Software Design Specification

Rural Reach

Revision 1.0

Team Members

Aslah
Fazeel Anwar
Mohammed Roshan P
Rohit C M

Table of Contents

Revision History

Version	Name	Reason For Changes	Date
1.0		*Initial Revision*	

Approved By

Name	Signature	Department	Date

1. Introduction

This document serves as a software design guide for a Flutter app platform that allows users to buy and sell agricultural yields and small-scale household products without the intervention of middlemen. The purpose of this application is to provide a user-friendly platform for local farmers, small-scale producers, and consumers to connect and trade their products conveniently.

1.1 Project Scope

The scope of this project is to develop a Flutter app platform that enables users to buy and sell agricultural yields and small-scale household products within their neighborhoods without the intervention of middlemen. The app platform will provide a user-friendly interface that allows farmers, small-scale producers, and consumers to connect and trade their products efficiently..

1.2 Project Overview

This document outlines the overall architecture, functionality, and design of the application. It provides a comprehensive guide for developers, designers, and stakeholders to understand the application's features and functionalities, including the system's design and user experience.

This application is developed using Flutter, a cross-platform mobile development framework that allows developers to create high-quality mobile applications for iOS and Android platforms. The application's primary goal is to enable local farmers and small-scale producers to connect with consumers in their neighborhoods and provide fresh, locally produced products to the local community

2. Architecture

2.1 General Constraints

This app is made using Flutter and Firebase.The app will be hosted on firebase .The app is designed in such a way that it can handle large amount of traffic

- **Performance**

    The website will be created with the goal of offering quick response times to users, ensuring that there is minimal delay and website downtime. To achieve this, the website will be optimized for performance using efficient algorithms and data structures in its design
    .

- **Software requirement**

    The application's front end is built using Flutter SDK, while the back end uses Firebase, which also offers real-time database functionality.

- **Hardware requirement**

    1. **Processor**

        Any processor that can run the selected operating system will suffice. However, it's recommended to use a multi-core processor for better performance..

    2. **Random Access Memory**

        At least 2 GB of RAM is required to run a Flutter app smoothly.

    3. **Storage**

        Flutter requires a minimum of 2.8 GB of free disk space to install, but you'll also need additional space to store your project files.

    4. **Graphics Card**

        A dedicated graphics card is not necessary, but it can help with the performance of the app

    5. **Emulator or Physical device**
        You'll need an Android emulator or a physical Android device to test and run your app during development.

- **Data Design**

1. **Data Structures**

There are several data structures that can be used in an eCommerce grocery app that helps farmers to sell their products. Here are some examples:

A. **Product Catalog**

A data structure to store information about products such as name, description, price, and availability. This data structure should be designed to allow for efficient querying and searching of products.

B. **User profiles**

A data structure to store information about users such as name, contact details, and delivery address. This data structure should be designed to allow for easy management of user accounts and to support personalized recommendations and promotions.

C. **Orders and Transactions**

A data structure to store information about orders, including customer details, order items, and transaction details. This data structure should be designed to ensure data consistency and accuracy, and to support order tracking and payment processing.

D. **Inventory Management**

A data structure to manage inventory levels for each product, including stock levels and restocking schedules. This data structure should be designed to support efficient inventory management, including alerts for low stock levels and automatic reordering

