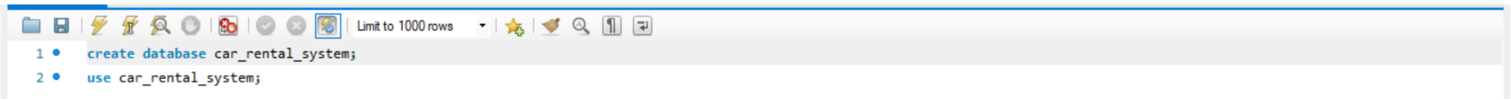
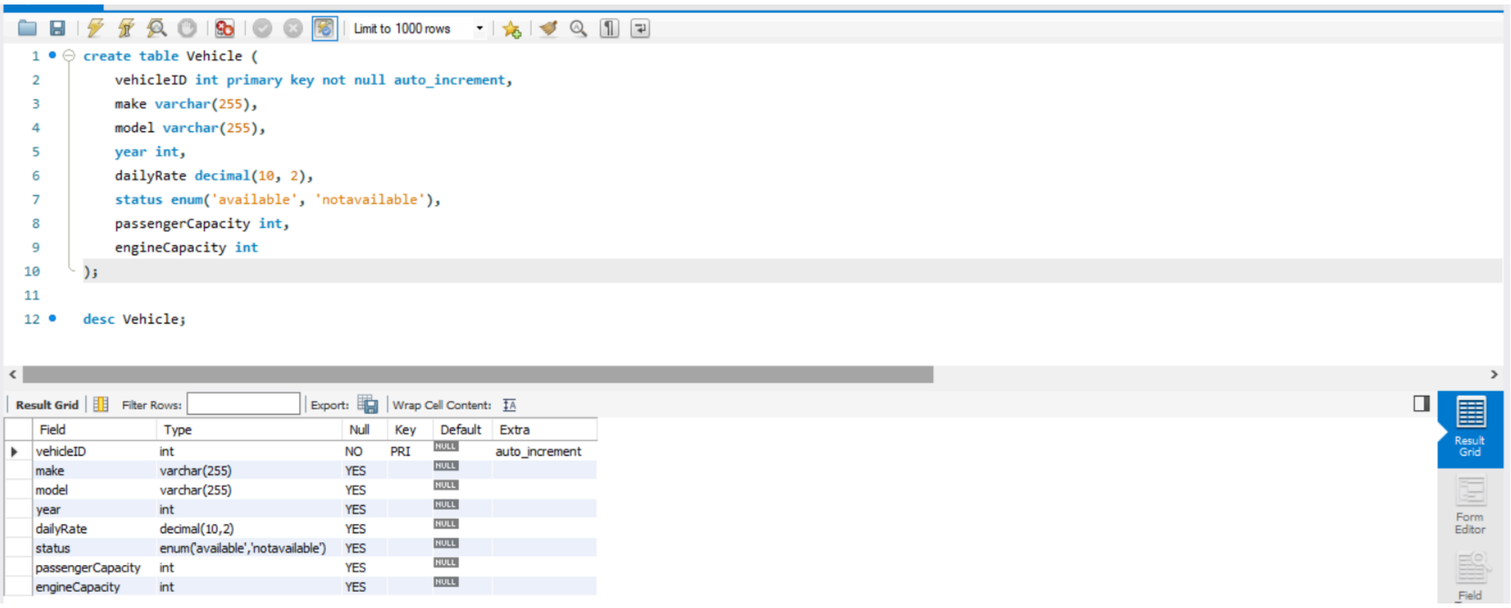
Creating DB -



```
create database car_rental_system;
use car_rental_system;
```

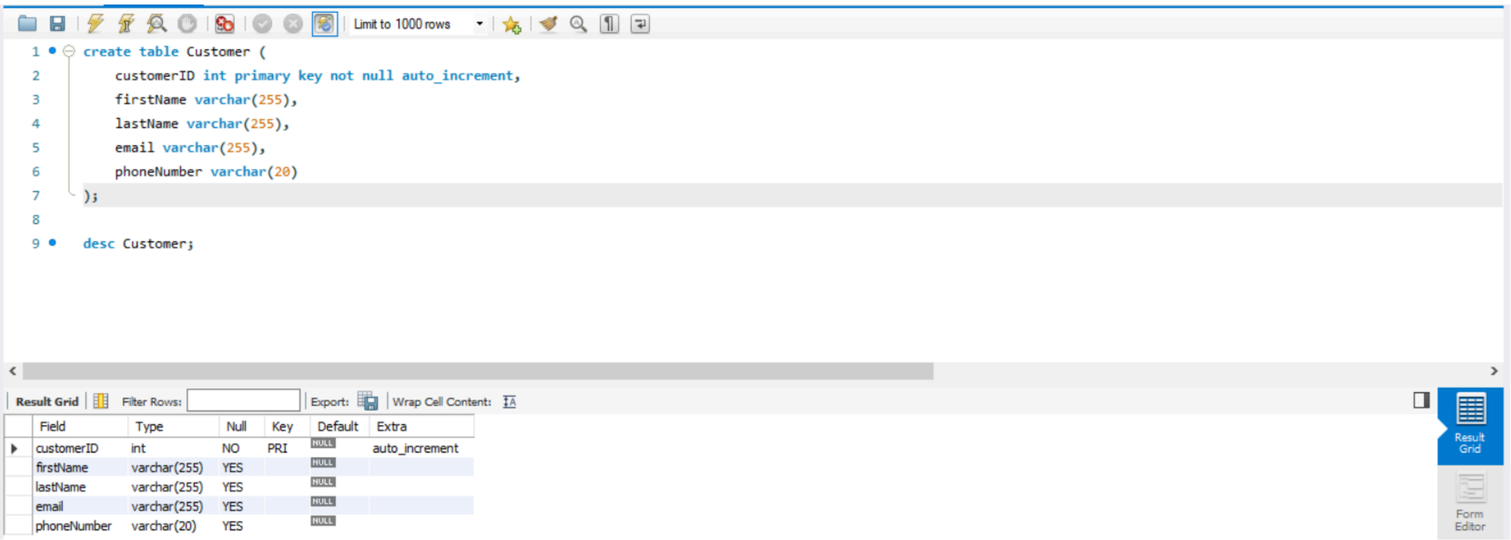
Creating Vehicle table -



```
create table Vehicle (
    vehicleID int primary key not null auto_increment,
    make varchar(255),
    model varchar(255),
    year int,
    dailyRate decimal(10, 2),
    status enum('available', 'notavailable'),
    passengerCapacity int,
    engineCapacity int
);

desc Vehicle;
```

Field	Type	Null	Key	Default	Extra
vehicleID	int	NO	PRI	NULL	auto_increment
make	varchar(255)	YES		NULL	
model	varchar(255)	YES		NULL	
year	int	YES		NULL	
dailyRate	decimal(10,2)	YES		NULL	
status	enum('available','notavailable')	YES		NULL	
passengerCapacity	int	YES		NULL	
engineCapacity	int	YES		NULL	

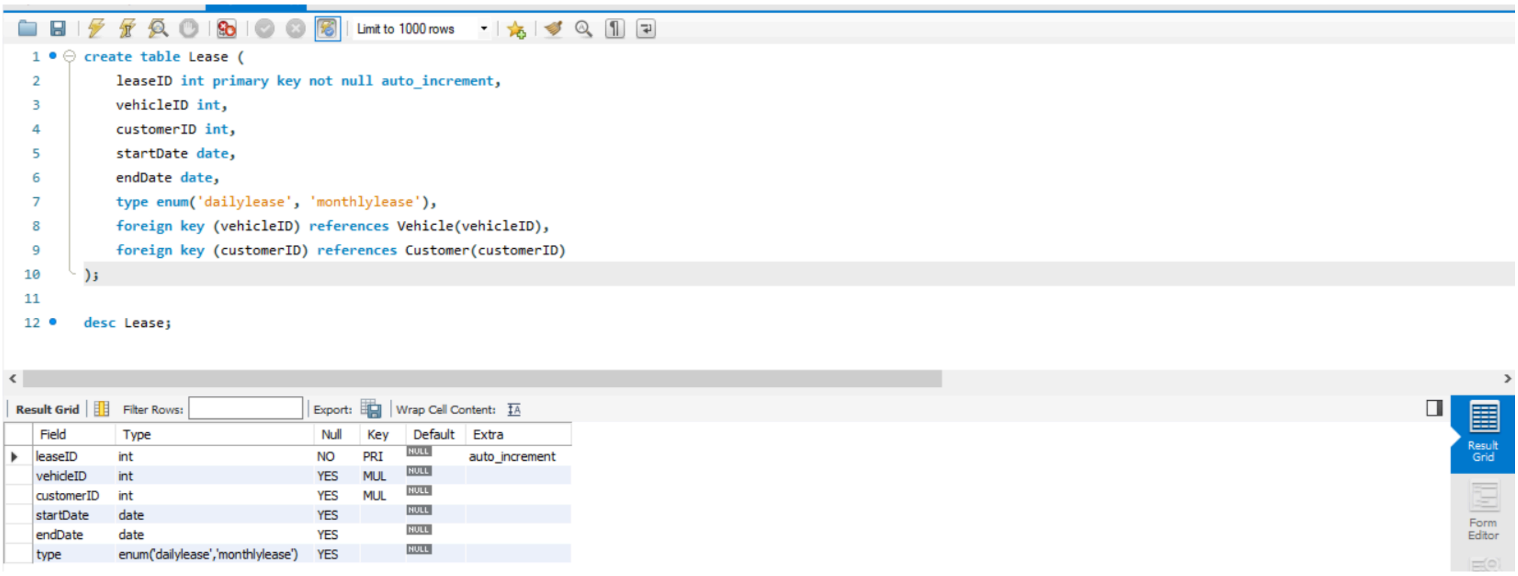
Creating Customer table -



```
create table Customer (
    customerID int primary key not null auto_increment,
    firstName varchar(255),
    lastName varchar(255),
    email varchar(255),
    phoneNumber varchar(20)
);

desc Customer;
```

Field	Type	Null	Key	Default	Extra
customerID	int	NO	PRI	NULL	auto_increment
firstName	varchar(255)	YES		NULL	
lastName	varchar(255)	YES		NULL	
email	varchar(255)	YES		NULL	
phoneNumber	varchar(20)	YES		NULL	

