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Automatic Attendance System using Arduino and GSM Module

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Abstract – Perfect *attendance recording and management has become important in today's life as attendance and achievement go hand in hand. Attendance is one of the work ethics valued by employers. Generations in developing countries still use paper based Most of the educational institutions and government or attendance method for maintaining the attendance records. There is a need to replace these previous methods of attendance recording with biometric attendance system. The unique features of fingerprint make it ideal for use in attendance management systems. Besides being secure, Fingerprint based attendance system will also be user friendly. Fingerprint matching is widely used in forensics for to identify the perfect person. It can also be used in applications such as identity management and access control. This review incorporates the problems of attendance systems presently in use, working of a typical fingerprint based attendance system, study of different systems, their advantages, disadvantages and comparison based upon important parameters.*

Key Words*:* **Arduino uno, LCD16×2, GSM Module, fingerprint Module, Bluetooth, RTC Module**

1. INTRODUCTION:

In an educational system, the teachers call out the name of every student and mark the attendance. This causes time wastage during lecture time. This becomes more and more important where number of students in a class is very large. Managing the attendance data is also very difficult such a large group. The way is that the teacher will pass the attendance sheet around the class for the students to sign. This method has a major drawback because the students tend to answer or sign for their friends. In educational institutions, attendance and academic success are directly depends on each other. That's why a proper attendance management system is important. In developing countries, most of the educational institutions and government organizations still use paper-based attendance method to keep and save the attendance. Most employers value work attendance for their ethics. Biometrics is the popular technology used for automatic identification of a person based on biological characters such as fingerprint, iris, facial recognition, etc. The fingerprint verification system is commonly used biometric technique.

2: Methodology

Block Diagram

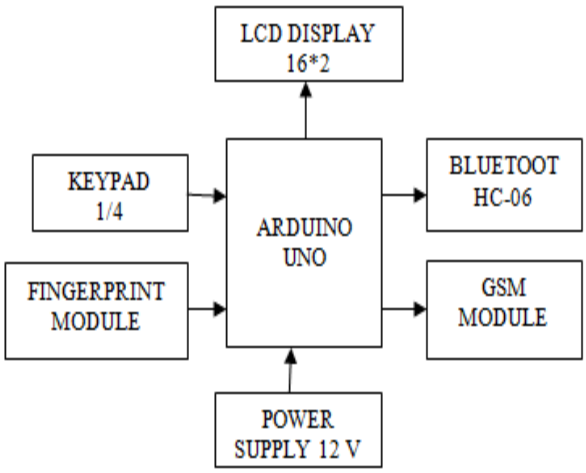

Fig-1: Automatic Attendance System Using Arduino and GSM Module

In the attendance tracking system it requires 12v power supply. When we give the power supply then circuit becomes on. There are four push to on buttons are provided for user entry. 2nd button is for increment, 3rd button is for decrement, and last 4th button is for Enter in The main menu and long press of 4th button to enter the options.

Here we use the thumb detector when a student's comes towards the system then he or she gives the thumb then R305A saves its thumb in memory. When a student comes to class then the thumb detector matches the thumb with pre-scanned thumb. When it matches then there are three options if we are adding a new person then we has to press 4th button. And if the thumb is already stored then press long press 4th button to enter the thumb prints. As soon as we press the 4th button then option on LCD we see. To scan thumb print press ENTER. Select one of the option then press Enter then immediately message on stored numbers send by using GSM.

3. Components:

3.1 Arduino Uno:
Arduino is a microcontroller which is used to read the sensor values. Current sensor is connecting to the Arduino. While Keeping in mind the economic parameters and its simplicity, Arduino Uno has been used which reduce the programming complexity. Arduino monitoring Attendance system.

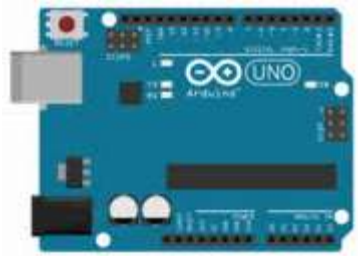

Fig-2: Pin diagram of Arduino Uno

3.2 GSM Module:

Size specifications A6 size: 22.8×16.8×2.5mm, A7 Size: 22.8×19.8×2.5mm.
Working temperature: -30°Cto+80°C
Working voltage: 3.3V-4.2V
Power voltage: >3.4V

3.3 Bluetooth Module:

The HC-06 is a class 2 slave Bluetooth module designed for transparent wireless serial communication. Once it is paired to a master Bluetooth device such as PC, smart phones and tablet, its operation becomes transparent to the used.

3.4 Liquid Crystal Display (LCD):

LCD is used for displaying the message s such as scan the finger, message send to parent's notifications.

3.5 Finger-Print Module:

R305 Fingerprint Module is a serial fingerprint scanner. This Fingerprint scanner is capable of storing and comparing the fingerprint and accordingly giving the desired output. Fingerprint processing includes two parts: fingerprint enrollment and fingerprint matching (the matching can be 1:1 or 1: N). When enrolling, user needs to enter the finger two times. When matching, user enters the finger through optical sensor and system will generate a template of the finger and compare it with templates of the finger library. For 1:1 matching, system will compare the live finger with specific template designated in the Module; for 1: N matching, or searching, system will search the whole finger library for the matching finger., system will generate the matching result, success or failure.

Results:

The output of purposed system as shown in below figures:

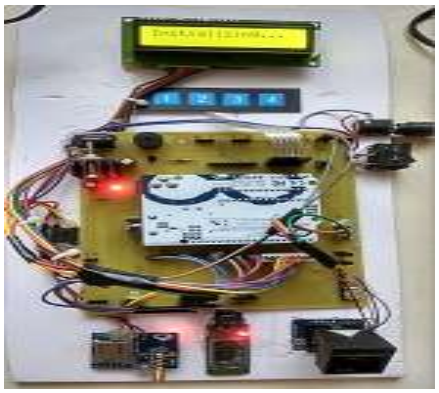

Fig-3: Project Hardware Diagram

Conclusions:

We conclude at the end of the report that this project will definitely provide benefit to all the educational institutes & all the Industries.

The system helped to reduce many issues such as denying the possibilities of cheating in recording the attendance, helped to ease the lecturers to keep track of students' attendance, the cryptography technique added more security so that there will be no anonymous fingerprint which is able to tamper with the recorded data, and the portability criteria which saves time in taking attendance instead of queuing in a line. In our future work, some enhancements of the developed attendance system can be implemented.

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