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# **SOFTWARE REQUIREMENTS SPECIFICATION**

**For**

## **Local Fresh Market**

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**Submitted in fulfillment requirements for Integrative  
Programming and Technologies 2 (IT305)**

**August 09, 2025**

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## **1.INTRODUCTION**

The consumption of local fresh goods has seen a significant increase in recent years as consumers become more conscious of the environmental, economic, and health benefits associated with eating locally. Traditional methods of sourcing food, which often rely on large-scale industrial farms and long-distance transportation, have raised concerns over sustainability, food quality, and the carbon footprint of food production. To address these issues and support healthier, more sustainable living, the need for locally sourced products has become more apparent.

Local Fresh Goods System this study explores the concept of local fresh goods—products that are grown or produced within a specific region and sold directly to consumers. By focusing on locally sourced foods, this approach supports small-scale farmers, reduces transportation costs and emissions, and provides consumers with fresher, more nutritious products. The local fresh goods system encourages seasonal eating, strengthens community ties, and promotes a more sustainable food ecosystem. By connecting producers directly with consumers, it fosters transparency and trust, benefiting both the local economy and the environment.

The aim of this initiative is to enhance awareness about the benefits of consuming local fresh goods and to provide solutions for communities to easily access these products. The goal is to shift toward a food system that values sustainability, supports local economies, and provides high-quality food to consumers while reducing the environmental impact of food sourcing and transportation.

## **1.1 PURPOSE**

The purpose of this study is to explore and promote the adoption of a Local Fresh Goods System that aims to address the challenges posed by traditional, global food sourcing methods. This system seeks to support local farmers and producers by encouraging the consumption of food that is grown or produced within proximity to consumers. The objective is to reduce the environmental impact associated with long-distance food transportation, while also improving the nutritional value and flavor of the food consumed. By connecting consumers directly with local producers, this system intends to foster stronger community ties, enhance economic sustainability, and provide healthier, more accessible food options. Additionally, the study aims to highlight the benefits of seasonal eating and increase awareness about the positive impact of purchasing locally sourced products. Ultimately, this initiative supports broader goals of sustainability, community development, and environmental conservation by promoting a more efficient and ethical food system.

## **1.2 Intended Audience**

The intended audience of this study includes local farmers, food producers, and vendors who will benefit from a more direct and efficient way to market and sell their products. Consumers are also a key audience, as they will have increased access to fresh, seasonal, and locally sourced food options, improving their overall health and supporting local economies. Local governments and community organizations play an important role as well, as they can use this study to shape policies that promote sustainable food practices and strengthen local food systems. Additionally, food distributors, restaurants, and small businesses may find value in connecting with local producers to offer more regionally sourced ingredients. Ultimately, the system is designed to benefit all stakeholders in the food supply chain, helping to create a more sustainable, resilient, and community-oriented food ecosystem.

### **1.3 Product Scope**

The Local Fresh Goods System is designed to facilitate the efficient distribution and consumption of food products sourced from local farmers and producers. This system will connect consumers directly with nearby producers, enabling them to access fresh, seasonal, and sustainably grown products. The system will include local markets, CSA programs, farm stands, and distribution hubs, streamlining the process of purchasing and consuming local food. It will promote transparency, allowing consumers to learn more about the sourcing and production practices of their food, while encouraging seasonal eating and reducing reliance on long-distance food transportation. The system also aims to strengthen local economies by supporting small-scale producers and reducing environmental impact through shorter supply chains. By fostering a more sustainable and resilient food system, the Local Fresh Goods System will contribute to healthier communities, more diverse food options, and a more connected local economy.

### **1.4 Definitions, Acronyms, and Abbreviations**

In this study, **local fresh goods** refer to food products that are grown, harvested, or produced within the Philippines and sold directly to consumers through local markets, farm stands, or Community Supported Agriculture (CSA) programs. CSA (Community Supported Agriculture) is a system where consumers buy shares of a farm's produce in advance, providing financial support to farmers in exchange for seasonal, fresh produce. Sustainability in this context refers to agricultural practices that protect the environment, promote local economies, and ensure food security in the long term. Carbon footprint is the environmental impact of food production, particularly the greenhouse gas emissions associated with long-distance transportation.

