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Krishi - An Intelligent Helping Hand System for Farmers

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Abstract: Farmers are the backbone of Indian Society. They grow the needed staple food for us. Sometimes due to confusions, they are not able to know about range of crops grown in nearby places because of which they land up in trouble which leads to heavy debts or suicidal of the farmers. So, to provide such information to the farmers in helping them, get to know the kind of crops grown in their nearby places and also grow a variety of crops which would yield in quality crops and profit, a web-based application is developed. This application will help the farmers or users to predict the ratio of different crop grown, so that farmer will be able to analyse the situation and harvest according to ratio already specified. In this application, location based as well as crop-based search are done so that maps will display and it will be easy to know the ratio of crop harvested and also predict the price of particular crop in specified location. It also allows searching the nearby areas to guide the farmers in step-by-step process for particular crop harvesting and also enable them to chat with relevant specialists to get useful information.

Keywords: Crops, predict, location based, harvesting.

I. INTRODUCTION

The main goal of the Krishi system is to give farmers the tools they need to manage their crop information, prices, and service requests all in one place. Farmers have the ability to input details about their crops, establish prices, and ask for services from different providers. They receive timely responses and can provide feedback to the admin. The system also features a tool for identifying crop diseases and providing steps for treatment, ensuring that crops stay healthy and losses are kept to a minimum. By combining location-specific and crop-specific details, the system helps farmers understand the growth rate of crops in nearby areas and access important data for cultivating profitable crops. The predictive analytics system helps farmers in making well-informed decisions about planting and harvesting by using specific rates. It also provides a map-based search tool to show the types of crops grown in particular areas, making it easier for farmers to understand crop rates. Real-time rainfall updates further assist farmers in planning their farming activities, improving productivity and adaptability to unfavourable rainfall conditions. In summary, the system is designed to optimize agricultural practices, increase profitability, and promote sustainable farming through data-driven insights and seamless service collaboration.

II. RELATED WORK

[1] This paper explores sustainable farming techniques that can be adopted by smallholder farmers to improve crop yield and environmental sustainability. Key practices include crop rotation, organic fertilizers, and integrated pest management.

[2] The paper discusses the profound impact of climate change on agriculture, highlighting the interconnectedness of climate change and food security. It notes that climate change adversely affects agricultural production at both global and local levels, leading to reduced crop yields and altered cropping systems. The analysis reveals that higher temperatures can accelerate plant maturity, shortening growth stages, while increase CO2 levels may initially benefit crops without climate changes.

[3] The investigation of AI and IoT in farming, as lit up through different considers, presents a scene brimming with potential and challenges. This audit has typified the center angles of these advances in revolutionizing cultivating hones.

[4] The study's findings suggest that incorporating digital technologies like DCC and SAMs could transform farming methods, improve efficiency, and promote environmental sustainability. The report underscores the significance of using big data in smart agriculture, empowering farmers to streamline their activities and make well-informed choices.

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[5] This paper centers on the improvement of a rural robot that can mechanize cultivating forms, with the objective of expanding efficiency and decreasing labor costs. Cereal crops such as sugarcane, wheat, and jowar. The proposed framework can computerize different cultivating forms, counting furrowing, soil dampness location, water pumping, seed sowing, and collecting. The framework can too be controlled remotely utilizing the Blynk application.

III. PROPOSED SYSTEM

In our proposed system, the farmers can add crops information and price and can request for services if he needs any from any of the service providers. The farmers can view the response from the service provider of the request and can also send feedback to the admin. The farmer can also get solutions for any of the diseases his crops or plants will get in this application. A location based and crop based growing and harvesting information which helps the farmers not only to know about ratio of crop grown in nearby places, also to provide such useful information which helps them to grow varied kinds of profits-oriented crops. Location based as well as crop-based search is also thought of to be done so that maps will display the location and the kind of crops grown in a particular area and it easy to know the ratio of crop harvested. Also, real time weather updates are given to the farmers.

ADVANTAGES

- Comprehensive Crop Information: Farmers can easily access detailed information about different crops, including optimal growing conditions, pest control methods, and market prices.
- Disease Solutions: The system provides solutions for crop diseases, helping farmers take timely actions to protect their crops.
- Service Provider Connectivity: Farmers can request services from various providers, such as machinery rental, pest control, and irrigation services.
- Feedback Mechanism: Farmers can send feedback to the admin, ensuring continuous improvement of services and system functionalities.
- Location-Based Information: Farmers can view crop-growing and harvesting data specific to their location, helping them understand local agricultural trends.
- Crop Growth Prediction: The application can predict the ratio of different crop growth, allowing farmers to analyse trends and plan their planting and harvesting schedules accordingly.
- Weather Information: Farmers receive real-time weather updates, helping them plan agricultural activities such as planting, irrigation, and harvesting based on accurate weather forecasts.

IV. METHODOLOGY

A. Implementation Steps

1. Model

The Model layer refers to the entities, business objects, data source, and other repositories available in our application. Model used to perform the database related operations. It uses php to interact with the database and to perform operations such as information related to the user, products, stores etc.

2. View

View is a front end or GUI, which invokes Model through Controller, view, consists of latitude and longitude. The view in XAMPP IDE is coded using tools. The view will have all the necessary validations for user entries.

3. Controller

- Controller classes are responsible for handling user input and responses.
- Locating the appropriate action method to call and validating that it can be called.
- Getting the values to use as the action method's arguments.
- Handling all errors that might occur during the execution of the action method.
- Providing the user-friendly views to the user.

