ECS204: Programming Project & Competitions

**Interim Project Report**

**2023 ICE Batch 6**

# "Agri Market" Agriculture Development Application Project

# Agri Market

**Group B**

School of Engineering

Sri Lanka Technological Campus

2020

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# 1. Declaration

"We declare that this thesis is our own work and has not been submitted in any form for another degree or diploma at any university or other institution of tertiary education. Information derived from the published or unpublished work of others has been acknowledged in the text and a list of references is given."

2020.05.17

# 2. Abstract

Agriculture Market is a digital classified Agriculture marketing mobile App creating a digital market for the farming community .Buyers, sellers and transporters are able to come together in a transparent manner procuring agriculture commodities and services through a listing mechanism.
Agri Mart Mobile Application provides easier user interface which makes the shopping easy for customers, farmers and also makes the delivery of products easy and less time-consuming. offers a wide range of vegetables, fruits, cereals, Agricultural Equipment. In further, this app comes with the Educational Guidance Forum which aims on the developing farmer's agricultural knowledge. In this forum every user can share their knowledge through using Question and Answer forum.

# 3. Chapter 1 – Introduction

## 3.1 Problem Description

1. Selling harvest is the biggest challenge for any farmer. There is a huge gap between farmers and potential buyers in these days. In that gap there are lots of middle persons, that frustrates farmers by decreasing their prices, marketplaces.
2. On the other hand, buying harvest from farmers is the biggest challenge for any traders/shop owners. There is a huge gap between farmers and potential buyers in these days, that frustrates buyers and customers too.
3. Different prices from every region, because in different region there will be much harvests otherwise less harvests so the prices will be different for every region.
4. Difficulties with transportation of harvest to buyers. the quality of the sales is highly affected by transportation delay time.

## 3.2 Identified Root Causes

1. Don't have computer literacy
2. Every region will have the different whether conditions.
3. Farmers don't have a proper idea for marketing.
4. Farmers don't have a marketing source.
5. Trade mafias in the supply chain.
6. Government institutions don't have clear mechanism to identify demand and supply.
7. No proper connection with transportation chain. lack of management in today transportation mechanisms.

## 3.3 Proposed Solutions

1. Mobile app can be access anywhere with low budget requirements compared to desktop web applications.
2. Users can contact the farmers directly via online.
3. Farmers can identify a proper marketing source through get registered to this application.
4. Farmers and buyer can easily engage with transportation chain and nearby transporters.
5. Farmers will have a very good marketplace to sell their harvest.
6. Buyers will have a very good marketplace to buy their harvest from Farmers.
7. Wholesalers can deal with farmers for a least amount via this application.
8. Crop cultivation guidance wiki service through the app which includes new technological, transportation techniques, storage techniques via experts through educational guidance forum in our app. This is a Q & A forum with agriculture experts.
9. New secure easy online payment options through mobile application
10. Market analysis display system where farmers can study about pricing their harvest and daily updates on price changes.

*11.* User Review system on each farmers/supplier to maximize the quality of goods and service.

### 3.4 Project Scope

In this modern world and the new generation all the fields are technology wisely improved. But the only the agriculture field in our country not improved well. Agriculture is important to human being because it forms the basis for food security. Agriculture plays a crucial role in the life of any economy. It is back bone of our economy. Agriculture not only provides food and raw materials but also employment opportunities to a very large proportion of population. So, through this application we can easily improve the agriculture field and also all the users can easily get connect with this. So as developers we are thinking it will help all the users as well and this will surely improve the agricultural field with technology wise.

### Scope statement

Introducing an online mobile platform to local farmers, buyers and transporters to market their agricultural food items where all the related money transactions and communications can be done.

The Scope of this SRS document is to define the functional requirements for the Agricultural mobile application and its component like User management, Content management and Management System, Farmers' database, etc. Introducing an online mobile platform to local farmers, buyers and transporters to market their agricultural food items where all the related money transactions and communications can be done.

- Farmers and buyers will able to Share their market information through this application.
  - Generally, intermediaries are getting the most benefit from agricultural marketing, but this application will largely alleviate that disadvantage. Farmer can be connected with buyers directly.
- Facility of getting all the updates of daily market prices and other details.
  - Selling is the biggest challenge for any farmer. We can close the gap between farmers and potential buyers from this application, that helps farmers by providing information on prices, marketplaces, and next links in the big supply chain. This means creating a whole marketplace for farmers where they'll be able to compare and control market prices for different products and also get more opportunities to promote and market themselves.
- Any of user will able to find nearby transport agent through this application.
  - Because of lack of management in today transportation mechanisms, the quality of the sales is highly affected by time. To do transport sales efficiently, this app manages all the sales transports through registered transporters.

- Agriculture experts can engage with farmers Q and A forums
    - This app comes with the Educational Guidance Forum which aims on the developing farmer's agricultural knowledge. In this forum every user can share their knowledge through using Question and Answer forum.
- Vegetables, Fruits, Rice and cereals crop harvest marketing
    - Agri Mart Mobile Application provides easier user interface which makes the shopping easy for customers, farmers and also makes the delivery of products easy and less time-consuming. Offers a wide range of vegetables, fruits, cereals, Agricultural Equipment.

It also defines user interfaces, user characteristics, etc. It also covers the non-functional requirements like performance, reliability, availability, security, maintainability etc.

## 3.5 Project Objectives and Expected Benefits

### 3.5.1 The purpose of this application is to automate and facilitate the whole process of agricultural marketing

This mobile application will be provided to farmers with valuable information that can help them improve their marketing. Mobile app can be access anywhere with low budget requirements compared to desktop web applications. Generally, intermediaries are getting the most benefit from agricultural marketing, but this application will largely alleviate that disadvantage. Farmer can be connected with buyers directly.

### 3.5.2 This application fixes the limitation and problems in buying and selling processes of agricultural products.

Selling is the biggest challenge for any farmer. We can close the gap between farmers and potential buyers from this application, that helps farmers by providing information on prices, marketplaces, and next links in the big supply chain. This means creating a whole marketplace for farmers where they'll be able to compare and control market prices for different products and also get more opportunities to promote and market themselves.

### 3.5.3 Increase the quality of sale

The main goal to increase the quantity of sales by making the new technology of mobile application design more attractive and to search a lot of customers and company to their location. Mobile apps for agriculture are a great option as they give farmers an opportunity to work in the field more effectively.

### 3.5.4 Efficient Transportation

Because of lack of management in today transportation mechanisms, the quality of the sales is highly affected by time. To do transport sales efficiently, this app manages all the sales transports through registered transporters.

## 3.6 Users

Sellers – Sellers are the basically farmers who sells and markets their products through the app

Buys - Customers who buy products from sellers

Transporters – Drivers who transport deliveries to the buyers

# 4. Chapter 2 – Solutions in General

## 4.1. Product Perspective

This mobile application is a new solution to facilitate more efficient agriculture marketing service and develop Sri Lankan local agricultural economy. Buyers, sellers and transporters are able to come together in a transparent manner procuring agriculture commodities and services through a listing mechanism.

Agri Mart Mobile Application provides easier user interface which makes the shopping easy for customers, farmers and also makes the delivery of products easy and less time-consuming. offers a wide range of vegetables, fruits, cereals, Agricultural Equipment. In further, this app comes with the Educational Guidance Forum which aims on the developing farmer's agricultural knowledge. In this forum every user can share their knowledge through using Question and Answer forum.

## 4.2 Product Features

### User Account System

In this application all users have to create a legal user account by agreeing our terms and conditions. There are 3 types of roles in user accounts.

1. Seller

2. Buyer

3. Transport Operator

Each role must be registered with suitable details and user confirmations.

### Selling and Buying System

Sellers and buyers can sell buy products through this feature. Each product is listed and included with the options of categories, sorting, preordering, placing bids, discounts, favorites etc. And when buying buyers can buy with exact amount with desired measuring unit. Seller can keep updated info about their stocks.

**Economy analytics**

In each time period, this feature will show the price analytics of each product categories

**User Review System**

Buyers can give each seller a review. This will keep the quality of the products.

**Online Payment System**

We will provide secure payment system with multi payment method support and availability.

**Contact the Developers and Feedback report system**

Users can immediately contact and send their feedback and problems to developer team.

**Delivery Service locate System**

This service locates each transport delivery operators in real time to give the exact location of the orders through satellite GPS technology.

**Chat system**

All users can chat with each other user and have discussions.

**Agriculture Consultancy Service System**

Agriculture consultants are able to provide guidance to the Farmers and maintain a Q and A forum.

## 4.3 User Classes and Characteristics

| User Class | Frequency of use | Product functions use | Technical expertise | Educational level |
|---|---|---|---|---|
| Buyer | high | User Account System<br>Selling and Buying System<br>Economy analytics<br>User Review System<br>Online Payment System<br>Contact the Developers and Feedback report system<br>Delivery Service locate System<br>Chat system | low | varies |
| Seller | high | User Account System<br>Selling and Buying System<br>Economy analytics<br>Online Payment System<br>Contact the Developers and Feedback report system<br>Delivery Service locate System<br>Chat system | low | varies |
| Transporter | high | User Account System<br>Online Payment System<br>Contact the Developers and Feedback report system<br>Delivery Service locate System<br>Chat system | low | varies |
| Developer | high | All Features | high | high |
| Consultant | low | Contact the Developers and Feedback report system<br>Chat system | high | high |

| Unregistered User | high | User Account System | low | Varies |
|---|---|---|---|---|

## 4.4 Operating Environment

Minimum Software hardware Requirements

- Mobile OS Version – Android 8 Oreo or higher version (Minimum API 26)
- Ram – 2GB
- Disk Memory space – 70- 120MB
- Connectivity – 5Mbps
- Screen Size – 5 inch or higher
- Sensors – GPS Sensor
- App Distribution Platform – Google Play

Design and Implementation Constraints

- App should work to multiple Oss and devices
- Device screen compatibility - UI must support for all mobile screen sizes
- Usability UI should be easy and have a nice flow
- Security for online payments
- Marketing application for exact audience
- Long time period for development
- Lack of knowledge and experience in developing apps, multiple programming languages, database systems, communication protocol management in developers
- App has to support to GPS system.
- The phone having the application should either over Lan or internet.
- Sign in and password is used for the identification of user. so, these have to identify by system correctly by correct input methods and characters.

## 4.6 User Documentation

User documentation refers to the documentation for a product or service provided to the end users. The user documentation is designed to assist end users to use the product or service. This is often referred to as user assistance. The user documentation is a part of the overall product delivered to the customer

User documentation is important because it provides a avenue for users to learn:

1. how to use your software
2. features of your software
3. tips and tricks of your software
4. how to resolve common problems with your software

Without user documentation, a user may not know how to do the above things.

So, we are providing

- Manual document.
- Video tutorials

These are helpful to user to understand about this app.

What does user documentation usually include?

- Minimum hardware and software requirements
- Installation guide
- How to start the system
- How to use different features of the system
- Screenshots explaining main features of the system
- Example inputs and outputs

Explanations of error messages and troubleshooting guides

### 4.5 Assumptions and Dependencies

Users of this application are any Android device user that loads this application to their devices. All of the users are in the same class, only one type of user exists. Operating environment is, as just mentioned above, is an Android OS mobile device. An android device that can support basic dependencies of the application is expected for proper user experience. On the other hand, our database server and services can operate on any OS like Windows or Ubuntu that can supply the database server's fundamental dependencies and needs. One important constraint is privacy and security. Users should be accessing only the authenticated data.

The product does require back-end data base server MYSQL for storing the username and password for different type of user of the system as well as various database regarding various insurance information.

### Assumptions

- User must be trained for basic computer functionalities.
- User must have the basic knowledge of English.
- The system must be able to respond to database software within responsible time.

## 5. Chapter 3 – Similar Approaches

Many mobile applications have been developed for the advancement of agriculture in the world. These are Android apps used for agriculture which provides the latest market rates, weather forecasting, latest technology videos, news related to agriculture etc.

### Govipola

This application is developed in Sri Lanka and somewhat similar to our AgriMart mobile application. Govipola is a digital classified AgriApp creating a digital market for the farming community.

Buyers and sellers are able to come together in a transparent manner procuring agriculture commodities and services through a listing mechanism.

### Govi-Mithuru

provides customized and timely advice to farmers regarding land preparation, cultivation, crop protection, harvest and improved family nutrition.

### AgriApp

It is an online farming marketplace bringing Kisan, farming input/output, government service on an online platform. It also provides chat option for farmers in India.

### FarmBee

It is marvelous in the list of agriculture android apps, It is available in 10 different Indian languages. It is a small app in terms of memory with an easy user interface.

### Agrivi

Agrivi app guides farmers towards improving their production and increasing productivity.

### FarmLogs

FarmLogs is a farm management app, designed to help farmers execute their grain marketing decision.

Sirrus, Growers Edge, Farm Future, Farm At Hand and Agri Media Video are similar approach mobile application in the world.

## 6. Chapter 4 – Technologies Adopted

Mainly we used following technologies adapted for the proposed solution.

