CAR RENTAL SYSTEM

CREATING TABLE

1. Vehicle table:

```
create table vehicle (
                        vehicleid int primary key,
                        make varchar(10),
                        model varchar(20),
                        year int,
                       dailyrate decimal(10,2),
                       status varchar(20) check (status in ('available', 'notAvailable')),
                       passengercapacity int,
                       enginecapacity int);
```

Output:

```
mysql> create table vehicle (
    ->     vehicleid int primary key,
    ->     make varchar(10),
    ->     model varchar(20),
    ->     year int,
    ->     dailyrate decimal(10,2),
    ->     status varchar(20) check (status in ('available', 'notAvailable')),
    ->     passengercapacity int,
    ->     enginecapacity int
    -> );
Query OK, 0 rows affected (0.04 sec)
```

2. Customer table:

```
create table customer(
                customerid int primary key,
                firstname varchar(20),
                lastname varchar(20),
                email varchar(50),
                phonenumber varchar(12));
```

Output:

```
mysql> create table customer(customerid int primary key,
    ->                       firstname varchar(20),
    ->                       lastname varchar(20),
    ->                       email varchar(50),
    ->                       phonenumber varchar(12));
Query OK, 0 rows affected (0.09 sec)
```

3. Lease table:

```
create table lease(
        leaseid int primary key,
        vehicleid int,
        customerid int,
        startdate date,
        enddate date,
        type varchar(20) check(type in('dailylease','monthlylease')),
        foreign key(vehicleid) references vehicle(vehicleid),
        foreign key(customerid) references customer(customerid) );
```

Output:

```
mysql> create table lease(leaseid int primary key,
    ->                    vehicleid int,
    ->                    customerid int,
    ->                    startdate date,
    ->                    enddate date,
    ->                    type varchar(20) check(type in('dailylease','monthlylease')),
    ->                    foreign key(vehicleid) references vehicle(vehicleid),
    ->                    foreign key(customerid) references customer(customerid));
Query OK, 0 rows affected (0.06 sec)
```

4. Payment table:

```
create table payment(
        paymentid int primary key,
        leaseid int,
        paymentdate date,
        amount decimal(10,2),
        foreign key(leaseid) references lease(leaseid));
```

Output:

```
mysql> create table payment(paymentid int primary key,
    ->                      leaseid int,
    ->                      paymentdate date,
    ->                      amount decimal(10,2),
    ->                      foreign key(leaseid) references lease(leaseid));

Query OK, 0 rows affected (0.06 sec)
```

INSERTING THE DATA

1. Vehicle table:

insert into vehicle (vehicleid, make, model, year, dailyrate, status, passengercapacity, enginecapacity) values
(1, 'Toyota', 'Camry', 2022, 50.00, 'available', 4, 1450),
(2, 'Honda', 'Civic', 2023, 45.00, 'available', 7, 1500),
(3, 'Ford', 'Focus', 2022, 48.00, 'notAvailable', 4, 1400),
(4, 'Nissan', 'Altima', 2023, 52.00, 'available', 7, 1200),

(5, 'Chevrolet', 'Malibu', 2022, 47.00, 'available', 4, 1800),
(6, 'Hyundai', 'Sonata', 2023, 49.00, 'notAvailable', 7, 1400),
(7, 'BMW', '3 Series', 2023, 60.00, 'available', 7, 2499),
(8, 'Mercedes', 'C-Class', 2022, 58.00, 'available', 8, 2599),
(9, 'Audi', 'A4', 2022, 55.00, 'notAvailable', 4, 2500),
(10, 'Lexus', 'ES', 2023, 54.00, 'available', 4, 2500);

