PROJECT TITLE:

INVENTORY MANAGEMENT SYSTEM

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1. Introduction:

1. Problem Statement:

The inventory management system is designed to track products, suppliers, inventory levels, purchase orders, and sales orders for a retail business. The system needs to maintain accurate records of stock levels, manage supplier relationships, and process customer orders efficiently.

Many businesses face challenges in managing inventory due to:

• Manual data entry error

• Lack of real-time tracking

• Inefficient order management

2. Real-life use case:

In a real use case, write that it can digitally track retail store operations, like products can be added, deleted, and updated, and likewise, suppliers can be added, deleted, and inventory can be managed smartly.

2. Requirements Analysis:

3. Functional Requirement:

1. Manage Products – Add/view products with name, description, category, and price.

2. Track Inventory – Monitor stock levels and storage locations.

3. Manage Suppliers – Store supplier contact and address info.

4. Purchase Orders – Create and manage supplier orders with line items.

5. Manage Customers – Store customer info for order processing.

6. Sales Orders – Record sales orders linked to customers.

7. Data Retrieval – Query product, customer, and inventory data

4. Non-Functional Requirements:

1. Data Integrity – Enforced via primary and foreign keys.
2. Scalability – Auto-increment IDs for growing records
3. Maintainability – Normalized and clean table design.

4. Performance – Basic optimization via keys (indexes implied).
5. Security – Basic protection through required fields; advanced security not covered.
6. Extensibility – Easy to add features like sales order details or audit logs.

3. Database Design :

5. TABLES:

- Achieve 1NF (No Repeating groups).
- Achieve 2NF (No Partial Dependency).
- Achieve 3NF (No Transitive Dependency).
-

6 . Constraints:

1 . PRIMARY KEY – Ensures unique IDs in all main tables.

2. FOREIGN KEY – Links related tables (e.g., Products to Inventory, Customers to SalesOrders).

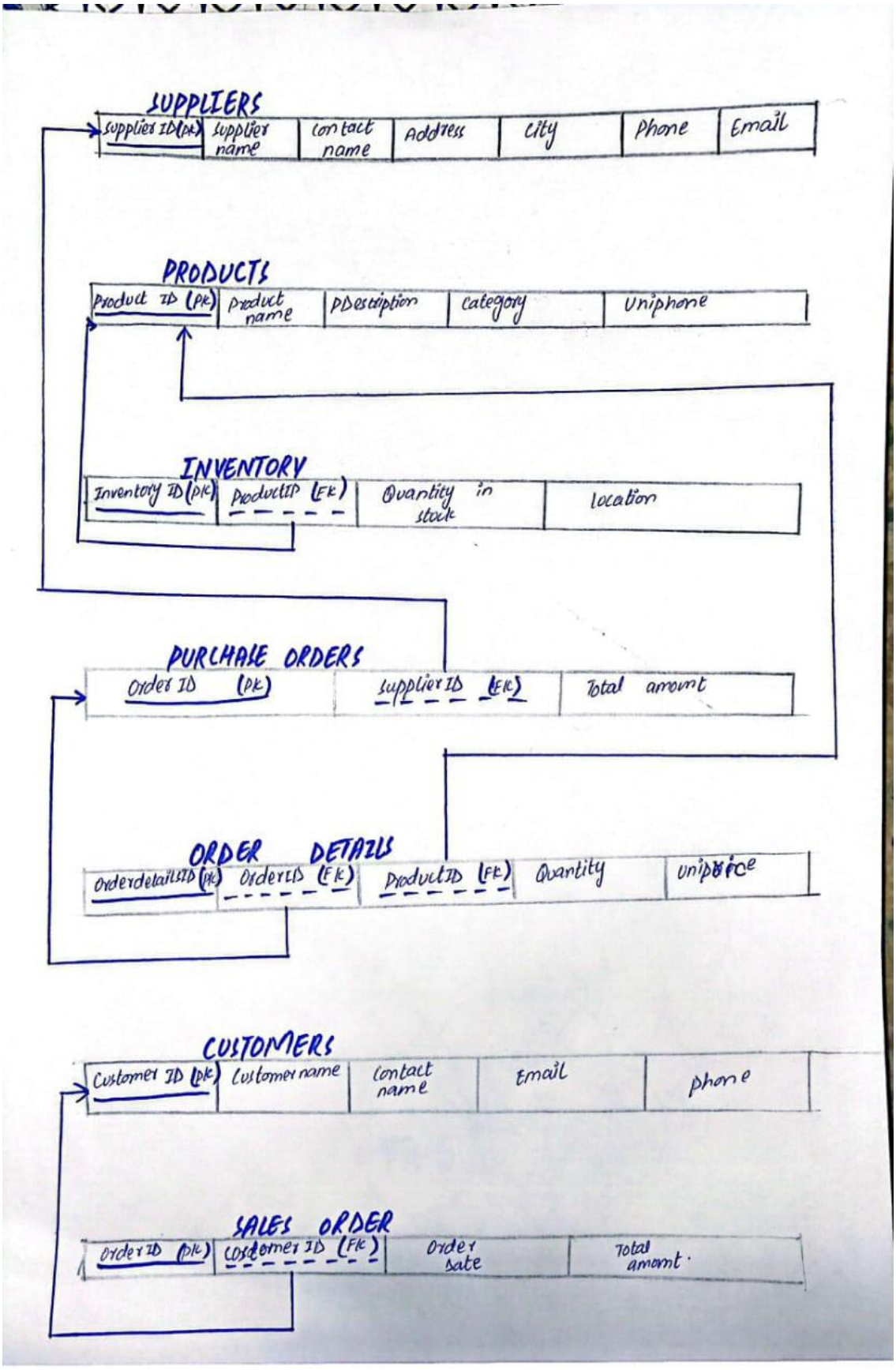
3. NOT NULL – Prevents missing values in required fields.

