Sales Management System[DB]

Step 1: Project Idea Selection

a database system that manages [customers, products, categories, orders, and sales] for a retail environment. The system provides functionalities for tracking customers, organizing products into categories, processing orders, and recording sales.

Step 2: Analyzing

Customer Needs:

- A platform to store and retrieve customer data.
- A way to categorize and manage products.
- Tracking and processing customer orders.
- Recording sales transactions and generating summaries.
- Efficient searching, sorting, and querying of data.

Entities Identified:

- **Customers**: To store client information.
- **Categories**: To classify products into types (e.g., electronics, clothing).
- **Products**: Contains product data like name, price, quantity, etc.
- **Orders**: Represents order requests made by customers.
- **Sales**: Records completed sales transactions.

Users of the System:

- **Admin**: Can manage all tables and perform insert, update, delete operations.
- **Cashier/Salesperson**: Can only view products, insert new orders and record sales.

Step 3: ERD Diagram.

Product and Category (One-to-Many)

- **One category has many products, but each product belongs to exactly one category.**

[product : total , category: partial]

Order and Customer (Many-to-One)

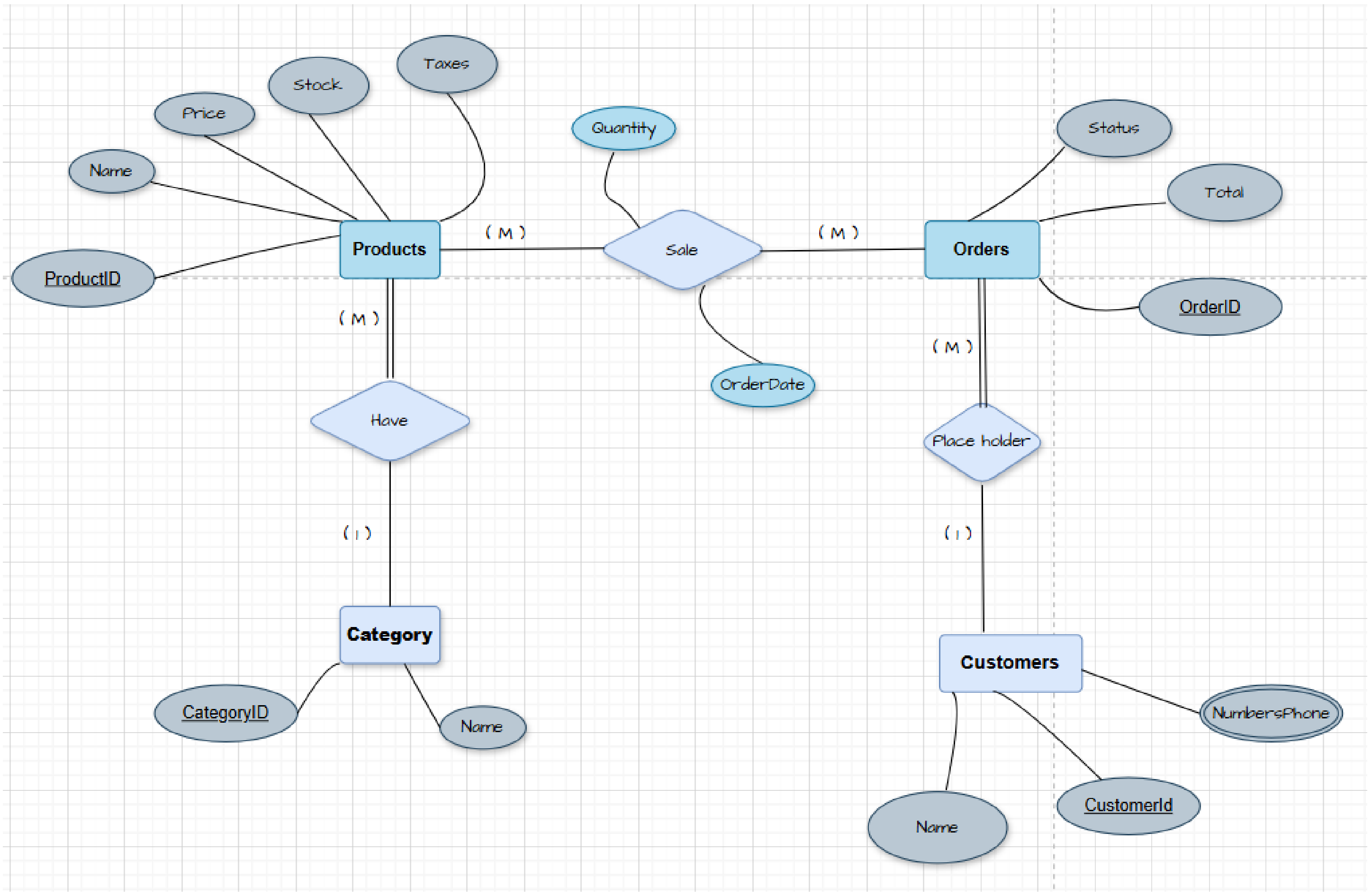
- **Many orders belong to one customer, but each order is made by exactly one customer.**

[order: total , category: partial]

Order and Product (Many-to-Many)

- **One order can have many products, and one product can be in many orders.**

[order: partial , product: partial]



How Mapping Was Done by Men3m?

