

# Mobile Phone Programming: Remote Access to Customer Database using Android Phone

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**Abstract** – Cable operators have collection agents to collect the money from their customers. The collection agents cheat in the process. Sometimes they do not give the money collected to the cable operator. We are providing a solution to this problem. We are going to make a database with all the customer information stored in it. This database will be accessed using an application on the android phone. The phone should have access to internet using 2G/3G data connection. The main aim of the project is to make customer information digital and remove discrepancies regarding the payment by customers. This application is developed for cable operators only. It can also be modified a little to suit the needs of newspaper agencies.

**Keywords** – Android, Cable operators, Database, Newspaper agencies, 3G.

## I. INTRODUCTION

Android is a Linux-based operating system designed primarily for touchscreen mobile devices such as smartphones and tablet computers. Initially developed by Android, Inc., which Google backed financially and later bought in 2005, Android was unveiled in 2007 along with the founding of the Open Handset Alliance: a consortium of hardware, software, and telecommunication companies devoted to advancing open standards for mobile devices. The first Android-powered phone was sold in 2008.

Android is open source and Google releases the code under the Apache License. This open source code and permissive licensing allows the software to be freely modified and distributed by device manufacturers, wireless carriers and enthusiast developers. Additionally, Android has a large community of developers writing applications that extend the functionality of devices, written primarily in a customized version of the Java programming language.

Applications are developed in the Java language using the Android Software Development Kit (SDK). The SDK includes a comprehensive set of development tools, including a debugger, software libraries, a handset emulator based on Quick Emulator (QEMU), documentation, sample code, and tutorials. The officially supported Integrated Development Environment (IDE) is Eclipse using the Android Development Tools (ADT) plugin. Other development tools are available, including a Native Development Kit for applications or extensions in C or C++, Google App Inventor, a visual environment for novice programmers, and various cross platform mobile web applications frameworks.

An IDE is a software application that provides comprehensive facilities to computer programmers for software development. An IDE normally consists of a source code editor, build automation tools and a debugger.

Eclipse is a multi-language software development environment comprising a base workspace and an extensible plug-in system for customizing the environment. It is written mostly in Java. It can be used to develop applications in android with help of ADT plugin.

We have used Eclipse IDE to develop our application along with the Quick Emulator.

## II. PROBLEM SCENARIO

There are two main problems that cable operators face.

First, the cable operators have a large number of customers. The information about these customers are on the customer forms. These forms are filed and stored.

Whenever the agency wants information about any customer, they have to search all these filed documents. This process is tedious and time consuming.

Second, the cable operators have a number of people working for them like collection agent who will collect the money form customer and technical agents (for cable agencies) who will take care of technical difficulties faced by customer. It is found that the collection agents cheat in process of collecting the money from customers.

We are providing the solution to these two problems faced by cable operators through the Android Application.

### III. ANDROID PROGRAMMING

The architecture of android platform consist of four sections as seen in Fig. 1. The top most section is *Application* section. The core applications including an email client, SMS program, calendar, maps, browser, contacts, and others. All applications are written using the Java programming language. These applications use the underlying services and systems i.e. *Application Framework*. Android includes various *Libraries* used by the Android system. These are exposed to developers through the Application Framework. Android includes a set of core libraries (*Android Runtime*) that provides most of the functionality available in the core libraries of the Java programming language. Android relies on *Linux version 2.6* for core system services such as security, memory management, process management, network stack, and driver model. The kernel also acts as an abstraction layer between the hardware and the rest of the software stack.



Fig. 1: Android Architecture

The application that is made to solve the above problem scenario uses the activity manager and resource manager from Activity Framework section and SQLite library from Libraries.

The android application uses Java as the programming language. All the activities that are performed in the Android Application is performed according to the Java commands. For example, when the user clicks on the button 'Add Customer' (Fig. 3) it opens a new activity (AddCust.class). The method for opening the new activity is defined in MainActivity class:

```
public void addCustomer(View view)
{
    // Do something in response to
    // button
    Intent intent = new Intent(this,
    AddCust.class);
    startActivity(intent);
}
```

The layout of the screen i.e the way in which the buttons and text field appear on screen is set by HTML – Hyper Text Markup Language. For example, the buttons in Fig. 3 are all lined up vertically. The HTML code for that is:

```
<LinearLayout
    android:id="@+id/linearlayout1"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="vertical"
    tools:context=".MainActivity" >

    <Button
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:text="@string/button_send1"
        android:onClick="addCustomer"/>

    <Button
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:text="@string/button_send2"
        android:onClick="deleteCustomer"/>

    <Button
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:text="@string/button_send3"
        android:onClick="editCustomerInfo"/>
```

```

<Button
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:text="@string/button_send4"
    android:onClick="updatePaymentInfo"/
>

</LinearLayout>
    
```

This specifies the width and height (android:layout\_height and android:layout\_width) of the button as can be seen in the code above. It also specifies the link of the button by the keyword 'android:onClick'.

