

Attendance System Using IoT & Fingerprint Sensor

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Abstract- Biometric student attendance system increases the efficiency of the process of taking student attendance. This project represents a simple and portable approach to student attendance in the form of an Internet of Things (IOT) based system that records the attendance using fingerprint based biometric scanner and stores them securely over cloud. This system aims to automate the cumbersome process of manually taking and storing student attendance records. It will also prevent proxy attendance, thus increasing the reliability of attendance records.

Keywords- IoT, Cloud, biometric, scanner

I. INTRODUCTION

Traditionally the attendance is done manually by using attendance sheets where students put their signature. But the disadvantage of it is that one can replicate the signature of another who isn't present and because of this the actual presence becomes questionable. One way to avoid this is to call the roll numbers of the students. But this is really time consuming and takes away a fair portion of the class period and the final calculation of percentage is really tedious. An automatic attendance system using biometrics will give a solution. Biometric is used to analyze biological data related to humans. For recognition purpose biometric has been widely used. The recognition is based on some biological features. Biometrics that can be used may differ based on application but the key structure of biometric system is always same.

II. METHOD

The Attendance system using IoT and Fingerprint Sensor is a portable system which is circulated in a class while taking attendance. When a student put their finger on sensor it scans it and check with already stored fingerprint in then system. If it matches then the attendance is marked if it doesn't then attendance will not be marked. Below is the flowchart of the attendance system Here you can see the actual process behind the system and the flow of our system.[5]

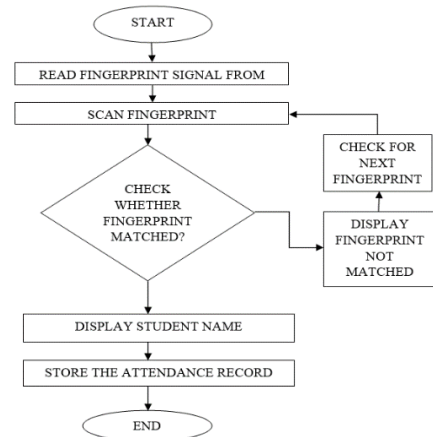


Fig 1 : Flowchart

Implementation Of Hardware

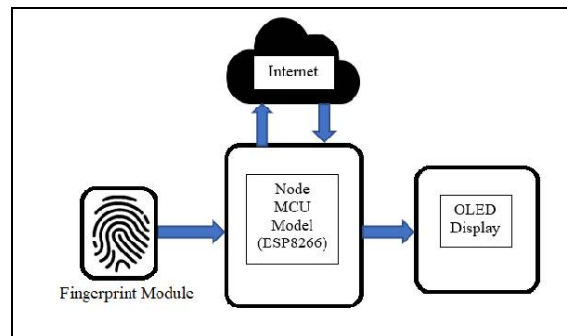


Fig 2 : Block Diagram

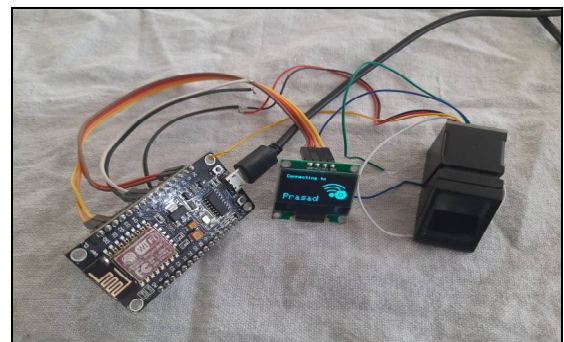


Fig 3 : Hardware Photos

The Attendance system using IoT and Fingerprint Sensor consists of three main blocks containing Fingerprint sensor (R307), Node MCU model (ESR8266) and OLED display. [4]

The above block diagram shows the working of IOT based attendance system. The student or employee has to put their finger on the fingerprint sensor to mark their attendance after that the sensor start the scanning process it scans the finger and checks whether the fingerprint is matching with fingerprints which are already stored in the inbuilt memory of the sensor if it matches then it start next process through the Node MCU model it marks the attendance record for that person and stores on google sheet via internet and then it displays the name of user on OLED display indicating with their name and whether attendance is marked or not.

