Coding Challenge - Car Rental System

Creating Tables:

create table vehicle(vechicleID int primary key, make varchar(255), model varchar(255), year int, Dailyrate decimal, status bit, passengercapacity int, enginecapacity int);

create table customer(customerid int primary key, firstname varchar(255), lastname varchar(255), email varchar(255), phonenumber varchar(255));

create table lease (leaseid int primary key,vehicleID int,customerid int, foreign key (vehicleID) references vehicle(vechicleID), foreign key (customerid) references customer(customerid),startdate date, enddate date, leasetype varchar(255));

create table payment(paymentid int primary key, leaseid int, paymentdate date, amount decimal, foreign key (leaseid) references lease(leaseid));

Inserting Records:

insert into vehicle values
(1,'Toyato','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);

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','sarahe@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 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);
```

Reading the tables:

```
select * from vehicle;

select * from customer;

select * from lease;

select * from payment;
```

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

UPDATE vehicle SET Dailyrate = 68.00 WHERE make = 'Mercedes';

```
mysql> select * from vehicle;
+------------+-----------+----------+------+-----------+---------+------------------+-----------------+
| vechicleID | make      | model    | year | Dailyrate | status  | passengercapacity | enginecapacity |
+------------+-----------+----------+------+-----------+---------+------------------+-----------------+
|          1 | Toyato    | Camry    | 2022 |        50 | 0x01    |                4 |            1450 |
|          2 | Honda     | Civic    | 2023 |        45 | 0x01    |                7 |            1500 |
|          3 | Ford      | Focus    | 2022 |        48 | 0x00    |                4 |            1400 |
|          4 | Nissan    | Altima   | 2023 |        52 | 0x01    |                7 |            1200 |
|          5 | Chevrolet | Malibu   | 2022 |        47 | 0x01    |                4 |            1800 |
|          6 | Hyundai   | Sonata   | 2023 |        49 | 0x00    |                7 |            1400 |
|          7 | BMW       | 3 Series | 2023 |        60 | 0x01    |                7 |            2499 |
|          8 | Mercedes  | C-Class  | 2022 |        68 | 0x01    |                8 |            2599 |
|          9 | Audi      | A4       | 2022 |        55 | 0x00    |                4 |            2500 |
|         10 | Lexus     | ES       | 2023 |        54 | 0x01    |                4 |            2500 |
+------------+-----------+----------+------+-----------+---------+------------------+-----------------+
10 rows in set (0.00 sec)
```

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

DELETE FROM Payment
WHERE leaseID IN (SELECT leaseID FROM Lease WHERE customerID = 1);

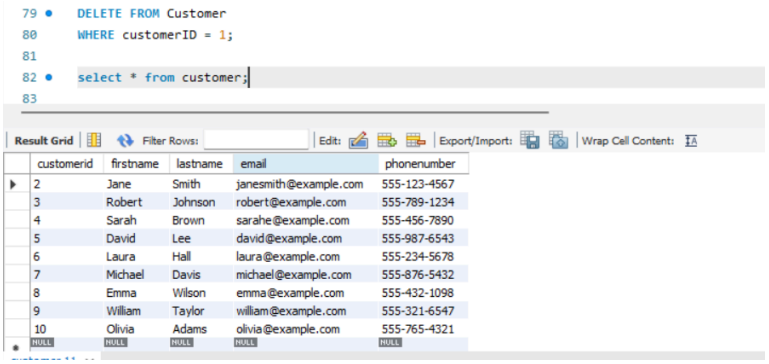
select * from payment;

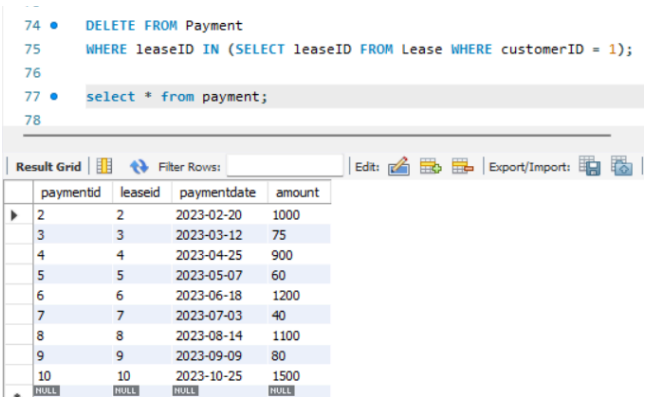
DELETE FROM Lease
WHERE customerID = 'specific_customer_id';

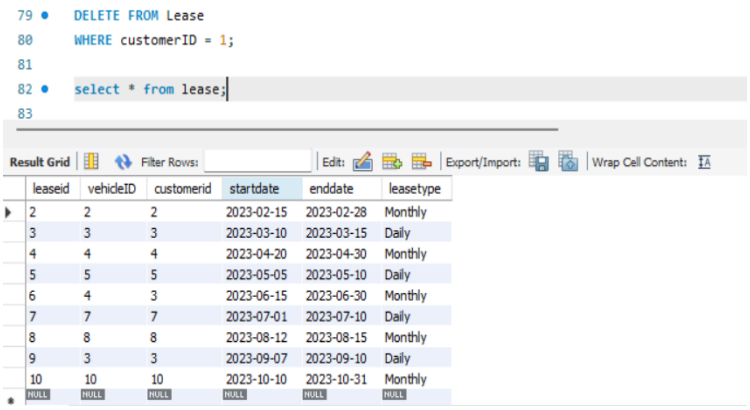
select * from lease;

DELETE FROM Customer
WHERE customerID = 1;

select * from customer;







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

alter table Payment rename column paymentDate to transactionDate;

