INDRAPRASTHA INSTITUTE *of* INFORMATION TECHNOLOGY **DELHI**

DATABASE MANAGEMENT SYSTEM

Project Report

AgroMetrics

by **Team Atoms** (Group 24):

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INDIVIDUAL CONTRIBUTION

Manasvi:

- Discussion of Ideas.
- Discussion on stakeholders of the final selected idea.
- Documentation of assigned tasks - detailed analysis of 1-2 stakeholders and some entities with their attributes and their relationships with other entities.
- Maintaining part of the ER diagram that was assigned.
- Populated equal number of tables.
- Identified primary and foreign keys of the tables assigned
- Made updations and finalized the ER diagram according to our implementation
- Updations in W-P Document
- Consistency of data across ER diagram, SQL Tables and W-P Doc.

Shanu:

- Discussion of Ideas.
- Discussion on stakeholders of the final selected idea.
- Documentation of assigned tasks - detailed analysis of 1-2 stakeholders and some entities with their attributes and their relationships with other entities.
- Maintaining part of the ER diagram that was assigned.
- Populated equal number of tables
- Made updations and finalized the ER diagram according to our implementation
- Updations in W-P Document
- Consistency of data across ER diagram, SQL Tables and W-P Doc.

Rahul:

- Discussion of Ideas.
- Discussion on stakeholders of the final selected idea.
- Documentation of assigned tasks - detailed analysis of 1-2 stakeholders and some entities with their attributes and their relationships with other entities.
- Maintaining part of the ER diagram that was assigned.
- Populated equal number of tables.
- Identified primary and foreign keys of the tables assigned
- Creating and finalizing schemas for our tables
- Creation of all tables in MySQL and the Relational Schema from it.
- Consistency of data across ER diagram, SQL Tables and W-P Doc.

Jasdeep:

- Discussion of Ideas.
- Discussion on stakeholders of the final selected idea.
- Documentation of assigned tasks - detailed analysis of 1-2 stakeholders and some entities with their attributes and their relationships with other entities.
- Maintaining part of the ER diagram that was assigned.
- Populated equal number of tables.
- Identified primary and foreign keys of the tables assigned
- Helped in creation of tables in MySQL
- Creating and finalizing schemas for our tables
- Consistency of data across ER diagram, SQL Tables and W-P Doc.

Nikhil:

- Discussion of Ideas.
- Discussion on stakeholders of the final selected idea.
- Documentation of assigned tasks - detailed analysis of 1-2 stakeholders and some entities with their attributes and their relationships with other entities.
- Maintaining part of the ER diagram that was assigned.
- Populated equal number of tables.
- Updations in W-P Document
- Created Schema Tables in W-P Document
- Consistency of data across ER diagram, SQL Tables and W-P Doc.

PROBLEM STATEMENT

In a world where the farmer's hard work is of such importance, there we find that they are unable to sell crops at reasonable prices or get information that would help them make smart choices. Traders also find it difficult as they also do not have many choices and cannot buy the best quality crops at reasonable prices. Moreover, the Government and Mandi House do not have data of crops bought or sold and the problems faced by farmers and traders.

Our platform will provide them with relevant data and assistance to ensure transparency in trade.

ABSTRACT

Farmers are of prime importance to the Indian Economy. Their hard work is essential for the growth of any civilisation. This leads to the main motive behind building this application, which is to enable the farmers with powerful technology to protect themselves against any fraudulent activities and enable them to sell crops at competitive prices along with a proper guidance system which can potentially help them to grow and make informative decisions. The aim is to promote uniformity in agriculture marketing by streamlining procedures across the integrated markets, detaching information asymmetry between buyers and sellers and encouraging real-time price discovery based on actual demand and supply.

Together with well-designed RDBMS, a user-friendly interface, this application has the potential to assist farmers and traders. This allows the farmers who were paid less worth their crop prices to get paid above or equal to Minimum support price (MSP) regulated by the government. This also gives them the opportunity to see the list of government policies for which they are eligible. The analyst research team can analyse data about selling and buying pattern, crops growth etc. Moreover, farmers can track their growth and make informed decisions about their earnings. These all can lead to the effective growth of farmers both financially and mentally. Traders will also have a greater number of options to choose from and can buy the best quality crops at reasonable prices. The government can also ensure that prices paid to farmers are greater than MSP.

WEEK 1

Ideation and finalisation of the Application, and identifying the stakeholders

(Work Division: All work was done together and everyone contributed equally)

Project Description

A platform that connects farmers and traders to true digitalization thereby providing information to all stakeholders regarding agronomic data, helping the nation to take the agriculture industry towards modernization and to stop any fraudulent activity involved in the process. This will help build transparency in the system that will ultimately set new milestones in the economic growth of the country.

Not only the Farmers and traders can buy or sell the crops at reasonable rates, but they can also analyse their growth and get an informative decision to increase their earnings. Our platform connects various stakeholders such as Farmers, Traders, Mandi boards, FPOs, Government, Analysts, etc.

1) Farmers/Farmer's Group(FPOs) can easily sell their crop to traders for at least the minimum selling price set by Mandi boards.
2) All the stakeholders using our platform have access to the quality of the crops grown by the farmers.
3) It will ease/digitalize the transactions to prevent any exploitation of farmers.
4) The government can suggest farmers grow a particular type of crop according to the weather condition or soil type.
5) The government will regulate the functioning of the system.
6) Farmers, traders, Mandi boards can get loans easily from the banks under the supervision of Govt.
7) Farmers will have access to the policies they are eligible for, list new policies and new amendments made in the policies by the government.
8) All the complaints made by the farmers and traders will be resolved by the government or mandi boards.
9) Analysts can view the data and generate the report.
10) Farmers will get data for the crops they should grow to keep in mind various factors such as demand and supply, weather etc.

A very well designed database management system would be required to deploy a web app of the scope aforementioned.

StakeHolders of the Application

- Farmers
- Traders
- Mandi Board
- Government
- FPO (Farmers Producers Organisation)
- Analysts

WEEK 2&3

Roles of each Stakeholder and the purpose fulfilled by using the DB

(Work Division: All work was done together and everyone contributed equally)

FARMERS

Roles

- Get a platform to sell their products and receive fair and competitive wages.
- Get information about traders who are offering the highest price for a particular crop.
- Add and sell their crops.
- Get information about nearby markets.
- Keep track of crops sold by them seasonally.
- Suggestions for policy and schemes according to their income.
- Get suggestions about profitable crops according to land, projected demand, projected supply, and weather.
- Get information about which crops are currently in demand and their current price through supply, and demand.
- Get information about the fees charged by the Mandi board and take an informed decision about where he wants to sell his crops promoting transparency in trade.

Query

1. What were the crops sold by me and what was the amount earned by me?
2. What was the profit made by me in a particular season?
3. What crops are popular among traders and which can I sell?
4. What is the Minimum Support price offered by the government for any given crop?
5. Find top traders to sell to according to the price they offer.
6. What are the fees charged by the Mandi Board?
7. What are the nearest/most popular markets according to my location? Also, Rate them so that others can make better choices.
8. What are the various loans and schemes offered to me by the government?

9. What is the required quality of a crop as prescribed by the Mandi Board/Trader?
10. Are there storage spaces available that are provided by Mandi board and what is the price charged, also make a request for storage space?
11. List of FPO which he can join or leave FPO that he is currently part of.

TRADERS

Roles

- Get a platform where they can buy crops on fair prices and according to wanted quantity and quality.
- Get information about Minimum Support Price(MSP) that they must pay for a particular crop.
- Get information about the fees charged by the Mandi board for each type of crop. Keep track of prices at different points of time.
- Keep track of places where crops can be bought. These places are rated according to trader satisfaction. (helps make informed decisions)
- Get information for the ways by which payment can be made.
- Receive support in the form: Information, Application for loan and register for complaints.
- Can specify what they would like to buy and in which season and the price that they are willing to pay.
- Areas which have maximum produce and minimum price.

