20CS312 MINI PROJECT

AGROBOT

A MINI PROJECT REPORT

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BONAFIDE CERTIFICATE

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ABSTRACT

Agriculture plays a critical role in the entire life of a given economy. However, there are increasing pressures from various aspects as climatic changes, soil erosion, lack of awareness and from the consumers' end, are changing tastes in food and concerns about how it is produced. The progress in the innovation and invention of Agriculture, has been developed to be a most challenging task. This is especially because of the increasing demand on the standards of agricultural products and human unavailability in rural agricultural areas. Farmers working with plants, pests and diseases continue to pose their own challenges. Information about the condition of the crop is certainly useful to do actions for plants to maintain their quality. The proposed project aims at predicting and giving solutions for agriculture-related problems. The user can get benefited by knowing the available loans and schemes provided by the government. They can get notified about current events and happenings regarding both agricultural and other non-agriculture related news. If the user prefers using Agrobot, then, they can become a member by registering their details. The user can also experience a reasonable purchase through the shop option provided in the website. The user can keep track of daily weather conditions and forecasting. Additionally, a chatbot has also been implemented that promotes remote interaction with the farmers, in an attempt to solve their queries. The chatbot also identifies and provides suggestions regarding diseases in crops. To prioritize the needs of the farmers, the multi-language option has also been provided, allowing them to access the website in their regional language. Further, a comment section is also available as a measure towards receiving user feedback to improve Agrobot.

LIST OF FIGURES

LIST OF ABBREVIATIONS

S.NO	ABBREVIATIONS	EXPANSION
1	OS	Operating System
2	DB	Database
3	ER	Entity Relationship
4	IBM	International Business Machines
5	AI	Artificial Intelligence
6	UML	Unified Modeling Language
7	DST	Data Structure Diagram
8	WIFI	Wireless Fidelity
9	API	Application Programming Interface
10	GDP	Gross Domestic Product
11	ERD	Entity Relationship Diagram
12	SQL	Structured Query Language

CHAPTER 1

INTRODUCTION

1.1 Problem Statement

Agriculture plays a vital role. Everyone on this earth depends on agriculture for their livelihood. And, even countries do depend on it for their country's GDP growth. But now the scope of agriculture is in stake. Many people do not consider agriculture as an employment opportunity. Even though, some people opt for agriculture, there are several problems like pollution, pest control, soil fertility and a few more that reduces the crop yield and in turn their income.

1.2 Project Scope and Objective:

1.2.1 Scope of the Project:

The scope of the project is to address the above mentioned issue. At present there are various number of software programs that have been developed and in development to educate the farmers with the technological information. However they don't provide an effective and interactive way of query and response. AGROBOT overcomes these drawbacks and the farmers can interact effectively to get the desired response.

1.2.2 Objective of the Project:

The main objective is to help the farmers by developing an exclusive website called "Agrobot" that addresses the features like current news feed which keeps the users updated, weather prediction, notifying about the agricultural loans and schemes provided by the government for the well being of the farmers, a shop option that enables the user to buy and sell agricultural goods and a chatbot to answer their queries through active interaction. A multi-language option has also been provided, which enables the user to use the website and interact with the chatbot in their comfortable language.

CHAPTER 2

SYSTEM IMPLEMENTATION

2.1 Project Specification:

FRONT-END DEVELOPMENT:

WEBSITE:

WORDPRESS:

WordPress is a content management system that allows the users to host and build websites. WordPress contains plugin architecture and a template system, so the users can customize any website to fit the business, blog, portfolio, online store, etc..

PLUGINS:

A Plugin is a piece of software containing a group of functions that can be added to a WordPress website. They can extend functionality or add new features to the WordPress websites without altering the existing website.

INTELA:

Intela is the first fully mobile, cloud-based learning product to integrate all of the proven learning strategies into a single system. It is based on cognitive science research which shows that four key learning strategies and has a significant impact on learning and retention. It also decreases the time to competency, enhances learning retention and improves engagement.

BACK-END DEVELOPMENT:

DATABASE - MYSQL:

MySQL is a relational database management system based on (SQL) Structured Query Language. The application is used for a wide range of purposes including data warehousing, e-commerce and logging applications. The most common of MySQL is for the purpose of a web database.

AI CHATBOT:

IBM CLOUD:

IBM Cloud is a set of cloud computing services for business offered by IBM. The services supports several programming languages and services as well as integrated DevOps to build, run, deploy and manage applications on the cloud.

2.2 USE CASE DIAGRAM

A use case diagram is a dynamic or behavior diagram in UML. Use case diagrams model the functionality of a system using actors and use cases. Use cases are a set of actions, services, and functions that the system needs to perform. In this context, a "system" is something being developed or operated, such as a website. The "actors" are people or entities operating under defined roles within the system.

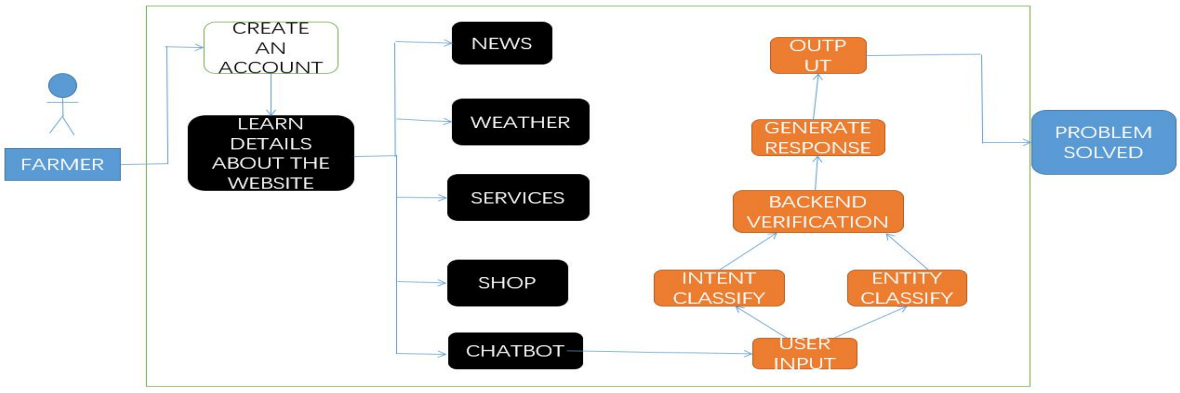

Figure 2.1: Use case diagram

This use case diagram (Figure.2.1) describes the interaction between the primary actor who is the farmer performs the actions of creating the account and will be able to access the various features present in the website.