4. IDENTITY – Auto-generates incremental IDs for primary keys

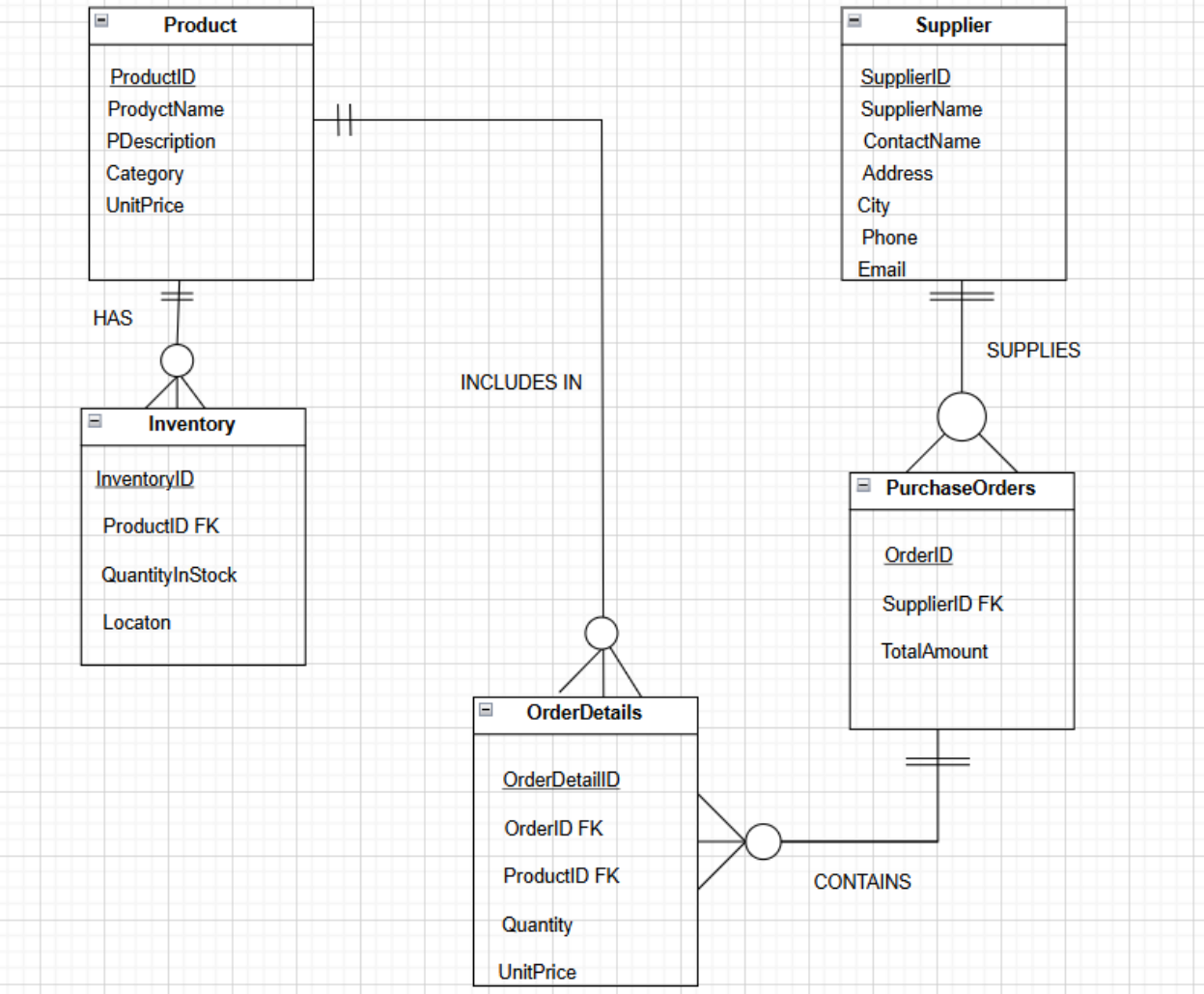
7. Relationships:

