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Design and Development of KisanSeva: an Android based application for Farmers

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Abstract: This application which is named as 'KisanSeva' will certainly bring a major transformation in the ways which are both known and unknown to the farmers. Most of the farmers in Maharashtra are still using traditional methods for farming due to which they are facing problems like loss of soil quality, fewer yields from the farm, unpredictable weather, lack of knowledge about pests, unnecessary expenditure on pesticides etc. This project focuses on improving the quality and quantity of the goods produced by the farmers by providing them with new & precise information about the important aspects of farming. There are few apps related to farming available in the market but this app will provide extra features like organic farming, methods of water management & expert suggestions. This app will also provide a small platform for the farmers to sell their produce.

1. INTRODUCTION

The idea of involving the farming in digital sector for the betterment of farmers is the driving force behind the development of this application. The purpose behind developing a Smartphone based application was that, India being the second most populous country in the world will have more Smartphone users compared to United States. Around 220 million people in the U.S. will use a Smartphone by 2017, compared to nearly 244 million in India. This will certainly have a major impact on the society which resides in the rural area of the country.

The reason behind choosing the android platform was that, in India almost 60% Smart phones are running on the android OS. This helps in reaching out to more people in the society. Also the development tools required for android application are easily available.

This application involves different modules each serving a specific purpose and which are unique in their own way. It involves modules like Crop Information, Crop Protection, Weather, Agro Advisory etc. This application will certainly be useful in every sense related to farming sector.

The next section of this paper deals with the design part of the project. The third section illustrates technology used for the development and the fourth the section describes the implementation part. Conclusion is drawn in the final section of this paper

2. DESIGN

2.1 System Design

Figure 2.1 shows a high level diagram of the proposed system. A user has do deploy this system on his smart phone. User registration, crop, weather database creation and displaying the required information are the basic building blocks.

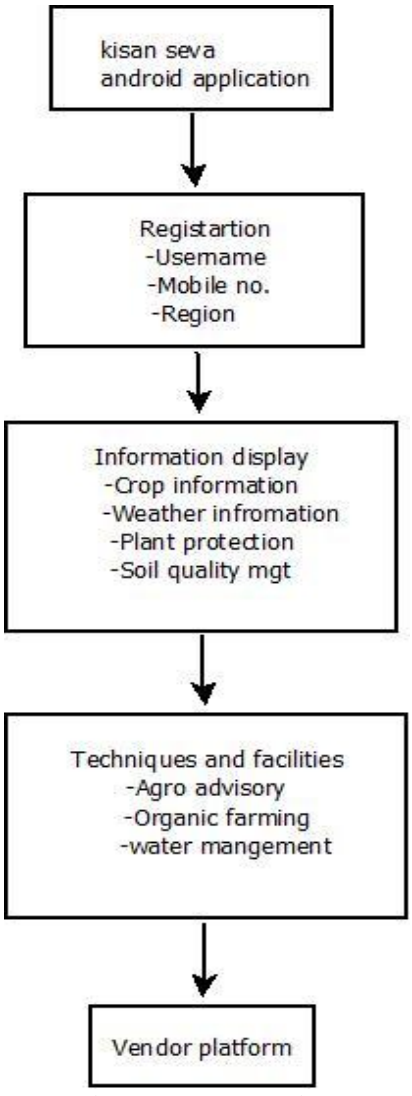

Fig.2.1: System Design

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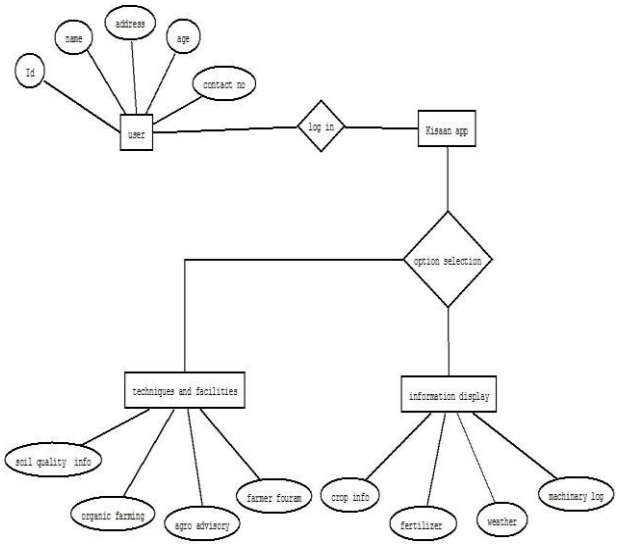

Fig.2.2: Detailed Design

Figure 2.2 shows the detailed system design. To use this application the user will first have to register with his/her name, mobile number and then select the respective region. After the registration the main Window will open from where the user can access the application. Here different modules will be presented to the user. In the crop information and crop protection module the user will have to select the category of the crop and the crop name. Then according to the crop the information will be displayed. In crop protection module after selection of the crop, the user will have to select the type of the pest and the current stage of the pest. After selection of the option the information will be displayed about the how to deal with the pests. The water management and the soil quality management modules will provide information about the new trends and techniques that are being used all over the world and how these techniques can be applied here. Then we have also provided a vendor platform for the farmers. Here the farmer can sell the goods just by posting an advertise. The weather module will provide weather reports. Agro advisory module will contain recent research papers and articles uploaded by researchers in agriculture field.