Query

1. What are the prices quoted by various farmers and find best(minimum) prices for a particular crop?
2. What is the variety of crops available to purchase?
3. What is the MSP that I have to pay for a particular crop?

4. How much fees would I be charged from mandi house for purchasing crops?
5. What are the nearest/best locations from where I can buy crops?
6. What are the crops purchased by me, seasonally?
7. Specify crop, its price and quality that they want to buy.

MANDI BOARD

Roles

- Keep track and update the list of crops which farmers and traders can trade on.
- Can update trading charges and MSP according to government orders.
- Get information on how much trading is done in a day by farmers and traders.
- Get information about prices and quality of crops at different points of time and can update the information according to demand and supply.
- Manage and Assign storage space provided by them.

Query

1. Which crops farmers can sell and traders can buy from mandi boards?
2. What is the MSP and prices of different crops at different points of time and quality of crops?
3. What are the charges which farmers and traders have to pay?
4. What is the statistics of trading on any particular day?
5. What are the complaints or suggestions from farmers or traders?
6. Update the price of storage space and add details about the same?
7. What was the total amount earned in the form of fees charged from traders and farmers?

GOVERNMENT

Roles

- Regulate the MSP for different crops
- Monitor the quality of crops
- Make changes/updations in the policy made by them
- Monitor the charges collected by Mandi house
- Facilitating the agricultural value chain
- Government subsidy distributions
- Optimizing agricultural practice

Query

1. What is the MSP of different crops on the website?
2. What fee different Mandi houses are charging from the traders and farmers?
3. What is the price of different crops in different mandi at different points of time?
4. Is there any complaint against any mandi house?
5. Data of different stakeholder means how many total registered users are farmers, how many are traders and mandi houses and from which state they are from?
6. Add/Update policies that are being offered to farmers and traders.
7. What percentage of farmers have grown the same crops as suggested by us?
8. What is our spending on providing subsidies to farmers?
9. How many farmers have applied for a particular loan provided by the government?

FPO (FARMER PRODUCER ORGANISATION)

Roles

- Selling their stocks as a whole to achieve better surplus individually to get the benefit of economies of scale.
- To give bargaining power as a whole to the FPO.
- To manage the track records of their sale.
- To distribute the profit based on the share of its members.

Query

1. What are the details of members of FPOs?
2. Add/delete the members of FPOs.
3. To update the current stock after each purchaser.
4. What are the most demanded crops?
5. What are the prices of crops?

ANALYST

Roles

- Analyze the data consisting of prices charged by farmers, buying price of traders and Mandi Board, and data about various crops and predict profitable crops.

Query

1. What are the popular crops in different states and how the production of different crops change with time?
2. What are the different incentives offered by the government and how many farmers are part of such incentives?

3. What are the trends of charges on trade charged by mandi boards?
4. Range of prices charged by traders and mandi boards.
5. Most popular crops.
6. Analyse how many farmers have applied for schemes and loans offered by the government.
7. Analyse which states have a high selling rate of crops.
8. Analyse the variation of MSP over the seasons for a particular crop.

WEEK 4-6

ER-Diagram,Defining Database Schema with its constraint and populating table

DATABASE SCHEMA

Seller

User_ID	varchar(100) NotNull
Name	varchar(100) NotNull
State	varchar(100) NotNull
Bank_Account_Number	bigint
Income	double
Designation	varchar(5) NotNull

Primary Key - User_ID

Foreign Key - None

Analyst

Ananlyst_ID	varchar(100) NotNull
Analyst_Name	varchar(100) NotNull

Primary Key - Analyst_ID

Foreign Key - None

Trader

Trader_ID	varchar(100) NotNull
Name	varchar(100) NotNull
Mobile_Number	bigint
Bank_Account_Number	bigint
Total_Trade_Charge	double

Primary Key - Trader_ID

Foreign Key - None

Farmer

Farmer_ID	varchar(100) NotNull
User_ID_Linked	varchar(100) NotNull
Land_Area	double
FPO_ID	varchar(100)
Trade_Charge	double

Primary Key - Farmer_ID

Foreign Key -

- User_ID_Linked references Seller(User_ID)
- FPO_ID references FPO(FPO_ID)

Transaction

Transaction_ID	varchar(100) NotNull
Crop_ID	varchar(100) NotNull
Buyer_ID	varchar(100) NotNull
Seller_ID	varchar(100) NotNull
Mandi_Board_ID	varchar(100) NotNull
Amount	double
Quantity	int
Quality	int
Date_of_Transaction	date NotNull

Primary Key - Transcation_ID,Crop_ID

Foreign Key -

- Seller_ID references Seller(User_ID)
- Mandi_Board_ID references MandiBoard(Mandi_Board_ID)
- Buyer_ID references Trader(Trader_ID)

MandiBoard

Mandi_Board_ID	varchar(100) NotNull
Name	varchar(100) NotNull
State	varchar(100) NotNull
Location	varchar(200)
Rating	double
Trader_Charges(%)	double
Registered_users	int
Revenue_Trading	int
Revenue_Storage_Space	int
Email_Address	varchar(100)
Contact_No	bigint

Primary Key - Mandi_Board_ID

Foreign Key - None

FPO(Farmer Producers Organisation)

FPO_ID	varchar(100) NotNull
User_ID_Linked	varchar(100)

	NotNull
FPO_Registration_Date	date
Address	varchar(200)

Primary Key - FPO_ID

Foreign Key -

- User_ID_Linked references Seller(User_ID)

Complain_Seller

Complain_ID	varchar(100) NotNull
Complain_From	varchar(100) NotNull
Compalin_Details	varchar(500)
Current_Status	varchar(1)
Date	date NotNull

Primary Key - (Complain_ID, Complain_From)

Partial Key : Complain_ID

Foreign Key -

- Complain_From references Seller(User_ID)

Complain_Trader

Complain_ID	varchar(100) NotNull
Complain_From	varchar(100) NotNull
Compalin_Details	varchar(500)
Current_Status	varchar(1)
Date	date NotNull

Primary Key - (Complain_ID, Complain_From)

Partial Key:Complain_ID

Foreign Key -

- Complain_From references trader(Trader_ID)

Coupon

Coupon_ID	varchar(100) NotNull
Transaction_ID	varchar(100) NotNull
Crop_ID	varchar(100) NotNull
Value	double NotNull

Valid_Till	date NotNull
Seller_Status	varchar(100) NotNull
Buyer_Status	varchar(100) NotNull

Primary Key - Coupon_ID

Foreign Key

- Transaction_ID references transaction (Transaction_ID)
- Crop_ID references crop_mandiboard(Crop_ID)

Official

Official_ID	Int Not NULL

Primary Key - Official_ID

Storage Mandi House

Storage_ID	varchar(100) NotNull
Mandi_Board_ID	varchar(100) NotNull
Renter_Person_ID	varchar(100)

Charges	double
timeFrom	date
timeTo	date
Space	int

Primary Key - (Storage_ID, Mandi_Board_ID)

Foreign Key -

- Mandi_Board_ID references MandiBoard (Mandi_Board_ID)
- Renter_Person_ID references Seller(User_ID)

Government_Policy

Policy_ID	varchar(100)
Name	varchar(100)
Details	varchar()
Implemented_On	date
Expires_on	date
Target_income	int
Total_Expenditure	int NotNull

Primary Key - Policy_ID

Foreign Key - None

Crop Mandi Board

Crop_ID	varchar(100) NotNull
Crop_Name	varchar(100) NotNull
MandiBoardX_MSP	double
MandiBoardX_Previous	double

Primary Key - Crop_ID (MandiBoardX= x^{th} mandiBoard)

Foreign Key -None

Crop Seller

Seller_ID	varchar(100) NotNull
Crop_ID	varchar(100) NotNull
Quality	double
Selling_Price	double NotNull
Quantity	double

Primary Key - (Seller_ID,Crop_ID)

Foreign Key -Seller_ID references Seller(User_ID)

