

# Database Management System – MC212

## Dairy Management System

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### Relational Schema :

```
CREATE DATABASE "Database Management System"
```

```
CREATE SCHEMA DMS;
```

```
SET search_path to DMS;
```

```
CREATE DOMAIN
```

```
Mobile_No_type AS REAL CHECK (value >= 1000000000 AND value <= 9999999999);
```

```
CREATE DOMAIN
```

```
Date_type AS REAL CHECK (value >= 1 AND value <= 31);
```

```
CREATE DOMAIN
```

```
Month_type AS REAL CHECK (value >= 1 AND value <= 12);
```

```
CREATE TABLE Products (
```

```
    ProductID SERIAL PRIMARY KEY,
```

```
PName VARCHAR(100) NOT NULL,  
Expiretio_Duration INT,  
Margin DECIMAL CHECK (Margin >= 0 AND Margin < 100 ),  
Price DECIMAL NOT NULL  
);
```

```
CREATE TABLE Finance (  
    Years INT PRIMARY KEY,  
    Revenue DECIMAL,  
    Most_Profit_Product INT  
    Profit_Loss DECIMAL,  
    Budget DECIMAL  
);
```

```
CREATE TABLE Employees (  
    EmployeeID SERIAL PRIMARY KEY,  
    EName VARCHAR(100) NOT NULL,  
    Mobile_No Mobile_No_type NOT NULL,  
    Email VARCHAR(100) NOT NULL,  
    Salary DECIMAL NOT NULL,  
    Working_Status BOOL NOT NULL,  
    Role VARCHAR(50) NOT NULL  
);
```

```
CREATE TABLE FranchiseAgreements (  
    FranchiseAgreementID SERIAL PRIMARY KEY,  
    Sharing_Revenue DECIMAL,  
    Terms TEXT NOT NULL,  
    Agreement TEXT NOT NULL  
);
```

```
CREATE TABLE Franchise (  
    FranchiseID SERIAL PRIMARY KEY,  
    FName VARCHAR(100) NOT NULL,  
    Location TEXT,  
    Revenue DECIMAL,  
    Mobile_No Mobile_No_type NOT NULL,  
    Status BOOL NOT NULL,  
    Email VARCHAR(100) NOT NULL,  
  
    FranchiseAgreementID INT REFERENCES FranchiseAgreements(FranchiseAgreementID)  
        ON DELETE RESTRICT  
        ON UPDATE CASCADE  
);
```

```
CREATE TABLE RawMaterial (  
    RawMaterialID SERIAL PRIMARY KEY,  
    RawMaterialName VARCHAR(100) NOT NULL,  
    Quality INT NOT NULL CHECK (Quality >= 0 AND Quality <=5 ),  
    Price DECIMAL NOT NULL  
);
```

```
CREATE TABLE RawMaterialPerProduct (  
    RMPP_ID SERIAL PRIMARY KEY,  
    RawMaterialID INT REFERENCES RawMaterial(RawMaterialID)  
        ON DELETE RESTRICT  
        ON UPDATE CASCADE,  
    ProductID INT REFERENCES Products(ProductID)  
        ON DELETE CASCADE  
        ON UPDATE CASCADE,  
    Quantity INT NOT NULL  
);
```

```
CREATE TABLE Inventory (  
    InventoryID SERIAL PRIMARY KEY,  
    ProductID INT REFERENCES Products(ProductID)  
        ON DELETE CASCADE  
        ON UPDATE CASCADE,  
    RMPP_ID INT REFERENCES RawMaterialPerProduct(RMPP_ID)  
        ON DELETE SET NULL  
        ON UPDATE CASCADE,  
    IName VARCHAR(100) NOT NULL,  
    Capacity DECIMAL NOT NULL,  
    Location TEXT,  
    Available_Storage DECIMAL  
);
```

```
CREATE TABLE Distributors (  
    DistributorID SERIAL PRIMARY KEY,  
    DName VARCHAR(100) NOT NULL,  
    Mobile_No Mobile_No_type NOT NULL,  
    Email VARCHAR(100) NOT NULL,  