```
112    /*    3    */
113
114 •  alter table Payment
115    rename column paymentDate to transactionDate;
116
117 •  select * from payment;
118
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

paymentid	leaseid	transactionDate	amount
1	1	2023-01-03	200
2	2	2023-02-20	1000
3	3	2023-03-12	75
4	4	2023-04-25	900
5	5	2023-05-07	60
6	6	2023-06-18	1200
7	7	2023-07-03	40

payment 16 ×

4. Find a specific customer by email.

select * from Customer where email = 'johndoe@example.com';

```
121 •  select *
122    from Customer
123    where email = 'johndoe@example.com';
124
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

customerid	firstname	lastname	email	phonenumber
1	John	Doe	johndoe@example.com	555-555-5555
NULL	NULL	NULL	NULL	NULL

5. Get active leases for a specific customer.

select Lease.*, Vehicle.make, Vehicle.model from Lease join Vehicle on Lease.vehicleID = Vehicle.vehicleID
where Lease.customerID = 3 and Lease.endDate >= CURDATE();

```
130    /*5. Get active leases for a specific customer. */
131
132 •  select Lease.*, Vehicle.make, Vehicle.model from Lease join Vehicle on Lease.vehicleID = Vehicle.vehicleID
133    where Lease.customerID = 3 and Lease.endDate >= CURDATE();
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

leaseid	vehicleID	customerid	startdate	enddate	leasetype	make	model

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

select Payment.* from Payment join Lease on Payment.leaseID = Lease.leaseID
join Customer on Lease.customerID = Customer.customerID WHERE Customer.phoneNumber = '555-987-6543';

```
133 •  select Payment.*
134    from Payment
135    join Lease on Payment.leaseID = Lease.leaseID
136    join Customer on Lease.customerID = Customer.customerID
137    WHERE Customer.phoneNumber = '555-987-6543';
138
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

paymentid	leaseid	transactionDate	amount
5	5	2023-05-07	60

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

select avg(dailyRate) as average_daily_rate from Vehicle where status = 'available';

