



Digital Wireless Attendance Maintenance System

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I. INTRODUCTION

Fingerprint identification is the oldest method that has been successfully used in various applications. Each of our ten fingerprints is different from one another and from those of every other person. Even identical twins have unique finger-prints. That makes them ideal for personal identification. For attendance, the student places his/ her finger over the fingerprint device and the student's matriculation number is sent to the database as having attended that particular lecture. But biggest disadvantage in this kind of biometric device is that students can able to evade out of class after registering their presence in biometric device without attending the lecture. In order to overcome this kind of problems the a small change in this method is introduced for respective professors to mark attendance for the students. This method is the easiest and simplest technology, because it only requires elementary software resources and fingerprint input for authentication. At the end of the semester or year, reports are generated to enlist the name students that are eligible for exams and number of times the student attended lecture.

II. NORMAL ATTENDANCE MONITORING MODEL

A fingerprint is captured by user interface, which are Likely to be an optical solid state or an ultrasound sensor.

III. IMPLEMENTATION OF PROCESS

Fingerprint scanning and registration:

Fingerprint scans convert people's fingerprints into digital codes or numerical data that can be recorded in a database. Like facial recognition software, fingerprint scanning matches an individual's code against an existing database of codes in order to confirm that individual's identity. Proponents of fingerprint scanning point to the conversion of fingerprints into digital data as a privacy protection measure. Fingerprint scanning is already in use as an identification system that replaces cards or key to log onto computers.

Fingerprint recognition or authentication

Fingerprint recognition or fingerprint authentication refers to the automated method of verifying a match between two human fingerprints. Fingerprints are one of many forms of biometrics used to identify individuals and verify their identity. This article touches on two major classes of algorithms (minutia and pattern) and four Sensor designs (optical, ultrasonic, passive capacitance, and active capacitance).

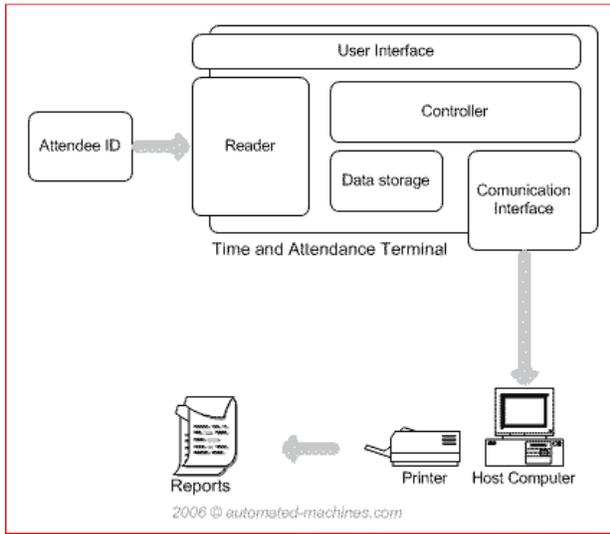


Fig.1 Normal Biometric attendance device

IV. PREVIOUS WORK

Generally the attendance systems use paper based methods for taking and calculating attendance. This manual method requires paper sheets and a lot of stationery material. Previously a very few work has been done relating to the academic attendance monitoring problem like RFID based systems. Some software's have been designed previously to keep track of attendance. But they require manual entry of data by the teachers. So the problem remains unsolved. Furthermore idea of attendance tracking systems using facial recognition techniques have also been proposed but it requires expensive apparatus still not getting the required accuracy.

V ADVANCEMENT IN ATTENDANCE MAINTENANCE DEVICE

Using the normal fingerprint module to verify the user details we are recording the attendance of the students just by entering the absentees roll numbers alone in the touch keypad on the display one by one.

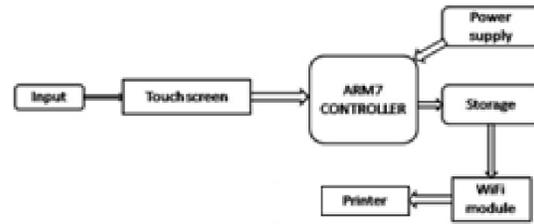


Fig.2 Block Diagram

By this method the staff members can able to take attendance in the device by just enrolling the absentee's number one by one in the device instead of marking presence for all other students. Hence this method is very easy for the staff members to take attendance in the device.

