

A Project ETE Report

on

FARMER'S FRIENDLY: A TECHNOLOGY FOR FARMERS

*Submitted in partial fulfilment of the
requirement for the award of the degree of*

BACHELOR OF TECHNOLOGY

In

COMPUTER SCIENCE



(Established under Galgotias University Uttar Pradesh Act No. 14 of 2011)

Under The Supervision of

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GREATER NOIDA
INDIA
OCTOBER, 2021**

CANDIDATE’S DECLARATION

We hereby certify that the work which is being presented in the project, entitled “**FARMER’S FRIENDLY: A TECHNOLOGY FOR FARMERS**” in partial fulfilment of the requirements for the award of the Bachelor Of Technology in Computer Science submitted in the School of Computing Science and Engineering of Galgotias University, Greater Noida, is an original work carried out during the period of July 2021 to December 2021, under the supervision of **Dr. K.M Baalamurugan**, Assistant Professor, Department of Computer Science and Engineering, of School of Computing Science and Engineering , Galgotias University, Greater Noida

The matter presented in the project has not been submitted by us for the award of any other degree of this or any other places.

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This is to certify that the above statement made by the candidates is correct to the best of my knowledge.

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CERTIFICATE

The Final Project Viva-Voce examination of Nidhi Bhatia: 19SCSE1180084, Yash Dixit: 19SCSE1010852 [Project Id-BT3266] has been held on _____ and his/her work is recommended for the award of Bachelor Of Technology in Computer Science.

Signature of Examiner(s)

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Date: December, 2021

Place: Greater Noida

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ABSTRACT

In this modern era of modernisation, it is necessary to modernise and uplift the advancement in every sector of development. To move forward with that, we are introducing ways for better and advanced farming which will not only improve farming methods but will reform the thinking of farmers.

This project focuses upon finding the solution of the challenges faced by the farmers during various stages of farmings. The most common and major challenges which are faced by farmers includes crop failure due to weather, unawareness about modern tools and scarcity of capitals. This project provides the ways for convenient farming using data of previous year weather conditions in a certain area. Hence, through this project, crop failures and other difficulties during agricultural practices can be prevented. This project focuses upon maximum cultivation and profit for farmers in order to meet the rising demands for more food of higher quality. This will help the farmers to cope with the climate change, soil erosion and biodiversity loss.

This project is a web based application which uses different APIs for fetching the data. HTML, CSS, Javascript is used to provide functioning to the webpage. This project will help farmers know about different farming techniques in different seasons on the basis of previous weather conditions in a certain area. This will enable farmers to grow crops even in an area that may become flooded.

Thus, from the above content, we can conclude that this will be a revolutionary project for farmers which will not only effect the farmers but also the production rates. As farming is one of the basic and important element contributing in the national economy so, proper implementation of this project will contribute to the national economy. More and updated features can be further added so as to make it more convenient for farmers.

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Many people around the world are feeling the effects of climate change. In India, over 17.5 million people lose income and go hungry when heavy rain floods their farmland. Monsoon floods are robbing millions of people of their homes and livelihoods, with mounting risk of more deadly disease outbreaks when health resources are stretched to breaking point by COVID-19. Drought and food security are intimately linked.

The Indian Meteorological Department defines a heavy rainfall event as one when the daily rainfall is above 65 millimetres (mm), with extremely heavy rains at 245 mm and above, clarified climate scientist Dr. Roxy Mathew Koll of the Indian Institute of Tropical Meteorology. As per this definition based on daily rainfall, the recent rains in Kerala and Uttarakhand were both heavy-to-extreme rainfall events, he noted. Extreme weather events have another avatar too: droughts. According to a report on climate change in India by the Ministry of Earth Sciences (MoES) in 2020, regions which witnessed a significant drying trend (including parts of central India, the southwest coast and north-east India), also experienced a higher annual frequency of droughts (more than two droughts per decade on average, from 1951 to 2016). This has ramifications for India's food and water security, said the report, because lower levels of soil moisture and groundwater storage can affect crop production.

Drought-prone districts account for 42 per cent of the country's cultivable lands. Rain-fed areas are highly drought-prone. On an average, India's rain-fed regions suffer from drought every three years. Often the drought persists for three to six years and affects availability of water for people and livestock and crop and fodder production. Drought has direct and negative impacts agricultural production. Severe droughts in rain-fed areas have reduced agricultural production by 20 to 40 per cent. Considering the population of India which is around 1.39 Billion.

Thus, it is necessary to modernise and uplift the advancement in every sector of development. The most common and major challenges which are faced by farmers includes crop failure due to weather, unawareness about modern tools and scarcity of capitals.

Developing countries need to dramatically increase agricultural innovation and the use of technology by farmers, to eliminate poverty, meet the rising demand for food, and cope with the adverse effects of climate change. The key driver for increasing agricultural productivity and rising incomes is the adoption of innovative technologies and practices by farmers. This will enable farmers to raise yields, manage inputs more efficiently, adopt new crops and production systems, improve the quality of their products, conserve natural resources, and adapt to climate challenges. However, the world is facing a widening research and development spending gap, even as government funding for agriculture is reaching new heights.

The management of weather and climate risks in agriculture has become an important issue due to climate change. The Intergovernmental Panel on Climate Change (IPCC) has highlighted multiple climate risks for agriculture and food security as well as the potential of improved weather and climate early warning systems to assist farmers. Wise use of weather and climate information can help to make better-informed policy, institutional and community decisions that reduce related risks and enhance opportunities, improve the efficient use of limited resources and increase crop, livestock and fisheries production. Meteorological and Hydrological Services (MHSs) have an important role to play in providing this weather and climate information to farmers, big and small. However, MHSs will need realignment, new resources and training in order to provide location and crop specific actionable weather and climate services and products that link in available technologies, best practices and go the last mile to reach all farmers. The Agromet Advisory Services of the India Meteorological Department (IMD) in the Ministry of Earth Sciences is a small step in this direction, aimed at “weatherproofing” farm production.

1.2 FORMULATION OF PROBLEM

- Recent extreme weather events are destroying standing crops as well as causing other impacts such as climate-triggered pestilence.
- Such events are more likely to occur in future, and this can create problems for rain-fed agriculture because we won't get the right amount of rain at the right time, say climate scientists.
- Farmers say they need more reliable forecasts as well as rescue, relief and rehabilitation measures – including crop insurance – to aid climate-resilient farming.

Coming up with the solution for these issues, this project will help the farmers in many ways. One of which is by introducing them to the new era technologies. This project will introduce farmers to modern tools and educating them about those different tools. This project will help farmers know about different farming techniques in different seasons on the basis of previous weather conditions in a certain area. This will enable farmers to grow crops even in an area that may become flooded. This will tell farmers about different resources available for them in their sector. It project will gradually create a community for farmers through which they can share ideas and thoughts for better yielding.

The present era is the modern age and information technology has made a huge contribution in this modern age. Most people in the world now rely on information online. And India is the main country of agriculture. Most people in our country now depend on agriculture. In the past, people in our country used to grow crops based on information available from TV and radio, but now they do not want to wait for TV or radio.

And the Internet is now in the hands of people, which is why many people now want to know about agriculture online, and they want to plan accordingly. And most of the information centres on agriculture online in India cannot provide all the information about agriculture most of the time. The smart farming system should be used so that the farmers can easily get all the information from the farm. Farmers will be able to access all agriculture-related information from the smart farming system, not just from any part of India.

