

Fingerprint Attendance System

Fabiha Fairouz
dept. of Computer Science and
Engineering
Brac university
Dhaka, Bangladesh
fabihafairouz017@gmail.com

Mohammad Mazedur Rahman
dept. of Computer Science and
Engineering
Brac university
Dhaka, Bangladesh
riad.druvo@gmail.com

Roisul Islam Rumi
dept. of Computer Science and
Engineering
Brac university
Dhaka, Bangladesh
roisulislam@gmail.com

Syed Moazzim Hossain
dept. of Computer Science and
Engineering
Brac university
Dhaka, Bangladesh
syedhossain0995@gmail.com

Ekhwan Islam
dept. of Computer Science and
Engineering
Brac university
Dhaka, Bangladesh
ekhwanislam182@gmail.com

Abstract— In any institution that employs or educates large groups of people they are required to keep track of their attendance. The reason for keeping attendance may vary for companies but for educational institutes it's to see how dedicated the students are. For the purpose of tracking student attendance teachers are meant to take what is most commonly known as roll call, which is done by having the teacher call out the name of the student and student reply present. This is a very primitive system of keeping student attendance in this day and age. Thus we wish to update the system and bring in the modern age. We do this in the form of making the entire attendance taking chore fully automatic. By using built in libraries of the sensor we will match a taken fingerprint with one in the database, if it exists, and give the prints owner a present and if no match are found then an absent.

Keywords—fingerprint, attendance system, database management.

I. INTRODUCTION

The aim of this project is to create an attendance system which would take attendance of individuals using a fingerprint scanner. Initially, all the students have to register their fingerprints into the system. During attendance, the readings from the fingerprint scanner would be taken into the raspberry pi which would check this against the list of fingerprints stored within it and then, in turn, store this information onto the database. The result would be that teachers would not have to bother about the attendance of the class, for example, bringing the attendance sheet every class, teachers would not have to call out names or pass a sheet of paper for the attendance of the students before or after the class, students who are coming late would also be listed accordingly, it would be almost impossible for students to give attendance of other students, also known as 'proxy' attendance, and also the teacher can fetch and manipulate the information anytime he or she wants, for example, if he or she wanted to know which of the students arrived late on a certain date of class. Some advanced functionality is that this system, if manufactured in such a way that it can handle a large number of data, can be used in the entrance of an institute, such as a university or an office, so that, people can entire the infrastructure by providing their fingerprint scan to the system, which would decline the use of identity cards, which would in turn result in people not being bothered about forgetting to bring their identity cards.

II. EXPERIMENTAL SETUP

Our proposed model of the fingerprint attendance system is shown in figure.1. The model will have two parts mainly, the hardware section and the database. In our model, the fingerprint is taken as an input from the students. This input is then matched with the existing fingerprint in the database. If the fingerprint matches, the information of the student is uploaded in the database as present. However, a time constraint of 10 minutes is added in our model. That is, if the input is given after 10 minutes, the student is still considered as absent in the database. Also the teacher and the authorities will have the privilege to update the student database. There will be a LCD display which will show if the fingerprint matched or not. In case the fingerprint does not match, the display will show to give the input again.

