Report on

FarmConnect: A Government-Mediated Agricultural Trading System

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Project Overview

FarmConnect is a database-driven platform designed to facilitate direct transactions between farmers and the government, eliminate third-party interference, and ensure fair pricing for agricultural products. The government acts as an intermediary, purchasing goods from farmers and selling them to vendors with a fixed 10% tax, which serves as government revenue. To prevent monopolization, vendors are assessed and classified, with purchase limits set based on their profile. The system promotes fairness, transparency, and economic sustainability for farmers while maintaining market balance.

Contributions

Table 1: Team Member's Contributions

ID	Name	Tasks	Contribution
2121228042	Md. Nayem Ahmed Niloy	• Project Plan • Project Overview • Project description • Conceptual and Physical Diagram • Key Milestone • Data Population • Query	34%
2121067642	Rulia Akter Eti	• Project Objective • Scope Statement • Logical Diagram • Table Creation • Conclusion	33%
2121071642	Saif Sarwar	• Project Deliverable • Roles and Responsibilities • Table Creation • project Schedule Grant Chart • Query	33%

1 Project Title

FarmConnect: A Government-Mediated Agricultural Trading System

2 Project Description

Our database system, **FarmConnect**, is a robust platform designed to ensure fair and efficient agricultural trade in Bangladesh. It empowers farmers by enabling them to directly sell their products to the government, eliminating third-party interference and maximizing their profits. The system also allows government-approved vendors to place product orders under monitored conditions, maintaining fair distribution and preventing market monopolization.

The `farmer` table holds details such as `farmer_id`, `name`, `contact`, `location`, `registration_date`, and `approved_by` (linked to `government`). Farmers list products in the `product` table, which includes attributes like `product_id`, `farmer_id`, `product_name`, `category`, `quantity_available`, `price_per_unit`, and `listing_date`.

Vendors are registered in the `vendor` table with fields like `vendor_id`, `name`, `contact`, `location`, `category`, `max_purchase_limit`, and `approved_by`. Orders are managed through the `order` table, which tracks `order_id`, `vendor_id`, `product_id`, `quantity_ordered`, `total_price`, `tax_amount`, `order_date`, `pickup_location`, and `order_status`.

The `government` table stores `gov_id`, `official_name`, `department`, `role`, and `contact`. Financial activities are recorded in the `transaction_log` table, which includes `transaction_id`, `order_id`, `vendor_id`, `tax_collected`, and `transaction_date`.

By integrating all stakeholders into a centralized and monitored system, FarmConnect ensures fair pricing, equitable vendor access, and transparent tax management, fostering a sustainable agricultural economy.

3 Project Objectives

The objectives of this project are:

- **Ensure Fair Trade for Farmers:** The system enables farmers to sell their products directly to the government without intermediaries, ensuring they receive a fair price for their goods. By eliminating third-party interference, farmers can maximize their profits.
- **Prevent Market Monopolization:** By categorizing vendors and implementing a purchase limit based on their profile, the system prevents monopolization, ensuring fair distribution of agricultural products among all vendors.
- **Facilitate Transparent Transactions:** Every transaction is recorded in a structured database, tracking product listings, orders, vendor purchases, and government tax collection. This transparency ensures accountability and prevents fraudulent activities.
- **Implement Efficient Order Management:** The system allows vendors to place orders for available products while enforcing their purchase limits. Farmers can track order details, pickup locations, and fulfillment status, streamlining the entire trade process.
- **Enable Government Oversight and Revenue Collection:** The government acts as an intermediary in all transactions, monitoring vendor purchases and applying a fixed 10% tax on each sale. The system ensures accurate tax collection and records all financial transactions.
- **Optimize Vendor Assessment and Categorization:** Vendors are assessed based on their history and categorized accordingly. Their assigned category determines their maximum purchase limit, ensuring that small-scale vendors also have access to agricultural products.
- **Enhance Data Security and Privacy:** The system ensures that sensitive information related to farmers, vendors, and government transactions is securely stored and accessed only by authorized personnel through role-based authentication.
- **Provide Comprehensive Reporting and Analytics:** The system generates reports on product availability, sales, vendor performance, and tax revenue. These insights help the government make informed policy decisions and ensure a balanced marketplace.
- **Apply Database and Software Development Principles:** This project demonstrates practical applications of database management, SQL queries, and software engineering principles in developing a scalable and efficient agricultural trading system.

  By achieving these objectives, the **FarmConnect** system ensures a fair and transparent trading ecosystem, empowers farmers, prevents monopolization, and strengthens government oversight while maintaining market balance.

4 Project Scope

4.1 Scope Statement:

The **FarmConnect** project aims to develop and implement a database-driven platform to facilitate direct transactions between farmers and the government while ensuring fair trade practices for vendors. The system will provide functionalities for farmers to list their agricultural products, including details such as farmer name, product name, quantity available, price per unit, and location. Vendors will be able to browse available products and place orders while adhering to predefined purchase limits set by the government.

The system will include a vendor assessment module, categorizing vendors based on their profiles and past transactions to prevent monopolization. The government will act as an intermediary, overseeing transactions and applying a fixed 10% tax on purchases, which will be recorded systematically for transparency. Additionally, comprehensive order tracking and reporting features will be integrated to monitor transactions, vendor performance, and government revenue collection.

To ensure security, the system will implement authentication and role-based access control, ensuring that only authorized users (farmers, vendors, and government officials) can access specific functionalities. The project will leverage MySQL for efficient data storage and retrieval, employing structured tables such as `farmer`, `product`, `vendor`, `order`, and `government_tax` to maintain a well-organized and scalable database.

By consolidating all agricultural trade operations into a single user-friendly platform, **FarmConnect** will enhance economic opportunities for farmers, ensure fair vendor participation, and streamline government oversight in the agricultural supply chain.

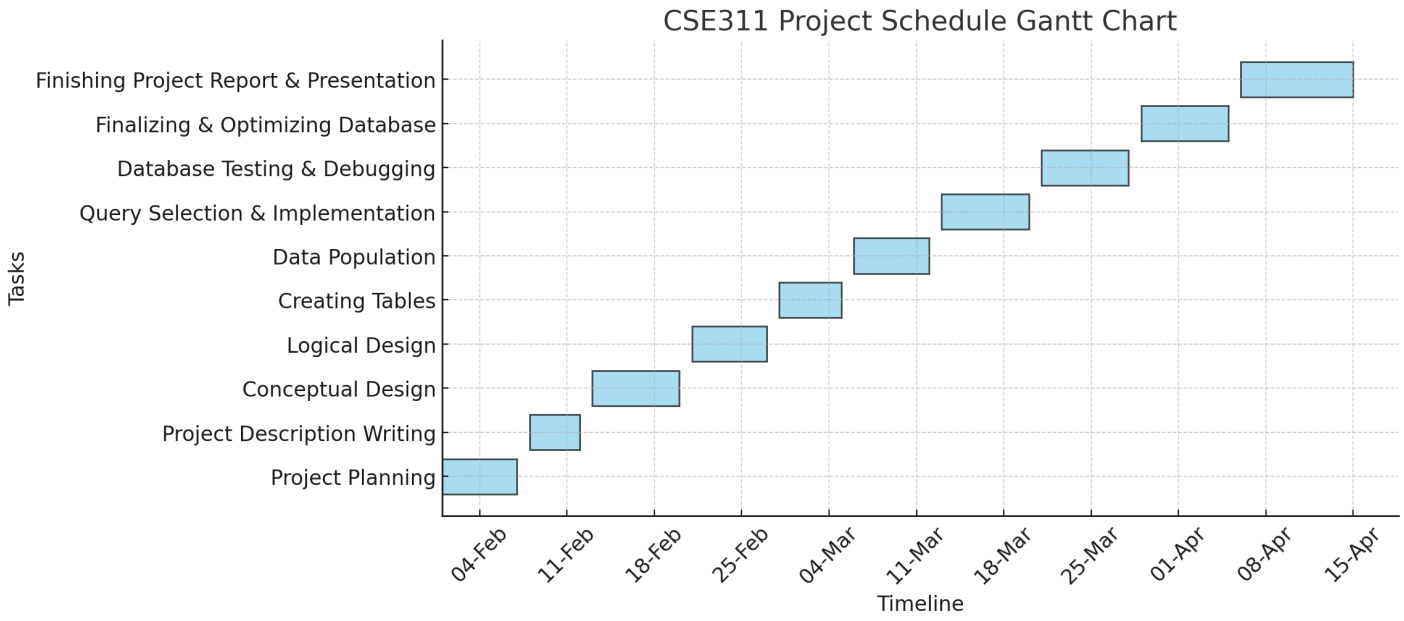
4.2 Key Milestones:

- Development of farmer registration and product listing modules.
- Implementation of vendor registration, assessment, and categorization system.
- Integration of order placement and purchase limit enforcement functionalities.
- Development of government oversight features, including tax application and revenue tracking.
- Implementation of transaction monitoring and reporting tools.
- Security integration with authentication and role-based access control.
- Testing and debugging of all system modules.
- Deployment of the FarmConnect platform for pilot testing.
- Training sessions for farmers, vendors, and government officials.
- Final system launch and ongoing maintenance with updates.

4.3 Roles and Responsibilities:

The **Development Team** is responsible for designing, developing, and testing the **FarmConnect** platform, ensuring that all core features function effectively. The **Project Manager** oversees the execution, resource allocation, and adherence to deadlines. The **Government Authorities** supervise vendor assessment, tax collection, and transaction monitoring. **Farmers** provide input by listing products, while **Vendors** engage with the system to purchase goods within assigned limits. Stakeholders, including agricultural policymakers and economic analysts, contribute feedback to improve the platform's efficiency and effectiveness in fair trade enforcement.

4.4 Project Schedule:



5 Deliverable

- **Farmer Registration and Portal:** A user-friendly interface that allows farmers to register, list their available products, and track sales made to the government.
- **Government Procurement System:** A module that enables government representatives to review and approve farmer product listings, ensuring fair pricing and smooth transactions.
- **Vendor Registration and Assessment Module:** A system for vendors to register and undergo a government assessment to prevent monopolization and ensure fair distribution.
- **Transaction and Payment Processing:** A secure and transparent mechanism for handling payments between farmers, the government, and vendors, ensuring that farmers receive fair compensation.
- **Tax Calculation and Application:** A feature that automatically applies a 10% tax on products sold by the government to vendors, ensuring compliance with taxation policies.
- **Inventory and Product Management:** A tool for farmers to update product availability, manage stock, and track real-time sales data.
- **Order Matching System:** A matching algorithm that helps the government fairly allocate available products to vendors based on demand, ensuring balanced distribution.
- **Search and Filtering System:** A feature that allows vendors and government officials to filter and search for products based on category, quantity, and pricing.
- **Reporting and Analytics Dashboard:** Real-time analytics on farmer sales, vendor purchases, tax revenue, and overall transaction trends to assist in data-driven decision-making.
- **Security and Role-Based Access Control:** A secure login system where farmers, government officials, and vendors have role-specific permissions to access only relevant functionalities.

