

# Assignment 1

## Task 1: Database Design

Create database named “TechShop”

```
mysql> show databases;
+-----+
| Database |
+-----+
| information_schema |
| mysql |
| performance_schema |
| sakila |
| sys |
| world |
+-----+
6 rows in set (0.00 sec)

mysql> create database TechShop;
Query OK, 1 row affected (0.01 sec)

mysql> show databases;
+-----+
| Database |
+-----+
| information_schema |
| mysql |
| performance_schema |
| sakila |
| sys |
| techshop |
| world |
+-----+
7 rows in set (0.00 sec)
```

**Use database:**

```
mysql> use techshop;
Database changed
```

**Create tables:**

- Customers
- Products
- Orders
- OrderDetails
- Inventory

```
mysql> create table Customers(CustomerId int primary key,FirstName varchar(64),LastName varchar(64),Email varchar(64),Phone int,Address varchar(64))
;
Query OK, 0 rows affected (0.03 sec)
^C
mysql> desc Customers;
```

Field	Type	Null	Key	Default	Extra
CustomerId	int	NO	PRI	NULL	
FirstName	varchar(64)	YES		NULL	
LastName	varchar(64)	YES		NULL	
Email	varchar(64)	YES		NULL	
Phone	int	YES		NULL	
Address	varchar(64)	YES		NULL	

6 rows in set (0.00 sec)

```
mysql> CREATE TABLE Products (
-> ProductId INT PRIMARY KEY,
-> ProductName VARCHAR(255),
-> Description TEXT,
-> Price DECIMAL(10, 2)
-> );
Query OK, 0 rows affected (0.03 sec)

mysql> desc Products;
```

Field	Type	Null	Key	Default	Extra
ProductId	int	NO	PRI	NULL	
ProductName	varchar(255)	YES		NULL	
Description	text	YES		NULL	
Price	decimal(10,2)	YES		NULL	

4 rows in set (0.00 sec)

```
mysql> CREATE TABLE Orders (
-> OrderId INT PRIMARY KEY,
-> CustomerId INT,
-> OrderDate DATE,
-> TotalAmount DECIMAL(10, 2),
-> FOREIGN KEY (CustomerId) REFERENCES Customers(CustomerId)
-> );
Query OK, 0 rows affected (0.05 sec)

mysql> desc Orders;
```

Field	Type	Null	Key	Default	Extra
OrderId	int	NO	PRI	NULL	
CustomerId	int	YES	MUL	NULL	
OrderDate	date	YES		NULL	
TotalAmount	decimal(10,2)	YES		NULL	

4 rows in set (0.00 sec)

```
mysql> CREATE TABLE OrderDetails (
->   OrderDetailId INT PRIMARY KEY,
->   OrderId INT,
->   ProductId INT,
->   Quantity INT,
->   FOREIGN KEY (OrderId) REFERENCES Orders(OrderId),
->   FOREIGN KEY (ProductId) REFERENCES Products(ProductId)
-> );
```

Query OK, 0 rows affected (0.06 sec)

```
mysql> desc OrderDetails;
```

Field	Type	Null	Key	Default	Extra
OrderDetailId	int	NO	PRI	NULL	
OrderId	int	YES	MUL	NULL	
ProductId	int	YES	MUL	NULL	
Quantity	int	YES		NULL	

4 rows in set (0.00 sec)

```
mysql> CREATE TABLE Inventory (
->   InventoryId INT PRIMARY KEY,
->   ProductId INT,
->   QuantityInStock INT,
->   LastStockUpdate TIMESTAMP,
->   FOREIGN KEY (ProductId) REFERENCES Products(ProductId)
-> );
```

Query OK, 0 rows affected (0.05 sec)

```
mysql> desc Inventory;
```

Field	Type	Null	Key	Default	Extra
InventoryId	int	NO	PRI	NULL	
ProductId	int	YES	MUL	NULL	
QuantityInStock	int	YES		NULL	
LastStockUpdate	timestamp	YES		NULL	

4 rows in set (0.00 sec)

```
mysql> show tables;
```

Tables_in_techshop
customers
inventory
orderdetails
orders
products

5 rows in set (0.01 sec)