Each Entity represent One Table

- **Attributes become columns.**
- **Primary Key is added.**

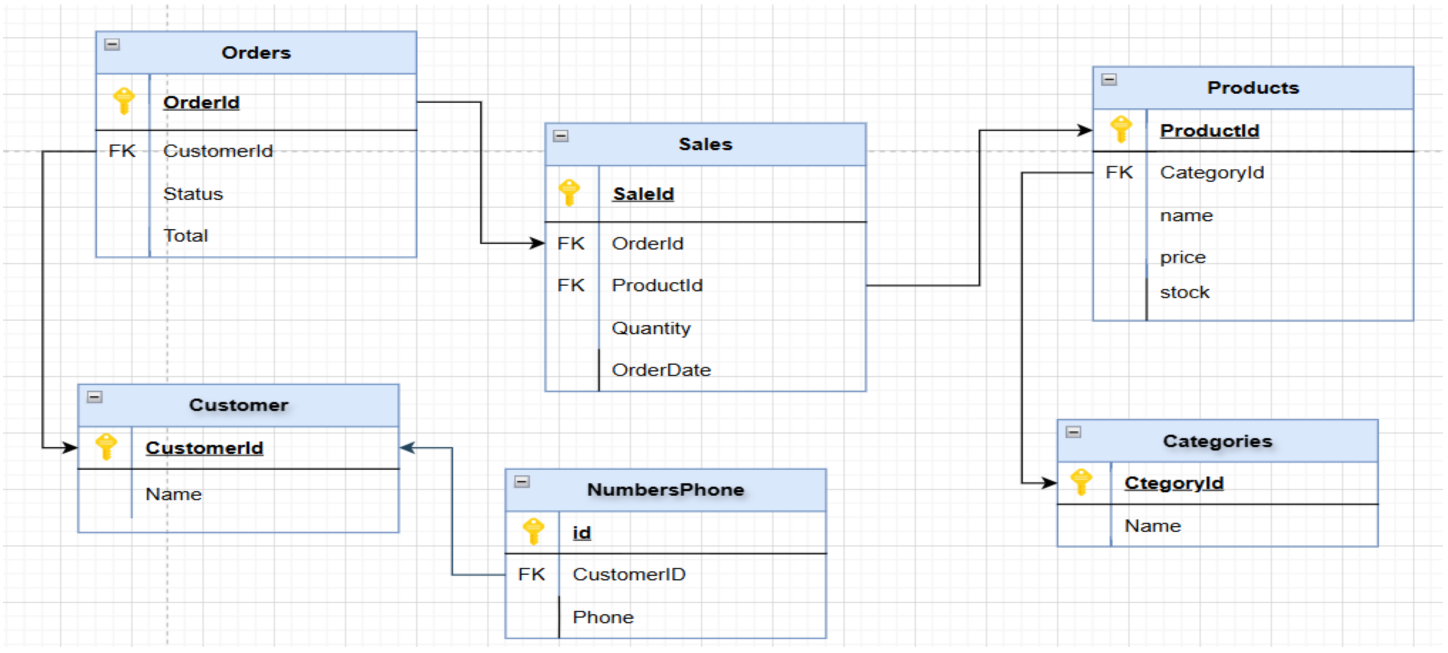
One-to-Many

- **The “partial Entity” ID becomes a foreign key in the "Total" side.**
- **Example: category_id into the Product table.**

Many-to-Many

- **Make a bridge table with two foreign keys.**
- **Add extra data if needed (like quantity, date).**

The composite attribute Phone Number was mapped to a separate table to allow storing multiple phone numbers per customer.



Normalization

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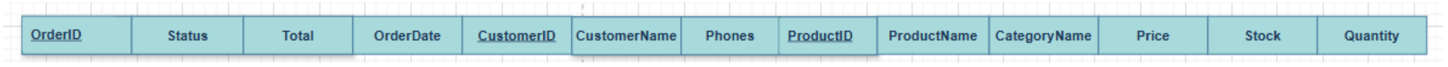
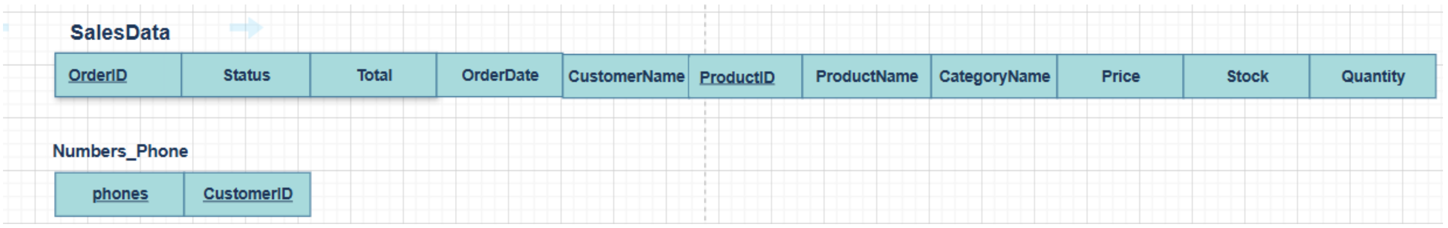


OrderID	Status	Total	OrderDate	CustomerID	CustomerName	Phones	ProductID	ProductName	CategoryName	Price	Stock	Quantity

1F



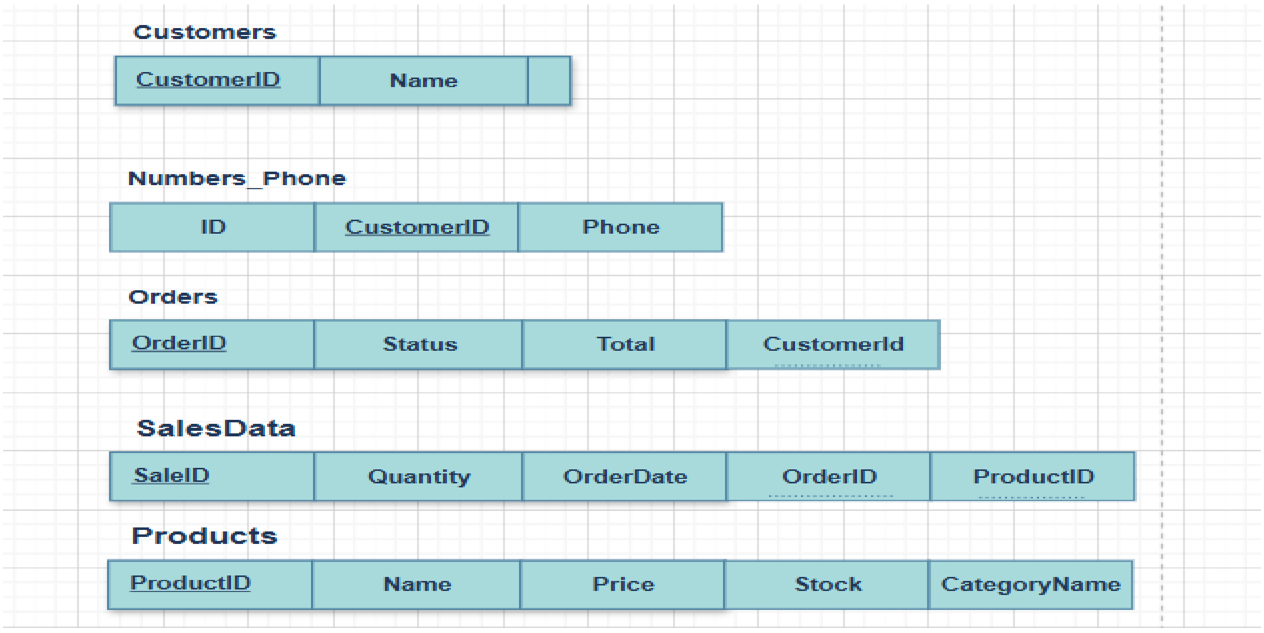
SalesData

OrderID	Status	Total	OrderDate	CustomerName	ProductID	ProductName	CategoryName	Price	Stock	Quantity

