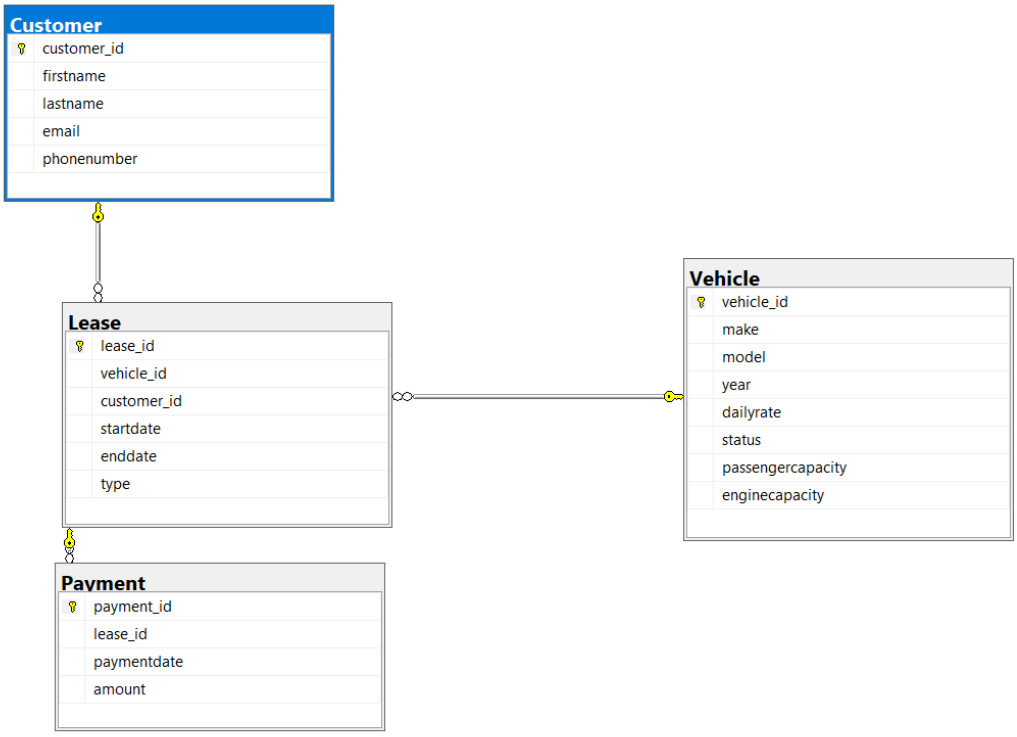
CODING CHALLENGE-CAR RENTAL SYSTEM

Name:Nidya Thirshala M

ER Diagram:



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

```
Update Vehicle set dailyrate=68 where make='Mercedes';
select * from Vehicle;
```

Before Update:

carID	make	model	Year	dailyRate	available	passenger Capacity	engineCapacity
8	Mercedes	C-Class	2022	58.00	1	8	2599

After Update:

8	8	Mercedes	C-Class	2022	68.00	1	8	2599

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

I have used “on delete cascade on update cascade” to maintain Referential Integrity.

```
delete from Customer where customer_id=7;
select * from Payment;
select* from Lease;
select*from Customer;
```

Payment Table:

payment_id	lease_id	paymentdate	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
8	8	2023-08-14	1100
9	9	2023-09-09	80
10	10	2023-10-25	1500

Lease Table:

lease_id	vehicle_id	customer_id	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
8	8	8	2023-09-07	2023-09-10	Daily
9	3	3	2023-09-07	2023-09-10	Daily
10	10	10	2023-10-10	2023-10-31	Monthly

Customer Table:

customer_id	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
8	Emma	Wilson	emma@example.com	555-432-1098
9	William	Taylor	wiiliam@example.com	555-321-6547
10	Olivia	Adams	olivia@example.com	555-765-4321

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

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

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

4. Find a specific customer by email.

```
select customer_id,firstname,lastname,phonenumber from Customer where email='emma@example.com';
```

customer_id	firstname	lastname	phonenumber
8	Emma	Wilson	555-432-1098

5. Get active leases for a specific customer.

```
select l.lease_id,v.vehicle_id,v.make,v.model,v.year,l.startdate,l.enddate,l.type from Lease l join Vehicle v
on l.vehicle_id=v.vehicle_id where l.customer_id=6 and getdate() between l.startdate and l.enddate;
```

Since all the records are in "2023" so there are no active leases.

