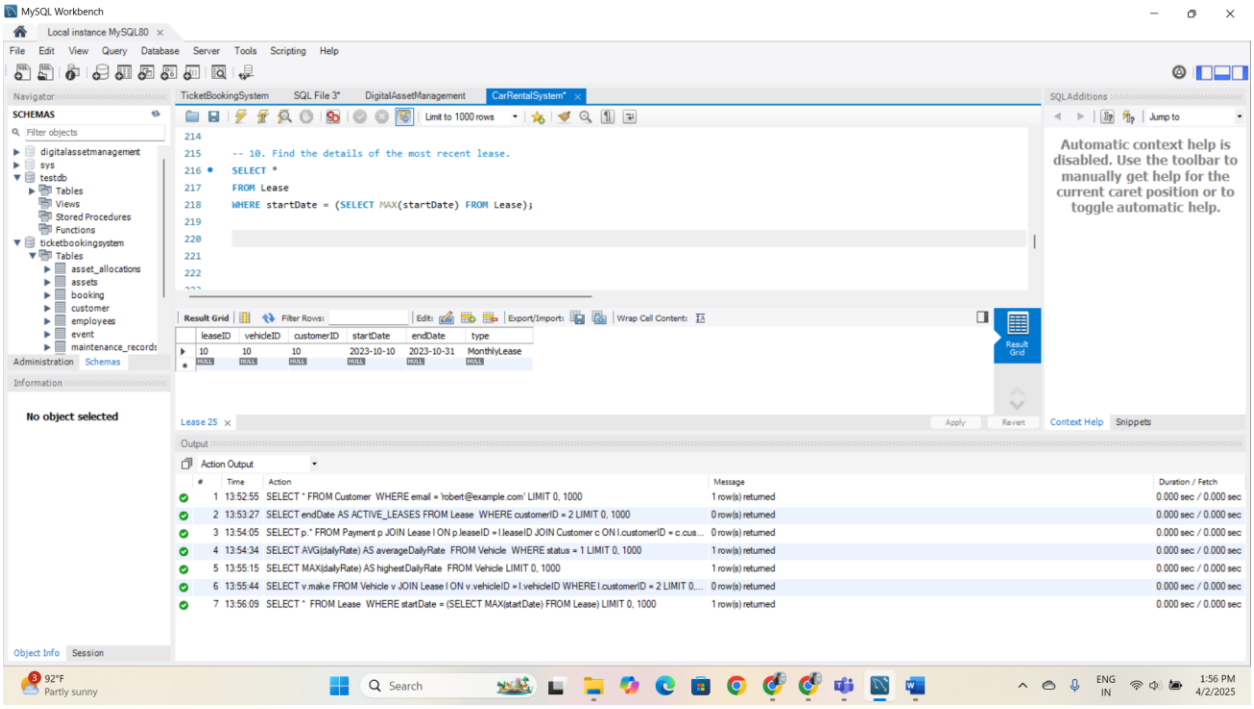
JOIN Lease l ON v.vehicleID = l.vehicleID

WHERE l.customerID = 2;



-- 10. Find the details of the most recent lease.