Farmer Mandi Board

User_ID	varchar(100) NotNull
Mandi_Board_ID	varchar(100)

Primary Key - (User_ID,Mandi_Board_ID)

Foreign Key -

- User_ID references Seller(User_ID)
- Mandi_Board_ID references MandiBoard(Mandi_Board_ID)

SCHEMA + ER DIAGRAM

Link:https://drive.google.com/drive/u/0/folders/1skGEjdktVAuK9AZPhq45GjSFhYB3LrwP

Links to CSV data files:

1)Farmers:https://docs.google.com/spreadsheets/d/12zbmmt41ZPRbCHOE7e18qBZEr-LSqV0r0syZz4bN9Vg/edit?usp=sharing
2)Complain_Trader:https://docs.google.com/spreadsheets/d/1UqN1N7VlxoUGzFAAzc0I368rDT_bVu3wUVaVPpu3fRo/edit?usp=sharing
3)Complain_Seller:https://docs.google.com/spreadsheets/d/1v3MLfz_qaJrLTicbJw0IjjKpfrc7q0ynFKC0OWz0CqY/edit?usp=sharing
4)Government_Policy:https://docs.google.com/spreadsheets/d/1zuqRbTYwfQO0iDQRkIBgEqn4Q88KmzC3Qr3jxz8G8Q0/edit?usp=sharing
5)Official(Government):https://docs.google.com/spreadsheets/d/1BGMUYHSiLqd3cryIVhXOLstGJqiZKu_yZEF283Y8MHY/edit?usp=sharing
6)Coupon:https://docs.google.com/spreadsheets/d/1WjLSRIhDTOuRsJHvd9XhMQjlmPBCN367qQBCErOeZJw/edit?usp=sharing
7)Trader:https://docs.google.com/spreadsheets/d/1NAVsxDOoHYFdD5ELCclAxu18iDPxqkbKCCTHokrpsxs/edit?usp=sharing
8)MandiBoard:https://docs.google.com/spreadsheets/d/1ivDq9SGRxqxOdtJ30Dw-EKLvj0TGhvzOKb0nYICgPfA/edit?usp=sharing
9)FPO:https://docs.google.com/spreadsheets/d/1aYiJfbU7zVZ676Yhb4lcXBJ5ThbjpMaHxhxl1LOYXSg/edit?usp=sharing
10)Crop_Seller:https://docs.google.com/spreadsheets/d/1fEzzC1xs4pHZFnDgLdWcyp0SCZFkwHYhx6ne_OI3epw/edit?usp=sharing
11)Seller:https://docs.google.com/spreadsheets/d/147aeaj48ZzHXstF2NXu7Rbjj1HEseMTRLBqYnZ5no0U/edit?usp=sharing
12)Storage_Mandi_House:https://docs.google.com/spreadsheets/d/1pAIEASeK_GoxpvXDLvKbK6L8_uKe103seEhbWjRfuGU/edit?usp=sharing
13)Transaction:https://docs.google.com/spreadsheets/d/1bc-XfJDpP_ygJaqxuQbyMARYwLW8So2tPVbKgY5E-kk/edit?usp=sharing
14)Analyst:https://docs.google.com/spreadsheets/d/1sSXTuCezZ0TIcViXn5rce_1fHmYs2lwyIAOUBvvi7gI/edit?usp=sharing
15)Crop_Mandi_Board:https://docs.google.com/spreadsheets/d/1BZxphMnnjOhfuN7M_buVjm-l5ETeJR6W7LHDNkGiyyo/edit?usp=sharing
16)Framer_Mandi_Board:https://docs.google.com/spreadsheets/d/1hsDPTMfm9SfG4qWSZ8uyzJyGILLI4GUt-HdLvmrshIo/edit?usp=sharing
17)Seller-Policy:https://docs.google.com/spreadsheets/d/1Drbvo_BKZ7VIV5GCx606DNpZ2DaRsIuo0SLWXcp8cnI/edit?usp=sharing

RELATIONSHIPS

- Mandi board --------Sellers (many to many) registers relation.
- Mandi board --------Trader (many to many) trade relation.
- Mandi board --------Government_Official (many to many) regulate relations.
- Mandi board --------Analyst (many to many) analysis relationship.
- Seller----------Crop (one to many) owns relationship.
- Crops table----------Traders (one to many) get-information ,trade relation.
- Traders ----------Crops table with MSP(many to one)
- Traders ----------Farmers(many to many) trade relation
- Traders ----------Complain Table(many to one) complain relation
- Sellers ----------Complain Table(many to one) complain relation
- Farmer----------FPO(many to one) member relationship
- Mandi Board ----- Storage (one to many) owner relationship
- Policy ------- Government_Official(many to many) implements relationship
- Seller----------Policy(many to many) avail relationships

Generalisation:

- Farmer---------Seller('is a ' Generalisation)
- FPO ----------Seller('is a' Generalisation)

Tables With Data

Total Number of Tables

```
mysql> show tables;
+--------------------------+
| Tables_in_trial_project |
+--------------------------+
| analyst                  |
| complain                 |
| complain_trader          |
| coupon                   |
| crop_mandi_board         |
| crop_seller              |
| farmer-mandiboard        |
| farmers                  |
| fpo                      |
| government_policy        |
| mandi_board              |
| official                 |
| seller                   |
| seller_policy            |
| storage_mandi_house      |
| trader                   |
| transaction              |
+--------------------------+
17 rows in set (0.01 sec)
```

Complain_Seller

```
mysql> select * from complain
    -> ;
+-------------+--------------+--------------------------------------+----------------+------------+
| Complain_ID | Complain_From | Complain_Detail                      | Current_Status | Date       |
+-------------+--------------+--------------------------------------+----------------+------------+
| compu1      | u1           | Crops not recieved                   | 0              | 2020-09-02 |
| compu10     | u10          | something more                       | 1              | 2020-08-02 |
| compu11     | u11          | Crops not recieved                   | 0              | 2020-09-03 |
| compu12     | u12          | Crops taken away while i was not here | 1              | 2020-08-03 |
| compu13     | u13          | Crops taken away while i was not here | 0              | 2020-09-01 |
| compu14     | u14          | Money less recieved                  | 1              | 2020-09-04 |
| compu15     | u15          | Money less recieved                  | 0              | 2020-08-04 |
| compu2      | u2           | Crops taken away while i was not here | 1              | 2020-09-05 |
| compu3      | u3           | Crops taken away while i was not here | 0              | 2020-08-05 |
| compu4      | u4           | Money less recieved                  | 1              | 2020-09-03 |
| compu5      | u5           | Money less recieved                  | 0              | 2020-08-03 |
| compu6      | u6           | Money not recieved                   | 0              | 2020-09-01 |
| compu7      | u7           | Money not returned                   | 1              | 2020-09-04 |
| compu8      | u8           | Money not returned                   | 0              | 2020-08-04 |
| compu9      | u9           | something                            | 0              | 2020-08-01 |
+-------------+--------------+--------------------------------------+----------------+------------+
```

Complain_Trader

```
mysql> select * from complain_trader;
+-------------+--------------+-----------------------------------+----------------+------------+
| Complain_ID | Complain_From | Complain_Detail                   | Current_Status | Date       |
+-------------+--------------+-----------------------------------+----------------+------------+
| compu1      | t1           | Crops not recieved                | 0              | 2020-09-02 |
| compu10     | t10          | something more                    | 1              | 2020-08-02 |
| compu2      | t2           | Crops taken away while i was not here | 1          | 2020-09-05 |
| compu3      | t3           | Crops taken away while i was not here | 0          | 2020-08-05 |
| compu4      | t4           | Money less recieved               | 1              | 2020-09-03 |
| compu5      | t5           | Money less recieved               | 0              | 2020-08-03 |
| compu6      | t6           | Money not recieved                | 0              | 2020-09-01 |
| compu7      | t7           | Money not returned                | 1              | 2020-09-04 |
| compu8      | t8           | Money not returned                | 0              | 2020-08-04 |
| compu9      | t9           | something                         | 0              | 2020-08-01 |
+-------------+--------------+-----------------------------------+----------------+------------+
```

