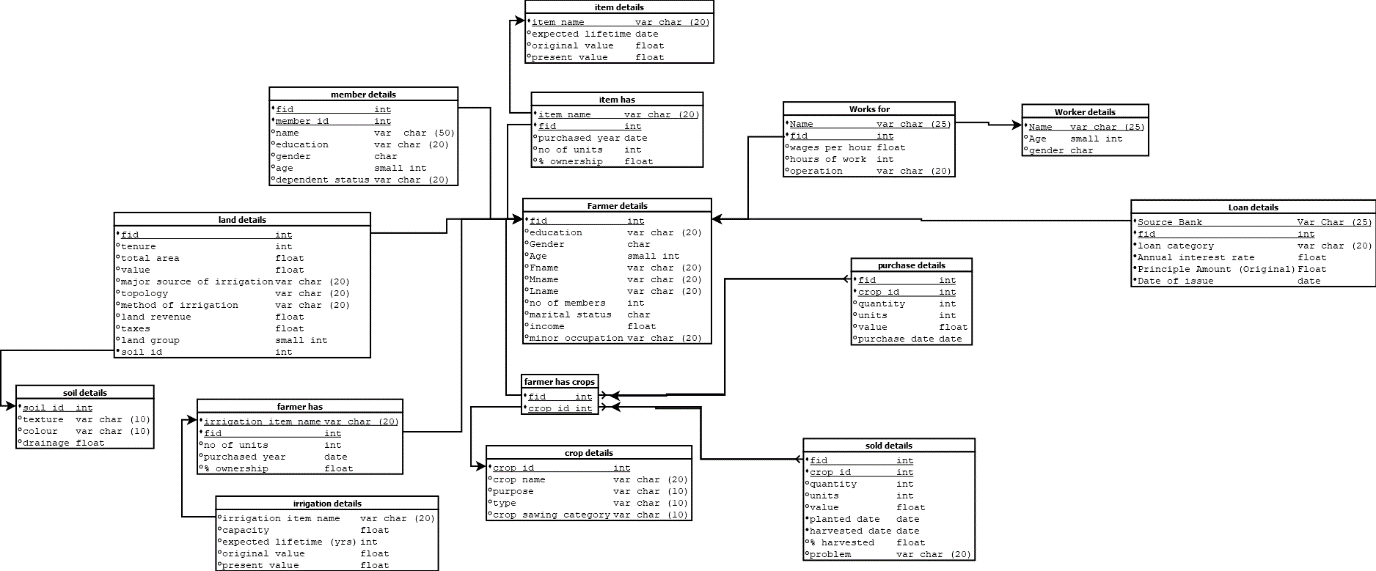
**Database and Management System**

Database Project

**Database for keeping Farmer Analysis Package**

**Relational Schema:**

****

**Minimal FD SET and BCNF:**

**Relation 1:**

**Relation:** Item details(**item name**, expected lifetime, original value, present value)

**Minimal FD set:-**

item name->expected lifetime

item name-> original value

item name-> present value

**Key:** item name

-> Here **relation** Item details(**item name**, expected lifetime, original value, present value) **is in BCNF**, because determinant of every functional dependencies that holds on relation is the key of the relation.

**Relation 2:**

**Relation:** item has(**item name, fid**, purchased year, no of units, % ownership)

**Minimal FD set:-**

{item name, fid}->purchased year

{item name, fid}-> no of units

{item name, fid}->% ownership

**Key:** {item name, fid}

-> Here **relation** item has(**item name, fid**, purchased year, no of units, % ownership) **is in BCNF**, because determinant of every functional dependencies that holds on relation is the key of the relation.

**Relation 3:**

**Relation:** Farmer details(**fid**, education, Gender, Age, Fname, Mname, Lname, no of members, marital status, income, minor occupation )

**Minimal FD set:-**

fid->education

fid->Gender

fid->Age

fid->Fname

fid->Mname

fid->Lname

fid->no of members

fid->marital status

fid->income

fid->minor occupation

**Key:** fid

-> Here **relation** Farmer details (**fid**, education, Gender, Age, Fname, Mname, Lname, no of members, marital status, income, minor occupation ) **is in BCNF**, because determinant of every functional dependencies that holds on relation is the key of the relation.

**Relation 4:**

**Relation:** Farmer has crops(**fid, crop id**)

**Minimal FD set:-**

{Fid, crop id}-> NULL

**Key:** {fid, crop id}

-> Here **relation** Farmer has crops(**fid, crop id**) **is in BCNF**, because the relation which has no functional dependencies is always BCNF.

**Relation 5:**

**Relation:** crop details(**crop id**, crop name, purpose, type, crop sowing category)

**Minimal FD set:-**

Crop id->crop name

Crop id->purpose

Crop id-> type

Crop id-> crop sowing category

Crop id->purpose

Crop id->type

Crop id->category

**Key:** crop id

-> Here **relation** crop details(**crop id**, crop name, purpose, type, crop sowing category) **is in BCNF**, because determinant of every functional dependencies that holds on relation is the key of the relation.

