D-SHOP – A MULTI-VENDOR E-COMMERCE APP

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FINAL YEAR DESIGN PROJECT REPORT

This Report Presented in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Computer Science and Engineering

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DHAKA, BANGLADESH

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APPROVAL

This Project titled "**D-SHOP - A MULTI-VENDOR E-COMMERCE APP**", submitted by **Md Shakil Ahmed** to the Department of Computer Science and Engineering, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on **14-07-2024**.

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We hereby declare that, this project has been done by us under the supervision of **Mohammad Monirul Islam, Assistant Professor, Department of CSE, Daffodil International University**. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree.

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Finally, I must acknowledge with due respect the constant support and patience of our parents.

ABSTRACT

The D-Shop is a multi-vendor e-commerce application created specifically for University Students. It’s goal is to establish a convenient and user-friendly online marketplace where students can start their new business and earn part time money. They can sell their famous products from their districts. As a user they can sell their used product and also they can communicate on community chatting sections. They must first set up their selling account via the seller app. He or she can then sell products provided the admin approves of their seller account. To use this app students can use any device, like iOS or Android. One of the platform's main features is a multi-vendor e-commerce system that allows sellers to list and manage every product that they sells. Vendors possess the liberty to add, modify, and remove every product as per their requirements. A strong search system has been added to improve the user experience. Customers can locate all the required products they're looking for quickly and effectively with the help of this search system. Sellers can efficiently manage their inventory and engage with potential buyers through the platform's user-friendly interface. It also has an admin panel on the web. Where all of our vendors and their operations are under our authority. The app promises to improve accessibility, ease of use, and productivity in the buying and selling of goods within the university community.

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CHAPTER 1

Introduction

1.1 What is D-Shop -A Multi-Vendor E-Commerce App?

The project is, D-Shop (Daffodil Shop) : A multi-vendor ecommerce app. This app is made to make it easier for vendors and students at Daffodil International University to buy and sell goods. Using the Apps will benefit both sellers and buyers. Users and administrators can easily manage the app with its simple interface and functionality.

We know as students how much more efficient part-time work is. Thus, with the help of this app, any student can open a store and make money through product sales. Additionally, all of the food courts and other stores are able to sell. In order to upload their products, they must first create an account here. The ability to create, edit, delete, and update all of their product details is available to students acting as vendors. Both a buyer's and a vendor's version of this app are available. Payment by bank account is a simple process for the vendor.

I only used the Flutter framework and Firebase as the backend when developing this app. Currently, the most widely used framework for developing apps is Flutter. We can make cross-platform apps with its assistance. Dart is the only language I used. We can easily create Android and iOS apps with just one language. Additionally, this app is accessible on all devices with tabs and screens of any size.

1.2 Motivation

To give the community of Daffodil International University access to a convenient and user friendly online marketplace. To give students the tools they need to market their goods and services for extra money. To assist suppliers in effectively managing their inventories and reaching a larger audience.

The creation of an easily navigable, multi-vendor e-commerce program that benefits Daffodil International University merchants as well as students. The goal of the D-Shop app is to give the students and faculty of Daffodil International University access to a convenient and user friendly online marketplace.

It attempts to give students the ability to sell their goods and services for extra money while also assisting vendors in expanding their market reach and streamlining their inventory management.

1.3 Objectives

The goal of this project is to create "The D-Shop," a multi-vendor e-commerce application that will only be available to vendors and students at Daffodil International University on mobile and web platforms. Its main goal is to establish an easy-to-use online marketplace where students can easily purchase, sell, and make money.

The scope of the project includes:

Developing native apps for the iOS and Android operating systems would guarantee students have seamless access. A multi-vendor e-commerce system gives vendors the freedom to independently list, manage, and alter their products.

Strong search capabilities: Putting in place a system that makes it easier for customers to find products quickly.

Easy-to-use vendor interface: Giving suppliers a practical way to handle inventory and communicate with prospective customers.

Web-based administrative panel: Provides a single point of control for overseeing suppliers and their activities.

1.4 Expected Outcomes

- Students can start their business **.**
- Students can earn part time money **.**
- Buyers can get all food and restaurant in one app **.**
- All the local shop can increase their selling .
- Flexibility for the students.
- Student can sell their used products.
- Several payment methods
- As user everyone can chat on community chat section.
- Faster response to buyer/market demands

1.5 Project Management and Finance

Project Management:

- **Project Objectives:**
  A. To develop a e-commerce app for buy and sell students traditional goods.
  B. To increase students products sell and expand their business.
  C. To provide students a platform where they can easily orders their necessary products.
- **Project Timeline:**
  A. Phase 1: Project Planning and Research (2-3 weeks)
  B. Phase 2: Design and Prototyping (4-6 weeks)
  C. Phase 3: Front-End Development (6-9 weeks)
  D. Phase 4: Back-End Development (7-10 weeks)
  E. Phase 5: Testing (3-5 weeks)
  F. Phase 6: Deployment (1-2 weeks)
  G. Phase 7: Post -Launch and Marketing (ongoing)
- **Resource Planning:**

A. Equipment and tools:

- Developments and testing server
- Version Control system (e.g., Git)
- Testing tool (e.g., Firebase Testing)

B. Software and Technologies:

- Front-End Technologies (e.g., Flutter , Dart)
- Back-End Technologies (e.g., Firebase, Flutter-Fire)
- Database Management System (e.g., Firebase)
- Server Hosting (e.g., Google Play Store, Apple Apps Store)
- Payment Gateway (e.g., Stripe, Baksh)

C. Data and Content:

- Product data: Provided by vendors/seller
- Product Images: Provided by vendors/seller

D. Training and Skill Development:

- Ensure that the development team has the necessary training and skills in ecommerce development, database management.
- Provide additional training on technologies and tools as needed.

Risk Management:

D-Shop presents a number of possible concerns despite providing the Daffodil University community with a handy platform.

Fraudulent transactions, illegal access to customer data, and data breaches are examples of security threats. These dangers can be reduced by putting in place secure payment channels, robust authentication procedures, and data encryption.

Vendor management risks include bad customer service, counterfeit goods, and dishonest seller behavior. This can be resolved by D-Shop by putting in place rigorous procedures for verifying vendors, conducting quality assurance tests on products, and creating explicit terms of service with penalties for infringing suppliers.

System outages, malfunctions, and scalability problems are examples of operational hazards. These risks can be reduced by doing routine system maintenance, putting disaster recovery plans into action, and keeping an eye on performance.

- **Communication Plan:**

A. Stakeholder Meetings:

Purpose: Update stakeholders on project requirement gathering progress.

Participants: Stakeholder.

Frequency: Specified in the project .

B. Change Control Meeting:

Purpose: Any modifications to the project's requirements or scope must be discussed and approved.

Participants: Team members and the supervisor

Frequency: whenever there are requests for changes.

Table 1.5.1: Estimated Cost for App Development

SN	Component	Estimated Cost (BDT)
1	Software Development	60,000 – 70,000
2	Testing Cost	8,000 – 10,000
3	Marketing Cost	15,000 – 20,000
4	Maintenance Cost	10,000 – 15,000
5	Firebase Cost per year	14,000 – 18,000
6	Google Play Store	2,500 – 3,000
7	Apple App Store Cost	12,000 -16,000
	Total Estimate Cost	121,500 – 152,000

Table 1.5.1 provides a detailed of the estimated costs for App Development , Software testing , Maintaining cost etc.

1.6 Report Layout

Developing a thorough report layout for " D-Shop – A Multi-Vendor E-Commerce App" entails organizing several parts to highlight the specifics of the project, its stages of development, its features, and its results. An outline for the report layout may be seen below:

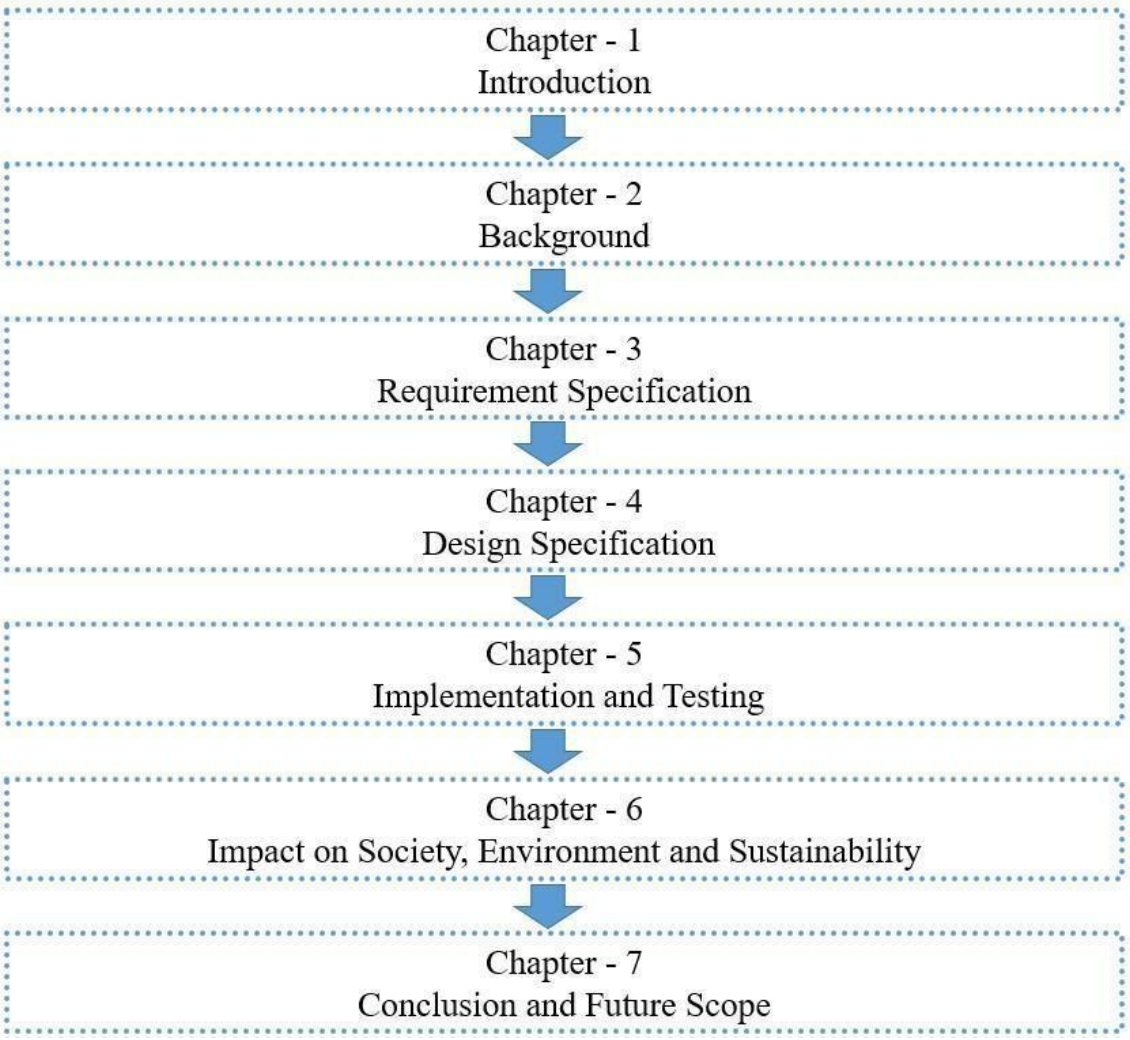

Figure 1.6.1: Report Layout of this Project.

CHAPTER 2

Background

2.1 Terminologies

This is an multivendor e-commerce app project. In this app we use flutter framework . Flutter is most popular framework for app development now. It facilitates the creation of cross-platform apps for Android and iOS. We utilize Firebase for the backend services. The most often used backed app currently is Firebase.

Real-time data is stored in it. It enables us to quickly and efficiently get data in real time. For authentication purpose, we use firebase email login and signup methods. Firebase's auth mechanism is highly secure. It greatly improves user experience.

2.2 Related Work

Although there are other apps similar to D-Shop, each one has special features and capabilities of its own. The following are a few linked works:

Daraz: Daraz.com is a popular online marketplace offering a diverse range of products, including electronics, fashion, and household items. It offers a simple platform for people to purchase and sell things with safe transactions and dependable delivery services, and it operates in several countries.

Amazon: The biggest online store in the world, Amazon provides a huge range of goods and services, including cloud computing, artificial intelligence, streaming, and e-commerce. Its status as a major player in the global e-commerce industry has been cemented by its creative business tactics and customer-centric approach.

Alibaba: Alibaba is a multinational conglomerate based in China with a focus on technology, e-commerce, and retail. Known as one of the biggest online marketplaces in the world, Alibaba offers a wide variety of goods and services and promotes trade between companies and customers.

e-Bay: eBay is a well-known international online marketplace where people and companies may purchase and sell a variety of goods using both fixed-price and auction listings. With millions of active users, eBay has developed into a varied marketplace renowned for its ease of use and wide selection of goods.

Food Panda: Food-panda is a global online meal delivery platform that provides easy and quick food ordering and delivery services by connecting customers with a variety of restaurants..

Each of these systems has been successful in its particular area and has its own distinct features and functionalities. Our app is limited to use at Daffodil International University. This app was made in response to user needs.in order for students at Daffodil International University to conveniently obtain the goods they want.

2.3 Comparative Analysis

Table 2.3.1: Comparative Analysis Between exiting apps

Feature	D-Shop	Amazon	Daraz	Alibaba	E-Bay	Food Panda
Offers	Multiple vendor system that gives vendors and students at Daffodil University the ability to add, edit, and remove products. Strong search capabilities improve user experience and encourage easy buying and selling among university community members.	Amazon offers a wide selection of goods and a smooth buying experience.	Daraz is a multi-vendor e-commerce site that emphasizes offering a broad selection of products	Alibaba specializes in bulk sales	eBay offers a unique selling format by allowin g both fixedprice and auctionstyle listings.	Foodpanda's main focus is on food delivery services, in contrast to The D-Shop.

