BSCS FINAL PROJECT

<E-AGRICULTURE>

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Presented by:

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ABSTRACT

E Agriculture is totally android bases application where the user means our farmer knows all details about their land by just sign up and login to our application use can also see some of feature of application without sign up but totally access is only given after the sign up. A very use full feature of E commerce is it is use nation wise.it is platform for our farmers just download and install the application and know all details regarding to the fertile and better fertility of the land. For the better system we are provided a chat system for the customer in this system the farmer or customer having some queries related to the seeds and lands which is not provided in the application and they wanted to explore and ask to us for better approach of searching .and we holds all the information regarding to a land if its condition is not good but after our instruction which types of changes occur in it. As being a starting market our customersare our near farmers. after some time when we sees that our idea is growing better so we will also added lots of more modules for a bigger application and make it our business market better way. At any time when you are connected to a internet you can download and install and ask from us from related queries about the information which are not provided in the application.

This is mainly focused on the those farmers who have the android phones and know about somehow about internet even if they don't have idea about the internet and their son and daughter are well educated they can also help their further in this regard.

DEDICATION

This Project is dedicated to our Parents who encouraged us and support us in every field of life. Their efforts to polish us and make us a good person are valuable. We also like to special thanks our Institution and Teachers who encouraged us to show our hidden talent. We were not able to do our work without our Parents, Teachers and Institution advice and support.

Acknowledgement

We have taken efforts in this project. However, it was not possible without team work. By the Grace of Allah Almighty, we have done our project. We would like to express our special thanks to our Parents and University department, who encouraged us and prayed for us. The moral and financial support of our parents for higher studies has encouraged us. We would like to express our deepest gratitude to Prof. Hammad for their patient, guidance, enthusiastic encouragement and useful critiques for this project work. Valuable support and devise of Prof. Hammad has helped us a lot. We are able to complete our report just because of our teacher and the strong unity between our group Members.

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Revision History:

Name	Date	Reason For Changes	Version
M ALEEM	19-Jan-22	First Draft of the document	1.0
M ALEEM	19-Apr-22	Second Draft of the document	2.0
M ALEEM	22-May-22	Third Draft of the document	3.0

Chapter 1

INTRODUCTION

1.1 Introduction

Introducing an E-Agriculture application which can help the farmer to know about their lands properly and also know about what they actually grow as well as Previous. This application programs towards the farmer is totally based on interacting with the farmer directly and being aware then about all necessary needs of land to grow more and more vegetables and crops in better way and how they increase their growth rate. Such kind of rare information on the internet is not avail properly if somewhere is avail but the majority of the farmers are not educated in Pakistan .So by seeing all of these Problems we making a application in which only the use can sign up and then login just by giving their names and contact info etc. In the coming time out some of the educated farmers will be able to do some kind of advanced farming with the help of knowledge given to the newly farmers with the help of application.

Our application has the feature of login sign up and weather forecast and all instructions regarding the chemicals and how to keep away such kinds of pesticides from our crops.

1.2 Product (Problem Statement):

At any time when you are connected to the internet you can download and install and ask from us related queries about the information which is not provided in the application. This is mainly focused on the those farmers who have the android phones and know about the internet even if they don't have idea about the internet and their son and daughter are well educated they can also help their further in this regard. Analysis will be done when some of the farmers can use our application for their needs of growing better and their response tells us is it our idea going well or not but majority of chances is it will be good for the farmer and because our farmer don't have idea about the fertility and which type of chemicals and seeds they needs. And for betterment of our huge project we done a survey and gathered almost 20 farmers and ask about our idea in all of twenty eighteen are agreed and hope for our better project for their guidance .project main focus is that make an application based on fire based which contains all related data of fertile and its better growth rate and make our farmer more focused towards their 1fertile.at the end we have to say these kind of information may be given by our senior farmer but properly and clearly it is a rare chance because calculations and idea have a huge difference.

1.3 Background

E-agriculture is totally android based application where the user means our farmer knows all details about their land by just sign up and login to our application user can also see some of features of application without sign up but totally access is only given after the sign up. A very use full feature of E commerce is it is use nation wise. it is platform for our farmers just download and install the application and know all details regarding to the fertile and better fertility of the land. For the better system we are provided a chat system for the customer in this system the farmer or customer having some queries related to the seeds and lands which is not provided in the application and they wanted to explore and ask to us for better approach of searching .and we holds all the information regarding to a land if its condition is not good but after our instruction which types of changes occur in it. As a starting market, our customers are our nearby farmers. After some time, when we see that our idea is growing better, we will also add lots of more modules for a bigger application and make our business market better.

Some Proposed modules are listed below:

1. Better interaction with the customer with providing accurate information.

2. Online E-agriculture system is given to the user in case of our nationwide.

3. Selective type of lands and their fertility which reduces or search for accurate and better information.

1.4 Objective(s)/Aim(s)/Target(s)

- Provided all information to the user after login.
- Complete line of information focusing on new farmer mentality.
- Providing selective land information according to user needs.
- Registration procedure to the user.
- Complete Information regarding any kind of fertilizer.
- Single platform for various lands.

1.5 Scope:

We have made a plan to extend our project nationwide. As in starting, our target market or our target customers are only area wise because we have all information area wise regarding the lands. After the successful implementation along with profitable results as well as revenue streams. We have also planned to make changes in the application time wise by adding different modules in the application. This platform

is for those who don't have the idea to increase the growth rate of the growing of crops in their lands and they wanted to earn more in a year or months so this application helps a lot.

1.6 Business Goal:

The main goal of agriculture app development is to optimize farming processes. Since most features for smart farming are already available on desktop computers and laptops, extending them to mobile devices is the next logical step, allowing farmers to use these technologies wherever they are.

Though there are already many digital products in the smart farming market, they don't nearly meet the demand, which continues to grow everywhere from the US to Asia and Africa.

1.7 Challenges:

The major challenges in our projects are as follows:

Gathering the all information about the lands, taking their samples and have a research on it that which type of fertilizers and crops and sufficient for that type of land and to know that that which type of amount of water it required. Then the second challenge is to gather all the information of all types of fertilizers and which type of fertilizer is for which type of crop and land. The also one major challenge is to raise awareness in farmers about the new technology and tools that will help them in their production. So we can get more profit with less land.

1.7 Learning Outcomes:

The learning outcomes of our project are following:

- To use technology in agriculture activities.
- To access information easily in agriculture production.
- To take measures on occupational health and safety.
- To raise the awareness to the farmers about the new technology.
- To describe human-environment-agriculture relations and problems.
- To have knowledge about all types of land and fertilizers.

1.8 Nature of End Product:

E-Agriculture is an application for farmers. Farmers can easily sign in the application and they can easily use it. Users can see all the necessary information when they login to the app. Users can select the type of

land which they require. Then application will show him which type of crops and which type of fertilizer will be more suitable for his land through which he can get more production from his land. Users also check the fertilizers section in which the user can see which type of fertilizer he will use for his land and which type of fertilizer will be more suitable for his crops. Users can also see the weather forecast on the main page of the application. The application will also tell the user how much water the land requires. So the user can get more profit from the minimum land.

1.9 Document Conventions

The conventions used in this document are as follows:

Formatted in: Microsoft Word 2010

Font Style: Times New Roman

Sub Headings: 14-Bold

Main Heading: 16-Bold

Writing: 12 Normal

Bullets: Used For Points

1.10 Miscellaneous:

It is noted that this APP is totally based on Agriculture, which is further made on the React Native Framework. This Framework is widely used to develop applications for Android, Android TV, iOS, macOS, tvOS, Web, and Windows by enabling developers to use the React framework along with native platform capabilities.

Chapter 2

Overall Description

2.1 Product Perspective:

Our goal is to inform the farmers about their crops on which land they planted and what fertilizer to use and what medicine to use to benefit them. And in this, we will also tell our farmers what time the crop is planted which will benefit them. And we will also tell which medicines to use in which disease to benefit our crops.

There are many uneducated farmers in Pakistan who do not know how to deal with their crops, which pesticides and which fertilizer to benefit from, we will also tell them all that they benefit from and their crop is good.

This will benefit our farmers, especially our farmers who are not educated; they can learn a lot from it and can do good farming.

Main features of the product are as follows:

- Avoid wasting time and effort.
- Security of data is high.
- Searching is easy.
- More reliable.
- User friendly.
- High accuracy
- Design flexibility
- Easy availability
- Awareness for Farmers.
- Use of recommended fertilizers.
- Also for the awareness of the up-coming generation.
- Enhance the production

2.2 Product Features:

- User friendly.
- Easy availability Awareness for Farmers.

- Use of recommended fertilizers.
- Also for the awareness of the up-coming generation.
- Enhance the production.
- Easy fast retrieval of information.
- Contains better storage capacity.
- Accuracy in work.
- Access of any information individually.
- Product and component based. Multi-level priorities and severities.

2.3 Functional Description:

E-agriculture can help farmers in every aspect of their farming business from planning and harvesting crops to preventing disease outbreaks.

As a result farmers are able to produce better crops and earn more revenue. We looked at a few ways in which agriculture can utilize farm management systems to enhance planning, speed decisions, and most importantly, improve outcomes. After becoming familiar with agricultural technology there is something to know about it. In E Agriculture we provide the facility of sign-in and provide all information after sign-in.

2.4 Administrator:

Administrator Main functions of administrator are as follows:

- Add and remove Information about Crops, Pesticides and Fertilizers.
- Troubleshoot, and resolve any reported problems.
- Provide application performance tuning.
- Can view user / customer account details.
- Can manage all the activities of the APP.
- Remove Or Delete user Account Manually

2.5 USER:

Main functions of the customer are as follows:

- Signup
- Sign In
- View Services

- Free Access To Service Information.

