CODING CHALLENGE

```
CREATE DATABASE CAR_RENTAL;
USE CAR_RENTAL;

create table Vehicle(
vehicleID int primary key,
make varchar(225),
model varchar(225),
Year year,
dailyRate decimal(3,0),
status int,
passengerCapacity int,
enginerCapacity int
);

create table Customer (
customerID INT PRIMARY KEY ,
firstName VARCHAR(255) ,
lastName VARCHAR(255),
email VARCHAR(255),
phoneNumber VARCHAR(15)
);

create table Lease(
leaseID int PRIMARY KEY,
vehicleID int,
```

```
customerID int,
startdate date,
endDate date,
type  varchar(255),
foreign key(vehicleID) references Vehicle(vehicleID),
foreign key(customerID) references Customer(customerID)
);

create table Payement(
paymentID int Primary key,
leaseID int,
paymentDate date,
amoount decimal(5,2),
foreign key(leaseID) references Lease(leaseID)
);
alter table payement modify amoount decimal(10,2);
```

INSERTING INTO VEHICLE

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

vehicleID	make	model	Year	dailyRate	status	passengerCapacity	enginerCapacity
1	Toyota	Camry	2022	50	1	4	1450
2	Honda	Civic	2023	45	1	7	1500
3	Ford	Focus	2022	48	0	4	1400
4	Nissan	Altima	2023	52	1	7	1200
5	Chevrolet	Malibu	2022	47	1	4	1800
6	Hyundai	Sonata	2023	49	0	7	1400
7	BMW	3 Series	2023	60	1	7	2499
8	Mercedes	C-Class	2022	58	1	8	2599
9	Audi	A4	2022	55	0	4	2500
10	Lexus	ES	2023	54	1	4	2500

10 rows in set (0.00 sec)

INSERTING INTO CUSTOMER

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');

customerID	firstName	lastName	email	phoneNumber
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

10 rows in set (0.00 sec)

INSERTING INTO LEASE

INSERT INTO Lease (leaseID, vehicleID, customerID, startDate, endDate, type)

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');

leaseID	vehicleID	customerID	startdate	endDate	type
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

10 rows in set (0.00 sec)

INSERTING INTO PAYMENT

INSERT INTO Payement (paymentID, leaseID, paymentDate, amoount)

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);

paymentID	leaseID	paymentDate	amoount
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

10 rows in set (0.00 sec)

QUESTIONS

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

   update vehicle set dailyrate=68 where make='Mercedes';

8	Mercedes	C-Class	2022	68	1	8	2599

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

DELETE FROM Customer
WHERE customerID = your_customer_id;

DELETE FROM Lease
WHERE customerID = 10;

DELETE FROM Payement
WHERE leaseID IN (SELECT leaseID FROM Lease WHERE customerID =10);

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

alter table Payement rename column paymentDate to transactionDate;

transactionDate
2023-01-03
2023-02-20
2023-03-12
2023-04-25
2023-05-07
2023-06-18
2023-07-03
2023-08-14
2023-09-09
2023-10-25

4. Find a specific customer by email.
   select*from Customer where email='william@example.com';

```
+------------+-----------+----------+--------------------+--------------+
| customerID | firstName | lastName | email              | phoneNumber  |
+------------+-----------+----------+--------------------+--------------+
|          9 | William   | Taylor   | william@example.com | 555-321-6547 |
+------------+-----------+----------+--------------------+--------------+
1 row in set (0.00 sec)
```

5. Get active leases for a specific customer.
   select * from lease where customerID = 8 AND endDate >= '2023-08-15';

```
+---------+-----------+------------+------------+------------+---------+
| leaseID | vehicleID | customerID | startdate  | endDate    | type    |
+---------+-----------+------------+------------+------------+---------+
|       8 |         8 |          8 | 2023-08-12 | 2023-08-15 | Monthly |
+---------+-----------+------------+------------+------------+---------+
1 row in set (0.00 sec)
```