## Insert at least 10 values in each of the table

```
mysql> insert into Customers values (1,"Vedant","Joshi","vedant@gmail.com",12345,"Mumbai"),
-> (2,"Vinay","Natkar","vinay@gmail.com",23432,"Pune"),(3,"Sarvesh","Deshmukh","sarvesh@gmail.com",98734,"Delhi"),
-> (4,"Kautubh","Kulkarni","kautubh@gmail.com",76349,"Chennai"),(5,"Vikrant","Pachbhai","vikrant@gmail.com",34870,"Nagpur"),
-> (6,"Ram","Shingne","ram@gmail.com",64982,"Hydrabad"),(7,"Abhishek","Zune","abhishek@gmail.com",85478,"Akola"),
-> (8,"Rahul","Gayakwad","rahul@gmail.com",92847,"Latur"),(9,"Rohit","Sharma","rohit@gmail.com",21290,"Nashik"),
-> (10,"Tilak","Verma","tilak@gmail.com",55467,"Jaypur");
Query OK, 10 rows affected (0.01 sec)
Records: 10 Duplicates: 0 Warnings: 0
```

```
mysql> select * from Customers;
+-----+-----+-----+-----+-----+-----+
| CustomerId | FirstName | LastName | Email | Phone | Address |
+-----+-----+-----+-----+-----+-----+
| 1 | Vedant | Joshi | vedant@gmail.com | 12345 | Mumbai |
| 2 | Vinay | Natkar | vinay@gmail.com | 23432 | Pune |
| 3 | Sarvesh | Deshmukh | sarvesh@gmail.com | 98734 | Delhi |
| 4 | Kautubh | Kulkarni | kautubh@gmail.com | 76349 | Chennai |
| 5 | Vikrant | Pachbhai | vikrant@gmail.com | 34870 | Nagpur |
| 6 | Ram | Shingne | ram@gmail.com | 64982 | Hydrabad |
| 7 | Abhishek | Zune | abhishek@gmail.com | 85478 | Akola |
| 8 | Rahul | Gayakwad | rahul@gmail.com | 92847 | Latur |
| 9 | Rohit | Sharma | rohit@gmail.com | 21290 | Nashik |
| 10 | Tilak | Verma | tilak@gmail.com | 55467 | Jaypur |
+-----+-----+-----+-----+-----+-----+
10 rows in set (0.00 sec)
```

```
mysql> INSERT INTO Products (ProductId, ProductName, Description, Price)
-> VALUES
-> (101, 'Laptop', 'High-performance laptop', 50000),(102, 'Smartphone', 'Latest smartphone model', 30000),
-> (103, 'Tablet', '10-inch tablet with HD display', 15000),(104, 'Headphones', 'Noise-canceling over-ear headphones', 5000),
-> (105, 'Digital Camera', '20MP digital camera with zoom lens', 20000),(106, 'Fitness Tracker', 'Water-resistant fitness tracker', 2000),
-> (107, 'Smart TV', '55-inch 4K Smart TV', 23000),(108, 'Gaming Console', 'Next-gen gaming console', 27000),
-> (109, 'Wireless Speaker', 'Bluetooth wireless speaker', 7000),(110, 'Coffee Maker', 'Programmable coffee maker', 9000);
Query OK, 10 rows affected (0.01 sec)
Records: 10 Duplicates: 0 Warnings: 0
```

```
mysql> select * from Products;
+-----+-----+-----+-----+
| ProductId | ProductName | Description | Price |
+-----+-----+-----+-----+
| 101 | Laptop | High-performance laptop | 50000.00 |
| 102 | Smartphone | Latest smartphone model | 30000.00 |
| 103 | Tablet | 10-inch tablet with HD display | 15000.00 |
| 104 | Headphones | Noise-canceling over-ear headphones | 5000.00 |
| 105 | Digital Camera | 20MP digital camera with zoom lens | 20000.00 |
| 106 | Fitness Tracker | Water-resistant fitness tracker | 2000.00 |
| 107 | Smart TV | 55-inch 4K Smart TV | 23000.00 |
| 108 | Gaming Console | Next-gen gaming console | 27000.00 |
| 109 | Wireless Speaker | Bluetooth wireless speaker | 7000.00 |
| 110 | Coffee Maker | Programmable coffee maker | 9000.00 |
+-----+-----+-----+-----+
10 rows in set (0.00 sec)
```

```
mysql> INSERT INTO Orders (OrderId, CustomerId, OrderDate, TotalAmount, Status)
-> VALUES
-> (201,1,'2023-01-15',25000,'Pending'),(202,2,'2023-02-20',15000,'Shipped'),(203,3,'2023-03-10',10000,'Delivered'),
-> (204,4,'2023-04-05',20000,'Pending'),(205,5,'2023-05-15',30000,'Shipped'),(206,1,'2023-06-01',22000,'Delivered'),
-> (207,6,'2023-07-10',12500,'Pending'),(208,7,'2023-08-18',8000,'Shipped'),(209,8,'2023-09-25',35000,'Delivered'),
-> (210,9,'2023-10-02',17000,'Pending');
Query OK, 10 rows affected (0.01 sec)
Records: 10 Duplicates: 0 Warnings: 0
```

```
mysql> select * from Orders;
+-----+-----+-----+-----+-----+
| OrderId | CustomerId | OrderDate | TotalAmount | Status |
+-----+-----+-----+-----+-----+
| 201 | 1 | 2023-01-15 | 25000.00 | Pending |
| 202 | 2 | 2023-02-20 | 15000.00 | Shipped |
| 203 | 3 | 2023-03-10 | 10000.00 | Delivered |
| 204 | 4 | 2023-04-05 | 20000.00 | Pending |
| 205 | 5 | 2023-05-15 | 30000.00 | Shipped |
| 206 | 1 | 2023-06-01 | 22000.00 | Delivered |
| 207 | 6 | 2023-07-10 | 12500.00 | Pending |
| 208 | 7 | 2023-08-18 | 8000.00 | Shipped |
| 209 | 8 | 2023-09-25 | 35000.00 | Delivered |
| 210 | 9 | 2023-10-02 | 17000.00 | Pending |
+-----+-----+-----+-----+-----+
10 rows in set (0.00 sec)
```

```
mysql> INSERT INTO OrderDetails (OrderDetailId, OrderId, ProductId, Quantity)
-> VALUES
-> (301,201,101,2),(302,201,102,1),(303,202,103,1),(304,203,104,3),(305,203,105,1),
-> (306,204,106,2),(307,205,107,1),(308,205,108,1),(309,206,109,2),(310,207,110,1);
Query OK, 10 rows affected (0.07 sec)
Records: 10 Duplicates: 0 Warnings: 0

mysql> select * from OrderDetails;
+-----+-----+-----+-----+
| OrderDetailId | OrderId | ProductId | Quantity |
+-----+-----+-----+-----+
| 301 | 201 | 101 | 2 |
| 302 | 201 | 102 | 1 |
| 303 | 202 | 103 | 1 |
| 304 | 203 | 104 | 3 |
| 305 | 203 | 105 | 1 |
| 306 | 204 | 106 | 2 |
| 307 | 205 | 107 | 1 |
| 308 | 205 | 108 | 1 |
| 309 | 206 | 109 | 2 |
| 310 | 207 | 110 | 1 |
+-----+-----+-----+-----+
10 rows in set (0.00 sec)
```

```
mysql> INSERT INTO Inventory (InventoryId, ProductId, QuantityInStock, LastStockUpdate)
-> VALUES
-> (401,101,50,'2023-01-01 10:00:00'),(402,102,100,'2023-02-15 12:30:00'),
-> (403,103,25,'2023-03-10 15:45:00'),(404,104,30,'2023-04-05 08:20:00'),
-> (405,105,40,'2023-05-20 17:30:00'),(406,106,15,'2023-06-12 09:15:00'),
-> (407,107,60,'2023-07-08 14:00:00'),(408,108,20,'2023-08-25 11:10:00'),
-> (409,109,35,'2023-09-18 18:00:00'),(410,110,50,'2023-10-03 22:45:00');
Query OK, 10 rows affected (0.08 sec)
Records: 10 Duplicates: 0 Warnings: 0

mysql> select * from Inventory:
-> ;
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 ':' at line 1
mysql> select * from Inventory;
+-----+-----+-----+-----+
| InventoryId | ProductId | QuantityInStock | LastStockUpdate |
+-----+-----+-----+-----+
| 401 | 101 | 50 | 2023-01-01 10:00:00 |
| 402 | 102 | 100 | 2023-02-15 12:30:00 |
| 403 | 103 | 25 | 2023-03-10 15:45:00 |
| 404 | 104 | 30 | 2023-04-05 08:20:00 |
| 405 | 105 | 40 | 2023-05-20 17:30:00 |
| 406 | 106 | 15 | 2023-06-12 09:15:00 |
| 407 | 107 | 60 | 2023-07-08 14:00:00 |
| 408 | 108 | 20 | 2023-08-25 11:10:00 |
| 409 | 109 | 35 | 2023-09-18 18:00:00 |
| 410 | 110 | 50 | 2023-10-03 22:45:00 |
+-----+-----+-----+-----+
10 rows in set (0.00 sec)
```