1.3 TOOLS AND TECHNOLOGY USED

This project is a web based application which uses different APIs for fetching the data. HTML is used for structuring the whole layout of the page , CSS is used for styling and designing the elements provided in the given webpage and JavaScript is used to give functions to the elements of the webpage. The data is fetched from different APIs through JavaScript.

With the increase in population the demands of consumers will be met and the price will be lowered due to decreased rate of crop failure. The farmers will not go in debt due to crop failure and will be able to afford and learn more about modern tools of farming. Proper knowledge of chemical fertilisers and cross interaction between farmers will decrease the mental load of farmers.

As farming is one of the basic and important element contributing in the national economy so, proper implementation of this project will contribute to the national economy. More and updated features can be further added so as to make it more convenient for farmers.

The time has come for modern living. Farmers in our country usually use the weather and weather information to harvest plants and crops. But now, with the help of technology, anyone get all of the information related to agriculture. At present, new technology and smart systems are very populate in India. With the recent development and promotion of affordable technological equipment, both large and small farmers are getting new and more precise equipment for less and more production. Fortunately, farmers worldwide are facing technological advancements that can help them grow more food and market it at a much more reasonable price. Opportunities for more precise cultivation can increase yields and profits and reduce the use of valuable water and fertilizers. So, we believe that the “Smart Farming System” will lead to the advancement of scientific and modern farming. In summary, this system will help the farmers involve farming in every smart way, in one single platform.

Cultivation takes skill. A farmer need to know when to plant, when to irrigate, when to fertilize, and when to harvest. Also they need to know how to protect ourselves from pesticides and from harvesting after harvest. A time before, in the season of farming, various pathogens in the crops grown on land, but could not find a proper way to protect the crops produced from those diseases, farmers used to go to the market pesticides shopkeepers, they always suggest about primary medicine and most of them. Therefore most of the time crop damage is often done due to a lack of proper treatment on time. After analysed these issues, we started working with this online web application “Smart Farming System”, basically from all those hardships of the farmers. Most people now use smartphones and use the Internet. Fortunately, farmers around the world are now facing technological advances that will help them grow more food and collaborate to bring it to market at a much more reasonable price.

CHAPTER 2

LITERATURE REVIEW

In this modern era of technology there is still lack of computerized system for the farmer to check weather conditions, and to buy required items on a single platform. Farmers in our country usually use the weather information to harvest plants and crops. But now, with the help of technology, anyone get all of the information related to agriculture. At present, new technology and smart systems are very popular in India. Currently, the farmer has no such prior information regarding weather conditions to extract the maximum profit from the crops. There is no way for farmer to know about new tools, technologies and nearby godown/factories. There is no transparency. No facility is present for the farmers to buy the latest tools and equipments.

Many times, farmers are not even aware of the schemes and compensation provided by government. In spite of all the opportunities waiting at the doors the farmers are not able to benefit out of those. Current system does not provide the way of e-learning for farmer that will provide the knowledge of new techniques in farming. So they doesn't get the maximum profit through the current system.

We have found several websites about agriculture out of which most of them are informative. Some websites sell a variety of agricultural products. But if anyone ask anything about agriculture online, which provides information to farmers about different farming techniques in different seasons on the basis of previous weather conditions in a certain area, there are no live answer options. And it is easy to talk directly to a consultant on agriculture and there are no live contact option with the admins, but the system is doing this unique task.

The following is a description of some agriculture-based website:-

1. ANGLER: Based on the scope, Team ANGLER developed a web application that renders all data from the web application to the mobile app. They have structured multiple masters the web panel to manage the various users with privileges of location masters in hierarchy like state, store, village, zone etc. The developed web application maintains the complete details of farmers in this web panel and finally renders to the mobile app. The mobile app serves as a universal UI for regional sales managers to take orders from farmers and embeds it with the

web panel. Our web panel provides the vendors with various reports to clients to analyse the statistics and business progress with possible improvements.

Previously developed websites do not allow the farmers to get the information regarding tools and seeds available as well as weather conditions of a certain place from a single platform. But the currently developed website provides all this set of information on a single platform.

CHAPTER 3

WORKING OF PROJECT

The website “FARMER’S FRIENDLY: A TECHNOLOGY FOR FARMERS” will provide login feature to each user that can be used to check the weather status in their respective area and can perform agro-marketing as well.

3.1 DESIGN AND ARCHITECTURE

We describe the Algorithm, which is used to explain how the system is going to work, i.e. the process logic behind it, the flowchart, which represents the pictorial representation of the process logic and finally the Data Flow Diagram of the Website.

3.1.1 DATA FLOW DIAGRAM MODELLING

Data flow diagrams are used to graphically represent the flow of data in a business information system. DFD describes the processes that are involved in a system to transfer data from the input to the file storage and reports generation.

Data flow diagrams can be divided into logical and physical. The logical data flow diagram describes flow of data through a system to perform certain functionality of a business. The physical data flow diagram describes the implementation of the logical data flow.

DFD graphically representing the functions, or processes, which capture, manipulate, store, and distribute data between a system and its environment and between components of a system. The visual representation makes it a good communication tool between User and System designer. Structure of DFD allows starting from a broad overview and expand it to a hierarchy of detailed diagrams.

DFD Symbols: There are **four basic symbols** that are used to represent a data-flow diagram.

1. **Process:** A process receives input data and produces output with a different content or form. Processes can be as simple as collecting input data and saving in the database, or it can be

complex as producing a report containing monthly sales of all retail stores in the northwest region.

Every process has a name that identifies the function it performs.

The name consists of a verb, followed by a singular noun.

Example:

- Apply Payment
- Calculate Commission
- Verify Order

Notation:

- A rounded rectangle represents a process
- Processes are given IDs for easy referencing

2. **Data Flow:** A data-flow is a path for data to move from one part of the information system to another. A data-flow may represent a single data element such the Customer ID or it can represent a set of data element (or a data structure).

Example:

- Customer_info (LastName, FirstName, SS#, Tel #, etc.)
- Order_info (OrderId, Item#, OrderDate, CustomerID, etc.).

Notation:

- Straight lines with incoming arrows are input data flow
- Straight lines with outgoing arrows are output data flows

Note that:

Because every process changes data from one form into another, at least one data-flow must enter and one data-flow must exit each process symbol.

3. **Data Store:** A data store or data repository is used in a data-flow diagram to represent a situation when the system must retain data because one or more processes need to use the stored data in a later time.

Notation

- Data can be written into the data store, which is depicted by an outgoing arrow
- Data can be read from a data store, which is depicted by an incoming arrow.
- Examples are: inventory, Accounts receivables, Orders, and Daily Payments.

Note that:

- A data store must be connected to a process with a data-flow.
- Each data store must have at least one input data-flow and at least one output data-flow (even if the output data-flow is a control or confirmation message).

4. **External Entity:** An external entity is a person, department, outside organization, or other information system that provides data to the system or receives outputs from the system. External entities are components outside of the boundaries of the information systems. They represent how the information system interacts with the outside world.

- A rectangle represents an external entity
- They either supply data or receive data
- They do not process data

Notation

- A customer submitting an order and then receive a bill from the system
- A vendor issue an invoice

Note that:

- External entities also are called terminators because they are data origins or final destinations.
- An external entity must be connected to a process through a data-flow.

