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GROUP CONNECTIVITY AND SECURITY USING LOCATION SERVICE BASED ANDROID APPLICATION

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ABSTRACT
Android is a new generation platform of smart mobile phones. Android provides location sharing and access facilities. By using location API, GPS and maps services many applications can be developed, which is probably a concern of vast numbers of developers. .Location based android apps can be used for solving many real time connectivity and security problems. If we can access "Location" then this would help us to solve many problems and will help to develop many applications based on location.Combination of these location based features can serve as a complete package as an object to remain in touch with people and feel secure which is the general idea behind this project.

KEYWORDS: Location Sharing, Location tracking, Connectivity, Security, Lost phone Tracking, Location Alarm, SIM change alert.

INTRODUCTION
This Application is a complete package of Location based services like defense against personal threats, group connectivity, location tracking, stolen phone tracking etc. Combination of these location based features can serve as a complete package as an object to remain in touch with people and feel secure which is the general idea behind this project. Location data is accessible with mobile devices through the mobile network and which uses information on the geographical position of the mobile device. And same can be used for these purposes.

Fig.1.System Architecture

This project has two basic aspects 1. Connectivity 2. Security it provides following types of Applications:
  ➤ Defense against personal threats
  ➤ Location sharing
  ➤ Location tracking
  ➤ Data sharing
  ➤ Group Bonding
  ➤ Staff Monitoring
  ➤ Stolen phone tracking

LITERATURE SURVEY
Study of android SDK and Android SDK Manager and integrating it with an ADT Bundle of a Java IDE.
Android software development is the process by which new applications are created for the Android operating system. Applications are usually developed in the Java programming language using the Android Software Development Kit, but other development tools are available.

The Android software development kit (SDK) includes a comprehensive set of development tools. These include adebugger, libraries, a handset emulator
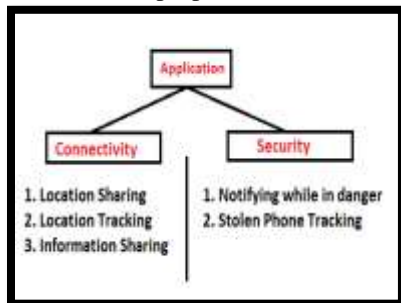
based on QEMU, documentation, sample code, and tutorials. Currently supported development platforms include computers running Linux (any modern desktop Linux distribution), Mac OS X10.5.8 or later, and Windows XP or later. For the moment one can also develop Android software on Android itself by using the AIDE - Android IDE - Java, C++ app and the Java editor app. The officially supported integrated development environment (IDE) is Eclipse using the Android Development Tools (ADT) Plugin, though IntelliJ IDEA IDE (all editions) fully supports Android development out of the box,and NetBeans IDE also supports Android development via a plugin.Additionally, developers may use any text editor to edit Java and XML files, then usecommand line tools (Java Development Kit and Apache Ant are required) to create, build and debug Android applications as well as control attached Android devices (e.g., triggering a reboot, installing software package(s) remotely).

To start the development, we should have development environment set up. We need to:
- Download the Android SDK.
- Install the ADT plugin for Eclipse (if you'll use the Eclipse IDE).
- Download the latest SDK tools and platforms using the SDK Manager.

Study of all Android Versions
The version history of the Android mobile operating system began with the release of the Android beta in November 2007. The first commercial version, Android 1.0, was released in September 2008. Android is under ongoing development by Google and the Open Handset Alliance (OHA), and has seen a number ofupdates to its base operating system since its initial release.

Since April 2009, Android versions have been developed under a confectionery-themed code name and released in alphabetical order; the exceptions are versions 1.0 and 1.1 as they were not released under specific code names:
- Alpha (1.0)
- Beta (1.1)
- Cupcake (1.5)
- Donut (1.6)
- Eclair (2.0–2.1)
- Froyo (2.2–2.2.3)
- Gingerbread (2.3–2.3.7)
- Honeycomb (3.0–3.2.6)
- Ice Cream Sandwich (4.0–4.0.4)
- Jelly Bean (4.1–4.3.1)
- KitKat (4.4–4.4.4)
- Lollipop (5.0)

Accessing Message, Contacts and INTERNET packages of android to create Network Sockets and do message communication. And Connection with existing apps (Whatsapp, Hike etc)
Android API provides facilities like accessing message and contacts from phone as well as to connect with existing services like MMS, SMS, GPS and also to connect with existing apps like whatsapp.

Study of Existing apps
1. Overview of existing applications from different technologies such as Android, IOS etc. for selection of the topic.
2. Study of location based applications for finding out their drawbacks.
3. Study of security apps like Vith U

VithU is an emergency App that, at the click of the power button of your smartphone 2 times consecutively begins sending out alert messages every 2 minutes to your contacts that you feed into the app as the designated receivers or guardians.The message says "I am in danger. I need help. Please follow my location." The receiver will receive a link to your location every 2 minutes giving them your updated location. Also, you will get updates on the Crime Scene in India and a "Tips Feed" option exclusively giving you safety tips in an emergency situation. Don't miss your favorite Crime Show "Gumrah" with the "Show Alert" option in the Menu Bar which will be your reminder & alert you whenever Gumrah is on Air. Last but not the least, if you have been a victim or witnessed a Crime you can share the incident with Channel V by posting it in the "Submit Your Story" option in the Menu Bar.