The DA stands for the Department of Agriculture, the government body responsible for regulating and promoting agriculture in the Philippines, including local food systems. DTC

(Direct-to-Consumer) refers to the model in which local farmers and producers sell their goods directly to consumers, bypassing intermediaries like wholesalers. Kadiwa is a government-run program in the Philippines that connects farmers directly with consumers through community markets, offering affordable and fresh agricultural products. Farmers' Markets are public markets where local farmers and food producers sell their products directly to consumers, promoting fresh, local produce.

## 2. Overall Description

The **Local Fresh Goods System** aims to create an efficient, sustainable, and accessible network for sourcing and consuming locally produced food within the Philippines. It is primarily designed for local farmers, food producers, consumers, and community organizers. Farmers and producers will benefit from the opportunity to directly connect with consumers, reducing reliance on intermediaries and enhancing their market reach. Consumers will have access to fresh, nutritious, and seasonal products while supporting their local economy and reducing their environmental footprint. Community organizations, local government units (LGUs), and food distributors will play a role in facilitating the system's operations, ensuring that local food markets are well-established and accessible.

The system is intended to be simple and user-friendly, ensuring that both producers and consumers can engage with it with minimal technical knowledge. Local farmers and producers will be expected to list their products through digital platforms or physical markets, while consumers can access these goods either online or through direct visits to farmers' markets, farm stands, or through Kadiwa programs. Administrators and market coordinators will oversee operations, monitor inventory, and ensure the quality and sustainability of food sold through the system.

However, the system faces certain limitations and dependencies. Its success relies on the availability and consistency of local produce, as the system is designed to function within the

seasonal cycles of agriculture. Additionally, the infrastructure for distributing goods—whether through physical markets, delivery systems, or online platforms—must be well-developed and reliable. Possible challenges include fluctuations in crop yield due to weather, economic pressures on farmers, or logistical hurdles that could impact product availability and pricing. Furthermore, the system's effectiveness depends on active participation from consumers and producers, with the need for ongoing education and awareness about the benefits of local sourcing and sustainable eating habits.

## 2.1 User Characteristics

The primary users of the **Local Fresh Goods System** are local farmers, food producers, and vendors who are responsible for listing and selling their products directly to consumers. These users are expected to have basic knowledge of agriculture, food production, and marketing to effectively engage with the system, whether through digital platforms or physical markets. Their primary tasks include updating product availability, ensuring quality, and managing transactions with consumers. Producers may also need to track inventory and adjust prices based on seasonality and demand.

Secondary users include consumers—local buyers who will interact with the system to purchase fresh, seasonal goods from nearby farms and producers. These users may include individual consumers, families, or small businesses looking for fresh, sustainable food options. Since their role involves simply browsing and purchasing food through either online platforms or local markets, minimal technical expertise is required from them. The system is designed to be user-friendly, ensuring that consumers of varying ages and technological backgrounds can easily access and use it.

**Community organizations and local government units (LGUs)** also play a role as secondary users, supporting the infrastructure of local food systems. Their responsibilities may

include facilitating the creation of markets, providing logistical support, or promoting the benefits of local sourcing. These organizations are expected to have a basic understanding of how to support the system, ensure its accessibility to all residents, and engage with local food producers effectively.

This distinction between primary and secondary users ensures that the Local Fresh Goods System is accessible to individuals with varying levels of technical knowledge while supporting both the supply and demand sides of the local food ecosystem.

## **2.2 Constraints**

The effectiveness of the Local Fresh Goods System is subject to several constraints that may impact its implementation and operation. One of the primary constraints is the availability and consistency of local produce, as the system relies on farmers' harvest cycles and the ability to provide fresh, seasonal goods. Fluctuations in crop yields due to weather conditions, pests, or other agricultural challenges may affect the availability of certain products, leading to shortages or inconsistent supply.

