Organic Buddy – Platform for Practicing Organic Farming

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Abstract - *The aim of this project is to create a platform where budding farmers and traditional farmers come together and practice organic farming. This platform also helps the budding farmers to gain knowledge and practice organic farming. This project allows remote monitoring of the plantation and several features such as forum, shop, get help from chatbot and local community, etc. This platform attempts to reduce the cultivation cost by sharing equipment amongst the farmers through the portal.*

*Key Words***: Organic farming**, **Chatbot**, **Organic tutor**, **IOT**, **Disease suggestion**, **Remote monitoring**.

1. INTRODUCTION

Currently used farming techniques are not well quipped to meet the demands of current market. Due to this the middlemen gets an upper hand and the farmers who are the backbone of this whole system suffers and results into more farmers quitting this job or committing serious crimes. This project will create a platform where farmers will practice organic farming which is the tradition of our Indian agriculture which was practiced by our ancestors. This will allow farmers to remotely monitor their plants along with several features such as forum, shop, get help from chatbot and local community, etc.

1.1 Background

Currently the most affected sector due to growth in population is the agriculture. Due to such enormous growth, there is demand and supply gap between generation and requirement of crops. This has caused price of crops to rise. The middlemen take advantage of this situation and purchase crops from farmers at less price and sell those crops at higher amount causing the farmers to struggle.

In order to earn more profits and to reduce the cultivation time, the farmers started to use artificial fertilizers which are containing chemicals. Chemical fertilizers increases the crop production but along with it there are adverse effects such as

- Hardening of soil
- Decreased fertility
- Polluted air and water
- Releasing greenhouse gases

Chemical fertilizers help plants to grow at a faster rate, such plants grown in that manner would not be healthy and strong enough and will not have enough time to mature and develop with good root growth, healthy stems, nutrition rich fruits and vegetables. These plants are more likely to die because they will be attracting more pests and diseases due to their bad immune system. Chemical fertilizers are prone to root burn, due to the fact that these fertilizers do not allow enough water intake for the plants.

1.2 Why Organic Farming?

Basically, organic farming involves the use of natural fertilizer such as animal waste, fish scales, earthworms, etc. As these fertilizers do not affect the immune system of plants and results in production of healthy plants. According to recent studies, intellectuals are arguing in favor of organic fertilizers as they are best way to avoid soil pollution and damage caused to life because of chemical fertilizers. Salt content is a critical characteristic of chemical fertilizers. These are dangerous to agriculture in long run. Use of these fertilizers will affect life of these soil friendly micro-organisms.

2. System Proposed

The system proposed is a one stop application for experienced and budding farmers considering the upcoming trend of organic farming. The system covers all the aspects that a fresher to farming might require to cultivate crops. The features are as follows:

2.1 Shop Section

The Section is further classified into 3 categories which are.

a) Shop fertilizers: It contains all the fertilizers which are organic in nature and the user can purchase them through the portal. This ensures hassle free experience and trusted product.

b) Shop seeds: This section provides different seeds which user can purchase according to his climatic conditions.

c) Hire equipment: Lack of infrastructure is the major problem in Indian agriculture. Considering the fact that most of the farmers fall below poverty line and budding farmers might not have the capital for investing huge cost on machinery, hence this section

aims to provide equipment on lease for certain period due to which both the parties have benefits.

2.2 Learn Section.

This section is specially designed for budding farmers where they can gather information regarding several crops such as the appropriate temperature required, soil moisture and expected time to produce the yield. This section helps user to identify the climate near them and select the crops to plant.

2.3 Get Help.

This section consists of chatbot and forum. Chatbot, which is trained to suggest diseases based on user observations as input, this ensures that user queries get resolved and remedies could be provided. Forum serves as a platform through which user can post updates and can

also get queries resolved which are not resolved by chatbot from the local community. Various government schemes can also be posted to spread awareness amongst local community.

This functionality is also enhanced by using machine learning model which is trained to classify the images of diseases. This feature helps the farmer to capture the image of disease and upload it to the model, the trained model then predicts the disease using which the user can treat his/her plant accordingly.