Results Messages

lease_id	vehicle_id	make	model	year	startdate	enddate	type

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

```
select p.* from Payment p join Lease l on p.lease_id=l.lease_id
where l.customer_id=(select customer_id from Customer
where phonenumber='555-555-5555');
```

payment_id	lease_id	transactionDate	amount
1	1	2023-01-03	200

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

```
select avg(dailyrate) as 'Average daily rate for available cars'
from Vehicle where status=1;
```

Average daily rate for available cars
54.714285

8. Find the car with the highest daily rate.

```
select * from Vehicle where dailyrate=(select max(dailyrate) from Vehicle);
```

vehicle_id	make	model	year	dailyrate	status	passengercapacity	enginecapacity
6	Hyundai	Sonata	2023	4900.00	0	7	1400

9. Retrieve all cars leased by a specific customer.

```
select * from Vehicle v join Lease l on v.vehicle_id=l.vehicle_id join Customer c on
l.customer_id=c.customer_id where c.customer_id=4;
```

Results Messages

	vehicle_id	make	model	year	dailyrate	status	passengercapacity	enginecapacity	lease_id	vehicle_id	customer_id	startdate	enddate	type	customer_id	firstname	lastname	email	phonenumber
1	4	Nissan	Altima	2023	52.00	1	7	1200	4	4	4	2023-04-20	2023-04-30	Monthly	4	Sarah	Brown	sarah@example.com	555-456-7890

10. Find the details of the most recent lease.

```
SELECT TOP 1 l.*FROM Lease l
ORDER BY  l.StartDate DESC;
```

lease_id	vehicle_id	customer_id	startdate	enddate	type
10	10	10	2023-10-10	2023-10-31	Monthly

11. List all payments made in the year 2023

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

Results Messages

payment_id	lease_id	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
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 * from Customer where customer_id not in (select l.customer_id from Lease l
 join Payment p on l.lease_id=p.lease_id);
```

customer_id	firstname	lastname	email	phonenumber
6	Laura	Hall	laura@example.com	555-234-5678
9	William	Taylor	wiiliam@example.com	555-321-6547

13. Retrieve Car Details and Their Total Payments.

```
select v.vehicle_id,v.make,v.model,v.year,v.dailyRate,v.status,v.passengerCapacity,v.engineCapacity,
sum(p.amount) AS TotalPayments from Vehicle v join Lease l ON v.vehicle_id = l.vehicle_id
join Payment p ON l.lease_id = p.lease_id group by v.vehicle_id,v.make,v.model,v.year,v.dailyRate, v.status,
v.passengerCapacity,v.engineCapacity;
```

Results Messages

	vehicle_id	make	model	year	dailyRate	status	passengerCapacity	engineCapacity	TotalPayments
1	1	Toyota	Camry	2022	50.00	1	4	1450	200
2	2	Honda	Civic	2023	45.00	1	7	1500	1000
3	3	Ford	Focus	2022	48.00	0	4	1400	155
4	4	Nissan	Altima	2023	52.00	1	7	1200	2100
5	5	Chevrolet	Malibu	2022	49.00	0	7	1400	60
6	8	Mercedes	C-Class	2022	68.00	1	8	2599	1100
7	10	Lexus	ES	2023	54.00	1	4	2500	1500

14. Calculate Total Payments for Each Customer.

