

# **AN WEB BASED APPLICATION SMART FARMING SYSTEM**

**BY**

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This Report Presented in Partial Fulfillment of the Requirements for the  
Degree of Bachelor of Science in Computer Science and Engineering

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## **APPROVAL**

This Project/internship titled “**Smart Farming System**”, submitted by Md. Asaduzzaman, ID No: 161-15-7179 to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 5<sup>th</sup> December 2019.

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## DECLARATION

We hereby declare that, this project “Smart Farming System” has been done by us under the supervision of Raja Tariqul Hasan Tusher, Senior Lecturer, Department of CSE Daffodil International University. We also declare that neither this project “Smart Farming System” nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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## **ABSTRACT**

This project "Smart Farming System" is an online-based web application. With the "Smart Farming System" project, farmers of Bangladesh will get an idea about agriculture very easily. Learn about the various disease of agriculture and can solve basic problems very easily. To get support in various agricultural activities, you can easily contact the consultant through the "Smart Farming System" from any part of Bangladesh. There are some services like this but they are not enough. The smart farming system is different from everyone else. Users can easily visit the "Smart Farming System" site by simply typing the name of the website. And if you want to get any kind of help, the user will have to register with the user giving some information and at the bottom of the registration form, there are two options. And the profit of the "smart farming system" will come mainly from the doctor. This system is flexible, simple, and user-friendly for everyone. We built it using languages like HTML, CSS, Bootstrap, JavaScript. In addition, the PHP framework is used to manage the MySQL database. After completing this project we tested it with a community based social media on Facebook and it worked great and people are expecting these services to be interesting.

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# CHAPTER 1

## INTRODUCTION

### 1.1 Introduction

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, you get all the information related to agriculture. 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. Won't get 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, I believe that the smart farming project 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.

### 1.2 Motivation

Cultivation takes skill. As a farmer, we need to know when to plant, when to irrigate, when to fertilize, and when to harvest. We need to know how to protect ourselves from pesticides and from harvesting after harvest. When I used to go to the fields with my father when I was a kid, I saw various pathogens in the crops grown on our land, but could not find a proper way to protect the crops produced from those diseases, we used to go to the market pesticides shopkeepers, they talked about primary medicine and most of them. Therefore, crop damage is often done due to a lack of proper treatment on time. I started working with this online web application smart farming system, basically from all those hardships of the farmers. And the present age is the age of technology. Most people now use smartphones and use the Internet. And as I study IT, I continue to try to help farmers through IT. 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. Opportunities for more precise cultivation can increase yields and profits and reduce the use of valuable water and fertilizers. If we think of a developing country like Bangladesh, we will see that our farmers

are not advanced enough in technology and agriculture. So, I believe that the smart farming project will lead to the advancement of scientific and modern farming.

### **1.3 Objectives**

According to the FAO's forecast that 20 million people are living on this planet, agriculture faces enormous challenges: food production must increase by 70% and yet must be achieved with limited availability of arable land, rising saltwater requirements and other less predictable factors, such as the impact of climate change, among other things as well as the life cycle of plants and animals. We can solve many of these problems very easily through the smart farming system.

- The Smart Farming System project plays a key role in determining the farmers' early diagnosis of the crop.
- Through the Doctor's Directory system, farmers can easily contact agricultural consultants.
- Anyone can ask any question about agriculture at any time by registering at our smart farming system web site.

### **1.4 Expected Outcomes**

Farmers will be benefited by the Agriculture Consultant or any other registered member if they have any questions by registering on the Smart Farming System web site to solve their problems. You can get help from blogs on various issues of farming for the benefit of the farmers. With the help of the Disease Prediction Blog, farmers will be able to identify different pathogens on their own crops. Farmers can easily contact the agricultural consultants for advice on their agriculture. And students who study agriculture in Bangladesh can register as freelancers by registering on our website. This will open a way to solve their unemployment problems.

## **1.5 Report Layout**

### **Chapter 1: Introduction**

In the first chapter, we discussed the introduction of the project. We discuss this chapter about motivation, objective, expected outcomes of our “Smart Farming System”.

### **Chapter 2: Background**

In the subsequent section; in part 2 we just examined the venture foundation-related works. It dependent on the venture hypothesis we search correlative work and generally examines few locales. At that point, we talk about the extent of the issue and the last challenge in our task.

### **Chapter 3: Requirement Specification**

The third section is a significant part since we depict Business Process Modeling, Requirement gathering and Analysis, Use case model and portrayal, Logical information model lastly Requirements of planning.

### **Chapter 4: Design Specification**

Here in part four, we pursue the forthright and back-end plans in our task. At that point, we depicted the collaboration to plan and client experience. The usage prerequisites additionally depict well in this section.

### **Chapter 5: Implementation and Testing**

We attempted to catch up on database usage in this section. It additionally portrayed the front-end structure that what to look like our site. At last, we gave some test outcomes that we checked after the improvement finished. It's the last report of the test outcome.

### **Chapter 6: Conclusion and Future Scope**

It's the synopsis of the task "Smart Farming System". It incorporates tentative arrangements as well.

## **CHAPTER 2**

### **BACKGROUND**

#### **2.1 Introduction**

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 Bangladesh 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 centers on agriculture online in Bangladesh 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 Bangladesh. We talked to ordinary farmers and agricultural entrepreneurs about the art farming system and they welcome the initiative, and with this welcome, we think we have achieved success in the primary.

#### **2.2 Related Works**

We have found several websites about agriculture, most of them are informative. Another two websites sell a variety of agricultural products. But if you ask anything about agriculture online, there are no live answer options. And it is easy to talk directly to a consultant on agriculture and there are no online means to consult that agricultural officer with his food easily, but the smart farming system is doing this unique task. The following is a description of some agriculture-based websites.

### 2.2.1 Ajkerkrishi.com

Farmers in our country are doing farming for us through various problems and adversities. Their agricultural crops are disrupted due to a lack of proper information and advice at the right time. Various diseases cause crop damage, but farmers of all levels are being deprived of the right price of their products under the influence of middlemen. Therefore, this is the initiative of our "today's agriculture" to utilize the technology based on the needs of the era to deliver all the right information at the right time [1].



Figure 2.2.1 Ajkerkrishi.com

### 2.2.2 krishibangla.com

KrishiBangla site has been made with the specialized help of the Department of Agriculture Extension. Over the most recent 20 years, the Initiative for Total Reform (ITR) propelled the biggest farming site in Bangla in the private area for the quick extension of present-day rural innovation and simple access to horticulture for all worried about the utilization of data correspondence innovation (ICT) for the advancement of agribusiness in the nation. Green savers are directing different humanitarian exercises for the advancement of the condition and urban agribusiness in the nation. Toward the start of the new year, 'KrishiBangla.com' has developed as a manageable site giving data,



innovation, and administrations identified with farming and the earth in the bigger school. Activity for Total Reform (ITR) and Green Savers are mutually working 'Agri-business Bangla.com'.



Figure 2.2.2 krishibangla.com

### 2.2.3 krishi.gov.bd

Through this website, the government of Bangladesh distributes agricultural based news to the people of the country.

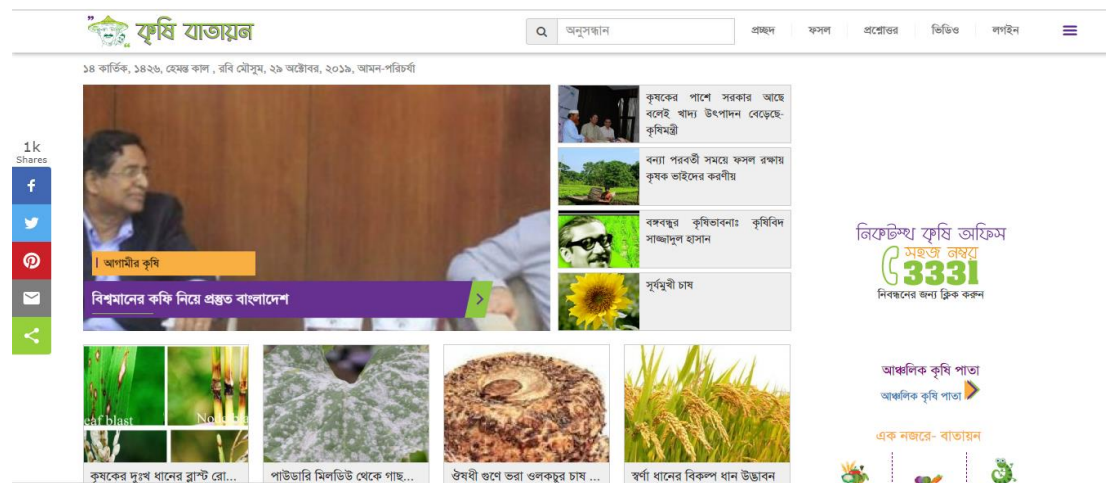


Figure 2.2.3 krishi.gov.bd

## 2.3 Comparative Studies

Before starting to plan for this project, we did a variety of surveys of the agriculture sector. Our project is based primarily online. We study a few related projects where it seems to be visible in the online world as well. We just can't startup by judging a service

online. So we first have an opinion from the students of Daffodil International University, and later we go to the villages and get feedback from the farmers. At present, the agricultural-based sites in Bangladesh sell most of the blogs and some agricultural products. But our project will be able to answer live questions and answers online as well as anyone and one and a half farming consultants. More importantly, farmers can hire agricultural consultants as they wish. And the information on our website will be classified according to the category of the agricultural consultant. If you want a farmer, you can easily contact the nearest union, UPAZILA agriculture officials through our website. So we can say that the Smart Farming System project will play a leading role in advancing the agriculture sector of Bangladesh.

