VISVESVARAYA TECHNOLOGICAL UNIVERSITY,

BELGAUM- 590014

Project Report

On

Big Data Analysis in the field of Agriculture

Submitted in partial fulfilment of the requirement for the degree of,

Bachelor of Engineering in

Computer Science and Engineering

Submitted By,

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UNDER THE GUIDANCE OF,

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

B.V.B. COLLEGE OF ENGINEERING & TECHNOLOGY,

(An Autonomous Institution affiliated to VTU, Belgaum)

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K.L.E. SOCIETY'S

B.V. BHOOMARADDI COLLEGE OF ENGINEERING & TECHNOLOGY,

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

CERTIFICATE

This is to certify that Minor Project entitled APMC APP is a bonafide work carried out by the student team Ms. RITU H – USN-2BV14CS082, Mr.SANDESH KULKARNI – USN-2BV14CS094, Mr. SHRAVAN HIREGOUDAR – USN-2BV14CS100, Mr. SURAJ DESAI –USN-2BV14CS115, Ms. MANVITA B_– USN-2BV14CS129, in partial fulfilment of completion of Fifth semester B. E. in Computer science and Engineering during the year 2016 – 2017. The project report has been approved as it satisfies the academic requirement with respect to the project work prescribed for the above said program.

Guides	H.O.D	Principal
Prof. Praveen Raj	**Dr.G.H. Joshi**	**Dr. P.G.Tewari**

ABSTRACT

The current generation where in technology plays a specific role in all fields, it has become necessary for technology to creep into every field. Agriculture being the most important occupation of any country, making ease for functioning in terms of marketing agricultural goods has become very important. APMC being the sector for marketing and fare trade, incorporating certain measures to make life simple for both farmers and traders has become mandatory.

Our project is a small approach in this concern. Basically, this app the title of our project refers to makes the APMC daily bidding process easy by making it virtual rather than manual. The system (app) being open for all category of users, this will maintain the policy of fare trade and prevent the farmers from being cheated. Also go through the external links provided. This app is simple to such an extent that any person who is new to smart phones will get to use it easily very fast.

ACKNOWLEDGEMENT

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1. Preamble

1.1 Introduction

APMC app is a simple and easy to use application that is built keeping in mind the category of people who will be using it. This application is mainly built in order to maintain a fair and open bidding system which will prevent the innocent farmers from being cheated.

1.2 Problem definition

1.2.1 Identification process:

In today's competitive world, software plays an important role. Performance, ease, portability, compactness are the basic needs of any developed system software. A need for developing a software tool in order to ensure support to the farmers and traders that will provide them trustworthy application has been recognised.

1.2.2 Problem Description:

A software and big-data based application for simplifying the life of people by providing them an application to openly conduct the daily-bidding process virtually.

1.3 Scope and Objectives of the project

1.3.1 Scope:

Designing a tool-kit which provides assistance to users in a very simplified way and acts as an app with capability of fulfilling their requirements. Internet being a very important aspect of our lives, some people don't know how to use the internet as they don't very well follow the GUI of it. This application also provides information to people who are well-versed with the internet but find it a problem to use applications because of language problems.

1.3.2 Objectives:

Software developed will successfully provide the services to people who want to use the application to obtain information but they are not able to do so because of reasons explained earlier. Farmers will be able to use the app and predict prices required as per their needs. Traders will be able to view the products that are available for sale on that particular day.

2. System Study

2.1 Comparison between existing systems:

The existing system being manual, it is not much preferable because the commodity of farmers will be restricted to a particular region. Farmers will not be able to fetch attention of traders from far off places. Also, in addition to the previous point,

farmers will be able to participate in the APMC bidding process while even sitting at home. A farmer or a trader need not be physically present at the time of bidding.

2.2 Proposed System

APMC app is a user friendly and simple to use application which is built, keeping in mind that the category of people this app is built for are not familiar with using smart phones and applications. A user friendly interface is provided so that anyone can use the tool with ease. It provides an effective self-learning platform as well.