6. Find all payments made by a customer with a specific phone number.
   select * from payement where leaseID in (select leaseID
   from Lease where customerID in (select customerID from Customer
   where phoneNumber = '555-555-5555'));

```
+-----------+---------+-----------------+---------+
| paymentID | leaseID | transactionDate | amoount |
+-----------+---------+-----------------+---------+
|         1 |       1 | 2023-01-03      |  200.00 |
+-----------+---------+-----------------+---------+
1 row in set (0.00 sec)
```

7. Calculate the average daily rate of all available cars.
   select AVG(dailyRate) AS AvgRate from vehicle;

```
+---------+
| AvgRate |
+---------+
| 52.8000 |
+---------+
1 row in set (0.00 sec)
```

8. Find the car with the highest daily rate.
   SELECT *
   FROM vehicle
   ORDER BY dailyRate DESC
   LIMIT 1;

vehicleID	make	model	Year	dailyRate	status	passengerCapacity	enginerCapacity
8	Mercedes	C-Class	2022	68	1	8	2599

1 row in set (0.00 sec)

9. Retrieve all cars leased by a specific customer.
   SELECT vehicle.*
   FROM vehicle
   JOIN lease ON vehicle.vehicleID = lease.vehicleID
   JOIN customer ON lease.customerID = customer.customerID
   WHERE customer.customerID = 1;

vehicleID	make	model	Year	dailyRate	status	passengerCapacity	enginerCapacity
1	Toyota	Camry	2022	50	1	4	1450

1 row in set (0.00 sec)

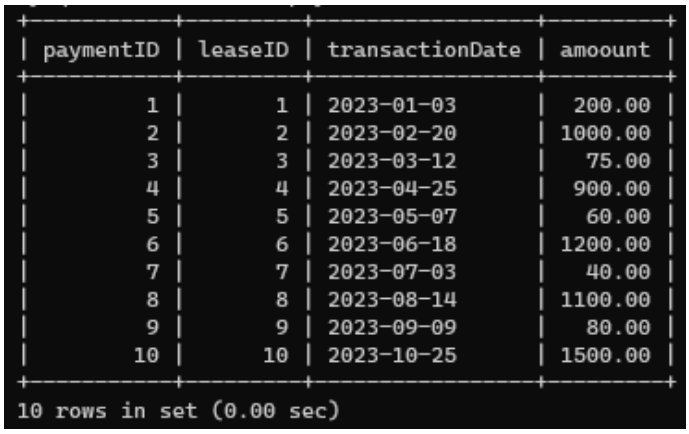
10. Find the details of the most recent lease.
    > select * from lease
    -> order by startdate desc
    -> limit 1;

leaseID	vehicleID	customerID	startdate	endDate	type
10	10	10	2023-10-10	2023-10-31	Monthly

1 row in set (0.00 sec)

11.List all payments made in the year 2023.

> select * from payement where transactionDate like '2023%';



paymentID	leaseID	transactionDate	amoount
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

10 rows in set (0.00 sec)

12.Retrieve customers who have not made any payments.

```
select firstName,lastName from Customer where customerID in
   -> (
   -> select customerID from Lease where leaseID
   -> NOT in
   -> (select leaseID from payement)
   -> );
```

Empty set (0.00 sec)

13.Retrieve Car Details and Their Total Payments.

```
> SELECT
   ->     vehicle.*,
   ->     SUM(payement.amoount) AS total_payments
   -> FROM
   ->     vehicle
   -> LEFT JOIN
   ->     lease ON vehicle.vehicleID = lease.vehicleID
   -> LEFT JOIN
   ->     payement ON lease.leaseID = payement.leaseID
   -> GROUP BY
   ->     vehicle.vehicleID, vehicle.model, vehicle.dailyRate
   -> ORDER BY
   ->     vehicle.vehicleID;
```

vehicleID	make	model	Year	dailyRate	status	passengerCapacity	enginerCapacity	total_payments
1	Toyota	Camry	2022	50	1	4	1450	200.00
2	Honda	Civic	2023	45	1	7	1500	1000.00
3	Ford	Focus	2022	48	0	4	1400	155.00
4	Nissan	Altima	2023	52	1	7	1200	2100.00
5	Chevrolet	Malibu	2022	47	1	4	1800	60.00
6	Hyundai	Sonata	2023	49	0	7	1400	NULL
7	BMW	3 Series	2023	60	1	7	2499	40.00
8	Mercedes	C-Class	2022	68	1	8	2599	1100.00
9	Audi	A4	2022	55	0	4	2500	NULL
10	Lexus	ES	2023	54	1	4	2500	1500.00

10 rows in set (0.00 sec)

14.Calculate Total Payments for Each Customer.