ER DIAGRAM:

An Entity Relationship (ER) Diagram is a type of flowchart that illustrates how “entities” such as people, objects or concepts relate to each other within a system. ER Diagrams are most often used to design or debug relational databases in the fields of software engineering, business information systems, education and research. Also known as ERDs or ER Models, they use a defined set of symbols such as rectangles, diamonds, ovals and connecting lines to depict the interconnected behaviour of entities, relationships and their attributes. They mirror grammatical structure, with entities as nouns and relationships as verbs. ER diagrams are related to data structure diagrams (DSDs), which focus on the relationships of elements within entities instead of relationships between entities themselves.

In the ER diagram for Agrobot, (Figure.2.2), there are four entity sets as user, admin, farmer, and website with certain attributes on each cases. The relationship between user login and farmer entity sets is one to one relationship which indicates that one farmer can make use of only one login credential. There is one to many relationship between user and admin entity sets indicating that one user can register using different details.

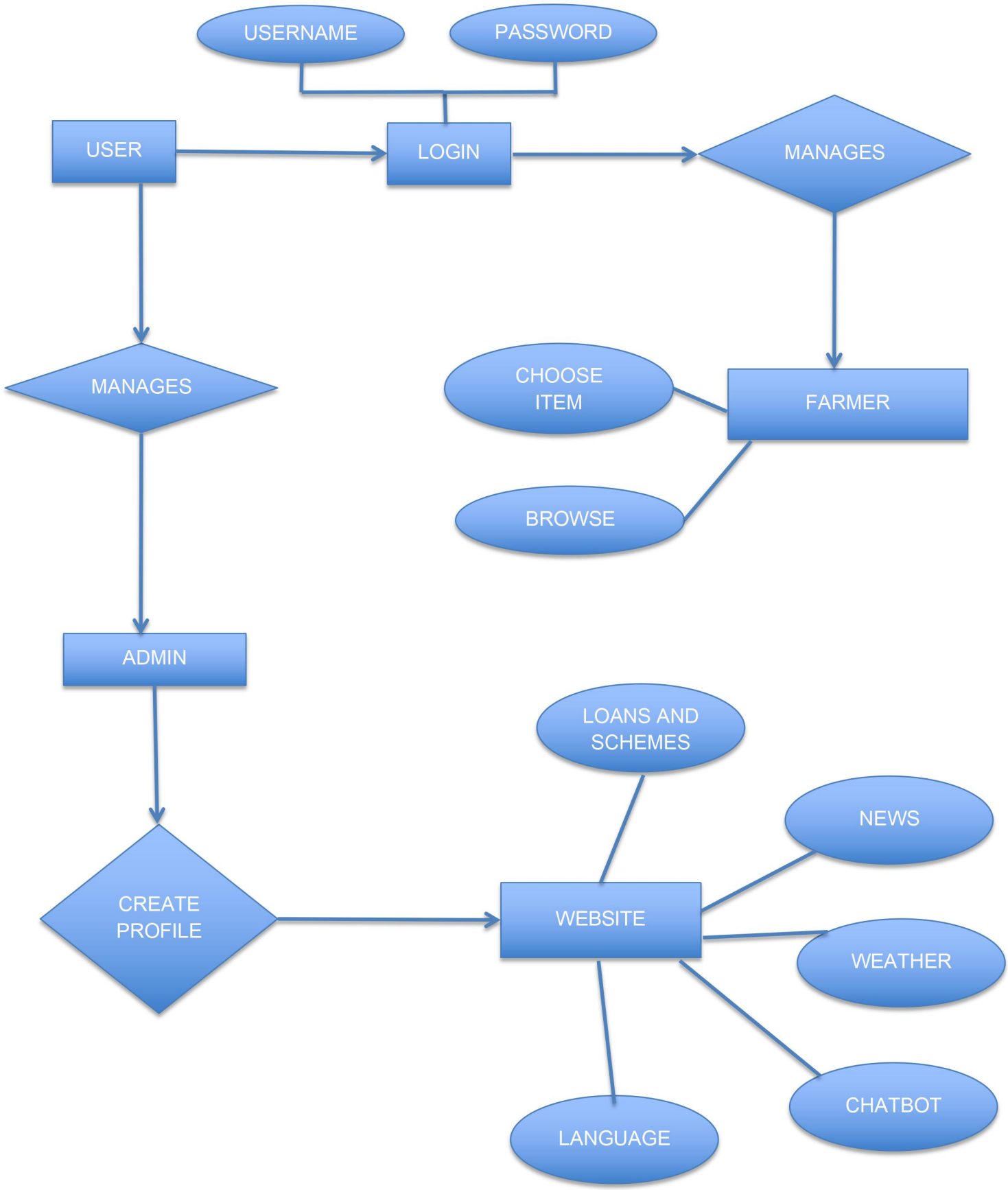

Figure 2.2: ER Diaram

2.4 SYSTEM ARCHITECTURE:

The architecture diagram defines the fundamental structures of a software system and the discipline of creating such structures and the structured solution of the proposed idea.

- This project has a very simple system architecture that is depicted in (Figure.2.3). There will be a system user who has to register in Agrobot. Then the user will have some login Id and password that has been registered.
- The admin will permit the user into the website if he/she is an authorized user.
- After logging into the website, they can choose for which page they wish to navigate.
- The user will also be provided with chatbot and language options to enable interactive conversations.
- The user's login credentials, application of loans and purchase in shops will be stored in the database.