2.3 Advantages of the proposed System

2.3.1 Self-reliant application.

2.3.2 Quick responses, saves time and energy.

2.3.3 Less space consumption.

2.3.4 Helps farmers in fair trade

2.3.5 All in one application for APMC functioning.

2.4 Constraints or limitations of proposed system

2.4.1 Good Internet speed is an all-time compulsion.

2.4.2 Any user will be able to view details of only the current page.

2.4.3 For those who do not see properly, this application will not be of specific use.

3. Software Requirement Specification

3.1 Overview of SRS

The SRS document explains the requirements for the project including functional, non-functional requirements along with use case diagram and description.

3.2 Intended Audience

All end users who are interested in using the application for ease. Specifically, farmers and traders are our major concenteration.

3.3 Requirement Specifications:

3.3.1 Functional Requirements:

Req-ID	Functional Requirement	Priority
3.1.1	User shall be able to login to the application	1
3.1.2	User shall be able to access the User guide	2
3.1.3	User(trader) shall be able to bid for a product available for the present day	1
3.1.4	User(trader) shall be able to view product details available for bidding	1
3.1.5	User(farmer) shall be able to update product details that he/she is willing to sell	1
3.1.6	User shall be able to modify user information	2
3.1.7	User shall be able to contact the APMC for help	3

Figure 1

3.4 Non-functional Requirements:

3.4.1.a**. Security:** Authenticated users are allowed to login and modify information

3.4.1.b. **Portability:** works on all android versions above 4.2(jellybean)

3.4.1.c. Authorized user is allowed to login

3.4.2.a. **Usability:** Users will be provided with a instruction page for detail understanding of the app

3.4.2.b. User guide has information needed by the user

3.4.4.a. At least one product is available for bidding on a particular day

3.4.5.a. Product details are previously provided by the farmer

3.4.6.a. User information is previously provided

3.4.7.a. **Reliability:** The app shall be reliable for a long term for any number of users

3.4.7.b. APMC contact information is collected in advance

3.4 Software and Hardware requirement specifications:

3.4.1 Hardware Requirements Specifications

3.4.1.1 Android phone (4.2 version and above)

3.4.1.2 Wi-Fi enabled settings

3.4.2 Software requirement specifications

3.4.2.1 Jellybean version 4.2

3.5 Design Constraints/Assumptions/Dependencies:

3.5.1 Design Constraints:

- Newly developed features should be error free and independent of previous features.
- Response time of application depends on speed of internet for downloading pages.

3.5.2 Assumptions:

- User is well versed with English language.
- User is thorough with the Manual provided.
- Internet is connected before using the application.
- User knows how to handle smart phones.
- User can see in order to operate the app.

3.5.3 Dependencies:

- Wi-Fi (Internet).
- AWS
- Hadoop
- Hive
- Android Programming

3.6 UX DESIGN:

3.6.1 Persona and Use Cases:

3.6.1.1 Farmer Persona -1:

- Name : Shambhulingayya Mathad
- I am a Farmer from Neglur.
- I am here to sell Jowar.
- I visit APMC to get satisfactory price for my product.
- I feel farmers will be cheated if they try to sell products in open market.
- APMC helps me to get best price for my products.

Use Cases:

- Farmer will be able to attract traders from far off places as well.
- Farmer will be able to trade sitting at home.
- Farmer will be able get satisfactory amount for his produce.
- Farmer will be a part of fare trade.

3.6.1.2 Farmer Persona-2:

- Farmer will be able to attract traders from far off places as well.
- Farmer will be able to trade sitting at home.
- Farmer will be able get satisfactory amount for his produce.
- Farmer will be a part of fare trade.

Use Cases:

- Farmer will be allowed to set his own price.
- Farmer will be allowed to re-trade if the price he got was unsatisfactory.
- Farmer gets to know about the trader.

3.6.1.3 Trader Persona:

- Name: Manikanth Kurgol
- I am a merchant.
- I buy goods from farmers and sell it in the market.
- I prefer commodities based on their demand and quality.
- I believe virtual trading will reduce work.

Use Cases:

- Merchant can fix price of his choice for a commodity.
- Merchant can know the quality criteria of the product without having to test it manually.

3.6.1.4 Krishi Technician Persona:

- Name: Mallikarjun B. G.
- I am a Technician from Krishi Vahini.
- I visit APMC to check its functioning every week.
- I think this system has been beneficiary to both farmers and traders.
- I prefer smart way of working rather than traditional ways.
- I support digitization.

Use Cases:

- Officials will be able to check the functioning through the app.
- Fare and open trade can be established.

