Android App for Mobile Agriculture Services

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Abstract— Agriculture plays a pivotal role to increase the Indian economy. Although India is the second largest irrigated country in the world after China, only one-third of the cropped area is under irrigation. Therefore Irrigation is the most important agricultural input in a tropical monsoon country like India where rainfall is uncertain, unreliable and erratic India cannot achieve sustained progress in agriculture unless and until more than half of the cropped area is brought under assured irrigation and its contribution to gross domestic product (GDP) is now around one sixth, it provides employment to 56 per cent of the Indian workforce. Also, the forward and backward linkage effects of agriculture growth increase the incomes in the non-agriculture sector. The growth of some commercial crops has significant potential for promoting exports of agricultural commodities and bringing about faster development of agro-based industries. The purpose of this project entitled as "Android App for mobile agriculture services" is to solve the problems of millions of small farmers which are arrows in their day to day life.

Key words: Cloud-Server, Cloud Computing, API's, Force.Com IDE, Cloud Resources

I. INTRODUCTION

The purpose of this project entitled as "Android App for mobile agriculture services" is to solve the problems of millions of small farmers which are arrows in their day to day life. The problems face by every farmer is in terms of plant disease that are affected to their plants, the climate change, fluctuation in commodities rates in aggri-market etc. so this android app resolves their problems by providing the agronomy help as well as the weather information and the current commodity prices of agriculture market. Since the farmer unable to understand and identify the type of disease affected by the plant so in this app we are going to provide the solutions and agronomy support with the help of images which is already stored in the database server, the farmer need to select the type of disease which looks exactly similar to his current field diseases and he get the detail help of how to cure that disease. Addition to this the farmer also gets the detail information of weather station such as temperature, humidity, moisture, rain etc. And this android app also provides the current price index of agriculture commodity prices for the selected geographical surrounding area according to government data information so the farmer faces less loss and maximizes his profits. The farmer also gets the knowledge related to the agriculture field in terms of flash news notifications it gives the information about the happening trends around the world it may be article or documentation or the web link information.

II. LITERATURE SURVEY

Although Smart phones are quickly replacing conventional Basic mobile phones, the complete switch has yet to be made. This is because there are still many tasks that can only be performed on a Basic mobile phones. For this purpose, we sometimes require remotely accessing smart phones to perform certain tasks.

Android is a growing platform, here we trying to go through the current trends in the Smartphone market and the historical growth in the Android app market.

A. Growth of Android

Google's Android Smartphone software stretched its market lead in early 2012, helped by new models from handset makers like Samsung and HTC and piling the pressure on rivals like Research In Motion and Nokia. Android gaining share strongly in most of seven major markets - Australia, Britain, France, Germany, Italy, Spain and the United States - in the 12 weeks to mid-April. In Spain and Italy, its market shares more than doubled year-on-year to 72 percent and 49 percent respectively, while it almost doubled to 62 percent in Germany. Strong demand for the iPhone 4S helped market No.2 Apple narrow the gap with Android in the United States and Britain, but its share slipped in continental Europe.

The Android platform is growing at a blistering pace, adding 850,000 new phones or tablets every day according to Andy Rubin, Senior Vice President of Mobile at Google. Each and every day, we are humbled by the trajectory of Android and our partners.

With a year-on-year growth rate of more than 250%, 850,000 new Android devices are activated each day, jetting the total number of Android devices around the world past 300 million. These numbers are a testament to the break-neck speed of innovation that defines the Android ecosystem. Last year at Mobile World Congress (MWC), we announced that there were more than 150,000 apps in Android Market. That number tripled to more than 450,000 apps today, with over one billion app downloads happening every month.

1) Google App Store: Google Play

Google Play is a digital distribution of multimedia content and services from Google which includes an online store for music, movies, books, and Android applications and games, as well as a cloud media player. The service is accessible from the web, Play Store mobile Apps on Android and Google TV. Purchased content is available across all of these platforms/devices. Google Play was introduced in March 2012 when Google rebranded and merged its predecessors Android Market and Google Music services. Below table 1 shows the growth in the number of applications in the application market.

