G-11
Inventory Management System
For Broma

(A store that sells electronic products

from various suppliers)

GROUP MEMBERS

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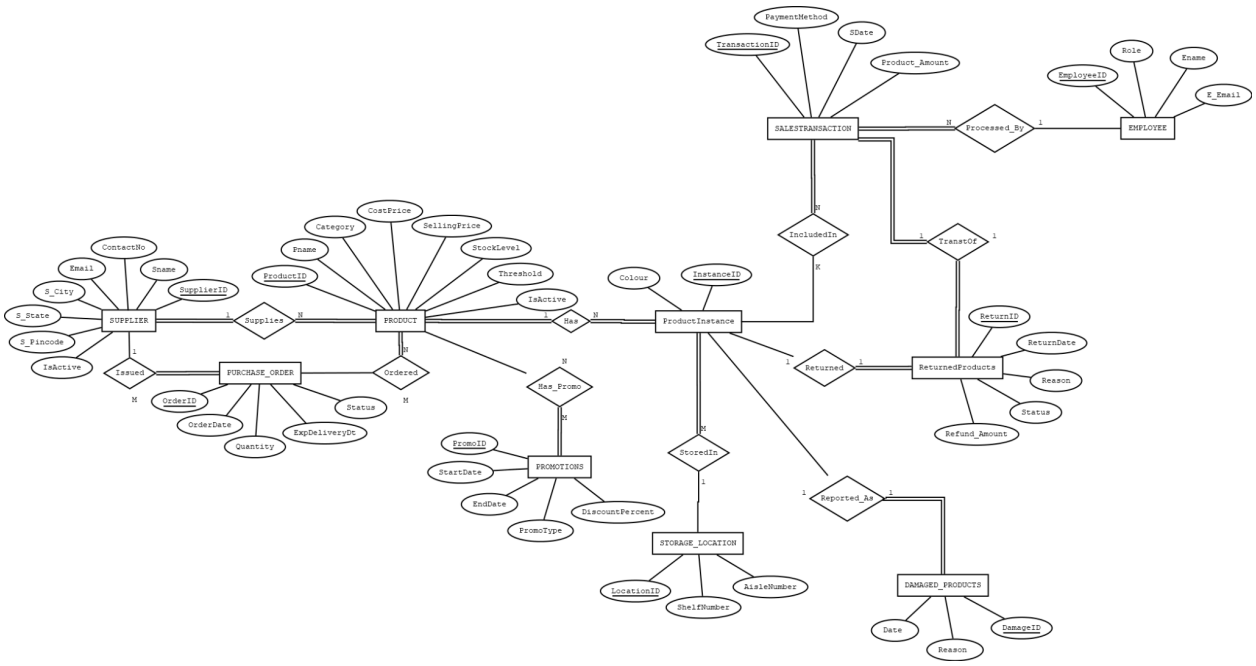
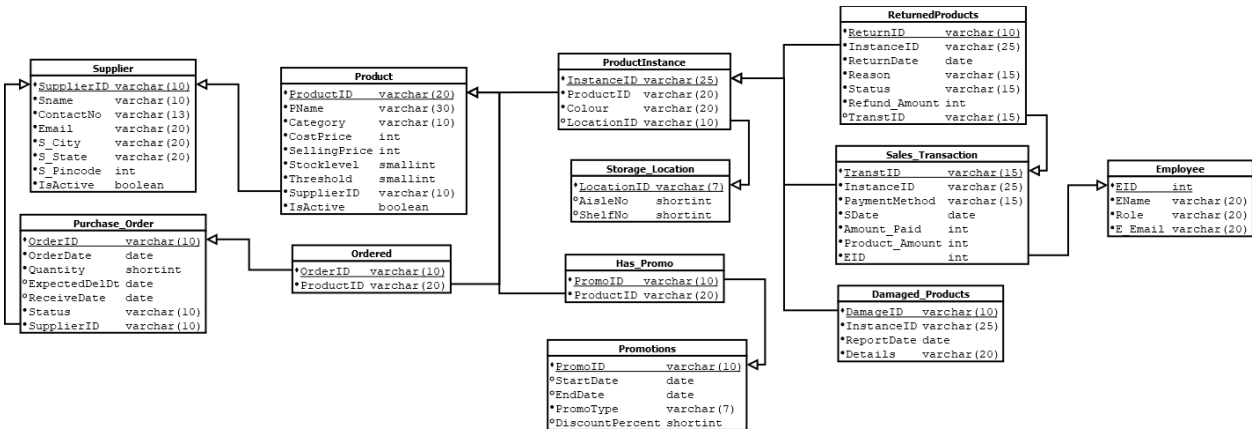
ER Diagram:



Relational Schema:



Proof that relations are in BCNF:

1. **Supplier (SupplierID, Sname, S_ContactNo, S_Email, S_City, S_State, S_Pincode, IsActive)**

   FDs:

   SupplierID → Sname, S_ContactNo, S_Email, S_City, S_State, S_Pincode, IsActive

   Key: SupplierID

   For all FDs in this relation, SupplierId is the superkey.

   So, the relation is in BCNF.

2. **Product (ProductID, PName, Category, CostPrice, SellingPrice, StockLevel, Threshold, SupplierID)**

   FDs:

   ProductID → Pname, Category, CostPrice, SellingPrice, StockLevel, Threshold, SupplierID

   Key: ProductId

   For all FDs in this relation, ProductId is the superkey.

   So, the relation is in BCNF.

3. **Purchase_Order (OrderID, Quantity, OrderDate, ExpDeliveryDt, SupplierID)**

   FDs:

   OrderID → OrderDate, Quantity, ExpDeliveryDt, ReceiveDate, SupplierID

   Key: OrderID

   For all FDs in this relation, OrderId is the superkey.

   So, the relation is in BCNF.

4. **Ordered(OrderID, ProductID, Status)**

   FDs:

   OrderID → ProductID, Status

   Key: OrderID

   Since OrderID is the superkey for this FD, this relation is in BCNF.

5. **Promotions (PromoID, StartDate, EndDate, DiscountPercent)**

   FDs:

   PromoID → StartDate, EndDate, DiscountPercent

   Key: PromoID

   For all FDs in this relation, PromoID is the superkey.

   So, the relation is in BCNF.

6. **Has_Promo(PromoID, ProductID)**

   FDs:

   PromoID, ProductID → PromoID, ProductID

   Key: PromoID, ProductID

   For all FDs in this relation, {PromoID, ProductID} is the superkey.

   So, the relation is in BCNF.

7. **Product_Instance (InstanceID, ProductID, Colour, LocationID)**

   FDs:

   InstanceID → ProductID, Colour, LocationID

   Key: InstanceID

   For all FDs in this relation, InstanceId is the superkey.

   So, the relation is in BCNF.

8. **Storage_Location (LocationID, ShelfNo, AisleNo)**

   FDs:

   LocationID → ShelfNo, AisleNo

   Key: LocationID

   For all FDs in this relation, LocationID is the superkey.

   So, the relation is in BCNF.

9. **Damaged_Products(DamageID, InstanceID, ReportDate, Details)**

   FDs:

   DamageID → InstanceID, ReportDate, Details

   Key: DamageID

   For all FDs in this relation, DamageID is the superkey.

   So, the relation is in BCNF.

10. **SALES_TRANSACTION(TranstID, InstanceID, PaymentMethod, SDate, Amount_Paid, Product_Amount, EID)**

    FDs:

    TranstID → InstanceID, PaymentMethod, SDate, Amount_Paid, Product_Amount, EID

    Key: TranstID

    For all FDs in this relation, TranstID is the superkey.

    So, the relation is in BCNF.

11. **Employee (EID, Ename, Role, E_Email)**

    FDs:

    EID → Ename, Role, E_Email

    Key: EmployeeID

For all FDs in this relation, EmployeeID is the superkey.

So, the relation is in BCNF.

12. **ReturnedProducts (ReturnID, InstanceID, ReturnDate, Reason, Status, TranstID)**

    FDs:

    ReturnID → InstanceID, ReturnDate, Reason, Status, TranstID

    Key: ReturnID

    For all FDs in this relation, ReturnID is the superkey.

    So, the relation is in BCNF.