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Profile Management System

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Abstract-There are many places like Hospitals, Petrol pumps, Universities, Corporate offices etc. where it is clearly mentioned, "KEEP YOUR MOBILE PHONES SILENT!!" Many times people forget to switch the mobile to the "Silent Mode" which is not feasible every time like in an important meeting, lectures etc. An Android application for automatic profile switching will provide near about completely automated profile switching. This application will enable the device to switch to the 'Silent Mode' based on the data stored by the users in the database as per their requirements.

Keywords- GPS, SQLite, Google maps

1. INTRODUCTION

PROFILE MANAGEMENT SYSTEM will enable the device to switch to the 'Silent Mode' in locations like Hospitals, schools, colleges, Universities, offices etc as per customized by the user. The user just needs to enter the required coordinates of the locations along with the required radius dimensions that he wants to be in the silent zone. The stored data will be compared via the GPS and the profile will be changed accordingly.

The user can store selected phone numbers in the database. If being on the silent mode say, in a meeting, a call comes form that particular number, the profile will change automatically to general mode after receiving more than 3 missed calls, and back to the silent mode after the call is been attended. A message will be sent automatically to that number of being busy. The user can contact them back later without being disturbed. In User- Defined Switching Mode user set location that gets stored in the SQLite database which is already present in Android Devices.

The application will use GPS Service provided by GPS Satellites for finding locations. In profile switching operation application actually switch the ringer mode of profile. Here user can choose among Silent or Vibrate only ringer mode for switching purpose. There is a provision made to neglect the calls while on the silent profile to avoid the disturbance. Only

Calls from the emergency numbers stored by the users will be allowed to be attended.

Thus, PROFILE MANAGEMENT SYSTEM plans to achieve the following objectives:

- Easy to use
- Automated profile switching
- Accuracy
- Increase usability
- User-friendly

2. PROBLEM DEFINITION

This new application will provide complete automatic profile switching according to location. This application will enable the device to switch to the 'Silent Mode' in locations like Hospitals, Major Corporate offices, Universities, Well known Educational Complexes, Petrol pumps, Government offices etc.

In User- Defined Switching Mode user set location that gets stored in the SQLite database which is already present in Android Devices.

The application will use GPS Service provided by GPS Satellites for finding locations. In profile switching operation application actually switch the ringer mode of profile. Here user can choose among Silent or Vibrate only ringer mode for switching purpose.

3. REVIEW OF LITERATURE

3.1 Global Positioning System (GPS)

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.

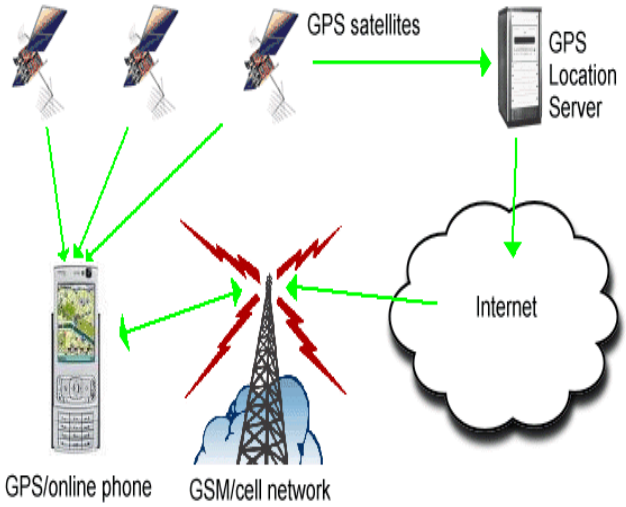

Figure 3.1.1 GPS Architecture

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. GPS is often used by civilians as a navigation system [4]. On the ground, any GPS receiver contains a computer that "triangulates" its own position by getting bearings from at least three satellites. The result is provided in the form of a geographic

position - longitude and latitude - to, for most receivers, within an accuracy of 10 to 100 meters. Software applications can then use those coordinates to provide driving or walking instructions.

Getting a lock on by the GPS receivers on the ground usually takes some time especially where the receiver is in a moving vehicle or in dense urban areas. The initial time needed for a GPS lock is usually dependent on how the GPS receiver starts. The receiver has a general idea of which satellites to look for because it knows its last position and the almanac data helps identify which satellites are visible in the sky. This takes longer than a hot start but not as long as a cold start. The GPS receiver has to attempt to lock onto a satellite signal from any available satellites, basically like polling, which takes a lot longer than knowing which satellites to look for. This GPS lock takes the longest. In an attempt to improve lock times, cell phone manufacturers and operators have introduced the Assisted GPS technology, which downloads the current ephemeris for a few days ahead via the wireless networks and helps triangulate the general user‘s position with the cell towers thus allowing the GPS receiver to get a faster lock at the expense of several (kilo) bytes[5].

