

LEGAL IMPLICATION OF EMPLOYEE AND PHYSICAL-ACTIVITY MONITORING SYSTEM USING ANDROID SMARTPHONE

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ABSTRACT: - The Project is to develop software for the managers allowing them to monitor their employee mobile phone. All calls of incoming and outgoing, texts and multimedia messages can be monitored and interrupted by the manager, who can also view their employee location (through GPS). The managers can also access the information of their employee activity and set up alerts if their employee are going outside of geographical zones, are receiving texts from unapproved numbers or calls from banned persons.

An efficient and improved geographical asset tracking Solution is developed in our project to conserve valuable mobile resources using dynamic adaption of tracking scheme by means of Little's Law techniques. This system uses mobile phones of Android based for the software to be run. The centralized server stores the alerts and the details of incoming call, text and multimedia messages and the timely location update of their employee. Manager can view the details of their employee mobile usage later by login into the centralized server.

Keywords: Android Mobile, Call Logs, SMS Logs, Google Maps, Latitude & Longitude Location.

I. Introduction:-

The many tracking systems has been developed widely for tracking vehicles to display their position on a map, but no applications has been developed so far to track the human mobility. Recently the tracking of human mobility has become a crucial issue. The tracking of human mobility is very useful these days like tracking a criminal came on payroll or for a detective officer going to detect a case or any other utility. The ultimate project objective is to develop a system with cost effective and be used for tracking a human being using a GPS and GPRS equipped mobile phone rather than using a handheld GPS receiver.

The focus of our project highlights to reduce the overall cost of tracking based on GPS system every part of the world across the boundaries. The GSM/GPRS is one of the best and cheapest modes of communication present these days and in future, the satellite based service is available 24X7 everywhere in the whole world. GPS system is used to get the location including details of latitude, longitude and altitude values with the details of timestamp etc. it is a free of cost service available to every individual.

A. ANDROID MOBILE:-

In last 15 years Operating Systems have been developed a lot. Starting from earlier black and white phones till recent smart phones or mini computers, mobile OS has come across an advance range of development. Mobile OS has been evolved from Palm OS in year 1996 to Windows pocket Personal computer in year 2000 then to Blackberry OS and Android especially for the smart phones.

ANDROID is one of the most advanced and widely used mobile OS these days. **Android** makes a bunch of software comprising with operating system of middleware and key applications. Palo Alto of California, U.S. by Andy Rubin, Rich miner, Nick sears and Chris White in year 2003 founded Android Inc. Later in 2005 Google acquired Android Inc. After the Android original release, there have been a number of updates contained in the original version of Android. Android is being the powerful Operating System supports a large number of applications in Smart Phones. The user's life is made more comfortable and advanced by these Android applications.

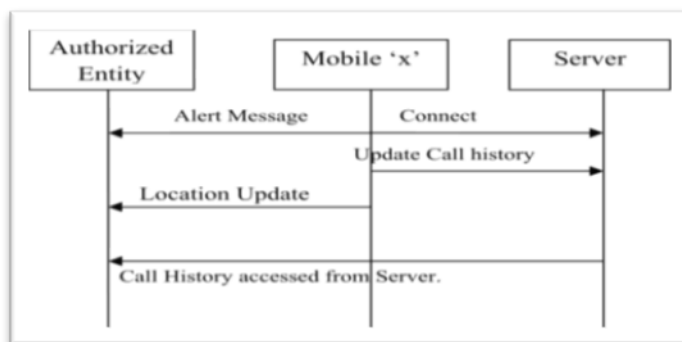
B. GPS:-

The **Global Positioning System (GPS)**, a space-based satellite navigation system. The GPS provides the location and time information in all weather conditions being anywhere on or near the Earth till where there is a sight line unobstructed 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.