Numbers_Phone

phones	CustomerID

2F



Customers

CustomerID	Name	

Numbers_Phone

ID	CustomerID	Phone

Orders

OrderID	Status	Total	CustomerId

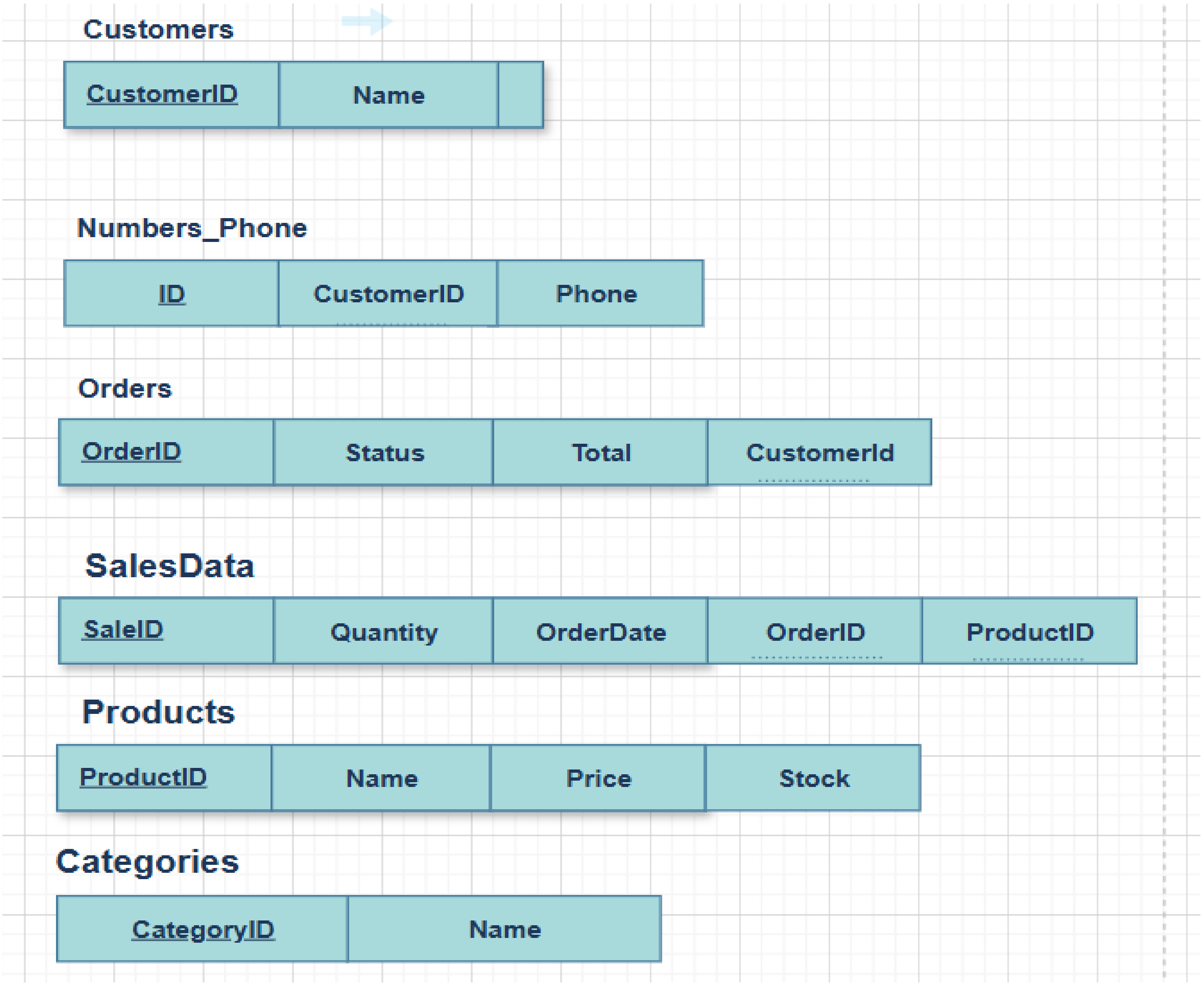
SalesData

SaleID	Quantity	OrderDate	OrderID	ProductID

Products

ProductID	Name	Price	Stock	CategoryName

