AN ANDROID BASED APPLICATION "Krishi - Empowering Farmers through Direct-to-Consumer Sales in Bangladesh."

BY

Md. Soliman Ali

Id: 191-16-401

This Report Presented in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Computing and Information Systems.

Supervised by

Mr. Israfil

Lecturer

Department of CIS

Daffodil International University

DAFFODIL INTERNATIONAL UNIVERSITY

DHAKA, BANGLADESH

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APPROVAL

This Project titled **"Krishi – Empowering Farmers Through Direct-to-Consumer Sales in Bangladesh"**, Submitted by **Md. Soliman Ali**, ID No: **191-16-401** to the Department of Computing & Information System, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computing & Information System and approved as to its style and contents. The presentation has been held on 23-09-2024.

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Department of Computing & Information System
Faculty of Science & Information Technology
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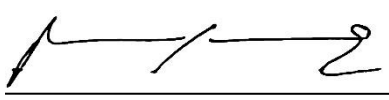

Dr. Saifuddin Md. Tareeq — **External Examiner**
Professor
Department of Computer Science and Engineering
University of Dhaka, Dhaka

DECLARATION

I hereby declare that; this project has been done by me under supervision of **Mr. Israfil, Lecturer, Department of Computing and Information System (CIS)** of Daffodil International University. I am also declaring that this project or any part of there has never been submitted anywhere else for the award of any educational degree like, B.Sc., M.Sc., Diploma or other qualifications.

Supervised By

Mr. Israfil

Lecturer

Department of CIS

Daffodil International University

Submitted By

Name: Md. Soliman Ali

ID: 191-16-401

Department of CIS

Daffodil International University

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My profound gratitude goes out to my supervisor, **Mr. Israfil, Lecturer, Department of CIS**, Daffodil International University, Dhaka. His extensive experience, unwavering patience, and priceless advice in the field of **"Android Application"** were crucial to the project's successful conclusion. His constant support and constructive criticism were crucial in shaping this work.

I also sincerely appreciate the kind support I received from **Md. Sarwar Hossain Mollah, Associate Professor and Head of the Department of CIS**, along with all of the department's faculty and staff, during this project.

I would especially like to express my gratitude to my Daffodil International University fellow course mates for their constant encouragement, thoughtful conversations, and positive involvement during this journey.

Finally, and certainly not, I will always be grateful to my parents for their constant patience, support, and encouragement throughout this journey.

ABSTRACT

Bangladesh's economy depends significantly on agriculture, but because traditional supply channels contain intermediary parties / dealers, farmers and consumers frequently lose economically. This project's objective is to develop the Android app **"Krishi"**, which will link farmers and customers directly and increase farmers' profits while giving customers access to fresh, reasonably priced products. The app will have safe payment methods and an easy-to-use User Interface. Through the optimization of supply chains and digital inclusion, the project aims to build a more sustainable and fair agricultural market. Through the promotion of fair trade, transparency, and sustainable practices, this program has the opportunity to alter agricultural environment drastically.

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Chapter 1

INTRODUCTION

1.1 **Introduction**

"Krishi" is an innovative Android software that links farmers and consumers directly to change agriculture supply chain. By doing away with intermediary parties / brokers, this project hopes to give farmers proper payment for their food and provide consumers with affordable, high-quality, fresh goods.

Through the use of technology and a user-friendly interface designed for digital inclusion, the project aims to empower farmers, streamline the supply chain, and advance sustainable farming methods. In the end, **"Krishi"** hopes to establish a more fair and effective market that benefits both farmers and customers.

1.2 Motivation

The idea for **"Krishi"** started with an interest in addressing the issues farmers and consumers meet in agricultural supply chain. Farmers frequently earn minimal profits due to third parties, while consumers pay high costs for agricultural products.

By connecting farmers and consumers directly through an innovative Android app, I hope to empower farmers with fair pricing, improve their livelihoods and supply consumers with fresh, affordable products.

Keeping all this in mind, I am committed and motivated to promote a sustainable, equitable, and efficient agricultural marketplace by ensuring digital inclusion through a user-friendly interface that will ensure the fresh products for the consumers and a fair compensation of the hard workings of the farmers.

1.3 Objectives

The intended purpose of this project is to transform the agricultural supply chain by connecting farmers directly with consumers through an innovative Android app. This initiative seeks to enhance farmers' earnings, provide consumers with fresh and affordable produce, and create a more efficient and equitable marketplace, proper use of technology in which there is no other third parties involved. To make system more convenient for the users, the main objectives of my project are:

1. View all the products that are available in detail, choose according to their need.
2. Maintain the supply chain between business and consumer where consumer can which farmer/seller they would prefer to buy the product.
3. Expand the profit margin of the businesses that are being less because of the third parties.
4. Ensure fair pricing for the consumer, improve both of their livelihoods and supply consumers with fresh, affordable products.
5. Establish a direct sales channel to ensure fair prices for farmers' produce and improve their economic conditions.

1.4 Expected Outcomes

This application intends to improve the agricultural supply chain significantly. It is projected to boost farmers' revenues by allowing direct consumer sales and removing third parties. Consumers will have more access to fresh, high-quality agricultural goods at reduced prices, encouraging healthy eating habits and supporting local agriculture. The simplified supply chain will decrease the inefficiencies, delays, waste, and costs associated with existing distribution techniques. Furthermore, the user-friendly app design will encourage digital inclusion by allowing more farmers and consumers to engage in the digital economy. Features such as reviews and ratings will increase trust as well as transparency between farmers and consumers, resulting in a more trustworthy marketplace. Furthermore, the system will allow users to browse a list of items and select among various farmers/sellers based on pricing and other criteria, promoting a competitive market environment and offering consumers with more options.

1.5 Report Layout

A quick overview of my project report is given in the report layout. There are seven chapters in the project report. A summary of these seven chapters is given below:

- **Chapter-1**: In this chapter, I went over the overview **of "Krishi - Empowering Farmers through Direct-to-Consumer Sales in Bangladesh."** In this section, I covered the project's overview, motives, goals, and intended outcomes in this section.
- **Chapter-2:** This chapter will cover the related background of the application. Scope of problems, challenges, preliminaries, related works, comparative studies of the application will be included.
- **Chapter-3:** In this chapter, The Requirement Specification of the application will be introduced.
- **Chapter-4:** This chapter will cover the Design Specification of the application.
- **Chapter-5:** This chapter will cover the Implementation and Testing of the application**.**
- **Chapter-6:** In this chapter, the Societal Impact and the Sustainability of the application will be discussed.
- **Chapter-7:** In the final chapter, I will discuss closing remarks and the application's future scope.

Chapter-2

BACKGROUND

2.1 Preliminaries

For millions of people, especially in Bangladesh, the agricultural sector is important to their way of life and economy. Traditional supply chains, on the other hand, frequently involve several third parties, which makes it challenging for consumers to get reasonably priced, fresh products and for farmers to obtain fair prices.

Through the development of **"Krishi,"** an Android app that links farmers and customers directly, the digitization of services offers a chance to reform the industry. The app helps farmers with secure transactions, price updates, inventory management, and product setup. Streamlining the supply chain, ensuring farmers receive fair prices, and giving consumers access to fresh, superior agricultural products free of the middle men are the objectives.

2.2 Related Works

There are various apps and websites associated with our project. which are -

- Digital Agriculture 4 Farmer (App)
- Krishi Bazar (App)
- SobjiBazaar - Online Grocery Shop (Website)
- Farmfresh-organics (Website)

Digital Agriculture 4 Farmer

It is an online store. But only the seller can add products of them.

Krishi Bazar

It is an online store. Buyer selects and buys the products as usual like any other app.

SobjiBazaar - Online Grocery Shop (Website)

It is a multivendor website. Buyer can buy products just like other applications.

Farmfresh-organics (Website)

It is a website. They produce the products in a green house and sell those products. Buyers buy only the limited varieties of products available there.

2.3 Comparative Analysis

While there aren't many works on the internet that are exactly like ours, some do have a similarity.

Number		**Krishi**	**Digital Agriculture 4 Farmer**	**Krishi Bazar**	**Sobji Bazaar**	**Farmfresh-organics**
1	Registration Or Login	Yes	No	Yes	Yes	Yes
2	Show List of Products	Yes	No	No	Yes	Yes
3	Choosing between the farmers Or sellers	Yes	No	No	No	No
4	Flexible quantity selection	Yes	No	No	No	No
5	Simple UI	Yes	No	Yes	Yes	Yes
6	Location selection	Yes	No	No	No	No
7	Any central storing system	Yes	No	No	No	No

2.4 Scope of the Problem

The livelihoods of millions of people in Bangladesh depend heavily on the agricultural sector, which yet faces numerous obstacles as a result of current supply chain systems. The application seeks to address the following major issues, which are revealed through a comparison with other platforms. The agricultural sector is crucial for the livelihoods of many people in Bangladesh.

However, challenges in the current supply chain systems hinder its efficiency. This new application aims to address these issues by allowing direct communication between farmers and customers, promoting competition in the market, enabling flexible quantity selection, providing a wide range of products from different farmers, offering a user-friendly interface, and implementing a thorough registration process. Additionally, the app combines reviews and ratings to promote transparency and confidence in the quality and cost of products.

2.5 Challenges

We had to get over a number of challenges while working on this project. –

1. Need to let farmers and other users know about the application.
2. Describe the application's benefits.
3. Showing them the correct way to utilize this application.
4. Go through registration process.
5. Ensure they ask the proper price according to the current market.
6. On-time product delivery.