6 Diagrams

6.1 Conceptual Design Diagram

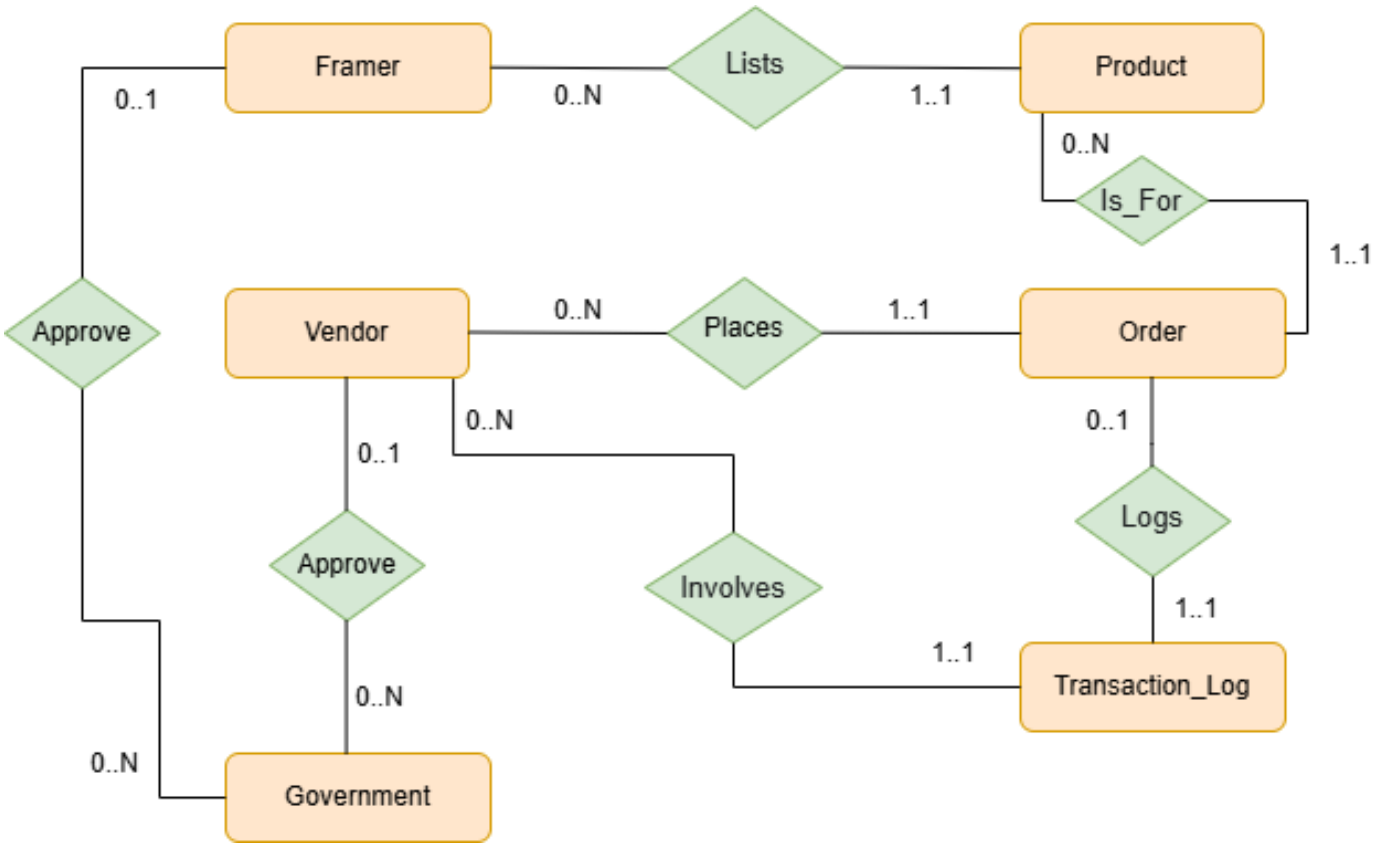


Figure 1: Conceptual design of the database

6.2 Logical Design Diagram

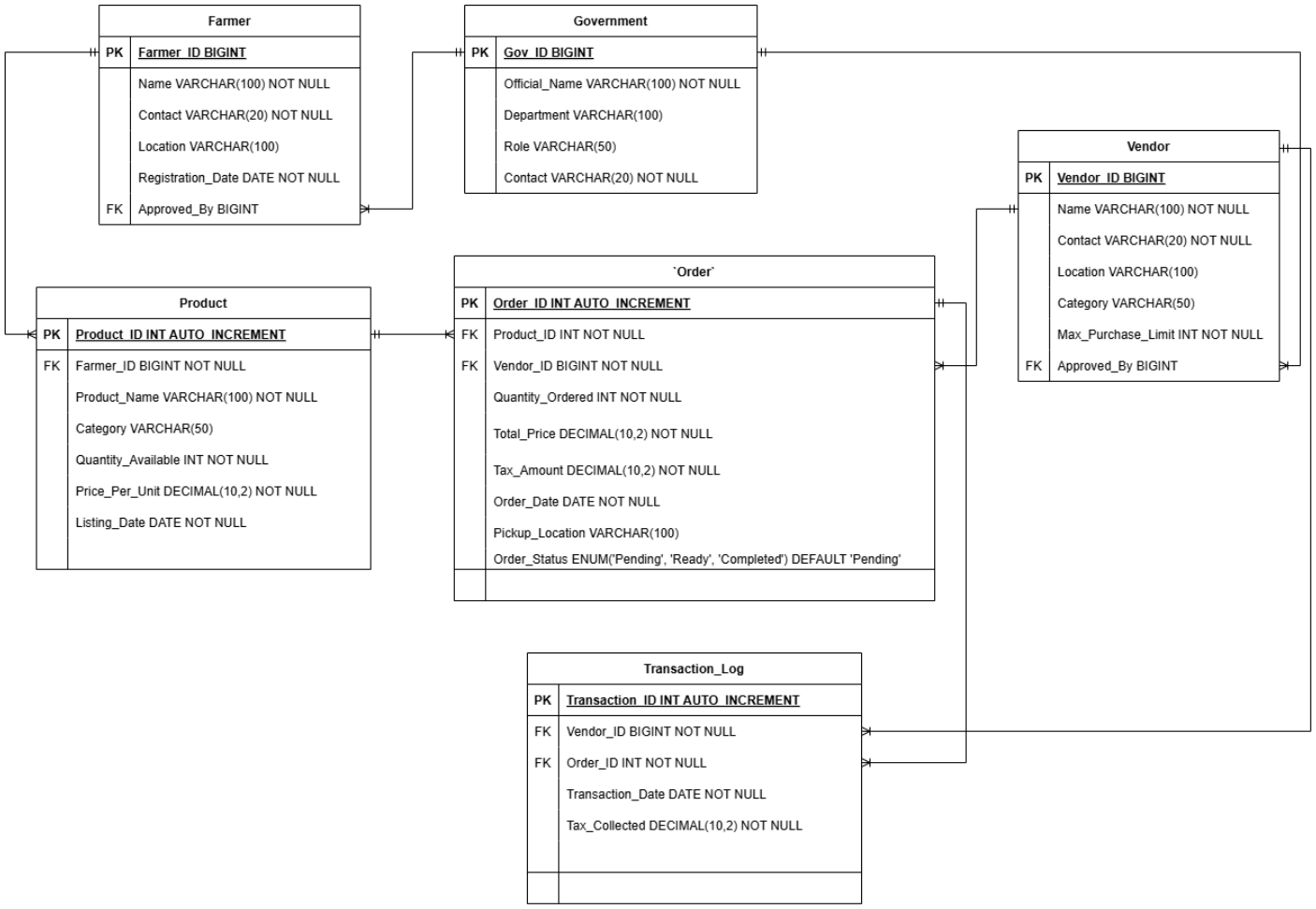


Figure 2: Logical design of the database

6.3 Physical Design Diagram

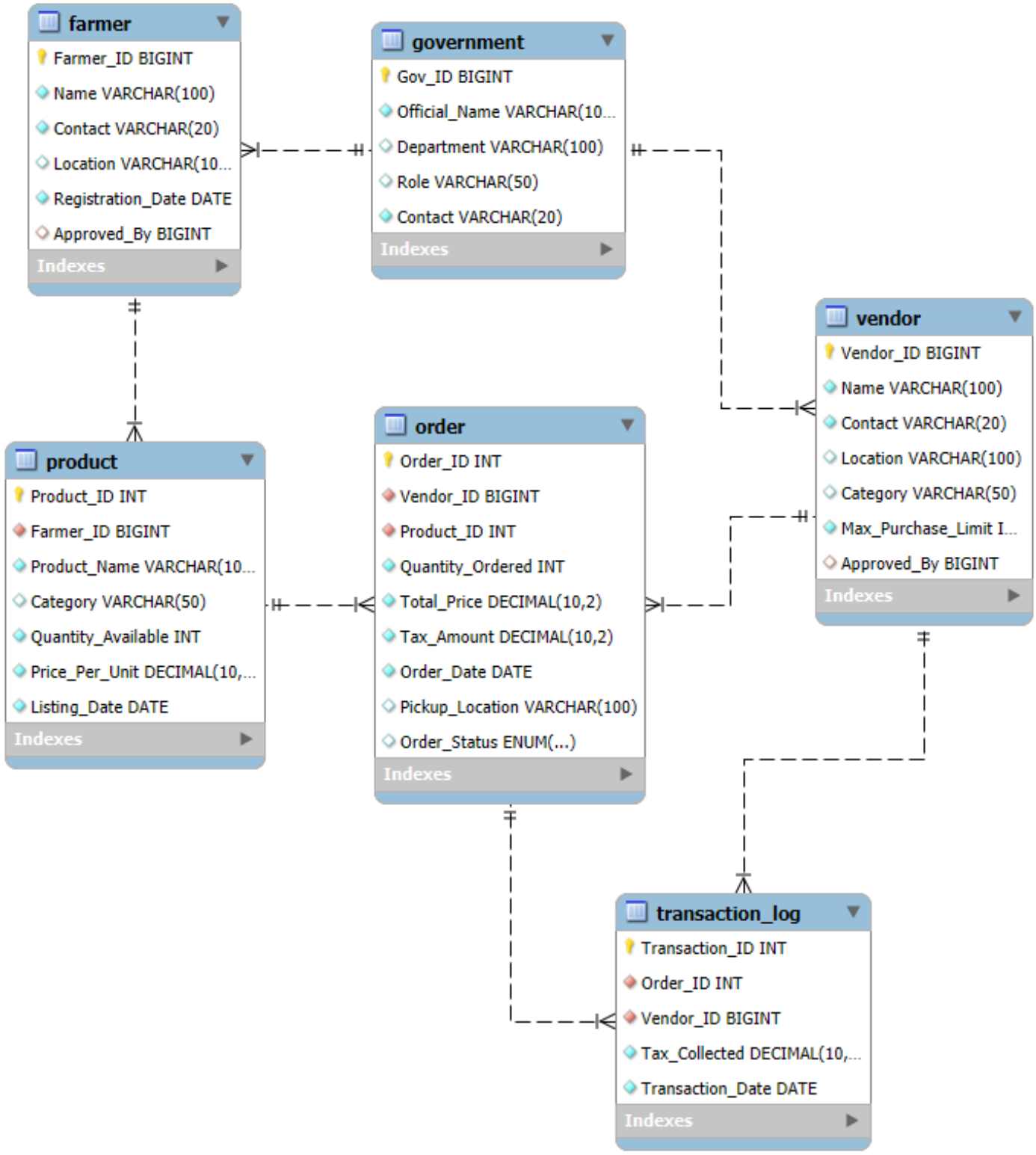


Figure 3: Physical design of the database

7 Table Creation

- **Farmer:**

```
    CREATE TABLE Farmer (
    Farmer_ID BIGINT PRIMARY KEY,
    Name VARCHAR(100) NOT NULL,
    Contact VARCHAR(20) NOT NULL,
    Location VARCHAR(100),
    Registration_Date DATE NOT NULL,
    Approved_By BIGINT,
    FOREIGN KEY (Approved_By) REFERENCES Government(Gov_ID)
);


```

- **Product:**

```
    CREATE TABLE Product (
    Product_ID INT AUTO_INCREMENT PRIMARY KEY,
    Farmer_ID BIGINT NOT NULL,
    Product_Name VARCHAR(100) NOT NULL,
    Category VARCHAR(50),
    Quantity_Available INT NOT NULL,
    Price_Per_Unit DECIMAL(10,2) NOT NULL,
    Listing_Date DATE NOT NULL,
    FOREIGN KEY (Farmer_ID) REFERENCES Farmer(Farmer_ID)
);


```

- **Vendor:**

```

    CREATE TABLE Vendor (
    Vendor_ID BIGINT PRIMARY KEY,
    Name VARCHAR(100) NOT NULL,
    Contact VARCHAR(20) NOT NULL,
    Location VARCHAR(100),
    Category VARCHAR(50),
    Max_Purchase_Limit INT NOT NULL,
    Approved_By BIGINT,
    FOREIGN KEY (Approved_By) REFERENCES Government(Gov_ID)
);


```

- **Government:**

```
    CREATE TABLE Government (
    Gov_ID BIGINT PRIMARY KEY,
    Official_Name VARCHAR(100) NOT NULL,
    Department VARCHAR(100),
    Role VARCHAR(50),
    Contact VARCHAR(20) NOT NULL
);


```

- **Order:**

```
    CREATE TABLE `Order` (
    Order_ID INT AUTO_INCREMENT PRIMARY KEY,
    Vendor_ID BIGINT NOT NULL,
    Product_ID INT NOT NULL,
