Backend SQL Task

Creation of table structure: -

Customer Table: -

```
CREATE TABLE Customers (
    CustomerID INT AUTO_INCREMENT PRIMARY KEY,
    FirstName VARCHAR(50),
    LastName VARCHAR(50),
    Email VARCHAR(100),
    DateOfBirth DATE
);
INSERT INTO Customers (FirstName, LastName, Email, DateOfBirth) VALUES
('John', 'Doe', 'john.doe@example.com', '1985-01-15'),
('Jane', 'Smith', 'jane.smith@example.com', '1990-06-20')
```

Products Table: -

```
CREATE TABLE Products (
    ProductID INT AUTO_INCREMENT PRIMARY KEY,
    ProductName VARCHAR(100),
    Price DECIMAL(10, 2)
);
INSERT INTO Products (ProductName, Price) VALUES
('Laptop', 1000),
('Smartphone', 600),
('Headphones', 100);
```

Orders Table:-

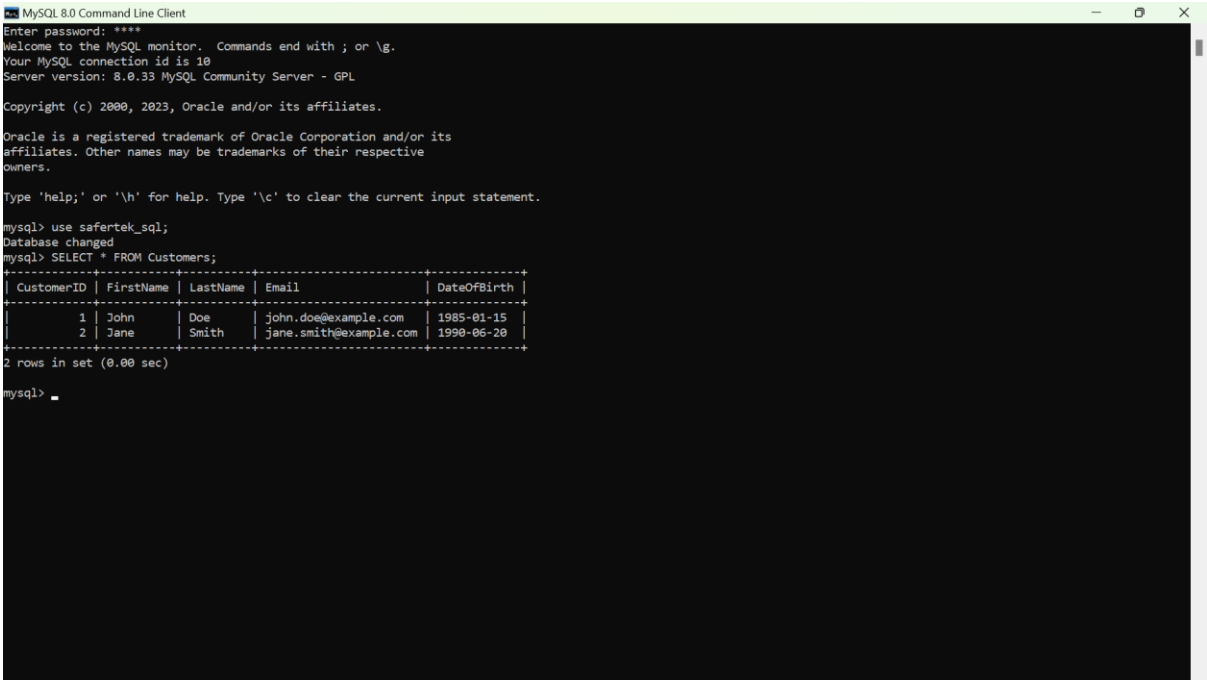
```
CREATE TABLE Orders (
    OrderID INT AUTO_INCREMENT PRIMARY KEY,
    CustomerID INT,
    OrderDate DATE,
    FOREIGN KEY (CustomerID) REFERENCES Customers(CustomerID)
);
INSERT INTO Orders (CustomerID, OrderDate) VALUES
(1, '2023-01-10'),
(2, '2023-01-12');
```

OrderItems Table:-

```
CREATE TABLE OrderItems (
    OrderItemID INT AUTO_INCREMENT PRIMARY KEY,
    OrderID INT,
    ProductID INT,
    Quantity INT,
    FOREIGN KEY (OrderID) REFERENCES Orders(OrderID),
    FOREIGN KEY (ProductID) REFERENCES Products(ProductID)
);
INSERT INTO OrderItems (OrderID, ProductID, Quantity) VALUES
(1, 1, 1),
(1, 3, 2),
(2, 2, 1),
(2, 3, 1);
```