3.2 Android

Android delivers a complete set of software for mobile devices: an operating system, middleware and key mobile applications. Android was built from the ground-up to enable developers to create compelling mobile applications that take full advantage of all a handset has to offer. It was built to be truly open. Android is built on the open Linux Kernel.

Android support LBS Application Programming Interfaces (APIs). Location service allows finding out the device current location. The application can request for periodic update of the device location information. The application can also register a intent receiver for proximity alerts like when the device is entering and existing from an area of given longitude, latitude and radius.

On a basic level, android is a distribution of Linux that includes a Java Virtual Machine (JVM), with Java being the preferred programming language for most Android applications. The Android Software Development Kit (SDK) includes a debugger, libraries, a handset emulator, documentation, sample code and tutorials. Android‘s official integrated development environment is Eclipse using the Android Development Tools (ADT) plug-in. SQLite database support is integrated into the Android platform. The ADT plug-in includes an Android emulator that allows for the simulation of GPS and Wi-Fi.

4. IMPLEMENTATION

4.1 System Module

Our project is about providing near about completely automated profile switching that will enable the device to switch to the ‘Silent Mode’ based on the data stored by the users in the database as per their requirements. Our project comprises of six modules.

- Groups module
- Locations module
- Profile changer module
- Call reject module
- Logs
- Logout

Figure 4.1.1: System Modules

Group module:

This module deals with creating different groups of contacts as per the requirement of the user which can be later used to link with the locations selected for the profile changing purpose. More than one groups can be formed and be activated for a single or multiple locations.

Location module:

This module consists of the Google maps using which the user can set required locations to be used for profile changing. The name for the location and the range of radius is defined along with the coordinates of the locations selected.

Profile Changer module:

Using this module the locations are activated for the call rejection and profile changing functions. It plays an important role in mapping the groups with the locations selected.

Call Reject module:

This module helps assigning groups to the locations for call rejection activation. More than one group can be assigned to a single location.

Logs:

This module simply helps to keep the track of the user call logs. The type of calls i.e. incoming, outgoing or missed call along with its date and time of calling in saved for the future reference of the user.

Logout:

This module is being used when the user desires to exit the application. The application stops working and the user needs to log in again in order to continue using the services.

4.2 Hardware and Software Requirements

- Hardware Requirements:

  • System: 2GB ram 64bit processor
  • Hard Disk: 80 GB.
  • Mouse: Optical Mouse.
  • Keyboard: 101 Keyboards.
  • Android Device: 4.0 (Ice-cream sandwich) or 4+ (Jelly Bean).

- Software Requirements:

  - Operating system: Windows 7/XP/8.0/8.1 or Mac.
  - Coding Language:
    java jdk/ jre.
    Android jdk
    Eclipse (IDE)
  - Backend:
    PHP
  - Server:
    MYSQL database
  - Google Maps
  - SQLite
  - EMULATOR (Testing on system)

5. SYSTEM ARCHITECTURE :

The system architecture consists of the GPS System, Android Device, and User components. The User can interact with Android Device through User Interface. The Android Device uses Location Manager Interface and receives location data using Forward Geocoding and also can get address of location using Reverse Geocoding from GPS System.

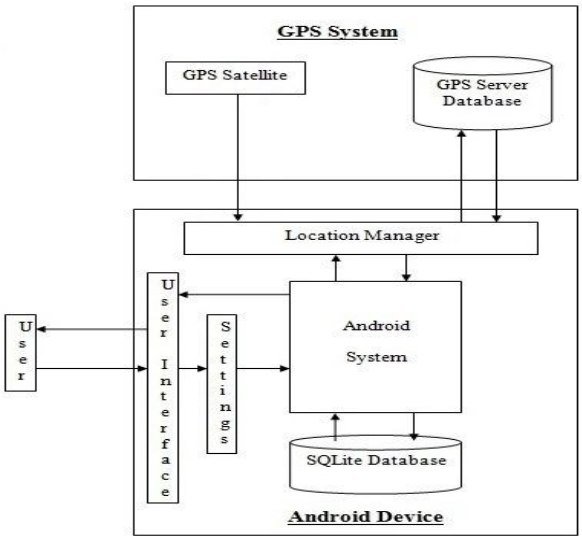

Figure 5.1 System Architecture

As shown in figure, the GPS System consists of GPS Satellite & GPS Server Database. The GPS Satellite continuously transmits the signal containing information about receiver's location (i.e. Location of GPS receiver with respect to GPS satellite, Current time etc.). Using this information GPS receiver calculates coordinates of location (i.e. Longitude, Latitude, and Altitude).