1. Android Mobile Application Development
2. UI/UX Design Technologies
3. Database Maintenance
4. Server Database Maintenance

# 7. Chapter 5 – Analysis and Design
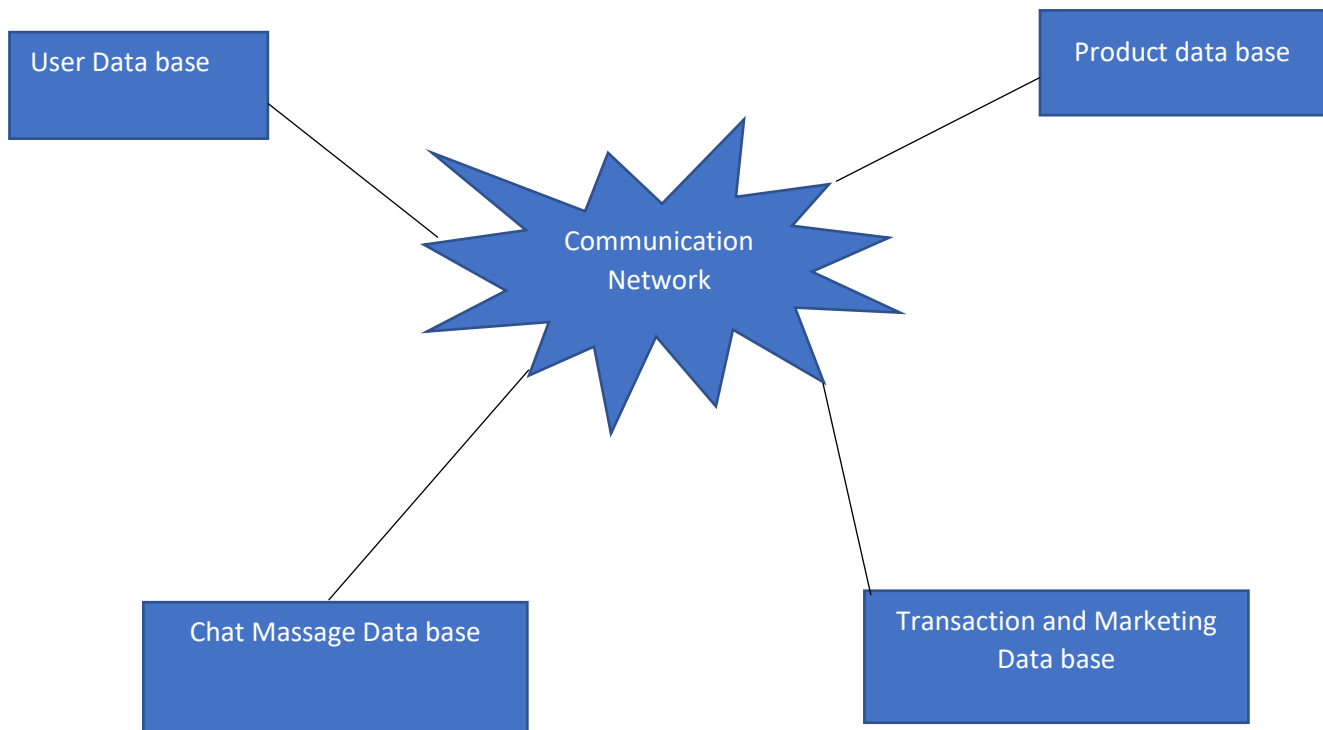
## 7.1 Hardware Interfaces

## GPS Location for Transport Operators

Requirements

Smartphone with GPS Sensor
Agri Mart app

Software Interfaces

Client database implies that a single application should be able to operate transparently on data that is spread across a variety of different databases and connected by a communication network as shown in below figure.
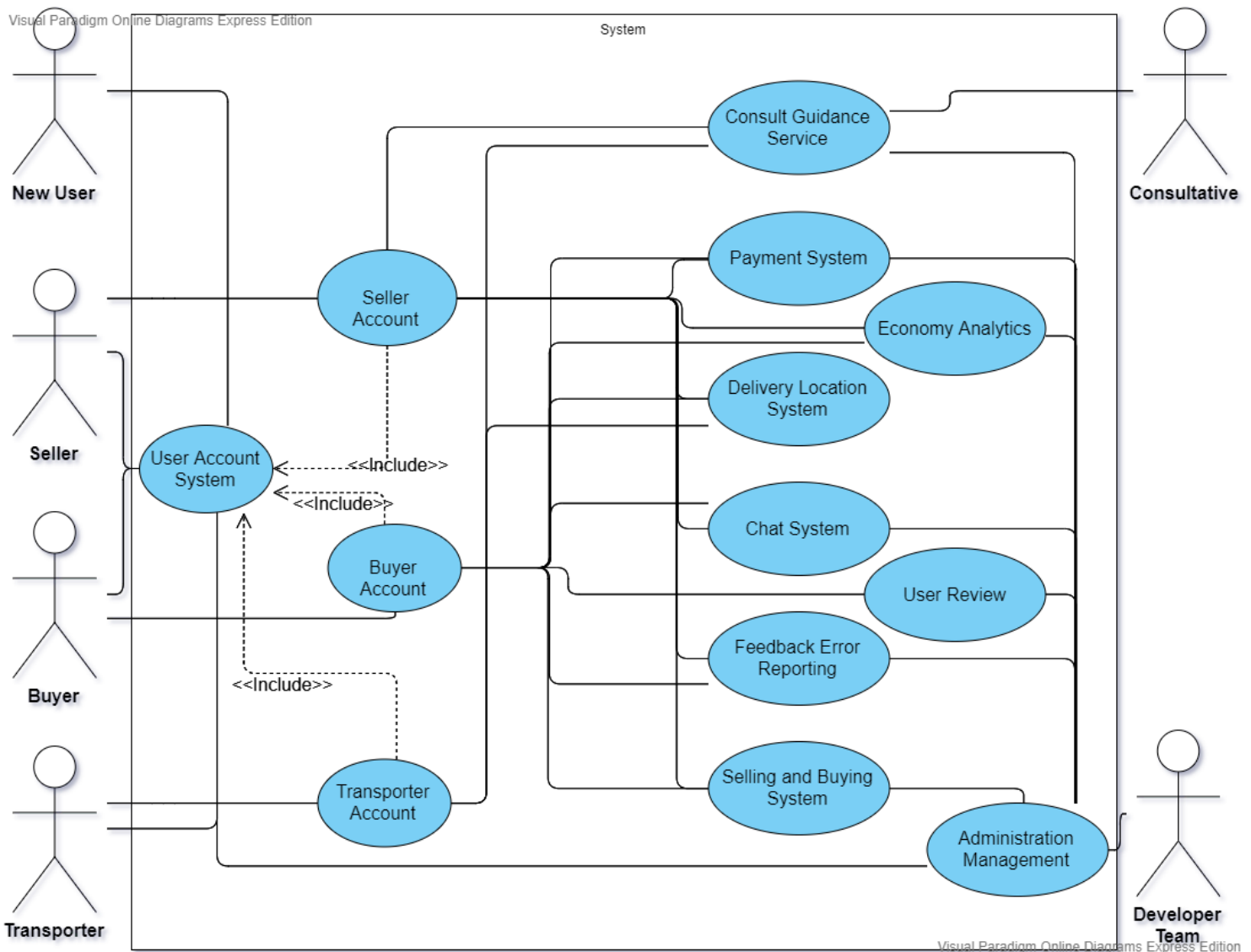
### 7.2 Communications Interfaces

The term client/server refers primarily to an architecture or logical division of responsibilities, the client is the application (also known as the front-end), and the server is the DBMS (also known as the back-end).
A client/server system is a distributed system in which,
- Some sites are client sites and others are server sites.
- All the data resides at the server sites.
- All applications execute at the client sites.

### 7.3 system Features

- User Case Diagram with Features

System

New User

Consultative

Seller

Buyer

Transporter

Consult Guidance Service

Payment System

Economy Analytics

Delivery Location System

Seller Account

User Account System

<<Include>>

<<Include>>

Chat System

Buyer Account

User Review

Feedback Error Reporting

<<Include>>

Transporter Account

Selling and Buying System

Administration Management

Developer Team

### 7.3.1 System Feature 1

- Agriculture consultancy service system

### 7.3.1.1 Description and Priority

This is the feature can have between the seller(farmer) and consultant, through producers and the products to transport, bio energy and policy, consultant are the only specialist agribusiness information provide converting the whole value chain with trusted proprietary data, authoritative analysis, accurate forecasts and tailored consulting.

|  | Ratings(0-9) |
|---|---|
| Priority | 9 |
| Benefit to the user | 9 |
| Cost | 3 |
| Risk | 5 |

7.3.1.2 Stimulus/Response Sequences

| Use case name | Contact with agriculture consultative |
|---|---|
| Assumption | The actor has been authenticated so the user details already known to the system. |
| Pre-condition | The user has to register to make use of this feature |
| Initiation | "Use case when starts when." The actor chooses this option |
| Main flow of event | <ul><li>User must login using email and password or register a basic user account by entering basic details where email and password are compulsory</li><li>The use case provide list of consultative.</li><li>The actor selects a consultative.</li><li>The actor has request to consultative.</li><li>The use case give permission</li><li>The actor make conversation</li></ul> |
| Exceptional flow of the event | User can access this through profile options |
| Post-conditions | The actor got advice from consultative The system displays the suitable UI and login successfully to selected role Save the activities in the system log |
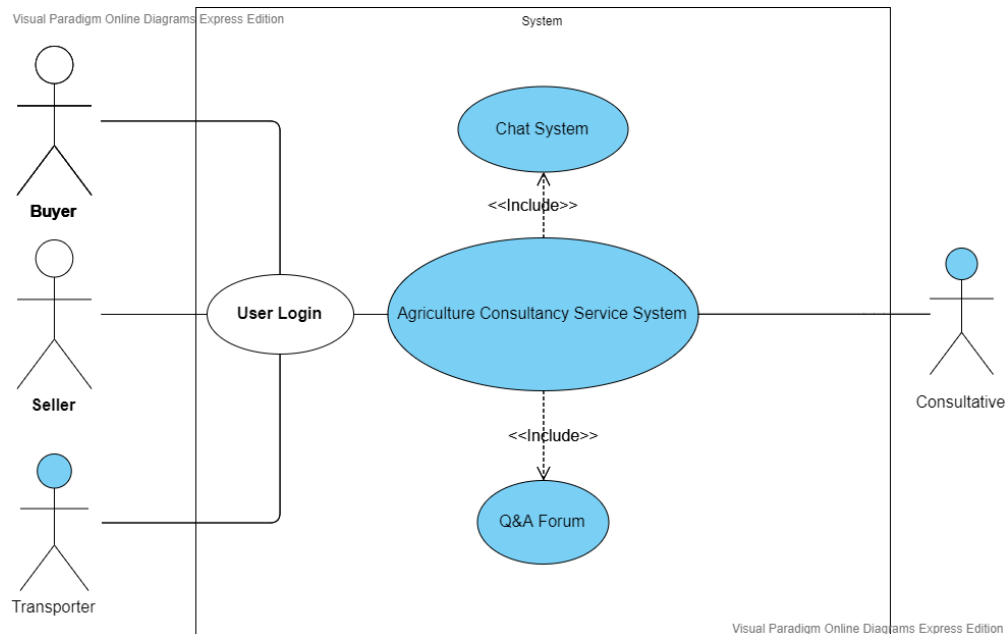
### 7.3.1.3 Functional Requirements

- **Customer Database**
  This data base contains customer details and save their detail when they register as a new customer, Application will access these dates when needs.
  Customer Database **divide** as Buyer Database, farmer Data base, Delivery service Data base.

- **agriculture consultative**
  This data base contains agriculture consultative details, Application will access these dates when needs.

### 7.3.2 System Feature 2

- Delivery Service locate System

### 7.3.2.1 Description and Priority

This feature can mostly target the farmers and transport service owners, when a farmer wants to sell his own product to a market or whole sale buyer or other buyers, farmer must need a transport facility to sell his product to them, so farmer can find a transport service owner through the application and can find the location of the transport service owner and transport service owner also can easily find the location of the farmer and reach the location and transport the products to the correct location.