## **2.4 Scope of the problem**

No project can be perfect at 100 percent. Every human-made system has some problems. There are some issues with our smart farming system project too but hopefully, in the future we will recover all the problems with a great solution. We have already improved it a lot. Frankly, we've got some issues that are still going on. We like to mention them for clarity. Hopefully, in the near future, our developers and business owners will be able to find great solutions to this problem. This system requires humanitarian assistance to ensure all processes are correct. Web-based systems are not fully secure. We will strengthen security to protect our website so that hackers cannot cyber-attack our site. Not just that, we will talk about a portion of the key issues in the Challenge area.

## **2.5 Challenges**

We know that, our project is mainly to develop Bangladeshi people. So they have to do a lot of hard work to believe in online service.

Some significant challenges that need to consider in this task will be talked about in this segment.

- Collection of agricultural data.
- It is very difficult to make a money deal with a consultant.
- Storing information is very difficult.
- The issue of tax is the acute headache of online business. No one can really tell the amount they are going to charge you.
- Saving time.
- quickly response farmer and doctor.

## **CHAPTER 3**

### **REQUIREMENT SPECIFICATION**

#### **3.1 Business Process Modeling**

These day web clients of Bangladesh are developing quickly and countless them are excitedly sitting tight for smooth and secure assistance for bringing items from the worldwide market. It's entirely conceivable to get the business opportunity and fabricate a major help on the off chance that it is conceivable to shape a decent plan of action. We tried and found that it's conceivable to make a benefit in a decent range. Individuals like to pay on the off chance that anybody gives them legitimate help on how they like to get it. It will make the extent of work in our nation. The representative, as well as related administrations, will be profited by this like the doctor, farmer, and so forth. Actualizing this task may make huge business [2].

We already developed its mobile version. It will open the new world of business. This business model will able to turn a big community to their potential customer. Everyone has a smartphone now, so it will be easy to provide service for Android users too. Promoting this business will be also easy than the other business.

