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## Mobile Tracking for Safety and Convenience of the Users

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### ABSTRACT

Parents are very much concerned about their children now a days and are compelled to provide an Android phone to their children. They want to monitor children activities and movements, where they are going and what they are doing. But this process is difficult. To solve this problem a Mobile Tracking System has been designed, using this system parents can track children's location.

An Android application (Mobile Tracking System) needs to install in mobile phone of the children and parents have to register this application with a password. After completing the registration, parents can monitor mobile phone's location of their children through a web site ([www.mobiletrackerbd.com](http://www.mobiletrackerbd.com)) from anywhere.

Parents can track children's mobile phone's location by two methods, one is manually and another is automatically. In manual system children have to click a button of the apps for sending mobile phone's location.

In automatic system parents have to set a time period into the apps and then apps automatically send mobile phone's location periodically as setting time. Parents can track last and previous location of their children's mobile phone.

Keywords: application, gps, security, mobile, location

### INTRODUCTION TO MOBILE TRACKING

"Mobile tracking" tracks the current position of a mobile [cell phone]. To locate the phone, it must be turned on but does not require an active call. A resident of Visakhapatnam has lost not one not two but thirty mobiles. The experience of losing so many cell phones got him thinking and he started experimenting with making devices that could track mobile thieves. N V Satyanaraian, an M Tech and a scientist, finally managed to do something about it.

Mobile phone tracking is a process for identifying the location of a mobile phone, whether stationary or moving. Localization may be affected by a number of technologies, such as the [multilateration](#) of radio signals between (several) [cell towers](#) of the [network](#) and the phone or by simply using [GNSS](#). To locate a mobile phone using multilateration of mobile radio signals, the phone must emit at least the idle signal to contact nearby antenna towers and does not require an active call. The [Global System for Mobile Communications](#) (GSM) is based on the phone's [signal strength](#) to nearby antenna masts. [1] [Mobile positioning](#) may be used for [location-based services](#) that disclose the actual coordinates of a mobile phone. [Telecommunication](#) companies use this to [approximate](#) the location of a mobile phone, and thereby also its user.

#### How mobile tracking works

Most cell phone tracking apps work by accessing global positioning software (GPS) and providing location information in the app or software. Put simply, GPS is a U.S. satellite navigation system that provides three-dimensional location data to receivers through a network of satellites. Although originally used for military purposes, GPS technology is available today for everyone to use.

#### Websites used to track mobiles:

Tracking by is available for uploading this information to a common web site where your "friends and family" can view your last reported position. Newer phones may have built-in [[Global Positioning System|GPS receivers]] which could be used in a similar fashion, but with much higher accuracy.

Some newer phones and technology may also allow the tracking of the phone even when turned off. Also, phones can have secondary batteries installed to allow tracking even if the battery is removed.

Such systems include **Google Maps, as well as, LTE's OTDOA and E- CellID**. There are also hybrid positioning systems which combine several different location approaches to position mobile devices by Wi-Fi, WiMAX, GSM, LTE, IP addresses, and network environment data.



**Fig: 1.3 Website track**

This is known as cell tower triangulation and can provide a fairly accurate location, with a variance of 500-1500 meters. And your phone can also be tracked **using GPS, or a Global Positioning System**, which is built into every model.

#### **Bearer interest**

A phone's location can be uploaded to a common web site where one's "friends and family" can view one's last reported position. Newer phones may have built-in [GPS receivers](#), which could be used in a similar fashion, but with much higher accuracy.

#### **Services offered by the stolen mobile finder:**

yougetitback.com is a lost and found service that mediates between owners and finders of lost or stolen items to arrange their safe return to the rightful owner. When we lost our mobile we simply register your mobile's IMEI number and email address. If your phone is found you can be emailed from our site simply by the IMEI number being entered!

An IMEI number is the unique reference number that is assigned to a mobile at the time of manufacture. To view your mobile's IMEI number, simply key \*#06# into your mobile phone and it will be displayed.

Users need to register at [www.convertz.net](http://www.convertz.net) to download the SMF (stolen mobile finder) application software for a price after which the handset is linked to the firm's server. From then on, every movement is monitored. If and when a user loses the mobile or the user switches subscriber identity module (SIM) cards, an SMS is sent to a pre-programmed nominee number stating the change.