2.4 Dashboard

This is the main screen of the application on which user can see the details of crops planted. This information is fetched using remote module consisting of raspberry pi and sensors. The information includes the temperature, soil moisture.
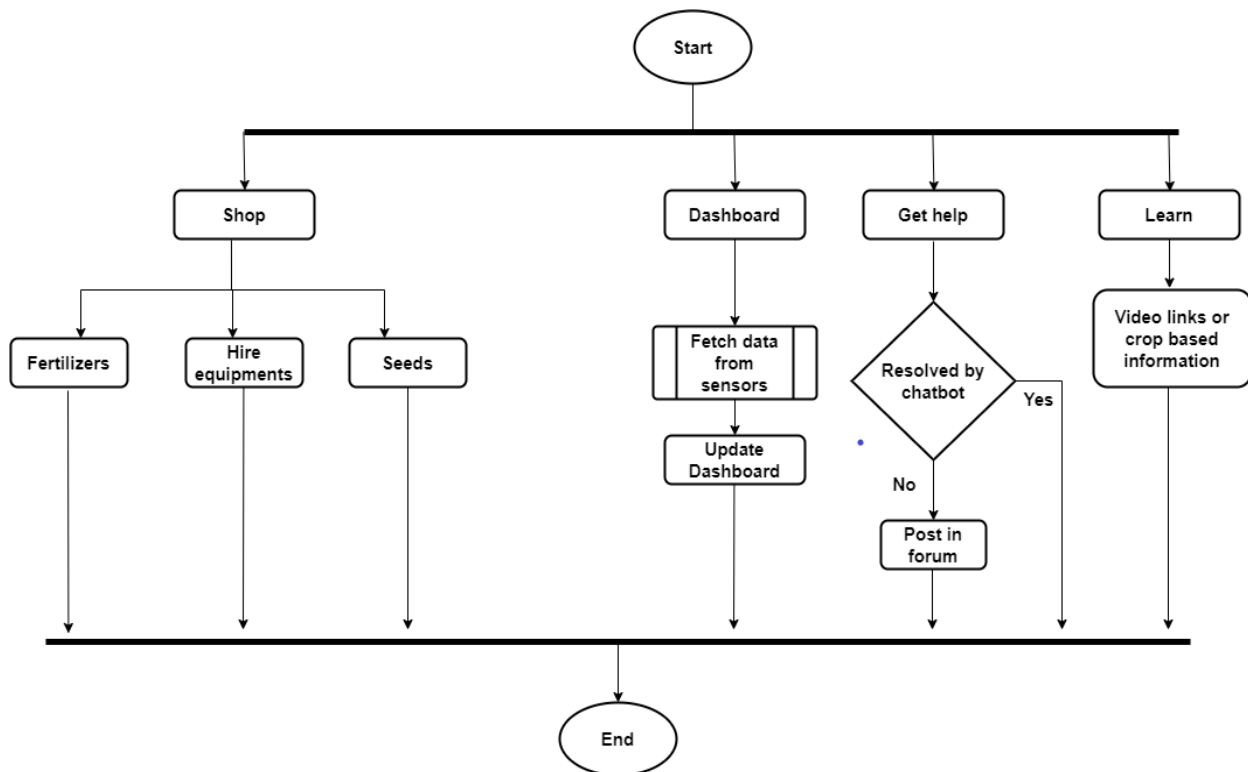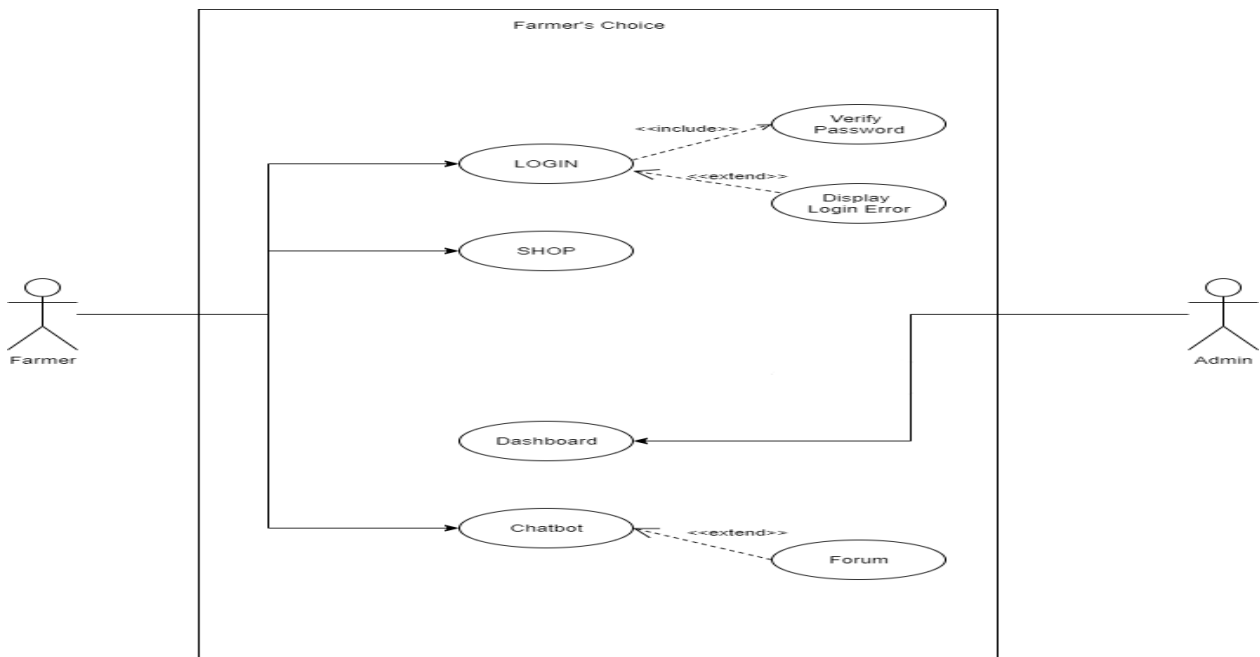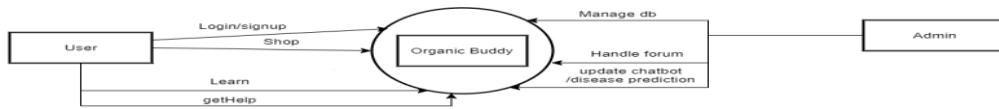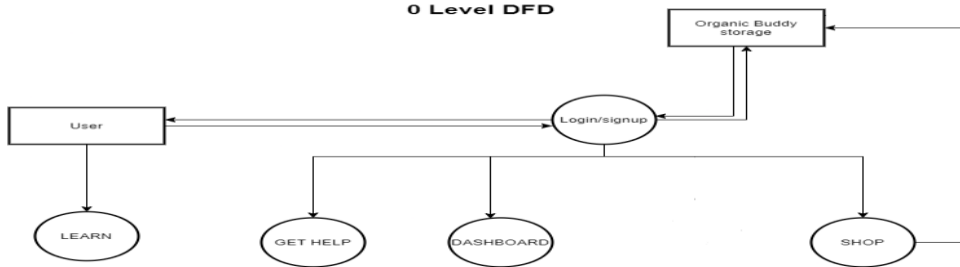
3. UML Diagrams