E. **Ratings and Reviews**

A data structure to store ratings and reviews of products and sellers. This data structure should be designed to support user-generated content and to provide feedback to sellers.
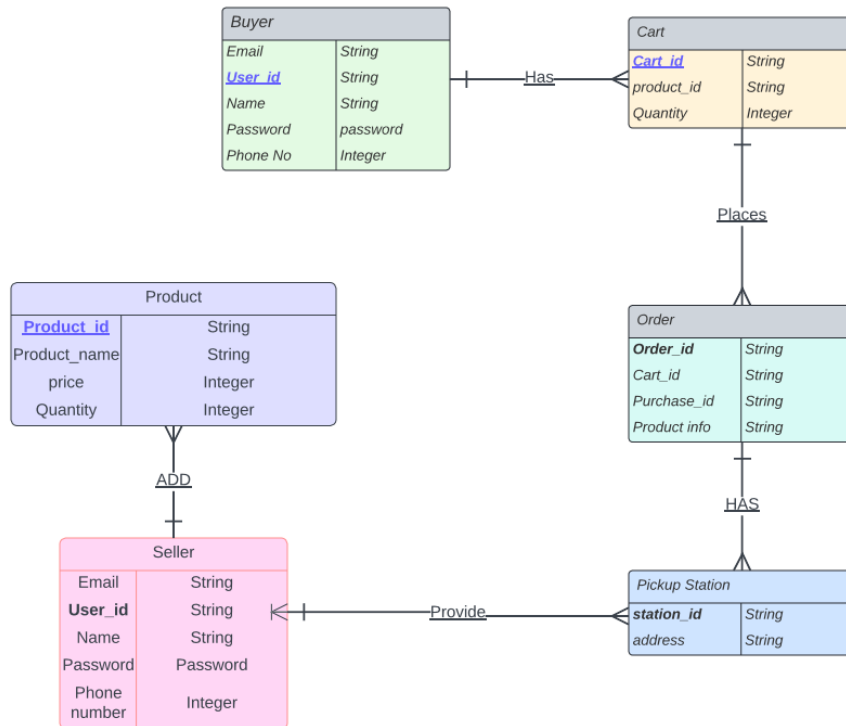
F. **Analytics and Reporting**

A data structure to store data about user behavior and sales metrics, such as conversion rates and revenue. This data structure should be designed to support data analysis and reporting, to provide insights to sellers and to support decision-making.

2. **Databases**

The project will use Firebase for implementing the database. The database will be designed to efficiently store and retrieve data related to seller profiles, product catalog,etc

schema

Buyer	
Email	String
User_id	String
Name	String
Password	password
Phone No	Integer

Cart	
Cart_id	String
product_id	String
Quantity	Integer

Has

Places

Product	
Product_id	String
Product_name	String
price	Integer
Quantity	Integer

Order	
Order_id	String
Cart_id	String
Purchase_id	String
Product info	String

ADD

HAS

Seller	
Email	String
User_id	String
Name	String
Password	Password
Phone number	Integer

Provide

Pickup Station	
station_id	String
address	String

3. Detailed Design

Components

The following components will be used in the project:

A. User Registration and Login

Allow users to register and login to the app.

- *Input: user's personal information (name, email, phone number, etc.)*

- *Output: successful login and access to user account*

B. Product Catalog and search

Provide a catalog of products and allow users to search for products.

• *Input: user's search queries (product name, category, price range, etc.)*
• *Output: list of relevant products with details (name, description, price, availability, etc.)*

C. Shopping Cart and Checkout

Allow users to add products to a cart and checkout to place an order.

• *Input: User's selected products, quantities, and pickup location.*

• *Output: Order confirmation with details (order number, total amount, pickup location, etc.)*

D. Order tracking and History

Allow users to track the status of their orders and view their order history.

• *Input: user's order number or account information*

• *Output: Order status and history with details (date, items, price, pickup location, etc.)*

E. Farmer Registration and product listing

Allow farmers to register and list their products for sale.

• *Input: farmer's personal information (name, address, contact, etc.) and product details (name, description, price, quantity,etc.)*

• *Output: successful registration and listing of products for sale*

F. Pick up Station Management

Manage the pickup of orders from the local pickup stations.

• *Input: Pickup station information (address, contact, operating hours, etc.) and order status updates.*

• *Output: Successful pickup and order status updates*

4. User Interface Design

The user interface (UI) of the app platform is crucial in ensuring a seamless and user-friendly experience for users. The app platform's UI design will be simple, intuitive, and easy to navigate, with a focus on providing a clean and modern aesthetic that reflects the app platform's purpose.

