T. R.

KAHRAMANMARAŞ SÜTÇÜ İMAM UNIVERSITY

GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES

OFF-SITE MOBILE TEAM ACTIVITY MANAGEMENT VIA MOBILE LOCATION-BASED TECHNOLOGIES

IDREES M.H. RAOUF AL SALEEM AGHA

MASTER'S THESIS

DEPARTMENT OF BIOENGINEERING AND SCIENCES

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A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Bioengineering and Sciences

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Doç. Dr. Ibrahim Taner OKUMUŞ (Supervisor) …….

Department of Bioengineering and Sciences

Kahramanmaraş Sütçü İmam University

Prof.Dr. Abdulkadir YILDIZ (Member) .....…….....

Department of Bioengineering and Sciences

Kahramanmaraş Sütçü İmam University

Doç.Dr. Muhammet Fatih HASOĞLU (Member) …….

Computer Engineering Department

Hasan Kalyoncu University

I approve that the above signatures related to the members.

Assoc. Prof. Dr. Mustafa ŞEKKELI …….

Director of Graduate School

KahramanmaraşSütçü İmam University

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MOBIL KONUM TABANLI TEKNOLOJILERLE KURUM-DIŞI MOBIL TAKIM FAALIYET YÖNETIMI
(YÜKSEK LİSANS TEZİ)

IDREES M.H. RAOUF AL SALEEM AGHA

ÖZET

Bu tezde mobil takım faaliyetleri yönetim sistemi tasarımı ve gerçekleştirmesi çalışılmıştır. Geliştirilen uygulama günlük hayatta kurumların ve kişilerin yaşadığı sorunlara Pratik çözümler üretmek için akıllı telefonlarda mevcut olan GPS gibi gelişmiş özellikleri kullanabilecek şekilde tasarlanmıştır. Mevcut çalışma, şirket dışında sahada görev yapan ve yapacakları görevle ilgili gelişmeler ve görevin tamamlanması ile ilgili raporlar hazırlaması gerekn çalışanların konumlarının tespiti ve koordinatlarının takip edilmesi için verimli bir çözüm üretmeyi hedeflemektedir. Sahada personeli olan kurumlar, personelin yapacağı işin planlandığı şekilde tamamlandığını ve personelin sahadaki konumunu takip etmekte zoruluklar yaşamaktadır. İşlerin planlandığı şekilde tamamlanmaması kaynak kaybına sebep olmaktadır.

Bu sorunu çözmek için bir Android uygulaması ve sunucu uygulaması geliştirilmiştir. Çalışanların akıllı telefonlarına yüklenecek olan Android uygulaması, çalışanların faaliyetleri ile ilgili raporlarını yazabilecekleri ve raporlarına fotoğraf ekleyebilecekleri kolar kullanılabilir bir arayüz sunar. Uygulama aynı zamanda her rapora GPS kullanımı ile kullanıcının coğrafi konumunu eklemekte ve tüm bilgileri koordinatlarla beraber sunucuya göndermektedir. Sunucuda çalışan web uygulaması şirket yöneticisi tarafından kullanılmakta ve tüm çalışanların rapolarını merkezi bir veritabanına bağlı uygulama sayesinde gözlemleyebilmektedir. Sunucu uygulamasıyla yöneticiler takım faaliyetlerini gözetleyebilmekte ve planlama yapabilmektedir.

Anahtar kelimeler: Mobil Uygulamalar, GPS, Android Uygulamaları, konum tabanlı sistem, akıllı telefon uygulamaları,

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Danışman: Doç.Dr. İbrahim Taner OKUMUŞ
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OFF-SITE MOBILE TEAM ACTIVITY MANAGEMENT VIA MOBILE LOCATION-BASED TECHNOLOGIES
(M.SC. THESIS)

IDREES M.H. RAOUF AL SALEEM AGHA

ABSTRACT

This thesis studies the design and implementation of a mobile team activity management system. The application is designed to use the advanced features available on smart phones such as mobility, mobility sensors and GPS that are available on the smart phones to offer practical solutions for many problems faced by companies, firms and individuals. The present research is an attempt to efficiently solve the problem of determining the location and tracking the coordinates of mobile employees who are required to perform tasks outside their companies/firms and to deliver reports about the progress and completion of their tasks. In other words, the companies that work in such a way face a problem with their scales people regarding the credibility of their assumptions whether the job is done as planned, as well as the difficulty in tracking the location of employees and verifying the completion of the tasks. The failure in accomplishing the tasks correctly leads to a loss in resources and funds of the companies.

To solve the problem, an android application and a server application is developed. The android app which is installed on the employee's smart phone offers an easy-to-use interface through which the employee can write report about his/her activities and tasks status and add pictures to the report. Also the application adds the geographical location of the employee to every task via the use of GPS, and sends the full information to the main server along with the coordinates. The web portal that the server offers can be used by the manager of the company/ firm to monitor all the reports of the sales of people through a central database connected to the application. Through the server application managers can monitor and plan team activities.

Key words: Mobile Applications, GPS, Android Applications, location Based System, Smart phone Applications.

Kahramanmaraş Sütçü İmam University

Graduate School of Natural and Applied Sciences

Department of Bioengineering and Sciences, August, 2016

Supervisor: Assoc.Prof. Ibrahim Taner OKUMUS

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SYMBOLS AND ABBREVIATIONS

APL: Application Programming Interface

GPS: Geographical Position System

LBS: Location Based System

LP: Local Positioning

OS: Operating System

PC: Personal Computer

PHP: Personal Home Page

S.M.S: Short Message Service

SQL: Structure Query Language

OGS: Open Geospatial Consortium

EO: Earth-Orientation

WLAN: Wireless Local Area Network

RFID: Radio Frequency Identification

IrDA: Infrared

RDMS: Relational Database Management System

AR: Android Runtime

DalvikVM: Dalvik virtual machine

INTRODUCTION

1.1 General

Cell phone's evolution caused from wireless network ubiquitous trend toward component miniaturization; moreover, other applications host well be enhanced according to more telephony devices to be powerful mobile calculating platforms. Today clever mobile phones are capable of steaming bandwidth, user inter face, Internet content, video camera and still, touch screen based, accelerometers and transceivers of Bluetooth due to arming these mobiles with devices such as Wi-Fi, 3G wireless radios and GPS sensor [1, 2].

The chief implementation's environs for applications on the mobile phone will be developed according to the operating system of mobile. Furthermore, equivalent to programs on a PC, the increasing overall purpose calculating abilities of phone devices caused to install and downloading the apps on the mobile phones.

Collective with their increasing popularity and adoption rate [3], it is expected that the hand-held mobile phones will get to be the next PC [4]. The technology trends have been convincing mobile applications and qualified resourceful thrilling to become widely available, from gaming through multimedia to social network [5].

Hand-in hand with increasing of the raw mobile phone calculating, various middleware/ OS platforms allow developers to take utilities of the computing resources to produce feature-rich implementations that provide the compelling user interface and functional. Moreover, a wide selection of proprietorship and open-source mobile phone OS platforms exists. The most prominent ones being: Apples IOS, Google's android, Symbian from Symbian foundation, RIM Blackberries OS, and Microsoft's windows mobile.

Google's android OS, the widely used open Source platform nowadays is based on the Linux-kernel [3] and Java development environment [6]. A growing number of cell phone manufactures and vendors such as Motorola, Samsung and HTC have adopted android as the platform of choice for their products. For example, in June (2010), Google announced that 68000 apps are now available on the android market and the number hit the 100000 mark before the end of July. According to the reported statistics, the numbers of apps downloaded to android enabled mobile handsets reached 1 billion as of July's 2010[1].

1.1.1 Mobility and location sensing:

The ability to sense location is one aspect where a mobile device distinguishes itself from a traditional PC in terms of benefits and utilities. Unlike a PC, a mobile device can be easily carried by the user and conveniently can be accessed for location based applications such as looking up driving directions, maps, etc. [1].

The importance and usefulness of location-sensing have already been well recognized and accepted with the popularities of GPS based navigation systems [2]. The main factor and portability of a mobile phone make it ideal for such applications.

Most of today's smart-phones have location sensing capabilities built in, since people are most likely to use mobile phones on the go and away from home or office apps that leverage location-based services can add real value to the user and thus provide a good return on investment for mobile device. A number of the elements of location in a way that adds value to the user are popular examples such as:

a) Four square mobile app that allows users to check in at various consumer and vestals outlets such as restaurants, malls, hotels, reward points, etc. [7].

b) Loop, which permits users to trail the situation of their friends on Facebook.

c) Go Walla which allows users to broadcast their location on twitter, share photos of places they visit with [9] their friends, and get localized coupons and offers [10].

1.2 Aim of Study

The aim of the present study is to design and implement a system for tracking and locating mobile team member's activities that needs to work on field. The proposed system aims at implementing a mobile application that exploits the location – based services and GPS technologies embedded in smart phones to track, validate and manage off site team activities and a server application that keeps the records of users and their activities. The proposed system aims to provide smart reporting tools and to attach data to reports for validation and a server application to monitor the mobile reporters.

1.3 Literature Survey

Mohammed Qadeer and Ankar Chandra [2012] proposed a system which provides the user with the current location and sends this location using SMS plus sharing location with friends and family and displays them on maps. The application uses the GPS as a location provider [1].Abhijcet Tekawade and Ravindrashinde, [2013], proposed a system which uses the GPS as a location provider through geographic location for mobile network for locating friends using LBS.The application coding is done in J2me and My SQL database used to update the location information and to track the location [11].

Amit Kushwaha, Vineet Kushwaha, [2011], when the person visiting places ensured that not carry the travel bought into service tall important data on mobile phone, which proposed a system. All instructions must be available in the movable device and as well as in the user's customized formal G.B. Al-Suwaidi and M. J. Zemerly [2009] recommended an implementation of position friends and family utilizing mobile phones with GPS located on the client – server architecture that helps users to discover their family members and to accept alerted when their friends are nearby. The mobile application uses j2ME while the server uses PHP [12].

M. Zahaby and P. Ganjar [2009] reported that the SMS technique utilized to send the GPS coordinate from cell phone to other mobile phones. Additionally, there are two algorithms such as Kalman's filter and velocity, which used as a basis for finding the tracking location. The first coordinates are generated from GPS assisted mobile on Google's map. This position is later sent through an SMS to another member. The latter can after that see the correct location of the sender on his map [13]. In I. Jami M& R.F. Ormondroyd's [2000] reported that the two techniques were described to locate the member or track cellular phones with using digital cellular mobile telephony networks. The previous technique is based on time of swivel (TOA) methods. While, the latter uses the angle of arrival (AOA). Both TOA and AOA methods were inspected for multiparty fading environment [14].

LITERATURE REVIEW

1.4 Technology

The mobile phone technology, provide a media for sharing information and data communication recently through their users (peoples). Furthermore, the mobile technology developed with various application through advanced technology such as network and internet.

Mobile technology, developing a new service through tracking the mobile user's location. In recent chapter, we will discuss and clarify different technical aspect of LBS.

1.5 How to Find a Present Location of a Mobile User

The main concept behind mobile handheld technology, is to offer various valuable applications (services). In the early of 1990, the mobile technology provided the communication infrastructure when the internet service was adopted by the telephone technology [1].

The LBS [2] can be defined as "a group of applications that take advantage from the geographical location's information of a mobile technology with the purpose of providing different services which rely on the relevant information.

The LBS technology provides personalized services in mobile clients (user) according to the client's location. Furthermore, they offer a different new aspect for the (1) designer, (2) mobile-phone service network's operators and (3) service developers that establish a value services: offer the routing of information, controlling the traffic situations and provide the user ability to finding the closest location (shopping mall). Accordingly, different services have been established by LBS for mobile user technology. The following are the main functions of LBS technology [3, 4]:

- Offer controlling and managing different aspects (such as business, services, etc. for instance Hotels, Banks, Hospitals etc.)
- Warning function (for instance receive the notifications of shopping mall sales, also provide ability to receive news concerning traffic jam)

- Offer find friend functions or find out the stolen phone's location.

1.6 How to Find a Present Location of a User Using GPS

Mobile phone (Cell phone) structure basically works on broadcasting radio signals. The mobile phone producers have capabilities to measure and track the mobile phone locations that consume a huge amount of information (sending and receiving from tower). Furthermore, the introduction of establishing the mobile phone GPS technology offer precise information concerning the tracking of mobile phone GPS.