Output:

```
mysql> insert into vehicle (vehicleid, make, model, year, dailyrate, status, passengercapacity, enginecapacity) values
    -> (1, 'Toyota', 'Camry', 2022, 50.00, 'available', 4, 1450),
    -> (2, 'Honda', 'Civic', 2023, 45.00, 'available', 7, 1500),
    -> (3, 'Ford', 'Focus', 2022, 48.00, 'notAvailable', 4, 1400),
    -> (4, 'Nissan', 'Altima', 2023, 52.00, 'available', 7, 1200),
    -> (5, 'Chevrolet', 'Malibu', 2022, 47.00, 'available', 4, 1800),
    -> (6, 'Hyundai', 'Sonata', 2023, 49.00, 'notAvailable', 7, 1400),
    -> (7, 'BMW', '3 Series', 2023, 60.00, 'available', 7, 2499),
    -> (8, 'Mercedes', 'C-Class', 2022, 58.00, 'available', 8, 2599),
    -> (9, 'Audi', 'A4', 2022, 55.00, 'notAvailable', 4, 2500),
    -> (10, 'Lexus', 'ES', 2023, 54.00, 'available', 4, 2500);
Query OK, 10 rows affected (0.02 sec)
Records: 10  Duplicates: 0  Warnings: 0
```

2. Customer table:

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');

Output:

```
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
```

3. Lease table:

insert into lease (leaseid, vehicleid, customerid, startdate, enddate, type) values
(1, 1, 1, '2023-01-01', '2023-01-05', 'DailyLease'),
(2, 2, 2, '2023-02-15', '2023-02-28', 'MonthlyLease'),

(3, 3, 3, '2023-03-10', '2023-03-15', 'DailyLease'),
(4, 4, 4, '2023-04-20', '2023-04-30', 'MonthlyLease'),
(5, 5, 5, '2023-05-05', '2023-05-10', 'DailyLease'),
(6, 4, 3, '2023-06-15', '2023-06-30', 'MonthlyLease'),
(7, 7, 7, '2023-07-01', '2023-07-10', 'DailyLease'),
(8, 8, 8, '2023-08-12', '2023-08-15', 'MonthlyLease'),
(9, 3, 3, '2023-09-07', '2023-09-10', 'DailyLease'),
(10, 10, 10, '2023-10-10', '2023-10-31', 'MonthlyLease');

Output:

```
mysql> insert into lease (leaseid, vehicleid, customerid, startdate, enddate, type) values
    -> (1, 1, 1, '2023-01-01', '2023-01-05', 'DailyLease'),
    -> (2, 2, 2, '2023-02-15', '2023-02-28', 'MonthlyLease'),
    -> (3, 3, 3, '2023-03-10', '2023-03-15', 'DailyLease'),
    -> (4, 4, 4, '2023-04-20', '2023-04-30', 'MonthlyLease'),
    -> (5, 5, 5, '2023-05-05', '2023-05-10', 'DailyLease'),
    -> (6, 4, 3, '2023-06-15', '2023-06-30', 'MonthlyLease'),
    -> (7, 7, 7, '2023-07-01', '2023-07-10', 'DailyLease'),
    -> (8, 8, 8, '2023-08-12', '2023-08-15', 'MonthlyLease'),
    -> (9, 3, 3, '2023-09-07', '2023-09-10', 'DailyLease'),
    -> (10, 10, 10, '2023-10-10', '2023-10-31', 'MonthlyLease');
Query OK, 10 rows affected (0.02 sec)
Records: 10  Duplicates: 0  Warnings: 0
```

4. Payment table:

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);