```
139    /*    7    */
140
141 •  select avg(dailyRate) as average_daily_rate
142    from Vehicle
143    where status = 'available';
144
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

average_daily_rate
50.6667

8. Find the car with the highest daily rate.

select * from Vehicle order by dailyRate desc limit 1;

```
145    /*    8    */
146
147 •  select *
148    from Vehicle
149    order by dailyRate desc
150    limit 1;
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content: | Fetch rows:

vechicleID	make	model	year	Dailyrate	status	passengercapacity	enginecapacity
8	Mercedes	C-Class	2022	68	1	8	2599
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

9. Retrieve all cars leased by a specific customer.

select vehicle.* from vehicle
join Lease on vehicle.vehicleID = Lease.vehicleID where Lease.customerID = '2';

```
140     /*    9    */
141
142 •   SELECT vehicle.*
143     FROM vehicle
144     JOIN Lease ON vehicle.vehicleID = Lease.vehicleID
145     WHERE Lease.customerID = '2';
146
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

vehicleid	make	model	year	Dailyrate	status	passengercapacity	enginecapacity
2	Honda	Civic	2023	45	1	7	1500

10. Find the details of the most recent lease.

SELECT Lease.*, Vehicle.make, Vehicle.model FROM Lease
JOIN Vehicle ON Lease.vehicleID = Vehicle.vehicleID ORDER BY Lease.startDate DESC LIMIT 1;

```
147     /*    10    */
148
149 •   SELECT Lease.*, Vehicle.make, Vehicle.model
150     FROM Lease
151     JOIN Vehicle ON Lease.vehicleID = Vehicle.vehicleID
152     ORDER BY Lease.startDate DESC
153     LIMIT 1;
154
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: | Fetch rows:

leaseid	vehicleID	customerid	startdate	enddate	leasetype	make	model
10	10	10	2023-10-10	2023-10-31	Monthly	Lexus	ES

11. List all payments made in the year 2023.

select * from Payment where year(transactionDate) = 2023;

```
155     /*    11    */
156
157 •   select *
158     from Payment
159     where year(transactionDate) = 2023;
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

paymentid	leaseid	transactionDate	amount
1	1	2023-01-03	200
2	2	2023-02-20	1000
3	3	2023-03-12	75
4	4	2023-04-25	900
5	5	2023-05-07	60
6	6	2023-06-18	1200
7	7	2023-07-03	40
8	8	2023-08-14	1100
9	9	2023-09-09	80
10	10	2023-10-25	1500

12. Retrieve customers who have not made any payments.

select Customer.* from Customer left join Payment on Customer.customerID = Payment.leaseid WHERE Payment.leaseID is null;

```
161    /*    12    */
162
163 •  select Customer.* from Customer left join Payment on Customer.customerID = Payment.leaseid WHERE Payment.leaseID is null;
164
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

customerid	firstname	lastname	email	phonenumber

13. Retrieve Car Details and Their Total Payments.

select Vehicle.vehicleID,Vehicle.make,Vehicle.model,SUM(Payment.amount) as total_payments
from Vehicle join Lease on Vehicle.vehicleID = Lease.vehicleID
join Payment on Lease.leaseID = Payment.leaseID
group by Vehicle.vehicleID, Vehicle.make, Vehicle.model;

```
165    /*    13    */
166
167 •  select Vehicle.vehicleID,Vehicle.make,Vehicle.model,SUM(Payment.amount) as total_payments
168    from Vehicle join Lease on Vehicle.vehicleID = Lease.vehicleID
169    join Payment on Lease.leaseID = Payment.leaseID
170    group by Vehicle.vehicleID, Vehicle.make, Vehicle.model;
171
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

vehicleID	make	model	total_payments
1	Toyato	Camry	200
2	Honda	Civic	1000
3	Ford	Focus	155
4	Nissan	Altima	2100
5	Chevrolet	Malibu	60

