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Android Based Geo-Attendance System

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ABSTRACT-- In most educational institutions, participation of Teacher's in attendance process is regarded as a vital exercise for allowing knowledge transfer. One common method is by having Teacher's to manually sign the attendance sheet. Besides, such attendance sheet could easily be misplaced or lost. Besides that, the application will help to reduce time being wasted, leading to a higher learning productivity in class. There are a few paperless attendance systems such as Biometric, Android based that have been developed but such systems need to be equipped with either a computer or RFID reader, resulting in additional cost for hardware and its maintenance. With that in mind, we have aimed to address this issue by having a smart attendance system with minimal hardware and software requirement and at the same time, by using GPS and Geo-Fence technique and enhancing the mobility aspect of the existing attendance systems.

KEYWORDS: Manually signing, Smart Attendance, Biometric, RFID, GPS, Geo-Fence.

I. INTRODUCTION

Recording safe Teacher's or representative's attendance isn't a simple errand, in view of approval and constrained access to equipment gadgets one after another. In most instructive organizations, investment of Teacher's in participation process is viewed as a dynamic procedure for permitting information move. This shows the significance of having Teacher's to go to the booked talks and Task. Regular strategies for checking Teacher's participation are as yet embraced by most universities. One basic technique is by having Teacher's to physically sign the participation sheet



Fig. 1. Hardware based biometric attendance (existing) system

The target of this paper is to show how the usage of portable participation application created utilizing geo-fence strategy to exhibit the area of an individual utilizing a GPS advanced mobile phone. It is a framework that was intended to reduce contributions from clients. The proposed application was created on the android stage with GPS and Wifi4G advances. This is done to recognize the status of participation that is check in or check out. At long last, the director and staff can access and update the information in database.

III. REALTED WORK

Tracking with Global positioning System (GPS):

There are number of utilization that pre-owned GPS for following. GPS permits an article to be followed by identifying GPS unit that introduced in a gadget. At the point when an individual conveys that gadget, a satellite can recognize the GPS area. Presently a-days, a large portion of the advanced cells as of now installs a GPS unit. This segment will talk about related innovation for following frameworks dependent on GPS.



Following table shows the distribution of Location Based Queries (LBQ):

Table 1: Distribution of Location Based Queries

Location Based Queries(LBQ)			
Range Queries (RQ)	Nearest neighbor queries (NNQ):	Navigation queries (NQ)	Geofence queries (GFQ):
Range queries enable retrieve nearby location within a specified range of GPS location. Someone with GPS enabled device can search nearby objects using queries. The Application such as a store locator usually use this kind of queries.	For NNQ, the nearest object return to the specific location based on the queries.	With NQ, the user with a location can be instructed to follow the path to certain destination.	GFQ enables a user to create virtual boundaries of an area consist a number of coordinates. These coordinates represent a new specific area on the map. With these boundaries, many application can be implemented such as child tracking system or car tracking system.

What is “Geofencing”?

Geo-fencing is a virtual boundary that utilized the worldwide situating framework (GPS) or radio recurrence recognizable proof (RFID) to characterize geographical limits. Its capacity permits an application to trigger when a gadget crosses a Geofence and enters (or leaves) the limits characterized. Some application characterizes limits by longitude and scope or through client made and Web-based maps.



Fig.2. the Geofenced Area of BIT college, Barshi

Working:

To utilize geofencing, an overseer or designer should initially build up a virtual limit around a predefined area in GPS- or RFID-empowered programming. This can be as straightforward as a circle drawn 100 feet around an area on Google Maps, as indicated utilizing APIs when building up a versatile application. This virtual geofence will at that point trigger a reaction when an approved gadget enters or leaves that region, as indicated by the director or designer.



What is “Firebase”?

Firestore is a mobile-backend-as-a-service that provides powerful features for building mobile apps. Firestore has three core services:

- A real-time database
- User authentication
- Enabling offline support.

IV. PROPOSED SYSTEM SYSTEM SPECIFICATION

This archive subtleties the prerequisites of the executives framework for disseminated arrange. The product prerequisites will be determined for all the periods of the application. A product necessity particular is a finished depiction of the conduct of the framework to be created. It incorporate a lot of utilization cases are otherwise called utilitarian necessities. Notwithstanding use cases, it additionally contain non-utilitarian (Or Supplementary) prerequisites

Software Requirements

- Back End: Firebase (Database).
- RAM: Minimum 2GB Studio latest Version.
- Android SDK 7 and above.

Hardware Requirements

- Front End: Android
- Mobile phones with Android OS support.