Chapter-3

REQUIREMENT SPECIFICATION

3.1 Use Case Diagram

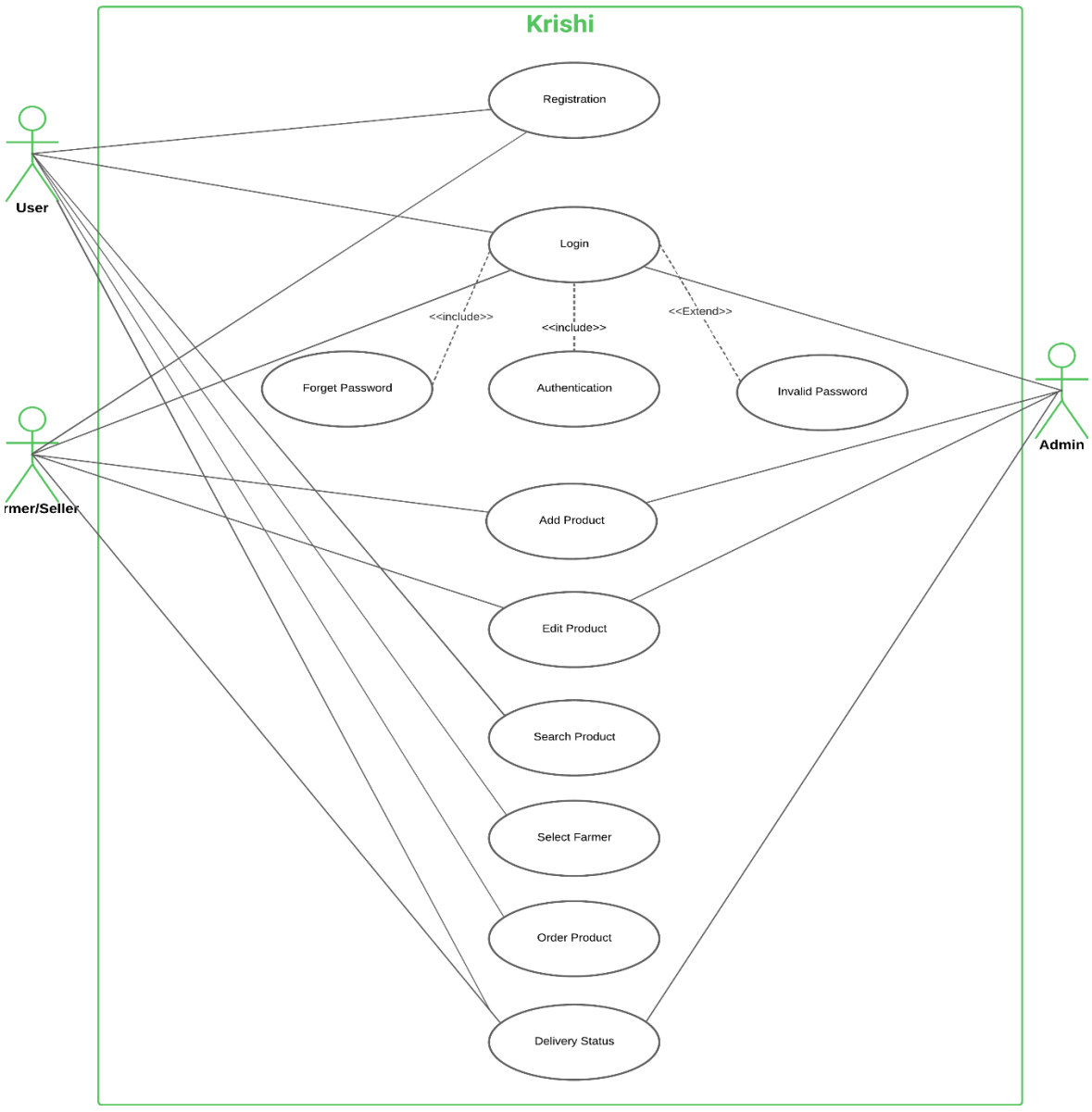


Figure 3.1: Use Case Diagram

3.2 Requirement Gathering and Analysis

Creating the project specifications sets the quality of an application. It is the project's primary aspect. We employed a variety of approaches to gather the project's requirements. We have made our application suitable for a wide range of users. We therefore attempted to speak with various people individually to learn what they expected from this kind of application. We conducted one-to-one information gathering with questions to gather information for this kind of application. We examined the issues that people that come up during the brainstorming stage. Ultimately, we created a prototype of our application based on their recommendation and our analysis.

3.3 Data Flow Diagram

Data flow diagram (DFD) defines the flow of data of a system. It describes how to transfer data from user to storage. The following figures will show the DFD of the application.

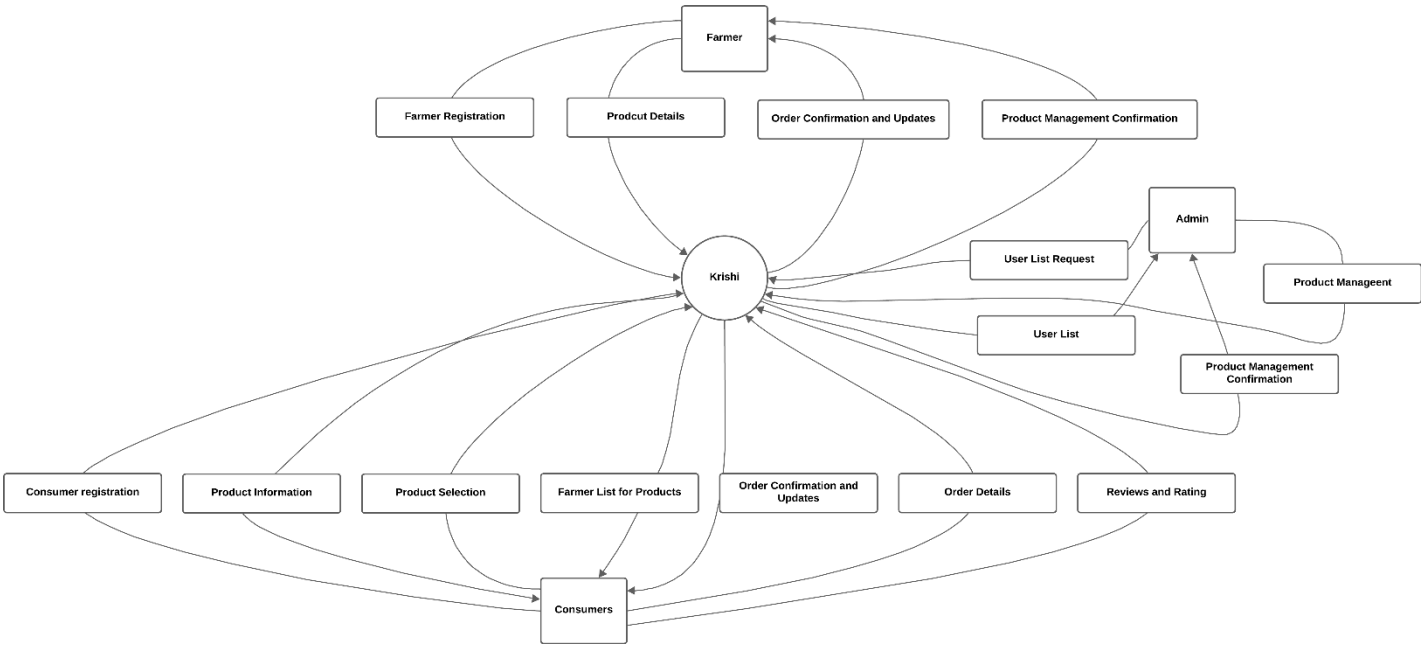


Figure 3.3.1: 0 Level DFD

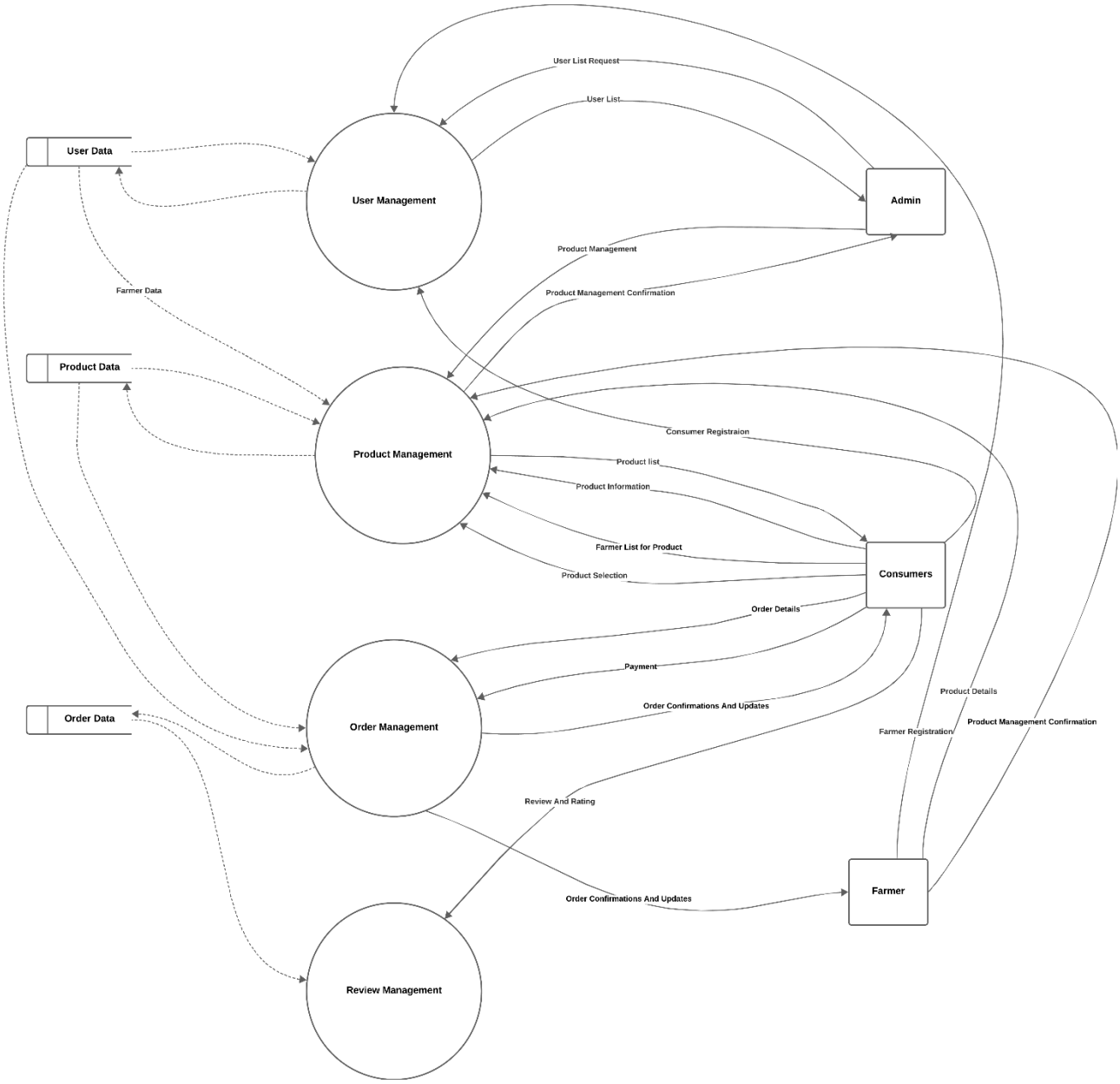


Figure 3.3.2: 1st Level DFD

3.4 ER Diagram

An entity relationship diagram, or ER diagram, is a database's graphical structure. It is a database's blueprint in an initial implementation form. Entity sets and relationship sets are components of an ER diagram. There are six entity sets in our ER diagram, such as a user, item, purchase, transaction, etc. Figure 3.4 displays our application's ER diagram.