## Task 2: Select, Where, Between, AND, LIKE

Write an SQL query to retrieve names and emails of all customers.

```
mysql> select FirstName, LastName, Email from Customers;
+-----+-----+-----+
| FirstName | LastName | Email |
+-----+-----+-----+
| Vedant    | Joshi    | vedant@gmail.com |
| Vinay     | Natkar   | vinay@gmail.com   |
| Sarvesh   | Deshmukh | sarvesh@gmail.com |
| Kaustubh  | Kulkarni | kaustubh@gmail.com |
| Vikrant   | Pachbhai | vikrant@gmail.com |
| Ram       | Shingne  | ram@gmail.com     |
| Abhishek  | Zune     | abhishek@gmail.com |
| Rahul     | Gayakwad | rahul@gmail.com   |
| Rohit     | Sharma   | rohit@gmail.com   |
| Tilak     | Verma    | tilak@gmail.com   |
+-----+-----+-----+
10 rows in set (0.00 sec)
```

Write SQL query to list all orders with their order dates and corresponding customer names.

```
mysql> select
-> Orders.OrderId,
-> Orders.OrderDate,
-> Customers.FirstName,
-> Customers.LastName
-> from
-> Orders
-> join
-> Customers ON Orders.CustomerId = Customers.CustomerId;
+-----+-----+-----+-----+
| OrderId | OrderDate | FirstName | LastName |
+-----+-----+-----+-----+
| 201     | 2023-01-15 | Vedant    | Joshi    |
| 202     | 2023-02-20 | Vinay     | Natkar   |
| 203     | 2023-03-10 | Sarvesh   | Deshmukh |
| 204     | 2023-04-05 | Kaustubh  | Kulkarni |
| 205     | 2023-05-15 | Vikrant   | Pachbhai |
| 206     | 2023-06-01 | Vedant    | Joshi    |
| 207     | 2023-07-10 | Ram       | Shingne  |
| 208     | 2023-08-18 | Abhishek  | Zune     |
| 209     | 2023-09-25 | Rahul     | Gayakwad |
| 210     | 2023-10-02 | Rohit     | Sharma   |
+-----+-----+-----+-----+
10 rows in set (0.00 sec)
```