If the user is able to answer questions on SMS mode, it is understood that only the user has switched SIMs. Otherwise, it is understood that the handset has been stolen. Once the user lodges a complaint with Converts Technologies server, outgoing calls from the phone are barred and tracking begins.

Find my Phone or similar is the name given by various manufacturers to software and a service for [smartphones](#), whereby a registered user can find the approximate location of the phone if switched on, over the [Internet](#), or by the phone sending [e-mail](#) or [SMS](#) text messages. This helps to locate lost or stolen phones.

[Apple](#) offers a free service called [Find My](#) for iPhones running [iOS](#). [Microsoft's My Windows Phone](#) once offered a similar service for phones running [Windows Phone](#). Similarly, [Google](#) offers [Find My Device](#) for phones running [Android](#).<sup>[3]</sup>

Some of these applications may have limitations which can be checked before installing, such as only working in some countries, dependencies upon the phone's implementation of [GPS](#), etc.<sup>[4]</sup> Similar paid or free apps are also available for all device platforms.

Similar applications are available for [computers](#). Computers rarely have built-in GPS receivers or [mobile telephone network](#) connectivity, so these methods of location and signaling are not available.

A computer connected to the Internet by a cabled connection gives its location as the location of the [Internet Service Provider](#) (ISP) it is connected to, usually a long distance away and not very useful, although the [IP address](#) may help.

However, a [WiFi](#)-connected computer (typically a [laptop computer](#)) can find its approximate location by checking WiFi networks in range against a [database](#), allowing approximate location to be determined and signaled over the Internet.<sup>[5]</sup>

Fig: 1.6 Find My Device Service

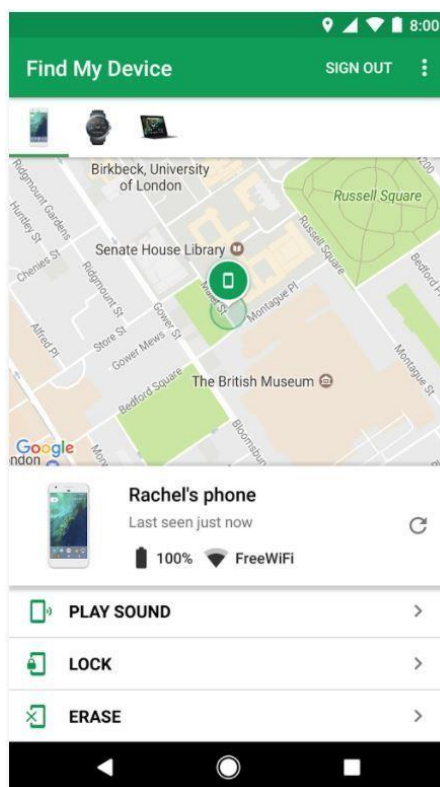


Fig:1.7 Track Log

**Mobile Tracker** has been designed to be as easy to use as possible. With just **one button** and **two clicks** you can record a complete track log. Press the "Start" button: Logging starts right away, the "Start" button turns into the "Stop" button. When you are done recording press the "Stop" button: *Mobile Tracker* automatically saves the track log to the folder "My Track logs" in your documents folder.

**Details included for the track log:**

- number of waypoints
- start and end time
- total time traveled
- total distance traveled (in *m, km, ft* and *mi*)
- direct distance start to end (in *m, km, ft* and *mi*)
- total average speed (in *m/s, km/h, fps* and *mph*)

## 2. LITERATURE SURVEY

The technology of locating is based on measuring power levels and antenna patterns and uses the concept that a mobile phone always communicates wirelessly with one of the closest [base stations](#), so if you know which base station the phone communicates with, you know that the phone is close to the respective base station.

Advanced systems determine the sector in which the mobile phone resides and roughly estimate also the distance to the base station. Further approximation can be done by interpolating signals between adjacent antenna towers.

Qualified services may achieve a precision of down to 50 meters in urban areas where mobile traffic and density of antenna towers (base stations) is sufficiently high. Rural and desolate areas may see miles between base stations and therefore determine locations less precisely.

