Lesson 02 Demo 04

Implementing Joins on Tables

Objective: To demonstrate various Table Joins (inner join, left join, right join, full outer join) between the tables in the MySQL database to combine data effectively

Tools Required: Visual Studio Code and MySQL

Prerequisites: None

Steps to be followed:

1. Implement different types of table joins

Step 1: Implement different types of table joins

1.1 Execute the following command to display the tables in the **estore** database:
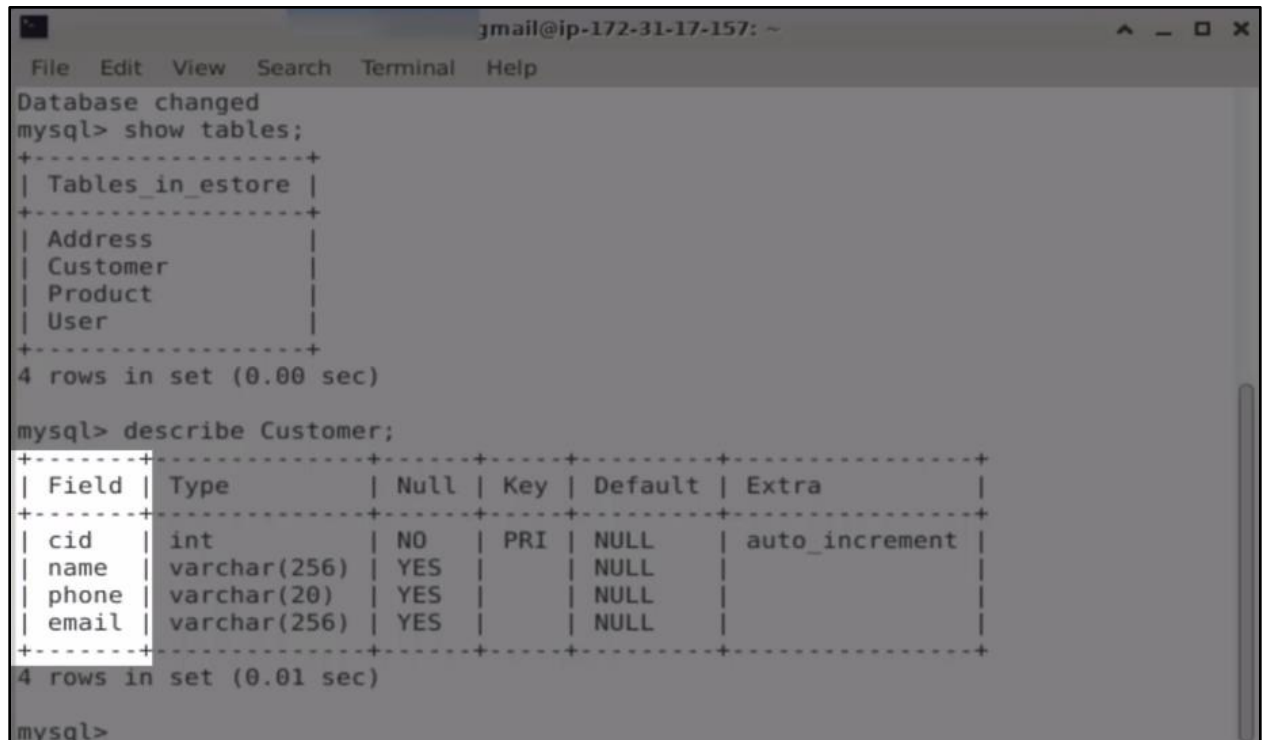
use estore;
show tables;

```
mysql> use estore;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
mysql> show tables;
+------------------+
| Tables_in_estore |
+------------------+
| Address          |
| Customer         |
| Product          |
| User             |
+------------------+
4 rows in set (0.00 sec)

mysql>
```

