Android Based Mobile Application for Socio Economic Survey

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ABSTRACT

Android operating system is an advanced technology in the world. Now-a-days mobile applications are rapidly growing in market. Android operating system is one of the most widely used. In this paper we give brief description about socio economic survey. Till date, the SES was taken up manually. Enumerators used to visit each. So to overcome that problem we are developing mobile app to collect data. Android Mobile Application Development is based on Java language, as it allows developers to write codes in Java language. These codes can control mobile devices via Google-enabled Java libraries. It is a great platform to develop mobile applications using the software stack provided in the Google Android SDK.

Keywords-Android, Postgre, SOAP web services and SQLite

I. INTRODUCTION

Android is an open source and Linux-based **Operating System** for smart phones, tablet and computers etc. Android was developed by the Open Handset Alliance, later maintained by Google, and other companies.

Android offers a bound together way to deal with application development for cell phones which implies designers need only to create for Android, and their applications ought to have the capacity to keep running on various gadgets working on Android.

In 2007, Google released first beta version of Android Software Development Kit (SDK). And in September 2008, First commercial version Android 1.0, was released.

A. Why Android?

Figure 1. Android advantages

B. Android Architecture

An Android Architecture consists of a kernel based on the Linux kernel, with middleware, libraries and APIs written in C and the application software running on an application framework which includes the Java-compatible libraries based on Apache Harmony. Android uses the Dalvik virtual machine with just-in-time compilation to run Dalvik dex-code (Dalvik Executable), which is to be converted from Java byte code.

The main hardware platform for Android is the ARM architecture. There is a support for x86 from the Android x86 project, and Google TV uses a special x86 version of Android.

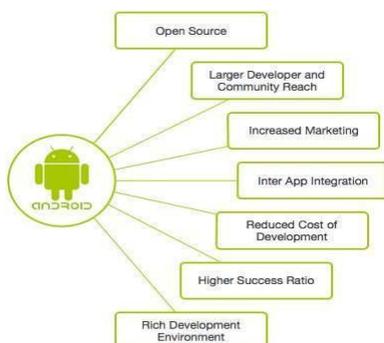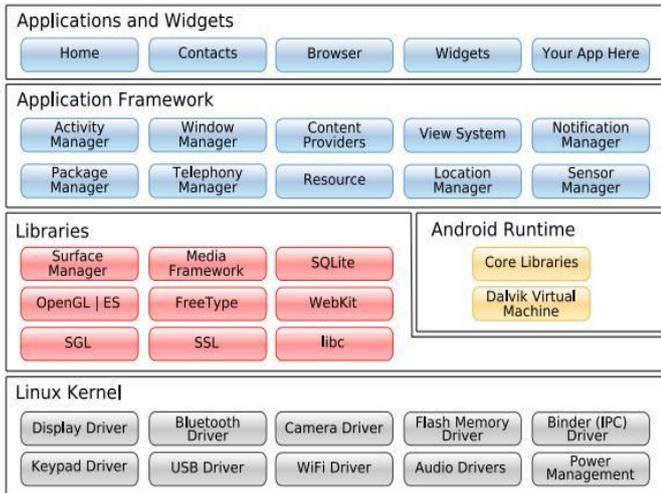**Figure 2.** Android Architecture

Here Android user's interface is based on direct manipulation, it has a using touch inputs that loosely correspond to real-world actions, like swiping, tapping, pinching and reverse pinching to manipulate on-screen objects. The response from the user input is designed to be immediate and provides a fluid touch interface, often using the vibration capabilities of the device to provide hap tic feedback to the user.

The internal hardware such as accelerometers, gyroscopes and proximity sensors are used by some applications to respond the additional user actions, for example Alert or move the screen from portrait to landscape depending on how the device is oriented, or allowing the user to steer a vehicle in a racing game by rotating the device, simulating control of a steering wheel. The android has a growing selection of third party applications, Such as which can be acquired by users either through an app store like Google Play store or by downloading and installing the application's APK file from a third-party site. From Play Store application the users are allow browsing, downloading and updating apps published by Google and third-party developers, and are pre-installed on devices that comply with Google's compatibility requirements.