### Existing System

Ringer A silent phone can be extremely tricky to find. If you're in the habit of losing a silent cell phone, you may wish to invest in a phone sensor, also known as a phone detector. These are tools that, when placed near a cell phone, will actually pick up the call signal and make sounds to indicate that the phone is somewhere within proximity.

If the phone is lost, all you need to do is have someone call you as you walk around with the sensor until the device begins to indicate that a call signal is nearby. When you hear the signal, you then have a basic idea of where to start looking for your cell phone.

#### **Phone Tracking Using IMEI Number:**

Every phone comes with a unique International Mobile Equipment Identify Number which can come in useful to track it in case of loss or theft. This number can be accessed by dialing \*#06# and it is advisable to make a note of it as soon as you purchase your handset.

In case the phone gets stolen, file an FIR with the police and give them its identity number Pass on a copy of the FIR and IMEI number to your service provider who will then be able to track your handset.

With its IMEI number, a device can be traced even if it is being used with another SIM. Once the handset is located, request your service provider to block it from being used till you are able to get your hands on it again

#### **Proposed System**

Using simple SMS commands so you can ring your Android Device even if it is in silent mode and thus locate your device local.

The paper describes mobile phone location tracking system which has the following objectives:

- Develop an Android application which is used to receive GPS location and a web application that can be used to track mobile phone's location.
- This application can track the last location of children's mobile phone.
- Previous locations can be tracked
- Parents can monitor how frequently their children go a particular place.

Advanced systems determine the sector in which the mobile phone resides and roughly estimate also the distance to the base station. Further approximation can be done by interpolating signals between adjacent antenna towers.

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### **3. Software Requirements**

#### **Specification Introduction:**

The Software Requirement Specification document itself states in precise and explicit language those functions and capabilities a software system (i.e., a software application, an e-Commerce Web site, etc.) must provide, as well as states any required constraints by which the system must abide. The SRS contains Functional and Non-functional requirements.

#### **Functional Requirements**

- Be able to recognize the attention word received through SMS.
- Be able to handle the phone state to ring automatically.
- Be able to detect the current location of Android device.
- Be able to retrieve the device, sim card & location details.
- Be able to send retrieved details through SMS.

#### **Software & Hardware Requirements**

1. Hardware Requirements
2. Processor Pentium IV or above. RAM 2 GB RAM or more.
3. Hard Disk Space Minimum of 40 GB
4. GPS enabled Android 4.0 devices.
5. Software Requirements
6. Microsoft Windows (XP or later)
7. The Android SDK starter package
8. Java Development Kit (JDK) 5 or 6
9. Eclipse (Indigo)

## TECHNOLOGY BACKGROUND

### GPS:

The Global Positioning System (GPS) is a utility that provides users with positioning, navigation, and timing services. This system consists of three segments: the space segment, the control segment, and the user segment

The space segment consists of a nominal constellation of 24 operating satellites that transmit one-way signals that give the current GPS satellite position and time. The Control Segment tracks the GPS satellites, uploads updated navigational data, and maintains health and status of the satellite constellation.

The user segment consists of the GPS receiver equipment and uses the transmitted information to calculate the user's three dimensional position and time [6].

### Android:

Android is a mobile operating system which offers a unified approach to application development. Developers need to develop applications using Android and these applications can run on numerous different devices, as long as the devices are powered using Android [6].

### Here Google Maps:

PHP; My SQL: HTML, JavaScript are used.

### Installation:

The installation of Mobile Tracker is as easy as with other third party programs: Extract the content of MobileTracker.zip to a single directory and use ActiveSync® to copy MobileTracker.cab to your mobile device. Launch MobileTracker.cab from File Explorer on your device and follow the on-screen instructions

## 3. SYSTEM ARCHITECTURE

In proposed system architecture there are two diagrams, one is concept diagram and another is block diagram

