Biometric Attendance System Using Fingerprint Module

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Abstract- *Previously there was a major issue on impersonation experienced by the working sector such as bank, industry, institutes etc. It was difficult to maintain the record of each individual working details.*

Using the biometric identification technique, we can automate this maintainace of record of an individual to every easy manner. This will make the effort of the management system to be reduced drastically. There are many ways in the biometric system such as retinal scan, finger print scan etc.

In our paper we are going to describe the fingerprint scanning method for an institute level application.

The main aim of this system will be reduced the manual efforts of recording the manual efforts of recording the attendance and to provide an appropriate database record for the staff to make the proper analysis of the attendance of a student.

As we are using the fingerprint impression of an individual the identification of the individual will be easily.

This system will be recurred by the authenticated person of the institute. Only the authorized person can make the enrolment of the students.

Once the enrolment is done than the authentication of the individual will record the attendance on regular basis.

Keywords- Biometric, fingerprint, enrolment database management.

I. INTRODUCTION

Today in a fact moving world. Every organization needs to save their efforts in manual works. The traditional ways of monitoring the attendance is well known to us as the register records maintained by the manual entry of the attendance by an authorized person.

As this technique is too much out dated for today use. Institute were the attendance of an individual plays a major role in these academics this traditional way can't be used any more.

Biometric system gives us a perfect solution to their issue. Using the unique fingerprint pattern of an individual we can store/record the attendance. This will prevent the malpractices of students is attendance during the lectures. The system will provide an easy and fast way of monitoring the attendance.

As the database of the biometric system will be in digital format the uploading and analysis work will also become smooth and efficient.

This system will be effective over the older system. Using a communication path such as GSM, Wi-Fi, Zigbee this method can be more effectively build and implemented.

Teacher and staff can do the analysis of the attendance easily through this method.

This method will be very helpful in maintaining the records of students as the database will be stored and maintained in the digital format. Teachers can also maintain the records for a longer time than by the traditional ways.

By providing an application-oriented system the database of the biometric system can be directly be saved in excel sheets or pdf format to ease the analysis of the attendance system. This will help the teacher to convey a message to the guardians of the student who particularly has the attendance below the desired level and to maintain their attendance further.

II. RESEARCH AND COLLECTED DATA

This attendance system has been already implemented using different technology such as barcode system, swipe-card system etc. while studying paper of biometric attendance they have explain system using barcode mechanism which was implement in June 2015. This mechanism is does not identify properly as different barcode need to be generate for everyone, so method become more

tedious. The barcode mechanism does not allow the generation of complete database is not even informative. Next system is swipe card system which has same difficulty as same maintaining database so using biometric technology more suitable technical maintained. Biometric attendance given informative database at individual research analysis of database.

III. METHODOLOGY

To make a proper attendance monitoring system we will require a proper modeling structure of the system. The design of the system is as followed in the diagram.

Component Used

1] Microcontroller Arduino UNO.
2] LCD display.
3] Keypad.
4] Wi – Fi module.
5] Finger print module.
6] External memory – card.
7] RTC unit
8] Power supply

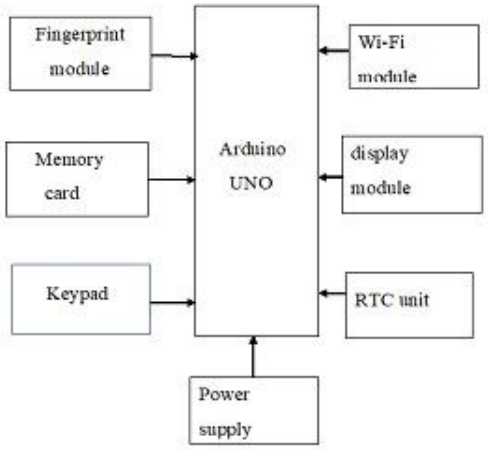


Fig 1. Block diagram

Fingerprint module is to the stage from where the input thumb impression will be obtained. The image will be captured converted and stored by this module.

Display module is used to show the interfacing of the input output of the system as shown in the enrolment any authentication stages.

RTC provides the real time clocking to the marked attendance which we provide more informative details is the database.

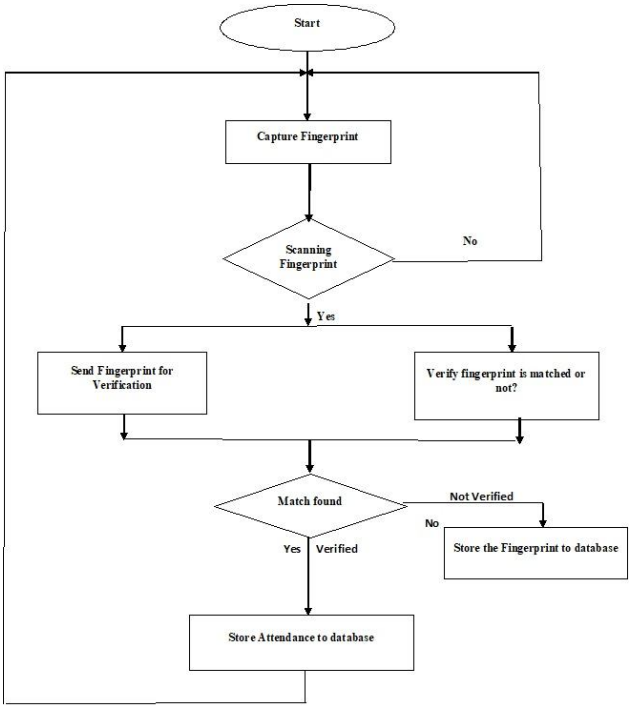


Fig 2. Flow chart

Wi-Fi module is used for the wireless communication of the biometric system with the application.

