

A Cross-Platform Attendance System using GPS and FingerPrint Scanning through Smartphones using Xamarin Forms

Pratiksha Ashok Naik
Dept. of ISE, Information Technology
SDMCET
Dharwad, India

Dr. Jagadeesh Pujari
Dept. of ISE, Information Technology
SDMCET
Dharwad, India

Abstract:- In this generation the mobile developers want their application to be available on all the different platforms such as iOS, Android and Windows. These Platforms will have its own environment and language hence its difficult and time consuming for a developer to develop the apps. Keeping this as a consideration many cross platform technologies have come into picture. Using Xamarin Forms you can write the business Logic and UI once and share among the different platforms. The main Moto of this project is to execute a way that is easier, convenient and more users friendly. The user can download the app on their smartphones, and by scanning the fingerprint they can provide the attendance and also the tracking of the individual throughout the working hours is more efficiently done by using GPS.

Keywords:- *Xamarin Forms, GPS, Fingerprint Scanning.*

I. INTRODUCTION

Attendance recording has been a hassle for a long time now. After the automation of manual registry book entry, the biometric device system has made the whole system digitized and has helped the records to be in a soft format. The main Moto of this project is to execute a way that is easier, convenient and more users friendly and robust. By developing a Cross platform application. the user can download this application on their smartphones, and by scanning the fingerprint through the phone the task of attendance entry is simplified and also, the tracking of the individual throughout the working hours is more efficiently done by using GPS technology.

In this paper we have considered two main concepts that is GPS technology and fingerprint biometrics for providing the attendance and we have used a xamarin forms for the development of the application . In the corporate world it has been very difficult for the employee to provide their attendance using the conventional biometric method. To overcome the drawback of old system a cross platform app has been developed which keeps the track of the employee using GPS and fingerprint scanning technology is for authentication.

To develop this project we have used C# language, Visual Studio 2017 with Xamarin.

As per the survey in last few years the use of mobile application has increased to a large amount. At the same time the new technologies are coming into the existences. The innovative idea of building the apps keep on changing every day. Building a mobile application for each platform and deploying it is difficult and time consuming. So to overcome the drawbacks we can use a cross platform technology to build the mobile application in less time and cost effective. Xamarin Forms allow you to build the application for different platforms such as iOS, Android Windows using C# language.

II. EXISTING SYSTEM

The current biometric attendance system consists of a device that is installed at a particular place in an institution. The fingerprint identity of an individual is pre-installed in the device. The identity of an individual cannot be forgotten, shared, stolen or hacked very easily. These features can uniquely identify a individual, replacing or supplementing traditional security methods by providing two major improvements that is individuals biometrics cannot be easily robbed and an individual does not need to memorize passwords or codes. The persons need to walk to the device to provide their attendance. The above method has some disadvantages: It requires that a person has to physically travel to the point of location of device for the attendance to be registered. Also, the location of individual is not tracked throughout the working hours.

III. PROPOSED SYSTEM

In This project we have two Parts that is the user and the server. In user part we have the GPS and Fingerprint Technology and in server we have the database which talks to the user. In this project we have the two validating conditions firstly the GPS one and the next is fingerprint .Once the user is in the permissible zone then only the user can provide the attendance through the smartphone. If the user is not in the permissible zone then an alert message is displayed not in the Desired Location. The definition of the permissible zone can be carried out through the server registration process. If the user is in the location then the other message is displayed saying place your finger, the users need to provide their registered fingerprint if the finger print matches then the user is directed to the next page where he has to provide the attendance by pressing the attendance button which will display the current date and

time of the attendance. And the displayed date and time will be stored in the database.