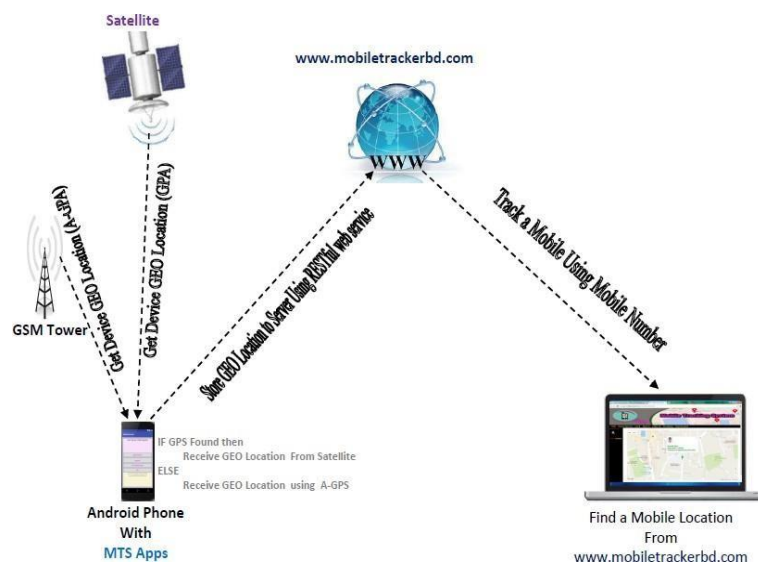


Fig 1: Conceptual Diagram of mobile tracking system

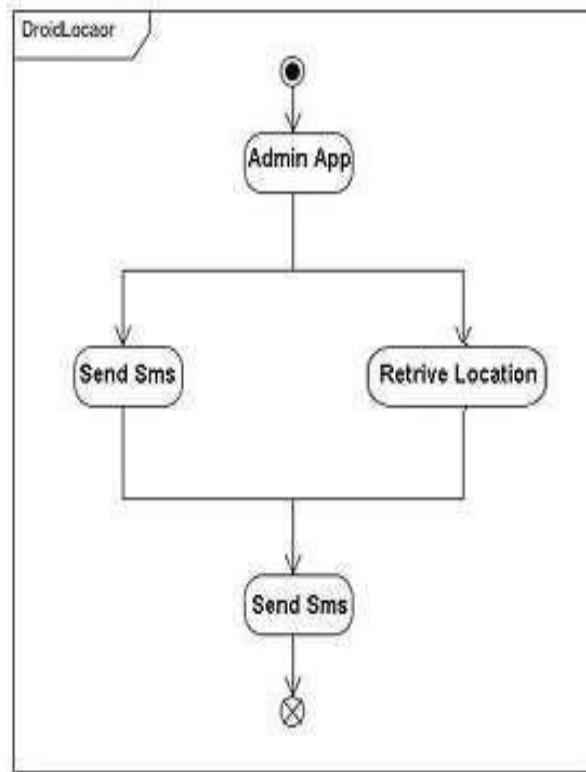


Fig:2.5 User Case Design

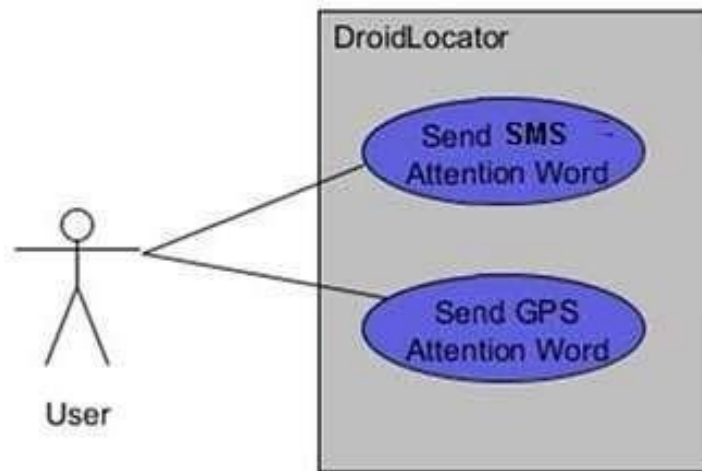


FIG:2. User Interface Design

The software becomes more popular if its user interface is: Attractive, Simple to use, Responsive in short time, Clear to understand and Consistent on all interfacing screens.



FIG:2.7 User interface for Mobile Tracking System.

