



AGRIO APP: An Advanced Android Application For Farmers

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ABSTRACT -Now a days, everyone is familiar with smartphones including farmers. Mobile phones play indispensable role in daily life of people. Use of traditional methods in farming results slow progress. People can see the advantages of using better approaches to cultivate the crops with the tools and technologies that supports farming are yet to move into agricultural field. Farmers are mainly not aware about the technical advancements in farming and also they are unable to know the rates of the crops and their products they sell. There are also many schemes for farmers which are not known to them. With the emergence of mobile phones and Internet, there is a high potential for giving essential information via this means. Hence, an Android application-AGRIO APP is designed to provide a solution to these problems. We are creating a platform for users which is considered either as a farmer or a customer who uses a smartphone through which they can get the updated rates of crops so that they can buy and sell their products at a rates. This application will have features such as, all the farming related information from the experts and necessary information about different schemes. It also provides a platform to sell crops on profits without marketing, finding the current market rate of crops, identifying the climate conditions, understanding the new methods and showing latest news and information from agricultural authority.

Keywords; Android

I. INTRODUCTION

India's economy is highly depended on agriculture. Agriculture is important for the production of food and other materials. A good part of population depends on agriculture. The Agriculture development plays a major role in the economic welfare of our country. India is more efficient for cultivating food crops than other countries. Agriculture field faces a lot of problems, constraints and challenges due to the dramatic growth of population, increasing the food requirement, natural resource degradation and concerns of climate change. Farmers are not aware about the technologies, methods and new policies used in the farming. Farmers have difficulties to know about the market rates of vegetables, products and farmers sell their products in less profit.

Today, farmers get news through television, radio and smartphones. But all farmers has little knowledge to read newspaper or they have no time to watch Television. So farmers never get information about the current farming news and schemes, so farmers have to sell their vegetables in low profit. Because of getting less money, farmers are forced to take loans from the financial institutions such as banks. The major part of farmers is often unable to know about technological advancements in agriculture which helps to get better yield and prices for their crops. Since it is not possible to increase the land area for cultivation, the only possible way is to increase the productivity. The usage of smartphones solves some of the above problems. The usage of mobile phones with internet connection has recently increased in rural areas which help in spreading the agriculture- based information to the farmers. Smartphones will take their space in all the environments where people handle their day to day activities, and compute operations that are performed on computers. So, mobile applications are appropriate option for sharing information to the farmers. Android is the commonly used latest platform for developing mobile applications and most people's uses android smartphones than others. Android smart phone becomes popular due to its features and its low price. The application helps farmers who use smartphones where they can find the real time updated rates of vegetables, fruits and other crops of every market in theirs place, farmers can sell their crops based on location and peoples nearest to farmers can buy crops from farmers of their nearest location and these help farmers to sell their products at better rates. The application also provides the features like showing climate conditions, methods of cultivating specific crops, opportunities for better interaction and communication with experts, market price of crops, guidelines for selecting pesticides and fertilizers, information on most suitable seasons to cultivate various crops, renting agricultural machineries directly from owners, new farming policies and schemes from government

II. LITERATURE REVIEW

[1] discusses an Android application for Farmer used the updated rates of vegetables and fruits at each market in India and farmers will be able to sell their crops at better rates. This Application gives proper information such as all the farming related notices from the government and different schemes to farmers. They are predicating the rates of the vegetables and fruits depending on market condition.

[2] presents an overview of mobile-apps targeted to the agricultural sector currently available in Google Play Store, android operating system. In addition, a solution of the given problem is designed and presented in the form of an Android application- Kissan Sevak. This provides crop planning which include when to grow the crop, which crop to grow, seed variety related to the soil type, the time of harvest, buying seeds, pesticides, farm-equipment, and fertilizers, contact with the respective dealers, marketing applications which is the available price in the current market information applications, for contacting farm specialists ,for checking the available storage facilities, for post-harvest technologies.