Crop_Seller

```
mysql> select * from crop_seller;
+-----------+---------+---------------------+--------------+----------------------+
| Seller_ID | Crop_ID | Quality(out of 10) | SellingPrice | Quantity(in Quintal) |
+-----------+---------+---------------------+--------------+----------------------+
| u1        | c1      |                   6 |            1 |                   94 |
| u10       | c10     |                   6 |           10 |                   89 |
| u11       | c11     |                   9 |           11 |                   83 |
| u12       | c12     |                   3 |           12 |                   45 |
| u13       | c13     |                   6 |           13 |                   65 |
| u14       | c14     |                   3 |           14 |                   38 |
| u15       | c15     |                  10 |           15 |                   90 |
| u16       | c16     |                  10 |           16 |                    3 |
| u17       | c17     |                   8 |           17 |                   68 |
| u18       | c18     |                   7 |           18 |                   73 |
| u19       | c19     |                   6 |           19 |                   39 |
| u2        | c2      |                   7 |            2 |                   53 |
| u20       | c20     |                   1 |           20 |                    9 |
| u21       | c1      |                   2 |           21 |                   32 |
| u22       | c2      |                  10 |           22 |                   54 |
| u23       | c3      |                   9 |           23 |                   34 |
| u24       | c4      |                   5 |           24 |                   65 |
| u25       | c5      |                   6 |           25 |                   76 |
| u27       | c7      |                   5 |           27 |                   94 |
| u28       | c8      |                   8 |           28 |                   53 |
| u29       | c9      |                   9 |           29 |                   74 |
| u3        | c3      |                   4 |            3 |                   74 |
| u30       | c10     |                   4 |           30 |                   10 |
| u31       | c11     |                  10 |           31 |                   82 |
| u32       | c12     |                   7 |           32 |                   74 |
| u33       | c13     |                   4 |           33 |                   59 |
| u34       | c14     |                   8 |           34 |                   62 |
| u35       | c15     |                   3 |           35 |                   62 |
| u36       | c16     |                   6 |           36 |                   89 |
| u37       | c17     |                   8 |           37 |                   83 |
| u38       | c18     |                   2 |           38 |                   45 |
| u39       | c19     |                   5 |           39 |                   65 |
| u4        | c4      |                  10 |            4 |                   10 |
| u40       | c20     |                   5 |           40 |                   23 |
| u5        | c5      |                   6 |            5 |                   82 |
```

Coupon

```
mysql> select * from coupon;
+-----------+----------------+---------+-------+------------+---------------+--------------+
| Coupon_Id | Transaction_ID | Crop_ID | Value | Valid_Till | Seller_Status | Buyer_Status |
+-----------+----------------+---------+-------+------------+---------------+--------------+
| co1       | tr1            | c1      |   100 | 2009-05-05 | 1             | 1            |
| co10      | tr10           | c13     |   400 | 2010-04-03 | 0             | 1            |
| co11      | tr11           | c2      |    40 | 2010-05-10 | 0             | 0            |
| co12      | tr12           | c10     |    60 | 2010-06-16 | 1             | 1            |
| co13      | tr13           | c19     |    50 | 2010-07-23 | 1             | 1            |
| co14      | tr14           | c16     |    80 | 2010-08-29 | 1             | 1            |
| co15      | tr15           | c16     |    70 | 2010-10-05 | 0             | 0            |
| co16      | tr16           | c9      |    20 | 2010-11-11 | 0             | 1            |
| co17      | tr17           | c8      |    40 | 2010-12-18 | 1             | 0            |
| co18      | tr18           | c13     |    30 | 2011-01-24 | 1             | 0            |
| co19      | tr19           | c12     |   200 | 2011-03-02 | 0             | 1            |
| co2       | tr2            | c4      |    40 | 2009-06-11 | 1             | 1            |
| co20      | tr20           | c14     |    10 | 2011-04-08 | 1             | 0            |
| co3       | tr3            | c6      |    20 | 2009-07-18 | 0             | 0            |
| co4       | tr4            | c7      |   600 | 2009-08-24 | 1             | 1            |
| co5       | tr5            | c2      |   200 | 2009-09-30 | 0             | 0            |
| co6       | tr6            | c5      |    90 | 2009-11-06 | 1             | 0            |
| co7       | tr7            | c3      |   180 | 2009-12-13 | 0             | 0            |
| co8       | tr8            | c11     |   200 | 2010-01-19 | 1             | 1            |
| co9       | tr9            | c17     |   500 | 2010-02-25 | 0             | 0            |
+-----------+----------------+---------+-------+------------+---------------+--------------+
```

Farmers

```
mysql> select * from farmers;
+-----------+-----------------+-----------+--------+---------------+
| Farmer_ID | User_ID_Linked  | Land_Area | FPO_ID | Trade_Charges |
+-----------+-----------------+-----------+--------+---------------+
| f1        | u1              |       1.5 | fp1    |           100 |
| f10       | u10             |      2.83 | fp7    |           325 |
| f11       | u11             |     2.955 | fp8    |           350 |
| f12       | u12             |      3.08 | fp9    |           375 |
| f13       | u13             |     3.205 | fp10   |           400 |
| f14       | u14             |      3.33 | fp11   |           425 |
| f15       | u15             |     3.455 | fp6    |           450 |
| f16       | u16             |      3.58 | fp19   |           475 |
| f17       | u17             |     3.705 | fp18   |           500 |
| f18       | u18             |      3.83 | fp12   |           525 |
| f19       | u19             |     3.955 | fp4    |           550 |
| f2        | u2              |      2.24 | fp19   |           125 |
| f20       | u20             |      4.08 | fp6    |           575 |
| f3        | u3              |      1.75 | fp20   |           150 |
| f4        | u4              |      2.08 | fp15   |           175 |
| f5        | u5              |     2.205 | fp14   |           200 |
| f6        | u6              |      2.33 | fp16   |           225 |
| f7        | u7              |     2.455 | fp14   |           250 |
| f8        | u8              |      2.58 | fp5    |           275 |
| f9        | u9              |     2.705 | fp6    |           300 |
+-----------+-----------------+-----------+--------+---------------+
```

FPO(Farmer Producers Organization)

```
mysql> select * from fpo;
+--------+---------------+---------------------+-----------------------------------------------------------------------------------------------------
| FPO_ID | User_ID_Linked | FPO_Registration_Date | Address
+--------+---------------+---------------------+-----------------------------------------------------------------------------------------------------
| fp1    | u21           | 1999-05-12          | 271 First Floor New Grain Market GPO Karnal Haryana
| fp10   | u30           | 2013-08-06          | Jadupalli village Meliaputti MandalSrikakulam Srikakulam Andhra Pradesh
| fp11   | u31           | 1996-07-06          | Shop No 49 1st Floor Aadarana Construction Municipal Complex Near Tower Clock
| fp12   | u32           | 2010-10-31          | Viswas Residency Opposite New Bus Stand Bethamcherla Kurnool
| fp13   | u33           | 1999-10-09          | 9 Lankalapalli PalemPoosapatirega Manda
| fp14   | u34           | 2007-04-12          | Bachu Sambasiva rao 37 Shyamalambapuram kaikalur Krishna
| fp15   | u35           | 2014-01-01          | Shop No. 49 1st Floor Aadarana Construction Municipal Complex Near Tower Clock
| fp16   | u36           | 2012-11-22          | 8 Pothupeta BoorlapallePeddathippasamudram
| fp17   | u37           | 2005-09-08          | D No 2 82 B C Colony Sarikondapelam Vaddemgunta Bollapalli mandal
| fp18   | u38           | 2006-06-30          | 19 - Lodhera Tal SridungargarhBikanerRajasthan
| fp19   | u39           | 2006-09-13          | 80 Samiriya Po Akodiya Tal Chaksu Dist Jaipur Rajasthan.
                |
| fp2    | u22           | 2001-08-25          | 2388 Village Devi Dasspura TehsilTahnesa
| fp20   | u40           | 2007-03-29          | 25 - Dulai Kothi Surpura Tal Dudu
| fp3    | u23           | 2000-05-18          | 32 New Sabzi Mandi Rohtak
| fp4    | u24           | 1997-07-24          |  1 Ward No.3 Rewala Gate Jhajjar
| fp5    | u25           | 1997-02-20          | Vill- Taj Nagar Main Road The-Farrukh Nagar
| fp6    | u26           | 2000-03-24          | Gram Jatka DelhiAlwar Road Badkali Chowk Taluka
| fp7    | u27           | 2004-10-08          | Ward No 13 Vill Mwoli Po Meoli Tal Nuh
| fp8    | u28           | 2009-06-27          | Vill Karnedra TehsilBallabgarh
| fp9    | u29           | 2002-04-14          | D No1-119 Lankalapalli PalemPoosapatirega Mandal Vizianagaram
+--------+---------------+---------------------+-----------------------------------------------------------------------------------------------------
```