Target Audience	Give special attention to developing an online marketplace for the campus community.Designed to make it easier for students to buy and sell things for extra money.	With a global reach, Amazon serves a wide range of customers.	Daraz serves a wide range of clients across several South Asian nations.	Alibaba is a global marketplace that mainly links merchants and buyers for large transactions.	eBay focuses on auctions and bidding, serving a worldwide market.	Foodpanda links customers with nearby eateries and concentrates on the meal delivery sector.
Accessibility	Available on all devices, including	Similar to The D-Shop,	Daraz are available on a range	People can use both	eBay is availabl e across	Mobile apps are available
	Android and iOS. guarantees students' convenience and usability.	Amazon is available across a range of platforms and devices.	of hardware and software configurations..	platforms anywhere in the world	a range of devices, much like The D-Shop	for both platforms
Search System	Robust search engine to find products quickly and efficiently. makes navigating easier, which improves the user experience overall.	The sophisticated search and recommendation system on Amazon is wellknown.	Daraz has a robust search system, helping customers find products efficiently	Alibaba's search system is intended for wholesale and bulk order operations.	eBay's search mechanism is made to make it easier to bid and make direct purchases.	Foodpanda's search engine is optimized to find food products from nearby eateries.

Inventory Management	Suppliers are able to effectively handle their stock. flexibility to change, add, or remove goods in accordance with specifications	Vendors can manage their inventories using the powerful tools that Amazon offers.	Vendors are able to efficiently manage their inventory with both platforms.	Sellers can keep a lot of goods under control with Alibaba's platform.	eBay gives sellers the resource s they need to efficient ly manage their stock.	Rather than keeping track of actual products, Foodpanda's suppliers maintain menus.
Admin Panel	Centrally located admin panel accessible via the web. control over the activities of sellers on the platform.	Vendors can access Amazon's Seller Central as an admin panel	Daraz has an admin panel as well for managing vendor operations.	Alibaba gives compani es the resources they need to run their operation s.	To manage listings and sales, eBay provide s a dashboa rd for sellers.	To manage their menu and orders, restauran ts can use Foodpanda's dashboar d.

Table 2.3.1 Comparative analysis between existing apps involves evaluating features, usability, and performance metrics to identify strengths and weaknesses. By examining user feedback and market trends, insights can be gained into which app best meets specific needs. Such analysis helps in strategic decision-making for app development and improvement initiatives.

2.4 Scope of the Problem

Limited Choices in the Marketplace:

Problem: There may not be as many possibilities for vendors and students at Daffodil International campus to purchase and sell things among other members of the campus community.

Scope: The D-Shop seeks to overcome this restriction by offering a specialized, multi-vendor e-commerce platform made to fit the unique requirements of the campus community.

Purchase and Sale Inconvenience:

Problem: In the absence of a specialized platform, students can encounter difficulties in purchasing and vending items, resulting in inconvenience and inefficiency.

Scope: By providing an easy-to-use solution, the D-Shop aims to improve the entire buying and selling experience at the university by streamlining the process.

Concerns about Device Compatibility:

Problem: The inability to work with different devices may make it more difficult for pupils to access an online marketplace.

Scope: By guaranteeing accessibility on iOS and Android devices, the D-Shop removes obstacles connected to device compatibility and offers users a hassle-free option.

Absence of vendor autonomy:

Problem: In the absence of a specialized e-commerce platform, vendors may encounter difficulties in autonomously managing their products.

Scope: Sellers are given the freedom to list, edit, and remove products according to their own specifications by the D-Shop's multi-vendor system.

Ineffective Product Exploration:

Problem: Customers could find it difficult to swiftly and efficiently find the things they're seeking for without a strong search system.

Scope: To improve the overall user experience and speed up effective product discovery, the D-Shop implements a robust search system in order to address this issue.

The challenges of operational oversight:

Problem: The absence of a centralized system may pose difficulties in managing and supervising vendor operations.

Scope: The web admin interface that the D-Shop offers gives centralized control over vendors and their platform activities.

2.5 Challenges

Vendor onboarding and engagement: Engaging and onboarding quality vendors that have a solid reputation and supply a range of goods is part of vendor onboarding.

Payment processing: controlling costs and making sure that both buyers and sellers have a smooth transaction.

User adoption and engagement: encouraging students to purchase and trade on the site in order to grow its user base.

Community building: Establishing a dependable and upbeat community on the platform is known as community building.

Additional Challenges: Adoption and Awareness: It may be difficult to ensure that vendors and students use the platform widely and to increase awareness of it, thus successful marketing techniques are needed.

Sustainability: It may be difficult to maintain and expand the platform's activity over time, particularly if the number of users within the academic community stays small.

The D-Shop's capacity to draw in and hold on to customers may be impacted by competition from well-established general e-commerce platforms. Continuous technical maintenance and updates are necessary to guarantee the platform's effectiveness and security. However, given the rapidly changing nature of modern technology, this may prove to be a difficult task.

CHAPTER 3

Requirement Specification

3.1 Business Process Modeling

After discussing demand collection, we broke down the process into its component parts. The use-case model for the design, a few logical data models, and the design specifications have also been thrown around.

3.2 Requirement Collection and Analysis

The features and functionalities that an app system needs in order to satisfy user wants are referred to as functional requirements. Contrarily, non-functional requirements pertain to those aspects of the system that are crucial to its functionality and performance but have nothing to do with its features.

The following functional requirements apply to this project:

3.2.1 For User:

Registration: The technology would allow users to sign up and establish accounts. Included in the registration should be the following fields: Profile Image, Name, Phone Number, Address, Diu Email, Password

Authentication: Users would need to provide their DIU Email address and password in order to access the system.

Profile Edit: The user can edit their profile when they need to change any data.

View Products: The user can able to see products details such as price, quantity, products images, Products size etc.

Order Products: User can order any products they choose. They can add to card every products .

Search Product: Here, they can conduct a product search. The search function is instantaneous, rapidly retrieving data from the backend. The search function will make it easier for users to find products.

See products category wise: They are able to view every product by category. It will assist them in locating the products in the category they want.

See Store: They can see all the store that we have on our app. It will help to visit any store as like local shop.

Add Reviews: After delivered every product buyer can add review on every products.

Messaging with vendor: User can message vendor for any reason. It will help to purchase exactly that product which one buyer wants to buy.
Payment: We exclusively accept cash payments. If the BKASH API is located. We're going to provoke this. Use Stripe's payment methods as well.

3.2.2 For Vendors

Registration: we use there same methods like user registrations. Included in the registration should be the following fields: Profile Image, Name, Phone Number, Address, Diu Email, Password
Authentication: vendor would need to their any Email address and password in order to access the system.
View Earnings: Vendors can able to see their total earnings there.

See Reviews: Vendor can see users review on every products .

Messaging with buyer: Vendor can message buyer after completing order. This feature with increase communications with seller and buyers.
Upload products: There they can upload their products. It has four sections like general where they give all to basics needed details then shipping, attribute, and pictures.
Edit Products: It has two features. When vendors upload any products it need to be published from this phase.
See Orders: They can see all the orders from there.

Sign Out : It has sign out option to sign out.

3.2.3 For the Admin

Dashboard: There they can see so many important information
Vendors: There admin can approved vendors.
Orders : Admin can see orders details.

Upload Banners: Admin can upload App banners images from there.

Non-Functional Requirements:

Usability: The system would be simple to use, intuitive to traverse

Performance: There would be no lag or delays when a big number of users used this app at once.
Security: Strong security measures would be implemented in the system to guarantee the confidentiality of users' money and personal data. Secure methods would be used for both data storage and transfer.
Reliability: Users would always have access to a dependable system.

Scalability: The system would be scalable, meaning that there would be no performance decrease as the number of users and data volume increased.
Accessibility: With the use of assistive technology, people with disabilities—such as those who are visually impaired—would be able to access the system.
Compatibility: The system would be compatible with different device and operating systems, allowing android and ios.
Maintenance: With little downtime for upgrades and bug patches, the system would be simple to update and manage.
Documentation: To help users and system administrators, the system would have extensive documentation, including as user manuals, vendor manuals, technical specifications, and training materials.

Activity Diagrams

3.2.4: Sign Up

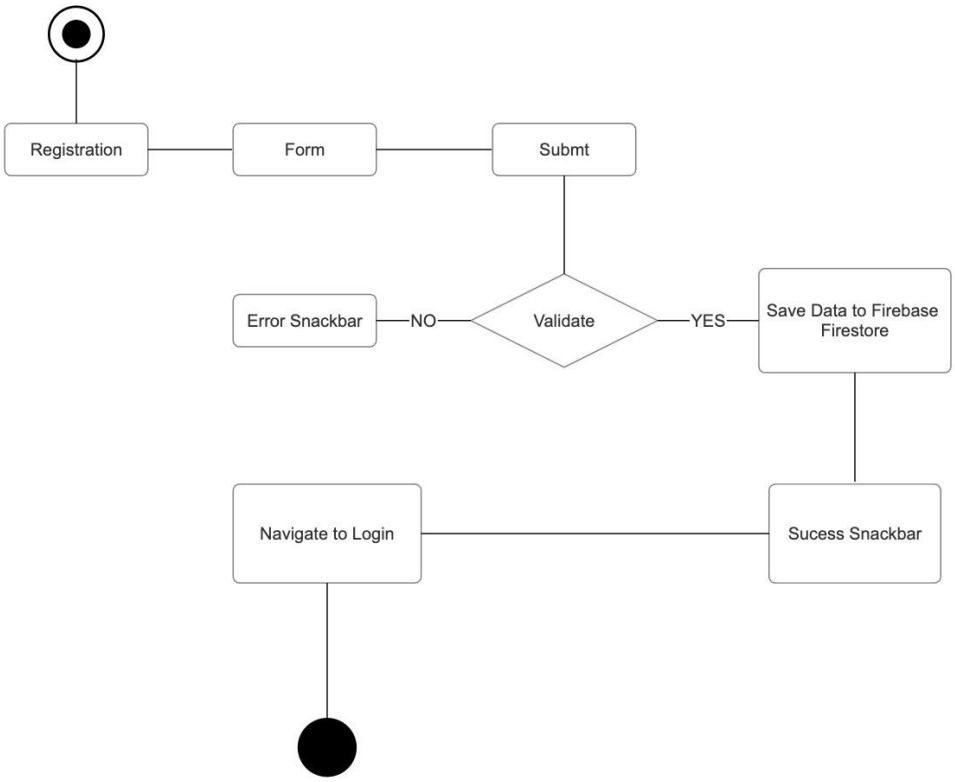

Figure 3.1: Activity Diagram for Sign Up

Description

The user accesses the Apps home screen to begin the enrollment procedure. The user must click the "Sign UP" button to start the account creation process if they haven't already.
The user will be prompted by the system to either complete the registration process or log in if they already have an account. The user must enter their username, DIU email address, phone number, address, and password in order to register. After that, the system will verify the data that was submitted.
The user can access the system by logging in once the account has been validated. However, before using the vendors app, users must first create an account as vendors. and after that they can begin their business by uploading products.

3.2.5: Log in

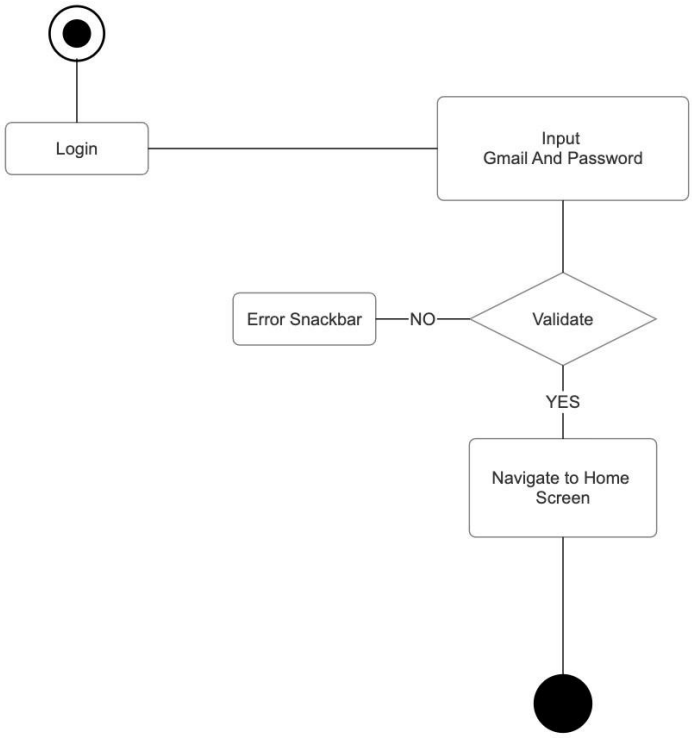

Figure 3.2: Activity Diagram for Log in

Description

The user inputs their password and DIU email address. The DIU Email and password are verified by the system. The user will be taken to the app home screen if the validation is successful and the bar is displayed on the app bottom. If validation is unsuccessful, an error snack-bar message will be displayed.