2.6 User Classes and Characteristics

Users and their classes and characteristics are as follows:

- It will tell people the right way at which time to give water to the crops.
- Provide information about Fertilizers.
- Provide information about pesticides.
- Increase work safety. Enhance crop productivity.
- It will provide information about which pesticide used in which crop and which fertilizer is best for the crops.
- It will also provide information to our farmers on how much water to give to the crops and will also tell the farmer about weather.

2.7 Administrator:

It is administrating the whole system with the needed knowledge. Administrator is responsible for overall modules of the proposed system. It has to rectify and manage the problems that could occur.

2.8 End User:

Should be aware of or capable of using the APP, internet or searching on an internet Friendly interface, user guidance is mandatory to let the user be more convenient with the proposed system.

2.9 Design and Implementation Constraints

1. Regulatory policies- As per Govt. Directives. Information and Data will be stored at database which would be accessible by the Admin.
2. Dependency on connectivity, bandwidth constraints in different regions across the country for Web/Mobile based interface.
3. Identification of the User who will enter the data in the different role in the process flow of the system.
4. The Users will be accessing the software application using various connectivity scenarios.
5. The application will support only Unicode enabled fonts for local language representation.
6. There is a requirement to develop an interface in regional languages for input and output interfaces. The application should be accessible to any mobile.

7. Authorized details will be required for access by the user.

2.10 Assumptions and Dependencies:

- It is assumed that all the Users can access the system through the internet.
- The administrative and govt. officials can also access the system through the internet.
- The farmers and Users can receive information through mobile.
- Common features including Login, Logout, Forgot password, Change Password, User management features etc.
- which will be used across all software applications as part of the Mission Mode Project will be developed commonly and uniformly.
- It assumes that SMS validity for 24 hour and SMS gateway is available.
- The Mail server is up and running.

Chapter 3

System Requirements

3.1 Functional Requirements

A System Requirement Specification (SRS) is an organization's understanding of a customer's or potential client's system needs and dependencies at a given moment in time before any actual design or development work is done. The data acquired during the analysis is turned into a paper that lays out a set of needs. It provides a summary of the services that the system should deliver as well as the constraints that the system should function under. SRS is a document that fully specifies what the proposed program should do without specifying how it will do it. A two-way insurance policy guarantees that both the client and the organization are aware of each other's requirements at any given moment.

1. It will provide information to our information about which pesticide used in which crop and which fertilizer is best for the crops
2. It will also provide information to our farmers on how much water to give to the crops. It will also tell the farmer about the weather.
3. IT also recommends which type of fertilizers should be used for more production or which type of pesticides should be used for production.
4. In this farmer can gain total control on his land, livestock by investing in an E agriculture.
5. E agriculture offers various benefits to its users. The main aim of E Agriculture is to help provide farmers with total control of agribusiness.
6. E Agriculture provides its users a comprehensive solution for managing agribusiness.

3.2 Use case Diagram admin:

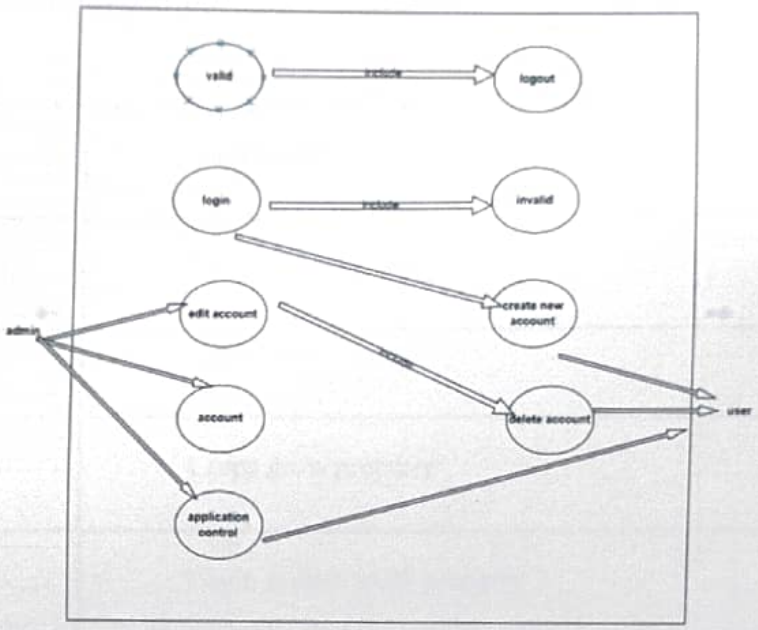
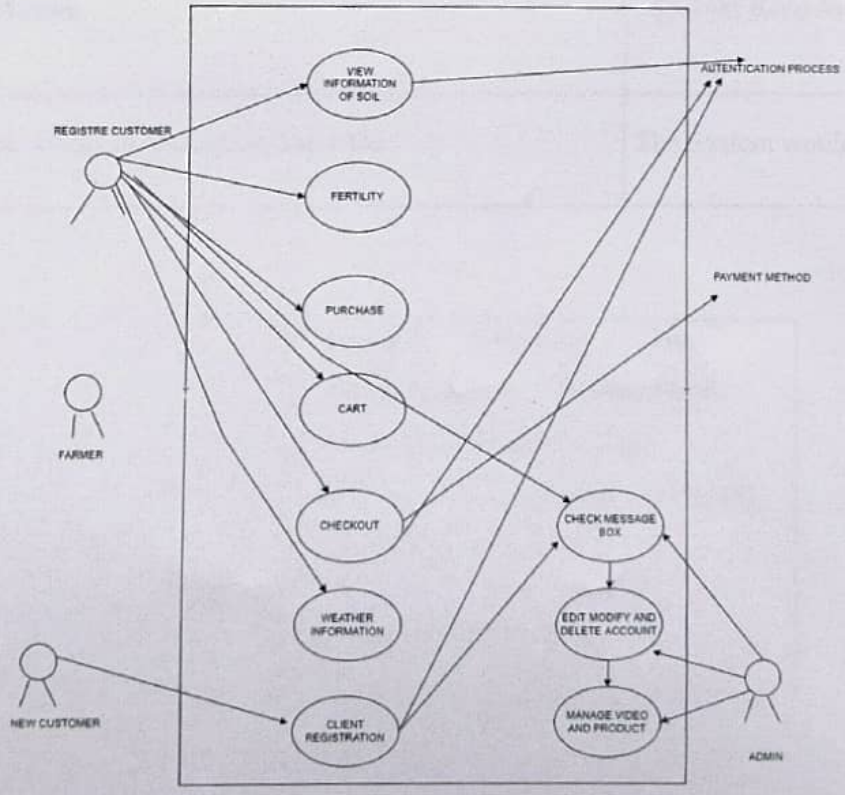


Figure 1 Use Case Diagram

Use-Case 2



3.3 Admin-User login Authorization:

Identifier	Farmer/citizen
Purpose	For the help of farmers
Priority	High
Pre-conditions	Crops grow properly
Post-conditions	Login system work properly

Typical Course of Action

	Actor Action	**System Response**
	The actor clicks on the option View the	The System would show the report

1	Weather	rain fall deficiency. The following details: District Name Block Name Rainfall (MM) Rain on this week last year(MM) Percentage of week to last corr. week last year

2	Soil Testing	The system would show the report of soil
3	Market rates	Compare the market rates with this
Alternate Course of Action		
S#	**Actor Action**	**System Response**
1		Application work properly
2	Login issue	Manage shop

Table 1: UC-1

Name of Use-Case 2 (and so on)

A use case is a set of interactions between external entities and the system under consideration that has a specific goal. Actors, such as users and systems for our application, are external entities that interact with the system. The use case diagram can graphically represent a set of use cases that describe the system's complete functionality at a particular level of detail.

A use case diagram can summarize the details of your system's users (also known as actors) and their interactions with the system. To build one, you'll use a set of specialized symbols and connectors. An effective use case diagram can help your team discuss and represent

A use case diagram doesn't go into a lot of detail—for example, don't expect it to model the order in which steps are performed. Instead, a proper use case diagram depicts a high-level overview of the relationship between use cases, actors, and systems. Experts recommend that use case diagrams be used to supplement a more descriptive textual use case.

3.4 Requirements Analysis and Modeling:

The process of determining the best solution to a problem is known as analysis. The process of learning about existing problems, defining objects and requirements, and evaluating solutions is known as system analysis. It is a

way of thinking about an organization and the problems it faces, as well as a set of technologies that aid in the resolution of these issues. Feasibility studies are important in system analysis because they provide a target for design and development.

3.5 Nonfunctional Requirements:

Performance Requirements

The introduction to the software product under consideration has been presented in this section of the thesis. It explains the fundamental characteristics and factors that influence the software product or system model, as well as its requirements.

Safety Requirements

In this application we specify those requirements that are concerned with possible loss, damage, or harm that could result from the use of the product. We define the safeguards or actions that must be taken, as well as actions that must be prevented. Refer to any external policies or regulations that state safety issues that affect the product's design or use. We provide a proper login system to users. In which users have their own account password.

Security Requirements

The main security risk is unauthorized persons accessing either farmer information. This is prevented by every user having a password-secured account with which they must login to use the application. No other user's data is visible to any other user using the application . Also no other person has permission to view or edit data in any way. The application will only be allowed to be used in secure networks, reducing the risk of insecurity in the application's functionality. We provide a secure login system to our farmers where they will have their own account password. Through this system farmers can easily access their account. Through this we will preserve all the information about farmers and their crops.

3.6 Additional Software Quality Attributes:

We develop an agriculture application for the help of farmers. Our goal is to inform the farmers about their crops on which land they planted and what fertilizer to use and what medicine to use to benefit them. And in this, we will also tell our farmers what time the crop is planted which will benefit them. And we will also tell which medicines to use in which disease to benefit our crops.