1.2 Execute the following command to describe the **Customer** table to view its structure:
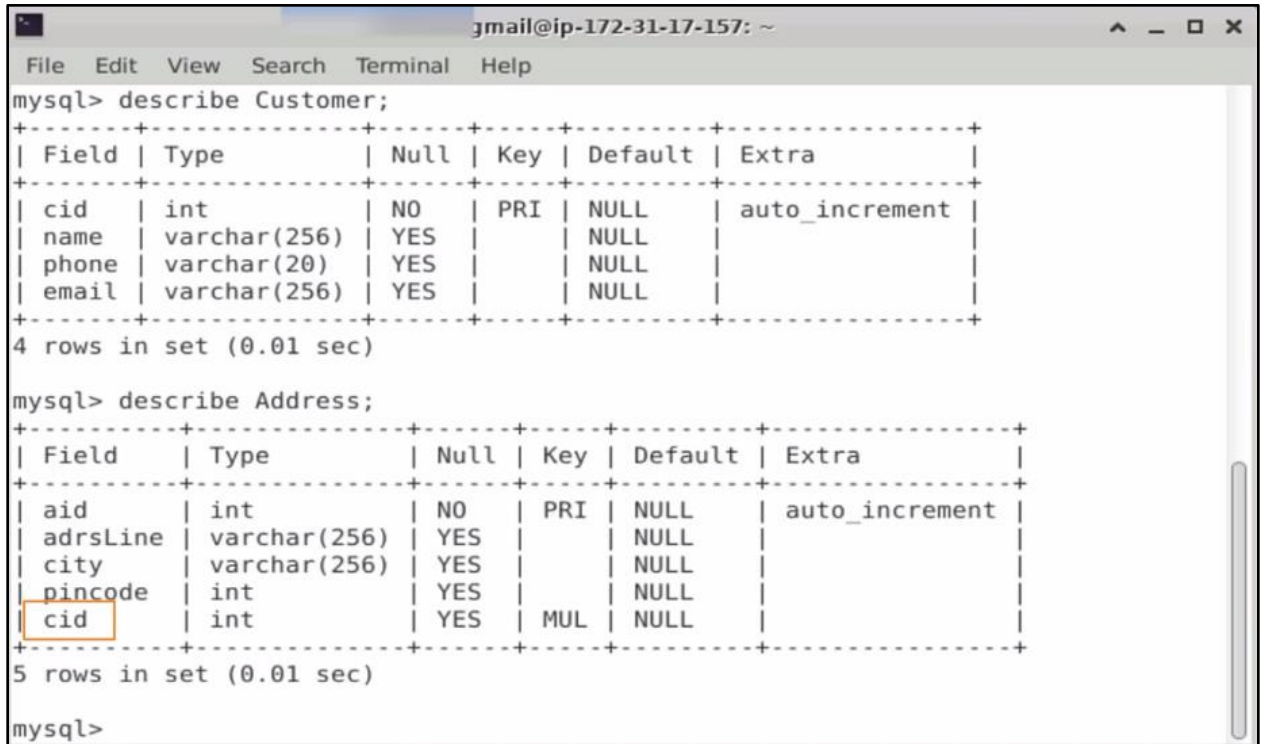
   describe Customer;

```
                                    ɉmail@ip-172-31-17-157: ~                    ^ _ □ ×
 File   Edit   View   Search   Terminal   Help
Database changed
mysql> show tables;
+--------------------+
| Tables_in_estore |
+--------------------+
| Address          |
| Customer         |
| Product          |
| User             |
+--------------------+
4 rows in set (0.00 sec)

mysql> describe Customer;
+--------+--------------+------+-----+---------+----------------+
| Field  | Type         | Null | Key | Default | Extra          |
+--------+--------------+------+-----+---------+----------------+
| cid    | int          | NO   | PRI | NULL    | auto_increment |
| name   | varchar(256) | YES  |     | NULL    |                |
| phone  | varchar(20)  | YES  |     | NULL    |                |
| email  | varchar(256) | YES  |     | NULL    |                |
+--------+--------------+------+-----+---------+----------------+
4 rows in set (0.01 sec)

mysql>
```

The columns in the **Customer** table are: **cid**, **name**, **phone**, and **email**.