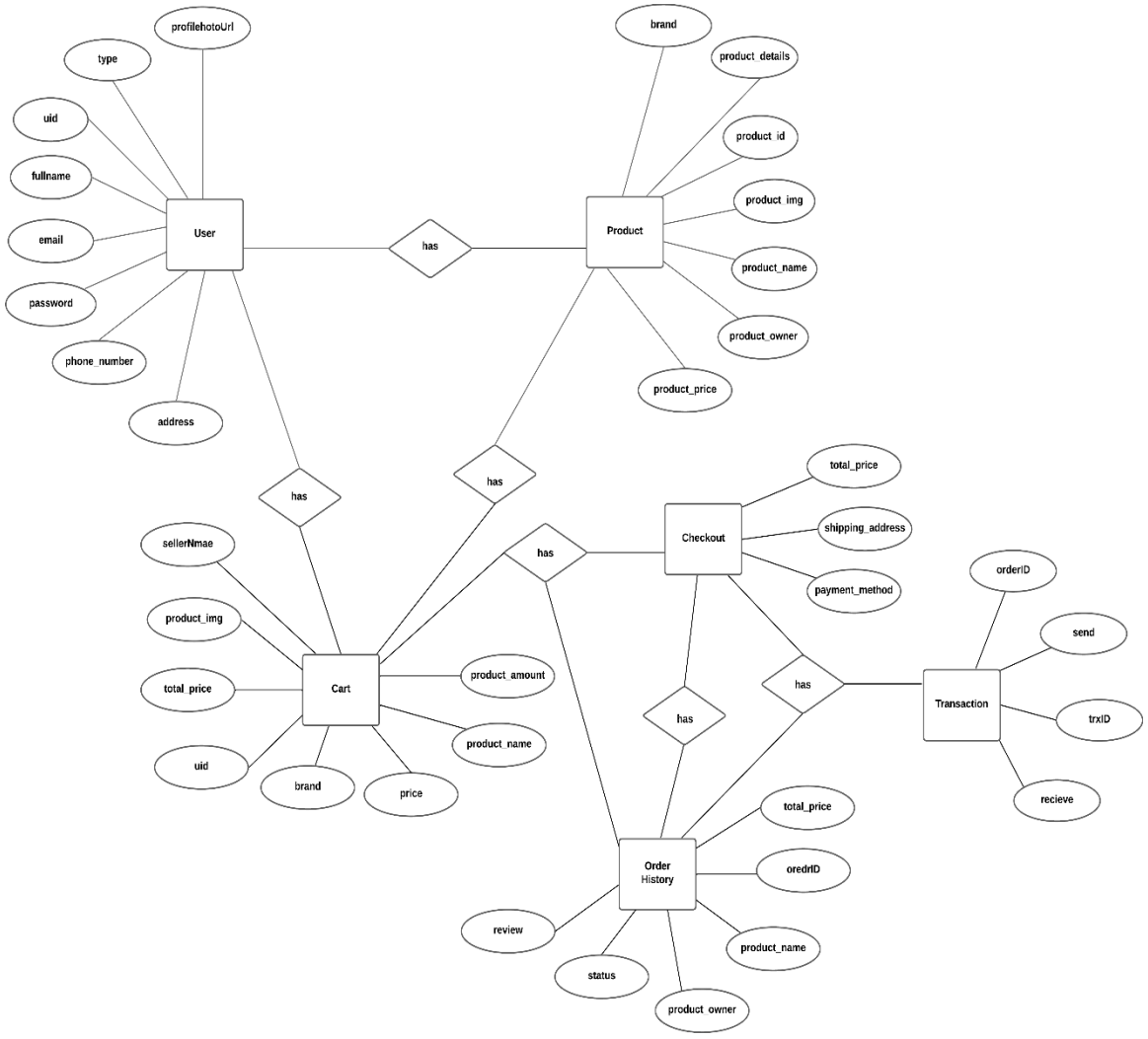


Figure 3.4: ER Diagram

3.5 Design Requirements

Design specifications outline a system's functional ideas or actions. It provides a programmer with a clear understanding of the system's functionality. The design Requirements for our project's users are:

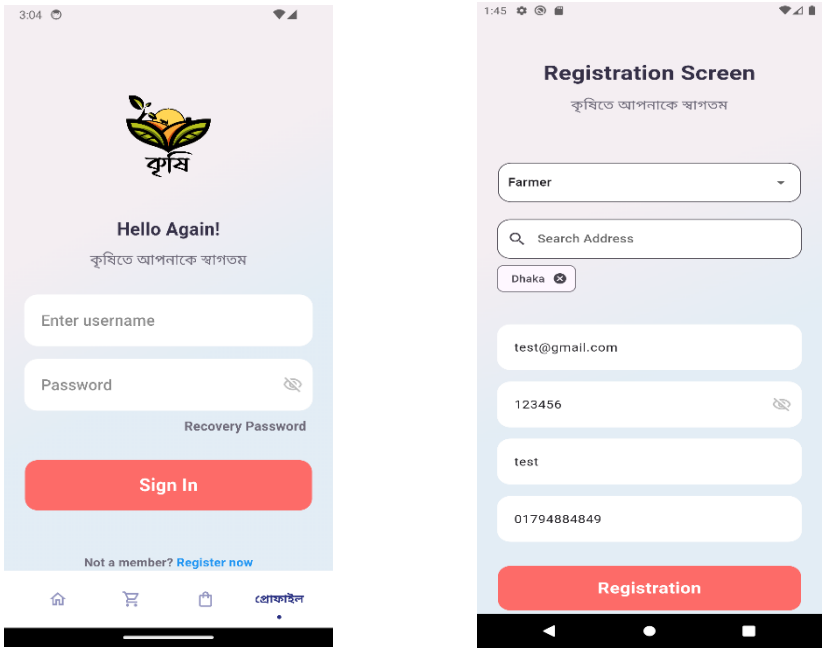
- Able to do registration
- Able to login
- Farmers can add/edit product based on location
- Able to see the product list based on location
- Able to choose products
- Can choose between farmers according to the price and other attributes
- Can add to cart
- Able to choose quantity
- Can edit the cart if necessary
- Able to do checkout and payment
- Can see the progress of the delivery of the product
- Can give review after product handed to consumer
- Exit App

Chapter-4

DESIGN SPECIFICATION

4.1 Front-End Design

An application's user interface is an essential component. An application's popularity and quality is mainly determined by its front-end design. User interface, or interaction design, is primarily visualized through front-end design.

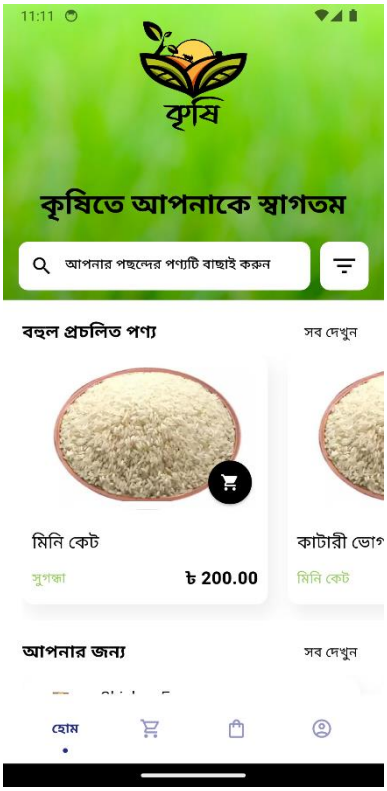


(A) (B)

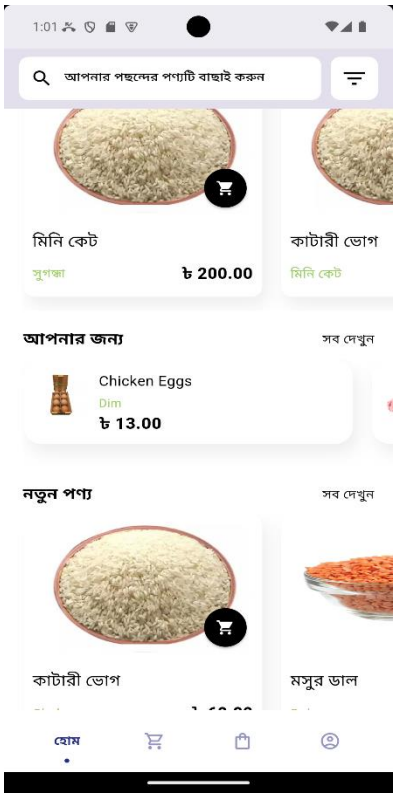
Figure 4.1.1: (A) Login Page (B) Registration Page

Figure 4.1.1 (A) shows the login screen and (B) shows the registration screen for the application.