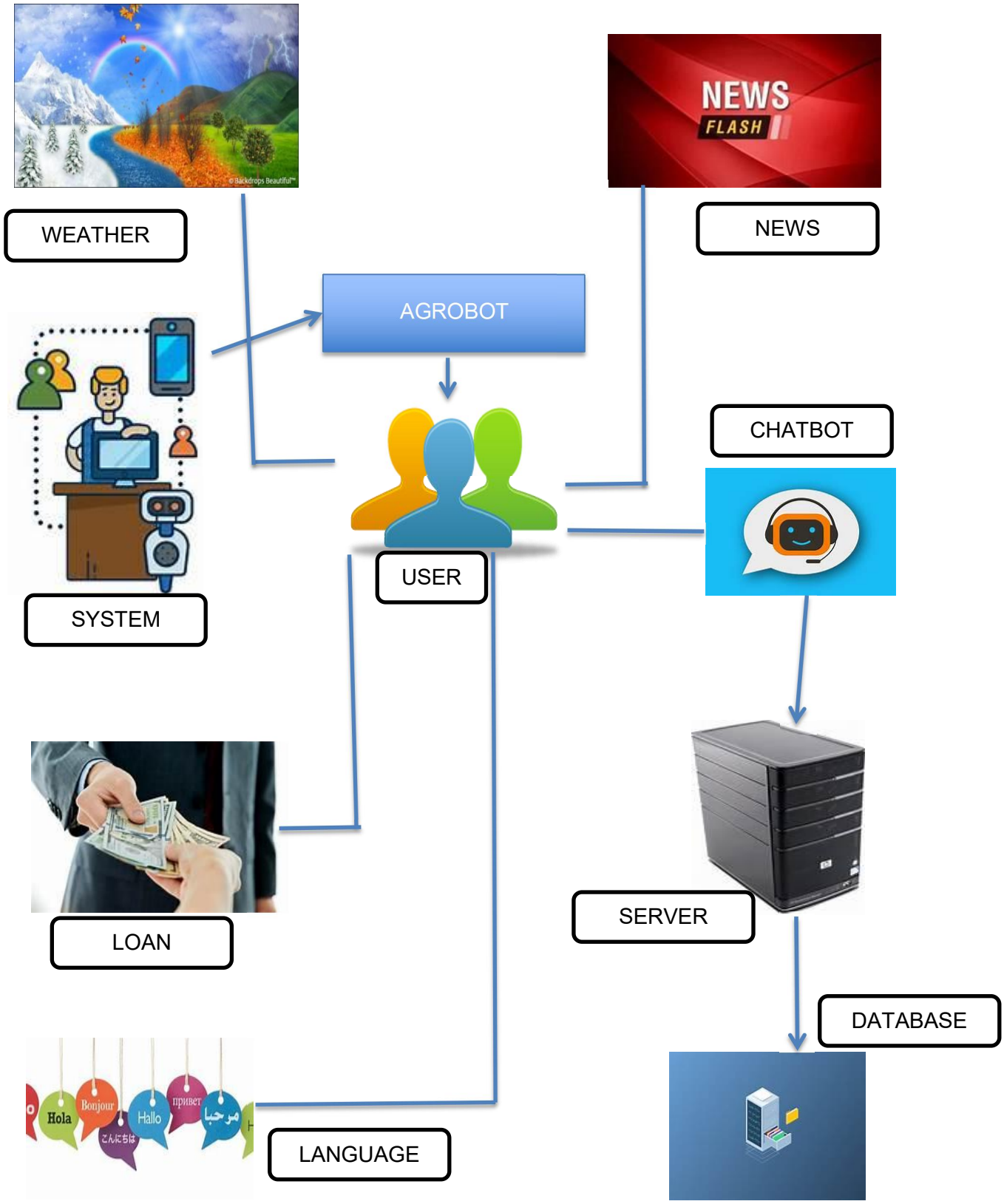

Figure 2.3: Architecture Diagram

CHAPTER 3

EXTERNAL INTERFACE REQUIREMENTS

3.1 USER INTERFACE:

Any popular OS that will allow the use of a browser to view and access web pages. In order to make the user comfortable, all the main details have been detailed in the Home page of the website itself.

3.2 HARDWARE INTERFACE:

Any kind of internet connection like WIFI, modem data etc, to allow the browser interfaces to connect to the website. The website can be accessed through any devices like mobile, computer, laptop, tablet, etc.

3.3 SOFTWARE INTERFACE:

Some of the software interfaces which you can use to access our website are

* Opera for Windows 10 PC - Version 82.0.4227.43
* Google chrome for Windows - Version 96.0.4664.110
* Google chrome for macOS - Version 96.0.4664.110
* Google chrome for Linux - Version 96.0.4664.110
* Google chrome for Android - Version 96.0.4664.104
* Google chrome for iOS - Version 96.0.4664.116
* Mozilla Firefox Standard Release for Desktop - Version 95.0.2
* Mozilla Firefox Extended Support Release for Desktop - Version 91.4.1
* Mozilla Firefox for iOS - Version 40.2
* Mozilla Firefox for Android - Version 95.0
* Microsoft Edge for Windows 10 - Version 96.0.1054.62
* Microsoft Edge for macOS - Version 96.0.1054.62
* Microsoft Edge for iOS - Version 96.1054.49
* Microsoft Edge for Android - Version 96.0.1054.53
* Microsoft Edge for Xbox One - Version 44.18363.8131

CHAPTER 4

TESTING

4.1 TEST PLAN:

Scope:

The scope of the testing is to make the user to go through all the web pages easily.

Test Deliverables:

The user will be able to get updated about the current news, weather conditions, loans and schemes available for the farmers and an interactive chatbot in their preferrable language.

4.2 TEST PROCEDURE:

The test plan is shown below

Name of the test	**Things to be tested**
API testing	User's comfort with website should be tested.
Unit testing	Every page of the website should be tested.
Integration testing	Connection between the web pages are tested.
System testing	The functional flow of the web pages are tested.

4.3 TEST CASES:

TEST CASE ID	TEST NAME	EXPECTED RESULTS	ACTUAL RESULTS	STATUS
1.	While opening, the site should open	Site should open	As expected	Pass
2.	Pages should be directed while clicking	Pages should open	As expected	Pass
3.	On pressing chat button, the chatbot must be enabled.	Users must get response for the chat	As expected	Pass
4.	On clicking the link, news page should be opened	The link should be directed to HINDU page	As expected	Pass
5.	While clicking the language button, changes must be observed	Chosen language must be updated	As expected	Pass
6.	To check whether the weather widget gets updated daily	Forecasting varies according to daily environmental changes	As expected	Pass
7.	To create and register an user	User should be notified with a welcome message	As expected	Pass

8.	To sprint to various social share buttons if clicked	Directs to the corresponding social media platform	As expected	Pass
9.	To be able to hear the audio content upon clicking the loudspeaker button	Home page audio will be played	As expected	Pass
10.	To be able to notify the registration process with the same user details	User should receive the message that “User already exists”	As expected	Pass
11.	To log-out of the account when needed	User can log out	As expected	Pass

CHAPTER 5

FUTURE ENHANCEMENT

In future, currency conversion feature is to be added in shop page. Provision of mobile view to view the website. Addition of “Buy and Sell” feature, “Add to cart” and payment options to the shop. In a nutshell to create a replica of an e-commerce website. Day to day updates on current events and happenings in the news page. Introduction of audio option in the chatbot (voice bot). In weather page, provide access to the user to customize the location in the weather widget. Ensuring security in user login.

