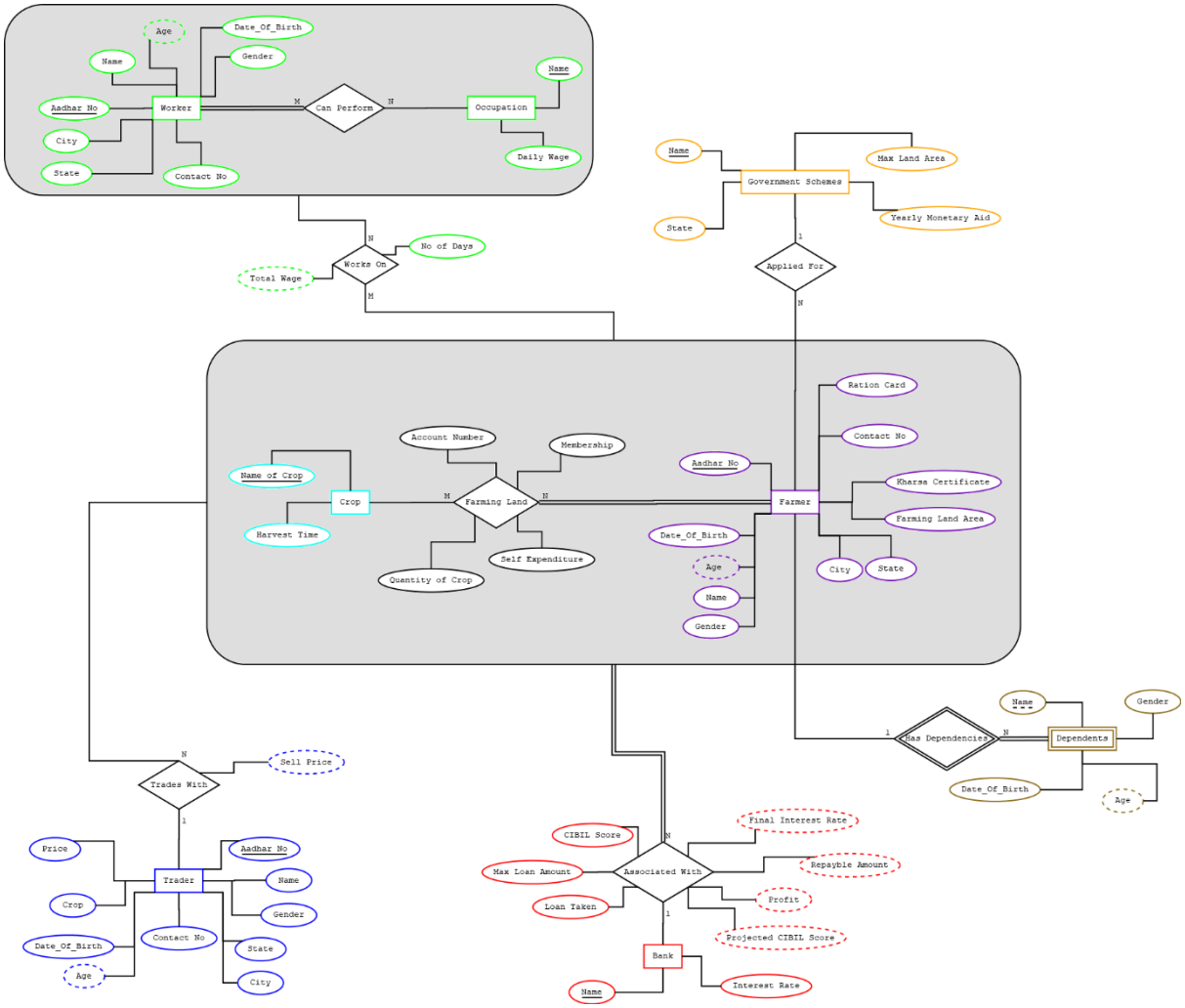
Krishi Seva

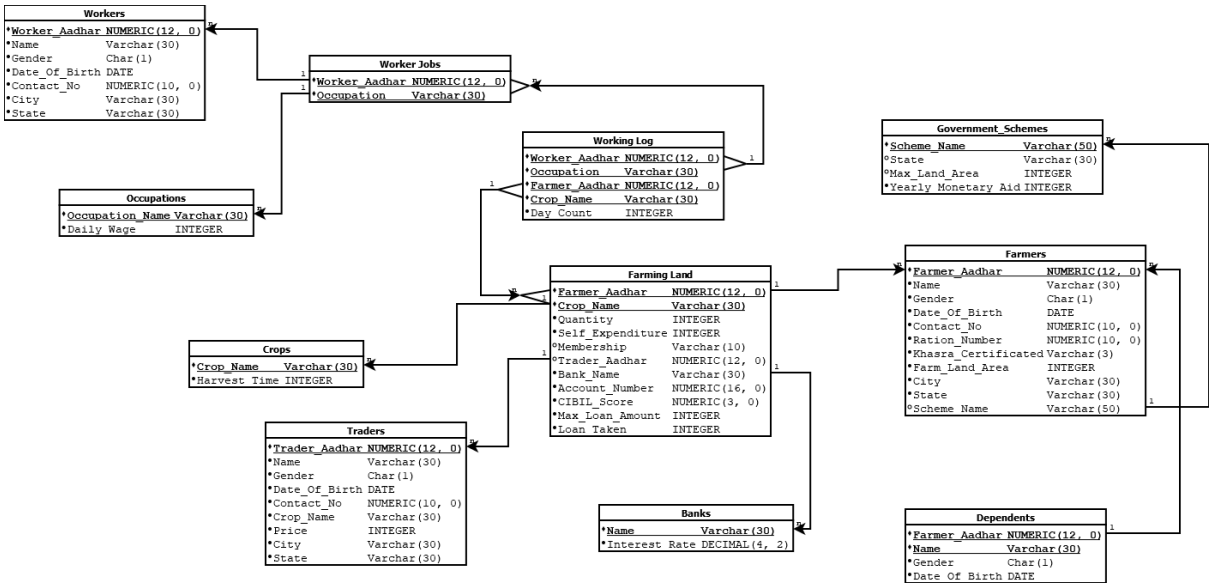
Akshat Jindal | Yash Mehta | Naisargi Patel

Group T-407

Final ERD Diagram



Final Relational Schema



Normalization Proof

TABLE: Crops

FUCTIONAL 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.