Nowadays, GPS system is widespread used in recent smart phones. The main specification of carrying a GPS system, provide ability to the smart phone to be specified (tracked) their location freely (anywhere and anytime). The specification of tracking GPS smart phone has offer significant value to various fields for instance business, peoples and ect. That helps them to connect with their peers. Basically, smart phone as a technique operate based on two-way radio while sending and receiving signals with the towers.

The efficiency of GPS mainly expands the signal of radio to receive the satellites. As a process, GPS system can be measured as an advanced technology that comfortable with mobile phone precisely. Commonly, GPS have ability to get enough support from GPRS technique and service network provider to managing and controlling the precise location. The main ability of GPS is assisting the mobile phone to get advantage from internet communications or GPRS technique to establish the real contact with their peer (server) for GPS technology. The mentioned procedure basically will be slow if the connection with server established for the first time. The stated technique will not take into the consideration completely for network service provider for mobile phone; we take the consideration of charges for utilizing GPRS only as shown in Figure (2.1). The common disadvantage of the mentioned technique is the servers of GPS are not able to use any of 3 standby satellites aimed for the connection of GPS [4-7].

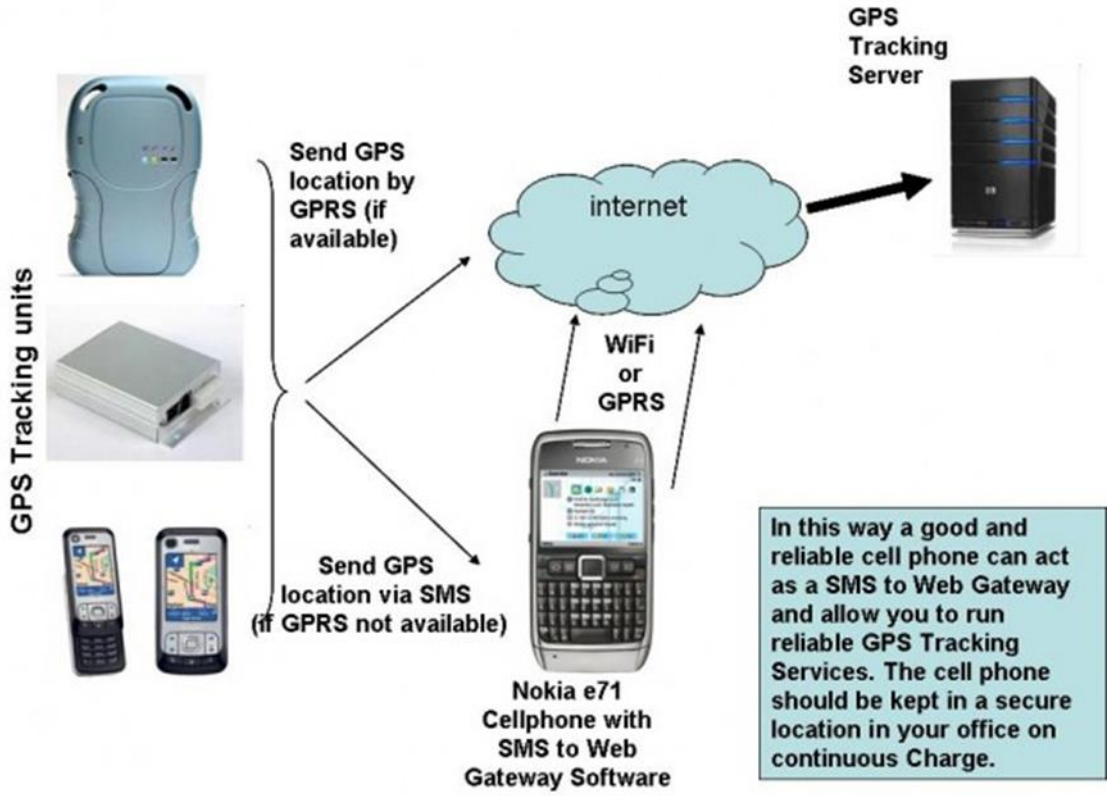


Figure 0.1 The typical GPS system

1.7 Position System of LBS

LBS technique through mobile service (application) is basically depending on the mobile phone's location. Therefore, various LBS's definitions are provided. The LBS services able to reach (connect) with mobile phone devices over mobile network technology, as well as utilization ability to run the mobile phone's location [5]. In past decades, based on OGC service, the LBS defined as "is a wireless IP system that utilizing the geographic information to assist and serve a mobile clients (user), also related application that take advantage from mobile position (location). On one hand, LBS is a technology that provide information accessibility with mobile phone devices over mobile network connection and has ability to develop and using the mobile phone's geographical position [6,9].

On the other hand, LBS comprised of different services to realize a person (user) location or item for instance find and specify the nearest ATM machine or identify people locations such as businessman, friends or employees. However, LBS has comprised of

tracking service such as vehicles or items tracking. Generally, LBS have two significant tasks [7, 10]:

a. Discovering the user position (location).

b. Different service provided by takes advantage from related information.

The following questions below are answered based on the above functions in a sophisticated (new, fast and precise) approach for mobile phone users:

a. Where am I?

b. Where is the nearest?

c. Where is my?

d. How do I get there?

LBS are classified into three different categories:

a. Satellite positioning (SP).

b. Network based positioning (NBP).

c. Local positioning (LP).

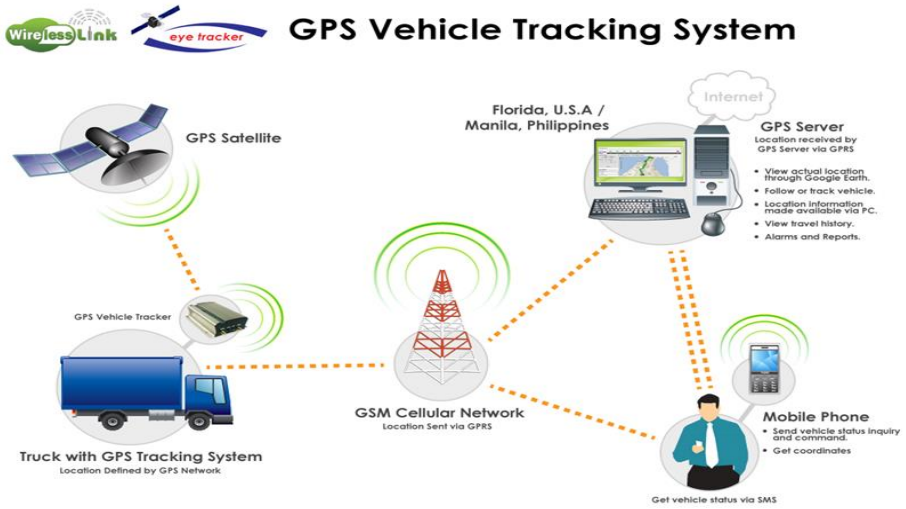


Figure 0.2: The GPS vehicles tracking system

1.7.1 Satellite positioning

SP is a system that basically act as a receiver stations, as well as infrastructure of EO satellites. Accordingly, the terminals measure and calculate the user's position according to

the received information over radio signals from (three or more) satellites. The terminal provides approximately (10-40) M accuracy, furthermore rendering the user independently through mobile phone network that concerned to positioning; additionally provide ability to access to different LBS technique through third service providers. Nowadays, GPS can be measured as a commonly used positioning system that utilized infrastructure-based with various related terminals [19]

1.7.2 Network-based position

Is a system that show the positioning approach where the mobile telecommunication networks are used for providing the mobile terminals position. They have different approaches that standardized and developed in a mobile network functions. However, network – based methods is realized and specified as the coordinates of the known base station and the specified terminal's distance from the main station that able to be measured precisely or at least approximated [20].

1.7.3 Local positioning

LP can be measured as a third classification of LBS. It mentions to show the position that operates in a specified (restricted) area and reliance on a signal transmission for short distance. It covers particularly in indoor environments for LBS such as the satellite of high building for shopping mall (centers), etc., as well as mobile network positioning methods are not clearly appropriate or precise enough. The LP methods can be comprised the positioning methods that basically the WLAN technology, Bluetooth technology, and RFID technology or IrDA technology are specified and utilized [21, 22].

1.8 Classification of LBS

In general, LBS can be categorized into two different services [9]:

1.8.1 Public safety emergency services

The client (user) location can be discovered by the mobile carrier, hence it finds a great use during emergency, as well as it can be used through the emergency / health risk to specify the location of the mobile clients (users).

1.8.2 Consumer service

Smart phones such as IPhone, Blackberry and Android, basically offered different location based applications and services which assist users to access different services based on the user's location. Furthermore, there are two methods to implement LBS [10]:

a. By processing location data in a server and to advancing the generated response to the clients.

b. By finding location data for a mobile device based application where can use it directly.

The location of the device can be retrieved by:

1. Provider network of mobile phone service, the current cell ID is used to locate the base Transceiver station (BTS), and the mobile phone is cooperating with and the location of that BTS. For this purpose, it is the most basic and cheapest method as it uses the radio base station location of that the cell phone is connected to.

2. The GPS uses a constellation of 24 satellites earth orbiting. GPS specify and discover the user's position through calculating differences in the signals time take from different satellites to arrive the receiver. Also, the GPS signals are decoded, accordingly the smart phone must have inbuilt GPS receiver.

1.9 GPS Technology

Since obstacles like trees and buildings may affect the length period of the signal to travel to a tower in GSM method, GPS measurement method is used. It is ordered to determine the location. Additionally, GPS receiver has to determine:

a. At least three satellites location of above.

b. Those satellites where we are in relation.

The receiver then uses trilateration to control and determine the clear cut location. Basically, it draws a domain around each of the three satellites it can locate. Intersect of these three spheres in two points. However, one is in space, besides the other is on the ground. At which our location is intersect to the three sections.

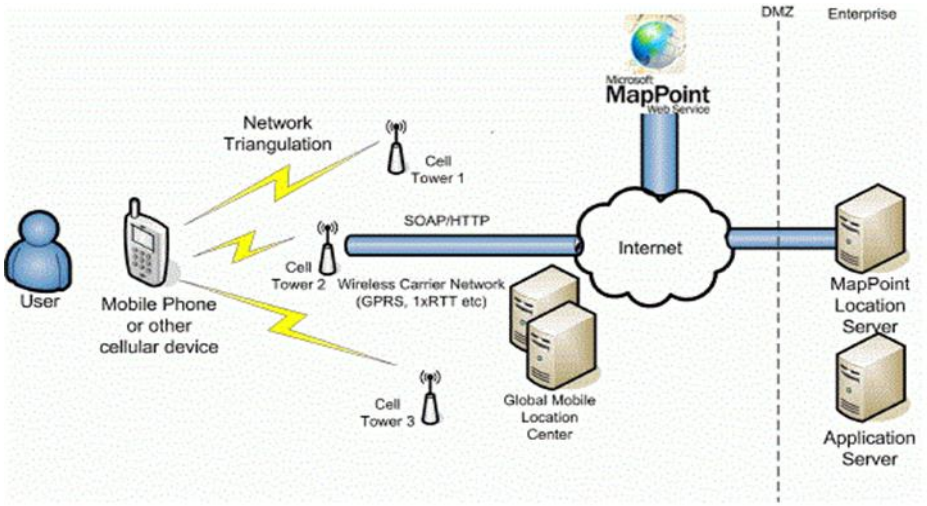


Figure 0.3 The LBS technology

1.10 GPS Accuracy

As a function, the receivers of GPS provide clear cut user's position, it is essential to understand and realize that a little of error or wrong developed and inherent in specified position. As a result, different factors are issued to develop such kind of error for instance satellite clock deflection, atmospheric (climate) conditions, effective noise, and multipath of signal. Furthermore, cause of satellite geometry, basically vertical accuracy is considering as one and a half to three times (less) poorer than horizontal accuracy. Also, the position of GPS should be specified as a box. The official size of the box specified and depends on the GPS accuracy receiver [10, 22].

1.11 Privacy and Location

According to the huge amount of research in location based computing, privacy is placed as an significant issue [11], and the subject is properly specified and addressed in the view of how confidentiality information is preserved secured in the mobile device application. Furthermore, privacy have main concern with stationary application for example web application. Nowadays, different researches concentrating on preserving significant information safe and secure are numerous. Recent research, the identity placed at the core of privacy researches [12]. Similarly, identity has numerous different aspects and we look the user's position to be a clear and detailed characteristic of identity for instance full name of

user and social security number. The main difference among location and most other attributes is continually changes of location and it is relevant frequently to mobile computing.

