Smart Ledger: Field Operative Tracking

Pratik Rastogi[1], Prashant Jawla[2], Aniruddh Suri[3], Ms. Rohini Jadhav[4]
[1,2,3] *Student, Bharati Vidyapeeth (Deemed to be) University College of Engineering, Pune*
[4]*Asst. Prof, Bharati Vidyapeeth (Deemed to be) University College of Engineering, Pune*

***Abstract*- Use of Smartphone is increasing day by day and is very effective tools for increasing computational power and security along with search and rescue. The purpose of this project is to create Salesperson Tracking System. All the activities of the Salespersons will be monitored using Salesperson Tracking System based on Android OS. This system is very useful for managers to track their salespersons through mobile phones. The project consists of three parts. The first part consists of a mobile device which has an embedded GPS and wireless Internet connection to transmit its current location. The second part is a webserver that will receive the data, parse it and store it for access over the Internet. The third component is the salesperson interface that will allow others to visually see where the handheld GPS device is and has been. To view the location of the salesman, one could use any device that can connect to the Internet such as desktop computer, cell phone or laptop. Scheduling information and time off requests are often considered part of personnel training; as this information will enable managers know when salespersons are expected to actually be in the office or other work areas. It will be implemented using Android Studio. The developed system was able to increase productivity, reduction of cost and instant access to salesman attendance record.**

I. INTRODUCTION

Android is a software stack for mobile devices that includes an operating system, middleware and key applications. Android is a software platform and operating system for mobile devices based on the Linux operating system and developed by Google and the Open Handset Alliance. It allows developers to write managed code in a Java-like language that utilizes Google-developed Java libraries, but does not support programs developed in native code. The unveiling of the Android platform on 5 November 2007 was announced with the founding of the Open Handset Alliance, a consortium of 34 hardware, software and telecom companies devoted to advancing open standards for mobile devices. When released in 2008, most of the Android platform will be made available under the Apache free-software and open-source license. Application Framework is used to write applications for Android. Unlike other embedded mobile environments, Android applications are all equal, for instance, an applications which come with the phone are no different than those that any developer writes. The framework is supported by numerous open source libraries such as openSSL, SQLite and libc. It is also supported by the Android core libraries. From the point of security, the frame work is based on UNIX file system permissions that assure applications have only those abilities that mobile phone owner gave them at install time. Virtual Machine is extremely low-memory based virtual machine, which was designed especially for Android to run on embedded systems and work well in low power situations. It is also tuned to the CPU attributes. The Dalvik VM creates a special file format (.DEX) that is created through build time post processing. Conversion between Java classes and DEX format is done by included dx tool. Smart mobile devices are the fastest growing computing platforms with 1.6 billion mobile device users in 2013. This rap id development and growth of smart phones in consumer market over the last few years has alarmed the platform that is utilized for social business, entertainment, gaming, productivity marketing using software applications involving global positioning sensors (GPS), and wireless connectivity, photo/video capabilities, built in web browsers, voice recognition and various other native capabilities of the smart phone. These features present in mobile devices present new challenges and requirements to application developers that are not found traditional mobile apps. SALESMAN APP allows a salesman to use a mobile device to maintain a track of his targets, products and goals. The software being used for development is IBM Work light which is a plug-into the Eclipse IDE. It provides