For Consumer Type Users



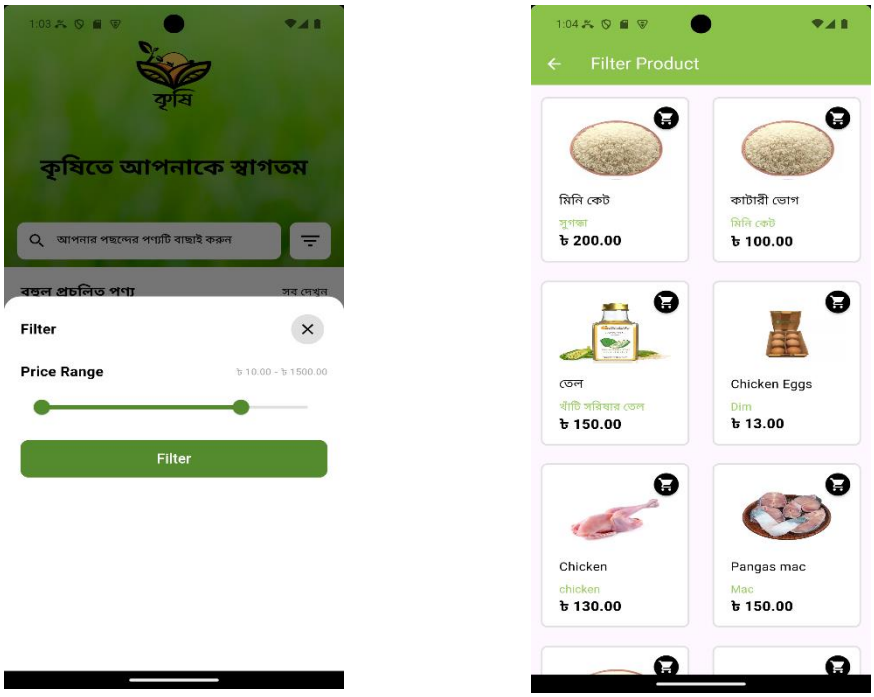
(A.1)



(A.2)

Figure 4.1.2: (A.1,2) Home Screen (For Consumer)

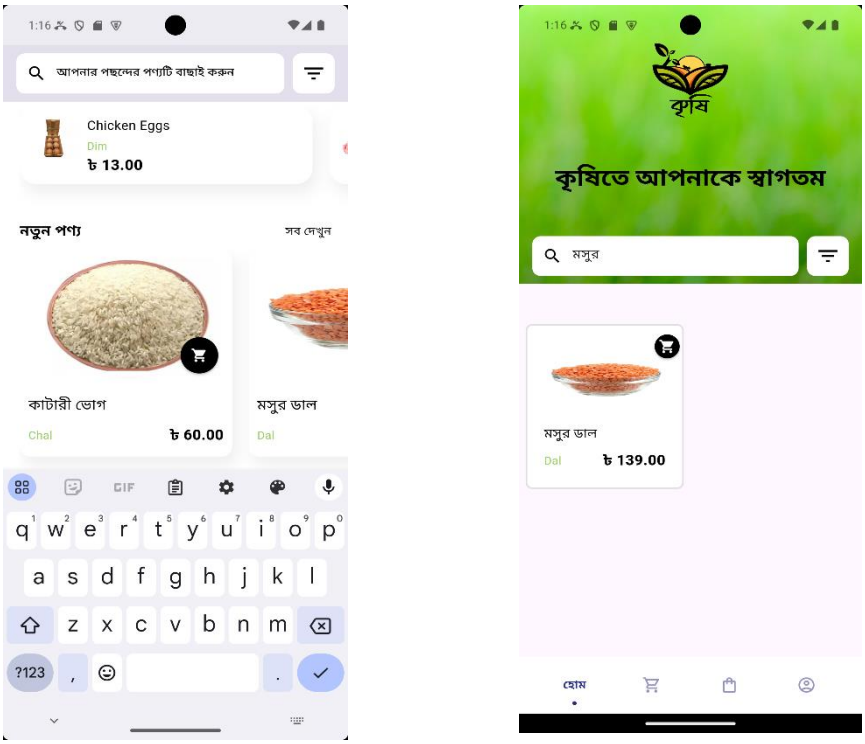
Figure 4.1.2: (A.1,2) shows the home screen that shows a search and filter panel, product list and the main four options (Home, Orders, Cart, Profile) in the navigation bar of the application.



(A) (B)

Figure 4.1.3: (A) Filter Screen (B) Filtered Product Screen

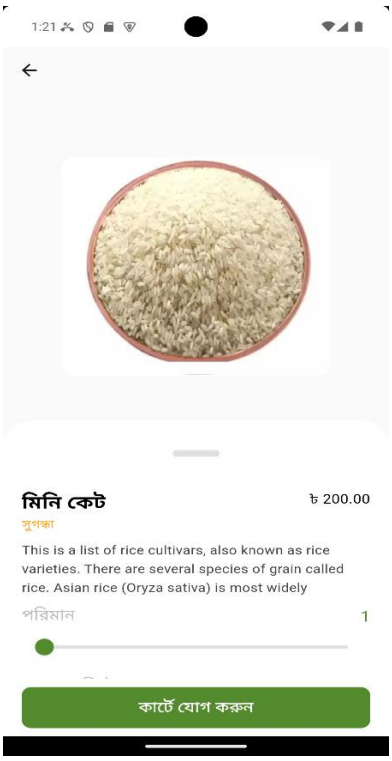
Figure 4.1.3: (A) Shows Filter panel in which they can choose the price range (B) Shows the products according to the selected range.



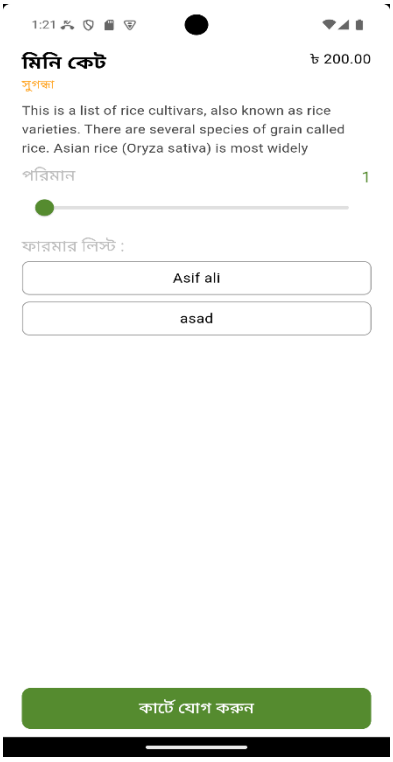
(A) (B)

Figure 4.1.4: (A) Search Panel (B) Searched Product Screen

Figure 4.1.4: (A) Shows Search panel in which they can search for the product (B) Shows the products according to the searched product.



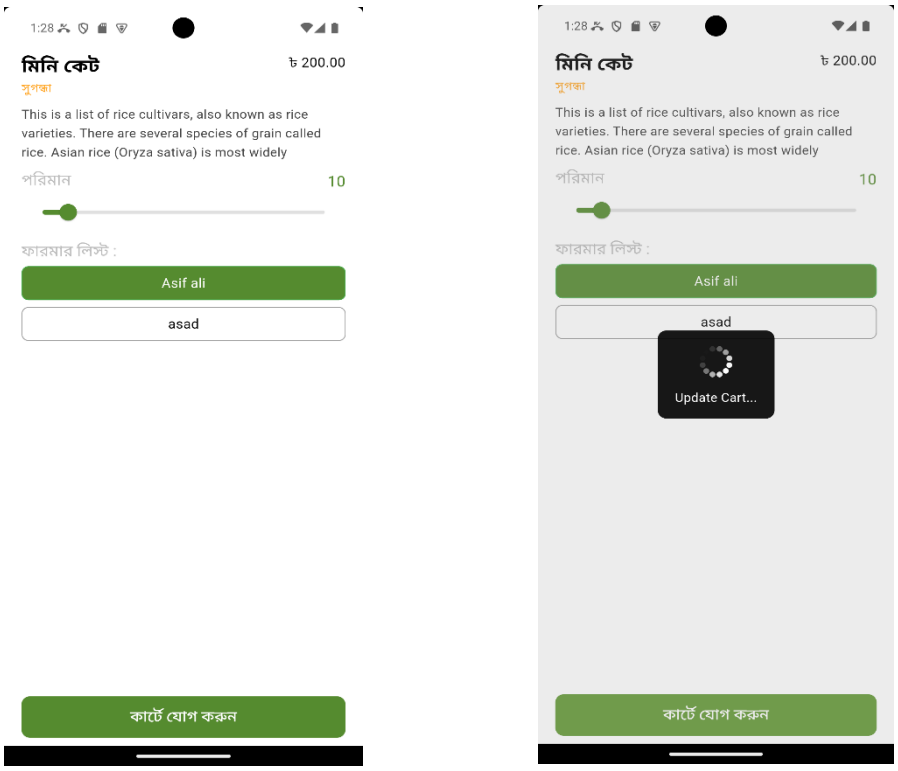
(A)



(B)

Figure 4.1.5: (A) Product View Screen (B) Product quantity and selection Screen

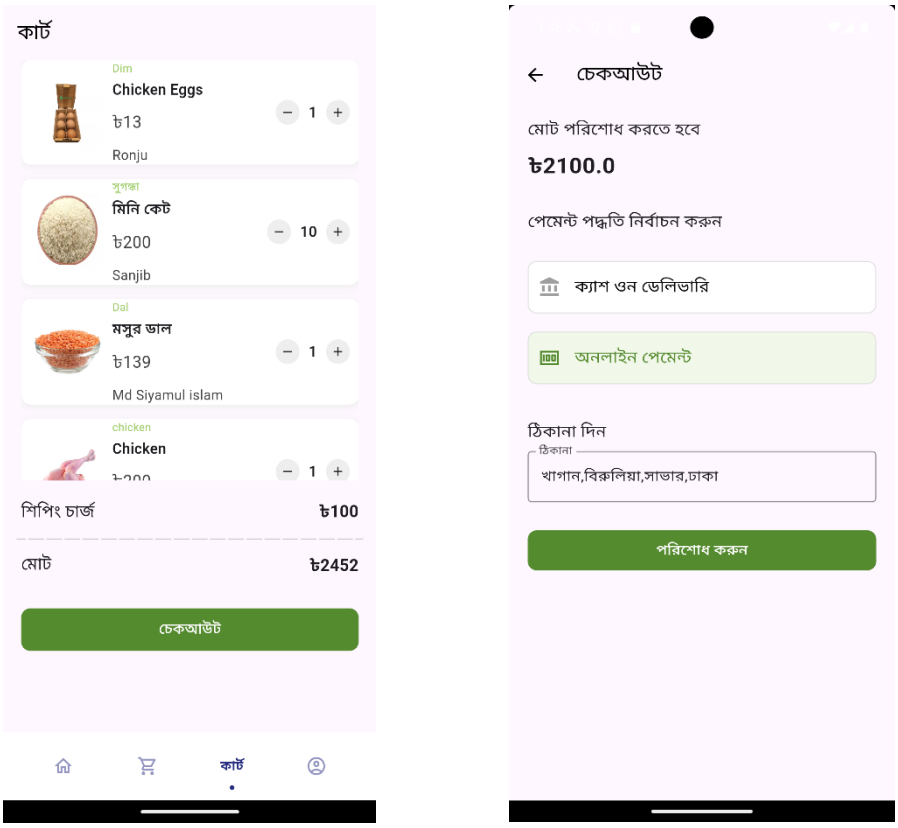
Figure 4.1.5: (A) shows the product screen that shows details of the product, that includes add to product price and product image (B) shows how the consumer can select the quantity and the farmer who sell that product.