Fig -1: Flow Chart

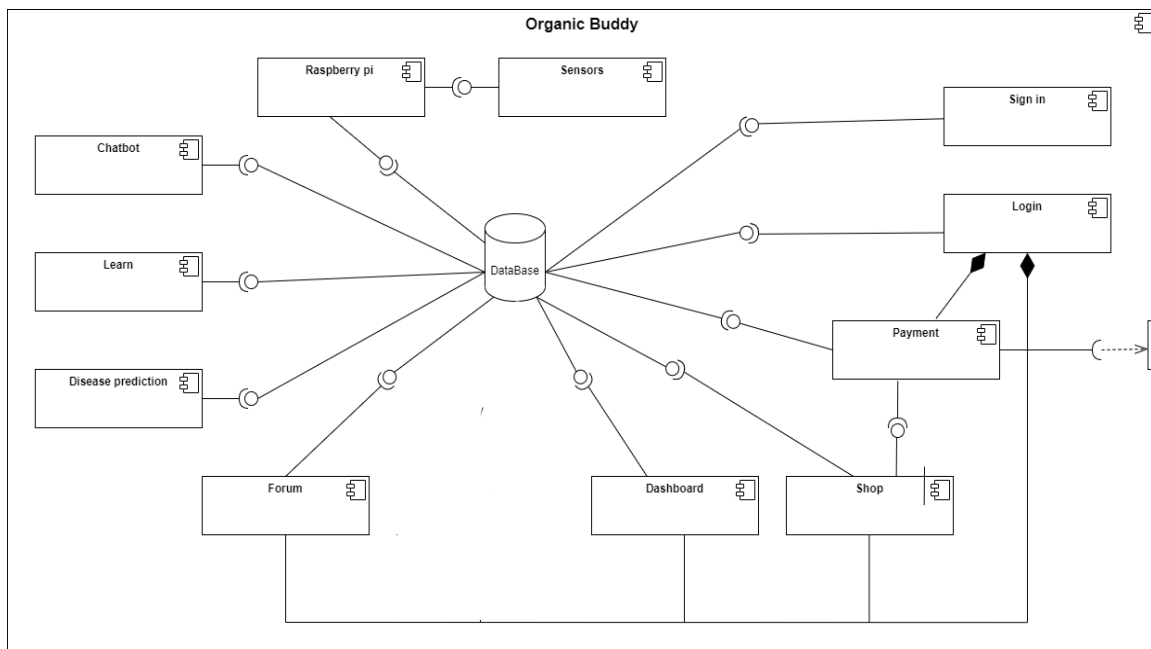**Fig -2**: Use Case
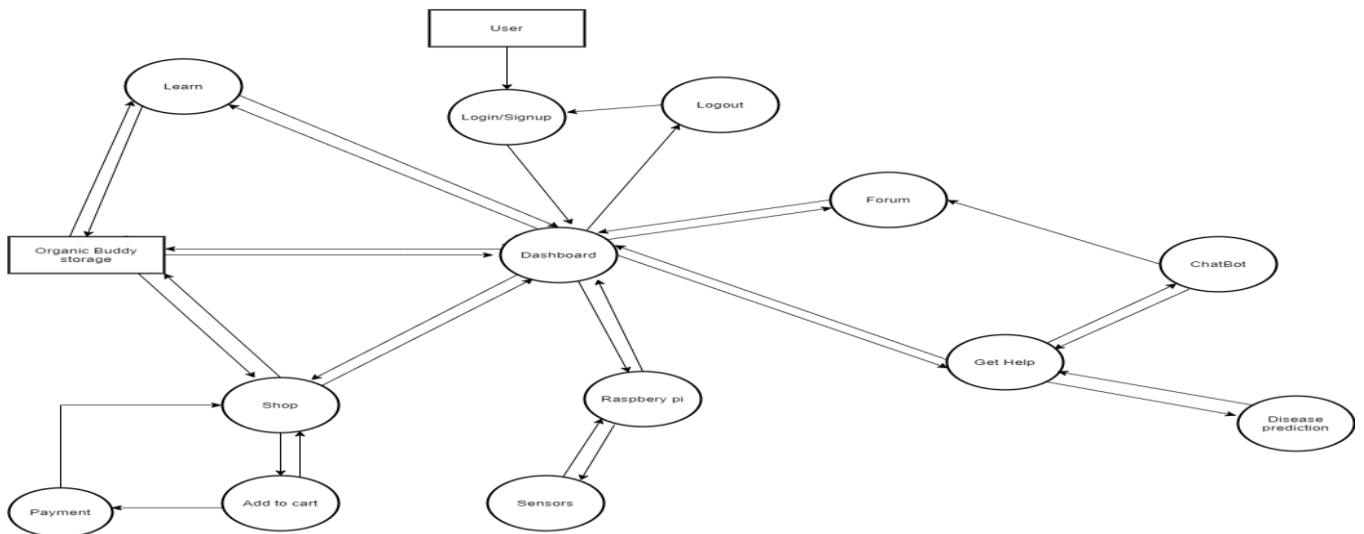
Fig -3: DFD (Level 0,1,2)

