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The Cybernetic System for Overseeing Staff Presence at Workplace

Sukrutha HM [1],Swathi S [2],Swetha R [3],Sheela B.P [4],Dr Sreepathi .B [5]
Department Of Information Science &Engineering
V.T.U/ R.Y.M.E.C, Bellar
India

ABSTRACT
The traditional approach of manual attendance has been carried out which is not only time consuming but also provides erroneous result. Cybernetic system provides many benefits to organizations. This reduces the need of pen and paper based manual attendance tracking system. Organizations can't monitor employees everywhere but now it is no longer difficult to ensure that field employee is reaching the workplace or not. Workforce Location can be easily tracked with cybernetic system to ensure that the staff presence is at the workplace .Following this thought, we have proposed a cybernetic system for tracking staff using an android mobile
Application on smartphone reducing the need of additional biometric scanner device. The location of an organization has a specific location, which can be determine by the GPS. Each staff's location can be determined by the GPS using smartphone. This location is defined as a key of time and attendance tracking in our paper.
Keywords :— cybernetic system, GPS, Android,

I.   INTRODUCTION

Mobile devices are common and mobile internet access is increasingly possible everywhere in daily life of modern people. Commonly used mobile operating systems are android, ios and windows. Android stands out with its open source nature and working capabilities on inexpensive mobile devices. Real-time location tracking is continuously monitoring a vehicle or a person by using obtained coordinates with gps, wi-fi or cell-id. Considering that the client person uses mobile phone with internet on it, location tracking can be done with a mobile application.. This paper presents design and implementation of an cybernetic system for overseeing staff presence at workplace using gps sensor.
Every Organization has a specific location, which is determine by the GPS. The location of an employee can be determined by GPS device (Mobile Phone, GPS watch or GPS enabled device etc.).

II. RELATED WORKS

A. Global Positioning System(GPS) GPS exploration arrangement is extensively adopted for monitoring staff's nowadays. It is chiefly utilized to assist the employer to trail the locale of the staff's alongside turn-by-turn instructions. It can additionally be utilized in pursuing a person and how long the she stayed at every single location. These purposes permit the employer to monitor the staff's location and update the database.

B. *Global System For Mobile Communication* GPS is a real-time satellite discovery arrangement for three dimensional locale determinations. It was industrialized by countless U.S manipulation associations, GPS module has three main components; they are satellite collection, ground-control or

monitoring web, and a user accessible device (i.e.) an android mobile. The satellite Collection is the group of satellites in path that accomplish the fluctuating signals and data messages to the user equipment. The Global Arrangement for Mobile Contact (GSM) is the second-generation digital cellular mobile network. It is extensively used concerning the world. Even though improvements to GSM such as the subsequent creation arrangements have been rolled out to cater for faster data centric traffic, retrograde compatibility to GSM is yet maintained. Due to its expansive potential, it is selected as the medium for transfer of locale information.The main constituents of the vehicle pursuing arrangement are the GPS module that is utilized to attain the staff's coordinate and the GSM modem that is utilized to send the locale to the user's phone across the mobile network.

III. THE PROPOSED SYSTEM

A. System Overview
The system replaces the traditional Identification Card by a mobile application. The application was installed on users mobile. A unique user ID and location (GPS coordinate) was associated with the application. A cybernetic system software was installed on workstation for process the data receive from user mobile and store the information (time, entry and leaving) to the Database. The basic block diagram is shown in Fig. 1.
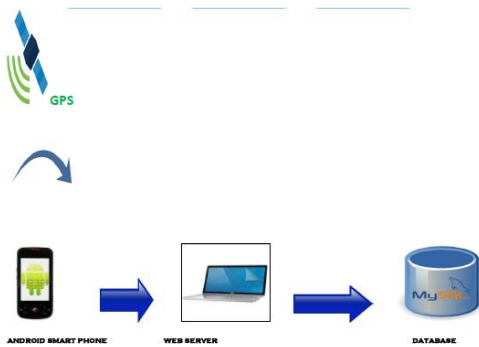
Fig 1: Basic Block Diagram Of The Cybernetic System