1.3 Describe the **Address** table to view its structure:
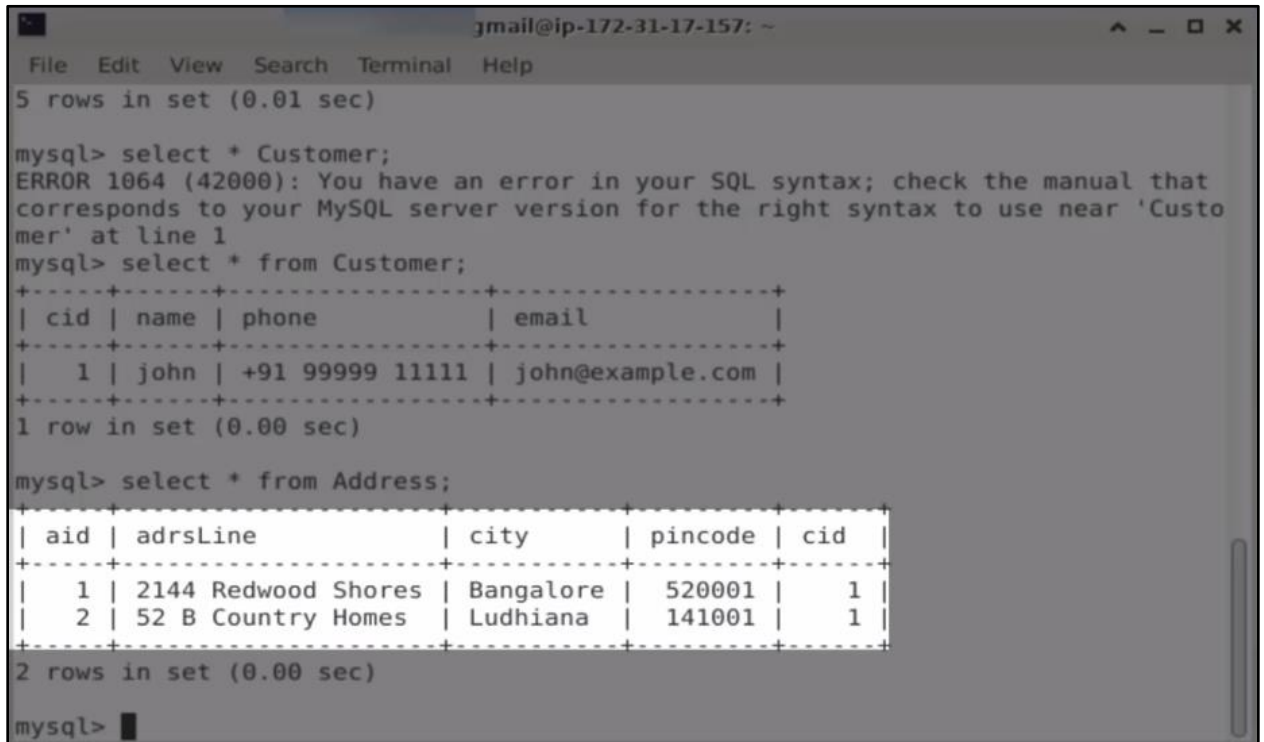**describe Address;**

```
                          gmail@ip-172-31-17-157: ~                    ^ _ □ ✕

 File   Edit   View   Search   Terminal   Help
mysql> describe Customer;
+---------+--------------+------+-----+---------+----------------+
| Field   | Type         | Null | Key | Default | Extra          |
+---------+--------------+------+-----+---------+----------------+
| cid     | int          | NO   | PRI | NULL    | auto_increment |
| name    | varchar(256) | YES  |     | NULL    |                |
| phone   | varchar(20)  | YES  |     | NULL    |                |
| email   | varchar(256) | YES  |     | NULL    |                |
+---------+--------------+------+-----+---------+----------------+
4 rows in set (0.01 sec)

mysql> describe Address;
+----------+--------------+------+-----+---------+----------------+
| Field    | Type         | Null | Key | Default | Extra          |
+----------+--------------+------+-----+---------+----------------+
| aid      | int          | NO   | PRI | NULL    | auto_increment |
| adrsLine | varchar(256) | YES  |     | NULL    |                |
| city     | varchar(256) | YES  |     | NULL    |                |
| pincode  | int          | YES  |     | NULL    |                |
| cid      | int          | YES  | MUL | NULL    |                |
+----------+--------------+------+-----+---------+----------------+
5 rows in set (0.01 sec)

mysql>
```

