

Krishi Seva

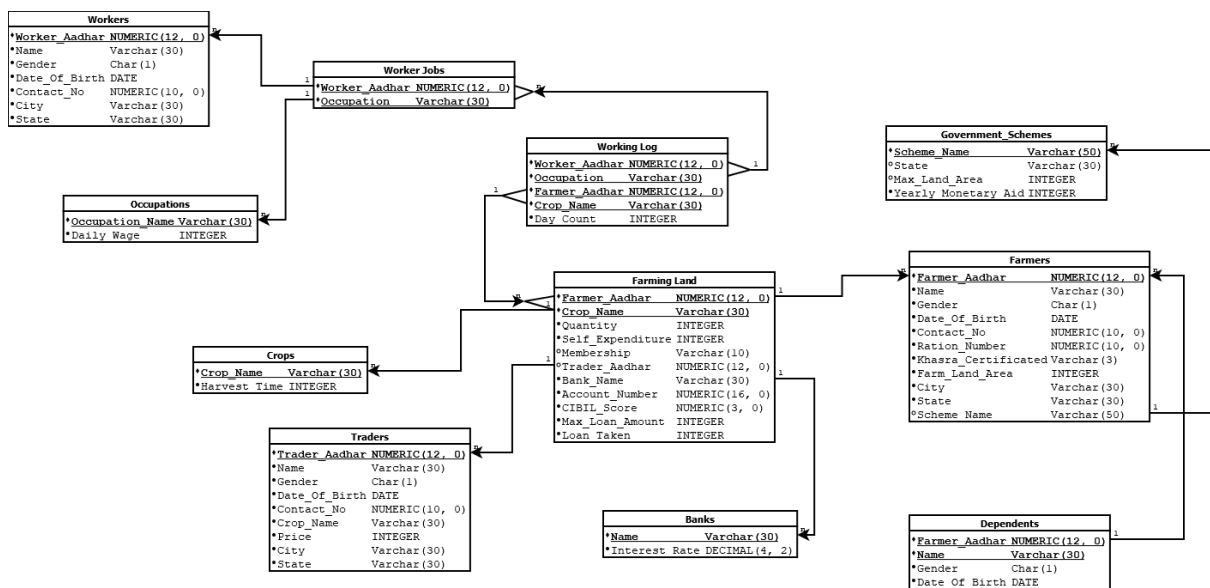
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Group T-407

The diagram is an Entity-Relationship (ER) model for a rural community database. It consists of several entities, their attributes, and the relationships between them.

- Entities and Attributes:**
 - Worker** (Green box): Aadhar No, Name, Age, Gender, City, State, Contact No.
 - Occupation** (Green box): Name, Daily Wage.
 - Government Schemes** (Orange box): Name, State, Max Land Area, Yearly Monetary Aid.
 - Farmer** (Purple box): Aadhar No, Date of Birth, Age, Name, Gender, Ration Card, Contact No, Kharas Certificate, Farming Land Area, City, State.
 - Crop** (Cyan box): Name of Crop, Harvest Time.
 - Farming Land** (White box): Account Number, Membership, Self Expenditure, Quantity of Crop.
 - Bank** (Red box): Name, Interest Rate.
 - Trader** (Blue box): Price, Crop, Date of Birth, Age, Aadhar No, Name, Gender, Contact No, State, City.
 - Dependents** (Orange box): Name, Date of Birth, Age, Gender.
- Relationships:**
 - Can Perform** (White diamond): Connects Worker (M) and Occupation (N).
 - Works on** (White diamond): Connects Worker (M) and Crop (N). Attributes: Total Wage, No of Days.
 - Applied For** (White diamond): Connects Government Schemes (1) and Farmer (N). Attributes: State.
 - Associated With** (White diamond): Connects Farmer (N) and Bank (1). Attributes: CIBIL Score, Max Loan Amount, Loan Taken, Final Interest Rate, Repayable Amount, Profit, Projected CIBIL Score.
 - Has Dependencies** (Double-lined diamond): Connects Farmer (1) and Dependents (N). Attributes: Name, Date of Birth, Age, Gender.
 - Trades With** (White diamond): Connects Trader (1) and Crop (N). Attributes: Sell Price.
- Other Relationships:**
 - Farming Land** (White diamond): Connects Crop (M) and Farmer (N). Attributes: Quantity of Crop, Self Expenditure.