C. Names of Android versions

The names of android versions Starts from A to N currently, Marshmallow is present android version used in most newly launched mobile devices. Nougat was officially released on August 22, 2016 as update to Google nexus smart phone. Android Nougat introduces a split screen display mode for phones, in which two apps can be snapped to occupy halves of the screen.

Figure 3. Versions of Android

II. METHODS AND MATERIAL

1. Existing System

Till date, the SES was taken up manually. Enumerators used to visit each.

TABLE I

S. No	Observations	Recommendations
1	Data Capturing at SES field Level is done manually and then fed into PDA which in turn generates a Text File and then gets ported to Server.	Development of Online Module with DATA Capturing and Reporting Module at SES field level and for Authorized Users which allows capturing and posting the DATA to Server.

Disadvantages

- Data redundancy
- Data computation is cumbersome
- Data manipulation

A. Socio Economic Survey

- The purpose of this survey is to obtain baseline socio-economic survey data on households in the project area.
- Socio economic survey for the Project Affected Villages (PAV) as well as the Project Affected Families (PAF) was carried out to evaluate the

impact caused to the families by the commencement of the project on the area.

- The family-wise door-to-door survey was conducted based upon a list of project affected families provided by the project authorities in consultation with the State Revenue Department.
- Number of members of the family who are permanently residing, engaged in any trade, business, occupation or vocation in the affected area.
- Number of members of the family who are likely to lose their agricultural land, employment or are alienated wholly or substantially from the main source of their trade, business, occupation or vocation.
- Number of families belonging to Scheduled Tribes
- Number of vulnerable persons such as the disabled, destitute, orphans, widows, unmarried girls, abandoned women, or persons above fifty years of age, who are not provided or cannot immediately be provided with alternative livelihood, and who are not otherwise covered as part of a family.
- Family without homestead land, agricultural land or either homestead land or agricultural land and BPL families residing not less than three years in the affected area preceding the date of declaration of affected area.

1) Profile of The Project Affected Villages

It is the mandatory duty of the project authorities to rehabilitate the affected persons in a new location with all the things they have had in their villages and preferably more than what they had in the project-affected village so that they will be induced to vacate their village voluntarily.

Such as number of members of the family who are permanently residing, engaged in any trade, business, occupation or vocation in the affected area.

2) Estimation of Project Affected Families Category

Number of vulnerable persons such as the disabled, destitute, orphans, widows, unmarried girls.

III. PROPOSED SYSTEM

I propose to redefine the business process involved in the existing manual data collection of SES data. As per the study, the business process carried out by existing system needs to be redesigned. The new business process for data capturing is

1. Offline / online capture
2. Aadhar integration
3. Sync to central servers

Advantages

- Time saving
- Improve the speed and capability of your application.
- Data correction is easy.
- Flexible Synchronization and Updates
- The data can be accessed easily and quickly
- The user does not require an internet connection to access the document.
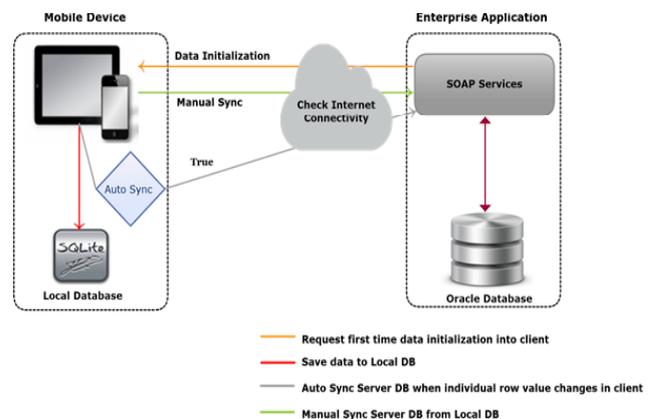
Architecture

Figure 4. System Architecture

The above architecture gives an overview of the interaction between the mobile device and the enterprise application.