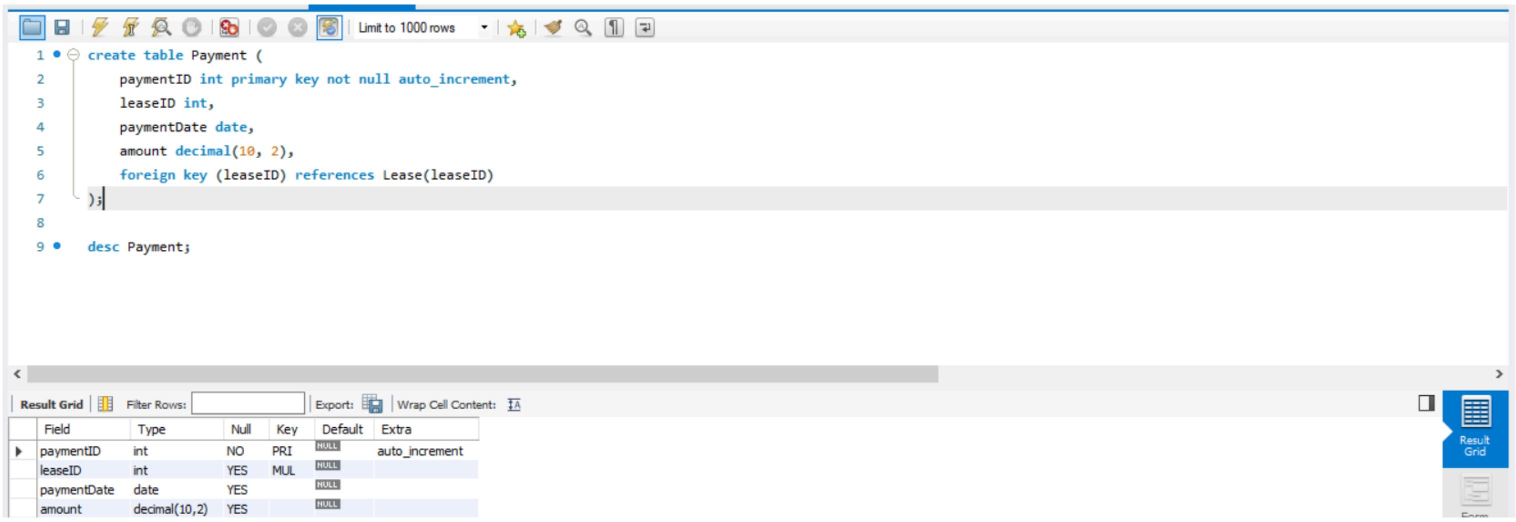
Creating Lease table -



```
create table Lease (
    leaseID int primary key not null auto_increment,
    vehicleID int,
    customerID int,
    startDate date,
    endDate date,
    type enum('dailylease', 'monthlylease'),
    foreign key (vehicleID) references Vehicle(vehicleID),
    foreign key (customerID) references Customer(customerID)
);

desc Lease;
```

Field	Type	Null	Key	Default	Extra
leaseID	int	NO	PRI	NULL	auto_increment
vehicleID	int	YES	MUL	NULL	
customerID	int	YES	MUL	NULL	
startDate	date	YES		NULL	
endDate	date	YES		NULL	
type	enum('dailylease','monthlylease')	YES		NULL	

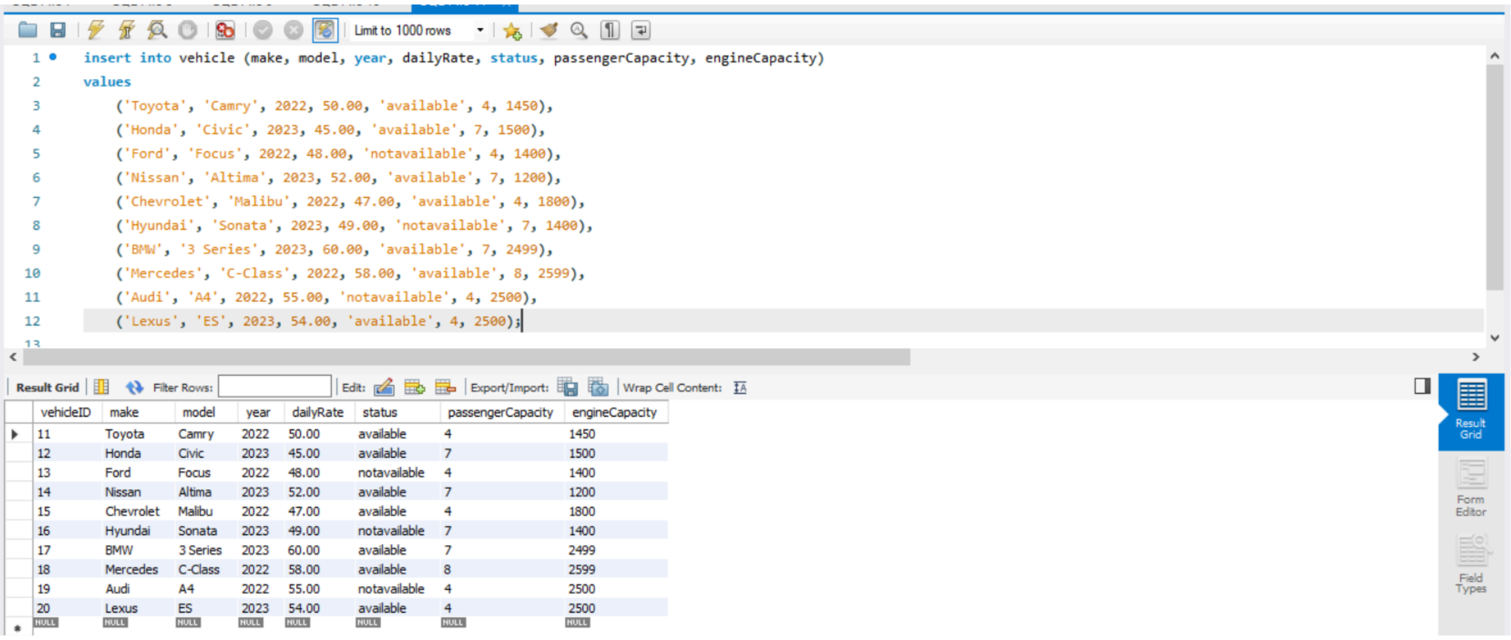
Creating Payment table -



```
create table Payment (
    paymentID int primary key not null auto_increment,
    leaseID int,
    paymentDate date,
    amount decimal(10, 2),
    foreign key (leaseID) references Lease(leaseID)
);

desc Payment;
```

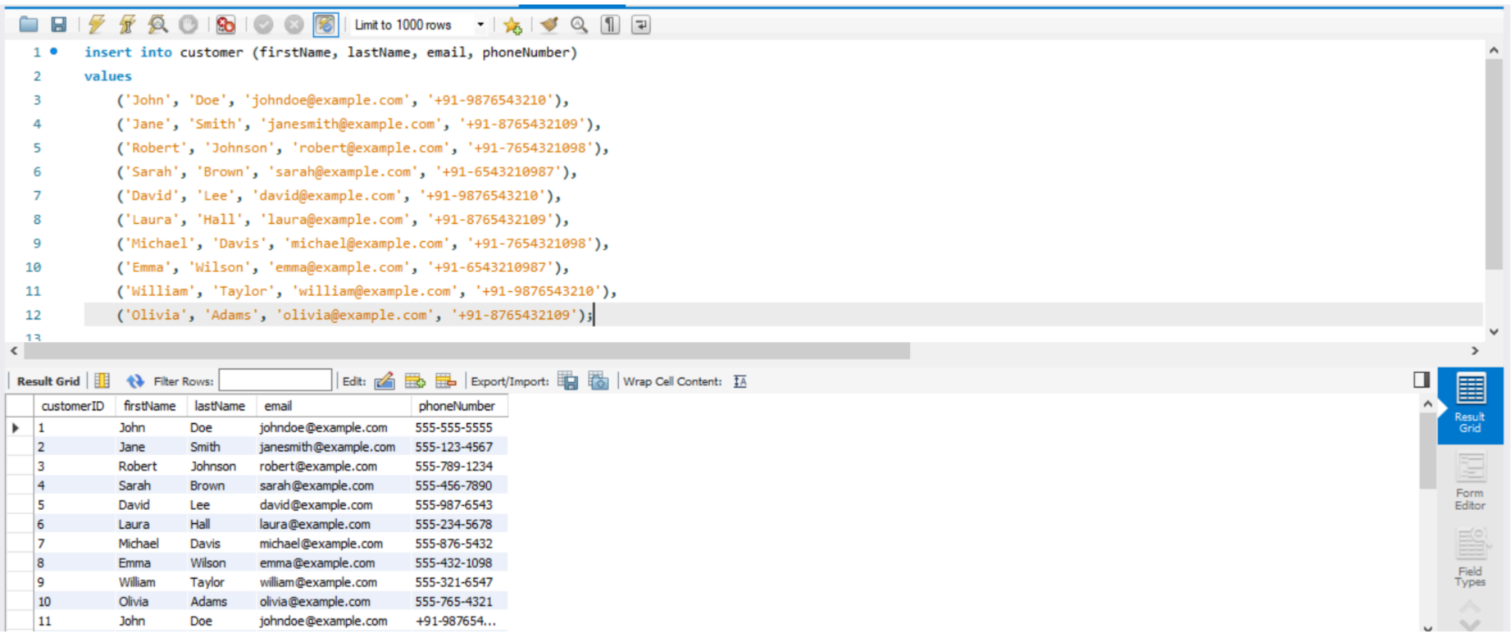
Field	Type	Null	Key	Default	Extra
paymentID	int	NO	PRI	NULL	auto_increment
leaseID	int	YES	MUL	NULL	
paymentDate	date	YES		NULL	
amount	decimal(10,2)	YES		NULL	