Study of GPS technologies
The Global Positioning System (GPS) is a space-based satellite navigation system that provides location and time information in all weather conditions, anywhere on or near the Earth where there is an unobstructed line of sight to four or more GPS satellites. The system provides critical capabilities to military, civil and commercial users around the world. It is maintained by the United States government and is freely accessible to anyone with a GPS receiver. The GPS project was developed in 1973 to overcome the limitations of previous navigation systems, integrating ideas from several predecessors, including a number

of classified engineering design studies from the 1960s. GPS was created and realized by the U.S. Department of Defense (DoD) and was originally run with 24 satellites. It became fully operational in 1995. Bradford Parkinson, Roger L. Easton, and Ivan A. Getting are credited with inventing it.

Advances in technology and new demands on the existing system have now led to efforts to modernize the GPS system and implement the next generation of GPS III satellites and Next Generation Operational Control System (OCX). Announcements from Vice President Al Gore and the White House in 1998 initiated these changes. In 2000, the U.S. Congress authorized the modernization effort, GPS III. In addition to GPS, other systems are in use or under development. The Russian Global Navigation Satellite System (GLONASS) was developed contemporaneously with GPS, but suffered from incomplete coverage of the globe until the mid-2000s. There are also the planned European Union Galileo positioning system, India's Indian Regional Navigation Satellite System, and the Chinese Beidou Navigation Satellite System.

PROPOSED WORK
Advantages Of System
Location sharing
User can share his own location to others any reasons like if he/she wants to tell where he/she is or can share location if he/she wants to help others to reach there. Location shared will be in terms of actual address and longitude and latitude so that others can know exact location
STEPS:
  i. Find owns location
  ii. Form an address and map link also And
  iii. Send to friend via SMS or any other medium

Location Tracking
In this app people can trace each other's location. There will be a list named My Circle in which user can add contacts. If the person is in trusted list then that person will automatically get location of other and when he is not marked as trusted then app will ask first whether to send location or not
STEPS:
  i. User 1 will click on get location option and request will be sent to other user via SMS.
  ii. Application at other side will read the SMS using broadcast listener and if it matches the location request keyword it will send location back if person is in trusted list or will pop up notification whether to send location or not

  iii. If location is to be sent, find owns location and send back

Data sharing (Contact numbers)
Similar to location request user can request for a particular contact number and on other side with users permission contact no will be sent.
STEPS:
  i. Request for particular number (SMS will be sent as FIND XYZ or FIND 9749545454.
  ii. App will interpret the request and will process by asking user whether to send contact number or not.

Lost Phone tracking
If person loses the phone he/she can track his/her phone as.
STEPS:
  i. That person will send SMS to his/her number trace <password>
  ii. If app matches the password will send the current location.

SIM change alert :
But what if person who found the changes the SIM card?There will be provision that when SIM card of the phone s changed password will be asked. If user can't enter right password then SIM change alert will be sent to the numbers set by the user

Uninstall Protection:
But what if the person uninstalls the application then how track the phone?Android API also contains uninstall protection. In this case user cant even uninstall the app without entering password
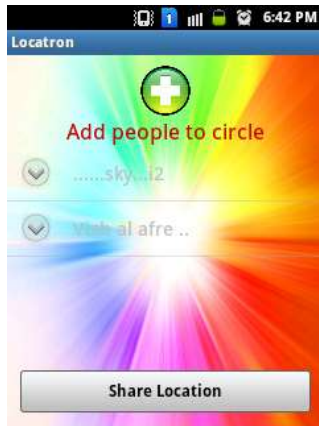
Alert while in danger
When person thinks that he/she is in danger he/she will press power button 5 times and location will be sent to the people in the circle set by the user earlier
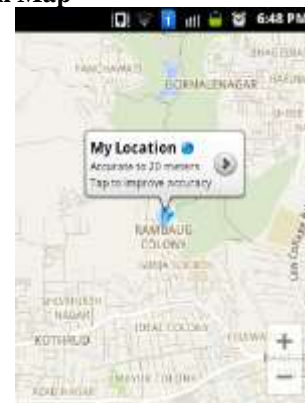
Location Alarm
If someone doesn't want to miss the destination while traveling, can set the location alarm. When the particular location will be about to reach alarm will ring.

SYSTEM FLOW DIAGRAMS
USE CASE DIGRAM

SEQUENCE DIAGRAM

Sequence Diagram to trace location

Data Flow Diagram
Level 0 DFD.

SCREEN SHORTS OF SYSTEM
Home screen

Level 1 DFD

Setting Menu

Level 2 DFD

Circle

Circle options

Location sharing

Add contacts

Location on Map

Location alarm

CONCLUSION

This android application will be a complete package which will serve as an object to remain in touch with people. It is an exciting new way to keep in touch with your circle and to "Be secure… Feel secure" with features like.

-   Location sharing and tracking
-   Notifying while in danger

- Stolen phone tracking

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