

## Mobile Anti-theft Software (MATS)

M. Rajkumar<sup>1</sup>; Pacha Shobha Rani<sup>2</sup>; S. Mohammed Yasin<sup>3</sup>; K. Rakesh<sup>4</sup>; S. Vignesh<sup>5</sup>

<sup>1</sup>Associate Professor, Department of CSE, R.M.D. Engineering College, Tamil Nadu, India.

<sup>1</sup>mrk.cse@rmd.ac.in

<sup>2</sup>Associate Professor, Department of CSE, R.M.D. Engineering College, Tamil Nadu, India.

<sup>2</sup>psr.cse@rmd.ac.in

<sup>3</sup>Student, Department of CSE, R.M.D. Engineering College, Tamil Nadu, India.

<sup>3</sup>ucs17229@rmd.ac.in

<sup>4</sup>Student, Department of CSE, R.M.D. Engineering College, Tamil Nadu, India.

<sup>4</sup>ucs17308@rmd.ac.in

<sup>5</sup>Student, Department of CSE, R.M.D. Engineering College, Tamil Nadu, India.

<sup>5</sup>ucs17333@rmd.ac.in

### Abstract

*As the increase use of smart phones protecting the smart phones from intruders is the challenging part. In this paper we are came up with application that is used to find the lost device by SMS command. The Mobile Anti-Theft is made for the benefits of the people for finding their device when lost using SMS commands. This project is able to locate the lost device and able to send the current location of device to the user. Using this application we can find the lost mobile phones without paying for any service in a cost efficient manner. It can also able to take the picture of the culprit who stole the mobile phone using both front and rear cameras.*

**Key-words:** SMS, GROOT Components, GPS, WIFI.

### 1. Introduction

Android Application is a software designed to run on an Android device or emulator. The term also refers to an APK file which stands for Android package. This file is a zip archive containing app code, resources, and meta information. Android apps can be written Kotlin, Java, and C++ and are run inside virtual Machine.

## Introduction about Application

Mobile Anti-Theft Software can able to provide the device location when lost along with photo of the person who took the mobile. The user has to send a command FINDME to his/her number from his/her emergency mobile number which is registered when the app is installed on the device.

## 2. Methodology

This project has the capability to overcome the drawbacks of **Google Find My Device**. **Offline Mode**- Unlike Google Find My Device this app works in offline mode. **Ability to Get Precise Location** - This app can able to share the device location precisely. **Sim Swap Detection** - The app can able to detect SIM SWAP and sends the message to user emergency mobile number immediately.

## Explanation about the Application

The user has to register his/her emergency mobile number which is not present in the device. Once the registration process has completed the user has to disable his/her mobile lock screen and use the lock screen provided in the app. If the lock screen setup is completed then user has to turn off battery optimization for this app i.e., allow background process.

## Registration

In the registration process the user has to enter his/her emergency mobile number that is not already present in the device. The emergency mobile number is used to find the device just by sending SMS Command FINDME to his/her mobile number which is present in the device.

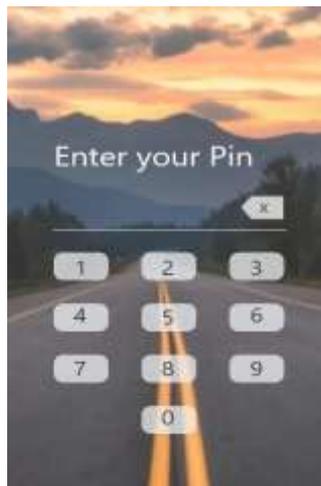


(a) Registration screen

Once the registration is completed the emergency mobile number will be saved into the app database.

