Database Management System – MC212

Dairy Management System

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Function Dependency

1. Products Table:

1. ProductID → PName
2. ProductID → Expire_Duration
3. ProductID → Margin
4. ProductID → Price

2. Finance Table:

1. Years → Revenue
2. Years → Most_Profit_Product
3. Years → Profit_Loss
4. Years → Budget

3. Employees Table:

1. EmployeeID → EName
2. EmployeeID → Mobile_No
3. EmployeeID → Email
4. EmployeeID → Salary
5. EmployeeID → Role

4. FranchiseAgreements Table:

1. FranchiseAgreementID → Sharing_Revenue
2. FranchiseAgreementID → Terms
3. FranchiseAgreementID → Agreement

5. RawMaterial Table:

1. RawMaterialID → RawMaterialName
2. RawMaterialID → Quality
3. RawMaterialID → Price

6. RawMaterialPerProduct Table:

1. RMPP_ID → RawMaterialID
2. RMPP_ID → ProductID
3. RMPP_ID → Quantity

7. Inventory Table:

1. InventoryID → ProductID
2. InventoryID → RMPP_ID
3. InventoryID → IName
4. InventoryID → Capacity
5. InventoryID → Location
6. InventoryID → Available_Storage

8. Distributors Table:

1. DistributorID → DName
2. DistributorID → Mobile_No
3. DistributorID → Email
4. DistributorID → Address

9. SupplierContract Table:

1. SupplierContractID → Duration
2. SupplierContractID → Terms
3. SupplierContractID → Agreements

10. Supplier Table:

1. SuppliesID → Name
2. SuppliesID → Email
3. SuppliesID → Mobile_No
4. SuppliesID → Supplies_contract_ID

11. Franchise Table:

1. FranchiseID → FName
2. FranchiseID → Location
3. FranchiseID → Revenue

4. FranchiseID → Mobile_No
5. FranchiseID → Email
6. FranchiseID → FranchiseAgreementID

12. Production Table:

1. Batch_Number → InventoryID
2. Batch_Number → Quantity
3. Batch_Number → Manufacturing_Date

13. SupplyOrder Table:

1. SupplyOrderID → SupplierID
2. SupplyOrderID → InventoryID
3. SupplyOrderID → RawMaterialID
4. SupplyOrderID → Amount
5. SupplyOrderID → Quantity
6. SupplyOrderID → Date

14. Orders Table:

1. OrderID → DistributorID
2. OrderID → Year
3. OrderID → Month
4. OrderID → Date
5. OrderID → FranchiseID
6. OrderID → Status
7. OrderID → ShippingMethod
8. OrderID → TotalAmount

15. OrderProduct Table:

1. OrderProductID → OrderID
2. OrderProductID → ProductID
3. OrderProductID → Amount
4. OrderProductID → Quantity

16. Transaction Table:

1. TransactionID → OrderID
2. TransactionID → Year

3. TransactionID → EmployeeID
4. TransactionID → SupplyOrderID
5. TransactionID → Date
6. TransactionID → Amount
7. TransactionID → Month

Normalization

1. 1NF:

All tables are already in 1NF as there are no repeating groups within any row.

2. 2NF:

1) **Products:** This table is in 2NF as there are no partial dependencies.
2) **Finance:** This table is in 2NF as there are no partial dependencies.
3) **Employees:** This table is in 2NF as there are no partial dependencies.
4) **FranchiseAgreements:** This table is in 2NF as there are no partial dependencies.
5) **RawMaterial:** This table is in 2NF as there are no partial dependencies.
6) **RawMaterialPerProduct:** This table is in 2NF as there are no partial dependencies.
7) **Inventory:** This table is in 2NF as there are no partial dependencies.
8) **Distributors:** This table is in 2NF as there are no partial dependencies.
9) **SupplierContract:** This table is in 2NF as there are no partial dependencies.
10) **Supplier:** This table is in 2NF as there are no partial dependencies.
11) **Franchise:** This table is in 2NF as there are no partial dependencies.
12) **Production:** This table is in 2NF as there are no partial dependencies.
13) **SupplyOrder:** This table is in 2NF as there are no partial dependencies.
14) **Orders:** This table is in 2NF as there are no partial dependencies.
15) **OrderProduct:** This table is in 2NF as there are no partial dependencies.
16) **Transaction:** This table is in 2NF as there are no partial dependencies.