Recently, different researches studied and published that mainly concentrate and discussed on technology that warranty the user's privacy and security, not many studies really studied and examine the required privacy. Different studies conduct their researches that basically show and explain the same concept behind high privacy is needed and significant to the clients (users), but few recent researches specified and discussed this concept.

1.12 Android Platform Architecture

Android system is designed and considered as open –source software platform created by Google aimed and designed for mobile apps manufacture on devices that forced by Android O.S. Furthermore, the mentioned platform considered as a complete software stack, that present and offers all the middleware requirements to run application's user on mobile phone devices platform such as: OS, device drivers, core libraries on optimized virtual machine, and Java designed and development discussed in the figure below. As a structure, Android stack is a constructed as tiered architecture that mainly structured from 5 principle layers [1].

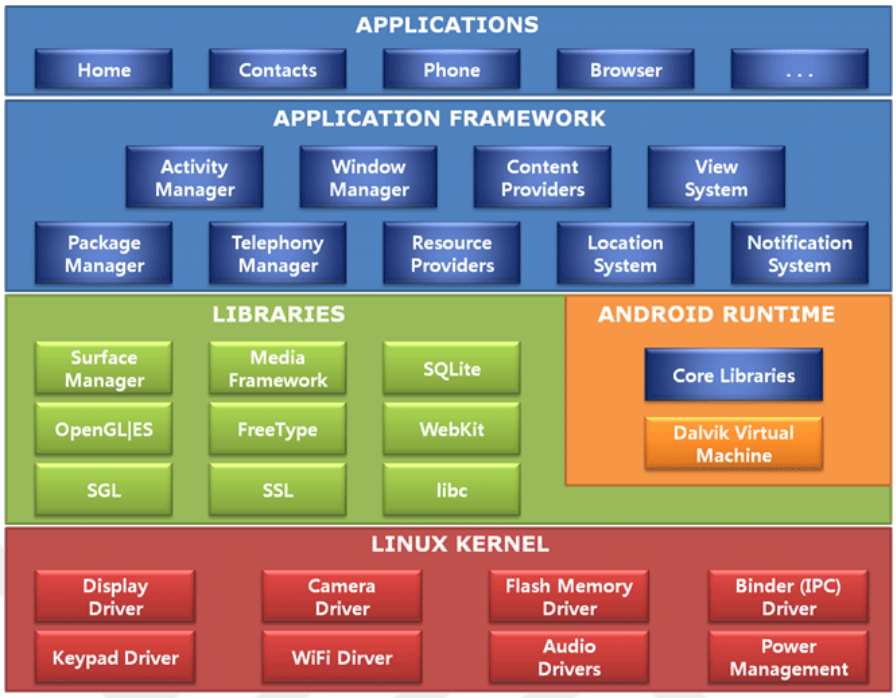


Figure 0.4 The android platform architecture

1.12.1 Kernel

As software, Android is developed based on Linux 2.6 kernel which serves as the hardware abstraction layer. Linux is used since it offers assured and robust, low level system into a largely structure component such as store (memory) and process management, network stack and hardware model and security. OEMs can bring –up Linux on their system and apply drivers running before additional components of the stack loaded [23].

1.12.2 Libraries

On the top of the kernel-layer are the local libraries located and written in (C & C++) that offer a high range Android platform's actual power. The manager's surface is responsible for comprise matching and surface's rendering on the screen through maintainer's windows by utilizing various applications, running on different procedures in tandem, as well as confirming the screen's pixels that show up properly. Unrestricted type is basically utilized for rendering and managing screen's fonts. Basically, open- source SQL's RDMS is utilized for approximately all Android's data storage. It allows to developing database in memory for efficient and effective data storage as well as retrieval data [24].

1.12.3 Android runtime:

On other level, the AR which is created and designed for Java program's running in resource constrained surrounded environments with restricted computational Battery life's power and storage (memory). One of the significant AR's ingredients is the DalvikVM. The DalvikVm is an enhanced byte-code interpreter which aimed to effective and effective implementation of byte code on processors with small-scale utilized in mobile phones. Both java class and JAR files are modified and translated into "dex" file in the build time. For fulfillment on the DalvikVM, the efficiency and effectiveness of DaLvik provide ability to operate each applications on the platform as a separate process in own case of the DaLvikVM. The main components of core libraries offers widely utilized collecting classes, input – output libraries service, and different tools developed and written in Java [25].

1.12.4 Application framework

This layer contains of different number of instruments and APLs that mainly written by programming language (Java) which are utilized and designed by the application's developers. In the bellow, we specify and discuss some basic components of application framework. The activity's manager basically is accountable for their application's management of life cycle t, as well as preserves a common back. Furthermore, stack is utilized to developing and providing navigation through apps running in diverse processes. Also the Java implementation is window's manager that summarize the lower level services that mainly offered by surface's manager which used for managing the windows. As a procedure, the package manager specifies, tracks, organize and manages the locations of their users and offer adequate capability to setup and manage diver's applications on mobile phone platform that generally including those developed and offered with the mobile phone devices. The manager of telephony devices develops and presents the core Java APLs that mainly utilized to fulfilling aimed phone services. A common interface is provided by Content providers that utilized for sharing and delivering data between different applications [26].

1.12.5 Applications

Application layer is located and considered as top-layer in the stack. As a platform, all applications are designed and written in Java program and utilized the similar APLs collection

that developed and created by application framework. Basically, contained those applications that are designed and shipped with the phone such as Dialer, Home, Browsers and Contacts, etc. as well as those designed by the programmer [26].

1.13 Software Used for the Proposed System

In the following paragraphs, we discuss and explain all related software that utilized for the proposed system.

1.13.1 My SQL

My SQL is widely and common utilized open source RDMS. The SQL phases represent largely structured query language. Furthermore, My SQL is prevalent databases choose for web applications usage, as well as is a universal component that used LAMP open source web application software stock. As a development, My SQL can have designed and setup from main source code, but this might be tedious. Accordingly, it is specified and installed usually from a binary package, expect particular customizations are requested and developed on Linux distributions. The management system of package might download and setup my though addition configuration is basically needed to organize and manage security issue and optimization's settings. On one hand, My SQL measured as low-end substitute to powerful database's proprietary, although it has regularly progressed to support and motivate higher-scale requirements as well. On the other hand, is considered as commonly utilized small to medium scale single-server evolution [24].

1.13.2 PHP

PHP is considered as open source universal-purpose server-side scripting language basically designed and provided for web's evolution to create and design dynamic web page. Also measured as one of the advanced developed scripting languages of server-side to establish HTML- Source program as a new and alternative of requesting and receiving process data from external file. The required code is design and construed by a web server and using PHP which develop and produces web page. Furthermore, it has provided to comprise the capability of a command Lin interface, as well as able to utilized graphical applications [25].

PHP serve as input filter from a stream or file that basically including text and / or PHP with developing and produce another data stream. Furthermore, commonly the main output will be offered HTML which designed and developed to provide dynamic web pages. PHP now concentrate on server-side scripting [25].

1.14 Android Operating System

Android mainly defined as Linux based OS and open source system that developed for mobile devices with touch screen specification for instance smart phone devices and tablets. The mentioned open source code (OSC) and permissive authorize permit the designed software to modified easily and managed, arrange and distributed device manufactures, offers wireless technology and support the developers. Android has a third party applications growing, to be designated and specified by mobile phone users either over the Amazon app store application or app store application such as Google play [25].

EXPERIMENTAL WORK

1.15 Developed System

The system can justify and qualify each salesman through checking the number of the sent reports from the salesman on a specific time period and location. The company's manager by using the proposed system can pinpoint the unvisited zones and places. The proposed system provides an active and specific method in proceeding of chore (ground work) for all salesmen. It can process the routine jobs without charges, so it helps reducing effort, number of employees and paper works in more efficient way. The proposed system uses friendly environment, and simple educated users can work on it:

a. Writing and sending reports are done by a simple tool.

b. Unified and fixed formulas are used to write reports for all salesmen.

c. The salesman has the access of sending classified high quality pictures with the report.

A high degree of security is provided in the process of sending reports because they are sent directly from the salesmen to the company's manager without passing through unauthorized people. A direct connection will be made between the manager and the company and daily processes from various places are done without the need of his physical availability. The system provides a tool which facilitates supplying a direct way to increase the number of direct marketing channels. The proposed system increases the ability of the company by saving the time and quality of the work and speeds up the distribution. The proposed system offers the ability of direct marketing as well as it decreases the marketing coasts.

The proposed system is highly flexible in that the user can use different types of sent types through a Samsung camera, drop pox, or other devices. The system provides multi language use including English, French, Chinese, etc. by adding simple changes. A flexible and friendly interfacing for use ris provided to store personal details of the salesmen. The highlighted characteristics of the proposed system are works without geographical limitations in all countries.

By the help of direct communication between the company's manager and the salesman, the manager can take a quick decision in critical issues. The proposed system is unlimited and

can work and respond to small and large companies and can serve a large number of clients. The system has the flexibility to be applied to various kinds of products whether manufacturing, electrical, etc.

1.15.1 About the proposed system design

The application uses the advanced features available on smart phones such as mobility, mobility sensors and GPS that is available on the smart phones to offer practical solutions for many problems the companies, firms and individuals face. The problem that the proposed system tries to solve efficiently is locating and tracking the coordinates of mobile employees who are required to perform tasks outside their company/firm and deliver reports about the progress and completion of their tasks.

The companies that work in such an area face a problem with their scales people regarding the credibility of their assumptions whether the job is done as planned, as well as the difficulty in tracking the location of employees and verifying the completion of the tasks. The failure in a accomplishing the tasks correctly leads to a loss in resources and funds of the companies. Besides, the proposed system is of two main parts:

a. The android app is installed on the employee's smart phone. The application offers an easy-to-use interface through which the employee can enter live feed about his/her activities and tasks status. In turn, the application adds the geographical location of the employee to every task via the use of GPS and sends the full information to the main server along with the coordinates.

b. The web portal that the server's offers can be used by the manager of the company/firm to offer real time information for all the reports of the sales people through a central database connected to the application. The web portal can also locate the employees at any given moment.

The Merits of the Application

1. Verifying the credibility of the employees.
2. Giving detailed knowledge about geographical areas.
3. A unified report layout.
4. Effective central management.
5. Annulment of the e-mail usage.
6. Easiness of writing and delivering reports.

The Proposed System is distinguished from the previous systems by the following:

1. The ability to follow unlimited number of field employees.
2. The ability of the employees to send reports to the company headquarters from their location.
3. The ability of the company to validate the accuracy and authenticity of the sent reports.
4. The ability of documenting and archiving the locations and visits of the employees.
5. The simplicity of reports production.
6. The unification of the style of the reports by using a predesigned template.
7. The easiness of communication between the company headquarter and the field employees.
8. A highly centralized control and monitoring over all employees.

Several real-life applications especially those involving mobile teams and geographically dispersed sites have developed needs for more advanced technology to track and report their activities such as Mobile Sales Teams, Military and Humanitarian Organizations... etc. The 'Mobile Sales Team' will be the case of the present study. Mobile Sales Teams are required to conduct sales sessions at clients' sites and report back to administration. Administrators need to validate the team activity.

Sales Teams generate and submit reports to the administration describing activities done at clients' sites. Sales teams claim that they have been to clients' sites. Sales employees accredit based on their mobile activity. Administration cannot be sure that their sales team has really been to clients' sites without implementing an Android Mobile Application to be used by sales team through which they can generate reports. The Android application uses the built-in GPS technology to embed location data in reports. The administration receives reports generated by the application to validate team location. The application provides a simple UI where users can submit text reports.

The application automatically attaches location data (latitude, longitude pair) to submit reports. Administration receives submitted reports automatically at the back-end. The back-end displays submitted reports as maps on Google Maps. Users also have accounts to be able to track their own reports at the back-end.