The DFD diagram for our website is as follows:

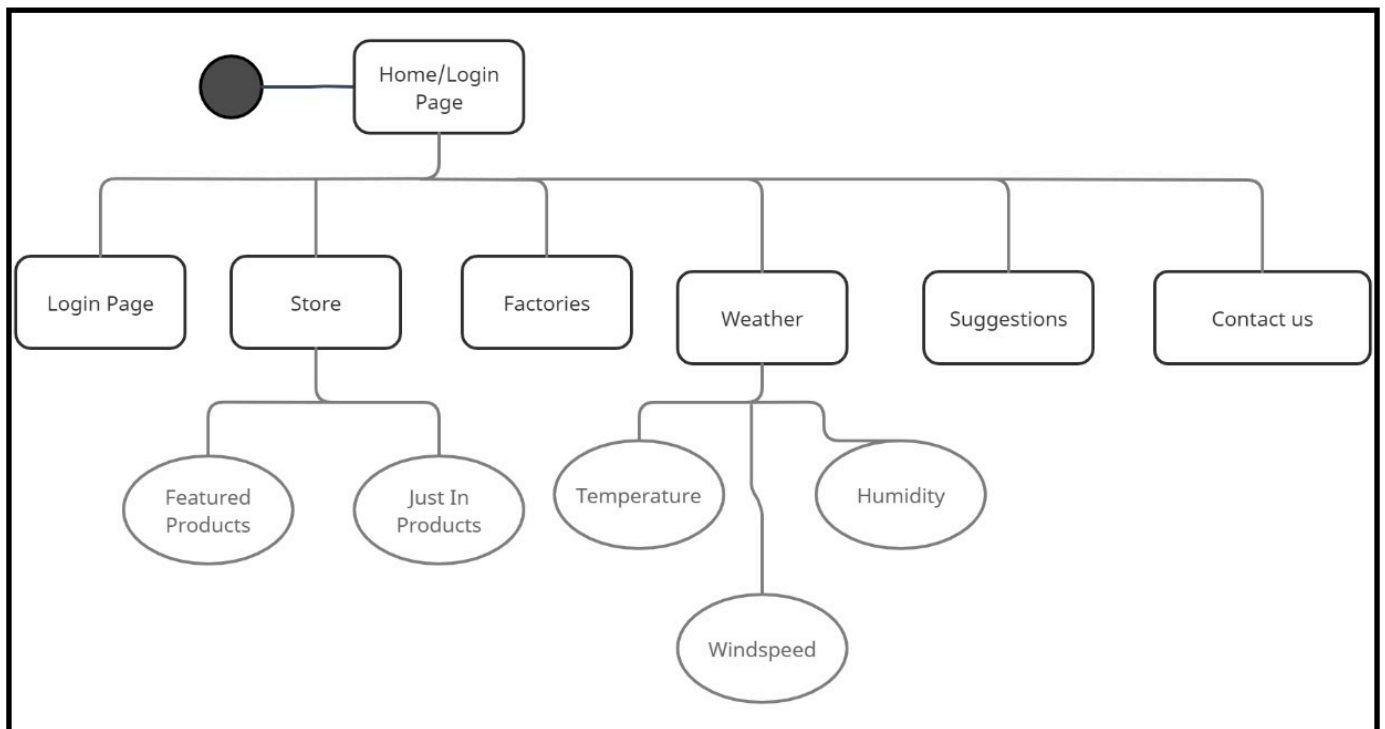


Figure 1. Data Flow Diagram

3.1.2 USE CASE DIAGRAM MODELLING

A use case diagram is used to represent the dynamic behavior of a system. It encapsulates the system's functionality by incorporating use cases, actors, and their relationships. It models the tasks, services, and functions required by a system/subsystem of an application. It depicts the high-level functionality of a system and also tells how the user handles a system.

Purpose of Use Case Diagrams

The main purpose of a use case diagram is to portray the dynamic aspect of a system. It accumulates the system's requirement, which includes both internal as well as external influences. It invokes persons, use cases, and several things that invoke the actors and elements accountable for the implementation of use case diagrams. It represents how an entity from the external environment can interact with a part of the system.

Following are the purposes of a use case diagram given below:

- It gathers the system's needs.
- It depicts the external view of the system.
- It recognizes the internal as well as external factors that influence the system.
- It represents the interaction between the actors.

Procedure

It is essential to analyze the whole system before starting with drawing a use case diagram, and then the system's functionalities are found. And once every single functionality is identified, they are then transformed into the use cases to be used in the use case diagram. After that, we will enlist the actors that will interact with the system. The actors are the person or a thing that invokes the functionality of a system. It may be a system or a private entity, such that it requires an entity to be pertinent to the functionalities of the system to which it is going to interact.

Once both the actors and use cases are enlisted, the relation between the actor and use case/ system is inspected. It identifies the no of times an actor communicates with the system. Basically, an actor can interact multiple times with a use case or system at a particular instance of time.

Following are some rules that must be followed while drawing a use case diagram:

- A pertinent and meaningful name should be assigned to the actor or a use case of a system.
- The communication of an actor with a use case must be defined in an understandable way.
- Specified notations to be used as and when required.
- The most significant interactions should be represented among the multiple no of interactions between the use case and actors.

3.1.2.1 Use case scenario for farmer

The farmer who likes to take our service, he needs to go first with choosing won helping service. Now he needs to get registered on the website by logging in.

The use case diagram for farmer is:-

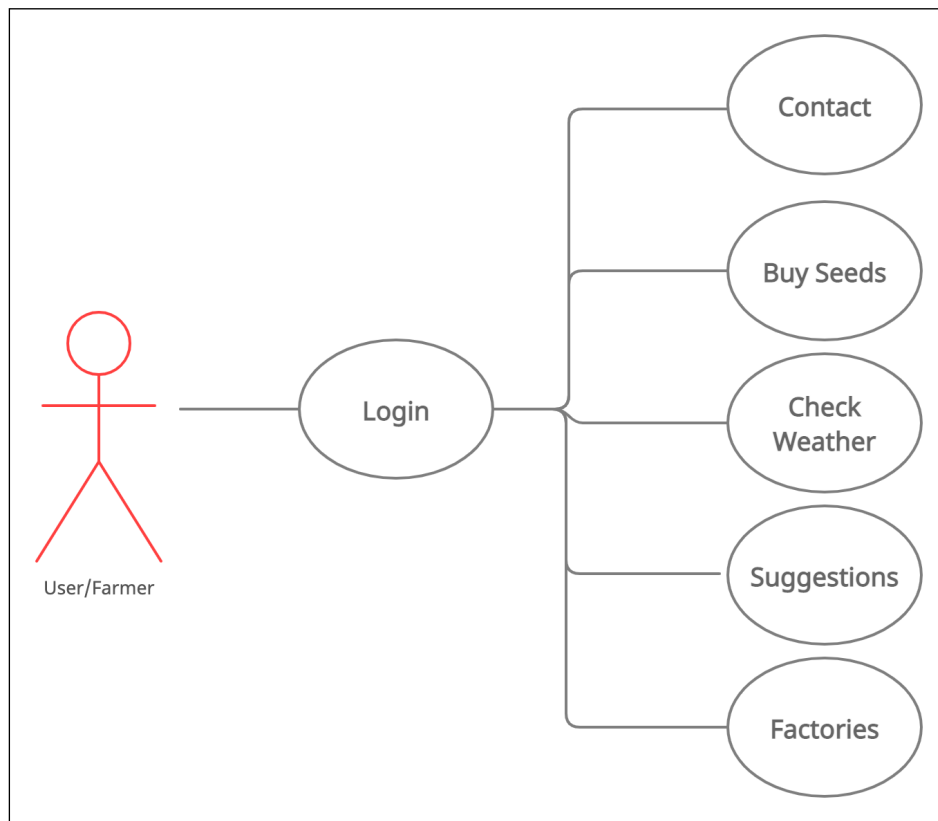


Figure 2. Use Case Diagram for farmer

3.1.2.2 Use case scenario for Admin

An Admin is expected to sign in with the authoritative secret password. At that point, he can get to the site. Presently, He can include any New seeds information, he can even update weather api, he can add suggestions according to the weather conditions of a particular area and the soil type found in that area, he can update factories information and in case any new factories that need to be added, also availability of new seeds could be updated as well as about new tools and technologies can be added like, hats, guns etc.