> select Customer.customerID, SUM(payement.amoount) AS totalPayments
-> from Customer JOIN Lease ON Customer.customerID = Lease.customerID
-> LEFT JOIN payement ON Lease.leaseID = payement.leaseID
-> group by Customer.customerID;

customerID	totalPayments
1	200.00
2	1000.00
3	1355.00
4	900.00
5	60.00
7	40.00
8	1100.00
10	1500.00

8 rows in set (0.00 sec)

15.List Car Details for Each Lease.

> select V.*,L.leaseID from lease L inner join vehicle V on V.vehicleID=L.vehicleID;

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

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

```
mysql> SELECT
    ->     Customer.customerID,
    ->     Customer.firstName,
    ->     Customer.lastName,
    ->     vehicle.vehicleID,
    ->     vehicle.make,
    ->     Lease.leaseID,
    ->     Lease.startdate,
    ->     Lease.endDate
    -> FROM
    ->     Lease
    -> JOIN
    ->     Customer ON Lease.customerID = Customer.customerID
    -> JOIN
    ->     vehicle ON Lease.vehicleID = vehicle.vehicleID
    -> WHERE
    ->     vehicle.status=1;
```

customerID	firstName	lastName	vehicleID	make	leaseID	startdate	endDate
1	John	Doe	1	Toyota	1	2023-01-01	2023-01-05
2	Jane	Smith	2	Honda	2	2023-02-15	2023-02-28
4	Sarah	Brown	4	Nissan	4	2023-04-20	2023-04-30
3	Robert	Johnson	4	Nissan	6	2023-06-15	2023-06-30
5	David	Lee	5	Chevrolet	5	2023-05-05	2023-05-10
7	Michael	Davis	7	BMW	7	2023-07-01	2023-07-10
8	Emma	Wilson	8	Mercedes	8	2023-08-12	2023-08-15
10	Olivia	Adams	10	Lexus	10	2023-10-10	2023-10-31

8 rows in set (0.00 sec)

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

```
select  c.firstName, c.lastName,p.amoount from payement p
    -> inner join Lease l
    -> on l.leaseID = p.leaseID
    -> inner join Customer c
    -> on c.customerID = l.customerID
    -> order by p.amoount desc limit 1;
```

firstName	lastName	amoount
Olivia	Adams	1500.00

1 row in set (0.00 sec)

18.List All Cars with Their Current Lease Information.

-> select vehicle.make,vehicle.model,vehicle.status,lease.* from lease

-> INNER JOIN vehicle on lease.vehicleID=vehicle.vehicleID;

make	model	status	leaseID	vehicleID	customerID	startdate	endDate	type
Toyota	Camry	1	1	1	1	2023-01-01	2023-01-05	Daily
Honda	Civic	1	2	2	2	2023-02-15	2023-02-28	Monthly
Ford	Focus	0	3	3	3	2023-03-10	2023-03-15	Daily
Nissan	Altima	1	4	4	4	2023-04-20	2023-04-30	Monthly
Chevrolet	Malibu	1	5	5	5	2023-05-05	2023-05-10	Daily
Nissan	Altima	1	6	4	3	2023-06-15	2023-06-30	Monthly
BMW	3 Series	1	7	7	7	2023-07-01	2023-07-10	Daily
Mercedes	C-Class	1	8	8	8	2023-08-12	2023-08-15	Monthly
Ford	Focus	0	9	3	3	2023-09-07	2023-09-10	Daily
Lexus	ES	1	10	10	10	2023-10-10	2023-10-31	Monthly

10 rows in set (0.00 sec)