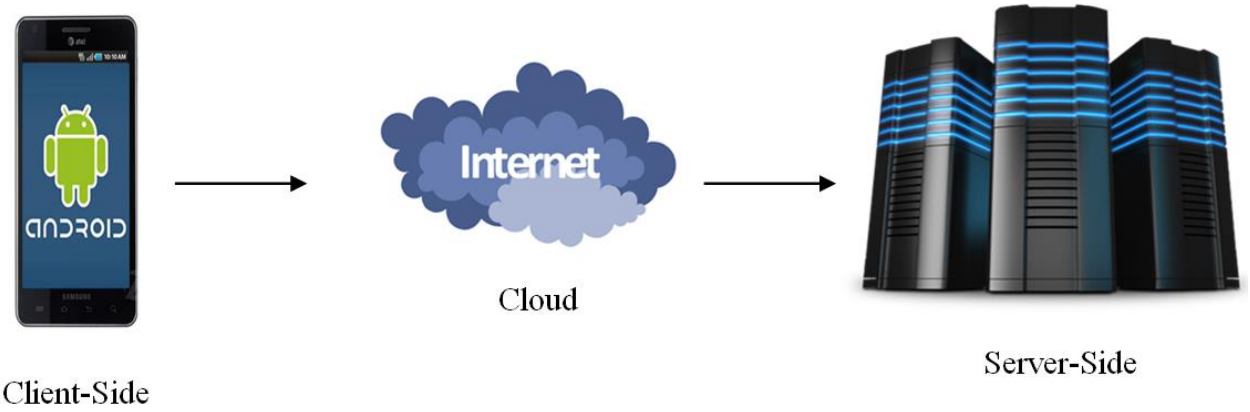


Figure 0.1 Network diagram shows the connection between the android application and server to submit reports.

Server-side script PHP (API) receives submission requests and stores in DBsubmits user generated reports to the server API.

A-Client-Side (The Android App)

Programming language	Java
Database	None
SDK	Android studio

B- Server-Side

Programming language	PHP
Database	My SQL Language
Server OS	Linux

1.15.2 Application programming interface (API)

The API was built in PHP. The API receives reports submission made by the Android application. The API validates reports and location data then stores the submitted reports into the database. Check if required input is Check if user is authenticated Attempt storing the submitted Set and correct. Lat, lng, msg

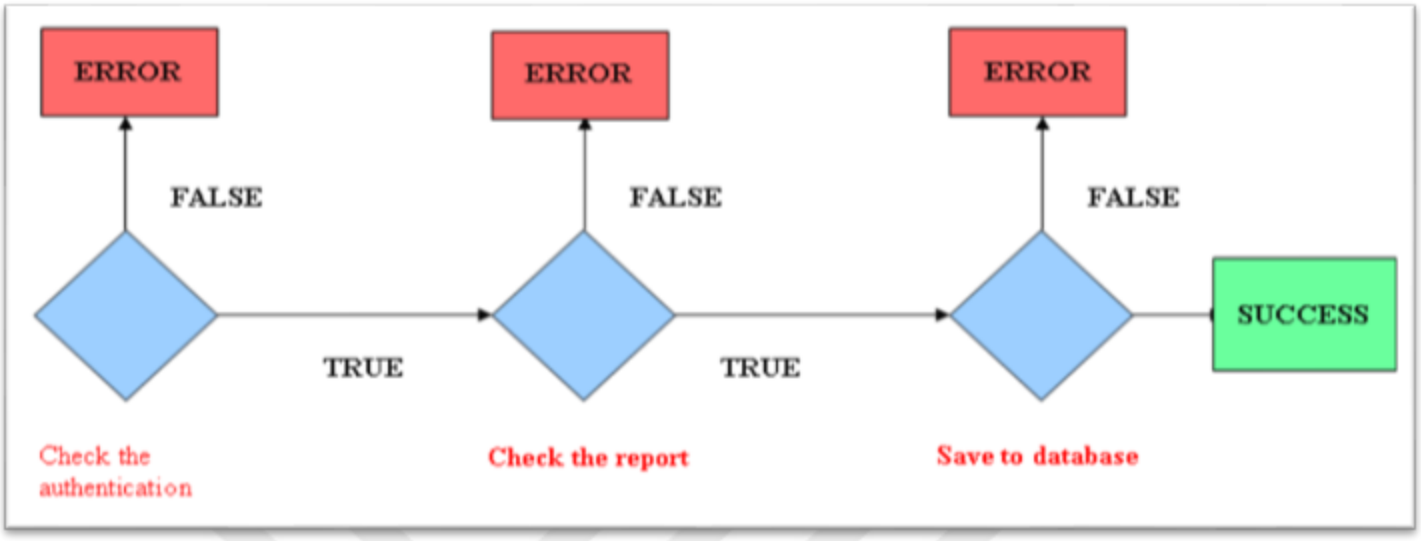
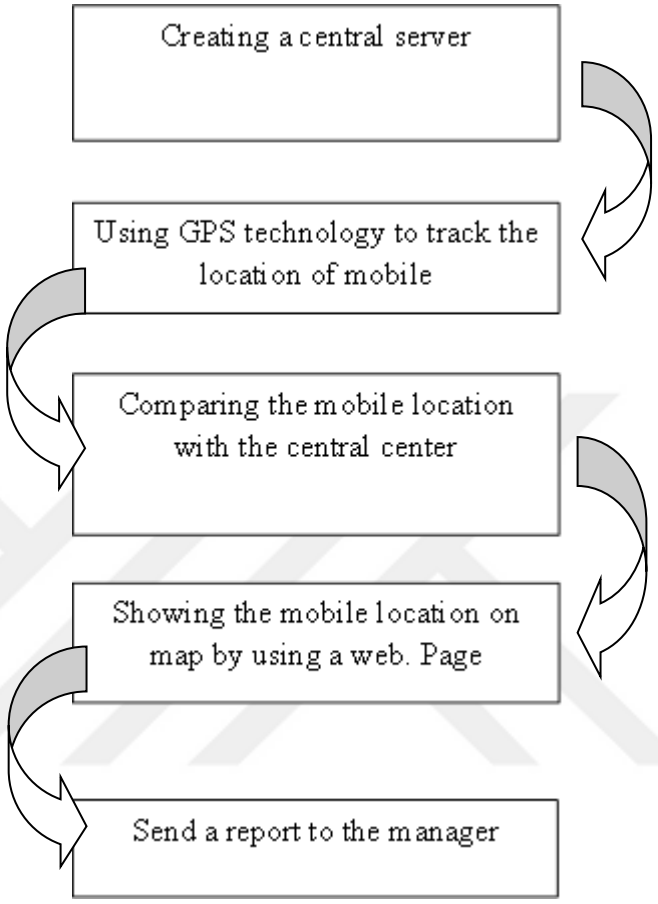


Figure 0.2 API flow chart

1.15.3 Database – server

Two main tables link registered users to their reports in a one-to-many relationship, so each user can submit many reports.

1.16 Main Diagram of Proposed System



RESULTS AND DISCUSSION

1.17 Layout of Proposed System

In window below, we have three important parts and they are total reports that are sent from all agents as shown in figure (4.1). City maps also appear as well as the resellers' chart of all agents.

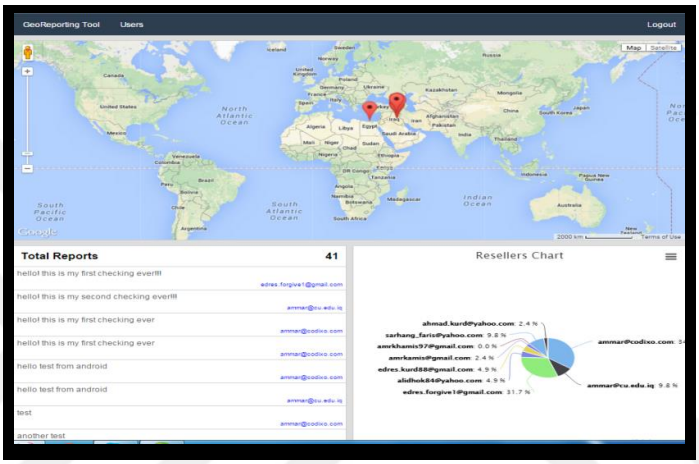


Figure 0.1 The main window of the proposed system

In figure (4.2), the window shows the layout icon of the proposed system and it also means that the user has successfully installed the proposed system.

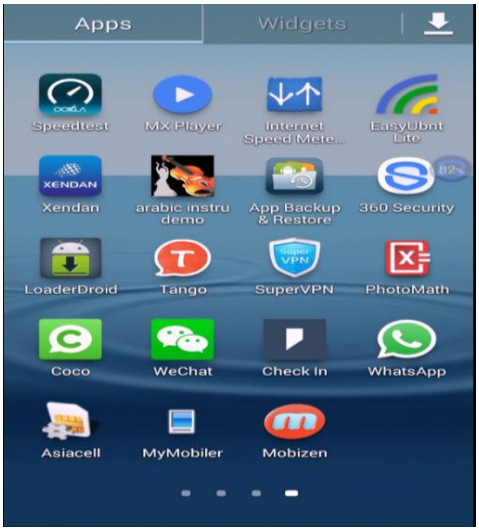


Figure 0.2 Agent enter e-mail and password for the proposed system

The agent must enter a valid e-mail and a correct password in order to be able to use the proposed system. Also, the proposed system offers to register the date and time of each agent as shown in the figure below:

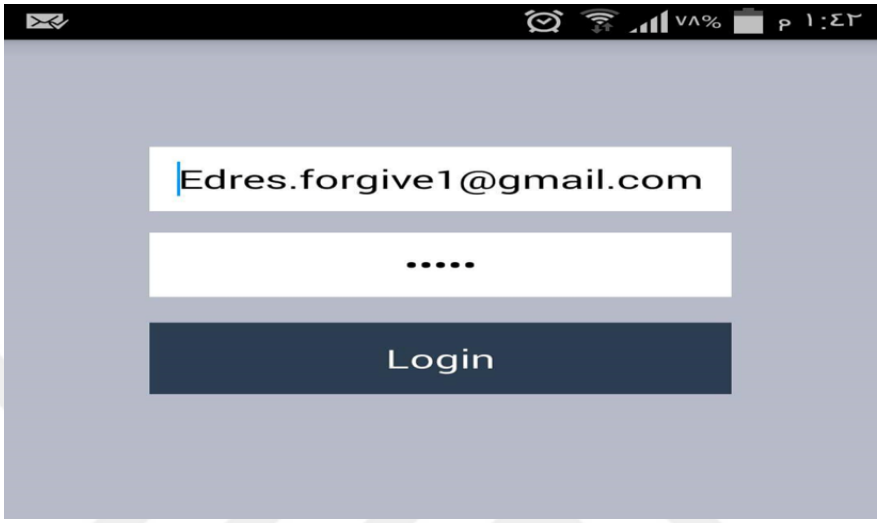


Figure 0.3 Agent enter e-mail and password for proposed system

Figure (4.4) shows that when the agent entered the proposed system, he can see all past check-ins he did before or he can add new check-in to the proposed system.

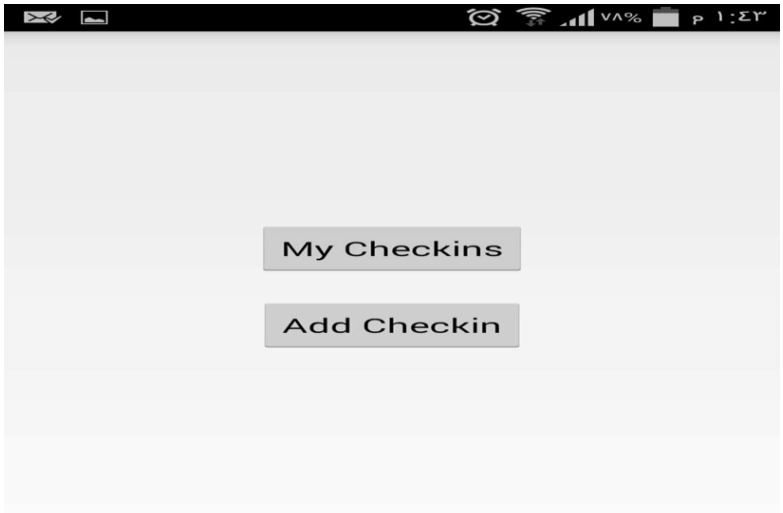


Figure 0.4 Agent check-ins

Figure (4.5) shows all check-ins which are added before as well as the date, time and how the check-ins was sent.