There are many uneducated farmers in Pakistan who do not know how to deal with their crops, which pesticides and which fertilizer to benefit from, we will also tell them all that they benefit from and their crop is good.

This will benefit our farmers, especially our farmers who are not educated, they can learn a lot from it and can do good farming.

In this project we focus on these main points.

1. Awareness for Farmers.
2. Use of recommended fertilizers.
3. Also for the awareness of the up-coming generation. Enhance the production.

E agriculture can help farmers in every aspect of their farming business from planning and harvesting crops to preventing disease outbreaks.

As a result farmers are able to produce better crops and earn more revenue. We looked at a few ways in which agriculture can utilize farm management systems to enhance planning ,speed decisions, and most importantly, improve outcomes. After becoming familiar with agricultural technology there is more to know about it. In E Agriculture we provide the facility of sign-in and provide all information after sign-in .

3.7 Other Requirements:

Hardware Requirement:

The application will be built using react native cross platform(N/ode.js).

1. Android min. requirement (kit kat 4.4)
2. IOS min requirement(8.1).

Software Requirement:

Operating system: Android and IOS operating system are a software interface of this application.

Chapter 4

Technical Architecture

4.1 Admin-user: use-case:

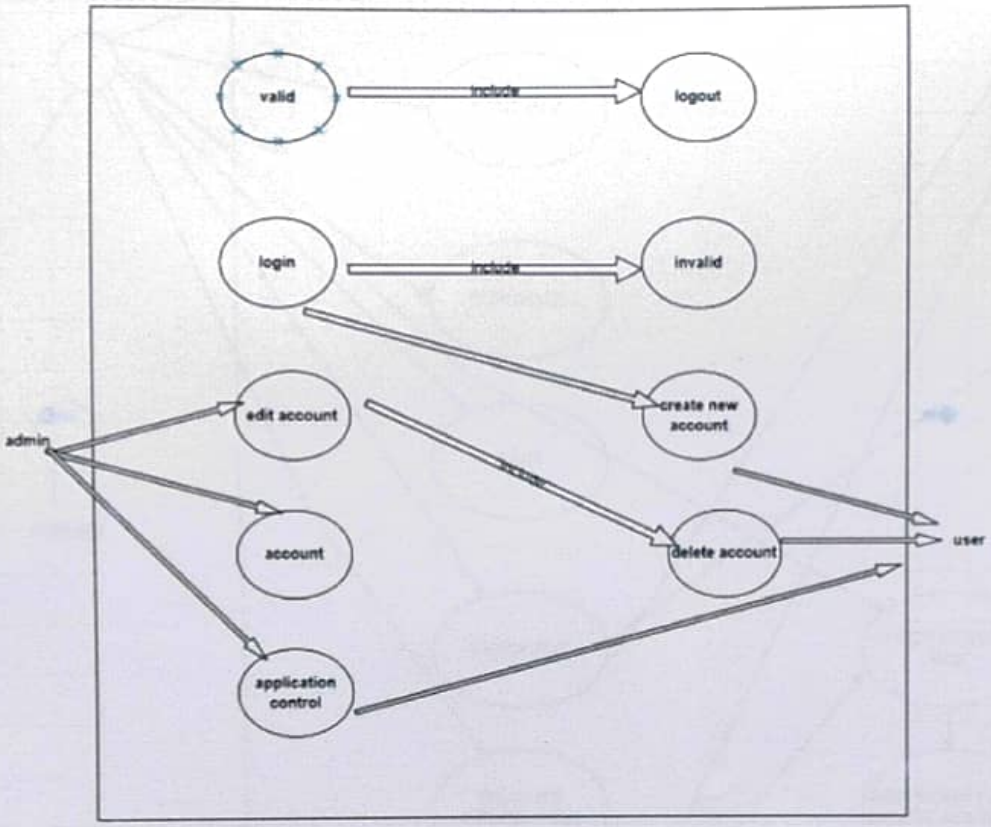


Figure 2: Admin Use Case

Complete Interaction: Use-case:

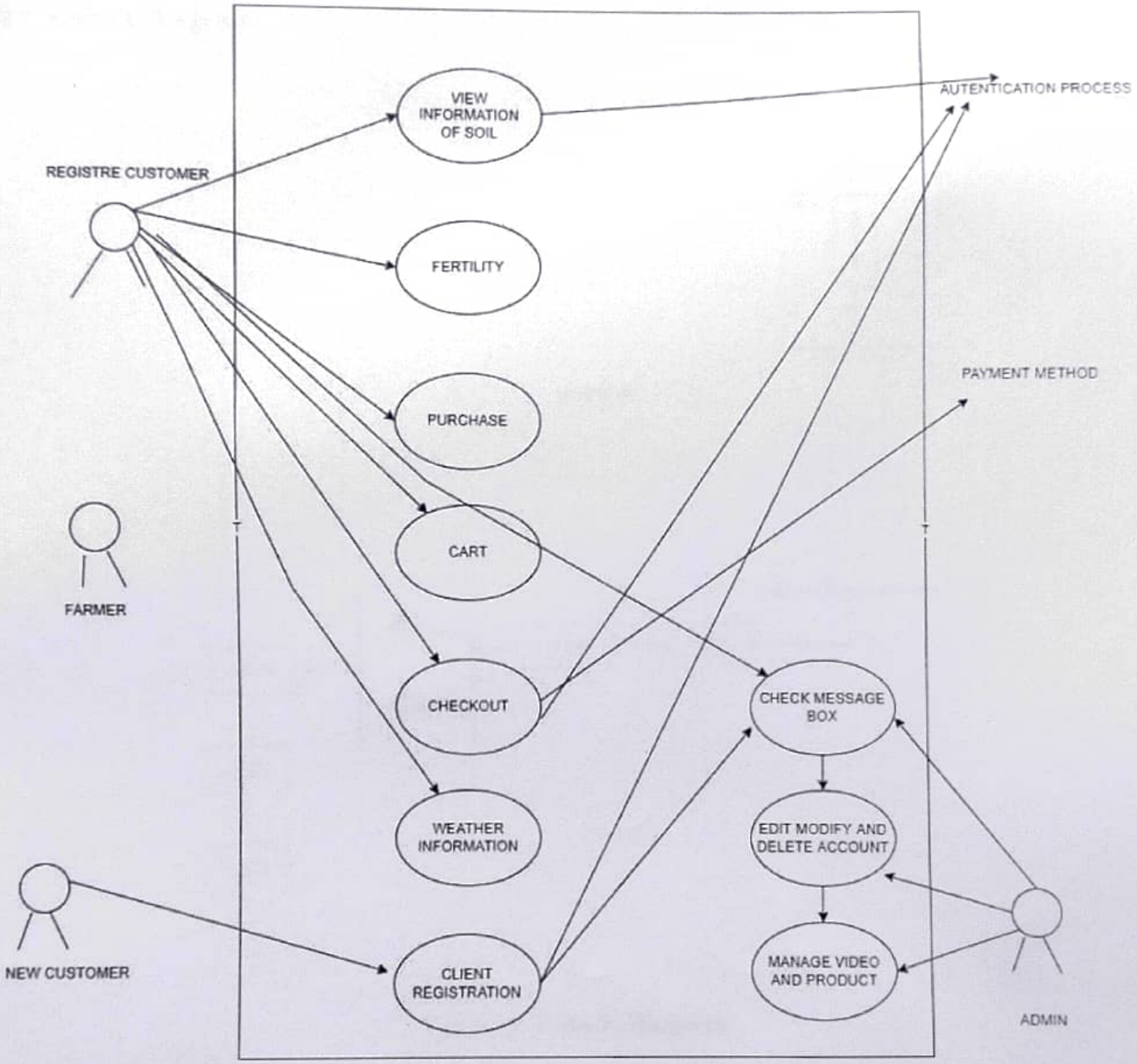


Figure 3: Overall App USE CASE

4.2 Activity Diagram:

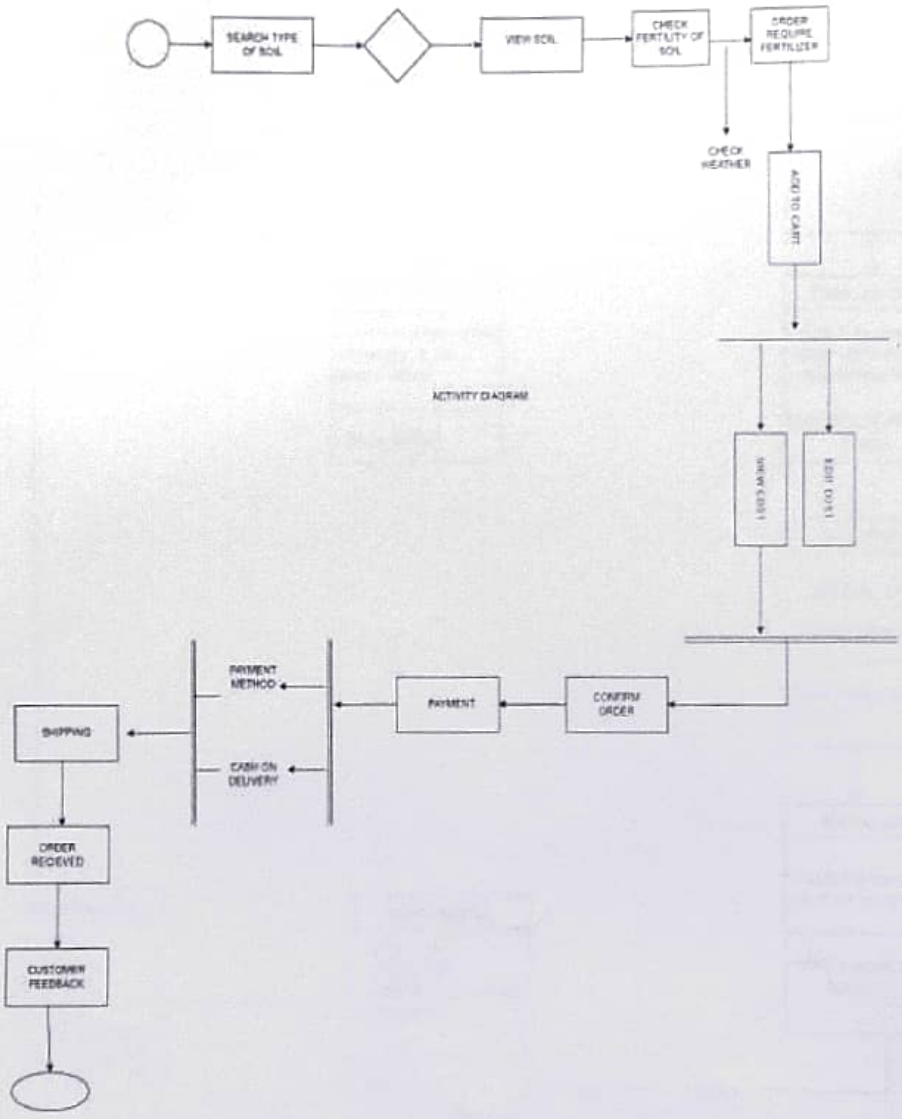


Figure 4: Activity Diagram

4.3 Class diagram:

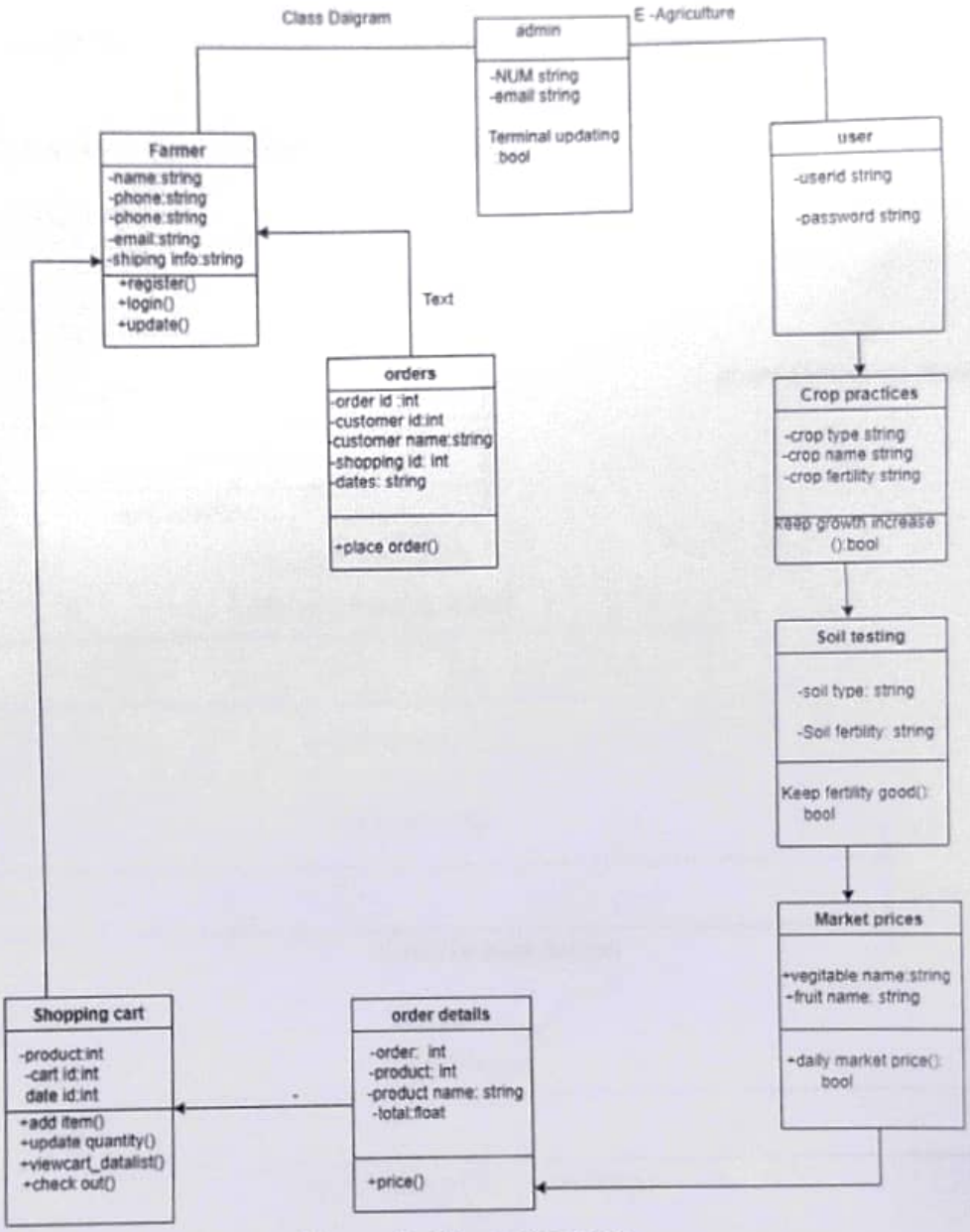


Figure 5: Class Diagram

4.4 Sequence Diagram 1:

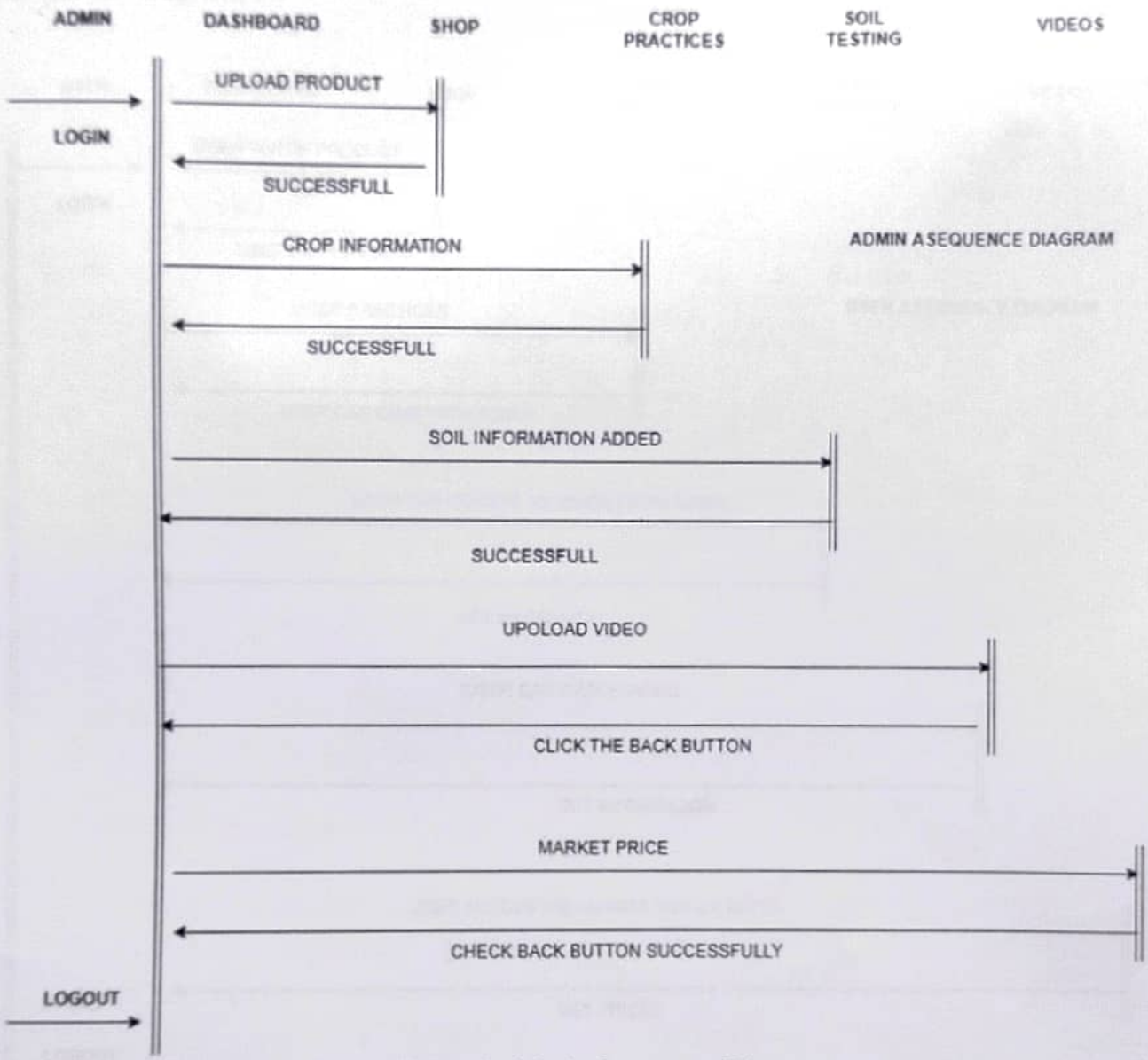


Figure 6: Admin Sequence Diagram

Sequence diagram 2:

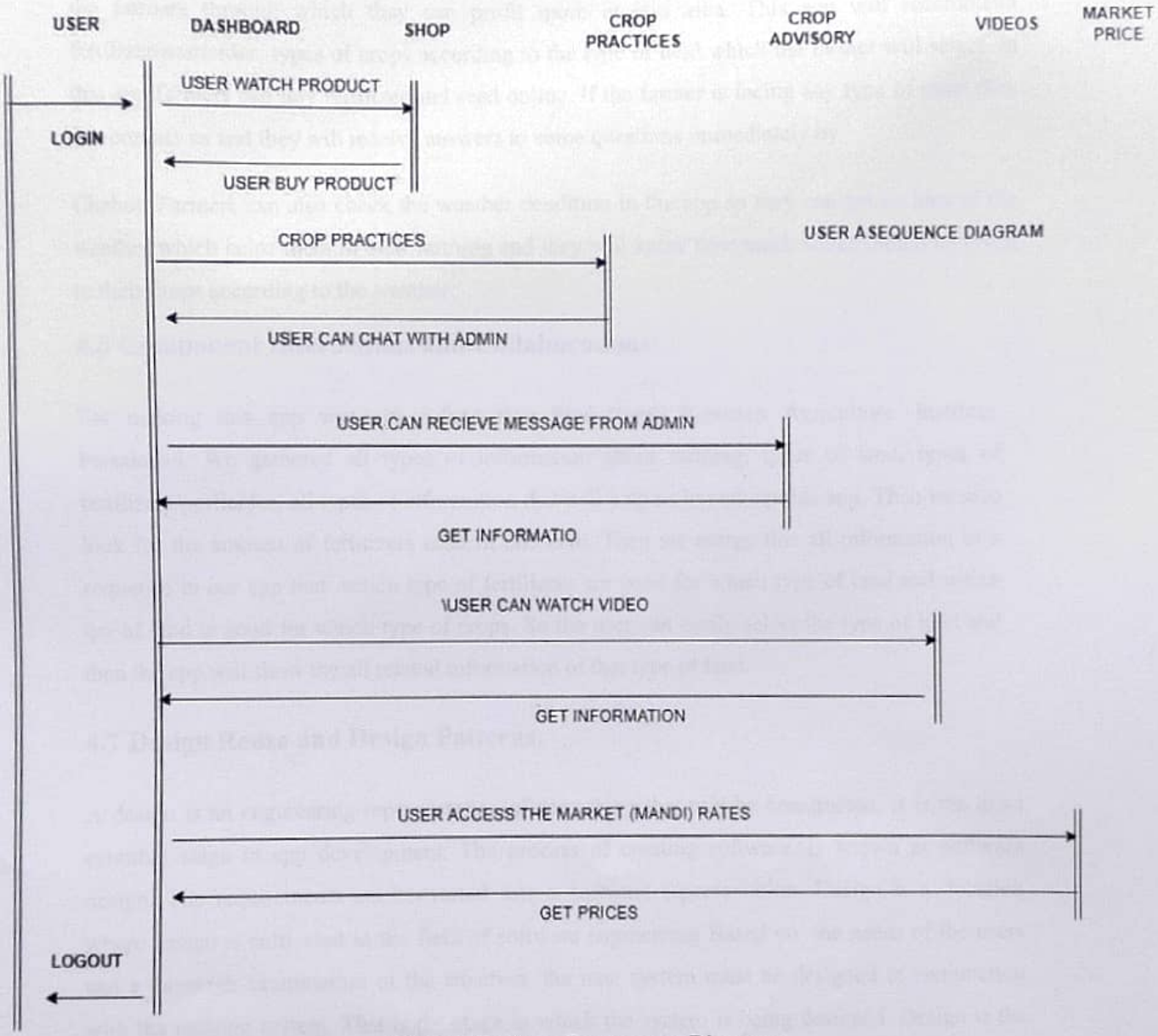


Figure 7: User Sequence Diagram

4.5 Application and Data Architecture:

E-Agriculture, In this App we basically work for the better growth of the crops and for helping the farmers through which they can profit more in less area. This app will recommend fertilizer/pesticides, types of crops according to the type of land which the farmer will select. In this app farmers can buy fertilizer and seed online. If the farmer is facing any type of issue they can contact us and they will receive answers to some questions immediately by

Chabot. Farmers can also check the weather condition in the app so they can get an idea of the weather which helps them in their farming and they will know how much water should be given to their crops according to the weather.

4.6 Component Interactions and Collaborations:

For making this app we took information from Ayub Research Agriculture Institute, Faisalabad. We gathered all types of information about farming, types of land, types of fertilizers/pesticides, all types of information that will help us in making this app. Then we also look for the amount of fertilizers used in one acre. Then we merge this all information in a sequence in our app that which type of fertilizers are good for which type of land and which tpe of land is good for which type of crops. So the user can easily select the type of land and then the app will show the all related information of that type of land.

4.7 Design Reuse and Design Patterns:

A design is an engineering representation of something that will be constructed. It is the most essential stage in app development. The process of creating software is known as software design. The requirements are converted into a software representation. Design is a location where design is cultivated in the field of software engineering Based on the needs of the users and a thorough examination of the situation, the new system must be designed in conjunction with the existing system. This is the stage in which the system is being designed. Design is the ideal method for accurately translating a customer's request into final software. Product. Design creates a model or representation, as well as information on the programmed data structure. The architecture, interface and components needed to put a system together. The logical conclusion:

Because of this, a system design was created. The system development technique is a way for completing a product or removing a problem from a product. The software development process is defined as a series of phases, procedures, and steps that result in a finished product.

4.8 Technology Architecture:

E-Agriculture is an application for farmers. Farmers can easily sign in the application and they can easily use it. Users can see all the necessary information when they login to the app. Users can select the type of land which they require. Then application will show him which type of crops and which type of fertilizers/pesticides will be more suitable for his land through which he can get more production from his land. Users also check the fertilizers section in which the user can see which type of fertilizer he will use for his land and which type of fertilizer will be more suitable for his crops. Also the user can buy fertilizers/pesticides online. Users can also see the weather forecast on the main page of the application. The application will also tell the user how much water the land requires so there are minimum chances of any kind of loss for the farmers. So the user can get more profit from the less area of land. Due to this, farmers can also get awareness about the use of technology.

4.9 Architecture Evaluation:

Following are the modules of the architecture of E-Agriculture:

Shop: In this, farmers can buy and sell different types of fertilizers and pesticides.

Soil Testing: In this, the farmer can select the type of land and get all the necessary information about that type of land.

Crop Practices: In this, the farmer can know which type of crops are best to grow in which type of land so he can get best results.

Videos Information: In this, farmers can watch all types of videos according to the agriculture.

Admin Panel: In this, the admin can control all the data of the application.