CHAPTER 6

CONCLUSION

In conclusion, AGROBOT helps the farmers by assisting them and improving their agricultural practices. It also aids the users by providing the current news, weather prediction, notifying about the agricultural loans and schemes provided by the government, a shop that enables the users to buy and sell the agricultural goods. The users will also be provided with a chatbot where the farmers can interact effectively to get the desired response.

SCREENSHOTS

1)HOME

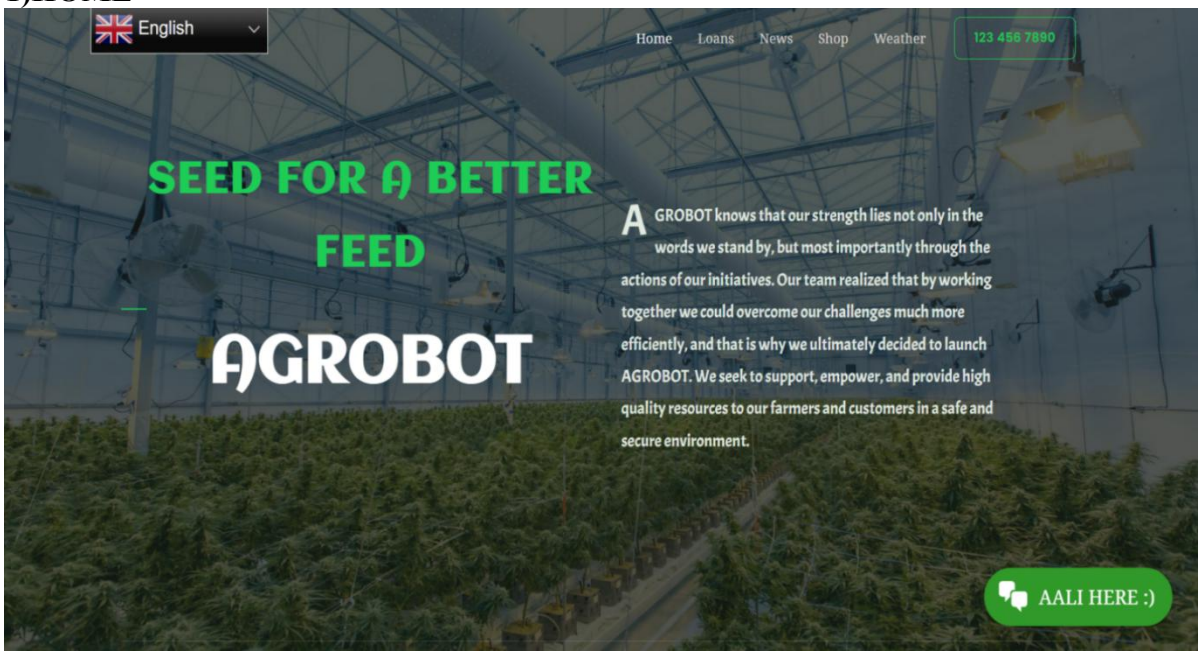

Figure 7.1: Home page

The description of Agrobot along with all the available features is present in the "Home" page (Figure.7.1).

2) LOANS

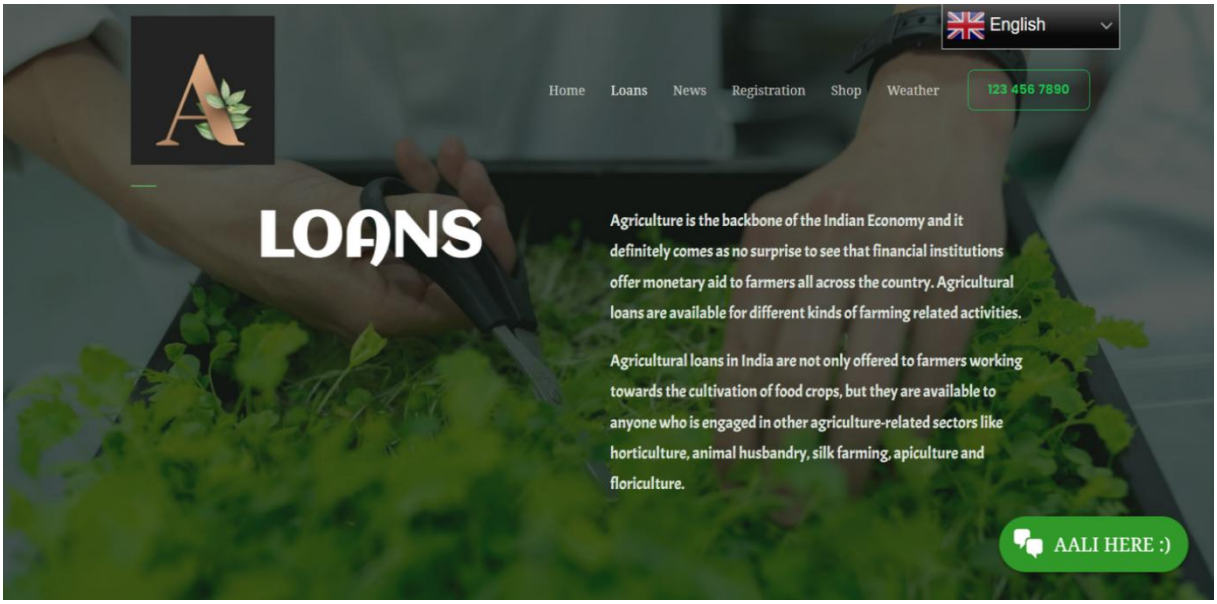

Figure 7.2: Loans page

The updated loans and schemes for the farmers are listed in detail, in the "Loans" page (Figure.7.2).