Insert Values -



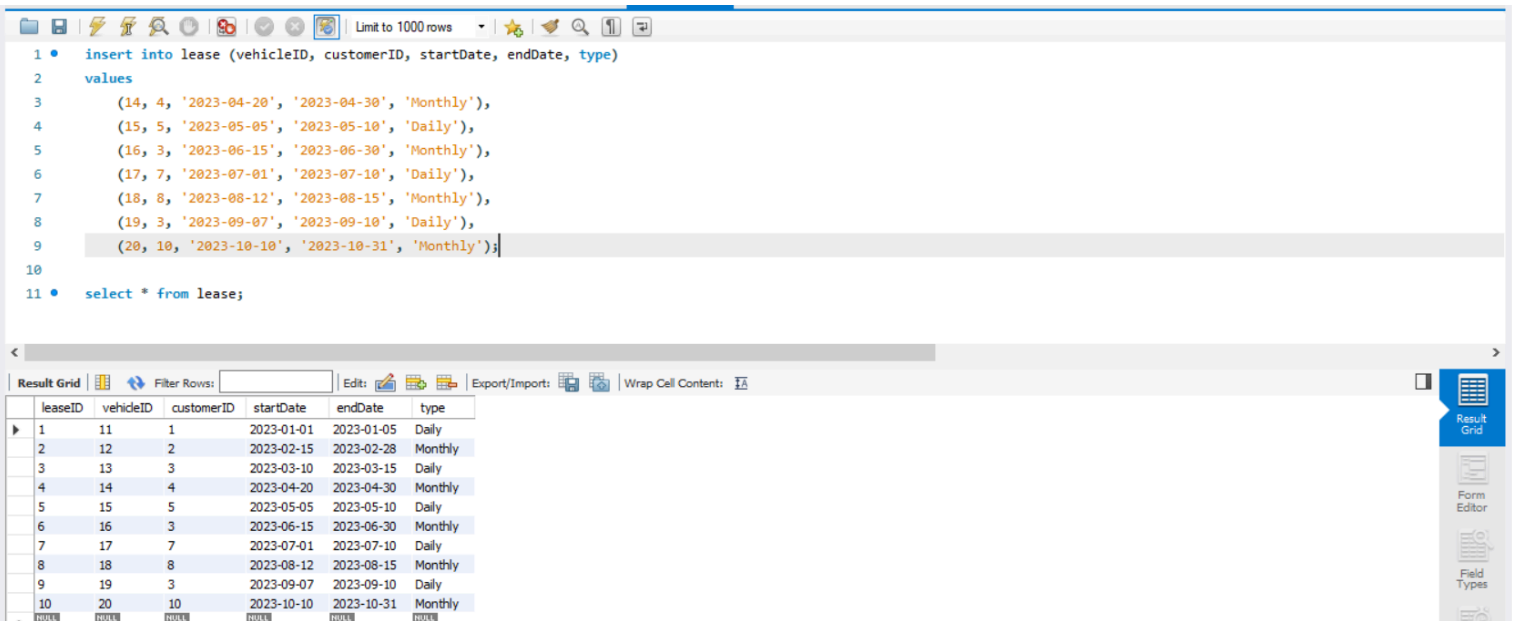
```
insert into vehicle (make, model, year, dailyRate, status, passengerCapacity, engineCapacity)
values
    ('Toyota', 'Camry', 2022, 50.00, 'available', 4, 1450),
    ('Honda', 'Civic', 2023, 45.00, 'available', 7, 1500),
    ('Ford', 'Focus', 2022, 48.00, 'notavailable', 4, 1400),
    ('Nissan', 'Altima', 2023, 52.00, 'available', 7, 1200),
    ('Chevrolet', 'Malibu', 2022, 47.00, 'available', 4, 1800),
    ('Hyundai', 'Sonata', 2023, 49.00, 'notavailable', 7, 1400),
    ('BMW', '3 Series', 2023, 60.00, 'available', 7, 2499),
    ('Mercedes', 'C-Class', 2022, 58.00, 'available', 8, 2599),
    ('Audi', 'A4', 2022, 55.00, 'notavailable', 4, 2500),
    ('Lexus', 'ES', 2023, 54.00, 'available', 4, 2500);
```

vehicleID	make	model	year	dailyRate	status	passengerCapacity	engineCapacity
11	Toyota	Camry	2022	50.00	available	4	1450
12	Honda	Civic	2023	45.00	available	7	1500
13	Ford	Focus	2022	48.00	notavailable	4	1400
14	Nissan	Altima	2023	52.00	available	7	1200
15	Chevrolet	Malibu	2022	47.00	available	4	1800
16	Hyundai	Sonata	2023	49.00	notavailable	7	1400
17	BMW	3 Series	2023	60.00	available	7	2499
18	Mercedes	C-Class	2022	58.00	available	8	2599
19	Audi	A4	2022	55.00	notavailable	4	2500
20	Lexus	ES	2023	54.00	available	4	2500
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL



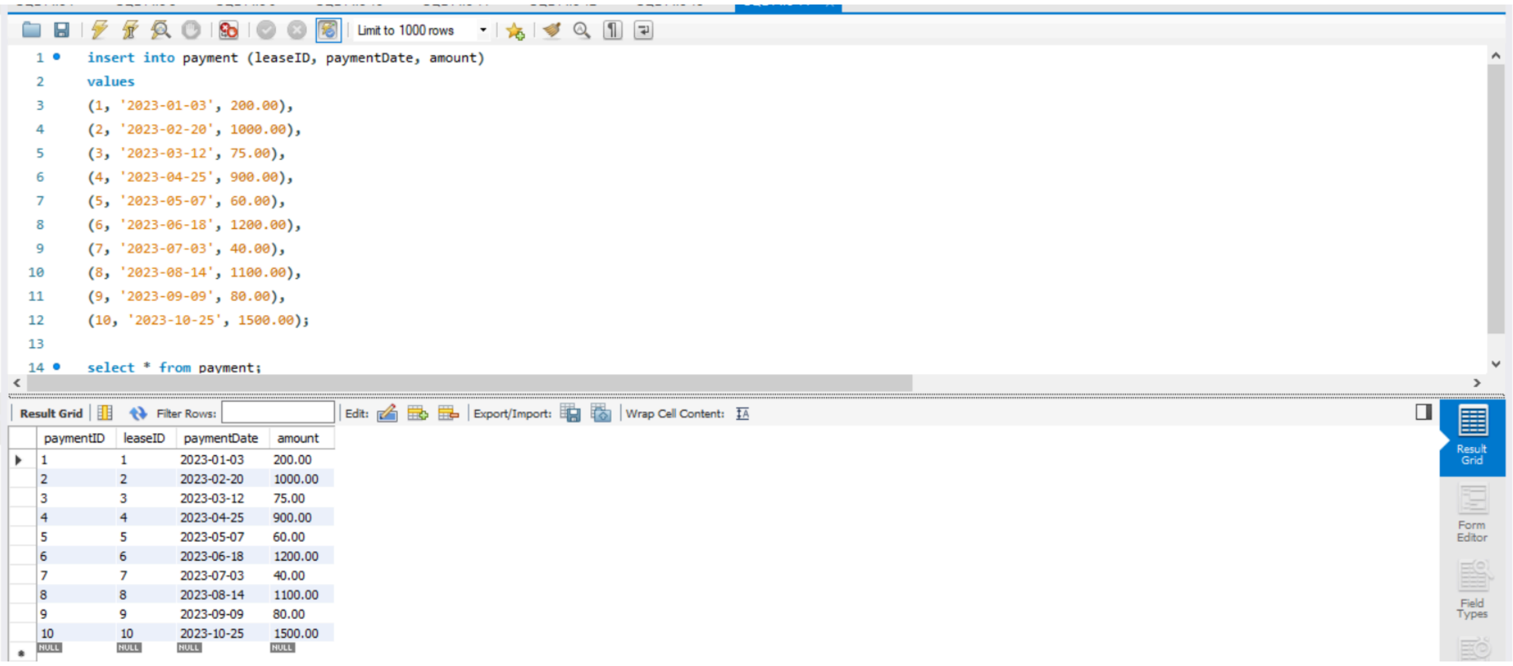
```
insert into customer (firstName, lastName, email, phoneNumber)
values
    ('John', 'Doe', 'johndoe@example.com', '+91-9876543210'),
    ('Jane', 'Smith', 'janesmith@example.com', '+91-8765432109'),
    ('Robert', 'Johnson', 'robert@example.com', '+91-7654321098'),
    ('Sarah', 'Brown', 'sarah@example.com', '+91-6543210987'),
    ('David', 'Lee', 'david@example.com', '+91-9876543210'),
    ('Laura', 'Hall', 'laura@example.com', '+91-8765432109'),
    ('Michael', 'Davis', 'michael@example.com', '+91-7654321098'),
    ('Emma', 'Wilson', 'emma@example.com', '+91-6543210987'),
    ('William', 'Taylor', 'william@example.com', '+91-9876543210'),
    ('Olivia', 'Adams', 'olivia@example.com', '+91-8765432109');
```

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
11	John	Doe	johndoe@example.com	+91-987654...



```sql
insert into lease (vehicleID, customerID, startDate, endDate, type)
values
    (14, 4, '2023-04-20', '2023-04-30', 'Monthly'),
    (15, 5, '2023-05-05', '2023-05-10', 'Daily'),
    (16, 3, '2023-06-15', '2023-06-30', 'Monthly'),
    (17, 7, '2023-07-01', '2023-07-10', 'Daily'),
    (18, 8, '2023-08-12', '2023-08-15', 'Monthly'),
    (19, 3, '2023-09-07', '2023-09-10', 'Daily'),
    (20, 10, '2023-10-10', '2023-10-31', 'Monthly');

select * from lease;
```

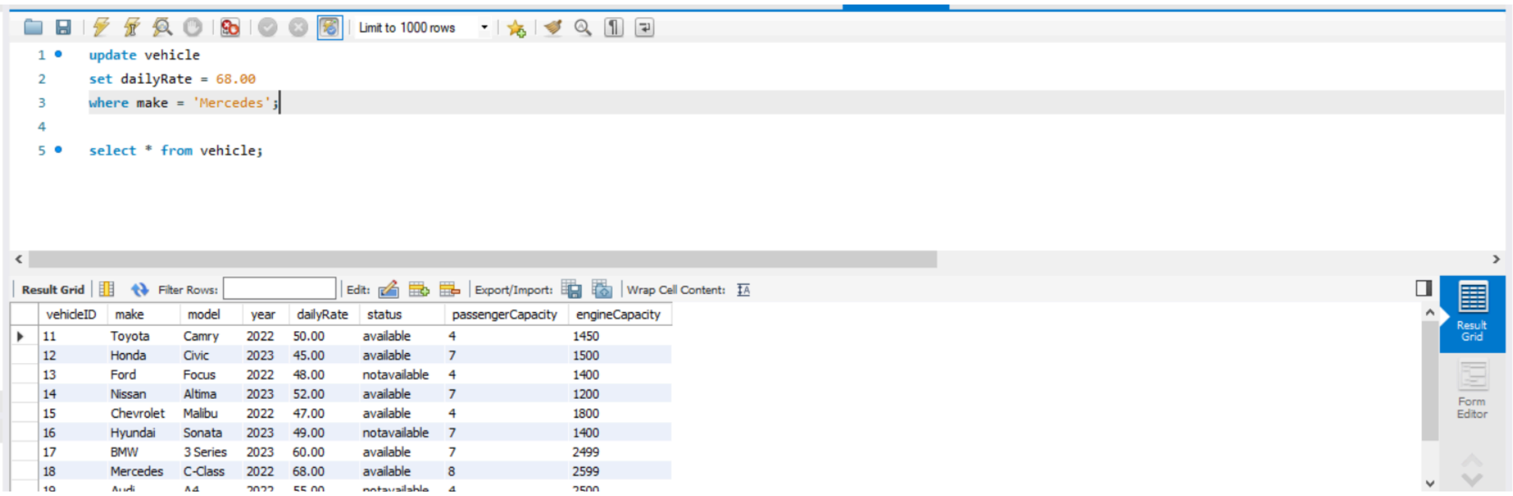
leaseID	vehicleID	customerID	startDate	endDate	type
1	11	1	2023-01-01	2023-01-05	Daily
2	12	2	2023-02-15	2023-02-28	Monthly
3	13	3	2023-03-10	2023-03-15	Daily
4	14	4	2023-04-20	2023-04-30	Monthly
5	15	5	2023-05-05	2023-05-10	Daily
6	16	3	2023-06-15	2023-06-30	Monthly
7	17	7	2023-07-01	2023-07-10	Daily
8	18	8	2023-08-12	2023-08-15	Monthly
9	19	3	2023-09-07	2023-09-10	Daily
10	20	10	2023-10-10	2023-10-31	Monthly
NULL	NULL	NULL	NULL	NULL	NULL



```sql
insert into payment (leaseID, paymentDate, amount)
values
(1, '2023-01-03', 200.00),
(2, '2023-02-20', 1000.00),
(3, '2023-03-12', 75.00),
(4, '2023-04-25', 900.00),
(5, '2023-05-07', 60.00),
(6, '2023-06-18', 1200.00),
(7, '2023-07-03', 40.00),
(8, '2023-08-14', 1100.00),
(9, '2023-09-09', 80.00),
(10, '2023-10-25', 1500.00);

select * from payment;
```

paymentID	leaseID	paymentDate	amount
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
NULL	NULL	NULL	NULL