(A) (B)

Figure 4.1.6: (A) Product quantity and selection Screen (B) Product adding to cart

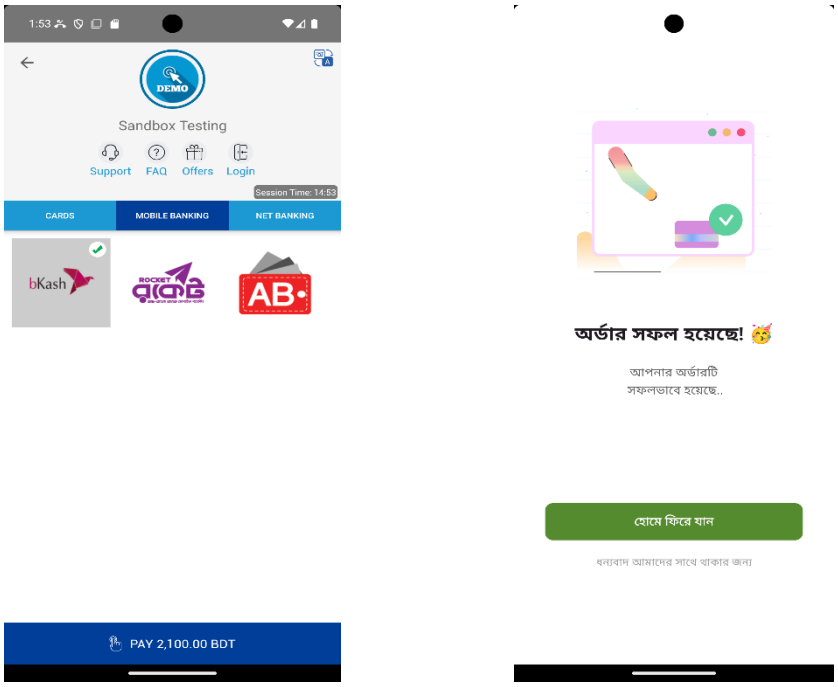
Figure 4.1.6: (A) shows how the consumer can select the quantity and the farmer who sell that product. (B) shows the selected product that is adding to the cart.



(A) (B)

Figure 4.1.7: (A) Cart Screen (B) Checkout Screen

Figure 4.1.7: (A) shows the cart page where the selected product of the consumer shows and with a short detail of total quantity and price with checkout button (B) shows the summary of total price and can select the payment and add the shipping address and then proceeds for payment.



(A) (B)

Figure 4.1.8: (A) Payment Screen (B) Order Success Screen

Figure 4.1.8: (A) shows the payment page where they can pay for the products they had chosen (B) shows order placed successfully and navigate to the home page after processing.


All
মিনি কেট
orderID: 1724450349129
Owner: Md Eusuf Uddin
Total Price: $200
Status: Pending
অর্ডার গুলো

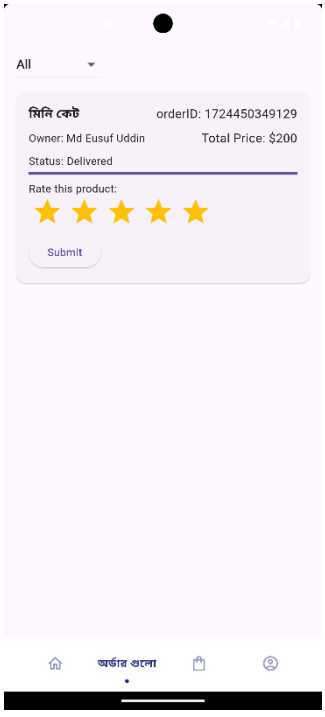
(A)


All
মিনি কেট
orderID: 1724450349129
Owner: Md Eusuf Uddin
Total Price: $200
Status: Order taken
অর্ডার গুলো

(B)

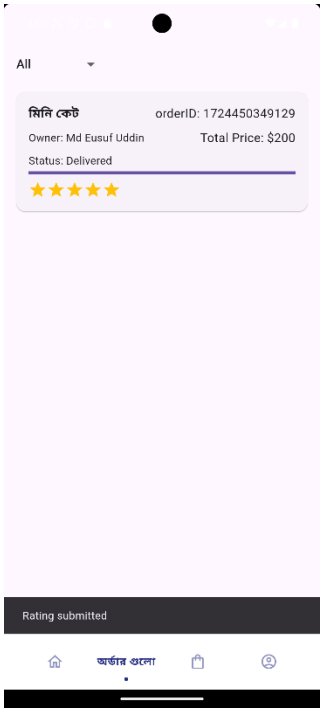

All
মিনি কেট
orderID: 1724450349129
Owner: Md Eusuf Uddin
Total Price: $200
Status: On the way
অর্ডার গুলো

(C)


All
মিনি কেট
orderID: 1724450349129
Owner: Md Eusuf Uddin
Total Price: $200
Status: Delivered
Rate this product:
Submit
অর্ডার গুলো

(D)

Cont.

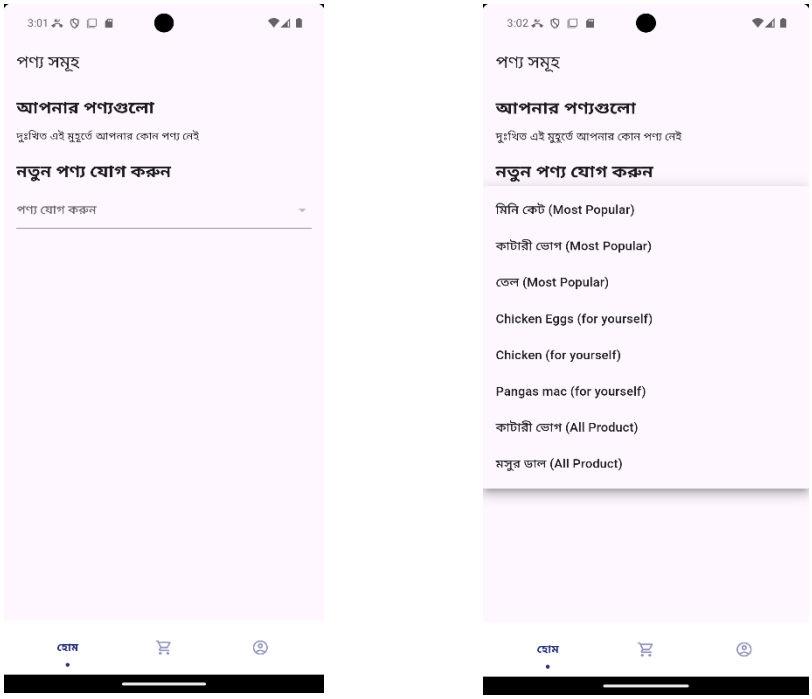


(E)

Figure 4.1.9: (A) Order Pending Status (B) Order Confirmation Status
(C) Order On the way Status (D) Order Delivered Status (E) Order Rating Status

Figure 4.1.9: (A) shows the order done by consumer shows into orders page after payment for farmer to confirm the order (B) shows the order status to Order Taken after confirming by the farmer (C) shows the order on the way after dispatched by the farmer (D) shows status changed to delivered after clicking mark as delivered by the farmer (E) Shows the rating system after the product is delivered successfully.

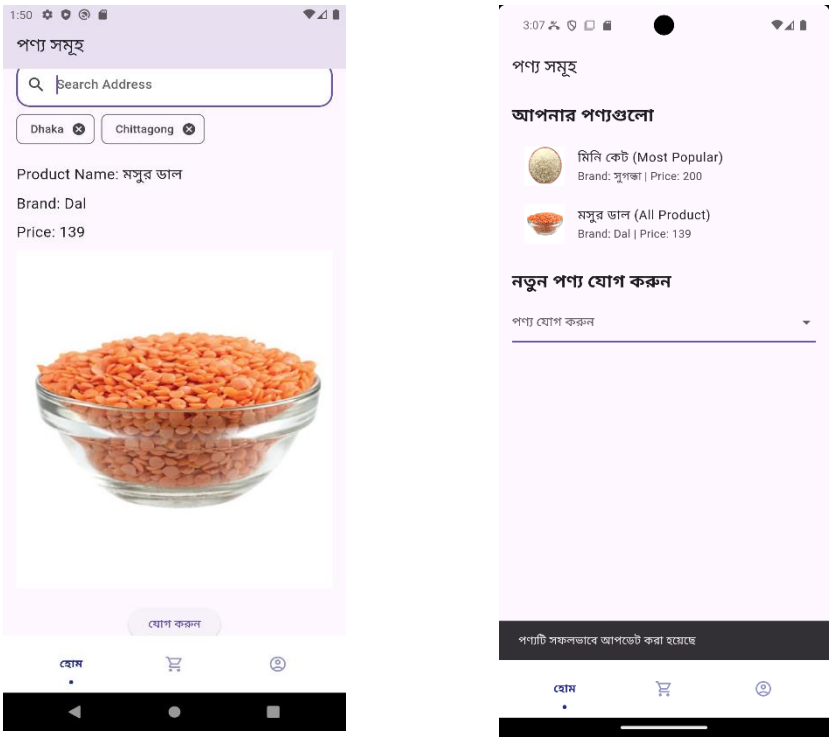
For Farmer Type Users



(A) (B)

Figure 4.1.10: (A) Product Screen (B) Add Product Screen

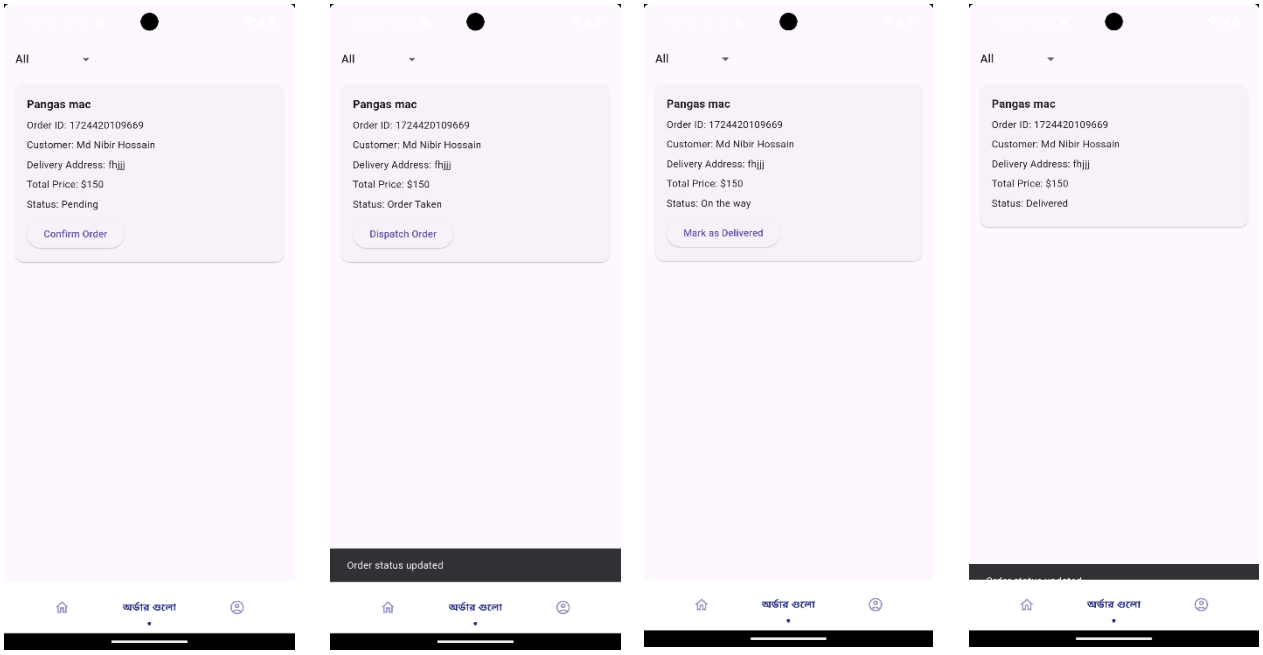
Figure 4.1.10: (A) shows the product page where farmers can add and view their products (B) shows the page for adding product