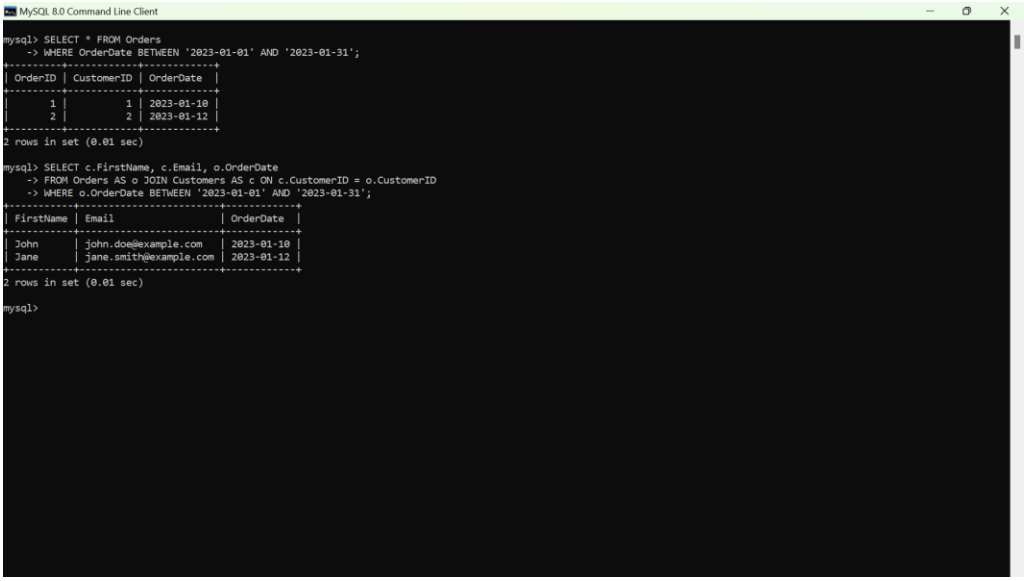
1. List all customers.

   SELECT * FROM Customers;



2. Find all orders placed in January 2023.

   SELECT * FROM Orders WHERE OrderDate BETWEEN '2023-01-01' AND '2023-01-31';

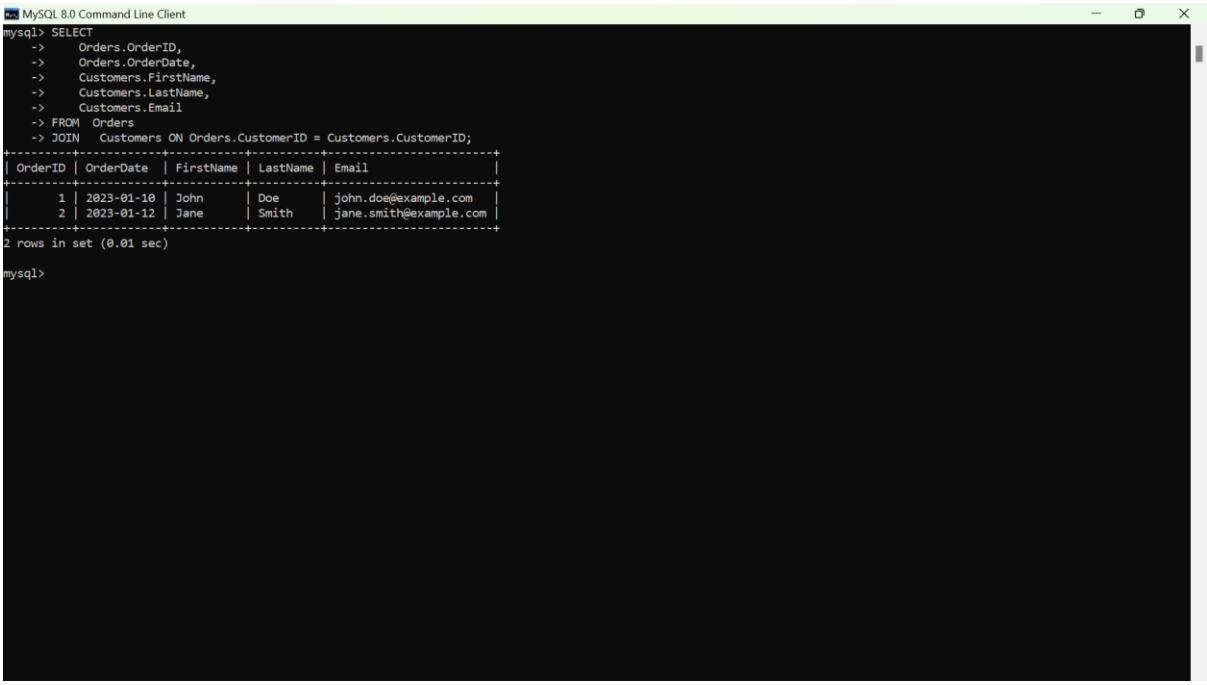


3. Get the details of each order including the customer name and email.

   SELECT Orders.OrderID, Orders.OrderDate, Customers.FirstName, Customers.LastName, Customers.Email

