RFID BASED ATTENDANCE SYSTEM USING STM32

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Abstract — Radio Frequency Identification based attendance system is an automatic attendance system which consists of a microcontroller system which of a micro controller, RFID reader, RFID tag and a data base as its primary components. An RFID based attendance system can be a great solution to overcome such challenges as it automates the students' attendance process & enables teachers and parents to track & monitor students' activities effortlessly.

I. Introduction

Traditional Doorbell is wired devices and is usually fixed at one place. These types of wired doorbells were not very much reliable as this bell used to stop working at the time of electricity failures. The installation of wired doorbells is much complex when compared with the wireless doorbells. They are becoming obsolete because of these reasons wired doorbells are gradually being replaced by advanced Wireless Doorbell Device. By this type of bells, the installation and change for the position of bells will be easier and safer.

In this project, we are going to build a Wireless Doorbell using Arduino. We all know of the wired doorbell systems which require wires and suitable outlets for it to work satisfactorily. As the wired doorbell system needs complicated wiring. When it comes to installation, wireless doorbell system is very simple to install and requires no experience person for installation. By this type of devices there will be less consumption of electricity and it will be helping us in contribution of one of the major agenda in current time.

II. LITERATURE SURVEY

RFID web system also provides higher security than paper-based system in light of the RFID, microcontroller and also web server application which are normally provides higher security features. Though with the higher security, it shows unreliable output since failure of second step verification. The system shows higher performance comparably since the MySQL database and sever which provide higher storage with high speed performance, thus thousands of students can be hooked in this system in a few minutes..

RFID with fingerprint system is very similar to RFID with facial system. Each and every characteristics of table are providing similar concepts except the cost. Fingerprint biometric system provide very lower cost in compare to Retina, Iris and etc.

#	Attendance Systems	Security	Reliability	Performance	Cost
A	RFID Bases attendance system	High	Low	Medium	High
B	RFID and web-based system	High	Low	High	High
C	RFID with Face verification system	High	High	High	Medium
D	RFID with Fingerprint system	High	High	High	High
E	Arduino based RFID attendance system	High	Medium	High	High
F	Microcontroller based RFID and GSM	High	Low	Ultra High	Low
G	RFID and GSM	High	Low	High	Low
H	RFID four tire system with biometrics	Ultra High	Ultra High	Medium	Low
I	RFID attendance management system	High	Low	High	High
K	RFID with telegram messenger	High	High	Low	Low