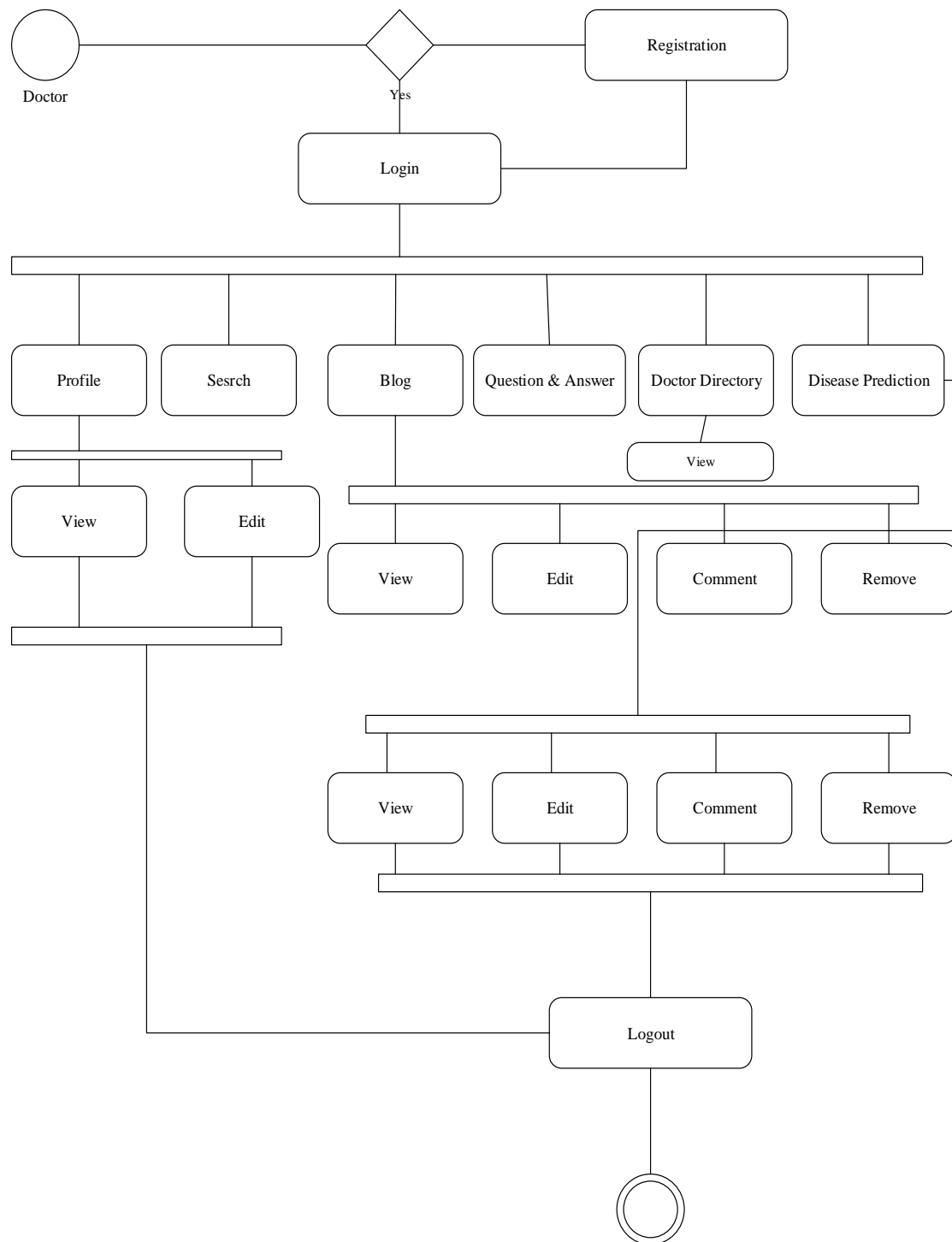


Figure 3.1.1 Business process model for doctor

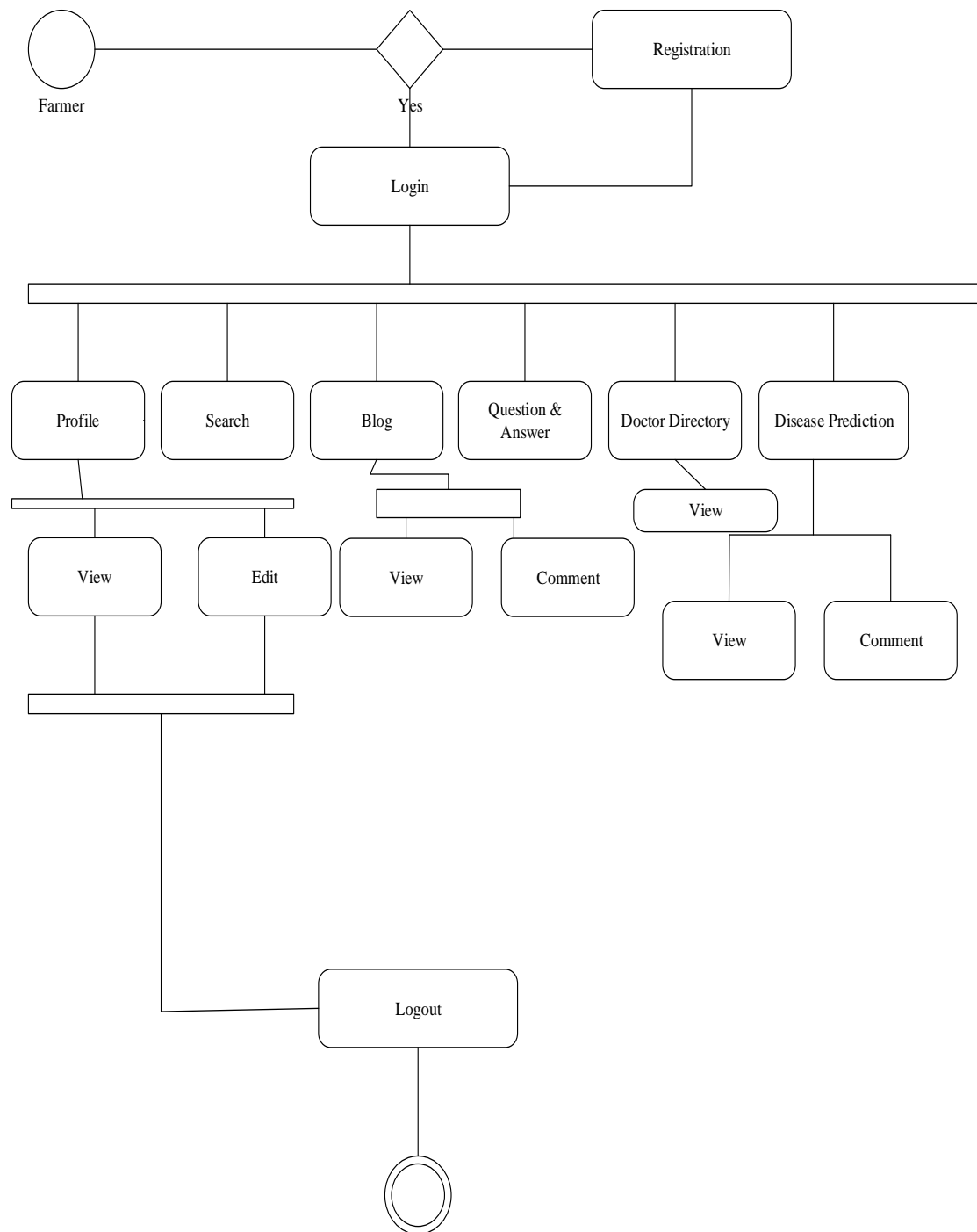


Figure 3.1.2 Business process model for farmer

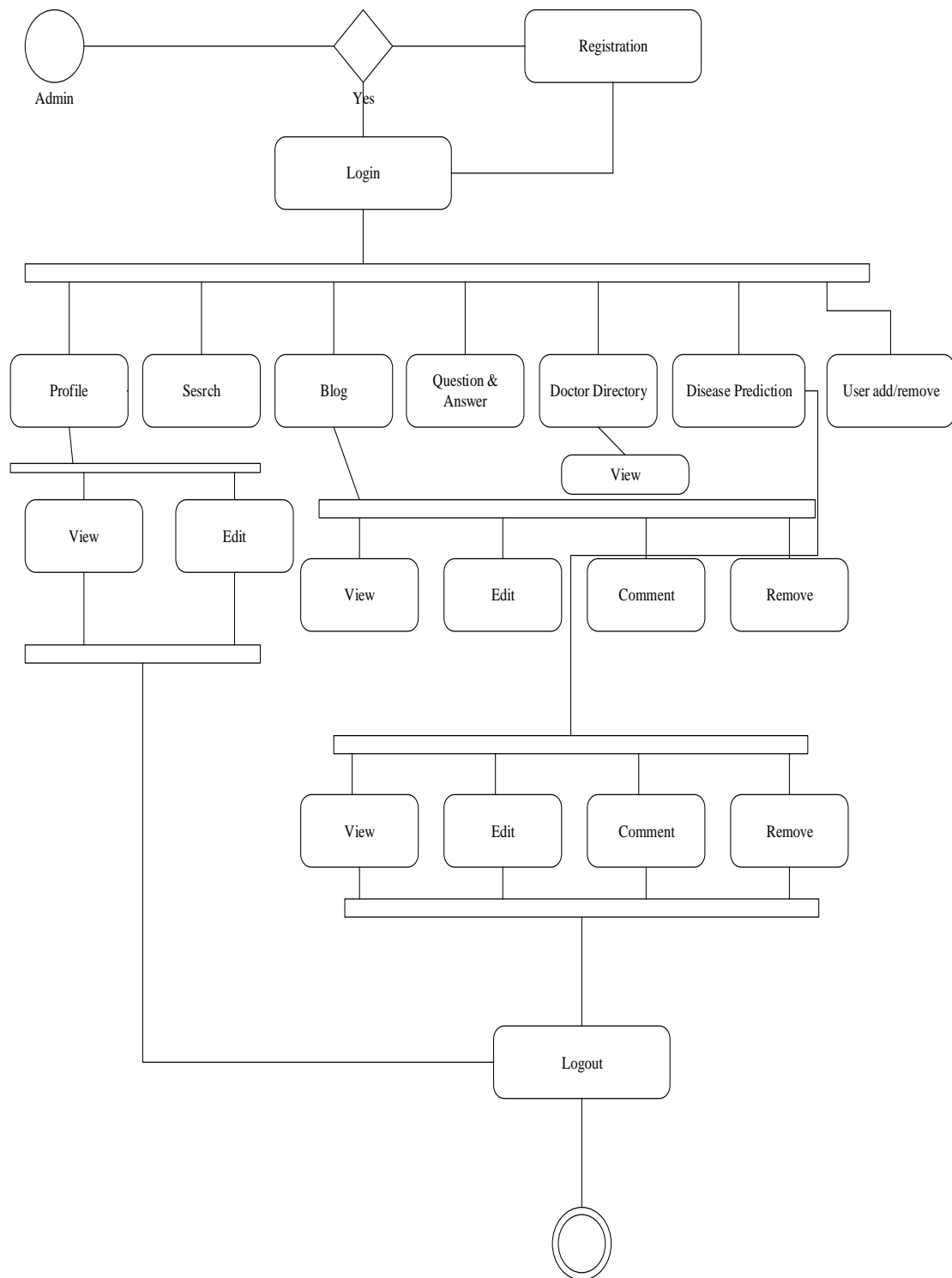


Figure 3.1.3 Business process model for admin

### 3.2 Requirement Collection and Analysis

Here some requirements that we need in this "Smart Farming System" project.

Requirements are like:

- If users want to avail of any service, they need to be registered on our website first and after completing the registration they will be able to get service of their choice.
- Need to provide all right information then properly benefited doctor directory services.

Analytically, if farmers and agronomists want to get any services from the "smart farming system" he must first provide information. You will be able to access the service if you are registered.