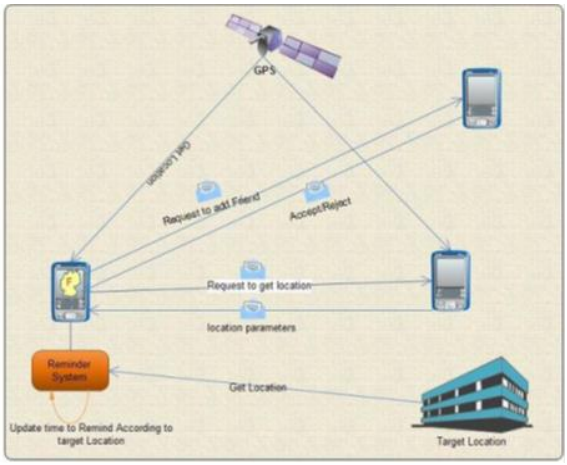
an open, comprehensive and advance mobile application platform to build, run and manage mobile applications. IJSER the project is being manage do entire product range offered by the company. It will Web sphere Application Server (WAS) Liberty Profile .The objective is to save the salesman's time that he uses to report to the office before and after going to the field, this is achieved by providing all the required data to the salesman on his smart phone before he heads to the field thus he then only needs to travel between his home and field thereby minimizing the reporting time to the office and increasing the efficiency. A synchronize button is provided to sync the data with the server providing new appointments to the salesman on daily basis and updating offers on products etc. GPS enables the manager of the salesman to easily monitor his motion.

II. RELATED WORK

Several techniques and methods have been carried out effectively to monitor employee attendance. Lawson et al. proposed a cost-effective computer based embedded attendance management system by which authority electrically monitors the attendance for verification using an improvised electronic card. These cards contain necessary information of an individual. These are inserted in an electronic machine, which will record the time and other information to a server system. Password based authentication and verification of attendance monitoring system of any individuals has also been carried out in the literature. A system that applies user id and password of a person for authentication was designed and implemented by Cheng et al. However, an issue with these electronic cards or password based system allows for imposture since cards or passwords can be shared or someone can ask another person to insert his/her card or password. This problem can be addressed by using biometric recognition system which includes finger print or iris recognition. A system was proposed and implemented by authors fingerprints to identify and calculate the attendance and generate the reports after a fixed time duration. Individuals simply put their fingerprints on the fingerprint reader which scans the finger print and verifies that person. M.Smaili et al solved the problem by proposing a wireless attendance management system where iris of an individual is used for authentication. It is also like fingerprint where no two people can have the same eyes. A scanner will scan the eyes and automatically log the person in. Unlike fingerprint, iris is more preserved from the external environment. However, both the fingerprint and iris recognition based approach needs some extra devices or scanner, which can be connected to the server computation system. In our work, we addressed the problem utilizing smartphones internet connectivity for monitoring the presence or attendance of an individual. Smartphone based monitoring system reduces the surplus cost of additional scanning device because now a day almost each employee possesses a smartphone of his own. An area is fixed for every employee when an employee enters or exits that area, that time stamp is saved and the time duration of any particular employee residing within its area is calculated by the system.

III. PROPOSED SYSTEM

We would like to introduce a mobile-based tracking application to track salesperson and to provide the real-time reporting and task allocation & completion status. We highly recommend this application and believe that it will be a valuable addition to our company.



Pictorial representation of proposed system

Product Key Features:

- GPS based real-time location tracking with total distance covered in KM(S) and route is taken.
- Login & Logout timings of the field executives in order to maintain their attendance record.

- Real-Time Task allocation, updating and report generation.
- Tracking the effectiveness and productivity of the salesperson.
- Real-Time report generation

III.I. SOFTWARE MODULES

Software modules to be used in Android application can be better described in form of different activities used. An Activity is a library entity, which checks the response of a layout to the salesperson behaviour. The behaviour or activity is processed through a class file and an associated layout. Multiple activities are to be used here to handle different functional requirements:

A. About App Module

Show welcome information to the salesperson. Next is authentication screen.

B. Authenticate Salesperson Module

For first time salesperson, it first registers the salesperson onto the device database.

Once registered, for normal salesperson, it checks login ID and password and authenticates the same against those stored internally.

On proper authentication, the salesperson is taken to the application menu.

C. Custom Pin Module

Describes the behaviour of the pinpoint, which would be used to point to any arbitrary location salesperson touches on the screen. Initializes the pinpoint image as a Green pointer with 'G' inscribed.

Any pinpoint would be added as an overlay on the main MapView.

D. Friend Pin Module

Describes the behaviour of the pinpoint, which would be used to point to the salesperson whose location was retrieved from the server.