- Discuss in Relational Schema & ER Diagram :

4. Relational Schema:


SUPPLIERS
Supplier ID (PK)
Supplier name
Contact name
Address
City
Phone
Email
PRODUCTS
Product ID (PK)
Product name
PDescription
Category
Uniphone
INVENTORY
Inventory ID (PK)
ProductID (FK)
Quantity in stock
location
PURCHASE ORDERS
Order ID (PK)
SupplierID (FK)
Total amount
ORDER DETAILS
OrderdetailsID (PK)
OrderID (FK)
ProductID (FK)
Quantity
Uniprice
CUSTOMERS
Customer ID (PK)
Customer name
Contact name
Email
Phone
SALES ORDER
Order ID (PK)
Customer ID (FK)
Order Date
Total amount

5. EER Diagram:



6 . SQL Script:

DDL:

```
create database inventorySystem;

use inventorySystem;


create table Products(

ProductID int primary key identity,

ProductName varchar(150) not null,
```

```
PDescription varchar(450),
Category varchar(50),
UnitPrice decimal(10,2) not null,
);

Create table Suppliers(
SupplierID int Primary key identity,
SupplierName varchar(100),
ContactName varchar(100),
Address varchar(200),
City varchar(50),
Phone varchar(20),
Email varchar(100)
);
create table Inventory(
InventoryID int primary key identity,
ProductID int not null,
QuantityInStock int not null,
location varchar(60),
foreign key (ProductID) references products(productID)
);
create table PurchaseOrders(
orderID int primary key identity,
supplierID int not null,
FOREIGN KEY (SupplierID) REFERENCES Suppliers(SupplierID),
TotalAmount decimal (10,2)
);
```