III. EXISTING SYSTEM

Year	Month	Applications available	Downloads to date
2016	Jan	28,00,000	
2015	Sep	20,00,000	60 billion
2014	July	10,00,000	
2013	April	800,000	40 billion

2012	January	400,000	
2011	December	380,297	10 billion
2011	October	319,000	
2011	July	250,000	6 billion
2011	May	200,000	3 billion
2010	April	38,000	
2010	August	80,000	1 billion
2010	March	30,000	

Table 1: shows the growth in the number of applications in the application market

Android operating system is a stack of software components. Main components of Android Operating system Architecture or Software Stack are Linux kernel, native libraries, Android Runtime, Application Framework and Applications.

A. Linux Kernel

Linux Kernel (Linux 2.6) is the bottom-most layer of the software stack. The whole Android Operating System (OS) is built on this layer with little changes made by the Google. Like any other main OS it provides the following functionalities: Process management, Memory Management, device management (ex. camera, keypad, display etc). Android operating system interacts with the hardware of the device with this layer. This layer also contains many important hardware device drivers. Linux kernel is also responsible for managing virtual memory, networking, drivers, and power management.

B. Native Libraries Layer

On the top of the Linux Kernel layer is Android's native libraries. This layer enables the device to handle different types of data. Data is specific to hardware. All these libraries are written in C or C++ language. These libraries are called through java interface. Some important native libraries are: Surface Manager: it is used to manage display of device. Surface Manager used for composing windows on the screen. SQLite: SQLite is the database used in android for data storage. It is relational database and available to all applications. WebKit: It is the browser engine used to display HTML content. Media framework: Media framework provides playbacks and recording of various audio, video and picture formats. (For example MP3, AAC, AMR, JPG, MPEG4, H.264, and PNG). Free Type: Bitmap and Font Rendering. OpenGL | ES: Used to render 2D or 3D graphics content to the screen. libc: It contains System related C libraries.

C. Android Runtime

Android Runtime consists of Dalvik Virtual machine and Core Java libraries. It is located on the same level as the library layer. Dalvik Virtual Machine is a type of Java Virtual Machine used for running applications on Android device. The Dalvik VM enables every Android application to run in its own process, with its own instance of the Dalvik virtual machine. The Dalvik VM allows multiple instance of Virtual machine to be created simultaneously providing security, isolation, memory management and threading support. Unlike Java VM which is process-based, Dalvik Virtual Machine is register-base. Dalvik Virtual Machine run .dex files which are created from .class file by dx tool. dx tool is included in Android SDK. DVM is optimized for low processing power and low memory environments. DVM is developed by Dan Bornstein from Google

D. Application Framework

The Application Framework layer provides many higher-level services or major APIs to applications in the form of Java classes. Application developers are allowed to make use of these services in their applications. These are the blocks with which developer's applications directly interact. Important blocks of Application framework are: Activity Manager: It manages the life cycle of applications. Content Providers: It is used to manage the data sharing between applications, manages how to access data from other applications. Telephony Manager: it manages all voice call related functionalities. Location Manager: It is used for Location management, using GPS or cell tower. Resource Manager: Manage the various types of resources used in Application.

In the conventional android based smart-phones the most advanced android based smart-phones today have a processor (SoC) clocked at around 2 to 2.5GHz with RAM ranging between 2 to 3 GB where as a mid-range or start-up range android device will have a processor which is in most cases dual-core will be clocked between 1 to 1.5GHz. For application running on this configuration in Android platform, these resources are shared among all the existing (running) applications based on the profile of the application. The android system can force close the application implicitly or may prompt the user if the available resources are not adequate for the computations related to that application. Conventional scheduling methods like cfq, priority scheduling etc, re used for scheduling the processing of applications.

Some of the major limitations of the existing system based android applications are enlisted below:

The available RAM, SoC (Source On Chip) and system software resources are not adequate to run complex system computation like compiling, debugging or any other development related processes or heavy graphics related processing on a mid range android based devices.

- Even though latest versions of android like 4.0 and beyond supports multi-tasking, only a limited number of applications can run simultaneously on mid-range android based devices.
- Excessive/prolonged use/running of large applications which requires a large portion of the local resources may reduce the life expectancy of the hardware and may drain the battery power early. In most cases the device may heat-up drastically.
- A common problem in mid-range android devices if the processor is over-loaded even by a single large application is lagging.