### 3.3 Use Case Modeling and Description:

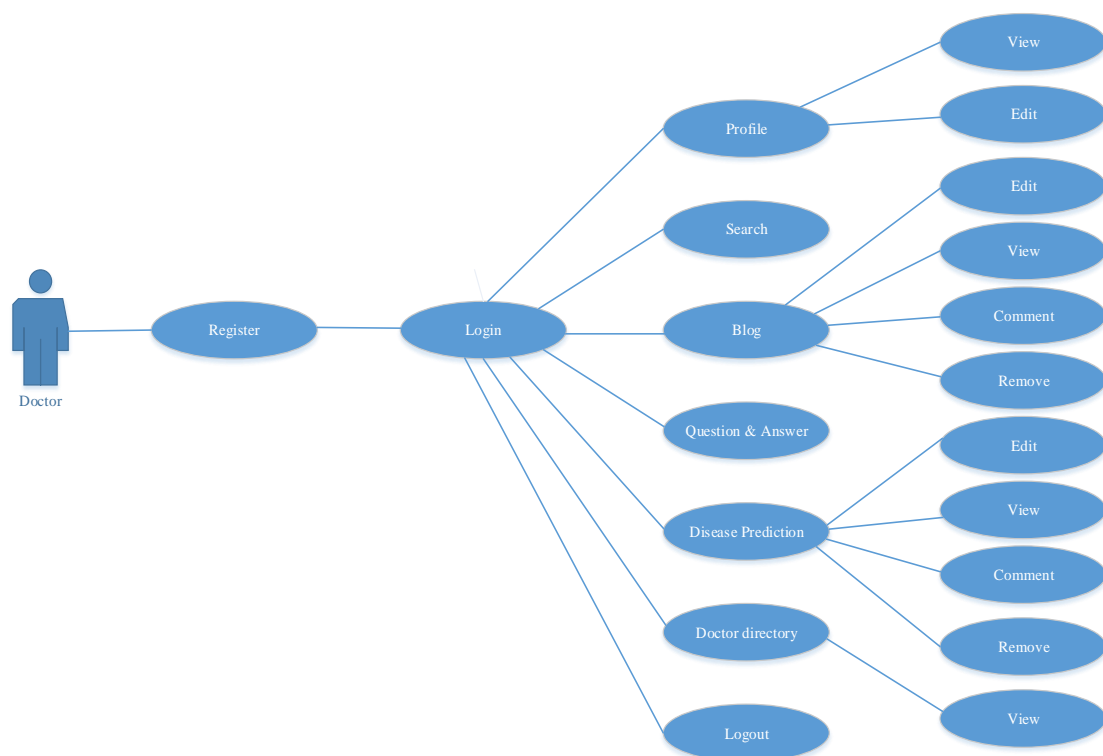


Figure 3.3. 1: Use case diagram for doctor



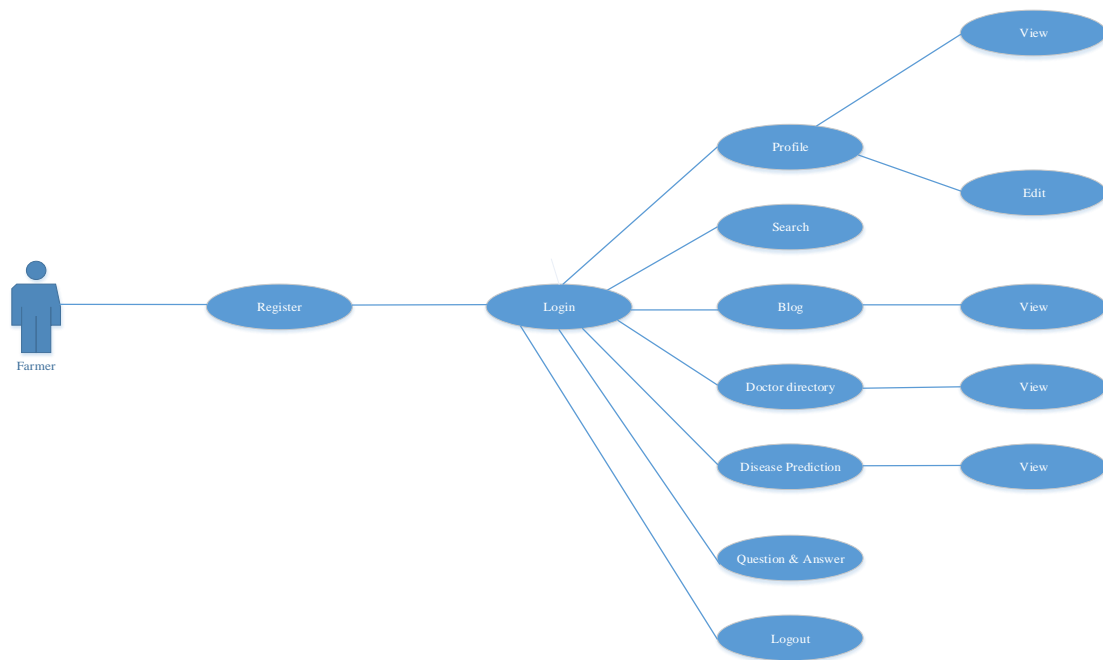


Figure 3.3.2: Use case diagram for farmer

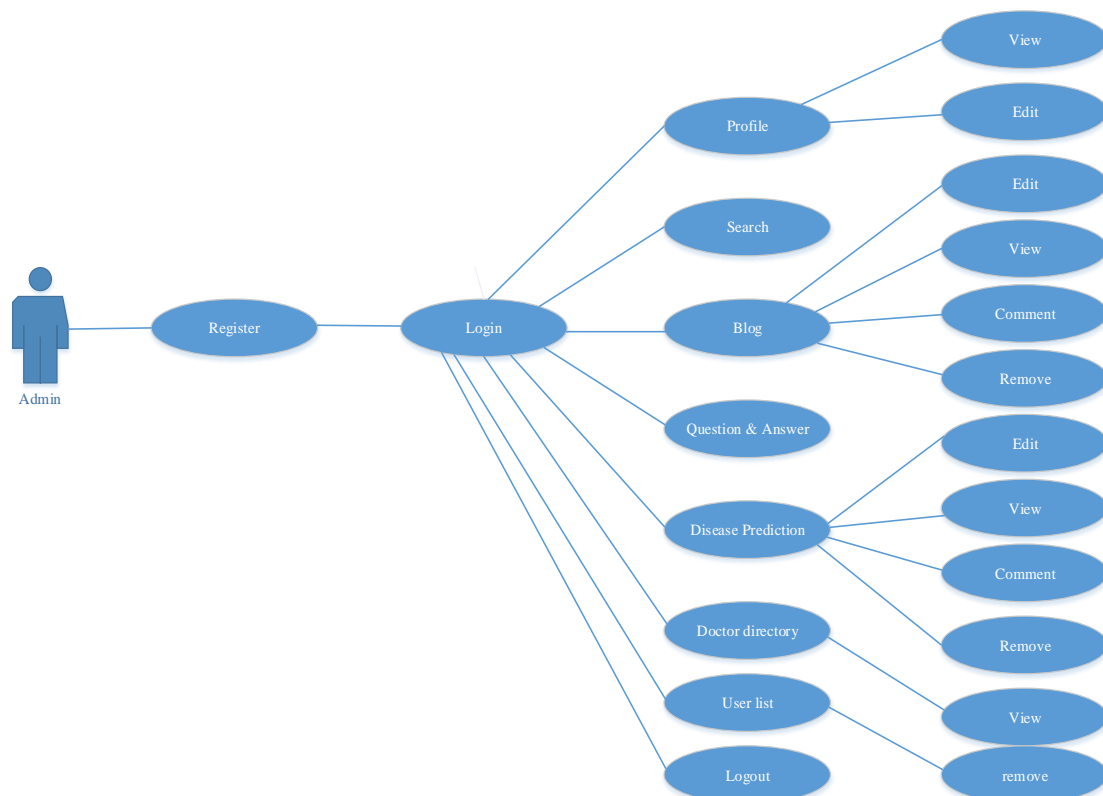


Figure 3.3.3: Use case diagram for admin

Here is the Use Case chart shows what the role and activity of a doctor, farmer, and admin of this framework. It just shows what they can do and what they can't do. Use

case charts, for the most part, are utilized to assemble the means and phases of necessities of a framework both interior and outside impacts.

**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.

**Use case scenario for doctor:**

The doctor who likes to take us service, he needs to go first with picking won helping benefits. Presently he needs to get enrolled on the site.

**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 doctor and farmer affirmation of this site.

### **3.4 Logical Data Model**

Continuously a logical data model; another name logical schema is a full information model of the particular issue area that communicated autonomously of a specific stock-piling innovation or database the executive's item. Here, in our legitimate information demonstrating shows the way toward speaking to the information design and association in an alluring graphical manner with no respect to the physical usage. The logical data model really gives all the accumulated data about the activities of different substances and the specialized connections between the elements present in the database [3].