And also buyers can locate the order with option.

| | Ratings(0-9) |
|---|---|
| **Priority** | 8 |
| **Benefit to the user** | 8 |
| **Cost** | 1 |
| **Risk** | 8 |

7.3.2.2 Stimulus/Response Sequences

| Use case name | Delivery Service locate System |
|---|---|
| Assumption | The actor has been authenticated so the user details already known to the system. |
| Pre-condition | The user has register to make use of this feature and user needs GPS hardware and software facility |
| Initiation | "Use case when starts when." The actor(buyer) chooses this option |
| Main flow of event | 1. User must login using email and password or register a basic user account by entering basic details where email and password are compulsory 2. Then users can browse to the orders section and use location service |

| | |
|---|---|
| Exceptional flow of the event | If transporter turned off location, app show unable to find message |
| Post-conditions | The actor(buyer) Got to know about GPS point<br>The system displays the suitable UI and login successfully to selected role<br>Save the activities in the system log |
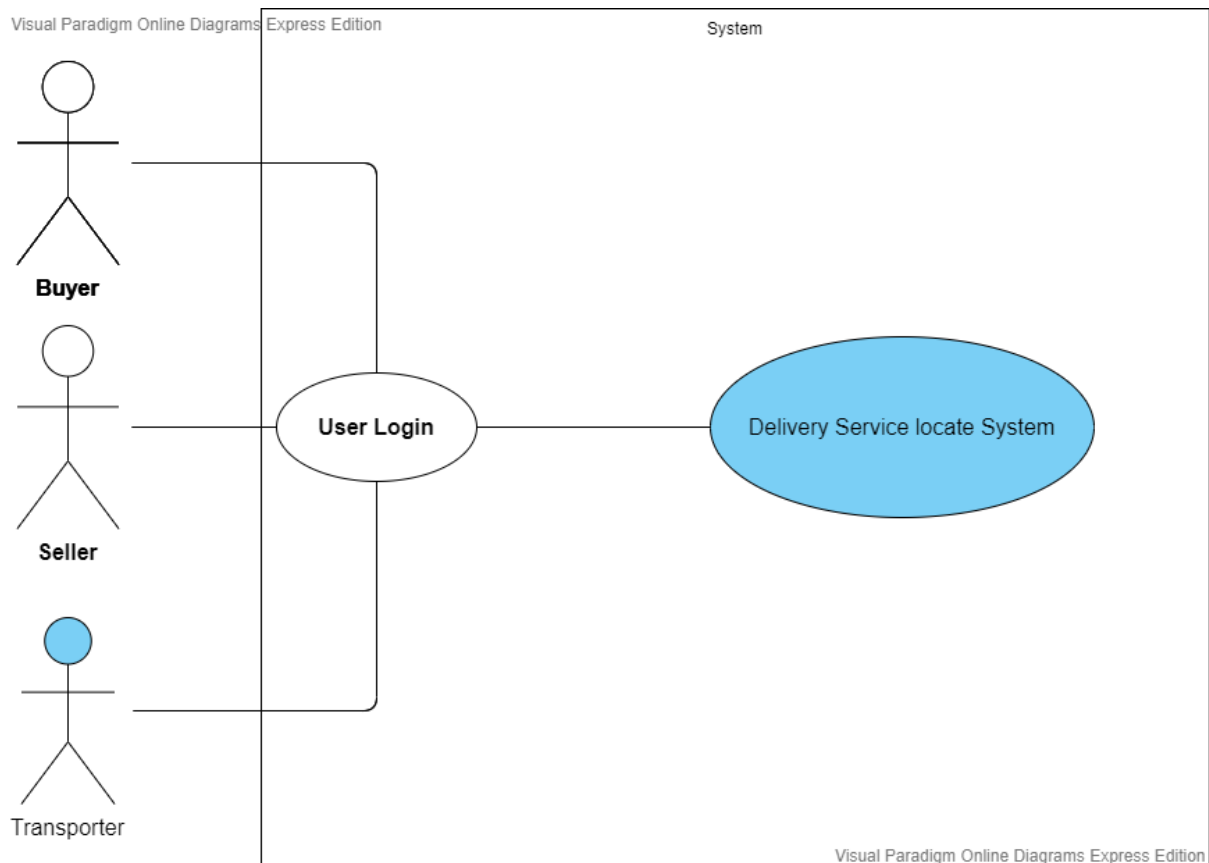


### 7.3.2.3 Functional Requirements

- **Buyer Database**
  This data base contains buyer details and save their detail when they register as a new customer, Application will access these dates when needs.

- **Delivery service Database**
  This data base contains delivery service details and save their detail when they register as a new customer, Application will access these dates when needs.

- **GPS facility and access**

  This requirement needs to access GPS point of user to detect location.

## 7.3.3 System Feature 3

- User Review System

## 7.3.3.1 Description and Priority

This feature can mostly between the buyer and seller. This will facilitate the buyers to share their experience on sellers.

| | Ratings(0-9) |
|---|---|
| Priority | 8 |
| Benefit to the user | 8 |
| Cost | 0 |
| Risk | 4 |

3.3.2 Stimulus/Response Sequences

| Use case name | User Review System |
|---|---|
| Assumption | The actor has been authenticated so the user details already known to the system. |
| Pre-condition | The user has register to make use of this feature |
| Initiation | "Use case when starts when." <br> The actor(buyer) chooses this option |
| Main flow of event | <ul><li>The actor(buyer) search product.</li><li>The actor(buyer) select the product</li><li>The actor(buyer) Pay the product</li><li>The actor(buyer) give ratings and reviews on next screen about the experience</li></ul> |
| Exceptional flow of the event | <ul><li>User can access this through past order section</li></ul> |
| Post-conditions | Adding user review to sellers' profile <br> The system displays the suitable UI and login successfully to selected role <br> Save the activities in the system log |
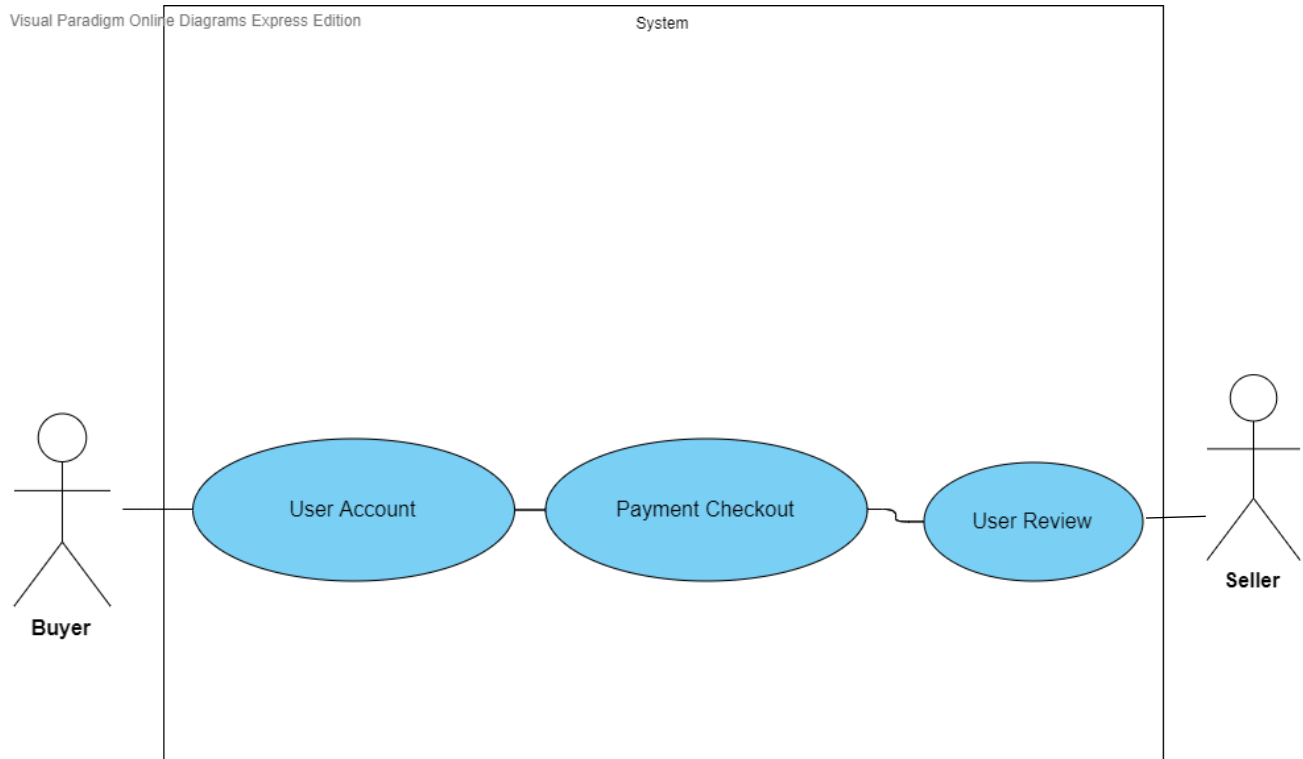
### 7.3.3.3 Functional Requirements

- **User Account Database**
  This data base contains all users' personal details with emails and passwords encrypted.

- **Bank Access**
  This requirement needs to deal online payment in online so bank needs give permission to customer and app to use bank resources.
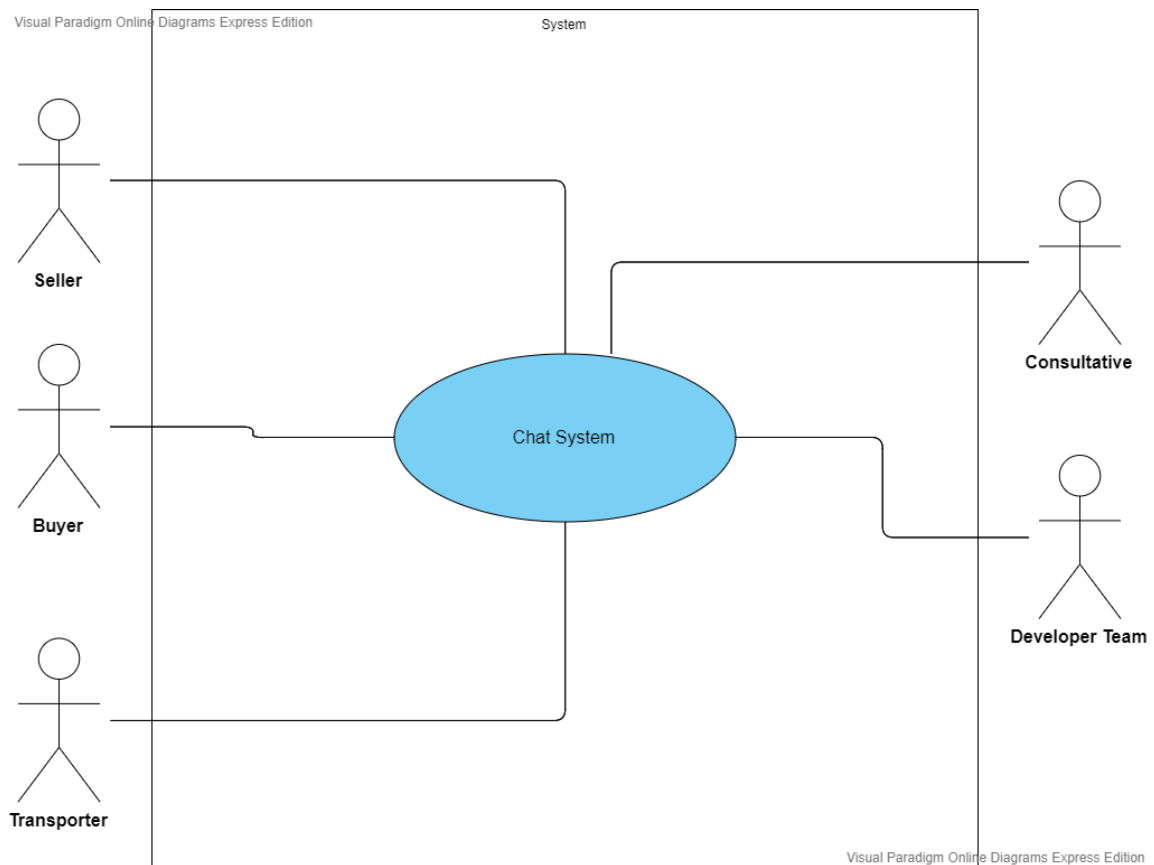
**7.3.4 System Feature 4**

- Chat System

**7.3.4.1 Description and Priority**

This feature can between all the users of the application. They can get connected with each other's while chat option. A farmer to a farmer, a farmer to a seller, a farmer to a delivery service owner, delivery service owner to a seller, etc. they can share their information such as delivery product, delivery location, costs and etc. through the chat option in the application.

|  | Ratings(0-9) |
|---|---|
| **Priority** | 8 |
| **Benefit to the user** | 8 |
| **Cost** | 0 |
| **Risk** | 4 |

3.4.2 Stimulus/Response Sequences

| Use case name | Chat option within farmers, sellers and delivery service |
|---|---|
| Assumption | The actor has been authenticated so the user details already known to the system. |
| Pre-condition | The user has register to make use of this feature |
| Initiation | "Use case when starts when" <br> The actor chooses this option |
| Main flow of event | <ul><li>Login to user account and select role</li><li>The actor selects the actor who wants to speak</li><li>The use case give permission</li><li>The actors make conversation through forum</li></ul> |
| Exceptional flow of the event | User can access this through profile anytime |
| Post-conditions | The Actors made conversation within them. <br> The system displays the suitable UI and login successfully to selected role <br> Save the activities in the system log |

### 7.3.4.3 Functional Requirements

- **Chat Massages Database**

  Stores every Chat massages done by users

- **User Account Database**
  This data base contains all users' personal details with emails and passwords encrypted.

