

Mobile Security Using Android: Locate Your Droid

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Abstract

For the past several decades, designers have processed security for a wide variety of applications from mobiles to automatic machines. Losing a smart phone can be an especially bad thing, since they are so expensive, and carry so much information. This application needs to be installed before. With this application user has the choice to launch phone tracking and finding cell phone by sending SMS requests to their lost phone and even getting the locations of the phones that are lost. Moreover this application also provides the facility of Simcard locking if the Simcard is changed and the privacy question is not answered along with blocking of all the incoming calls. Even if your cell is on the silent mode with this application you can change the mode of ringing in the phone and can then locate it if it is lost near to you. This application also provides the features of Simcard swap protection, ring alert.

Keyword: SMS, SDK, API, JVM, SIM, , EDGE, 3G,WiFi, GPS.

I. Introduction

This security app that will enable users to remotely track their phone position and remotely manage a complete suit of security features. Users have the choice to launch phone tracking and finding features from any cell phone by sending SMS requests to their lost or stolen device or Calling. Among features like phone tracking, phone lock, ring at maximum volume and the below features:-

1. **Accurate Phone Tracking And Location:** If you lose your phone, just send it a text message and Find My Phone will reply to you with its current address and a Google Maps link to your phone's location.

2. **Sim Card Swap Protection:** When the person trying to change the SIM(Subscriber Identification Module), then app will automatically send a predefined text message along with the new SIM number as a notification

3. **Ring Alert:** Find Text your phone and have it ring at maximum volume for several minutes if you lose it somewhere nearby.

4. **Block- Incoming Call:** Block all incoming call during the security question screen on SIM change operation except than one number that is predefine.

II. Android

Android is a software stack for mobile devices that includes an operating system, middleware and key applications. The Android SDK provides the tools and APIs necessary to begin developing

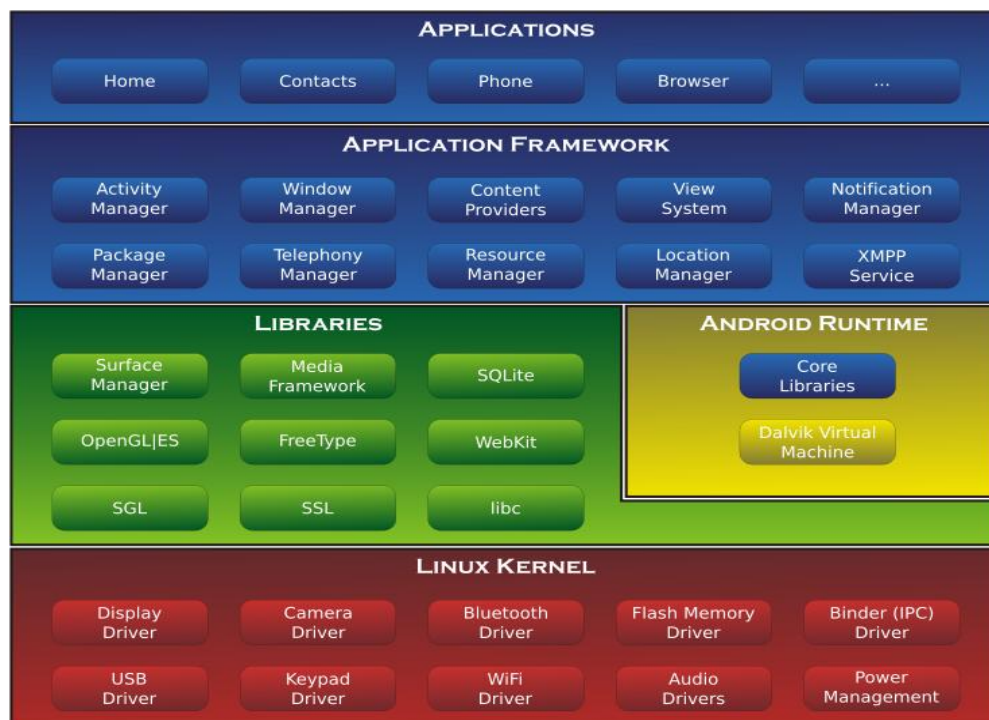
applications on the Android platform using the Java programming language.[1]