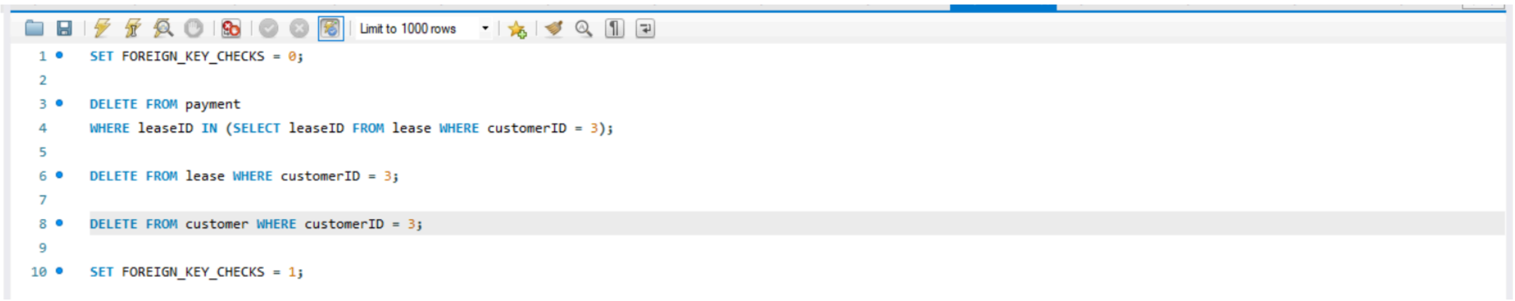
1. Update the daily rate for a Mercedes car to 68.



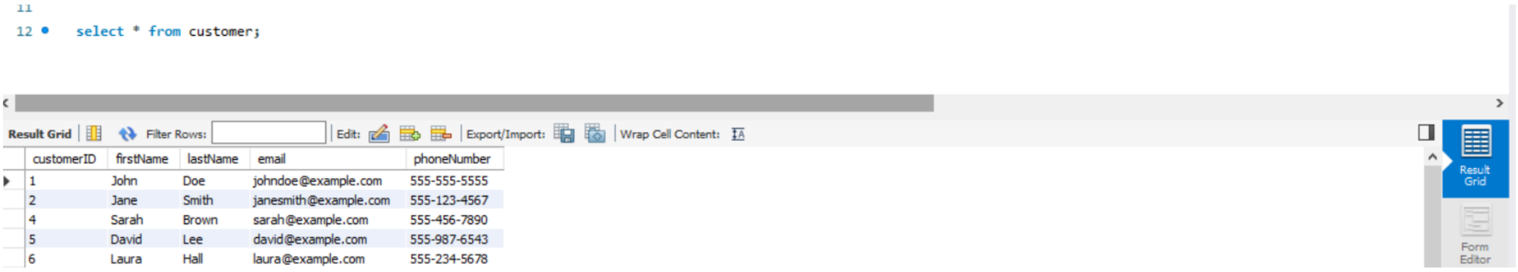
```sql
update vehicle
set dailyRate = 68.00
where make = 'Mercedes';

select * from vehicle;
```

vehicleID	make	model	year	dailyRate	status	passengerCapacity	engineCapacity
11	Toyota	Camry	2022	50.00	available	4	1450
12	Honda	Civic	2023	45.00	available	7	1500
13	Ford	Focus	2022	48.00	notavailable	4	1400
14	Nissan	Altima	2023	52.00	available	7	1200
15	Chevrolet	Malibu	2022	47.00	available	4	1800
16	Hyundai	Sonata	2023	49.00	notavailable	7	1400
17	BMW	3 Series	2023	60.00	available	7	2499
18	Mercedes	C-Class	2022	68.00	available	8	2599
19	Audi	A4	2022	55.00	notavailable	4	2500

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

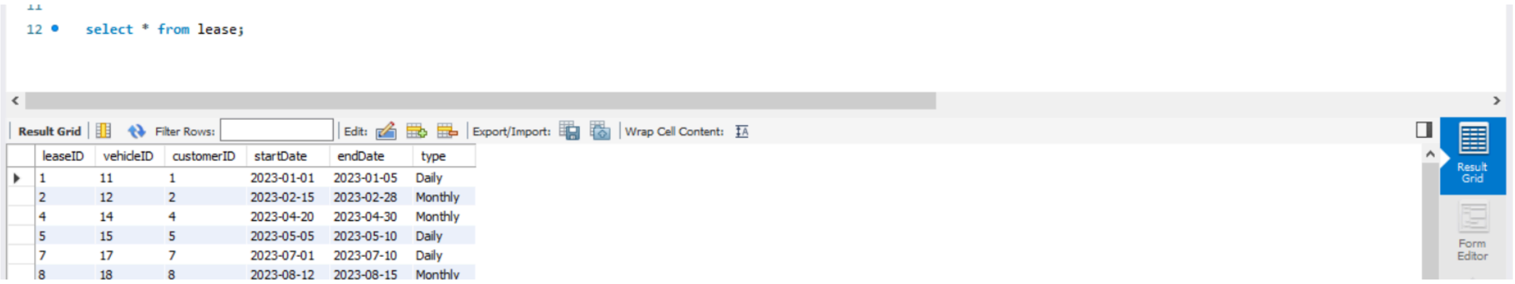


```sql
SET FOREIGN_KEY_CHECKS = 0;

DELETE FROM payment
WHERE leaseID IN (SELECT leaseID FROM lease WHERE customerID = 3);

DELETE FROM lease WHERE customerID = 3;

DELETE FROM customer WHERE customerID = 3;

SET FOREIGN_KEY_CHECKS = 1;
```



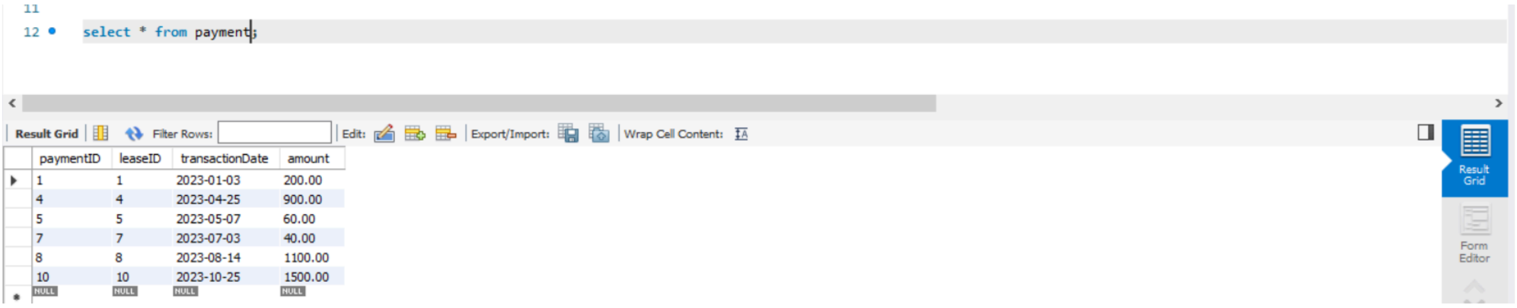
```sql
select * from customer;
```

customerID	firstName	lastName	email	phoneNumber
1	John	Doe	johndoe@example.com	555-555-5555
2	Jane	Smith	janesmith@example.com	555-123-4567
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



```sql
select * from lease;
```

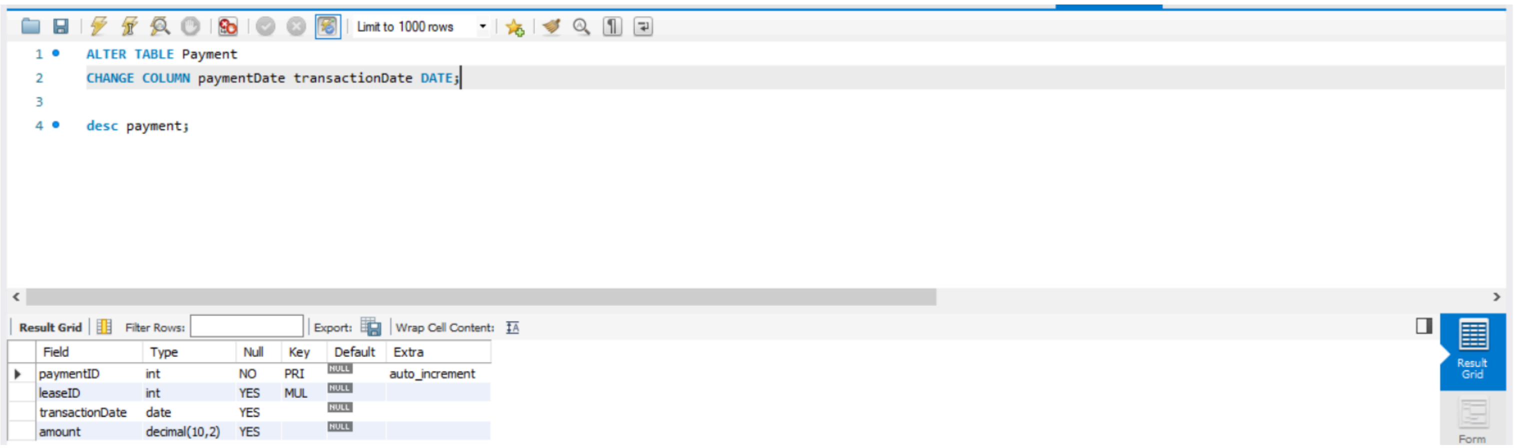
leaseID	vehicleID	customerID	startDate	endDate	type
1	11	1	2023-01-01	2023-01-05	Daily
2	12	2	2023-02-15	2023-02-28	Monthly
4	14	4	2023-04-20	2023-04-30	Monthly
5	15	5	2023-05-05	2023-05-10	Daily
7	17	7	2023-07-01	2023-07-10	Daily
8	18	8	2023-08-12	2023-08-15	Monthly



```sql
select * from payment;
```

paymentID	leaseID	transactionDate	amount
1	1	2023-01-03	200.00
4	4	2023-04-25	900.00
5	5	2023-05-07	60.00
7	7	2023-07-03	40.00
8	8	2023-08-14	1100.00
10	10	2023-10-25	1500.00
NULL	NULL	NULL	NULL