Another constraint is the logistical infrastructure required to distribute fresh goods efficiently. The system depends on well-maintained markets, delivery networks, and local distribution hubs to ensure that food reaches consumers in a timely and safe manner. Poor infrastructure or logistical failures can disrupt supply chains, affecting both product availability and the consumer experience.

Additionally, the system is dependent on consumer and producer engagement. The success of the initiative relies on widespread participation from both sides—producers must be willing to sell locally, and consumers must be educated about the benefits of sourcing food from nearby. Without sufficient awareness or willingness to shift from traditional grocery stores, adoption could be slow.

Government policies and regulations also play a crucial role. Local food systems often require coordination with local government units (LGUs) for regulations regarding food safety, transportation, and market operations. Any changes in regulations or lack of government support could present barriers to the system's growth.

Lastly, external factors such as economic conditions, market volatility, and natural disasters could affect both production and demand, impacting the stability and reliability of the system.

### **2.3 Assumptions and Dependencies**

The development and successful operation of the Local Fresh Goods System are based on several assumptions and dependencies that must be met for the system to function effectively. It is assumed that local farmers and food producers will consistently supply fresh, seasonal goods and maintain high-quality standards to meet consumer expectations. Additionally, it is expected that these producers will actively participate in the system, whether through direct sales at markets, farm stands, or via Community Supported Agriculture (CSA) programs.

The system also assumes that the necessary infrastructure—such as local markets, distribution hubs, and transportation systems—will be available and maintained to ensure that fresh products can be efficiently delivered to consumers. The technology infrastructure, including online platforms and payment systems, must be consistently operational to facilitate easy transactions between producers and consumers. This infrastructure also needs to be accessible to consumers of varying technical proficiency.

Furthermore, the success of the system depends on the active engagement of consumers who are willing to shift their purchasing habits to support local food systems. This requires ongoing education and awareness campaigns to inform the public about the environmental, health, and economic benefits of sourcing food locally.

The government's support and regulation play a crucial role as well. It is assumed that local government units (LGUs) will provide the necessary regulatory frameworks to support local food markets and ensure food safety standards are met. Additionally, regular updates to the system—whether in terms of technology or logistics—will be necessary to address emerging challenges and maintain system efficiency.

These assumptions and dependencies emphasize the need for collaboration between producers, consumers, and government entities, as well as a strong infrastructure to sustain the system and maximize its benefits for local communities.

### **3. Requirements Specification**

#### **3.1 Functional Requirements**

The Local Fresh Goods System should allow local farmers and food producers to register and manage their products, ensuring that consumers can easily browse and purchase fresh, seasonal goods. The system must provide real-time updates on product availability and support secure payment options for transactions. It should enable consumers to choose between home delivery or pickup at designated locations. Administrators need to access reports on sales and market trends to improve the system's efficiency. Additionally, the platform must ensure the security of user information, including profiles and payment details, and offer a simple, user-friendly interface for both producers and consumers to interact with.

#### **3.2 Non-Functional Requirements**

The Local Fresh Goods System should be easy to use, even for individuals with minimal technical knowledge, ensuring that both producers and consumers can easily navigate the platform. It must be reliable in providing accurate product availability and transactions, and secure in handling sensitive user and payment information. The system should be resilient, able to operate smoothly despite challenges like power outages or network disruptions. Additionally, it

must be scalable to accommodate a growing number of users and products, and maintainable so it can be regularly updated and improved as needed to meet future demands.

### **3.3 External Interface Requirements**

- **User Interfaces:**

Web and mobile apps for both consumers and producers, providing secure login, product browsing, ordering, and payment management. Interfaces must be intuitive and user-friendly.

- **Payment Gateway Integration:**

Integration with external payment systems (e.g., PayPal, credit/debit cards, GCash) for secure transactions, with real-time payment notifications for both parties.

- **Shipping and Delivery Services:**

Interface with logistics providers (e.g., Lalamove, GrabExpress) for real-time tracking and order status updates, enabling home delivery or pick-up options.

- **Government and Regulatory Bodies:**

Integration with government entities (e.g., Department of Agriculture, LGUs) for compliance, reporting, and program coordination (e.g., Kadiwa).

