Remote Access of Smartphone using SMS Modal

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Abstract - In the recent years smartphone has become increasingly popular & its acceptance is inflating at an astonishing rate. At the present time people use their smartphone to accumulate important or private files & also to effectuate almost all the official & business works. So losing phone can be caused unbearable sufferings; such as private or official files can be wielded by others or the possibility of mislaying all the indispensable data. To truncate such stresses, we propounded an application named 'Remote Access of Smartphone'. The idea is based on controlling a smart phone by another device which can be either a normal phone or a smart phone. The application has the functionality to help the user retrieving important files, contact numbers, call & message log, tracking location, informing replaced SIM number, deleting folder, recording voice or snapping photo automatically & send it back etc. Through this application, the user will attain the proficiency of controlling his smart phone predominantly. Hence, "Remote Phone Controller" will succor the users to regain the lost data & lessen their stresses.

Index Terms - Access control, authorization, remote administration, usability, responsiveness, user interface, Authentication, data transmission.

I. INTRODUCTION

Remote access of smartphones using SMS (Short Message Service) models refers to the ability to control and interact with a smartphone device remotely using text messages. This technology enables users to perform various actions on their smartphones, such as retrieving information, executing commands, and even managing certain functionalities, all through SMS communication. The concept of remote access via SMS models has gained significance with the increasing reliance on smartphones in our daily lives. It provides a convenient and accessible method for users to control their devices remotely, regardless of their physical location or the availability of an internet connection. This capability can be particularly useful in scenarios where internet connectivity is limited or unreliable.

The process of remote access through SMS models typically involves a combination of hardware, software, and SMS-based communication protocols. A user initiates commands by sending specific SMS instructions to the target smartphone. These instructions can be predefined commands or custom instructions tailored to the specific remote access application. On the receiving smartphone, a dedicated SMS application or service interprets the incoming messages, extracts the relevant instructions, and executes the corresponding actions. This may involve accessing the smartphone's settings, launching applications, retrieving data, capturing media, or performing other operations as defined by the remote access application.

There are various use cases for remote access of smartphones using SMS models. For example, it can be utilized for remote device management, allowing administrators to monitor and configure smartphones deployed in a corporate or organizational setting. It can also be employed in security systems, enabling users to remotely arm or disarm alarms, control surveillance cameras, or receive notifications based on predefined triggers. Additionally, remote access via SMS models can be utilized for personal automation and convenience purposes. Users can schedule tasks or reminders, control home automation systems, retrieve information, or even locate their misplaced or stolen smartphones, all through simple text messages.

While remote access via SMS models provides a versatile and accessible method for smartphone control, it's important to consider security aspects. Implementations should incorporate robust authentication mechanisms, encryption protocols, and safeguards against unauthorized access to ensure the privacy and integrity of the data being transmitted.

A smartphone (or smart phone) is a mobile phone with more advanced computing capability and connectivity than basic feature phones. The people of the whole world are now mesmerizing towards smartphone because of its leading technology. Smart phone can be manipulated for any motivations. It has almost all proficiencies to act as an alternate of the notebook. People are using it for maintaining communication, official & educational matters since it is very convenient to use. As a result, people are keeping their important documents or information on their smart phone. According to research by IDC, the global smartphone market topped 1 billion shipments for the first time in 2013, covering about one-seventh of the world's population.

So it would be really a great heartache if user lost his smart phone since there is a possibility of exposing & losing all the data or information. Moreover, the important data or information might be used by others; which would be really harmful or user's privacy could be destructed. Sometimes, this dissipation could not be repaid. Besides, there can be such kind of situation when we need our smartphone, which is not with us at the moment. We might need a document or files which are kept in the smartphone.

'Remote Access of Smartphone' can overtake these kinds of situations. The user can access his smartphone's data at any time & the application can provide all the important data or information to the user at a glance. User will get the power to control his device with a particular phone. He can retrieve all his contact numbers, call log, message log, any files or documents, or current location of the smart phone. User can also delete any file or folder he wants.

Various applications are introduced by large organizations for the security of Android mobiles. Organizations like Prey, Avast, etc. have developed applications withan intent to track the phone or to restrict an unauthorized user from tapping into the phone. Though all the security applications focus on privacy as well as the security of the user's phone, there are various permissions that aren't made available from Android to secure the privacy policies of Android operating systems and to avoid the violations of the inbuilt privacy features made available by Android itself.