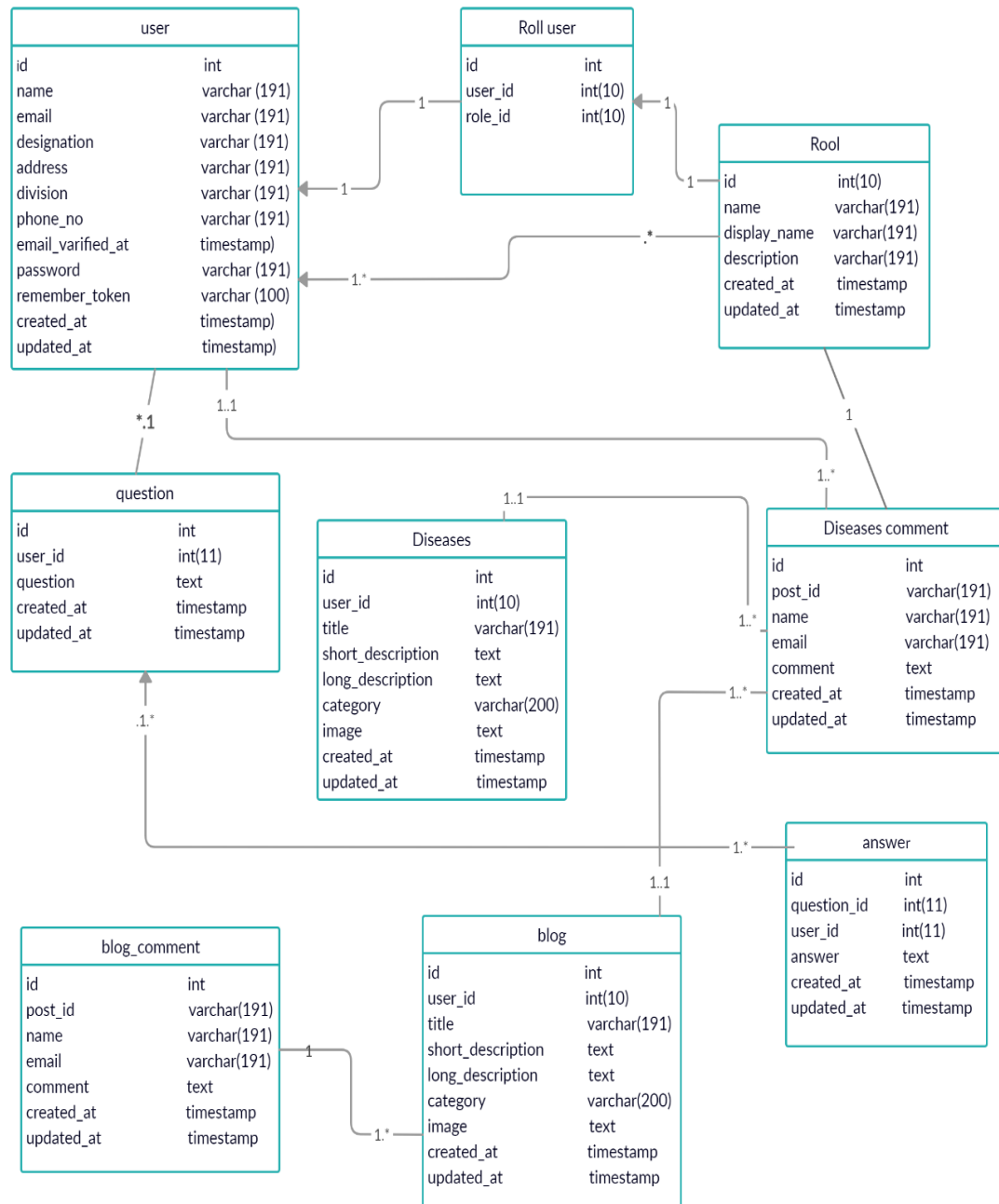


Figure: 3.4.1 Logical data model

### 3.5 Design Requirements

Continuously for planning a framework, it needs some data and necessities. This task additionally has this. Our framework will contain three types of roles: admin, doctor, and farmer. Here we attempted to make reference to it shortly.

Requirements are given below:

- A farmer will be profited by this administration. Furthermore, they are going to take our administration. Along these lines, he needs to pick won assistance. Presently he needs to get enrolled on the site.
- A doctor who will be profited by this administration. What's more, they are going to take our administration. In this way, he needs to pick won profited. Presently he needs to get enlisted on the site.
- An administrator is a controller for everything being equal. The administrator can sign in with the managerial secret word and afterward get to this site. He can acknowledge or dismiss any solicitation.

## 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. Our top specialists' 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, Bootstrap, and JavaScript, and so on for structuring the front-end. The necessity of essential planning was satisfied by utilizing crude HTML and bootstrap, 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.

#### **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 [4].

#### **CSS framework or Bootstrap:**

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. In our application, I have utilized the Twitter Bootstrap structure. 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. Bootstrap likewise gives media question which highlights

responsive design for various gadgets with various screen size. Bootstrap gives a lot of certain documents which contain templates which gives fundamental definition.

Bootstrap additionally gives some JavaScript parts too. There are some worked in segments like JQuery UI. By utilizing the Bootstrap system, we get both CSS and JavaScript offices with a solitary stage. Be that as it may, before start planning an application interface with Bootstrap, one may have some essential information about this system. It will expand productivity [5].

### **JQuery UI:**

JQuery UI is the name of the library which uses JavaScript as a center programming language. It improves codes of a programming language named JavaScript. For the most part, it collaborates with a Graphical User Interface (GUI). It additionally gives special visualizations liveliness. It can likewise abrogate falling templates. It additionally gives AJAX usefulness which stands to Asynchronous JavaScript and XML. It is additionally a subset of JavaScript. By utilizing AJAX no page reloading is required. It is additionally perfect with any program like Google Chrome, Mozilla Firefox, Opera, Safari, Internet Explorer and so forth.

## **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.

#### 4.2.1 Back-end Design for admin panel:

##### 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 [6].

##### 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.

#### 4.3 Interaction Design and UX

We have subtleties of the cooperation structure of our task. We are giving them part by parts like the farmer, doctor and admin panel. The administrator and the board segment will just approach the control board.

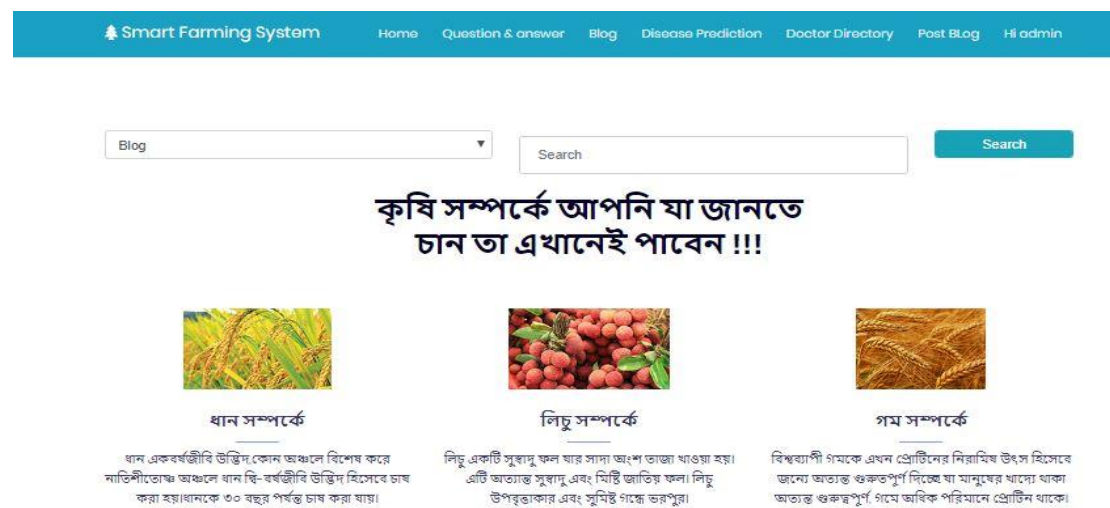


Figure:4.3.1 View of a home page

## 4.4 Implementation Requirements

As an unpredictable and utilitarian work, the usage of our task may require numerous things. From the start for taking care of and controlling the database is expected to utilize PHP code and clearly, the stage is MYSQL. Here the MYSQL is a database the board framework, which could make simple to alter site database. To make any class or new database we can do it in PHP, my administrator. It's only for instance. Along these lines, we can erase or embed our database in it. Something critical is, while we go for executing the PHP records, simply need to keep the documents into c-Drive that is for where really the XAAMP document has. Presently, Into XAAMP document, htdocs a record we have to put our PHP documents into that envelope. At that stage, we can make localhost. When we execute our records we should need to type localhost then the document area into URL. Presently just that, we additionally have a couple of programming prerequisites as well, which is given underneath with short subtleties.

### 4.4.1 Software Requirements

In order to implement this project, we need a few software requirements for some essential tasks to be done like coding, controlling and maintaining.

**Sublime Text:** (It's a code editor. We actually prefer it to smart coding. To implement the project a code editor is essential. All HTML, CSS, PHP, Bootstrap, jQuery or JavaScript code need to write in this type of platform).

**Chrome:** (It's the most part software we need to implement our projects. Users need to add our extension on the chrome browser to get the interface of Smart Farming System).

**XAAMP:** (It needed for creating the local web server which is essential for testing and deployment of the changes in every stage) [7].