- **External Data Interfaces:**

Integration with weather APIs (e.g., PAGASA) for weather updates and agricultural databases for crop data and market trends.

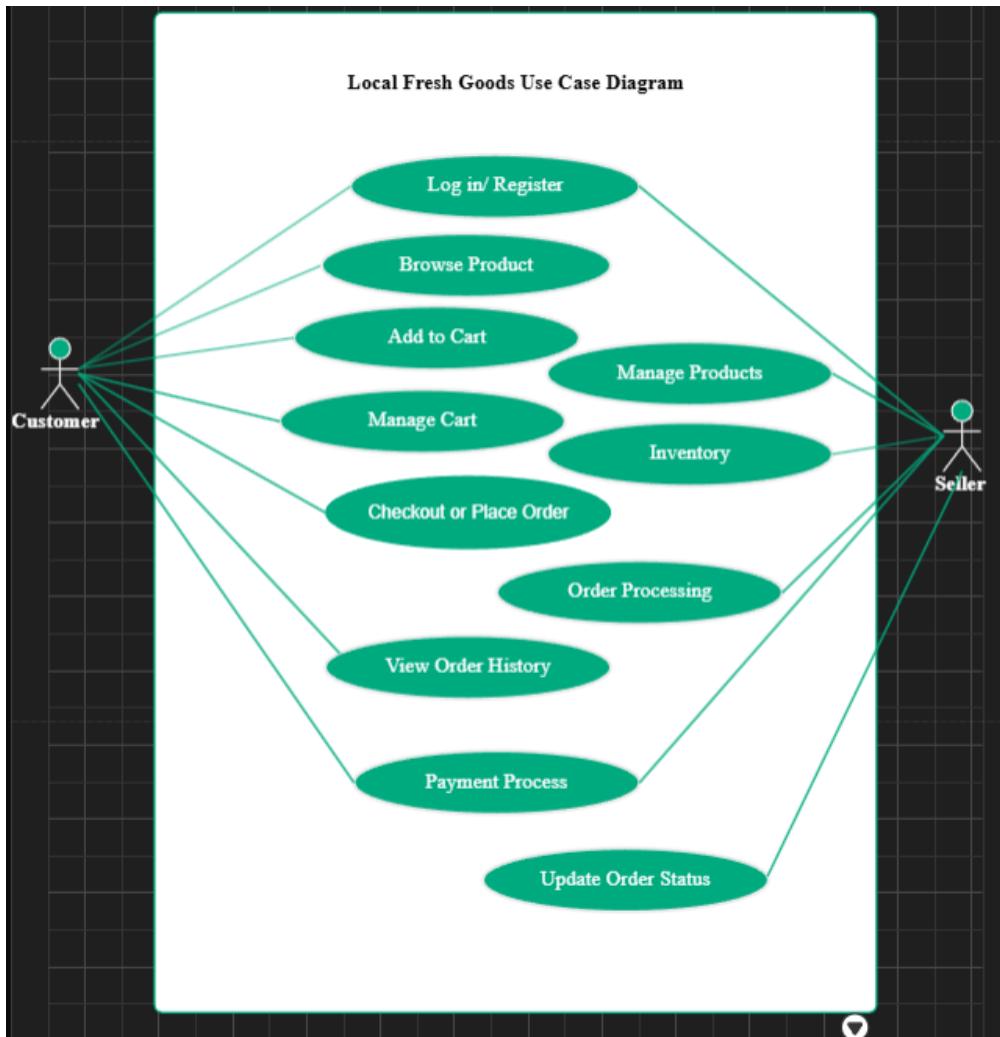
- **Third-Party Service Providers:**

Integration with social media for marketing, email/SMS for notifications, and analytics tools for performance tracking.

- **Security and Privacy Interfaces:**

Use of SSL/TLS encryption for secure data transmission and adherence to privacy laws (e.g., Data Privacy Act of the Philippines).

### 3.4 System Models



#### Customer Use Cases:

##### Manage User Profile

Description: Customers can create, view, and update their personal information including name, contact details, location, and preferences.