II. LITERATURE SURVEY

An application was introduced which used GPS to track the position of the uses phone. Also, it uses a predefined perimeter of the user's phone so that if the phone leaves its perimeter, then it alerts the user. This application introduces a better way to manipulate with the GPS coordinates. In this paper Remote phone controller, they used two different platforms. The first platforms Android application and the second one is web portal. In the Android application, it combines feature of various Android applications into a single application to provide auser with a secure single platform to secure their phone as well as access other features.

The Major focus is on getting an accurate location of the misplaced phone under the circumstances when the battery is low or the phone is stolen. Various applications are available for Android Device Manager or third-party applications like Prey, Avast anit- theft etc.

"mTracker" application is used to trace and record the positions that were monitored. They have developed a PC application that shows in the Google Maps the positions that were stored in the PDA, allowing the user to see when and where the device was.

There is a project of an Android application which is developed to perform different tasks on your mobile phone from any other phone via simple SMS and control your Android phone remotely using SMS. The basic purpose of this application is, if we have forgotten our Android phone at any place, we can still control that phone remotely by sending an SMS.

Another similar application with the use of GPS for tracking the location has a special feature that enables the user know if the phone is stolen and is being used by an unauthorized user. This is made possible by checking the sim card when it is inserted into the sim slot. If a new sim is inserted, then the authorized user is alerted.

One common method is through the use of dedicated mobile applications that facilitate remote control and interaction. These applications typically establish a connection between the controlling smartphone and the target smartphone, allowing users to access and manipulate the target device remotely. Studies highlighted the usability and convenience of these applications, emphasizing their potential for tasks such as device management, file transfer, and even remote troubleshooting.

Another notable approach involves leveraging built-in features and functionalities of smartphones, such as screen mirroring and casting capabilities. By utilizing these features, users can remotely view and control the screen of the target smartphone from their own device. This method often requires both smartphones to be connected to the same network, either through Wi-Fi or Bluetooth.

This paper Remote data acquisition from android mobile focuses on the proposed systems results. Also, this paper describes the actual implementation of the project as well.

In the paper, main contributions can be summarized as follows:

a) We have effectuated a very easy way of accomplishing all the desired functions. A single SMS with a particular keyword is adequate to meet the user's requirements.

b) None of the SMS store in the inbox. The smartphone receives the SMS in the background & works according to it.

c) Android cannot send more than 160 characters within a message. For that reason, we provided a feature by which the user can also get back his information through the mail.

d) After losing phone, if the SIM card is replaced, the user will be automatically notified with a message from the new SIM number.

e) We have dispensed a block diagram of the whole process which shows how the system actually works.

This application acts as a remote of the TV. A hardware based remote controller is proposed for home & office automation
They provide a better way of transferring information as well as better time management strategy. Jong-hyuk Roh and SeunghunJin suggest a protocol that can control multiple devices
Through this application user can control each of the devices separately as he wants HamitErdem and ArmaganUner present the design & implementation of multi-channel remote-controller (MCRC) for home & office appliances.

They integrate a several existing remote controller channel in a common platform. Jeffrey Nichols and Brad A. Myers published a paper of controlling home & office appliances
They developed a framework that allows users to interact with appliances through a separate user's smartphone. A multi-purpose remote controller based on Bluetooth mobile phone is proposed to provide users for a convenient control interface.

III. PROPOSED METHODOLOGY

The proposed methodology makes use of both qualitative and quantitative perspectives, and includes a broad array of approaches such as literature reviews, expert opinions, focus groups, and content validation. It also involves sophisticated assessment of construct validity including substantive and structural aspects.

- Establish a communication channel: You need to have a means to send and receive SMS messages with the target smartphone. This can be done using a mobile network connection or an internet-based SMS gateway.

- Develop a command interface: Decide on a set of commands that will allow you to control the smartphone remotely. For example, commands could include retrieving information, executing actions, or changing settings on the device.

- Implement the SMS receiver: Develop an application or service that runs on the smartphone and monitors incoming SMS messages. This component should be able to process and interpret the received commands.

