Mobile Location Based Profile Manager

Prof. Vivek Pandey[1], Sachin Pandey[2], Rohit Bhaud[3]

[1-3]Dept. of Information Technology Engineering, Koti Vidya Charitable Trust's Alamuri Ratnamala Institute of Engineering and Technology College, A.S.Rao Nagar, Sapgaon, Shahapur, Thane-421601 Maharashtra, India
---***---

Abstract - *Mobile has become a vital communication tool which everyone prefers to possess and carry along. This technology has laid a foundation to overcome the traditional desktop based approach of obtaining information. This project has been developed for Android driven Smartphone's. Global Positioning System (GPS) is a top priority technology used for locating a device position accurately. Methodologies for tracking can be done using a GPS receiver which is an additional hardware integrated in most of mobile equipment. We have used GPS as the approach idea for location tracking. "Mobile Location Based Profile Manager" is an android application that can perform various tasks according to your location. According to the detected location profile settings are applied on the phone.*

Key Words: Profile manager, GPS location tracking, Profile settings, Save Location, SMS Notification.

1. INTRODUCTION

Mobile technology is exactly what name implies – technology that is portable. Example of mobile IT devices include: laptop and notebook computers, palmtop computer or personal digital assistants, mobile phone and smartphones, global positioning system devices etc. Mobile devices can be enabled to use variety of communication technologies such as Wireless Fidelity (WIFI)- a type of wireless local area network technology, Bluetooth- connect mobile devices wirelessly 'third generation' (3G), global system for mobile communication (GSM) and general packet radio service (GPRS)-data networking services for mobile phones.

Let consider you are going to meet your Friend/Mom in a regular meeting place. Just think about how your dear feels if they suppose to see their photo as wallpaper and their favourite music as ringtone in your mobile? And always you can switch it back to your favourite wallpaper and music once you move out from your regular meeting place. This switching will get automatically performed by "Auto Profile Manager" and our application will help you to make a better relationship with your Friend/Mom etc.

2. LITERATURE SURVEY

A mobile applications (or mobile app) are applications developed for small handheld devices, such as mobile phones, Smartphone's, PDAS and so on. Mobile apps can come preloaded on the handheld device as well as can be downloaded by users from app stores or the Internet application designed to is nothing but a software run on Smartphone's, tablet computers and other mobile devices. They are available through application distribution platforms, which are typically operated by the owner of the mobile operating system, such as the Apple App Store, Google Play, Windows Phone Store and Blackberry. Some apps are free, while others have a price.

Usually, they are downloaded from the platform to target device, such a as an iPhone, BlackBerry, Android phone or Windows Phone, but sometimes they can be downloaded to less mobile computers, such as laptops or desktops. Mobile apps were originally offered for general productivity and information retrieval, including email, calendar, contacts, and stock market and weather information. However, public demand and the availability of developer tools drove rapid expansion into other categories, such as mobile games, factory automation, GPS and location- based services, banking, order-tracking, and ticket purchases. The explosion in number and variety of apps made discovery a challenge, which in turn led to the creation of a wide range of review, recommendation, and duration sources, including blogs, magazines, and dedicated online app-discovery services.

3. AIM OF THE PROJECT

To develop an application in android that senses user location and apply profile settings specified by user. The application is named "Mobile Location Based Profile Manager" as the name suggests it will save settings in database and apply those settings on your phone. Location tracking is performed using the GPS service. Changes in location can be emulated with the help Google map in Android. The location change is compared with the database entries if there are tasks associated to the current location. When user enters that particular settings will be applied automatically. Also there is a provision for default settings. That is when user settings can't be applied, default settings automatically exist.

Apart from profile settings, user can also send notifications and SMS. In notification, user can type the message and save the notification. In SMS, user can type the message and can specify any no. of senders. Also user can use contacts to enter phone no. In both SMS and notification, user can specify one of these option - recurring, one time or disabled. Message can be sent on entry/exit of location. Apart from this there is one more feature to launch application once user enters particular location. The application will automatically be opened at that location e.g. If I want to enter a classroom, I want that notepad to be opened automatically on my phone.

4. REQUIREMENTS

Software
- GPS
- SQLite
- Java Development Kit (JDK) 1.7
- Eclipse IDE
- Android SDK
- Android Development Tool (ADT)
- Google Maps API

Hardware
- Any Processor above 500MHz
- Ram-125mb
- Hard Disk-50mb
- A GPS enabled android phone

5. DESIGN

The design consists of the Use Case Diagram, Database Schema, and the Software Architecture of our System.