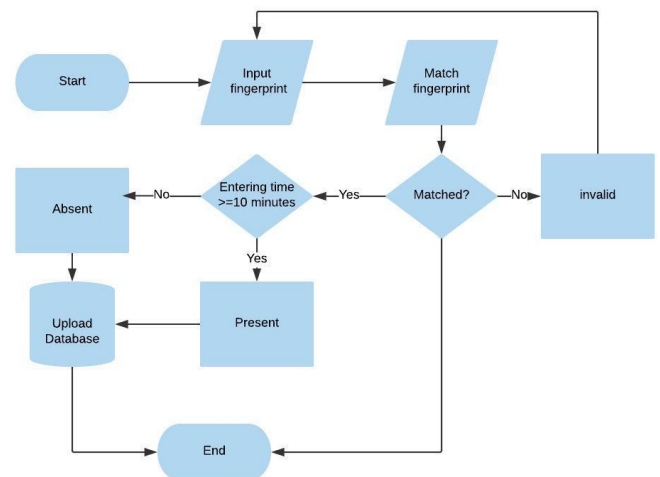


Fig.1: System architecture of automated fingerprint attendance system

A. Hardware section

The components used in the model were, Arduino uno, Raspberry pi 3 B+, Fingerprint sensor, LCD display. Arduino uno is the main microcontroller used in the model. Raspberry pi 3 B+ is used for connecting multiple arduino for different rooms and for updating the information in the database. Fingerprint sensor is main device of this project. This device can store up to 2000 data. Initially we will be storing the fingerprint data in the sensor and later store it in the database. LCD display is used to show whether a fingerprint is matched or not. All

the devices can communicate among themselves through USB.



Fig.2: experimental setup of automated fingerprint attendance system

B. Database

The database of the attendance system would contain student's ID, their name, fingerprint data and their present/absent status. The database was implemented using SQL. The database can be accessed by the authority and faculties. They will have the privilege to edit the student status when they want.

Class Attendance 2018-12-04

Date	Name	ID	Class	Status
2018-12-03	Mun	2	4	Absent
2018-12-03	Raju	3	4	Absent
2018-12-04	Mun	4	5	Absent

Fig 3: Database Interface

III. DISCUSSION AND RESULTS

For the past couple of years, we have noticed that the number of students giving attendance of other students has increased a lot. This is a growing issue as it is quite unfair for those who does their classes regularly. Also, in cases where students are getting caught in doing such unfair means, the teacher or invigilator usually has to take some action within the course of the class time, as a result, wasting the valuable time of other students. Speaking of teachers, they are forced to carry some attendance sheet or access some spreadsheet from the internet, in some cases the teacher forgets to or cannot access the attendance sheet so they ask the students to take a piece of paper and list their student identity numbers there, and then call out the students name for attendance. This whole process is very time consuming and inefficient. So, we believe that our automated fingerprint sensor is a perfect solution as it handles all of the situations listed above very efficiently.

The automated fingerprint attendance system that we are designing is still very much at its initial stages and in prototype, which means a lot of work needs to be done before it can be said to be a complete system. One of the main factors of that is the number of instances the system can handle at the same time and the number of fingerprint records it can store within its memory. Currently, it is suitable for a small scale number of records but if we were to implement this in a large system, then we will need the system to store a large number of data within its memory. One of the main goals of this project is to connect multiple fingerprint sensors with a single microcontroller or raspberry pi. This would allow one microcontroller to handle multiple instances of multiple fingerprint sensors making it very efficient in saving power, space and money, more emphasis on the money part as it would greatly reduce the price of the system if we were to sell this in large scale. If we are able to handle large records of data, we can use this system of the entry points of the infrastructures of institutes so that students or employees, if used by some firm or company, can enter the residence by providing their fingerprint instead of carrying a separate identity card. This would reduce or remove the needs for an identity check before entering the infrastructure, improve security, as no one else expect the people with a record of their fingerprint in the system can enter the residence, also would remove the boredom process of remembering to bring your identity card every time you go to that institute, and that people would not have to face any sort of trouble if he or she forgets to bring his or her identity card.

IV. CONCLUSION

Due to the probability of proxy attendance happening is so high using our system is a better alternative with a low chance of failure. Through the usage of built in libraries and simple to make database we were able to create a affordable and stable mechanism that will modernise an age old task.

V. ACKNOWLEDGMENT

We would like to acknowledge the online company for providing us with the parts and equipment that we needed to develop the automated fingerprint sensor. Also, we would like to acknowledge our course faculty for providing us with such a great opportunity for developing a digital system which not only was a fun experience but also would help us in the long run, in our future life when we enter the job market. Lastly, we would like to acknowledge our laboratory faculty for guiding us throughout the whole development process of our digital system and how it would have been almost impossible for us to implement without his or her coordination.

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