Seller_Policy

```
mysql> select * from seller_policy;
+-----------+-----------+---------------------+
| Seller_ID | Policy_Id | Date_registeration  |
+-----------+-----------+---------------------+
| u1        | p1        | 2010-06-13          |
| u24       | p1        | 2014-06-09          |
| u5        | p10       | 2013-06-08          |
| u22       | p2        | 2014-06-06          |
| u4        | p2        | 2011-06-14          |
| u23       | p3        | 2009-06-05          |
| u3        | p3        | 2014-06-09          |
| u10       | p4        | 2020-06-10          |
| u2        | p4        | 2015-06-12          |
| u21       | p5        | 2013-06-08          |
| u9        | p5        | 2014-06-06          |
| u8        | p6        | 2015-06-07          |
| u7        | p7        | 2014-06-11          |
| u6        | p8        | 2009-06-05          |
| u25       | p9        | 2015-06-07          |
+-----------+-----------+---------------------+
```

Seller

```
mysql> select * from seller;
+---------+--------------+----------+-----------------------------------------------------------+-----------------+-----------------+--------+-------------+
| User_ID | Login_ID     | Password | Name                                                      | State           | Bank Account No | Income | Designation |
+---------+--------------+----------+-----------------------------------------------------------+-----------------+-----------------+--------+-------------+
| u1      | admin1       | admin1   | Barjraj Singh                                             | Madhya Pradesh  |   9999999110078 |      0 | F           |
| u10     | Sanjayf10    | admin10  | Sanjay                                                    | Himachal Pradesh |   6307596428273 |      0 | F           |
| u11     | Abhif11      | admin11  | Abhi                                                      | Goa             |   5897329463628 |      0 | F           |
| u12     | Ramf12       | admin12  | Ram dutt gupta                                            | Madhya Pradesh  |   5487062498983 |      0 | F           |
| u13     | Khadakf13    | admin13  | Khadak singh                                              | Rajasthan       |   5076795534338 |      0 | F           |
| u14     | Gurmitf14    | admin14  | Gurmit singh                                              | Uttar Pradesh   |   4666528569693 |      0 | F           |
| u15     | Chanderpalf15 | admin15  | Chanderpal                                                | Madhya Pradesh  |   4256261605048 |      0 | F           |
| u16     | Amanf16      | admin16  | Aman                                                      | Rajasthan       |   3845994640403 |      0 | F           |
| u17     | Khursidf17   | admin17  | Khursid                                                   | Uttar Pradesh   |   3435727675758 |      0 | F           |
| u18     | Rajeevf18    | admin18  | Rajeev                                                    | Himachal Pradesh |   3025460711113 |      0 | F           |
| u19     | Durgesh19    | admin19  | Durgesh                                                   | Goa             |   2615193746468 |      0 | F           |
| u2      | Sharatf2     | admin2   | Ramdin Verma                                              | Rajasthan       |   9589732145433 |      0 | F           |
| u20     | Naharf20     | admin20  | Nahar singh                                               | Kerala          |   2204926781823 |      0 | F           |
| u21     | Vruttifp1    | admin21  | Vrutti Livelihood Resource Center (VLRC)                  | Andhra pradesh  |   1794659817178 |      0 | FP          |
| u22     | Dhonefp2     | admin22  | Dhone Farmers Producer Company Limited                    | Andhra pradesh  |   1384392852533 |      0 | FP          |
| u23     | Peapullyfp3  | admin23  | Peapully Farmers Producer Company Limited                 | Andhra pradesh  |    974125887888 |      0 | FP          |
| u24     | Ramanajfp4   | admin24  | Sri Ramanjaneya Farmer Producer Company Limited           | Madhya pradesh  |    563858923243 |      0 | FP          |
| u25     | Bajra2       | admin25  | Simhadri Farmer Producer Company Limited                  | Delhi           |    153591958598 |      0 | FP          |
| u26     | Shaatf3      | admin26  | Meliaputti Tribal Farmer Services Producer Company Limited | Haryana         |    256675006047 |      0 | FP          |
| u27     | Birenerf4    | admin27  | Kotturu Tribal Farmers Services Producer Company Limited  | Punjab          |    666941970692 |      0 | FP          |
```

Trader

```
mysql> select * from trader;
+-----------+----------+----------+------------+---------------+----------------------+----------------------+
| Trader_ID | Login    | Password | Name       | Mobile_Number | Bank_Account_Number | Total_Trade_Charges |
+-----------+----------+----------+------------+---------------+----------------------+----------------------+
| t1        | Trader1  | pass1    | Shanu      |    9923419993 |        536137067120 |                    8 |
| t10       | Trader10 | pass10   | Elonasv    |    9923419593 |        536133333430 |                   89 |
| t11       | Trader11 | pass11   | Elonsta    |    9923456593 |        501237053430 |                   98 |
| t12       | Trader12 | pass12   | Elonster   |    9923400593 |        536139283430 |                  107 |
| t13       | Trader13 | pass13   | Gian       |    9913419513 |        536112345670 |                  116 |
| t14       | Trader14 | pass14   | Moesk      |    8923469593 |        536137022220 |                  125 |
| t15       | Trader15 | pass15   | Mukesh     |    9923419593 |        536137053430 |                  134 |
| t16       | Trader16 | pass16   | Rahul      |    9923417893 |        123437053430 |                  143 |
| t17       | Trader17 | pass17   | Mukesita   |    9923400093 |        536137364430 |                  152 |
| t18       | Trader18 | pass18   | Nobita     |    9922419393 |        536136723930 |                  161 |
| t19       | Trader19 | pass19   | Pankit     |    9923489590 |        536137984530 |                  170 |
| t2        | Trader2  | pass2    | Alambama   |    9923123456 |        586131053430 |                   17 |
| t20       | Trader20 | pass20   | Robita     |    9924411593 |        536134444430 |                  179 |
| t3        | Trader3  | pass3    | Ambani     |    9823419593 |        536137111130 |                   26 |
| t4        | Trader4  | pass4    | Angel      |    9913419583 |        536137010570 |                   35 |
| t5        | Trader5  | pass5    | Ankit      |    9988819593 |        536137050192 |                   44 |
| t6        | Trader6  | pass6    | Ankiti     |    8823419593 |        736437052430 |                   53 |
| t7        | Trader7  | pass7    | Bhag       |    9912319593 |        536198763430 |                   62 |
| t8        | Trader8  | pass8    | Doctor who |    8812419593 |        516137023430 |                   71 |
| t9        | Trader9  | pass9    | Elon       |    9923456783 |        894310627575 |                   80 |
+-----------+----------+----------+------------+---------------+----------------------+----------------------+
```