    Quantity_Ordered INT NOT NULL,
    Total_Price DECIMAL(10,2) NOT NULL,
    Tax_Amount DECIMAL(10,2) NOT NULL,
    Order_Date DATE NOT NULL,
    Pickup_Location VARCHAR(100),
    Order_Status ENUM('Pending', 'Ready', 'Completed') DEFAULT 'Pending',
    FOREIGN KEY (Vendor_ID) REFERENCES Vendor(Vendor_ID),
    FOREIGN KEY (Product_ID) REFERENCES Product(Product_ID)
);


```

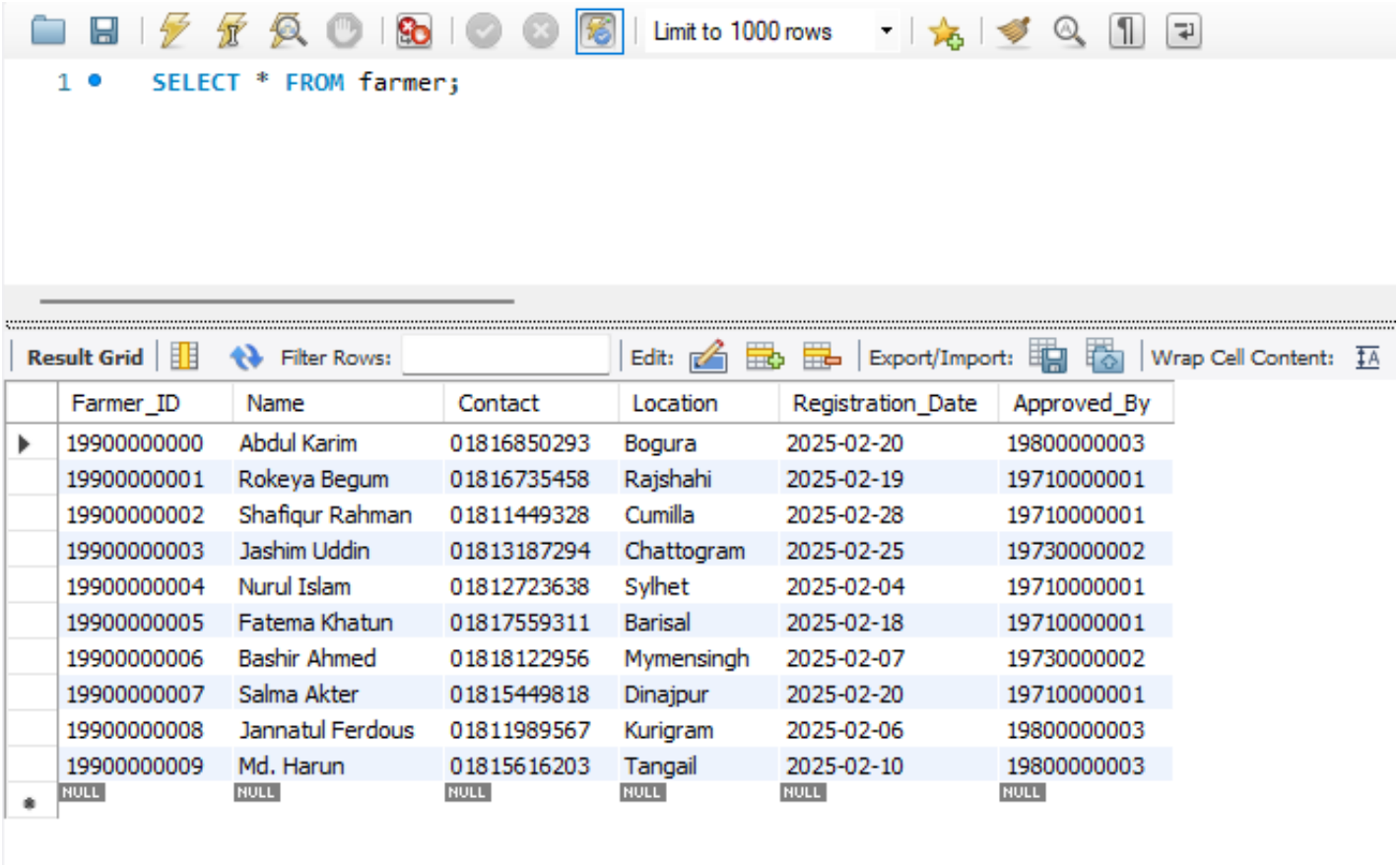
- **Transaction_Log:**

```
    CREATE TABLE Transaction_Log (
    Transaction_ID INT AUTO_INCREMENT PRIMARY KEY,
    Order_ID INT NOT NULL,
    Vendor_ID BIGINT NOT NULL,
    Tax_Collected DECIMAL(10,2) NOT NULL,
    Transaction_Date DATE NOT NULL,
    FOREIGN KEY (Order_ID) REFERENCES `Order`(Order_ID),
    FOREIGN KEY (Vendor_ID) REFERENCES Vendor(Vendor_ID)
);


```

7.1 Data Population:

Farmer:

```
INSERT INTO Farmer (Farmer_ID, Name, Contact, Location, Registration_Date, Approved_By) VALUES
(19900000000, 'Abdul Karim', '01816850293', 'Bogura', '2025-02-20', 19800000003),
(19900000001, 'Rokeya Begum', '01816735458', 'Rajshahi', '2025-02-19', 19710000001),
(19900000002, 'Shafiqur Rahman', '01811449328', 'Cumilla', '2025-02-28', 19710000001),
(19900000003, 'Jashim Uddin', '01813187294', 'Chattogram', '2025-02-25', 19730000002),
(19900000004, 'Nurul Islam', '01812723638', 'Sylhet', '2025-02-04', 19710000001),
(19900000005, 'Fatema Khatun', '01817559311', 'Barisal', '2025-02-18', 19710000001),
(19900000006, 'Bashir Ahmed', '01818122956', 'Mymensingh', '2025-02-07', 19730000002),
(19900000007, 'Salma Akter', '01815449818', 'Dinajpur', '2025-02-20', 19710000001),
(19900000008, 'Jannatul Ferdous', '01811989567', 'Kurigram', '2025-02-06', 19800000003),
(19900000009, 'Md. Harun', '01815616203', 'Tangail', '2025-02-10', 19800000003);
```