5.1 Use Case Diagram

A Use case Diagram focuses on the behavior of the system from an external point of view. A use case describes a function provided by the system that yields a visible result for an actor. In this scenario we have identified two users that is user of the application ant the system itself.
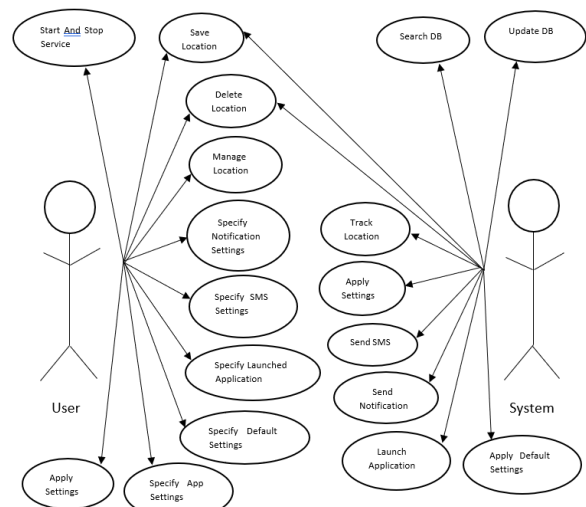

Fig -1: Use Case Diagram

5.2 Database Schema

A database schema of a database system is its structure described in A formal language supported by the database management system (DBMS) and refers to the organization of data to create a blueprint of how a database will be constructed (divided into database tables). In our Project consists of two tables names as "locations" and "appconfig". "locations" table stores all the settings information regarding particular location. "appconfig" table stores the settings regarding the application like get the location from GPS or network, scan interval etc.
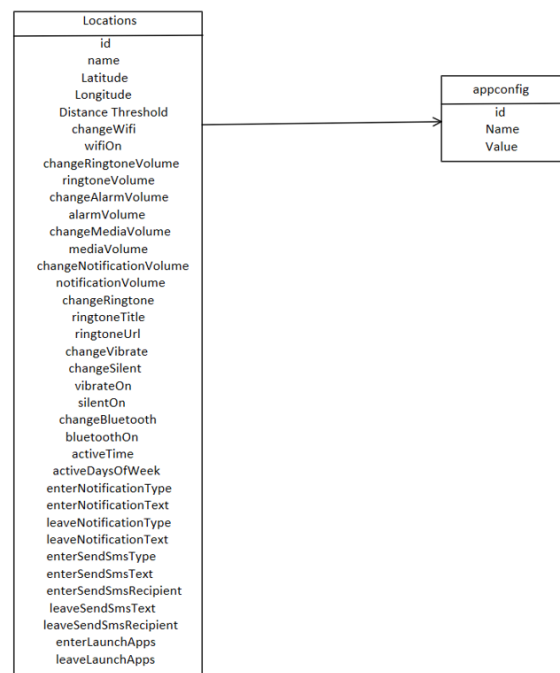

Fig -2: Database Schema

5.3 Software Architecture

In software architecture, a system is represented as a set of software components, their connections, and their important behavioral interactions. Creating software architecture promotes better understanding of the system, thus aiding the design process. Architecture Description Languages (ADLS) are used to describe a Software Architectures. Common elements of an ADL are component, connector and configuration.
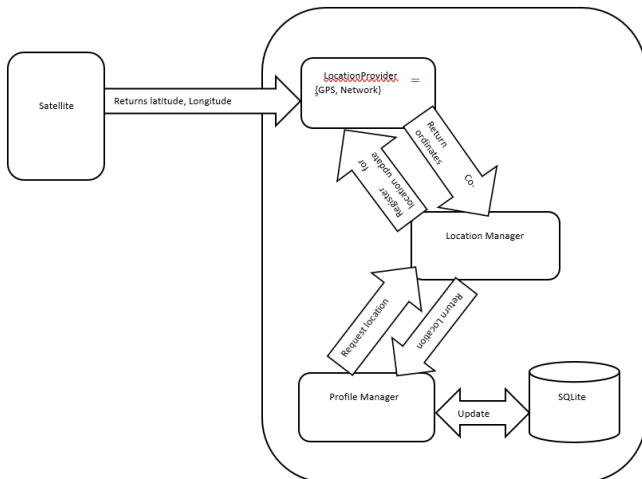

Fig -3: Software Architecture

6. IMPLEMENTATION

6.1 Implementation Details

The implementation of our system was carried out through a series of phases, This phases are as follows.

Phase 1: Accessing the current location through GPS and keeping the track of location changes:

Android devices allow determining the current Geolocation. This can be done via a GPS (Global Positioning System) module, via cell tower triangulation or via wifi networks. Android contains the android.location package which provides the API to determine the current geo position.

Location Manager:

The Location Manager class provides access to the Android location service. This service allows to access location providers, to register location update listeners and proximity alerts and more.

Location Provider:

The Location Provider class is the super class of the different location providers which deliver the information about the current location. This information is stored in the Location class. The Android device might have several locations Provider available and you can select which one you want to use.

Various Permissions we need to get in order to use GPS system in android application.