A. User Registration and Login

This screen will allow users to create an account/Log in to access the app platform's features.
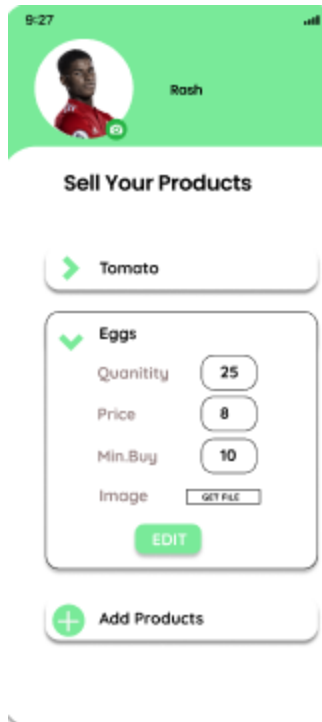
B. Product Listing Screen for Buyer

This screen will display the products available for sale in the user's neighborhood, organized by product category.
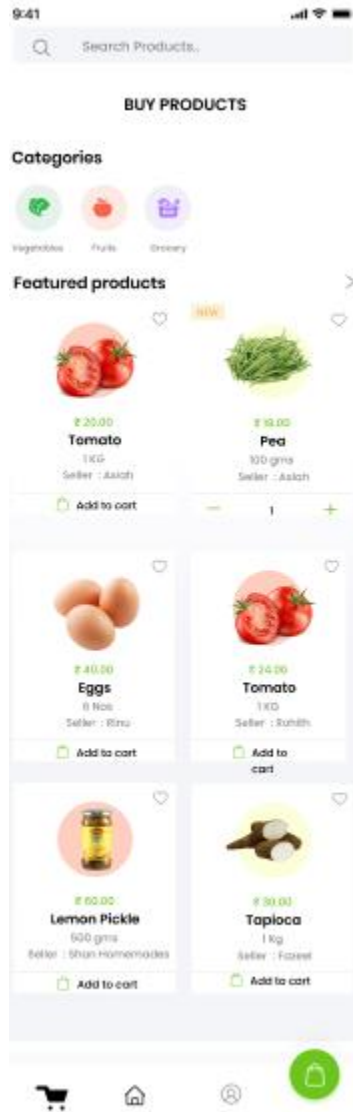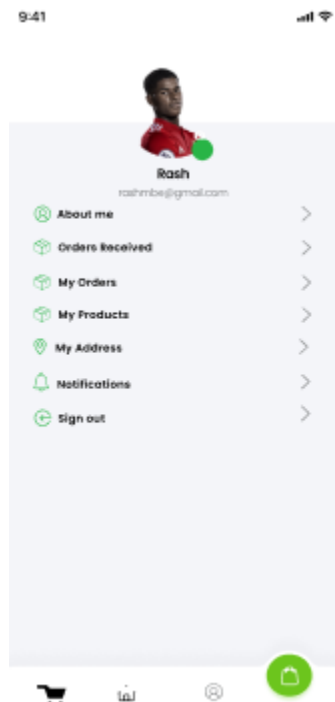
C. Product Adding functionality for Seller

 This screen will display the products available for sale in the user's neighborhood, organized by product category.
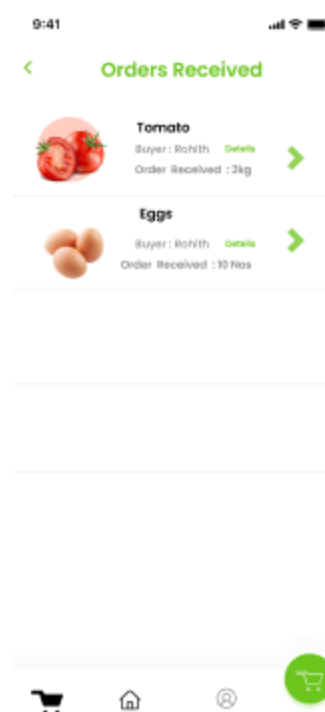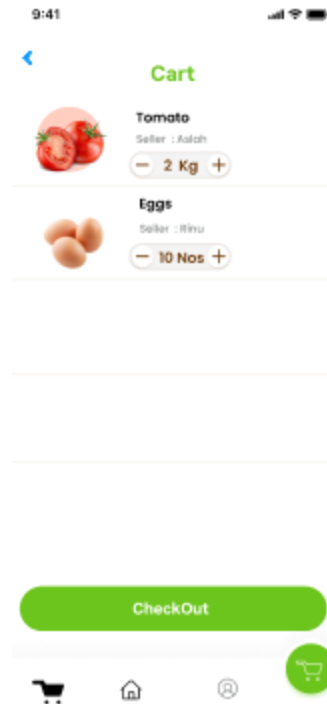
D. User Profile