3.2.6: Add To Cart

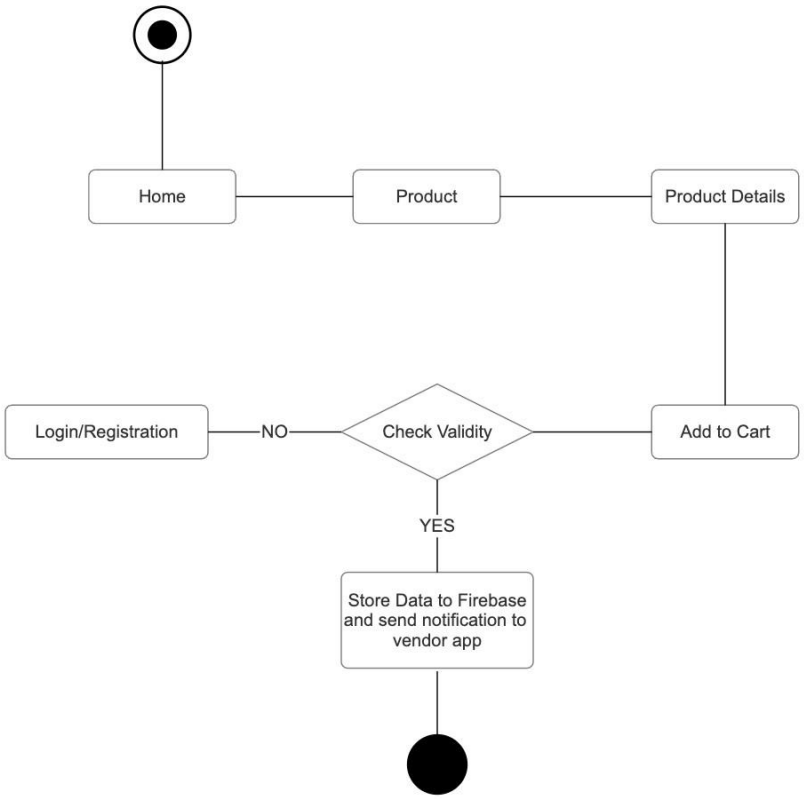

Figure 3.3: Activity Diagram for Add to Cart

Descriptions

Customers can select "add to cart." App verifies the validity of the user. They can add items to their cart if they have an account. When users click "add to cart," the vendors' app and the Firebase backend receive this data. They cannot add items to their cart if they are not validated.

3.2.7: Vendor App

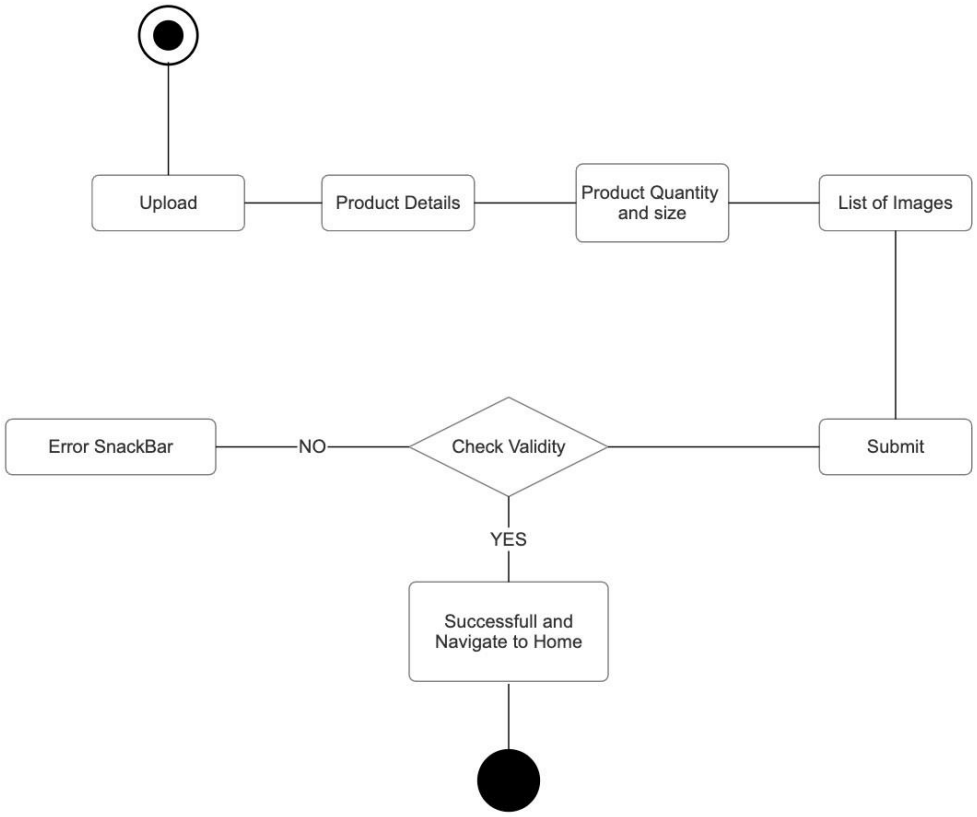

Figure 3.4: Activity Diagram for Vendors

Description:

Vendors are free to upload any goods they like to sell there. Users are free to post as many product images and data as they like. Navigate to the app's main screen after a successful upload; if not, a snack bar will appear at the bottom of the app.

3.2.8: Search Products

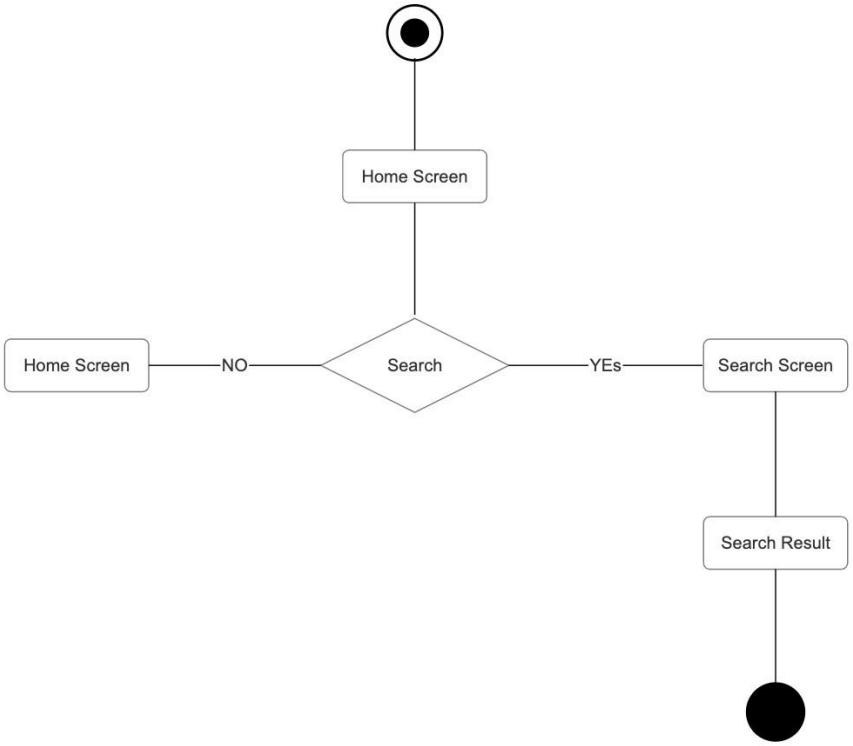

Figure 3.5: Activity Diagram Search Product

Descriptions

The search bar is visible to users as soon as they land on the home screen. The user will enter the product title if they wish to search for a product. Next, in order to locate products that match the user's query, the system will send out a search request to the database. A list of products that match the search query will be displayed by the system. The product details will be displayed by the system once the user has selected a product. The user can add the items to their cart and check out if they want to purchase them.
All things considered, the search feature is really important for making it easier to sell products on the Apps.

3.2.9: Log Out

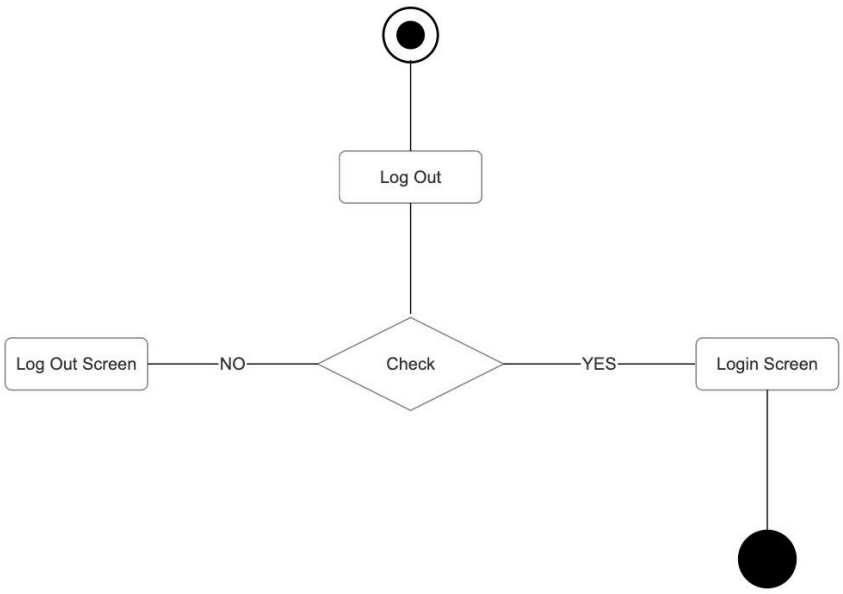

Figure 3.6: Activity Diagram Log Out

Description

The user must first log in to this application. when they wish to exit the system. They must click "Log Out." They will be guided from the app to the login screen by it.

3.3 Use Case Modeling and Description

Use case models are used to illustrate the program's external perspective, gather system requirements, pinpoint internal and external influences on the system, and illustrate how administrative needs interact with one another. The case model and system usage are shown in the figure.

There are three different kinds of users in this system. Admin, Seller, and Buyer are present. Admins have complete control over this system once they log in. Upon login, the administrator has complete authority over the system. Vendor access is managed by the admin in the vendors app. Customers can search products, add items to their carts, and register as regular users. They have control of their profile. The ability to upload, update, and remove products is granted to vendors.

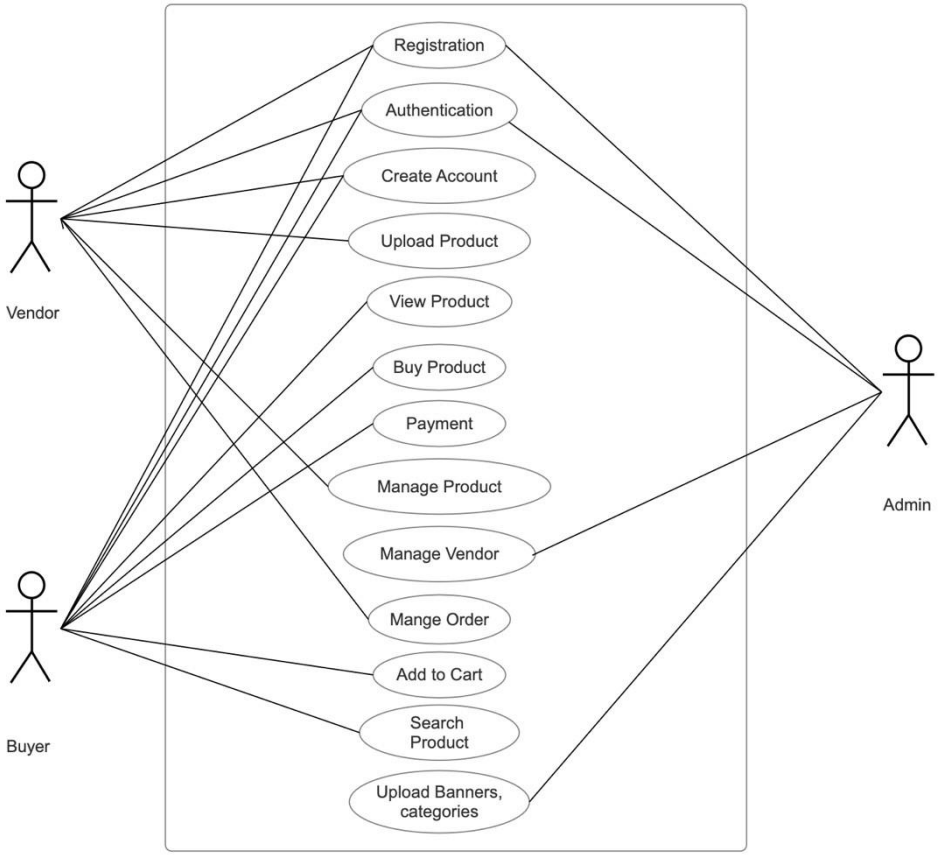

Figure 3.1: Use-case diagram

3.3.1 Use-Case Table

3.3.1 : Sign Up Table

Use case Title	Sign-Up User
Use case ID	UC-1
Precondition	Users must have register and fill the form
Actors	Vendors, buyers
Success End Condition	User successfully Create Account
Failure End Condition	Show error snack-bar on apps bottom
Trigger	Show on app screens
Description	Once all required fields have been filled out, the user can register for the system.

Table 3.3.1 The sign-up user use case table outlines the steps, conditions, and interactions required for a new user to successfully create an account on a system or application.

3.3.2: Login Table

Use case Title	Login User
Use case ID	UC-2
Precondition	Must have registered and then they can login by email and pass
Actors	Vendors, buyers
Success End Condition	User successfully Login
Failure End Condition	Show error snack-bar on apps bottom
Trigger	Show the user apps main screen
Description	After login, users can see all the products and others features.

Table 3.3.2 A Login user use case table outlines the steps, interactions, and conditions involved when a user attempts to access a system by entering their credentials .

Table 3.3.3: Log Out table

Use case Title	Log Out User
Use case ID	UC-3
Precondition	Must have Logged In and then press on log out
Actors	Vendors, buyers
Success End Condition	User successfully Log Out
Failure End Condition	Show error snack-bar on apps bottom
Trigger	Show the user apps Login screen
Description	After login , users can see all the products and others features.