Write SQL query to insert new customer record into Customers table. Include customer information such as name, email and address.

```
mysql> insert into Customers (CustomerId,FirstName, LastName, Email, Phone, Address)
-> values(11,'New','Customer','new.customer@gmail.com',98765,'Kanpur');
Query OK, 1 row affected (0.01 sec)
```

```
mysql> select * from Customers;
```

CustomerId	FirstName	LastName	Email	Phone	Address
1	Vedant	Joshi	vedant@gmail.com	12345	Mumbai
2	Vinay	Natkar	vinay@gmil.com	23432	Pune
3	Sarvesh	Deshmukh	sarvesh@gmail.com	98734	Delhi
4	Kaustubh	Kulkarni	kaustubh@gmail.com	76349	Chennai
5	Vikrant	Pachbhai	vikrant@gmail.com	34870	Nagpur
6	Ram	Shingne	ram@gmail.com	64982	Hydrabad
7	Abhishek	Zune	abhishek@gmail.com	85478	Akola
8	Rahul	Gayakwad	rahul@gmail.com	92847	Latur
9	Rohit	Sharma	rohit@gmail.com	21290	Nashik
10	Tilak	Verma	tilak@gmail.com	55467	Jaypur
11	New	Customer	new.customer@gmail.com	98765	Kanpur

```
11 rows in set (0.00 sec)
```

Write SQL query to update prices of all products in Products table by increasing them by 10%.

```
mysql> update Products
-> set Price=Price*1.10 ;
Query OK, 10 rows affected (0.04 sec)
Rows matched: 10  Changed: 10  Warnings: 0
```

```
mysql> select * from Products;
```

ProductId	ProductName	Description	Price
101	Laptop	High-performance laptop	55000.00
102	Smartphone	Latest smartphone model	33000.00
103	Tablet	10-inch tablet with HD display	16500.00
104	Headphones	Noise-canceling over-ear headphones	5500.00
105	Digital Camera	20MP digital camera with zoom lens	22000.00
106	Fitness Tracker	Water-resistant fitness tracker	2200.00
107	Smart TV	55-inch 4K Smart TV	25300.00
108	Gaming Console	Next-gen gaming console	29700.00
109	Wireless Speaker	Bluetooth wireless speaker	7700.00
110	Coffee Maker	Programmable coffee maker	9900.00

```
10 rows in set (0.00 sec)
```

Write SQL query to delete a specific order and their associated order details for a specific customer from the orders and orderdetails tables.

```
mysql> DELETE FROM OrderDetails
      -> WHERE OrderId IN (SELECT OrderId FROM Orders WHERE CustomerId =8);
Query OK, 0 rows affected (0.00 sec)

mysql> DELETE FROM Orders
      -> WHERE CustomerId=8;
Query OK, 2 rows affected (0.01 sec)

mysql> select * from Orders;
```

OrderId	CustomerId	OrderDate	TotalAmount	Status
201	1	2023-01-15	143000.00	Pending
202	2	2023-02-20	16500.00	Shipped
203	3	2023-03-10	38500.00	Delivered
204	4	2023-04-05	4400.00	Pending
205	5	2023-05-15	55000.00	Shipped
206	1	2023-06-01	15400.00	Delivered
207	6	2023-07-10	9900.00	Pending
208	7	2023-08-18	8000.00	Shipped
210	9	2023-10-02	17000.00	Pending

```
9 rows in set (0.00 sec)
```

Write SQL query to insert a new order into Orders table. Include customerid,orderdate,and any other necessary information

```
mysql> insert into Orders(OrderId,CustomerId,OrderDate,TotalAmount,Status)
      -> values(211,8,'2023-12-09',12000,'Pending');
Query OK, 1 row affected (0.08 sec)

mysql> select * from Orders;
```

OrderId	CustomerId	OrderDate	TotalAmount	Status
201	1	2023-01-15	25000.00	Pending
202	2	2023-02-20	15000.00	Shipped
203	3	2023-03-10	10000.00	Delivered
204	4	2023-04-05	20000.00	Pending
205	5	2023-05-15	30000.00	Shipped
206	1	2023-06-01	22000.00	Delivered
207	6	2023-07-10	12500.00	Pending
208	7	2023-08-18	8000.00	Shipped
209	8	2023-09-25	35000.00	Delivered
210	9	2023-10-02	17000.00	Pending
211	8	2023-12-09	12000.00	Pending

```
11 rows in set (0.00 sec)
```



Write SQL query to update contact information(e.g. email and address) of a specific customer in the customers table.

```
mysql> UPDATE Customers
-> SET Email='newemail@gmail.com',
-> Address='London'
-> WHERE CustomerId=7;
Query OK, 1 row affected (0.01 sec)
Rows matched: 1 Changed: 1 Warnings: 0

mysql> select * from Customers;
```