The Address table has a foreign key column: cid.

1.4 Execute the following command to retrieve data from both tables:

select * from Customer;

select * from Address;

```
                                    jmail@ip-172-31-17-157: ~                    ^  _  □  ×
 File   Edit   View   Search   Terminal   Help
5 rows in set (0.01 sec)

mysql> select * Customer;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that
corresponds to your MySQL server version for the right syntax to use near 'Custo
mer' at line 1
mysql> select * from Customer;
+------+-------+----------------+------------------+
| cid  | name  | phone          | email            |
+------+-------+----------------+------------------+
|    1 | john  | +91 99999 11111 | john@example.com |
+------+-------+----------------+------------------+
1 row in set (0.00 sec)

mysql> select * from Address;
+------+---------------------+-----------+---------+------+
| aid  | adrsLine            | city      | pincode | cid  |
+------+---------------------+-----------+---------+------+
|    1 | 2144 Redwood Shores | Bangalore |  520001 |    1 |
|    2 | 52 B Country Homes  | Ludhiana  |  141001 |    1 |
+------+---------------------+-----------+---------+------+
2 rows in set (0.00 sec)

mysql>
```

1.5 Add more data to the **Customer** tables using the following commands:

Insert into Customer values (null, 'fionna', '+91 99999 22222', 'fionna@example.com');

Insert into Customer values (null, 'harry', '+91 99999 34567', 'harry@example.com');

Insert into Customer values (null, 'george', '+91 99999 12345',
'george@example.com');

Insert into Customer values (null, 'sia', '+91 99999 77777', 'sia@example.com');

Insert into Customer values (null, 'kim', '+91 99999 65656', 'kim@example.com');

Insert into Customer values (null, 'leo', '+91 99999 32323', 'leo@example.com');

Insert into Customer values (null, 'mike', '+91 99999 12312', 'mike@example.com');

```
insert into Customer values(null, 'fionna', '+91 99999 22222', 'fionna@example.com');
insert into Customer values(null, 'harry', '+91 99999 34567', 'harry@example.com');
insert into Customer values(null, 'george', '+91 99999 12345', 'george@example.com');
insert into Customer values(null, 'sia', '+91 99999 77777', 'sia@example.com');
insert into Customer values(null, 'kim', '+91 99999 65656', 'kim@example.com');
insert into Customer values(null, 'leo', '+91 99999 32323', 'leo@example.com');
insert into Customer values(null, 'mike', '+91 99999 12312', 'mike@example.com');
```

1.6 Copy and paste the commands into the SQL window and execute them to insert the data

```
jmail@ip-172-31-17-157: ~
File  Edit  View  Search  Terminal  Help
Query OK, 1 row affected (0.02 sec)

mysql> insert into Customer values(null, 'harry', '+91 99999 34567', 'harry@exam
ple.com');
Query OK, 1 row affected (0.00 sec)

mysql> insert into Customer values(null, 'george', '+91 99999 12345', 'george@ex
ample.com');
Query OK, 1 row affected (0.01 sec)

mysql> insert into Customer values(null, 'sia', '+91 99999 77777', 'sia@example.
com');
Query OK, 1 row affected (0.00 sec)

mysql> insert into Customer values(null, 'kim', '+91 99999 65656', 'kim@example.
com');
Query OK, 1 row affected (0.00 sec)

mysql> insert into Customer values(null, 'leo', '+91 99999 32323', 'leo@example.
com');
Query OK, 1 row affected (0.00 sec)

mysql> insert into Customer values(null, 'mike', '+91 99999 12312', 'mike@exampl
e.com');
```