3NF



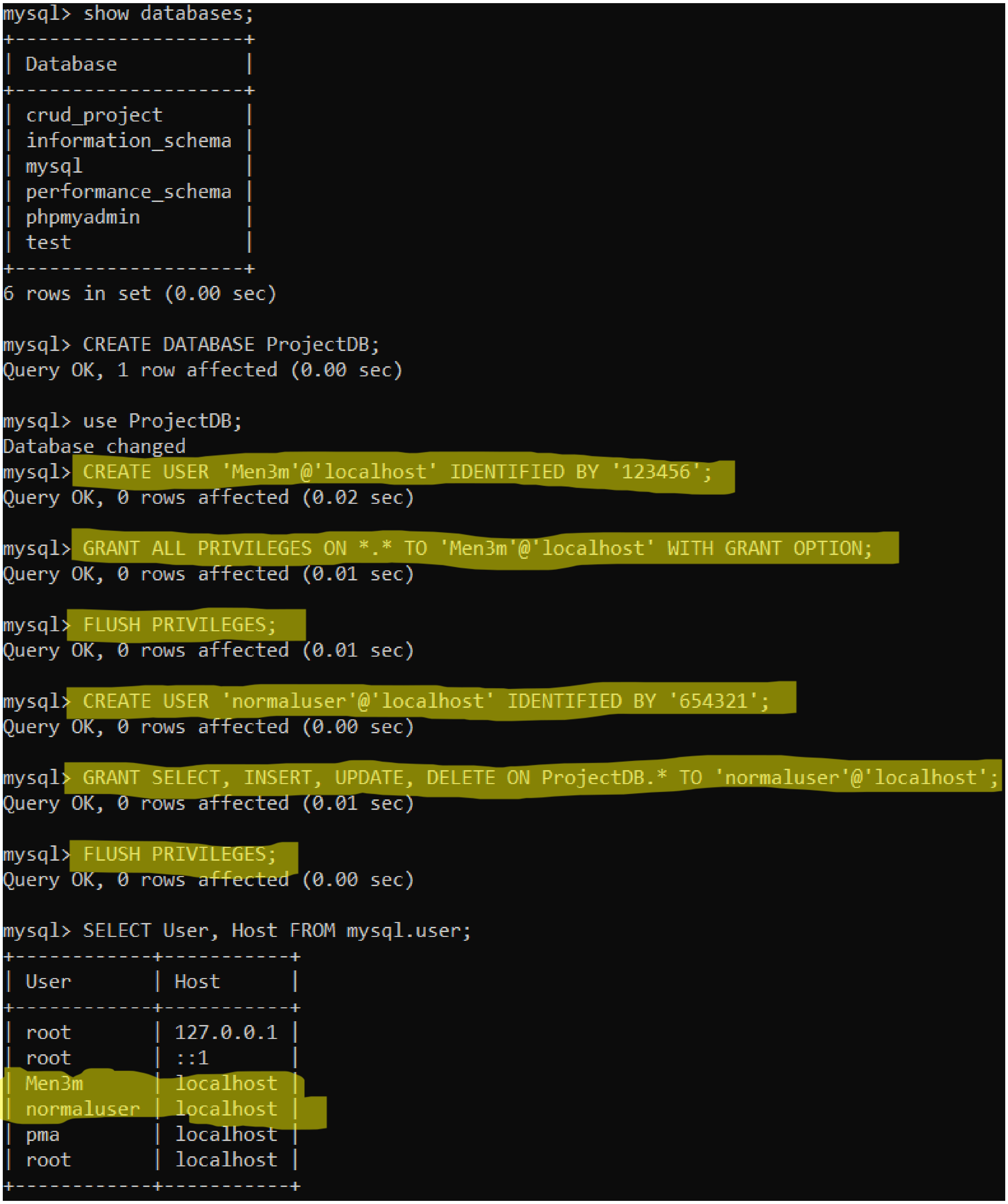
Define user

Men3m (Admin):

Full access to everything. Can manage data, databases, and users.

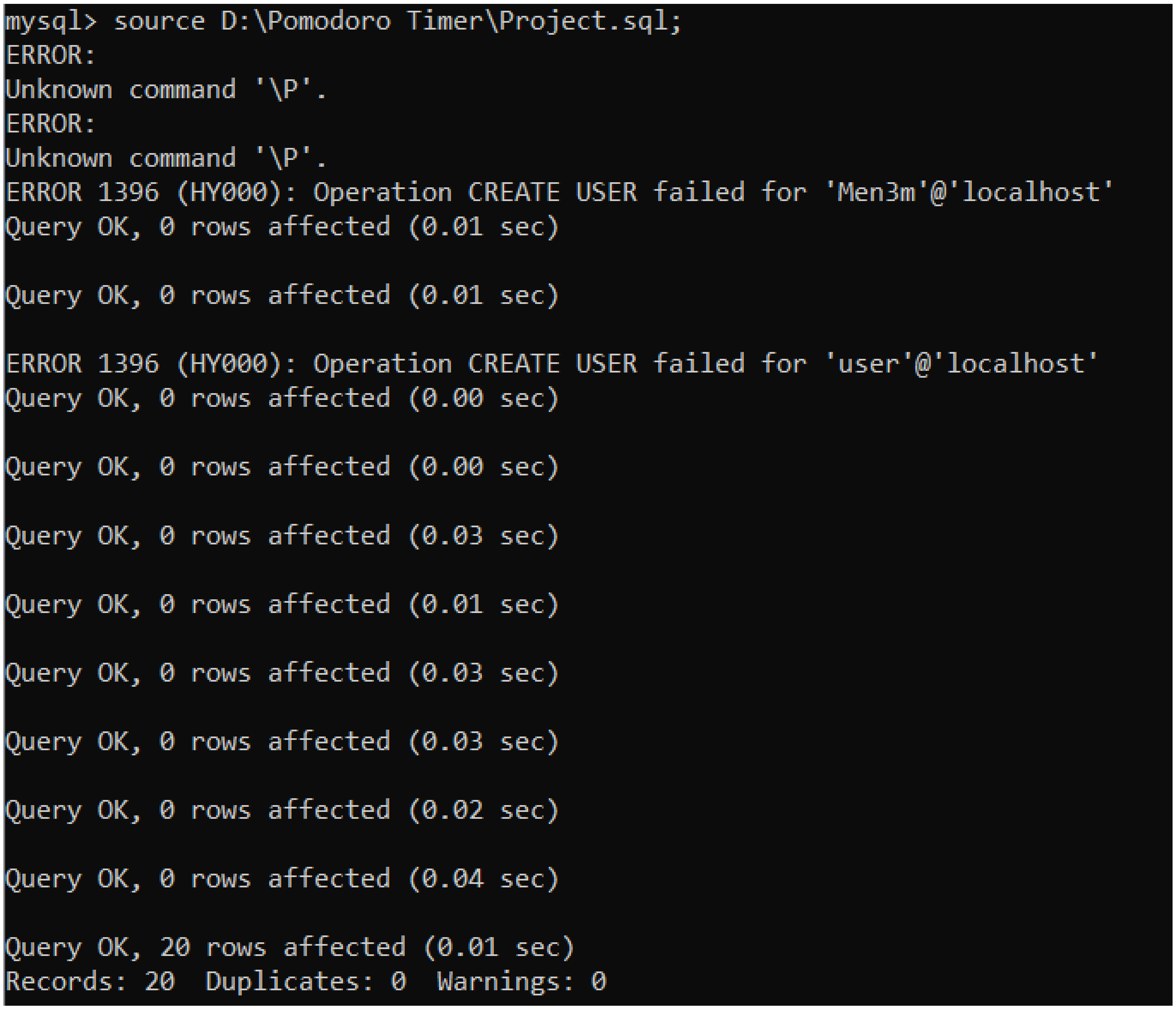
normaluser

Can only read, add, edit, and delete data in ProjectDB.



