

CODING CHALLENGE-4

CAR RENTAL SYSTEM

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```
mysql> use car_rental_system;  
Database changed
```

```
mysql> CREATE TABLE vehicle (  
  -> carid INT(29),  
  -> make VARCHAR(20),  
  -> model VARCHAR(20),  
  -> year YEAR,  
  -> dailyrate DOUBLE,  
  -> available BIT(7),  
  -> passengercapacity INT(20),  
  -> enginecapacity INT(20),  
  -> PRIMARY KEY (carid)  
  -> );  
Query OK, 0 rows affected, 3 warnings (0.18 sec)
```

```
mysql> CREATE TABLE customer (  
  -> customerid INT,  
  -> firstname VARCHAR(20),  
  -> lastname VARCHAR(20),  
  -> email TEXT,  
  -> phonenumber TEXT,  
  -> PRIMARY KEY (customerid)  
  -> );  
Query OK, 0 rows affected (0.05 sec)
```

```
mysql> CREATE TABLE lease (  
  -> leaseid INT(10),  
  -> carid INT,  
  -> customerid INT,  
  -> startdate DATE,  
  -> enddate DATE,  
  -> leasetype TEXT,  
  -> PRIMARY KEY (leaseid),  
  ->          FOREIGN KEY (carid) REFERENCES vehicle (carid),  
  ->          FOREIGN KEY (customerid) REFERENCES customer(customerid)  
  -> );  
Query OK, 0 rows affected, 1 warning (0.11 sec)
```

```
mysql> CREATE TABLE payment (
    -> paymentid INT,
    -> leaseid INT,
    -> paymentdate DATE,
    -> amount DOUBLE,
    -> PRIMARY KEY (paymentid),
    -> FOREIGN KEY (leaseid) REFERENCES lease(leaseid)
    -> );
Query OK, 0 rows affected (0.07 sec)
```

```
mysql> show tables;
+-----+
| Tables_in_car_rental_system |
+-----+
| customer                    |
| lease                      |
| payment                    |
| vehicle                    |
+-----+
4 rows in set (0.08 sec)
```

```
mysql> INSERT INTO vehicles (carid, 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 (0.01 sec)
Records: 10 Duplicates: 0 Warnings: 0
```

```
mysql> select * from vehicles;
```

carid	make	model	year	dailyrate	available	passengercapacity	enginecapacity
1	Toyota	Camry	2022	50	1	4	1450
2	Honda	Civic	2023	45	1	7	1500
3	Ford	Focus	2022	48	0	4	1400
4	Nissan	Altima	2023	52	1	7	1200
5	Chevrolet	Malibu	2022	47	1	4	1800
6	Hyundai	Sonata	2023	49	0	7	1400
7	BMW	3 Series	2023	60	1	7	2499
8	Mercedes	C-Class	2022	58	1	8	2599
9	Audi	A4	2022	55	0	4	2500
10	Lexus	ES	2023	54	1	4	2500

```
10 rows in set (0.00 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", "Olivia", "Adams", "olivia@example.com", "555-765-4321");
Query OK, 10 rows affected (0.02 sec)
Records: 10 Duplicates: 0 Warnings: 0
```

```
mysql> select * from customer;
```

customerid	firstname	lastname	email	onenumber
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

```
10 rows in set (0.00 sec)
```

```
mysql> INSERT INTO lease (leaseid, carid, customerid, startdate, enddate, leasetype)
-> 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") ;
Query OK, 10 rows affected (0.01 sec)
Records: 10 Duplicates: 0 Warnings: 0
```

```
mysql> select * from lease;
```

leaseid	carid	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

```
10 rows in set (0.00 sec)
```

```
mysql> INSERT INTO payment (paymentid, leaseid, paymentdate, amount)
-> 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") ;
Query OK, 10 rows affected (0.02 sec)
Records: 10 Duplicates: 0 Warnings: 0
```

```
mysql> select * from payment;
```

paymentid	leaseid	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
7	7	2023-07-03	40
8	8	2023-08-14	1100
9	9	2023-09-09	80
10	10	2023-10-25	1500

```
10 rows in set (0.00 sec)
```

1)

```
mysql> update vehicles set dailyrate=68 where make="Mercedes";
Query OK, 1 row affected (0.02 sec)
Rows matched: 1  Changed: 1  Warnings: 0
```