- Execute commands: When a valid command is received via SMS, the SMS receiver should execute the corresponding action on the smartphone. This might involve accessing system functions, interacting with installed apps, or performing actions on the device's hardware.

- Send responses: Depending on your requirements, you may want the smartphone to send back responses or acknowledgments for executed commands. The SMS receiver should be able to compose and send SMS messages containing the relevant information.

- Security considerations: Remote access to a smartphone can raise significant security concerns. It's crucial to implement appropriate security measures to protect the device and the data it contains. Consider using encryption, authentication mechanisms, and secure communication channels to ensure the confidentiality and integrity of the communication.

- Compliance and legal considerations: Ensure that your implementation complies with applicable laws and regulations regarding remote access and privacy. Understand the legal implications of accessing someone's smartphone remotely and obtain the necessary consent or authorization if required.

CLASS MODEL

The class model and functional model of the Remote Android Access application.
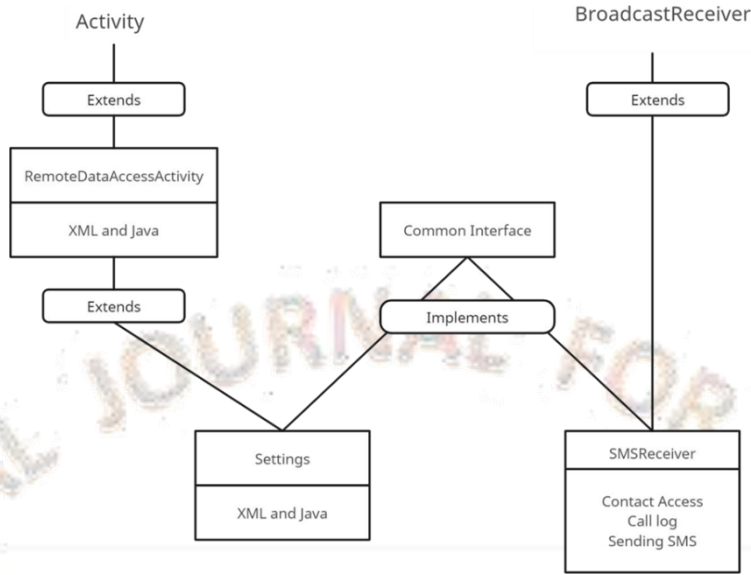

Fig1: Class model

Remote Data Access Activity Class:
In the class model, Activity extends Remote Data Access Activity class with front end tool xml and back-end tool like Java.

Settings class:
The Settings class extends Remote Data Access Activity class. It is used for setting the password using the interface.

SMS Receiver class:
When the SMS is sent it will be registered in the broadcast receiver class. The Broadcast Receiver enables application to receive intents that are broadcast by the system even when the components of application are not running. When the SMS is received it will be stored in on Receive () function of SMS Receive () class which in turn extends broad cast receiver.

Here Setting and SMS Receiver implements Common Interface because password will be set in settings and when the SMS is received it should match with format of SMS. When there is a match, the user can easily access contacts and inbox messages. If there are any corresponding matches found with respect to these accesses, it generates text message and sends back to user.

FUNCTION MODEL

The very first and foremost thing is that the application needs to be installed. Then the installed application is registered to SMS receiver. Receiving the SMS allows the application to set the authorization and authentication like username and password.

In the development of program code, the program is arranged or associated with password which cannot be modified. However if the user wants to change password, then he has to go back to development code to edit and modify it. Run that program, then "apk" file needs to be installed in the mobile and later run the application. To overcome this disadvantage we reset the password, so every time when the apk file will be installed on mobile device and run we can setup a new password of our own to access the information.

The next step is waiting for the SMS arrival. When the SMS is received it is registered as per sms Receiver, then it calls the Broadcast Receiver which enables the application to receive intents that are broadcast by the system or by others applications even when the other components of application are not running. If password matches then user will be able to access Contacts and Inbox SMS.

Contact Access:
The format followed for contact access is mentioned below:

Get contact<coma>password<coma>contact name If the entered password is matched with the set password, then it will access the requested contact number. Getting the requested contact number may be an issue because user should be sure that he should know the manner he has saved the contacts in phone memory. It is somewhat case sensitive. To over come this disadvantage, the string of the contact's name will access the contact number.