Table 3.3.3 The "Log Out" use case table describes the steps, conditions, and outcomes for a user successfully terminating their session in a software application.

Table 3.3.4: Products Details

Use case Title	Products Details
Use case ID	UC-4
Precondition	Must have login
Actors	Buyers
Success End Condition	User can see all the details of that particular products
Failure End Condition	Show error snack-bar on apps bottom
Trigger	Able to see details of a products
Description	After login, users can see all the products and others features.

Table 3.3.4 Product details use case table provides a structured overview of product features, functionalities, and scenarios of application.

Table 3.3.5: View Buyer and Vendors Information

Use case Title	Buyers and vendors Information
Use case ID	UC-5
Precondition	Must have login on app and then press on profile
Actors	Vendors, buyers
Success End Condition	They can see their profile details
Failure End Condition	Show error snack-bar on apps bottom
Trigger	View all the buyers and vendors information
Description	After login , users can see all the information

Table 3.3.5 Buyers and vendors Information Use Case Table exchanges between purchasers and suppliers, ensuring streamlined communication and transactional clarity.

Table 3.3.6: Search Screen

Use case Title	Search Screen
Use case ID	UC-6
Precondition	Must have login on app and then press on search
Actors	Buyers
Success End Condition	They can search any products
Failure End Condition	Not show any products
Trigger	View all the products that they searching for
Description	It will help then to find any products easily

Table 3.3.6 The Search Screen use case table outlines the functional requirements, user interactions, and system responses for enabling efficient and accurate searching within an application.

Table 3.3.7: Add Review

Use case Title	Add Products Review
Use case ID	UC-7
Precondition	Must have login on app and then after completing order they can add review.
Actors	Buyers
Success End Condition	They can add review
Failure End Condition	Not added any review
Trigger	View all the review
Description	It will help to other buyers to buy that product

Table 3.3.7 The "Add Review" use case table outlines steps for users to submit feedback or ratings for a product or service. It typically includes columns for inputs such as user ID, product ID, rating, and text comments.This table facilitates the systematic recording and retrieval of user-generated reviews, crucial for evaluating customer satisfaction and product performance.

3.4 Logical Data Model

3.4.1 Class Diagram

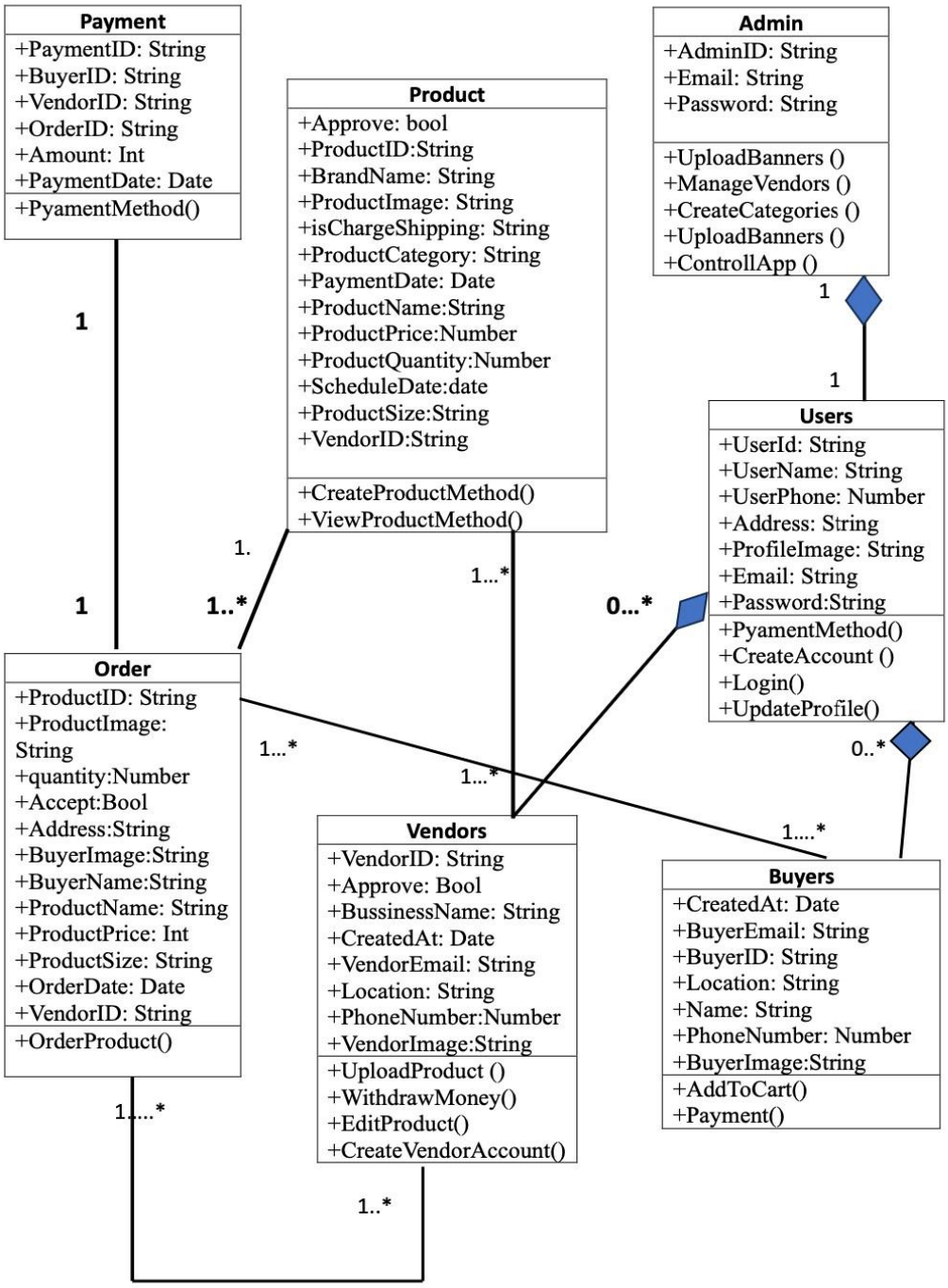

Figure 3.7: Class Diagram .

Description:

The class diagram represents the main entities of the system: Payment, Product, user, Admin, Vendor, Buyer, and Order. Each class has its attributes and methods to perform specific operations.

Payment logic is represented by the Payment class.Payment_id, order_id, buyer_id, vendor_id, payment_date, and payment_amount are some of its properties.

The Product class represents the product posted by the vendor on the app. It has attributes such as product_id, vendor_id, brand_name, title, price, photo_url, description, quantity, date.

The Admin class represents the system administrator who has full control over the app. It has attributes such as admin_id, email_address and password.

The user class represents the regular user of the system who can buy products, add to cart products, view products. It has some attribute like user_id, user_name, User_phone, user_profile, user,_image,user_email,user_password.

The vendor class represents a who have the access to upload product , able to earn money. Vendors has some attribute like vendor_id, business_name, created_at,vendor_email, vendor_location, vendor_phone, vendor_number, vendor_number.

The Order class represents the orders made by the buyers for the products. It has attributes such as product_id, product_image, product_quantity, buyer_address, product_name, product_price ,product_size, order_date.

The Buyer class represents the users who want to buy products on the app.It has attributes such as buyer_id, buyer_email, buyer_location , buyer_name, buyer_phone , buyer_image.

The database structure, system architecture, system design, and programming language are examples of internal aspects that affect the system. User needs, market demand, rivalry, and technological improvements are examples of external variables.

The activity diagram can be used to illustrate how the demands of the admin interact with one another. It entails tasks that the administrator completes after logging in, like managing orders, managing payments, managing users, and managing products.

3.4.2 Entity Relationship (ER)

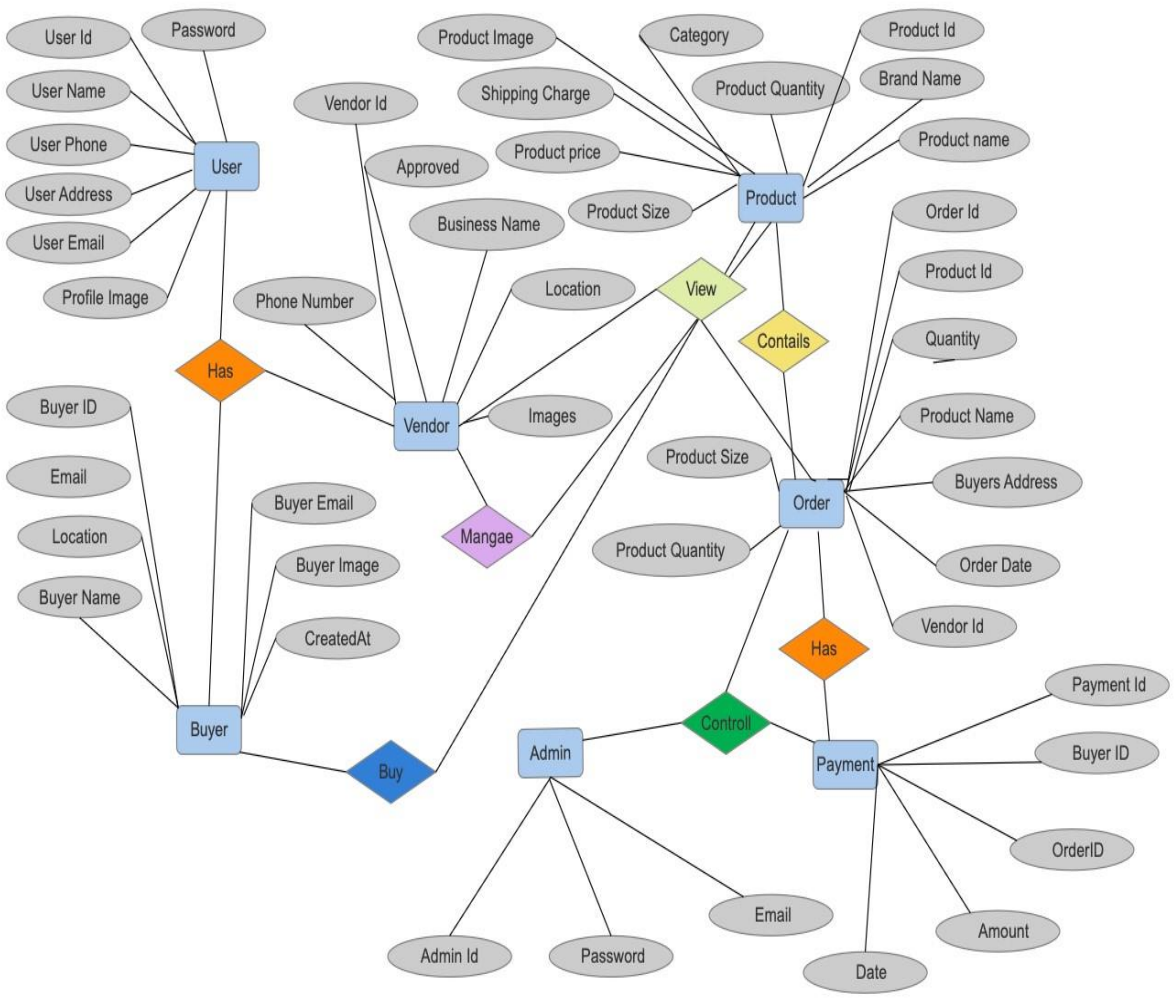

Figure 3.8: Entity Relationship

The system's various entities and their connections to one another are depicted in the diagram. The admin entity can control user access and has complete authority over the system. The broad entity known as the User represents both the vendor and the buyers. After logging in, customers can see and search products, register as regular users, and carry out other tasks. Vendors that have their accounts approved by the admin are able to post products on the app. Orders are produced when a buyer successfully purchases a product, and payments are made by buyers for the products they purchase.

In general, this diagram shows the program's external perspective and names the various entities, their interactions with one another, and the range of tasks each may carry out.

3.5 Design Requirement

A multi-vendor e-commerce program called the D-Shop was developed especially for students at Daffodil International University. Its objective is to create an easy-to-use online marketplace where students may launch new businesses and make extra money on the side. The Apps offer a hassle-free option for students. Students can use any device, including iOS and Android, to access this program. A multi-vendor e-commerce system that enables sellers to list and control any product they offer is one of the platform's key features. Sellers are free to add, change, and remove any product in accordance with their needs. The user experience has been enhanced with the addition of a robust search system. With the use of this search system, customers can find all the necessary things they're seeking for in a timely and efficient manner. Sellers can interact with potential customers and effectively manage their inventory thanks to the platform's user-friendly layout. Additionally, it features a web admin interface from which we can oversee all of our vendors' operations. The software claims to increase productivity, accessibility, and ease of use for the purchasing and selling of commodities among university students.

CHAPTER 4

Design Specification

4.1 Front-end Design

D-shop is a multivendor e-commerce application that was made only with the Flutter framework. Google has developed an open-source platform called Flutter for developing mobile applications. However, it's no longer exclusive to mobile programming! You can create stunning applications for multiple platforms with Flutter. Design and development are the two primary components of the Flutter app interface building process. Creating the user experience (UX) and visual components that users will interact with is the design part, specifically for the front-end design of a Flutter app. User experience, the design places a high priority on accessibility, usability, and aesthetics.

4.2 Back-end Design

Firebase is used at the backend. Google's Backend-as-a-Service (BaaS) platform Firebase offers a set of tools to make developing mobile apps easier. It takes care of the tedious backend work so that Flutter developers may concentrate on creating stunning and useful user interfaces. Firebase takes care of intricate backend work so developers may concentrate on the essential features of the project. Because Firebase services are designed to scale, more users can be added without requiring server management. All things considered, Firebase is an effective solution that greatly increases the productivity of developing Flutter apps. It includes capabilities that improve user experience, shortens development times, and streamlines backend processes.