(A) (B)

Figure 4.1.11: (A) Adding Product (B) Product Dashboard

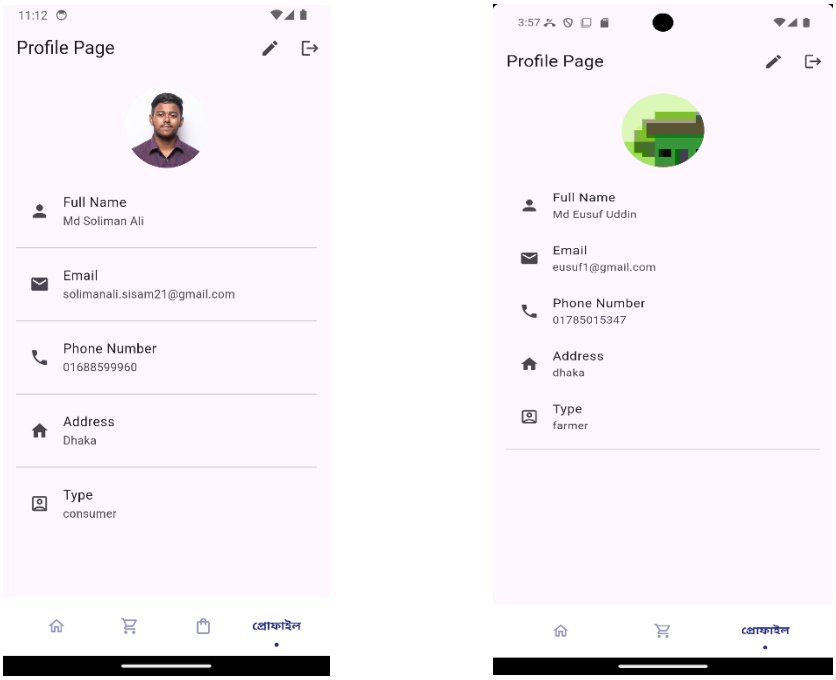
Figure 4.1.11: (A) shows the page where farmer will add their product by location (B) shows the product dashboard after adding product.



(A) (B) (C) (D)

Figure 4.1.12: (A) Order Initial Status (B) Order Confirmation Status
(C) Order Dispatched Status (D) Order Delivered Status

Figure 4.1.12: (A) shows the order done by consumer shows into orders page for farmer to confirm the order (B) shows the order status to Order Taken after confirming (C) shows the order on the way after dispatched (D) shows status changed to delivered after clicking mark as delivered.



(A) (B)

Figure 4.1.13: (A) User profile details screen (Consumer)
(B) User profile details screen (Farmer)

Figure 4.1.13: (A) shows the profile page where it shows the detail of the consumer and the type of the user with profile edit capability and sign out button (B) shows the profile page where it shows the detail of the farmer and the type of the user with profile edit capability and sign out button.

4.2 Back-End Design

The back-end design of an Android application is a crucial aspect of its dynamics. I've been storing user login and transaction data in the Firebase database for my project. When a user creates an account, this system saves information for Firebase authentication. Firebase Authentication creates a unique ID for each user. A real-time database where we can store user transaction data is one of the additional features Firebase offers. Firebase storage can also be used to store the user's profile photos.

The list of registered users for the application is displayed in Firebase Authentication.

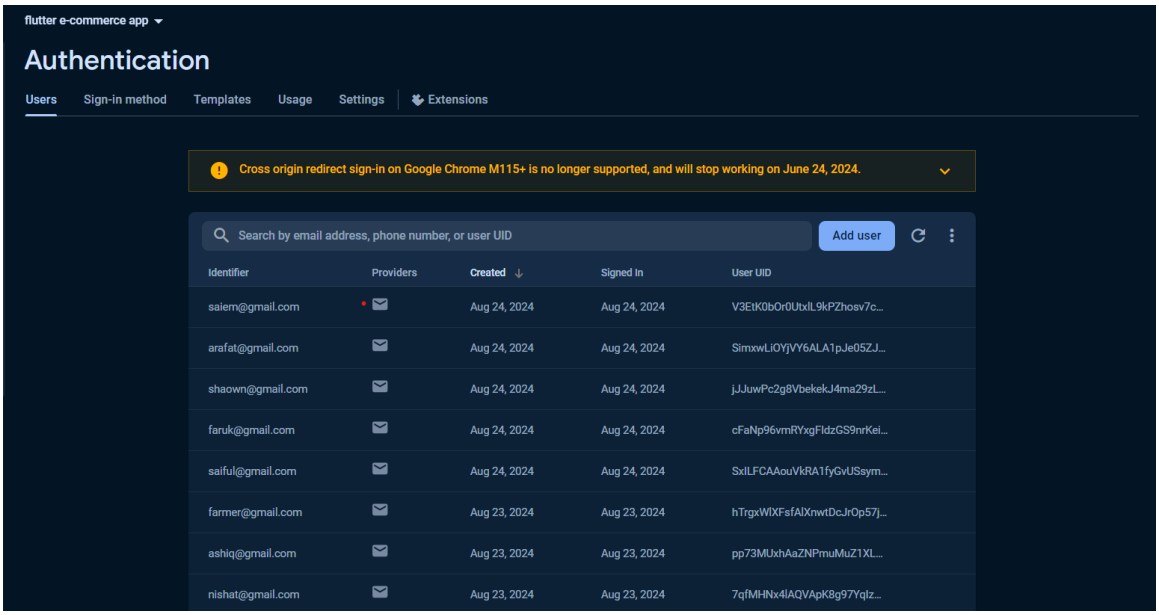
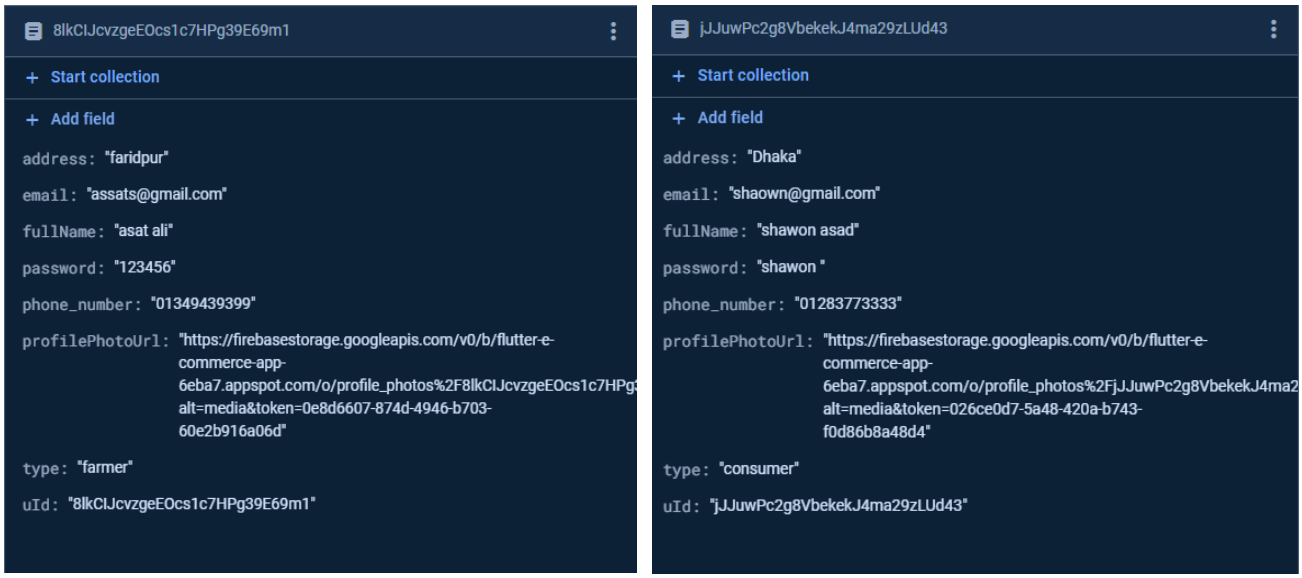


Figure 4.2.1: Authenticated user's information

This is the database design maintained for storing user's information.



(A) (B)

Figure 4.2.2.(A, B): Specific user's information

Two (2) types of user **(A) farmer** and **(B) consumer**. Users can read/write data by using their uId.

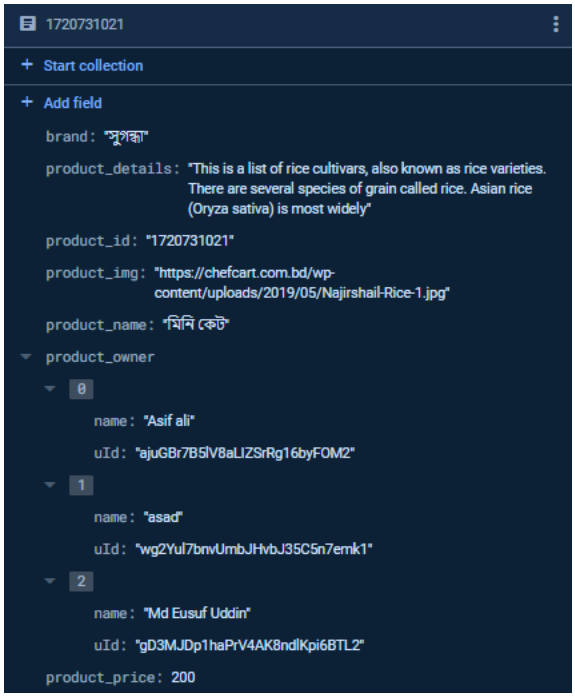


Figure 4.2.3: Product design and information

This is the design of the product and the information that stores by the document. Users can view the product information as this document design follows.