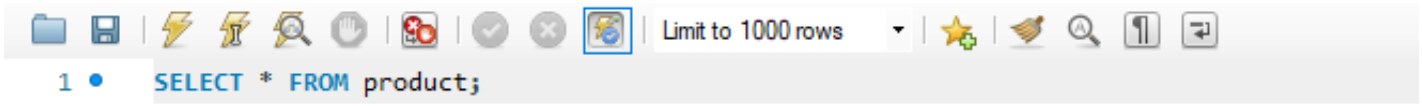


Farmer_ID	Name	Contact	Location	Registration_Date	Approved_By
19900000000	Abdul Karim	01816850293	Bogura	2025-02-20	19800000003
19900000001	Rokeya Begum	01816735458	Rajshahi	2025-02-19	19710000001
19900000002	Shafiqur Rahman	01811449328	Cumilla	2025-02-28	19710000001
19900000003	Jashim Uddin	01813187294	Chattogram	2025-02-25	19730000002
19900000004	Nurul Islam	01812723638	Sylhet	2025-02-04	19710000001
19900000005	Fatema Khatun	01817559311	Barisal	2025-02-18	19710000001
19900000006	Bashir Ahmed	01818122956	Mymensingh	2025-02-07	19730000002
19900000007	Salma Akter	01815449818	Dinajpur	2025-02-20	19710000001
19900000008	Jannatul Ferdous	01811989567	Kurigram	2025-02-06	19800000003
19900000009	Md. Harun	01815616203	Tangail	2025-02-10	19800000003
NULL	NULL	NULL	NULL	NULL	NULL

Figure 4: Farmer Table

Product:

```
        INSERT INTO Product (Product_ID, Farmer_ID, Product_Name, Category,
    Quantity_Available, Price_Per_Unit, Listing_Date) VALUES
(1, 19900000004, 'Potato', 'Grains', 117, 31.08, '2025-02-27'),
(2, 19900000006, 'Rice', 'Root Crops', 309, 47.48, '2025-02-08'),
(3, 19900000002, 'Wheat', 'Spices', 488, 49.13, '2025-02-10'),
(4, 19900000002, 'Onion', 'Grains', 341, 97.95, '2025-02-23'),
(5, 19900000001, 'Garlic', 'Vegetables', 205, 76.25, '2025-02-02'),
(6, 19900000007, 'Tomato', 'Vegetables', 494, 89.95, '2025-02-13'),
(7, 19900000008, 'Chili', 'Vegetables', 250, 71.48, '2025-02-06'),
(8, 19900000003, 'Pumpkin', 'Grains', 450, 81.49, '2025-02-14'),
(9, 19900000003, 'Brinjal', 'Root Crops', 450, 72.15, '2025-02-28'),
(10, 19900000001, 'Cucumber', 'Spices', 250, 54.09, '2025-02-19');
```



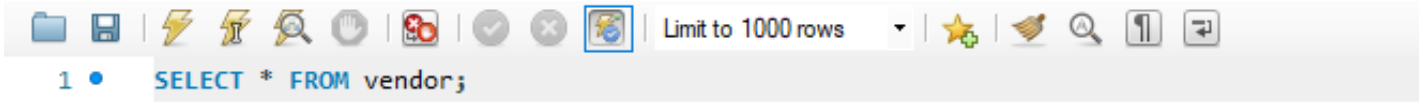
Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

Product_ID	Farmer_ID	Product_Name	Category	Quantity_Available	Price_Per_Unit	Listing_Date
1	19900000004	Potato	Grains	117	31.08	2025-02-27
2	19900000006	Rice	Root Crops	309	47.48	2025-02-08
3	19900000002	Wheat	Spices	488	49.13	2025-02-10
4	19900000002	Onion	Grains	341	97.95	2025-02-23
5	19900000001	Garlic	Vegetables	205	76.25	2025-02-02
6	19900000007	Tomato	Vegetables	494	89.95	2025-02-13
7	19900000008	Chili	Vegetables	250	71.48	2025-02-06
8	19900000003	Pumpkin	Grains	450	81.49	2025-02-14
9	19900000003	Brinjal	Root Crops	450	72.15	2025-02-28
10	19900000001	Cucumber	Spices	250	54.09	2025-02-19
NULL	NULL	NULL	NULL	NULL	NULL	NULL

Figure 5: Product Table

Vendor:

```
        INSERT INTO Vendor (Vendor_ID, Name, Contact, Location, Category,
    Max_Purchase_Limit, Approved_By) VALUES
(19850000000, 'Anwar Traders', '01616458481', 'Bogura', 'Vegetables', 1875,
    19800000003),
(19850000001, 'Mithila Distributors', '01618928725', 'Rajshahi', 'Root Crops',
    1650, 19730000002),
(19850000002, 'Karim Enterprise', '01615292966', 'Cumilla', 'Spices', 1818,
    19800000003),
(19850000003, 'Tania Agro', '01613433103', 'Chattogram', 'Vegetables', 1554,
    19710000001),
(19850000004, 'Sabbir Supply', '01616214745', 'Sylhet', 'Spices', 1544,
    19730000002),
(19850000005, 'Bismillah Vendors', '01619080420', 'Barisal', 'Spices', 1487,
    19800000003),
(19850000006, 'Greenline Suppliers', '01617925404', 'Mymensingh', 'Vegetables',
    577, 19800000003),
(19850000007, 'Shapla Traders', '01617125919', 'Dinajpur', 'Vegetables', 1271,
    19730000002),
(19850000008, 'AgroMart', '01618870557', 'Kurigram', 'Vegetables', 1364,
    19710000001),
(19850000009, 'Haque Brothers', '01618216990', 'Tangail', 'Spices', 1735,
    19800000003);
```



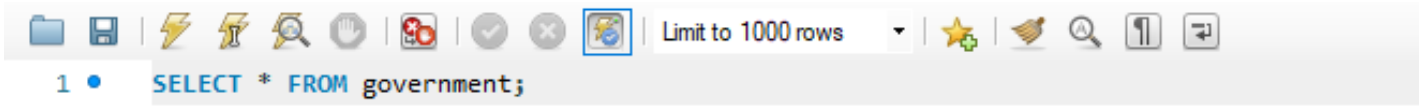
Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

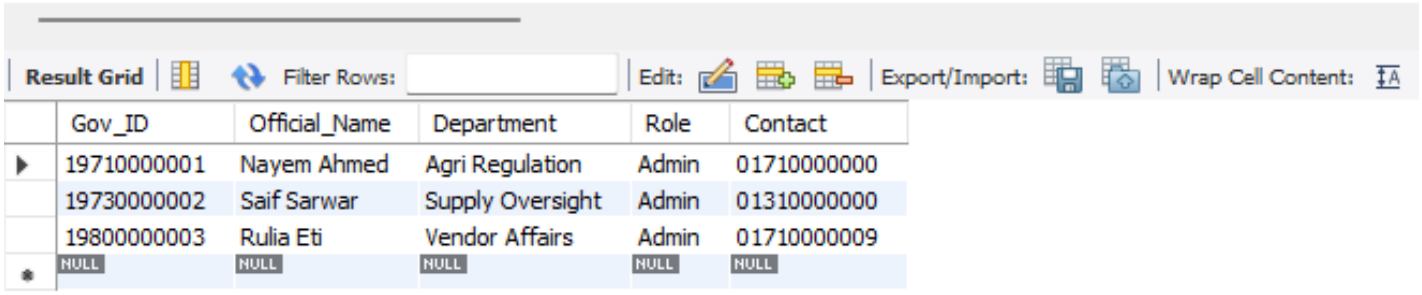
Vendor_ID	Name	Contact	Location	Category	Max_Purchase_Limit	Approved_By
19850000000	Anwar Traders	01616458481	Bogura	Vegetables	1875	19800000003
19850000001	Mithila Distributors	01618928725	Rajshahi	Root Crops	1650	19730000002
19850000002	Karim Enterprise	01615292966	Cumilla	Spices	1818	19800000003
19850000003	Tania Agro	01613433103	Chattogram	Vegetables	1554	19710000001
19850000004	Sabbir Supply	01616214745	Sylhet	Spices	1544	19730000002
19850000005	Bismillah Vendors	01619080420	Barisal	Spices	1487	19800000003
19850000006	Greenline Suppliers	01617925404	Mymensingh	Vegetables	577	19800000003
19850000007	Shapla Traders	01617125919	Dinajpur	Vegetables	1271	19730000002
19850000008	AgroMart	01618870557	Kurigram	Vegetables	1364	19710000001
19850000009	Haque Brothers	01618216990	Tangail	Spices	1735	19800000003
NULL	NULL	NULL	NULL	NULL	NULL	NULL

Figure 6: Vendor Table

Government:

```
        INSERT INTO Government (Gov_ID, Official_Name, Department, Role, Contact
    ) VALUES
(19710000001, 'Nayem Ahmed', 'Agri Regulation', 'Admin', '01710000000'),
(19730000002, 'Saif Sarwar', 'Supply Oversight', 'Admin', '01310000000'),
(19800000003, 'Rulia Eti', 'Vendor Affairs', 'Admin', '01710000009');