3.6.2 Low and High Resolution Wireframe:

3.6.2.1 Low Resolution Wireframe:

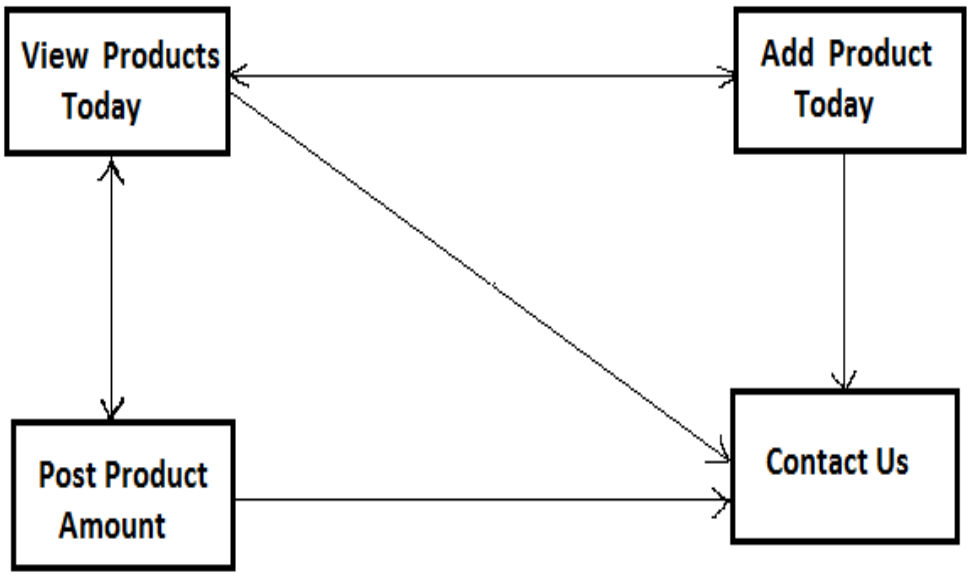

Figure 2

3.6.2.2 High Resolution Wireframe:

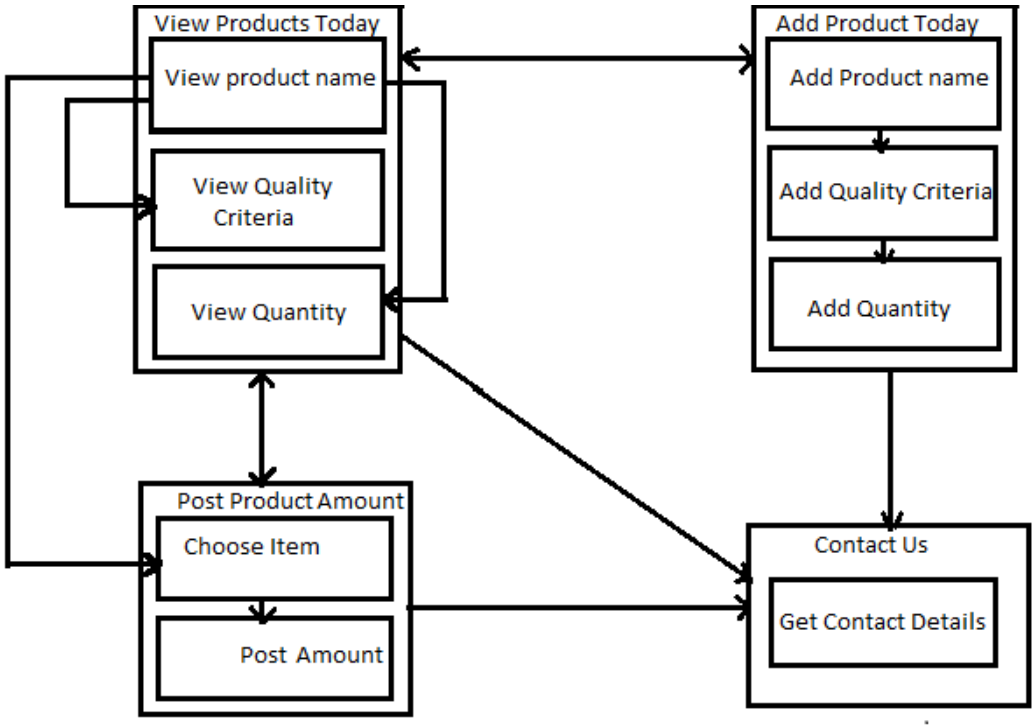

Figure 3

3.6.3 Mobile Personas:

3.6.3.1 Divided Attention:

- Only Bidding success notifications are sent to the concerned farmer and trader.
- Contact details of the farmer are provided to the trader after bidding.
- Unsuccessful bidding does not allow the trader to access contact information of the farmer.

