

# Automated H.R. System

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**Abstract**— Manual recording and tracking of attendance and calculation of salary of employees is a very tedious task. Proposed system offers a cheap alternative to that with minimal cost of installation. Further, continuously tracking the location of employees during the office hours with the help of their device location can prove inefficient due to the enormous consumption of device battery. The proposed system offers an alternative to this problem as well. Location of device is updated periodically, thus both, conserving battery of the device as well as removing redundant entries. The system also offers offline storage of data to be uploaded by field workers in case of absence of internet connection. Main advantages of this system is its minimal cost of deployment, low cost of maintenance and efficient battery conservation.

**Index Terms**—attendance management system, cloud computing, HR automation, geotracking.

## I. INTRODUCTION

Attendance tracking of the employees of an organization manually is a time and labour consuming task.

The Inora HR System is a software developed for daily staff attendance, customer service and reporting for Inora. The information is sorted date-wise and employee-wise and a report is generated. It facilitates to access the attendance information of a particular employee via the computer admin interface[1]. The system detects false attendance using the Geo Fencing feature and also a photo is taken during marking of the attendance[4][5]. The manager will receive an alert if attendance is marked beyond the boundary. This system will also help in evaluating the payroll of employees[3].

The system will provide an interface for the employees to mark their attendance and also track it efficiently. Also, false absent markings can be reported to the manager[1]. The manager will be able to track their employees when on a field visit. As continuous location updates will heavily tax the battery, we have decided to update the location on hourly basis. Data will be processed with the help of data aggregation techniques to help store and retrieve it efficiently. The entire system will be hosted on AWS cloud so there will be the flexibility of storage and computational capability[6]. Also, AWS has built world class, highly secure infrastructure, both physically and over the internet[6].

Initially, the system will be deployed for use in only Android OS, with the only functionalities being implemented being Attendance tracking[1] and payroll calculation[3].

The system will be implemented on A.W.S cloud server for ease of maintenance and flexibility of use of resources[6].

## II. HARDWARE AND SOFTWARE COMPONENTS

Only one hardware component is involved in the system on deployment/customer end, smart-phone owned by the employee.

Initially, the system is targeted for an android only audience, and hence, the smart-phone devices should have a minimum of the following version of android operating system installed in them:

- Android Lollipop (5.0)

The smart phone has to have a minimum of the following requirements along with permissions as required to access the modules:

- Camera (5.0 MP or more)
- Location module
- Storage (100 MB or more)

The system shall also comprise of a website which can be accessed by the managers to view reports, approve/reject requests, etc.

The minimum hardware requirements for a PC to access the website are as follows:

- Intel i3 (5th Gen) or AMD A10 or above Processor, 2 GB or more R.A.M., 200 GB HDD.
- Internet access to the system(1.0 Mbps or higher)
- There is no need to install any special software as the website can be accessed from any supported browser.

## III. INITIAL SYSTEM

The initial features offered in the system are the attendance recording and tracking system along with the employee payroll calculation system based on their attendance.

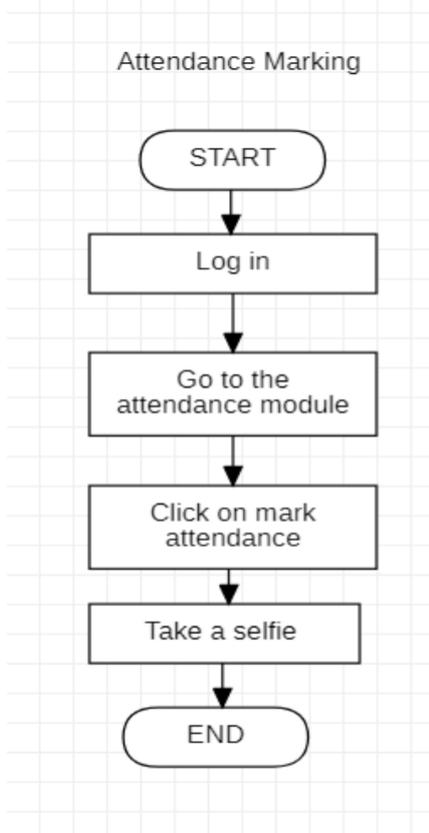
The attendance recording is aimed to be made proxy-proof by taking into consideration the following three parameters[5]:

- 1) Photo
- 2) Location

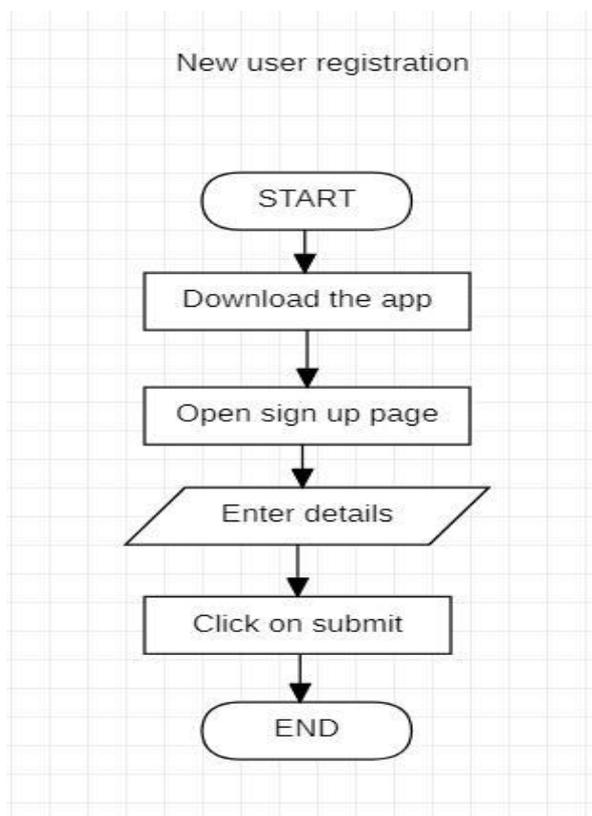


Flowcharts:

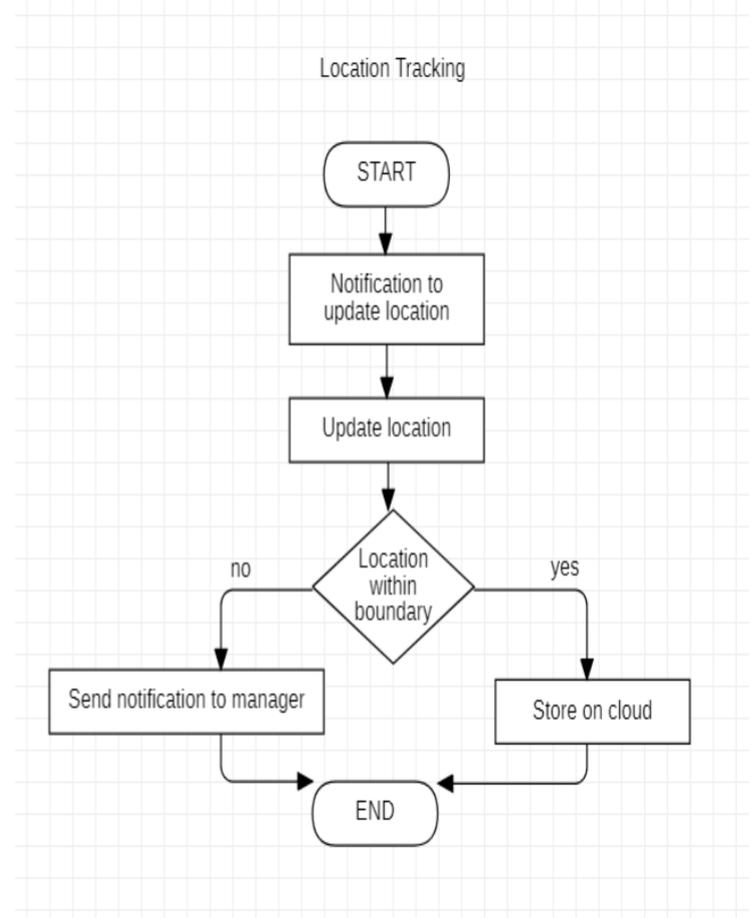
1.



2.



3.



### V. SYSTEM FEATURES

The proposed system has the following extra features:

- 1) *Efficient employee location tracking.*
- 2) *Notification updates to authorities.*
- 3) *Change of record in case of incorrect entry by appropriate authority.*
- 4) *Leave request by employees.*

#### 4.1 *Efficient employee location tracking:*

Earlier systems used to track the location of targeted devices continuously. The problem with this mechanism is that it generates a lot of redundant data besides draining the target device’s battery drastically.

To counter this problem, our system only generates a location access request periodically, preferably once every hour. This helps in saving of battery as well as preventing generation of redundant data.

#### 4.2 *Notification updates to authorities:*

Authorities in the upper levels of management hierarchy will be notified in case of the following scenarios:

- An employee is absent.

- An employee is late for work.
- An employee has not marked their attendance.
- An employee requests for a change in attendance record.
- An employee is not within the Geo-fence.
- An employee requests for half day/ full day leave.

The employees shall also be sent notification in the following cases:

- They haven't marked the day's attendance.
- There is a status update in their request for change in attendance record or leave.

- [2] Keri Schreiner "Where we at? Mobile phones bring GPS to the masses" Published at IEEE Computer Society, 2007.
- [3] Husin J. Then, Biju Issac, "Analysis, Design and Implementation of a Web-based Payroll Application Software" 2009, International Conference on Computer Technology and Development
- [4] Fabrice RECLUS "Geofencing for Fleet & Freight Management" 2009, IEEE
- [5] Jun Iio, "Attendance Management System using a Mobile Device and a Web Application" 2016 19th International Conference on Network-Based Information Systems
- [6] Sajee Mathew, "Overview of Amazon Web Services", AWS Inc, 2020

#### 4.3 Change of records in case of incorrect entries:

The employees can sometimes forge to mark their attendance. This may lead to unwanted miscalculations on their behalf for generation of salary payroll.

In order to avoid this, the employees can request a change in the attendance record from the storage after providing sufficient proof for their mistake to the management. The management shall be provided with a module to help correct the attendance record as required.

This, however, shall be allowed only a predetermined number of times, exhausting which, the employee shall not be allowed to make request for a change again until the next cycle.

#### 4.4 Leave request by employees:

Employees can request for Half day/ full day paid/unpaid leaves as per availability and business model of the organization from their portal itself. Upon doing so, a request notification will be sent to the manager who can then accept or reject the request as required. The employee shall then be sent a notification of the update of their request on their device.

## CONCLUSION

The main advantage of this system is that the maintenance for this system will cost very less as it is deployed on the cloud. It will also minimise any initial cost of deployment. The system also eliminates redundant location records and also helps in conserving device battery. Employees as well as the managers get notification for any requests or update on requests. Future works on this system include a customer feedback or query system integrated into this system as well as an e-commerce platform for organizations to sell their products. The system can be used by any organization deploying modules as per their needs.

## REFERENCES

- [1] R. Anand, G. Arun Kumar, S. Murthy "Mitter-bitter monitoring system using Android smartphones" Dept. Of CSE, Dhaanish Ahmed College of Engineering, Chennai, India.