- **Lock Screen**

The user has to turn off his/her device lock screen and it is best to use the lock screen provided in the application. The sample lock screen image is shown as,



(b)

- **Working**

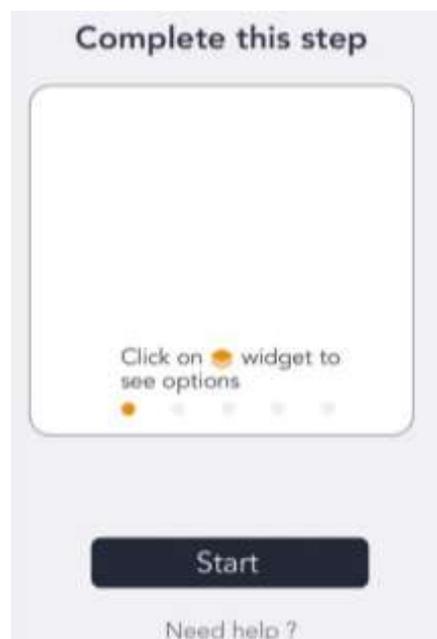
Once the app is installed the user has to register a mobile number which is not in the device. When the device is lost the user has to send **SMS** command to his/her mobile number from the registered number. Now when the lost device received **SMS command** it will turn on **WIFI, GPS,** and **MOBILE DATA**. When the device found the location then it will send that location through SMS. In addition to that the application will take pictures in both front and back camera. It will save those pictures in google drive and shares the link through email or SMS service. At the same time the mobile or device will go to KIOS mode (i.e This mode is used to freeze the phone that the intruder will not able do any operations on that device) We mainly used this concept if the intruder found that device mobile data, GPS is turned on, He/she may try to turn off the GPS, to avoid we use this feature called KIOS mode. The battery optimization feature should be disabled by the user to Run our application in Background. And also the user should give accessibility permission in order to get accurate results of application.

### 3. Groot Components

In this step the user has to map his mobile data, WIFI, GPS which is present in the Status Bar. Once the user mapped then it will be easier for the app to turn on GPS, WIFI, mobile data since It is not possible to turn on those functionalities programmatically in the latest version of android. We overcome this drawback by using Groot Component.

#### 3.1 Working of Groot Component

The Working and usage of Groot component in application is to turn on LOCATION, WIFI, MOBILE DATA. In android versions above 7 we cannot turn on those services programmatically. To overcome this draw back We introduce a component called GROOT. It will get the accessibility permission from the user to make some changes in the device. Once getting permissions the user ask to perform some tasks before setting up the application and the user also suggest to turn off the battery optimization in their device for better performance of the application. The user might ask to do mapping of some icons on the following positions for to turn GPS and Mobile data. After completing the process the application will be start working and we suggest the user to not force stop the application and not to turn off the accessibility.



(c)

The image (c) or screen consists of widget operations to perform the tasks.



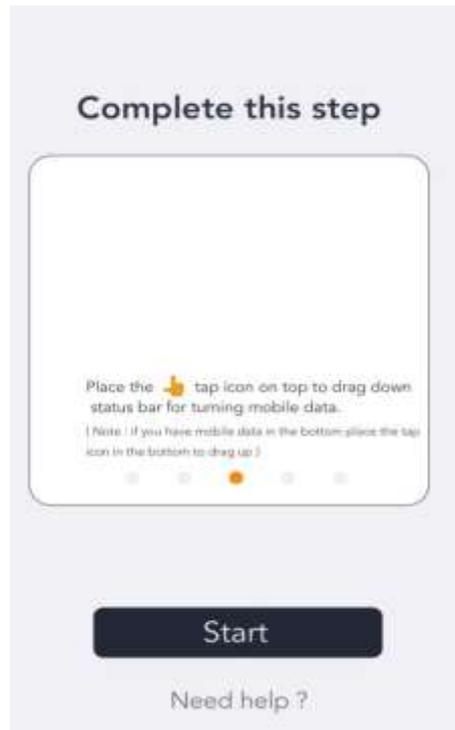
(d)

The image (d) or screen consists to select the input mode to map the icons on the device.



