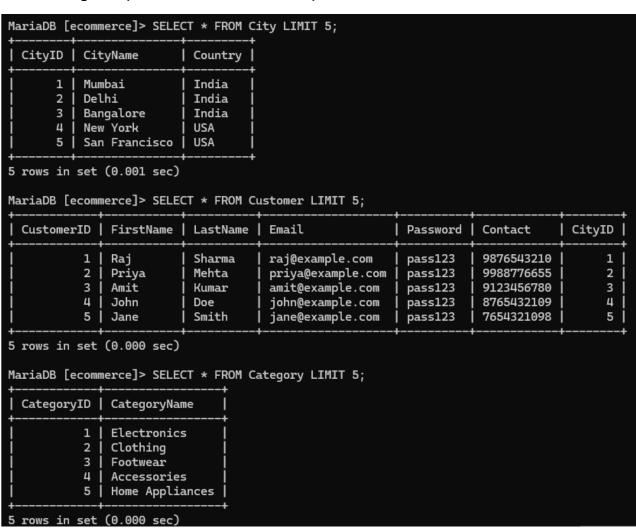
Outputs of Task 4 (SQL for Data Analysis)

-- STEP 1 - Understanding Data

-- Table list



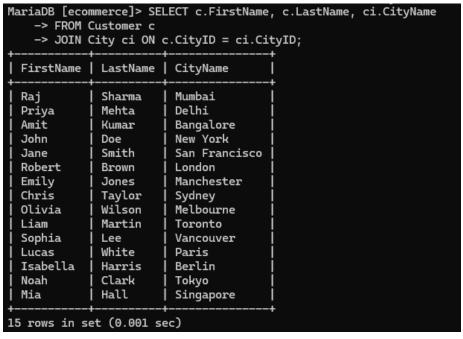
-- Previewing data (first 5 rows from each table)



```
MariaDB [ecommerce] > SELECT * FROM Product LIMIT 5;
  ProductID | ProductName
                               Price
                                           CategoryID
                                79999.00
                                                     1
              iPhone 14
                                55000.00
                                                     5
          2
              Samsung TV
              Nike Sneakers
                                 7500.00
                                                     3
          Ц
              Levi's Jeans
                                                     2
                                 2500.00
              Rolex Watch
                               500000.00
                                                    12
5 rows in set (0.000 sec)
MariaDB [ecommerce] > SELECT * FROM Orders LIMIT 5;
  OrderID | CustomerID | OrderDate
                                       TotalAmount
                          2025-01-10
                                           79999.00
                      1
                     2
                          2025-01-15
                                           7500.00
        3
                      3
                          2025-02-01
                                           2500.00
        4
                      4
                          2025-02-10
                                           55000.00
                          2025-02-15
        5
                      5
                                          500000.00
5 rows in set (0.000 sec)
MariaDB [ecommerce] > SELECT * FROM OrderedProduct LIMIT 5;
  OrderProductID
                   OrderID
                              ProductID |
                                          Quantity
                                                       79999.00
               2
                          2
                                      3
                                                  1
                                                        7500.00
                                                        2500.00
               3
                          3
                                                  1
                                      4
               4
                          4
                                      2
                                                  1
                                                       55000.00
               5
                          5
                                      5
                                                  1
                                                      500000.00
5 rows in set (0.000 sec)
MariaDB [ecommerce]> SELECT * FROM Review LIMIT 5;
                                       Rating |
  ReviewID |
             CustomerID
                           ProductID
                                                                                       ReviewDate
                                                ReviewText
                                                 Amazing phone, worth the price!
                       1
                                             5
                                                                                       2025-01-12
         1
                                   1
                                   3
                                            Ц
                                                 Good quality sneakers.
                                                                                       2025-01-17
                                   4
                                                 Jeans are fine, but size issue.
                                                                                       2025-02-02
                                             3
                       4
         4
                                   2
                                                 TV picture quality is excellent.
                                             5
                                                                                       2025-02-12
         5
                       5
                                   5
                                             5
                                                 Luxury watch, absolutely stunning!
                                                                                       2025-02-18
 rows in set (0.000 sec)
```