```



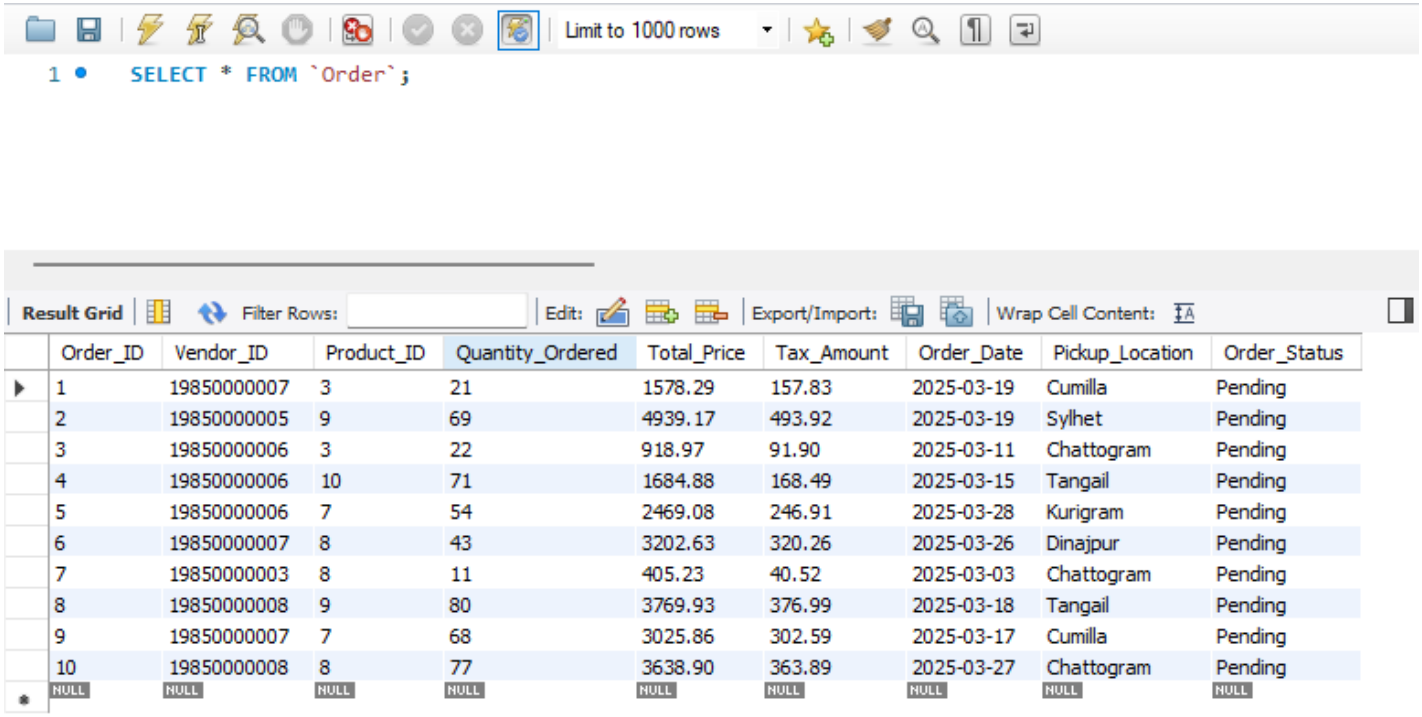


Gov_ID	Official_Name	Department	Role	Contact
19710000001	Nayem Ahmed	Agri Regulation	Admin	01710000000
19730000002	Saif Sarwar	Supply Oversight	Admin	01310000000
19800000003	Rulia Eti	Vendor Affairs	Admin	01710000009
NULL	NULL	NULL	NULL	NULL

Figure 7: Government Table

Order:

```
        INSERT INTO `Order` (Order_ID, Vendor_ID, Product_ID, Quantity_Ordered,
    Total_Price, Tax_Amount, Order_Date, Pickup_Location, Order_Status) VALUES
(1, 19850000007, 3, 21, 1578.29, 157.83, '2025-03-19', 'Cumilla', 'Pending'),
(2, 19850000005, 9, 69, 4939.17, 493.92, '2025-03-19', 'Sylhet', 'Pending'),
(3, 19850000006, 3, 22, 918.97, 91.90, '2025-03-11', 'Chattogram', 'Pending'),
(4, 19850000006, 10, 71, 1684.88, 168.49, '2025-03-15', 'Tangail', 'Pending'),
(5, 19850000006, 7, 54, 2469.08, 246.91, '2025-03-28', 'Kurigram', 'Pending'),
(6, 19850000007, 8, 43, 3202.63, 320.26, '2025-03-26', 'Dinajpur', 'Pending'),
(7, 19850000003, 8, 11, 405.23, 40.52, '2025-03-03', 'Chattogram', 'Pending'),
(8, 19850000008, 9, 80, 3769.93, 376.99, '2025-03-18', 'Tangail', 'Pending'),
(9, 19850000007, 7, 68, 3025.86, 302.59, '2025-03-17', 'Cumilla', 'Pending'),
(10, 19850000008, 8, 77, 3638.90, 363.89, '2025-03-27', 'Chattogram', 'Pending')
    ;


```

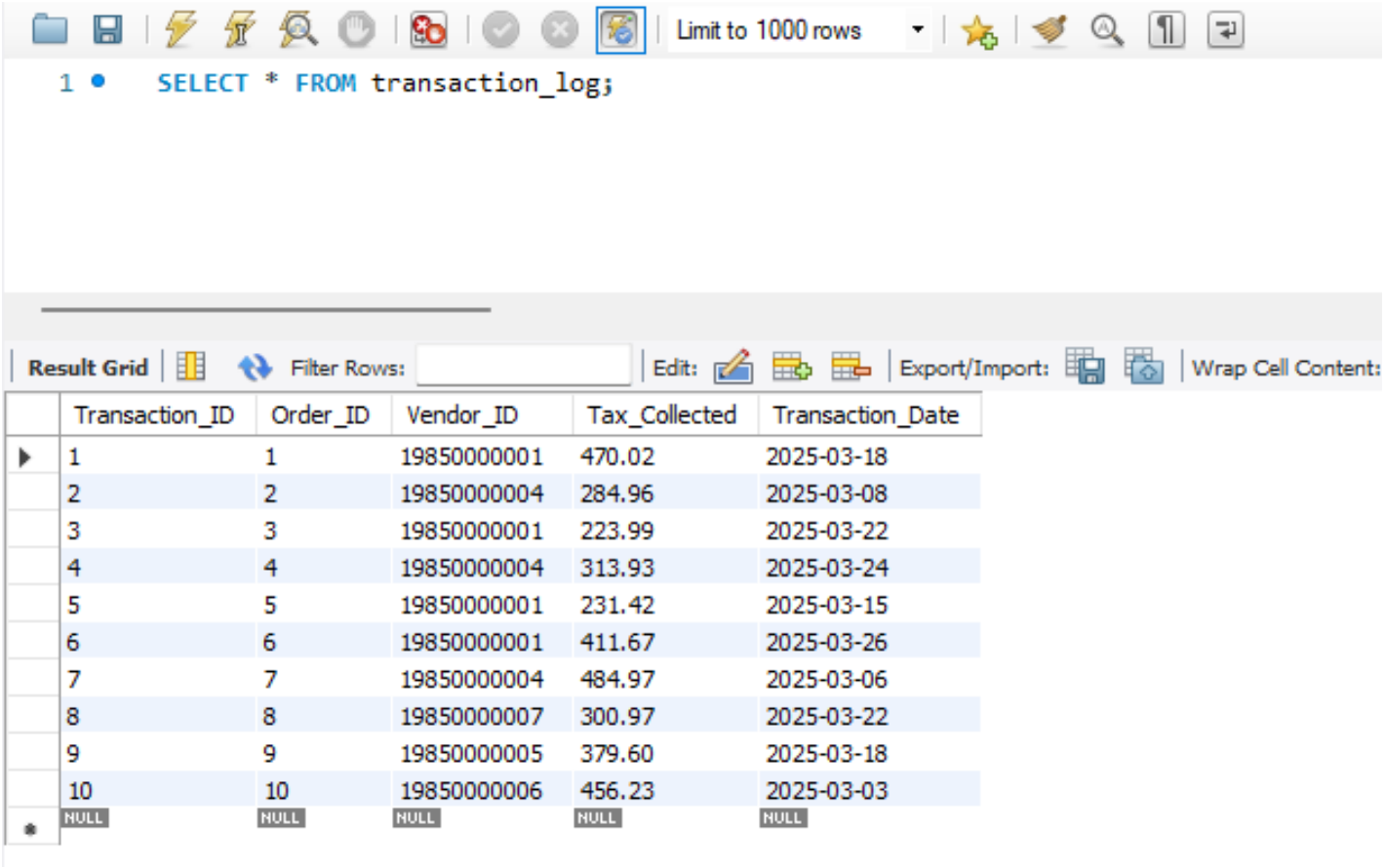


Order_ID	Vendor_ID	Product_ID	Quantity_Ordered	Total_Price	Tax_Amount	Order_Date	Pickup_Location	Order_Status
1	19850000007	3	21	1578.29	157.83	2025-03-19	Cumilla	Pending
2	19850000005	9	69	4939.17	493.92	2025-03-19	Sylhet	Pending
3	19850000006	3	22	918.97	91.90	2025-03-11	Chattogram	Pending
4	19850000006	10	71	1684.88	168.49	2025-03-15	Tangail	Pending
5	19850000006	7	54	2469.08	246.91	2025-03-28	Kurigram	Pending
6	19850000007	8	43	3202.63	320.26	2025-03-26	Dinajpur	Pending
7	19850000003	8	11	405.23	40.52	2025-03-03	Chattogram	Pending
8	19850000008	9	80	3769.93	376.99	2025-03-18	Tangail	Pending
9	19850000007	7	68	3025.86	302.59	2025-03-17	Cumilla	Pending
10	19850000008	8	77	3638.90	363.89	2025-03-27	Chattogram	Pending
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

Figure 8: Order Table

Transaction_Log:

```
1         INSERT INTO Transaction_Log (Transaction_ID, Order_ID, Vendor_ID,
      Tax_Collected, Transaction_Date) VALUES
2 (1, 1, 19850000001, 470.02, '2025-03-18'),
3 (2, 2, 19850000004, 284.96, '2025-03-08'),
4 (3, 3, 19850000001, 223.99, '2025-03-22'),
5 (4, 4, 19850000004, 313.93, '2025-03-24'),
6 (5, 5, 19850000001, 231.42, '2025-03-15'),
7 (6, 6, 19850000001, 411.67, '2025-03-26'),
8 (7, 7, 19850000004, 484.97, '2025-03-06'),
9 (8, 8, 19850000007, 300.97, '2025-03-22'),
10 (9, 9, 19850000005, 379.60, '2025-03-18'),
11 (10, 10, 19850000006, 456.23, '2025-03-03');
12
13
```



Transaction_ID	Order_ID	Vendor_ID	Tax_Collected	Transaction_Date
1	1	19850000001	470.02	2025-03-18
2	2	19850000004	284.96	2025-03-08
3	3	19850000001	223.99	2025-03-22
4	4	19850000004	313.93	2025-03-24
5	5	19850000001	231.42	2025-03-15
6	6	19850000001	411.67	2025-03-26
7	7	19850000004	484.97	2025-03-06
8	8	19850000007	300.97	2025-03-22
9	9	19850000005	379.60	2025-03-18
10	10	19850000006	456.23	2025-03-03
NULL	NULL	NULL	NULL	NULL