- Initialize the data in Tablet PC.
- Collect the details.
- Store the details in local database by using SQLite database. After collecting the details go to server's place and check the internet connectivity and finally push the details into server by calling web service.

IV. RESULTS AND DISCUSSION

Implementation

A. Load Data from SOAP Web Service in Android Application

Web Service is used to load data from server in the Application with the help of the KSOAP library. The kSOAP library is a graceful, as well as lightweight, and efficient SOAP client library. The library is open source, easy to use, and it can save you from the hassle of coding a custom parser. It is one of the most important SOAP libraries currently available and it's frequently updated, which is a good sign for any open source project.

SOAP Web Service in Android Application

Step 1. First we create new project in Android Studio / Eclipse.
Step 2. Before we start creating our project we need external library for SOAP to load data from SOAP based web service. KSOAP2 library is used to load and send data to service.
Step 3. After download we need to add KSOAP2 library in the project paste the KSOAP2.jar file in libs folder inside app folder.
Step 4. Open the AndroidManifest.xml and add permission of internet to request server and get the data. <uses-permissionandroid:name="android.permission.INTERNET"/>
Step 5. In the activity_main.xml file inside the layout folder.We create a form in which we send the data to server and get response.
Step 6. In the MainActivity.java file.Set SOAP_ACTION, METHOD_NAME and NAMESPACE variables.
Step 7. **Create an AsyncTask, and add these doInBackground()'s codes to the**

AsyncTask is an abstract class provided by Android which helps us to use the UI thread properly. This class allows us to perform long/background operations and show its result on the UI thread without manipulating threads.

AsyncTask has four steps

1. doInBackground : Code performing long running operation goes in this method. When onClick method is executed on click of button, it calls execute method which accepts parameters and automatically calls doInBackground method with the parameters passed.
2.onPostExecute : This method is called after doInBackground method completes processing. And result from doInBackground is passed to this method.
3.onPreExecute : This method is called before doInBackground method is called.
4.onProgressUpdate : This method is invoked by calling publishProgress anytime from doInBackground call this method.

Step 8. Execute the AsyncTask from onCreate method to see the output in the console.

B. Database

Two databases are used i.e. SQLite database at application end for storing the constant data and rarely changeable data and the other database is PostgreSQL, as server for complete data which is maintained by Data centre. PostgreSQL is connected to SOAP web service with the help of dependency jdbc jar file (postgresql-9.4- 1206-jdbc4).

1. SQLite database

SQLITE DATABASE is an open source database which is embedded into android.
- It supports standard relational database features like SQL syntax.
- It requires only little amount of memory at runtime.
- Here it supports all data types like int, string, long etc.,

2. PostgreSQL

PostgreSQL is an open source object-relational database system. It has more than 15 years of active development and a proven architecture that has earned it a strong reputation for reliability, data integrity, and as well as correctness.

PostgreSQL runs on all major operating systems, Such as including Linux, UNIX (AIX, BSD, HP-UX, SGI IRIX, Mac OS X, Solaris, Tru64), and Windows.

Advantages

PostgreSQL offers many advantages for your company or business over the other database systems.

V. CONCLUSION

In this paper, I have concluded that the capturing of offline data storing from mobile phones is accomplished by using various technologies Like Pouch DB, SQLite DB. Various features included in the mobile Application like initializing details, viewing and uploading details.

VI. FUTURE ENHANCEMENT

Project can be further extended Such as,

- Offline entry of data can be developed as a future enhancement of application.
- Feature such as downloading the reports in the form of PDF or excel sheet can also be considered.

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