C. II. PROPOSED SYSTEM:-

An Employee Monitoring System sends the every incoming/outgoing SMS and calls, GPS location details to the centralized server where the details are being stored. In this project the mobile device's application for tracking phase is developed in Android using the mobile phone GPS. Here the GPS receiver fetches the GPS location using Little's Law and predicts how people spread from one location to another location in a period of time. After the exact location of the user is calculated, a GPRS packet is further created which includes the location details and a unique identifier called International Mobile Equipment Identity (IMEI) number and timestamp details. This System helps Manager to monitor the incoming and outgoing call, text messages of their employee mobile phone even after the employee deletes the call log and SMS details manually.



III. ARCHITECTURE DIAGRAM:-

A. Client Side Design

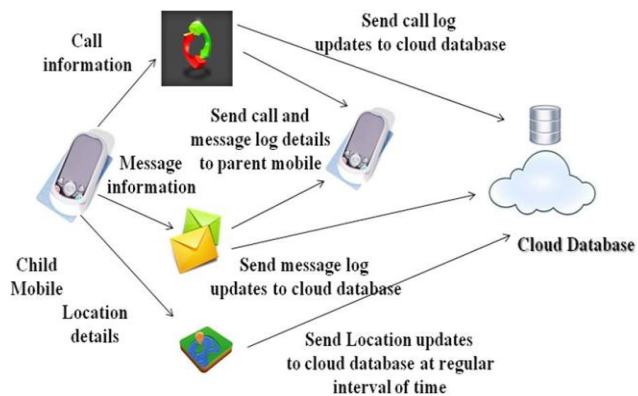
An Android application is developed and installed on the android smart phone. This application uses the mobile phone with Android based facility for the software to be run. The mobile device used in this system for the employee should be an Android based device whereas the managers may prefer any kind of mobile devices, since they are only going to receive alerts regarding employee's activities in Short Message Service format only. If managers want to login to this application, then the manager's mobile device should be an Android based device. It also keeps the profile of each employee in the organization. The reason to choose Android is because of its increasing consumer reach and popularity.

D. Server Side Design

A server is implemented to store, generate and view the details which are sending by the software which is installed in the mobile phone. The server can receive the data from the software and can store the data in an efficient manner. This helps the manager to review the details and can know the performance of the employees in the organisation.

E. Database Design

A database is needed on the server side to store the information of employees in the organisation. The data which is collected by the software is stored in the database for the further access. SQLite is used as a mobile back-end database and MySQL is used as a portal back end database.



IV. LANGUAGE SPECIFICATION

This project can be implemented only in JAVA because Android supports only JAVA for user applications.

JAVA:

Java is Platform Independent. Java is an object-oriented programming language developed initially by James Gosling and colleagues at Sun Microsystems. In this system a strong security model is implemented, in order to prevent the compiled Java programs from the attack of illicitly accessing resources where they execute or on the network. Java interpreter implementation is used in popular World-Wide Web browsers, as well as some World-Wide Web servers and for other systems. They facilitate to display interactive user interfaces, and to script behavior on these systems.

SWING:

Swing is essential to create a graphical user interface (GUI) facilitated Java program. The toolkit of Swing composed the components of rich set for building GUIs and to add interactivity to Java applications. Swing provides all the components expected from a modern toolkit like the list controls, table controls, buttons, tree controls, and labels.

Swing also partially supports a simple component toolkit, like includes rich undo support, highly customizable text package, integrated internationalization and accessibility support. Swing is being a part of the Java Foundation Classes

(JFC).Java Foundation Classes also includes important features used for a GUI program, such as the ability of adding rich graphics functionality and the ability to create a program work in different languages and by users with varying different input devices.

SWING GUI COMPONENTS

The Swing toolkit contains a rich array of components which are from basic components like buttons and check boxes, the rich and complex components, like tables and text. The even deceptively simple components, like text fields, offer sophisticated functionality, such as formatted text input or password field 12 behavior. The file browsers and dialogs are available to suit the most needs, and if not, the possibility of customization is done. If none of the Swing's provided components that are exactly what you required then you can leverage the basic Swing component functionality to create your own.

