Coding Challenge - Car Rental System - SQL

Instructions

 Coding Challenge submissions should be done through the partcipants' Github repository, and the link should be shared with trainers and Hexavarsity.

SQL Schema:

- 1. Vehicle Table:
 - vehicleID (Primary Key)
 - make
 - model
 - year
 - dailyRate
 - status (available, notAvailable)
 - passengerCapacity
 - engineCapacity

2. Customer Table:

- customerID (Primary Key)
- firstName
- lastName
- email
- phoneNumber

3. Lease Table:

- leaseID (Primary Key)
- vehicleID (Foreign Key referencing Vehicle Table)
- customerID (Foreign Key referencing Customer Table)
- startDate
- endDate
- type (to distinguish between DailyLease and MonthlyLease)

4. Payment Table:

- paymentID (Primary Key)
- · leaseID (Foreign Key referencing Lease Table)
- paymentDate
- amount

Vehicle Table

· type (to distinguish between DailyLease and MonthlyLease)

4. Payment Table:

- paymentID (Primary Key)
- leaseID (Foreign Key referencing Lease Table)
- paymentDate
- amount

Vehicle Table

carID	make	model	Year	dallyRate	available	passenger Capacity	engineCapacity
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

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carID	make	model	Year	dallyRate	available	passenger Capacity	engineCapacity
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

Customer Table

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

- 1. Update the daily rate for a Mercedes car to 68.
- 2. Delete a specific customer and all associated leases and payments.
- 3. Rename the "paymentDate" column in the Payment table to "transactionDate".
- 4. Find a specific customer by email.
- Get active leases for a specific customer.
- 6. Find all payments made by a customer with a specific phone number.
- 7. Calculate the average daily rate of all available cars.
- 8. Find the car with the highest daily rate.
- 9. Retrieve all cars leased by a specific customer.
- 10. Find the details of the most recent lease.
- 11. List all payments made in the year 2023.
- 12. Retrieve customers who have not made any payments.
- 13. Retrieve Car Details and Their Total Payments.
- 14. Calculate Total Payments for Each Customer.
- 15. List Car Details for Each Lease.
- 16. Retrieve Details of Active Leases with Customer and Car Information.
- 17. Find the Customer Who Has Spent the Most on Leases.
- 18. List All Cars with Their Current Lease Information.

Lease Table

leaseID	carlD	customerID	startDate	endDate	leaseType
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

Payment Table

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

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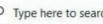