3.6.3.2 Handedness

- Images or icons are of standard size and placed at accessible positions.

Figure 4

3.6.3.3 Small screen display

- Only minimum information is displayed.
- Detailed information is provided on clicking the required option.

3.6.3.4 Battery usage

- No animations or videos are included, hence saves battery.

3.6.4 User Context:

3.6.4.1. What is the user doing?

Checks for existing crops on today's list or updates crops with his desired price.

3.6.4.2. Where is the user?

User is using the application in his/her leisure time irrespective of the place.

3.6.4.3. Who is the user?

User is either trader or farmer interested in online bidding.

3.6.5 Non-Functional Requirements:

3.6.5.1 No push notification, customer gets information only when he uses the app.

3.6.5.2 Frequent update of data.

3.6.5.3 Once bidding for the day is done, the product list gets vanished.

3.6.5.4 Certifications can be uploaded (if any).

4 System Design

4.1 Architectural Design:

4.1.1 Overview of System:

The system designed consists of an application which has data stored on AWS. User, preferably the farmers and traders will be able to use the app for the APMC manual functionalities that are done virtually here.

4.2 GUI Wireframes:

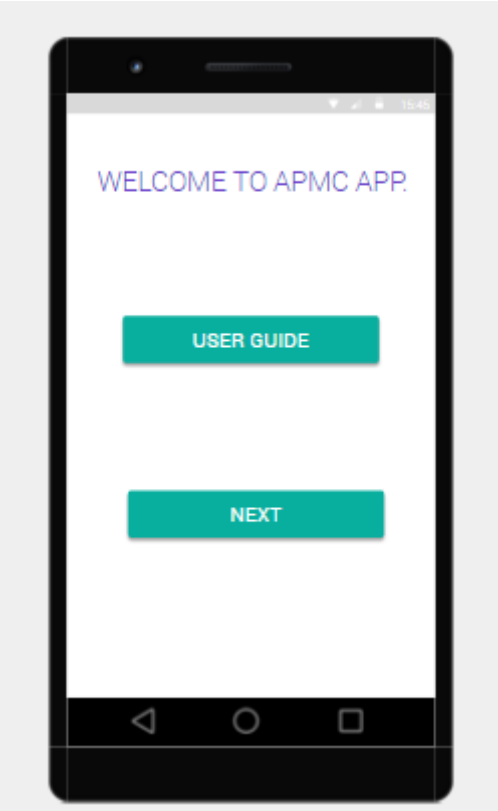

Figure 5

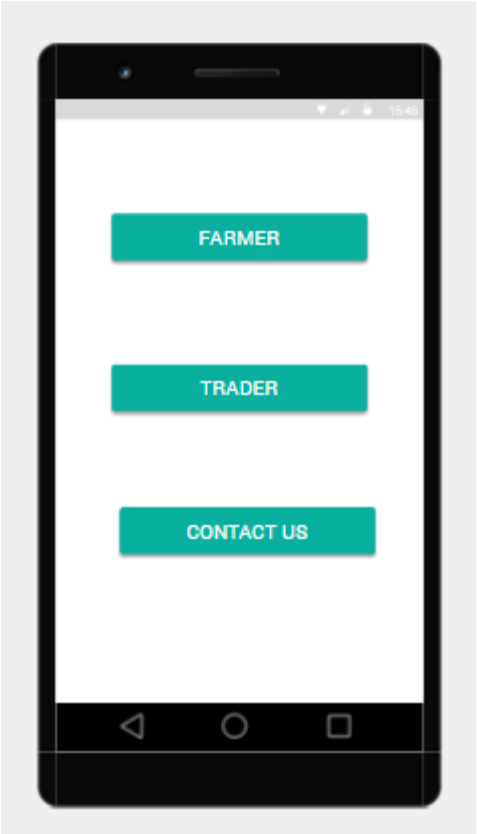

Figure 6