Figure 9: Transaction_Log Table

8 Queries

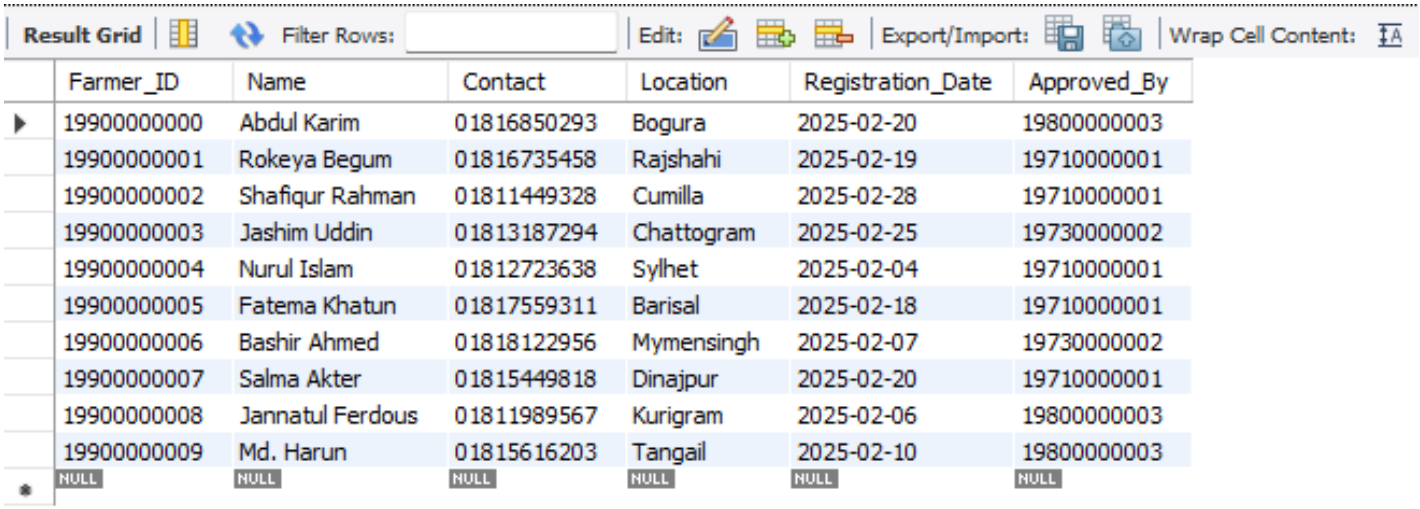
8.1 Query List

- List all registered farmers
- Retrieve all vendors located in Rajshahi
- Find all products listed in February 2025
- Retrieve products with price per unit above 80 BDT
- List all orders with status 'Pending'
- Find the vendor who placed the most orders
- Calculate total tax collected in March 2025
- Find the average product price by category
- Count the number of farmers in each location
- Show each product and the vendor who ordered it
- Find vendors approved by a specific government official
- List all transactions with tax collected more than 300 BDT
- Retrieve top 5 most recent orders
- List vendors who haven't placed any orders
- Find products that are almost sold out (less than 50 quantity)
- View all farmers approved by the same government official
- Update order status to 'Ready' for a specific order
- Delete a vendor record (example ID)
- Drop the Product table
- Create a view to show all vendor orders with tax

8.2 SQL Query:

– List all registered farmers

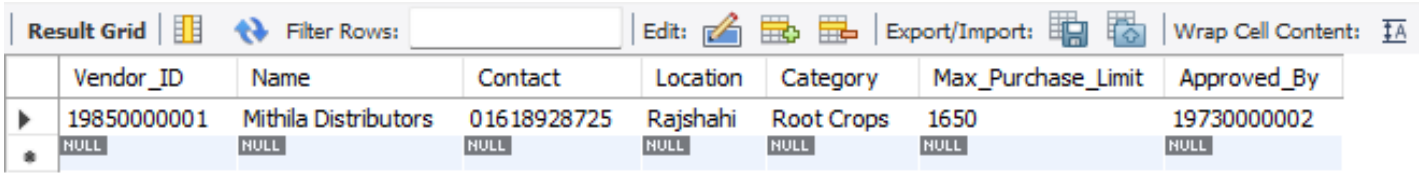
```sql
SELECT * FROM Farmer;
```



Farmer_ID	Name	Contact	Location	Registration_Date	Approved_By
19900000000	Abdul Karim	01816850293	Bogura	2025-02-20	19800000003
19900000001	Rokeya Begum	01816735458	Rajshahi	2025-02-19	19710000001
19900000002	Shafiqur Rahman	01811449328	Cumilla	2025-02-28	19710000001
19900000003	Jashim Uddin	01813187294	Chattogram	2025-02-25	19730000002
19900000004	Nurul Islam	01812723638	Sylhet	2025-02-04	19710000001
19900000005	Fatema Khatun	01817559311	Barisal	2025-02-18	19710000001
19900000006	Bashir Ahmed	01818122956	Mymensingh	2025-02-07	19730000002
19900000007	Salma Akter	01815449818	Dinajpur	2025-02-20	19710000001
19900000008	Jannatul Ferdous	01811989567	Kurigram	2025-02-06	19800000003
19900000009	Md. Harun	01815616203	Tangail	2025-02-10	19800000003
NULL	NULL	NULL	NULL	NULL	NULL

– Retrieve all vendors located in Rajshahi

```sql
SELECT * FROM Vendor
WHERE Location = 'Rajshahi';
```



Vendor_ID	Name	Contact	Location	Category	Max_Purchase_Limit	Approved_By
19850000001	Mithila Distributors	01618928725	Rajshahi	Root Crops	1650	19730000002
NULL	NULL	NULL	NULL	NULL	NULL	NULL

– Find all products listed in February 2025

```sql
SELECT * FROM Product
WHERE MONTH(Listing_Date) = 2 AND YEAR(Listing_Date) = 2025;
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

Product_ID	Farmer_ID	Product_Name	Category	Quantity_Available	Price_Per_Unit	Listing_Date
1	19900000004	Potato	Grains	117	31.08	2025-02-27
2	19900000006	Rice	Root Crops	309	47.48	2025-02-08
3	19900000002	Wheat	Spices	488	49.13	2025-02-10
4	19900000002	Onion	Grains	341	97.95	2025-02-23
5	19900000001	Garlic	Vegetables	205	76.25	2025-02-02
6	19900000007	Tomato	Vegetables	494	89.95	2025-02-13
7	19900000008	Chili	Vegetables	250	71.48	2025-02-06
8	19900000003	Pumpkin	Grains	450	81.49	2025-02-14
9	19900000003	Brinjal	Root Crops	450	72.15	2025-02-28
10	19900000001	Cucumber	Spices	250	54.09	2025-02-19
NULL	NULL	NULL	NULL	NULL	NULL	NULL

– Retrieve products with price per unit above 80 BDT

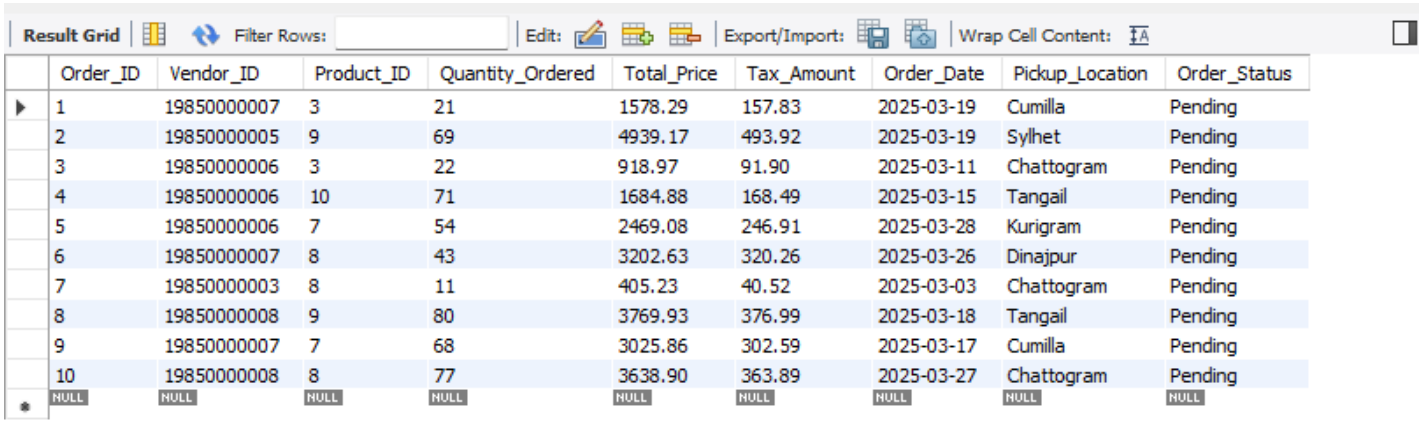
```sql
SELECT Product_Name, Price_Per_Unit
FROM Product
WHERE Price_Per_Unit > 80;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Product_Name	Price_Per_Unit
Onion	97.95
Tomato	89.95
Pumpkin	81.49

– List all orders with status 'Pending'

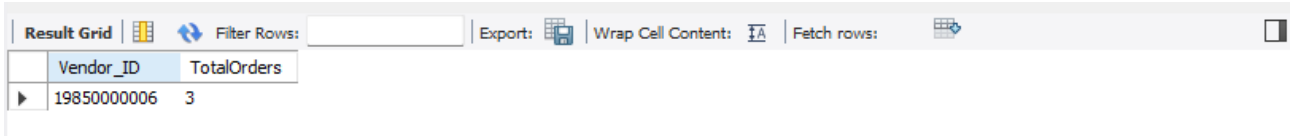
```
SELECT * FROM `Order`
WHERE Order_Status = 'Pending';

```



Order_ID	Vendor_ID	Product_ID	Quantity_Ordered	Total_Price	Tax_Amount	Order_Date	Pickup_Location	Order_Status
1	19850000007	3	21	1578.29	157.83	2025-03-19	Cumilla	Pending
2	19850000005	9	69	4939.17	493.92	2025-03-19	Sylhet	Pending
3	19850000006	3	22	918.97	91.90	2025-03-11	Chattogram	Pending
4	19850000006	10	71	1684.88	168.49	2025-03-15	Tangail	Pending
5	19850000006	7	54	2469.08	246.91	2025-03-28	Kurigram	Pending
6	19850000007	8	43	3202.63	320.26	2025-03-26	Dinajpur	Pending
7	19850000003	8	11	405.23	40.52	2025-03-03	Chattogram	Pending
8	19850000008	9	80	3769.93	376.99	2025-03-18	Tangail	Pending
9	19850000007	7	68	3025.86	302.59	2025-03-17	Cumilla	Pending
10	19850000008	8	77	3638.90	363.89	2025-03-27	Chattogram	Pending
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