## **Browse Product Details**

Description: Customers can see comprehensive information about products including images, descriptions, prices, stock availability, and specifications.

## **Add to Cart**

Description: Customers can select products and add them to their shopping cart with desired quantities.

## **Manage Cart Items**

Description: Customers can view, modify quantities, remove items, or save products for later in their shopping cart.

## **Checkout & Place Orders**

Description: Customers can complete purchases by proceeding through checkout process, confirming order details, and finalizing transactions.

## **View Order History**

Description: Customers can access their past orders, track current order status, and view order details.

## **Seller Use Cases:**

### **Manage Products**

Description: Seller can add new products, edit existing product information, update details, and remove products from the marketplace.

### **Manage Inventory**

Description: Seller can monitor and update stock levels, set product availability, and manage inventory quantities.

### **Order Processing**

Description: Seller handle the complete order lifecycle from receipt to fulfillment, including validation and preparation.

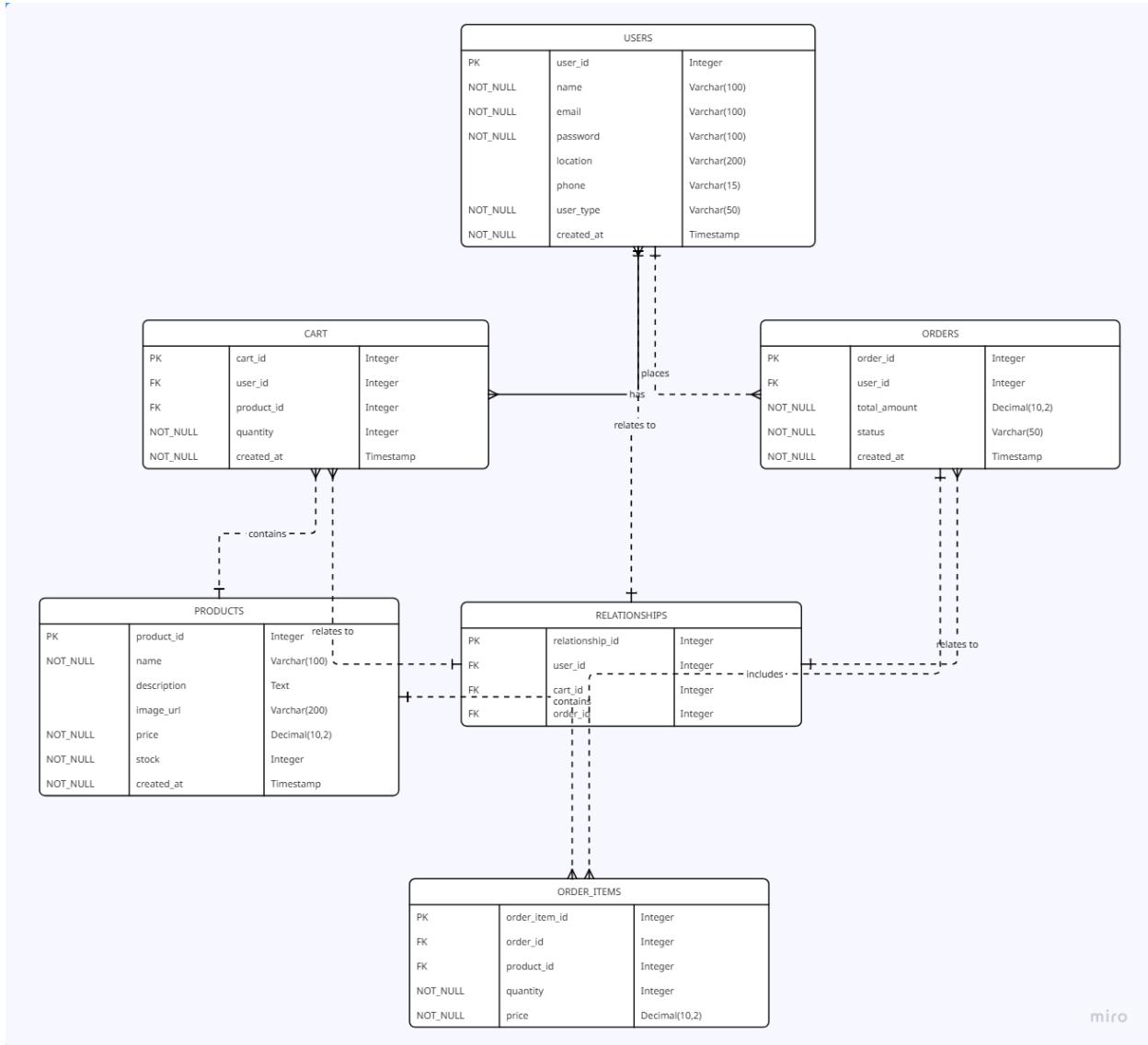