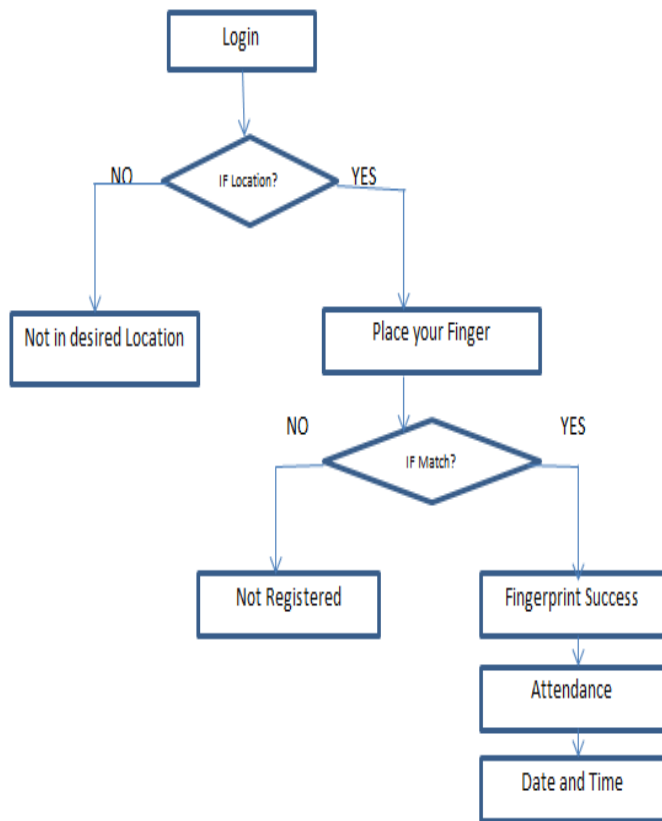


Fig 1:- Flowchart

IV. ARCHITECTURE

A cross platform architecture which uses a portable class library to share the code and different dependency are used for different platform. In PCL we have data layer, data access layer, service layer and business Layer. Each platform has its own API,UI and Platform dependent implementation.

➤ *Data Layer:*

It is nonvolatile data persistence and can be implemented with the XML files and it is like SQLite database.

➤ *Data Access Layer:*

These are the wrappers around the data layer which provide different crud operations such as create, read, update, delete. Without exposing the details to the caller.

➤ *Business Layer:*

This is also named as the business Logic Layer which contains the business entity definition that is models and business Logic.

➤ *Service Access Layer:*

Used to access the service from the remote database. Using (REST, JSON, and WCF) to retrieve the data from the remote server.

➤ *Xamarin. Forms:*

Using a single codebase can develop a UI's for different platform such as android, windows, iOS. Developers need not write the UI separately for each of the platforms. Xamarin forms uses the code sharing method .Once the UI written in the portable class it can be accessed through the different platforms. During the runtime the screen and the controls behind it are mapped with the UI element. Once the application is developed it can be deployed on any of the platforms. Xamarin forms uses a code sharing method by which the same code can be used for the different platforms. There is no compromise with the functionality of the application all the platforms will have the same functionality.

Different Packages used in this project are:

➤ *Xam. Plugin. Geolocator:*

Simple cross platform plugin which is used to know the location and speed. Using this plugin we can also track the geolocation.

➤ *Plugin. Fingerprint:*

This Plugin is used to access the fingerprint sensor of the device.

➤ *sqlite-net-pcl:*

It is a library which provide SQLite database storage for Mono, .NET and Xamarin applications. It is also an open source Library which can be downloaded from nuget source.

➤ *PCL Storage:*

This consist of different Local files, IO, API's, For different platform such as windows, android, iOS. Using this it is easy to create a cross platform application.

➤ *Current Activity:*

This plugin provides base functionality for Plugins for Xamarin to gain access to the application's main Activity.

➤ *Entity Framework:*

This frame is used to access data using data access technology. This framework is generally used in all the cross platform app development.

➤ *Xamarin. Forms:*

Using a single codebase can develop a UI's for different platform such as android, windows,iOS.

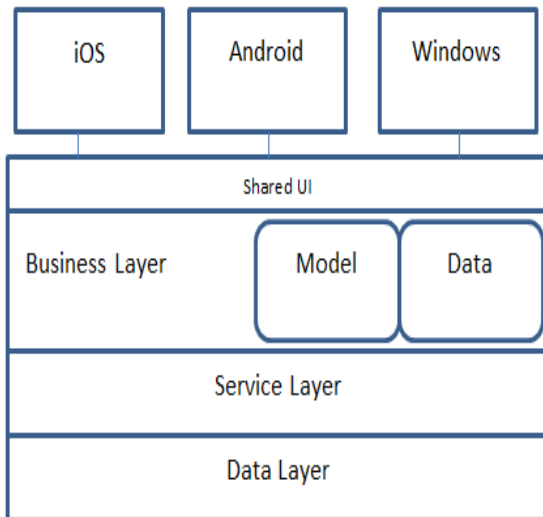


Fig 2:- Architecture

RESULTS

The following snapshots show the results of the developed application.

- A. Allows the user to login if he/she is in the desired location or else prompts the error message saying not in the desired Location.