We know that every contact name that is saved in the phone will be given a unique contact Id. When the contact's name is received from the sent SMS it will be assigned with some unique contact Id. It sorts contact details of that particular person on the basis of the contact-Id's and sends back the name and number of that respective person. If there are any relevant contact numbers found, then it

checks the contact's name which matches with the same valid contact number stored in phone book and if there some contact number that matches with same contact name it generates text message that includes the information's such as contact name, contact-Id and phone number saved in the phone memory. This message is sent to corresponding user who is in need of such contact details.

SMS access:

The format followed for SMS access is mentioned below,

Get sms<coma>password<coma>date. This option is sent for SMS. If the above format matches, it first checks message in the inbox. If there are any messages in the inbox on that particular date, it will generate a text message and send all the messages on that particular date. If message in the inbox exceeds 160 characters, then the particular message is split into two messages and generates the text message and the message is sent. If there are no messages in the inbox on that particular date then a message is generated as no messages available on that particular date.

On SMS arrival:

The application is waiting for SMS to arrive. When the SMS is sent it will be freely registered in the "SMS-RECEIVED" class. It means that when the SMS is sent it calls Broad Cast Receiver as sms rcv is object of Broadcast Receiver class. The Broadcast Receiver enables the application to receive intents that are broadcast by other applications even when the other components of application are not running. Once the code returns from this function, the system considers the object to be finished and no longer active.

This has important repercussions to what you can do in an onReceive (Context, Intent) implementation: anything that requires asynchronous operation is not available, because you will need to return from the function to handle the asynchronous operation, but at that point the Broadcast Receiver is no longer active and thus the system is free to kill its process before the asynchronous operation completes. When it calls the Broadcast Receiver, it activates the overall execution process at once.
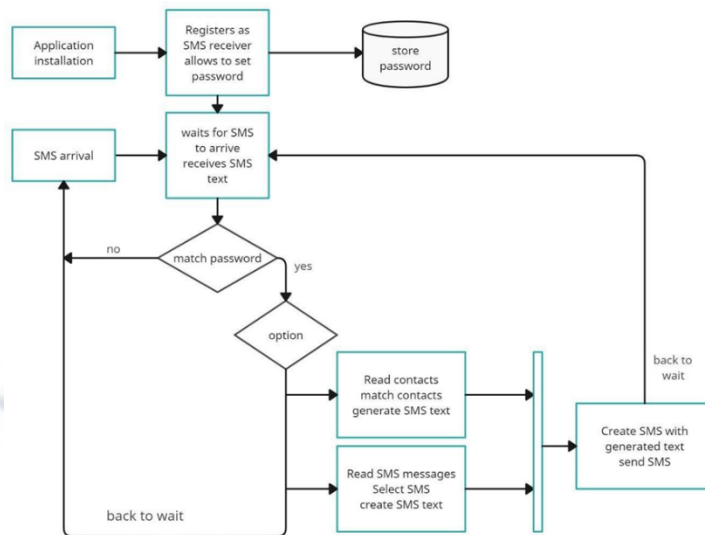

Fig 2: Functional modal

IV. FINAL OUTCOME

SOURCE - CLIENT INTERFACE

The first interface for the app will be two sides that is Being source and Being client, In Being client will control the Smartphone and Being source is the Smartphone in which the data or the task is been performed.

We have to input the username of user and mobile number in both sides and also for the security purpose there is a Secret Key which should be same in both the sides for the successful login.
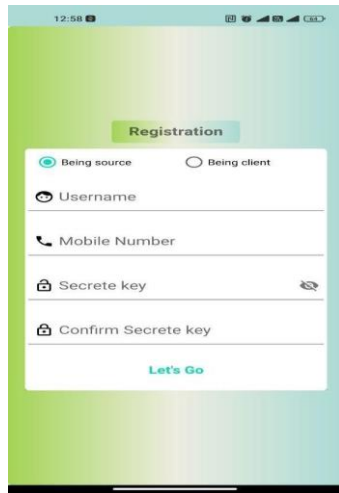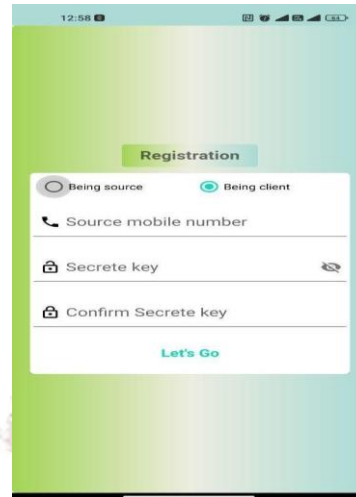
Fig 3: Source Registration   **Figure 4: Client Registration**