Output:

```
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 vehicle;
+-----------+-----------+----------+------+-----------+--------------+-------------------+----------------+
| vehicleid | make      | model    | year | dailyrate | status       | passengercapacity | enginecapacity |
+-----------+-----------+----------+------+-----------+--------------+-------------------+----------------+
|         1 | Toyota    | Camry    | 2022 |     50.00 | available    |                 4 |           1450 |
|         2 | Honda     | Civic    | 2023 |     45.00 | available    |                 7 |           1500 |
|         3 | Ford      | Focus    | 2022 |     48.00 | notAvailable |                 4 |           1400 |
|         4 | Nissan    | Altima   | 2023 |     52.00 | available    |                 7 |           1200 |
|         5 | Chevrolet | Malibu   | 2022 |     47.00 | available    |                 4 |           1800 |
|         6 | Hyundai   | Sonata   | 2023 |     49.00 | notAvailable |                 7 |           1400 |
|         7 | BMW       | 3 Series | 2023 |     60.00 | available    |                 7 |           2499 |
|         8 | Mercedes  | C-Class  | 2022 |     58.00 | available    |                 8 |           2599 |
|         9 | Audi      | A4       | 2022 |     55.00 | notAvailable |                 4 |           2500 |
|        10 | Lexus     | ES       | 2023 |     54.00 | available    |                 4 |           2500 |
+-----------+-----------+----------+------+-----------+--------------+-------------------+----------------+
10 rows in set (0.00 sec)

mysql> 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 |
|          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> select * from lease;
+---------+-----------+------------+------------+------------+---------------+
| leaseid | vehicleid | customerid | startdate  | enddate    | type          |
+---------+-----------+------------+------------+------------+---------------+
|       1 |         1 |          1 | 2023-01-01 | 2023-01-05 | DailyLease    |
|       2 |         2 |          2 | 2023-02-15 | 2023-02-28 | MonthlyLease  |
|       3 |         3 |          3 | 2023-03-10 | 2023-03-15 | DailyLease    |
|       4 |         4 |          4 | 2023-04-20 | 2023-04-30 | MonthlyLease  |
|       5 |         5 |          5 | 2023-05-05 | 2023-05-10 | DailyLease    |
|       6 |         4 |          3 | 2023-06-15 | 2023-06-30 | MonthlyLease  |
|       7 |         7 |          7 | 2023-07-01 | 2023-07-10 | DailyLease    |
|       8 |         8 |          8 | 2023-08-12 | 2023-08-15 | MonthlyLease  |
|       9 |         3 |          3 | 2023-09-07 | 2023-09-10 | DailyLease    |
|      10 |        10 |         10 | 2023-10-10 | 2023-10-31 | MonthlyLease  |
+---------+-----------+------------+------------+------------+---------------+
10 rows in set (0.00 sec)

mysql> 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 |
+-----------+---------+-------------+---------+
10 rows in set (0.00 sec)
```

QUERIES:

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

Query: update vehicle set dailyrate = 68.00 where make = 'Mercedes';

Output:

```
mysql> update vehicle set dailyrate = 68.00 where make = 'Mercedes';
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> select * from vehicle;
+-----------+-----------+----------+------+-----------+--------------+-------------------+----------------+
| vehicleid | make      | model    | year | dailyrate | status       | passengercapacity | enginecapacity |
+-----------+-----------+----------+------+-----------+--------------+-------------------+----------------+
|         1 | Toyota    | Camry    | 2022 |     50.00 | available    |                 4 |           1450 |
|         2 | Honda     | Civic    | 2023 |     45.00 | available    |                 7 |           1500 |
|         3 | Ford      | Focus    | 2022 |     48.00 | notAvailable |                 4 |           1400 |
|         4 | Nissan    | Altima   | 2023 |     52.00 | available    |                 7 |           1200 |
|         5 | Chevrolet | Malibu   | 2022 |     47.00 | available    |                 4 |           1800 |
|         6 | Hyundai   | Sonata   | 2023 |     49.00 | notAvailable |                 7 |           1400 |
|         7 | BMW       | 3 Series | 2023 |     60.00 | available    |                 7 |           2499 |
|         8 | Mercedes  | C-Class  | 2022 |     68.00 | available    |                 8 |           2599 |
|         9 | Audi      | A4       | 2022 |     55.00 | notAvailable |                 4 |           2500 |
|        10 | Lexus     | ES       | 2023 |     54.00 | available    |                 4 |           2500 |
+-----------+-----------+----------+------+-----------+--------------+-------------------+----------------+
10 rows in set (0.00 sec)
```

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

Query: delete from payment where leaseid in (select leaseid from lease where customerid = <customerid>);

delete from lease where customerid = 10;

delete from customer where customerid = 10;

Output:

```
mysql> delete from payment where leaseid in (select leaseid from lease where customerid = 10);
Query OK, 1 row affected (0.01 sec)

mysql> delete from lease where customerid = 10;
Query OK, 1 row affected (0.01 sec)

mysql> delete from customer where customerid = 10;
Query OK, 1 row affected (0.01 sec)

mysql> 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 |
|          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 (0.00 sec)
```

3. Rename the "paymentDate" column in the Payment table to "transactionDate".
Query: alter table payment rename column paymentdate to transactiondate;
Output:

```
mysql> alter table payment rename column paymentdate to transactiondate;
Query OK, 0 rows affected (0.02 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          | decimal(10,2) | YES  |     | NULL    |       |
+-----------------+---------------+------+-----+---------+-------+
4 rows in set (0.01 sec)
```