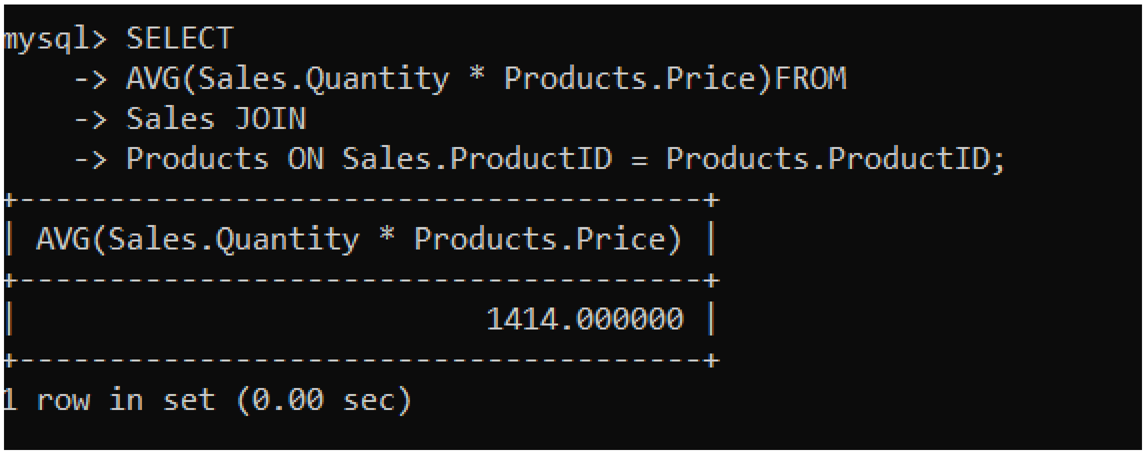
```
mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| crud_project       |
| information_schema |
| mysql              |
| performance_schema |
| phpmyadmin         |
| test               |
+--------------------+
6 rows in set (0.00 sec)

mysql> CREATE DATABASE ProjectDB;
Query OK, 1 row affected (0.00 sec)

mysql> use ProjectDB;
Database changed
mysql> CREATE USER 'Men3m'@'localhost' IDENTIFIED BY '123456';
Query OK, 0 rows affected (0.02 sec)

mysql> GRANT ALL PRIVILEGES ON *.* TO 'Men3m'@'localhost' WITH GRANT OPTION;
Query OK, 0 rows affected (0.01 sec)

mysql> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0.01 sec)

mysql> CREATE USER 'normaluser'@'localhost' IDENTIFIED BY '654321';
Query OK, 0 rows affected (0.00 sec)

mysql> GRANT SELECT, INSERT, UPDATE, DELETE ON ProjectDB.* TO 'normaluser'@'localhost';
Query OK, 0 rows affected (0.01 sec)

mysql> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0.00 sec)

mysql> SELECT User, Host FROM mysql.user;
+------------+-----------+
| User       | Host      |
+------------+-----------+
| root       | 127.0.0.1 |
| root       | ::1       |
| Men3m      | localhost |
| normaluser | localhost |
| pma        | localhost |
| root       | localhost |
+------------+-----------+
```

1.Import DB From File project.sql



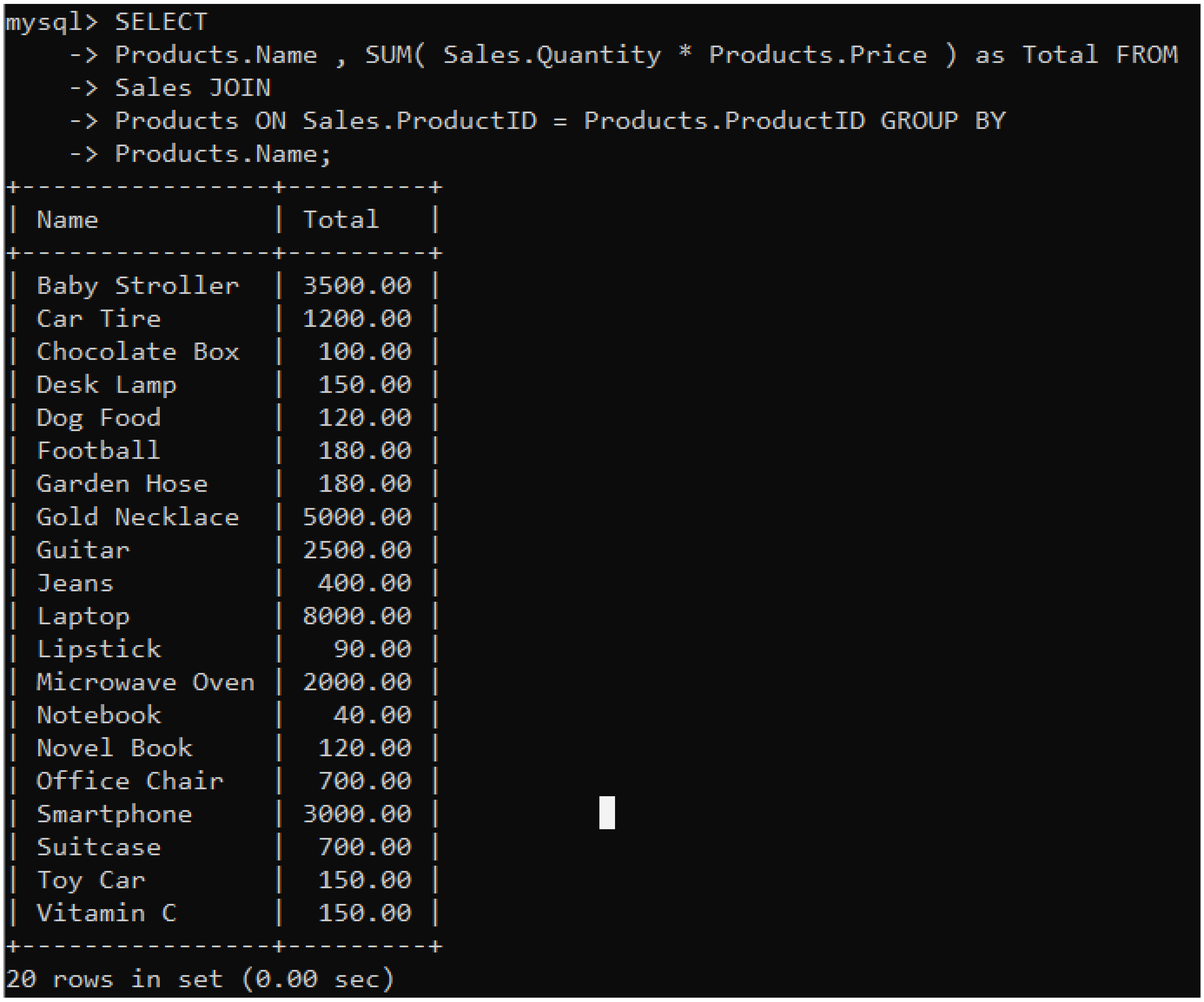
```
mysql> source D:\Pomodoro Timer\Project.sql;
ERROR:
Unknown command '\P'.
ERROR:
Unknown command '\P'.
ERROR 1396 (HY000): Operation CREATE USER failed for 'Men3m'@'localhost'
Query OK, 0 rows affected (0.01 sec)

Query OK, 0 rows affected (0.01 sec)

ERROR 1396 (HY000): Operation CREATE USER failed for 'user'@'localhost'
Query OK, 0 rows affected (0.00 sec)

Query OK, 0 rows affected (0.00 sec)

Query OK, 0 rows affected (0.03 sec)

Query OK, 0 rows affected (0.01 sec)

Query OK, 0 rows affected (0.03 sec)

Query OK, 0 rows affected (0.03 sec)

Query OK, 0 rows affected (0.02 sec)

Query OK, 0 rows affected (0.04 sec)

Query OK, 20 rows affected (0.01 sec)
Records: 20  Duplicates: 0  Warnings: 0
```