3)NEWS

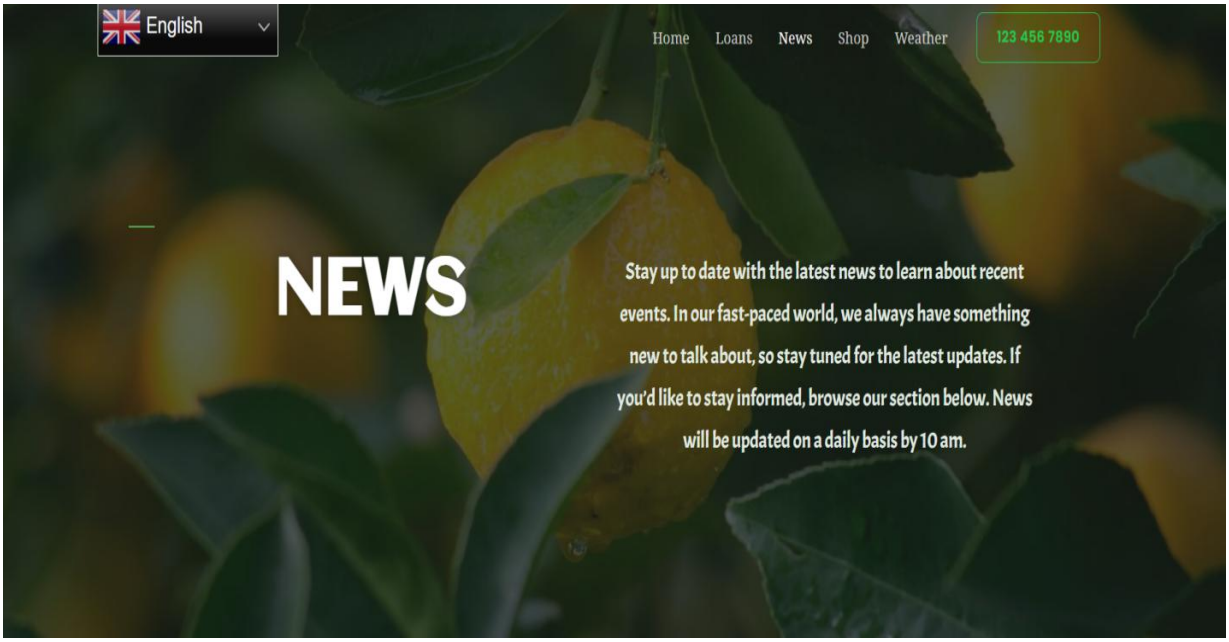

Figure 7.3: News page

Daily happenings is being posted in the "News page" (Figure.7.3) elaborately.

4) REGISTRATION

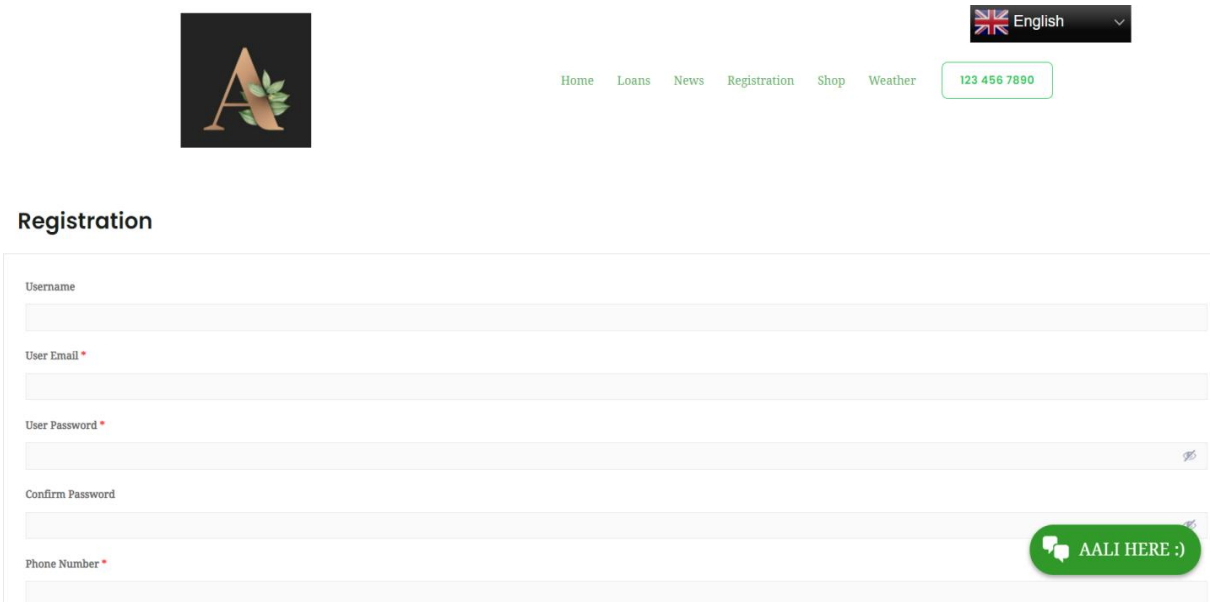

Figure 7.4: Registration page

If the user wishes to be a part of Agrobot, then he/she can register using their personal details through the "Registrations" page (Figure.7.4).

5)SHOP

Figure 7.5: Shop page

The "Shop" page (Figure.7.5) lists all the possible varieties of agricultural products that are for sale in the market controlled by Agrobot.