The GPS Server Database stores the information of locations such as coordinates of location (i.e. Longitude, Latitude, and Altitude) and name and address of that location. In the Android Device, the Location Manager is an interface between Android Device and GPS System. Using Forward Geocoding method Android System will get the co-ordinates of Android Device from GPS Satellite through Location manager.

Then those co-ordinates will send to GPS Server Database to get name and address of location this method is known as Reverse Geocoding. After getting name and address of location, the Android System will check that whether the received address is belongs to Silent Zone or not.

If device is in Silent Zone then Android System will switch sound profile ringer mode to Silent or Vibrate only as per settings. Android System will check for User-Defined Silent Zone in SQLite Database which is already present in Android Device. If location does not belongs to Silent Zone then switching will not takes place. User can add location for automatic profile switching.

Using User Interface user can store location information i.e. co-ordinates in the SQLite Database. While storing the location user can give any name for the particular location, also he will able to choose mode i.e. Silent or Vibrate Only and Activation status. User will also able to change settings for User-Defined as well as Default Switching and turn on/off the application through Settings.

5.1 WORKING:

After the installation the user have to first register him/her by providing some basic details. Once he is done with the registration he can log-in in order to use the application. On logging the user needs to enter 3 contact numbers that will be marked as important. This numbers will be referred as the emergency numbers.

If user gets a call from the mentioned numbers while he is in the silent mode, the profile will be automatically switched to general mode for that particular call. After the call is done it will again go back to the silent mode. If user gets a call from the number other than what are stored in the database, a message will be send to the caller about the user being busy, and the call will be disconnected automatically without any kind of disturbance.

Next, the user is asked to enter the locations that he wishes to set as default silent zone. This is achieved with the help of GPS and Google maps. The user is allowed to customize the settings according to his preferences. The required radius of the silent zone is set by the user itself. Once the locations are set, the profiles will be switched automatically.

The current location of the user will be compared to the locations stored in the database and necessary changes will be made. A notification will pop up in the notification bar to notify the user about the changed profile. The application is fully customized as per the user requirements.

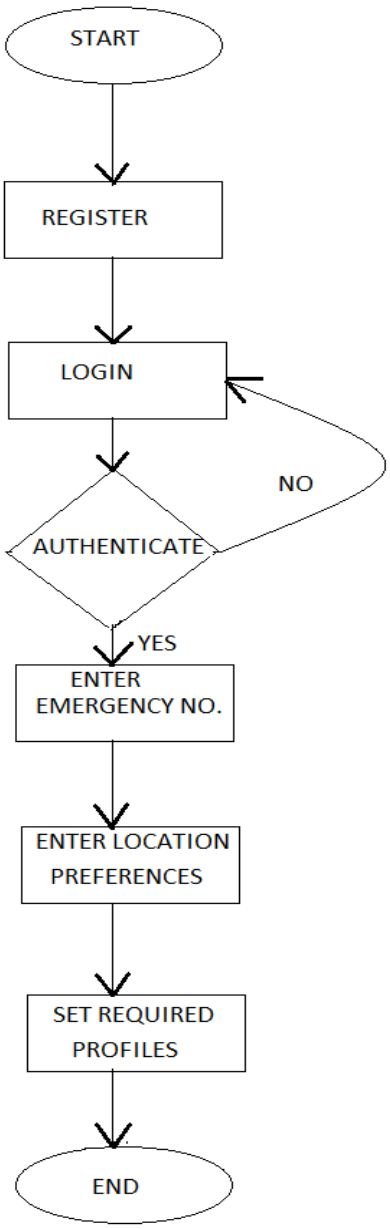

Figure 5.1.1 System workflow

6. FUTURE SCOPE

Profile Management System in Android Mobiles is a next level of Location Aware Intelligent Software which reduces human intervention for simple task such as sound profile switching. Android Smart Phone becomes much smarter by this application.

- Wide range of default locations, such as educational complexes, medical complexes, government and corporate offices etc can be considered.
- Provision for adding those locations in silent zone which the user requires.
- User-defined accuracy settings for user-defined locations.
- User-defined locations are stored in device's SQLite database and not in GPS Server Database hence GPS Server Database is not get disturb for adding new user-defined location or updating existing user-defined locations.

One can make location based triggering application without making lot of changes in this application. Instead of profile switching one can design this application for call divert also, so whenever he enters into the Silent Zone his all calls will be diverted on some number specified by him.

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