AZADI KA AMRIT MAHOTSAV HACKATHON 2022

Synopsis

PID : PID403

Challenge Title: Mobile Attendance System with location

Name of the Office : DDO Office

Challenge Description with context :

Mobile Attendance System will keep the records of attendance of each employee of the office. This system will make it easier to keep the track of entry and exit timings of the employee. To make it more effective the location tracking can be included. Leave management can be improved and maintained digitally. The system can be developed as web application as well as mobile application. At present, all the records of the attendance of the employee is maintained manually. The system is less effective to keep the attendance records of the employee. Record keeping of the attendance and leave records are digital which makes it possible to maintain records for long term and transparent.

Abstract :

Over the years the process of manual attendance has been carried out which is not only time consuming but also provides erroneous result. Automated time and attendance monitoring system provides many benefits to organizations. This reduces the need of pen and paper based manual attendance tracking system. Following this thought, we have proposed a smart location based attendance tracking system which is implemented on 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 employee'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 .

Literature Review/Existing Innovation-technology for problem :

The main advantage of our application is that it will track the location of employee so that attendance can be verified. same way for attendance verification IP address of Wi-fi will be captured as well as verified particular system IP address ,so it can be cross verified with related office and specific Employee .So Employee have to be connected with office Wi-fi & own device to have attendance.
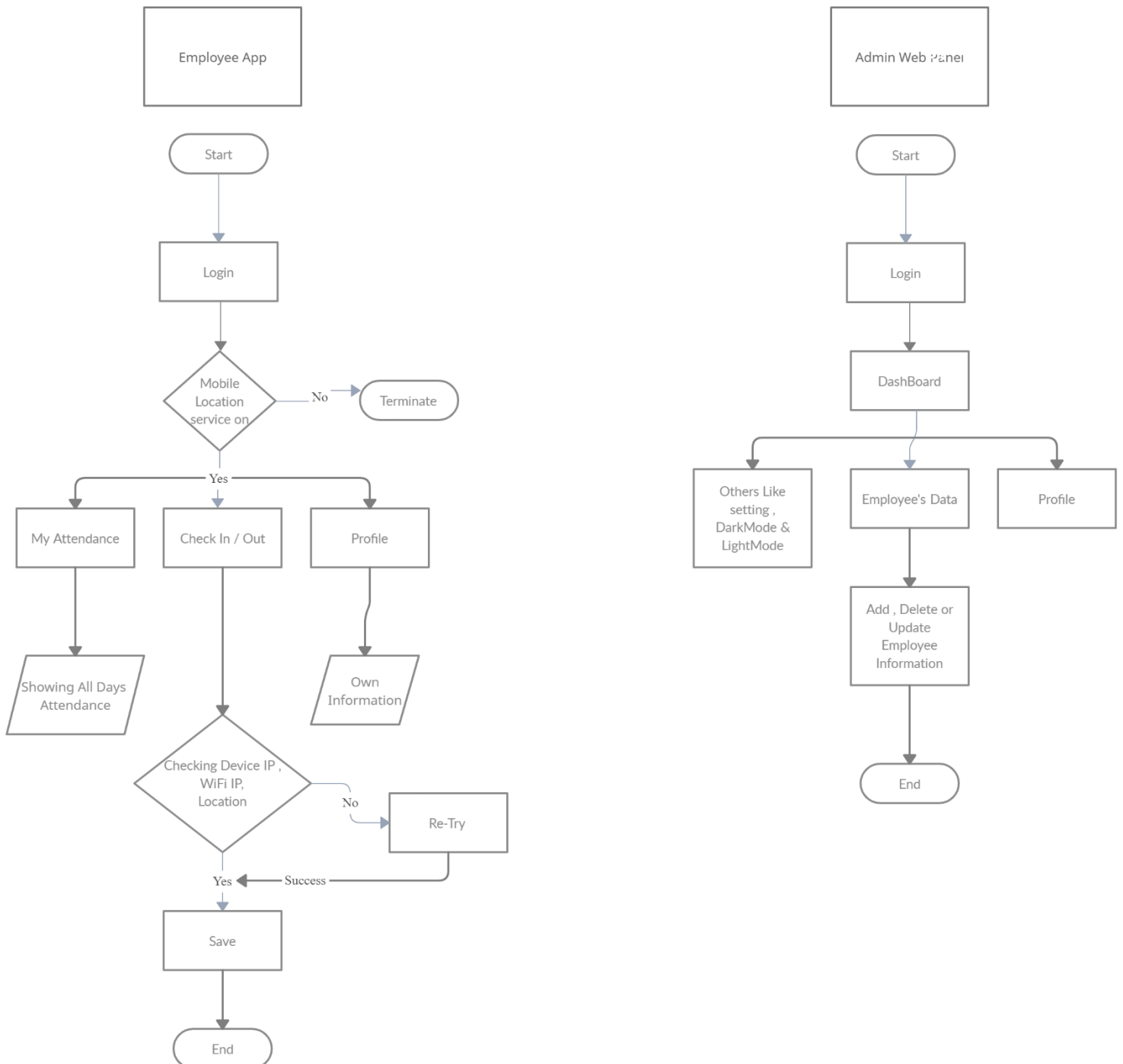
Approach to solve the problem :