CustomerId	FirstName	LastName	Email	Phone	Address	NumberOfOrders
1	Vedant	Joshi	vedant@gmail.com	12345	Mumbai	2
2	Vinay	Natkar	vinay@gmil.com	23432	Pune	1
3	Sarvesh	Deshmukh	sarvesh@gmail.com	98734	Delhi	1
4	Kaustubh	Kulkarni	kaustubh@gmail.com	76349	Chennai	1
5	Vikrant	Pachbhai	vikrant@gmail.com	34870	Nagpur	1
6	Ram	Shingne	ram@gmail.com	64982	Hydrabad	1
7	Abhishek	Zune	newemail@gmail.com	85478	London	1
8	Rahul	Gayakwad	rahul@gmail.com	92847	Latur	2
9	Rohit	Sharma	rohit@gmail.com	21290	Nashik	1
10	Tilak	Verma	tilak@gmail.com	55467	Jaypur	0
11	New	Customer	new.customer@gmail.com	98765	Kanpur	0

```
11 rows in set (0.00 sec)
```

Write SQL query to recalculate and update the total cost of each order in the orders table based on prices and quantities in the OrderDetails table.

```
mysql> UPDATE Orders
-> SET TotalAmount = (
-> SELECT SUM(od.Quantity * p.Price)
-> FROM OrderDetails od
-> JOIN Products p ON od.ProductId = p.ProductId
-> WHERE od.OrderId = Orders.OrderId
-> )
-> WHERE OrderId IN (SELECT OrderId FROM OrderDetails);
Query OK, 7 rows affected (0.08 sec)
Rows matched: 7 Changed: 7 Warnings: 0

mysql> select * from Orders;
```

OrderId	CustomerId	OrderDate	TotalAmount	Status
201	1	2023-01-15	143000.00	Pending
202	2	2023-02-20	16500.00	Shipped
203	3	2023-03-10	38500.00	Delivered
204	4	2023-04-05	4400.00	Pending
205	5	2023-05-15	55000.00	Shipped
206	1	2023-06-01	15400.00	Delivered
207	6	2023-07-10	9900.00	Pending
208	7	2023-08-18	8000.00	Shipped
209	8	2023-09-25	35000.00	Delivered
210	9	2023-10-02	17000.00	Pending
211	8	2023-12-09	12000.00	Pending

```
11 rows in set (0.00 sec)
```

Write SQL query to insert new product into products table including Product Name, Description, Price and any other relevant details.

```
mysql> insert into Products(ProductId,ProductName,Description,Price)
-> values(111,'Speaker','High raze audio speaker',7000);
Query OK, 1 row affected (0.01 sec)
```

```
mysql> select * from Products;
```

ProductId	ProductName	Description	Price
101	Laptop	High-performance laptop	55000.00
102	Smartphone	Latest smartphone model	33000.00
103	Tablet	10-inch tablet with HD display	16500.00
104	Headphones	Noise-canceling over-ear headphones	5500.00
105	Digital Camera	20MP digital camera with zoom lens	22000.00
106	Fitness Tracker	Water-resistant fitness tracker	2200.00
107	Smart TV	55-inch 4K Smart TV	25300.00
108	Gaming Console	Next-gen gaming console	29700.00
109	Wireless Speaker	Bluetooth wireless speaker	7700.00
110	Coffee Maker	Programmable coffee maker	9900.00
111	Speaker	High raze audio speaker	7000.00

```
11 rows in set (0.00 sec)
```

Write SQL query to update status of specific order in orders table(e.g. from pending to shipped)

```
mysql> UPDATE Orders
-> SET Status='Delevered'
-> WHERE OrderId=202;
Query OK, 1 row affected (0.01 sec)
Rows matched: 1 Changed: 1 Warnings: 0
```

```
mysql> select * from Orders;
```

OrderId	CustomerId	OrderDate	TotalAmount	Status
201	1	2023-01-15	143000.00	Pending
202	2	2023-02-20	16500.00	Delevered
203	3	2023-03-10	38500.00	Delivered
204	4	2023-04-05	4400.00	Pending
205	5	2023-05-15	55000.00	Shipped
206	1	2023-06-01	15400.00	Delivered
207	6	2023-07-10	9900.00	Pending
208	7	2023-08-18	8000.00	Shipped
210	9	2023-10-02	17000.00	Pending

```
9 rows in set (0.00 sec)
```

Write SQL query to calculate and update number of orders placed by each customer in the Customers table based on data in orders table.

```
mysql> alter table Customers add NumberOfOrders int;
Query OK, 0 rows affected (0.03 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

```
mysql> select * from Customers;
```

CustomerId	FirstName	LastName	Email	Phone	Address	NumberOfOrders
1	Vedant	Joshi	vedant@gmail.com	12345	Mumbai	NULL
2	Vinay	Natkar	vinay@gmil.com	23432	Pune	NULL
3	Sarvesh	Deshmukh	sarvesh@gmail.com	98734	Delhi	NULL
4	Kaustubh	Kulkarni	kaustubh@gmail.com	76349	Chennai	NULL
5	Vikrant	Pachbhai	vikrant@gmail.com	34870	Nagpur	NULL
6	Ram	Shingne	ram@gmail.com	64982	Hydrabad	NULL
7	Abhishek	Zune	abhishek@gmail.com	85478	Akola	NULL
8	Rahul	Gayakwad	rahul@gmail.com	92847	Latur	NULL
9	Rohit	Sharma	rohit@gmail.com	21290	Nashik	NULL
10	Tilak	Verma	tilak@gmail.com	55467	Jaypur	NULL
11	New	Customer	new.customer@gmail.com	98765	Kanpur	NULL