### 7.3.5 System Feature 5

- Contact the Developers and Feedback report system

### 7.3.5.1 Description and Priority

This feature can mostly between the all users of the application and the app maintainers. If the users of the application have any problem in using the application such as network quality, any complaints, any inquiries they can easily get connected with the app maintainers through the forum.

| | Ratings(0-9) |
|---|---|
| **Priority** | 8 |
| **Benefit to the user** | 8 |
| **Cost** | 3 |
| **Risk** | 4 |

7.3.5.2 Stimulus/Response Sequences

| Use case name | Contact the Developers and Feedback report System |
|---|---|
| Assumption | The actor has been authenticated so the user details already known to the system. |
| Pre-condition | The user has register to make use of this feature |
| Initiation | "Use case when starts when." The actor chooses this option |
| Main flow of event | <ul><li>Login to user account</li><li>Go to the feedback option</li><li>Report the issues or appreciations</li></ul> |
| Exceptional flow of the event | User can access this through profile anytime |

| Post-conditions | The Actor made conversation with maintainers<br>The system displays the suitable UI and login successfully to selected role<br>Save the activities in the system log<br>The system displays the suitable UI and login successfully to selected role<br>Save the activities in the system log |
|---|---|
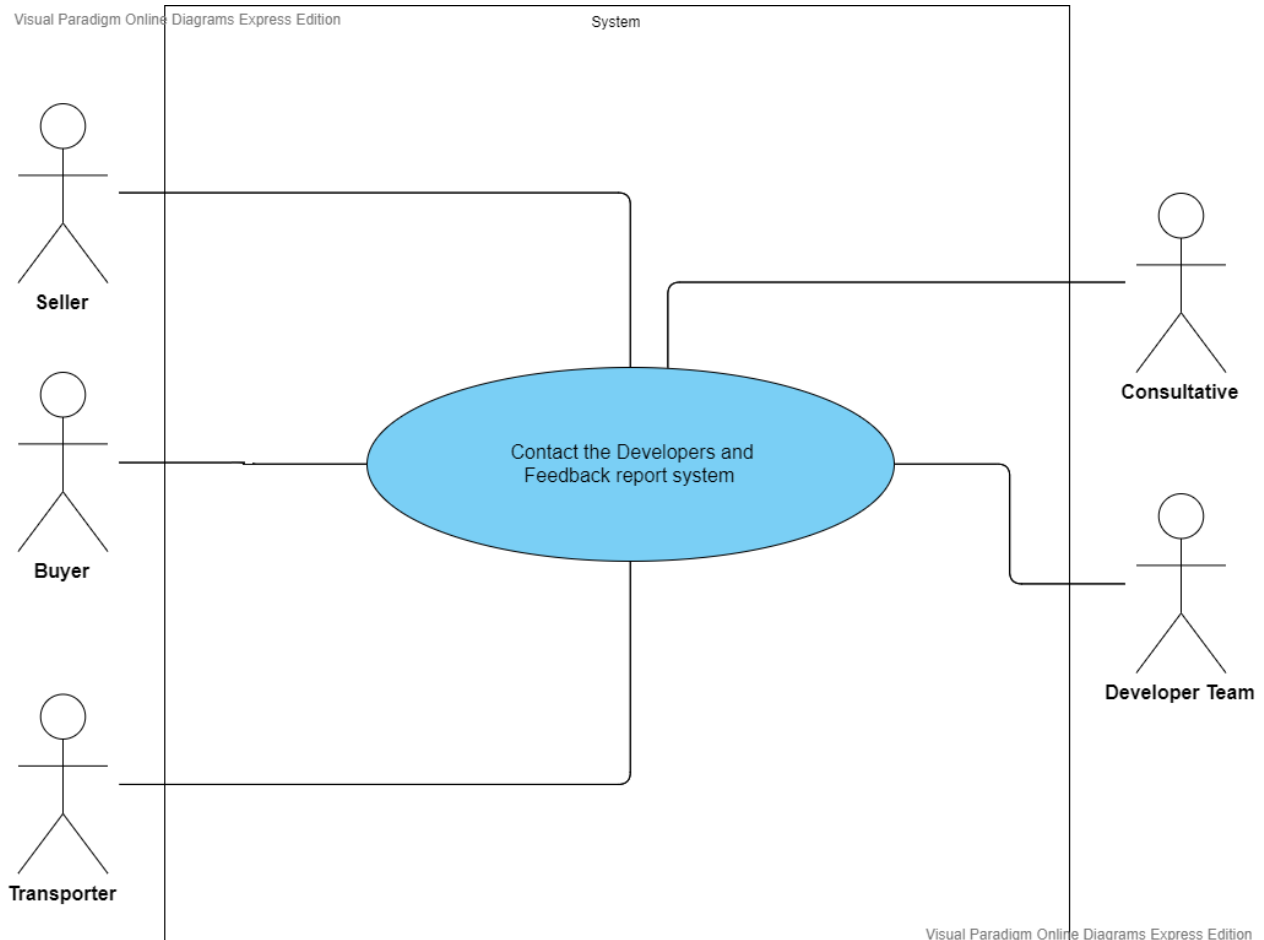


### 7.3.5.3 Functional Requirements

- **User Account Database**
  This data base contains all users' personal details with emails and passwords encrypted.

- **product Database**
- **Transaction & Marketing Database**
  System must keep every detail of transactions and store in each product category and every financial occurs.

**7.3.6 System Feature 6**

- Online payment

**7.3.6.1 Description and Priority**

This feature allows customers to make payment in online.

Customer can use Debit card, Visa card or Credit Card or PayPal service

| | Ratings(0-9) |
|---|---|
| **Priority** | 8 |
| **Benefit to the user** | 8 |
| **Cost** | 3 |
| **Risk** | 4 |

7.3.6.2 Stimulus/Response Sequences

| Use case name | Online payment System |
|---|---|
| Assumption | The actor has been authenticated so the user details and payment details already known to the system. |
| Pre-condition | The user has register to make use of this feature |
| Initiation | "Use case when starts when" The actor chooses this option |
| Main flow of event | <ul><li>User login</li><li>Browse cart</li><li>The actor selects an option</li><li>Use case ask payment details</li><li>The actor enters the details</li><li>The actor provides payment receipt.</li><li>Final Confirmation and checkout</li></ul> |

| | |
|---|---|
| Exceptional flow of the event | No Exceptional flow, but there is the way when the payment is partially completed |
| Post-conditions | The transaction is registered in the daily activity log.<br>The system displays the suitable UI and login successfully to selected role<br>Save the activities in the system log |
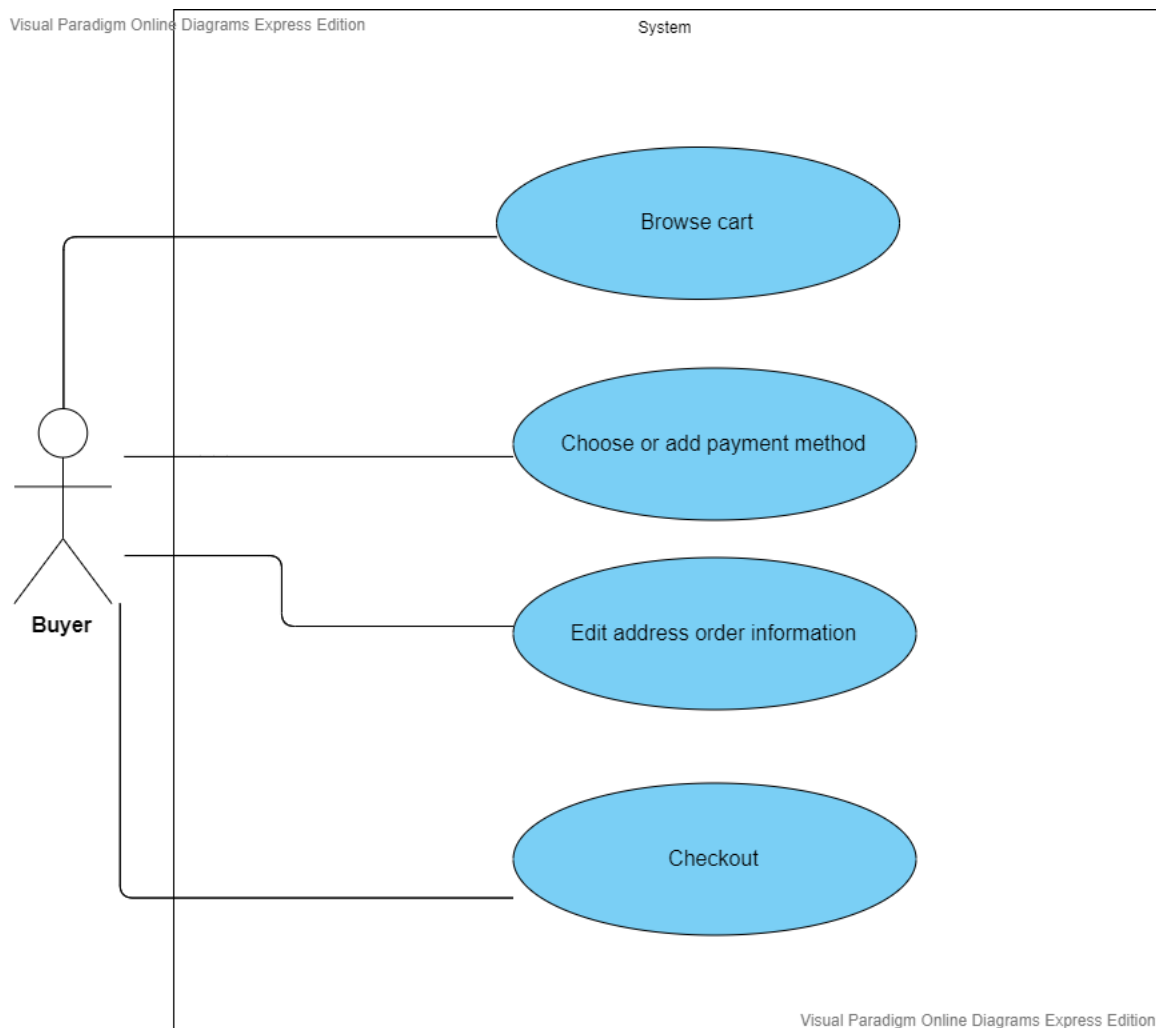
**7.3.6.3 Functional Requirements**

- **User Account Database**
  This data base contains all users' personal details with emails and passwords encrypted.

- **Transaction & Marketing Database**
  System must keep every detail of transactions and store in each product category and every financial occurs.

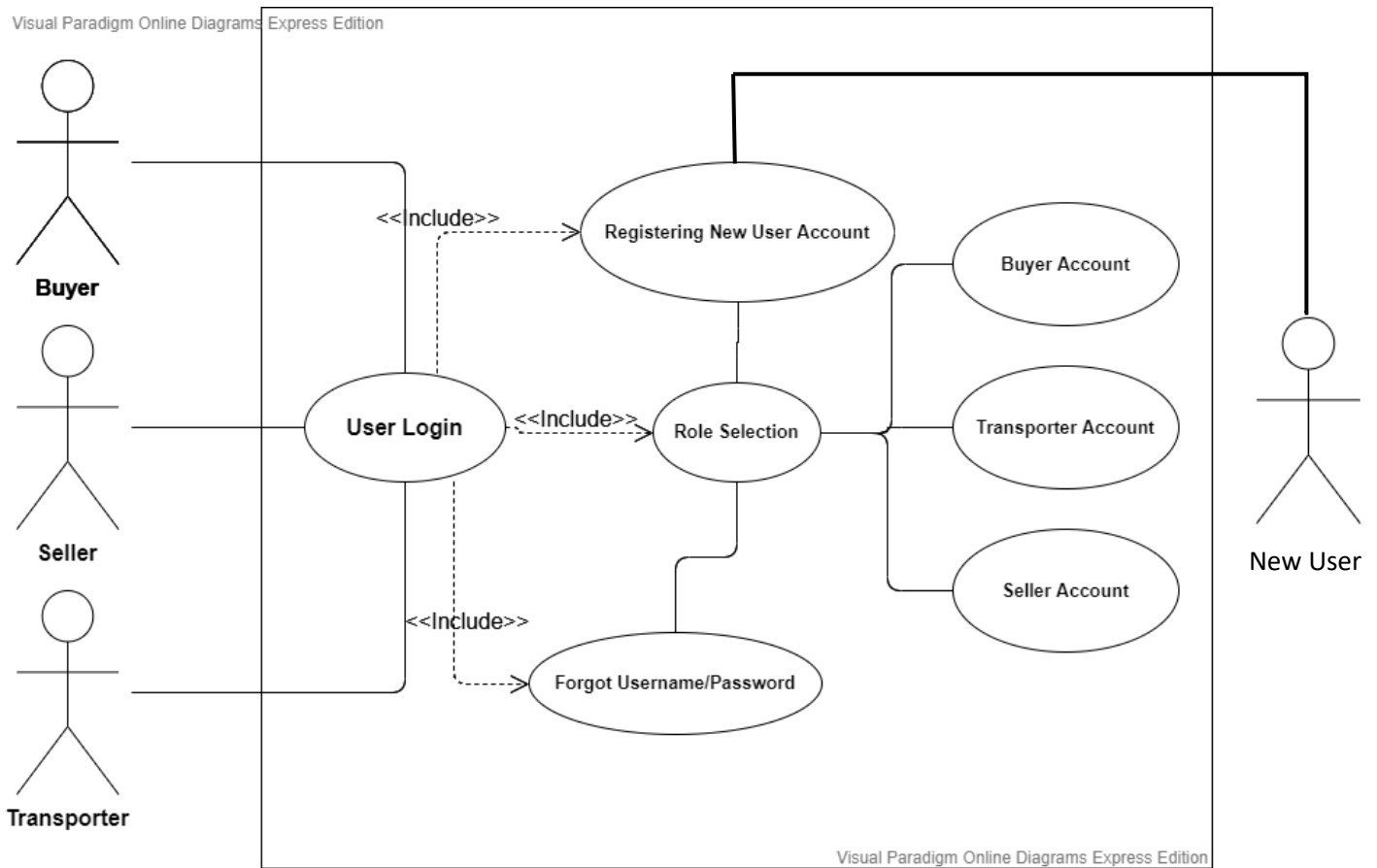**7.3.7 System Feature 7**

- User Account System

**7.3.7.1 Description and Priority**

This feature allows customers to browse each service correctly. As application is used by main 3 types of customers sellers, buyers, transporter operators. Each account has its own facilities. This is the gateway that divides the users.

|  | Ratings(0-9) |
| --- | --- |
| **Priority** | 9 |
| **Benefit to the user** | 9 |
| **Cost** | 4 |
| **Risk** | 4 |

7.3.6.2 Stimulus/Response Sequences

| Use case name | User Account System |
|---|---|
| Assumption | The actor has able to use the desired function of each roles by registering an account with personal details |
| Pre-condition | The user has to install app and choose a language |
| Initiation | "Use case when starts when"<br>The actor chooses this option |
| Main flow of event | 1. User must login using email and password or register a basic user account by entering basic details where email and password are compulsory<br>   o User must agree to the terms and conditions<br>   o And create account<br>   o login again<br>2. The system verifies the username and giving the access to choosing a role<br>3. User can select and register with desired roles as Seller, Buyer, Transporter |
| Exceptional flow of the event | 1. Missing username or password<br>   • The system displays forget username & password<br>   • System generates temporary password and send to email/mobile SMS.<br>   • Use case resumes at main flow step 1<br><br>2. Invalid username or password<br>   • The system displays invalid username or password<br>   • The system prompts for correct username & password<br>   • Use case resumes at main flow step 1 |
| Post-conditions | The system displays the suitable UI and login successfully to selected role<br>Save the activities in the system log |

### 7.3.6.3 Functional Requirements

- **User Account Database**
  This data base contains all users' personal details with emails and passwords encrypted.