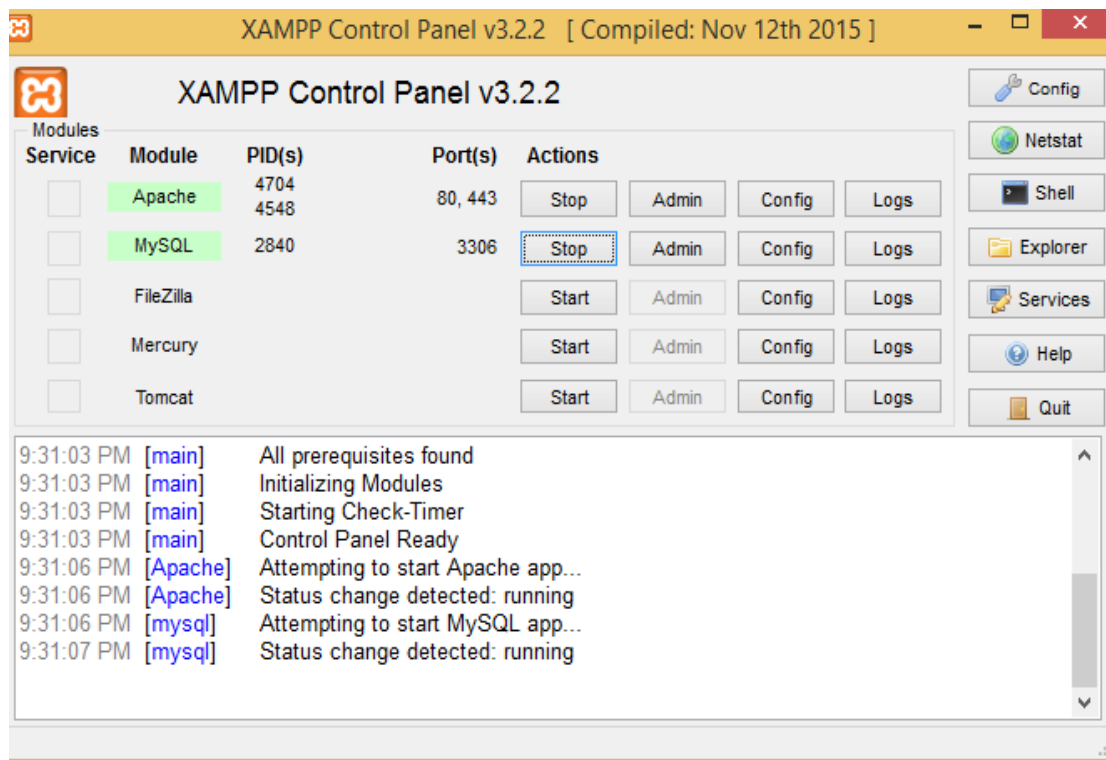


Figure 4.4.1 XAMPP Control Panel

## CHAPTER 5

### IMPLEMENTATION AND TESTING

#### 5.1 Implementation of Database

Our project is really made dependent on web innovation and dependent on this stage as well. So the principal thing first. We needed to structure a database to actualize this. At that point, we execute the database adequately by utilizing the PHP code. Other than this, we took care of the database is MYSQL. Here we utilized capacities for SQL questions for the activity database. Exploiting PHP, for this task we planned various sorts of information tables that portray the characteristics, substance, and information type as well. In this way, in our database when the client signs in or register it checked from the database and afterward required activity from this database. Figures underneath show subtleties of all tables of our database [8].

Table 5.1.1: Database table for doctor registration

| i<br>d | Name   | Email                     | Mobile      | Des-<br>igna-<br>tion | Ad-<br>dress | Divi-<br>sion | Pass-<br>word |
|--------|--------|---------------------------|-------------|-----------------------|--------------|---------------|---------------|
| 1      | asad   | asad@gmail.com            | 01725121036 | Doc-<br>tor           | dhak<br>a    | dhaka         | 12345<br>6    |
| 2      | rakib  | rakib@gmail.co<br>m       | 01725121312 | Doc-<br>tor           | bogra        | rajshah<br>i  | 12378<br>9    |
| 3      | galib  | ga-<br>lib@gmail.com      | 01755121312 | Doc-<br>tor           | pabn<br>a    | rajshah<br>i  | 12398<br>7    |
| 4      | nazmul | nazmul@gmail.c<br>om      | 01785121516 | Doc-<br>tor           | rajsh<br>ahi | rajshah<br>i  | 45678<br>9    |
| 5      | anower | an-<br>ower@gmail.co<br>m | 01305121345 | Doc-<br>tor           | pabn<br>a    | rajshah<br>i  | 32145<br>6    |
| 6      | reza   | reza@gmail.com            | 01956121345 | Doc-<br>tor           | gazi-<br>pur | dhaka         | 45678<br>9    |

|   |        |                  |             |         |          |       |        |
|---|--------|------------------|-------------|---------|----------|-------|--------|
| 7 | pranto | pranto@gmail.com | 01846456352 | Doc-tor | gazi-pur | dhaka | 987456 |
|---|--------|------------------|-------------|---------|----------|-------|--------|

Table 5.1.2: Database table for farmer registration

| i<br>d | nam<br>e    | email                 | mobile      | desig-<br>nation | address     | divi-<br>sion | pass-<br>word |
|--------|-------------|-----------------------|-------------|------------------|-------------|---------------|---------------|
| 1      | amit        | amit@gmail.com        | 01685121345 | Farme<br>r       | dhaka       | dhaka         | 123456        |
| 2      | rasel       | rasel@gmail.com       | 01963124563 | Farme<br>r       | tangail     | dhaka         | 123654        |
| 3      | pro-<br>tik | pro-<br>tik@gmail.com | 01345126354 | Farme<br>r       | rangpu<br>r | rangpu<br>r   | 456789        |

Table 5.1.3 Database table for admin registration

| id | Name | password |
|----|------|----------|
| 1  | Asad | 123456   |

## 5.2 Implementation of Front-End Design

It's a fundamental and significant piece of any site or undertaking. We likewise take the Front-End structure as a momentous piece of a venture. In the event that the UI looks basic to the guest or appears to be uneasy things, a great deal at that point individuals will overlook it. Here another issue is site stacking. On the off chance that the site takes stacking time than the normal, individuals will be exhausted and accordingly, disregard

it. So we attempted to structure an uncommon look UI with a slick and clean face other than that it's simple for any client as well. It is very easy to use and responsive also. These days individuals have cell phones and they like to utilize them for each reason. We kept it in information and made a responsive site that can utilize this site easily.

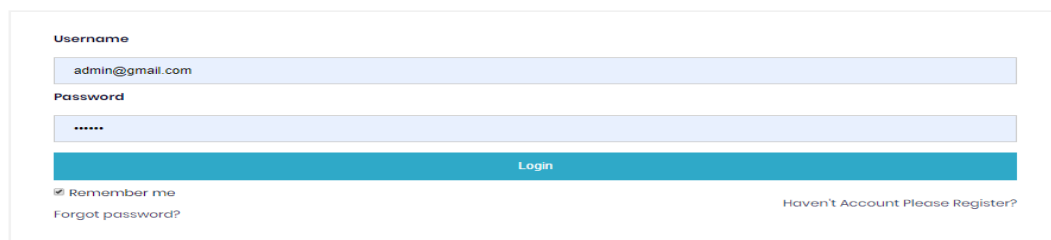
Figures below can describe more details that text.

**5.2.1 Register Account:** If anyone want to be a user they need to register first. User should have valid information for completing registration. So, user go into the home-page>login>signup, Then the register page will appear. Now I will provide the screenshot of register page below:

The screenshot displays the 'Register Form' for the 'Smart Farming System'. The form is contained within a white box with a light gray border. At the top of the box, the title 'Register Form' is centered. Below the title, the form fields are arranged vertically: 'Name\*' (text input with 'Rakib Hasan'), 'Email' (text input with 'rakib@gmail.com'), 'Mobile\*' (text input with '01717211053'), 'Designation' (text input with 'Doctor'), 'Address' (text input with 'Dhaka'), 'Division\*' (dropdown menu with 'Dhaka' selected), 'Password' (password input with masked characters), and 'Confirm Password' (password input with masked characters). Below these fields is the 'Register Type' section, which includes radio buttons for 'Doctor' (selected) and 'Farmer'. A blue 'Register' button is positioned below the radio buttons. At the bottom of the form box, a small link reads 'If you have an account please Login'. Above the form box, a teal navigation bar contains the site logo and menu items: 'Home', 'Question & answer', 'Blog', 'Disease Prediction', 'Doctor Directory', 'Register', and 'Log In'.