14. Calculate Total Payments for Each Customer.

select Customer.customerID,Customer.firstName,Customer.lastName,SUM(Payment.amount) AS total_payments
from Customer
join Lease on Customer.customerID = Lease.customerID
join Payment on Lease.leaseID = Payment.leaseID
group by Customer.customerID;

```
172     /*    13    */
173
174 •   select Customer.customerID,Customer.firstName,Customer.lastName,SUM(Payment.amount) AS total_payments
175     from Customer
176     join Lease on Customer.customerID = Lease.customerID
177     join Payment on Lease.leaseID = Payment.leaseID
178     group by Customer.customerID;
179
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

customerID	firstName	lastName	total_payments
1	John	Doe	200
2	Jane	Smith	1000
3	Robert	Johnson	1355
4	Sarah	Brown	900
5	David	Lee	60
7	Michael	Davis	40
8	Emma	Wilson	1100
10	Olivia	Adams	1500

15. List Car Details for Each Lease.

select Lease.*, Vehicle.make, Vehicle.model from Lease join Vehicle on Lease.vehicleID = Vehicle.vehicleID;

```
180     /*    15    */
181
182 •   select Lease.*, Vehicle.make, Vehicle.model from Lease join Vehicle on Lease.vehicleID = Vehicle.vehicleID;
183
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

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

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

select Lease.*,Customer.firstName,Customer.lastName,Vehicle.make,Vehicle.model
from Lease
join Customer on Lease.customerID = Customer.customerID
join Vehicle on Lease.vehicleID = Vehicle.vehicleID
where Lease.endDate >= curdate();

```
184     /*    16    */
185
186 •   select Lease.*,Customer.firstName,Customer.lastName,Vehicle.make,Vehicle.model
187     from Lease
188     join Customer on Lease.customerID = Customer.customerID
189     join Vehicle on Lease.vehicleID = Vehicle.vehicleID
190     where Lease.endDate >= curdate();
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

leaseid	vehicleID	customerid	startdate	enddate	leasetype	firstName	lastName	make	model

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

select Customer.customerID,Customer.firstName,Customer.lastName,SUM(Payment.amount) AS total_spent
from Customer
join Lease on Customer.customerID = Lease.customerID
join Payment on Lease.leaseID = Payment.leaseID
group by Customer.customerID
order by total_spent desc limit 1;

```
192    /*    17    */
193
194    select Customer.customerID,Customer.firstName,Customer.lastName,SUM(Payment.amount) AS total_spent
195    from Customer
196    join Lease on Customer.customerID = Lease.customerID
197    join Payment on Lease.leaseID = Payment.leaseID
198    group by Customer.customerID
199    order by total_spent desc limit 1;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: | Fetch rows:

customerID	firstName	lastName	total_spent
10	Olivia	Adams	1500

18. List All Cars with Their Current Lease Information.

select vehicle.vehicleid,Vehicle.make,vehicle.model,Lease.startDate as leaseStartDate,Lease.endDate as leaseEndDate,Lease.customerID as leaseCustomerID from Vehicle
left join Lease on Vehicle.vehicleID = Lease.vehicleID and Lease.endDate >= CURDATE();

```
201    /*    18    */
202
203    select vehicle.vehicleid,Vehicle.make,vehicle.model,Lease.startDate as leaseStartDate,Lease.endDate
204    as leaseEndDate,Lease.customerID as leaseCustomerID from Vehicle
205    left join Lease on Vehicle.vehicleID = Lease.vehicleID and Lease.endDate >= CURDATE();
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

vehicleid	make	model	leaseStartDate	leaseEndDate	leaseCustomerID
1	Toyato	Camry	NULL	NULL	NULL
2	Honda	Civic	NULL	NULL	NULL
3	Ford	Focus	NULL	NULL	NULL
4	Nissan	Altima	NULL	NULL	NULL
5	Chevrolet	Malibu	NULL	NULL	NULL
6	Hyundai	Sonata	NULL	NULL	NULL
7	BMW	3 Series	NULL	NULL	NULL
8	Mercedes	C-Class	NULL	NULL	NULL
9	Audi	A4	NULL	NULL	NULL
10	Lexus	ES	NULL	NULL	NULL