**Relation 6:**

**Relation:** Member details(**fid, member id**, name, education, gender, age, dependent status)

**Minimal FD set:-**

{fid, member id}->name

{fid, member id}->education

{fid, member id}->gender

{fid, member id}->age

{fid, member id}->dependent status

**Key:** {fid, member id}

-> Here **relation** Member details(**fid, member id**, name, education, gender, age, dependent status) **is in BCNF**, because determinant of every functional dependencies that holds on relation is the key of the relation.

**Relation 7:**

**Relation:** Land details(soil id, **fid** ,tenure, total area, value, major source of irrigation, topology, method of irrigation, land revenue, taxes, land group)

**Minimal FD set:-**

{fid}->tenure

{fid}->total area

{fid}->value

{fid}->major source of irrigation

{fid}->topology

{fid}->method of irrigation

{fid}->land revenue

{fid}->taxes

{fid}->land group

**Key:** {fid}

-> Here **relation** Land details(soil id, **fid** ,tenure, total area, value, major source of irrigation, topology, method of irrigation, land revenue, taxes, land group) **is in BCNF**, because determinant of every functional dependencies that holds on relation is the key of the relation.

**Relation 8:**

**Relation:** Soil detail(**soil id**, texture, colour, drainage)

**Minimal FD set:-**

Soil id->texture

Soil id->colour

Soil id->drainage

**Key:** soil id

-> Here **relation** Soil detail(**soil id**, texture, colour, drainage) **is in BCNF**, because determinant of every functional dependencies that holds on relation is the key of the relation.

**Relation 9:**

**Relation:** Irrigation details(**irrigation item name**, capacity, expected lifetime, original value, present value)

**Minimal FD set:-**

irrigation item name-> capacity

irrigation item name-> expected lifetime

irrigation item name-> original value

irrigation item name -> present value

**Key:** {irrigation item name}

-> Here **relation** Irrigation details(**irrigation item name**, capacity, expected lifetime, original value, present value) **is in BCNF**, because determinant of every functional dependencies that holds on relation is the key of the relation.

**Relation 10:**

**Relation:** farmer has(**item name, fid**, no of units, purchased year, % ownership)

**Minimal FD set:-**

{fid,itemname}->no of units

{fid,itemname}->purchased year

{fid,itemname}->% ownership

**Key:** {fid, item name}

-> Here **relation** farmer has(**fid**, **item name**, no of units, capacity, purchased year, expected lifetime, original value, present value, % ownership) **is in BCNF**, because determinant of every functional dependencies that holds on relation is the key of the relation.

**Relation 11:**

**Relation:** works for(**Name, fid**, wages per hour, hours of work, operation)

**Minimal FD set:-**

{Name,fid}->wages per hour

{Name,fid}->hours of work

{Name,fid}->operation

**Key:** {Name, fid}

-> Here **relation** works for(**Name, fid**, wages per hour, hours of work, operation) **is in BCNF**, because determinant of every functional dependencies that holds on relation is the key of the relation.

**Relation 12:**

**Relation:** Worker details(**Name**, Age, gender)

**Minimal FD set:-**

Name->Age

Name->gender

**Key:** Name

-> Here **relation** Worker details(**Name**, Age, gender) **is in BCNF**, because determinant of every functional dependencies that holds on relation is the key of the relation.

**Relation 13:**

**Relation:** Purchased details(**fid, crop id**, quantity, units, value, purchase date)

**Minimal FD set:-**

{fid,crop id}->quantity

{fid,crop id}->units

{fid,crop id}->value

{fid,crop id}->purchase date

**Key:** {fid, crop id}

-> Here **relation** Purchased details(**fid, crop id**, quantity, units, value, purchase date) **is in BCNF**, because determinant of every functional dependencies that holds on relation is the key of the relation.

**Relation 14:**

**Relation:** Sold details(**fid, crop id**, quantity, units, value, planted date, harvested date, % harvested, problem)

**Minimal FD set:-**

{fid,crop id}->quantity

{fid,crop id}->units

{fid,crop id}->value

{fid,crop id}->planted date

{fid,crop id}->harvested date

{fid,crop id}->% harvested

{fid,crop id}->problem

**Key:** {fid, crop id}

-> Here **relation** Sold details(**fid,crop id**,quantity,units,value,planted date,harvested date,% harvested,problem) **is in BCNF**, because determinant of every functional dependencies that holds on relation is the key of the relation.