This screen will display the seller's profile, including their name, location, and products for sale

E. **Cart for Buyer and Orders List for Seller**

This screen will display the products the user has added to their shopping cart and allow them to edit or remove items. For sellers, a similar cart of orders are displayed as orders list.
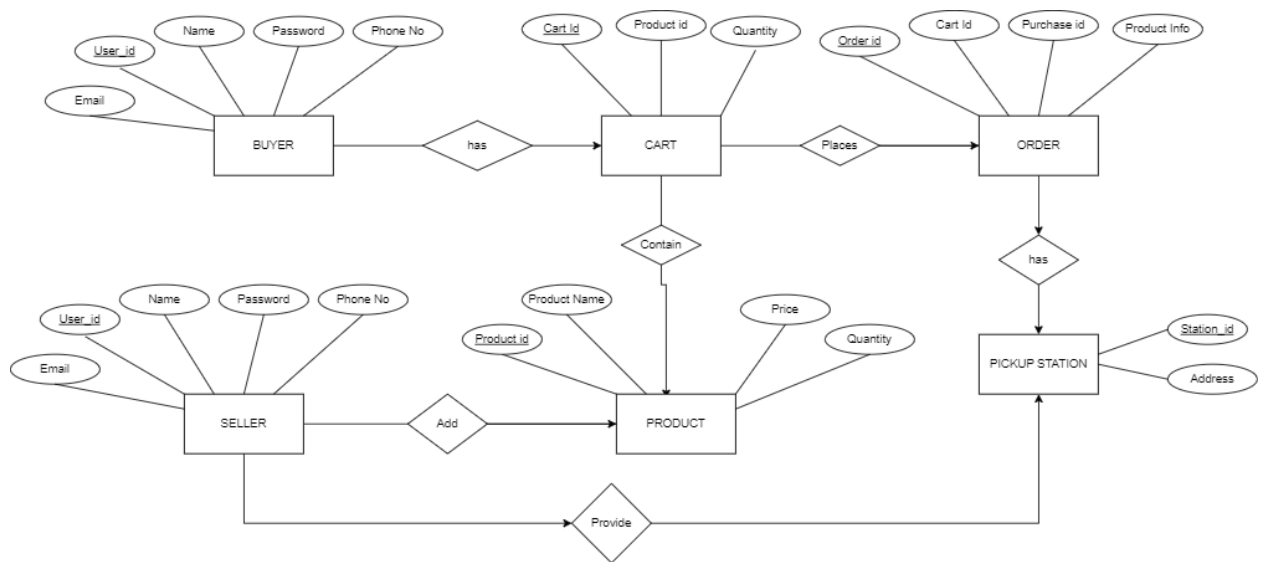
5. Conclusion

In conclusion, the development of a Flutter app platform for buying and selling agricultural yields and small-scale household products without the intervention of middlemen presents an opportunity to facilitate local trade, support small-scale producers and farmers, and provide consumers with fresh, locally sourced products. The app platform will utilize features such as location-based searches, user ratings, and reviews, in-app messaging, and push notifications to enhance the user experience. The app platform's user interface will be simple, intuitive, and easy to navigate, providing a modern and clean aesthetic that reflects the app platform's purpose.

6. Appendices

6.1 ER Diagram

6.2 UML Class Diagram