[3] suggest various ways in which a farmer can utilize Mobile Computing(MC) on their handsets using application called “Kissan”, to assist them for relatively better cultivation and merchandise. This framework uses MC, which in effect, puts power into a farmer’s hand. The experimental setup uses tools like Android SDK. This application gives real time weather, news and market prices at different locations related to farming that also in regional languages.

[4] With the help of Android SDK, Mobile Computation can be used to develop infrastructure for smart farming. Building cognoscente in the field of agriculture that enlarges countries agriculture production. Here the framework is build using MC, revolving the agriculture with technology. A solution that builds on top of mobile computation that helps in farm management and agriculture yield. Tools like Android SDK, Xampp Server, etc. are used in the system.

[5] With the help of Google Cloud Messaging, rapidly increasing needs in farming are met by doubling the productivity at the existing level with the help of modern technology. Here each action named as an activity with a sequence of callback methods that start up and tear down an activity. The MYSQL database, Google Cloud Messaging, JavaScript Object Notation are used to build the android application.

[6] introduced Forecasting and technical information regarding farming that provides great result in smart farming. Rural farmers greatly depend on Agriculture Kiosk and installing ICT into kiosk which will lead enhancement in farming. The Proposed System that uses android smart phone can be used for performing Kiosks operations. All the information provided by the kiosks will reach farmers just by operating the android phone.

[7] discussed the concepts such as Internet of Things (IOT), Digitalization, Mobile computation, Android etc., which can be used in farming. The system is built as modules including Admin module, User module, Technical Expert Module. The system is designed to provide information about fruits and vegetables and other information such as soil, fertilizer, method for harvesting, etc. For a farmer, it is a Free of Cost, Anytime, Anywhere service without Internet Service.

METHODOLOGY

The main objective of our proposed project is to build an application that help users for cultivation of crops with necessary information obtained through App. The user first registers with his/her personal details and these details are stored in the database. The user can login into the app by using the username and password provided during their registration. The basic information obtained through this App is information related to weather forecasting and also the users can buy crops directly from farmers by using their address posted in the App. For this, if a user has to do something such as to sell crops they cultivated, they have to post their current farming location in map, crop details, their address details, crop photos etc. in the App. So, if anyone wants to buy crops, they must see the posted information in the App and they will be able to know the location where the wanted crops are available. Hence, they can directly buy the crops from farmers without any mediator in between. The Application also provides remedies for various diseases in different crops that help farmers to take necessary actions if any diseases occur.. Also the users can rent or buy agricultural