```
mysql> select * from vehicles;
```

carid	make	model	year	dailyrate	available	passengercapacity	enginecapacity
1	Toyota	Camry	2022	50	1	4	1450
2	Honda	Civic	2023	45	1	7	1500
3	Ford	Focus	2022	48	0	4	1400
4	Nissan	Altima	2023	52	1	7	1200
5	Chevrolet	Malibu	2022	47	1	4	1800
6	Hyundai	Sonata	2023	49	0	7	1400
7	BMW	3 Series	2023	60	1	7	2499
8	Mercedes	C-Class	2022	68	1	8	2599
9	Audi	A4	2022	55	0	4	2500
10	Lexus	ES	2023	54	1	4	2500

```
10 rows in set (0.00 sec)
```

2)

```
mysql> DELETE FROM payment WHERE leaseid IN (SELECT leaseid FROM lease WHERE customerid = 10);
Query OK, 1 row affected (0.04 sec)

mysql> DELETE FROM lease WHERE customerid = 10;
Query OK, 1 row affected (0.02 sec)

mysql> DELETE FROM customer WHERE customerid = 10;
Query OK, 1 row affected (0.02 sec)

mysql>
```

```
mysql> select * from customer;
```

customerid	firstname	lastname	email	phonenummer
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

```
9 rows in set (0.01 sec)
```

3)

```
mysql> alter table payment RENAME column paymentdate TO transactiondate;
Query OK, 0 rows affected (0.03 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

```
mysql> desc payment;
```

Field	Type	Null	Key	Default	Extra
paymentid	int	NO	PRI	NULL	
leaseid	int	YES	MUL	NULL	
transactiondate	date	YES		NULL	
amount	double	YES		NULL	

```
4 rows in set (0.00 sec)
```

4)

```
mysql> select * from customer where email="william@example.com";
```

customerid	firstname	lastname	email	phonenumber
9	William	Taylor	william@example.com	555-321-6547

```
1 row in set (0.00 sec)
```

5)

```
mysql> select * from lease where customerid=3;
```

leaseid	carid	customerid	startdate	enddate	leasetype
3	3	3	2023-03-10	2023-03-15	Daily
6	4	3	2023-06-15	2023-06-30	Monthly
9	3	3	2023-09-07	2023-09-10	Daily

```
3 rows in set (0.01 sec)
```

6)

```
mysql> select payment.paymentid,payment.leaseid,payment.transactiondate,payment.amount from payment,lease,customer where c
ustomer.phonenumber="555-234-5678" and customer.customerid=lease.customerid and lease.leaseid=payment.leaseid;
```

paymentid	leaseid	transactiondate	amount
1	1	2023-01-03	200

```
1 row in set (0.01 sec)
```

7)

```
mysql> select round(avg(dailyrate)) from vehicles where available=1;
```

round(avg(dailyrate))
54

```
1 row in set (0.01 sec)
```

8)

```
mysql> select make,model from vehicles where dailyrate=(select max(dailyrate) from vehicles);
+-----+-----+
| make   | model |
+-----+-----+
| Mercedes | C-Class |
+-----+-----+
1 row in set (0.01 sec)
```

```
mysql>
```

9)

```
mysql> select vehicles.make,vehicles.model from vehicles,lease where lease.customerid=3 and vehicles.carid=lease.carid;
+-----+-----+
| make   | model |
+-----+-----+
| Ford   | Focus |
| Nissan | Altima |
| Ford   | Focus |
+-----+-----+
3 rows in set (0.00 sec)
```

10)

```
mysql> SELECT l.leaseid,l.startdate,l.enddate ,l.leasetype,c.customerid,c.firstname ,c.lastname ,v.carid,v.make,v.model FROM lease l JOIN customer c ON l.customerid = c.customerid JOIN vehicles v ON l.carid = v.carid WHERE l.enddate <= CURDATE() ORDER BY l.startdate DESC LIMIT 1;
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| leaseid | startdate | enddate | leasetype | customerid | firstname | lastname | carid | make | model |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| 10 | 2023-10-10 | 2023-10-31 | Monthly | 10 | Olivia | Adams | 10 | Lexus | ES |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
1 row in set (0.00 sec)

mysql>
```

11)

```
mysql> select * from payment where year(transactiondate)=2023;
+-----+-----+-----+-----+
| 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 |
+-----+-----+-----+-----+
10 rows in set (0.01 sec)
```