Analyst

```
mysql> select * from analyst;
+-------------+-------+----------+--------------+
| Analyst_ID  | Login | Password | Analyst Name |
+-------------+-------+----------+--------------+
| a1          | ana1  | ana1     | Manasvi      |
| a2          | ana2  | ana2     | Rahul        |
| a3          | ana3  | ana3     | Shanu        |
| a4          | ana4  | ana4     | Jasdeep      |
| a5          | ana5  | ana5     | Nikhil       |
| a6          | ana6  | ana6     | Vani         |
| a7          | ana7  | ana7     | Priyanne     |
| a8          | ana8  | ana8     | Donald Trump |
+-------------+-------+----------+--------------+
```

Transaction

```
mysql> select * from transaction;
+---------------+---------+----------+-----------+--------------+-----------------------+---------------------+-------------------+---------------------+
| Transaction_ID | Crop_ID | buyer_ID | seller_ID | Mandi_BoardID | Amount(in per Rs 1000) | Quantity(in Quintal) | Quality(out of 10) | Date_Of_Transaction |
+---------------+---------+----------+-----------+--------------+-----------------------+---------------------+-------------------+---------------------+
| tr1           | c1      | t2       | u1        | mb1          |                   100 |                 100 |                 6 | 2020-06-27          |
| tr10          | c13     | t11      | u10       | mb10         |                   298 |                  60 |                 6 | 2010-03-27          |
| tr11          | c2      | t12      | u11       | mb15         |                   320 |                  80 |                 9 | 2018-03-19          |
| tr12          | c10     | t13      | u12       | mb6          |                   342 |                  70 |                 3 | 2012-01-05          |
| tr13          | c19     | t14      | u13       | mb6          |                   364 |                  60 |                 6 | 2010-03-27          |
| tr14          | c16     | t15      | u14       | mb12         |                   386 |                  80 |                 3 | 2018-03-19          |
| tr15          | c16     | t16      | u15       | mb6          |                   408 |                  90 |                10 | 2012-01-05          |
| tr16          | c9      | t17      | u16       | mb8          |                   430 |                  60 |                10 | 2010-03-27          |
| tr17          | c8      | t18      | u17       | mb7          |                   452 |                  80 |                 8 | 2018-03-19          |
| tr18          | c13     | t19      | u18       | mb8          |                   474 |                  70 |                 7 | 2012-01-05          |
| tr19          | c12     | t20      | u19       | mb9          |                   496 |                  60 |                 6 | 2010-03-27          |
| tr2           | c4      | t3       | u2        | mb1          |                   122 |                  50 |                 7 | 2020-06-12          |
| tr20          | c14     | t1       | u20       | mb10         |                   518 |                  50 |                 8 | 2018-03-19          |
| tr3           | c6      | t4       | u3        | mb3          |                   144 |                  20 |                 4 | 2020-09-02          |
| tr4           | c7      | t5       | u4        | mb4          |                   166 |                  60 |                10 | 2020-11-23          |
| tr5           | c2      | t6       | u5        | mb5          |                   188 |                  80 |                 6 | 2019-02-13          |
| tr6           | c5      | t7       | u6        | mb6          |                   210 |                 110 |                 9 | 2017-05-05          |
| tr7           | c3      | t8       | u7        | mb7          |                   232 |                  90 |                 5 | 2015-07-26          |
| tr8           | c11     | t9       | u8        | mb8          |                   254 |                  50 |                 5 | 2013-10-15          |
| tr9           | c17     | t10      | u9        | mb9          |                   276 |                  20 |                 8 | 2012-01-05          |
```

Official

```
mysql> select * from official;
+-------------+--------+----------+
| Official_ID | Login  | Password |
+-------------+--------+----------+
| 1           | Gov1   | pass1    |
| 2           | Gov2   | pass2    |
| 3           | Gov3   | pass3    |
| 4           | Gov4   | pass4    |
| 5           | Gov5   | pass5    |
+-------------+--------+----------+
```

Storage_Mandi_House

```
mysql> select * from storage_mandi_house;
+------------+---------------+-----------------+---------+------------+------------+-------+
| Storage_ID | Mandi_Board_Id | Renter_Person_Id | Charges | timeFrom   | timeTO     | Space |
+------------+---------------+-----------------+---------+------------+------------+-------+
| s1         | mb1           | u1              |    3000 | 2019-05-01 | 2020-02-03 |    10 |
| s1         | mb10          | u22             |    5848 | 2019-05-01 | 2020-02-03 |    10 |
| s1         | mb11          | u25             |    6250 | 2019-02-14 | 2020-02-03 |    40 |
| s1         | mb12          | u28             |    6590 | 2019-04-05 | 2020-02-06 |     6 |
| s1         | mb13          | u31             |    7054 | 2019-02-05 | 2020-02-01 |     6 |
| s1         | mb14          | u34             |    7456 | 2019-02-05 | 2020-02-01 |     6 |
| s1         | mb15          | u37             |    7858 | 2019-02-23 | 2020-02-03 |     1 |
| s1         | mb2           | u4              |    3410 | 2019-02-14 | 2020-02-03 |    40 |
| s1         | mb3           | u7              |    3838 | 2019-04-03 | 2020-02-03 |     5 |
| s1         | mb4           | u10             |    4240 | 2019-02-08 | 2020-02-02 |    10 |
| s1         | mb5           | u13             |    4642 | 2019-02-05 | 2020-02-01 |     6 |
| s1         | mb6           | u16             |    5044 | 2019-02-23 | 2020-02-03 |     1 |
| s1         | mb9           | u19             |    5446 | 2019-04-24 | 2020-02-03 |     2 |
| s2         | mb1           | u2              |    3210 | 2019-04-22 | 2020-02-03 |    20 |
| s2         | mb10          | u23             |    5982 | 2019-04-22 | 2020-02-03 |    20 |
| s2         | mb11          | u26             |    6384 | 2019-04-07 | 2020-02-01 |    20 |
| s2         | mb12          | u29             |    6786 | 2019-04-20 | 2020-02-01 |     8 |
| s2         | mb13          | u32             |    7188 | 2019-04-10 | 2020-02-03 |     4 |
| s2         | mb14          | u35             |    7590 | 2019-04-10 | 2020-02-03 |     4 |
| s2         | mb15          | NULL            |    7992 | NULL       | NULL       |     3 |
| s2         | mb2           | u5              |    3570 | 2019-04-27 | 2020-02-01 |    30 |
| s2         | mb3           | u8              |    3972 | 2019-02-28 | 2020-02-01 |    10 |
| s2         | mb4           | NULL            |    4374 | NULL       | NULL       |     9 |
| s2         | mb5           | u14             |    4776 | 2019-04-10 | 2020-02-03 |     4 |
| s2         | mb6           | NULL            |    5178 | NULL       | NULL       |     3 |
| s2         | mb9           | u20             |    5580 | 2019-03-29 | 2020-02-01 |     6 |
| s3         | mb1           | u3              |    3320 | 2019-04-11 | 2020-02-03 |    20 |
| s3         | mb10          | u24             |    6116 | 2019-04-11 | 2020-02-03 |    20 |
| s3         | mb11          | u27             |    6518 | 2019-04-03 | 2020-02-03 |     5 |
| s3         | mb12          | u30             |    6920 | 2019-02-17 | 2020-02-03 |     7 |
| s3         | mb13          | u33             |    7322 | 2019-02-22 | 2020-02-02 |     3 |
| s3         | mb14          | u36             |    7724 | 2019-02-22 | 2020-02-02 |     3 |
| s3         | mb15          | u39             |    8126 | 2019-02-05 | 2020-02-01 |     6 |
| s3         | mb2           | u6              |    3704 | 2019-04-07 | 2020-02-01 |    20 |
| s3         | mb3           | u9              |    4106 | 2019-04-20 | 2020-02-01 |     8 |
| s3         | mb4           | u12             |    4508 | 2019-02-17 | 2020-02-03 |     7 |
| s3         | mb5           | u15             |    4910 | 2019-02-22 | 2020-02-02 |     3 |
| s3         | mb6           | u18             |    5312 | 2019-04-22 | 2020-02-02 |     2 |
| s3         | mb9           | NULL            |    5714 | NULL       | NULL       |     5 |
+------------+---------------+-----------------+---------+------------+------------+-------+
```