-- Step 2: Basic SELECT Queries

-- List all customers with their city name



-- List all products with their category names and prices

```
MariaDB [ecommerce] > SELECT p.ProductName, c.CategoryName, p.Price
    -> FROM Product p
    -> JOIN Category c ON p.CategoryID = c.CategoryID;
  ProductName
                      CategoryName
                                         Price
  iPhone 14
                       Electronics
                                          79999.00
  Samsung TV
                      Home Appliances
                                          55000.00
  Nike Sneakers
                      Footwear
                                           7500.00
  Levi's Jeans
                      Clothing
                                           2500.00
  Rolex Watch
                                         500000.00
                       Jewelry
  Adidas T-Shirt
                      Clothing
                                           1500.00
  Sony Headphones
                                           8000.00
                      Electronics
  Cricket Bat
                      Sports
                                           3500.00
  Dining Table
                      Furniture
                                          12000.00
  Harry Potter Book
                                            999.00
                      Books
  PlayStation 5
                                          55000.00
                      Gaming
                       Stationery
  Sketchbook
                                            250.00
                      Beauty
  Perfume Bottle
                                           4000.00
  Toy Car
                                           1200.00
                       Toys
                                            650.00
  Rice Bag 10kg
                      Groceries
15 rows in set (0.001 sec)
```

-- Step 3: Filtering Data (WHERE)

-- Customers living in CityID = 1

-- Products priced above 500

```
MariaDB [ecommerce] > SELECT ProductName, Price
    -> FROM Product
    -> WHERE Price > 500;
| ProductName
                      Price
  iPhone 14
                        79999.00
  Samsung TV
                        55000.00
  Nike Sneakers
                         7500.00
  Levi's Jeans
                         2500.00
  Rolex Watch
                       500000.00
  Adidas T-Shirt
                         1500.00
  Sony Headphones
                         8000.00
  Cricket Bat
                         3500.00
  Dining Table
                        12000.00
  Harry Potter Book
                          999.00
  PlayStation 5
                        55000.00
  Perfume Bottle
                         4000.00
  Toy Car
                         1200.00
 Rice Bag 10kg
                          650.00
14 rows in set (0.000 sec)
```

-- Step 4: Sorting Data (ORDER BY)

-- Products ordered from highest to lowest price

```
MariaDB [ecommerce] > SELECT ProductName, Price
    -> FROM Product
    -> ORDER BY Price DESC;
 ProductName
                      Price
  Rolex Watch
                       500000.00
 iPhone 14
                        79999.00
 Samsung TV
                        55000.00
| PlayStation 5
                        55000.00
| Dining Table
                        12000.00
  Sony Headphones
                         8000.00
  Nike Sneakers
                         7500.00
 Perfume Bottle
                        4000.00
 Cricket Bat
                         3500.00
 Levi's Jeans
                         2500.00
  Adidas T-Shirt
                         1500.00
  Toy Car
                         1200.00
  Harry Potter Book
                          999.00
  Rice Bag 10kg
                          650.00
  Sketchbook
                          250.00
15 rows in set (0.001 sec)
```