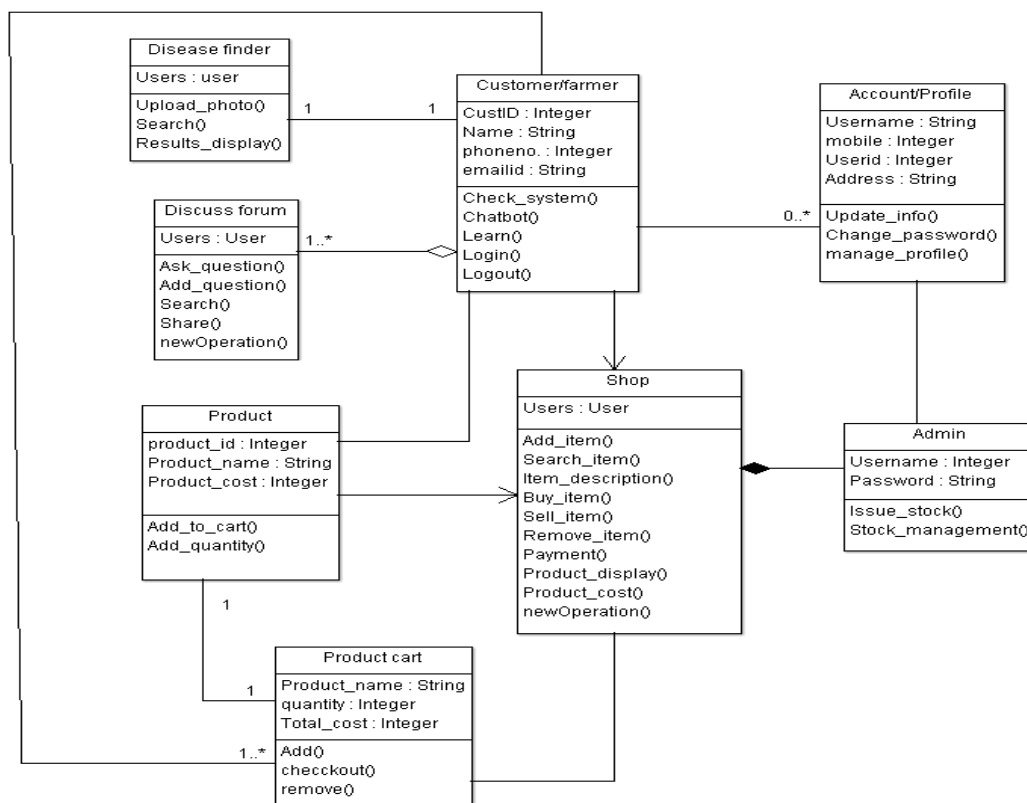**Fig -4**: Component Diagram
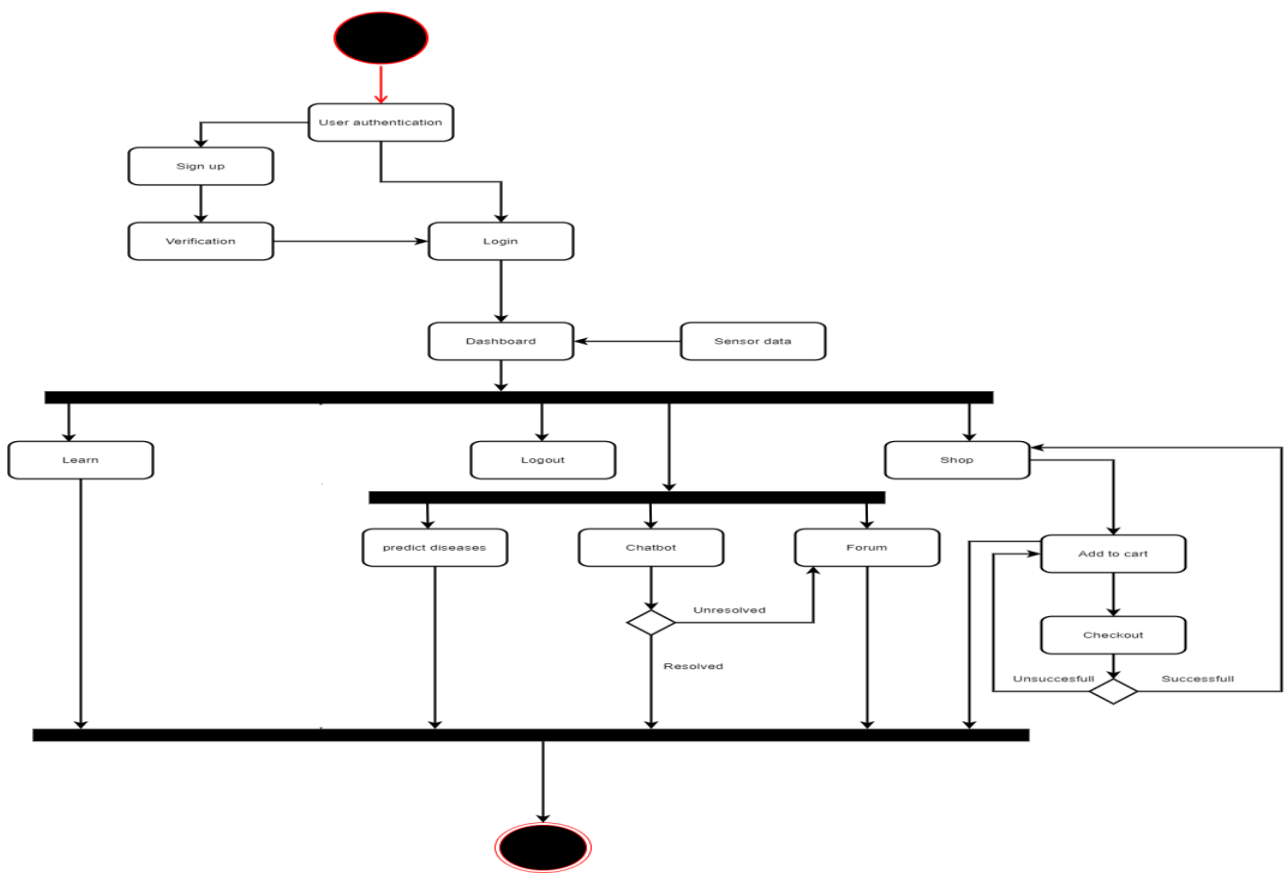