**Relation 15:**

**Relation:** Loan details(**source bank, fid**, loan category, Annual interest rate, Principle Amount(original),Date of issue)

**Minimal FD set:-**

{source bank,fid}->loan category

{source bank, fid}-> Annual interest rate

{source bank,fid}-> Principle Amount(original)

{source bank,fid}-> Date of issue

**Key:** { source bank, fid}

-> Here **relation** Loan details(**source bank, fid**, loan category, Annual interest rate,Principle Amount(original),Date of issue) **is in BCNF**, because determinant of every functional dependencies that holds on relation is the key of the relation.

**DDL SCRIPT:**

CREATE SCHEMA project;

SET SEARCH\_PATH TO PROJECT;

CREATE TABLE FARMER\_DETAILS(

FID INTEGER,

FNAME VARCHAR(100),

MEMBER\_STATUS INTEGER,

MARITAL\_STATUS VARCHAR(20),

GENDER VARCHAR(20),

AGE INTEGER,

EDUCATION VARCHAR(20),

MINOR\_OCCUPATION VARCHAR(20),

INCOME\_PRICE INTEGER,

PRIMARY KEY (FID)

);

SELECT \* FROM FARMER\_DETAILS;

----------1-----------------

CREATE TABLE SOIL\_DETAIL(

SID INTEGER,

TEXTURE VARCHAR(20),

COLOUR VARCHAR(20),

DRAINAGE FLOAT,

PRIMARY KEY (SID)

);

SELECT \* FROM SOIL\_DETAIL;

----------3-----------------

CREATE TABLE LAND\_DETAILS(

FAR\_ID INTEGER,

TENURE INTEGER,

TOTAL\_AREA FLOAT,

VALUE\_OF\_AREA FLOAT,

MAJOR\_SOURSE\_OF\_IRRIGTION VARCHAR(20),

METHOD\_OF\_IRRIGATION VARCHAR(20),

TOPOLOGY VARCHAR(20),

SOIL\_ID INTEGER,

LAND\_REVENUE INTEGER,

TAXES FLOAT,

LAND\_GROUP VARCHAR(20),

FOREIGN KEY (SOIL\_ID) REFERENCES SOIL (SID)

ON UPDATE CASCADE ON DELETE CASCADE,

FOREIGN KEY (FAR\_ID) REFERENCES FARMER\_DETAILS (FID)

ON UPDATE CASCADE ON DELETE CASCADE

);

SELECT \* FROM LAND\_DETAILS;

----------2-----------------

CREATE TABLE CROP\_DETAILS(

CID INTEGER,

CNAME VARCHAR(50),

TYPE\_OF\_CROP VARCHAR(20),

CROP\_SOWING\_CATEGORY VARCHAR(20),

PURPOSE VARCHAR(20),

PRIMARY KEY (CID)

);

SELECT \* FROM CROP\_DETAILS;

----------4-----------------

CREATE TABLE IRRIGATION\_DETAILS(

IRR\_ITEM\_NAME VARCHAR(50),

CAPACITY\_IN\_HP FLOAT,

EXPECTED\_REMAINING\_LIFE INTEGER,

ORIGINAL\_VALUE FLOAT,

PRESENT\_VALUE FLOAT,

PRIMARY KEY (IRR\_ITEM\_NAME)

);

SELECT \* FROM IRRIGATION\_DETAILS;

----------5-----------------

CREATE TABLE ITEM\_DETAILS(

INAME VARCHAR(50),

I\_ORIGINAL\_VALUE FLOAT,

I\_PRESENT\_VALUE FLOAT,

I\_EXPECTED\_REMAINING\_LIFE FLOAT,

PRIMARY KEY(INAME)

);

SELECT \* FROM ITEM\_DETAILS;

----------6-----------------

CREATE TABLE MEMBER\_DETAILS(

MEM\_ID INTEGER,

MEM\_NAME VARCHAR (100),

FAR\_ID INTEGER,

GENDER VARCHAR(20),

AGE INTEGER,

M\_EDUCATION VARCHAR(20),

DEPENDENT\_STATUS VARCHAR(20),

PRIMARY KEY(MEM\_ID),

FOREIGN KEY(FAR\_ID) REFERENCES FARMER\_DETAILS (FID)

ON DELETE CASCADE ON UPDATE CASCADE

);

SELECT \* FROM MEMBER\_DETAILS;

----------7-----------------

CREATE TABLE WORKER\_DETAILS(

WNAME VARCHAR(100),

AGE INTEGER,

GENDER VARCHAR(20),

PRIMARY KEY(WNAME)

);

SELECT \* FROM WORKER\_DETAILS;

----------8-----------------

CREATE TABLE WORKER\_WORKS\_FOR(

FAR\_ID INTEGER,

OPERATION VARCHAR(20),

WOR\_NAME VARCHAR(100),

HOURS\_OF\_WORK INTEGER,

WAGES\_PERHOUR FLOAT,

PRIMARY KEY (FAR\_ID, WOR\_NAME),

FOREIGN KEY(FAR\_ID) REFERENCES FARMER\_DETAILS (FID)