-- Orders listed by most recent order date

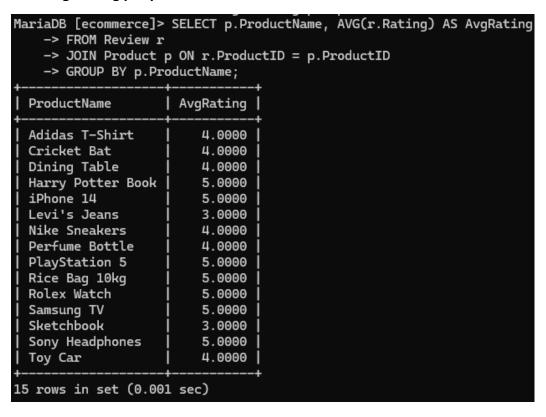
```
MariaDB [ecommerce] > SELECT OrderID, OrderDate, TotalAmount
    -> FROM Orders
    -> ORDER BY OrderDate DESC;
  OrderID | OrderDate
                          TotalAmount
       15
             2025-04-05
                                650.00
       14
            2025-04-01
                              1200.00
       13
            2025-03-25
                              4000.00
       12
             2025-03-20
                               250.00
             2025-03-15
       11
                             55000.00
       10
            2025-03-12
                               999.00
        9
             2025-03-10
                             12000.00
        8
             2025-03-07
                              3500.00
        7
            2025-03-05
                              8000.00
        6
            2025-03-01
                              1500.00
        5
             2025-02-15
                            500000.00
        4
             2025-02-10
                             55000.00
        3
            2025-02-01
                              2500.00
        2
             2025-01-15
                              7500.00
            2025-01-10
                             79999.00
15 rows in set (0.001 sec)
```

-- Step 5: Aggregation (GROUP BY & Aggregate Functions)

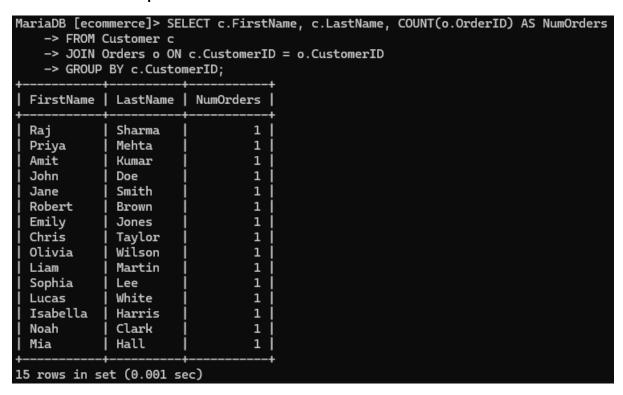
-- Total sales for each product

```
MariaDB [ecommerce] > SELECT p.ProductName, SUM(op.Price * op.Quantity) AS TotalSales
    -> FROM OrderedProduct op
    -> JOIN Product p ON op.ProductID = p.ProductID
    -> GROUP BY p.ProductName;
                     | TotalSales
| ProductName
  Adidas T-Shirt
                         1500.00
  Cricket Bat
                         3500.00
 Dining Table
                        12000.00
| Harry Potter Book |
                          999.00
  iPhone 14
                        79999.00
 Levi's Jeans
                         2500.00
 Nike Sneakers
                         7500.00
 Perfume Bottle
                         4000.00
 | PlayStation 5
                        55000.00
| Rice Bag 10kg
                          650.00
 | Rolex Watch
                       500000.00
 Samsung TV
                        55000.00
  Sketchbook
                          250.00
  Sony Headphones
                         8000.00
  Toy Car
                         1200.00
15 rows in set (0.001 sec)
```

-- Average rating per product



-- Number of orders per customer



-- Step 6: Joins

-- List orders with customer names, product names, quantity, and price



-- Left join to see all customers with or without orders

```
MariaDB [ecommerce] > SELECT c.FirstName, c.LastName, o.OrderID
    -> FROM Customer c
    -> LEFT JOIN Orders o ON c.CustomerID = o.CustomerID;
| FirstName | LastName | OrderID |
  Raj
              Sharma
                               1
 Priya
              Mehta
                               2
 Amit
                               3
              Kumar
  John
                               4
              Doe
  Jane
              Smith
                               5
  Robert
                               6
              Brown
                               7
 Emily
              Jones
  Chris
              Taylor
                               8
  Olivia
              Wilson
                               9
 Liam
              Martin
                              10
 Sophia
              Lee
                              11
                              12
 Lucas
              White
  Isabella
              Harris
                              13
  Noah
              Clark
                              14
 Mia
              Hall
                              15
15 rows in set (0.000 sec)
```