2.1 Features

- Application framework enabling reuse and replacement of components
- Dalvik virtual machine optimized for mobile devices
- Integrated browser based on the open source WebKit engine
- Optimized graphics powered by a custom 2D graphics library; 3D graphics based on the OpenGL ES 1.0 specification (hardware acceleration optional)
- SQLite for structured data storage
- Media support for common audio, video, and still image formats (MPEG4, H.264, MP3, AAC, AMR, JPG, PNG, GIF)
- GSM Telephony (hardware dependent)
- Bluetooth, EDGE, 3G, and WiFi (hardware dependent)
- Camera, GPS, compass, and accelerometer (hardware dependent)
- Rich development environment including a device emulator, tools for debugging, memory and performance profiling, and a plugin for the Eclipse IDE

2.2 Android Architecture

The following diagram shows the major components of the Android operating system. Each section is described in more detail below.[1]



(Figure 1.3.1: Android Architecture)[1]

2.2.1 Applications

Android will ship with a set of core applications including an email client, SMS program, calendar, maps, browser, contacts, and others. All applications are written using the Java programming language.[2]

2.2.2 Application Framework

By providing an open development platform, Android offers developers the ability to build extremely rich and innovative applications. Developers are free to take advantage of the device hardware, access location information, run background services, set alarms, add notifications to the status bar, and much, much more.

Developers have full access to the same framework APIs used by the core applications. The application architecture is designed to simplify the reuse of components; any application can publish its capabilities and any other application may then make use of those capabilities (subject to security constraints enforced by the framework). This same mechanism allows components to be replaced by the user.[3]

Underlying all applications is a set of services and systems, including:

- A rich and extensible set of Views that can be used to build an application, including lists, grids, text boxes, buttons, and even an embeddable web browser
- Content Providers that enable applications to access data from other applications (such as Contacts), or to share their own data

- A Resource Manager, providing access to non-code resources such as localized strings, graphics, and layout files
- A Notification Manager that enables all applications to display custom alerts in the status bar
- An Activity Manager that manages the lifecycle of applications and provides a common navigation backstack.

III. Locate Your Droid

Locate Your Droid Project includes the following modules:-

- 3.1 SIM Change Notification & Block Incoming Call
- 3.2 Current Location Identification
- 3.3 Phone's Profile Change by Message
- 3.4 Password Protected App

3.1 SIM Change Notification & Block Incoming Call

When the person change the SIM than one app is start which required the security question if the answer is not right for three times than the location the of phone is send to a predefined number and during this time no incoming call, only one predefined.

3.2 Current Location Identification

User can send a message from any mobile, with a specified keyword and receive the mobile location

(Address and Longitude and Latitude on Google map).

3.3 Phone's Profile Change by Message

User can change the profile of the phone by sending the message with specified keyword. Like "silent" for mobile profile silent.

3.4 Password Protected App

Password protection to prevent unauthorized app changes. An unknown person cannot change the setting unless he or she supplied a unique password of the app. The person cannot uninstall the app if password is not supplied.

IV. Main Components of the project

(a) MainActivity Class

```
protected void onActivityResult(int requestCode, int
resultCode, Intent data) {
```

```
    super.onActivityResult(requestCode,
resultCode, data);
    SharedPreferences
sharedPreferences =
PreferenceManager.getDefaultSharedPreferences(Pas
sword_page.this);
    security_enabled =
sharedPreferences.getString("securityenabled", "0");
    Log.e("security
enabled", "Answer"+security_enabled);
    finish();
}
```

(b) ReceivingMessage class:

```
Object[] pdus = (Object[])
bundle.get("pdus");
msgs = new SmsMessage[pdus.length];
for (int i=0; i<msgs.length; i++){
    msgs[i] =
SmsMessage.createFromPdu((byte[])pdus[i]); }
```