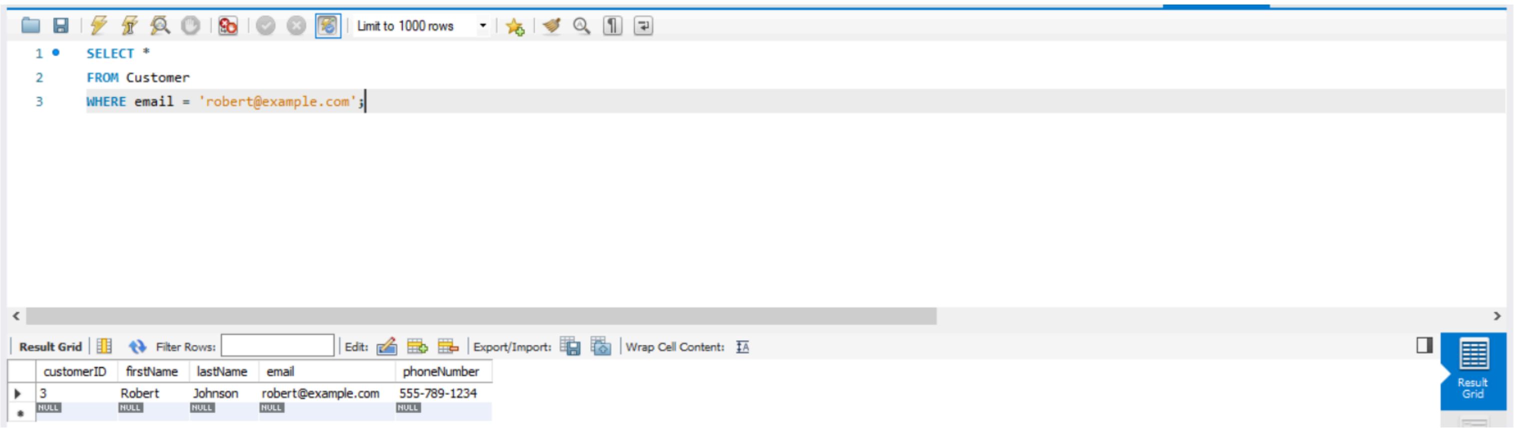
3. Rename the "paymentDate" column in the Payment table to "transactionDate".



```sql
ALTER TABLE Payment
CHANGE COLUMN paymentDate transactionDate DATE;

desc payment;
```

Field	Type	Null	Key	Default	Extra
paymentID	int	NO	PRI	NULL	auto_increment
leaseID	int	YES	MUL	NULL	
transactionDate	date	YES		NULL	
amount	decimal(10,2)	YES		NULL	

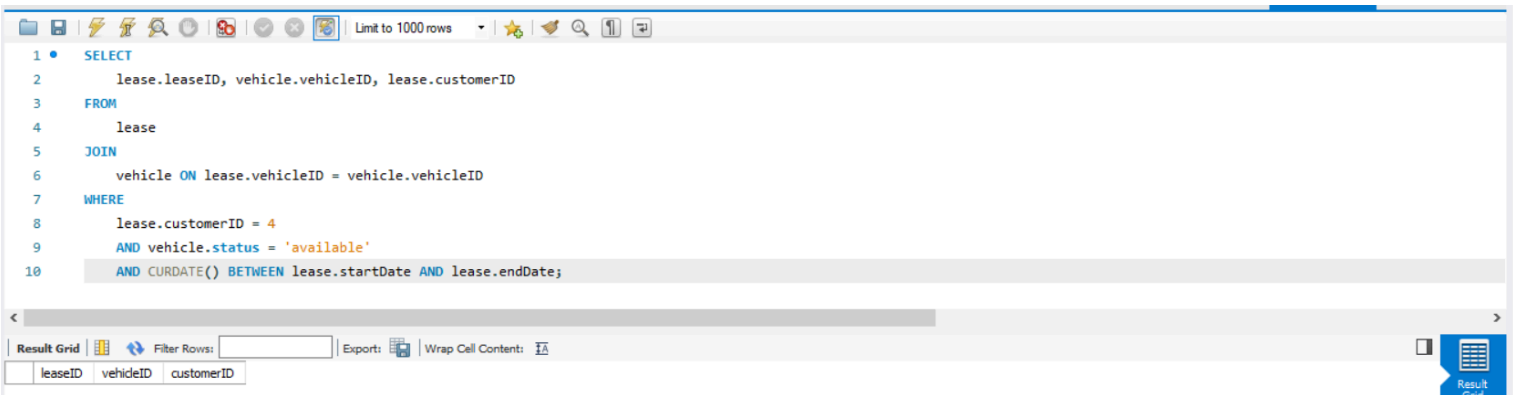
4. Find a specific customer by email.



```sql
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

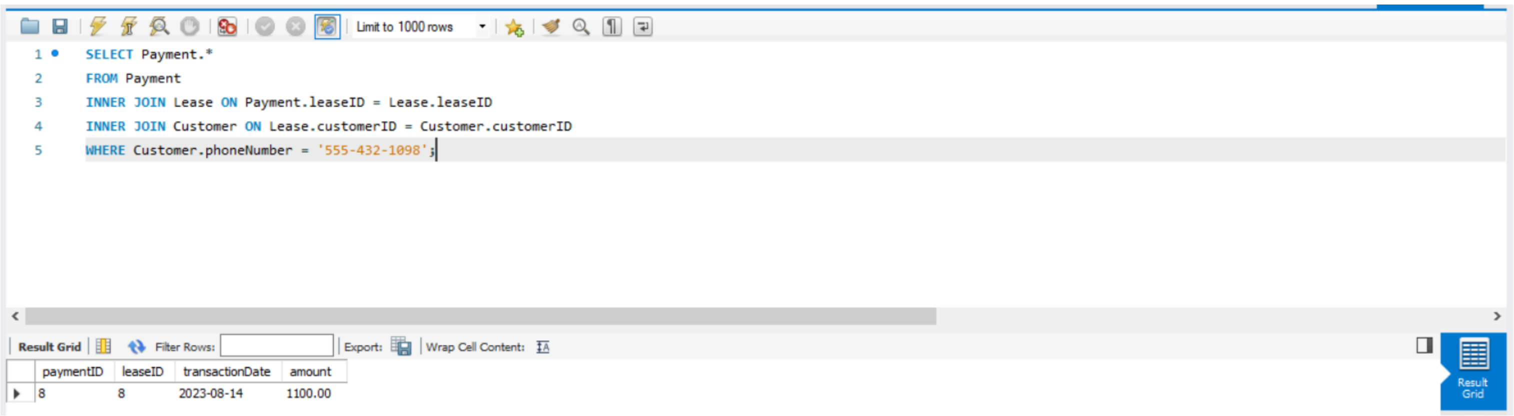
5. Get active leases for a specific customer.



```sql
SELECT
    lease.leaseID, vehicle.vehicleID, lease.customerID
FROM
    lease
JOIN
    vehicle ON lease.vehicleID = vehicle.vehicleID
WHERE
    lease.customerID = 4
    AND vehicle.status = 'available'
    AND CURDATE() BETWEEN lease.startDate AND lease.endDate;
```

	leaseID	vehicleID	customerID

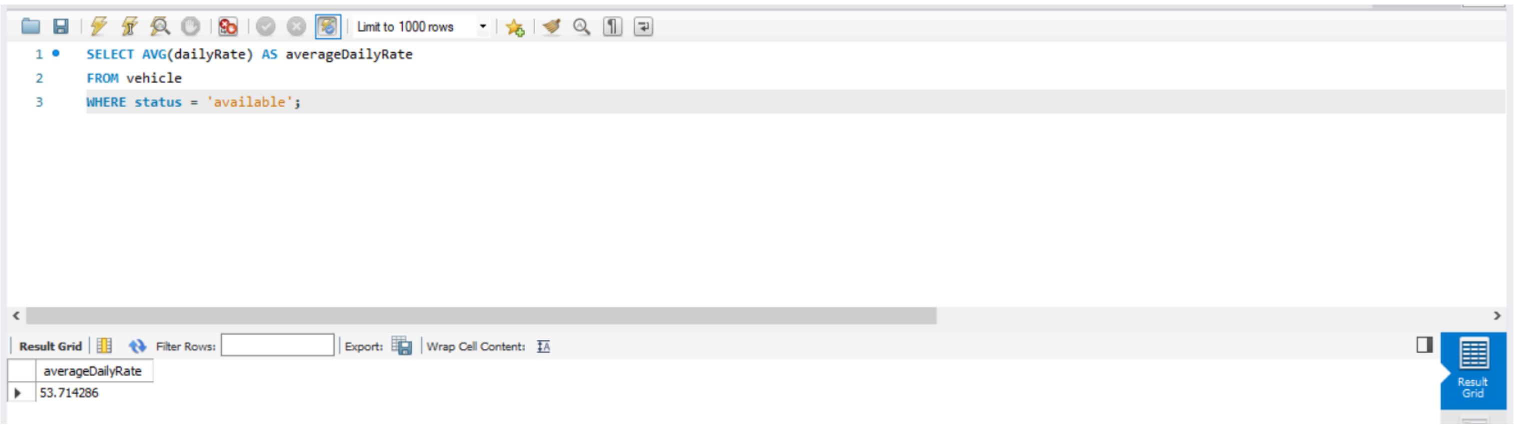
6. Find all payments made by a customer with a specific phone number.