    Status BOOL NOT NULL,  
    Address TEXT NOT NULL  
);
```

```
CREATE TABLE SupplierContract (  
    SupplierContractID SERIAL PRIMARY KEY,  
    Duration INT NOT NULL,  
    Terms TEXT NOT NULL,  
    Agreements TEXT NOT NULL  
);
```

```
CREATE TABLE Supplier (  
    SuppliesID SERIAL PRIMARY KEY,  
    Name VARCHAR(100) NOT NULL,  
    Email VARCHAR(100) NOT NULL,  
    Mobile_No Mobile_No_type NOT NULL,  
    Supplies_contract_ID INT REFERENCES SupplierContract(SupplierContractID)  
        ON DELETE RESTRICT  
        ON UPDATE CASCADE  
);
```

```
CREATE TABLE Production (  
    InventoryID INT REFERENCES Inventory(InventoryID)  
        ON DELETE RESTRICT  
        ON UPDATE CASCADE,  
    Quantity INT NOT NULL,  
    Manufacturing_Date DATE NOT NULL,  
    Batch_Number SERIAL PRIMARY KEY,  
);
```

```
CREATE TABLE SupplyOrder (  
    SupplyOrderID SERIAL PRIMARY KEY,  
    SupplierID INT REFERENCES Supplier(SuppliesID)  
        ON DELETE RESTRICT  
        ON UPDATE CASCADE,  
    InventoryID INT REFERENCES Inventory(InventoryID)  
        ON DELETE SET NULL  
        ON UPDATE CASCADE,  
    RawMaterialID INT REFERENCES RawMaterial(RawMaterialID)  
        ON DELETE RESTRICT  
        ON UPDATE CASCADE,  
    Amount DECIMAL NOT NULL,
```

```
Quantity INT NOT NULL,  
Date DATE NOT NULL  
);
```

```
CREATE TABLE Orders (  
    OrderID SERIAL PRIMARY KEY,  
    DistributorID INT REFERENCES Distributors(DistributorID)  
        ON DELETE RESTRICT  
        ON UPDATE CASCADE,  
    Year INT REFERENCES Finance(Years)  
        ON DELETE RESTRICT  
        ON UPDATE CASCADE,  
    Month Month_type NOT NULL,  
    Date Date_type NOT NULL,  
    FranchiseID INT REFERENCES Franchise(FranchiseID)  
        ON DELETE RESTRICT  
        ON UPDATE CASCADE,  
    Status Boolean,  
    ShippingMethod VARCHAR(50),  
    TotalAmount DECIMAL NOT NULL  
);
```

```
CREATE TABLE OrderProduct (  
    OrderProductID SERIAL PRIMARY KEY,  
    OrderID INT REFERENCES Order(OrderID)  
        ON DELETE RESTRICT  
        ON UPDATE CASCADE,  
    ProductID INT REFERENCES Products(ProductID)  
        ON DELETE RESTRICT  
        ON UPDATE CASCADE,  
    Amount DECIMAL NOT NULL,
```

```

Quantity INT NOT NULL
);

CREATE TABLE Transaction (
    TransactionID SERIAL PRIMARY KEY,
    OrderID INT REFERENCES Orders(OrderID)
        ON DELETE RESTRICT
        ON UPDATE CASCADE,
    Year INT REFERENCES Finance(Years)
        ON DELETE RESTRICT
        ON UPDATE CASCADE,
    EmployeeID INT REFERENCES Employees(EmployeeID)
        ON DELETE RESTRICT
        ON UPDATE CASCADE,
    SupplyOrderID INT REFERENCES SupplyOrder(SupplyOrderID)
        ON DELETE RESTRICT
        ON UPDATE CASCADE,
    Date Date_type NOT NULL,
    Amount DECIMAL NOT NULL,
    Month Month_type NOT NULL
);

```

### Reason:

all the relations in our schema are in BCNF (Boyce-Codd Normal Form), there is no need to make any changes to the structure of the relations and our schema.