paymentID	leaseID	paymentDate	amount
4	4	2023-04-25	900.00
5	5	2023-05-07	60.00
6	6	2023-06-18	1200.00
7	7	2023-07-03	40.00
8	8	2023-08-14	1100.00
9	9	2023-09-09	80.00
10	10	2023-10-25	1500.00

```
MySQL 8.0 Command Line Client
Query OK, 0 rows affected (3.17 sec)
mysql> INSERT INTO Vehicle (vehicleID, make, model, year, dailyRate, available, passengerCapacity, engineCapacity)
   -> 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);
Query OK, 10 rows affected (0.56 sec)
Records: 10 Duplicates: 0 Warnings: 0
mysql> select * from Vehicle;
vehicleID | make
                                   year | dailyRate | available | passengerCapacity | engineCapacity
                         model
                                    2022
            Toyota
                         Camry
                                               50.00
                                                                                                 1450
             Honda
                         Civic
                                    2023
                                               45.00
                                                                                                 1500
            Ford
                         Focus
                                    2022
                                               48.00
                                                                                                 1400
            Nissan
                         Altima
                                    2023
                                               52.00
                                                                                                 1200
            chevrolet
                         Malibu
                                    2022
                                               47.00
                                                                                                 1800
            Hyundai
                         Sonata
                                    2023
                                               49.00
                                                                                                 1400
         6
             BMW
                         3 Series
                                    2023
                                               60.00
                                                                                                 2499
            Mercedes
                         C-Class
                                    2022
                                               58.00
                                                                                                 2599
             Audi
                         A4
                                    2022
                                               55.00
                                                                                                 2500
                                    2023
                                               54.00
        10 | Lexus
                                                                                                 2500
10 rows in set (0.04 sec)
mysql> _
                                                                                                                    22°C Haze
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10-12-2023

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MySQL 8.0 Command Line Client
   -> WHERE make = 'Mercedes':
Query OK, 1 row affected (0.32 sec)
Rows matched: 1 Changed: 1 Warnings: 0
mysql> select * from Vehicle;
                                    year | dailyRate | available | passengerCapacity | engineCapacity
 vehicleID | make
                         model
            Toyota
                         Camry
                                    2022
                                               50.00
                                                                                                 1450
                                    2023
             Honda
                         Civic
                                               45.00
                                                                                                 1500
             Ford
                         Focus
                                    2022
                                               48.00
                                                                                                 1400
             Nissan
                         Altima
                                    2023
                                               52.00
                                                                                                 1200
             chevrolet
                        Malibu
                                    2022
                                               47.00
                                                                                                 1800
             Hyundai
                                    2023
                                               49.00
                                                                                                 1400
                         Sonata
                         3 Series