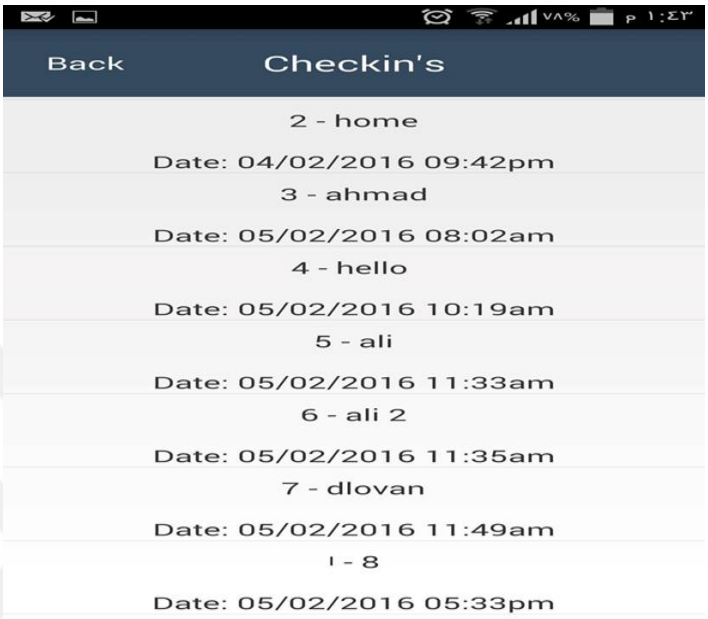


Figure 0.5 All old check-ins

The above figure shows that the proposed system can send a message to the agent if it finds that the GPS is disabled and asks him if he would like to enable it.

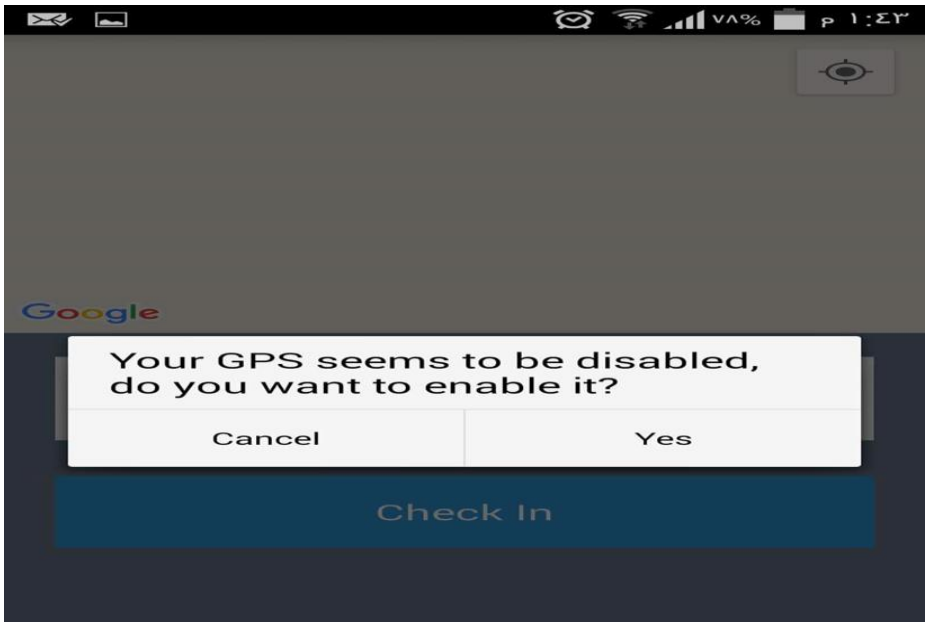


Figure 0.6 Message for GPS enable

The figure below shows that the user can send a message through the proposed system.

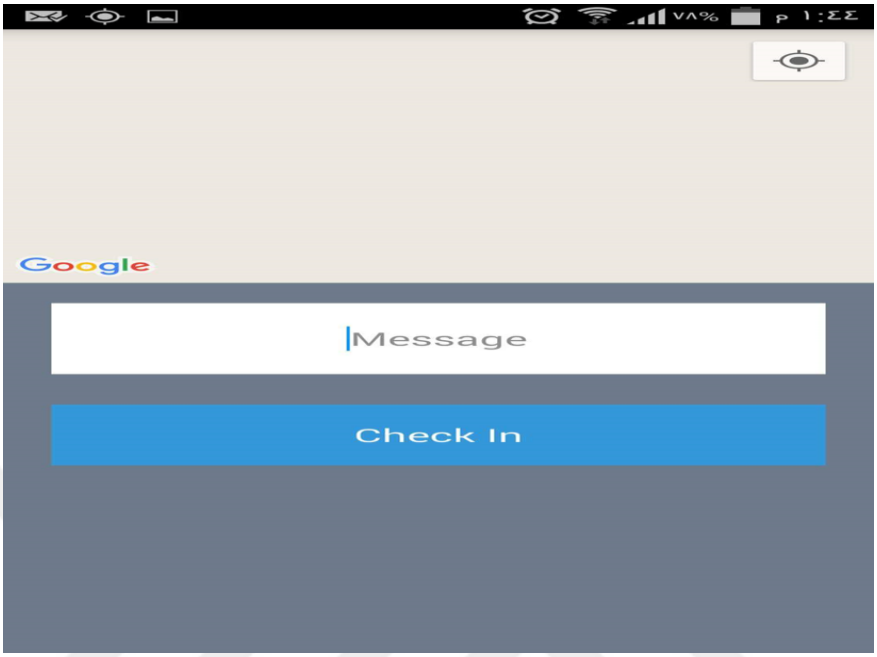


Figure 0.7 Agent message

Figure (4.8) shows a message sent from the agent to the manager.

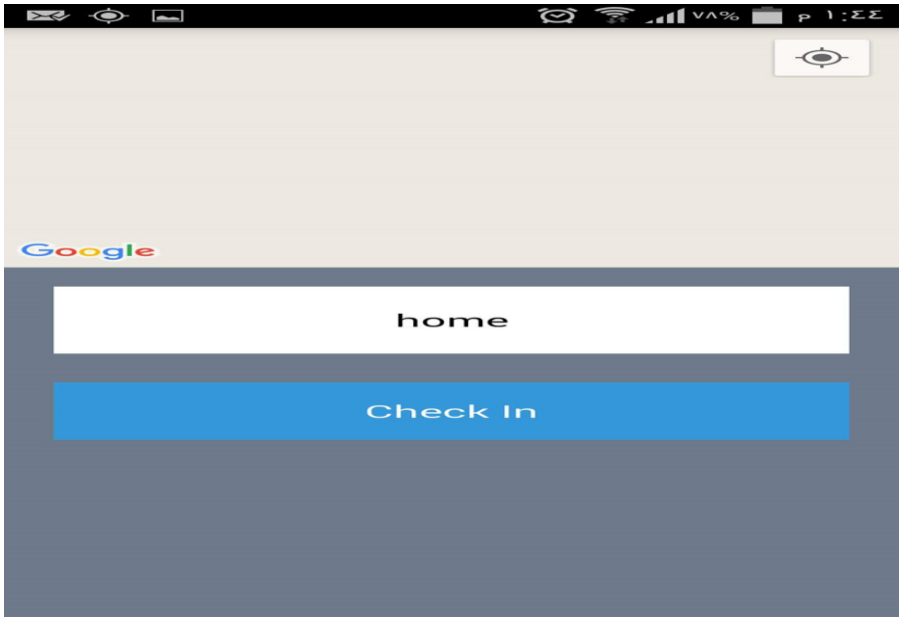


Figure 0.8 Window message

Figure (4.9) shows that the proposed system asks about the agent to be sure that the check-in does not contain any error before sending it.

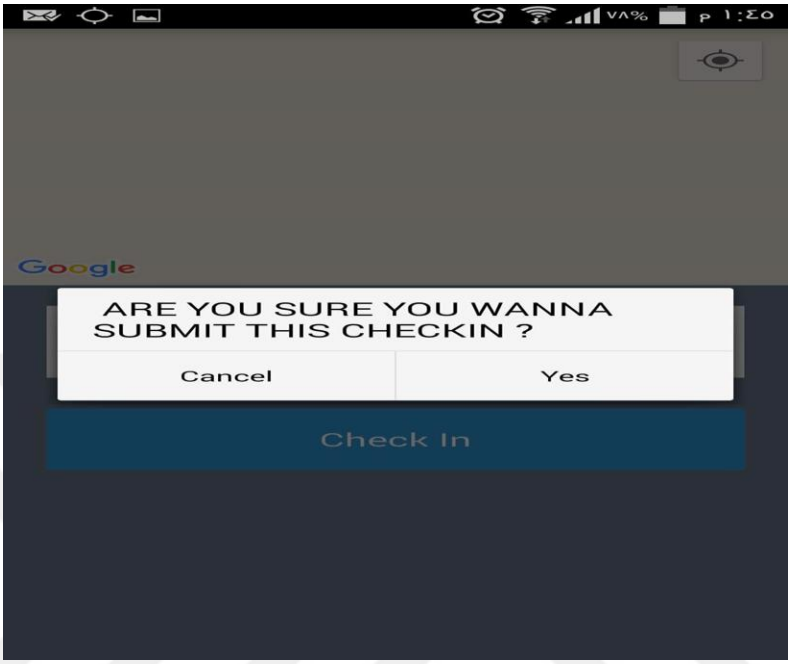


Figure 0.9 Be sure before sending

The agent can select any type as source for check-in report as shown in figure (4.10)

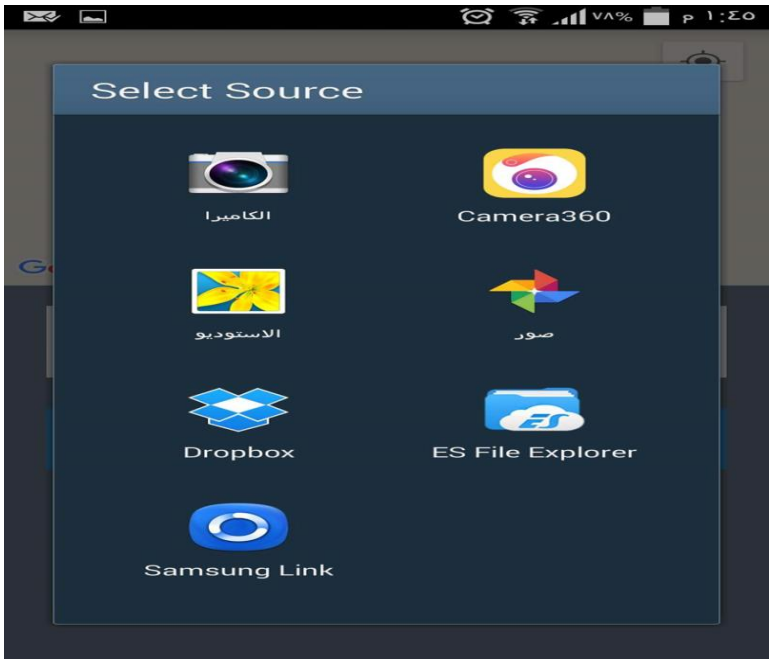


Figure 0.10 Selecting source

Figure 0.11 Using the proposed system

Figure (4.12) shows that the proposed system offers showing Geographical report about the check-in sent from the agent.

Figure 0.12 The geo-reporting for check-in

The figure below shows the map and the satellite picture of the map.

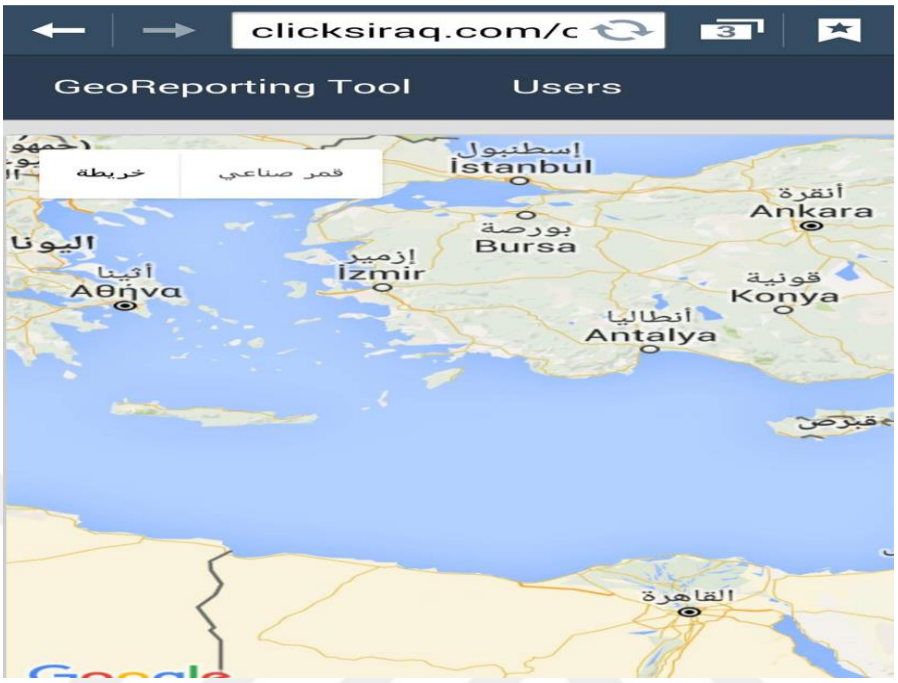


Figure 0.13 The map and satellite

Figure (4.14) shows more details upon the agent user like e-mail address, user name, job title, and user phone number, also, it can add a new user.