Add the following permissions to your application in your AndroidManifest.xml file
- INTERNET
- ACCESS_FINE_LOCATION
- ACCESS_COARSE_LOCATION

Phase 2: Getting Google Maps on application and enable pin-pointing on maps:

As per the requirements of our application we wish to know the latitude and longitude of a location corresponding to the position on the screen that user have just touched. Knowing this information is very useful as you can find out the address of a location.
Following code shows the function for onTouchEvent on the map:

```
Class MapOverlay extends
com.google.android.maps.Overlay
{
@Override
public boolean draw(Canvas canvas, MapView mapView,
boolean shadow, long when)
{
  //..
}
@Override
public boolean on TouchEvent(MotionEvent event,
MapView mapView)
{
if (event.getAction()= 1) {
GeoPoint p map View.getProjection() fromPixels(
(int) event.getX(),
(int) event.getY());
Toast.makeText(getBaseContext(),
p.getlatitude E6()/1E6+","+
p.getlongitude E6()/1E6,
Toast.LENGTH SHORT).show();
}
return false;
```

Phase 3: Enabling or disabling profile, Bluetooth, wifi settings and send SMS and notification:

In this phase we have implemented the code for enabling and disabling various profile related settings such as change media volume, alarm volume, ringtone volume, change ringtone, silent mode on/off, vibrate on/off.

For toggling this profile related settings we have used Audio Manager class in android which provides all volume related services.

Audio Manager:

Audio Manager provides access to volume and ringer mode control. We   used Context.getSystemService(Context.AUDIO_SERVICE) to get an instance of this class.

Various functions of Audio Manager used in the code are as follows:

public int getRingerMode():

Returns the current ringtone mode, one of RINGER_MODE_NORMAL, RINGER_MODE_SILENT, or RINGER_MODE_VIBRATE.

public void setRingerMode(int ringerMode):

Sets the ringer mode. Silent mode will mute the volume and will not vibrate. Vibrate mode will mute the volume and vibrate. Normal mode will be audible and may vibrate according to user settings.

It takes parameter as the ringer mode, one of RINGER_MODE_NORMAL, RINGER_MODE_SILENT, or RINGER_MODE_VIBRATE.

public int getVibrateSetting (int vibrateType):

Applications should maintain their own vibrate policy based on current ringer mode that can be queried via getRingerMode(). Returns whether the user's vibrate setting for a vibrate type. This shouldn't be needed by most clients that want to vibrate, instead see should Vibrate(int).

It takes parameter as the type of vibrate. One of VIBRATE_TYPE_NOTIFICATION or VIBRATE_TYPE_RINGER

It returns following:

The vibrate setting, one of VIBRATE_SETTING_ON, VIBRATE_SETTING_OFF or VIBRATE_SETTING_ONLY_SILENT.

public void setVibrateSetting (int vibrateType, int vibrateSetting):

Applications should maintain their own vibrate policy based on current ringer mode that can be queried via getRingerMode().

Sets the setting for when the vibrate type should vibrate. This method should only be used by applications that replace the platform-wide management of audio settings or the main telephony application.

public int getStreamVolume (int streamType):

Returns the current volume index for a particular stream. It takes the parameters as the stream type whose volume index is return

public void setStreamVolume (int streamType, int index, int flags):

Sets the volume index for a particular stream.
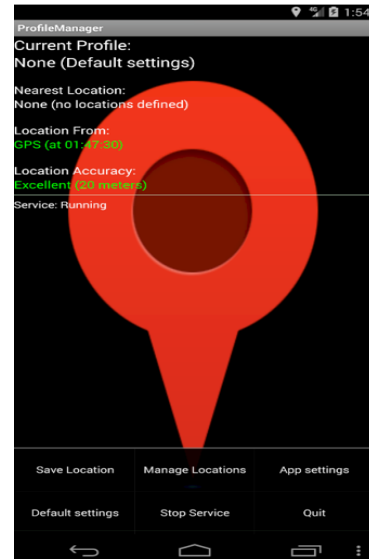
6.2 Screenshot

1. Front Screen with Menu

Fig -4: Front Screen with Menu

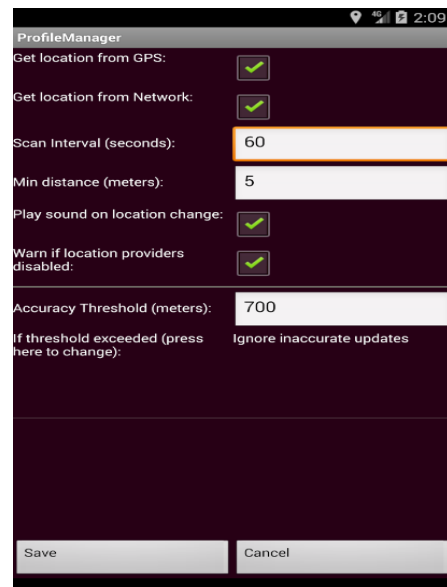2. Application settings opens when clicking on "App Setting" menu option