```
11 rows in set (0.00 sec)
```

```
mysql> update Customers
-> set NumberOfOrders=(
-> select count(*)
-> from Orders
-> where Orders.CustomerId=Customers.CustomerId);
Query OK, 11 rows affected (0.01 sec)
Rows matched: 11 Changed: 11 Warnings: 0
```

```
mysql> select * from Customers;
```

CustomerId	FirstName	LastName	Email	Phone	Address	NumberOfOrders
1	Vedant	Joshi	vedant@gmail.com	12345	Mumbai	2
2	Vinay	Natkar	vinay@gmil.com	23432	Pune	1
3	Sarvesh	Deshmukh	sarvesh@gmail.com	98734	Delhi	1
4	Kaustubh	Kulkarni	kaustubh@gmail.com	76349	Chennai	1
5	Vikrant	Pachbhai	vikrant@gmail.com	34870	Nagpur	1
6	Ram	Shingne	ram@gmail.com	64982	Hydrabad	1
7	Abhishek	Zune	abhishek@gmail.com	85478	Akola	1
8	Rahul	Gayakwad	rahul@gmail.com	92847	Latur	2
9	Rohit	Sharma	rohit@gmail.com	21290	Nashik	1
10	Tilak	Verma	tilak@gmail.com	55467	Jaypur	0
11	New	Customer	new.customer@gmail.com	98765	Kanpur	0

```
11 rows in set (0.00 sec)
```

### Task 3. Aggregate functions, Having, OrderBy, GroupBy and Joins

Write SQL query to retrieve list of all orders along with customer information(e.g. customer name)for each order.

```
mysql> SELECT
-> Orders.OrderId,
-> Orders.CustomerId,
-> CONCAT(Customers.FirstName, ' ', Customers.LastName) AS CustomerName,
-> Orders.OrderDate,
-> Orders.TotalAmount,
-> Orders.Status
-> FROM
-> Orders
-> JOIN
-> Customers ON Orders.CustomerId=Customers.CustomerId;
```

OrderId	CustomerId	CustomerName	OrderDate	TotalAmount	Status
201	1	Vedant Joshi	2023-01-15	143000.00	Pending
202	2	Vinay Natkar	2023-02-20	16500.00	Delevered
203	3	Sarvesh Deshmukh	2023-03-10	38500.00	Delivered
204	4	Kaustubh Kulkarni	2023-04-05	4400.00	Pending
205	5	Vikrant Pachbhai	2023-05-15	55000.00	Shipped
206	1	Vedant Joshi	2023-06-01	15400.00	Delivered
207	6	Ram Shingne	2023-07-10	9900.00	Pending
208	7	Abhishek Zune	2023-08-18	8000.00	Shipped
210	9	Rohit Sharma	2023-10-02	17000.00	Pending

9 rows in set (0.00 sec)

Write SQL query to find total revenue generated by each product. Include product name and total revenue.

```
mysql> select
-> P.ProductId,
-> P.ProductName,
-> sum(OD.Quantity*P.Price) AS TotalRevenue
-> from
-> Products P
-> join
-> OrderDetails OD ON P.ProductId=OD.ProductId
-> group by
-> P.ProductId,P.ProductName;
```

ProductId	ProductName	TotalRevenue
101	Laptop	110000.00
102	Smartphone	33000.00
103	Tablet	16500.00
104	Headphones	16500.00
105	Digital Camera	22000.00
106	Fitness Tracker	4400.00
107	Smart TV	25300.00
108	Gaming Console	29700.00
109	Wireless Speaker	15400.00
110	Coffee Maker	9900.00

10 rows in set (0.00 sec)

Write SQL query to list all customers who have made at least one purchase. Include their names and contact information.

```
mysql> select
-> Customers.CustomerId,
-> Customers.FirstName,
-> Customers.LastName,
-> Customers.Email,
-> Customers.Phone,
-> Customers.Address
-> from
-> Customers
-> join
-> Orders on Customers.CustomerId=Orders.CustomerId
-> group by
-> Customers.CustomerId,Customers.FirstName,Customers.LastName,Customers.Email,Customers.Phone,Customers.Address;
```

CustomerId	FirstName	LastName	Email	Phone	Address
1	Vedant	Joshi	vedant@gmail.com	12345	Mumbai
2	Vinay	Natkar	vinay@gmail.com	23432	Pune
3	Sarvesh	Deshmukh	sarvesh@gmail.com	98734	Delhi
4	Kaustubh	Kulkarni	kaustubh@gmail.com	76349	Chennai
5	Vikrant	Pachbhai	vikrant@gmail.com	34870	Nagpur
6	Ram	Shingne	ram@gmail.com	64982	Hydrabad
7	Abhishek	Zune	abhishek@gmail.com	85478	Akola
8	Rahul	Gayakwad	rahul@gmail.com	92847	Latur
9	Rohit	Sharma	rohit@gmail.com	21290	Nashik

9 rows in set (0.00 sec)

Write SQL query to find most popular product which is with highest total quantity ordered. Include product name and total quantity ordered.