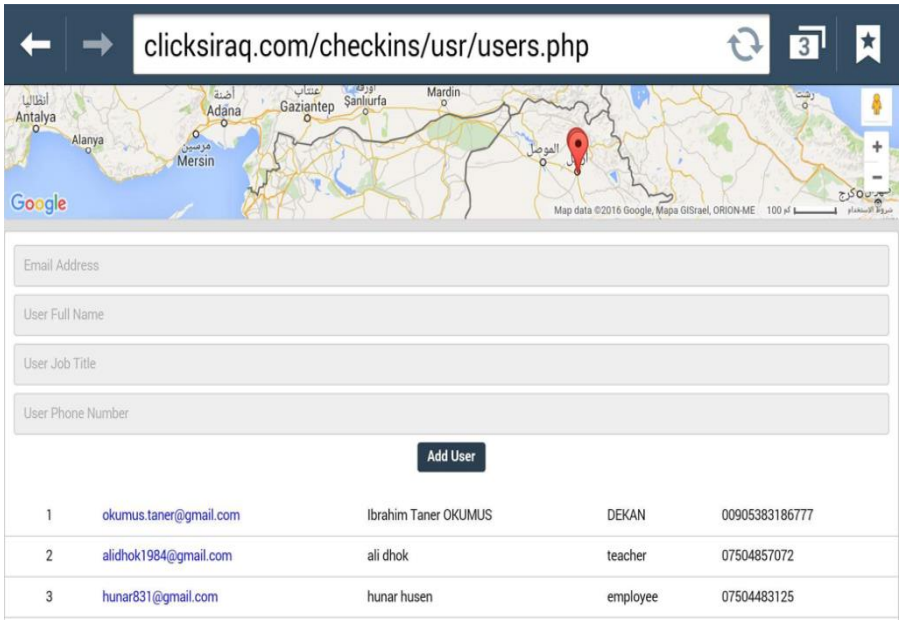


Figure 0.14 Details of agent user and adding a new user

The figure below shows the total reports of all agents sent through the proposed system

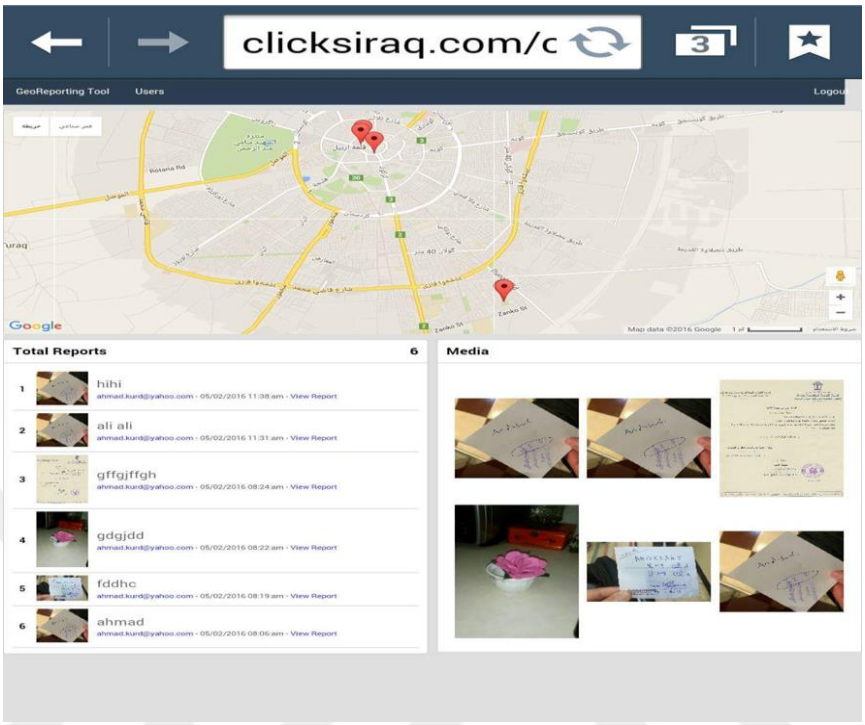


Figure 0.15 The total report of all agents

Figure (4.16) shows the total reports with date and time of sending.

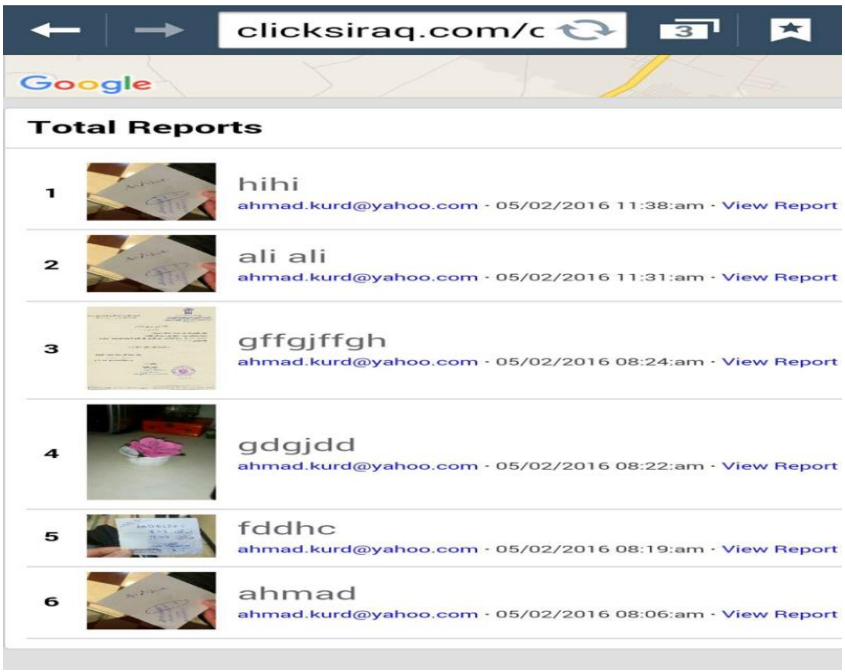


Figure 0.16 The total reports with date and time

The figure below shows all types of media used in all reports

Figure 0.17 The media used in all reports

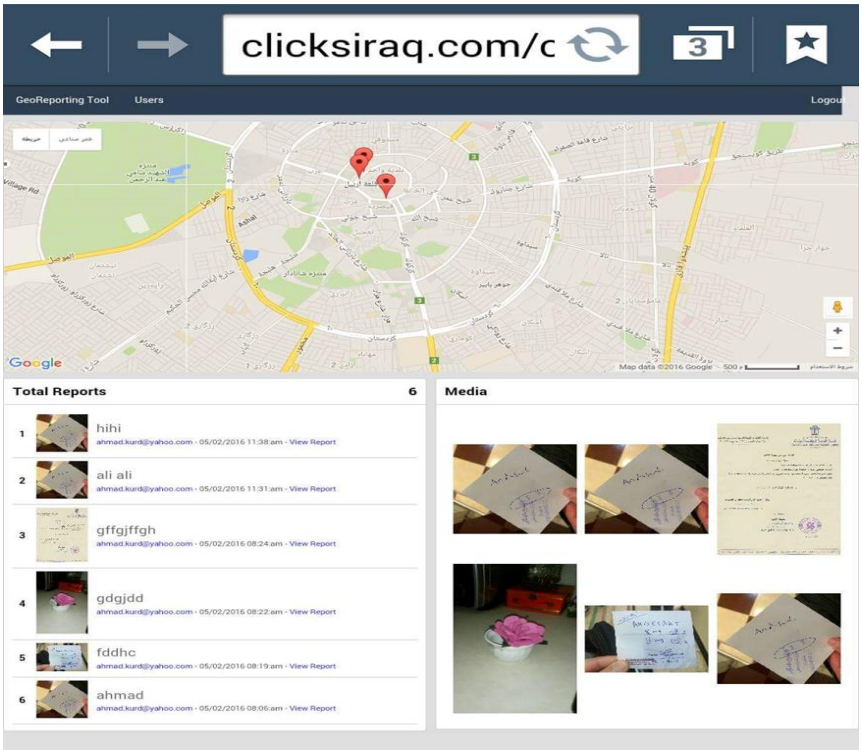


Figure 0.18 Another example of total report

The figure below shows one report sent from the agent with one type of media

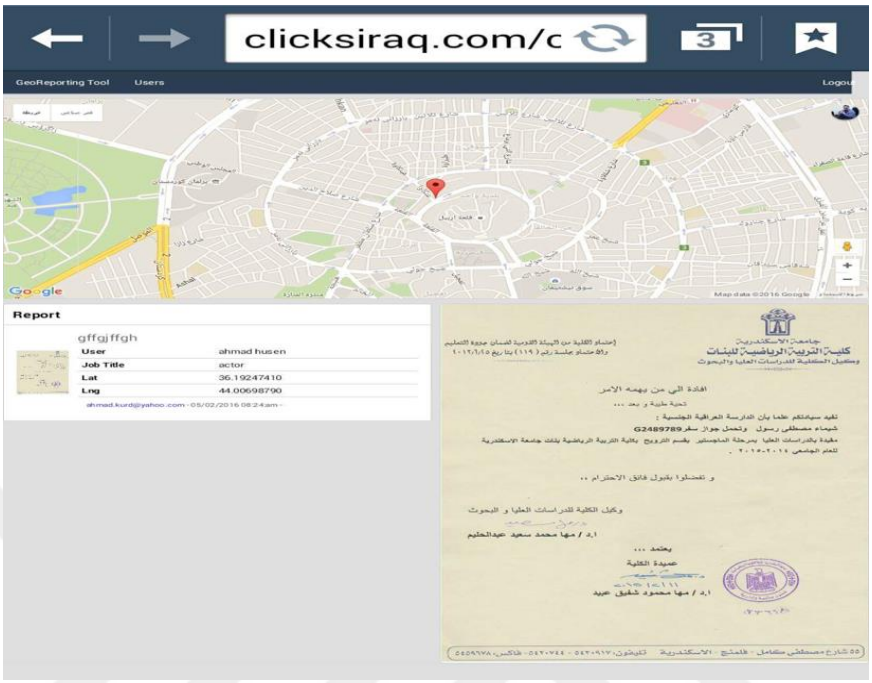


Figure 0.19 Example of one report

Figure 4.20 shows the details of the report sent by the agent.

Figure 0.20 The details of the report

CONCLUSIONS AND FUTURE STUDIES

1.18 Conclusions

To solve the mobile team activity monitoring and management a mobile application and a server application is developed. The developed system provides a competent way in tracking filed employees. The mobile application and its counterpart server application provides an easy knowledge-based method in producing unified report templates. The system enables discovering high-marketing and low-marketing geographical areas and also provides a centralized filed work management. According to the initial usage of the system user friendly interface makes it easy to use on both mobile side and the server side. Developed system works efficiently in tracking the activities of the field workers and also verify that the field worker accomplish the tasks that needs to be done in certain locations.

1.19 Future Studies

In order to further develop the system the following studies could be carried out in the future:

- The system provides the possibility of adding a direct communication method (e.g. video) between the field employee and the manager.
- The system accepts adding a method for report production and can be written in multiple languages.