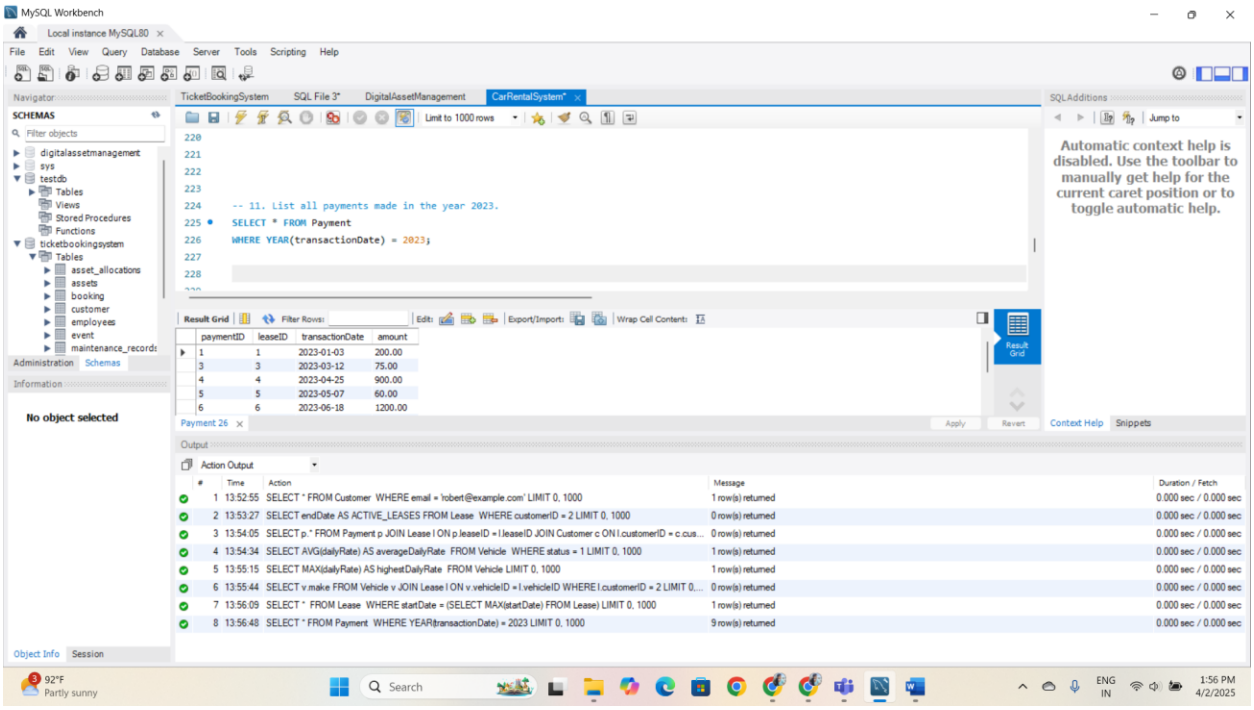
```
SELECT *
FROM Lease
WHERE startDate = (SELECT MAX(startDate) FROM Lease);
```



-- 11. List all payments made in the year 2023.

