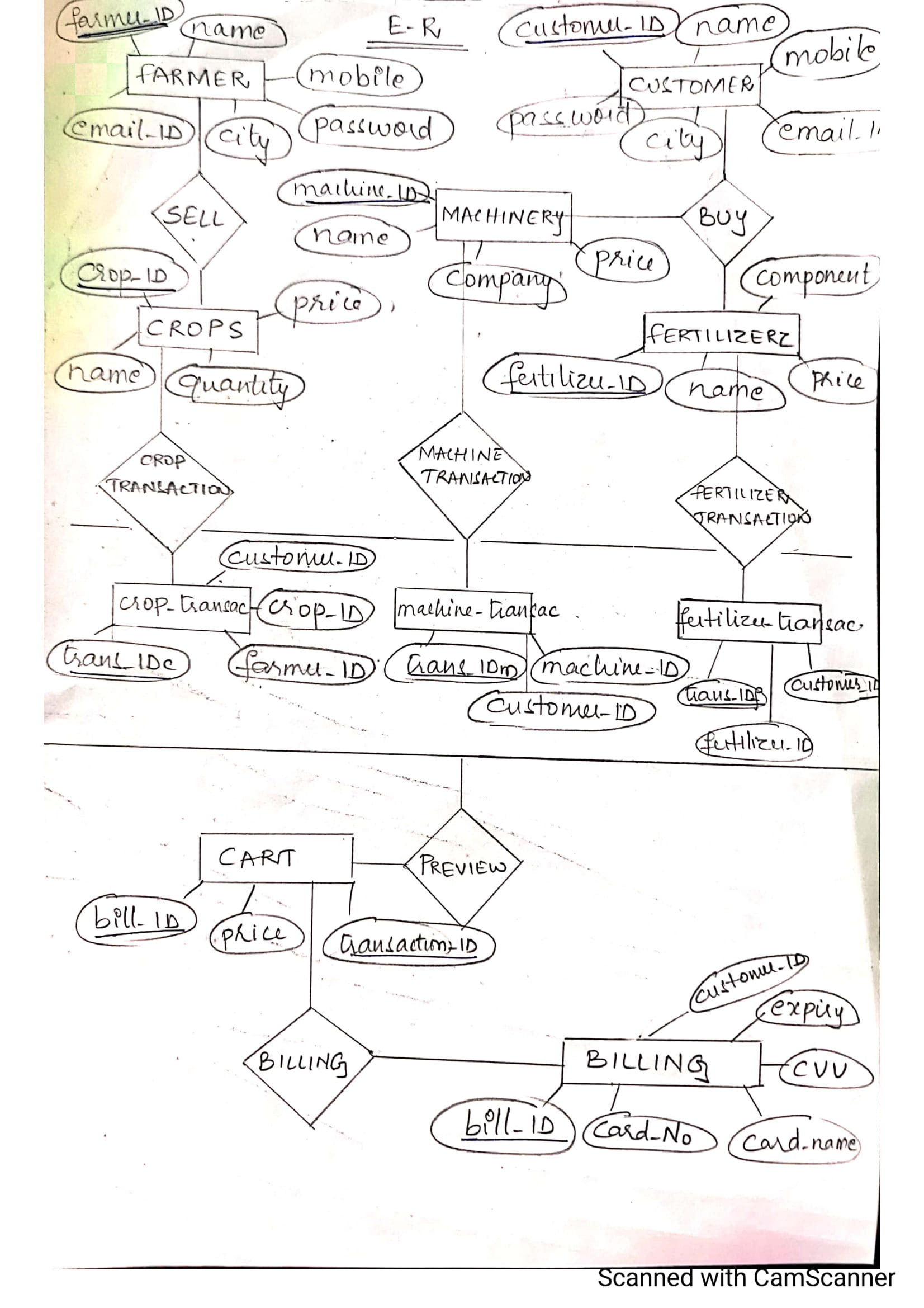
**Database management project : Normalization**