```sql
SELECT Payment.*
FROM Payment
INNER JOIN Lease ON Payment.leaseID = Lease.leaseID
INNER JOIN Customer ON Lease.customerID = Customer.customerID
WHERE Customer.phoneNumber = '555-432-1098';
```

	paymentID	leaseID	transactionDate	amount
▶	8	8	2023-08-14	1100.00

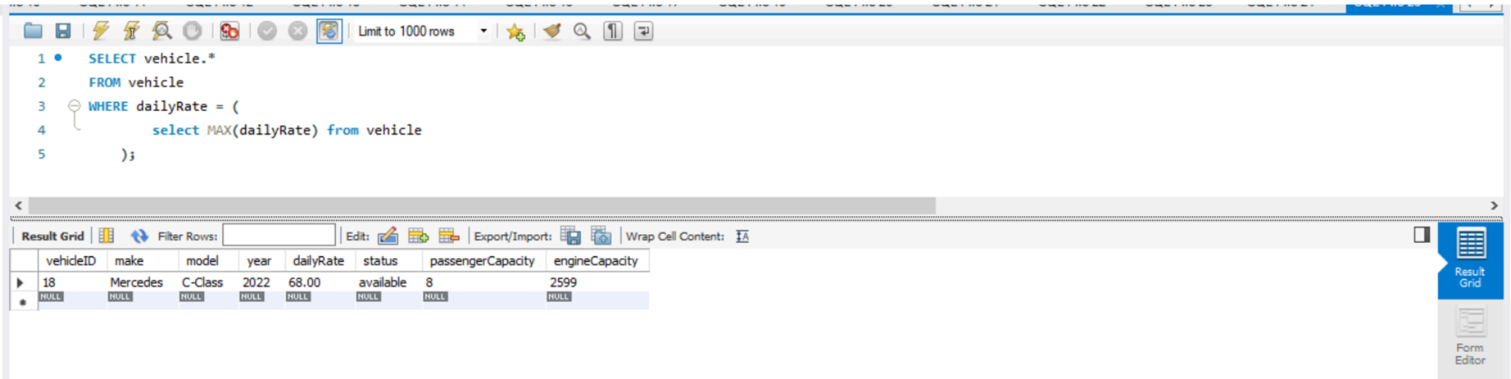
7. Calculate the average daily rate of all available cars.



```sql
SELECT AVG(dailyRate) AS averageDailyRate
FROM vehicle
WHERE status = 'available';
```

	averageDailyRate
▶	53.714286

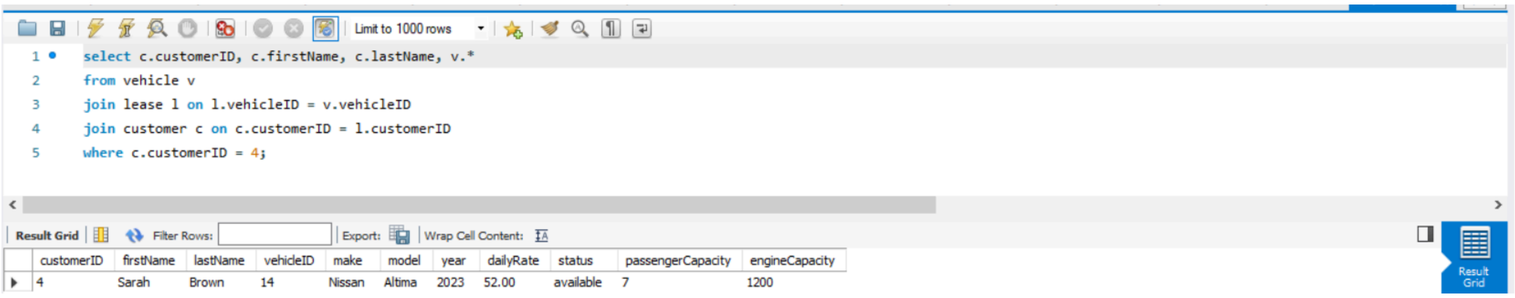
8. Find the car with the highest daily rate.



```sql
SELECT vehicle.*
FROM vehicle
WHERE dailyRate = (
        select MAX(dailyRate) from vehicle
    );
```

vehicleID	make	model	year	dailyRate	status	passengerCapacity	engineCapacity
18	Mercedes	C-Class	2022	68.00	available	8	2599
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

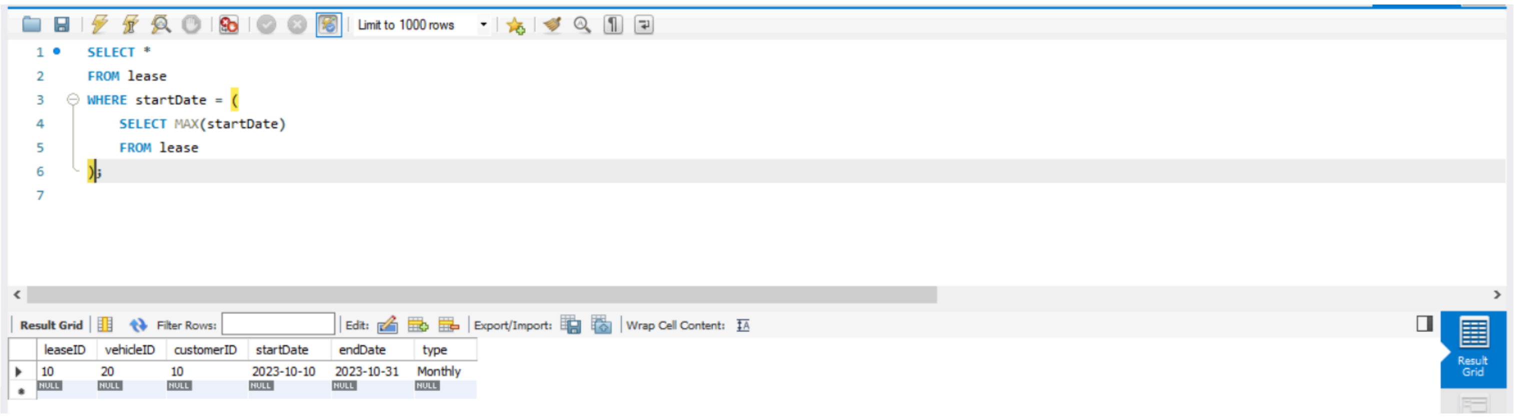
9. Retrieve all cars leased by a specific customer.



```sql
select c.customerID, c.firstName, c.lastName, v.*
from vehicle v
join lease l on l.vehicleID = v.vehicleID
join customer c on c.customerID = l.customerID
where c.customerID = 4;
```

customerID	firstName	lastName	vehicleID	make	model	year	dailyRate	status	passengerCapacity	engineCapacity
4	Sarah	Brown	14	Nissan	Altima	2023	52.00	available	7	1200

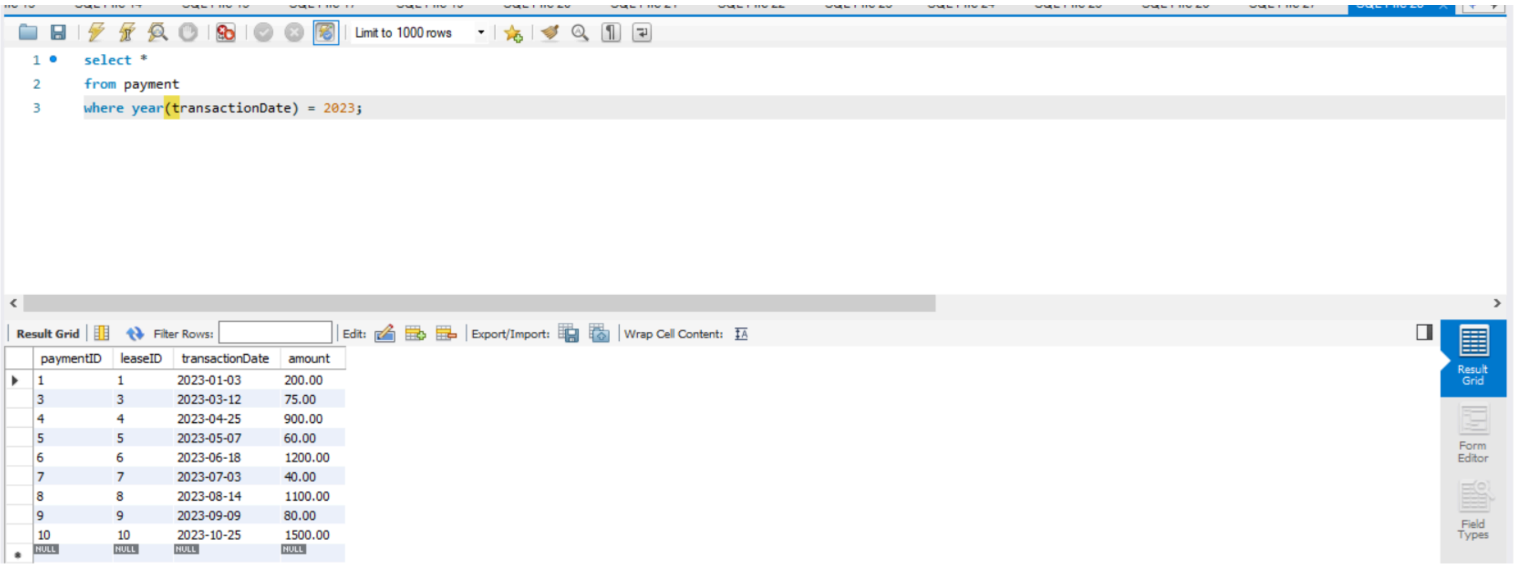
10. Find the details of the most recent lease.



```sql
SELECT *
FROM lease
WHERE startDate = (
    SELECT MAX(startDate)
    FROM lease
);
```

leaseID	vehicleID	customerID	startDate	endDate	type
10	20	10	2023-10-10	2023-10-31	Monthly
NULL	NULL	NULL	NULL	NULL	NULL

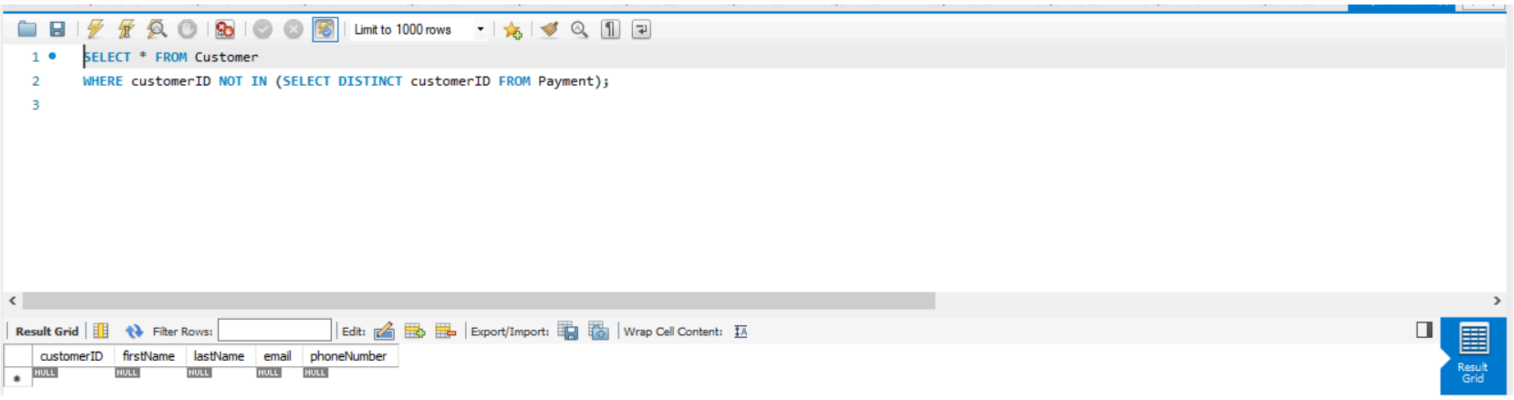
11. List all payments made in the year 2023.



