Coding Challenge - Car Rental System – SQL
Submitted by : SANKAR ROY

Creation and schema for the database

```sql
create database CarRental;
use CarRental;

create table vehicle(vehicleID int primary key,
make varchar(100),
model varchar(100),
year year,
dailyRate float(5,2),
status varchar(100) check(status in ('available' , 'not available')),
passengerCapacity int,
engineCapacity int);

desc vehicle;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Field	Type	Null	Key	Default	Extra
vehicleID	int	NO	PRI	NULL	
make	varchar(100)	YES		NULL	
model	varchar(100)	YES		NULL	
year	year	YES		NULL	
dailyRate	float(5,2)	YES		NULL	
status	varchar(100)	YES		NULL	
passengerCapacity	int	YES		NULL	
engineCapacity	int	YES		NULL	

```
22  create table lease(leaseID int primary key,
23  vehicleID int ,
24  customerID int ,
25  startDate date ,
26  endDate date ,
27  type varchar(15) check(type in ('daily', 'monthly')),
28  foreign key (vehicleID) references vehicle(vehicleID),
29  foreign key (customerID) references customer(customerID));
30
31  desc lease;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Field	Type	Null	Key	Default	Extra
leaseID	int	NO	PRI	NULL	
vehicleID	int	YES	MUL	NULL	
customerID	int	YES	MUL	NULL	
startDate	date	YES		NULL	
endDate	date	YES		NULL	
type	varchar(15)	YES		NULL	

```
15  create table customer(customerID int primary key ,
16  firstname varchar(100),
17  lastname varchar(100),
18  email varchar(100),
19  phoneNumber varchar(20));
20  desc customer;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Field	Type	Null	Key	Default	Extra
customerID	int	NO	PRI	NULL	
firstname	varchar(100)	YES		NULL	
lastname	varchar(100)	YES		NULL	
email	varchar(100)	YES		NULL	
phoneNumber	varchar(20)	YES		NULL	

```
33 • create table payment(paymentID int primary key,
34   leaseID int,
35   paymentDate date ,
36   amount float(10,2),
37   foreign key (leaseID) references lease(leaseID));
38
39 •  desc payment;
40
41 •  insert into vehicle values
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

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

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

```
96 •  update vehicle set dailyrate = 68.00 where make = 'mercedes';
97 •  select * from vehicle where make = 'mercedes';
98
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap C

vehicleID	make	model	year	dailyRate	status	passengerCapacity	engineCapacity
8	mercedes	c-class	2022	68.00	available	8	2599
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

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

```
121 •  delete from payment
122    where leaseID in(select leaseID from lease where customerID = 7);
123 •  select * from payment;
```

Result Grid | Filter Rows: | Edit: | Export/Import:

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
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

```
125 •  delete from lease
126    where customerID = 7;
127 •  select * from lease;
```

Result Grid | Filter Rows: | Edit: | Export

leaseID	vehicleID	customerID	startDate	endDate	type
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
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
NULL	NULL	NULL	NULL	NULL	NULL

```
129 •   delete from customer
130     where customerID = 7;
131 •   select * from customer;
```

Result Grid | Filter Rows: | Edit: | Export/Impor

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
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
NULL	NULL	NULL	NULL	NULL

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

```
102 •   alter table payment
103     rename column paymentdate to transactionDate ;
104 •   desc payment;
105
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

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

4. Find a specific customer by email.

```
106 •   select * from customer where email like 'michael@example.com' ;
```

Result Grid | Filter Rows: | Edit: | Export/Import:

customerID	firstname	lastname	email	phoneNumber
7	michael	davis	michael@example.com	555-876-5432
NULL	NULL	NULL	NULL	NULL

5. Get active leases for a specific customer.

```
109 •  set @date1 = '2023-04-25'; -- current date is of 2024 so made a variable for current date and added date to show a set
110 •  select * from lease
111    join customer on customer.customerID = lease.customerID
112    where customer.firstname = 'sarah' and enddate >= @date1;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

leaseID	vehicleID	customerID	startDate	endDate	type	customerID	firstname	lastname	email	phoneNumber
4	4	4	2023-04-20	2023-04-30	monthly	4	sarah	brown	sarah@example.com	555-456-7890

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

```
115 •  select payment.*
116    from payment
117    join lease on payment.leaseid = lease.leaseid
118    join customer on customer.customerid = lease.customerid
119    where customer.phonenumber = '555-987-6543';
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

paymentID	leaseID	transactionDate	amount
5	5	2023-05-07	60.00

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

```
134 •  select make , model , avg(dailyrate) as avgDailyRates
135    from vehicle
136    where status = 'available'
137    group by vehicleID;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content

make	model	avgDailyRates
toyota	camry	50.000000
honda	civic	45.000000
nissan	altima	52.000000
chevrolet	malibu	47.000000
BMW	3 series	60.000000
mercedes	c-class	68.000000
lexus	ES	54.000000

8. Find the car with the highest daily rate.

```sql
select make , model , dailyrate as highest_daily_rate
from vehicle
group by vehicleID
order by dailyrate desc
limit 1;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

make	model	highest_daily_rate
mercedes	c-class	68.00

9. Retrieve all cars leased by a specific customer.

```sql
select *
from vehicle
where vehicleID in(
select lease.vehicleID
from lease
where lease.customerID = 3
);
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell

vehicleID	make	model	year	dailyRate	status	passengerCapacity	engineCapacity
3	ford	focus	2022	48.00	not available	4	1400
4	nissan	altima	2023	52.00	available	7	1200
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

10. Find the details of the most recent lease.