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APPENDIX: SOFTWARE CODES

3.4 The code of the proposed system
In the following section we list some important codes of the proposed system with short note for each statement for explanation
Login Activity:-

```
Packagecom.clicksiraq.checkin;

importjava.io.IOException;
importjava.util.ArrayList;
importjava.util.List;

importorg.apache.http.HttpEntity;
importorg.apache.http.HttpResponse;
importorg.apache.http.NameValuePair;
importorg.apache.http.client.ClientProtocolException;
importorg.apache.http.client.HttpClient;
importorg.apache.http.client.entity.UrlEncodedFormEntity;
importorg.apache.http.client.methods.HttpPost;
importorg.apache.http.impl.client.DefaultHttpClient;
importorg.apache.http.message.BasicNameValuePair;
importorg.apache.http.util.EntityUtils;
importorg.json.JSONException;
importorg.json.JSONObject;

importandroid.app.ActionBar;
importandroid.app.Activity;
importandroid.app.ProgressDialog;
importandroid.content.Intent;
importandroid.content.SharedPreferences;
importandroid.content.SharedPreferences.Editor;
importandroid.graphics.Color;
importandroid.os.AsyncTask;
importandroid.os.Bundle;
importandroid.preference.PreferenceManager;
importandroid.view.MotionEvent;
importandroid.view.View;
importandroid.view.View.OnTouchListener;
importandroid.widget.Button;
importandroid.widget.EditText;
importandroid.widget.Toast;

public class LoginActivity extends Activity {

privateActionBaractionBar;
private Button btn;
```

```
privateEditTextuserbar;
privateEditTextpassbar;
private data object;
privateSharedPreferencesprefs;
private Editor editor;


@Override
protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_login);

        prefs = PreferenceManager.getDefaultSharedPreferences(getBaseContext());
        editor = prefs.edit();

        object = new data();

        // Introducing the xml ui to java so that you can change it dynamically
        btn = (Button) findViewById(R.id.button1);
        userbar = (EditText) findViewById(R.id.userbar);
        passbar = (EditText) findViewById(R.id.passbar);


        //checking if the user has signed in before
        if (prefs.contains("username") || prefs.contains("password")) {
                //if he did then the app will put his username and password inside the
textfield so that he doesnt have to
                //to write it again
                userbar.setText(prefs.getString("username", ""));
                passbar.setText(prefs.getString("password", ""));
        } else {
                userbar.setMaxLines(1);
                passbar.setMaxLines(1);
        }

        btn.setOnTouchListener(new OnTouchListener() {

                @Override
                publicbooleanonTouch(View v, MotionEvent event) {
                        if (event.getAction() == MotionEvent.ACTION_DOWN) {
                                //when he is touching the login btn it will change color
like
                                //highlighted and it will start the login funtion
                                btn.setTextColor(Color.parseColor("#bdc3c7"));

                                newpostdata().execute(userbar.getText().toString(),
                                                passbar.getText().toString());
```

```
                        return true;
                    } else if (event.getAction() == MotionEvent.ACTION_UP) {
                        //when the user lifts his finger up from the btn then it will get its color back to original
                        btn.setTextColor(Color.parseColor("#ffffff"));

                    }

                    return false;
                }
            });

}


classpostdata extends AsyncTask<String, Void, String> {

        privateProgressDialogmProgressDialog;

        @Override
        protected void onPreExecute() {
                // TODO Auto-generated method stub
                super.onPreExecute();
                // Create a progressdialog
                mProgressDialog = new ProgressDialog(LoginActivity.this);
                // Set progressdialog title
                mProgressDialog.setTitle("جاريتسجيلالدخول ...");
                // Set progressdialog message
                mProgressDialog.setIndeterminate(false);
                // Show progressdialog
                mProgressDialog.show();

        }

        @Override
        protected String doInBackground(String... params) {
                // TODO Auto-generated method stub
                //passing the username and password to the function so that it checks the server for a correct username or not
                JSONObjectjson = postDatafunc(userbar.getText().toString(),
                        passbar.getText().toString());

                if (json != null) {
                    try {
                        //getting the data by json and analysing it
```

```
                        String res = json.getString("op");
                        if (res.equals("true")) {
                                object.token = json.getString("msg");
                        }

                        return res;

                } catch (JSONException e) {

                        // TODO Auto-generated catch block
                        e.printStackTrace();

                }
        } else if (json == null) {
                return "sorry";
        }
        return " ";

}

@Override
protected void onPostExecute(String result) {
        // TODO Auto-generated method stub

        super.onPostExecute(result);

        //checking the results and then do something for each result
        if (result.equals("sorry")) {
                Toast.makeText(getBaseContext(), "، "تأكدمناتصالكبالانترنت")
                        .show();
        } else if (result.equals("false")) {
                Toast.makeText(getBaseContext(),
                        " ، "هناكخطأفياسمالمستخدماوكلمةالسر").show();
        } else if (result.equals("true")) {

                Toast.makeText(getBaseContext(), "، "تمتسجيلالدخول").show();
                //if the username and password were right then it will start the
next activity which
                //has the checkins that he already di
                startActivity(new Intent(LoginActivity.this, ListActivity.class));

                //saving the inforamtion in the device
                editor.putString("username", userbar.getText().toString());
                editor.putString("password", passbar.getText().toString());
                // editor.commit();

                editor.putString("token", object.token);
```

```
                    editor.commit();



                }
                mProgressDialog.dismiss();

        }

}

class data {
        String token;
}

JSONObjectpostDatafunc(String user, String pass) {
        // Create a new HttpClient and Post Header

        // HttpClienthttpclient = createHttpClient();
        HttpClienthttpclient = new DefaultHttpClient();
        HttpPosthttppost = new HttpPost(
                        "https://clicksiraq.com/checkins/api/login.php");

        try {

                // Add your data
                List<NameValuePair>nameValuePairs = new
ArrayList<NameValuePair>(2);
                nameValuePairs.add(new BasicNameValuePair("email", user));
                nameValuePairs.add(new BasicNameValuePair("password", pass));
                httppost.setEntity(new UrlEncodedFormEntity(nameValuePairs));

                // Execute HTTP Post Request
                HttpResponse response = httpclient.execute(httppost);
                HttpEntity e = response.getEntity();

                String data = EntityUtils.toString(e);

                JSONObject timeline = new JSONObject(data);

                return timeline;

        } catch (ClientProtocolException e) {
                // TODO Auto-generated catch block
        } catch (IOException e) {
                // TODO Auto-generated catch block
        } catch (JSONException e1) {
```

```
                // TODO Auto-generated  catch block
                e1.printStackTrace();
        }

        return null;
}
}
```

The main Activity:-

```
packagecom.clicksiraq.checkin;

importjava.io.IOException;
importjava.util.ArrayList;
importjava.util.List;

importorg.apache.http.HttpEntity;
importorg.apache.http.HttpResponse;
importorg.apache.http.NameValuePair;
importorg.apache.http.client.ClientProtocolException;
importorg.apache.http.client.HttpClient;
importorg.apache.http.client.entity.UrlEncodedFormEntity;
importorg.apache.http.client.methods.HttpPost;
importorg.apache.http.impl.client.DefaultHttpClient;
importorg.apache.http.message.BasicNameValuePair;
importorg.apache.http.util.EntityUtils;
importorg.json.JSONException;
importorg.json.JSONObject;

importandroid.app.Activity;
importandroid.app.AlertDialog;
importandroid.app.ProgressDialog;
importandroid.content.Context;
importandroid.content.DialogInterface;
importandroid.content.Intent;
importandroid.content.SharedPreferences;
importandroid.content.SharedPreferences.Editor;
importandroid.graphics.Color;
importandroid.location.Location;
importandroid.location.LocationListener;
importandroid.location.LocationManager;
importandroid.os.AsyncTask;
importandroid.os.Bundle;
importandroid.preference.PreferenceManager;
importandroid.util.Log;
importandroid.view.MotionEvent;
importandroid.view.View;
```

```
importandroid.view.View.OnTouchListener;
importandroid.view.WindowManager;
importandroid.view.inputmethod.EditorInfo;
importandroid.widget.Button;
importandroid.widget.EditText;
importandroid.widget.Toast;

importcom.google.android.gms.maps.CameraUpdateFactory;
importcom.google.android.gms.maps.GoogleMap;
import com.google.android.gms.maps.GoogleMap.OnMyLocationChangeListener;
importcom.google.android.gms.maps.MapFragment;
importcom.google.android.gms.maps.model.LatLng;
importcom.google.android.gms.maps.model.MarkerOptions;

public class MainActivity extends Activity implements
        OnMyLocationChangeListener {

privateGoogleMap map;
privateLocationManagerlocationManager;
privateLocationListenerlocationListener;
private String lat;
private String lng;
privateEditTextmsgtxt;
privateSharedPreferencesprefs;
private Editor editor;
private Button btn;

@Override
protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        //getting the gps ready
        locationManager = (LocationManager) this
                        .getSystemService(Context.LOCATION_SERVICE);

        if      (!locationManager.isProviderEnabled(LocationManager.GPS_PROVIDER))
{
                buildAlertMessageNoGps();
        }


        prefs = PreferenceManager.getDefaultSharedPreferences(getBaseContext());
        editor = prefs.edit();

        //intiallizing the map view
        map = ((MapFragment) getFragmentManager().findFragmentById(R.id.map))
```

```
                .getMap();

        msgtxt  = (EditText)findViewById(R.id.editText1);
        btn = (Button)findViewById(R.id.button1);


        btn.setOnTouchListener(new  OnTouchListener()  {

                @Override
                publicbooleanonTouch(View  v, MotionEvent  event)  {
                        if (event.getAction()  == MotionEvent.ACTION_DOWN)  {

                                btn.setTextColor(Color.parseColor("#bdc3c7"));

                                if(lat  != null){

                                if(Double.valueOf(lat)  > 0 ){

                                        if(!msgtxt.getText().toString().isEmpty()){
                                                alert();
                                        }else{
                                                Toast.makeText(getApplicationContext(),
"The  Checkin  Message  Box Is Empty",  0).show();
                                        }

                                }else{
                                        Toast.makeText(getApplicationContext(),
"Please  Wait  For Getting  Better Location  Data",  0).show();
                                }

                                }else{
                                        Toast.makeText(getApplicationContext(),
"Please  Wait  For Getting  Better Location  Data",  0).show();
                                }
                                return  true;
                        }  else if (event.getAction()  == MotionEvent.ACTION_UP)  {

                                btn.setTextColor(Color.parseColor("#ffffff"));

                        }

                        return  false;
                }
        });

        msgtxt.setImeOptions(EditorInfo.IME_ACTION_DONE);
```

```
        map.setMyLocationEnabled(true);
        map.setOnMyLocationChangeListener(this);

        map.getUiSettings().setZoomControlsEnabled(false);



}

//this is a function for showing a dialog
private void alert() {
        finalAlertDialog.Builder builder = new AlertDialog.Builder(this);
        builder.setMessage(" ARE YOU SURE YOU WANNA SUBMIT THIS
CHECKIN ? ")
                        .setCancelable(false)
                        .setPositiveButton("Yes",
                                        newDialogInterface.OnClickListener() {
                                                public void onClick(

@SuppressWarnings("unused") final DialogInterface dialog,

@SuppressWarnings("unused") final int id) {
                                                                //
MyApplication.getInstance().clearApplicationData();


                                                                        newpostdata().execute();

                                                }
                                        })
                        .setNegativeButton("Cancel",
                                        newDialogInterface.OnClickListener() {
                                                public void onClick(final DialogInterface
dialog,

@SuppressWarnings("unused") final int id) {
                                                                        dialog.cancel();
                                                }
                                        });
        finalAlertDialog alert = builder.create();
        alert.show();
}

//get the location and using it
protected void makeUseOfNewLocation(Location location) {
        // TODO Auto-generated method stub
        Log.e("new Location ==> ", " lat: " + location.getLatitude()
```

```
                + "  lng: " + location.getLongitude()  + "  accuracy  --> "
                + location.getAccuracy());


        lat = "" + location.getLatitude();
        lng = "" + location.getLongitude();
        map.clear();
        map.addMarker(new  MarkerOptions().position(new  LatLng(location
                .getLatitude(),  location.getLongitude())));
        map.moveCamera(CameraUpdateFactory.newLatLngZoom(
                new       LatLng(location.getLatitude(),       location.getLongitude()),
16));

}

//a class for background thread to send the location to server
classpostdata extends AsyncTask<String,  Void, String>  {

        privateProgressDialogmProgressDialog;

        @Override
        protected void onPreExecute()  {
                // TODO Auto-generated  method stub
                super.onPreExecute();
                // Create a progressdialog
                mProgressDialog  = new ProgressDialog(MainActivity.this);
                // Set progressdialog  title
                mProgressDialog.setTitle("Submitting....");
                // Set progressdialog  message
                mProgressDialog.setIndeterminate(false);
                // Show progressdialog
                mProgressDialog.show();

        }

        @Override
        protected String doInBackground(String...  params) {
                // TODO Auto-generated  method stub

                JSONObjectjson = postDatafunc(prefs.getString("token",  ""),
                                lat ,lng , msgtxt.getText().toString());
                if (json != null)  {
                        Log.e("Response  ==> ",  " " + json.toString());
                        try {

                                String  res = json.getString("op");
                                if (res.equals("true"))  {
```

```
                }

                return res;

            } catch (JSONException e) {

                // TODO Auto-generated catch block
                e.printStackTrace();

            }
        } else if (json == null) {
            return "sorry";
        }
        return " ";

    }

    @Override
    protected void onPostExecute(String result) {
        // TODO Auto-generated method stub

        super.onPostExecute(result);
        mProgressDialog.dismiss();

        if (result.equals("sorry")) {
            Toast.makeText(getBaseContext(), "٠ ،"تأكدمناتصالكبالانترنت)
                    .show();
        } else if (result.equals("false")) {
            Toast.makeText(getBaseContext(),
                    'There is an error in Submitting the Check in",
0).show();
        } else if (result.equals("true")) {

            Toast.makeText(getBaseContext(), "Submitted", 0).show();
            msgtxt.setText("");
            onBackPressed();
        }

    }

}

JSONObjectpostDatafunc(String token,Stringlat , String lng ,String msg) {
    // Create a new HttpClient and Post Header

    // HttpClienthttpclient = createHttpClient();
```

```
        HttpClienthttpclient = new DefaultHttpClient();
        HttpPosthttppost = new HttpPost(
                        "https://clicksiraq.com/checkins/api/checkin.php");

        try {

                // Add your data
                List<NameValuePair>nameValuePairs = new
ArrayList<NameValuePair>(4);
                nameValuePairs.add(new BasicNameValuePair("token", token));
                nameValuePairs.add(new BasicNameValuePair("lat", lat));
                nameValuePairs.add(new BasicNameValuePair("lng", lng));
                nameValuePairs.add(new BasicNameValuePair("msg", msg));
                httppost.setEntity(new UrlEncodedFormEntity(nameValuePairs , "UTF-
8"));

                // Execute HTTP Post Request
                HttpResponse response = httpclient.execute(httppost);
                HttpEntity e = response.getEntity();

                String data = EntityUtils.toString(e);

                JSONObject timeline = new JSONObject(data);

                return timeline;

        } catch (ClientProtocolException e) {
                // TODO Auto-generated catch block
        } catch (IOException e) {
                // TODO Auto-generated catch block
        } catch (JSONException e1) {
                // TODO Auto-generated catch block
                e1.printStackTrace();
        }

        return null;
}

private void buildAlertMessageNoGps() {
        finalAlertDialog.Builder builder = new AlertDialog.Builder(this);
        builder.setMessage(
                        "Your GPS seems to be disabled, do you want to enable it?")
                        .setCancelable(false)
                        .setPositiveButton("Yes",
                                        newDialogInterface.OnClickListener() {
                                                public void onClick(
```

```
@SuppressWarnings("unused") final DialogInterface dialog,

@SuppressWarnings("unused") final int id) {
                                                    startActivity(new Intent(

android.provider.Settings.ACTION_LOCATION_SOURCE_SETTINGS));
                                            }
                                        })
                        .setNegativeButton("Cancel",
                                        newDialogInterface.OnClickListener() {
                                            public void onClick(final DialogInterface
dialog,

@SuppressWarnings("unused") final int id) {
                                                    dialog.cancel();
                                            }
                                        });
        finalAlertDialog alert = builder.create();
        alert.show();
}

@Override
protected void onStart() {
        // TODO Auto-generated method stub
        super.onStart();
}

@Override
protected void onResume() {
        // TODO Auto-generated method stub
        super.onResume();
        map.setOnMyLocationChangeListener(this);

}

@Override
protected void onStop() {
        // TODO Auto-generated method stub
        map.setOnMyLocationChangeListener(null);
        super.onStop();
}

@Override
public void onMyLocationChange(Location location) {
        // TODO Auto-generated method stub
        makeUseOfNewLocation(location);
```

```
}

}
List view Adapter :-
packagecom.clicksiraq.checkin;

importjava.util.ArrayList;
importjava.util.HashMap;

importandroid.content.Context;
importandroid.content.Intent;
importandroid.net.Uri;
importandroid.view.LayoutInflater;
importandroid.view.View;
importandroid.view.View.OnClickListener;
importandroid.view.ViewGroup;
importandroid.widget.BaseAdapter;
importandroid.widget.ImageView;
importandroid.widget.ImageView.ScaleType;
importandroid.widget.TextView;

public class listViewAdapter extends BaseAdapter {

// Declare Variables
Context context;
LayoutInflaterinflater;
ArrayList<HashMap<String, String>> data;
HashMap<String, String>resultp = new HashMap<String, String>();


publiclistViewAdapter(Context context,
                ArrayList<HashMap<String, String>>arraylist) {
        this.context = context;
        data = arraylist;

}

@Override
publicintgetCount() {

        returndata.size();
}

@Override
public Object getItem(int position) {

        return null;
```

```
}

@Override
public long getItemId(int position) {
        return 0;
}

public View getView(final int position, View convertView, ViewGroup parent) {
        // Declare Variables

        final String id;


        inflater = (LayoutInflater) context
                        .getSystemService(Context.LAYOUT_INFLATER_SERVICE);

        final View itemView = inflater
                        .inflate(R.layout.listitem, parent, false);
        // Get the position
        resultp = data.get(position);

        TextView txt = (TextView) itemView.findViewById(R.id.textView1);

        id = resultp.get("msg");
        txt.setText(id);


        returnitemView;
}
}
```