The proposed system provides a solution to manual attendance taking problem. This system is a location based smart time and attendance tracking system based on the concept of web services which is implemented as an android mobile application. The employee has to install the respective APK files developed for them on their android devices. At first it is important to save the office coordinates by entering the latitude, longitude and radius of area. Employee has to save the IP (internet protocol) address of the office internet. At the same time one employee can save their information through the info menus of the App.

This location based time and attendance tracking system locates your position and logs your login and logout time. As the employee enters his workplace area, the system connects to the office internet and sends the employee id and local time to the server. Then the server gets the local time and stores the information in a database. Again when employee leaves the office area, the system notifies the office server that the employee is leaving. To run the whole system accurately it is important that both the employee device and office server is in the same internet connection (Wi-Fi) as well as own device for Employee for verify .

There will be two types of users in application. Admin and employee. Admin will have Web Based UI for use. It will showcase all the data and reports of employees. Employees can make their attendance through mobile application. They don't need to go to web for attendance. Through mobile only employee can mark their attendance.

Road map/Flow diagram to develop final solution :

Employee App

```
┌─────────────────┐
│  Employee App   │
└─────────────────┘
         │
     ( Start )
         │
     ┌───────┐
     │ Login │
     └───────┘
         │
    ◇ Mobile Location service on ◇ ──No──→ ( Terminate )
         │ Yes
   ┌─────┼─────────────┐
   │     │             │
┌──────────┐ ┌─────────────┐ ┌─────────┐
│ My       │ │ Check In /  │ │ Profile │
│Attendance│ │ Out         │ │         │
└──────────┘ └─────────────┘ └─────────┘
   │               │              │
▱ Showing         │          ▱ Own
All Days          │          Information
Attendance        │
          ◇ Checking Device IP, WiFi IP, Location ◇ ──No──→ ┌────────┐
                  │ Yes                                       │ Re-Try │
                  │ ◄──── Success ──────────────────────────└────────┘
             ┌──────┐
             │ Save │
             └──────┘
                │
             ( End )
```

Admin Web Panel

```
┌─────────────────┐
│ Admin Web Panel │
└─────────────────┘
         │
     ( Start )
         │
     ┌───────┐
     │ Login │
     └───────┘
         │
   ┌─────────────┐
   │  DashBoard  │
   └─────────────┘
         │
   ┌─────┼─────────────┐
   │     │             │
┌──────────┐ ┌─────────────┐ ┌─────────┐
│Others Like│ │Employee's   │ │ Profile │
│setting ,  │ │Data         │ │         │
│DarkMode & │ └─────────────┘ └─────────┘
│LightMode  │      │
└──────────┘  ┌─────────────┐
              │ Add , Delete│
              │ or Update   │
              │ Employee    │
              │ Information │
              └─────────────┘
                    │
                ( End )
```

Tools and technologies :

• Tools :

➜ **Vs Code :** Vs Code to work on the admin section using React JS and creating APIs together. It is better for good visibility, debugging with colors format etc .

➜ **MongoDB Compass / Firebase Console :** It Compass to create a cluster, set a local IP address, allow it to be used for all users, view all data for all users, etc.

➜ **Browser :** Running UI of admin panel as well as finding problems solution**.**

• Technologies :

➜ **Flutter Framework :** Flutter as a cross platform mobile development framework, including the ability to create applications that have a native look and feel on both Android and iOS devices, reduced development time and costs, and increased flexibility.

➜ **NodeJS / Firebase :** Node JS is primarily used for **non-blocking, event-driven servers**, due to its single-threaded nature. It's used for traditional web sites and back-end API services .

➜ **MongoDB :** It can provide many benefits to a software development team. **Its flexible schema makes it easy to evolve and store data in a way that is easy for programmers to work with .**

Challenges/Risk in implementation of Final prototype :

Implementing to this App software as well as Web software, in that challenges like to get employee location at he is present, then checking Wi-fi IP for Employees device is connected to office wi-fi or not as well as checking Employee device IP which is unique for verify Employee. From the Admin panel side, there would be challenges like manage all the Employees data in MongoDB, making Iterative UI for clean visibility to Admin. And Implementing best UI for Employee app side also .and save employee to the system App.