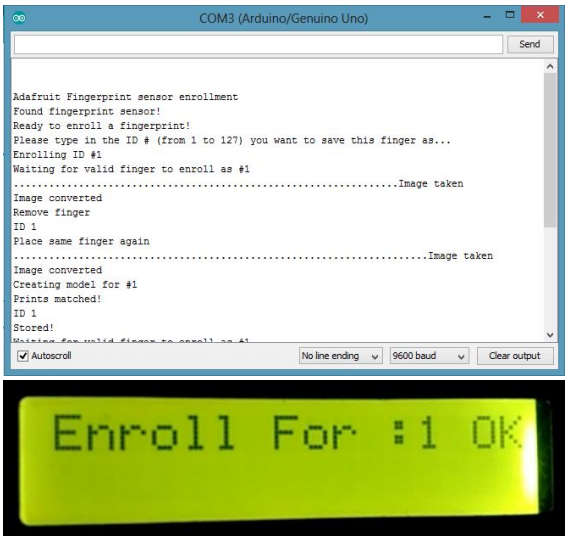
Arduino UNO is the microcontroller that can be used for the easy implementation of the system. As we can use more than one UART connection for connection of fingerprint module, LCD, memory card etc.

The system will be working in 3 stages as

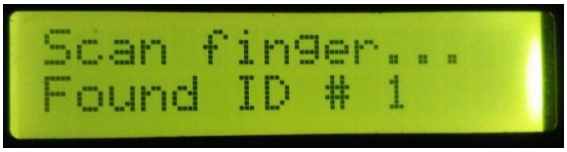
1] Enrolment.
2] Authentication.
3] Clearing data.

Enrollment-

The enrolment module is the first step of the system for the monitoring of the attendance using biometric will start. The individual will use his thumb impression as a unique pattern of identification. During the enrolment another input parameter will be his Roll No. or identify no of the individual.



Different enrolment can be done by the thumb impression in the teacher enroll section then all the further attendance will be marked under that staff attendance. This will be marked under that staff attendance. This will generate a proper lecture wise attendance of the students.



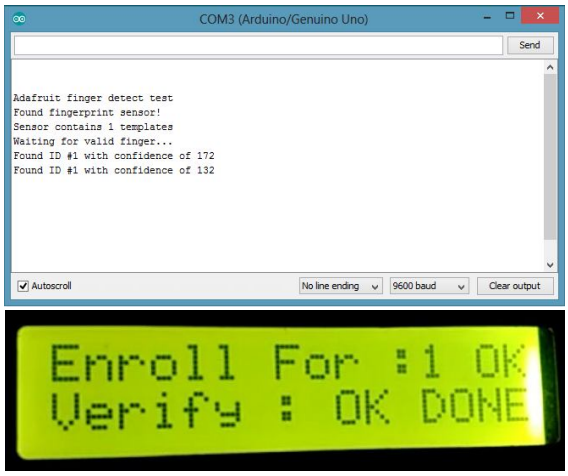
During teacher's enrolment their identity no, name, etc. will be taken once all the enrolment is been done by all the teachers and students then the database is ready for keeping attendance record.

After the completion of the enrolment system the system can be switch to authentication system in which all the individuals can marks their attendance.

So basically, enrolment creates the database of the organization

Authentication

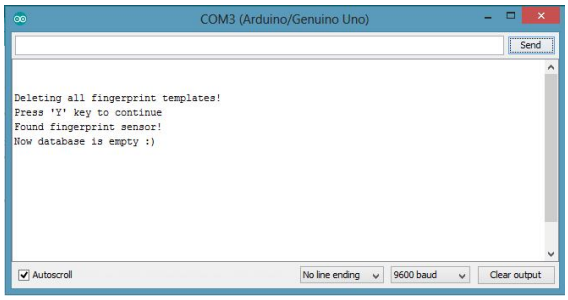
This process of system deals with the actual marking of the attendance of the individual. the database which was created during the enrolment stage is been used to verify whether the input is given by thumb is valid or not. Note that during authentication entry of new fingerprint will be restricted as this stage compare the thumb impression with the image saved in the database already.



no other input parameter will be allowed during this stage i.e. roll no, identity no etc. will be restricted only enrolled individual can used the system to be marked his attendance. at a time only one stage will be active i.e. either enrollment, authentication or clearing data. the marked attendance then will be store and can be obtained for analysis through the application designed for the system. After the successful analysis of the database the student can be notified if his/her attendance is not up to the marked

Clearing Data

This stage will be used only if the new database needs to be stored by deleting all the unwanted previous database. Ones the data in be removed it cannot be recovered as the only storage medium is the memory of the biometric system. This problem can be solved by using an external additional into it as we want.



This will make the system more effective towards maintaining the record of the students.

IV. CONCULSION

In this paper we have presented the fingerprint based biometric attendance system. The developed embedded system based on fingerprint recognition. The developed system is very helpful for the attendance monitoring is huge

organization also it reduced most of administrative work and malpractice performed during attendance monitoring. it is soft, secure and easy way to monitor attendance.

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