Figure 5.2.1: User Registration Page

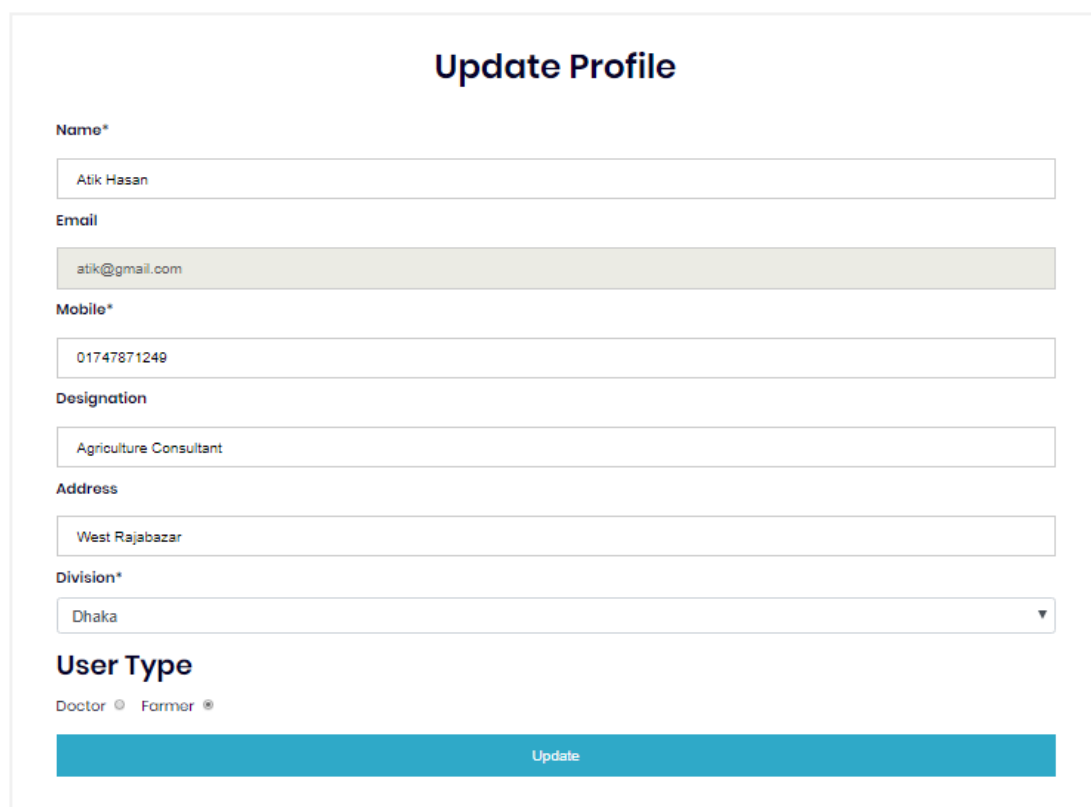
**5.2.2 Login Page:** User need to login for post blog, post question, doctor directory etc. But before that they need to be authenticated the system. First of all, they need to enter into the login page and fill up the required information. After that they will get access. Now I will provide the screenshot of login page below:



The login page features a form with two input fields: 'Username' containing 'admin@gmail.com' and 'Password' containing six dots. Below the password field is a blue 'Login' button. At the bottom left, there is a checked checkbox for 'Remember me' and a link for 'Forgot password?'. At the bottom right, there is a link that says 'Haven't Account Please Register?'.

Figure 5.2.2 Login page

**5.2.3 User Updated Profile:** After complete registration and login user must be complete company profile. Then any information adding and canceling. Now I will provide some screenshots for your better understanding.



The 'Update Profile' form contains several fields: 'Name\*' with 'Atik Hasan', 'Email' with 'atik@gmail.com', 'Mobile\*' with '01747871249', 'Designation' with 'Agriculture Consultant', 'Address' with 'West Rajabazar', and 'Division\*' with a dropdown menu showing 'Dhaka'. Below these is a 'User Type' section with radio buttons for 'Doctor' and 'Farmer', where 'Farmer' is selected. A blue 'Update' button is at the bottom.

Figure 5.2.3 User updated profile

**5.2.4 Blog post page:** Only doctors and admins can post blogs, update, and remove.



The screenshot shows a web form titled "Blog Post". It contains the following fields: "Title\*" (a text input), "Short Description" (a text input), "Long description" (a text area with a small icon in the bottom right corner), "Category" (a dropdown menu with "Select option" and a downward arrow), and "Image" (a file upload area with a "Choose File" button and the text "No file chosen"). At the bottom of the form is a large blue button labeled "Update".

Figure 5.2.4: Blog post page

**5.2.5 Disease Prediction Page:** Only doctors and admins can post blogs, Update, and Remove.



The screenshot shows a web form titled "Disease Post". It contains the following fields: "Title\*" (a text input), "Short Description" (a text input), "Long description" (a text area with a small icon in the bottom right corner), "Category" (a dropdown menu with "Select option" and a downward arrow), and "Image" (a file upload area with a "Choose File" button and the text "No file chosen"). At the bottom of the form is a large blue button labeled "Save".