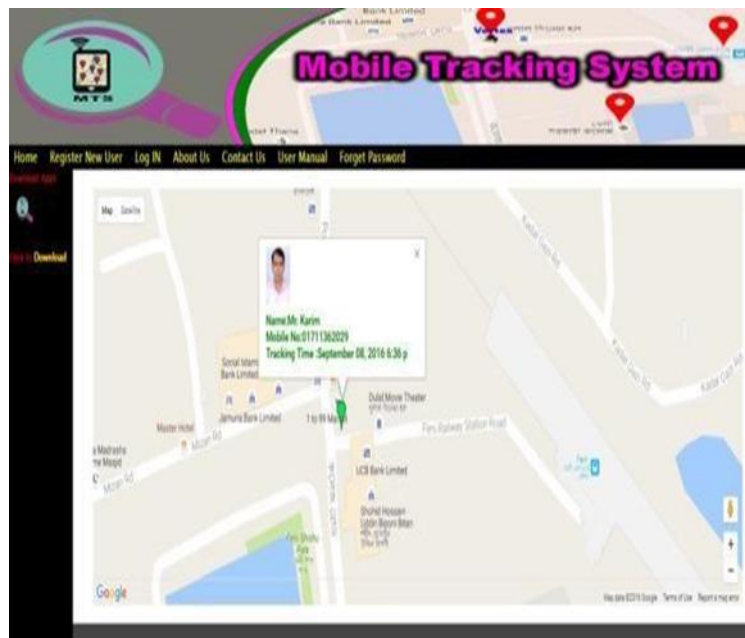


FIG:2.8 User interface for Mobile Tracking System (Tracked Mobile Location)

## Screen Shoot



Fig 2.9: Mobile tracking system first page without registration

This is the front page of mobile application before registration. The user should register this application by clicking the Register button.

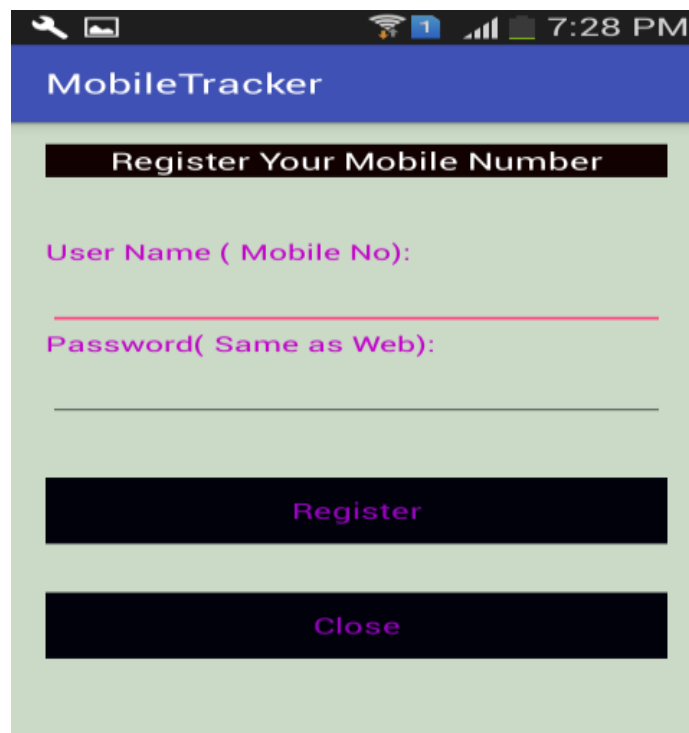
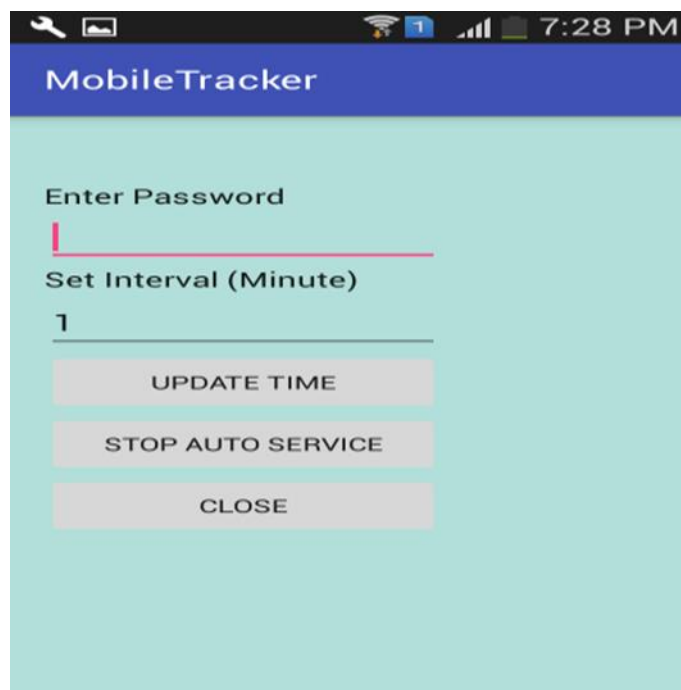