### 7.3.7 System Feature 8

- Economic Analytic System
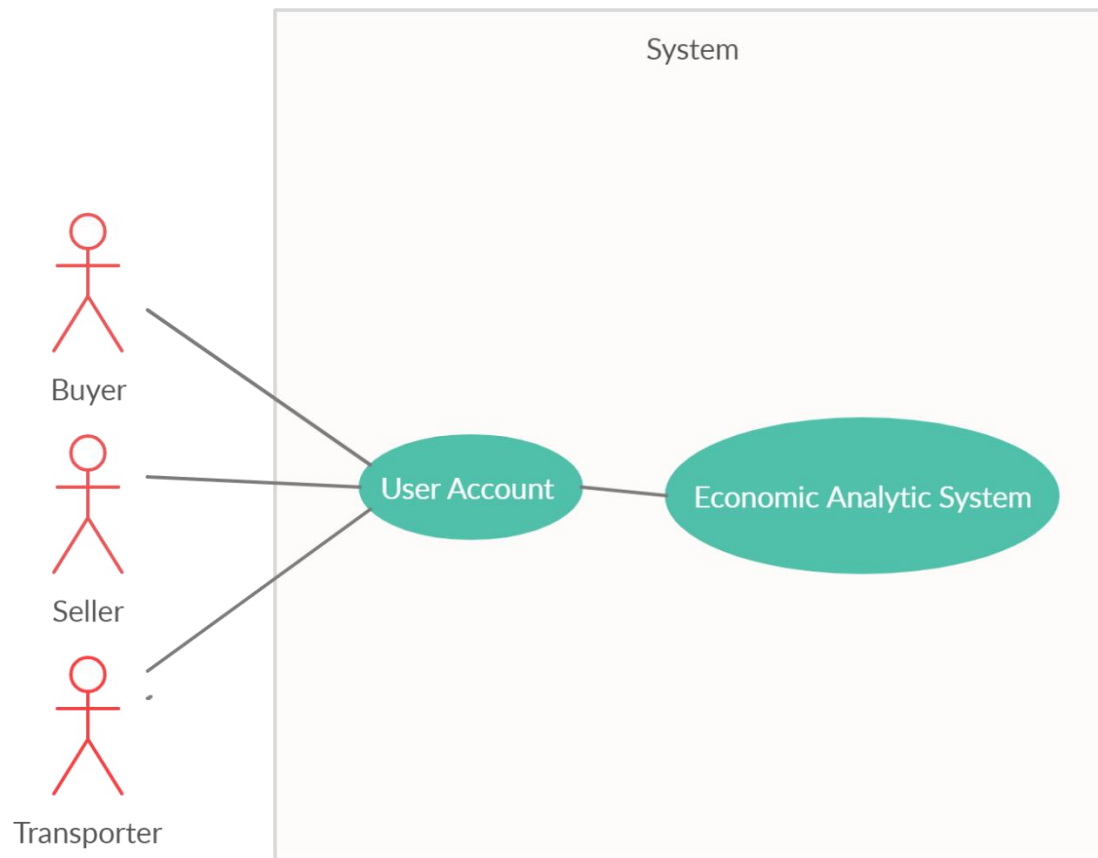
### 7.3.7.1 Description and Priority

This feature allows customers to browse each product category and see the market price variations and new trends. This will help the customers to define their product prices and retake decisions.

|  | Ratings(0-9) |
|---|---|
| **Priority** | 7 |
| **Benefit to the user** | 9 |
| **Cost** | 3 |
| **Risk** | 4 |

7.3.6.2 Stimulus/Response Sequences

| Use case name | Economic Analytic System |
|---|---|
| Assumption | The actors able to browse each product category and see the market price variations and new trends. |
| Pre-condition | The user has to login to a user account |
| Initiation | "Use case when starts when"<br>The actor chooses this option |
| Main flow of event | 1. User must login using email and password or register a basic user account by entering basic details where email and password are compulsory<br>2. The user must browse the features and go to the economic analytic section<br>3. User can select the desired product category to see the information. |

| | |
|---|---|
| Exceptional flow of the event | 3.  Missing username or password<br>  • The system displays forget username & password<br>  • System generates temporary password and send to email/mobile SMS.<br>  • Use case resumes at main flow step 1<br><br>4.  Invalid category of products<br>  • The system displays invalid category |
| Post-conditions | The system displays the suitable UI and login successfully to selected role<br>Save the activities in the system log |

**7.3.6.3 Functional Requirements**

- **Transaction & Marketing Database**
  System must keep every detail of transactions and store in each product category and every financial occurs.

- **Economic Algorithms**

  Using every details of transactions and use algorithms to calculate price evaluations and present it in graphs

**7.3.7 System Feature 9**

- Selling and Buying System
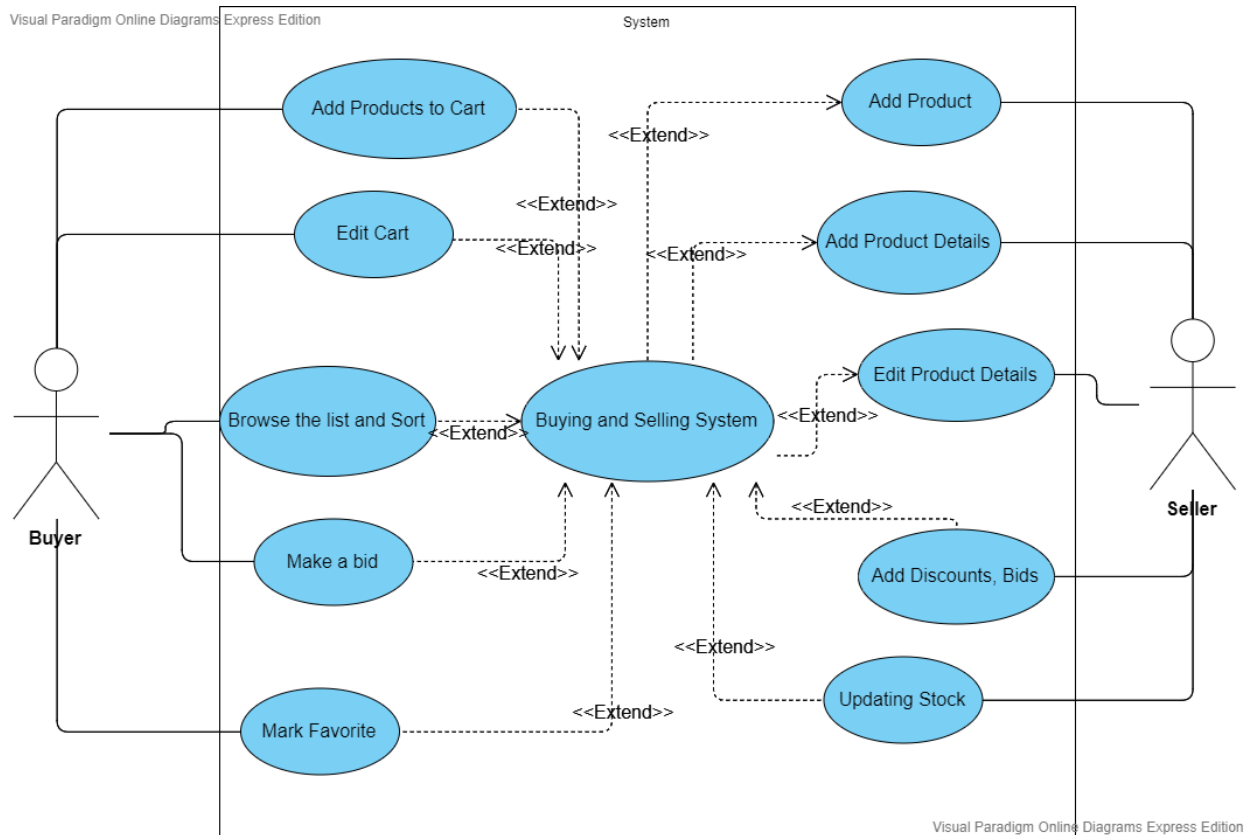
**7.3.7.1 Description and Priority**

This feature allows customers to browse each product category and see the market price variations and add to the desired amount to the cart and go for payment option. And the sellers are able to manage their stocks with prices, bids, discounts and market their sales.

|  | Ratings(0-9) |
|---|---|
| **Priority** | 9 |
| **Benefit to the user** | 9 |
| **Cost** | 3 |
| **Risk** | 5 |

7.3.6.2 Stimulus/Response Sequences

| Use case name | Selling and Buying System |
|---|---|
| Assumption | The actors able to browse each product category and add to cart and list down your stocks with correct details with measuring units. |
| Pre-condition | The user has to login to a user account and to a desired role |

| | |
|---|---|
| Initiation | "Use case when starts when"<br>The actor chooses this option |
| Main flow of event | 1. User must login using email and password or register a basic user account by entering basic details where email and password are compulsory<br>2. Then users must register to a desired role. Users can select Buyer role<br>    a. The user must browse the features and go to Market section.<br>    b. User can select the desired product category to see the product list<br>    c. User can select the desired product sorting option in category to see the product list clearly.<br>    d. User can select place a bid option<br>    e. User can bookmark favourite sellers<br>    f. Users can cancel orders<br>3. Users can select seller role<br>    a. Then users are able to upload their product information with pictures, delivery status, remaining stock.<br>    b. Users can change prices with discount and stock status<br>    c. Users can add bid option to pre order facilitates.<br>    d. Users can cancel orders |
| Exceptional flow of the event | 1. Missing username or password<br>    • The system displays forget username & password<br>    • System generates temporary password and send to email/mobile SMS.<br>    • Use case resumes at main flow step 1<br><br>2. Invalid category of products<br>    • The system displays invalid category |
| Post-conditions | The system displays the suitable UI and login successfully to selected role<br>Save the activities in the system log |

System

Add Products to Cart

<<Extend>>

Add Product

<<Extend>>

Edit Cart

<<Extend>>

<<Extend>>

Add Product Details

Browse the list and Sort

<<Extend>>

Buying and Selling System

<<Extend>>

Edit Product Details

Buyer

Make a bid

<<Extend>>

<<Extend>>

Seller

Add Discounts, Bids

<<Extend>>

Mark Favorite

<<Extend>>

Updating Stock

### 7.3.6.3 Functional Requirements

- **User Account Database**
- **Product Database**
- **Transaction & Marketing Database**
  System must keep every detail of transactions and store in each product category and every financial occurs.