Initializes the pinpoint image as a Brown pointer with 'U' inscribed.

Any pinpoint would be added as an overlay on the main MapView.

E. Home Pin Module

Describes the behaviour of the pinpoint which would be used to point to the device location or own location on the MapView.

Initializes the pinpoint image as a Blue pointer with 'A' inscribed.

Any pinpoint would be added as an overlay on the main MapView.

F. JSON Parser Module

Important class used to define the behaviour of the entity, which would handle the transaction with remote server using network connection Data is formatted as Java Script Object Notation (JSON) objects.

The method getServerResponse(url,method,params) returns a JSON object.

If the method is "POST", then an Http Client is used to simply send instructions or data contained in "params" to the remote server designated by "url". The response received contains no appreciable data apart from success or failure execution information when this connection method is used.

If the method is "GET", then an Http Client is used to simply send information contained in "params" to the remote server designated by "url" and the response is received from the server containing required data when this connection method is used.

The response received is built to strings and encoded into JSON format to be parsed latter by other object to retrieve information.

G. Maps Main Module

Initializes the MapView that is the primary view being used in our application.

The MapView implements the Google APIs for maps.

Implements toggling between Street View & Satellite View for Maps.

Implements addition of compass, controller to animate to location and zoom in/out & extraction of the best Criteria for selection of Provider.

Initializes home location and recurring refreshing of the same.

Implement extraction of the address from the particular coordinates and can place a pinpoint at that particular position & removal of all pinpoints.

Implement AsyncTasks for (execution on a separate thread so as not to overload the main thread) getting the JSON encoded location of salesperson though his/her UID, to create the salesperson in the remote database if the app is being used for the first time &to

delete the same salesperson data in the remote database.

H. Update Service Module

Implements a background service which periodically refreshes our location in the remote database against our UID.

IV. SYSTEM REQUIREMENTS

As the project is based on usage of two devices, we have divided our project requirements in two parts. These are summarized in the following table.

<table>
<tr><td>Devices</td><td colspan="2">A personal computer</td><td>Android Virtual Device</td></tr>
<tr><td rowspan="3">Hardware requirements</td><td>Processor</td><td>Pentium IV or higher</td><td rowspan="4">Android Virtual Device can be configured with Eclipse IDE. Need to have Android OS Google API version 2.2 or higher support.</td></tr>
<tr><td>RAM</td><td>128 MB or higher</td></tr>
<tr><td>Disk space</td><td>128 MB</td></tr>
<tr><td>Software requirements</td><td>Operating system</td><td>Windows – XP, Windows – 7, Linux or any other OS</td></tr>
</table>

V. CONCLUSION

As the dedicated GPS devices are costly, we have chosen android mobile phone as GPS device. Because all the android mobile phones have this built-in feature. GPS device will find out the current location from satellite. Depending on certain condition, we will find the location again. Might after certain distance of location change we will count the location again. We will plot this location to map. At the same time, we will connect with an external web server to send this information there. The web server will store the visiting path as a summation of some co-coordinating points. Actually, the web server is a restricted area. Therefore, we will have to use salesperson name and password to login that area. We can see the visiting path from the desktop or any other portable device. Like other systems, it is also not free from drawbacks. It will need the GPS service on from the time we want to track. It will mostly use the battery power of the mobile phone. For this reason, our mobile phone can be automatically switched off for lack of power. We need to depend on Internet connection to store the information to the web server. If there is some problem with Internet connection or lack of necessary bandwidth, we may not be able to send the data correctly.

REFERENCES

[1] PHP: The Complete Reference Steven McGraw Hill Professional, 2008.
[2] Web Technologies: HTML, Java script, PHP, Java, JSP, XML, and AJAX, Black book, Kogent Learning Solutions Inc.
[3] PHP Reference: Beginner to Intermediate PHP5, Mario Lurig, 2008.
[4] PHP & MySQL all in one desk reference for dummies, Wiley publishing, Inc.
[5] MySQL: The Complete Reference, Vikram Vaswani McGraw Hill Professional, 2010.