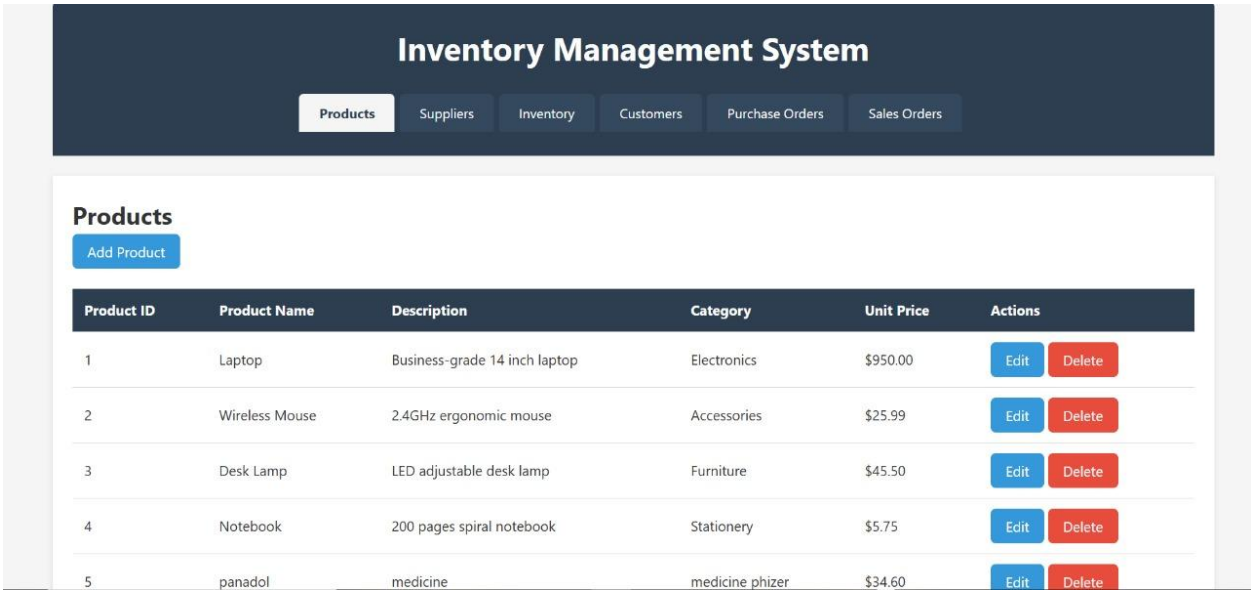
```
Create table orderDetails(
orderDetailID int primary key identity,
OrderID int not null,
ProductID int not null,
Quantity int not null,
UnitPrice Decimal (10,2) not null,
FOREIGN KEY (OrderID) REFERENCES PurchaseOrders(OrderID),
FOREIGN KEY (ProductID) REFERENCES Products(ProductID)
);


CREATE TABLE Customers (
    CustomerID INT PRIMARY KEY identity,
    CustomerName VARCHAR(100) NOT NULL,
    ContactName VARCHAR(100),
    Email VARCHAR(100),
    Phone VARCHAR(20)
);

CREATE TABLE SalesOrders (
    OrderID INT PRIMARY KEY identity,
     CustomerID INT NOT NULL,
    OrderDate DATETIME DEFAULT GETDATE(),
    TotalAmount DECIMAL(10,2),
    FOREIGN KEY (CustomerID) REFERENCES Customers(CustomerID)
);
```

