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**Project: BRALIRWA MANAGEMENT SYSTEM MODULE: DATABASE MANAGEMENT SYSTEM**

**1. Title of my Project**

**BRALIRWA Management System**

**2. Description of Your Project**

The BRALIRWA Management System is designed to streamline and automate the management of brewery operations, specifically for BRALIRWA, a brewery organization.

This system will allow for effective tracking and management of beer production, sales, inventory, and employee data.

The system also provides a database-driven environment for reporting, analysis, and decision-making for management and staff.

**3. ERD (Entity-Relationship Diagram)**

The ERD will include the following entities:

|  |
| --- |
| Employee |
| Employee ID (PK)  FirstName  LastName  Department  Position |

|  |
| --- |
| Product |
| Product ID (PK)  Name  Category  QuantityInStock  Price |

|  |
| --- |
| Sales |
| Sale ID (PK)  Sale Date  Product ID (FK)  Quantity  TotalPrice  Employee ID (FK) |

|  |
| --- |
| Production |
| Production ID (PK)  Product ID (FK  QuantityProduced  Production Date |

|  |
| --- |
| *Supplier* |
| *Supplier ID (PK)*  *Name*  *ContactInfo*  *Address* |

|  |
| --- |
| Order |
| OrderDate  OrderDate  *Supplier ID (FK)*  *TotalAmount* |

These entities will be linked based on the relationships:

* A **Sale** involves a **Product** (Many-to-One)
* **Sales** are made by **Employees** (One-to-Many)
* **Orders** are placed with **Suppliers** (Many-to-One)
* **Production** is associated with **Products** (One-to-Many)

**4. LDM (Logical Data Model)**

* **Employees**: Can manage multiple Sales, Orders, and Production processes.
* **Products**: Produced in quantities and sold in the market.
* **Sales**: Connected to employees and products, capturing each transaction.
* **Suppliers**: External entities providing raw materials or goods.
* **Orders**: Represent the purchase of goods from suppliers.
* **Production**: Tracks the quantity of products produced over time.

The relationships will be represented as follows:

* **Employee** → **Sales** (One-to-Many)
* **Sales** → **Product** (Many-to-One)
* **Order** → **Supplier** (Many-to-One)
* **Production** → **Product** (Many-to-One)

5. **PDM (Physical Data Model)**

* **Tables and Columns:**
  + Employee (Employee ID , FirstName, LastName, Department, Position)
  + Product (Product ID, Name, Category, QuantityInStock, Price)
  + Sales (Sale ID, Date, Product ID, Quantity, TotalPrice)
  + Supplier (Supplier ID, Name, ContactInfo, Address)
  + Order (Order ID, OrderDate, Supplier ID, TotalAmount)
  + Production (Production ID, Product ID, QuantityProduced, Date)
* **Indexes**:
  + Create indexes on foreign keys like Product ID in Sales, Employee ID in Sales, Supplier ID in Orders, etc.
* **Constraints**:
  + Foreign key constraints between the related tables.
  + Primary keys on each table (Employee ID, Product ID, etc.).

**6. Data Dictionary**

| **Table Name** | **Column Name** | **Data Type** | **Description** |
| --- | --- | --- | --- |
| Employee | Employee ID | INT | Unique identifier for each employee |
|  | FirstName | VARCHAR(100) | Employee’s first name |
|  | LastName | VARCHAR(100) | Employee’s last name |
|  | Department | VARCHAR(100) | Department where the employee works |
|  | Position | VARCHAR(100) | Job title of the employee |
| Product | Product ID | INT | Unique identifier for each product |
|  | Name | VARCHAR(100) | Name of the product |
|  | Category | VARCHAR(100) | Category to which the product belongs |
|  | QuantityInStock | INT | Quantity of the product in stock |
|  | Price | DECIMAL(10, 2) | Price of the product |
| Sales | Sale ID | INT | Unique identifier for each sale |
|  | Date | DATE | Date of the sale |
|  | Product ID | INT | Foreign key from Product table |
|  | Quantity | INT | Quantity of the product sold |
|  | TotalPrice | DECIMAL(10, 2) | Total price for the sale |
| Supplier | Supplier ID | INT | Unique identifier for each supplier |
|  | Name | VARCHAR(100) | Name of the supplier |
|  | ContactInfo | VARCHAR(100) | Contact information for the supplier |
|  | Address | VARCHAR(200) | Address of the supplier |
| Order | Order ID | INT | Unique identifier for each order |
|  | OrderDate | DATE | Date of the order |
|  | Supplier ID | INT | Foreign key from Supplier table |
|  | TotalAmount | DECIMAL(10, 2) | Total amount of the order |
| Production | Production ID | INT | Unique identifier for each production |
|  | Product ID | INT | Foreign key from Product table |
|  | QuantityProduced | INT | Quantity of product produced |
|  | Date | DATE | Date the production was completed |