List Activity:-

```
packagecom.clicksiraq.checkin;

importjava.io.IOException;
importjava.util.ArrayList;
importjava.util.HashMap;
importjava.util.List;

importorg.apache.http.HttpEntity;
importorg.apache.http.HttpResponse;
importorg.apache.http.NameValuePair;
importorg.apache.http.client.ClientProtocolException;
importorg.apache.http.client.HttpClient;
importorg.apache.http.client.entity.UrlEncodedFormEntity;
importorg.apache.http.client.methods.HttpPost;
importorg.apache.http.impl.client.DefaultHttpClient;
```

```
importorg.apache.http.message.BasicNameValuePair;
importorg.apache.http.util.EntityUtils;
importorg.json.JSONArray;
importorg.json.JSONException;
importorg.json.JSONObject;

importandroid.app.Activity;
importandroid.app.ProgressDialog;
importandroid.content.Intent;
importandroid.content.SharedPreferences;
importandroid.content.SharedPreferences.Editor;
importandroid.os.AsyncTask;
importandroid.os.Bundle;
importandroid.preference.PreferenceManager;
importandroid.util.Log;
importandroid.view.View;
importandroid.widget.Button;
importandroid.widget.ListView;
importandroid.widget.Toast;

public class ListActivity extends Activity {

privateJSONObject jsonobject1;
privateArrayList<HashMap<String, String>> arraylist1;
privateListView listview1;
privatelistViewAdapter adapter1;
privateSharedPreferencesprefs;
private Editor editor;
private Button addbtn1;

@Override
protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_list);

        prefs = PreferenceManager.getDefaultSharedPreferences(getBaseContext());
        editor = prefs.edit();

        addbtn1 = (Button) findViewById(R.id.add1);

        addbtn1.setOnClickListener(new View.OnClickListener() {

                @Override
                public void onClick(View v) {
                        // TODO Auto-generated method stub
                        startActivity(new Intent(ListActivity.this , MainActivity.class));
                }
```

```
        });

        newgetdata().execute();

}



 @Override
protected void onResume() {
        // TODO Auto-generated method stub
        super.onResume();

        newgetdata().execute();
}


 // a class for background thread to get all the checkins of the user then sending it to
 // listviewadpater to arrange it and put it in listitem so that it get arranged in listview
classgetdata extends AsyncTask<String, Void, String> {



                privateProgressDialogmProgressDialog;

                @Override
                protected void onPreExecute() {
                        // TODO Auto-generated method stub
                        super.onPreExecute();

                        mProgressDialog = new ProgressDialog(ListActivity.this);
                        // Set progressdialog title
                        mProgressDialog.setTitle(" Loading... ");
                        mProgressDialog.setIndeterminate(false);
                        mProgressDialog.setCancelable(false);
                        // Show progressdialog
                        mProgressDialog.show();

                }

                @Override
                protected String doInBackground(String... params) {
                        // TODO Auto-generated method stub

                        arraylist1 = new ArrayList<HashMap<String, String>>();
                        // Retrieve JSON Objects from the given URL address
```

```
                JSONObjectjsonobject = postDatafunc(prefs.getString("token",
""));

                // Log.d("json data from nearby", " " + jsonobject.toString());

                if (jsonobject != null) {

                        try {
                                // Locate the array name in JSON

                                JSONArrayjsonarray =
jsonobject.getJSONArray("msg");

                                if (jsonarray.length() > 0) {

                                        for (int i = 0; i <jsonarray.length(); i++) {
                                                HashMap<String, String> map1 =
new HashMap<String, String>();
                                                jsonobject1 =
jsonarray.getJSONObject(i);

                                                // Retrive JSON Objects
                                                map1.put("msg",
jsonobject1.getString("checkin_text"));

                                                 //      Log.e("liink " , "      " +
jsonobject1.getString("img_header"));
                                                arraylist1.add(map1);
                                        }

                                        return "ok";
                                } else {
                                        HashMap<String, String> map1 = new
HashMap<String, String>();
                                        map1.put("msg", " THERE ARE NO
CHECKIN'S ");
                                        arraylist1.add(map1);

                                }
                        } catch (JSONException e) {
                                Log.e("Error", e.getMessage());
                                e.printStackTrace();
                        }
                } else {
                        return "sorry";
                }
```

```
                return " ";
            }

            @Override
            protected void onPostExecute(String result) {
                // TODO Auto-generated method stub
                super.onPostExecute(result);

                if(result.equals("sorry"))
                {
                    Toast.makeText(getApplicationContext(), " No Internet
Connection ", 1).show();
                } else if(result.equals("ok") || result.equals("empty"))
                {
                    listview1 = (ListView) findViewById(R.id.listView1);

                    // Pass the results into ListViewAdapter.java
                    adapter1 = new listViewAdapter(ListActivity.this,
arraylist1);

                    // Set the adapter to the ListView
                    listview1.setAdapter(adapter1);
                }

                mProgressDialog.dismiss();

            }

        }

JSONObjectpostDatafunc(String token) {
            // Create a new HttpClient and Post Header

            // HttpClienthttpclient = createHttpClient();
            HttpClienthttpclient = new DefaultHttpClient();
            HttpPosthttppost = new HttpPost(
                    "https://clicksiraq.com/checkins/api/mycheckins.php");

            try {

                // Add your data
                List<NameValuePair>nameValuePairs = new
ArrayList<NameValuePair>(4);
                nameValuePairs.add(new BasicNameValuePair("token",
token));
                httppost.setEntity(new
UrlEncodedFormEntity(nameValuePairs));
```

```
                // Execute HTTP Post Request
                HttpResponse response = httpclient.execute(httppost);
                HttpEntity e = response.getEntity();

                String data = EntityUtils.toString(e);

                JSONObject timeline = new JSONObject(data);

                return timeline;

            } catch (ClientProtocolException e) {
                // TODO Auto-generated catch block
            } catch (IOException e) {
                // TODO Auto-generated catch block
            } catch (JSONException e1) {
                // TODO Auto-generated catch block
                e1.printStackTrace();
            }

            return null;
        }
}
```

CURRICULUM VITAE

Personal Identity

Name, Surname : Idress M. Hussein AL-Saleem AGHA

Nationality : Iraq

Date and place of birth : 04.04. 1988, Al-Sulaymaneyah. , Iraq

Marital Status : Single

Telephone : (+964) 7707725080

E-mail : edres.forgive1@gmail.com

Educational Background

Degree	Place of Education	Date of Graduate
Bachelor's Degree	University of Salahaddeen College of Education Computer Science Department	2009-2010
Master Degree	KSU, Graduate School of Natural and Applied Science, Bioengineering and Sciences	2015-2016