Once the login is successful done this SMS is sent which indicate the source and client connection is completed and successfully logged in and can perform the tasks.
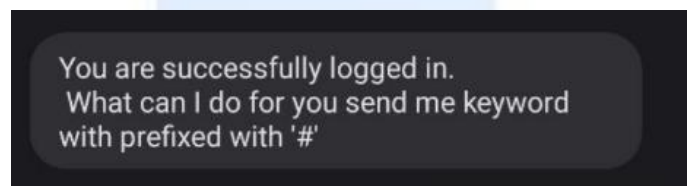

Fig 5: Login Message

MAIN PAGE:

The Main page of RAS app includes the following option in which the we can performance the various tasks as shown in the figure.
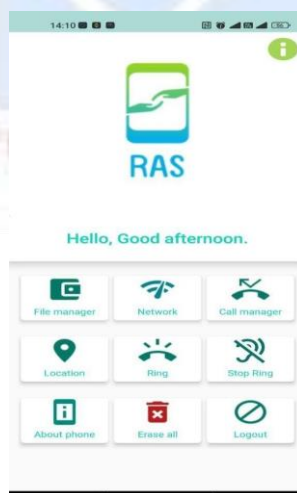

Fig 6: Main Page

1. **Ring:** When this button is clicked the other smartphone will ring automatically. Even if the smartphone is silent or vibrate mode the phone will ring and will alert the presence of phone nearby.

2. **Stop Ring:** This button is used to stop the ringing of smartphone when the phone is found by the user.

3. **About phone:** It is used to get the basic information about the smartphone like IMEI number, current battery percentage of the phone, Wi-Fi is Disabled / Enabled, GPS is Disabled / Enabled.

4. **Location:** This button is used to get the current location of the smartphone. The location of the smartphone is sent via SMS to the client and the link is redirect to the Google maps. below is an example of location tracking

5. **Erase all:** This is used to reset / Format all the smartphone system data. The smartphone will be cleaned by removing the entire data from the smartphone

6. **File Manager:** It is used to retrieve the text files from the phone. We have to provide the file name present in the phone and when the search button is clicked the text file will be extracted and displayed on the screen.

7. **Network:** This field is used to control the options like turning On/Off WIFI, Bluetooth, Mobile data, Hotspot and control the modes of the smartphone like silent, vibrate and rind mode.

8. **Call Manger:** This field is used to get the information about everything related to call and phone number.

At first, we have the search option in which the phone number can be searched by giving the name or the number which we want to retrieve.

9. **Logout:** Lastly, we have the logout button which is used to disconnect the source and client and the logout SMS is sent indicating the logout has been successfully done.

V. CONCLUSIONS

In conclusion, the remote access of smartphones using an SMS model has proven to be a valuable and efficient method for accessing and controlling mobile devices. It offers a convenient way to manage smartphones remotely, allowing users to perform various tasks and operations without physically handling the device.

The SMS model for remote access has several advantages. Firstly, it does not require an active internet connection, making it accessible even in areas with limited or no internet connectivity. This is particularly beneficial in remote locations or during emergencies where internet access may be unreliable.

Secondly, the SMS model provides a high level of security since the communication occurs through text messages. By utilizing encryption and authentication techniques, the system can ensure the privacy and integrity of the transmitted data, protecting user information from unauthorized access.

Furthermore, the SMS model is device-agnostic, meaning it can be implemented on a wide range of smartphones, regardless of their operating systems. This versatility makes it suitable for various scenarios, such as remote troubleshooting, device management, and parental controls.

With ongoing technological advancements and continued innovation, the future of this approach holds great potential for further improvements in functionality, security, and integration with other technologies, ultimately enhancing the user experience and expanding the possibilities of remote smartphone management.

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