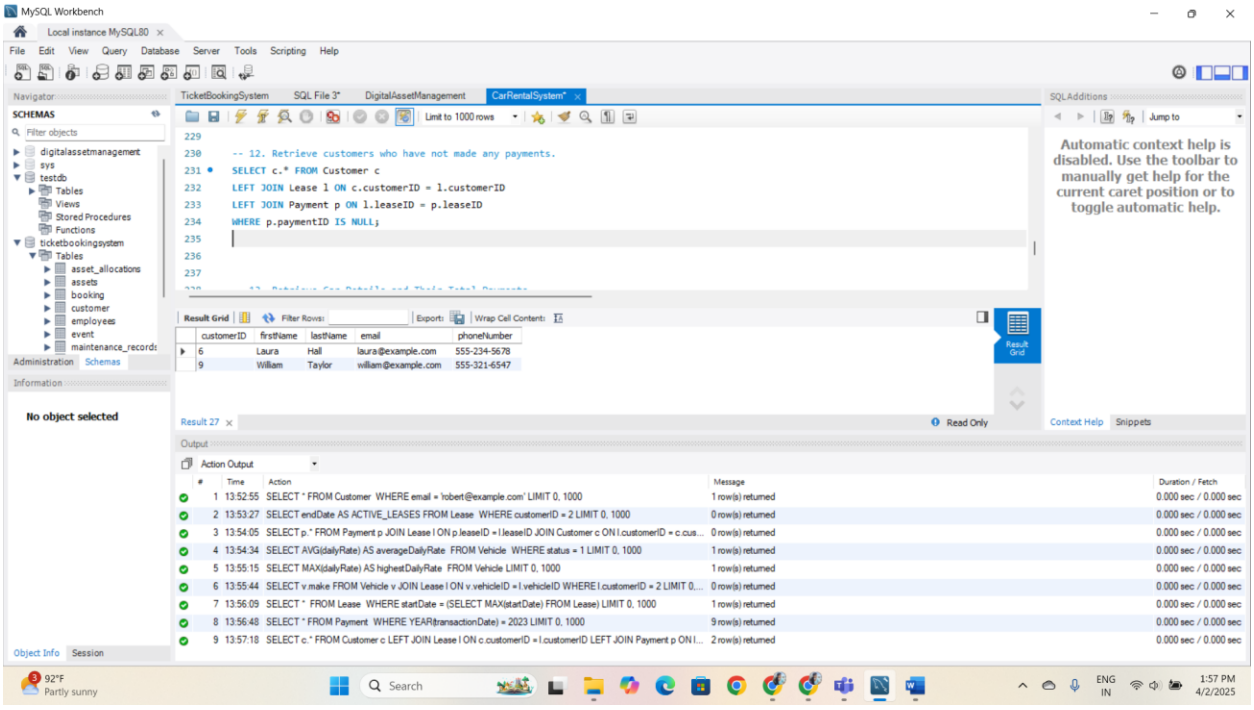
SELECT * FROM Payment

WHERE YEAR(transactionDate) = 2023;



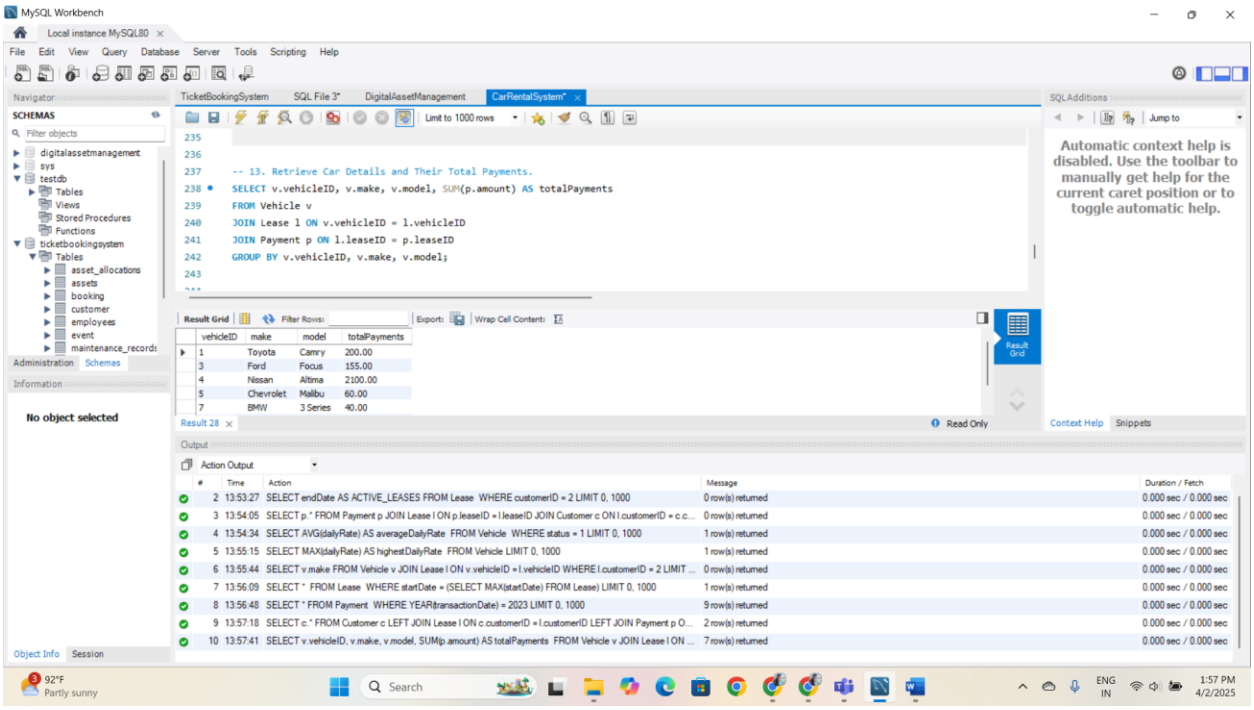
-- 12. Retrieve customers who have not made any payments.

```
SELECT 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;
```