```
mysql> select
-> P.ProductName,
-> sum(OD.Quantity) as TotalQuantityOrdered
-> from
-> Products P
-> join
-> OrderDetails OD on P.ProductId=OD.ProductId
-> group by
-> P.ProductName
-> order by
-> TotalQuantityOrdered desc
-> limit 1;
```

ProductName	TotalQuantityOrdered
Headphones	3

1 row in set (0.00 sec)

Write SQL query to retrieve list of products along with their corresponding description.

```
mysql> select
-> ProductId,
-> ProductName,
-> Description
-> from
-> Products;
```

ProductId	ProductName	Description
101	Laptop	High-performance laptop
102	Smartphone	Latest smartphone model
103	Tablet	10-inch tablet with HD display
104	Headphones	Noise-canceling over-ear headphones
105	Digital Camera	20MP digital camera with zoom lens
106	Fitness Tracker	Water-resistant fitness tracker
107	Smart TV	55-inch 4K Smart TV
108	Gaming Console	Next-gen gaming console
109	Wireless Speaker	Bluetooth wireless speaker
110	Coffee Maker	Programmable coffee maker
111	Speaker	High raze audio speaker

11 rows in set (0.00 sec)

Write SQL query to calculate average order value for each customer. Include customers name and their average order value.

```
mysql> select
-> C.CustomerId,
-> C.FirstName,
-> C.LastName,
-> avg(O.TotalAmount) as AverageOrderValue
-> from
-> Customers C
-> join
-> Orders O on C.CustomerId=O.CustomerId
-> group by
-> C.CustomerId,C.FirstName,C.LastName;
```

CustomerId	FirstName	LastName	AverageOrderValue
1	Vedant	Joshi	79200.000000
2	Vinay	Natkar	16500.000000
3	Sarvesh	Deshmukh	38500.000000
4	Kaustubh	Kulkarni	4400.000000
5	Vikrant	Pachbhai	55000.000000
6	Ram	Shingne	9900.000000
7	Abhishek	Zune	8000.000000
8	Rahul	Gayakwad	23500.000000
9	Rohit	Sharma	17000.000000

9 rows in set (0.00 sec)

Write SQL query to find out order with highest total revenue. Include OrderId,customer information and total revenue.

```
mysql> select
-> O.OrderId,
-> C.CustomerId,
-> C.FirstName,
-> C.LastName,
-> O.TotalAmount as TotalRevenue
-> from
-> Orders O
-> join
-> Customers C on O.CustomerId=C.CustomerId
-> order by
-> TotalRevenue desc
-> limit 1;
+-----+-----+-----+-----+-----+
| OrderId | CustomerId | FirstName | LastName | TotalRevenue |
+-----+-----+-----+-----+-----+
|      201 |          1 | Vedant   | Joshi    |    143000.00 |
+-----+-----+-----+-----+-----+
1 row in set (0.00 sec)
```

Write SQL query to list products and number of times each product has been ordered.

```
mysql> select
-> P.ProductId,
-> P.ProductName,
-> count(OD.OrderId) as NumberOfOrders
-> from
-> Products P
-> left join
-> OrderDetails OD on P.ProductId=OD.ProductId
-> group by
-> P.ProductId, P.ProductName
-> order by
-> NumberOfOrders desc;
+-----+-----+-----+
| ProductId | ProductName | NumberOfOrders |
+-----+-----+-----+
|      101 | Laptop      |              1 |
|      102 | Smartphone  |              1 |
|      103 | Tablet      |              1 |
|      104 | Headphones  |              1 |
|      105 | Digital Camera |              1 |
|      106 | Fitness Tracker |              1 |
|      107 | Smart TV    |              1 |
|      108 | Gaming Console |              1 |
|      109 | Wireless Speaker |              1 |
|      110 | Coffee Maker |              1 |
|      111 | Speaker     |              0 |
+-----+-----+-----+
11 rows in set (0.00 sec)
```

Write SQL query to find customers who have purchased specific product.

```
mysql> SELECT
->     C.CustomerId,
->     C.FirstName,
->     C.LastName,
->     C.Email,
->     C.Phone,
->     C.Address
-> FROM
->     Customers C
-> JOIN
->     Orders O ON C.CustomerId = O.CustomerId
-> JOIN
->     OrderDetails OD ON O.OrderId = OD.OrderId
-> JOIN
->     Products P ON OD.ProductId = P.ProductId
-> WHERE
->     P.ProductName='Smart TV';
+-----+-----+-----+-----+-----+-----+
| CustomerId | FirstName | LastName | Email | Phone | Address |
+-----+-----+-----+-----+-----+-----+
|          5 | Vikrant  | Pachbhai | vikrant@gmail.com | 34870 | Nagpur  |
+-----+-----+-----+-----+-----+-----+
1 row in set (0.00 sec)
```

Write SQL query to calculate total revenue generated by all orders placed within a specific time period.

```
mysql> SELECT
->     SUM(TotalAmount) AS TotalRevenue
-> FROM
->     Orders
-> WHERE
->     OrderDate BETWEEN '2023-01-01' AND '2023-12-31';
+-----+
| TotalRevenue |
+-----+
|    307700.00 |
+-----+
1 row in set (0.00 sec)
```



## Task 4: Subquery and its type

Write SQL query to find out which customers have not placed any orders.