2.Calculate Avg total



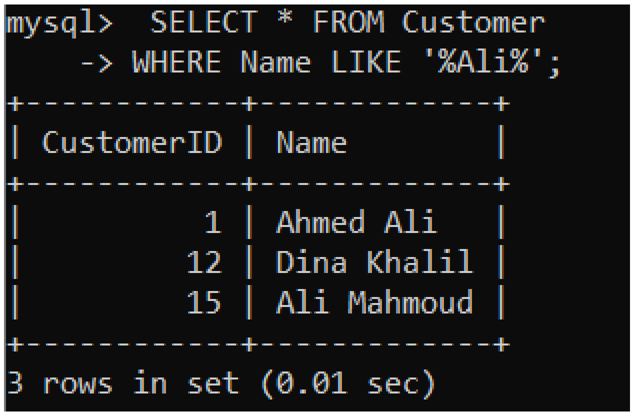
```
mysql> SELECT
    -> AVG(Sales.Quantity * Products.Price)FROM
    -> Sales JOIN
    -> Products ON Sales.ProductID = Products.ProductID;
+--------------------------------------+
| AVG(Sales.Quantity * Products.Price) |
+--------------------------------------+
|                          1414.000000 |
+--------------------------------------+
1 row in set (0.00 sec)
```

3.Find Sum Total each Customer



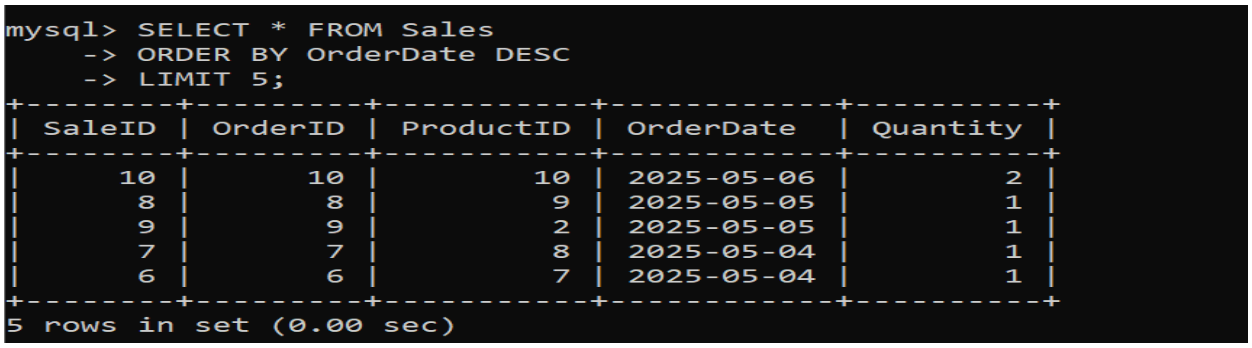
```
mysql> SELECT
    -> Products.Name , SUM( Sales.Quantity * Products.Price ) as Total FROM
    -> Sales JOIN
    -> Products ON Sales.ProductID = Products.ProductID GROUP BY
    -> Products.Name;
+----------------+---------+
| Name           | Total   |
+----------------+---------+
| Baby Stroller  | 3500.00 |
| Car Tire       | 1200.00 |
| Chocolate Box  |  100.00 |
| Desk Lamp      |  150.00 |
| Dog Food       |  120.00 |
| Football       |  180.00 |
| Garden Hose    |  180.00 |
| Gold Necklace  | 5000.00 |
| Guitar         | 2500.00 |
| Jeans          |  400.00 |
| Laptop         | 8000.00 |
| Lipstick       |   90.00 |
| Microwave Oven | 2000.00 |
| Notebook       |   40.00 |
| Novel Book     |  120.00 |
| Office Chair   |  700.00 |
| Smartphone     | 3000.00 |
| Suitcase       |  700.00 |
| Toy Car        |  150.00 |
| Vitamin C      |  150.00 |
+----------------+---------+
20 rows in set (0.00 sec)
```

4.Find Any customer subName = 'Ali'