III. IMPLEMENTATION OF SOFTWARE

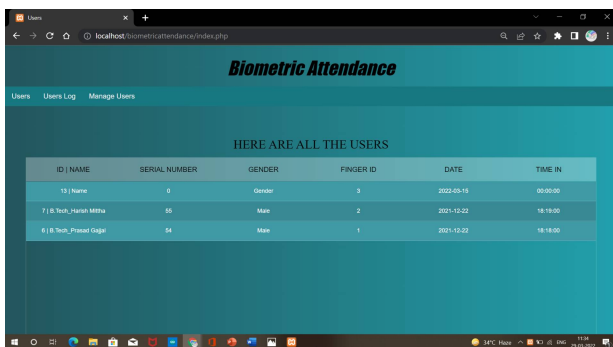


Fig 3 : Screenshot Of Software (User Block)

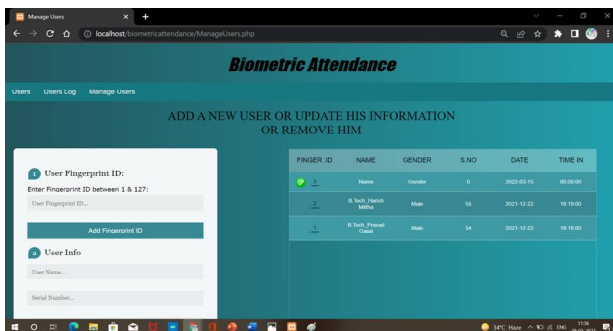


Fig 4 : Screenshot Of Software (Manage User Block)

User Block :- In user block you can see the registered user fingerprint ID , user name, gender, Sr.No. and date.

User Log :- In user log menu you can watch the real time attendance of users and their time in and time out in the class.

Manage User:- In manage user tab you can add user , delete user or update their information.

IV. APPLICATION

- This system can be used in biometric attendance of students.

- This system can be used for real time monitoring of any class strength and make attendance record in real time.
- It can be used for security purposes where high level security is desired.

V. ADVANTAGES

- Easy to use.
- Less time required to mark attendance.
- Reduces human errors.
- Reduces Proxy Attendance.

VI. RESULTS

The actual system will look like this after we implement it and designing a prototype for the project. To make it portable we have used Li-ion Batteries which are rechargeable and to turn ON and OFF we have used a switch and to charge batteries we have used charging module (TP4065).



Fig 5 : Image Of Successful Login



Fig 6 : Image Of Successful Logout



Fig 7 : Image For when we place non registered finger

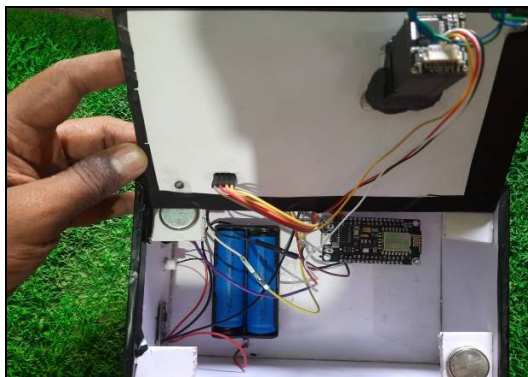


Fig 8 : Image Of Inside Hardware

VII. CONCLUSION

The traditional process of manually taking and maintaining student attendance is highly inefficient and time consuming. The attendance monitoring system based on biometric authentication has a potential to streamline the whole process. An Internet of Things (IoT) based portable biometric attendance system can prove to be of great value to educational institutions in this regard as it proves to be highly efficient and secure. The cost involved in making this system is quite less, when compared to conventional biometric attendance system. The use of IoT to store the attendance records makes all the data easy to access and retrieve as and when required by the teachers. The use of fingerprint scanner ensures the reliability of the attendance record.

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