4. Find a specific customer by email.
Query: select * from customer where email = sarah@example.com;
Output:

```
mysql> select * from customer where email = 'sarah@example.com';
+------------+-----------+----------+-------------------+--------------+
| customerid | firstname | lastname | email             | phonenumber  |
+------------+-----------+----------+-------------------+--------------+
|          4 | Sarah     | Brown    | sarah@example.com | 555-456-7890 |
+------------+-----------+----------+-------------------+--------------+
1 row in set (0.00 sec)
```

5. Get active leases for a specific customer.
Query: select c.customerid, concat(c.firstname,' ',c.lastname) as customername, l.leaseid, l.type
from customer c
join lease l on c.customerid = l.customerid
where c.customerid = 5 and curdate() <= l.enddate;
Output:

```
mysql> select c.customerid, concat(c.firstname,' ',c.lastname) as customername, l.leaseid, l.type from customer c join lease l on c.customerid = l.customeri
d where c.customerid = 5 and curdate() <= l.enddate;
Empty set (0.00 sec)
```

6. Find all payments made by a customer with a specific phone number.
Query: select c.customerid, concat(c.firstname, ' ', c.lastname) as customername, p.paymentid, p.transactiondate
from customer c
join lease l on c.customerid = l.customerid
join payment p on l.leaseid = p.leaseid
where c.phonenumber = '555-456-7890';

Output:

```
mysql> select c.customerid, concat(c.firstname, ' ', c.lastname) as customername, p.paymentid, p.transactiondate from customer c join lease l on c.customeri
d = l.customerid join payment p on l.leaseid = p.leaseid where c.phonenumber = '555-456-7890';
+------------+--------------+-----------+-----------------+
| customerid | customername | paymentid | transactiondate |
+------------+--------------+-----------+-----------------+
|          4 | Sarah Brown  |         4 | 2023-04-25      |
+------------+--------------+-----------+-----------------+
1 row in set (0.00 sec)
```

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

Query: select vehicleid, make, model, avg(dailyrate) as avgofdailyrate
from vehicle
where status = 'available'
group by vehicleid, make, model;

Output:

```
mysql> select vehicleid, make, model, avg(dailyrate) as avgofdailyrate from vehicle where status = 'available' group by vehicleid, make, model;
+-----------+-----------+----------+----------------+
| vehicleid | make      | model    | avgofdailyrate |
+-----------+-----------+----------+----------------+
|         1 | Toyota    | Camry    |      50.000000 |
|         2 | Honda     | Civic    |      45.000000 |
|         4 | Nissan    | Altima   |      52.000000 |
|         5 | Chevrolet | Malibu   |      47.000000 |
|         7 | BMW       | 3 Series |      60.000000 |
|         8 | Mercedes  | C-Class  |      68.000000 |
|        10 | Lexus     | ES       |      54.000000 |
+-----------+-----------+----------+----------------+
7 rows in set (0.00 sec)
```

8. Find the car with the highest daily rate.

Query: select * from vehicle order by dailyrate desc limit 1;

Output:

```
mysql> select * from vehicle order by dailyrate desc limit 1;
+-----------+----------+---------+------+-----------+-----------+-------------------+----------------+
| vehicleid | make     | model   | year | dailyrate | status    | passengercapacity | enginecapacity |
+-----------+----------+---------+------+-----------+-----------+-------------------+----------------+
|         8 | Mercedes | C-Class | 2022 |     68.00 | available |                 8 |           2599 |
+-----------+----------+---------+------+-----------+-----------+-------------------+----------------+
1 row in set (0.00 sec)
```

9. Retrieve all cars leased by a specific customer.

Query: select v.*
from vehicle v
join lease l on v.vehicleid = l.vehicleid
where l.customerid = 5;

Output:

```
mysql> select v.* from vehicle v join lease l on v.vehicleid = l.vehicleid where l.customerid = 5;
+-----------+-----------+--------+------+-----------+-----------+-------------------+----------------+
| vehicleid | make      | model  | year | dailyrate | status    | passengercapacity | enginecapacity |
+-----------+-----------+--------+------+-----------+-----------+-------------------+----------------+
|         5 | Chevrolet | Malibu | 2022 |     47.00 | available |                 4 |           1800 |
+-----------+-----------+--------+------+-----------+-----------+-------------------+----------------+
1 row in set (0.00 sec)
```