6)WEATHER

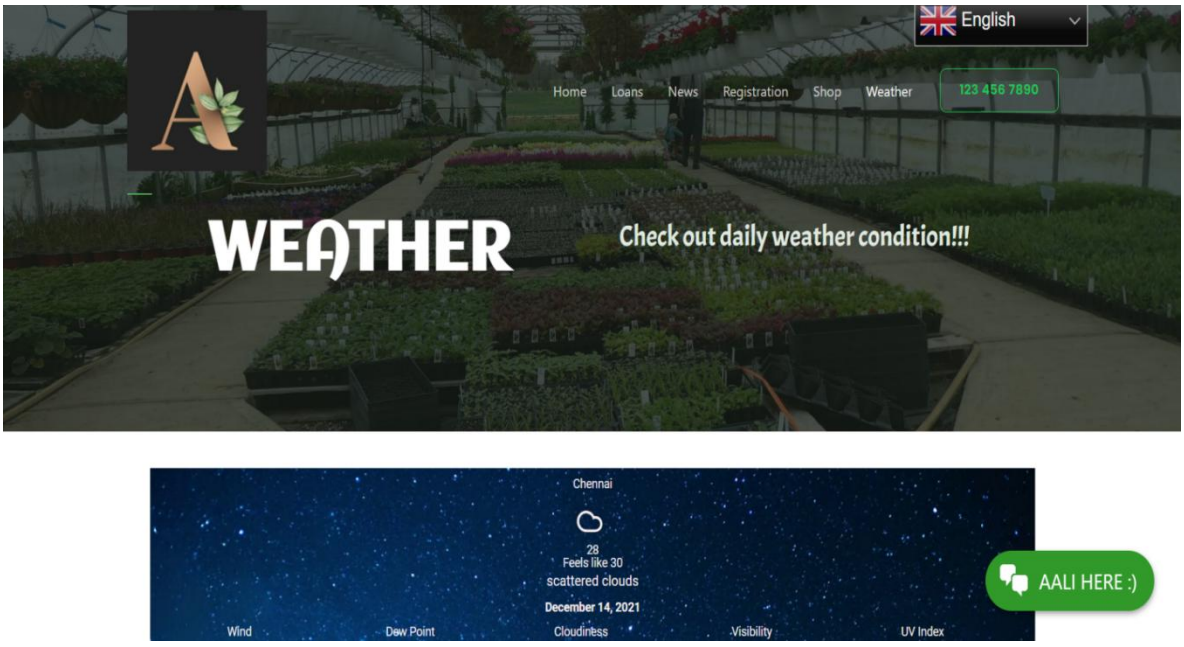

Figure 7.6: Weather page

The climatic conditions are known using the "Weather" page (Figure.7.6).

7) LANGUAGE

Figure 7.7: Multilanguage Option

Farmer can easily access the contents of the website in their preferable language to ensure better understanding, using the “Multi-language” option (Figure.7.7).

8) CHATBOT INTENTS

Intents (63) ↑	Description	Modified ↑↓	Examples ↑↓
#Bot_Control_Approve_Response	Acknowledge that the response satisfies a que...	16 days ago	14
#Bot_Control_Change_Subject	Change to a different topic.	15 days ago	10
#Bot_Control_Clarification	Repeat or clarify last statement.	16 days ago	16
#Bot_Control_Confirm_Presence	Ask the bot to indicate that it is available.	16 days ago	15
#Bot_Control_Ignore_Undo	Ask the bot to take one step back.	15 days ago	9
#Bot_Control_Reject_Response	Indicate the bot's response does not address a ...	3 months ago	21
#Bot_Control_Standby	Indicate a delay in providing input to the bot.	3 months ago	20
#Bot_Control_Start_Over	Restart bot or current flow.	16 days ago	17
#Bot_Control_Unsure	Indicate no definite answer to a question.	16 days ago	7

Showing 1–63 of 63 intents

1 1 of 1 pages

Figure 7.8: Chatbot details

The chatbot is trained with all the possible user queries using the assistant provided in IBM Cloud (Figure 7.8).

9) CHATBOT DIALOG

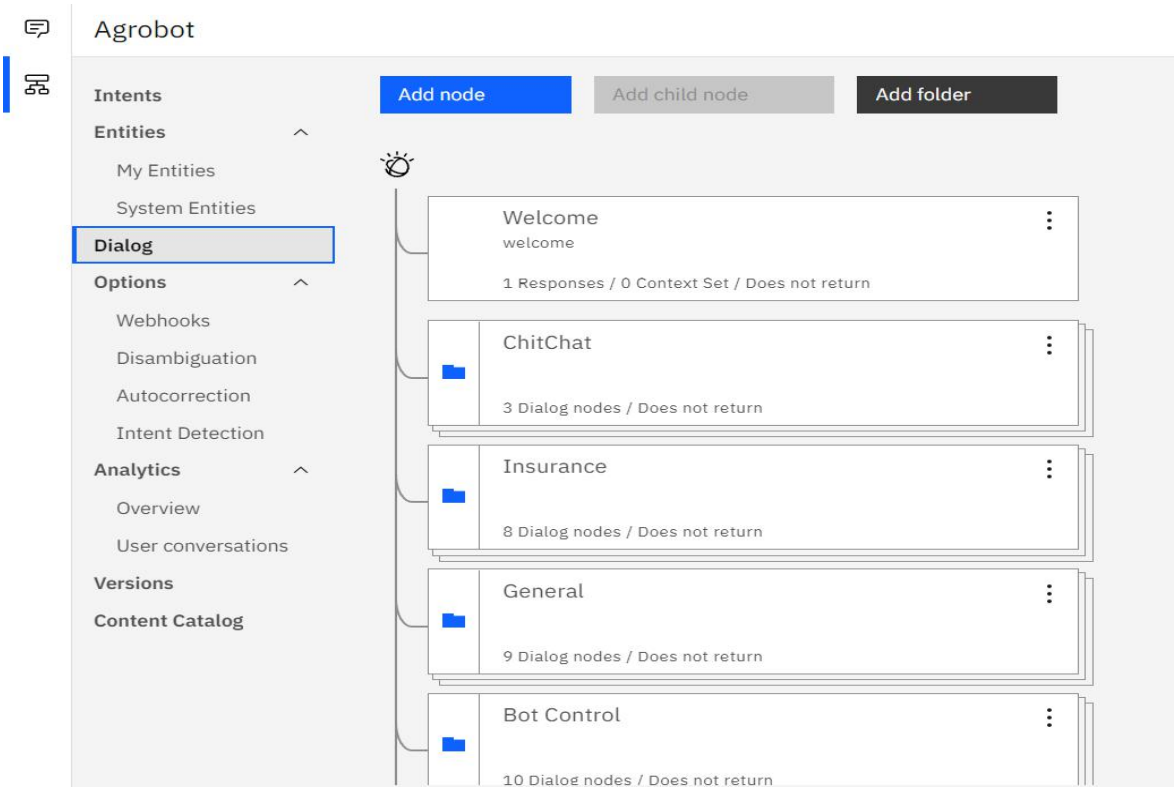

Figure 7.9: Chatbot dialog

The exchange of conversation between human and a bot is represented in the form of a logical tree (Figure.7.9), promoting an interactive communication in the end product.