Schema

Schema for Seller:

```
CREATE TABLE `seller` (
  `User_ID` varchar(100) NOT NULL,
  `Login_ID` varchar(100) NOT NULL,
  `Password` varchar(100) NOT NULL,
  `Name` varchar(100) NOT NULL,
  `State` varchar(100) DEFAULT NULL,
  `Bank Account No` double NOT NULL,
  `Income` double DEFAULT '0',
  `Designation` varchar(100) NOT NULL,
  PRIMARY KEY (`User_ID`),
  UNIQUE KEY `User_ID_UNIQUE` (`User_ID`),
  UNIQUE KEY `Login_ID_UNIQUE` (`Login_ID`)
);
```

Schema for Transaction

```
CREATE TABLE `transaction` (
  `Transaction_ID` varchar(100) NOT NULL,
  `Crop_ID` varchar(100) NOT NULL,
  `buyer_ID` varchar(100) NOT NULL,
  `seller_ID` varchar(100) NOT NULL,
  `Mandi_BoardID` varchar(100) NOT NULL,
  `Amount(in per Rs 1000)` double NOT NULL,
  `Quantity(in Quintal)` int NOT NULL,
  `Quality(out of 10)` int DEFAULT NULL,
  `Date_Of_Transaction` date NOT NULL,
  PRIMARY KEY (`Transaction_ID`,`Crop_ID`),
 --  UNIQUE KEY `Transaction_ID_UNIQUE`
(`Transaction_ID`),
 FOREIGN KEY (`Crop_ID`) REFERENCES
`crop_mandi_board` (`Crop_ID`) ON UPDATE
CASCADE,
FOREIGN KEY (`seller_ID`) REFERENCES
`seller` (`User_ID`) ON UPDATE CASCADE,
FOREIGN KEY (`buyer_ID`) REFERENCES
`trader` (`Trader_ID`) ON UPDATE CASCADE,
FOREIGN KEY (`Mandi_BoardID`) REFERENCES
`mandi_board` (`Mandi_Board_Id`) ON UPDATE
CASCADE
);
```

Schema for Trader:

```
CREATE TABLE `trader` (
  `Trader_ID` varchar(100) NOT NULL,
  `Login` varchar(100) NOT NULL,
  `Password` varchar(100) NOT NULL,
  `Name` varchar(100) NOT NULL,
  `Mobile_Number` bigint DEFAULT NULL,
  `Bank_Account_Number` bigint NOT NULL,
  `Total_Trade_Charges` double DEFAULT NULL,
  PRIMARY KEY (`Trader_ID`),
  UNIQUE KEY `Trader_ID_UNIQUE`
(`Trader_ID`),
  UNIQUE KEY `Login_UNIQUE` (`Login`)
);
```

Schema for Coupon

```
CREATE TABLE `coupon` (
  `Coupon_Id` varchar(100) NOT NULL,
  `Transaction_ID` varchar(100) NOT NULL,
  `Crop_ID` varchar(100) NOT NULL,
  `Value` double NOT NULL,
  `Valid_Till` date NOT NULL,
  `Seller_Status` varchar(1) NOT NULL,
  `Buyer_Status` varchar(1) NOT NULL,
  PRIMARY KEY (`Coupon_Id`),
  FOREIGN KEY (`Transaction_ID`)
REFERENCES `transaction` (`Transaction_ID`)
ON UPDATE CASCADE,
  FOREIGN KEY (`Crop_ID`) REFERENCES
`transaction` (`Crop_ID`) ON UPDATE CASCADE
);
```

Schema for Crop_Seller

```
CREATE TABLE `crop_seller` (
  `Seller_ID` varchar(100) NOT NULL,
  `Crop_ID` varchar(100) NOT NULL,
  `Quality(out of 10)` int DEFAULT NULL,
  `SellingPrice` double DEFAULT NULL,
  `Quantity(in Quintal)` double DEFAULT NULL,
  PRIMARY KEY  (`Seller_ID`, `Crop_ID`),
  FOREIGN KEY (`Seller_ID`) REFERENCES
`seller` (`User_ID`) ON DELETE CASCADE ON
UPDATE CASCADE,
  FOREIGN KEY (`Crop_ID`) REFERENCES
`crop_mandi_board` (`Crop_ID`) ON DELETE
CASCADE ON UPDATE CASCADE
);
```

Schema for MandiBoard:

```
CREATE TABLE `mandi_board` (
  `Mandi_Board_Id` varchar(100) NOT NULL,
  `Login` varchar(100) NOT NULL,
  `Password` varchar(100) NOT NULL,
  `Name` varchar(100) NOT NULL,
  `State` varchar(100) NOT NULL,
  `Location` varchar(500) DEFAULT NULL,
  `Rating` double DEFAULT NULL,
  `Trade_Charges(%)` double NOT NULL,
  `Registered_Users` int DEFAULT '0',
  `Revenue_Trading` int DEFAULT '0',
  `Revenue_Storage_Space` int DEFAULT '0',
  `Email_Address` varchar(100) DEFAULT NULL,
  `Contact_No` bigint DEFAULT NULL,
  PRIMARY KEY (`Mandi_Board_Id`),
  UNIQUE KEY `Mandi_Board_Id_UNIQUE`
(`Mandi_Board_Id`),
  UNIQUE KEY `Login_UNIQUE` (`Login`)
);
```

Schema for FPO:

```
CREATE TABLE `fpo` (
  `FPO_ID` varchar(100) NOT NULL,
  `User_ID_Linked` varchar(100) NOT NULL,
  `FPO_Registration_Date` date DEFAULT NULL,
  `Address` varchar(200) DEFAULT NULL,
  UNIQUE KEY `FPO_ID_UNIQUE` (`FPO_ID`),
  UNIQUE KEY `USER_ID_LINKED_UNIQUE`
(`User_ID_Linked`),
  PRIMARY KEY  (`FPO_ID`),
 --  CONSTRAINT `FPO_ID`
  FOREIGN KEY (`User_ID_Linked`)
REFERENCES `seller` (`User_ID`) ON DELETE
CASCADE ON UPDATE CASCADE
);
```

Schema for Farmers:

```
CREATE TABLE `farmers` (
  `Farmer_ID` varchar(100) NOT NULL,
  `User_ID_Linked` varchar(100) NOT NULL,
  `Land_Area` double DEFAULT NULL,
  `FPO_ID` varchar(100) DEFAULT NULL,
  `Trade_Charges` double DEFAULT '0',
  UNIQUE KEY `Farmer_ID_UNIQUE`
(`Farmer_ID`),
  UNIQUE KEY `User_ID_Linked_UNIQUE`
(`User_ID_Linked`),
  PRIMARY KEY  (`Farmer_ID`),
  FOREIGN KEY (`User_ID_Linked`)
REFERENCES `seller` (`User_ID`) ON DELETE
CASCADE ON UPDATE CASCADE,
  FOREIGN KEY (`FPO_ID`) REFERENCES `fpo`
(`FPO_ID`) ON DELETE SET NULL ON UPDATE
CASCADE
);
```