(e)

The image (e) or screen consists to select the drag icon and to map in the place where the floating icons should be placed.



(f)

The image (f) is the final step, after setting up the icons it will ask to finish the process and setup it

#### 4. Flow Chart

The application will wait for or listen for the SMS command to receive. Once if command received then it will turn on the WIFI, GPS, MOBILE DATA and send Google maps Location.

If user wants to capture the face of intruder then user can use capture command to capture both front and back camera and save it to Google Drive and drive link will be shared through Email or using SMS.

If user find the mobile which is near to him/her then the user can use Siren mode it will increase the sound of the siren and it will play the siren until the user find the device. After that user has to enter the pin to free out from the KIOS mode then only the siren sound will stop. In meanwhile, if the intruder try to change the sim, the message will be sent to the user number which is not in that device, This technique is termed as sim swap detection. If the application detects sim swap, then it will go under freeze mode called KIOS mode.

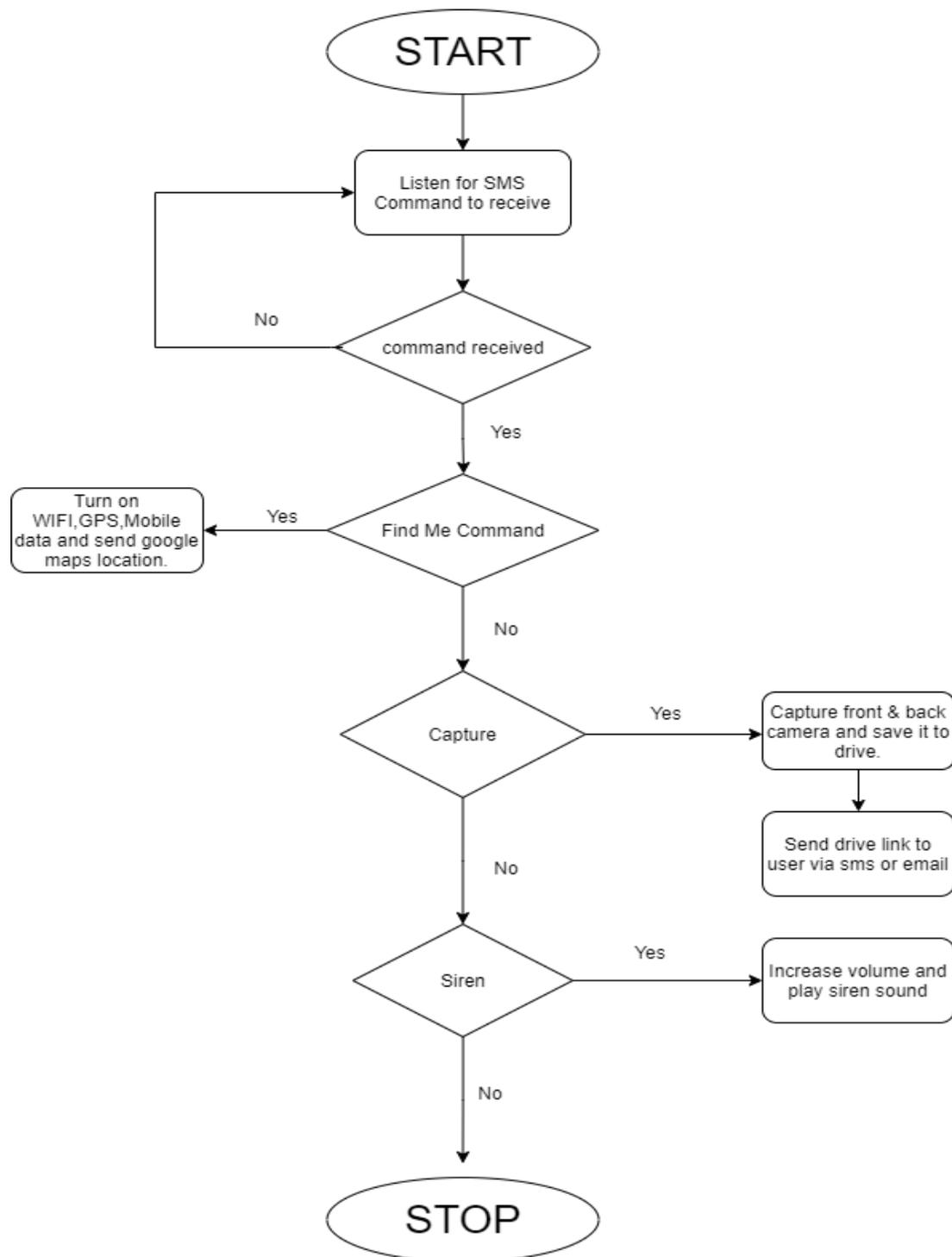


Figure 1. Flow chart of SMS

## 5. System Requirements

### Android SDK

Android SDK for developing using Java.

## **Android Studio IDE**

Android Studio IDE for developing android application.

## **Room Library**

Room Library is used for database setup for the application.

## **6. Software Testing**

### **6.1 General**

The purpose of testing is to discover errors. Testing is the process of trying to discover every conceivable fault or weakness in a work product. It provides a way to check the functionality of components, sub-assemblies, assemblies and/or a finished product. It is the process of exercising software with the intent of ensuring that the Software system meets its requirements and user expectations and does not fail in an unacceptable manner. There are various types of test. Each test type addresses a specific testing requirement.

### **6.2 Developing Methodologies**

The test process is initiated by developing a comprehensive plan to test the general functionality and special features on a variety of platform combinations. Strict quality control procedures are used. The process verifies that the application meets the requirements specified in the system requirements document and is bug free. The following are the considerations used to develop the framework from developing the testing methodologies.