- **Economic Algorithms**

  Using every details of transactions and use algorithms to calculate price evaluations and present it in graphs

## 8. Chapter 6 – Reference

**Websites**

https://www.techrepublic.com/article/top-10-web-service-security-requirements/

https://reqtest.com/requirements-blog/functional-vs-non-functional-requirements/

https://www.ooportal.com/project-life-cycle/module5/pre-conditions-post-conditions.php

https://www.stayonsearch.com/5-biggest-challenges-you-need-to-face-in-website-creation

https://www.ivoryresearch.com/library/dissertation-articles/dissertation-interim-report/

https://www.uni-bielefeld.de/(en)/ZiF/KG/2004Angst/bericht.html

https://www.southampton.ac.uk/englishforengineers/understanding_assessed_tasks/reports/interim_reports.page

https://www.sheffield.ac.uk/aerospace/current-students/year-groups/final-year-project/interimreport
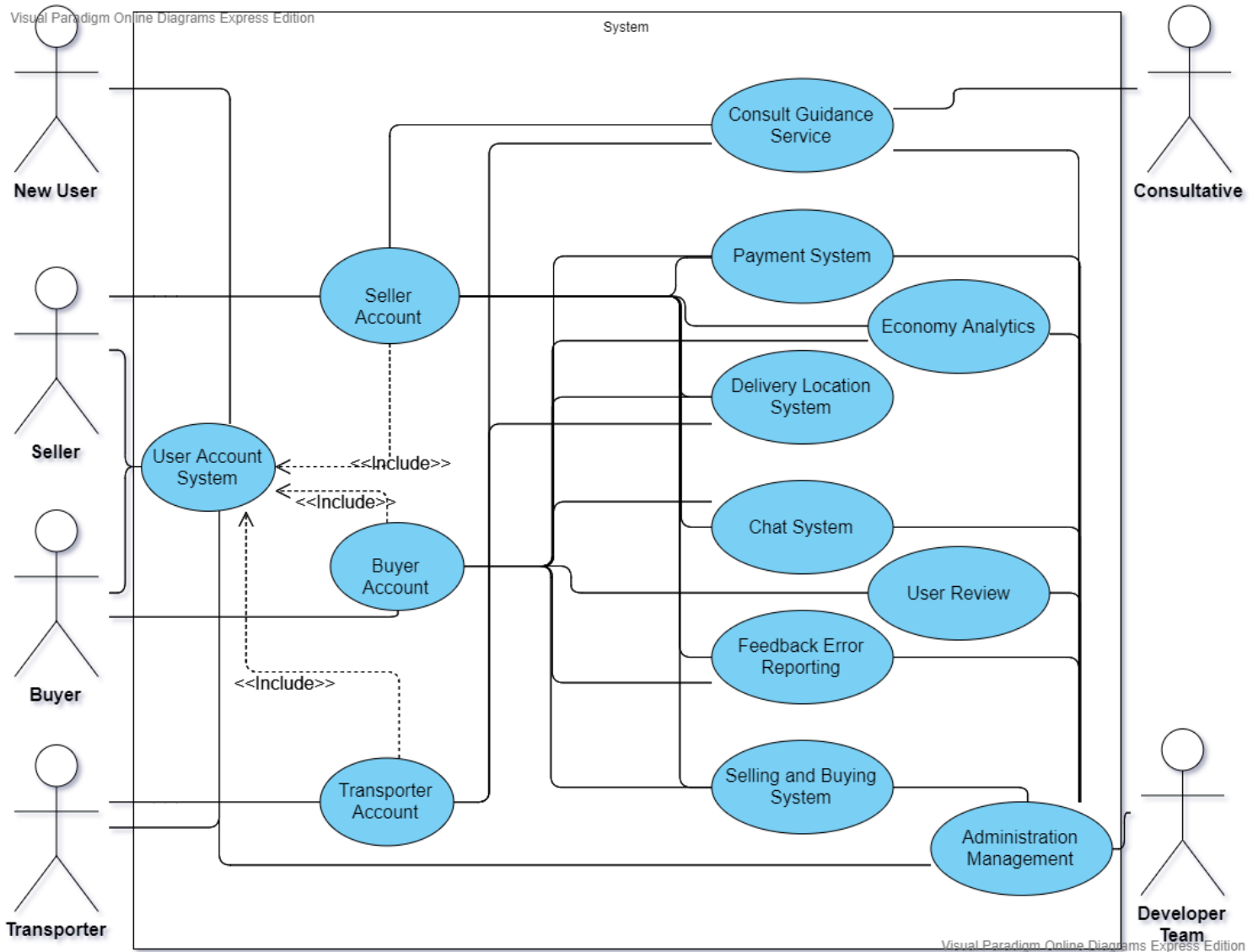
## 9. Appendix A: Glossary

UI – User Interface

UX - User Experience

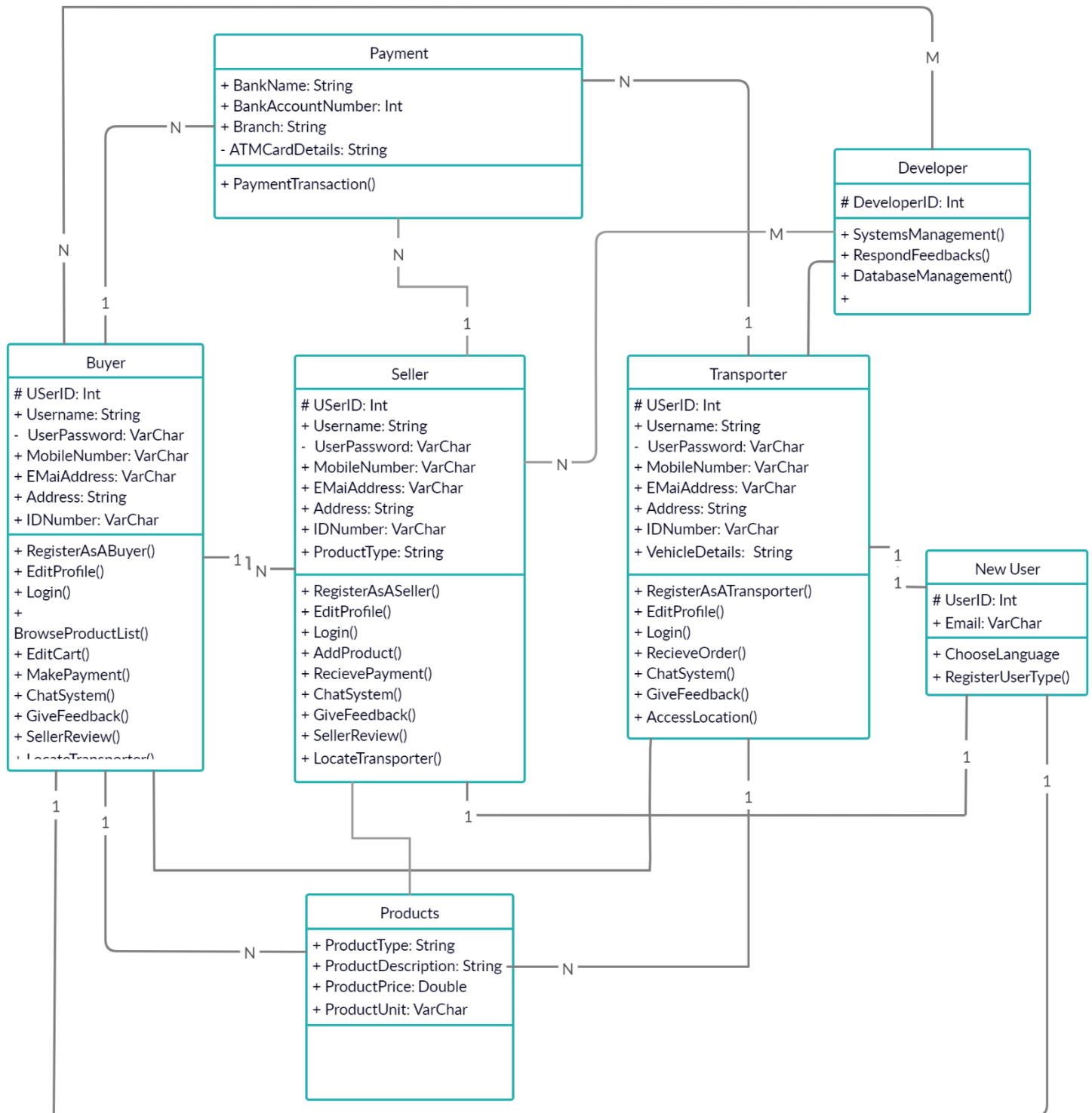API **-** Application Program Interface

SRS - Software Requirement Specification
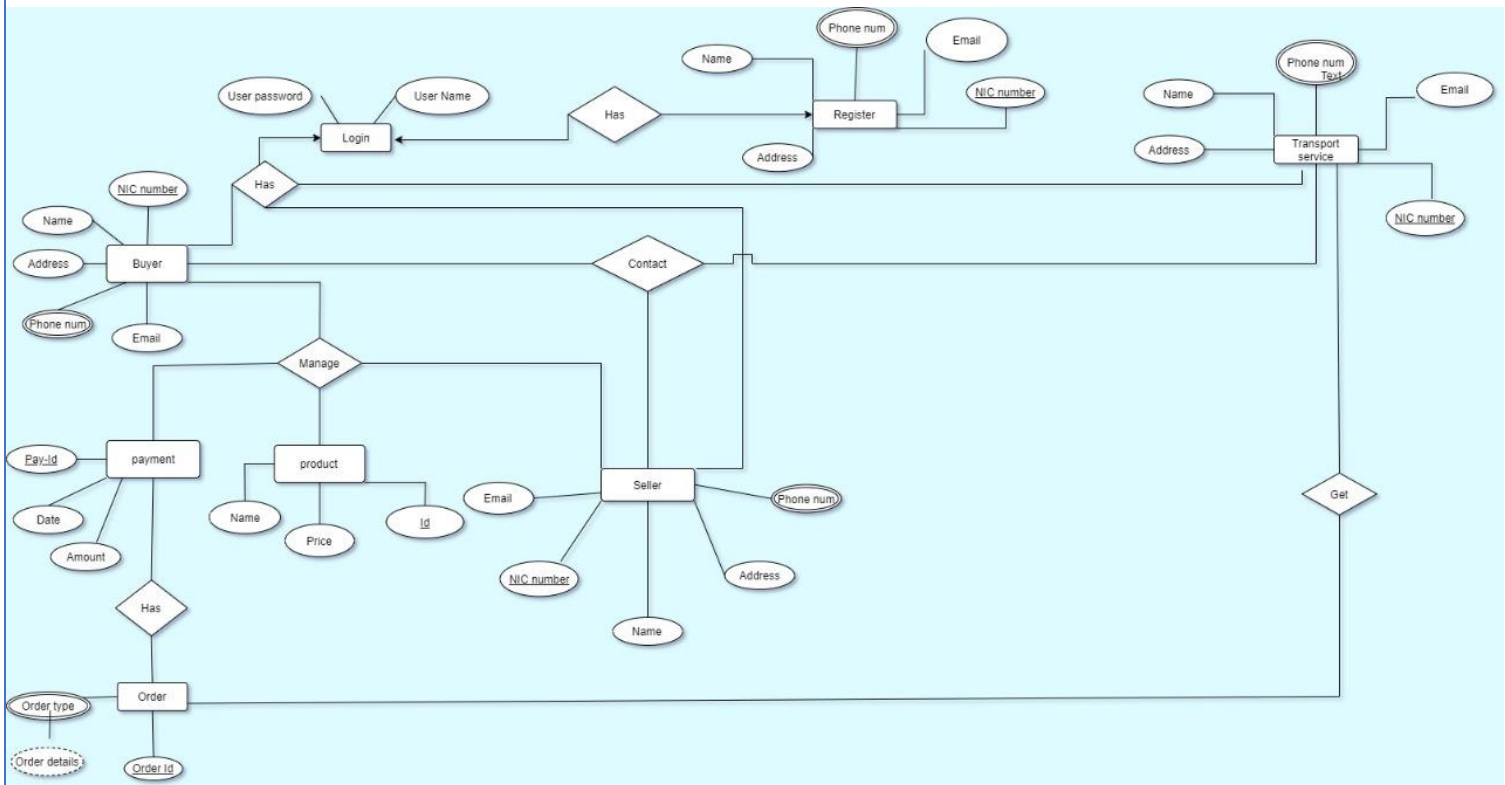
# 10. Appendix B: Diagrams
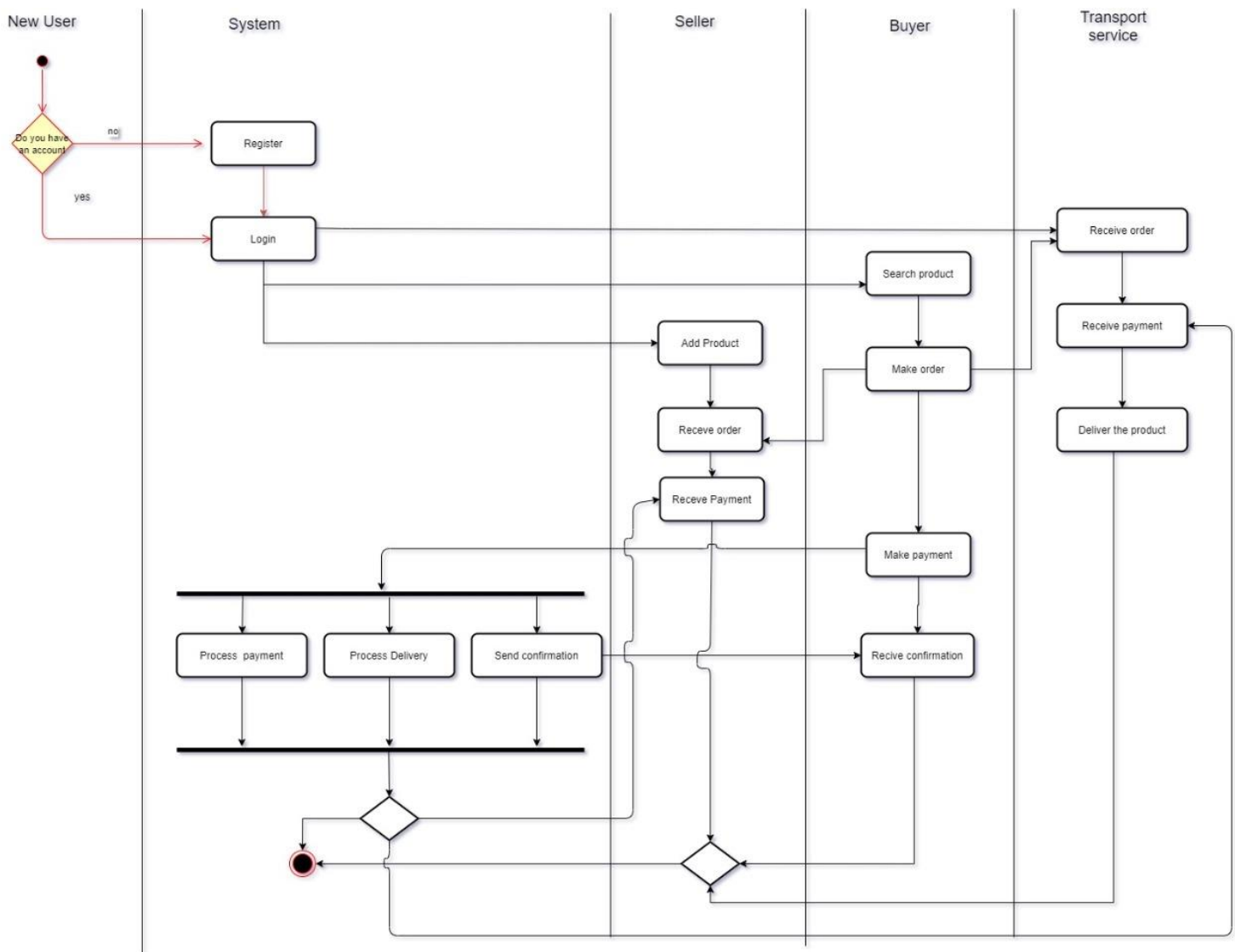
## 10.1 Use Case Diagram