In this system we are using the touch screen module instead of normal LCD screen for display, Fingerprint module, and numeric keypad to enter the roll number and other details.

Why Touch screens?

Touch screens are preferred over keypads because they need very little or no pressure to operate whereas the Keypads/ buttons need a minimum pressure to operate and our hands start aching after some time of continuous usage. And one more great advantage in using a touch screens is that it enables us to make more room for the screen itself instead of wasting the space on the permanent keypad. And that's the reason for our smart phone's screens to become big enough to browse web pages also and still fit in our pockets.

VI WI-FI

Wi-Fi is a popular technology that allows an electronic device to exchange data wirelessly (using radio waves) over a computer network, including high-speed Internet connections.

VII INTERFACING WI-FI

Fig. 3 shows how to interface the Wi-Fi with microcontroller. The Wi-Fi module continuously transmits or receives serial data (RS232 protocol) through internet without wires. It delivers the received data and receives the data to be transmitted to and from a host system through a host controller interface (HCI). The most popular host controller interface today is either a UART or a USB. Here, I will only focus on the UART interface; it can be easily show how a Bluetooth module can be integrated on to a host system through a UART connection.

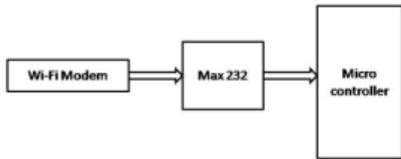


Fig.3 Interface The Wi-Fi With Microcontroller

INTERFACING WI-FI WITH LPC2148

We now want to transmit or receive data over internet with LPC2148 Primer Board by using Wi-Fi module through UART0. The message communication is done in internet or mobiles using Wi-Fi module through MAX232 into the SBUF register of LPC2148 microcontroller (refer serial interfacing with LPC2148). The serial data from the Wi-Fi receiver is taken by using the Serial Interrupt of the controller. The UART0 pin lines are used to transmit & receive operations in LPC2148 Primer

Board.

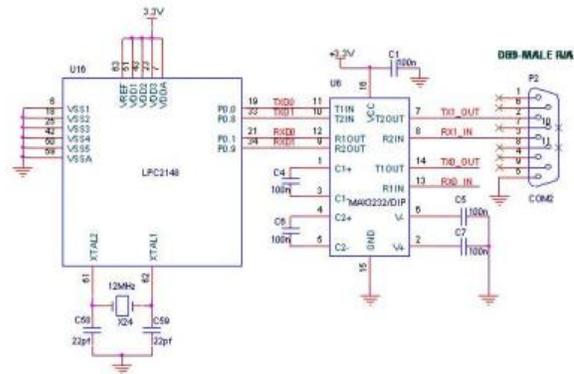


Fig.4 Circuit Diagram for interfacing Arm7 with Wi-Fi Module

SOFTWARE ARCHITECTURE

The software architecture consists of the database and the application program.

Database: The database Stores the records implemented in Microsoft SQL Server database. However, this can be changed to any other relational database of choice. SQL Server is fast and easy, it can store a very large record and requires little configuration.

Application Program:

The application program is developed with Microsoft C# programming language using Microsoft Visual Studio framework and it provides a user interface for the Attendance Management System. The advantages of Microsoft C# programming language are its robustness, easy to program, has an excellent database connectivity, runs on the two most common operating system platforms like Windows and Linux

RULES FOR MARKING ATTENDANCE

- Staff's should verify their fingerprint correctly to enter into the main menu.
- Staff's should register the attendance within 20min of start time of the lecture. For example if a lecture



starts on 8:45am attendance will not be marked after 9:05am.

- If the attendance is already marked staffs are not allowed to change the attendance through the device.

SCENARIO OF AUTOMATIC ATTENDANCE SYSTEM

Database storage contains the fingerprint templates of staffs along with their information (names, Staff ID numbers, and Subjects/lectures). When staff's gives their fingerprint input on the LCD touch screen module the reader verifies does the input is matched with database or not in order to mark the attendance for the students.