1.7 Retrieve all data from the **Customer** table using the command:
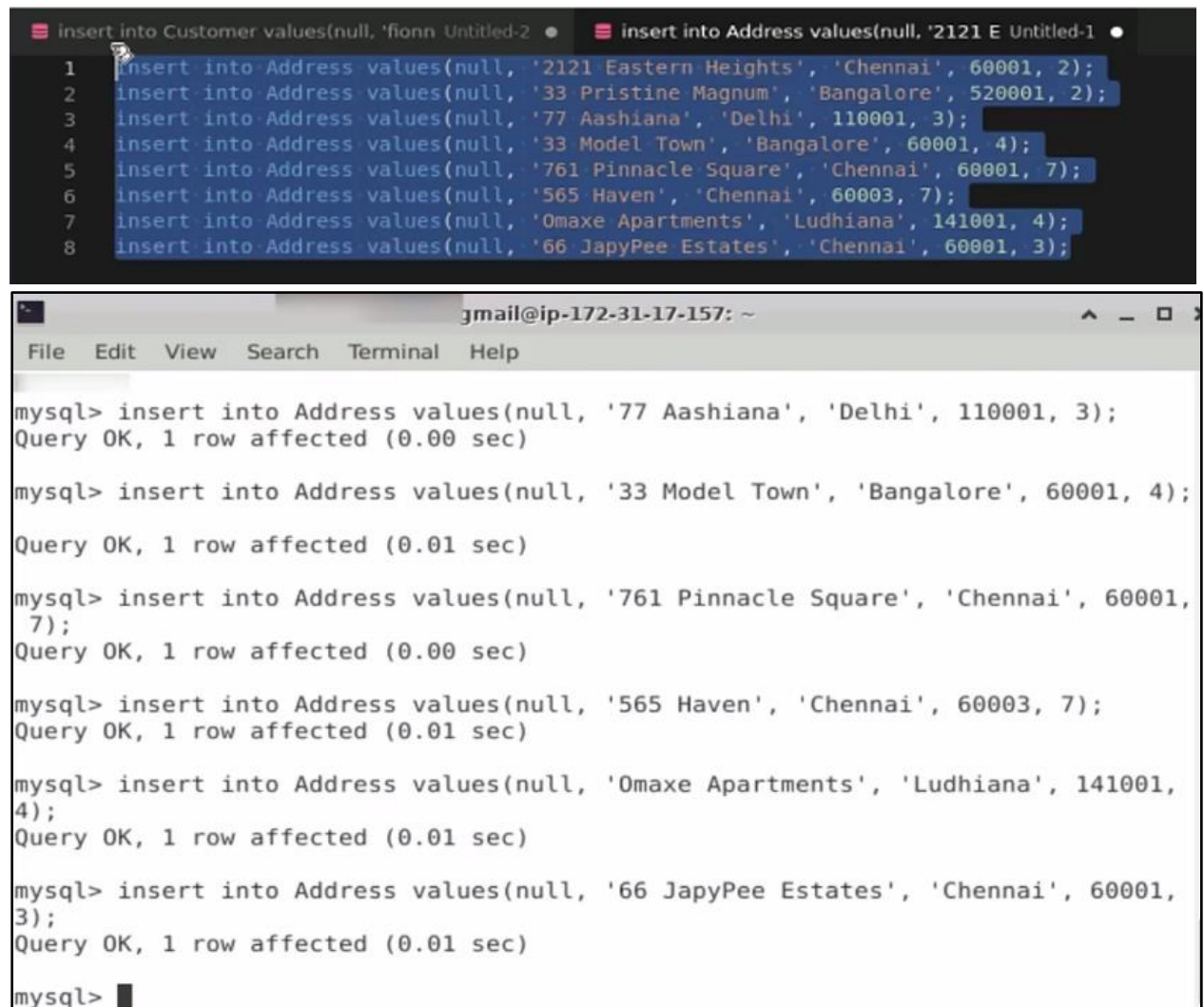
select * from Customer;

```
gmail@ip-172-31-17-157: ~                          ^ _ □ ×

 File  Edit  View  Search  Terminal  Help
mysql> insert into Customer values(null, 'mike', '+91 99999 12312', 'mike@exampl
e.com');
Query OK, 1 row affected (0.00 sec)

mysql> select * form Customer;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that
corresponds to your MySQL server version for the right syntax to use near 'form
Customer' at line 1
mysql> select * from Customer;
+-----+--------+-----------------+--------------------+
| cid | name   | phone           | email              |
+-----+--------+-----------------+--------------------+
|   1 | john   | +91 99999 11111 | john@example.com   |
|   2 | fionna | +91 99999 22222 | fionna@example.com |
|   3 | harry  | +91 99999 34567 | harry@example.com  |
|   4 | george | +91 99999 12345 | george@example.com |
|   5 | sia    | +91 99999 77777 | sia@example.com    |
|   6 | kim    | +91 99999 65656 | kim@example.com    |
|   7 | leo    | +91 99999 32323 | leo@example.com    |
|   8 | mike   | +91 99999 12312 | mike@example.com   |
+-----+--------+-----------------+--------------------+
8 rows in set (0.00 sec)

mysql>
```