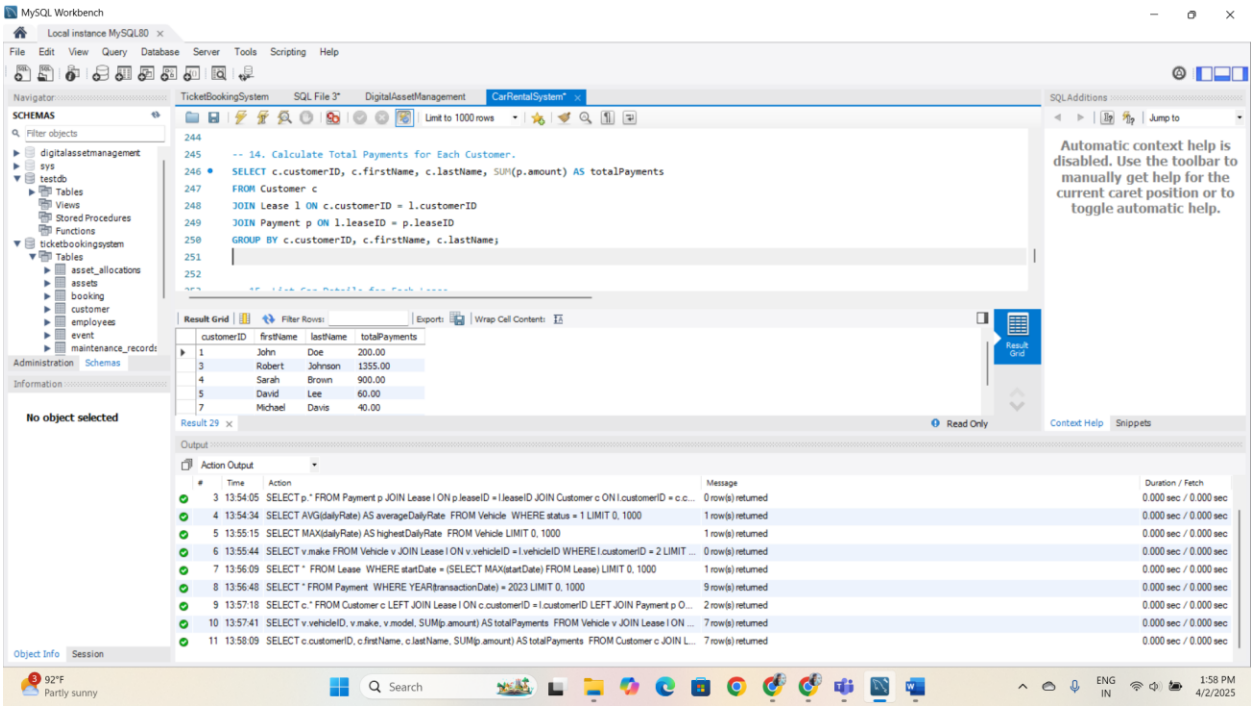
-- 13. Retrieve Car Details and Their Total Payments.

```
SELECT v.vehicleID, v.make, v.model, 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, v.make, v.model;
```