10. Find the details of the most recent lease.

Query: select *
from lease
order by startdate desc limit 1;

Output:

```
mysql> select * from lease order by startdate desc limit 1;
+---------+-----------+------------+------------+------------+------------+
| leaseid | vehicleid | customerid | startdate  | enddate    | type       |
+---------+-----------+------------+------------+------------+------------+
|       9 |         3 |          3 | 2023-09-07 | 2023-09-10 | DailyLease |
+---------+-----------+------------+------------+------------+------------+
1 row in set (0.00 sec)
```

11. List all payments made in the year 2023.

Query: select * from payment where transactiondate between '2023-01-01' and '2023-12-31';

Output:

```
mysql> select * from payment where transactiondate between '2023-01-01' and '2023-12-31';
+-----------+---------+-----------------+---------+
| paymentid | leaseid | transactiondate | 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 |
+-----------+---------+-----------------+---------+
9 rows in set (0.00 sec)
```

12. Retrieve customers who have not made any payments

Query: select c.*
from customer c
where not exists (select 1
from payment p
join lease l on p.leaseid = l.leaseid
where l.customerid = c.customerid);

Output:

```
mysql> select c.* from customer c where not exists (select 1 from payment p join lease l on p.leaseid = l.leaseid where l.customerid = c.customerid
    -> );
+------------+-----------+----------+--------------------+--------------+
| customerid | firstname | lastname | email              | phonenumber  |
+------------+-----------+----------+--------------------+--------------+
|          6 | Laura     | Hall     | laura@example.com  | 555-234-5678 |
|          9 | William   | Taylor   | william@example.com | 555-321-6547 |
+------------+-----------+----------+--------------------+--------------+
2 rows in set (0.02 sec)
```

13. Retrieve Car Details and Their Total Payments.

Query: select v.vehicleid, v.make, v.model, v.year, v.dailyrate, sum(p.amount) as total_payments

from vehicle v
join lease l on v.vehicleid = l.vehicleid
join payment p on l.leaseid = p.leaseid
group by v.vehicleid;

Output:

```
mysql> select v.vehicleid, v.make, v.model, v.year, v.dailyrate, sum(p.amount) as total_payments
    -> from vehicle v
    -> join lease l on v.vehicleid = l.vehicleid
    -> join payment p on l.leaseid = p.leaseid
    -> group by v.vehicleid;
+------------+------------+-----------+------+-----------+----------------+
| vehicleid | make       | model     | year | dailyrate | total_payments |
+------------+------------+-----------+------+-----------+----------------+
|          1 | Toyota     | Camry     | 2022 |     50.00 |         200.00 |
|          2 | Honda      | Civic     | 2023 |     45.00 |        1000.00 |
|          3 | Ford       | Focus     | 2022 |     48.00 |         155.00 |
|          4 | Nissan     | Altima    | 2023 |     52.00 |        2100.00 |
|          5 | Chevrolet  | Malibu    | 2022 |     47.00 |          60.00 |
|          7 | BMW        | 3 Series  | 2023 |     60.00 |          40.00 |
|          8 | Mercedes   | C-Class   | 2022 |     68.00 |        1100.00 |
+------------+------------+-----------+------+-----------+----------------+
7 rows in set (0.00 sec)
```

14. Calculate Total Payments for Each Customer.

Query: select c.customerid, c.firstname, c.lastname, sum(p.amount) as total_payments
from customer c
join lease l on c.customerid = l.customerid
join payment p on l.leaseid = p.leaseid
group by c.customerid, c.firtname, c.lastname;

Output:

```
mysql> select c.customerid, c.firstname, c.lastname, sum(p.amount) as total_payments from customer c join lease l on c.customerid = l.customerid join paymen
t p on l.leaseid = p.leaseid group by c.customerid, c.firstname, c.lastname;
+------------+-----------+----------+----------------+
| customerid | firstname | lastname | total_payments |
+------------+-----------+----------+----------------+
|          1 | John      | Doe      |         200.00 |
|          2 | Jane      | Smith    |        1000.00 |
|          3 | Robert    | Johnson  |        1355.00 |
|          4 | Sarah     | Brown    |         900.00 |
|          5 | David     | Lee      |          60.00 |
|          7 | Michael   | Davis    |          40.00 |
|          8 | Emma      | Wilson   |        1100.00 |
+------------+-----------+----------+----------------+
7 rows in set (0.00 sec)
```

