

CASE STUDY

Car Rental System

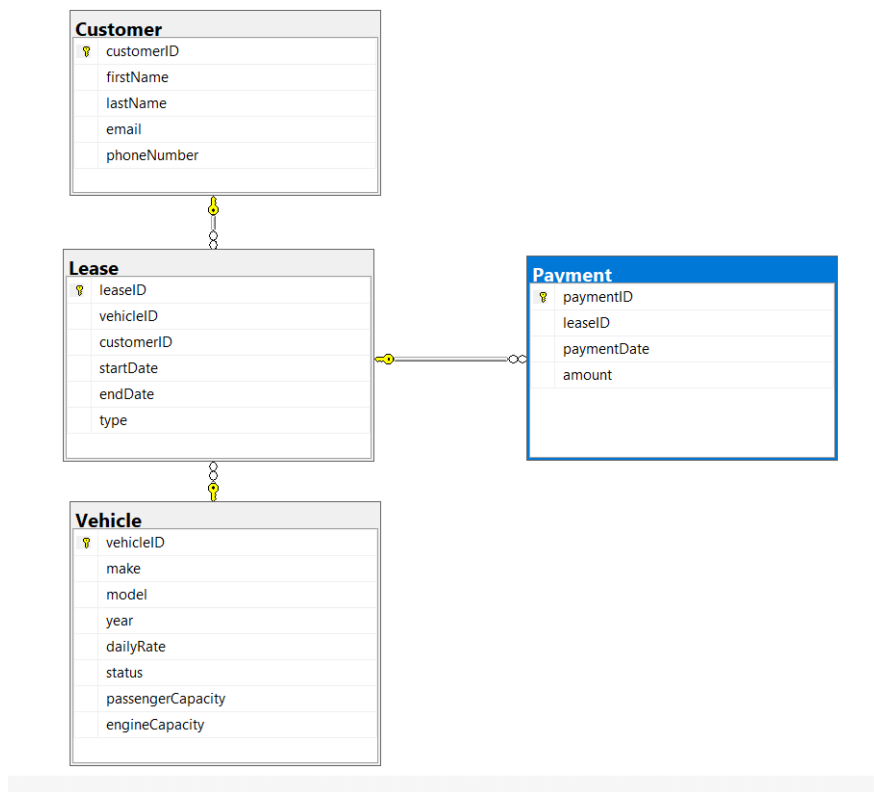
Questions:

Q1) Schema –

```
CREATE TABLE Vehicle (  
    vehicleID INT PRIMARY KEY Identity(1,1),  
    make VARCHAR(50),  
    model VARCHAR(50),  
    year INT,  
    dailyRate DECIMAL(10, 2),  
    status VARCHAR(15) CHECK (status IN ('available',  
'notAvailable')),  
    passengerCapacity INT,  
    engineCapacity DECIMAL(10, 2)  
);  
  
CREATE TABLE Customer (  
    customerID INT PRIMARY KEY identity(100,1),  
    firstName VARCHAR(50),  
    lastName VARCHAR(50),  
    email VARCHAR(100),  
    phoneNumber VARCHAR(15)  
);  
  
CREATE TABLE Lease (  
    leaseID INT PRIMARY KEY identity(300,1),  
    vehicleID INT FOREIGN KEY REFERENCES Vehicle(vehicleID),  
    customerID INT FOREIGN KEY REFERENCES Customer(customerID),  
    startDate DATE,  
    endDate DATE,  
    type VARCHAR(50) CHECK (type IN ('DailyLease', 'MonthlyLease'))  
);  
  
CREATE TABLE Payment (  
    paymentID INT PRIMARY KEY identity(1000,1),  
    leaseID INT FOREIGN KEY REFERENCES Lease(leaseID),  
    paymentDate DATE,  
    amount DECIMAL(10, 2)  
);
```

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Topic – Car Rental System

- **ER-Diagram:**



Q2) Menu –

Car Rental System Menu:

1. Add a New Car
2. Remove a Car
3. List Available Cars
4. List Rented Cars
5. Find Car by ID
6. Add a New Customer
7. Remove a Customer
8. List Customers
9. Find Customer by ID
10. Create a Lease
11. Return a Leased Car
12. List Active Leases
13. List Lease History
14. Record Payment
15. Exit

Enter your Choice:

Q3) Add a New Car –

```
Enter your Choice: 1
Enter Company Name: MG
Enter Model: Hector
Enter Year: 2023
Enter Daily Rate: 800
Enter Status (available, notAvailable): notAvailable
Enter Passenger Capacity: 7
Enter Engine Capacity: 1.5
MG Hector 2023 800.0 notAvailable 7 1.5
Vehicle Added Successfully!!
```

Q4) Remove a Car–

```
Car Rental System Menu:
1. Add a New Car
2. Remove a Car
3. List Available Cars
4. List Rented Cars
5. Find Car by ID
6. Add a New Customer
7. Remove a Customer
8. List Customers
9. Find Customer by ID
10. Create a Lease
11. Return a Leased Car
12. List Active Leases
13. List Lease History
14. Record Payment
15. Exit
Enter your Choice: 2
Enter Vechicle ID: 16
Vehicle Removed Successfully!!
```