IV. PROPOSED SYSTEM

The purpose of this project entitled as “Android App for mobile agriculture services” is to solve the problems of millions of small farmers which are arrows in their day to day life. The problems face by every farmer is in terms of plant disease that are affected to their plants, the climate change, fluctuation in commodities rates in aggri-market etc. so this android app resolves their problems by providing the agronomy help as well as the weather information and the

current commodity prices of agriculture market. Since the farmer unable to understand and identify the type of disease affected by the plant so in this app we are going to provide the solutions and agronomy support with the help of images which is already stored in the database server, the farmer need to select the type of disease which looks exactly similar to his current field diseases and he get the detail help of how to cure that disease. Addition to this the farmer also gets the detail information of weather station such as temperature, humidity, moisture, rain etc. And this android app also provides the current price index of agriculture commodity prices for the selected geographical surrounding area according to government data information so the farmer faces less loss and maximizes his profits. The farmer also gets the knowledge related to the agriculture field in terms of flash news notifications it gives the information about the happening trends around the world it may be article or documentation or the web link information.

V. SYSTEM ARCHITECTURE

Designing process of a system is none other than the representation of a system, or it is a process of producing a block or a node, which will be used as a building block to develop a system. Design is an essential way representing the progress between the requirement and the final system with satisfying results in compliance with the requirements specifications. Therefore it is also referred as a blueprint of a solution for the system. This chapter explains the design diagrams such as architecture diagram, class diagram, data flow diagram, use case diagram and sequence diagram for analyzing the system.

Systems Architecture is a generic discipline to handle objects (existing or to be created) called "systems", in a way that supports reasoning about the structural properties of these objects. Architecture is "the fundamental organization of a system, embodied in its components, their relationships to each other and the environment, and the principles governing its design and evolution.

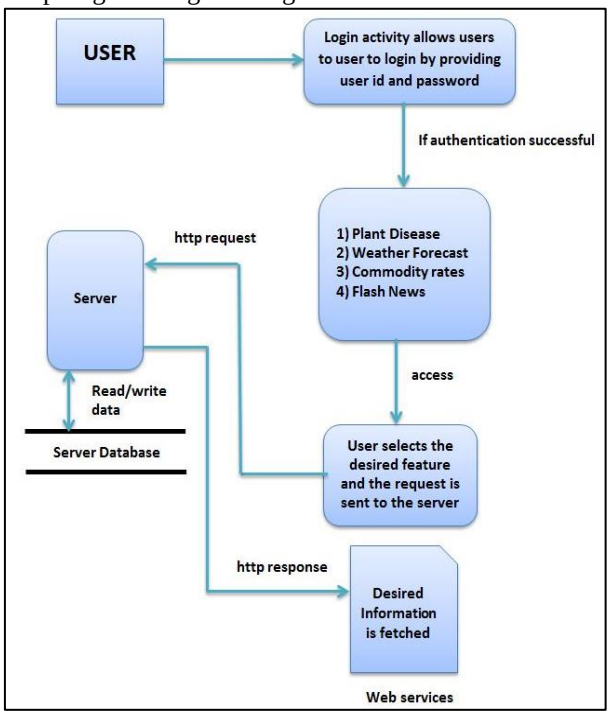

Fig. 1: System Architecture

VI. CONCLUSION

Now a day, smartphones are one of the major part for human life, as smartphones usage growing rapidly the application usage is also growing rapidly. So for this the human can easily interact with the application and can be able to get the any information of the world in one hand within less time on his handy device i.e.; by using Smartphones. The problems face by every farmer is in terms of plant disease that are affected to their plants, the climate change, fluctuation in commodities rates in aggri-market etc. so this android app resolves their problems by providing the agronomy help as well as the weather information and the current commodity prices of agriculture market. Since the farmer unable to understand and identify the type of disease affected by the plant so in this app we are going to provide the solutions and agronomy support with the help of images which is already stored in the database server, the farmer need to select the type of disease which looks exactly similar to his current field diseases and he get the detail help of how to cure that disease. Addition to this the farmer also gets the detail information of weather station such as temperature, humidity, moisture, rain etc. And this android app also provides the current price index of agriculture commodity prices for the selected geographical surrounding area according to government data information so the farmer faces less loss and maximizes his profits. The farmer also gets the knowledge related to the agriculture field in terms of flash news notifications it gives the information about the happening trends around the world it may be article or documentation or the web link information.

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