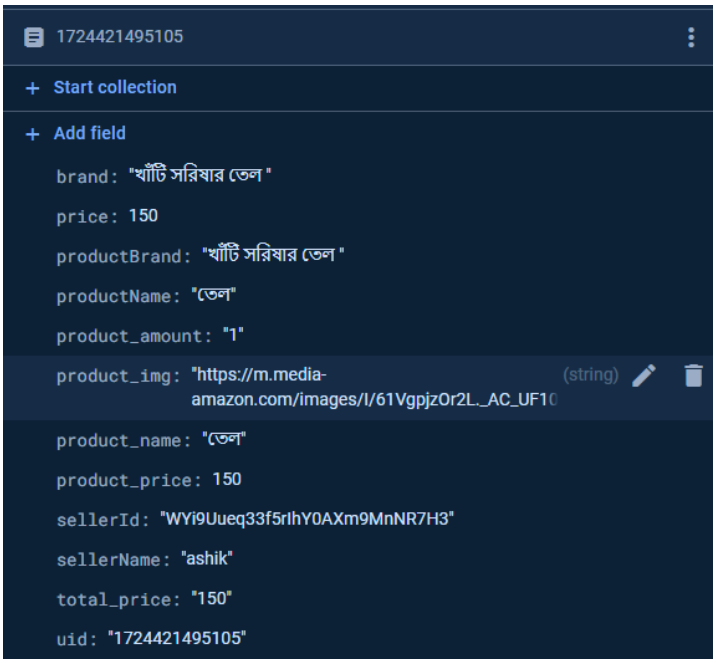


Figure 4.2.4: Cart Item design and information

This is the design of the document where the cart of desired product selected by the consumer. And it is accessible by the consumers to read/write.

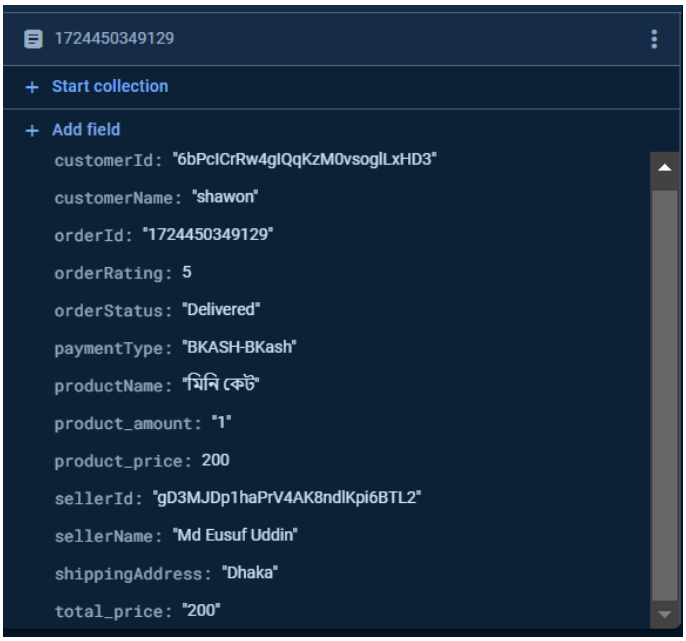


Figure 4.2.5: Order and Review design and information

This is the design of the document where the orders of desired product selected by the consumer. It stores the orders of the consumer and farmer and it is accessible by the consumers and farmers to read/write.

4.3 User Interface and Experience

The success of an application is largely determined by the quality of its interaction design, which acts as a vital link between the user and the system. A well-designed, user-friendly interface enables users to interact with the application more efficiently, enhancing usability and reducing the time required to complete tasks. With this in mind, we have placed a strong emphasis on developing an intuitive interaction design that fosters seamless user engagement. Given that our application is intended for a diverse user base, we have focused on creating an interface that is both highly accessible and visually appealing, ensuring a positive experience for all users.

4.4 Implementation Requirements

I've developed our application using a variety of hardware and software. I've used Adobe XD to design the user interface and create a prototype. We used Flutter to implement the design, which allowed us to make an application that worked on several platforms. The full list of instruments and programs utilized during the development process is provided below:

- **Design** – Adobe XD
- **Development Framework** - Flutter
- **IDE** – Android Studio
- **Language** – Dart
- **Database** – Firebase, JSON
- **Testing** – Android devices & Emulators

Chapter-5

IMPLEMENTATION AND TESTING

5.1 Database Implementation

The backend of this application is based on Firebase Realtime Database, which manages and stores user data securely and efficiently. Firebase's ability to function online and offline is one of its main benefits. When users experience a loss of internet connectivity, data is automatically synced to the Firebase database once the connection is restored and is temporarily stored locally on the device. Because the application uses Firebase and only uses a small amount of JSON to store necessary data, there is no longer a need for an additional offline database or SQL-based solution.

The application requires users to register through a specific registration page in order to facilitate user transactions. Users give important information during this process, such as their location, phone number, email address, full name, and a password for security. The user's data is safely saved in the Firebase Realtime Database upon submission, making it accessible in the future through the user's profile.

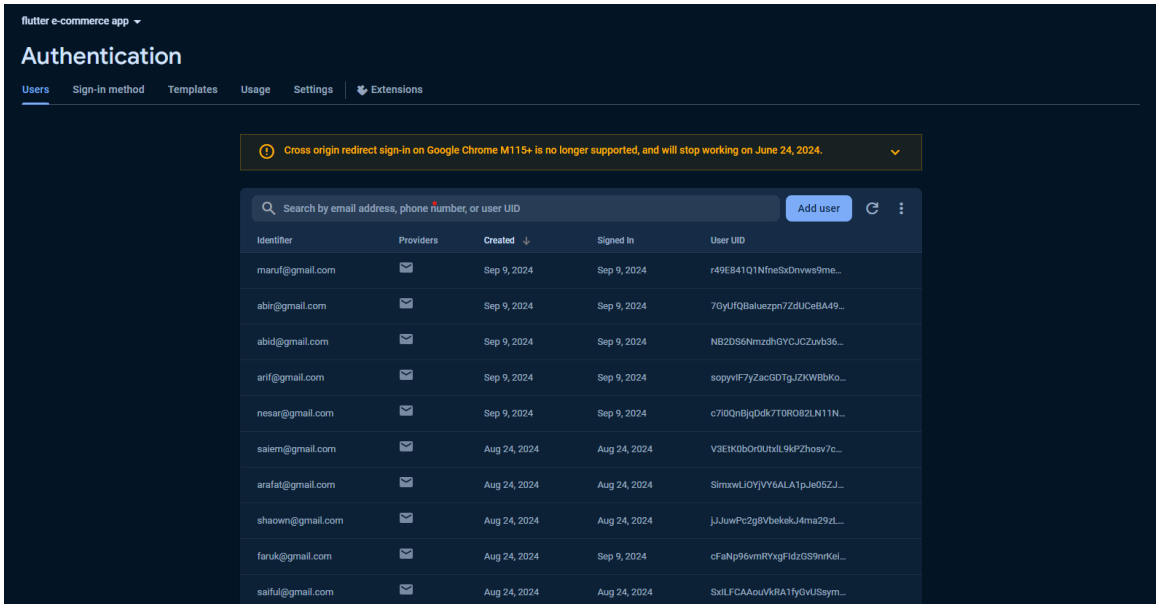


Figure 5.1.1: Registered User List

Firebase Authentication, which creates a unique identification number (UID) for each registered user, is used to manage user authentication. The application's ability to preserve user-specific data depends heavily on this UID. Users are required to enter a working email address and password upon logging in, and these details are verified against Firebase records. The system will prevent unwanted access by displaying an error message indicating invalid credentials if the email or password entered is incorrect. This method protects user data while ensuring a safe and convenient login process. The valid methods are shown below.

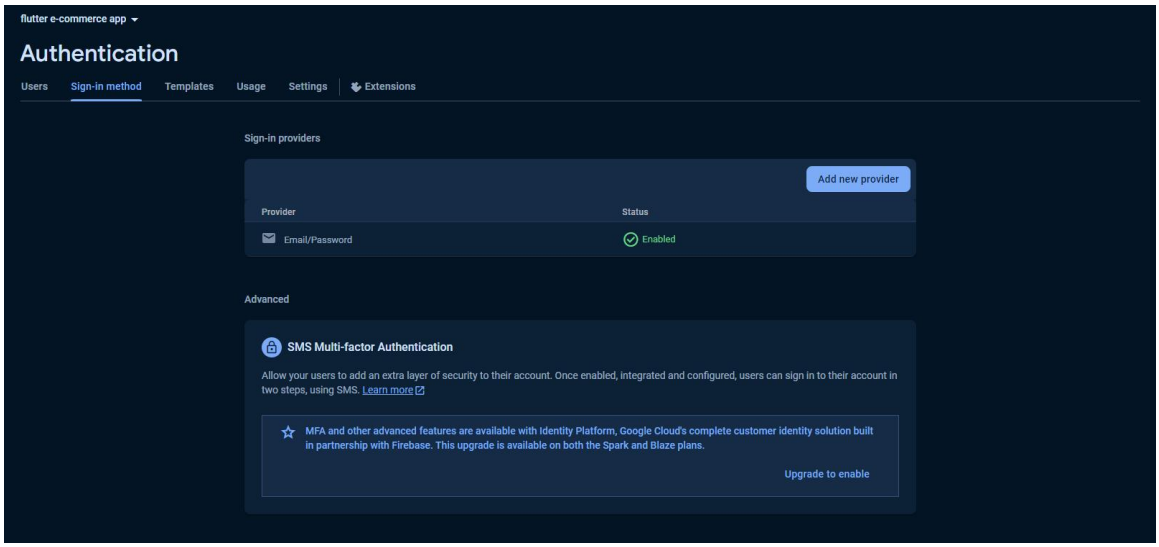


Figure 5.1.2: Valid Sign in Method for users

Customers will be able to access the necessary products through the app. After adding the item to their cart, the user will place an order. All of the transactions the user made while using the system can be recorded. The information that they decide to order will be saved and stored on the orders page for both farmers and consumers.