Q 5) List Available Cars –

```
Enter your Choice: 3
Select the Option From Below:
Vehicle ID: 1
Make: Tata
Model: Nexon
Year: 2022
Daily Rate: 1200.50
Status: available
Passenger Capacity: 5
Engine Capacity: 1.20

Vehicle ID: 3
Make: Mahindra
Model: XUV500
Year: 2021
Daily Rate: 2000.75
Status: available
Passenger Capacity: 7
Engine Capacity: 2.20

Vehicle ID: 4
Make: Hyundai
Model: Creta
```

Q6) List Rented Cars –

```
Enter your Choice: 4
Select the Option From Below:
Vehicle ID: 2
Make: Maruti
Model: Swift
Year: 2020
Daily Rate: 1000.00
Status: notAvailable
Passenger Capacity: 5
Engine Capacity: 1.20
```

Q7) Find Car by ID –

```
Enter your Choice: 5
Enter Vehicle ID: 21
Select the Option From Below:
Vehicle ID: 21
Make: Hyundai
Model: i10
Year: 2022
Daily Rate: 50.00
Available: notAvailable
Passenger Capacity: 5
Engine Capacity: 1.00
```

Q8) Add a New Customer –

```
Enter your Choice: 6
Enter First Name: Yatish
Enter Last Name: Agrawal
Enter Email: yatish@gmail.com
Enter Phone number: 7000618115
Customer Added Successfully!!
```

Q9) Remove a Customer –

```
Car Rental System Menu:
1. Add a New Car
2. Remove a Car
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4. List Rented Cars
5. Find Car by ID
6. Add a New Customer
7. Remove a Customer
8. List Customers
9. Find Customer by ID
10. Create a Lease
11. Return a Leased Car
12. List Active Leases
13. List Lease History
14. Record Payment
15. Exit
Enter your Choice: 7
Enter Customer ID: 116
Customer Removed Successfully!!
```

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Q10) List Customers –

```
Enter your Choice: 8
Select the Option From Below:

List of Customers:
Customer ID: 100
First Name: Harshwardhan
Last Name: Songirkar
Email: harsh20wardhan@gmail.com
Phone Number: 9098491788

Customer ID: 101
First Name: Yash
Last Name: Agrawal
Email: sde.yash.agrawal@gmail.com
Phone Number: 6263605421
```

Q11) Find Customer by ID –

```
Enter your Choice: 9

Enter the Customer ID to Find: 102
Select the Option From Below:
Customer Found:
Customer ID: 102
First Name: Sarthak
Last Name: Londhey
Email: sarthak.londhey@gmail.com
Phone Number: 9826996453
```

Q12) Create a Lease –

```
Enter your Choice: 10
Enter Customer ID: 103
Enter Vehicle ID: 15
Enter Start Date (YYYY-MM-DD): 2024-01-29
Enter End Date (YYYY-MM-DD): 2024-02-29
Enter Type ('DailyLease', 'MonthlyLease'): MonthlyLease
Lease Created Successfully!!
```

Q13) Return a Leased Car –

```
Enter your Choice: 11
Enter the Lease ID to Find: 318

Lease ID: 318
Customer ID: 15
Vehicle ID: 103
Start Date: 2024-01-29
End Date: 2024-02-29
Type: MonthlyLease
```

Q14) List Active Leases –

```
Enter your Choice: 12
Enter Start Date (YYYY-MM-DD): 2023-05-20

No Lease Found!!
```

Q15) List Lease History –

```
Enter your Choice: 13

Lease ID: 300
Customer ID: 1
Vehicle ID: 100
Start Date: 2023-01-05
End Date: 2023-01-10
Type: MonthlyLease

Lease ID: 301
Customer ID: 2
Vehicle ID: 101
Start Date: 2023-02-10
End Date: 2023-02-20
Type: MonthlyLease
```

Q16) Record Payment –

```
Enter your Choice: 14
Enter Lease ID: 318
Enter Transaction Date (YYYY-MM-DD): 2024-03-02
Enter Payment Amount: 600
Payment Recorded Successfully!!
```


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Q17) Exit –

```
15. Exit
Enter your Choice: 15

Exiting...
```

Q18) Testing File –

```
Select the Option From Below:
.Connection Already Established
Enter Company Name: Mercedes
Enter Model: C Class
Enter Year: 2023
Enter Daily Rate: 110
Enter Status (available, notAvailable): available
Enter Passenger Capacity: 5
Enter Engine Capacity: 1.5
Vehicle Added Successfully!!

Select the Option From Below:
.Connection Already Established
Enter Customer ID: 101
Enter Vehicle ID: 23
Enter Start Date (YYYY-MM-DD): 2024-05-28
Enter End Date (YYYY-MM-DD): 2024-05-30
Enter Type('DailyLease', 'MonthlyLease'): DailyLease
Lease Created Successfully!!
```

```
Select the Option From Below:
.Connection Already Established
Customer with ID 888 not found in the database.

Select the Option From Below:
.Connection Already Established
Lease with ID 888 not found in the database.

.Connection Already Established
.
-----
Ran 6 tests in 712.092s

OK
```