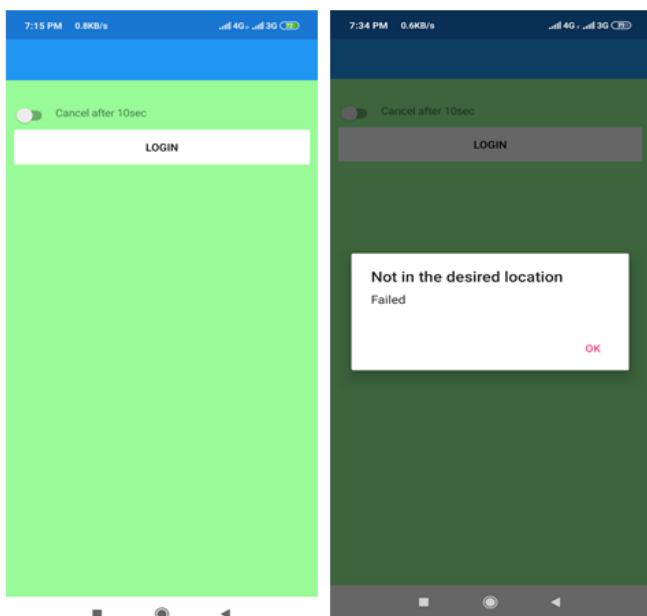


Fig 3:- Validating Process

- B. Once the user is in the desired Location he/she can scan the fingerprint using the smartphone for the user authentication purpose

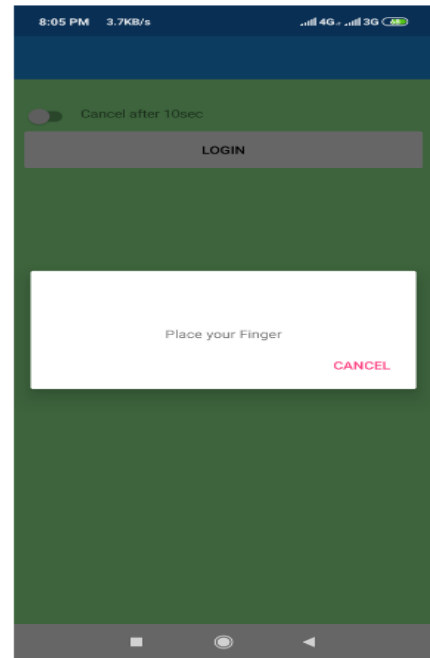


Fig 4:- Authentication process

- C. Once the fingerprint of the user matches he /she can provide their attendance

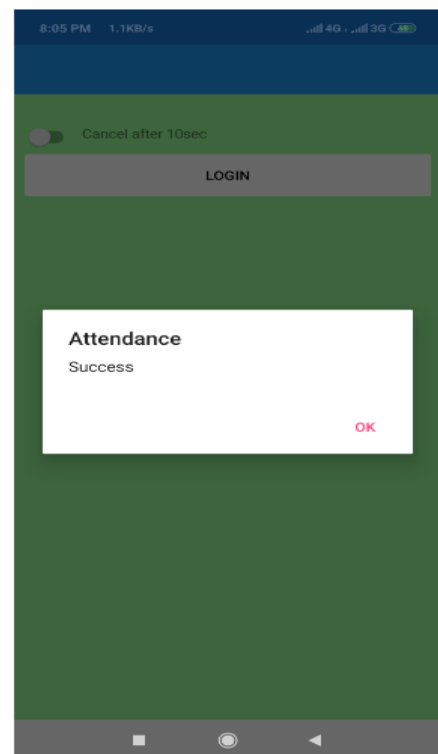


Fig 5:- Providing Attendance

- D. When the user provides the attendance the current system date and time will be stored in the database.

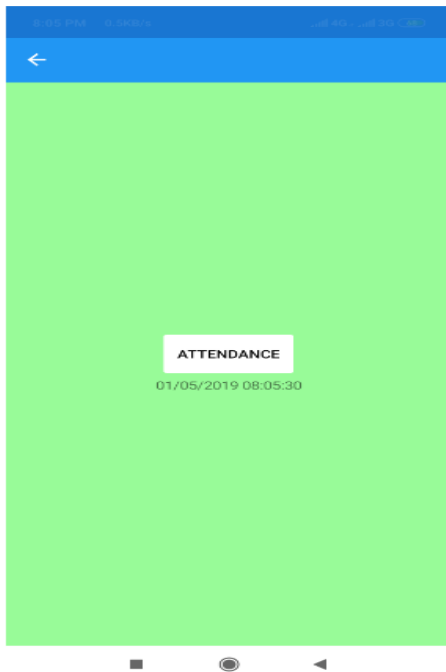


Fig 6:- Recording the current date and time

CONCLUSION

The mobile developers want their application to be available on all the different platforms such as iOS, Android and Windows. So using a cross platform technology it is easy for them to develop such application. But the developers need to choose the right technology for them. Xamarin Forms allow you to build the application for different platforms such as iOS, Android Windows using C# language. By implementing the proposed project, we will be able to implement the software engineering principles, learn a new technology and GPS and be able to provide the easiest means of exploring the talent.

FUTURE WORK

Currently in this project I have used Local database SQLite to store the data. The same database can be hosted on online Server for continuous communication between the app and the server.

REFERENCES

- [1]. Mukesh Prajapati, Dhananjay Phadake, Archit Poddar "Study of Xamarin Crossplatform framework" International journal of Technical Reserch and application, volume 4, pp.13-18