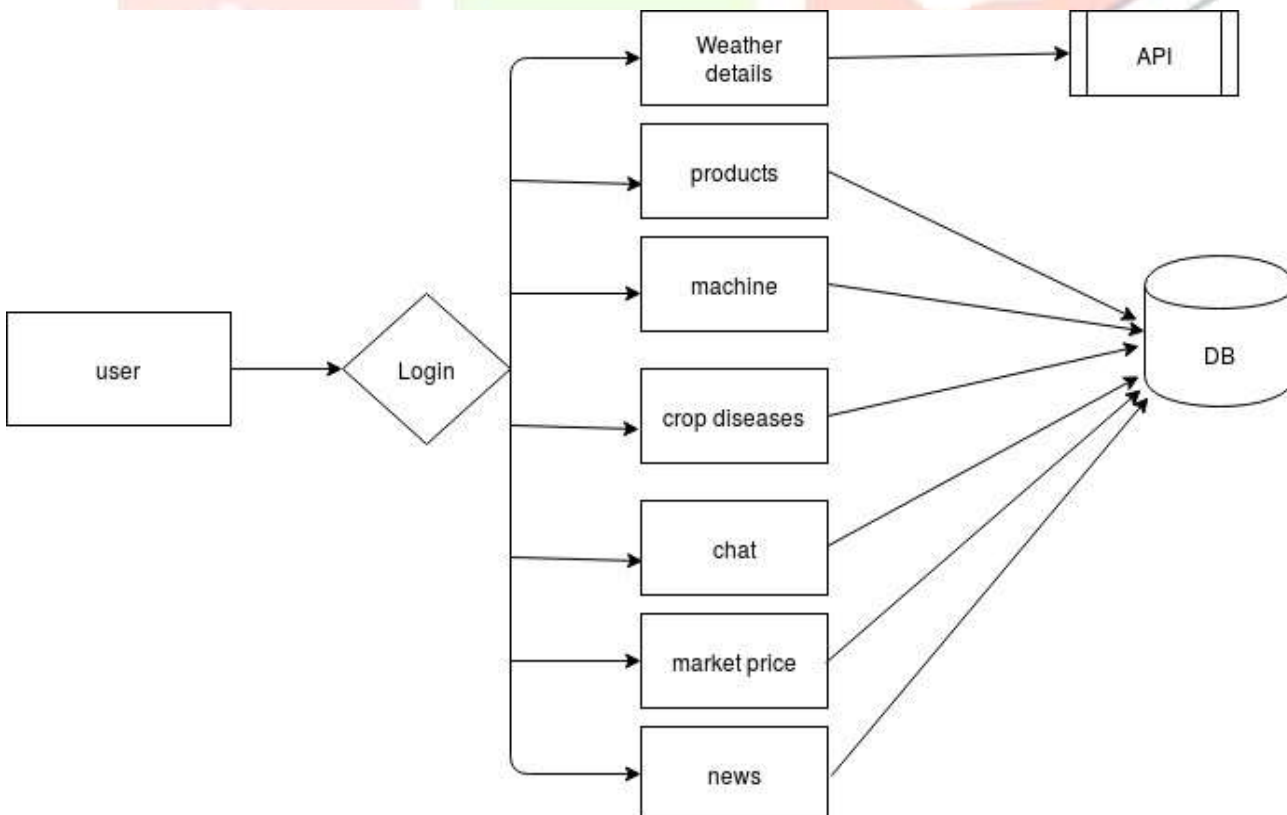


Fig. 1: Block Diagram

machines by posting the details and owner addresses. Here the Admin/ Expert can add news and update the

market price of different crops in different location, and the Experts will also respond to queries and doubts asked by users. The fig. 1 shows the block diagram and the fig.2 represents the Use case diagram of the proposed system.