4.3 Interaction Design and User Experience (UX)

Seller Experience:

1. Onboarding: Guide new sellers through a clear onboarding process that explains app features and product listing procedures.
2. Product Listing:
    - Provide a dedicated section for adding new products.
    - Allow uploading multiple high-resolution images.
    - Include clear fields for product details like name, description, category, price, and stock availability.
    - Enable editing and updating existing product listings.

    - Offer the option to temporarily disable or remove products.
3. Inventory Management:
    - Provide a dashboard for sellers to view their inventory levels.
    - Enable them to update stock quantities as needed.
    - Implement a notification system to alert sellers of low stock levels.
4. Order Management:
    - Offer a dedicated section for managing incoming orders.
    - Clearly display order details, including customer information, product details, and quantity.
    - Allow sellers to mark orders as "in process," "shipped," or "completed."
    - Optionally, integrate a messaging system for sellers to communicate with customers regarding their orders.

Customer Experience:

1. Browsing and Searching:
    - Implement a robust search function with filters by category, price, and keywords.
    - Allow browsing products by category or through curated collections.
    - Display clear product details on individual product pages, including images, descriptions, seller information, and reviews (if applicable).
2. Shopping Cart and Checkout:
    - Enable adding products to a shopping cart with quantity adjustments.
    - Offer a secure and convenient checkout process with multiple payment options (consider mobile wallet integration).
    - Provide clear order confirmation with estimated delivery times.
3. Communication and Support:
    - Integrate a messaging system for customers to communicate with sellers directly regarding products or orders.
    - Include a dedicated FAQ section for common questions and customer support information.

User Experience (UX):

- App Performance: Ensure smooth app performance with fast loading times and responsive interactions.

- Accessibility: Adhere to accessibility guidelines to ensure the app is usable for users with disabilities. This includes features like text scaling, color contrast, and screen reader compatibility.
- User Feedback: Encourage user feedback through in-app surveys or rating systems. Use this feedback to continuously improve the app and address user pain points.
- Personalization: Optionally, consider personalized features like product recommendations based on browsing history or purchase behavior.

Admin Panel:

- Provide a web-based admin panel for managing the platform.
- Allow adding, removing, and modifying vendors.
- Offer tools to monitor platform activity, including order volume, product listings, and user engagement.
- Generate reports and analyze sales trends.

4.4 Implementation Requirements

The D-shop implementation requirements include the following operational, developmental, and technological components.

- ❖ Front-end Technologies
  - Flutter
  - Dart
- ❖ Back-end Technologies
  - Firebase
- ❖ Tools
  - Android Studio
  - X-code
  - Flutter-Fire

CHAPTER 5

Implementation and Testing

5.1 Implementation of Database

The program can efficiently store, manage, and retrieve data thanks to those databases, which also guarantee data integrity, security, and performance. These databases serve as a dependable basis for the functioning of the application.

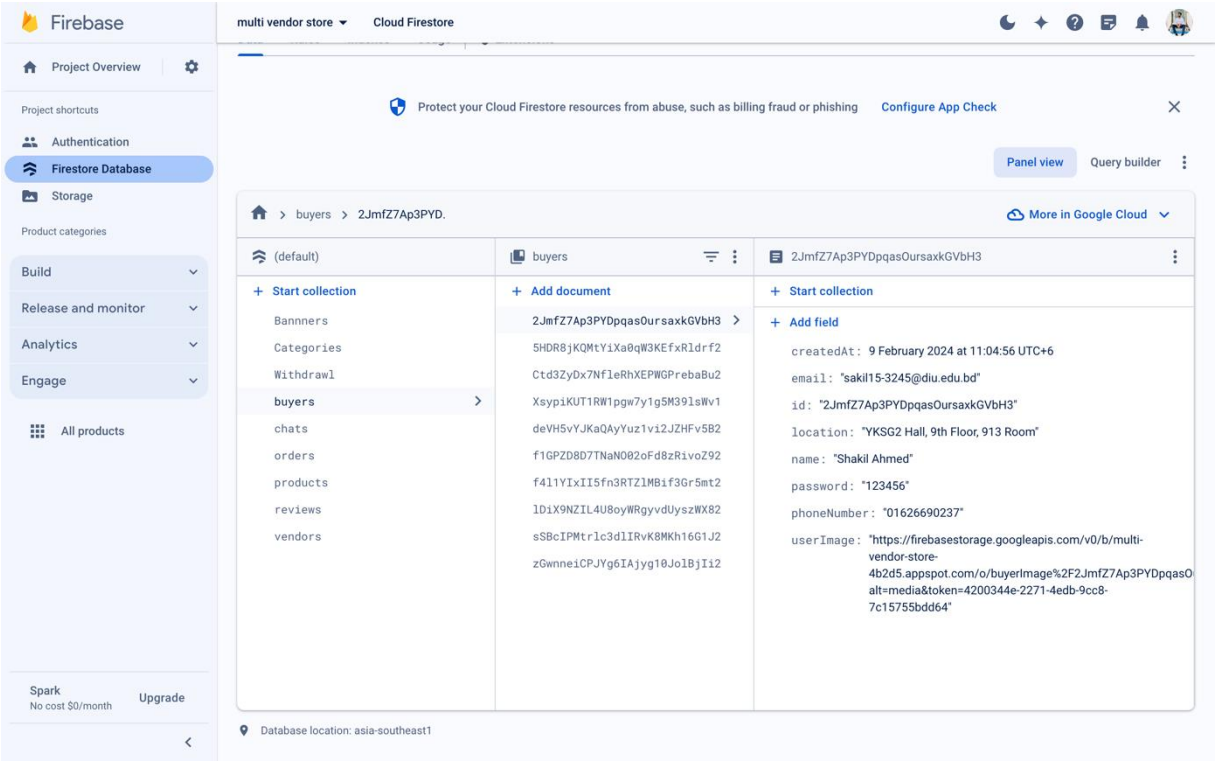

Figure 5.1.1: Firebase Database.

5.2 Implementation of Front-end Design

The frontend design of the D-Shop e-commerce app prioritizes making an experience that is easy to use and accessible for both vendors and shoppers.

5.2.1 App Splash Screen

This is app Splash screen. This page user will see when they open app. The splash screen of the D-Shop app should create a favorable first impression and establish the overall user experience.

Figure 5.2.1: App Splash Screen.

5.2.2 Registration Form for Buyers

This is Buyer registration form. There, they have to give some of their necessary required information to create an account.

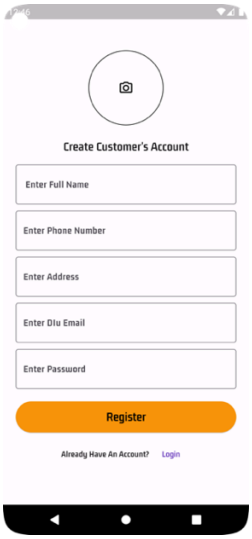

Figure 5.2.2: Buyer Registration Form.

5.2.3 Login Screen for Buyers

This is user Login screen. This screen helps to user login into main app.

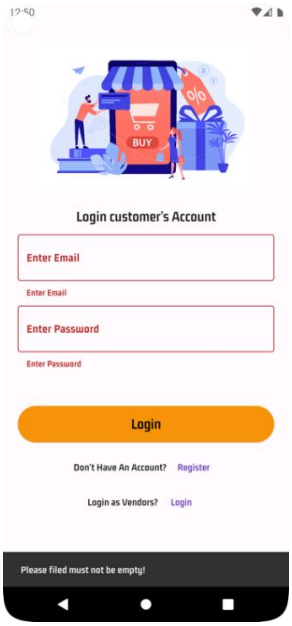

Figure 5.2.3: Buyer Login Screen.

5.2.4 App Home Screen

This is app home screen. There user can see app cover photos and categories and all products. They can navigate any screen from there.

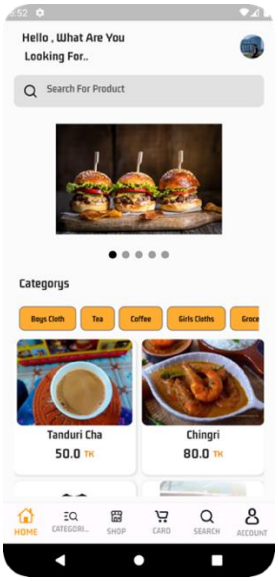

Figure 5.2.4: App Home Screen.

5.2.5 Product Details Screen

This is product details screen. This screen will show all the product details. They can add to cart any product from there.

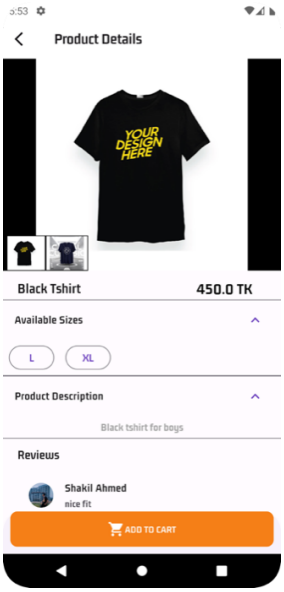

Figure 5.2.5: Product Details Screen.

5.2.6 Add to cart Screen

After clicking add to card user can see this view.

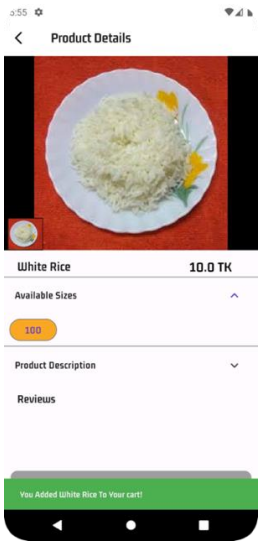

Figure 5.2.6: Add to Cart Screen.

5.2.7 Cart Screen

This is empty cart screen. After clicking add to cart and user can see there all the cart items.

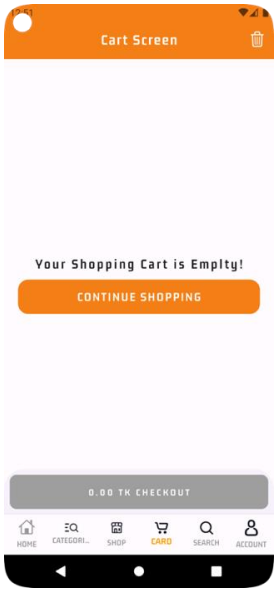

Figure 5.2.7: Cart Screen.

5.2.8 Cart Screen with cart item

After Clicking add to cart product will show this way in cart screen.

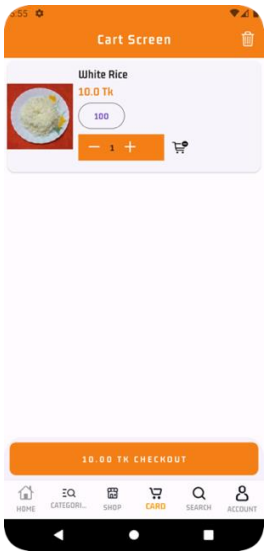

Figure 5.2.8: Cart Screen with cart item.

5.2.9 Stores Screen

This is Stores Screen. There user can see all the Stores on this app. They can visit all of this stores and buy products from them.

Figure 5.2.9: Stores Screen.

5.2.10 Stores Screen

After Visiting a particular Stores. User can see all the products that seller uploaded .

Figure 5.2.10: Stores Details Screen.

5.2.11 Categories Screen

This is categories screen. There user can see all the categories.

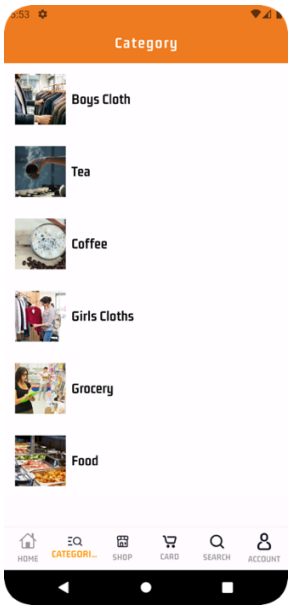

Figure 5.2.11: Categories Screen.

5.2.12 Order Screen

There user can see all of their orders details. They can reject their orders and they can chat with seller from there. They can review anu product after delivered the product.

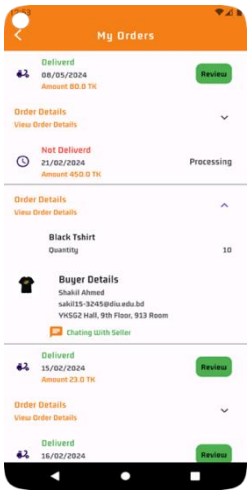

Figure 5.2.12: Orders Screen.

5.2.13 Buyer Profile Screen

This is user profile screen. User can see their details from this screen. They can edit their profile by clicking edit profile.

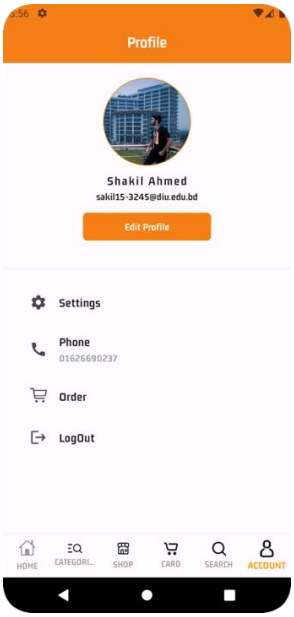

Figure 5.2.13: Buyer Profile Screen.