```sql
select *
from lease
order by startdate desc
limit 1;
```

Result Grid | Filter Rows: | Edit: | Expo

leaseID	vehicleID	customerID	startDate	endDate	type
10	10	10	2023-10-10	2023-10-31	monthly
NULL	NULL	NULL	NULL	NULL	NULL

11. List all payments made in the year 2023.

```
159 •   select *
160     from payment
161     where year(transactiondate) = 2023;
```

Result Grid | Filter Rows: | Edit:

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
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.

```
163 •   select * from customer
164     where customerid not in(select customer.customerID from customer
165     join lease on lease.customerid = customer.customerid
166     where lease.leaseID  in(select leaseID from payment
167     where leaseID = payment.leaseID)) ;
```

Result Grid | Filter Rows: | Edit: | Export/Import:

customerID	firstname	lastname	email	phoneNumber
6	laura	hall	laura@example.com	555-234-5678
9	william	taylor	william@example.com	555-321-6547
NULL	NULL	NULL	NULL	NULL

13. Retrieve Car Details and Their Total Payments.

```sql
select vehicle.* , sum(payment.amount) as totalAmount
from vehicle
join lease on vehicle.vehicleID = lease.vehicleID
join payment on payment.leaseid = lease.leaseID
group by vehicleID;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

vehicleID	make	model	year	dailyRate	status	passengerCapacity	engineCapacity	totalAmount
1	toyota	camry	2022	50.00	available	4	1450	200.00
2	honda	civic	2023	45.00	available	7	1500	1000.00
3	ford	focus	2022	48.00	not available	4	1400	155.00
4	nissan	altima	2023	52.00	available	7	1200	2100.00
5	chevrolet	malibu	2022	47.00	available	4	1800	60.00
8	mercedes	c-class	2022	68.00	available	8	2599	1100.00
10	lexus	ES	2023	54.00	available	4	2500	1500.00

14. Calculate Total Payments for Each Customer.

```sql
select customer.* , sum(payment.amount) as totalAmount
from customer
join lease on customer.customerID = lease.customerID
join payment on payment.leaseid = lease.leaseID
group by customerID;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

customerID	firstname	lastname	email	phoneNumber	totalAmount
1	john	doe	johndoe@example.com	555-555-5555	200.00
2	jane	smith	janesmith@example.com	555-123-4567	1000.00
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
8	emma	wilson	emma@example.com	555-432-1098	1100.00
10	olivia	adams	olivia@example.com	555-765-4321	1500.00

15. List Car Details for Each Lease.

```sql
select vehicle.* , lease.*
from vehicle
join lease on  lease.vehicleID = vehicle.vehicleID;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

vehicleID	make	model	year	dailyRate	status	passengerCapacity	engineCapacity	leaseID	vehicleID	customerID	startDate	endDate	type
1	toyota	camry	2022	50.00	available	4	1450	1	1	1	2023-01-01	2023-01-05	daily
2	honda	civic	2023	45.00	available	7	1500	2	2	2	2023-02-15	2023-02-28	monthly
3	ford	focus	2022	48.00	not available	4	1400	3	3	3	2023-03-10	2023-03-15	daily
4	nissan	altima	2023	52.00	available	7	1200	4	4	4	2023-04-20	2023-04-30	monthly
5	chevrolet	malibu	2022	47.00	available	4	1800	5	5	5	2023-05-05	2023-05-10	daily
4	nissan	altima	2023	52.00	available	7	1200	6	4	3	2023-06-15	2023-06-30	monthly
8	mercedes	c-class	2022	68.00	available	8	2599	8	8	8	2023-08-12	2023-08-15	monthly
3	ford	focus	2022	48.00	not available	4	1400	9	3	3	2023-09-07	2023-09-10	daily
10	lexus	ES	2023	54.00	available	4	2500	10	10	10	2023-10-10	2023-10-31	monthly

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

```
187 •  select lease.*, customer.*, vehicle.*
188    from lease
189    join customer on lease.customerid = customer.customerid
190    join vehicle on lease.vehicleid = vehicle.vehicleid
191    where '2023-06-20' between startdate and enddate;
192
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

leaseID	vehicleID	customerID	startDate	endDate	type	customerID	firstname	lastname	email	phoneNumber	vehicleID	make	model	year	dailyRate
6	4	3	2023-06-15	2023-06-30	monthly	3	robert	johnson	robert@example.com	555-789-1234	4	nissan	altima	2023	52.00

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

```
194 •  select customer.* , sum(payment.amount) as totalAmount
195    from customer
196    join lease on customer.customerID = lease.customerID
197    join payment on payment.leaseid = lease.leaseID
198    group by customerID
199    order by totalamount desc
200    limit 1 ;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: | Fetch ro

customerID	firstname	lastname	email	phoneNumber	totalAmount
10	olivia	adams	olivia@example.com	555-765-4321	1500.00

18. List All Cars with Their Current Lease Information.

```
203 •  set @curdate1 = '2023-05-15';  -- as current date has no active rent so i am using current date as 2023-05-15
204 •  select vehicle.* , lease.*
205    from vehicle
206    join lease on vehicle.vehicleID = lease.vehicleID
207    where enddate > @curdate1;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

vehicleID	make	model	year	dailyRate	status	passengerCapacity	engineCapacity	leaseID	vehicleID	customerID	startDate	endDate	type
4	nissan	altima	2023	52.00	available	7	1200	6	4	3	2023-06-15	2023-06-30	monthly
8	mercedes	c-class	2022	68.00	available	8	2599	8	8	8	2023-08-12	2023-08-15	monthly
3	ford	focus	2022	48.00	not available	4	1400	9	3	3	2023-09-07	2023-09-10	daily
10	lexus	ES	2023	54.00	available	4	2500	10	10	10	2023-10-10	2023-10-31	monthly