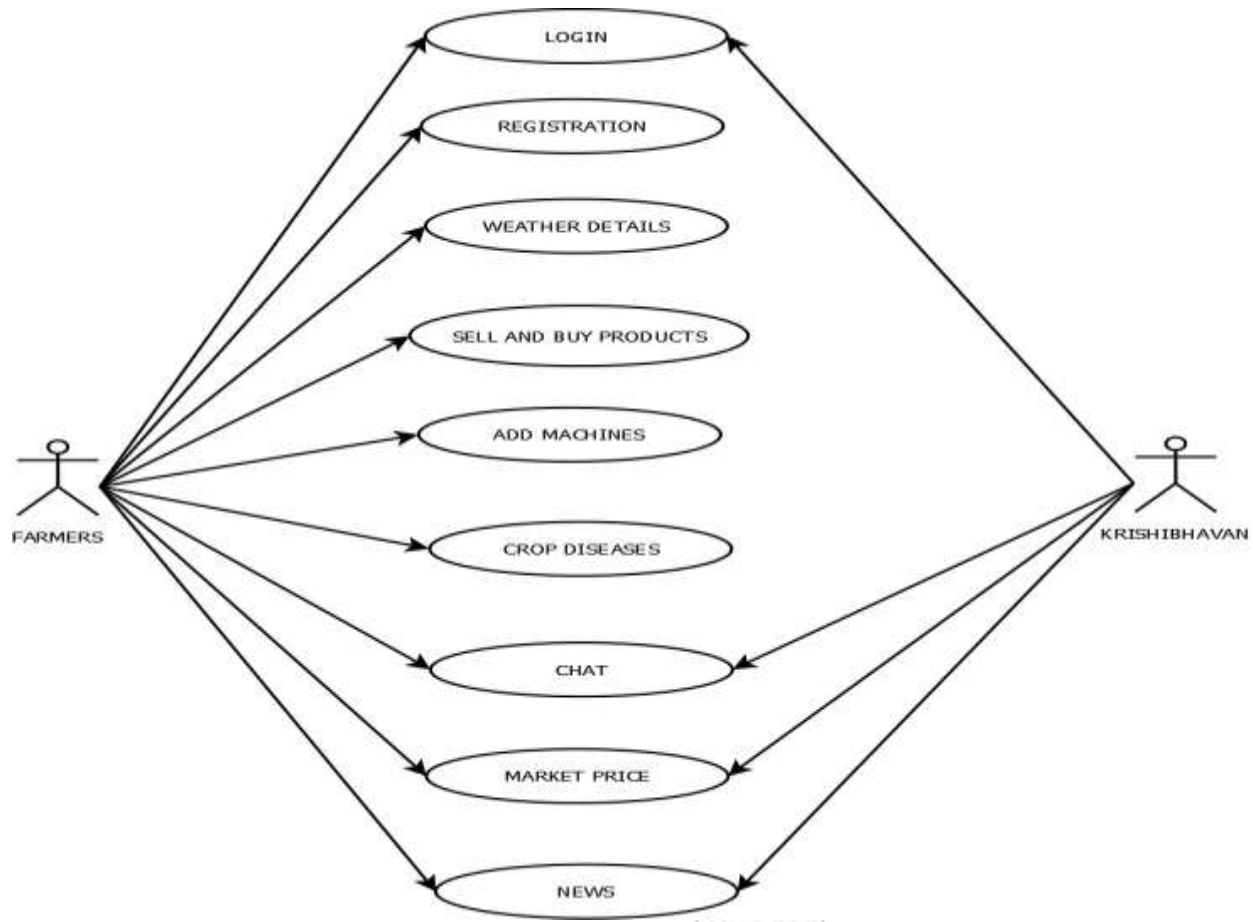


Fig.2: Use Case Diagram

The project is divided into different modules which are;

- Login/Register
- Climate
- Market rates
- Sell and Buy

- Methods and techniques
- Rent Machines
- Chat
- Admin

Login /Register

In this module the user first registers with his/her personal details. If it is an already registered user, then it goes to the login module. Then the user can access the details that he wants after login. If the user is not already registered, the user must sign up and do the registration process. Registration page will take users information such as username, location and other details. The user can login into the home page if the user is registered.

Climate

This module gives information about weather conditions which help farmers during cultivation period. The main aim of providing weather forecasting is to help the farmers to know about the details of the weather in specific location. The farmer can also get details such as humidity, sunrise, sunset and pressure etc. To take necessary decision for their cultivation of crops, the climate information plays an important role. Weather API is used for finding or knowing weather forecasting.

Market Rates

This module gives the daily updates of market prices of commercial crops which help farmers to know the current market price. Market rates is another basic feature available in this. It provides the entire vegetable's price rates at different places. Admin will update the prices of different crops periodically. Application will provide the updated market prices of crops.

Buy and Sell

Sell and Buy module consist of two services which are useful for both farmers and customers. These services include both sell and buy facilities. If any of the crops wants to be sold, the seller gives details about the crops to be sold, their price, location etc. If any user wants to buy a crop, the crops details such as name and price of crops, location of farmers who want to sell and their location will be shown in the Sell and Buy module. Also this module can include offers and discounts available with crops for sale. The crops, can be booked as an order by the user, so that the desired crop will not be sold to others.

Methods and Techniques

This module includes methods showing how to cultivate different types of crops. The remedies for the diseases in the application can also help farmers to take corrective steps against diseases in their crops.