device, which will run the application, with the help of which the employees will mark theirattendance and take their login, logout time automatically without any hassle. The other requirement is a personal computer on the server side, which will store the database
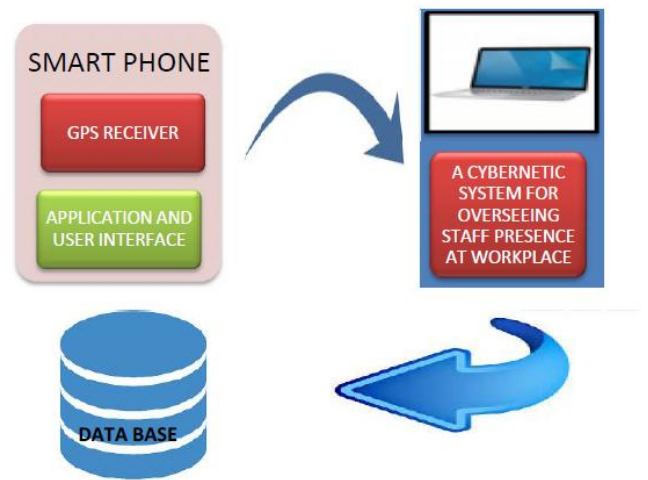
B. System Design And Architecture

The schematic diagram of our a cybernetic system for overseeing staff presence at workplace system is shown in Fig. 2. This system employs four hardware and software components. The smartphone is built-in with a GPS receiver, which can receive radio signals from GPS satellites, respectively. Google maps API (Application Programming Interface) is used here for finding personal meaningful location; based on the GPS readings, the application can perform geo-locationing to estimate the current location of the user .Then the application sends the location and user Id to a cybernetic system for overseeing staff presence at workplace for further process.After processing the data the management software store the information to Database.

The smart, cybernetic system for overseeing staff presence at workplace is a client-server approach and follows specific hardware and software architecture. Integrating the hardware and software is the main challenge here and the hardware and software works together.
The whole system has been divided into two major categories 1) App for mobile 2) App for pc

The software architecture consists of: the database, the application program and the server.
• Database: The database consists of a number of tables, which stores records. We used apache derby database which is easy, fast and efficient and can store a large number of records and requires a little configuration.
• Application Program: The application program is developed with Android programming language using Eclipse framework. The application program provides user interface to both the employees and office server. Programming in Android is simple, user friendly and android offers an excellent data connectivity.
• Server: The server is deployed on the personal computer using apache-Tomcat7. Tomcat7 is free, robust and easy to deploy.

Hardware Architecture
The basic requirement of the location base time and attendance tracking system is an android

Fig 2: Schematic Diagram Of Cybernetic System

C . Flow of Operation
Since a cybernetic system for overseeing staff presence at workplace uses Mobile Application and a cybernetic system management software for processing data. So, the flows of operation of the Mobile application are:-
1) Determine the location using GPS
2) update the staff ID and the location with pre-stored (office/workspace)location
3) Send information to the system the application figure out the location using GPS. Then, its check the location with pre stored (office/workspace) location, if location matched then the application makes a data packet containing user ID and location to the admins workstation.

Fig. 3 shows the flow of login operation of cybernetic system

Admin login: The role of the admin is to add new employee by entering his personal details and admin will provide the employee with identity number and password to the user so that he can access the application in his android phone. Admin can view the GPS location of the employee by entering Employee Identity Number as well as Date. Admin can check the salary of the particular employee by entering date and employee ID. Admin can view latitude and longitude of the GPS location sent by the employee. Admin can change the password of the employee.

User login: The user will have this application in his android phone, when the user will login to the system his image will be captured and his GPS location will be send to the admin where admin will view image and GPS location in web application. After Login, GPS location of the employee will

be tracked automatically by the system and send to the admi
after every 5 minutes .When user logout the system again th
image will be captured as well as GPS location will be send t
the admin.