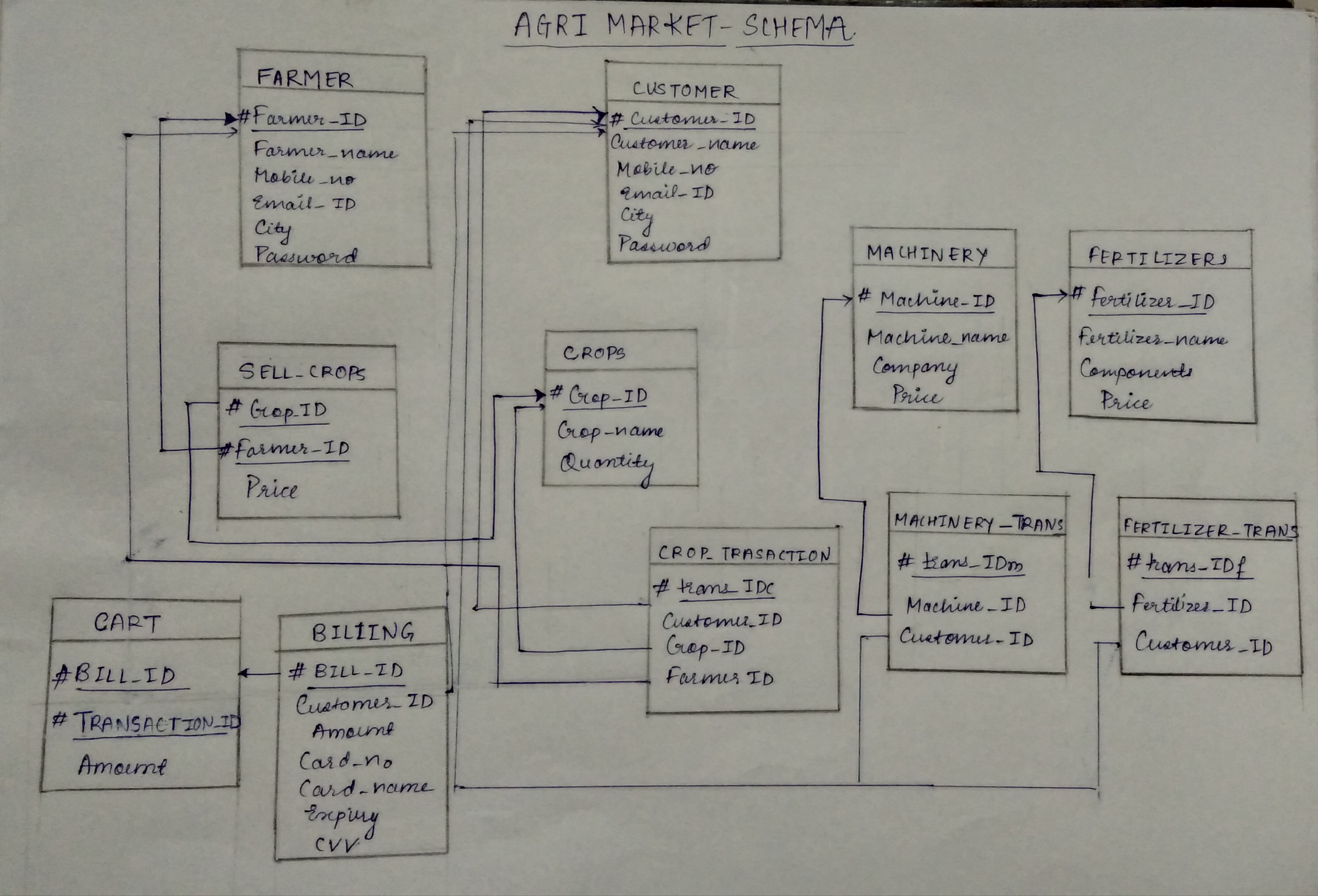
**Name : Siddhika Santoshkumar Bejekar**

**MIS no : 111803136**

**Project : Agri-market(Agriculture management system)**

**AGRI-MARKET**

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**Normalization:**

**1)Farmer table:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **#Farmer\_id** | **Username** | **Name** | **Mobile\_no** | **Email** | **Address** | **password** |

**Primary key: Farmer\_id**

**Functional dependencies:**

{Farmer\_id}-> Name, Mobile\_no, Email, Address, Username

{username}-> password

Thus, by transitive property of Functional dependencies,

Farmer\_id-> password

Closure of Farmer\_id:

(Farmer\_id)+ : {Name, Mobile\_no, Email, Address, username, password}

Candidate key : Farmer\_id

Prime attributes : Farmer\_id

Non-prime attributes : Name, Mobile\_no, Email, Address, username, password

There is no partial dependency, hence the table is in Second Normal form.

Username is non-prime attribute and username->password. Thus, not in Third Normal Form.

Farmer table :

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **#Farmer\_id** | **Username** | **Name** | **Mobile\_no** | **Email** | **Address** |

Functional dependencies:

{Farmer\_id}-> Name, Mobile\_no, Email, Address, username

Username table for farmer:

|  |  |
| --- | --- |
| **#username** | **password** |

Functional dependency:

{username}->password

Now the tables are in Third Normal Form.

**2)Customer table:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **#Customer\_id** | **Name** | **Mobile\_no** | **Email\_id** | **Address** | **username** | **password** |

Primary key: Customer\_id

**Functional dependencies:**

{Customer\_id}-> Name, Mobile\_no, Email, Address, username

{username}-> password

Thus, by transitive property of Functional dependencies,

Customer\_id-> password

Closure of Customer\_id:

(Customer\_id)+ : {Name, Mobile\_no, Email, Address, username, password}

Candidate key : Customer\_id

Prime attributes : Customer\_id

Non-prime attributes : Name, Mobile\_no, Email, Address, username, password

There is no partial dependency, hence the table is in Second Normal form.

Username is non-prime attribute and username->password. Thus, not in Third Normal Form.

Customer table:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **#Customer\_id** | **username** | **Name** | **Mobile\_no** | **Email** | **Address** |

Functional dependencies:

Customer\_id->Name, Mobile\_no, Email, Address, username

Username table for customer:

|  |  |
| --- | --- |
| **#Username** | **password** |

Functional dependency :

username->password

Now the tables are in Third Normal Form.