– Find the vendor who placed the most orders

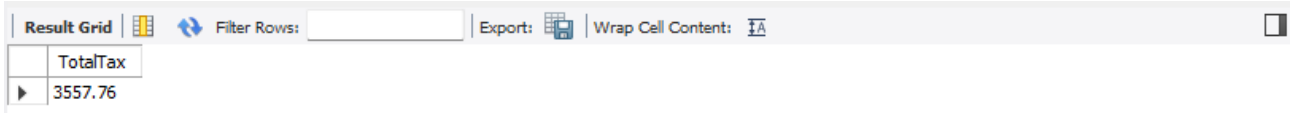
```
SELECT Vendor_ID, COUNT(*) AS TotalOrders
FROM `Order`
GROUP BY Vendor_ID
ORDER BY TotalOrders DESC
LIMIT 1;

```



Vendor_ID	TotalOrders
19850000006	3

– Calculate total tax collected in March 2025

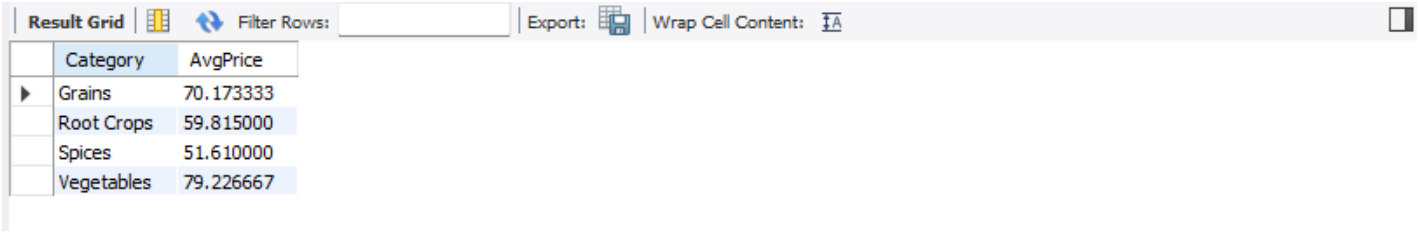
```
SELECT SUM(Tax_Collected) AS TotalTax
FROM Transaction_Log
WHERE MONTH(Transaction_Date) = 3 AND YEAR(Transaction_Date) = 2025;

```



TotalTax
3557.76

– Find the average product price by category

```
SELECT Category, AVG(Price_Per_Unit) AS AvgPrice
FROM Product
GROUP BY Category;

```

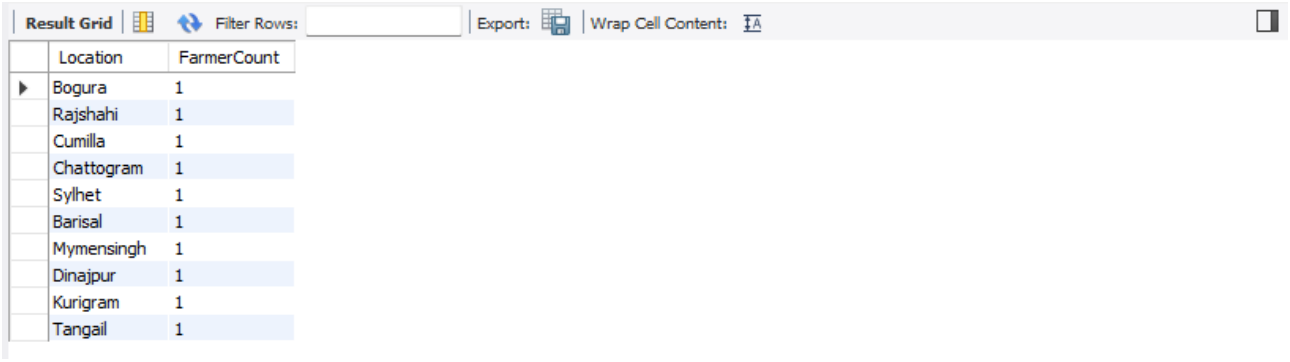


Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Category	AvgPrice
Grains	70.173333
Root Crops	59.815000
Spices	51.610000
Vegetables	79.226667

– Count the number of farmers in each location

```
SELECT Location, COUNT(*) AS FarmerCount
FROM Farmer
GROUP BY Location;

```

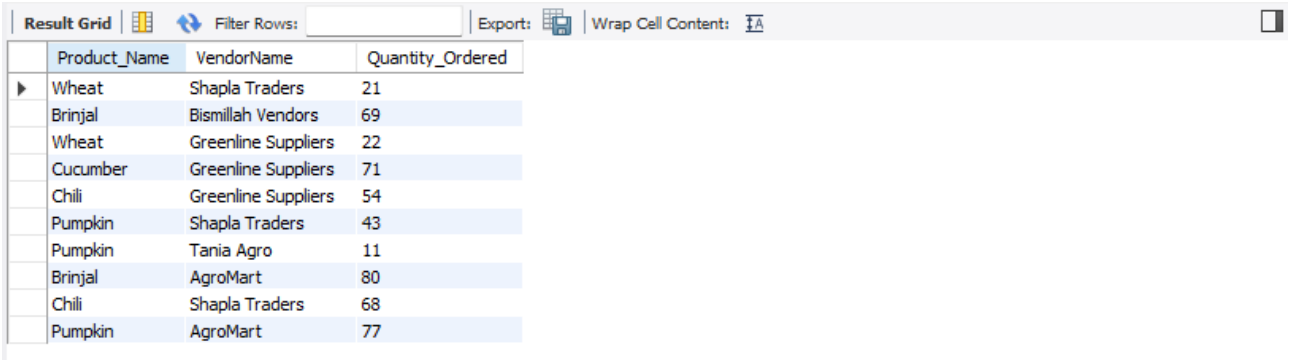


Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Location	FarmerCount
Bogura	1
Rajshahi	1
Cumilla	1
Chattogram	1
Sylhet	1
Barisal	1
Mymensingh	1
Dinajpur	1
Kurigram	1
Tangail	1

– Show each product and the vendor who ordered it

```
SELECT P.Product_Name, V.Name AS VendorName, O.Quantity_Ordered
FROM `Order` O
JOIN Product P ON O.Product_ID = P.Product_ID
JOIN Vendor V ON O.Vendor_ID = V.Vendor_ID;

```

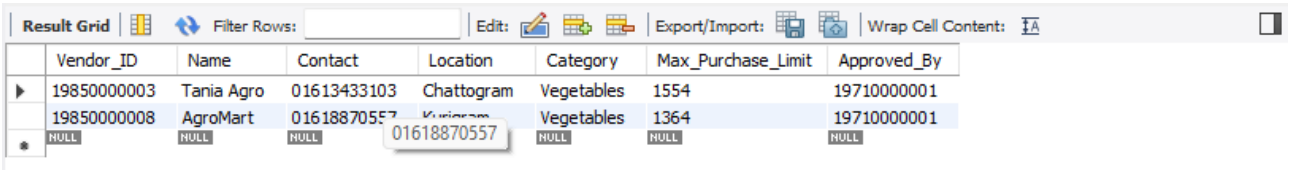


Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Product_Name	VendorName	Quantity_Ordered
Wheat	Shapla Traders	21
Brinjal	Bismillah Vendors	69
Wheat	Greenline Suppliers	22
Cucumber	Greenline Suppliers	71
Chili	Greenline Suppliers	54
Pumpkin	Shapla Traders	43
Pumpkin	Tania Agro	11
Brinjal	AgroMart	80
Chili	Shapla Traders	68
Pumpkin	AgroMart	77

– Find vendors approved by a specific government official

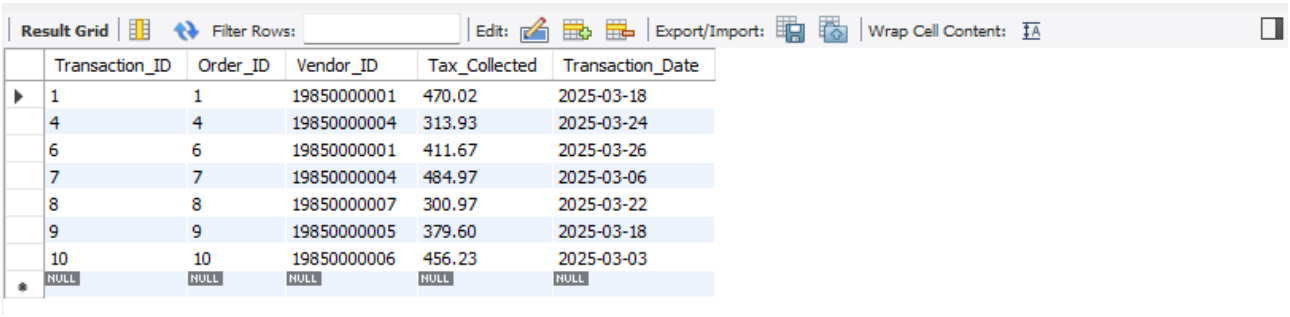
```
SELECT * FROM Vendor
WHERE Approved_By = 19710000001;

```



Vendor_ID	Name	Contact	Location	Category	Max_Purchase_Limit	Approved_By
19850000003	Tania Agro	01613433103	Chattogram	Vegetables	1554	19710000001
19850000008	AgroMart	01618870557	Kurigram	Vegetables	1364	19710000001
NULL	NULL	NULL	NULL	NULL	NULL	NULL

– List all transactions with tax collected more than 300 BDT

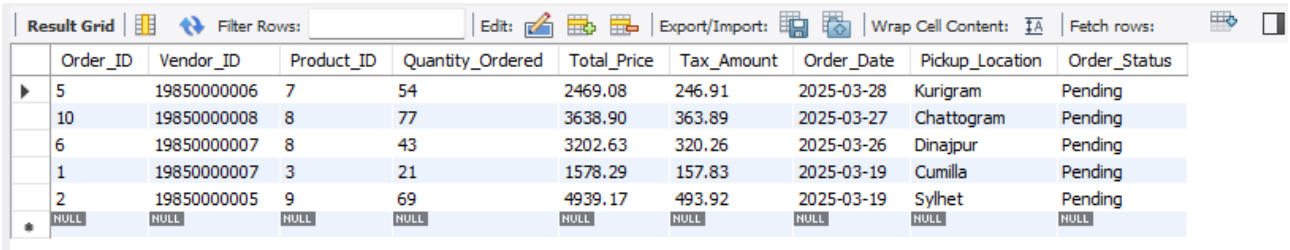
```
SELECT * FROM Transaction_Log
WHERE Tax_Collected > 300;