ON DELETE CASCADE ON UPDATE CASCADE,

FOREIGN KEY(WOR\_NAME) REFERENCES WORKER\_DETAILS (WNAME)

ON DELETE CASCADE ON UPDATE CASCADE

);

SELECT \* FROM WORKER\_WORKS\_FOR;

----------9-----------------

CREATE TABLE SOLD\_DETAILS(

FAR\_ID INTEGER,

QUANTITY INTEGER,

UNIT INTEGER,

VALUE\_OUTPUT INTEGER,

PLANTED\_DATE DATE,

HARVESTED\_DATE DATE,

HARVESTED\_OUTPUT FLOAT,

PROBLEM VARCHAR(20),

CROP\_ID INTEGER,

PRIMARY KEY(FAR\_ID, CROP\_ID),

FOREIGN KEY(FAR\_ID) REFERENCES FARMER\_DETAILS (FID)

ON DELETE CASCADE ON UPDATE CASCADE,

FOREIGN KEY(CROP\_ID) REFERENCES CROP\_DETAILS (CID)

ON DELETE CASCADE ON UPDATE CASCADE

);

SELECT \* FROM SOLD\_DETAILS;

----------10-----------------

CREATE TABLE PURCHASE\_DETAILS(

FAR\_ID INTEGER,

P\_QUANTITY INTEGER,

P\_UNIT INTEGER,

PURCHASED\_VALUE INTEGER,

PURCHASED\_DATE DATE,

CROP\_ID INTEGER,

PRIMARY KEY(FAR\_ID, CROP\_ID),

FOREIGN KEY(FAR\_ID) REFERENCES FARMER\_DETAILS (FID)

ON DELETE CASCADE ON UPDATE CASCADE,

FOREIGN KEY(CROP\_ID) REFERENCES CROP\_DETAILS (CID)

ON DELETE CASCADE ON UPDATE CASCADE

);

SELECT \* FROM PURCHASE\_DETAILS;

----------11-----------------

CREATE TABLE LOAN\_DETAILS(

SOURCE\_BANK VARCHAR(25),

ANNUAL\_INTEREST\_RATE FLOAT,

PRINCIPLE\_AMOUNT FLOAT,

FAR\_ID INTEGER,

DATE\_OF\_ISSUE DATE,

LOAN\_CATEGORY VARCHAR(20),

FOREIGN KEY(FAR\_ID) REFERENCES FARMER\_DETAILS (FID)

ON DELETE CASCADE ON UPDATE CASCADE

);

SELECT \* FROM LOAN\_DETAILS;

----------12-----------------

CREATE TABLE ITEM\_HAS(

INAME VARCHAR(50),

I\_PURCHASE\_YEAR DATE,

I\_OWNERSHIP FLOAT,

I\_NO\_OF\_UNITS INTEGER,

FAR\_ID INTEGER,

PRIMARY KEY (INAME, FAR\_ID),

FOREIGN KEY (FAR\_ID) REFERENCES FARMER\_DETAILS (FID)

ON DELETE CASCADE ON UPDATE CASCADE

FOREIGN KEY (INAME) REFERENCES ITEM\_DETAILS (INAME)

ON DELETE CASCADE ON UPDATE CASCADE

);

SELECT \* FROM ITEM\_HAS;

----------13-----------------

CREATE TABLE FARMER\_HAS\_CROPS(

FAR\_ID INTEGER,

CROP\_ID INTEGER,

PRIMARY KEY (CROP\_ID, FAR\_ID),

FOREIGN KEY (FAR\_ID) REFERENCES FARMER\_DETAILS (FID)

ON DELETE CASCADE ON UPDATE CASCADE

FOREIGN KEY (CROP\_ID) REFERENCES CROP\_DETAILS (CID)

ON DELETE CASCADE ON UPDATE CASCADE

);

SELECT \* FROM FARMER\_HAS\_CROPS;

----------14-----------------

CREATE TABLE FARMER\_HAS(

IRR\_ITEM\_NAME VARCHAR(50),

NO\_OF\_UNITS INTEGER,

PURCHASED\_YEAR DATE,

OWNERSHIP FLOAT,

FAR\_ID INTEGER,

PRIMARY KEY (IRR\_ITEM\_NAME,FAR\_ID),

FOREIGN KEY (FAR\_ID) REFERENCES FARMER\_DETAILS (FID)

ON UPDATE CASCADE ON DELETE CASCADE

FOREIGN KEY (IRR\_ITEM\_NAME) REFERENCES IRRIGATION\_DETAILS (IRR\_ITEM\_NAME)

ON UPDATE CASCADE ON DELETE CASCADE

);

SELECT \* FROM FARMER\_HAS;

----------15-----------------

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