B. Flowchart of Implementation

The flow of implementation starts with Admin who adds and manages the crops price into the database. Farmer login to the system using his username and password created by themself and performs the functionalities such as add and manage crop information, view price of the crop, search for a service, view response, send feedback, find the solutions for crops diseases, and predict the crops and rainfall and get recommendations of the crops.

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Service Provider login to the system using username and password and performs the functionalities such as add and manage service information, view request from the farmers and view the feedback.

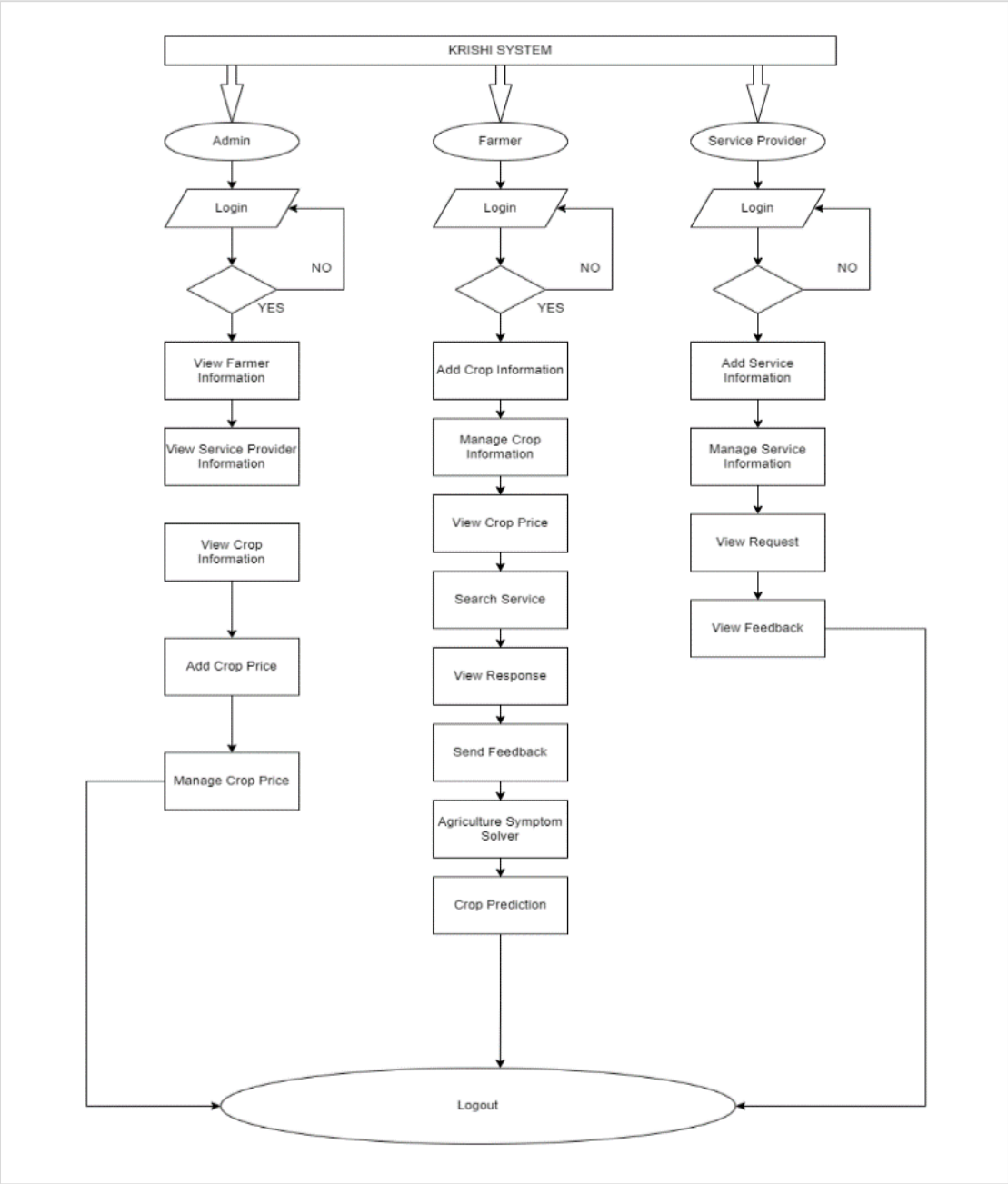

Fig. 1 Flow of implementation

V. IMPLEMENTATION

The Admin login through this page by using username and password and he can view farmer information with the crop information and service provider information. He can also add crop price and manage the crop price. The Farmer can login to the system using username and password or new farmer can also register here by providing the required details. They can add the crop information and also manage the crop information with viewing the crop price. He can search for the required service and view the response. He can send feedback for the received service from the service provider. He can get suggestions on how to solve the diseases of the crops and predict which crop he can grow in which place.

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The Service Provider can login to this system using username and password new service provider can also register here by providing the required details. They can add service information and manage service information. He can view the request for the services requested by the farmers and view the feedback.

VI. CONCLUSION

The system is a complete digital platform which allow farmers to add crop information and pricing, request services from service providers, they get timely responses. It has a continuous improvement feedback mechanism and offers solutions for crop diseases inside the app itself. It also provides relevant location-based and crop-specific planting-information, to help the farmers understand which crops are growing in higher ratios near their area conveniently enabling them with choosing the cash-crops. Moreover, the app will forecast growth rate of crops which helps farmers understand what to do in disaster situations and prepare accordingly. The platform is equipped with mapping, search functions to display crop diversity in a region which will help the policy makers and development workers for strategic planning of crops and agricultural management. Overall, this system aims to enhance productivity, optimize agricultural practices, and improve profitability for farmers, contributing to the sustainability of their operations.

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