15. List Car Details for Each Lease.

Query: select l.leaseid, v.vehicleid, v.make, v.model, v.year, v.dailyrate, l.startdate, l.enddate
from lease l
join vehicle v on l.vehicleid = v.vehicleid;

Output:

```
mysql> select l.leaseid, v.vehicleid, v.make, v.model, v.year, v.dailyrate, l.startdate, l.enddate
    -> from lease l
    -> join vehicle v on l.vehicleid = v.vehicleid;
+---------+-----------+-----------+----------+------+-----------+------------+------------+
| leaseid | vehicleid | make      | model    | year | dailyrate | startdate  | enddate    |
+---------+-----------+-----------+----------+------+-----------+------------+------------+
|       1 |         1 | Toyota    | Camry    | 2022 |     50.00 | 2023-01-01 | 2023-01-05 |
|       2 |         2 | Honda     | Civic    | 2023 |     45.00 | 2023-02-15 | 2023-02-28 |
|       3 |         3 | Ford      | Focus    | 2022 |     48.00 | 2023-03-10 | 2023-03-15 |
|       4 |         4 | Nissan    | Altima   | 2023 |     52.00 | 2023-04-20 | 2023-04-30 |
|       5 |         5 | Chevrolet | Malibu   | 2022 |     47.00 | 2023-05-05 | 2023-05-10 |
|       6 |         4 | Nissan    | Altima   | 2023 |     52.00 | 2023-06-15 | 2023-06-30 |
|       7 |         7 | BMW       | 3 Series | 2023 |     60.00 | 2023-07-01 | 2023-07-10 |
|       8 |         8 | Mercedes  | C-Class  | 2022 |     68.00 | 2023-08-12 | 2023-08-15 |
|       9 |         3 | Ford      | Focus    | 2022 |     48.00 | 2023-09-07 | 2023-09-10 |
+---------+-----------+-----------+----------+------+-----------+------------+------------+
9 rows in set (0.00 sec)
```

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

Query: select l.leaseid, l.startdate, l.enddate, c.firstname, c.lastname, v.make, v.model, v.dailyrate
from lease l
join customer c on l.customerid = c.customerid
join vehicle v on l.vehicleid = v.vehicleid
where l.enddate >= curdate();

Output:

```
mysql> select l.leaseid, l.startdate, l.enddate, c.firstname, c.lastname, v.make, v.model, v.dailyrate
    -> from lease l
    -> join customer c on l.customerid = c.customerid
    -> join vehicle v on l.vehicleid = v.vehicleid
    -> where l.enddate >= curdate();
Empty set (0.00 sec)
```

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

Query: select c.customerid, c.firstname, c.lastname, sum(p.amount) as total_spent
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 total_spent desc
limit 1;

Output:

```
mysql> select c.customerid, c.firstname, c.lastname, sum(p.amount) as total_spent
    -> 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 total_spent desc
    -> limit 1;
+------------+-----------+----------+-------------+
| customerid | firstname | lastname | total_spent |
+------------+-----------+----------+-------------+
|          3 | Robert    | Johnson  |     1355.00 |
+------------+-----------+----------+-------------+
1 row in set (0.00 sec)
```

18. List All Cars with Their Current Lease Information.

Query: select v.vehicleid, v.make, v.model, v.year, v.dailyrate, l.leaseid, l.startdate, l.enddate, c.firstname, c.lastname
from vehicle v
join lease l on v.vehicleid = l.vehicleid
join customer c on l.customerid = c.customerid
where l.enddate >= curdate();

Output:

```
mysql> select v.vehicleid, v.make, v.model, v.year, v.dailyrate, l.leaseid, l.startdate, l.enddate, c.firstname, c.lastname
    -> from vehicle v
    -> join lease l on v.vehicleid = l.vehicleid
    -> join customer c on l.customerid = c.customerid
    -> where l.enddate >= curdate();
Empty set (0.00 sec)
```