```sql
select *
from payment
where year(transactionDate) = 2023;
```

paymentID	leaseID	transactionDate	amount
1	1	2023-01-03	200.00
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
NULL	NULL	NULL	NULL

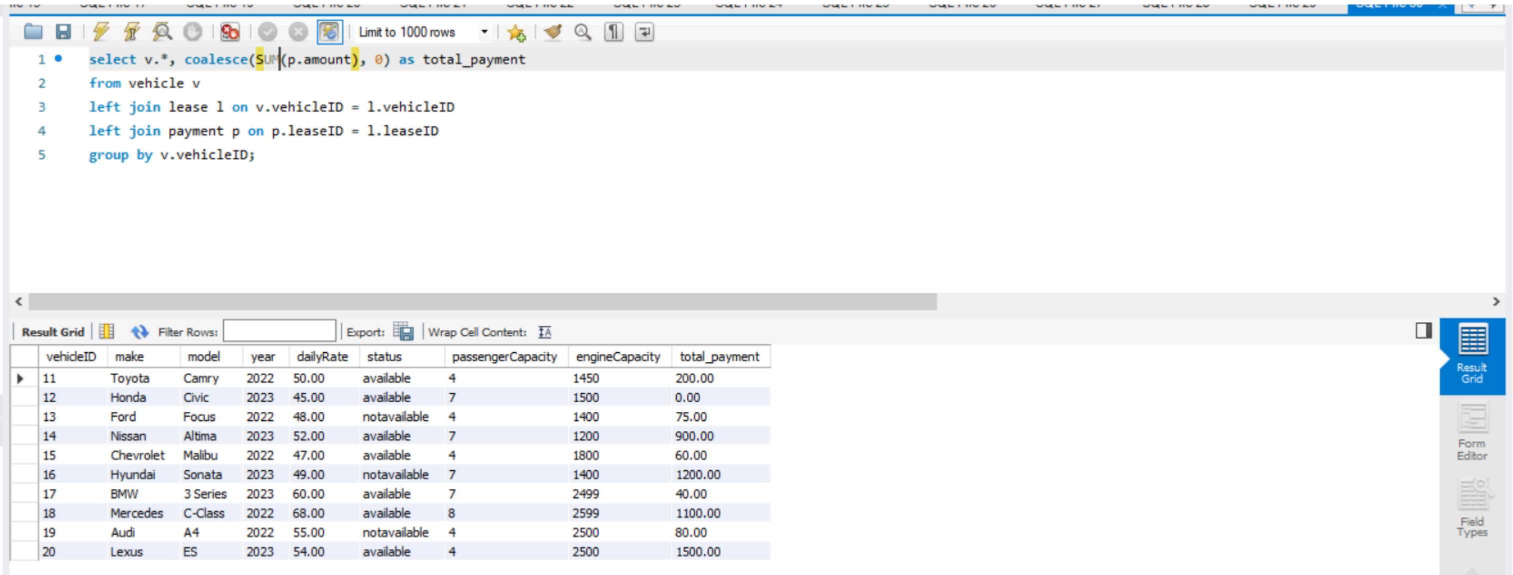
12. Retrieve customers who have not made any payments.



```sql
SELECT * FROM Customer
WHERE customerID NOT IN (SELECT DISTINCT customerID FROM Payment);
```

customerID	firstName	lastName	email	phoneNumber
NULL	NULL	NULL	NULL	NULL

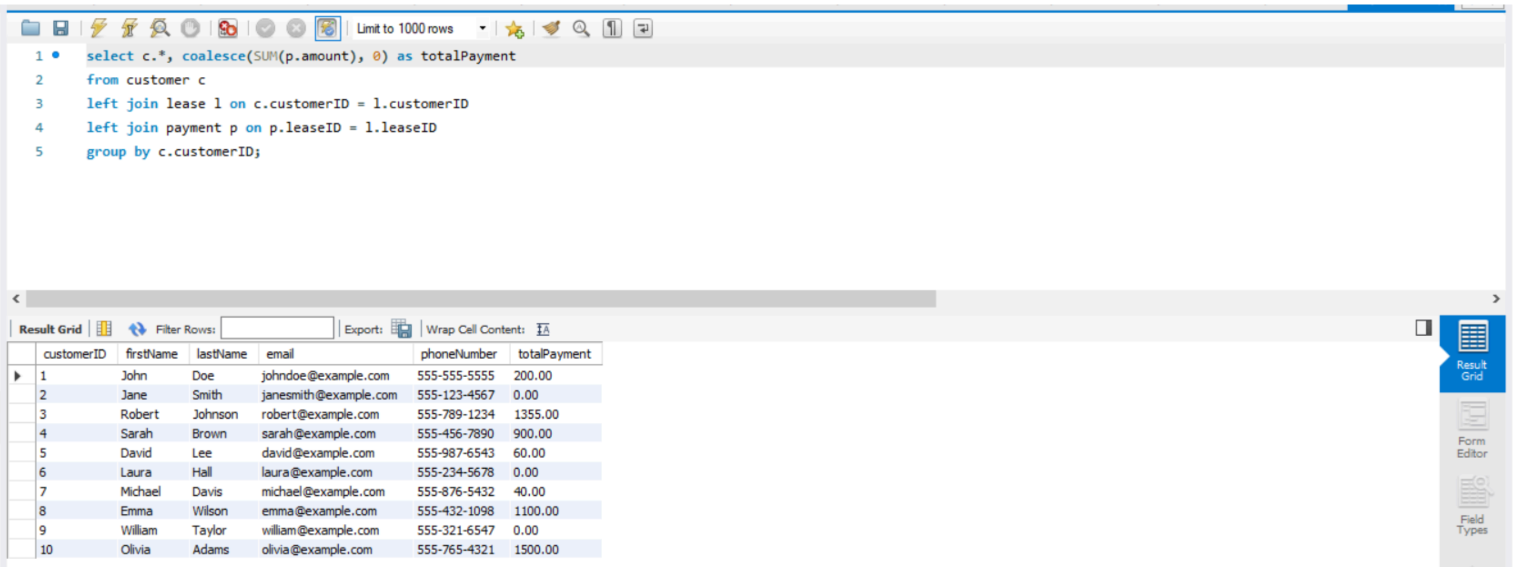
13. Retrieve Car Details and Their Total Payments.



```sql
select v.*, coalesce(SUM(p.amount), 0) as total_payment
from vehicle v
left join lease l on v.vehicleID = l.vehicleID
left join payment p on p.leaseID = l.leaseID
group by v.vehicleID;
```

vehicleID	make	model	year	dailyRate	status	passengerCapacity	engineCapacity	total_payment
11	Toyota	Camry	2022	50.00	available	4	1450	200.00
12	Honda	Civic	2023	45.00	available	7	1500	0.00
13	Ford	Focus	2022	48.00	notavailable	4	1400	75.00
14	Nissan	Altima	2023	52.00	available	7	1200	900.00
15	Chevrolet	Malibu	2022	47.00	available	4	1800	60.00
16	Hyundai	Sonata	2023	49.00	notavailable	7	1400	1200.00
17	BMW	3 Series	2023	60.00	available	7	2499	40.00
18	Mercedes	C-Class	2022	68.00	available	8	2599	1100.00
19	Audi	A4	2022	55.00	notavailable	4	2500	80.00
20	Lexus	ES	2023	54.00	available	4	2500	1500.00

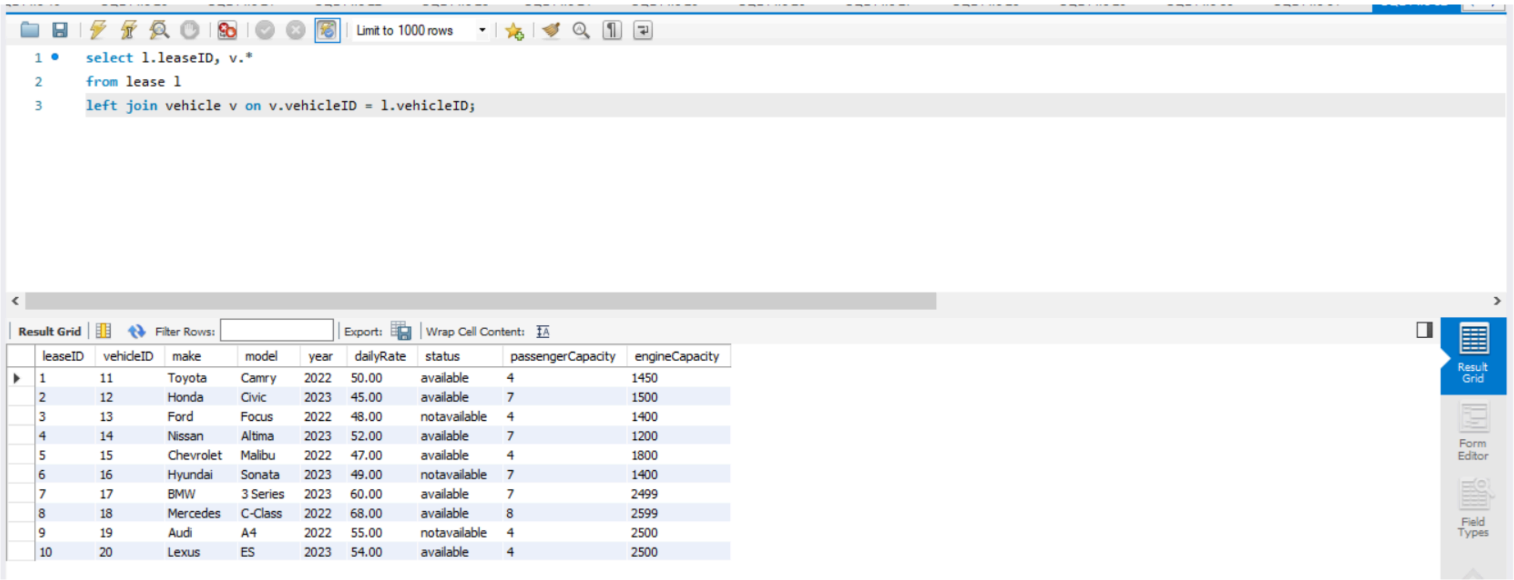
14. Calculate Total Payments for Each Customer.