## 10.2 Class Diagram

## 10.3 ER Diagram

## 10.4 Activity Diagram

## 10.5 Sequence Diagram
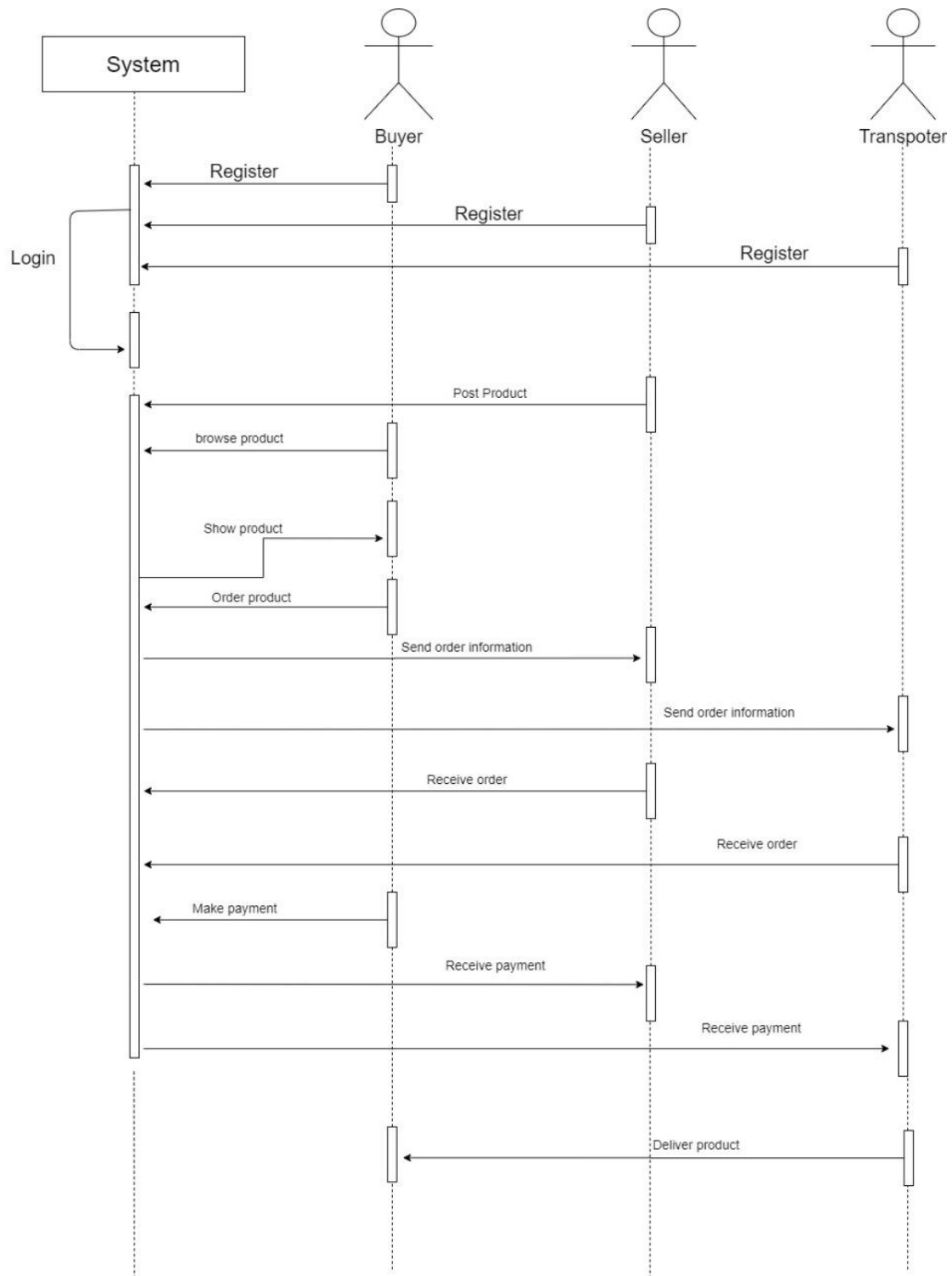
## 10.6 System Flow Chart
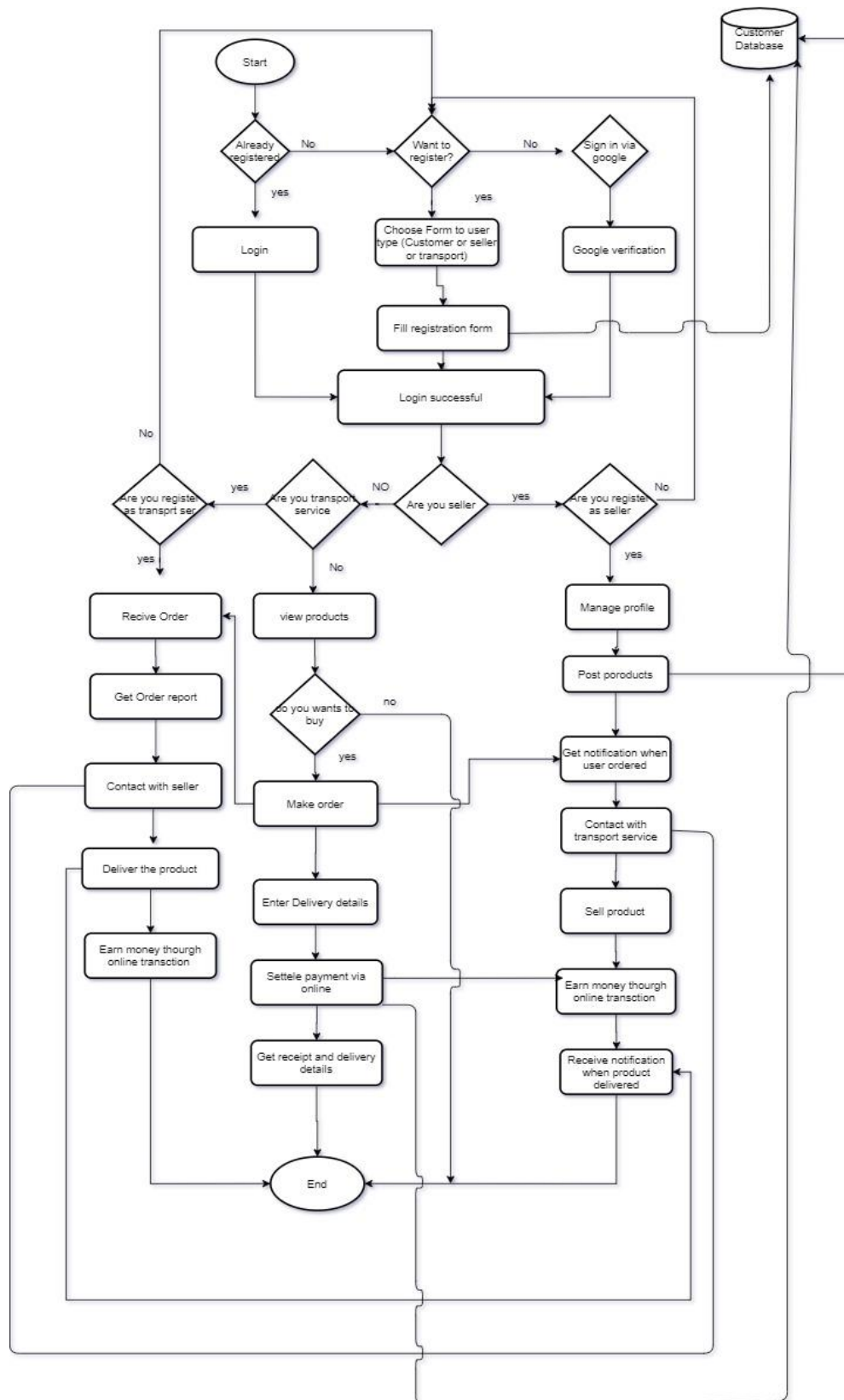
## 10.7 User Interface Designs

**WELCOME**

**Register**

**Agri Market**

**Agri Market**

### Enter Your Details

| | |
|---|---|
| First Name | |
| First Name | |
| Gender | |
| Address Line 1 | |
| Address Line 1 | |
| E - mail | |
| Password | |
| Retype Password | |

### Choose a Language

**Sinhala**

**Tamil**

**English**

**Register**

**Login**

**Create Account**

**Login**

### Enter Your Details

| | |
|---|---|
| E-Mail | |
| Password | |

- This application contains all the languages.

- So, there will be no difficulty in usage in all the island in different cultures.

- Everyone has to create a user account in order to use the application by entering basic details.

☐ Remember me

**Login**

**Market**

Cucumber 100 Pcs Japanese mini cucumber vegetable for home NO-GMO ...

**LKR 110.63**
LKR 290.17  -62%
**Free Delivery**
5.0 ★ 452 Sold

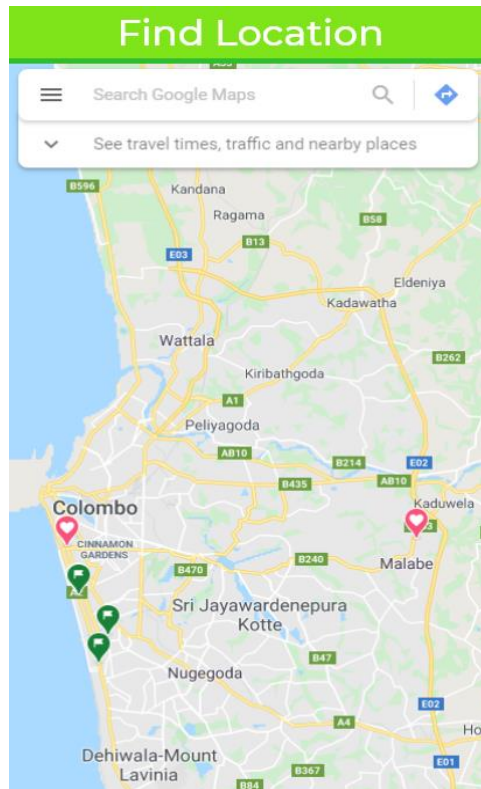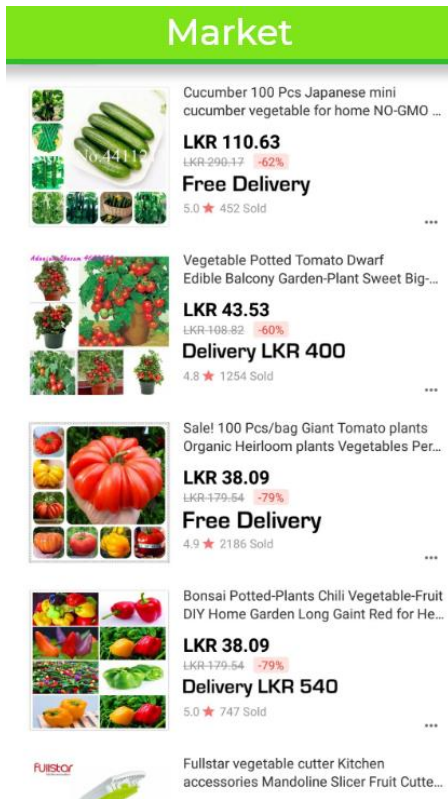Vegetable Potted Tomato Dwarf Edible Balcony Garden-Plant Sweet Big-...

**LKR 43.53**
LKR 108.82  -60%
**Delivery LKR 400**
4.8 ★ 1254 Sold

Sale! 100 Pcs/bag Giant Tomato plants Organic Heirloom plants Vegetables Per...

**LKR 38.09**
LKR 179.54  -79%
**Free Delivery**
4.9 ★ 2186 Sold

Bonsai Potted-Plants Chili Vegetable-Fruit DIY Home Garden Long Gaint Red for He...