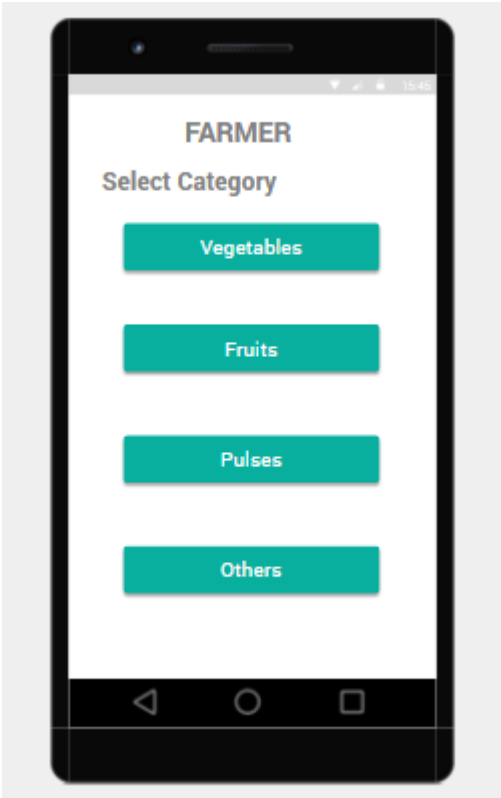

Figure 7

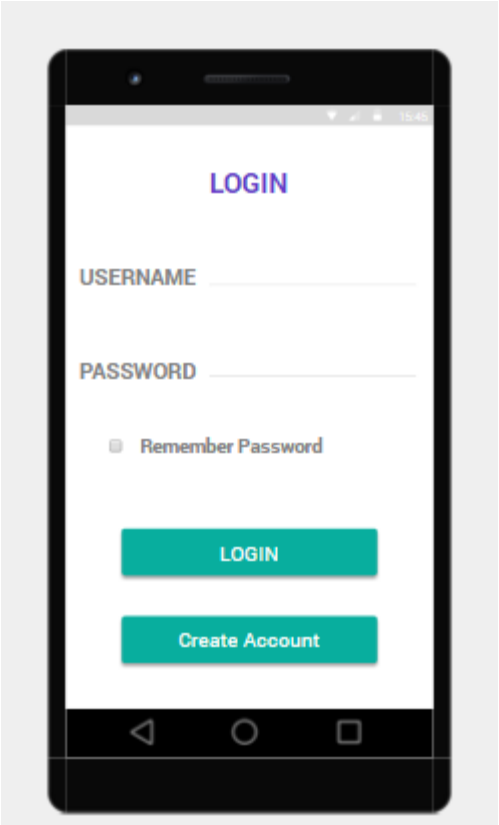

Figure 8

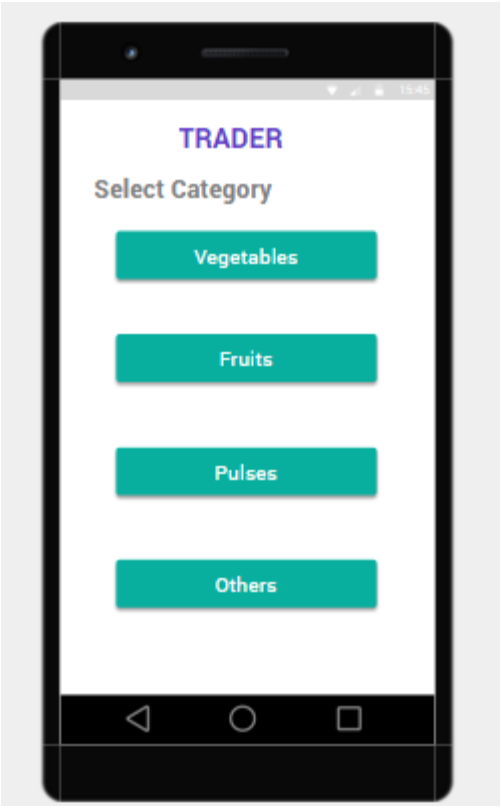

Figure 9

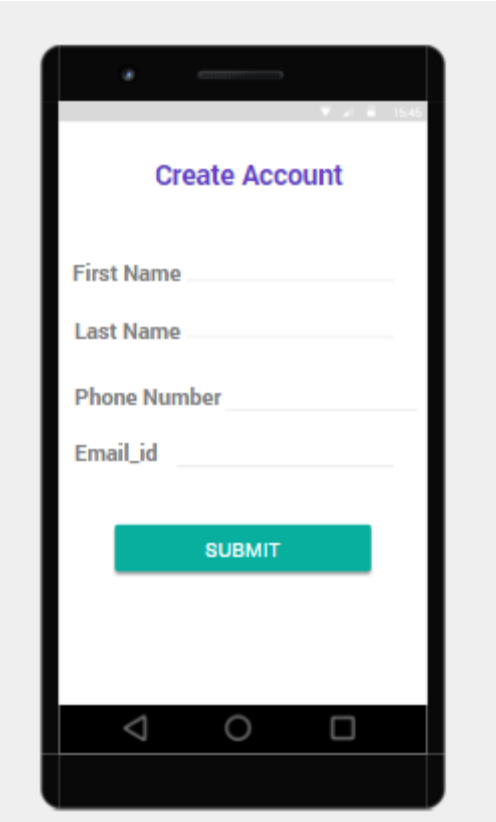

Figure 10

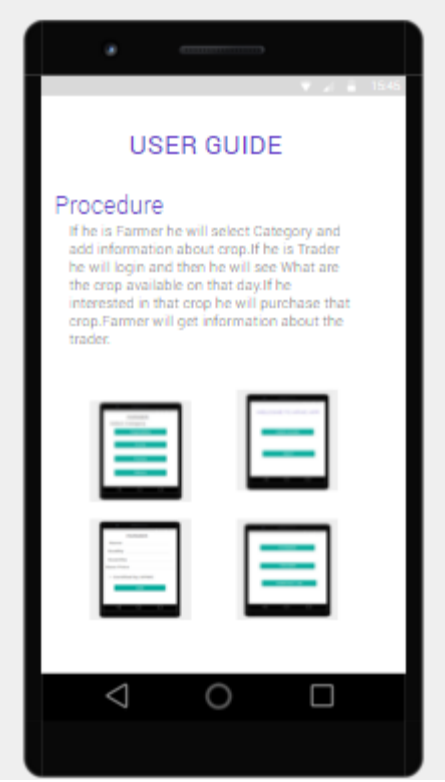

Figure 11

5 Implementation:

5.1 Introduction:

5.1.1 Pair programming:

1. Code is written by pair of programmers rather than individuals.
2. The pair together design plans and strategies.
3. One person types the code, the other actively reviews what is being typed.
4. Errors are pointed out and together solutions are formulated.
5. Roles are reversed periodically

5.2 Module Description:

5.2.1 Login/Register:

Input: Username, Password, Personal Details

Output: User directed to home page with a successful login/register message.

Description: If the user is a trader, he will have to login with his details in order to bid for products. Farmer does not need login credentials to access the application.

5.2.2 Bidding for a Product(Trader):

Input: Biding amount for a commodity.

Output: Bidding successful message.

Description: Trader is allowed to bid for products everyday and quote their prices for commodities based on quality of product that is mentioned in the description of product details put up by the farmer.

5.2.3 View Products Today:

Input: Click on button-view products today.

Output: Products available for bidding is loaded on the page.

Description: Products that are put up for sale by farmers can be viewed by the traders in one page.

5.2.4 Add Products Today (Farmer):

Input: Product description with name, quantity, quality criteria, certificates (if any).

Output: Product successfully added message.

Description: Farmers can add products to the list by giving information about the commodity and hitting on add button.

5.2.5 Modify Information:

Input: Modified Information of a commodity is given.

Output: Modification successful message is displayed.

Description: Farmers are allowed to modify information about the products that have been added by them anytime.

6 Testing

6.1 Introduction

Software testing is the process of analysing a software item to detect the differences between existing and required conditions (that is, bugs) and to evaluate the features of the software item.

White box testing was carried out since the testing was carried out by the programmer itself, all the test cases were written based on the execution of statements in the program, to see whether all of the statements will execute at least once in different scenarios, since the tester and33 programmer were the same, whenever there was an error which was not handled, it was fixed at the same time, since all the internal functionality was known to the tester.