Hence, admin can even see the information about the farmers and in future can even handle the queries related to the farmer.

The use case diagram for admin is:-

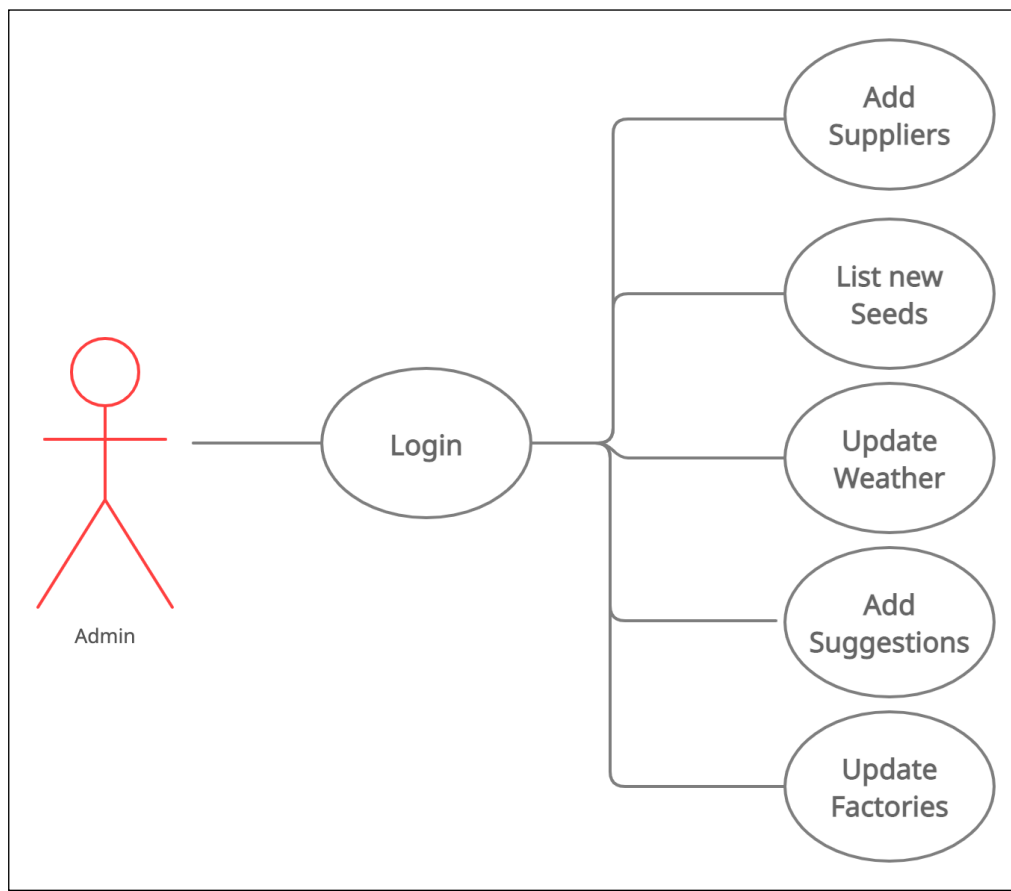


Figure 3. Use Case Diagram for Admin

3.2 ALGORITHM

There is a need to create an account first that is by registering and logging in for farmers to know about the weather conditions in their respective area also to buy and sell seeds and other farming related equipments.

Also, for friendly support we have provided the contact information as well as the opening hours so that they could easily get in touch with us and could clear their doubts. We have provided the factories information so that they could reach to the nearest factory from the location to get their cultivation product processed.

Once availed with the username and a password for the website the users can perform different operations like marketing, buying products, buying seeds, getting the nearest factories information, as well a suggestion for farming techniques.

3.3 MODULES OF THE WEBSITE

This project is divided into 7 modules. These 7 modules are connected through a simple navigation which is present on the top of the page. These modules/ Webpages provide different information or perform different tasks.

3.3.1 Home

Our first module is Home Module which consist of navigation bar through which user can navigate to different modules provided on this website.

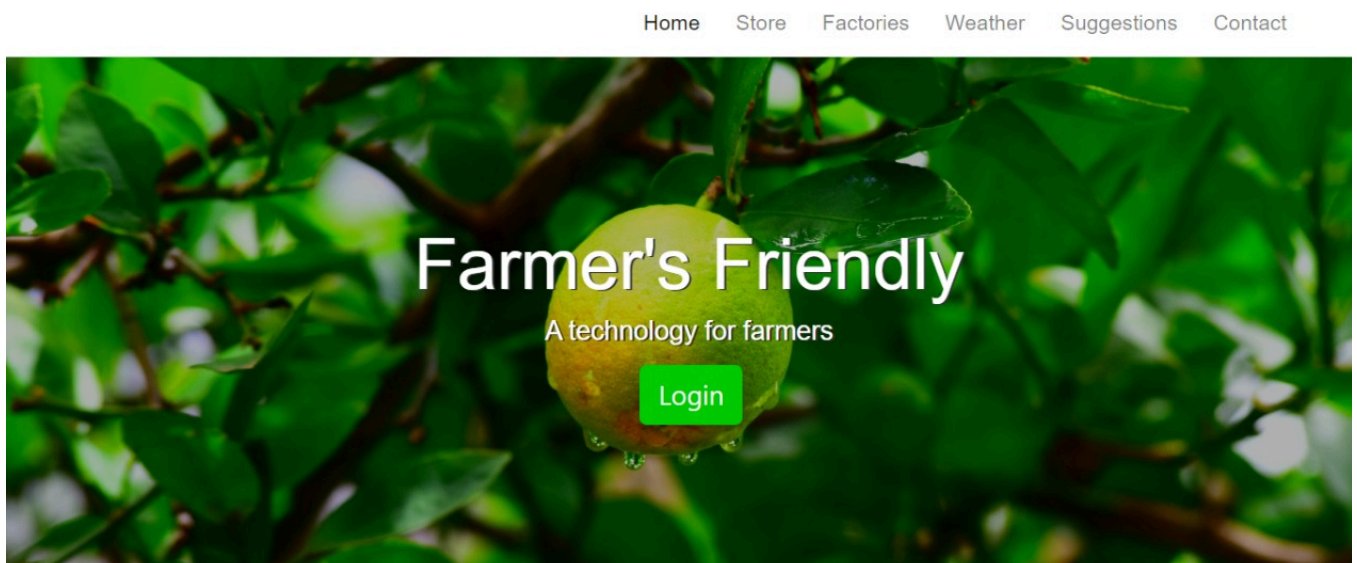


Figure 4. Home

3.3.2 Store

Our second module is Store Module which consist of required accessories and tools which are necessary for farmers during the farming process. This store module also consist of various seed listings and essential farming tools.