**LKR 38.09**
LKR 179.54  -79%
**Delivery LKR 540**
5.0 ★ 747 Sold

Fullstar vegetable cutter Kitchen accessories Mandoline Slicer Fruit Cutte...

**Find Location**

Search Google Maps

See travel times, traffic and nearby places

**Agri Guidance**

තවාන් පාත්ති සැකසීම

මේ සඳහා තෝරා ගත යුත්තේ තරමක සෙවනක් ඇති ස්ථානයකි. වැලි, මඩුවට පස්, කාබනික පොහොර, සහ දහයියා අනුරු 2:2:2:1 අනුපාතයට මිශ්‍රකර කර සෙ.මී. 10 ක පමණ උස මීටර් 01 පළල තවාන් පාත්ති සකස් කර ගන්න.

මෙම පාත්ති වලට වර්ග මීටරයකට සාන්ද්‍රනය සුපර් පොස්පේට් (TSP) ග්‍රෑම් 450 – 500 ක් පමණ මිශ්‍ර කළ යුතුය.මෙසේ සාදගත් පාත්ති වල සෙන්ටි මීටර් 5 – 6 පමණ ගැඹුරට සෙන්ටි මීටර් 10 පරතරයට කුඩා කාණු සාද ගත යුතුය.

කැබලි තවාන් කිරීම

ප්‍රතිකාර කර ගත් අන්නාසි කඳන් කැබලි කැපුම් මුහුණත යටට සිටින සේ තිරස් ලෙස තැන්පත් කර හොඳින් වසන්න. ඉත්පසු ජල සම්පාදනය කර තරමක සෙවනක් යටතේ පවත්වා ගැනීම අවශ්‍ය වේ.

Agri Market

- In the market UI, users can scroll and browse the products using the list. All the essential details like price, delivery fees, seller are displayed in the product description.
- In the Delivery location find UI, users can take a look at map position of transport operator
- In the consultancy service, users can scroll and browse more detailed guidance service to educate themselves about modern trends. This is a very easy UI.

## My Account

App Settings     Edit Profile Details

( Profile Picture )     User Name

### Access Roles

#### Transporter
Access

#### Seller
Access

#### Buyer
Access

## Access Seller Account

### Enter Your Details

First Name
Last Name
Gender
Address Line 1
Address Line 2
ID Number
Password
Seller Type

Access

## Access Buyer Account

### Enter Your Details

First Name
Last Name
Gender
Address Line 1
Address Line 2
ID Number
Password

☐ Agree Terms and Conditions

Access

## Access Transporter Account

### Enter Your Details

First Name
Last Name
Gender
Address Line 1
Address Line 2
ID Number
Password
Vehicle Capacity
Vehicle ID

Access

After Account creation, users can access their desired roles with functions

Product add screen for sellers

## Add Product

### Add Product to Sale

Description

Unit Price

Unit

Stocks left

Category

Expire date

Upload Picture  +

☐ Agree Terms and Conditions

## Add

## My Cart

| Product Picture | Product Description |
|---|---|
| | Delivery Fees Free/Paid |
| | Units / Price |

| Product Picture | Product Description |
|---|---|
| | Delivery Fees Free/Paid |
| | Units / Price |

| Product Picture | Product Description |
|---|---|
| | Delivery Fees Free/Paid |
| | Units / Price |

Total                Rs $$$$.$$

## Proceed To Checkout

## Go Back

Buyers shopping cart where they can add products to checkout Cart

## Chat System

| | |
|---|---|
| Profile Picture | **User Name** <br> New Massage |
| Profile Picture | **User Name** <br> New Massage |
| Profile Picture | **User Name** <br> New Massage |

**4.9**/5

★★★★★

**Rate Now** ☐ Stars

| | | |
|---|---|---|
| ★★★★★ | | 10 |
| ★★★★☆ | | 1 |
| ★★★☆☆ | | 0 |
| ★★☆☆☆ | | 0 |
| ★☆☆☆☆ | | 2 |
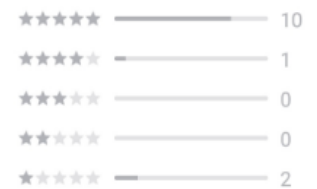
User Review System

- Adding Payment Options

## Payment Options

Select Payment Method

**Bank Payment**

**Card Payment**

## Add Bank Account

### Enter Your Details

Name

Account Number

Bank

Branch

Address

Password

**Add**

## Add Payment Card

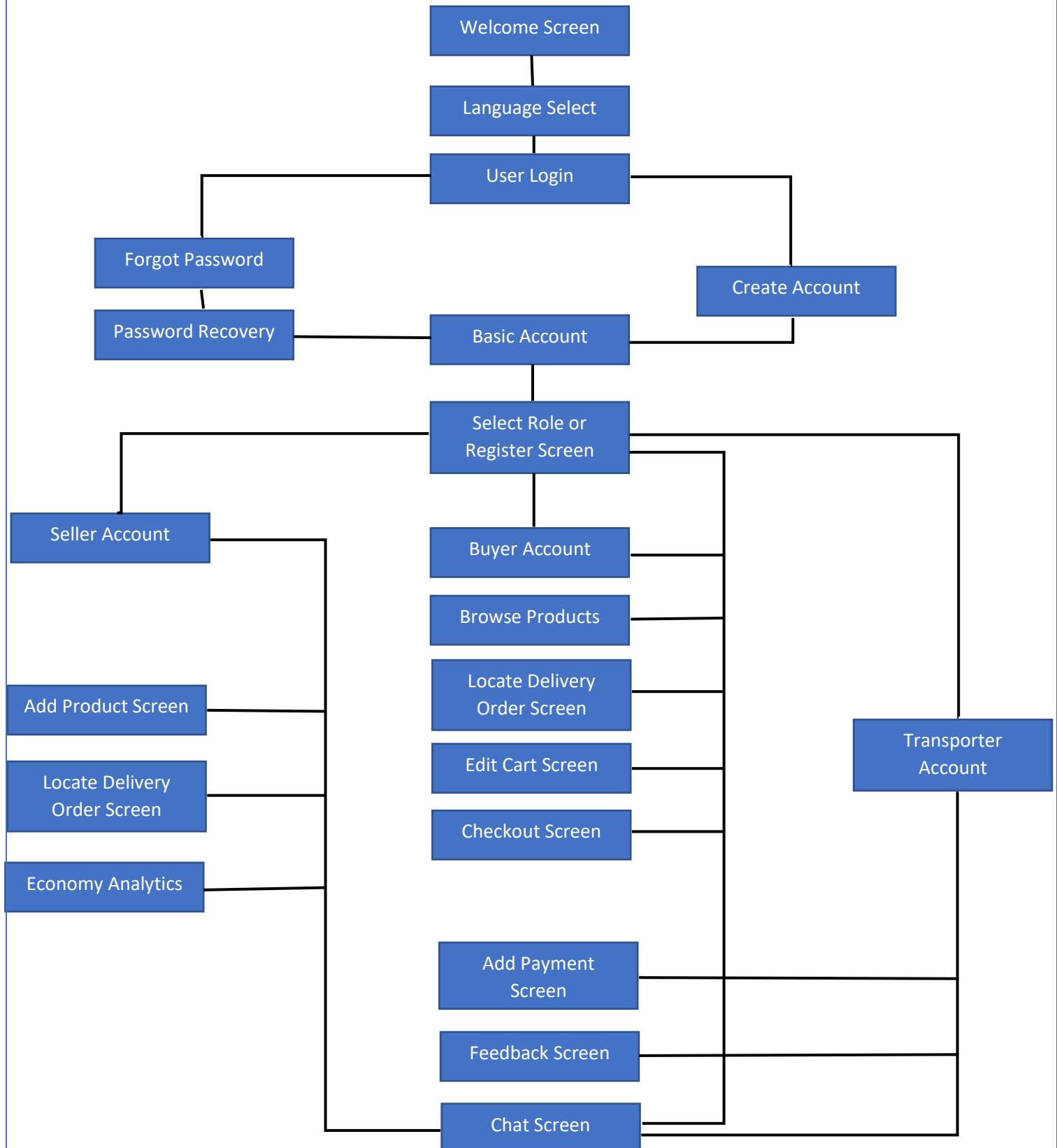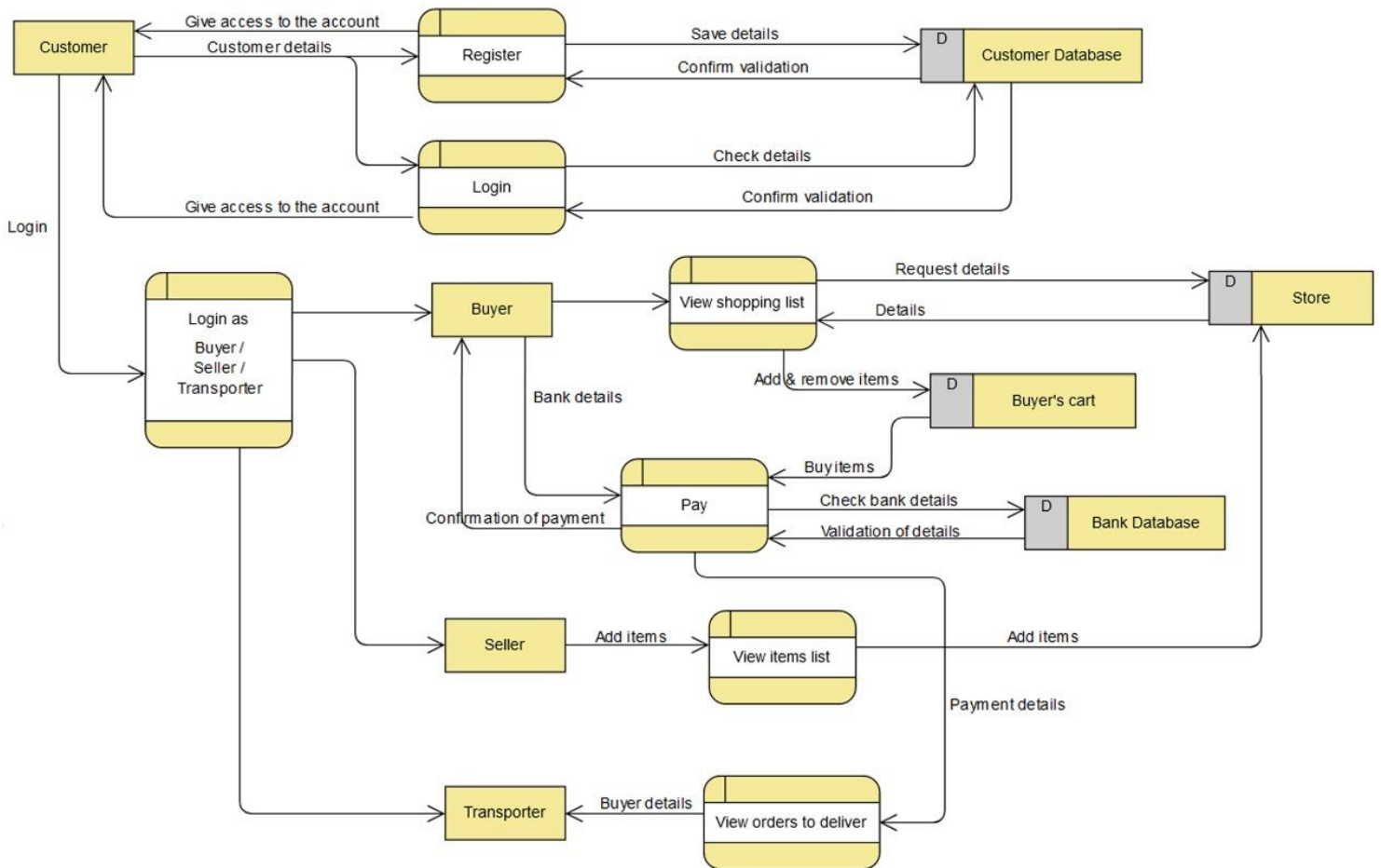### Enter Your Details

Name

Card Code

CSC

Expire Date

Address

Password

**Add**

## 10.8 User Interface Flow Diagram

## 10.9 Data Flow Diagram

## 11. Appendix C: Individual Performance

| Reg No | Name | Contribution |
|--------|------|-------------|
| 905 | **S.S. Arunjith** | • Appendix B: Diagrams<br>• Chapter 5 – Analysis and Design<br>• Chapter 2 – Solutions in General<br>• Activity Diagram<br>• Sequence Diagram<br>• Class Diagram<br>• Use Case Diagram<br>• ER Diagram<br>• System Flow Chart |
| 1038 | **H.M.N.I. Nimeshana** | • Abstract<br>• Chapter 2 – Solutions in General<br>• Chapter 5 – Analysis and Design<br>• User Interfaces<br>• UI Flow Diagram<br>• Use Case Diagram<br>• Class Diagram |
| 1081 | **B.M.H.T. Balasooriya** | • Chapter 1 – Introduction<br>• Chapter 3 – Similar Approaches<br>• Chapter 5 – Analysis and Design<br>• Class Diagram<br>• Sequence Diagram<br>• System Flow Chart |
| 1074 | **H.E.M.W.I.G.D.G. Ekanayake** | • Chapter 4 – Technologies Adopted<br>• Chapter 2 – Solutions in General<br>• User Interfaces<br>• Data Flow Diagram<br>• Class Diagram<br>• System Flow Chart |