```



Transaction_ID	Order_ID	Vendor_ID	Tax_Collected	Transaction_Date
1	1	19850000001	470.02	2025-03-18
4	4	19850000004	313.93	2025-03-24
6	6	19850000001	411.67	2025-03-26
7	7	19850000004	484.97	2025-03-06
8	8	19850000007	300.97	2025-03-22
9	9	19850000005	379.60	2025-03-18
10	10	19850000006	456.23	2025-03-03
NULL	NULL	NULL	NULL	NULL

– Retrieve top 5 most recent orders

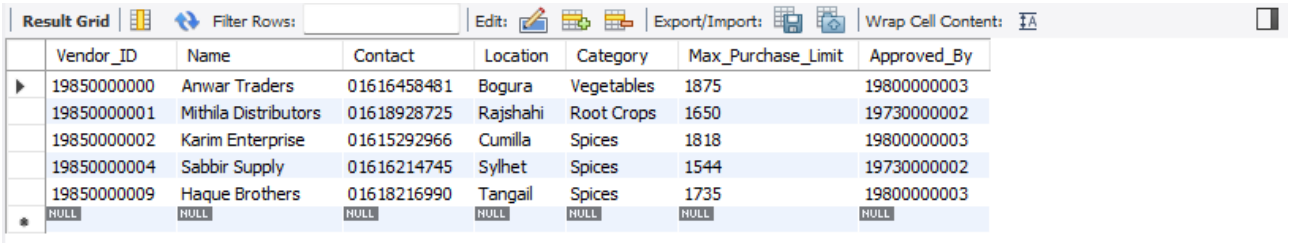
```
SELECT *
FROM `Order`
ORDER BY Order_Date DESC LIMIT 5;


```



Order_ID	Vendor_ID	Product_ID	Quantity_Ordered	Total_Price	Tax_Amount	Order_Date	Pickup_Location	Order_Status
5	19850000006	7	54	2469.08	246.91	2025-03-28	Kurigram	Pending
10	19850000008	8	77	3638.90	363.89	2025-03-27	Chattogram	Pending
6	19850000007	8	43	3202.63	320.26	2025-03-26	Dinajpur	Pending
1	19850000007	3	21	1578.29	157.83	2025-03-19	Cumilla	Pending
2	19850000005	9	69	4939.17	493.92	2025-03-19	Sylhet	Pending
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

– List vendors who haven't placed any orders

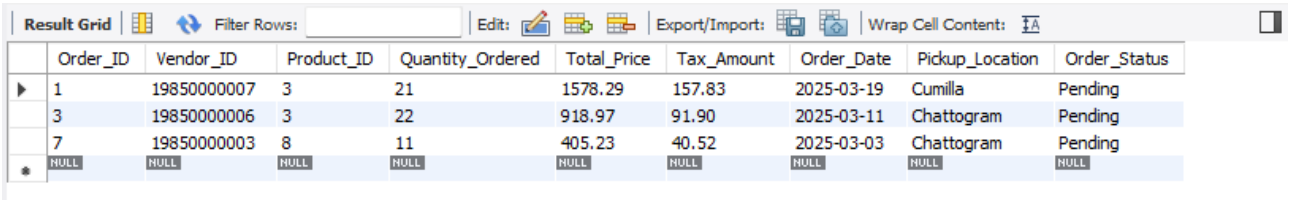
```
SELECT * FROM Vendor
WHERE Vendor_ID NOT IN (SELECT Vendor_ID
                        FROM `Order`);
```



Vendor_ID	Name	Contact	Location	Category	Max_Purchase_Limit	Approved_By
19850000000	Anwar Traders	01616458481	Bogura	Vegetables	1875	19800000003
19850000001	Mithila Distributors	01618928725	Rajshahi	Root Crops	1650	19730000002
19850000002	Karim Enterprise	01615292966	Cumilla	Spices	1818	19800000003
19850000004	Sabbir Supply	01616214745	Sylhet	Spices	1544	19730000002
19850000009	Haque Brothers	01618216990	Tangail	Spices	1735	19800000003

– Find products that are ordered less than 30 quantity

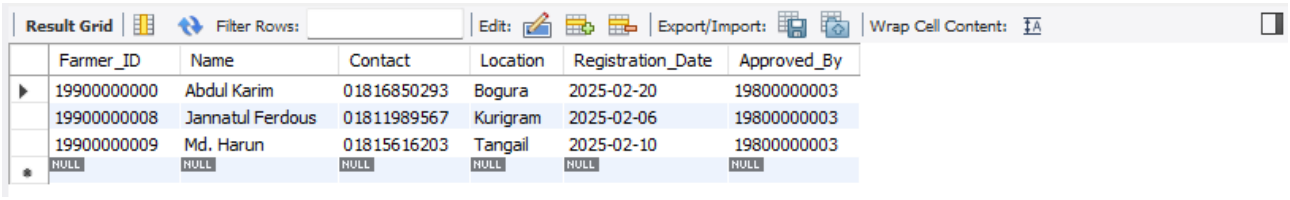
```
SELECT * FROM Product
WHERE Quantity_Ordered < 30;
```



Order_ID	Vendor_ID	Product_ID	Quantity_Ordered	Total_Price	Tax_Amount	Order_Date	Pickup_Location	Order_Status
1	19850000007	3	21	1578.29	157.83	2025-03-19	Cumilla	Pending
3	19850000006	3	22	918.97	91.90	2025-03-11	Chattogram	Pending
7	19850000003	8	11	405.23	40.52	2025-03-03	Chattogram	Pending

– View all farmers approved by the same government official

```
SELECT * FROM Farmer
WHERE Approved_By = 19800000003;
```



Farmer_ID	Name	Contact	Location	Registration_Date	Approved_By
19900000000	Abdul Karim	01816850293	Bogura	2025-02-20	19800000003
19900000008	Jannatul Ferdous	01811989567	Kurigram	2025-02-06	19800000003
19900000009	Md. Harun	01815616203	Tangail	2025-02-10	19800000003

– Update order status to 'Ready' for a specific order

```
UPDATE `Order`
SET Order_Status = 'Ready'
WHERE Order_ID = 3;
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

Order_ID	Vendor_ID	Product_ID	Quantity_Ordered	Total_Price	Tax_Amount	Order_Date	Pickup_Location	Order_Status
1	19850000007	3	21	1578.29	157.83	2025-03-19	Cumilla	Pending
2	19850000005	9	69	4939.17	493.92	2025-03-19	Sylhet	Pending
3	19850000006	3	22	918.97	91.90	2025-03-11	Chattogram	Ready
4	19850000006	10	71	1684.88	168.49	2025-03-15	Tangail	Pending
5	19850000006	7	54	2469.08	246.91	2025-03-28	Kurigram	Pending
6	19850000007	8	43	3202.63	320.26	2025-03-26	Dinajpur	Pending
7	19850000003	8	11	405.23	40.52	2025-03-03	Chattogram	Pending
8	19850000008	9	80	3769.93	376.99	2025-03-18	Tangail	Pending
9	19850000007	7	68	3025.86	302.59	2025-03-17	Cumilla	Pending
10	19850000008	8	77	3638.90	363.89	2025-03-27	Chattogram	Pending
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

– Delete a vendor record (example ID)

```
DELETE FROM Vendor
WHERE Vendor_ID = 19850000009;
```

26 15:05:54 DELETE FROM Vendor WHERE Vendor_ID = 19850000009 1 row(s) affected 0.031 sec

– Drop the transaction_log table

```
DROP TABLE transaction_log;
```

29 15:13:12 DROP TABLE transaction_log 0 row(s) affected 0.047 sec

– Create a view to show all vendor orders with tax

```sql
CREATE VIEW VendorOrders AS
SELECT O.Order_ID, V.Name AS VendorName, P.Product_Name,
   O.Total_Price, O.Tax_Amount
FROM `Order` O
JOIN Vendor V ON O.Vendor_ID = V.Vendor_ID
JOIN Product P ON O.Product_ID = P.Product_ID;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Order_ID	VendorName	Product_Name	Total_Price	Tax_Amount
1	Shapla Traders	Wheat	1578.29	157.83
2	Bismillah Vendors	Brinjal	4939.17	493.92
3	Greenline Suppliers	Wheat	918.97	91.90
4	Greenline Suppliers	Cucumber	1684.88	168.49
5	Greenline Suppliers	Chili	2469.08	246.91
6	Shapla Traders	Pumpkin	3202.63	320.26
7	Tania Agro	Pumpkin	405.23	40.52
8	AgroMart	Brinjal	3769.93	376.99
9	Shapla Traders	Chili	3025.86	302.59
10	AgroMart	Pumpkin	3638.90	363.89

9 Conclusion

The conclusion of this project highlights the successful development of **FarmConnect**, a government-mediated agricultural trading system designed to empower farmers and ensure fair, transparent, and efficient agricultural commerce. FarmConnect provides a user-friendly and structured platform where farmers can directly list their products, bypassing third-party middlemen and securing fair prices for their produce. Vendors interact with the system through a regulated ordering process, monitored by government authorities who apply a standardized 10% tax to every transaction, thereby generating transparent revenue for the state.

Key features such as vendor assessment and approval, product listing and inventory tracking, order management with status updates, and detailed transaction logging collectively ensure that trade remains balanced, secure, and free from monopolization. The implementation of role-based access and approval mechanisms further enhances accountability, while reporting and analytics tools support data-driven oversight.

By unifying farmers, vendors, and government authorities into a centralized database system, FarmConnect optimizes the agricultural supply chain and strengthens rural economic stability. It contributes not only to operational efficiency but also to the long-term goal of equitable market access for small-scale producers. In essence, FarmConnect stands as a scalable and adaptable solution capable of modernizing the agricultural economy and reinforcing fair-trade practices in Bangladesh.

10 Acknowledgements

We would like to express our heartfelt appreciation to our faculty, **Prof. Dr. Kamruddin Nur**, for providing us with the opportunity to work on this project. Their guidance and expertise in MySQL have been instrumental in shaping our project. A special thanks to my project partners, Rulia Akter Eti and Saif Sarwar, for their collaborative spirit and commitment throughout the development process. Together, we overcame challenges and worked efficiently, utilizing our collective skills and knowledge to create an impactful and functional Government-Mediated Agricultural Trading System.