An expanded dataset in the table will be visible as above.

1.8 Copy and paste the provided addresses for customers into the SQL window to insert the data into the **Address** table:

Insert into Address values (null, '2121 Eastern Heights', 'Chennai', 60001, 2);

Insert into Address values (null, '33 Pristine Magnum', 'Bangalore', 520001, 2);

Insert into Address values (null, '77 Aashiana', 'Delhi', 110001, 3);

Insert into Address values (null, '33 Model Town', 'Bangalore', 60001, 4);

Insert into Address values (null, '761 Pinnacle Square', 'Chennai', 60601, 7);

Insert into Address values (null, '565 Haven', 'Chennai', 60003, 7);

Insert into Address values (null, 'Omaxe Apartments', 'Ludhiana', 141001, 4);

Insert into Address values (null, '66 JayPee Estates', 'Chennai', 60001, 3);

1.9 Retrieve all data from the **Address** table using the command:
select * from Address;

1.10 Since the tables are related, you can merge them using Joins to retrieve data. For an
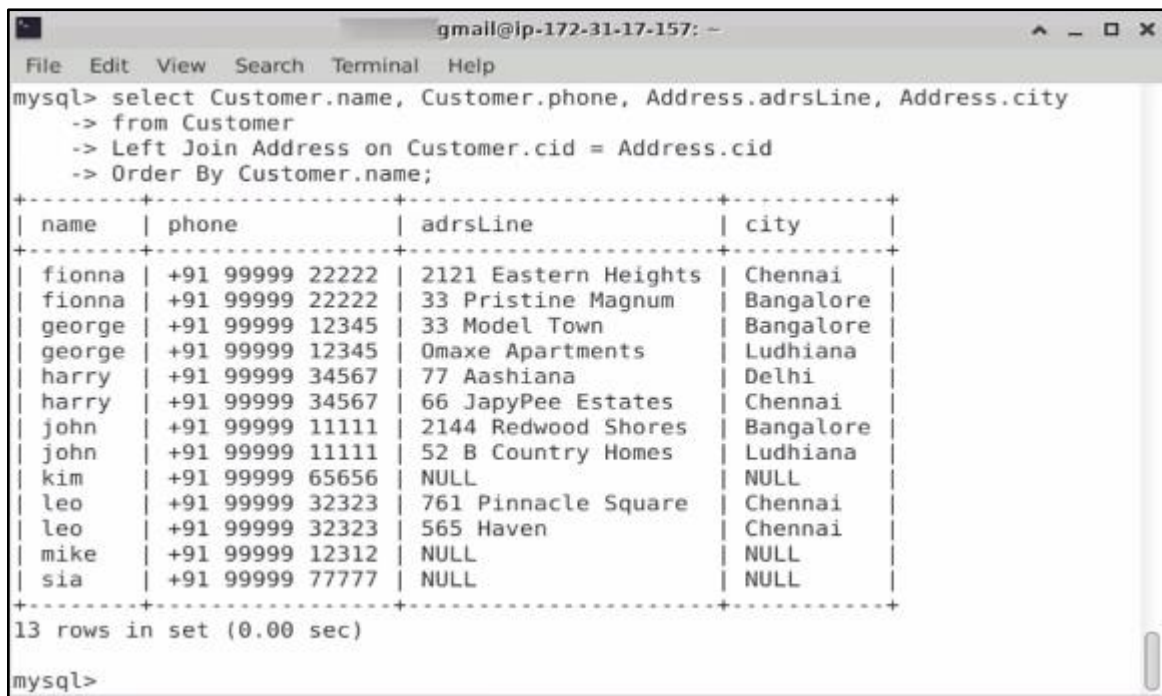Inner Join, which delivers matching records from both tables, the query can be written
as follows:
Select Customer.name, Customer.phone, Address.adrsLine, Address.city
From Customer
Inner Join Address on Custome.cid = Address.cid;

1.11 Copy and paste the query into the SQL window to see the results

You will notice that some customers have two addresses, while others have only one.