                                    2023
             BMW
                                               60.00
                                                                                                 2499
                         C-Class
             Mercedes
                                    2022
                                               68.00
                                                                                                 2599
             Audi
                         A4
                                    2022
                                                               0
                                                                                                 2500
         9
                                               55.00
                         ES
                                    2023
                                               54.00
                                                                                                 2500
        10 Lexus
10 rows in set (0.02 sec)
mysql> ALTER TABLE Payment
   -> RENAME COLUMN paymentDate TO transactionDate;
Query OK, 0 rows affected (2.09 sec)
Records: 0 Duplicates: 0 Warnings: 0
mysql> select * from Payment;
paymentID | leaseID | transactionDate | amount
                   1 | 2023-01-03
                                          200.00
                       2023-02-20
                                         1000.00
                      2023-03-12
                                           75.00
                      2023-04-25
                                          900.00
                       2023-05-07
                                           60.00
                      2023-06-18
                                         1200.00
                       2023-07-03
                                           40.00
         8
                   8 | 2023-08-14
                                         1100.00
                       2023-09-09
                                           80.00
                  10 | 2023-10-25
                                         1500.00
10 rows in set (0.00 sec)
mysql> _
      Type here to search
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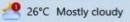




















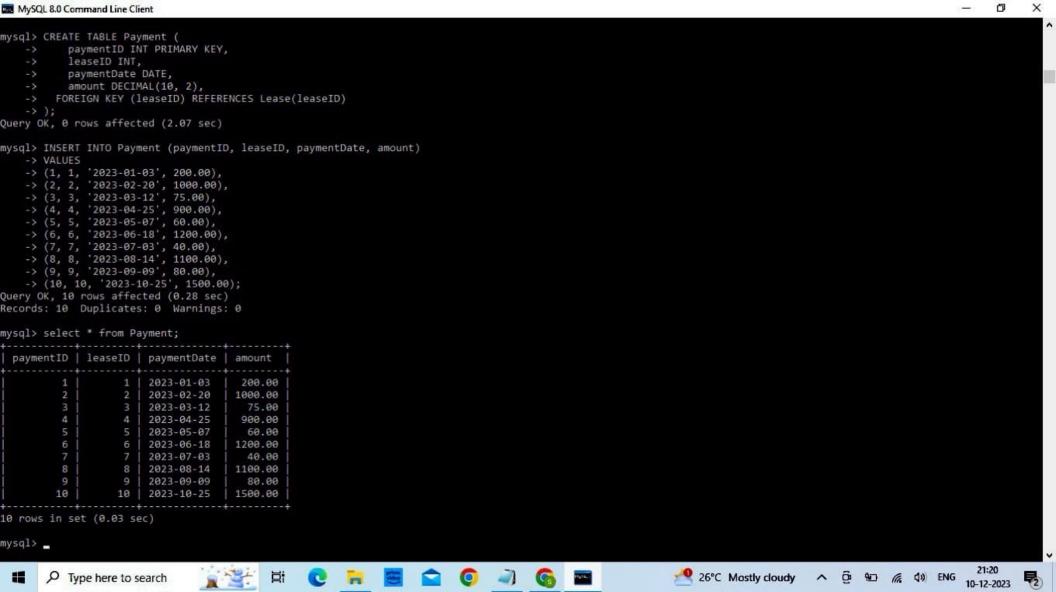


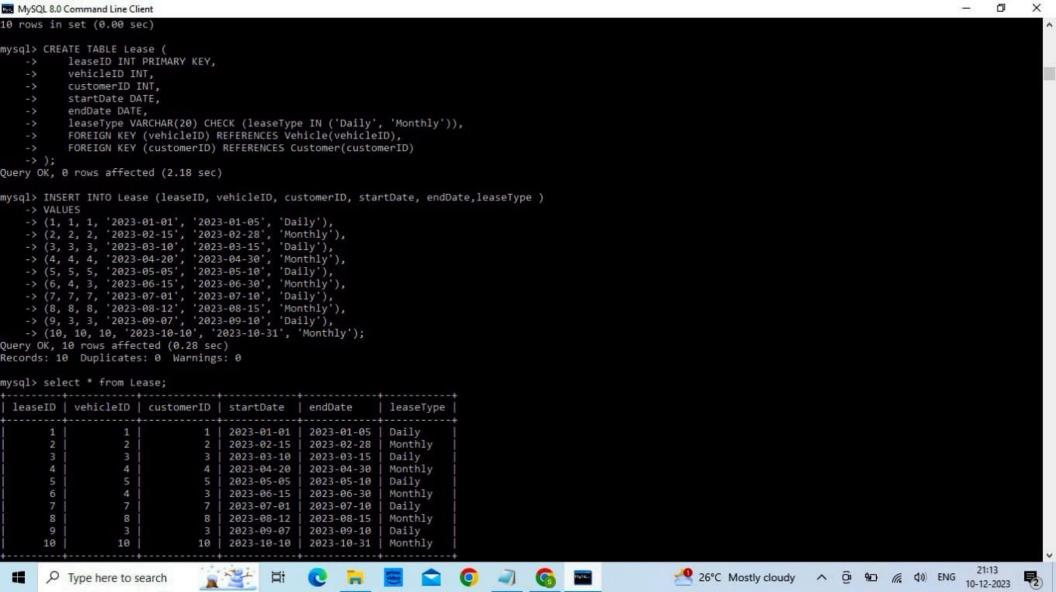




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MySQL 8.0 Command Line Client
                                                                                                                                                                  mysql> CREATE TABLE Customer (
          customerID INT PRIMARY KEY,
          firstName VARCHAR(255),
          lastName VARCHAR(255),
          email VARCHAR(255),
          phoneNumber VARCHAR(20)
Query OK, 0 rows affected (1.65 sec)
mysql> 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, 'Oliva', 'Adams', 'oliva@example.com', '555-765-4321');
Query OK, 10 rows affected (0.43 sec)
Records: 10 Duplicates: 0 Warnings: 0
mysal> select * from Customer;
customerID | firstName | lastName | email
                                      johndoe@example.com
              John
                          Doe
                                                             555-555-5555
                          Smith
                                     janesmith@example.com | 555-123-4567
              Jane
                                     robert@example.com
              Robert
                          Johnson
                                                             555-789-1234
                                     sarah@example.com
              Sarah
                          Brown
                                                             555-456-7890
                                     david@example.com
              David
                                                             555-987-6543
                          Lee
                          Hall
                                     laura@example.com
                                                             555-234-5678
              Laura
                                     michael@example.com
              Michael
                          Davis
                                                             555-876-5432
                          Wilson
                                     emma@example.com
                                                             555-432-1098
              Emma
              William
                          Taylor
                                     william@example.com
                                                             555-321-6547
              Oliva
                          Adams
                                     oliva@example.com
                                                             555-765-4321
10 rows in set (0.00 sec)
mysql> _
                                                                                                                        22°C Haze
       Type here to search
                                                                                                                                                             10-12-2023
```