   FROM Orders

   JOIN Customers ON Orders.CustomerID = Customers.CustomerID;



4. List the products purchased in a specific order (e.g., OrderID = 1).

   SELECT Products.ProductName, OrderItems.Quantity

   FROM OrderItems

   JOIN Products ON OrderItems.ProductID = Products.ProductID

   WHERE OrderItems.OrderID = 1;

```
mysql> SELECT Products.ProductName, OrderItems.Quantity FROM OrderItems
    ->  JOIN
    ->      Products ON OrderItems.ProductID = Products.ProductID
    ->  WHERE
    ->      OrderItems.OrderID = 1;
+-------------+----------+
| ProductName | Quantity |
+-------------+----------+
| Laptop      |        1 |
| Headphones  |        2 |
+-------------+----------+
2 rows in set (0.00 sec)
```

5. Calculate the total amount spent by each customer.

```
SELECT
Customers.CustomerID, Customers.FirstName,Customers.LastName,
SUM(Products.Price * OrderItems.Quantity) AS TotalSpent
FROM   Customers
JOIN Orders ON Customers.CustomerID = Orders.CustomerID
JOIN OrderItems ON Orders.OrderID = OrderItems.OrderID
JOIN Products ON OrderItems.ProductID = Products.ProductID
GROUP BY  Customers.CustomerID, Customers.FirstName, Customers.LastName;
```

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```
mysql> SELECT Customers.CustomerID, Customers.FirstName,Customers.LastName,
    ->     SUM(Products.Price * OrderItems.Quantity) AS TotalSpent
    -> FROM   Customers
    -> JOIN Orders ON Customers.CustomerID = Orders.CustomerID
    -> JOIN OrderItems ON Orders.OrderID = OrderItems.OrderID
    -> JOIN Products ON OrderItems.ProductID = Products.ProductID
    -> GROUP BY
    ->     Customers.CustomerID,
    ->     Customers.FirstName,
    ->     Customers.LastName;
+------------+-----------+----------+------------+
| CustomerID | FirstName | LastName | TotalSpent |
+------------+-----------+----------+------------+
|          1 | John      | Doe      |    1200.00 |
|          2 | Jane      | Smith    |     700.00 |
+------------+-----------+----------+------------+
2 rows in set (0.02 sec)

mysql>
```

6. Find the most popular product (the one that has been ordered the most).

   SELECT Products.ProductID, Products.ProductName,

   SUM(OrderItems.Quantity) AS TotalQuantitySold

   FROM Products JOIN OrderItems ON Products.ProductID = OrderItems.ProductID

   GROUP BY Products.ProductID, Products.ProductName

   ORDER BY TotalQuantitySold DESC LIMIT 1;