SYSTEM DESIGN

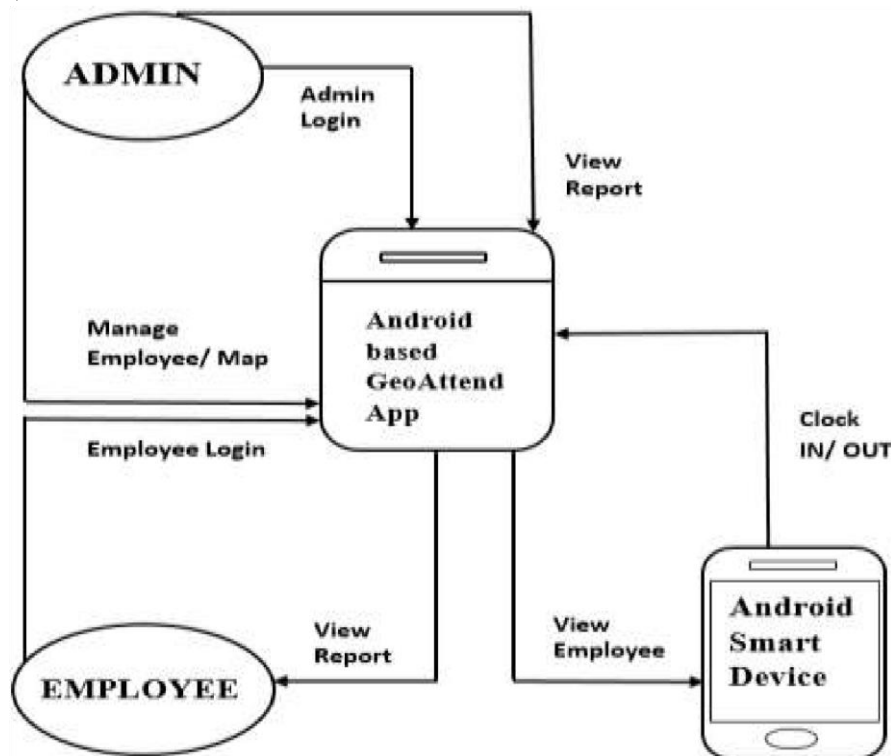


Fig.3.Block Diagram of System Design

WORKING OF “GEOATTEND” APPLICATION:

At whatever point a client or educator's go into the geofencing region of school gave by an application chairman, clients application "GeoAttend" gets initiated and naturally on the clock of the application and produces warning of entering in the geofencing region. In any case, one condition must be taken at the top of the priority list that GPS of Android telephone must be keep on. In the event that guess client don't have office of GPS on its cell phones client can go to their self by unique mark verification of cell phones. When the client entered in the geofencing territory, longitude and longitude area of client gets persistently sends after every 5 min. to administrator side for keeping track on client.



Result Evaluation and Analysis:

The framework gives simplicity of the executives to the overseers to view and track staffs' participation execution. This framework can make virtual limits of an organization area utilizing geo fence method with the goal that the framework can decide the staff is in substantial area or not.

Login/ Sign up page:

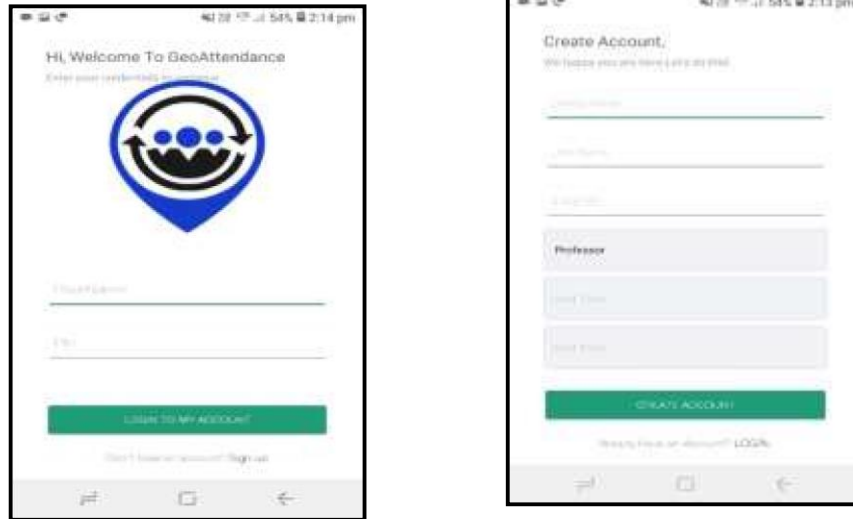


Fig.4. Login and Sign-up page for user and admin

Clock IN- Clock OUT Page:

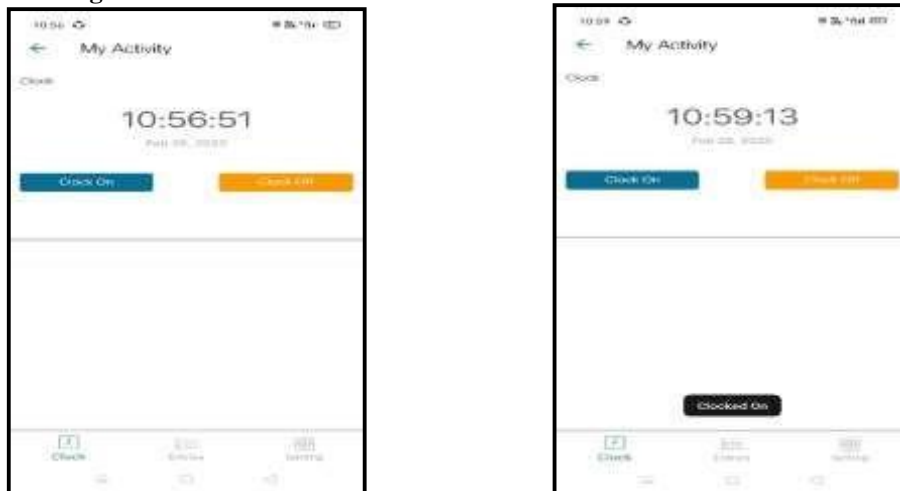


Fig.1.4.Clock-In Clock-Out Button on page



Fingerprint Authentication:

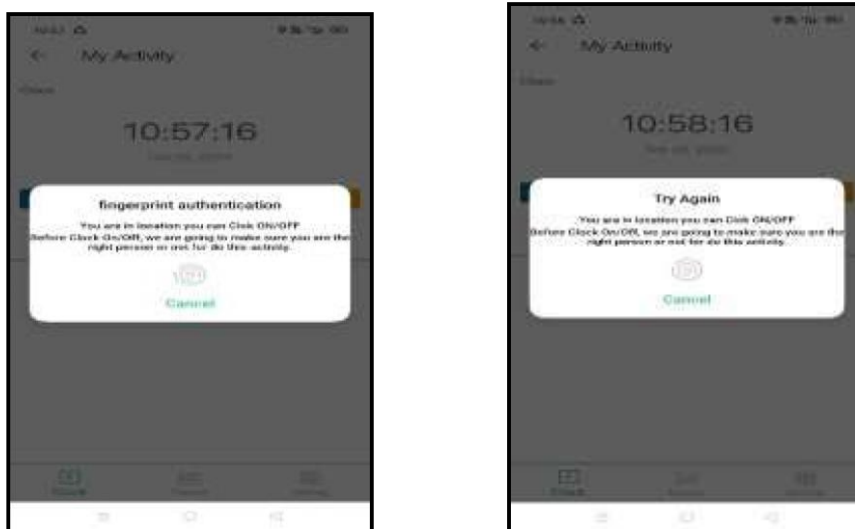


Fig.5. fingerprint authentication for clock-on and clock-out

Employee Monitoring Entries And Admin Side Entries:

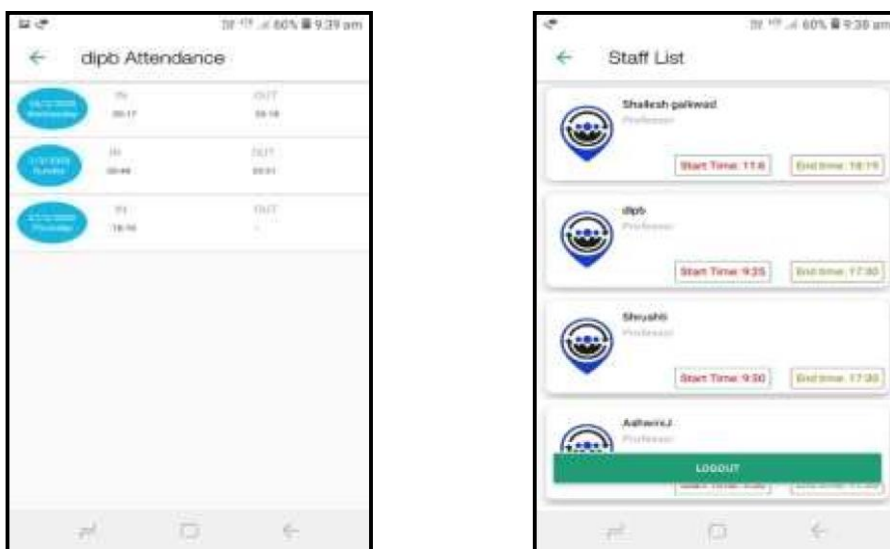


Fig.6. Entries on employee side and Admin side

V. CONCLUSION

The Android based Attendance System Using Geo-Fencing Application comprises of an Android advanced cell, GPS innovation, Wi-Fi passage and a server. The capacity of the whole framework is extremely straightforward. The future extent of the application is to create for different telephones too, for example, Symbian, Blackberry, and IOS.

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