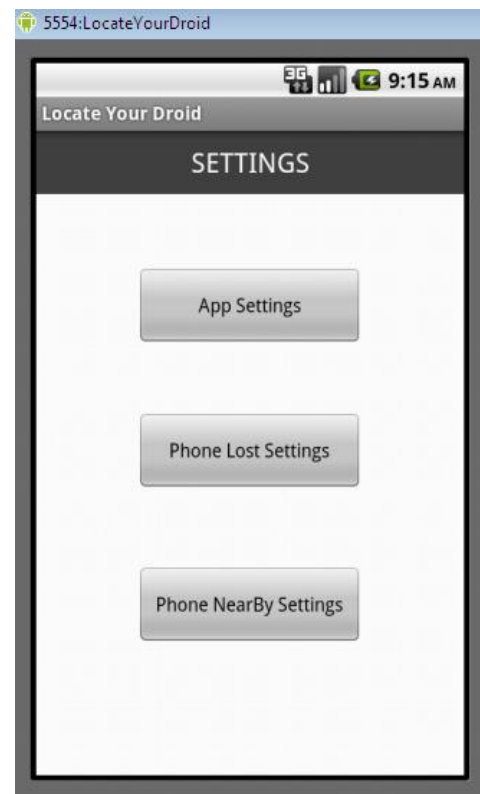


Fig:2 Application Options(Main Activity)

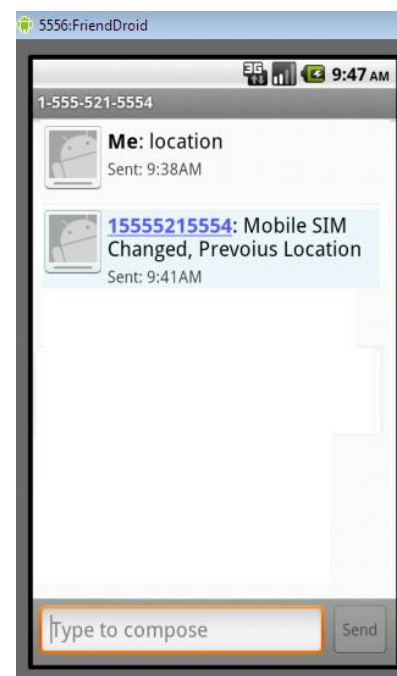


Fig3: Phone lost setting



Fig4: Get message on SIM change

(c) **XML files:-**

Applications consist of different interfaces. When the user runs application screen is defined in activity_password_page.xml. The linear arrangement of elements allow adding widgets one below the other. Width and height are defined with fill_parent attribute, which means equal to as parents. The other interface like send_sms.xml file, is displayed when the SIM gets changed in the phone. AndroidManifest.xml realizes installing and launching applications on mobile devices. Every application must have AndroidManifest.xml file in its root directory. The manifest presents essential information about the application to the android system, information the system must have before it can run any of the application's code. It defines the applications and permissions required for the applications. The syntax is: <uses-permission android:name="Unique name of the permission"></uses-permission>. AndroidManifest.xml has to include permissions to send and receive the messages, to access internet and various other permissions with are as follows:- Permission Detail

. SEND_SMS:- For sending the message from phone.

.RECEIVE_SMS:- For receive the message in mobile.

. READ_CONTACTS:- For read the phone contacts in the application.

READ_PHONE_STATE:- For reading the state of the phone like profiles (silent,normal etc).

READ_SMS :- Permission for read the message by the application.

WRITE_SMS:- Permission for write the message .

ACCESS_FINE_LOCATION:- Permission for find the location in map(latitude, longitude).

MODIFY_PHONE_STATE:- Permission for modify the phone state.

CALL_PHONE:- Permission for calling to someone.

V. Functionality of the app:-

Locate your Droid is a smart application for mobile care for the users. It is designed to integrate the different information systems existing in these organizations into one single efficient system.

It solves the problems when the user loses or misplaced his phone or someone steals the phone. User can't get the phone back. This app provides the facility to find your android phone.

When the person change the SIM than one app is start which required the security question if the answer is not right for three times than the location the of phone is send to a predefined number and during this time no incoming call, only one predefined.

User can send a message from any mobile, with a specified keyword and receive the mobile location (Address and Longitude and Latitude on Google map).

User can change the profile of the phone by sending the message with specified keyword. Like "silent" for mobile profile silent.

Password protection to prevent unauthorized app changes. An unknown person cannot change the setting unless he or she supplied a unique password of the app. The person cannot uninstall the app if password is not supplied.

VI. Conclusion and future work:-

The application has been loaded on the mobile and accessed .I conclude my project by discussing the future extensions of this project. In the future I would like to add some features extra features in this project, which are as follows:

1. This application can be made highly secured by adopting several security strategies and techniques.
2. Flexibility can be inbuilt in the project, so as to include as many modules as are required, e.g. we can include the location on the map.
3. The security of the data entry forms depends on the user name and password combinations, which authenticates the users. More sophisticated methodologies like digital signature can be used to restrict access and minimize the threat to the data.

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