#### **6.2.1 Unit Testing**

Unit testing involves the design of test cases that validate that the internal program logic is functioning properly, and that program input produce valid outputs. All decision branches and internal code flow should be validated. It is the testing of individual software units of the application. It is done after the completion of an individual unit before integration. This is a structural testing, that relies on knowledge of its construction and is invasive. Unit tests perform basic tests at component level and test a specific business process, application, and/or system configuration. Unit

tests ensure that each unique path of a business process performs accurately to the documented specifications and contains clearly defined inputs and expected results.

### **6.2.2 Functional Test**

Functional tests provide systematic demonstrations that functions tested are available as specified by the business and technical requirements, system documentation, and user manuals.

### **6.2.3 System Test**

System testing ensures that the entire integrated software system meets requirements. It tests a configuration to ensure known and predictable results. An example of system testing is the configuration-oriented system integration test. System testing is based on process descriptions and flows, emphasizing pre-driven process links and integration points.

### **6.2.4 Performance Test**

The Performance test ensures that the output be produced within the time limits, and the time taken by the system for compiling, giving response to the users and request being send to the system for to retrieve the results.

### **6.2.5 Integration Testing**

Software integration testing is the incremental integration testing of two or more integrated software components on a single platform to produce failures caused by interface defects. The task of the integration test is to check that components or software applications, e.g. components in a software system or – one step up – software applications at the company level – interact without error.

### **6.2.6 Acceptance Testing**

User Acceptance Testing is a critical phase of any project and requires significant participation by the end user. It also ensures that the system meets the functional requirements.

## 6.2.7 Build the Test Plan

Any project can be divided into units that can be further performed for detailed processing. Then a testing strategy for each of this unit is carried out.

## 7. Conclusion

The user who lost his/her mobile phones can able to find their devices easily using this application in a cost efficient manner. It is necessary for user to install and also to register the mobile number should be kept safe in order to track the mobile. As a future direction, we will advance our application for more features like remote wiping or factory reset for security and privacy purpose.

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