### **Payment Processing**

Description: Seller manage payment transactions, verify payments, handle refunds, and monitor financial transactions.

### **Update Order Status**

Description: Admins can change order states (pending, processing, shipped, delivered, cancelled) and update customers on order progress.

## Entity Relationship Diagram (ERD)



### Entities:

#### USERS Entity

Primary Key: `user_id` (Integer)

Attributes: `name` (Varchar, required), `email` (Varchar, required), `password` (Varchar, required), `location` (Varchar), `phone` (Varchar), `user_type` (Varchar, required), `created_at` (Timestamp, required)

## PRODUCTS Entity

Primary Key: product\_id (Integer)

Attributes: name (Varchar, required), description (Text), image\_url (Varchar), price (Decimal, required), stock (Integer, required), created\_at (Timestamp, required)

## CART Entity

Primary Key: cart\_id (Integer)

Foreign Keys: user\_id (Integer), product\_id (Integer)

Attributes: quantity (Integer, required), created\_at (Timestamp, required)

## ORDERS Entity

Primary Key: order\_id (Integer)

Foreign Key: user\_id (Integer)

Attributes: total\_amount (Decimal, required), status (Varchar, required), created\_at (Timestamp, required)

## ORDER\_ITEMS Entity

Primary Key: order\_item\_id (Integer)

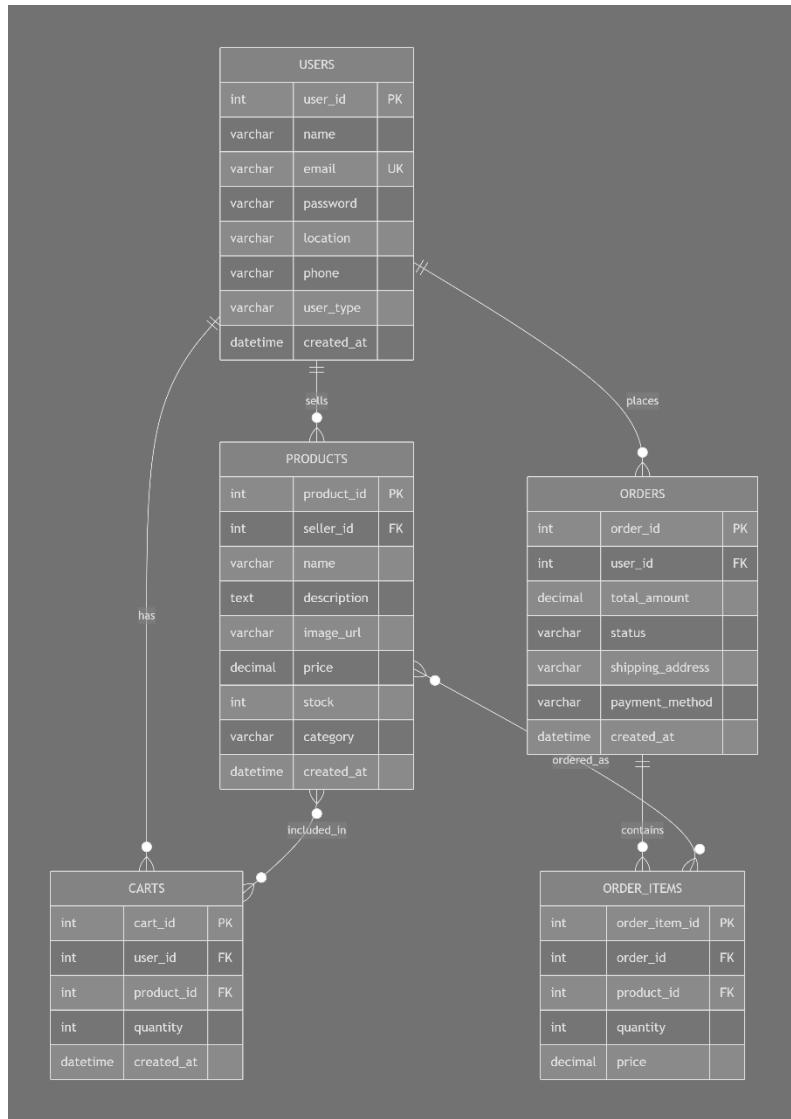
Foreign Keys: order\_id (Integer), product\_id (Integer)