Figure 5.2.5 Disease Prediction Page

**5.2.6 Doctor Directory page:** Doctor Directory page view any valid register and doctor profile update can be doctor.

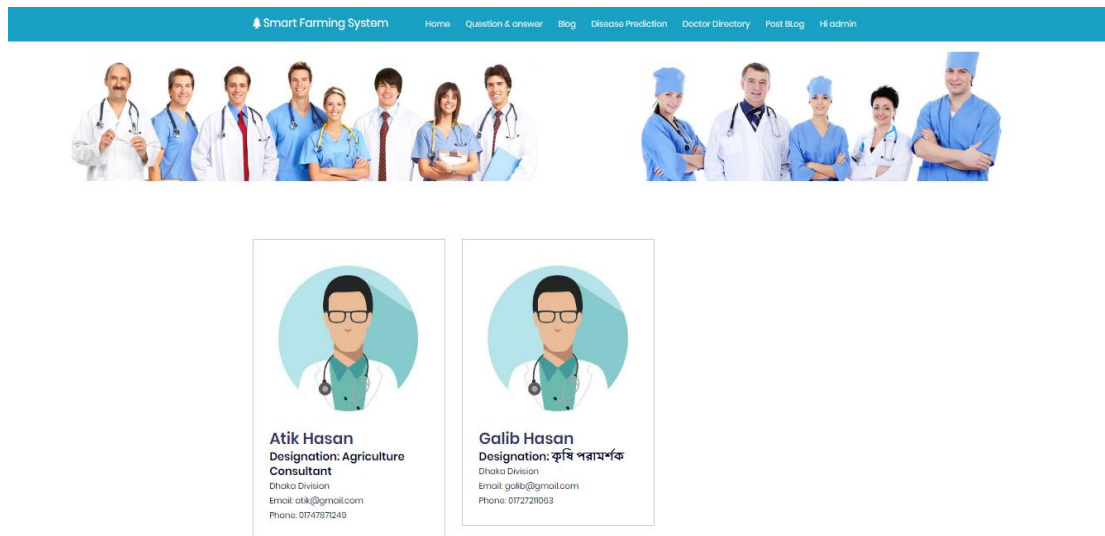


Figure 5.2.6 Doctor Directory page

**5.2.7 Question & Answer Page:** Question and answer can be any valid register and admin.

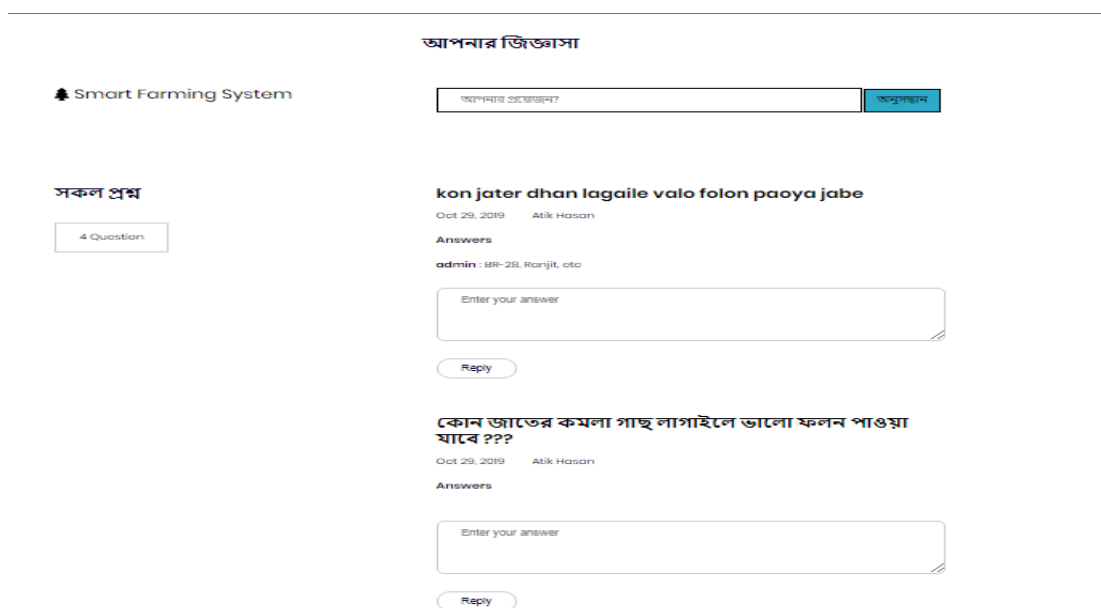


Figure 5.2.7: Question & Answer Page

### 5.2.8 Admin control panel: Admin can remove any user.

| Smart Farming System   |              |                         |                |        |   |                     |                        |
|--|--------------|-------------------------|----------------|--------|---|---------------------|------------------------|
| Home Question & answer Blog Disease Prediction Doctor Directory Post Blog Hi admin |              |                         |                |        |   |                     |                        |
| #  | Name         | Email                   | Phone No       | Role   | Designation                             | Join Date           | Action                 |
| 3  | Atik Hasan   | atik@gmail.com          | 01747871249    | Doctor | Agriculture Consultant                  | 2019-10-26 07:34:39 | <a href="#">Remove</a> |
| 5  | মোঃ নূরে আলম | uaosajahanpur@gmail.com | +8801700715967 | Doctor | উপজেলা কৃষি অফিসার। শাজাহানপুর, বগুড়া। | 2019-10-26 07:57:26 | <a href="#">Remove</a> |
| 8  | Asad         | asad@gmail.com          | 01727211063    | Farmer | Farmer                                  | 2019-10-26 22:03:40 | <a href="#">Remove</a> |
| 9  | admin        | admin@gmail.com         | 01750013635    | Admin  | controller                              | 2019-10-27 19:00:08 | <a href="#">Remove</a> |
| 10   | Galib Hasan  | galib@gmail.com         | 01727211063    | Doctor | কৃষি পরামর্শক                           | 2019-10-28 01:34:16 | <a href="#">Remove</a> |

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Figure 5.2.8 admin control page

### 5.2.9 Doctor control page: Doctor can be edit, update and remove post.

| Smart Farming System   |                        |                     |  |  |  |  |  |
|--|------------------------|---------------------|--|--|--|--|--|
| Home Question & answer Blog Disease Prediction Doctor Directory Post Blog Hi Galib Hasan |                        |                     |  |  |  |  |  |
| #  | Blog Title             | Post Date           | Action   |  |  |  |  |
| 3  | Dahlia Flower Diseases | 2019-10-28 01:39:07 | <a href="#">View</a><br><a href="#">Edit</a><br><a href="#">Remove</a> |  |  |  |  |

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Figure 5.2.9 Doctor control page



### 5.2.10 About page:



#### About Page

Farming takes skills. As a farmer, we have to know when to plant, when to water, when to fertilize and when to harvest. We need to know how to protect your crop from pests and from spoiling after harvest, and we need to know what the proper price is for your produce. Luckily, farmers worldwide are facing a suite of technological advances that can assist them in growing more food and bring more of it to market at a fair price. The opportunity for making farming smarter can increase yields and profits and reduce the use of precious water and fertilizer. If we think about a developing country such as Bangladesh, we will see our farmers are not enough advanced in technology and farming technique. Hence, I believe that smart farming project will step towards the progress of scientific and modern cultivation. In summary, this system will help the farmers involve farming in every smart way, in one single platform.

The agricultural sector is going to face enormous challenges in order to feed the 9.6 billion people that the FAO predicts are going to inhabit the planet by 2050. Food production must increase by 70% by 2050, and this has to be achieved in spite of the limited availability of arable lands, the increasing need for freshwater and other less predictable factors, such as the impact of climate change, among other things, to changes to seasonal events in the life cycle of plant and animals. One way to address these issues and increase the quality and quantity of agricultural production is using sensing technology to make farms more "intelligent" and more connected through the so-called "precision agriculture" also known as "smart farming".

The result of the project will be a Web Application. The farmer can use the Internet to find the information about best tools to meet their needs. Smart farming also allows the farmer to map out exactly which soil should be used for a specific type of crop. Technology allows the farmer to quickly analyze air temperature, humidity and the amount of dissolved oxygen. By the application, we can also check for plant disease. Optimized crop treatment such as accurate planting, watering, pesticide application and harvesting directly affects production rates.

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Figure 5.2.10 About page

### 5.2.11 Contact page:



#### Contact Page

Office Direction

##### Address

Smart Farming

Office #18/M,Khan Monjil,Tallabag,Sher-E Bangla Nagar, Dhaka-1207

asaduzzaman15-7179@diu.edu.bd

Phone: +880 1521316191

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Figure 5.2.11 Contact page

### 5.2.12 Mobile Version:



Figure 5.2.12 Mobile Version

### 5.3 Implementation Interactions

In the wake of finishing, we execute the framework to the "smart farming system" and again we fixed issues to guarantee the easy to use administration. In this way, individuals preferred this UI and utilized 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 [9].

## 5.4 Testing implementation

An experiment is a report, which has a lot of test information, preconditions, anticipated outcomes, and post-conditions, created for a specific test situation so as to confirm consistency against a particular prerequisite [10].

Table 5.4.1: Testing implementation

| Test Case             | Test Input  | Expected Outcome           | Obtain Outcome          | Pass/Fail |
|-----------------------|---|----------------------------|-------------------------|-----------|
| 1.Doctor Register     | Doctor can add profile Smart Farming System           | Register Successfully done | Login Successfully done | Pass      |
| 2.Farmer Register     | Farmer can add profile Smart Farming System           | Register Successfully done | Login Successfully done | Pass      |
| 3.Admin               | Admin can login into the system for manage the system | Successfully done          | Successfully done       | Pass      |
| 4.Question            | Doctor, Farmer and Admin can add question             | Successfully done          | Successfully done       | Pass      |
| 5.Answer              | Doctor, Farmer and Admin can add answer               | Successfully done          | Successfully done       | Pass      |
| 6.Blog                | Doctor and Admin can add post                         | Successfully done          | Successfully done       | Pass      |
| 7.Blog Comment        | Farmer, Doctor and admin can add comment              | Successfully done          | Successfully done       | Pass      |
| 8. Disease Prediction | Just Doctor and Admin can add post                    | Successfully done          | Successfully done       | Pass      |

|                               |  |                   |                   |      |
|-------------------------------|--|-------------------|-------------------|------|
| 9. Disease Prediction Comment | Farmer, Doctor and admin can add comment   | Successfully done | Successfully done | Pass |
| 10. Doctor Directory          | Doctor directory profile create can doctor | Successfully done | Successfully done | Pass |

## 5.5 Test Results and Reports

Nothing can be affirmed without genuine testing. Along these lines, after finishing the full undertaking we began to attempt the execution in numerous fields. We 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. The report paper can really portray the test outcome unhesitatingly.

Table 5.5.1 Test Report

| Number of Unit Test Case | 100% Success in first iteration | Less than 100% | Total Succession % |
|--------------------------|---------------------------------|----------------|--------------------|
| Total: 10                | 8                               | 2              | 80%                |
| Total: 10                | 10                              | 0              | 100%               |

## **CHAPTER 6**

### **CONCLUSION AND FUTURE SCOPE**

#### **6.1 Discussion and Conclusion**

The 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 application 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.

#### **6.2 Limitation**

- The part of system can be implemented using the current technology although some modifications had to be done at various places.
- Domain hosting bandwidth only 3GB.
- MySQL database storage 1GB.

#### **6.3 Scope for Further Developments**

This application keeps away from the manual work and the issues worry with it. Well, I have worked hard in order to present the website. All things considered, I discovered that the venture should be possible in a superior manner. Due to time and technology concerns, I am unable to deploy the online payment system and notification system and other small features. For that reason, I am going to develop new features like the following:

- Online Payment System using payment gateways.
- Notification System.
- Review of doctor from farmer.
- Doctor appointment system.
- Online phone call service adding.
- Online agriculture television.
- Online Chatbot developing.

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