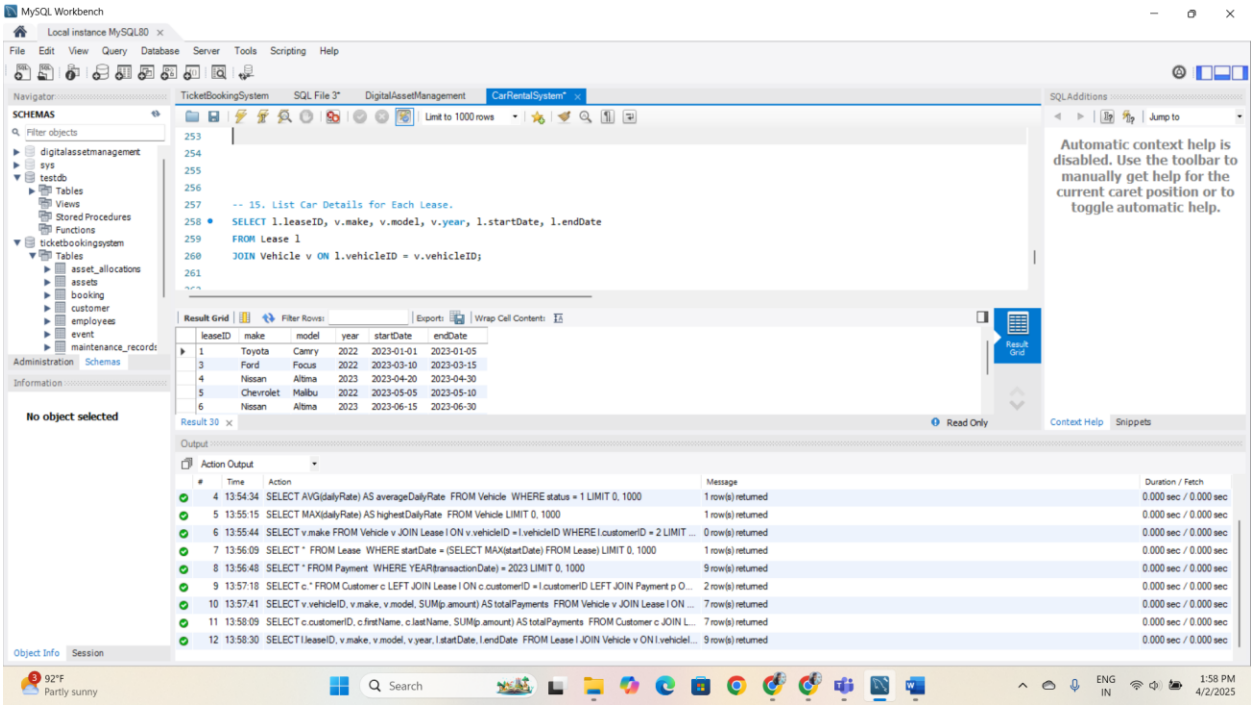
-- 14. Calculate Total Payments for Each Customer.

```
SELECT c.customerID, c.firstName, c.lastName, 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, c.firstName, c.lastName;
```



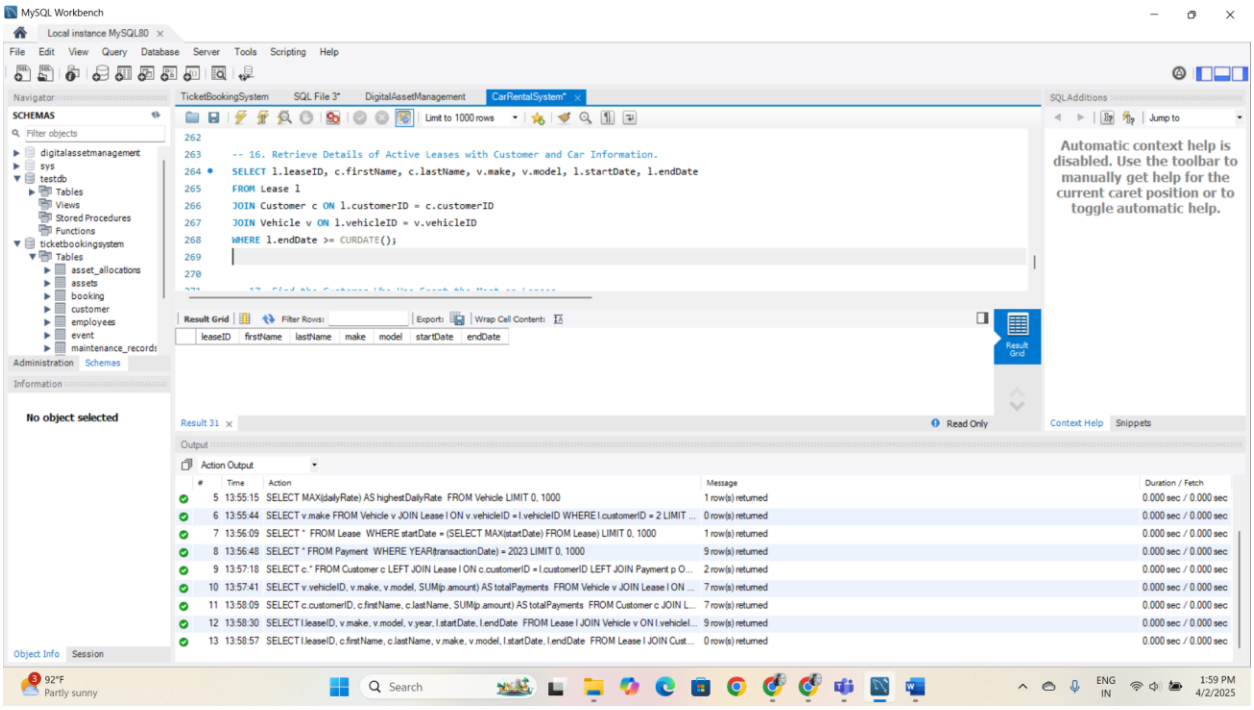
-- 15. List Car Details for Each Lease.

```
SELECT l.leaseID, v.make, v.model, v.year, l.startDate, l.endDate
FROM Lease l
JOIN Vehicle v ON l.vehicleID = v.vehicleID;
```