Fig 3.0: Registration page of mobile tracking system



This is the registration page of the mobile application. The user has to type mobile number into the user name text box and type password into the password text box. After entering a user name and password, click register button, then this application will be registered.



**FIG 3.1 :Auto services start and stop page of mobile tracking system**

This is the auto service start and stop page of mobile application. To enable this service user has to type application password and type interval time in minutes and click update time button. Then the auto service will start and application will send mobile location automatically as setting time interval. User can stop the auto service just type password into the password box and click the stop auto service button

**Fig 3.2: Application main page after registration**

This is the main page of mobile application after registration. By two ways users can send mobile phone's location, one is just clicking send position button and another is auto service by set interval time button.

## 4. IMPLEMENTATION OF MODULES

### Implementation

- Implementation is the stage in the project where the theoretical design is turned into a working system. The implementation phase constructs, installs and operated the new system. The most crucial stage in achieving a new successful system is that it works effectively and efficiently.
- Implementation is the process of assuring that the information system is operational and then allowing user to take over its operation for use and evaluation

### IMPLEMENTATION OF MODULES

- **Broadcast receiver that alerts application when each new SMS arrived**

Step 1: START

Step 2: SMS received.

Step 3: Checks attention word.

Step 4: If attention word matches with "Add Client added by admin" then starts Tracing activity and abort broadcasting.

Step 5: If attention word matches with "get location" then starts ringing activity and abort broadcasting.

Step 6: If attention word not matched then allow broadcasting.

Step 7: End



**Enable device ringing and acknowledges the user.**

Step 1: START

Step 2: Checks device it in silent or vibrate mode.

Step 3: If it is in silent or vibrate mode than set device to ringing mode.

Step 4: Enable device ringing.

Step 5: Acknowledges user that device ringing by sending device status information to user.

Step 6: End

**Get location And Acknowledges user**

Step 1: START

Step 2: Checks that internet is available.

Step 3: If internet is available then get location details from Network Provider.

Step 4: If internet is not available then Checks is GPS turned on.

Step 5: If GPS is available then get location details.

Step 6: Send location information to user.

Step 7: End

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## DEPLOYMENT

- Software deployment is all of the activities that make a software system available for use.
- Android application can be deployed multiple ways:
- If you are using eclipse, first you have to create Android virtual device manager and then right click on your project and run as android application.
- You can export your package to your android device And then browse to it to install.

### Future Enhancement

- SMS/Call Filtering.
- Allowing user to specify his own attention words(Database Connectivity).
- Lock device, wipe memory to keep your private data safe.
- Control your Android remotely via a web-based interface through Droid Locator.

## 9. EXPERIMENT & RESULT

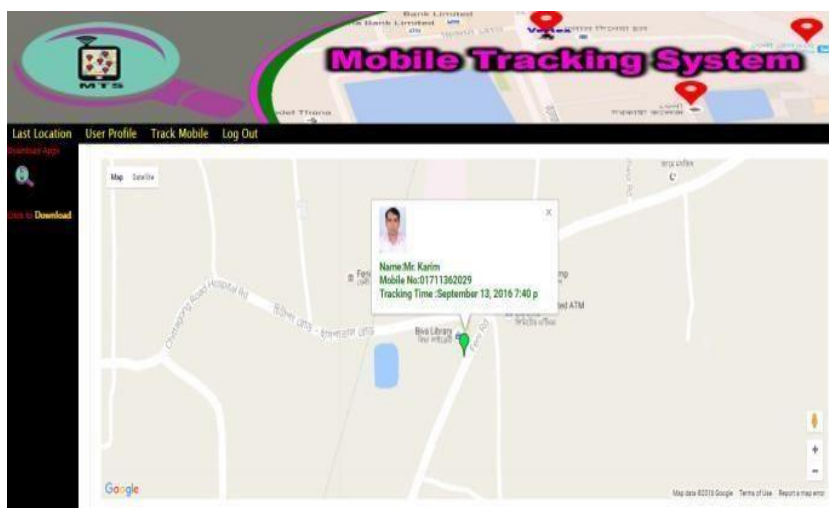
A software wrong output can cause users to lose interest in using the software. Result of the application is shown below:



SCREEN 1: USER AND ADMIN LOGIN PAGE



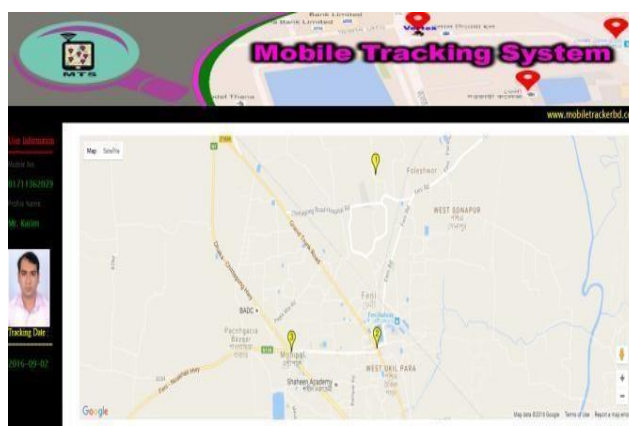
Admin or a registered user can login to this web application by user ID and Password. After clicking login menu login page will display. Admin or user enters their ID and Password and click login button. After a successful login admin will get administrative facilities and registered user will get user facilities. This page a user or admin can login for their details activity



**SCREEN 2: USER LIST PAGE (ADMIN PANEL)**

After successful login to admin the admin click All User List menu, then all registered user list of the web application will display in a new page. This is user list page, only admin can see all registered users of the web application using this page.

**SCREEN 3: LAST LOCATION OF A USER (USER PANEL)**



When registered user click Last Location menu then a google map will display with a marker, the marker indicates the last location of the registered mobile. When user click over the marker, the user profile picture and tracking time will be displayed. This is last location tracking page, a registered user can track last mobile location by this page.

**SCREEN 4: TRACK MOBILE PAGE**

Registered user can track previous location as the date. When a registered user click Track Mobile menu a page will display with drop down list that contain previous dates. When user selects a date and click Show Location button, then a google map will display with multiple marker with number. Multiple markers mean multiple locations. This is mobile tracking page, a registered user can track previous date tracking record by this page.

**SCREEN 5: TRACK MOBILE LOCATIONS**

When user tracks previous location this page will display. This is tracking page, multiple marker display with a serial number for a particular date in this page. User profile information will display left side of the page.

## 10. ADVANTAGES

There are many advantages of Mobile Tracking System.

- User can enjoy this service 24 hours.
- It is user friendly.
- It is secured.

- Unlimited number of users.
- Save multiple dates location record.
- It is free of cost.
- User can send location information automatically after some time interval set by the user.
- User can send location information manually.

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## LIMITATIONS

Some limitations of our research are given below:

- GPS connection problem inside the building area.
- If GPS connection is fail it may show base station's location that can make confusion.
- Android device must have internet connection for sending location data.
- If too many user access in this site at the same time it may be slower.

Same mobile number may be register in different android devices, it will show fake mobile location.

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## CONCLUSION

This Mobile Tracking System has been designed and developed and works properly. It is very efficient, user can easily use this application. Any people can track any mobile location any time using this application. The application is free of cost and does not require any additional device. We have tested in different Android phones and different browsers it works smoothly. We think users

All the features work on SMS basis. Therefore, incoming SMS format plays a vital role. Our android application running in the cell monitors all the incoming messages. If the SMS is meant for the application, it reads the same and performs the expected task.

We have created features, which will enhance the existing cell tracking system. Application stands different from the existing system as its not only the GPS value it makes use of but it works on GSM/ text messaging services which makes application a simple & unique one

Mobile tracking is useful in tracing the lost mobiles, vehicles and also useful in tracing the persons. This mobile tracking system does not require any external hardware.

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