Chapter 5

Detail Design and Implementation

5.1 Component-component Interface

5.1.1 Collaborative diagram:

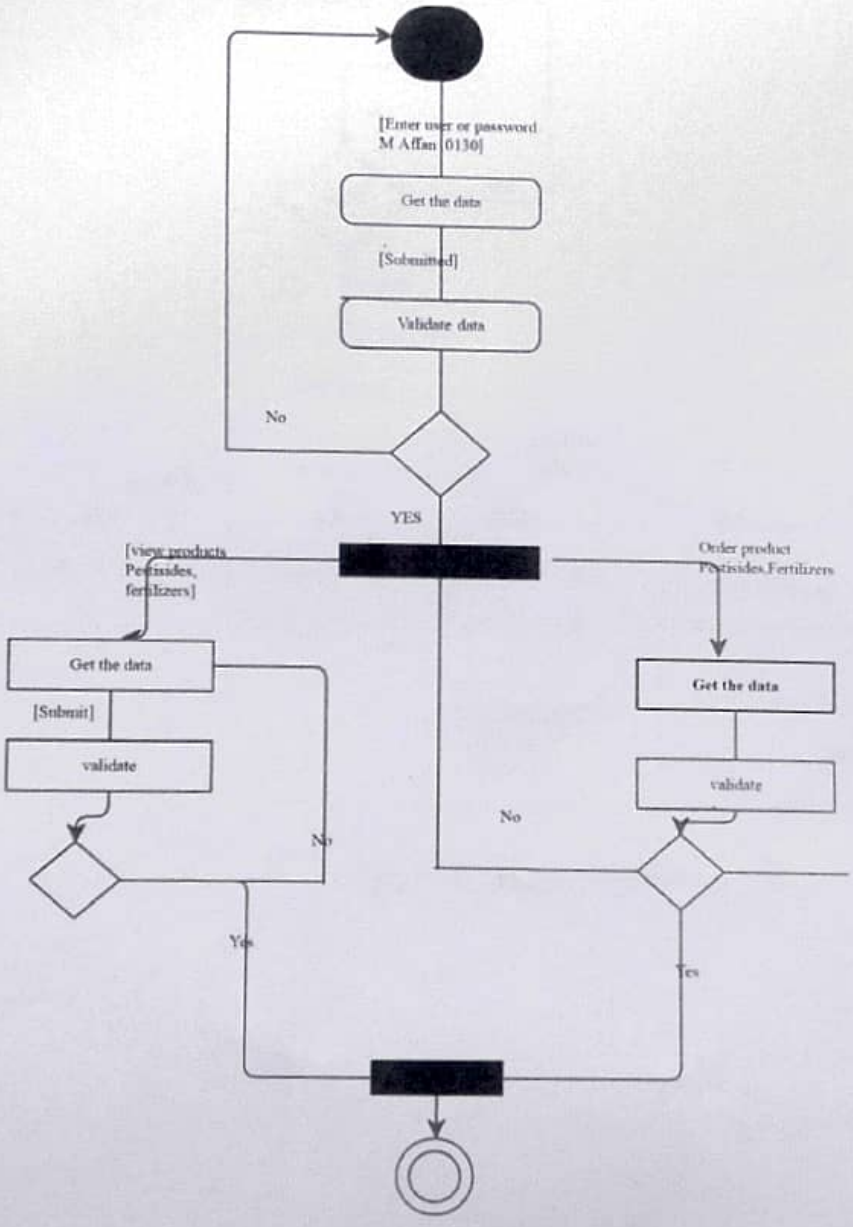


Figure 8: Collaborative Diagram

5.1.2 State transition diagram:

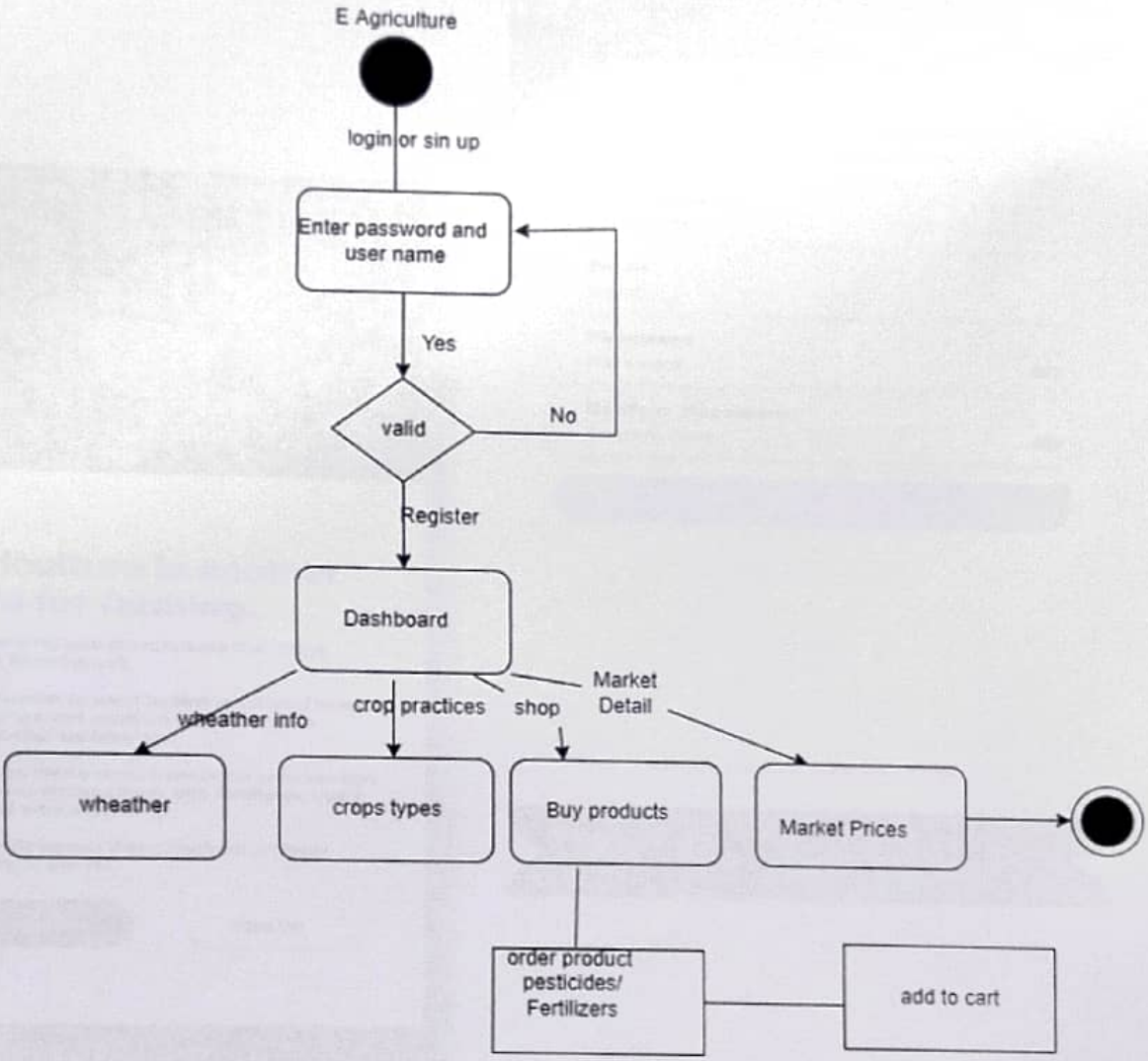
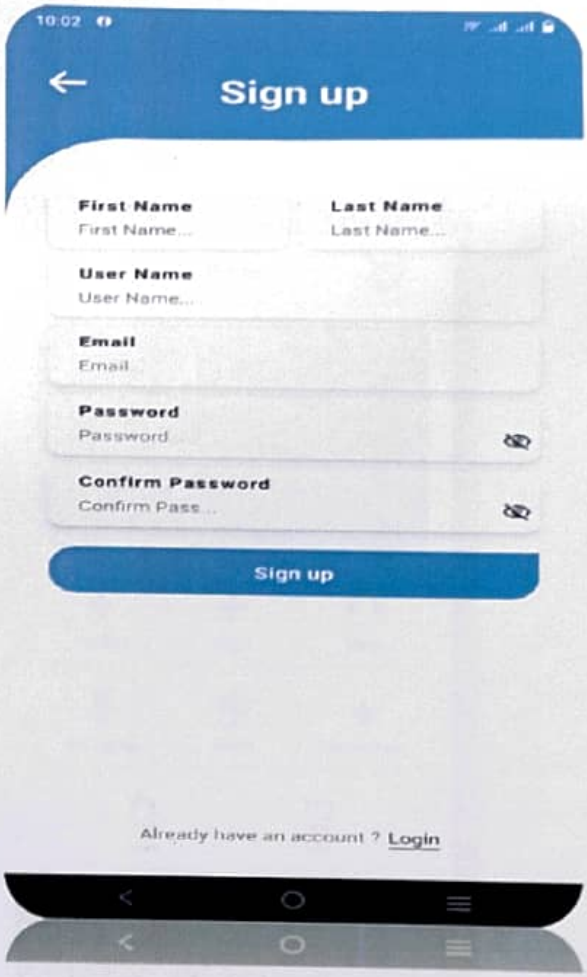


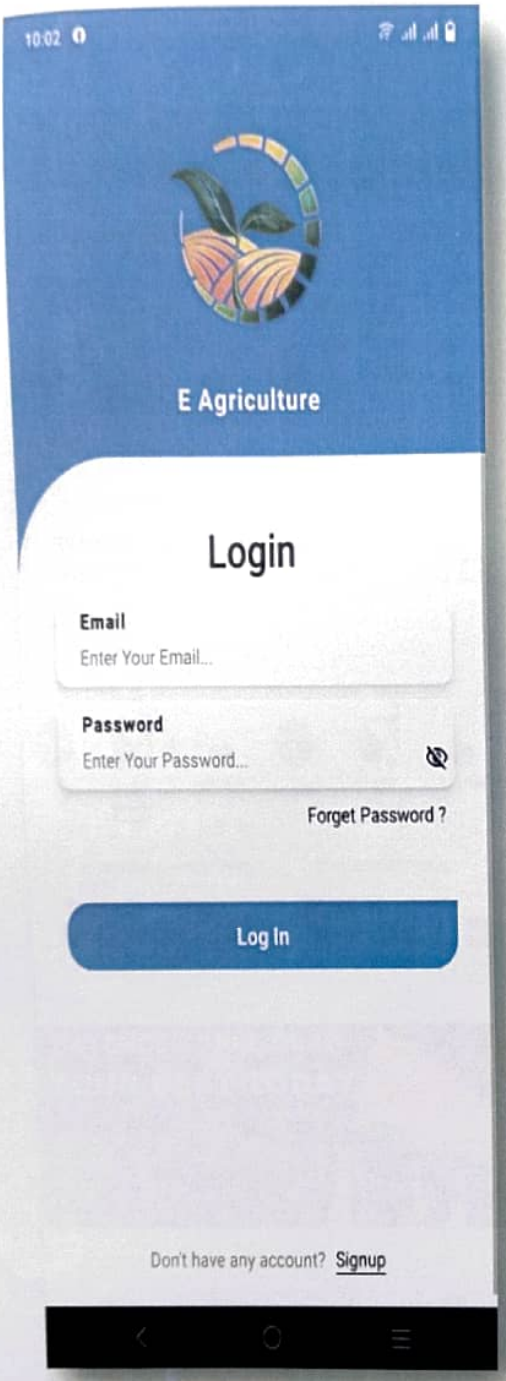
Figure 9: State Diagram

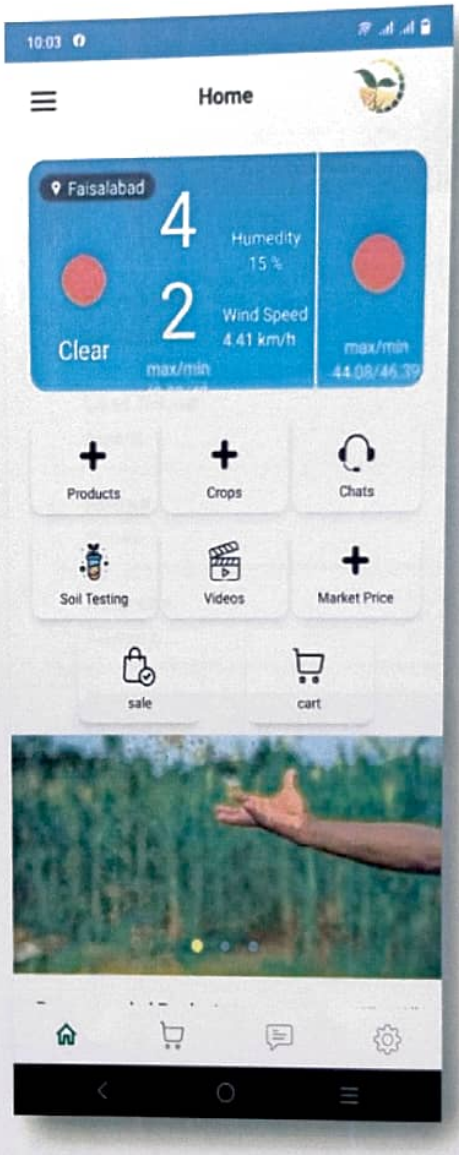
5.2 Component-Human Interface:

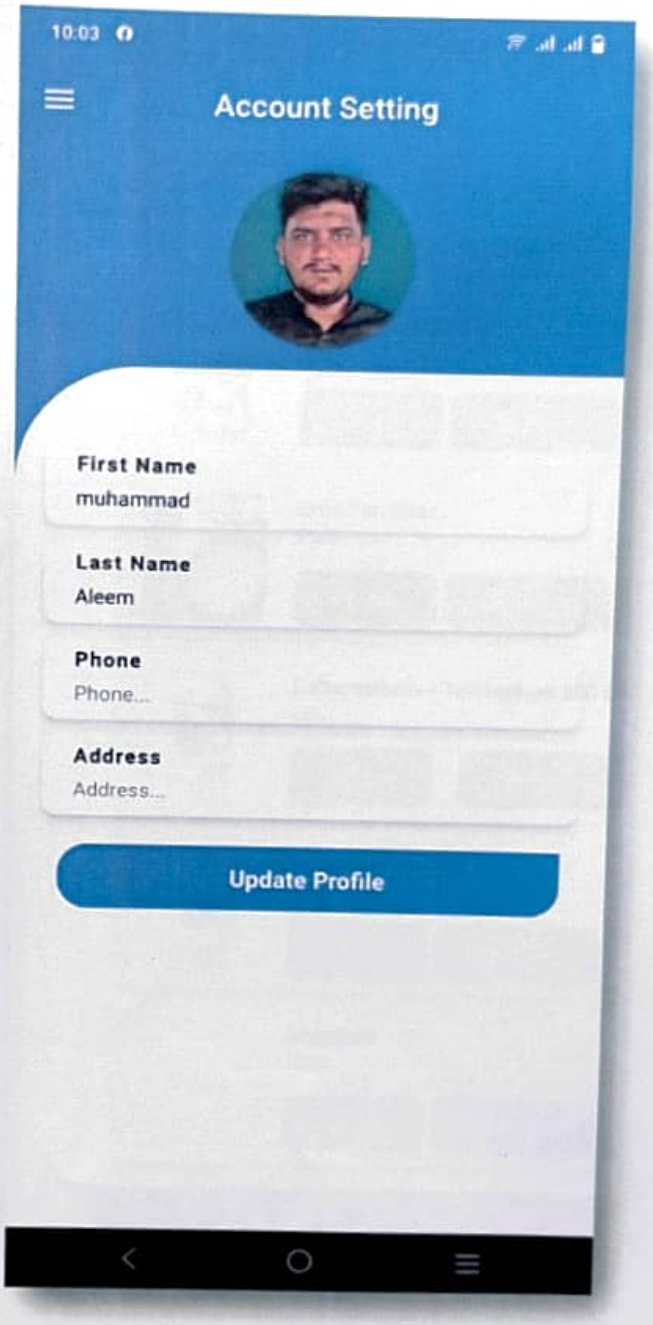
Complete step by step screenshot will be explained in the coming selection along with brief detail of the function. Every function will be shown along with the details.

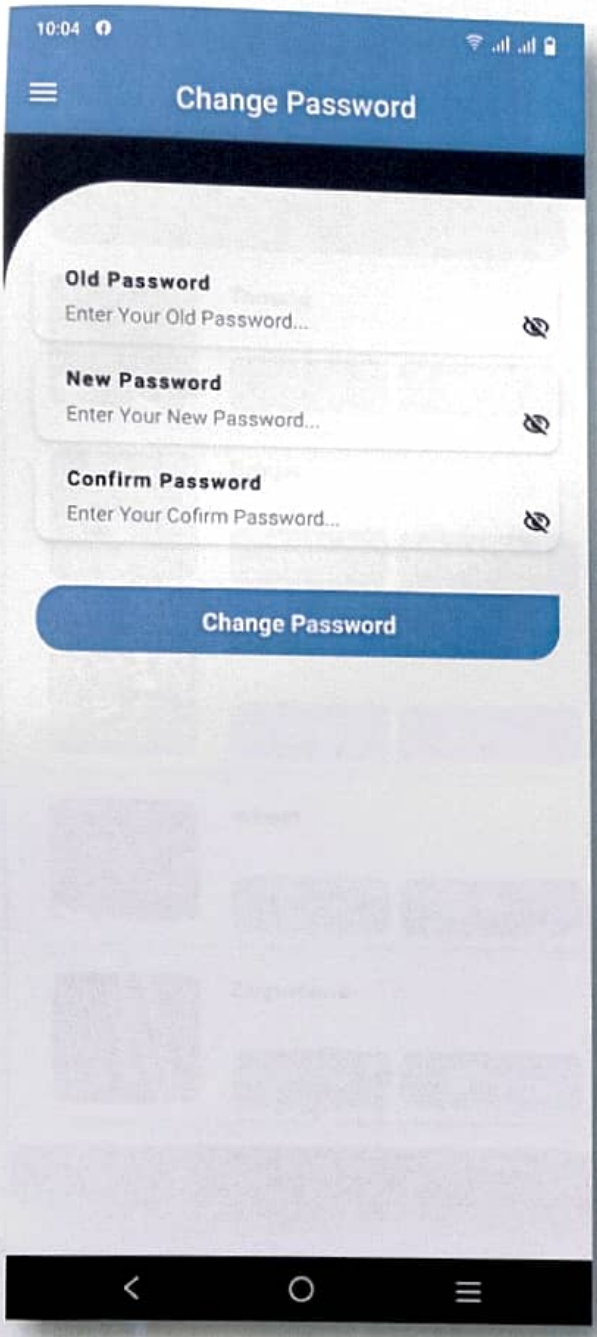
5.3 Screenshots/Prototypes:

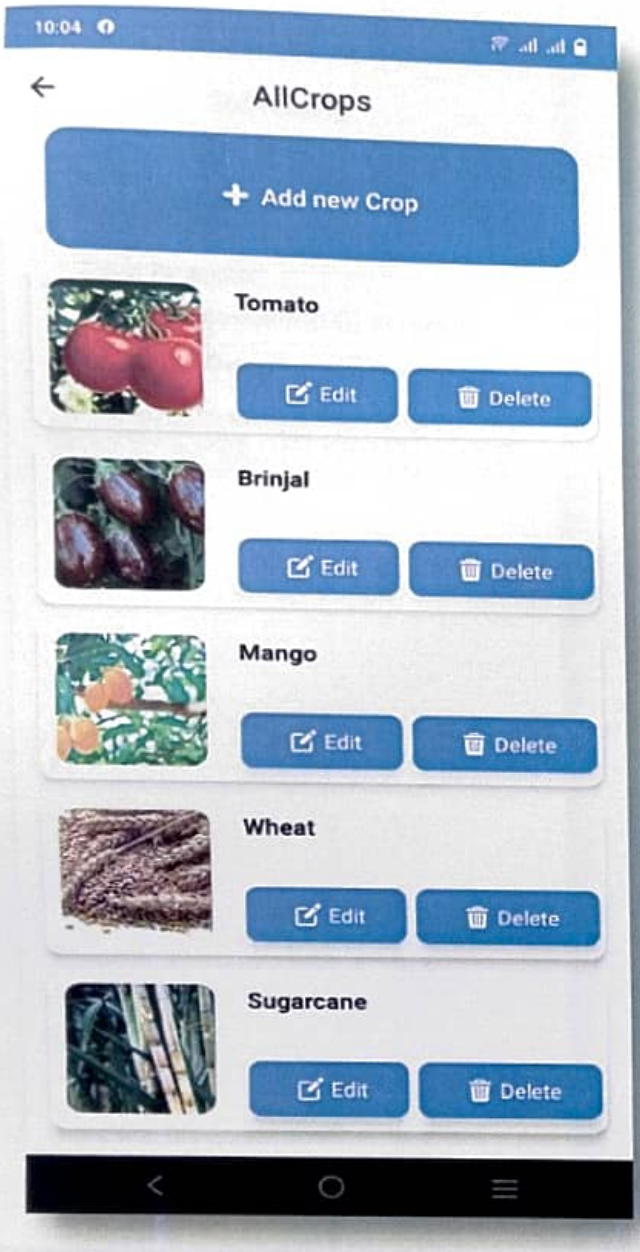


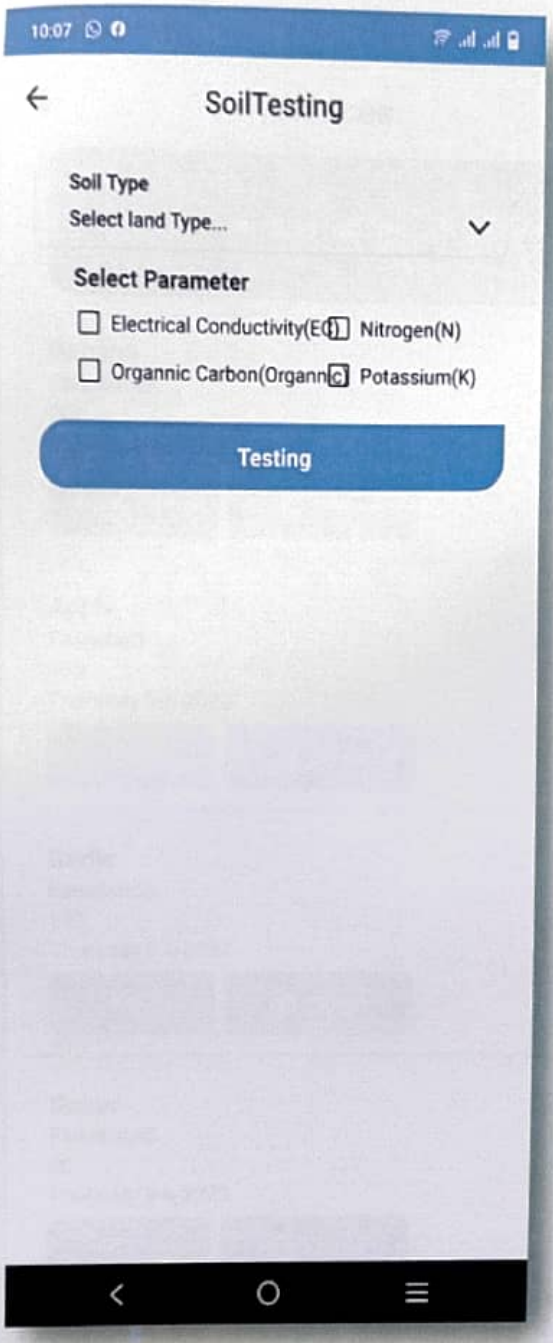


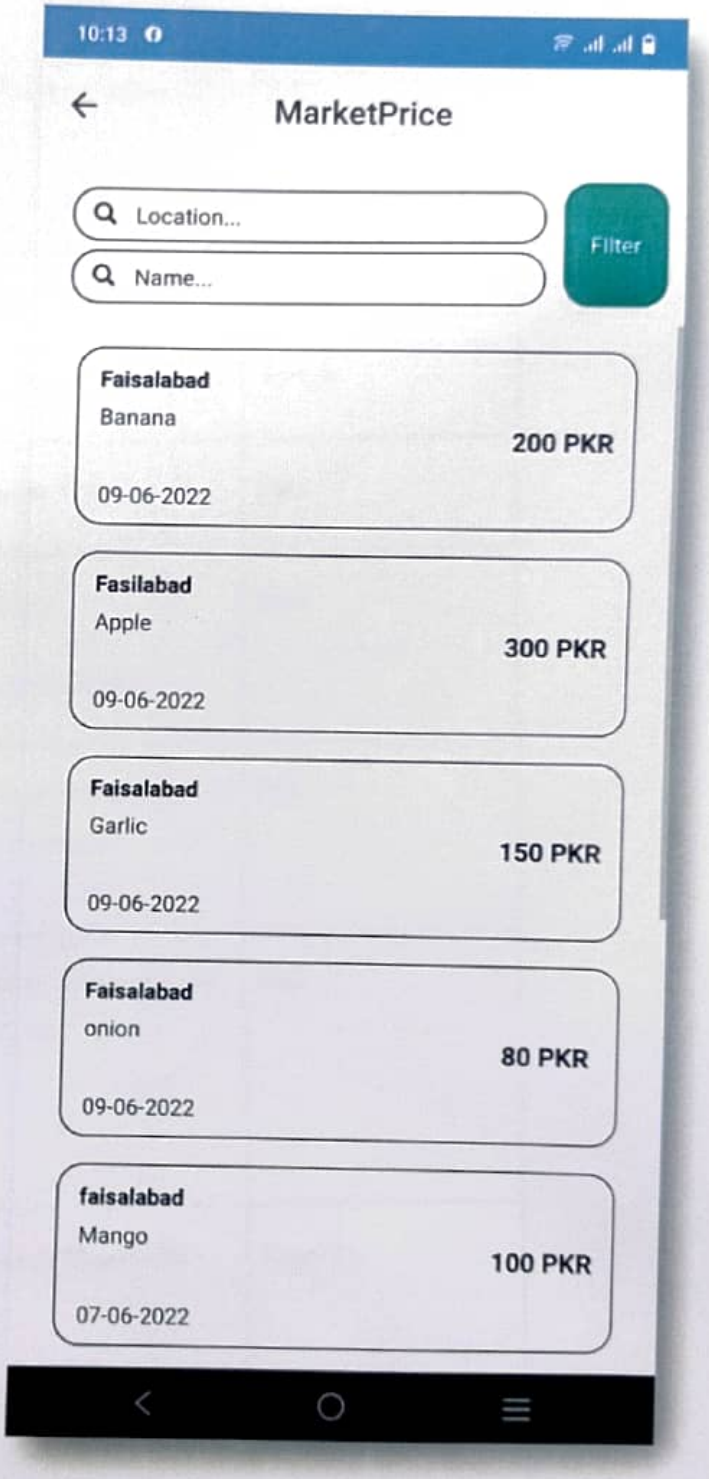












Chapter 6

Test case specification

6.1 Test case Specification:

Test Scenario	Test Case	Expected Result	Actual Result
Admin panel(s-1)	ID,PASS	Login form	Pass
Admin panel(s-2)	ID,PASS	Login Authentication	Pass
S-3	Correct user name Incorrect password	Error:password is not correct	Fail
S-4	Incorrect password Correct user name	error: username not found	Fail
S-5	Correct username Correct password	Login Successful	Pass
User login(S-6)	Empty fields	Login denied	Error: Enter user And password

S-7	Correct username incorrect password	Login denied	Error :password is not correct
S-8	Incorrect username Correct password	Login denied	Error:username is not correct
S-9	Correct username Correct password	Login accessed	Accessed granted
User-Product(s-10)	Correct product	Product added	Add to cart
S-11	Incorrect selection	error	Reloading
S-12	Incorrect product	error	Access denied
S-13	Out of stock	error	Access denied
Product Search bar(S-14)	Search product	detected	Access Granted
S-15	Search Multiple	Denied	Access denied

S-16	Search by categories	Denied	Access denied
Product buy-flow(s-17)	Product page	valid	Access denied
S -18	Adding to cart(more than one)	Accessed	Access Granted
S-19	Cash on delivery	Valid/Accessed	Access Granted
S -20	Shipping Area	valid	Access granted
S -21	Updating product	Accessed	Access granted
Croppractices(S-22)	Select crop	Accessed	Access granted
S -23	Check crops	Accessed	Access granted
S -24	Crops productivity	Accessed	Access granted
Wheather(S-25)	Wheather information	Accessed	Access granted

Market prices(S-26)	Check Market prices	Accessed	Access granted

Table 2: Test Case Specification

6.2 Summary of test result:

Model name	Test case run	Number of defects found	Number of defects corrected so far	Number of defects still need to be corrected
Admin –login	4	2	4	0
User -login	4	5	4	0
User product	5	4	3	0
Product category	5	3	2	0
Search product	5	4	2	0
Product Buy-Flow	7	5	4	0
Complete system	25	13	10	0

Table 3: Summary Of Result

6.3 Object Diagram

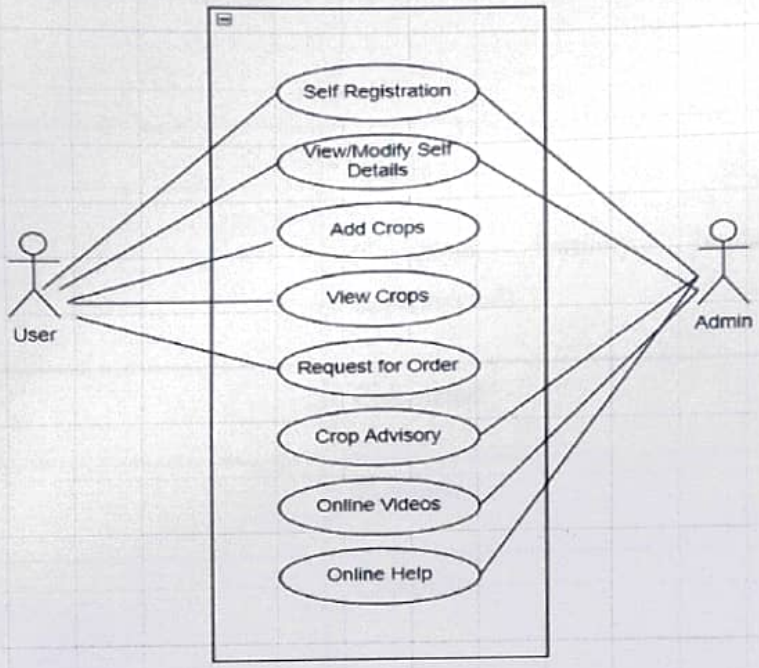


Figure 10: Object Diagram

Chapter# 7

7.1 Project Completion Status/Conclusion

Module Name	Status (Complete, Partially, Implemented, Not Implemented)
Signup Form	Completed
Login Form	Completed
User Login Form	Completed
New User	Completed
Shipping to Multiple Addresses	Completed
Add to Cart	Completed
Customer Profile	Completed
Customer Cart	Completed
Services	Completed
Categories	Completed
Crop Practices	Completed

Crop Advisory	Completed
Market Place	Completed
Videos	Completed
Weather	Completed
Soil Testing	Completed
Main Front Home Page	Completed
Products	Completed
Products Details	Completed
Contact US	Completed

Table 4: conclusion Status

Table 7.1: Project Completion Status:

Target/Objective	Status (Completed, Partially Completed, Not Completed)	Reasons
Complete Line of Products	Completed	Variety of Products
Complete Product Order	Completed	A complete order of products to buy

Reduced Time	Completed	Lower time to get Product
Product Ownership in Lower Time Limit	Completed	Get product in low time
Automatic Process	Completed	Activities performed automatically not manually
Number of Targets Completed	10-12	Most of all completed
Number of Targets Partially Completed	1-2	Online registration is in progress
Number of Targets Not Completes	1	Online payment system (Not Mandatory)

Table 5: Objective(s)/Target(s) Status

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