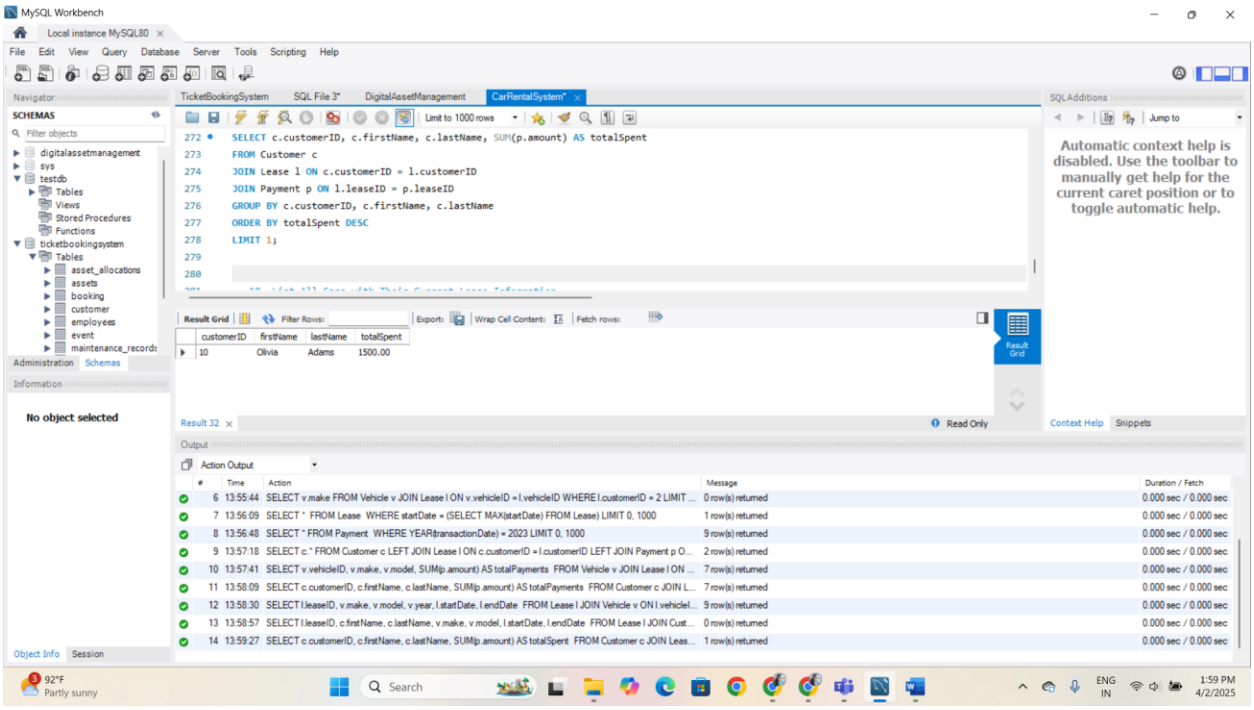
-- 16. Retrieve Details of Active Leases with Customer and Car Information.

```
SELECT l.leaseID, c.firstName, c.lastName, v.make, v.model, l.startDate, l.endDate
FROM Lease l
JOIN Customer c ON l.customerID = c.customerID
JOIN Vehicle v ON l.vehicleID = v.vehicleID
WHERE l.endDate >= CURDATE();
```



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

```
SELECT c.customerID, c.firstName, c.lastName, 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
ORDER BY totalSpent DESC
LIMIT 1;
```



-- 18. List All Cars with Their Current Lease Information.

```
SELECT v.vehicleID, v.make, v.model, v.year, 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;
```