Fig -5: App Setting

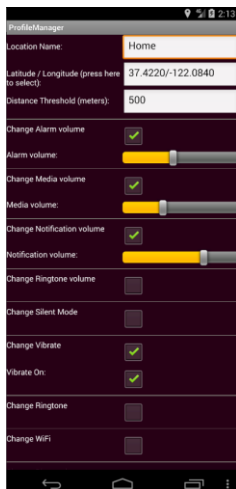3. Save location or edit location

Fig -6: Save/Edit location

4. Press on each location open this menu
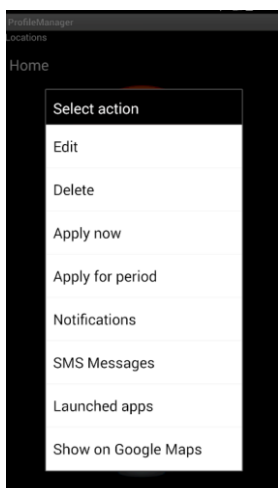

Fig -7: Manage Location

5. Set notification for particular location
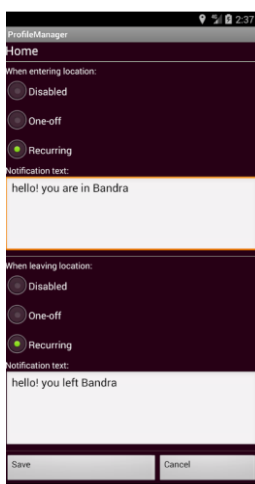

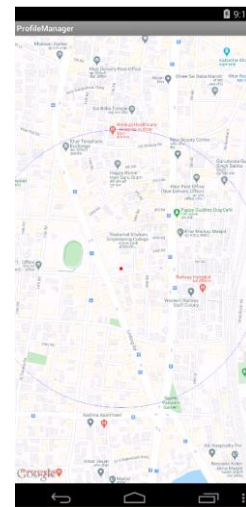**Fig -8:** Manage Notification

6. Pin Pointing Google Map

Fig -9: Pin Pointing Google Map

7. ANALYSIS

Feasibility Analysis of Project

1. Android Platform

Development of Android applications is done in the Java programming Language using the Android SDK which provides the tools and APIS necessary for development [2]. The developer is hence required to be familiar with Java, This is followed by the build process. During the build process, an archive containing application resources is also created automatically by the "apt" utility. The application is packaged as an Android Package, "apk" file. Typically an APK includes all the files related to a single Android application. This file is deployed on an Android device.

2. Java Development Kit (JDK) 1.7

The Java Development Kit (JDK) is a software development environment used for developing Java applications and applets. It includes the Java Runtime Environment (JRE), an interpreter/loader (java), a compiler (javac), an archiver (jar), a documentation generator (javadoc) and other tools needed in Java development. It will be used in for Android app development when supported by other software mentioned below.

3. Eclipse IDE

The Eclipse IDE (Java Developers version) with the Android plugin is not technically essential since everything it does can be done using the command line, but it simplifies so many things we will consider to be essential and hence use it or our project.

4. Android SDK

The Android SDK provide us with the API libraries and developer tools necessary to build, test, and debug apps for Android. Android Developer Tool (ADT) ADT is an Eclipse plugin that provides many features that will allow us to design and build application's user interface.

5. Google Maps

API Google Maps is the most well-known map service on the net offering basic street maps, terrain maps, satellite images and hybrid view, which is a combination of the street maps and satellite images. Setting up such a service and keeping it running as well as making it better constantly is a tough job

8. CONCLUSION

Application also provides with Google maps where user can specify the settings for remote location (ex. By sitting at home user can specify settings for his/her office) by pin-pointing the required location and also can view the location on the map. An android application for tracking user current location and apply the settings which are already specified by user. This settings consists of various profile settings like media volume, silent, vibrate and other settings such as Bluetooth and wifi toggling. Other functions provided by application are sending sms to specified number, notify user and launch the application according to the user location. It also provides additional functionality such applying settings depending on the time of the day or day of the work.

REFERENCES

1) Android Developer Blogspot:- Available from http://android-developers.blogspot.in/ and http://developer.android.com/reference/android/location/package-summary.html
2) Google maps and generating API key:- http://www.vogella.com/articles/AndroidGoogleMaps/article.html
3) Android concepts and queries:- http://stackoverflow.com/questions/1513485/how-do-i-get-the-current-gps-location-programmatically-in-android
4) Android Documentation:- Available from http://developer.android.com/reference/android/
5) Android tutorials:- http://www.youtube.com/results?search_quesry=the+new+boston+android+tutorial