Featured Products

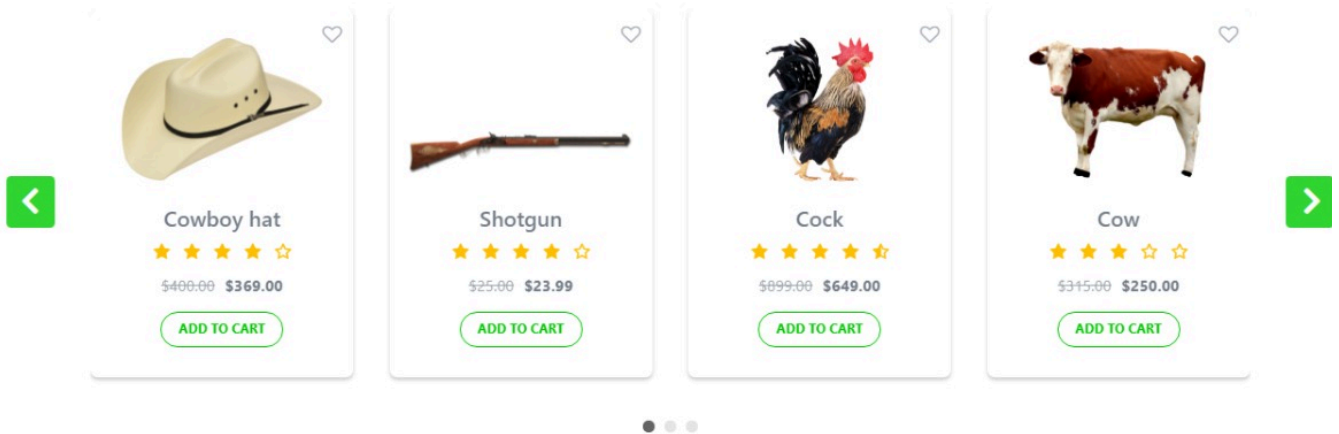


Figure 5. Store (Featured Products)

Just In

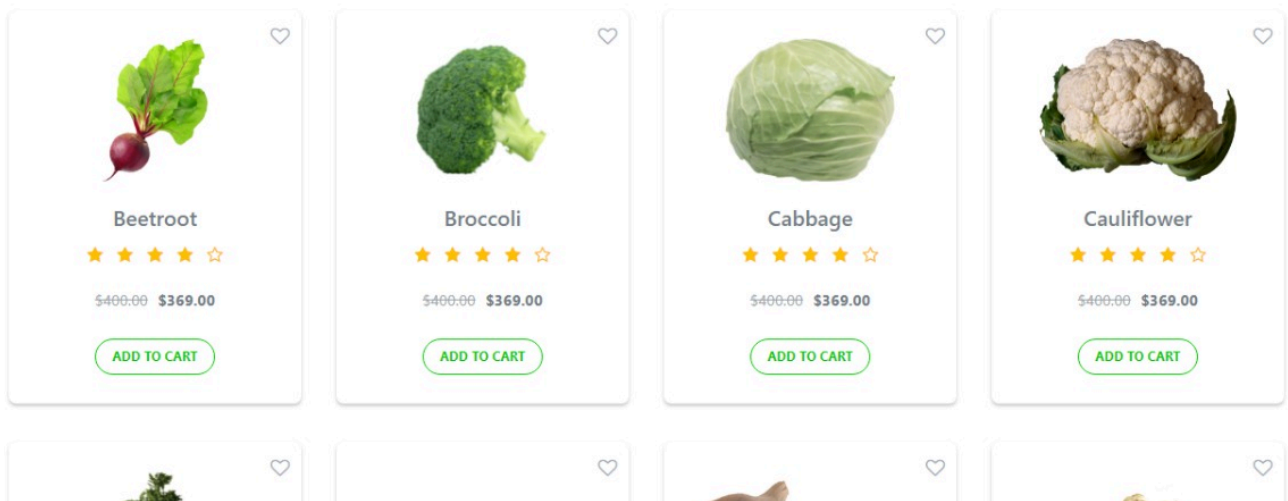


Figure 6. Store (New Products)

3.3.3 Factories

Our third module is Factories Module which consist of the information about the factories.

Our Factories

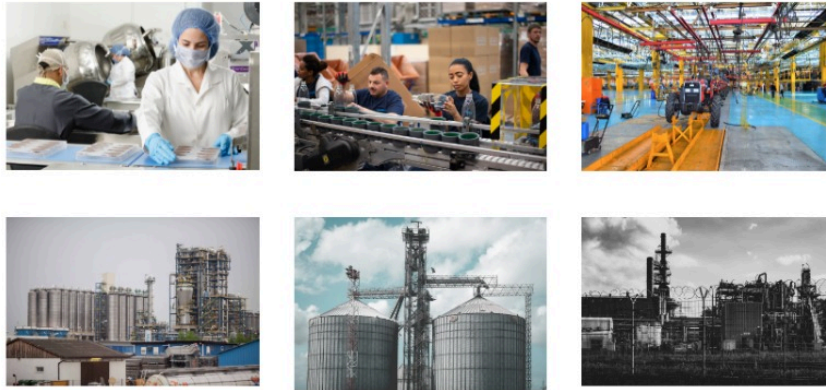


Figure 7. Factories

3.3.4 Weather

Our fourth module is Weather Module which consist of the information about the previous weather conditions of farmer's respective area.

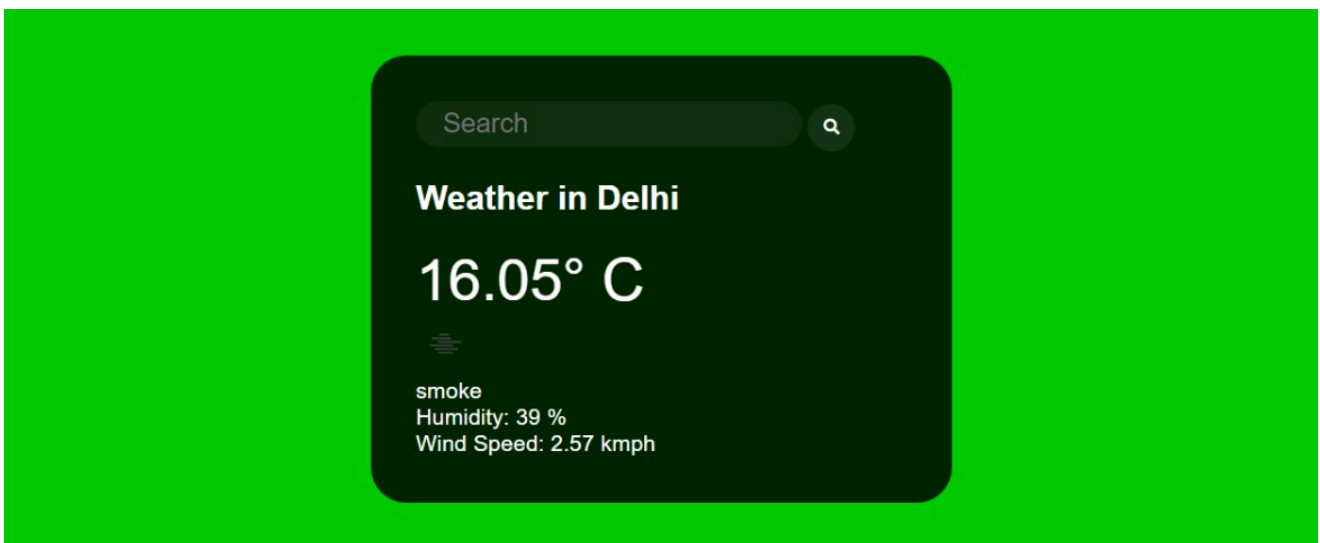


Figure 8. Weather

3.3.5 Suggestion

Our fifth module is Suggestion Module which consist of suggestions related to farming and seeds to be sown according to weather conditions in a specific area.