Rent Machines

This module gives an interface to help farmers with their farming needs like tools and machines for farming. The details of tools from different users will be available in the application and the farmers can buy it according to their needs by contacting them. There is another option available in this module for renting tools to those farmers who have their tools remain unused. From this way, the farmers can also get benefit from tools by renting it. The availability of tools improve the earning of other farmers.

Chat

Farmers are not aware about latest news and other information related to farming like loans, precautions, additional measures taken, and other advisories from experts are available in this module. If farmers have any doubts about cultivation, they can ask queries to experts and solve their problems. Also they gets new information related to agriculture and news in agriculture technology through this module. Hence, users will know the new relevant news in the field of agricultural technology.

Admin

Admins are those who have the privilege to make changes in the main database. They can add the market price of different crops, update and remove information such as news and also they can give response to user's queries or doubts through website. Here the admin can also act as Experts/ krishibhavan officer

IV. RELATED TECHNOLOGY

Android

Android is a Linux-based operating system and an open source, mainly designed for developing mobile applications for devices like smart phones. Android is an operating system used for mobile phones. Android programming is based on Java programming language and developers can modify and customize the OS for each phone. Android SDK is the software development kit that permit developers to develop apps for the Android platform.

Java

Java is object oriented computer programming language that is class based, which is mainly used for developing applications. The syntax of java is similar to C and C++, but has low level facilities comparatively to

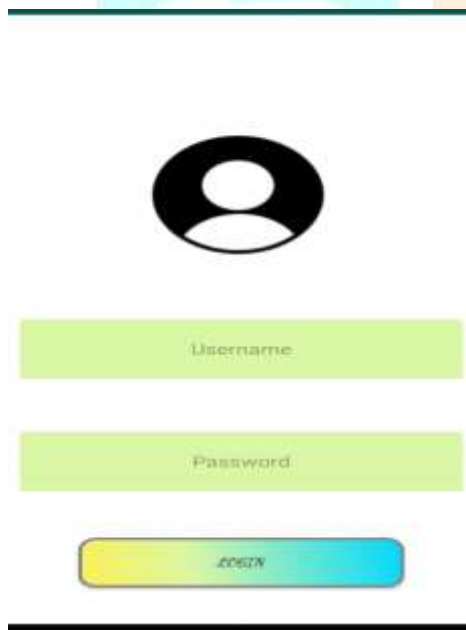
other languages. Java is the basic programming language for the Android smartphone applications. Java is designed to be easy to use, learn, write, debug and compile than other programming languages.

SQLite

SQLite is a process library that performs a self-contained, zero configuration, server less, Transitional SQL database engine. The source code exists in public domains and is free for both private and commercial purposes. It has binding to several programming languages like C, C++, java, C#, and as for our requirement it has binding towards python also SQLite is ACID compliant (A- atomicity, C- consistency, I- isolation, D- durability). SQLite is not a client-server database engine.

V. RESULT AND DISCUSSION

The user interface of this app is shown below.



(a) Login



(b) Climate

The application in which user can find the details of farmers and their crops, they can also add details of their crops and location, rental machines, climate information, current market price of specific crops after searching the crops in specified location, getting the latest news related to agriculture from agricultural officer, know the remedies for various crop diseases after selecting required crop, ask queries to experts and getting replies from them.

VI. CONCLUSION

The AGRIO APP creates an innovative platform for interaction between different users as farmers or customers. By implementing this application it helps customers to find farmers who are reliable for them to buy crops. Customers can view details of farmers and their crop details. Hence they can buy crops from farmers directly by contacting them. This App help to reduce the problems of farmers by introducing a platform with different operating interfaces that provide services that are needed by farmers such as knowing the details of information required for the cultivation of each crops, weather forecasting for each selected location, Market rates of each crops in different location, supporting expert's advisories, diseases and prevention methods for each crop weeds, renting of agricultural machines, trending news regarding agriculture, etc. And this application also provides a platform for helping customers to know about their nearest farmers for taking orders of their food crops.

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