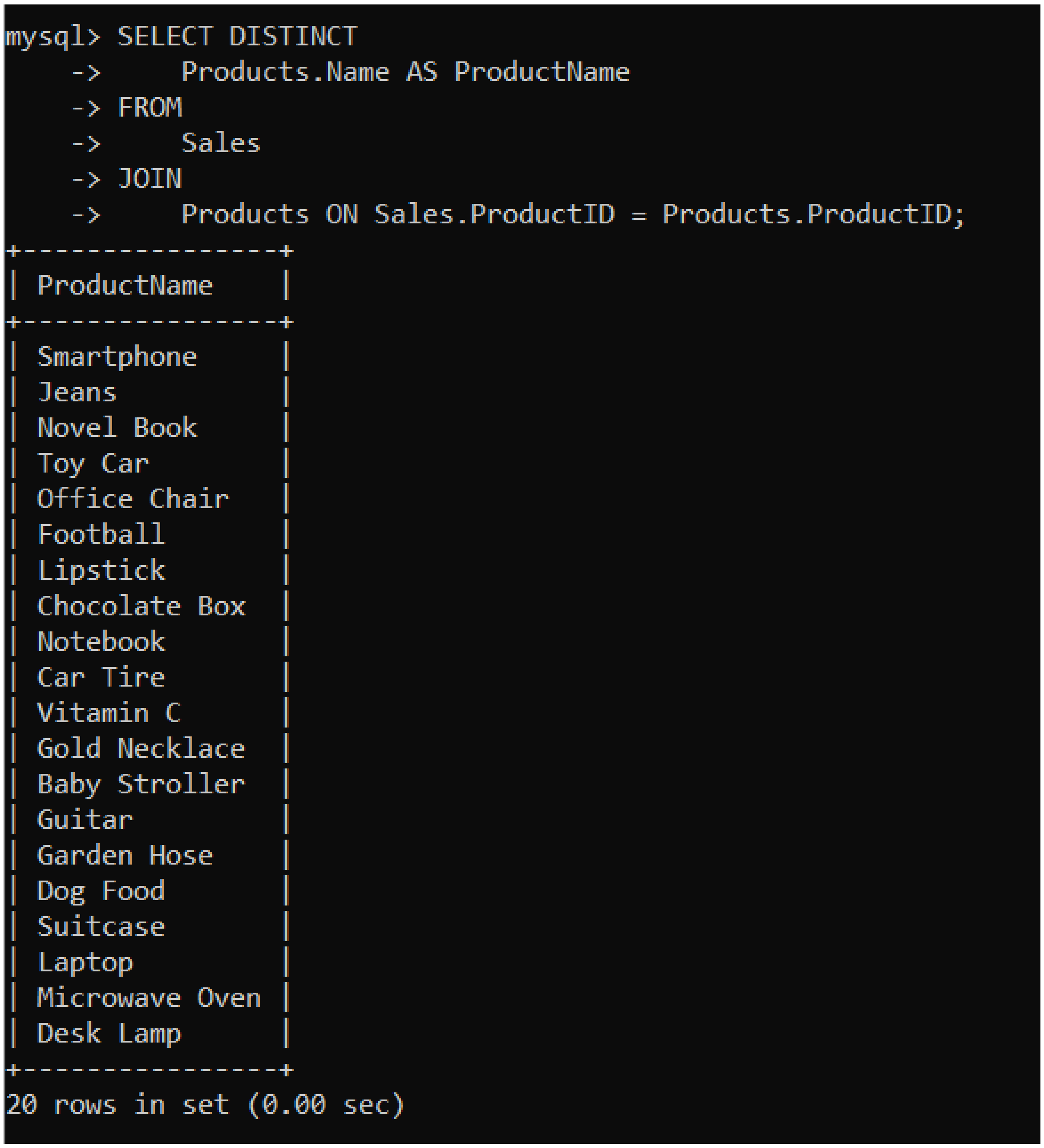
```
mysql>  SELECT * FROM Customer
    -> WHERE Name LIKE '%Ali%';
+------------+-------------+
| CustomerID | Name        |
+------------+-------------+
|          1 | Ahmed Ali   |
|         12 | Dina Khalil |
|         15 | Ali Mahmoud |
+------------+-------------+
3 rows in set (0.01 sec)
```

5.Find first sales depend on order Date Desc



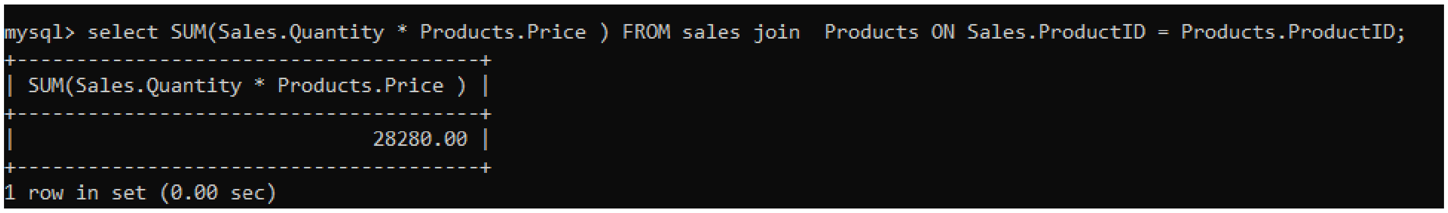
```
mysql> SELECT * FROM Sales
    -> ORDER BY OrderDate DESC
    -> LIMIT 5;
+--------+---------+-----------+------------+----------+
| SaleID | OrderID | ProductID | OrderDate  | Quantity |
+--------+---------+-----------+------------+----------+
|     10 |      10 |        10 | 2025-05-06 |        2 |
|      8 |       8 |         9 | 2025-05-05 |        1 |
|      9 |       9 |         2 | 2025-05-05 |        1 |
|      7 |       7 |         8 | 2025-05-04 |        1 |
|      6 |       6 |         7 | 2025-05-04 |        1 |
+--------+---------+-----------+------------+----------+
5 rows in set (0.00 sec)
```

6.Find unique names of products that have been sold, by joining the sales and products tables



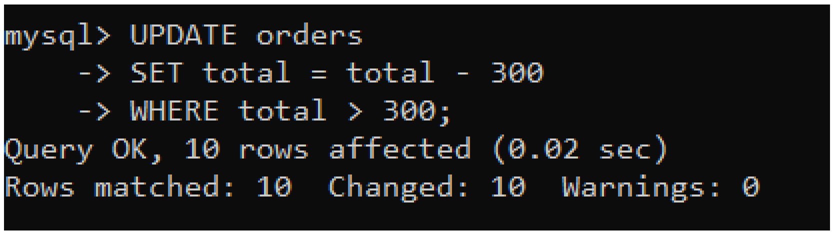
```
mysql> SELECT DISTINCT
    ->     Products.Name AS ProductName
    -> FROM
    ->     Sales
    -> JOIN
    ->     Products ON Sales.ProductID = Products.ProductID;
+----------------+
| ProductName    |
+----------------+
| Smartphone     |
| Jeans          |
| Novel Book     |
| Toy Car        |
| Office Chair   |
| Football       |
| Lipstick       |
| Chocolate Box  |
| Notebook       |
| Car Tire       |
| Vitamin C      |
| Gold Necklace  |
| Baby Stroller  |
| Guitar         |
| Garden Hose    |
| Dog Food       |
| Suitcase       |
| Laptop         |
| Microwave Oven |
| Desk Lamp      |
+----------------+
20 rows in set (0.00 sec)
```