Suggestions





			
1. Rice Temperature: 15°-27° C Rainfall: 100- 150 cm Soil: Heavy-clayey to-clayey-loam	2. Wheat Temperature: 12°-25°C Rainfall: 25-75 cm Soil: well-drained-light clay to heavy clay	3. Maize Temperature: 15°-27°C Rainfall: 65-125 cm Soil: Deep-heavy clay to light sandy loam	4. Millets Temperature: 20°-35°C Rainfall: 25-75 cm Soil: Sandy-loam to clayey loam

Figure 9. Suggestion

3.3.6 Login

Our sixth module is Login Module which consist of login portal which requires the login details like username/email and password for further continuation in the site.

Login Page

Username / Email

Password Forget?

Remember me?

[Not a member? Sign up](#)

Figure 10. Login
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3.3.7 Contact

Our seventh module is the contact us Module which consist of contact details and query box.

Talk to us

How can we help?

Talk to us here...

Submit

Opening Hours

- 🕒 Monday-Friday: 08:00-16:00
- 🕒 Weekends: 09:00-13:00
- 🕒 Public Holidays: 10:00-16:00

Get in touch with us

- ✉ farmersfriendly@gmail.com
- ☎ +91 123454321
- 🏠 Delhi, INDIA

[f](#) [t](#) [i](#) [h](#)

Figure 11. Contact

CHAPTER 4

DESIGN SPECIFICATION

4.1 FRONT-END DESIGN

Without an easy to use interface, it's unrealistic to make them alright with the site. In this way, we pay attention to the front end structure. We affirmed that the interface of the front end is super easy to use and we checked it once more. We took the assistance of HTML, CSS and JavaScript, and so on for structuring the front-end. The necessity of essential planning was satisfied by utilizing crude HTML, furthermore this to give some extraordinary things we have utilized JavaScript. The shading direction was finished by utilizing CSS and shading direction code. We tried sincerely and utilized vital soldiers for affirming a super easy to understand interface and expectation we made it noticeable.

4.1.1 HTML: Hyper Text Markup Language

It is a mainstream markup language. Fundamentally everybody utilizes this for making their website pages and web application. In this venture, we have utilized HTML for making adapted writings, tables, and different components that can't be spoken to in plain content.

HTML is the combination of Hypertext and Markup language. Hypertext defines the link between the web pages. A markup language is used to define the text document within tag which defines the structure of web pages. This language is used to annotate (make notes for the computer) text so that a machine can understand it and manipulate text accordingly. Most markup languages (e.g. HTML) are human-readable. The language uses tags to define what manipulation has to be done on the text.

<DOCTYPE! html>: This is the document type declaration (not technically a tag). It declares a document as being an HTML document. The doctype declaration is not case-sensitive.

<html>: This is called the HTML root element. All other elements are contained within it.

<head>: The head tag contains the “behind the scenes” elements for a webpage. Elements within the head aren’t visible on the front-end of a webpage. HTML elements used inside the <head> element include:

<body>: The body tag is used to enclose all the visible content of a webpage. In other words, the body content is what the browser will show on the front-end.

An HTML document can be created using any text editor. Save the text file using **.html** or **.htm**. Once saved as an HTML document, the file can be opened as a webpage in the browser.

Note: Basic/built-in text editors are Notepad (Windows) and TextEdit (Macs). Basic text editors are entirely sufficient for when you’re just getting started. As you progress, there are many feature-rich text editors available which allow for greater function and flexibility.

4.1.2 CSS framework

In the wake of finishing markup, cascading style sheets are designed. It, for the most part, clarifies how HTML components will show. There are three different ways to compose templates. One internal CSS, another is external CSS. Also, the last one is inline CSS. Be that as it may, more often than not external CSS is utilized. Since, by utilizing external CSS, all CSS information can be kept in various records. Be that as it may, these days the CSS structure is by all accounts exceptionally mainstream. This system is grown essentially for CSS and JavaScript. It is a free and open-source front-end structure. This system is profoundly utilized for planning sites and web applications too. This system bolsters pretty much every program. Like Google Chrome, Mozilla Firefox, Opera, Safari, Internet Explorer, and so on. There are some worked in segments like we get both CSS and JavaScript offices with a solitary stage. It will expand productivity.

Why we chose Ccss:-

- **CSS saves time:** You can write CSS once and reuse the same sheet in multiple HTML pages.

- **Easy Maintenance:** To make a global change simply change the style, and all elements in all the webpages will be updated automatically.
- **Search Engines:** CSS is considered a clean coding technique, which means search engines won't have to struggle to "read" its content.
- **Superior styles to HTML:** CSS has a much wider array of attributes than HTML, so you can give a far better look to your HTML page in comparison to HTML attributes.
- **Offline Browsing:** CSS can store web applications locally with the help of an offline cache. Using this we can view offline websites.

4.1.3 Javascript

JavaScript is a lightweight, interpreted programming language. It is designed for creating network-centric applications. It is complimentary to and integrated with Java. JavaScript is very easy to implement because it is integrated with HTML. It is open and cross-platform. Javascript is one of the most widely used programming languages (Front-end as well as Back-end). It has its presence in almost every area of software development. I'm going to list few of them here: Client side validation - This is really important to verify any user input before submitting it to the server and Javascript plays an important role in validating those inputs at front-end itself. Manipulating HTML Pages - Javascript helps in manipulating HTML page on the fly. This helps in adding and deleting any HTML tag very easily using javascript and modify your HTML to change its look and feel based on different devices and requirements. There are many useful Javascript frameworks and libraries available: Angular, React, jQuery, Node.js.

Client-Side JavaScript

Client-side JavaScript is the most common form of the language. The script should be included in or referenced by an HTML document for the code to be interpreted by the browser.

It means that a web page need not be a static HTML, but can include programs that interact with the user, control the browser, and dynamically create HTML content.

The JavaScript client-side mechanism provides many advantages over traditional CGI server-side scripts. For example, you might use JavaScript to check if the user has entered a valid e-mail address in a form field.

The JavaScript code is executed when the user submits the form, and only if all the entries are valid, they would be submitted to the Web Server.

JavaScript can be used to trap user-initiated events such as button clicks, link navigation, and other actions that the user initiates explicitly or implicitly.

Why we chose Js:-

- **Less server interaction** – You can validate user input before sending the page off to the server. This saves server traffic, which means less load on your server.
- **Immediate feedback to the visitors** – They don't have to wait for a page reload to see if they have forgotten to enter something.
- **Increased interactivity** – You can create interfaces that react when the user hovers over them with a mouse or activates them via the keyboard.
- **Richer interfaces** – You can use JavaScript to include such items as drag-and-drop components and sliders to give a Rich Interface to your site visitors.