3. TECHNOLOGY

It is an Android based application suitable for smart phone users. At the backend to store the data SQLite database is used.

3.1 Android:
Android is an open source and Linux-based Operating System for mobile devices such as Smartphones and tablet computers. Android was developed by the Open Handset Alliance, led by Google, and other companies. Android offers a unified approach to application development for mobile devices which means developers need only develop for Android, and their applications should be able to run on different devices powered by Android.

The first beta version of the Android Software Development Kit (SDK) was released by Google in 2007 where as the first commercial version, Android 1.0, was released in September 2008.On June 27, 2012, at the Google I/O conference, Google announced the next Android version, 4.1 Jelly Bean. Jelly Bean is an incremental update, with the primary aim of improving ng the user interface, both in terms of functionality and performance. The source code for Android is available under free and open source software licenses. Google publishes most of the code under the Apache License version 2.0 and the rest, Linux kernel changes, under the GNU General Public License version 2.

3.2 Java:
Java is a programming language expressly designed for use in the distributed environment of the internet. It is simpler to use than c++ and enforces an object oriented programming model. Java is a general purpose programming model that is concurrent, class based, object oriented. Java is write once, run anywhere.

3.3 Tool Used: We are using the Android
SDK version 2.3.3. It is a set of development tools used to develop applications for Android platform. The Android SDK includes the following:

- Gradle-based build support.
- Android-specific refactoring and quick fixes.
- Lint tools to catch performance, usability, version compatibility and other problems.
- ProGuard integration and app-signing capabilities.
- Template-based wizards to create common Android designs and components.
- A rich layout editor that allows users to drag-and-drop UI components, option to preview layouts on multiple screen configurations
- Support for building Android Wear apps
- Built-in support for Google Cloud Platform, enabling integration with Google Cloud Messaging and App Engine.

4. IMPLEMENTATION

We are currently working on the database and module designing. For the database creation we have used the wampserver. As the application is basically designed for the farmers in Maharashtra we have created the database is in Marathi language. We are using the Shivaji font for Marathi language. For the GUI we have used the scroll down, spinner, photo button features provided by the android. The modules like user registration, database creation and report generation have been implemented. Figure 4.1 shows some of the screen shots of the implemented system. The information about weather, soil quality, water management, vendors and market trend is obtained from the respective government agencies as the correctness of the system heavily depends upon this factual information.

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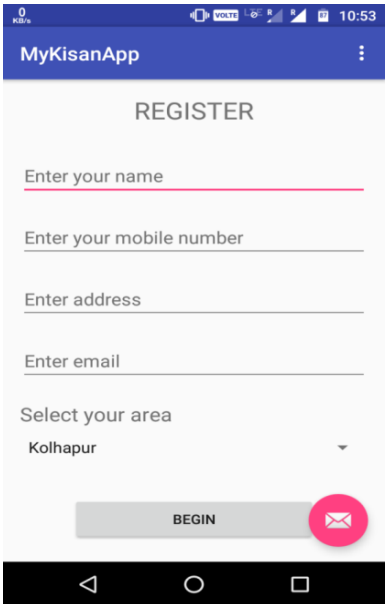

Figure 4.1 (a)

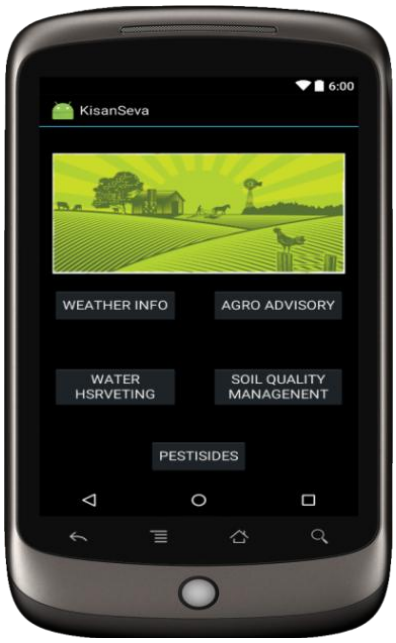

Figure 4.1 (a)

5. CONCLUSION

This application will certainly bring change in the agriculture field. The information viz. crop, weather, pesticides, vendor, soil quality etc.; which was not easily available before will be easily available to the farmers. The farmers can convert this information into knowledge and increase their yield. Due to the easy user interface and Marathi language support it will be easier for the farmers to use this application.

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