Schema for Crop_Mandi_Board

```
CREATE TABLE `crop_mandi_board` (
  `Crop_ID` varchar(100) NOT NULL,
  `Crop_Name` varchar(100) NOT NULL,
  `MandiBoard1_MSP` double DEFAULT NULL,
  `MandiBoard1_Previous` double DEFAULT NULL,
  `MandiBoard2_MSP` double DEFAULT NULL,
  `MandiBoard2_Previous` double DEFAULT NULL,
  `MandiBoard3_MSP` double DEFAULT NULL,
  `MandiBoard3_Previous` double DEFAULT NULL,
  `MandiBoard4_MSP` double DEFAULT NULL,
  `MandiBoard4_Previous` double DEFAULT NULL,
  `MandiBoard5_MSP` double DEFAULT NULL,
  `MandiBoard5_Previous` double DEFAULT NULL,
  `MandiBoard6_MSP` double DEFAULT NULL,
  `MandiBoard6_Previous` double DEFAULT NULL,
  `MandiBoard7_MSP` double DEFAULT NULL,
  `MandiBoard7_Previous` double DEFAULT NULL,
  `MandiBoard8_MSP` double DEFAULT NULL,
  `MandiBoard8_Previous` double DEFAULT NULL,
  `MandiBoard9_MSP` double DEFAULT NULL,
  `MandiBoard9_Previous` double DEFAULT NULL,
  `MandiBoard10_MSP` double DEFAULT NULL,
  `MandiBoard10_Previous` double DEFAULT NULL,
  `MandiBoard11_MSP` double DEFAULT NULL,
  `MandiBoard11_Previous` double DEFAULT NULL,
  `MandiBoard12_MSP` double DEFAULT NULL,
  `MandiBoard12_Previous` double DEFAULT NULL,
  `MandiBoard13_MSP` double DEFAULT NULL,
  `MandiBoard13_Previous` double DEFAULT NULL,
  `MandiBoard14_MSP` double DEFAULT NULL,
  `MandiBoard14_Previous` double DEFAULT NULL,
  `MandiBoard15_MSP` double DEFAULT NULL,
  `MandiBoard15_Previous` double DEFAULT NULL,
  PRIMARY KEY (`Crop_ID`),
  UNIQUE KEY `Crop_ID_UNIQUE` (`Crop_ID`)
);
```

Schema for Farmer_MandiBoard

```
CREATE TABLE `farmer-mandiboard` (
`User_ID` varchar(100) NOT NULL,
`Mandi_Board_ID` varchar(100) NOT NULL,
PRIMARY KEY  (`User_ID`,
`Mandi_Board_ID`),
FOREIGN KEY (`User_ID`) REFERENCES
`seller` (`User_ID`) ON DELETE CASCADE ON
UPDATE CASCADE,
FOREIGN KEY (`Mandi_Board_ID`)
REFERENCES `mandi_board`
(`Mandi_Board_Id`) ON DELETE CASCADE
ON UPDATE CASCADE
);
```

Schema for Storage_Mandi_House

```
CREATE TABLE `storage_mandi_house` (
  `Storage_ID` varchar(100) NOT NULL,
  `Mandi_Board_Id` varchar(100) NOT NULL,
  `Renter_Person_Id` varchar(100) DEFAULT
NULL,
  `Charges` int NOT NULL,
  `timeFrom` date DEFAULT NULL,
  `timeTO` date DEFAULT NULL,
  `Space` int NOT NULL,
  PRIMARY KEY
(`Storage_ID`,`Mandi_Board_Id`),
FOREIGN KEY (`Mandi_Board_Id`)
REFERENCES `mandi_board`
(`Mandi_Board_Id`) ON DELETE CASCADE
ON UPDATE CASCADE,
FOREIGN KEY (`Renter_Person_Id`)
REFERENCES `seller` (`User_ID`) ON
DELETE CASCADE ON UPDATE CASCADE
);
```

Schema for Complain_Seller

```
CREATE TABLE `complain` (
`Complain_ID` varchar(100) NOT NULL,
`Complain_From` varchar(100) NOT NULL,
`Complain_Detail` varchar(100) DEFAULT NULL,
`Current_Status` varchar(1) NOT NULL,
`Date` date NOT NULL,
PRIMARY KEY  (`Complain_ID`),
FOREIGN KEY (`Complain_From`)
REFERENCES `seller` (`User_ID`) ON DELETE
CASCADE ON UPDATE CASCADE
);
```

Schema for Seller_Policy

```
CREATE TABLE `seller_policy` (
  `Seller_ID` varchar(100) NOT NULL,
  `Policy_Id` varchar(100) NOT NULL,
  `Date_registeration` date NOT NULL,
PRIMARY KEY (`Policy_Id`,`Seller_ID`),
 FOREIGN KEY (`Seller_ID`) REFERENCES
`seller` (`User_ID`) ON UPDATE CASCADE,
 FOREIGN KEY (`Policy_Id`) REFERENCES
`government_policy` (`Policy_Id`) ON UPDATE
CASCADE
);
```

Schema for Government_Policy

```
CREATE TABLE `government_policy` (
  `Policy_Id` varchar(100),
  `Name` varchar(100),
  `Details` varchar(500),
  `Implemented_On` date DEFAULT NULL,
  `Expires_On` date DEFAULT NULL,
  `Target_Income` int DEFAULT NULL,
  `Expenditure(in crore)` double DEFAULT NULL,
  PRIMARY KEY (`Policy_Id`)
);
```

Schema for Complain_Trader

```
CREATE TABLE `complain_trader` (
`Complain_ID` varchar(100) NOT NULL,
  `Complain_From` varchar(100) NOT NULL,
  `Complain_Detail` varchar(500) DEFAULT NULL,
  `Current_Status` varchar(1) NOT NULL,
  `Date` date NOT NULL,
  PRIMARY KEY  (`Complain_ID`),
FOREIGN KEY (`Complain_From`)
REFERENCES `trader` (`Trader_ID`) ON DELETE
CASCADE ON UPDATE CASCADE
) ;
```

Schema for Official

```
CREATE TABLE `official` (
  `Official_ID` varchar(100) NOT NULL,
  `Login` varchar(100) NOT NULL,
  `Password` varchar(100) NOT NULL,
  UNIQUE KEY `Official_ID_UNIQUE`
(`Official_ID`),
  UNIQUE KEY `Login_UNIQUE` (`Login`),
  PRIMARY KEY (`Official_ID`)
);
```

Schema for Analyst:

```
CREATE TABLE `analyst` (
  `Analyst_ID` varchar(100) NOT NULL,
  `Login` varchar(100) NOT NULL,
  `Password` varchar(100) NOT NULL,
  `Analyst Name` varchar(100) NOT NULL,
  PRIMARY KEY (`Analyst_ID`),
  UNIQUE KEY `Analyst_ID_UNIQUE`
(`Analyst_ID`),
  UNIQUE KEY `Login_UNIQUE` (`Login`)
) ;
```

Adding Range Constraints : -

1) Constraint in TABLE seller

```
ALTER TABLE seller
ADD CHECK (Income >= 0);
```

2)Constraint in TABLE trader

```
ALTER TABLE trader
ADD CONSTRAINT chk1 CHECK (Total_Trade_Charges >=0 AND Mobile_Number >=0 AND
Bank_Account_Number >= 0);
```

3)Constraint in TABLE farmers

```
ALTER TABLE farmers
ADD CONSTRAINT chk2 CHECK (Land_Area >= 0 AND Trade_Charges >=0);
```

4)Constraint in TABLE mandi_board

```
ALTER TABLE mandi_board
ADD CONSTRAINT chk3 CHECK (Rating >= 0 AND Registered_Users >= 0 AND
Revenue_Trading >= 0 AND Revenue_Storage_Space >= 0 AND `Trade_Charges(%)` >= 0);
```

5)Constraint in TABLE government_policy

```
ALTER TABLE government_policy
ADD CONSTRAINT chk4 CHECK (Target_Income >= 0);
```

6)Constraint in TABLE crop_seller

```
ALTER TABLE crop_seller
ADD CONSTRAINT chk5 CHECK (SellingPrice >= 0);
```

7)Constraint in TABLE coupon

```
ALTER TABLE coupon
ADD CONSTRAINT chk6 CHECK (Value >= 0);
```

8)Constraint in TABLE transaction

```
ALTER TABLE transaction
ADD CONSTRAINT chk7 CHECK (`Amount(in per Rs 1000)` >= 0);
```

9)Constraint in TABLE storage_mandi_house

```
ALTER TABLE storage_mandi_house
ADD CONSTRAINT chk8 CHECK (charges >= 0);
```