TABLE DESIGN – AGROHUB

Users Table

Primary Key: user_id

Field Name	Data Type (Size)	Key Constraints	Description
user_id	INT	PRIMARY KEY	Unique identifier for each user
name	VARCHAR(100)	—	Full name of the user
email	VARCHAR(100)	UNIQUE	Login email address
password	VARCHAR(255)	—	Encrypted password
phone	VARCHAR(15)	—	Contact number
role	VARCHAR(20)	—	User role (Farmer / Owner / Admin)

Equipment Table

Primary Key: equipment_id
Foreign Key: owner_id → users(user_id)

Field Name	Data Type (Size)	Key Constraints	Description
equipment_id	INT	PRIMARY KEY	Unique equipment identifier
owner_id	INT	FOREIGN KEY	Equipment owner
equipment_name	VARCHAR(100)	—	Name of the equipment
equipment_type	VARCHAR(50)	—	Type of agricultural equipment
condition	VARCHAR(30)	—	Equipment condition
price	DECIMAL(10,2)	—	Rental or selling price
availability	VARCHAR(20)	—	Availability status

Rental Transactions Table

Primary Key: rental_id

Foreign Keys:

- farmer_id → users(user_id)
- equipment_id → equipment(equipment_id)

Field Name	Data Type (Size)	Key Constraints	Description
rental_id	INT	PRIMARY KEY	Rental transaction ID
farmer_id	INT	FOREIGN KEY	Farmer renting the equipment
equipment_id	INT	FOREIGN KEY	Rented equipment
start_date	DATE	—	Rental start date
end_date	DATE	—	Rental end date
status	VARCHAR(20)	—	Rental status

Worker Hiring Table

Primary Key: worker_id

Field Name	Data Type (Size)	Key Constraints	Description
worker_id	INT	PRIMARY KEY	Worker identifier
name	VARCHAR(100)	—	Worker name
skill	VARCHAR(100)	—	Area of expertise
experience	INT	—	Years of experience
contact	VARCHAR(15)	—	Contact number
availability	VARCHAR(20)	—	Availability status

Digital Agreement Table

Primary Key: agreement_id

Foreign Key: rental_id → rental_transactions(rental_id)

Field Name	Data Type (Size)	Key Constraints	Description
agreement_id	INT	PRIMARY KEY	Agreement identifier
rental_id	INT	FOREIGN KEY	Related rental transaction
agreement_date	DATE	—	Date of agreement
agreement_status	VARCHAR(20)	—	Agreement status

Insurance Table

Primary Key: insurance_id
Foreign Key: equipment_id → equipment(equipment_id)

Field Name	Data Type (Size)	Key Constraints	Description
insurance_id	INT	PRIMARY KEY	Insurance identifier
equipment_id	INT	FOREIGN KEY	Insured equipment
policy_type	VARCHAR(50)	—	Insurance policy type
coverage_amount	DECIMAL(10,2)	—	Coverage amount
validity	DATE	—	Policy validity date

Payments Table

Primary Key: payment_id
Foreign Keys:

- user_id → users(user_id)
- rental_id → rental_transactions(rental_id)

Field Name	Data Type (Size)	Key Constraints	Description
payment_id	INT	PRIMARY KEY	Payment identifier
user_id	INT	FOREIGN KEY	Paying user
rental_id	INT	FOREIGN KEY	Related rental
amount	DECIMAL(10,2)	—	Payment amount
payment_method	VARCHAR(30)	—	Mode of payment
payment_status	VARCHAR(20)	—	Payment status
payment_date	DATE	—	Date of payment

TABLE NORMALISATION – AGROHUB

First Normal Form (1NF)

A table is said to be in **First Normal Form (1NF)** if:

- Each field contains **atomic (indivisible) values**
- There are **no repeating groups**
- Each record is uniquely identified by a **primary key**

Application in AgroHub

- The **Users** table stores one value per field such as name, email, phone, and role.
- The **Equipment** table stores one equipment per record without multivalued attributes.
- The **Rental_Transactions**, **Payments**, **Insurance**, and **Digital_Agreement** tables store one transaction per row.
- Each table contains a clearly defined **primary key** (e.g., user_id, equipment_id, rental_id).

All AgroHub tables satisfy **1NF**.

Second Normal Form (2NF)

A table is in **Second Normal Form (2NF)** if:

- It is already in **1NF**
- All non-key attributes are **fully functionally dependent** on the primary key
- There is **no partial dependency**

Application in AgroHub

- Each table uses a **single-column primary key**, such as user_id or payment_id.
- All attributes in each table depend only on their respective primary key.
- For example, in the **Payments** table, amount, payment_method, and payment_status depend only on payment_id.

All AgroHub tables satisfy **2NF**.

Third Normal Form (3NF)

A table is in **Third Normal Form (3NF)** if:

- It is already in **2NF**
- There is **no transitive dependency**
- Non-key attributes do not depend on other non-key attributes

Application in AgroHub

- User details are stored exclusively in the **Users** table.
- Equipment details are stored only in the **Equipment** table.
- Rental, payment, insurance, and agreement details are stored in **separate tables**.
- Foreign keys (user_id, equipment_id, rental_id) are used to link tables without duplicating data.

All AgroHub tables satisfy **3NF**, ensuring **minimal redundancy**, **data integrity**, and **efficient storage**.