Unit Testing:

Unit testing is the testing of individual hardware or software units or groups of related units. Unit test begins at the vertex of the spiral and concentrates on each unit of the software as implemented in the source code.
It focuses on,

1. Internal processing logic
2. Data structures within the boundaries of a component.

The design of unit tests can be performed before coding begins or after source code has been generated. A review of design information provides guidance for establishing test cases that are likely to uncover errors in each of the categories.
Each test case should be coupled with a set of expected results.
But our app does not take the input from the users. So unit test is done for separate program.

Alpha – Beta testing:

Alpha Test

1. Conducted at the developer's site by end users.
2. Tests are conducted in a controlled environment.

Beta Test

1. Conducted by the customer at their sites.
2. Conducted in a real environment that cannot be controlled by the developer.
3. Customer sends the report of errors & that can be corrected by developer and then the product is released.

6.2 Acceptance Test Plan

Sl. No.	Test input	Expected Output
Module id: 01 –Login/Register		
1.1	User provides valid username	"You have successfully logged in"
1.2	User is new to the app	User has to register in order to bid for products
1.3	Invalid Username or Password	"Incorrect Username/Password"
1.4	Username already exists	"Choose a different username"
Module id: 02- Bidding for a Product(by Trader)		
2.1	Trader selects Product name, Quantity, Quality Criteria and price then clicks on "bid"	Trader's request added to bidding list
2.2	Trader is not logged in	Trader not allowed to bid

2.3	Trader chooses price less than quoted price	Request not added to bidding list
2.4	Trader chooses unavailable quantity for product	"Choose appropriate Quantity"
Module id: 03- View Products Today		
3.1	User is trying to view the list without logging in	User can see the list of added products until that time
3.2	User tries to modify the list Today	User is not allowed to modify the list on View Product page
Module id:04-Add Products Today		
4.1	Farmer fills all fields and clicks on "Add"	New product will be added for bidding
4.2	Farmer leaves some fields blank and clicks on "Add"	"Fill all fields" message is displayed
4.3	Farmer tried to see the existing bidding list before adding product	Farmer is displayed the bidding list
4.4	Farmer requests for Price Prediction before quoting his price	Farmer is displayed prediction of crops page
Module id:05-Post-bidding Process		
5.1	Bidding Successful	Farmer is sent Contact Details of Trader based on login information
5.2	More than one bidders for a single product	The trader who has quoted maximum price wins the bid
5.3	No bids for a product	Farmer is not sent any contact information
Module id:06-User guide		
6.1	User wants to see the User Guide	"Download" option is provided within the app
6.2	"Download" is clicked	User Guide gets downloaded file in his phone
Module id:07-Modify Information		
7.1	Trader modifies Personal Information	"Modified Personal Details" message is displayed

7.2	Framer modifies price value for his product added	"Successfully modified price" is displayed
7.3	Farmer removes his product from Product List	Traders who have sent bidding request for that product are notified
Module id:08-Contact Us		
8.1	User clicks on "Contact US"	APMC Details are displayed to User
8.2	User clicks on contact number	Contact number gets copied to "make a call" page of phone

6.3 Usability testing report

Feedback obtained from users of this product derives the below conclusion:

- The product is easy to use if the keywords are properly understood well in advance.
- Inclusion of pictures helps better understanding.
- Internet speed should be extremely good for quick response.
- The product will definitely help people who are fooled by middlemen or traders.
- The user guide provided helps to understand the working of the product better.
- Contact Details will help the users seek officials' help if necessary.

7.Results

When Farmer wants to add product for bidding, he is one step away from his phone from doing so. He will not have to travel to far off places in order to do so. The price prediction option provided to the farmer will help him predict price for a commodity based on market history.

Once the bidding for the product is done, the farmer will be provided contact details of trader and they can carry on their further commitments so on.

8. Summary of learning:

We got to learn various Big-Data and Android concepts that we learnt during the completion of the project. We were able to learn more about Hadoop and Hive with reference to AWS. Data handling, cleaning were very important aspects of learning.

9. Conclusion and future scope

Conclusion:

Thus, we have implemented all the features proposed in the beginning in our project successfully with some additional features.

Future scope:

As this project is mainly with reference to app building, only those who are atleast aware of reading will be able to use it. For those who are disabled w.r.t sight, voice translations can be provided for each product entry which takes input and gives output for the user.

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11. Appendix

A. Glossary

AWS- Amazon Web Services