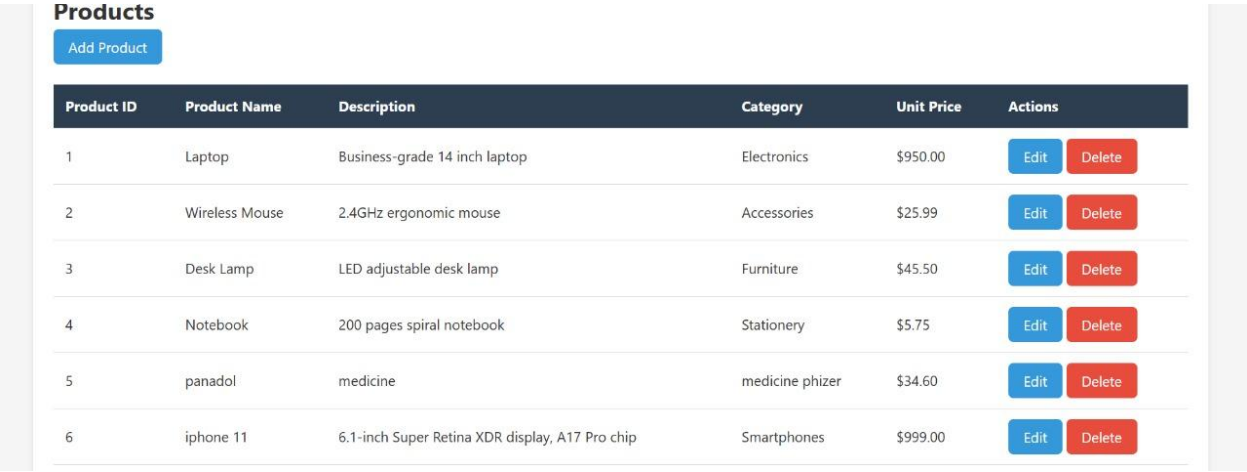
select *from Products;

select *from customers;

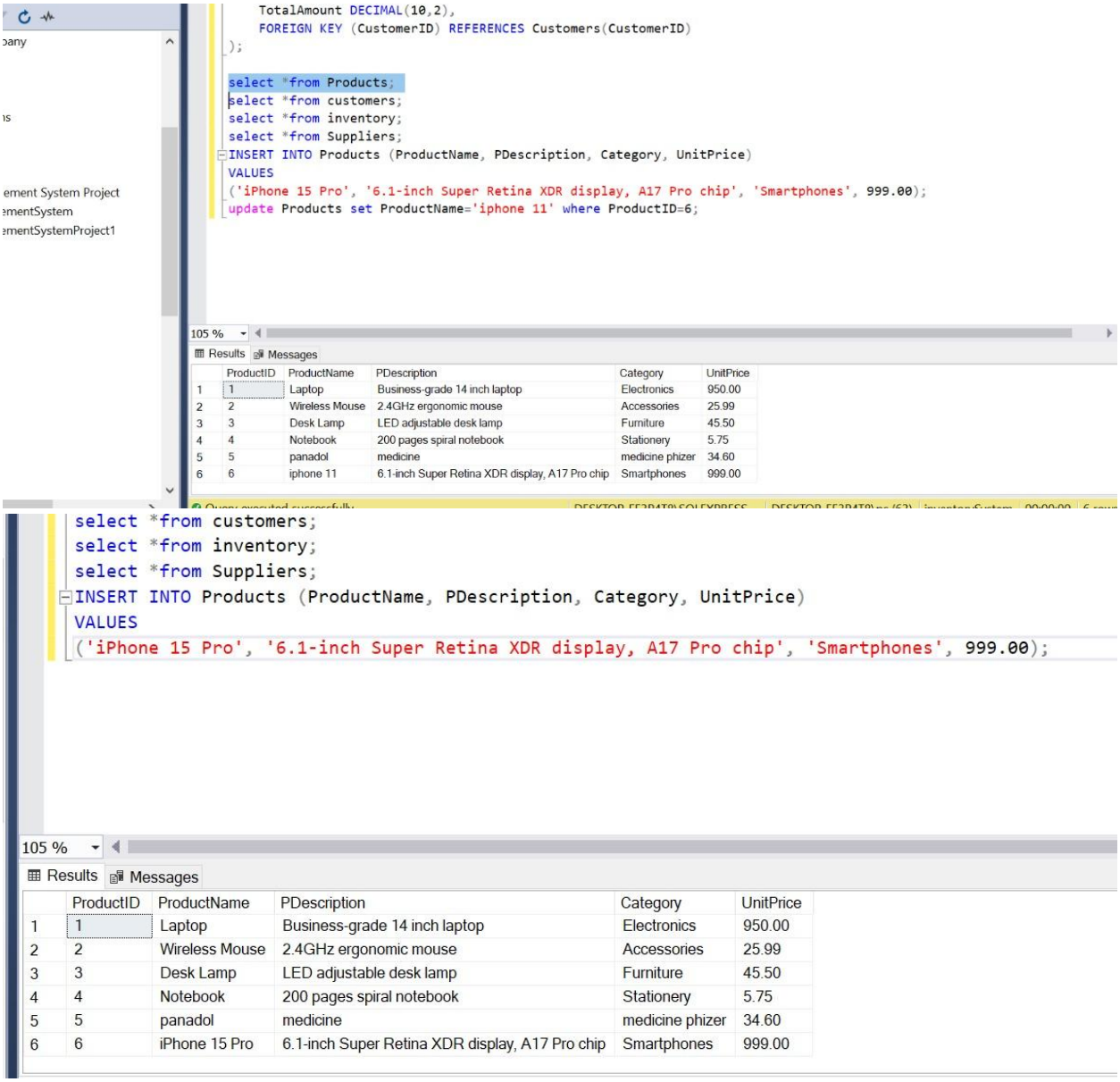
select *from inventory;