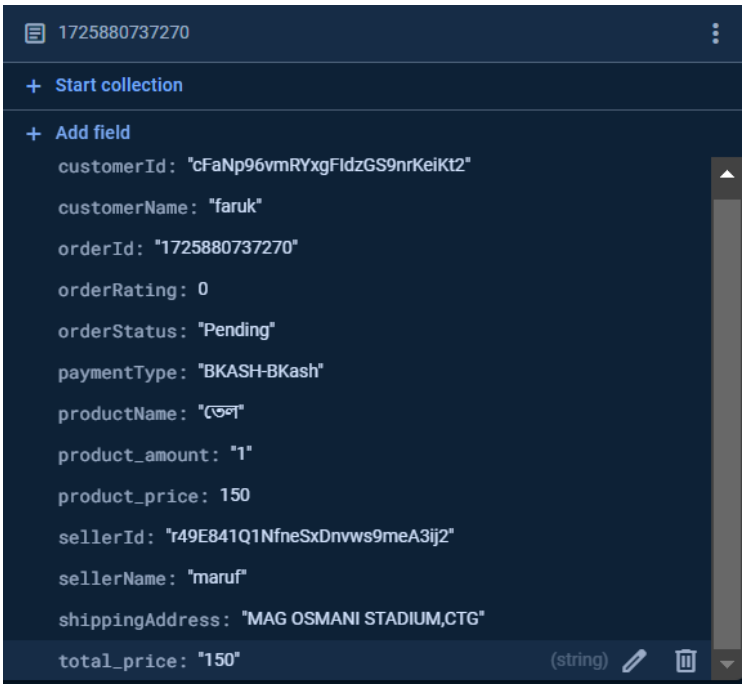


Figure 5.1.3: Show Transaction of the user

User stores the order record with a specific orderId, payment type, sellerId, userId, shippingAddress, total_price that will show after completion of payment.

5.2 Front-End Design Implementation

This application's main objective is to establish a direct line of communication between farmers and consumers in order to boost farmers' income and supply consumers with fairly priced, fresh goods. The platform allows farmers to list their products, which customers can then purchase directly, fostering a direct link between the two. The app is designed to be as simple and user-friendly as possible for both farmers and consumers.

Before logging in, users can browse the product page, but if they attempt to add a product to the cart, they will be prompted to log in. New users must register through the app before they can log in. Based on the user type, the app offers different functionalities:

- Consumers will see the product catalog, allowing them to put items in their cart and finish the purchase process. After making a payment, they can track the delivery status of their orders.
- Farmers are redirected to their product inventory, where they can manage their listings by adding or removing products.

Once a consumer places an order, the farmer will receive the order details, confirm it, and arrange for delivery. After the product is delivered, consumers can rate the product and the farmer, providing valuable feedback. To enhance usability, the app's major sections are designed in Bangla for better understanding and accessibility.

This streamlined process ensures both parties benefit from a direct, efficient, and user-friendly platform for transactions.

5.3 Testing Implementation

An essential step in guaranteeing the release of a bug-free application is the testing procedure. A single mistake has the ability to trigger unexpected behavior, which could harm end users' experiences and put them at risk. Extensive testing ensures the application works as intended by locating and fixing any remaining bugs. I covered more than 90 percent of users with my testing, using a range of Android devices and emulators across API levels 23 to 35. This broad range of device environments guarantees stability and compatibility with various Android versions.

In this section, I will outline the key testing strategies I followed to ensure the quality and performance of the application. These tactics made it easier to spot possible problems and guarantee a seamless user experience on all compatible devices.

5.3.1 Unit Testing

In unit testing, I've checked individual functionality in different android devices/emulators. If a function works fine then went to another one. Also checked every input field. By unit testing, my application output quality improved to a significant extend.

5.3.2 Verification Testing

During verification testing, I ensured that the application's functionality was consistent with the expected results. The user registration procedure in the Krishi app was extensively tested, ensuring that new users could register using the input fields without any problems. Users could access and utilize the main features of the app as intended after registering.

Customers could browse products, add items to their carts, finish the checkout process by making payments, and follow the real-time delivery status of their orders by logging into the app. Farmers were able to view their product listings in real-time, add or remove products from their inventory, and see what products customers had ordered by logging into the app. Additionally, farmers could verify delivery orders, ensuring a seamless transaction process.

The application successfully complied with the design and operation requirements, and all tested functionalities operated as expected. Through this verification process, it was established that the app functions as planned and offers farmers and consumers an efficient experience.

5.3.3 Validation Testing

Validation involves dynamic testing, where the application's usability and functionality are assessed in real-time scenarios. After completing successful verification testing, we focused on evaluating how users interact with the app. In Krishi, we tested various user inputs. For instance, when a user fills in the text fields on the registration page and clicks the register button, the system correctly processes the registration if all inputs are valid. The same applies to the login process.

Once logged in, users can search for products, and the app accurately returns results that match the search keywords. The functionality for adding products to the cart was also validated—when a user selects a quantity, the scroll mechanism works smoothly, and the cart reflects the chosen quantity along with the correct total price.

For farmers, the process of adding or deleting locations and products worked as expected. Additionally, when a farmer interacts with the order page by confirming or updating the order status, the system successfully updates the product's status in real-time.

Overall, the application delivered the expected outcomes without any issues, ensuring a smooth and reliable experience for both consumer and farmer users.

5.3.4 System Testing

Before deploying the app, I've used system testing knowledge to recheck the system bugs and errors. After properly tested, I can ensure that my system can provide security, reliability, which will satisfy the end users.

5.4 Testing Report

After testing in many different ways, I can assure that my application is ready to use. My application will provide reliability and proper security and provide a user-friendly environment to users. By using firebase real-time database there is no way to lose/leak of user/app data. Though firebase is an online database but it has also the capability of offline storing the data locally and after the device become online the data automatically synced in the database. For testing purposes, I've deployed the application's demo version to some users. They give us positive feedback and eager to use this app. Till now I didn't notice any bugs/errors However, I will continuously monitor the app and keep updating the app to fulfill user satisfaction.

Chapter-6

IMPACT ON SOCIETY, ENVIRONMENT AND SUSTAINABILITY

6.1 Impact on Society

Through the direct connection between farmers and consumers, the removal of middlemen, and the promotion of price transparency, the "Krishi" application aims to completely transform the agricultural supply chain. This Android app gives customers the ability to search, filter, and choose products based on price and quality while giving farmers the ability to set up their products, manage inventory, and receive real-time price updates. By guaranteeing equitable recompense and facilitating the purchase of fresh, reasonably priced produce by consumers, the system aims to empower farmers.

The project has a significant social impact, especially in Bangladesh where the economy is heavily dependent on agriculture. By eliminating middlemen and guaranteeing that farmers receive a higher portion of the profits, the app improves farmers' standard of living. It gives customers access to fresh, high-quality produce at reasonable costs. By connecting rural farmers to the digital marketplace and fostering technological literacy, the app promotes digital inclusion among farmers. Additionally, it supports sustainable agricultural practices by providing a platform for eco-friendly and organic products.

Ultimately, "Krishi" is more than just a market place; it's a tool for societal and economic advancement, promoting an equitable, open, and sustainable farming system that serves the interests of both farmers and consumers. Through innovative technology, this project supports rural development, strengthens local economies, and enhances food security.

6.2 Ethical Aspects

To promote ethical use, ethical considerations are given top priority in my application. This entails getting informed consent, protecting the security and privacy of user data, and being open and honest about how the app works. The app is accessible, respects cultural sensitivities, uses honest marketing techniques, and guarantees fair practices in transactions between farmers and consumers. These steps are meant to foster confidence and guarantee that farmers and customers will benefit.

6.3 Sustainability Plan

The Krishi app aims to contribute to sustainability through multiple significant projects. The app promotes local agriculture and lessens the carbon footprint associated with lengthy supply chains by facilitating direct sales between farmers and customers. Because real-time inventory management enables farmers to modify their offerings in response to actual demand, it helps reduce food waste. In addition, the app raises awareness and encourages ethical farming methods by promoting eco-friendly products and sustainable farming practices.

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To further promote a community that values environmental responsibility, Krishi also offers resources to teach farmers and consumers about sustainable practices. The app looks into collaborations with groups that promote environmental sustainability, like those that work to promote recycling and cut back on plastic consumption. To ensure continuous improvement and alignment with its sustainability goals, the app's sustainability impact is regularly monitored and reported on.

Chapter-7

CONCLUSION AND FUTURE SCOPE

7.1 Discussion and Conclusion

After a lot of pursuit and effort, I was able to create this application. This is a daily grocery shop application. It contains some important features that a person needs on a daily basis. By establishing a smooth and effective platform for both parties, this application successfully closes the gap between farmers and consumers. Customers can browse, filter, and buy products more easily thanks to the application's user-friendly interface. An easy-to-use checkout process and clear navigation improve the whole shopping experience. Users can rate and track their orders after making a purchase, which adds to the lively and interesting interaction.

The application offers farmers strong inventory management tools. Farmers may effortlessly add, edit, and remove products, as well as handle orders in real time. This feature helps farmers stay organized and responsive to customer demands by supporting timely order fulfillment and effective product management.

Krishi succeeds in its goals of providing a straightforward and effective platform for direct transactions between farmers and consumers. The application's layout facilitates efficient inventory and order management for farmers as well as a seamless shopping experience for customers. Through its promotion of local produce and improvements to the agricultural supply chain, Krishi is a useful instrument for increasing market accessibility and efficiency in operation.

Overall, Krishi shows how to connect consumers and local farmers in an organized manner, guaranteeing that each user group has access to the features and functionalities that are required to meet their requirements.

7.2 Limitations

Every system has some limitations. My system is not distinct from that. My system contains some minor limitations. I've tried my best to reduce limitations but some limitations remain in our application.

- Krishi product view page has a limitation, it was intended that in farmer list it was supposed to show product price as the farmer demand for the product. But for now, it's fixed priced.
- Sometimes the home page continuously refreshes the page when the user is scrolling, that creates a frustration for the user.
- Sometime after log in the initial state of the app stays same after log-out and login with different type of user.

7.3 Scope for further Development

I have some plans with our application. I can't add some features right now because of knowledge and time limitation. In the future I will add those features to the application. I will add the functionality where when the farmer will add the product of them, they can add price of the product they demand. Next For now, I've used some fixed products for showcasing and adding the same category of products. I will add the types of the product so that the marketplace can be big. The location system of the application is by district wise, I will further add by area wise location system in a district. I will fetch the location automatically through device and show the consumers the product available for that district. I will add multi step authentication for better security for the application.

I hope these features and functionalities will increase the efficiency of my application and save users time massively.

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Krishi

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