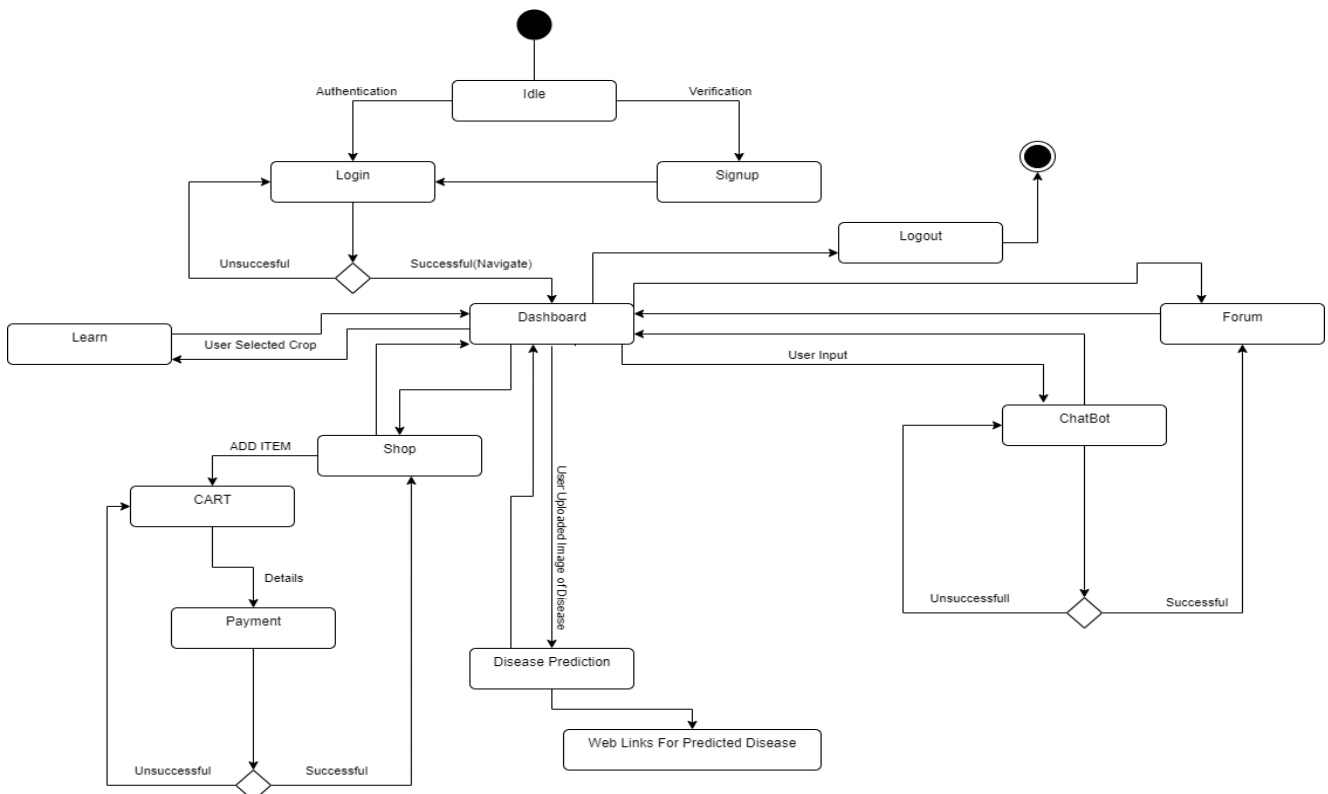**Fig -5**: Class Diagram

Fig -6: Activity Diagram

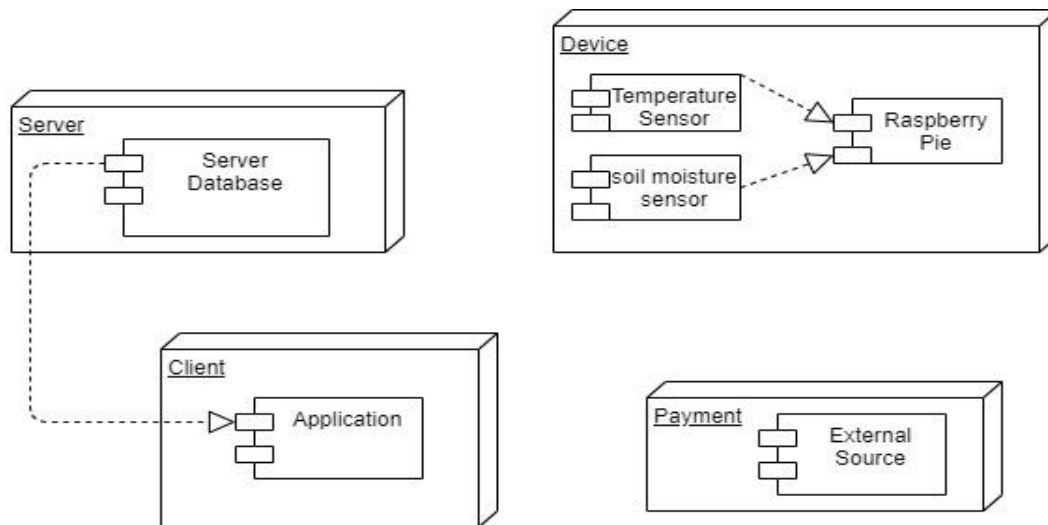
Fig -7: State Transition Diagram

Fig -8: Deployment Diagram

5. System Requirements

5.1 Software Requirements

- Firebase
- React.
- Python
- Raspbian OS

5.2 Hardware Requirements

- Raspberry Pi.
- Temperature and humidity sensor
- Moisture sensor

6. CONCLUSIONS

As we know that farmers have stopped using organic farming and have started using artificial farming methods. This system will be used for sharing knowledge to budding farmers. Farmers can hire equipment to reduce the cultivation cost. Forum will spread awareness about various government schemes, common equipment uses and disease queries. Chatbot based instant disease suggestion based on user inputs. This will help farmers increase profit percentage by sharing equipment, thus reducing cultivation cost. The system proposed can be a one stop application for farmers and remote monitoring of farms will make farmers job simple.

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