**Table for Products that can be sold by farmers and can be bought by customers :**

**The crops are sold by farmers on the site.**

**3)Crops table:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **#Crop\_id** | **#Farmer\_id** | **Crop\_name** | **Farmer\_name** | **price** |

Primary key: {Crop\_id, Farmer\_id }

Foreign key : Farmer\_id

**Functional dependencies:**

{Crop\_id, Farmer\_id}-> Price

{Crop\_id}-> Crop\_name

{Farmer\_id}-> Farmer\_name

{Crop\_id, Farmer\_id}-> Farmer\_name, Crop\_name, price

Thus, Candidate key : {Crop\_id, Farmer\_id}

Prime attributes : Crop\_id, Farmer\_id

Non-prime attributes : Farmer\_name, Crop\_name, price

There is partial dependency as Farmer\_name is partially dependent on only farmer\_id of candidate key and Crop\_name dependent only on Crop\_id.

Crop by farmers:

|  |  |  |
| --- | --- | --- |
| **#Crop\_id** | **#Farmer\_id** | **Price** |

Crops:

|  |  |
| --- | --- |
| **#Crop\_id** | **Crop\_name** |

Farmer selling crops:

|  |  |
| --- | --- |
| **#Farmer\_id** | **Farmer\_name** |

Now there is no partial dependency. The table is in Second Normal Form.

There are no Transitive functional dependencies. Thus, the tables are in Third Normal Form.

**The fertilizers and machine can be bought by farmers directly from the site.**

**4)Fertilizers table:**

|  |  |  |  |
| --- | --- | --- | --- |
| **#Fertilizer\_id** | **Fertilizer** | **components** | **price** |

Primary key : Fertilizer\_id

Functional dependencies:

{Fertilizer\_id}->Fertilizer, components, price

There is no partial dependency, hence the table is in Second Normal form.

There are no transitive functional dependencies, thus it is in Third Normal Form.

**5)Machine table:**

|  |  |  |  |
| --- | --- | --- | --- |
| **#Machine\_id** | **machine** | **Company** | **price** |

Primary key : Machine\_id

Functional dependencies:

{Machine\_id}->Machine, Company, Price

There is no partial dependency, hence the table is in Second Normal form.

There are no transitive functional dependencies, thus it is in Third Normal Form.

**Transaction tables:**

**6)Transaction table for buying crops:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **#Transaction\_id** | **Customer\_id** | **Customer\_name** | **Crop\_id** | **Crop\_name** | **Farmer\_id** | **Farmer\_name** |

Primary key : Transaction\_id

Foreign keys: Customer\_id, Crop\_id, Farmer\_id

Functional dependencies:

Transaction\_id-> Crop\_id, Cust\_id, Farmer\_id

Crop\_id->Crop\_name

Farmer\_id->Farmer\_name

Customer\_id-> Customer\_name

Thus, by the property of transitive dependency,

Transaction\_id->Customer\_id, Customer\_name, Crop\_id, Crop\_name, Farmer\_id,Farmer\_name

Transaction\_id is the candidate key

Prime attributes : Transaction\_id

Non prime\_attributes : Customer\_id, Customer\_name, Crop\_id, Crop\_name, Farmer\_id,Farmer\_name

There is partial dependency, so to convert to 2NF,

|  |  |  |  |
| --- | --- | --- | --- |
| **#Transaction\_id** | **Customer\_id** | **Crop\_id** | **Farmer\_id** |

Primary key: Transaction\_id

FD: Transaction\_id -> Customer\_id, Crop\_id, Farmer\_id

There is no transitive dependency within this table.

|  |  |
| --- | --- |
| **#Customer\_id** | **Customer\_name** |

Primary key : Customer\_id

FD : Customer\_id-> Customer\_name

|  |  |
| --- | --- |
| **#Crop\_id** | **Crop\_name** |

Primary key : Crop\_id

FD: Crop\_id-> Crop\_name

|  |  |
| --- | --- |
| **#Farmer\_id** | **Farmer\_name** |

Primary key : Farmer\_id

FD: Farmer\_id-> Farmer\_name

Thus, all the tables are in 2NF there are no transitive dependencies within any table. Thus, they are in Third normal form(3NF).

**7)Transaction table for buying fertilizers:**

|  |  |  |
| --- | --- | --- |
| **#Fertilizer\_trans\_id** | **Fertilizer\_id** | **Farmer\_id** |

Primary key : Fertilizer\_trans\_id

Foreign keys: Farmer\_id, Fertilizer\_id

Functional dependencies:

Fertilizer\_trans\_id -> Fertilizer\_id, Farmer\_id

**8)Transaction table for buying machinery:**

|  |  |  |
| --- | --- | --- |
| **#Machine\_trans\_id** | **Machine\_id** | **Farmer\_id** |

Primary key : Machine\_trans\_id

Foreign keys: Farmer\_id, Machine\_id

Functional dependencies:

Machine\_trans\_id -> Machine\_id, Farmer\_id