7.Find Sum total



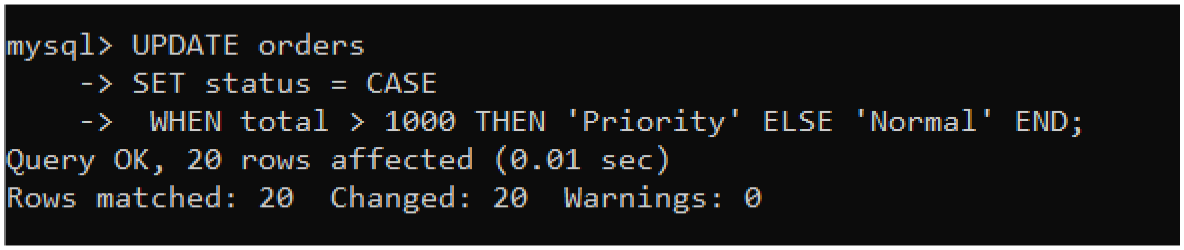
```
mysql> select SUM(Sales.Quantity * Products.Price ) FROM sales join  Products ON Sales.ProductID = Products.ProductID;
+---------------------------------------+
| SUM(Sales.Quantity * Products.Price ) |
+---------------------------------------+
|                              28280.00 |
+---------------------------------------+
1 row in set (0.00 sec)
```

8.Any order has total greater than 300 get offer 300.



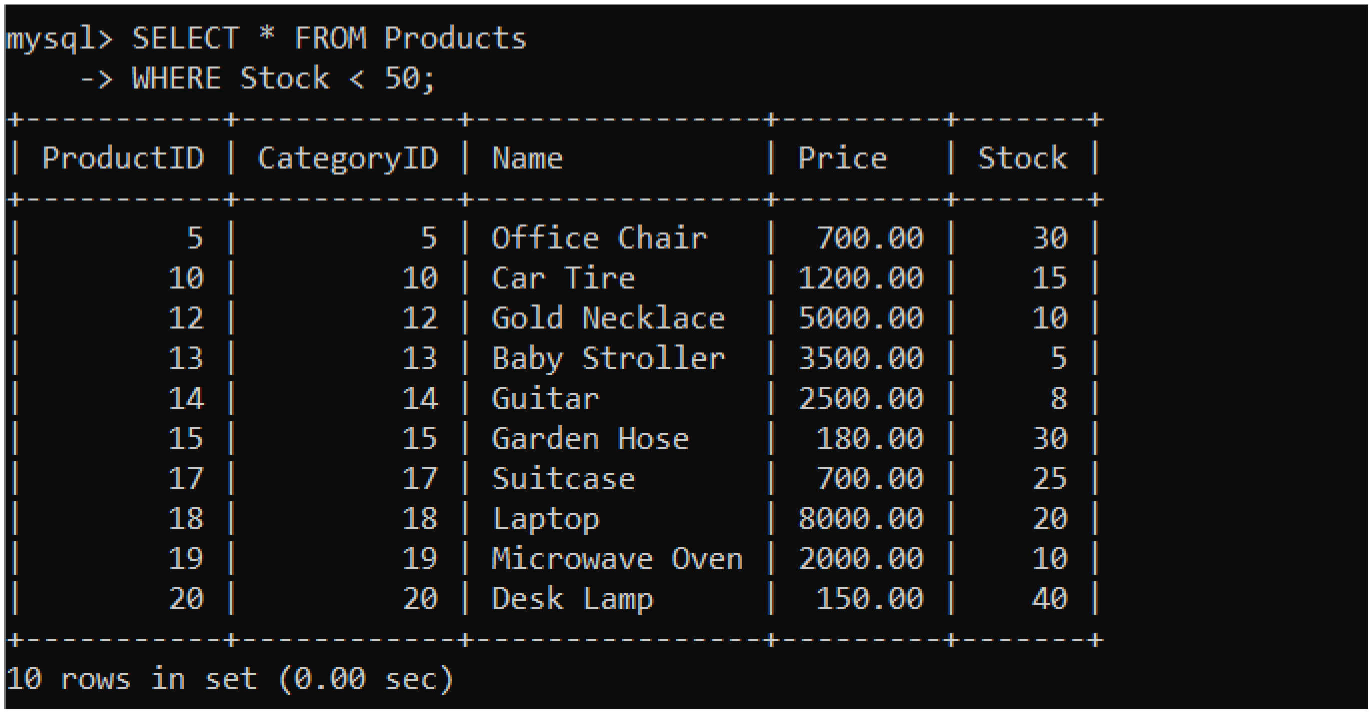
```
mysql> UPDATE orders
    -> SET total = total - 300
    -> WHERE total > 300;
Query OK, 10 rows affected (0.02 sec)
Rows matched: 10  Changed: 10  Warnings: 0
```

9.Any order total > 1000 Status = ‘priority’ else ‘Normal’



```
mysql> UPDATE orders
    -> SET status = CASE
    ->  WHEN total > 1000 THEN 'Priority' ELSE 'Normal' END;
Query OK, 20 rows affected (0.01 sec)
Rows matched: 20  Changed: 20  Warnings: 0
```

10.find any product has Stock < 50



```
mysql> SELECT * FROM Products
    -> WHERE Stock < 50;
+-----------+------------+----------------+---------+-------+
| ProductID | CategoryID | Name           | Price   | Stock |
+-----------+------------+----------------+---------+-------+
|         5 |          5 | Office Chair   |  700.00 |    30 |
|        10 |         10 | Car Tire       | 1200.00 |    15 |
|        12 |         12 | Gold Necklace  | 5000.00 |    10 |
|        13 |         13 | Baby Stroller  | 3500.00 |     5 |
|        14 |         14 | Guitar         | 2500.00 |     8 |
|        15 |         15 | Garden Hose    |  180.00 |    30 |
|        17 |         17 | Suitcase       |  700.00 |    25 |
|        18 |         18 | Laptop         | 8000.00 |    20 |
|        19 |         19 | Microwave Oven | 2000.00 |    10 |
|        20 |         20 | Desk Lamp      |  150.00 |    40 |
+-----------+------------+----------------+---------+-------+
10 rows in set (0.00 sec)
```