-- Create the CarRentalSystem database

CREATE DATABASE IF NOT EXISTS CarRentalSystem;

USE CarRentalSystem;

```
-- Create Vehicle Table
CREATE TABLE IF NOT EXISTS Vehicle (
    vehicleID INT PRIMARY KEY,
    make VARCHAR(255),
    model VARCHAR(255),
    year INT,
    dailyRate DECIMAL(10, 2),
    status ENUM('available', 'notAvailable'),
    passengerCapacity INT,
    engineCapacity INT
);

-- Create Customer Table
CREATE TABLE IF NOT EXISTS Customer (
    customerID INT PRIMARY KEY,
    firstName VARCHAR(255),
    lastName VARCHAR(255),
    email VARCHAR(255),
    phoneNumber VARCHAR(20)
);

-- Create Lease Table
CREATE TABLE IF NOT EXISTS Lease (
    leaseID INT PRIMARY KEY,
    vehicleID INT,
    customerID INT,
```

```
    startDate DATE,
    endDate DATE,
    type ENUM('DailyLease', 'MonthlyLease'),
    FOREIGN KEY (vehicleID) REFERENCES Vehicle(vehicleID),
    FOREIGN KEY (customerID) REFERENCES Customer(customerID)
);

-- Create Payment Table
CREATE TABLE IF NOT EXISTS Payment (
    paymentID INT PRIMARY KEY,
    leaseID INT,
    paymentDate DATE,
    amount DECIMAL(10, 2),
    FOREIGN KEY (leaseID) REFERENCES Lease(leaseID)
);
-- Insert values into Vehicle Table
-- Insert values into Vehicle Table with updated status values
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);
```

```
-- Insert values into 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');

-- Insert values into Lease Table
-- Insert values into Lease Table with updated type values
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');
```

-- Insert values into 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);

Queries

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

UPDATE Vehicle SET dailyRate = 68 WHERE vehicleID = 8;

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

select * from Vehicle;

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

DELETE FROM Payment WHERE leaseID IN (SELECT leaseID FROM Lease WHERE customerID =4);

DELETE FROM Lease WHERE customerID = 4;

DELETE FROM Customer WHERE customerID =4;

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

ALTER TABLE Payment

CHANGE COLUMN paymentDate transactionDate DATE;

select * from Payment;

paymentID	leaseID	transactionDate	amount
1	1	2023-01-03	200.00
2	2	2023-02-20	1000.00
3	3	2023-03-12	75.00
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 = 'robert@example.com';

customerID	firstName	lastName	email	phoneNumber
3	Robert	Johnson	robert@example.com	555-789-1234
NULL	NULL	NULL	NULL	NULL

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

SELECT * FROM Lease WHERE customerID = 1 AND endDate >= 2023-01-01;

leaseID	vehicleID	customerID	startDate	endDate	type
1	1	1	2023-01-01	2023-01-05	DailyLease
NULL	NULL	NULL	NULL	NULL	NULL

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

SELECT * FROM Payment

JOIN Customer ON Payment.customerID = Customer.customerID

WHERE Customer.phoneNumber = '555-987-6543';

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

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

avgDailyRate
53.714286

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

SELECT * FROM Vehicle WHERE dailyRate = (SELECT MAX(dailyRate) FROM Vehicle);

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 * FROM Vehicle

JOIN Lease ON Vehicle.VehicleID = Lease.VehicleID

WHERE Lease.customerID = 1;

vehicleID	make	model	year	dailyRate	status	passengerCapacity	engineCapacity	leaseID	vehicleID	customerID	startDate	endDate	type
1	Toyota	Camry	2022	50.00	available	4	1450	1	1	1	2023-01-01	2023-01-05	DailyLease

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

SELECT * FROM Lease ORDER BY startDate DESC LIMIT 1;

leaseID	vehicleID	customerID	startDate	endDate	type
10	10	10	2023-10-10	2023-10-31	MonthlyLease
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
1	1	2023-01-03	200.00
2	2	2023-02-20	1000.00
3	3	2023-03-12	75.00
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 Payment);
```

customerID	firstName	lastName	email	phoneNumber
NULL	NULL	NULL	NULL	NULL

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

```
SELECT Vehicle.*, SUM(Payment.amount) AS totalPayments
FROM Vehicle
JOIN Lease ON Vehicle.VehicleID = Lease.VehicleID
JOIN Payment ON Lease.leaseID = Payment.leaseID
GROUP BY Vehicle.VehicleID;
```

vehicleID	make	model	year	dailyRate	status	passengerCapacity	engineCapacity	totalPayments
1	Toyota	Camry	2022	50.00	available	4	1450	200.00
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	1200.00
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 Customer.*, SUM(Payment.amount) AS totalPayments
FROM Customer
LEFT JOIN Payment ON Customer.customerID = Payment.customerID
GROUP BY Customer.customerID;
```