#### IV. THE ANDROID APPLICATION

The application comprises of two parts – user interface and database. User interface developed on android platform and database of customer is developed using SQLite which is supported by the android. The user interface is developed using Java and HTML.

The application is password protected. This provides two fold benefit - firstly it provides security from unauthorized use and secondly it provides different access levels to its users as shown in Fig. 2. The collection agent will be able to modify the payment information for the customer ID provided. The cable operator will be able to Add, Delete or Edit any customer information as shown in Fig. 3.



Fig. 2 : Password Protection

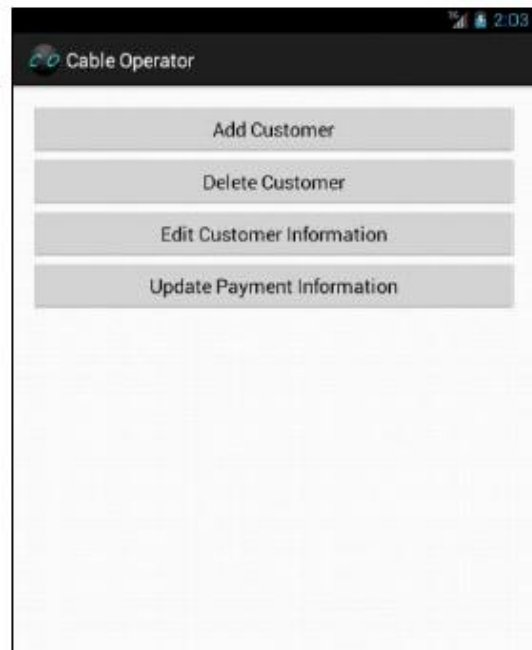


Fig. 3 : Add, Delete & Edit Customer Information

The 'Add Customer' button opens up an activity where the basic information about customer is added as shown in Fig. 4.

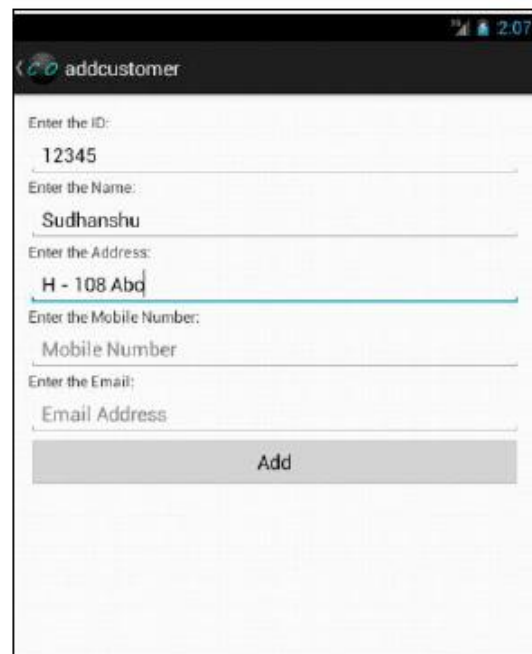


Fig. 4 : Adding basic information

When the 'Add' button is pressed, these information is stored in the database (Fig. 4). This database is created using SQLite library of the android. This database is stored on the cable operator's computer.

This is accomplished by Java client – server programming. This enables the data to travel over the internet to the database. For this, the android phone should have active data pack i.e. 2G/3G internet service.

The data communication between android device and computer is secure as per standards of 2G/3G technology.

#### V. ACKNOWLEDGMENT

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#### VI. REFERENCES

- [1] Shane Conder & Lauren Darcey, *Android Wireless Application Development*, 2nd edition, Addison - Wesley, 2010.
- [2] Shane Conder & Lauren Darcey, *Android Application Development in 24 Hours*, Sams publication.
- [3] Android Developers, [Online]. Available: <http://developer.android.com>.

