Project 1 Relational Database for an Online eStore

Conceptual and Logical Design

The online store database needs to keep track of orders for its inventory. When a customer places orders, the system must record that the order and order items. The system must update the available quantity on hand to reflect that the by product(s) has been sold. When an employee processes orders, the system must confirm that the ordered items are in stock. The online store needs to keep track of customers and employees, too. The system must update the available quantity on hand to reflect that the by product(s) has been sold. Each team create your store, database and sell your own products.

One customer may or may not place many orders.
One order must be placed by one and only one customer.

One order must contain one or more product.
One product may or may not be in many orders.
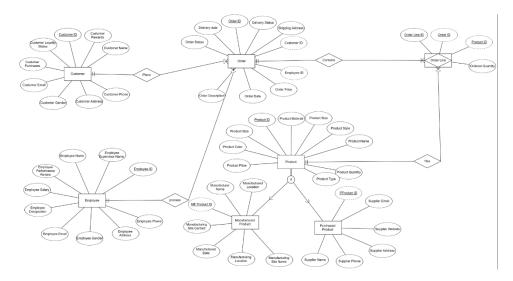
One employee may process one or more orders.
One order must be processed by one and only one employee.

One product must be either manufactured or purchased.

1. Identify entity types and relationship types. Fill out the following relationship matrix.

	Customer	Order	product	employee
Customer	-	Places	-	-
Order	Is Placed	-	Contains	Is Processed
Product	-	Has	Manufactured/purchased	-
Employee	-	Processes	-	-

2.Draw an ER/EER diagram using software tools includes 1) entity types, 2) relationship types, 3) keys, 4) attributes, and cardinality constraints (must show participation).

3. **Database Logical Design: Map the ER diagram to a relational database schema indicating the relation name, primary key and foreign key. Add appropriate additional attributes by yourself.**

Table Name: Customer

Customer ID	Customer Name	Customer Phone	Customer Address	Customer Gender	Customer Email	Customer Purchases	Customer Loyalty Status	Customer Rewards

Table Name: Order

Order ID	Order Price	Order Date	Order Description	Order status	Employee ID	Customer ID	Delivery Date	Delivery Status	Shipping Address

Table Name: Order Line

Order Line ID	Order ID	Product ID	Ordered Quantity

Table Name: Employee

Employee ID	Employee Name	Employee Phone	Employee Address	Employee Gender	Employee Salary	Employee Designation	Employee Email	Employee Performance Review	Employee Supervisor Name

Table Name: Product

Product ID	Product Name	Product Quantity	Product Type	Product Price	Product Color	Product Size	Product Material	Product Style

Table Name: Purchased Product

PProduct ID	Supplier Name	Supplier Address	Supplier Phone	Supplier Email	Supplier Website

Table Name: Manufactured Product

MFProduct ID	Manufacturer Name	Manufacturer Location	Manufactured Date	Manufacturing Site Name	Manufacturing Site Contact

4. **Establish join paths for the above relational database using the referential integrity by drawing arrow lines between the above tables. Indicate all the foreign keys (FK).**
   F.K. -> P.K. (Foreign Key refers to Primary Key)

   F.K.Order.EmployeeID → P.K.Employee.EmployeeID
   F.K.Order.CustomerID → P.K. Customer.CustomerID
   F.K.OrderLine.OrderID → P.K.Order.OrderID
   F.K.OrderLine.ProductID → P.K.Product.ProductID
   F.K.PurchasedProduct.PProductID → P.K.Product.ProductID
   F.K.ManufacturedProduct.MFProductID → P.K.Product.ProductID

5. **Do function analysis for each of your tables**
   Attribute A -> Attribute B (Determinant attribute(s) Determines Dependent Attribute(s))

   Transitive Dependencies

   Customer Rewards → Customer Purchases, Customer Loyalty Status
   Delivery Date → Order Date, Delivery Status, Shipping Address
   Employee Performance Review → Employee Supervisor Name
   Manufacturing Site Contact → Manufacturing Site Name, Manufacturing Location
   Product Price → Product Material, Product Style, Product Type, Product Color

Full Dependencies

Customer ID →Customer Name, Customer Phone, Customer Address, Customer Gender, Customer
            Email, Customer Purchases, Customer Loyalty Status, Customer Rewards
Order ID → Order Price, Order Date, Order Description, Order Status, Delivery date, Delivery Status,
Shipping address

Order Line ID → Ordered Quantity

Employee ID → Employee Name, Employee Phone, Employee Address, Employee Gender,
            Employee Designation, Employee Email, Employee Performance Review,
            Employee Supervisor Name
Product ID → Product Name, Product Quantity, Product Type, Product Price, Product Color,
            Product Size, Product Material, Product Style
PProduct ID → Supplier Name , Supplier Address, Supplier Phone, Supplier Email, Supplier Website

MFProduct ID → Manufacturer Name, Manufacturer Location, Manufactured Date,
            Manufacturing Site Name, Manufacturing Site Contact

6. **Show all the normalized tables and indicate the normalization form for each of your tables.**

Table Name	1NF	2NF	3NF
Customer	✓	✓	
Order	✓	✓	
Order Line	✓	✓	✓
Employee	✓	✓	
Product	✓	✓	
Purchased Product	✓	✓	✓
Manufactured Product	✓	✓	
Customer Rewards	✓	✓	✓
Delivery Date	✓	✓	✓
Employee Performance	✓	✓	✓
Manufacturing Site Contact	✓	✓	✓
Product Price	✓	✓	✓

Customer (2NF)

Customer ID	Customer Name	Customer Phone	Customer Address	Customer Gender	Customer Email	Customer Purchases	Customer Loyalty Status	Customer Rewards

Customer Rewards(3NF)

Customer ID	Customer Purchases	Customer Loyalty Status

Order (2NF)

Order ID	Order Price	Order Date	Order Description	Order status	Employee ID	Customer ID	Delivery Date	Delivery Status	Shipping Address

Delivery Date (3NF)

Order ID	Delivery Status	Shipping Address

Order Line(3NF)

Order ID	Product ID	Ordered Quantity

Employee (2NF)

Employee ID	Employee Name	Employee Phone	Employee Address	Employee Gender	Employee Salary	Employee Designation	Employee Email	Employee Performance Review	Employee Supervisor Name

Employee Performance (3NF)

Employee ID	Employee Supervisor Name

Product (2NF)

Product ID	Product Name	Product Quantity	Product Type	Product Price	Product Color	Product Size	Product Material	Product Style

Product Price (3NF)

Product ID	Product Type	Product Color	Product Material	Product Style

Purchased Product (3NF)

PProduct ID	Supplier Name	Supplier Address	Supplier Phone	Supplier Email	Supplier Website

Manufactured Product(2NF)

MFProduct ID	Manufacturer Name	Manufacturer Location	Manufactured Date	Manufacturing Site Name	Manufacturing Site Contact

Manufacturing Site Contact (3NF)

MFProduct ID	Manufacturer Location	Manufacturing Site Name