5.2.14 Chat Screen

This is chatting screen where user can chat with seller.

Figure 5.2.14: Chatting with seller Screen.

5.2.15 Search Screen

This is searching screen. There user can search their product. After Searching they can find their searched products easily.

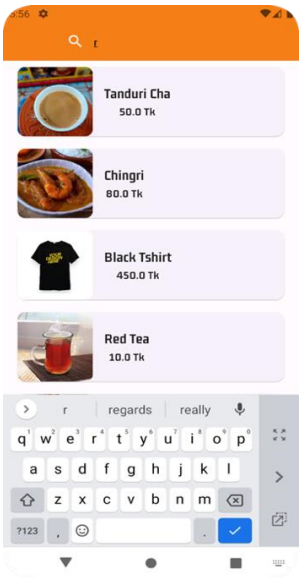

Figure 5.2.15: Searching Screen.

5.2.16 Edit Profile Screen

This is Edits profile screen. User can edit their profile from there.

Figure 5.2.16: Edit Profile Screen.

5.2.17 Vendor Registration Form

This is vendor registration Screen. Vendor can register from there.

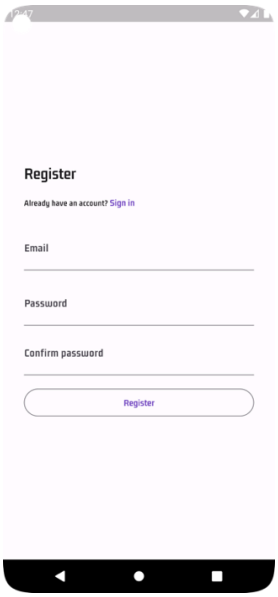

Figure 5.2.17: Vendor Registration Screen.

5.2.18 Vendor Registration Form

This screen will show when a vendor create his/her account on vendor app. When the admin accept the request and after that vendor can upload their products and able to access to vendor app.

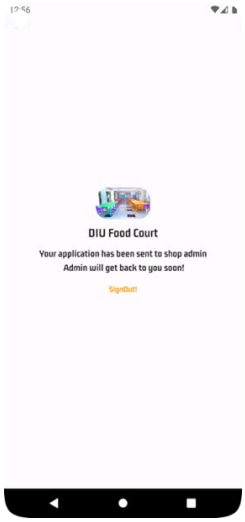

Figure 5.2.18: Vendor Account Request Screen.

5.2.19 Earning Screen

This is earnings screen. There seller can see his orders and his earing

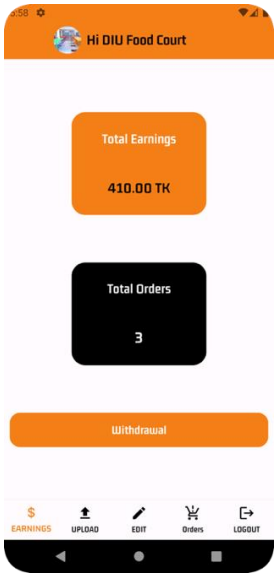

Figure 5.2.19: Withdraw Screen.

5.2.20 Withdraw Screen

This screen help vendor to withdraw money with bank account.

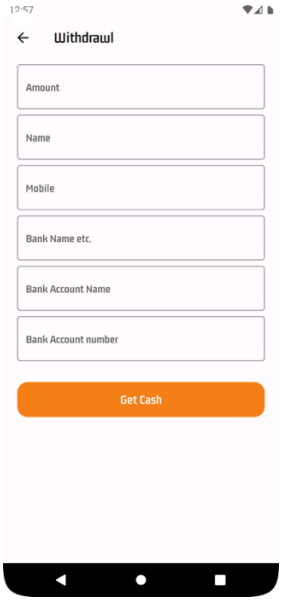

Figure 5.2.20: Withdraw money Screen.

5.2.21 Upload Product Screen

This is upload product screen. There vendor will upload all the product data and published that product.

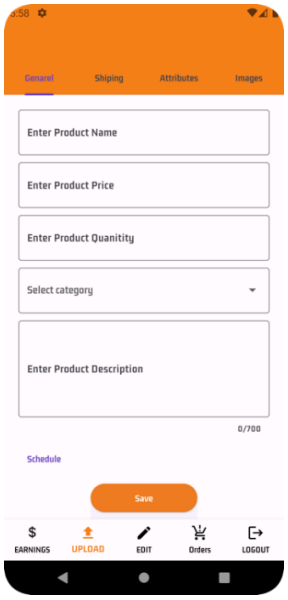

Figure 5.2.21: Upload Product Screen.

5.2.22 Product Images Upload Screen

This is product image upload screen. There vendor will upload all the product images.

Figure 5.2.22: Product Images Upload Screen

5.2.23 Order Delivered Screen

This is orders screen from there vendor confirm order is delivered or not.

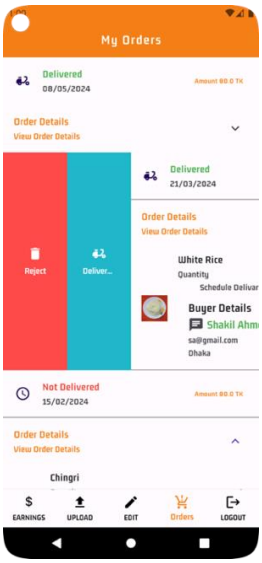

Figure 5.2.23: Delivered Screen.

5.2.24 Order Delivered Screen

This chatting with buyer screen. There vendor will chat with seller about orders or product.

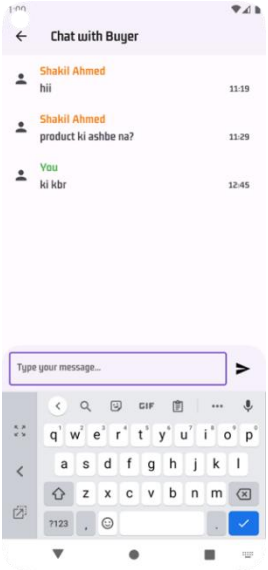

Figure 5.1.24.: Chatting with Buyer Screen.

5.2.25 Order Delivered Screen

This is an Edit product screen. There vendor will edit their product. They can delete or unpublished the product.

Figure 5.2.25: Edit Product Screen.

5.2.26 Admin Vendor Manage Web Screen

This is an manage vendor screen. There admin can manage all the vendors. Admin can remove any vendor. If admin accept vendor request then vendor can sell any product.

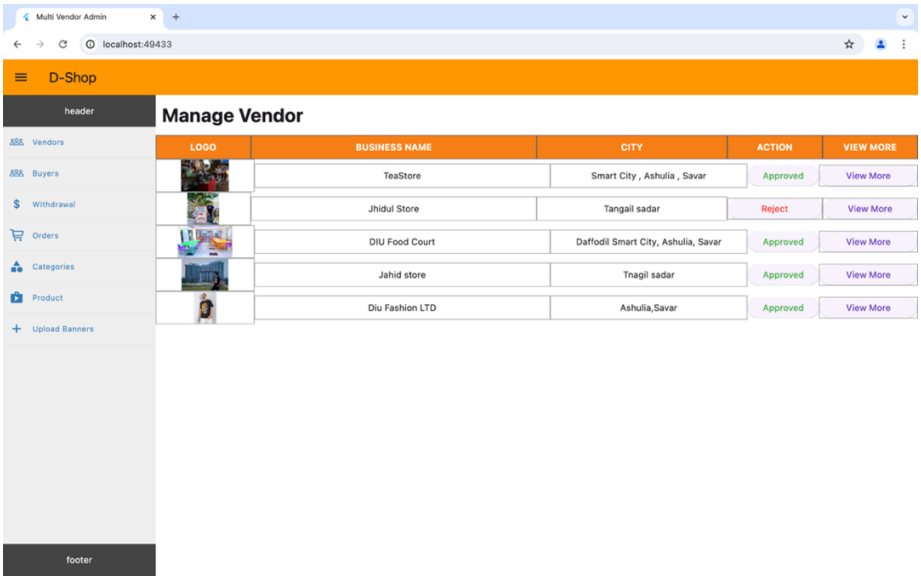

Figure 5.2.26: Admin Vendor Manage Screen.

5.2.27 Admin Buyer Manage Web Screen

This is an manage buyers screen. There will be managed all the buyers.

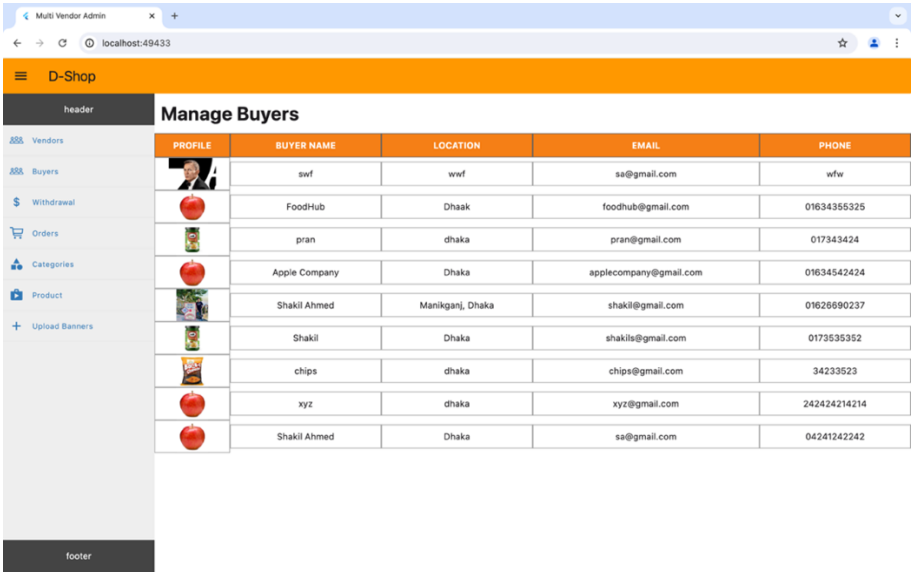

Figure 5.2.27 Manage Buyers .

5.2.28 Withdrawal Screen

This is an withdrawal screen. There admin can see the withdrawal details .

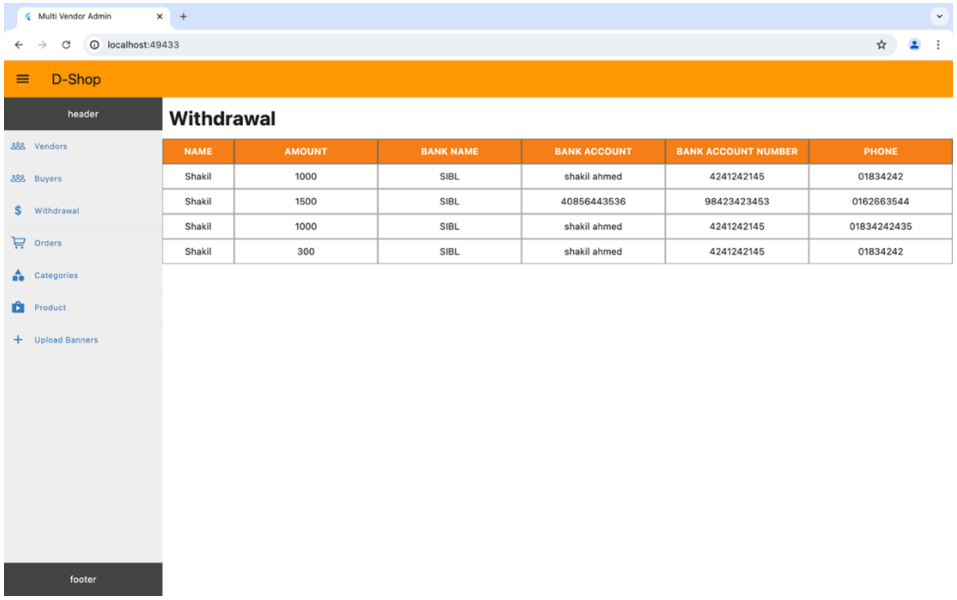

Figure 5.2.28: Withdrawal Screen

5.2.29 Order Screen

This is order screen. There admin can see all the order details.