-- Step 7: Subqueries

```
MariaDB [ecommerce] > SELECT FirstName, LastName, CustomerID
    -> FROM Customer
    -> WHERE CustomerID IN (
           SELECT CustomerID
    ->
    ->
           FROM Orders
           GROUP BY CustomerID
    ->
    ->
           HAVING SUM(TotalAmount) > (
               SELECT AVG(TotalAmount) FROM Orders
    ->
           )
    ->
    -> );
  FirstName | LastName | CustomerID
                                   1
  Rai
              Sharma
  John
                                   4
              Doe
  Jane
              Smith
                                   5
  Sophia
              Lee
                                  11
4 rows in set (0.001 sec)
```

-- Step 8: Views

-- Create a view summarizing total orders and spending per customer

```
MariaDB [ecommerce] > CREATE OR REPLACE VIEW CustomerOrderSummary AS
    -> SELECT c.FirstName, c.LastName, COUNT(o.OrderID) AS TotalOrders,
              SUM(op.Price * op.Quantity) AS TotalSpent
    -> FROM Customer c
    -> LEFT JOIN Orders o ON c.CustomerID = o.CustomerID
    -> LEFT JOIN OrderedProduct op ON o.OrderID = op.OrderID
    -> GROUP BY c.CustomerID;
Query OK, 0 rows affected (0.045 sec)
MariaDB [ecommerce]>
MariaDB [ecommerce]> -- Query the view
MariaDB [ecommerce]> SELECT * FROM CustomerOrderSummary;
| FirstName | LastName | TotalOrders | TotalSpent |
                                          79999.00
              Sharma
  Raj
  Priya
              Mehta
                                   1
                                           7500.00
                                          2500.00
  Amit
              Kumar
                                   1
  John
                                          55000.00
              Doe
  Jane
              Smith
                                   1
                                         500000.00
  Robert
              Brown
                                   1
                                          1500.00
  Emily
              Jones
                                   1
                                          8000.00
  Chris
              Taylor
                                   1
                                          3500.00
  Olivia
                                   1
                                          12000.00
              Wilson
  Liam
              Martin
                                           999.00
                                          55000.00
  Sophia
                                   1
              Lee
              White
                                   1
                                           250.00
  Lucas
  Isabella
                                   1
                                          4000.00
              Harris
  Noah
              Clark
                                   1
                                          1200.00
  Mia
              Hall
                                   1
                                            650.00
15 rows in set (0.018 sec)
```

-- Step 9: Indexing (Optimization)

```
-- Index on Customer.CityID
MariaDB [ecommerce]> CREATE INDEX idx_customer_city ON Customer(CityID);
Query OK, 0 rows affected (0.103 sec)
Records: 0 Duplicates: 0 Warnings: 0
MariaDB [ecommerce]>
MariaDB [ecommerce]> -- Index on Product.CategoryID
MariaDB [ecommerce]> CREATE INDEX idx_product_category ON Product(CategoryID);
Query OK, 0 rows affected (0.033 sec)
Records: 0 Duplicates: 0 Warnings: 0
MariaDB [ecommerce]>
MariaDB [ecommerce]> -- Index on Orders.CustomerID
MariaDB [ecommerce] > CREATE INDEX idx_order_customer ON Orders(CustomerID);
Query OK, 0 rows affected (0.022 sec)
Records: 0 Duplicates: 0 Warnings: 0
MariaDB [ecommerce]>
MariaDB [ecommerce]> -- Index on OrderedProduct.OrderID
MariaDB [ecommerce] > CREATE INDEX idx_orderproduct_order ON OrderedProduct(OrderID);
Query OK, 0 rows affected (0.043 sec)
Records: 0 Duplicates: 0 Warnings: 0
MariaDB [ecommerce]>
MariaDB [ecommerce]> -- Index on OrderedProduct.ProductID
MariaDB [ecommerce] > CREATE INDEX idx_orderproduct_product ON OrderedProduct(ProductID);
Query OK, 0 rows affected (0.095 sec)
Records: 0 Duplicates: 0 Warnings: 0
```