10) CHATBOT INPUTS

Policy	Can you please show me my insurance policy?	Do you like to view the insurance policy
	How do I download the policy to see?	Want to know more about policies?
	I want to look at policy terms.	To view the policy, visit http://agrobot.c
	Please show me my policy	
	Pull up my policy please	
	Show policy	
	Terms and conditions info	
	View policy	
	What is link to download insurance policy?	
	What is the expiration date of my health insurance?	
	What is the start date of insurance?	
	What's in my plan?	
	What's the full amount of things which the plan covers?	
	Where is the contract for insurance?	
Reply for Policy	List all policies.	To view the policy, visit http://agrobot.c
	Policies please.	
	Show me the policies.	
	What all policies do you have?	
	Yes, show it.	
	Yes, show me.	
Insurance ID	Can I get my poi on my mobile?	If you attach the correct mobile number
	Can my agent give me my poi?	To get POI, you have to register in our w
	Can you assist me to get poi?	Mail will be sent to the registered accou
	Can you email me poi?	The link to download POI will be provide
	Can you please give me poi?	You can contact your bank to get insura
	Can you please provide details of poi?	
	Can you please show me poi?	
	Do you know from where I can download poi card?	
	How can I find poi?	
	How to view poi?	

Figure 7.10: Chatbot input

To keep track of the intents fed to the chatbot, details are saved in an organised way using MS Excel (Figure.7.10).

11) MYSQL QUERY

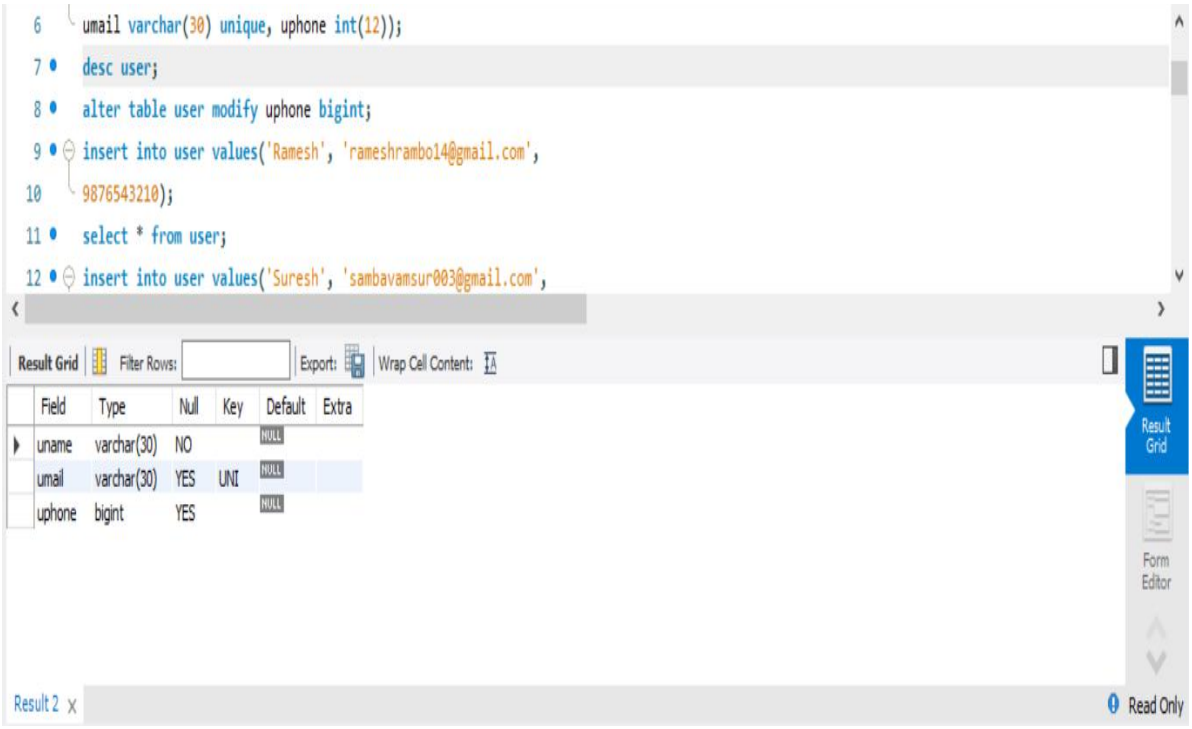

Figure 7.11: MySQL query 1

The table that has been created for collecting user registration details with attributes being user name, user mail ID and user mobile number using MySQL (Figure.7.11).

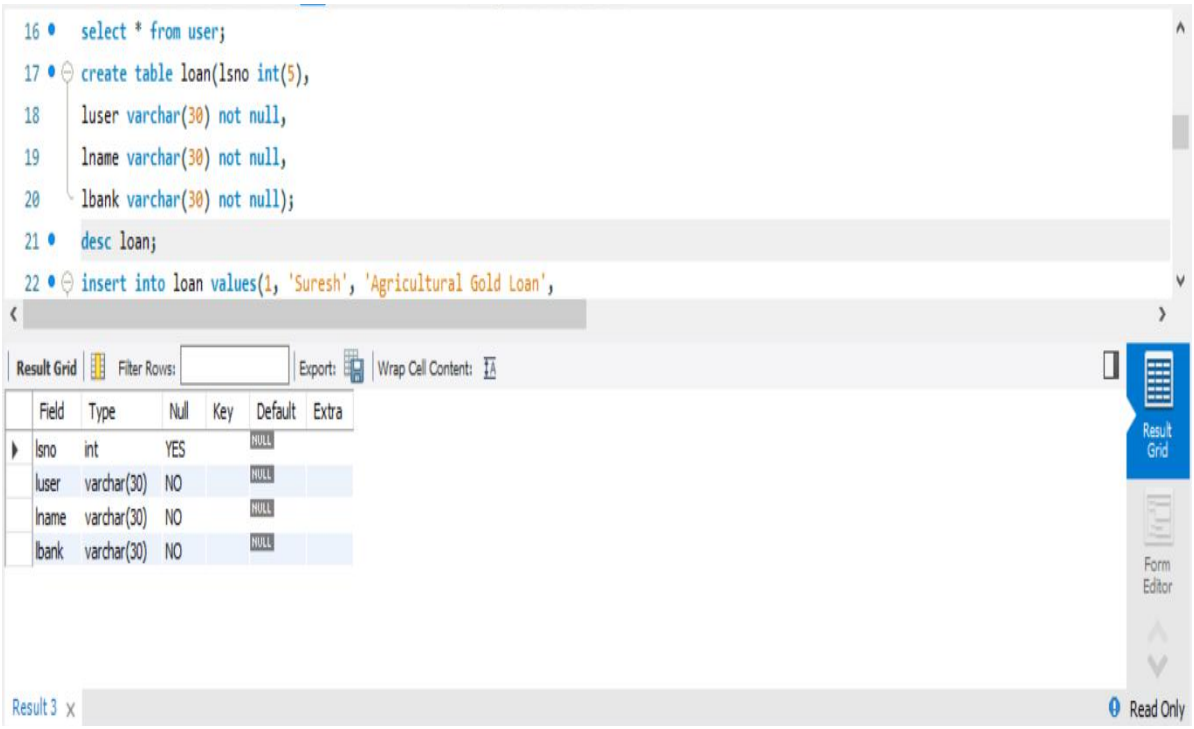

Figure 7.12: MySQL query 2

The table for loan application, that keeps track of the details of users who have applied for a specific loan or a scheme (Figure.7.12).