```
mysql> SELECT
    ->     Products.ProductID,
    ->     Products.ProductName,
    ->     SUM(OrderItems.Quantity) AS TotalQuantitySold
    -> FROM
    ->     Products
    -> JOIN
    ->     OrderItems ON Products.ProductID = OrderItems.ProductID
    -> GROUP BY
    ->     Products.ProductID,
    ->     Products.ProductName
    -> ORDER BY TotalQuantitySold DESC
    -> LIMIT 1;
+-----------+-------------+-------------------+
| ProductID | ProductName | TotalQuantitySold |
+-----------+-------------+-------------------+
|         3 | Headphones  |                 3 |
+-----------+-------------+-------------------+
1 row in set (0.00 sec)
```

7. Get the total number of orders and the total sales amount for each month in 2023.

   SELECT DATE_FORMAT(OrderDate, '%Y-%m') AS Month, COUNT(Orders.OrderID) ASTotalOrders,

   SUM(Products.Price * OrderItems.Quantity) AS TotalSalesAmount

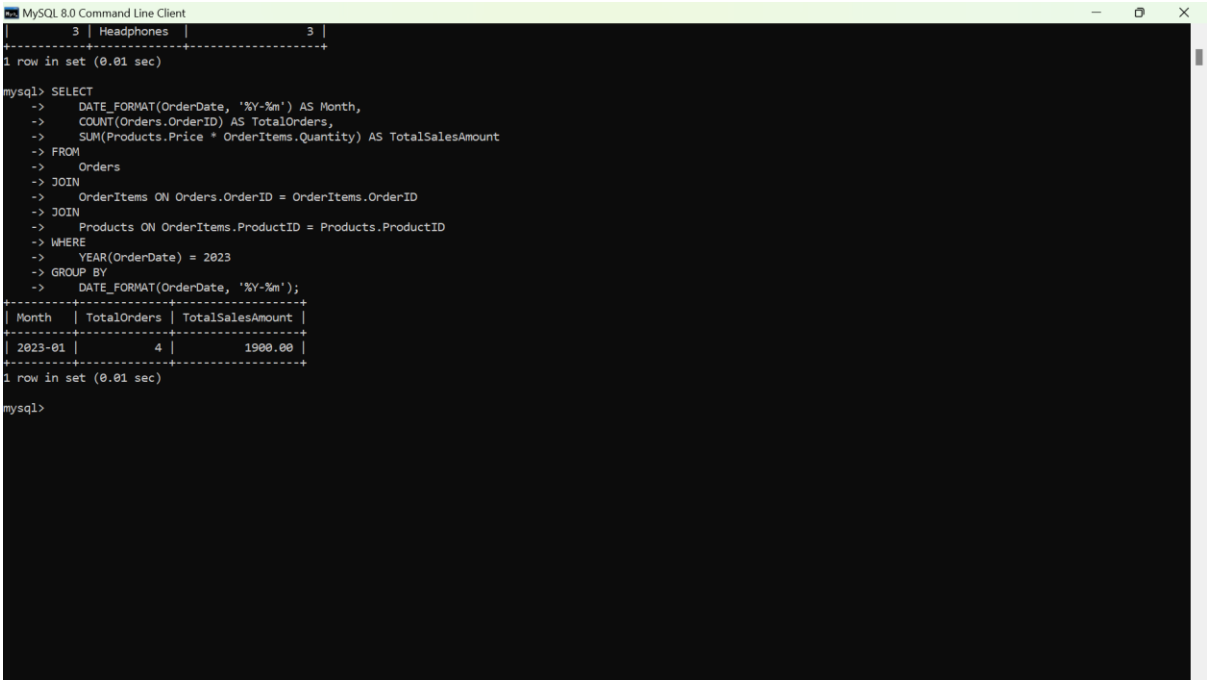
   FROM Orders

   JOIN OrderItems ON Orders.OrderID = OrderItems.OrderID

JOIN Products ON OrderItems.ProductID = Products.ProductID

WHERE YEAR(OrderDate) = 2023

GROUP BY DATE_FORMAT(OrderDate, '%Y-%m');



```
MySQL 8.0 Command Line Client
|         3 | Headphones  |                 3 |
+-----------+-------------+-------------------+
1 row in set (0.01 sec)

mysql> SELECT
    ->     DATE_FORMAT(OrderDate, '%Y-%m') AS Month,
    ->     COUNT(Orders.OrderID) AS TotalOrders,
    ->     SUM(Products.Price * OrderItems.Quantity) AS TotalSalesAmount
    -> FROM
    ->     Orders
    -> JOIN
    ->     OrderItems ON Orders.OrderID = OrderItems.OrderID
    -> JOIN
    ->     Products ON OrderItems.ProductID = Products.ProductID
    -> WHERE
    ->     YEAR(OrderDate) = 2023
    -> GROUP BY
    ->     DATE_FORMAT(OrderDate, '%Y-%m');
+---------+-------------+------------------+
| Month   | TotalOrders | TotalSalesAmount |
+---------+-------------+------------------+
| 2023-01 |           4 |          1900.00 |
+---------+-------------+------------------+
1 row in set (0.01 sec)

mysql>
```

8. Find customers who have spent more than $1000.

SELECT Customers.CustomerID, Customers.FirstName, Customers.LastName, SUM(Products.Price * OrderItems.Quantity) AS TotalSpent

FROM Customers JOIN Orders ON Customers.CustomerID = Orders.CustomerID

JOIN OrderItems ON Orders.OrderID = OrderItems.OrderID

JOIN Products ON OrderItems.ProductID = Products.ProductID

GROUP BY Customers.CustomerID, Customers.FirstName, Customers.LastName

HAVING TotalSpent > 1000;

```
mysql> SELECT
    ->     Customers.CustomerID,
    ->     Customers.FirstName,
    ->     Customers.LastName,
    ->     SUM(Products.Price * OrderItems.Quantity) AS TotalSpent
    -> FROM
    ->     Customers
    -> JOIN
    ->     Orders ON Customers.CustomerID = Orders.CustomerID
    -> JOIN
    ->     OrderItems ON Orders.OrderID = OrderItems.OrderID
    -> JOIN
    ->     Products ON OrderItems.ProductID = Products.ProductID
    -> GROUP BY
    ->     Customers.CustomerID,
    ->     Customers.FirstName,
    ->     Customers.LastName
    -> HAVING
    ->     TotalSpent > 1000;
+------------+-----------+----------+------------+
| CustomerID | FirstName | LastName | TotalSpent |
+------------+-----------+----------+------------+
|          1 | John      | Doe      |    1200.00 |
+------------+-----------+----------+------------+
1 row in set (0.00 sec)
```