III. Block Diagram

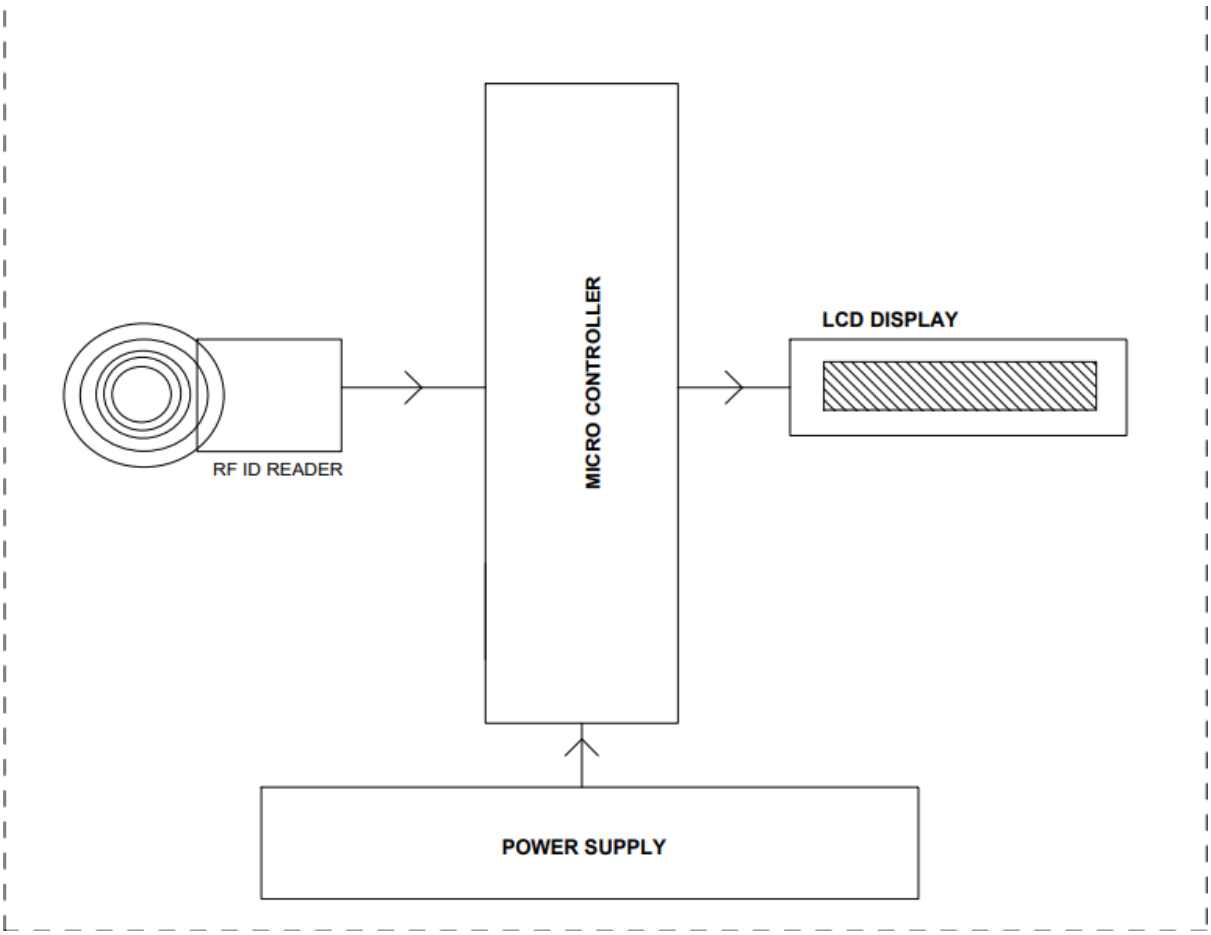

Figure 1- Block diagram of RFID Based attendance system

The basic block diagram of the RFID BASED ATTENDANCE SYSTEM USING STM 32 is shown in

the above figure. Mainly this block diagram consists of the following essentials blocks.

(1) Power Supply.

(2) Entry and Exit sensor Circuit.

(3) STM 32 and RFID Reader Module.

(4) RFID tag.

(5) LCD

(6) Display

IV. COMPONENTS LIST AND SPECIFICATION

1) RFID Reader:-

A radio frequency identification reader (RFID reader) is a device used to extract information from an RFID tag, which is used to track individual objects. Radio waves are used to transfer data from the tag to a reader. Reader does not require line of sight communication with tags. It means that Reader detects the RFID tag even if there is some object between Card and Reader.

Figure 2- RFID Reader

2) RFID tags:-

An RFID tag consists of two parts – an antenna for transmitting and receiving signals, and an RFID chip (or integrated circuit, IC) which stores the tag's ID and other information. RFID tags are affixed to items in order to track them using an RFID reader and antenna.

Figure 3- RFID tag

3) STM 32:-

STM 32 is a 32-bit microcontroller integrated circuits by STM electronics. The STM32 chips are grouped into related series that are based around the same 32-bit ARM processor core such as the Cortex-M33, CortexM7f, Cortex-M4f, Cortex-M3, Cortex-Mo+, or Cortex-Mo. Internally, each microcontroller consists of the processor core, static RAM, flash memory, debugging interface, and various peripherals.

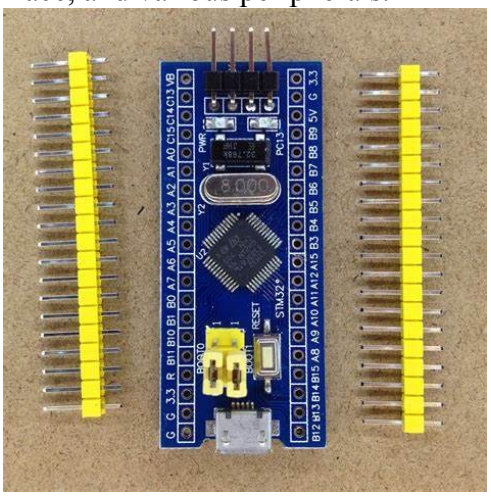

Figure 4- STM32 Microcontroller

4) Liquid Crystal Display:-

It is used to show current time and various messages. These messages are Invalid card, valid card, attendance of student. We have used 20 * 4 alphanumeric display.

Figure 5- LCD

V. EXPECTED RESULTS

The reader coil generates an electromagnetic field, which couples into the coil on the RFID tag ("transponder").
Once the data from EM-18 RFID Reader Module (Tag ID) is available at the serial pin of STM32F103C8 the character is stored bit by bit and displayed one by one on LCD display. Now just upload the complete code in STM32 and your system is ready to work. Just place any RFID tag over RFID reader and you will see the Tag ID appearing on the 16x2 LCD display.
Output which we are getting, that is being because of we are fetching data from our database.
If particular id no. is there in database then output will be present & if not then output will be absent.

VI. FUTURE SCOPE

I. Range of the RFID reader can be increased, so the reader can detect the tag from far distance.
II. The transferred data can be save and store in computer as a database using specific software.
III. This attendance system's data base can be linked with college website and can be shared and monitored by the student's parents.
IV. We can send this data through internet to user. So that user can access it remotely via internet.
V. We can implement GSM technology.

VII. CONCLUSION

Attendance in school colleges happens manually so it consists of lot of time & paper wastage. We can overcome this inefficiency and address the problem adopting RFID based attendance. RFID is being used actively in retail, healthcare, and other sectors to monitor workers. Since the workers in these sectors are large in number, hard to handle and their work can be performed by others in case of absenteeism; there the attendance mechanism is of trivial significance.

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