But with the benefits we have some Limitations as well:-

We cannot treat JavaScript as a full-fledged programming language. It lacks the following important features –

1. Client-side JavaScript does not allow the reading or writing of files. This has been kept for security reason.

2. JavaScript cannot be used for networking applications because there is no such support available.
3. JavaScript doesn't have any multi-threading or multiprocessor capabilities.

But, Once again, JavaScript is a lightweight, interpreted programming language that allows you to build interactivity into otherwise static HTML pages.

4.1.4 API

With the help of API we are fetching the data of the previous years weather conditions. What exactly is API.

API is the acronym for Application Programming Interface, which is a software intermediary that allows two applications to talk to each other. Each time you use an app like Facebook, send an instant message, or check the weather on your phone, you're using an API.

When you use an application on your mobile phone, the application connects to the Internet and sends data to a server. The server then retrieves that data, interprets it, performs the necessary actions and sends it back to your phone. The application then interprets that data and presents you with the information you wanted in a readable way. This is what an API is - all of this happens via API.

Application programming interfaces consist of two components:

1. Technical specification describing the data exchange options between solutions with the specification done in the form of a request for processing and data delivery protocols
2. Software interface written to the specification that represents it

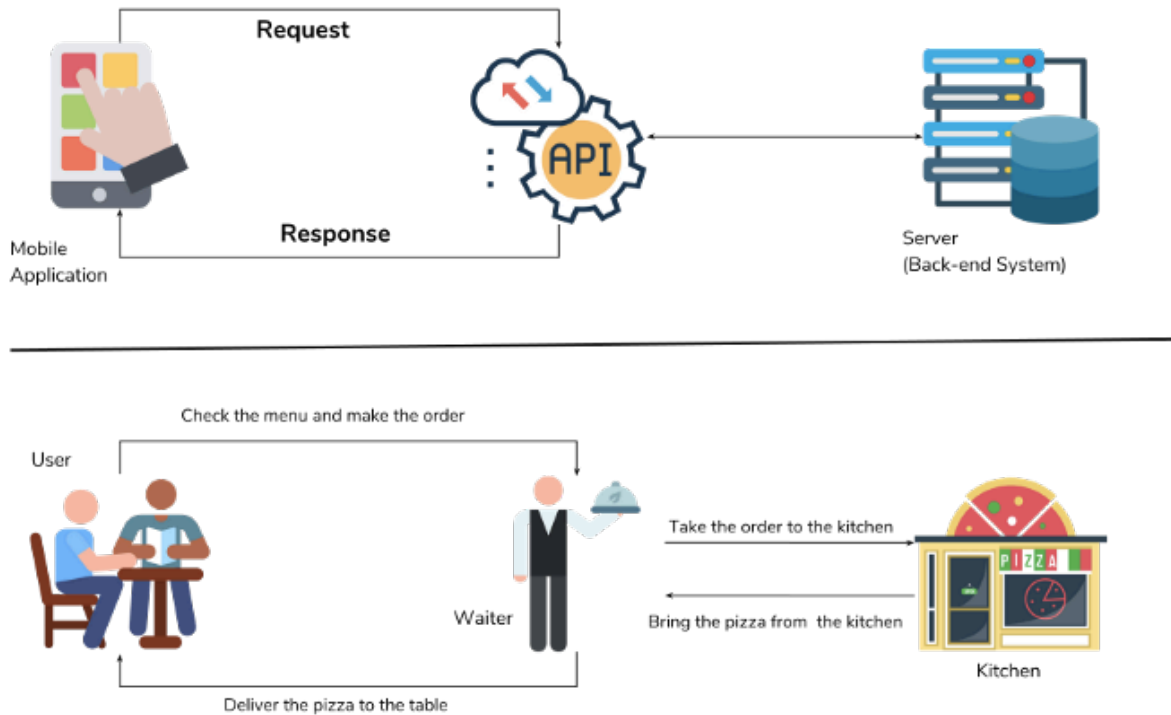


Figure 12. API Working

The software that needs to access information (i.e., X hotel room rates for certain dates) or functionality (i.e., a route from point A to point B on a map based on a user’s location) from another software, calls its API while specifying the requirements of how data/functionality must be provided. The other software returns data/functionality requested by the former application.

And the interface by which these two applications communicate is what the API specifies.

APIs by availability aka release policies

In terms of release policies, APIs can be private, partner, and public.

Private APIs. These application software interfaces are designed for improving solutions and services within an organization. In-house developers or contractors may use these APIs to integrate a company’s IT systems or applications, build new systems or customer-facing apps leveraging existing systems. Even if apps are publicly available, the interface itself remains available only for

those working directly with the API publisher. The private strategy allows a company to fully control the API usage.

Partner APIs. Partner APIs are openly promoted but shared with business partners who have signed an agreement with the publisher. The common use case for partner APIs is software integration between two parties. A company that grants partners with access to data or capability benefits from extra revenue streams. At the same time, it can monitor how the exposed digital assets are used, ensure whether third-party solutions using their APIs provide decent user experience, and maintain corporate identity in their apps.

Public APIs. Also known as developer-facing or external, these APIs are available for any third-party developers. A public API program allows for increasing brand awareness and receiving an additional source of income when properly executed.

There are two types of public APIs – open (free of charge) and commercial ones. The Open API Definition suggests that all features of such an API are public and can be used without restrictive terms and conditions. For instance, it's possible to build an application that utilizes the API without explicit approval from the API supplier or mandatory licensing fees. The definition also states that the API description and any related documentation must be openly available, and that the API can be freely used to create and test applications.

Commercial API users pay subscription fees or use APIs on a pay-as-you-go basis. A popular approach among publishers is to offer free trials, so users can evaluate APIs before purchasing subscriptions. Learn more about how businesses benefit from opening their APIs for public use in our detailed article on API economy.

4.2 BACK-END DESIGN

The back-end configuration characterizes how to functions with a site. Another name of the Back-end is the server site. The back-end side isn't unmistakable from the client end, just noticeable by the administrators. The individual who works to build up the back-end is known as an engineer or developer. For building up our venture we worked with these referenced beneath.

PHP (LARAVEL Framework): It is essentially an administrator interface for applications. By utilizing this it is anything but difficult to alter/include or erase information for the site. It fills in as a media director for the records. Not just that, the PHP structure LARAVEL finishes numerous other authoritative undertakings for designers.

Database Server: For developing our whole project, we have pursued the Relational Database Management System or RDBMS. What's more, we find that MYSQL gives the element of RDBMS. So we ought not to have any issue to utilize the MYSQL database. It is additionally extremely simple to utilize. It can also ensure security, scalability, high performance and many things.

A database is an application that stores the organized collection of records. It can be accessed and manage by the user very easily. It allows us to organize data into tables, rows, columns, and indexes to find the relevant information very quickly. Each database contains distinct API for performing database operations such as creating, managing, accessing, and searching the data it stores.

MySQL is a relational database management system based on the Structured Query Language, which is the popular language for accessing and managing the records in the database. MySQL is open-source and free software under the GNU license. It is supported by **Oracle Company**.

MySQL is currently the most popular database management system software used for managing the relational database. It is open-source database software, which is supported by Oracle Company. It

is fast, scalable, and easy to use database management system in comparison with Microsoft SQL Server and Oracle Database. It is commonly used in conjunction with PHP scripts for creating powerful and dynamic server-side or web-based enterprise applications.