7. Front END:





8. Back END:



```
    TotalAmount DECIMAL(10,2),
    FOREIGN KEY (CustomerID) REFERENCES Customers(CustomerID)
);

select *from Products;
select *from customers;
select *from inventory;
select *from Suppliers;
INSERT INTO Products (ProductName, PDescription, Category, UnitPrice)
VALUES
('iPhone 15 Pro', '6.1-inch Super Retina XDR display, A17 Pro chip', 'Smartphones', 999.00);
update Products set ProductName='iphone 11' where ProductID=6;
```

105 %

Results | Messages

	ProductID	ProductName	PDescription	Category	UnitPrice
1	1	Laptop	Business-grade 14 inch laptop	Electronics	950.00
2	2	Wireless Mouse	2.4GHz ergonomic mouse	Accessories	25.99
3	3	Desk Lamp	LED adjustable desk lamp	Furniture	45.50
4	4	Notebook	200 pages spiral notebook	Stationery	5.75
5	5	panadol	medicine	medicine phizer	34.60
6	6	iphone 11	6.1-inch Super Retina XDR display, A17 Pro chip	Smartphones	999.00

```
select *from customers;
select *from inventory;
select *from Suppliers;
INSERT INTO Products (ProductName, PDescription, Category, UnitPrice)
VALUES
('iPhone 15 Pro', '6.1-inch Super Retina XDR display, A17 Pro chip', 'Smartphones', 999.00);
```

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2	2	Wireless Mouse	2.4GHz ergonomic mouse	Accessories	25.99
3	3	Desk Lamp	LED adjustable desk lamp	Furniture	45.50
4	4	Notebook	200 pages spiral notebook	Stationery	5.75
5	5	panadol	medicine	medicine phizer	34.60
6	6	iPhone 15 Pro	6.1-inch Super Retina XDR display, A17 Pro chip	Smartphones	999.00

```
    Email VARCHAR(100),
    Phone VARCHAR(20)
);

CREATE TABLE SalesOrders (
    OrderID INT PRIMARY KEY identity,
    CustomerID INT NOT NULL,
    OrderDate DATETIME DEFAULT GETDATE(),
    TotalAmount DECIMAL(10,2),
    FOREIGN KEY (CustomerID) REFERENCES Customers(CustomerID)
);

select *from Products;
select *from customers;
select *from inventory;
select *from Suppliers;
```

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Results | Messages

	SupplierID	SupplierName	ContactName	Address	City	Phone	Email
1	1	Tech Supplies Co.	Emma Green	12 Silicon Ave	Austin	512-555-1234	emma@techsupplies.com
2	2	OfficeHub	Liam Brown	34 Paper St	Denver	303-555-9876	liam@officehub.com
3	3	BrightLights Ltd.	Sophia Lee	87 Light Rd	Phoenix	602-555-2468	sophia@brightlights.com
4	4	PaperSource	Noah Davis	22 Sheets Blvd	Portland	503-555-1357	noah@papersource.com