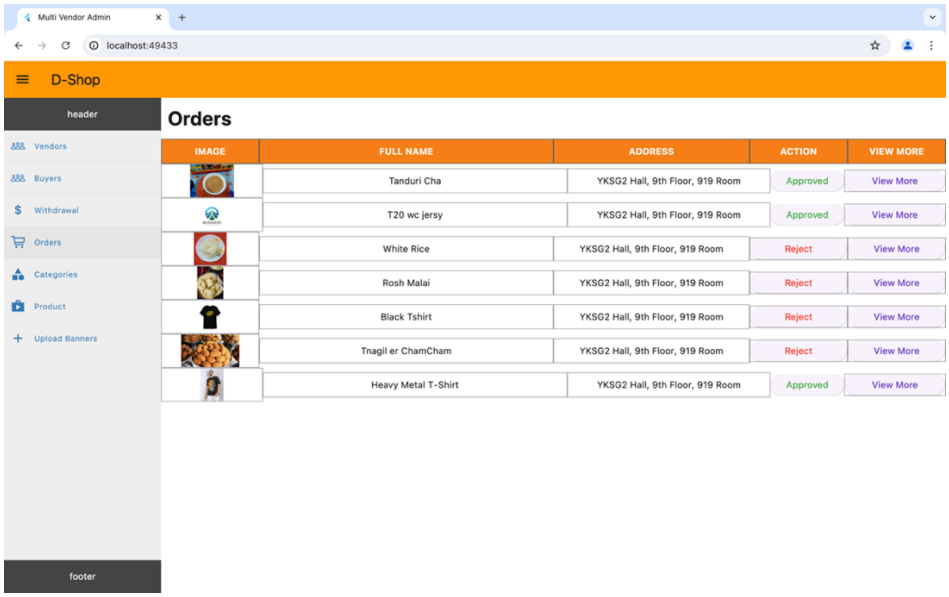

Figure 5.2.29: Order Screen

5.2.30 Categories Screen

There admin can create categories. According to this category vendors can upload their product

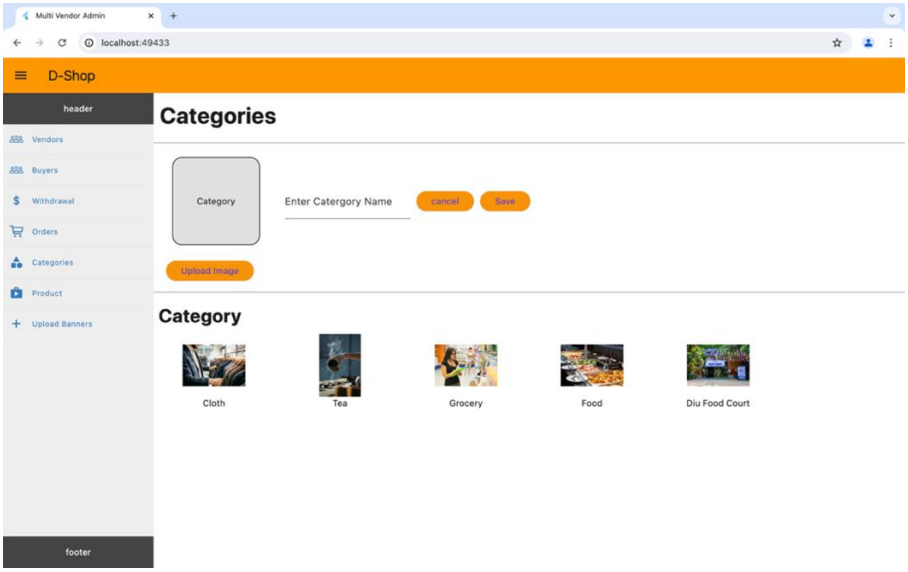

Figure 5.2.30: Categories Screen

5.2.31 Product Screen

There admin can see all the product that upload by our sellers. Admin can reject or approved all the product.

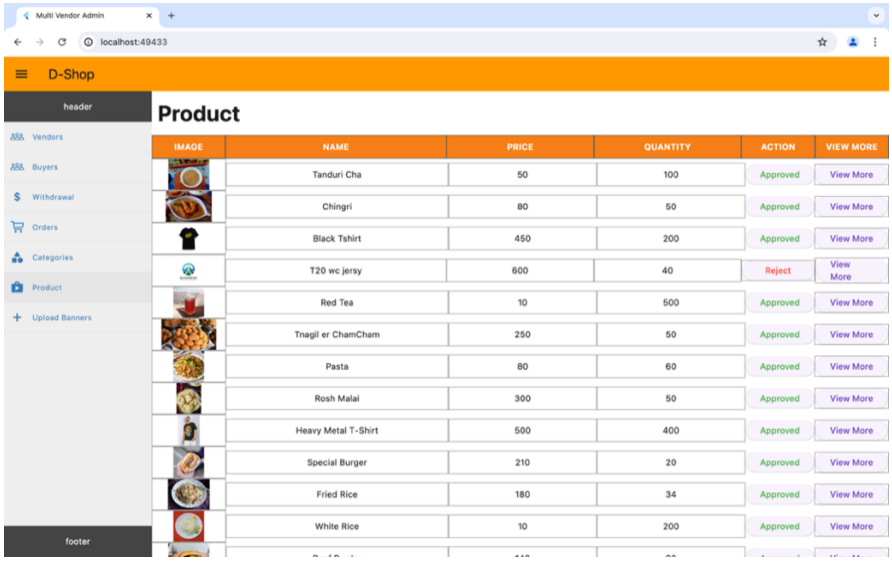

Figure 5.2.31: Product Screen

5.2.32 Banners Upload Screen

There admin will upload banners there then all of the banners will show on our main app.

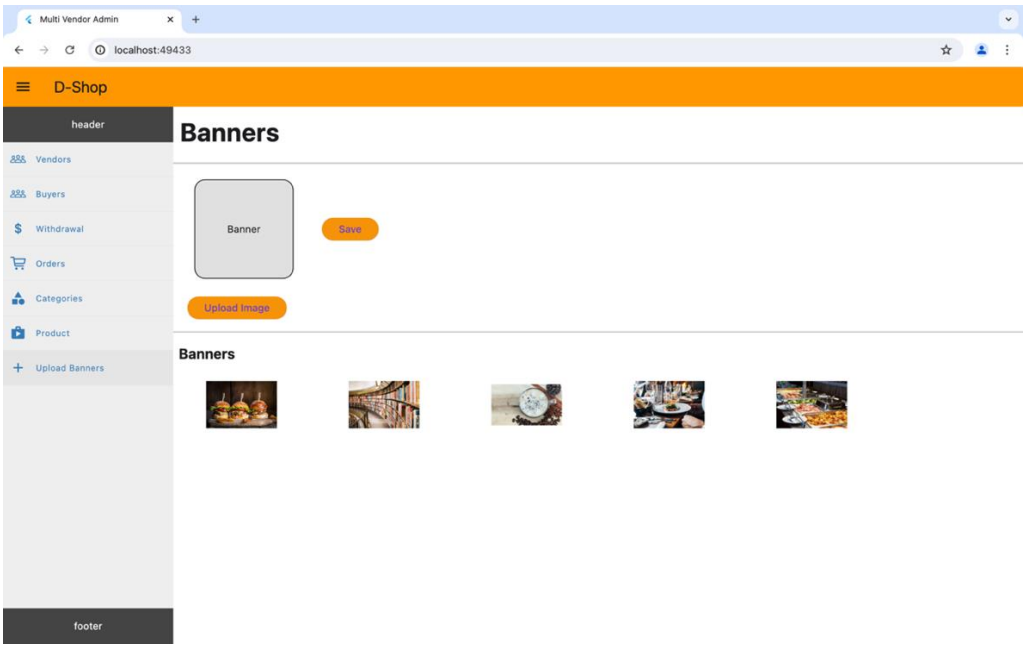

Figure 5.2.31: Banners Upload Screen

5.3 Testing Implementation

Testing is essential to make sure D-Shop runs well and provides vendors and consumers with a satisfying experience.

Testing user interfaces (UI) and user experiences (UX):

Target Audience: Students (both Buyers and Sellers)

Testing Procedures:To find any confusing features or navigational issues, do usability testing with a group of pupils.

Conducting user flow testing will guarantee seamless transitions between browsing, choosing products, checking out, and managing orders.

Functionality Testing Across Vendors:

Users in Target: Students (Vendors)

Testing Procedures: Functionality testing of product listing (adding pricing, photos, and descriptions), vendor registration, and product editing and deletion.

Testing inventory management: copying the process of adding, deleting, and updating stock levels.

Testing order management includes reviewing client communications, order alerts, and order information.

Functionality Testing for Customers:

Customers/Students are the target users.

Testing Procedures:

Testing the correctness of product searches involves checking the search results for keywords, category, price, and sorting choices.

Product browsing testing: making sure the information is easily readable and accessible.

Testing the checkout and shopping cart to ensure safe payment processing, seamless product adding and removal.

Testing order tracking involves monitoring predicted delivery times and order status updates.

Examining Security:

Goal: Entire System Security Testing Techniques:

penetration testing to find weaknesses in data storage, payment gateways, and user accounts.

Testing security configurations to guarantee compliance with data protection best practices.

Examining Performance:

Goal: System Performance as a Whole Testing Approaches:

To guarantee the system stays responsive, load test under heavy user traffic conditions.

Stress testing is done to put the system through its paces beyond usual and find possible weak areas.

Testing of the Admin Panel:

D-Shop Administrators are the target users.

Testing Procedures: User administration (adding, deleting suppliers), order management (keeping an eye on, settling disputes), and system configuration as a whole are all functionally tested.

Verifying the correct creation of sales reports and vendor performance indicators is known as reporting and analytics testing.

Other Things to Think About:

Check that the software runs without a hitch on Android and iOS devices with various

screen sizes by doing mobile device compatibility testing.
Test the process extensively to prevent data loss or corruption if current data needs to be moved from another system. Check the app's user interface and functionality in many languages if it serves overseas students through localization testing.

D-Shop can make sure that everything goes smoothly and that the student community has a great experience by putting in place a thorough testing plan that addresses all of these aspects.

5.4 Test Results and Reports

Testing Range

Functionality: Check to see if important elements including user interaction, multi-vendor product listing, management, and search functionality are as planned.
Usability: Evaluate how simple it is to use the app and finish tasks for both vendors and customers.
Performance: Evaluate the responsiveness, stability, and loading times of the app on different devices.

Test Results

Functionality

Multi-Vendor System: The system effectively enables the registration, product listing, and inventory management of numerous vendors. Products can be easily added, edited, and removed by vendors. (Acquire)
Product Search: Using categories and keywords, the search feature efficiently sorts and shows products. (Acquire)
User Interaction: Customers may easily explore products, put items in their carts, and track their orders. Integration of secure payment gateways requires more testing. (Separate Pass)
Admin Panel: Vendors and their activities can be fully managed using this panel. To evaluate features like order administration and dispute resolution, more testing is necessary. (Separate Pass)
Usability
UI: The application's UI is easy to use and straightforward. It is simple to explore and find needed features for both merchants and customers. (Pass)
Onboarding Procedure: Vendor and client onboarding goes smoothly and uncomplicatedly. (Pass)

Product Listing: Product listing is easy to read and provides all the necessary information, including price, photos, and a description. (Pass)

Checkout Process: There is a shortened checkout procedure. To guarantee a safe and comfortable payment experience, more testing is required. Performance (Partial Pass)

App responsiveness: The application runs smoothly and with no lag on a variety of iOS and Android devices. (Credit)

Loading Times: Although page loading times are usually acceptable, product listings with high-resolution photos may need to be optimized. (Pass with suggestions)

App stability is solid; no issues have been noticed.

Guidelines for Action

To get real-world usability feedback, conduct more testing with a broader user base. For a seamless checkout process, use a reputable and safe payment channel. Update the admin panel with order management and dispute resolution features. Optimize the speed at which high-resolution photos load on product listing pages.

The D-Shop e-commerce app performs well and has a user-friendly design with potential capabilities. It is advised to conduct additional testing with a larger user base and integrate a secure payment gateway prior to final implementation. By implementing the suggestions, the Daffodil International University community will benefit from an improved user experience and a successful launch.

CHAPTER 6

Impact on Society, Environment, and Sustainability

6.1 Impact on Society

The multi-vendor e-commerce program D-Shop, created for students at Daffodil International University, has the potential to benefit the campus community in a number of ways.

Positive Impact on Students

- ❖ Entrepreneurship & Development of Business Skills: By giving students a place to sell their goods, D-Shop encourages students to start their own businesses. They may be inspired to learn marketing, customer service, and product management as a result.
- ❖ Financial Independence: Students might potentially become less dependent on others and promote financial independence by selling their products through D-Shop and earning a part-time income.
- ❖ Building Community and Networking: D-Shop helps students who have similar interests get together to form a feeling of community. While consumers can find one-of-a-kind items manufactured by their peers, sellers can establish connections with future clients who like their products.

Positive Impact on the University

- ❖ Enhanced Student Involvement: D-Shop offers a fresh venue for student involvement, which may increase enthusiasm for events and campus life.
- ❖ Support for Local Businesses: D-Shop can encourage intercultural dialogue on campus and local businesses by concentrating on students selling "famous products from their districts."
- ❖ Enhanced Innovation and Creativity: D-Shop can support students in creating and marketing novel goods, promoting an entrepreneurial and creative culture within the university.

6.2 Impact on the Environment

- ❖ Decreased Individual Trips: Students may be able to purchase a variety of items from a single platform, which would cut down on the number of individual store visits and transportation-related emissions.

- ❖ Consolidation of Deliveries: If deliveries are compared to separate purchases made from different retailers, the number of delivery vehicles required may be decreased.
- ❖ Packaging Techniques: The waste footprint can be reduced if D-Shop promotes and supports eco-friendly packaging (such as reusable containers and little plastic).
- ❖ Delivery Optimization: Reducing delivery emissions may be accomplished by providing pick-up sites, employing alternative-fuel vehicles, or streamlining delivery routes.
- ❖ Customer behavior: You may greatly lessen the impact on the environment by promoting deliberate purchasing and minimizing returns.
- ❖ Encourage environmentally friendly packaging by collaborating with suppliers who provide reusable solutions or use less packaging.
- ❖ Combine delivery: Look into joint ventures with delivery companies that use efficient cars and optimize routes.
- ❖ Inform users: Using the app, raise awareness of environmental issues and promote conscientious waste disposal and buying practices.

6.3 Ethical Aspects

Transparency and Fairness:

- ❖ Vendor Selection: Clearly outline the steps involved in choosing vendors to use on the platform. Bias is avoided and justice is ensured.
- ❖ In order to avoid predatory pricing and unfair competition, it may be advisable to establish a minimum and maximum price range for specific categories.
- ❖ Transparency in Fees: Be open and honest about any costs (such as commissions and transaction fees) related to selling on the platform.

Data Privacy and Security

- ❖ Protecting user data (personal information, payment details) requires the implementation of strong security measures.
- ❖ Ownership and Use of Data: Provide a detailed data privacy policy explaining the gathering, utilizing, and archiving of user data.
- ❖ Get user consent before collecting and using their data for any particular purpose.