Final Relational Schema



Normalization Proof

TABLE: Crops

FUNCTIONAL DEPENDENCIES:

{Crop_Name -> Harvest_Time}

PRIMARY KEY: Crop_Name

SUPER KEY: Crop_Name

TABLE: Banks

FUNCTIONAL DEPENDENCIES:

{Name -> Interest_Rate}

PRIMARY KEY: Name

SUPER KEY: Name

TABLE: Government_Schemes

FUNCTIONAL DEPENDENCIES:

{Scheme_Name -> State, Max_Land_Area, Yearly_Monetary_Aid}

PRIMARY KEY: Scheme_Name

SUPER KEY: Scheme_Name

TABLE: Workers

FUNCTIONAL DEPENDENCIES:

{Worker_Aadhar -> Name, Gender, Date_Of_Birth, Contact_No, City, State}

{Contact_No -> Worker_Aadhar, Name, Gender, Date_Of_Birth, City, State}

PRIMARY KEY: Worker_Aadhar

SUPER KEY: Worker_Aadhar, Contact_No

TABLE: Traders

FUNCTIONAL DEPENDENCIES:

{Trader_Aadhar -> Name, Gender, Date_Of_Birth, Contact_No, Crop_Name, Price, City, State}

{Contact_No -> Trader_Aadhar, Name, Gender, Date_Of_Birth, Contact_No, Crop_Name, Price, City, State}

PRIMARY KEY: Trader_Aadhar

SUPER KEY: Trader_Aadhar, Contact_No

TABLE: Farmers

FUNCTIONAL DEPENDENCIES:

{Farmer_Aadhar -> Name, Gender, Date_Of_Birth, Contact_No, Ration_Number, Khasra_Certified, Farm_Land_Area, City, State, Scheme_Name}

{Contact_No -> Farmer_Aadhar, Name, Gender, Date_Of_Birth, Ration_Number, Khasra_Certified, Farm_Land_Area, City, State, Scheme_Name}

{Ration_Number -> Farmer_Aadhar, Name, Gender, Date_Of_Birth, Contact_No, Khasra_Certified, Farm_Land_Area, City, State, Scheme_Name}

PRIMARY KEY: Farmer_Aadhar

SUPER KEY: Farmer_Aadhar, Contact_No, Ration_Number

TABLE: Dependents

FUNCTIONAL DEPENDENCIES:

{Farmer_Aadhar, Name -> Gender, Date_Of_Birth}

PRIMARY KEY: {Farmer_Aadhar, Name}

SUPER KEY: {Farmer_Aadhar, Name}

TABLE: Worker Jobs

FUNCTIONAL DEPENDENCIES:

None

PRIMARY KEY: {Worker_Aadhar, Occupation}

SUPER KEY: {Worker_Aadhar, Occupation}

TABLE: Working Log

FUNCTIONAL DEPENDENCIES:

{Worker_Aadhar, Occupation, Farmer_Aadhar, Crop_Name -> Day_Count}

PRIMARY KEY: {Worker_Aadhar, Occupation, Farmer_Aadhar, Crop_Name}

SUPER KEY: {Worker_Aadhar, Occupation, Farmer_Aadhar, Crop_Name}

TABLE: Occupations

FUNCTIONAL DEPENDENCIES:

{Occupation_Name -> Daily_Wage}

PRIMARY KEY: Occupation_Name

SUPER KEY: Occupation_Name

TABLE: FarmingLand

FUNCTIONAL DEPENDENCIES:

{Farmer_Aadhar, Crop_Name -> Quantity, Self_Expenditure, Trader_Aadhar, Bank_Name, Account_Number, CIBIL_Score, Max_Loan_Amount, Loan_Taken, Membership}

{Account_Number -> Farmer_Aadhar, Crop_Name, Quantity, Self_Expenditure, Trader_Aadhar, Bank_Name, CIBIL_Score, Max_Loan_Amount, Loan_Taken, Membership}

PRIMARY KEY: {Farmer_Aadhar, Crop_Name}

SUPER KEY: {Farmer_Aadhar, Crop_Name}, Account_Number

Since for all non-trivial functional dependencies that are mentioned above, the Left-Hand Side always has a Super Key of the given relation as derived. Hence, the given relational schema lies in the BCNF form.