Attributes: quantity (Integer, required), price (Decimal, required)

## RELATIONSHIPS

- USERS (1) to CART (M) - One user can have many cart items
- USERS (1) to ORDERS (M) - One user can have many orders
- PRODUCTS (1) to CART (M) - One product can be in many carts
- PRODUCTS (1) to ORDER\_ITEMS (M) - One product can be in many order items
- ORDERS (1) to ORDER\_ITEMS (M) - One order can have many order items

### 3.5 Database Design



#### Database Schema Description:

- **USERS Table:** Stores all user information, including farmers/sellers and consumers. The user\_type attribute distinguishes between different roles (e.g., 'customer', 'seller', 'admin').
- **PRODUCTS Table:** Contains all product listings. Sellers (a type of user) are associated with their products via the user\_id foreign key, which links to the USERS table.

- **CART Table:** A junction table that manages the many-to-many relationship between USERS and PRODUCTS, recording which products a user has added to their cart and in what quantity.
- **ORDERS Table:** Records each transaction initiated by a user. It stores the overall order details like the total cost and current status.
- **ORDER\_ITEMS Table:** A junction table that breaks down each ORDER into its constituent PRODUCTS, capturing the quantity and price of each item at the time of purchase.

#### **Technology Stack:**

The system will utilize a relational database management system (RDBMS) such as **MySQL** or **PostgreSQL** for robust data integrity, transaction support, and complex querying capabilities.

### **3.6 Implementation**

The implementation of the Local Fresh Market System will follow a modular, full-stack architecture to ensure maintainability, scalability, and a seamless user experience.

#### **Technology Stack:**

- **Frontend (User Interface):** A responsive web application built using **React.js** or **Vue.js** to provide a dynamic and intuitive experience for both consumers and sellers on desktop and mobile devices.
- **Backend (Server & Application Logic):** A **Node.js** (with Express.js) or **Python** (with Django) server will handle business logic, API endpoints, user authentication, and communication with the database.

- **Database:** As specified in 3.5, **MySQL/PostgreSQL** will be used for persistent data storage.
- **Payment Gateway:** Integration with popular Philippine payment gateways such as **COD, GCash, PayMaya**, and credit/debit card processors via APIs.
- **Hosting & Deployment:** The application will be deployed on a cloud platform such as **AWS, Google Cloud, or Microsoft Azure** for high availability and scalability. Version control will be managed using **Git**.

#### **Development Phases:**

1. **Phase 1: Core Setup & User Management:** Set up the development environment, database, and implement user registration, login, and profile management.
2. **Phase 2: Product Management & Catalog:** Implement functionalities for sellers to add, edit, and delete products. Develop the customer-facing product browsing and search features.
3. **Phase 3: Shopping Cart & Checkout:** Build the cart system and integrate the payment gateway to enable a secure and complete purchase flow.
4. **Phase 4: Order Management & Fulfillment:** Develop the interfaces for sellers to view, process, and update order status, and for customers to view their order history.
5. **Phase 5: Integration & Polish:** Integrate with external services (e.g., SMS/email for notifications, logistics APIs) and perform comprehensive user acceptance testing (UAT).