HR Login: When HR login to the system he can check th
GPS location of the employee by entering employee ID an
date. HR can check salary of the particular employee b
entering employee identity number and date. This applicatio
helps admin and hr to easily check the salary of th
employee. Since GPS location of the employee is tracked, s
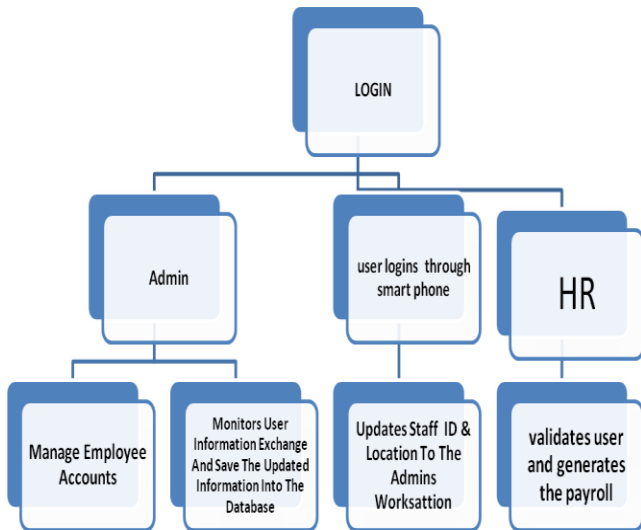employee will not attempt to add proxy attendance.

Fig 3:F low of operations

IV. METHODOLOGY

User authentication is one of the major factors in the proposed
system. Every employee is authenticated based on his/her
unique user identification number. This unique identification
number is the number which is given by the office. The
identification number along with other information is also
saved in the employee device. At first employee has to install
the required system APK files into their android device.
Mobile location service has to be on when the system was
running. If mobile location service is off then the whole
process will not go further. Mobile location service helps to
trace the employee location. When the employee enters the
office area, android device of the employee is automatically
connected to the office internet and a message is sent to the
office sever with the employee id and local time of the device
which is counted as login time of that employee. When
employee leaves the office area, a message is sent to the office
server with employee id and local time which is counted as
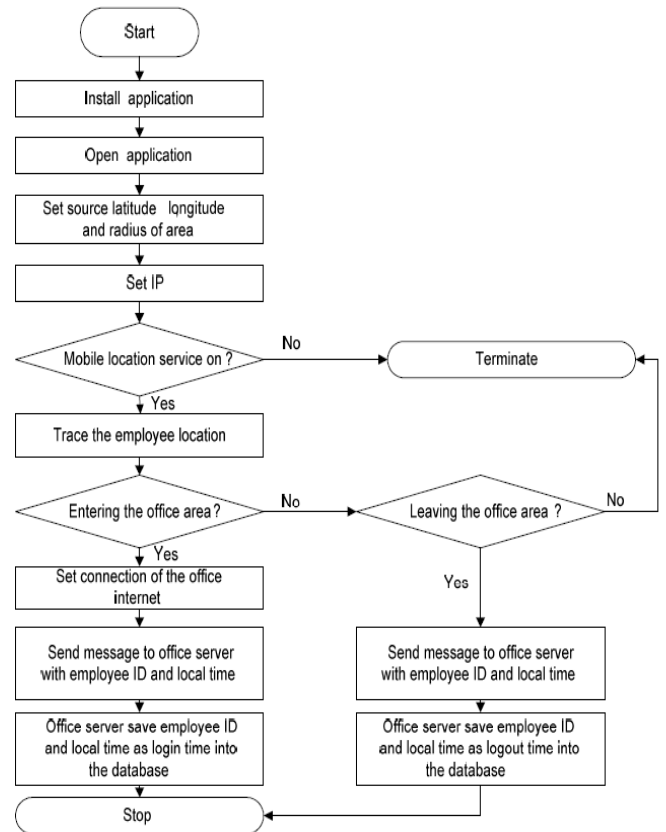logout time. Figure 4 depicts the overall methodology of our
proposed system.

Fig 4: flowchart depicts the methodology of the cybernetic system.

IV. IMPLEMENTATION

Due to the shortest of time the proposed model is not
totally completed. The hardware requirements are Android
& GPS enable phone or tabs or any device that is used as a
user identification tools. A cybernetic system Software
which interacts with user device is required. The software is
also connected with Database for storing data. There are
several tools/ methods are available for developing time and
attendance management software such as .Net, java, php etc.
Eclipse IDE with Android Development Tools will be used
for developing the android application.

V. CONCLUSION

This paper introduce a cybernetic system for overseeing staff
presence at workplace that use Location as the key of
attendance. The area is set for tracking using GPS and
employee coordinate inside the area border depicts that
employee is present in the organization. We currently
developing the system for Android enable smartphones/ Tabs.
In future we extend our system for iPhones and other mobile
phones.

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