3. 3NF:

1) **Products:** This table is in 3NF as there are no transitive dependencies.
2) **Finance:** This table is in 3NF as there are no transitive dependencies.
3) **Employees:** This table is in 3NF as there are no transitive dependencies.

4) **FranchiseAgreements:** This table is in 3NF as there are no transitive dependencies.
5) **RawMaterial:** This table is in 3NF as there are no transitive dependencies.
6) **RawMaterialPerProduct:** This table is in 3NF as there are no transitive dependencies.
7) **Inventory:** This table is in 3NF as there are no transitive dependencies.
8) **Distributors:** This table is in 3NF as there are no transitive dependencies.
9) **SupplierContract:** This table is in 3NF as there are no transitive dependencies.
10) **Supplier:** This table is in 3NF as there are no transitive dependencies.
11) **Franchise:** This table is in 3NF as there are no transitive dependencies.
12) **Production:** This table is in 3NF as there are no transitive dependencies.
13) **SupplyOrder:** This table is in 3NF as there are no transitive dependencies.
14) **Orders:** This table is in 3NF as there are no transitive dependencies.
15) **OrderProduct:** This table is in 3NF as there are no transitive dependencies.
16) **Transaction:** This table is in 3NF as there are no transitive dependencies.

4. BCNF:

1) **Products:** This table is in BCNF as there are no non-trivial dependencies.
2) **Finance:** This table is in BCNF as there are no non-trivial dependencies.
3) **Employees:** This table is in BCNF as there are no non-trivial dependencies.
4) **FranchiseAgreements:** This table is in BCNF as there are no non-trivial dependencies.
5) **RawMaterial:** This table is in BCNF as there are no non-trivial dependencies.
6) **RawMaterialPerProduct:** This table is in BCNF as there are no non-trivial dependencies.
7) **Inventory:** This table is in BCNF as there are no non-trivial dependencies.
8) **Distributors:** This table is in BCNF as there are no non-trivial dependencies.
9) **SupplierContract:** This table is in BCNF as there are no non-trivial dependencies.
10) **Supplier:** This table is in BCNF as there are no non-trivial dependencies.
11) **Franchise:** This table is in BCNF as there are no non-trivial dependencies.
12) **Production:** This table is in BCNF as there are no non-trivial dependencies.
13) **SupplyOrder:** This table is in BCNF as there are no non-trivial dependencies.
14) **Orders:** This table is in BCNF as there are no non-trivial dependencies.
15) **OrderProduct:** This table is in BCNF as there are no non-trivial dependencies.
16) **Transaction:** This table is in BCNF as there are no non-trivial dependencies.

Anomalies:

- We have to store the record of all agreement we made with the Franchise. We should not be able to delete an agreement made with Franchise. So we should use ON DELETE RESTRICT.
- If we are producing a product and we are using a raw material for it then we should not be able to delete that raw material without stopping the production of that product. So we should use ON DELETE RESTRICT.
- If we are dealing with a supplier then we should not be able to delete supplier contract because we can't deal with a supplier without making any contract..
- If we have made some deal with any supplier in past and now we had stopped working with that supplier than also we have to store all details of our supplier. So we should not be able to delete any data of supplier. So we should use ON DELETE RESTRICT
- If any inventory be destroyed than also we have to store data of SupplyOrder made In that inventory. So we should use ON DELETE SET NULL
- When we have made any deal in SupplyOrder than we should be able to see all details about its item so we should not be able to delete raw material. So we should use ON DELETE RESTRICT
- If we have stopped to dealing with any distributer than also we should be able to see all orders made with them. So we should not be able to delete any Distributer. So we should use ON DELETE RESTRICT