MYSQL SERVER

The Microsoft SQL Server, is an application used in the computer database creation for the family of Microsoft Windows in the server operating systems. Microsoft SQL Server provides an environment useful in database generations which can be accessed from the Internet, workstations, or any other media's such as a personal digital assistant (PDA). MySQL is a familiar choice of database for the use in web applications, and is also a central component of the popularly used LAMP open source web application software stack. Here LAMP is an acronym for "Linux, Apache, MySQL, Perl/PHP/Python". MySQL working on many different system platforms, including AIX, BSDi, FreeBSD, HP-UX, eComStation, i5/OS, IRIX, Linux, Mac OS X, Microsoft Windows, NetBSD, Novell NetWare, OpenBSD, Open Solaris, OS/2 Warp, QNX, Solaris, Symbian, SunOS, SCO Open Server, SCO UnixWare, Sanos and Tru64 then a port of MySQL to OpenVMS also exists.

MySQL being a primary RDBMS and ships with lack of GUI tools to administer MySQL databases or to manage data contained within the databases. The Users shall also use the included command line tools,[citation needed] or download MySQL front-ends from various parties that have developed desktop software and web applications to manage MySQL databases, build database structures, and work with data records.

V. DESIGN AND IMPLEMENTATION:-

Software is divided into separately named and addressable components called modules that are integrated to satisfy problem requirements. Modularity is the single attribute of software that allows a program to be intellectually

manageable. A Self-configurable New Generation Employee Tracking System application is divided into four different modules. They are

(i) MONITORING AND ALERTING ABOUT CALLS:-

In this module, this system allows Manager to monitor their Employee activities with the help of mobile phone incoming calls and outgoing calls. When there is call for Employee mobile we will receive an SMS alerts from the Employee android based mobile device to the Manager and also send information to server. So that the Manager can take necessary steps to avoid the unnecessary activities happen for the Employee.

(ii) MONITORING AND ALERTING ABOUT SMS:-

In this system, the Manager can monitor their Employee cell phone incoming SMS and outgoing SMS activities by receiving SMS alerts from the Employee android based mobile device. In this it additionally sends the information about the persons who are all sending and receiving SMS and also the time which has been sent and received and the Content which has been transferred among them. Here the Manager can have more clear decision in order to take necessary steps to avoid the Employee unnecessary activities.

(iii) MONITORING AND ALERTING ABOUT CURRENT LOCATION:-

In this module we are specially designed to track the current location of Employee through GPS and Network Provider. So that the Owners/Admins can also monitor the Employee where ever they have traveled and also the current position they are available. It will track the location continuously based on fixed interval algorithm and that information is send it to server.

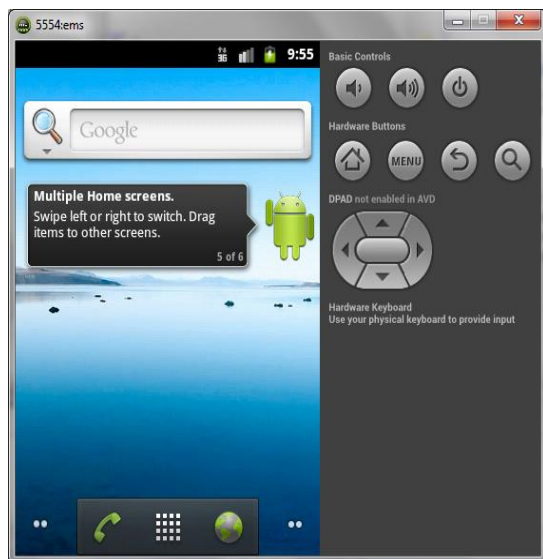
(iv) MAINTAINING THE DETAILS IN THE CENTRALIZED SERVER:-

In this, for our convenience we are maintaining a centralized server in order to store the information about the Employee mobile activities like incoming calls and outgoing calls, incoming SMS and outgoing SMS and also the current location of Employee through GPS and network provider. So that the Owners or Admins can later access the centralized server to know about the information about their Employee monitored activities.