```
mysql> SELECT
->     C.CustomerId,
->     C.FirstName,
->     C.LastName,
->     C.Email,
->     C.Phone,
->     C.Address
-> FROM
->     Customers C
-> LEFT JOIN
->     Orders O ON C.CustomerId = O.CustomerId
-> WHERE
->     O.OrderId IS NULL;
```

CustomerId	FirstName	LastName	Email	Phone	Address
8	Rahul	Gayakwad	rahul@gmail.com	92847	Latur
10	Tilak	Verma	tilak@gmail.com	55467	Jaypur
11	New	Customer	new.customer@gmail.com	98765	Kanpur

3 rows in set (0.00 sec)

Write SQL query to find the total number of products available for sale.

```
mysql> SELECT COUNT(*) AS TotalProducts
-> FROM Products;
```

TotalProducts
11

1 row in set (0.00 sec)

Write SQL query to calculate the total revenue generated by TechShop.

```
mysql> SELECT
->     SUM(TotalAmount) AS TotalRevenue
-> FROM
->     Orders;
```

TotalRevenue
307700.00

1 row in set (0.00 sec)

Write SQL query to calculate the average quantity ordered for products in a specific category.

```
mysql> SELECT
->     AVG(OD.Quantity) AS AverageQuantityOrdered
-> FROM
->     OrderDetails OD
-> JOIN
->     Products P ON OD.ProductId = P.ProductId
-> WHERE
->     P.ProductName='Smartphone';
```

```
+-----+
| AverageQuantityOrdered |
+-----+
|                1.0000 |
+-----+
1 row in set (0.00 sec)
```

Write SQL query to calculate the total revenue generated by a specific customer.

```
mysql> SELECT
->     SUM(O.TotalAmount) AS TotalRevenue
-> FROM
->     Orders O
-> JOIN
->     OrderDetails OD ON O.OrderId = OD.OrderId
-> WHERE
->     O.CustomerId =3;
```

```
+-----+
| TotalRevenue |
+-----+
|    77000.00 |
+-----+
1 row in set (0.00 sec)
```

Write SQL query to find the customers who have placed the most Orders. List their names and the number of orders they have placed.

```
mysql> SELECT
->     C.CustomerId,
->     C.FirstName,
->     C.LastName,
->     COUNT(O.OrderId) AS NumberOfOrders
-> FROM
->     Customers C
-> JOIN
->     Orders O ON C.CustomerId = O.CustomerId
-> GROUP BY
->     C.CustomerId, C.FirstName, C.LastName
-> ORDER BY
->     NumberOfOrders DESC
-> LIMIT 1;
+-----+-----+-----+-----+
| CustomerId | FirstName | LastName | NumberOfOrders |
+-----+-----+-----+-----+
|          1 | Vedant   | Joshi    |                2 |
+-----+-----+-----+-----+
1 row in set (0.00 sec)
```

Write SQL query to find the most popular product category, which is the one with highest total quantity ordered across all orders.

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

Write SQL query to find the customer who has spent the most money(highest total revenue) on products.List their name and total spending.

```
mysql> SELECT
->     C.CustomerId,
->     C.FirstName,
->     C.LastName,
->     SUM(O.TotalAmount) AS TotalSpending
-> FROM
->     Customers C
-> JOIN
->     Orders O ON C.CustomerId = O.CustomerId
-> GROUP BY
->     C.CustomerId, C.FirstName, C.LastName
-> ORDER BY
->     TotalSpending DESC
-> LIMIT 1;
+-----+-----+-----+-----+
| CustomerId | FirstName | LastName | TotalSpending |
+-----+-----+-----+-----+
|          1 | Vedant    | Joshi    |      158400.00 |
+-----+-----+-----+-----+
1 row in set (0.00 sec)
```

Write SQL query to calculate the average order value(total revenue divided by number of orders) for all customers.

```
mysql> SELECT
->     AVG(TotalAmount) AS AverageOrderValue
-> FROM
->     Orders;
+-----+
| AverageOrderValue |
+-----+
|      34188.888889 |
+-----+
1 row in set (0.00 sec)
```

Write an SQL query to find the total number of orders placed by each customer and list their names along with the order count.

```
mysql> SELECT
->     C.CustomerId,
->     C.FirstName,
->     C.LastName,
->     COUNT(O.OrderId) AS OrderCount
-> FROM
->     Customers C
-> LEFT JOIN
->     Orders O ON C.CustomerId = O.CustomerId
-> GROUP BY
->     C.CustomerId, C.FirstName, C.LastName;
```

CustomerId	FirstName	LastName	OrderCount
1	Vedant	Joshi	2
2	Vinay	Natkar	1
3	Sarvesh	Deshmukh	1
4	Kaustubh	Kulkarni	1
5	Vikrant	Pachbhai	1
6	Ram	Shingne	1
7	Abhishek	Zune	1
8	Rahul	Gayakwad	0
9	Rohit	Sharma	1
10	Tilak	Verma	0
11	New	Customer	0

11 rows in set (0.00 sec)

# Entity Relationship Diagram