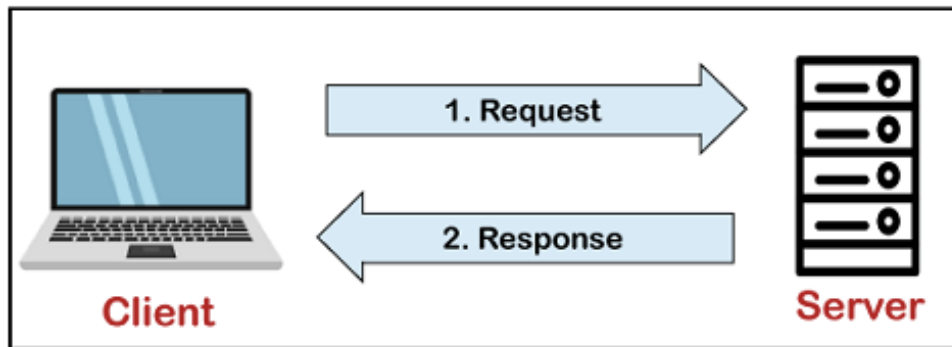


Figure 13. Working of MySQL

MySQL follows the working of Client-Server Architecture. This model is designed for the end-users called clients to access the resources from a central computer known as a server using network services. Here, the clients make requests through a graphical user interface (GUI), and the server will give the desired output as soon as the instructions are matched. The process of MySQL environment is the same as the client-server model.

The core of the MySQL database is the MySQL Server. This server is available as a separate program and responsible for handling all the database instructions, statements, or commands.

The working of MySQL database with MySQL Server are as follows:

1. MySQL creates a database that allows you to build many tables to store and manipulate data and defining the relationship between each table.
2. Clients make requests through the GUI screen or command prompt by using specific SQL expressions on MySQL.

3. Finally, the server application will respond with the requested expressions and produce the desired result on the client-side.

CHAPTER 5

RESULTS AND DISCUSSION

In the wake of finishing, we execute the framework to the “Farmer’s Friendly: A Technology for Farmers” and again we fixed issues to guarantee the easy to use administration. In this way, individuals will prefer this UI and utilize it easily. At that point, we take a basic notice framework which ready to snatch senders or the recipient's consideration and input rapidly. At long last, we make every one of the alternatives beginning to affirm conveyance with computerized contact and correspondence among collector and framework administrator. Expectations could change the item shopping world in another shape.

Nothing can be affirmed without genuine testing. Along these lines, after finishing the full undertaking we began to attempt the execution in numerous fields, previously checked the tests for affirmation. It's important to know how the undertaking functioning. Is it prepared or not? Since it's significant for each creating task and engineer as well. Of Course! This kind of result shows the natural state of any framework. In this way, we attempted to test a couple of times in various manners. No doubt! It works adroitly.

CHAPTER 6

CONCLUSION AND FUTURE SCOPE

CONCLUSION

A new way of approach to farming practices are being employed by the farmers. The proposed system solves their problems related to lack of information about the weather conditions and new tools/technologies for farming. The proposed system is simple, easy to use guide, efficient. A better way to guide farmer to help them to raise both socially as well as economically wise to their betterment of future generations.

The web application is planned so that future changes can be effectively done. The following conclusion can be accepted from the improvement of the project. Automation of the whole website improves the great association.

It delivers a well friendly graphical UI and gives proper access to approved users depending upon their approvals. It successfully overcomes the delay in communications. Refreshing information turns out to be simpler. Application security, information security, and reliability are striking features.

The System has a tolerable extension for adjustment later on in the event that it is basic. The System has a passable scope for modification in the future if it is essential.

FUTURE SCOPE

Future Scope of this project is that many different advanced modules can be added into this project:

- New Government schemes can be added into the project and can be updated in real-time.
- Volunteered agriculture-tutor can be sent to the particular location or their information can be provided on the website.

- Timely webinars can be organised for the farmers to discuss their issues and can be noted and can be updated on the site by them, or they can conduct their own Frequently asked question session.
- Automation of the whole application improves the great association and hence can be achieved in near future.

REFERENCES

- [1] S. R. Nandurkar, V. R. Thool, R. C. Thool, "Design and Development of Precision Agriculture System Using Wireless Sensor Network", IEEE International Conference on Automation, Control, Energy and Systems (ACES), 2014.
- [2] Yoo, S.; Kim, J.; Kim, T.; Ahn, S.; Sung, J.; Kim, D. A2S: Automated agriculture system based on WSN. In ISCE 2007. IEEE International Symposium on Consumer Electronics, 2007, Irving, TX, USA, 2007.
- [3] K. S. Srinivasan and D. Ebenezer, "A New Fast and Efficient Decision-Based Algorithm for Removal of High- Density Impulse Noises," IEEE Signal Processing Letters, Vol. 14, No. 3, March 2007.
- [4] Subsidies in Indian Agriculture and Their Beneficiaries. Agricultural Situation in India, LXII (5), Special Number, August, pp. 251.60.
- [5] Peter Namisko and Moses Aballo "Current status of agriculture and Global Trends" in International Journal of Science and Research Volume 2 Issue 7,2013.
- [6] "Agriculture in India: A SWOT analysis" by N.Praveen Kumar in Indian Journal of Applied Research in 2013.
- [7] Rafael C.Gonzalez and Richard E. woods, "Digital Image Processing", Pearson Education, Second Edition,2005
- [8] K. S. Srinivasan and D. Ebenezer, "A New Fast and Efficient Decision-Based Algorithm for Removal of High- Density Impulse Noises," IEEE Signal Processing Letters, Vol. 14, No. 3, March 2007.
- [9] S. Indo and C. Ramesh, "A Noise Fading Technique for Image Highly Corrupted with Impulse Noise," International Conference on Computing: Theory and Applications, PP. 627- 632, March 2007.
- [10] T. Song, M. Gabbouj, and Y. Neuvo, "Center Weighted Median Filters: Some Properties and Applications in Image Processing," Signal Processing, Vol. 35, No. 3, PP. 213-229, 1994

- [11] R. Yang, L. Lin, M. Gabbouj, J. Astola, and Y. Neuvo, "Optimal Weighted Median Filters Under Structural Constraints," IEEE Trans. Signal Processing, Vol. 43, PP. 591-604, Mar 1995
- [12] Pei-Eng Ng and Kai-Kuang Ma, "A Switching Median Filter with BDND for Extremely Corrupted Images", IEEE Trans Image Processing, Vol. 15, No. 6, PP. 1506-1516, June 2006
- [13] Jafar Ramadhan Mohammed, "An Improved Median Filter Based on Efficient Noise Detection for High Quality Image Restoration," IEEE Int. Conf ,PP. 327 – 331, . May 2008
- [14] Xiaoyin Xu, Eric L. Miller, Dong bin Chen and Mansoor Sarhadi, " Adaptive Two-Pass Rank Order Filter to Remove Impulse Noise in Highly Corrupted Images", IEEE Trans Image Processing, Vol.13 PP.238-247, February 2004.
- [15] Yoo, S.; Kim, J.; Kim, T.; Ahn, S.; Sung, J.; Kim, D. A2S: Automated agriculture system based on WSN. In ISCE 2007. IEEE International Symposium on Consumer Electronics, 2007, Irving, TX, USA, 2007