```
select c.customer_id,c.firstname,c.lastname,SUM(p.amount) AS TotalPayments
from Customer c join Lease l ON c.customer_id = l.customer_id
join Payment p ON l.lease_id = p.lease_id group by c.customer_id, c.firstName, c.lastName
order by customer_id;
```

Results Messages

	customer_id	firstname	lastname	TotalPayments
1	1	John	Doe	200
2	2	Jane	Smith	1000
3	3	Robert	Johnson	1355
4	4	Sarah	Brown	900
5	5	David	Lee	60
6	7	Michael	Davis	40
7	8	Emma	Wilson	1100
8	10	Olivia	Adams	1500

15. List Car Details for Each Lease.

```
select l.lease_id,v.vehicle_id,v.make,v.model,v.year,v.dailyRate,v.status,v.passengerCapacity,
v.engineCapacity,l.startDate,l.endDate,l.type from Lease l join Vehicle v on l.vehicle_id=v.vehicle_id;
```

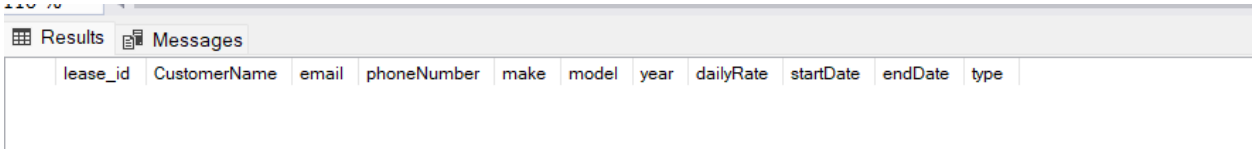
Results Messages

	lease_id	vehicle_id	make	model	year	dailyRate	status	passengerCapacity	engineCapacity	startDate	endDate	type
1	1	1	Toyota	Camry	2022	50.00	1	4	1450	2023-01-01	2023-01-05	Daily
2	2	2	Honda	Civic	2023	45.00	1	7	1500	2023-02-15	2023-02-28	Monthly
3	3	3	Ford	Focus	2022	48.00	0	4	1400	2023-03-10	2023-03-15	Daily
4	4	4	Nissan	Altima	2023	52.00	1	7	1200	2023-04-20	2023-04-30	Monthly
5	5	5	Chevrolet	Malibu	2022	49.00	0	7	1400	2023-05-05	2023-05-10	Daily
6	6	4	Nissan	Altima	2023	52.00	1	7	1200	2023-06-15	2023-06-30	Monthly
7	7	7	BMW	3Series	2023	60.00	1	7	2499	2023-07-01	2023-07-10	Daily
8	8	8	Mercedes	C-Class	2022	68.00	1	8	2599	2023-09-07	2023-09-10	Mothly
9	9	3	Ford	Focus	2022	48.00	0	4	1400	2023-09-07	2023-09-10	Daily
10	10	10	Lexus	ES	2023	54.00	1	4	2500	2023-10-10	2023-10-31	Monthly

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

```
SELECT l.lease_id,c.firstName, c.lastName ,c.email,c.phoneNumber,v.make,
v.model,v.year,v.dailyRate,l.startDate,l.endDate, l.type
from Lease l
join Customer c on l.customer_id = c.customer_id
join Vehicle V ON L.vehicle_id = V.vehicle_id
where L.endDate >= GETDATE();
```

Since all the records are in “2023” so there are no active leases.



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

```
SELECT top 1 c.customer_id, c.firstName, c.lastName,sum(p.amount) AS Mostly_spent_lease
from Customer C join Lease L ON C.customer_id = L.customer_id join
Payment p on l.lease_id = p.lease_id group by c.customer_id, c.firstName, c.lastName order by  Mostly_spent_lease desc;
```

110 %

Results | Messages

	customer_id	firstName	lastName	Mostly_spent_lease
1	10	Olivia	Adams	1500

18. List All Cars with Their Current Lease Information.

```
--18
select v.*,l.lease_id,l.startDate,l.endDate,l.type ,c.*from Vehicle v
left join Lease l ON v.vehicle_id = l.vehicle_id left join
Customer c ON l.customer_id = c.customer_id where l.endDate >= GETDATE()
order by v.vehicle_id;
```

Since all the records are in “2023” so there is no current lease information.