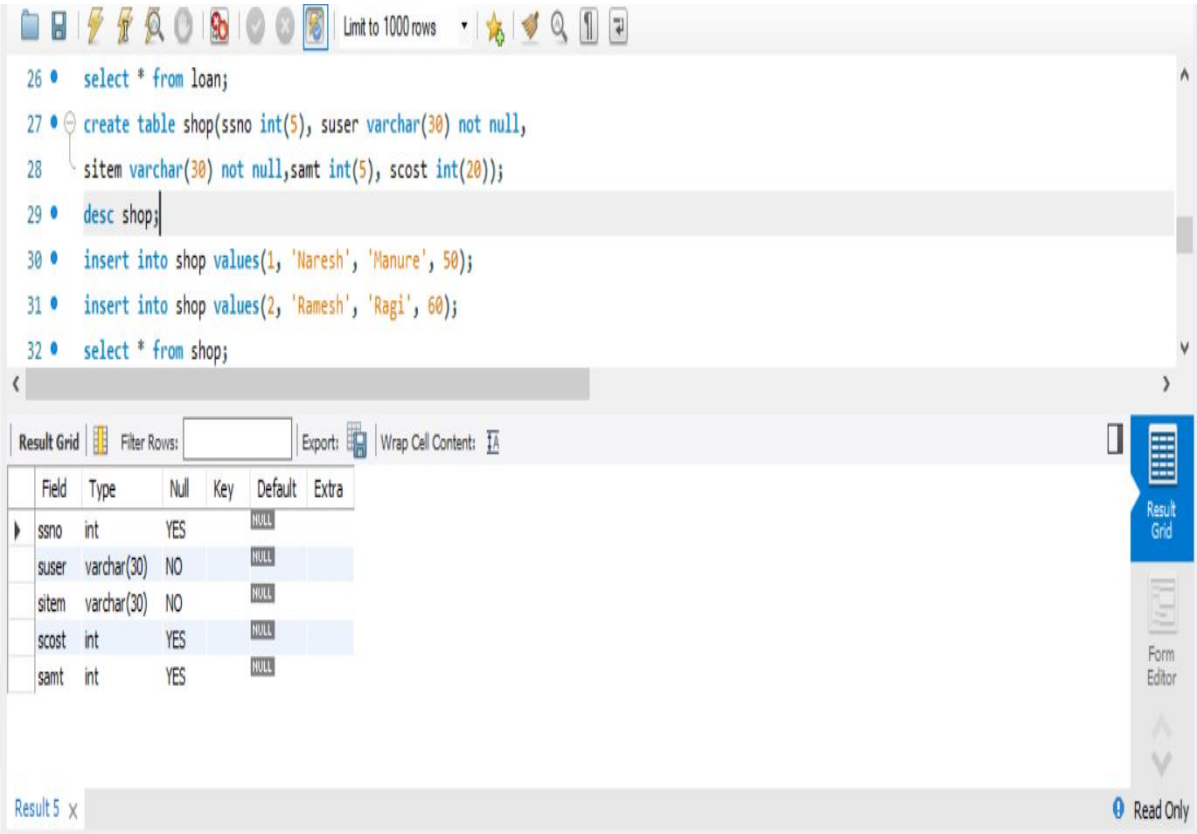

Figure 7.13: MySQL query 3

The table for E-commerce through Shop for the variety of items bought or sold by a farmer with their desirable quantities (Figure.7.13).

14) MYSQL QUERY

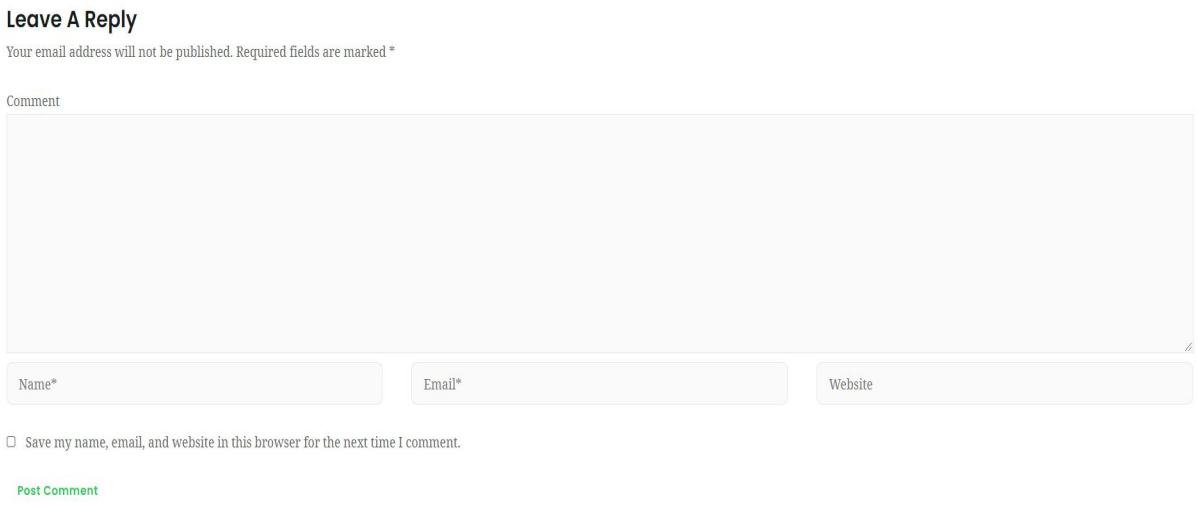

Figure 7.14: Comment section

The arena of feedback to receive user's opinions or suggestions that paves way towards the improvement of Agrobot (Figure.7.14).

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