1.12 Now, let's use Left Join to fetch all records from the left table (Customer), as well as the corresponding records from the right table (Address). Execute the below query:
Select Customer.name, Customer.phone, Address.adrsLine, Address.city
from Customer
Left JOIN Address ON Customer.cid = Address.cid
Order By Customer.name;
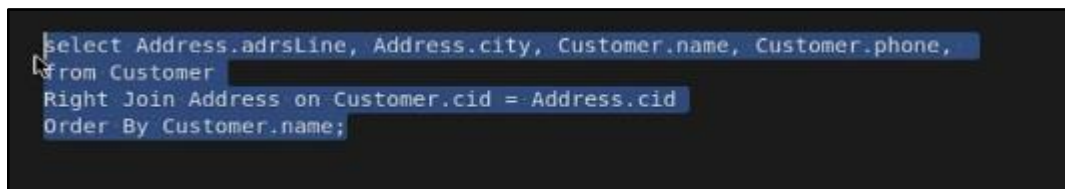
1.13 Copy and paste the query into the SQL window and execute it

You will see that data is fetched from the left table (**Customer**) while the unmatched data from the right table (**Address**) is displayed as **NULL**.

1.14 To perform a **Right Join** from the **Customer** table, update the query as shown below:
Select Address.adrsLine, Address.city, Customer.name, Customer.phone
from Customer
RIGHT Join Address ON Customer.cid = Address.cid
Order By Customer.name;

1.15 Copy and paste the updated query into the SQL window

Now, all the records coming from the right table (**Address**) will be available.

1.16 Finally, implement a **Full Outer Join** to retrieve records from both tables. Write the query as follows:

Select Customer.name, Customer.phone, Address.adrsLine, Address.city
from Customer
FULL OUTER JOIN Address on Customer.cid = Address.cid
Order By Customer.name;

```
select Customer.name, Customer.phone, Address.adrsLine, Address.city
from Customer
FULL OUTER JOIN Address on Customer.cid = Address.cid
Order By Customer.name;
```

By following these steps you have successfully implemented the joins on tables in the MySQL database to combine data effectively.