Possible Outcome :

Here in this application user can have a login option with credential's, after getting logged in he get the option to check-in & check-out, also has the features of having the history and also the option of profile. When employee check-in or check-out at that time the device must be connected with Wi-fi and their location will get match to their data, through this their attendance would be register. For this the employee own device IP address will get match to the company data. If all this steps get satisfied then the entry would be register or not, for the security reasons the data will be store in the database of the company. There will also the Admin section which avail add employee & get further more information.
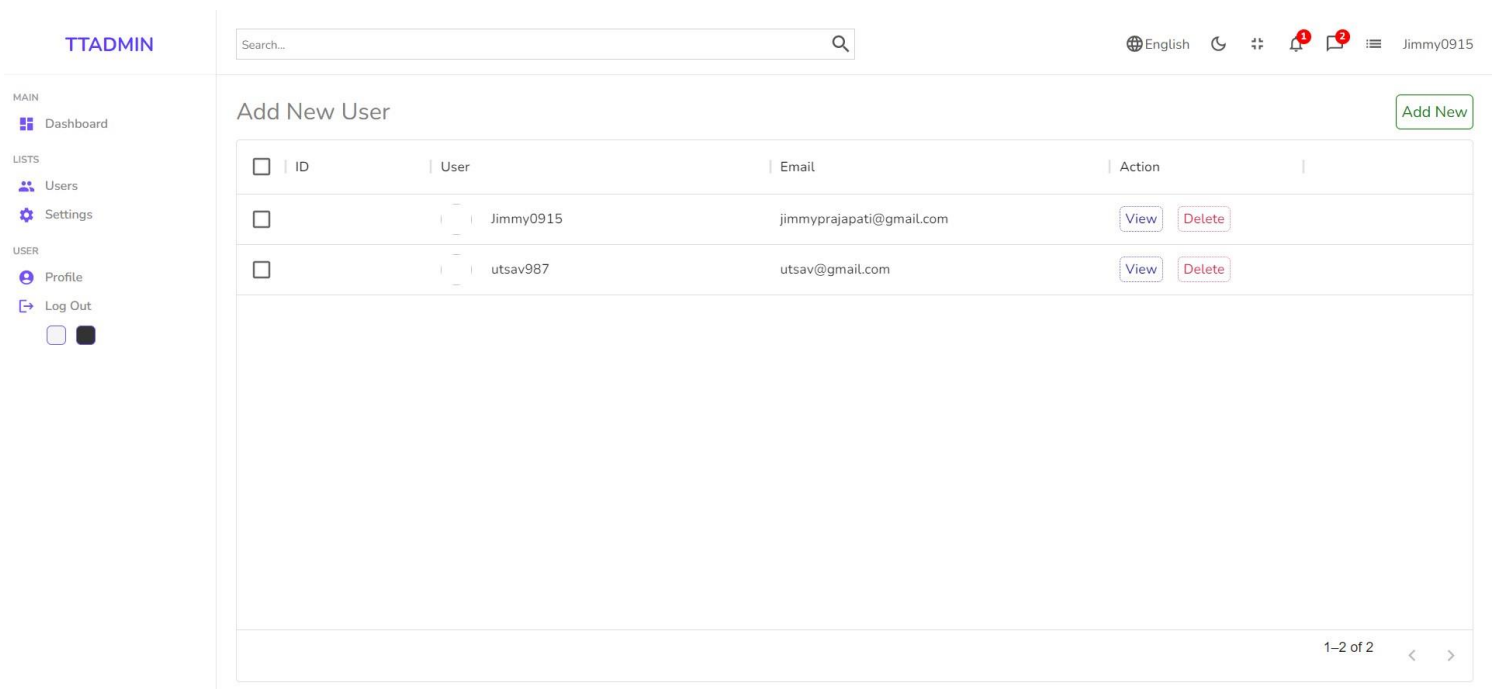
Work done till date :

The work done till 50 -60 % of the web control panel for admin is ready. In app of employee log in, getting location of Employee, check in - check out for entering as well as leave is ready. log in, adding employee to the database, employee's attendance APIs as and application UI is almost 80% is ready. Implementing light and dark mode to admin panel for best visibility. Adding employee to the database UI is ready as well as from the backend side is also ready. Employee delete API is also ready.

Image/Screenshot of Solution :

Employee Attendance

Admin Panel

Team details :

Sr. no.	Name	Email	Mobile
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