6.4 Sustainability Plan

D-Shop aims to be a sustainable platform not just economically, but also environmentally and socially responsible. Here's a plan addressing the key areas.

Environmental Sustainability:

In terms of packaging, push vendors to utilize sustainable materials such as paper, cardboard, or biodegradable alternatives.

Provide learning materials and collaborations with suppliers of environmentally friendly

Packaging:

- Examine possibilities for a program (deposit system) branded with the D-Shop for reuse packaging for regularly purchased goods.
- Encourage sellers to use eco-friendly packaging materials like recycled cardboard, paper, or biodegradable options.
- Offer educational resources and partnerships with sustainable packaging suppliers.

Delivery Optimization:

- To minimize carbon footprint, set up a system that promotes combined delivery for orders that are close to one another.
- Assist delivery firms that provide carbon-neutral solutions (such as bicycle couriers or electric cars).
- To lessen the need for deliveries, think about providing pick-up places on campus.
- To reduce the amount of paper used, promote paperless communication by using electronic order confirmations and receipts.
- Make it possible for vendors to upload specs and digital product manuals.

Responsible Data Handling:

Data Security

- Put strong security measures in place to guard user information from hacking and illegal access.
- Clearly explain data collecting and usage procedures in a privacy statement.
- Permit users to access and manage their data.

Data minimization:

- Just gather the information required for user accounts, transactions, and platform operation.
- When feasible, anonymize data for analytics reasons.
- To prevent needless data retention, evaluate and improve data storage procedures on a regular basis.

Social Responsibility:

Fair Trade policies

- ❖ Inspire vendors to provide goods produced using ethical sourcing and fair labor policies.
- ❖ To encourage civic responsibility within the university community, collaborate with nearby companies and student entrepreneurs.
- ❖ Think about showcasing items on the site that come from ethical sources.

Community Engagement:

- ❖ Encourage campus sustainability activities by collaborating with student organizations.
- ❖ Include instructive material on waste reduction and ethical consumption in the app.
- ❖ Organize competitions or other activities that encourage vendors and consumers to use sustainable practices.

Continuous Improvement:

- ❖ Evaluate D-Shop's operations' influence on sustainability on a regular basis.
- ❖ Establish quantifiable objectives for social and environmental responsibility.
- ❖ Monitor developments and make any necessary changes to the sustainability strategy.
- ❖ Keep abreast with new developments in environmentally friendly e-commerce trends and technology.

By carrying out this strategy, D-Shop can promote an ethical and environmentally friendly online marketplace that benefits both the community at Daffodil International University and the wider world.

CHAPTER 7
Conclusion and Future Scope

7.1 Discussion and Conclusion

In an effort to close the gap between student entrepreneurship and an easy-to-use internet marketplace, D-Shop offers Daffodil International University students a tempting option. Through the use of a multi-vendor e-commerce platform, D-Shop encourages a thriving student-run economy by giving students the opportunity to display and sell their own items. For other students, the easy-to-use interface and comprehensive search capabilities make shopping more efficient and guarantee that they can locate what they need with ease.

There is a great deal of potential for this effort to help both student buyers and vendors. Sellers receive a platform on which to begin their endeavors, transforming their original concepts into successful enterprises. With the help of D-Shop, they can effectively handle their inventory, establish connections with prospective clients, and perhaps generate vital part-time money. In addition to encouraging a feeling of community and supporting student companies, D-Shop provides customers with an easy way to find and buy unique items from their peers. D-Shop is the preferred platform for on-campus purchases because of its hassle-free mobile accessibility, which further improves the user experience.

The success of D-Shop depends on its efficient deployment and continuous administration. It will need a well-thought-out marketing plan to draw in student consumers and sellers and reach the critical mass needed for a vibrant marketplace. It will also be crucial to create a sense of trust among users and to provide clear standards. D-Shop has the power to completely transform the way that students at Daffodil International University purchase and sell things, therefore establishing a thriving student-run economy and encouraging an entrepreneurial culture within the student body.

7.2 Scope for Further Developments

The D-Shop initiative at Daffodil International University has a solid basis for becoming a prosperous student-run e-commerce business. These are some areas that still need work to improve the product's functionality and user experience.

Advanced Functionalities:

- ❖ Delivery and Pick-Up choices: For a flawless experience, think about implementing delivery management or pick-up point choices. This can entail agreements with nearby delivery businesses or specific campus sites for pick-up.
- ❖ Improvements in Security: Strong data encryption and multi-factor authentication will improve the platform's security for both consumers and sellers.
- ❖ Reviews and Social Proof: Encouraging future purchases and fostering trust may be achieved by letting customers rate and review items and merchants.
- ❖ Community Building Elements: Take into account incorporating discussion boards or chat features so that students may exchange ideas on goods, services, or even trade. This may strengthen the sense of community on the site.
- ❖ Marketing and Promotions: Provide tools that allow vendors to design customized sales, rebates, or loyalty plans in order to draw in more clients.

Growth and Scalability:

- ❖ Multilingual Support: Adding multilingual support to the app might increase its reach if the university has a sizable number of international students.
- ❖ Use more advanced search options and filters by applying criteria such as product qualities, price ranges, or categories. Users will be able to locate particular goods more quickly thanks to this.
- ❖ Mobile App Optimization: To guarantee a seamless and simple user experience on a variety of devices, continuously optimize the app for both iOS and Android.
- ❖ Integrate analytics tools to monitor vendor performance, purchase patterns, and user activity. This information may be utilized to target suggestions, enhance marketing campaigns, and pinpoint areas in need of more research and development.

Additional Considerations:

- ❖ Rules and Compliance: Verify that the platform complies with all applicable laws pertaining to data protection and online commerce.
- ❖ Content Management System: Create an admin panel-facing content management system (CMS) that is easy to use in order to handle announcements, platform regulations, and product categories.

- ❖ Help and Support: To effectively respond to customer inquiries and offer assistance, put in place a thorough help center or chatbot system.

The D-Shop project may develop into a strong and adaptable e-commerce platform that meets the changing demands of the student body at Daffodil International University by adding these features. Recall that you should rank them according on user comments and platform objectives for the future.

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Appendix A

Course Outcomes, Complex Engineering Problems (EP) and Complex Engineering Activities (EA) Addressing

Title: D-SHOP: A MULTI-VENDOR E-COMMERCE APP

Student ID: 201-15-3245

CO Description for FYDP

CO	CO Descriptions	PO
Phase -I		
CO 1	Integrate recently gained and previously acquired knowledge to identify a **web based travel management** problem for the Final Year Design Project (FYDP)	**PO1**
CO 2	Analyze different aspects of the goals in designing a solution for this FYDP	**PO2**
CO 3	Explore diverse problem domains through a literature review, delineate the issues, and establish this goals for the FYDP	**PO4**
CO 4	Perform economic evaluation and cost estimation and employ suitable project management procedures throughout the development life cycle of the FYDP	**PO11**
Phase -II		
CO 5	Design and develop technical solutions and system components or processes that meet specified requirements, ensuring compliance with public health and safety standards, as well as considering cultural, socioeconomic, and environmental factors in this FYDP	**PO3**
CO 6	Choose and apply appropriate methodologies, resources, and contemporary engineering and IT technologies to address complex engineering processes, encompassing prediction and modeling, while adhering to relevant constraints in this FYDP	**PO5**
CO 7	Analyze societal, health, safety, legal, and cultural considerations, along with associated responsibilities, in the context of professional engineering practice and the resolution of this problem, employing logical reasoning guided by contextual understanding.	**PO6**
CO 8	Comprehend and evaluate the enduring sustainability and impact of professional engineering endeavors in addressing intricate engineering challenges within social and environmental frameworks.	**PO7**
CO 9	Implement ethical principles and adhere to professional standards and norms in this FYDP	**PO8**
CO 10	Capable of operating proficiently both individually and as a team member or leader across diverse teams and interdisciplinary settings in this FYDP.	**PO9**
CO 11	Proficiently communicate with the engineering community and broader society regarding complex engineering endeavors, including the ability to comprehend and generate comprehensive reports and design documentation, as well as provide and receive clear instructions throughout this FYDP.	**PO10**

CO 12	Acknowledge the importance of self-directed and life-long learning within the evolving landscape of technology, and possess the readiness and capability to engage in lifelong learning endeavors.	**PO12**

Addressing CO (1 to 8), Knowledge Profile (K), Attainment of Complex Engineering Problems (EP), and Attainment of Complex Engineering Activities (EA)

Addressing CO (1 to 8), Knowledge Profile (K), Attainment of Complex Engineering Problems (EP):

SN	EP Definition	Attainment	CO	Justification (with Knowledge Profile)	References
1.	**EP1: Depth of Knowledge required**	Yes	CO1, CO2, CO3, CO5, CO6, CO7 and CO8	In our project through process modeling, data design, and front-end development, we cover K1, K3, demonstrating the implementation of strong engineering concepts. The project addresses K4 by combining interaction design, front-end and back-end design, and user experience (UX).	**Page no:** 2-3], **Section:** [1.4,1.5] **Page no:** [31-51] **Section:** [4.1, 4.2, 4.3, 4.4,5.1, 5.2, 5.3]
				Applying K5, the project ensures a multi-vendor system with design principles by integrating design criteria such as user interface, security, scalability, customization, compatibility,accessibility, and dependability.	**Page no:** [30] **Scetion:** [3.5]

				The project uses Firebase, Flutter, Dart, and Rest API to target K6.	[31-33], **Section:** [4.1, 4.2, 4.3, 4.4]
				We looked at earlier research that had comparable objectives **K8**.	**Page no:** [7-8], **Section:** [2.2, 2.3]
2.	**EP3: Depth of analysis requi red**	Yes	CO2, and CO6	In order to tackle **EP-3**, the project prioritizes modern front-end design for an improved user experience and chooses Firebase for efficient back-end development. It also addresses issues like platform accessibility, user interaction optimization, and scalability to provide a multi-vendor e-commerce system.	**Page no:** [7-12,31] **Section:** [2.1,2.5, 4.1, 4.2]

3.	**EP5: Extents of application code**	Yes	CO3	The project fulfills **EP-4** by discussing about frameworks and technologies. What type of framework I used and which technologies I used there.	**Page no:** [31] **Section:** [4.1, 4.2]
4.	**EP7: Interdependence**	No	CO3 &CO8	As part of our project, we have visited and met with stakeholders. There i discussed how we can meet with our goal and how we will follow the procedure to create this app.	**Page no:** [13] **Section:** [3.1,3.2]

Addressing CO11 with Complex Engineering Activities (EA) [Some or all of the following]:

SN	EA Definition	Attainment	CO	Justification	References
1.	**EA1: Range of resources**	Yes	CO11	Utilizing tools like firebase, Android Studio Code, Xcode, and a variety of programming languages, frameworks, and databases, along with a skilled team from across domains, this system was developed with great care and attention to detail.	**Page no:** [33,34] **Section:** [4.4, 5.1]

2.	**EA4: Consequences for society and the environment**	Yes		This projects emphasizes social impact and environmental sustainability.	**Page no:** [55,56] **Section:** [6.1, 6.2, 6.4]

Addressing CO (4, 9, 10, and 12):

1	CO4	Yes	In order to capture CO4, the project integrates financial management approaches, such as resource allocation, budgeting, cost management, and risk mitigation. This ensures effective fund distribution, keeps an eye on expenses, and identifies opportunities for optimization while preserving quality.	**Page no:** [2] **Section:** [1.5]
2	CO9	Yes	The initiative respects ethical standards by giving users' privacy top priority, being transparent about how data is used, making reasonable recommendations, and being mindful of cultural sensitivity.	**Page no:** [56] **Section:** [6.3]
3	CO12	Yes	In order to ensure continuous improvement and adaptation to new technological trends, the project's implementation phase prioritizes lifelong learning through a variety of testing protocols, automated frameworks, and pipelines. Results analysis is used to refine the platform for increased efficacy.	**Page no:** [44-54] **Section:** [5.1, 5.3, 5.4]

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D-SHOP: A MULTI-VENDOR E-COMMERCE APP

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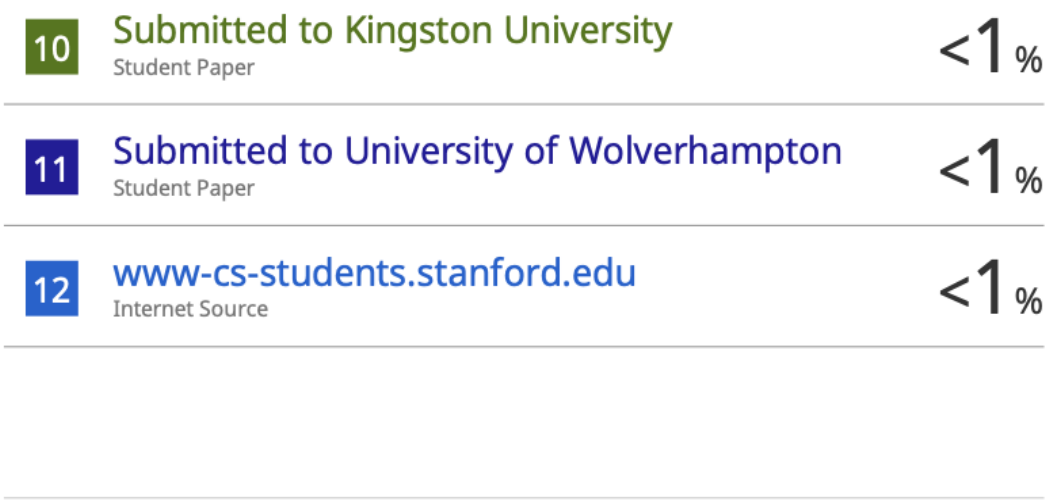
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