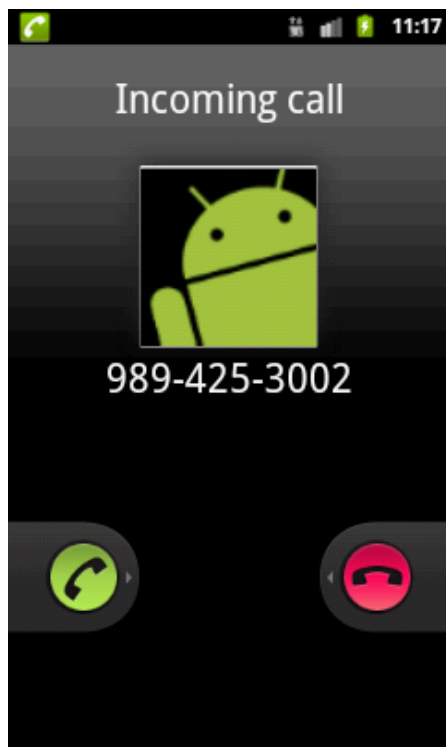
VI. OUTPUT DESIGN:-

Modules are being Subdivided to implement this Employment Monitoring System using Android Smartphones.

(i) Android Emulators:-



(ii) INCOMING CALLS:-



VII. SYSTEM IMPLEMENTATION:-

After the system has been tested, the implementation type or the changeover technique from the existing system to the new system is a step-by-step process. In the system, at first only a module of the system is implemented and checked for suitability and efficiency. When the end-user related to the particular module is satisfied with the performance, the next step of implementation is proceeded with.

The mobile with android operating system is implemented in monitoring system. Monitoring system is really very helpful for the project manager to control and monitor the employee through mobile phones. On using this system, the employee's problem related to the company can be monitored by the project manager and he can also track the employee's current location through the GPS.

In this system the implementation stage involves careful planning, existing system investigation and the other constraints on implementation, designing of methods to win changeover and evaluation of changeover methods. The Implementation process is used to convert a new system design into operation.

After the system is implemented and conversion is complete, a review should be conducted to determine whether the system meeting expectations and where improvements are needed.

A post implementation review measures the system's performance against predefined requirements. It determines how well the system continues to meet performance specification. Unexpected change in the system that affects the user or system performance is a primary factor that prompts system review.

VII. FUTURE ENCHANCEMENTS:-

The overall system cost is reduced by two factors one is, the existing mobile phone system is used and another is using GPRS. In future it has been hoped that the use of this system can eliminate the requirement of first traditional GPS receivers and second costly SMS based tracking systems. Thus this system can be used by any person who has a mobile phone. The future enhancement of this project is that enabling the project manager to trace the employee's day to day activities of mobile phone using various operating systems like

- Symbian
- RIM BlackBerry
- iPhone
- Windows Mobile 6
- Linux
- Palmweb

Finally the performance of the system is acceptable by the users. The Changes can be made, when the Organization insists any new ideas to be implemented on the system.

VIII. CONCLUSION:-

The advantage of this system use can avoid the unnecessary things happened for the Employee who are having mobile phones and this is promoted by monitoring their mobile phone usage and also by tracking their current location through the GPS. We have used available resource i.e. our mobile phone which is any usual Android based mobile phone which has GPS and GPRS facility. By using free Google API we have drastically reduced the cost of the services. Hence this system provides a low cost tracking system for humans by using the GPRS, GPS on the GSM network. Thus finally the combination of both the technologies i.e. GPS and GPRS provides a constant, continuous and real time human tracking system.

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