```sql
select c.*, coalesce(SUM(p.amount), 0) as totalPayment
from customer c
left join lease l on c.customerID = l.customerID
left join payment p on p.leaseID = l.leaseID
group by c.customerID;
```

customerID	firstName	lastName	email	phoneNumber	totalPayment
1	John	Doe	johndoe@example.com	555-555-5555	200.00
2	Jane	Smith	janesmith@example.com	555-123-4567	0.00
3	Robert	Johnson	robert@example.com	555-789-1234	1355.00
4	Sarah	Brown	sarah@example.com	555-456-7890	900.00
5	David	Lee	david@example.com	555-987-6543	60.00
6	Laura	Hall	laura@example.com	555-234-5678	0.00
7	Michael	Davis	michael@example.com	555-876-5432	40.00
8	Emma	Wilson	emma@example.com	555-432-1098	1100.00
9	William	Taylor	william@example.com	555-321-6547	0.00
10	Olivia	Adams	olivia@example.com	555-765-4321	1500.00

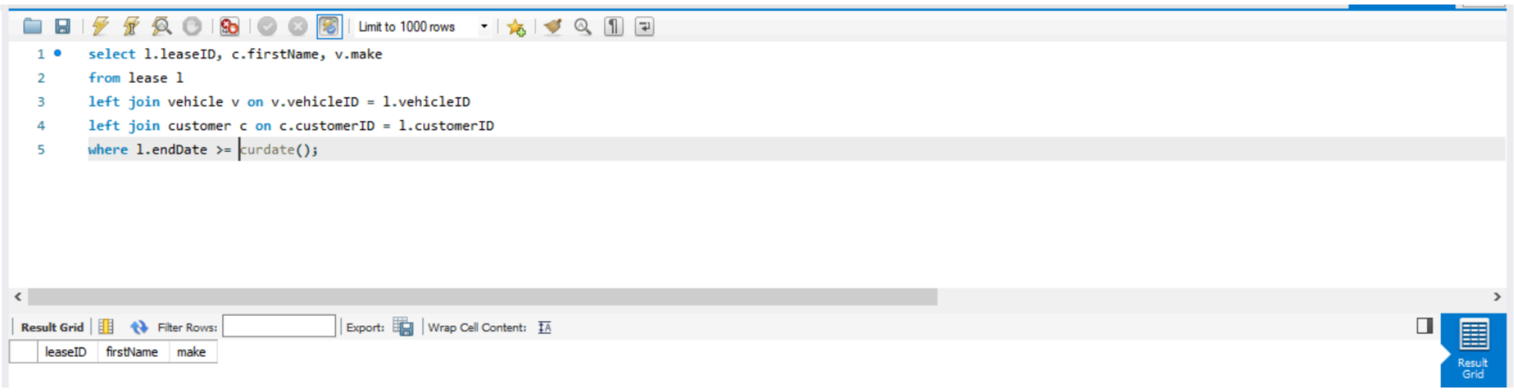
15. List Car Details for Each Lease.



```
select l.leaseID, v.*
from lease l
left join vehicle v on v.vehicleID = l.vehicleID;
```

leaseID	vehicleID	make	model	year	dailyRate	status	passengerCapacity	engineCapacity
1	11	Toyota	Camry	2022	50.00	available	4	1450
2	12	Honda	Civic	2023	45.00	available	7	1500
3	13	Ford	Focus	2022	48.00	notavailable	4	1400
4	14	Nissan	Altima	2023	52.00	available	7	1200
5	15	Chevrolet	Malibu	2022	47.00	available	4	1800
6	16	Hyundai	Sonata	2023	49.00	notavailable	7	1400
7	17	BMW	3 Series	2023	60.00	available	7	2499
8	18	Mercedes	C-Class	2022	68.00	available	8	2599
9	19	Audi	A4	2022	55.00	notavailable	4	2500
10	20	Lexus	ES	2023	54.00	available	4	2500

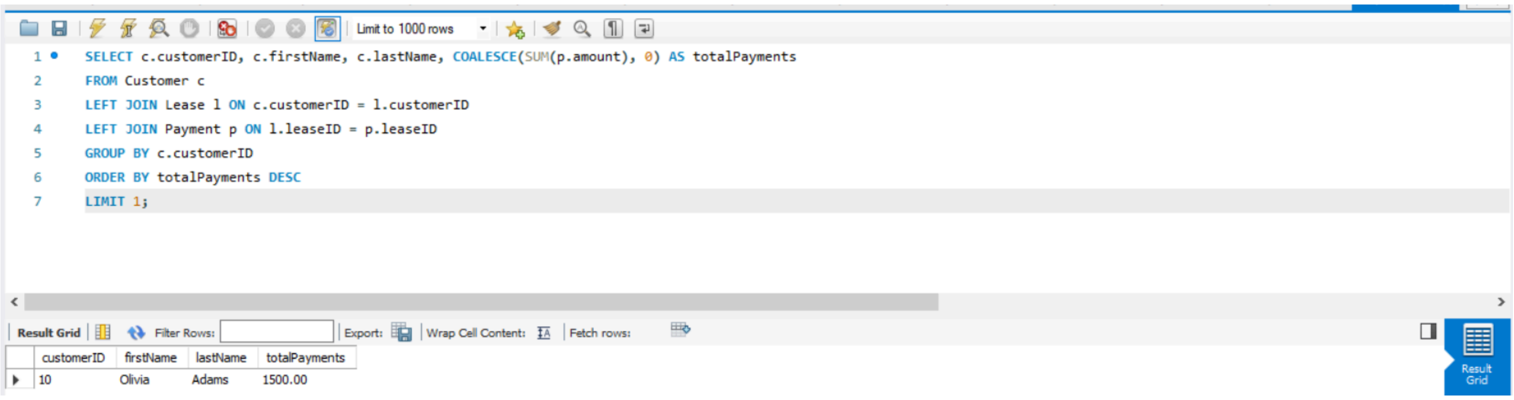
16. Retrieve Details of Active Leases with Customer and Car Information.



```
select l.leaseID, c.firstName, v.make
from lease l
left join vehicle v on v.vehicleID = l.vehicleID
left join customer c on c.customerID = l.customerID
where l.endDate >= curdate();
```

leaseID	firstName	make

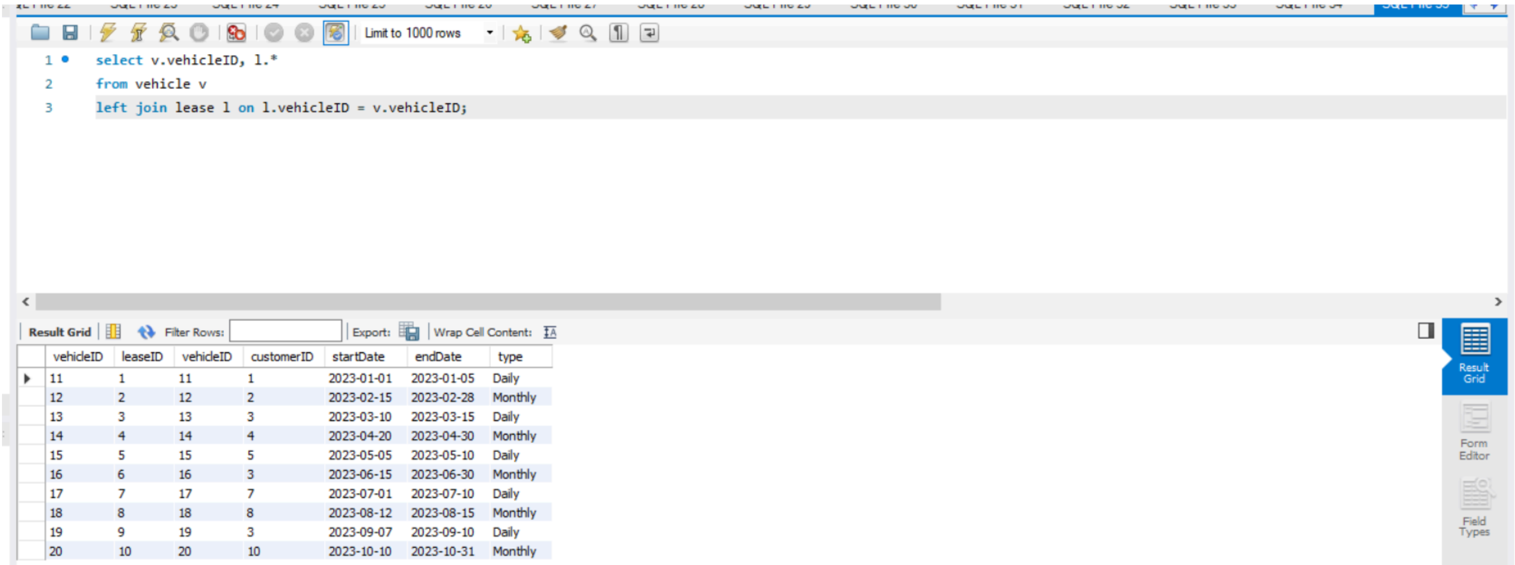
17. Find the Customer Who Has Spent the Most on Leases.



```
SELECT c.customerID, c.firstName, c.lastName, COALESCE(SUM(p.amount), 0) AS totalPayments
FROM Customer c
LEFT JOIN Lease l ON c.customerID = l.customerID
LEFT JOIN Payment p ON l.leaseID = p.leaseID
GROUP BY c.customerID
ORDER BY totalPayments DESC
LIMIT 1;
```

customerID	firstName	lastName	totalPayments
10	Olivia	Adams	1500.00

18. List All Cars with Their Current Lease Information.



```
select v.vehicleID, l.*
from vehicle v
left join lease l on l.vehicleID = v.vehicleID;
```

vehicleID	leaseID	vehicleID	customerID	startDate	endDate	type
11	1	11	1	2023-01-01	2023-01-05	Daily
12	2	12	2	2023-02-15	2023-02-28	Monthly
13	3	13	3	2023-03-10	2023-03-15	Daily
14	4	14	4	2023-04-20	2023-04-30	Monthly
15	5	15	5	2023-05-05	2023-05-10	Daily
16	6	16	3	2023-06-15	2023-06-30	Monthly
17	7	17	7	2023-07-01	2023-07-10	Daily
18	8	18	8	2023-08-12	2023-08-15	Monthly
19	9	19	3	2023-09-07	2023-09-10	Daily
20	10	20	10	2023-10-10	2023-10-31	Monthly