12)


```
mysql> SELECT c.customerid, c.firstname,c.lastname FROM customer c LEFT JOIN lease l ON c.customerid
= l.customerid LEFT JOIN payment p ON l.leaseid = p.leaseid WHERE p.paymentid IS NULL;
+-----+-----+-----+
| customerid | firstname | lastname |
+-----+-----+-----+
|          6 | Laura    | Hall     |
|          9 | William  | Taylor   |
+-----+-----+-----+
2 rows in set (0.00 sec)

mysql>
```

13)

```
mysql> SELECT v.carid,v.make,v.model,SUM(p.amount) FROM vehicles v JOIN lease l ON v.carid = l.carid
JOIN payment p ON l.leaseid = p.leaseid GROUP BY v.carid;
+-----+-----+-----+-----+
| carid | make   | model  | SUM(p.amount) |
+-----+-----+-----+-----+
|      1 | Toyota | Camry  |          200 |
|      2 | Honda  | Civic  |         1000 |
|      3 | Ford   | Focus  |          155 |
|      4 | Nissan | Altima |         2100 |
|      5 | Chevrolet | Malibu |           60 |
|      7 | BMW    | 3 Series |           40 |
|      8 | Mercedes | C-Class |         1100 |
|     10 | Lexus  | ES     |         1500 |
+-----+-----+-----+-----+
8 rows in set (0.00 sec)
```

14)

```
mysql> SELECT c.customerid,c.firstname,c.lastname,SUM(p.amount) FROM customer c JOIN lease l ON c.customerid
= l.customerid JOIN payment p ON l.leaseid = p.leaseid GROUP BY c.customerid;
+-----+-----+-----+-----+
| customerid | firstname | lastname | SUM(p.amount) |
+-----+-----+-----+-----+
|          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 |
+-----+-----+-----+-----+
8 rows in set (0.00 sec)
```

15)

```
mysql> SELECT l.leaseid,l.startdate ,l.enddate ,l.leasetype,v.carid,v.make,v.model FROM lease l JOIN vehicles v
ON l.carid = v.carid;
```

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

```
10 rows in set (0.00 sec)
```

16)

```
mysql> SELECT l.leaseid,l.leasetype,c.customerid,c.firstname FROM lease l JOIN customer c ON l.customerid
= c.customerid JOIN vehicles v ON l.carid = v.carid WHERE l.enddate >= CURDATE();
Empty set (0.01 sec)

mysql>
```

17)

```
mysql> SELECT c.customerid,c.firstname,c.lastname, SUM(p.amount) AS cost FROM customer c JOIN lease l ON
c.customerid = l.customerid JOIN payment p ON l.leaseid = p.leaseid GROUP BY c.customerid ORDER BY cost D
ESC LIMIT 1;
```

customerid	firstname	lastname	cost
10	Olivia	Adams	1500

```
1 row in set (0.00 sec)

mysql>
```

18)

```
mysql> SELECT v.carid,v.make,v.model,l.leaseid,l.startdate ,l.enddate ,l.leasetype,c.customerid,c.firstname ,c.lastname
-> FROM vehicles v LEFT JOIN lease l ON v.carid = l.carid LEFT JOIN customer c ON l.customerid = c.customerid;
```

carid	make	model	leaseid	startdate	enddate	leasetype	customerid	firstname	lastname
1	Toyota	Camry	1	2023-01-01	2023-01-05	Daily	1	John	Doe
2	Honda	Civic	2	2023-02-15	2023-02-28	Monthly	2	Jane	Smith
3	Ford	Focus	3	2023-03-10	2023-03-15	Daily	3	Robert	Johnson
3	Ford	Focus	9	2023-09-07	2023-09-10	Daily	3	Robert	Johnson
4	Nissan	Altima	4	2023-04-20	2023-04-30	Monthly	4	Sarah	Brown
4	Nissan	Altima	6	2023-06-15	2023-06-30	Monthly	3	Robert	Johnson
5	Chevrolet	Malibu	5	2023-05-05	2023-05-10	Daily	5	David	Lee
6	Hyundai	Sonata	NULL	NULL	NULL	NULL	NULL	NULL	NULL
7	BMW	3 Series	7	2023-07-01	2023-07-10	Daily	7	Michael	Davis
8	Mercedes	C-Class	8	2023-08-12	2023-08-15	Monthly	8	Emma	Wilson
9	Audi	A4	NULL	NULL	NULL	NULL	NULL	NULL	NULL
10	Lexus	ES	10	2023-10-10	2023-10-31	Monthly	10	Olivia	Adams

```
12 rows in set (0.01 sec)

mysql>
```