-- 15. List Car Details for Each Lease.

```
SELECT Vehicle.*, Lease.*
FROM Vehicle
JOIN Lease ON Vehicle.VehicleID = Lease.VehicleID;
```

vehicleID	make	model	year	dailyRate	status	passengerCapacity	engineCapacity	leaseID	vehicleID	customerID	startDate	endDate	type
1	Toyota	Camry	2022	50.00	available	4	1450	1	1	1	2023-01-01	2023-01-05	DailyLease
2	Honda	Civic	2023	45.00	available	7	1500	2	2	2	2023-02-15	2023-02-28	MonthlyLease
3	Ford	Focus	2022	48.00	notAvailable	4	1400	3	3	3	2023-03-10	2023-03-15	DailyLease
5	Chevrolet	Malibu	2022	47.00	available	4	1800	5	5	5	2023-05-05	2023-05-10	DailyLease
4	Nissan	Altima	2023	52.00	available	7	1200	6	4	3	2023-06-15	2023-06-30	MonthlyLease
7	BMW	3 Series	2023	60.00	available	7	2499	7	7	7	2023-07-01	2023-07-10	DailyLease
8	Mercedes	C-Class	2022	68.00	available	8	2599	8	8	8	2023-08-12	2023-08-15	MonthlyLease
3	Ford	Focus	2022	48.00	notAvailable	4	1400	9	3	3	2023-09-07	2023-09-10	DailyLease
10	Lexus	ES	2023	54.00	available	4	2500	10	10	10	2023-10-10	2023-10-31	MonthlyLease

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

```
SELECT Lease.*, Customer.*, Vehicle.*
FROM Lease
JOIN Customer ON Lease.customerID = Customer.customerID
JOIN Vehicle ON Lease.VehicleID = Vehicle.VehicleID
WHERE endDate >= 2023-05-10;
```

leaseID	vehicleID	customerID	startDate	endDate	type	customerID	firstName	lastName	email	phoneNumber	vehicleID	make	model	year	dailyRate	status	passenger
2	2	2	2023-02-15	2023-02-28	MonthlyLease	2	Jane	Smith	janesmith@example.com	555-123-4567	2	Honda	Civic	2023	45.00	available	7
3	3	3	2023-03-10	2023-03-15	DailyLease	3	Robert	Johnson	robert@example.com	555-789-1234	3	Ford	Focus	2022	48.00	notAvailable	4
5	5	5	2023-05-05	2023-05-10	DailyLease	5	David	Lee	david@example.com	555-987-6543	5	Chevrolet	Malibu	2022	47.00	available	4
6	4	3	2023-06-15	2023-06-30	MonthlyLease	3	Robert	Johnson	robert@example.com	555-789-1234	4	Nissan	Altima	2023	52.00	available	7
7	7	7	2023-07-01	2023-07-10	DailyLease	7	Michael	Davis	michael@example.com	555-876-5432	7	BMW	3 Series	2023	60.00	available	7
8	8	8	2023-08-12	2023-08-15	MonthlyLease	8	Emma	Wilson	emma@example.com	555-432-1098	8	Mercedes	C-Class	2022	68.00	available	8
9	3	3	2023-09-07	2023-09-10	DailyLease	3	Robert	Johnson	robert@example.com	555-789-1234	3	Ford	Focus	2022	48.00	notAvailable	4
10	10	10	2023-10-10	2023-10-31	MonthlyLease	10	Olivia	Adams	olivia@example.com	555-765-4321	10	Lexus	ES	2023	54.00	available	4

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

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

customerID	firstName	lastName	totalSpent
10	Olivia	Adams	1500.00

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

```
SELECT Vehicle.*, Lease.*
FROM Vehicle
LEFT JOIN Lease ON Vehicle.VehicleID = Lease.VehicleID;
```

vehicleID	make	model	year	dailyRate	status	passengerCapacity	engineCapacity	leaseID	vehicleID	customerID	startDate	endDate	type
2	Honda	Civic	2023	45.00	available	7	1500	2	2	2	2023-02-15	2023-02-28	MonthlyLease
3	Ford	Focus	2022	48.00	notAvailable	4	1400	3	3	3	2023-03-10	2023-03-15	DailyLease
3	Ford	Focus	2022	48.00	notAvailable	4	1400	9	3	3	2023-09-07	2023-09-10	DailyLease
4	Nissan	Altima	2023	52.00	available	7	1200	6	4	3	2023-06-15	2023-06-30	MonthlyLease
5	Chevrolet	Malibu	2022	47.00	available	4	1800	5	5	5	2023-05-05	2023-05-10	DailyLease
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	DailyLease
8	Mercedes	C-Class	2022	68.00	available	8	2599	8	8	8	2023-08-12	2023-08-15	MonthlyLease
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	MonthlyLease