

DESIGN AND IMPLEMENTATION OF RFID BASED STUDENTS ATTENDANCE MANAGEMENT SYSTEM

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ABSTRACT

The design and implementation of student's attendance management system, taken into consideration easy access and time saving. There were a lot of problems when using the paper as student attendance such as cheating. This project can help lecturer to reduce the problem like by design automatic attendance using RFID and student card. The project system was running by get the code of card student to compare with the database in Access. Graphical User Interface (GUI) was developed using Visual Basic 6.0 to make the database easier to access. Firstly, lecturer needs to fill forms in an interface like lecturer name, subject and code subject. This part is important because we need the information in this part to use in the next interface. In the next interface, lecturer needs to choose port and speed to make connection with RFID reader. After the reader was ready, process to get attendant will started. Students need to swap their card on the reader and the code from the card will use to compare with database in Access.

This project will be discussing about the campus card operation and usage in combination with wireless communication technology and database management system using specialized Software and other operations, to achieve a complete classroom energy saving system. The current system can Controls the master classroom power on and off by detecting the presence of the card, and effectively solve this problem. This system also identifies the number of students present in the class and also give the information about faculty status available in the class or not. This system is designed with low cost and easily operated by common students. And this project will help lecturer taking the student attendance more easily and automatically. As the conclusion, RFID technology can be used in student attendance application.

Keywords: RFID, Attendance, WIFI, IOT

I. INTRODUCTION

RFID (radio frequency identification) is another progression that joins the use of electromagnetic or electrostatic coupling in the radio rehash (RF) some segment of the electromagnetic range to outstandingly perceive a request, creature, or individual. RFID marks are not an "improved institutionalized recognizable proof" as the safeguards of the advancement may need you to acknowledge.

A RFID structure includes of three segments: a receiving wire and handset (frequently consolidated into one peruser) and a transponder (the tag). The gathering mechanical assembly uses radio repeat waves to transmit a banner that establishes the transponder. Whenever initiated, the tag transmits information back to the radio wire. RFID innovation varies from standardized identifications. RFID can peruse the label utilizing RF, implying that the RFID peruser can be perused from a separation, directly through your garments, wallet, knapsack or satchel. Other than the RFID label comprise of exceptional ID for each tag.

In our nation, this innovation previously been utilized for quite a long while in certain place, for example, in Highway utilizing card 'Contact N Go' and our administration additionally apply this innovation by utilizing RFID as I.C (distinguishing proof card). A few spots, they like to utilized Barcode which is less expensive than RFID. Innovation spread quick. In couple of years after the fact, there isn't unimaginable if RFID will supplant the standardized tag framework in the present life.

These days, there are loads of colleges around our nation and college comprises of understudy up to 10 thousand. To deal with a lot of understudy might be issue particularly to get the participation. Presently,

procedure to get participation in dominant part colleges still utilized the manual procedure. The manual procedure implies that when begin the class/address, speaker will give a bit of participation paper and understudies will check their name and after that will sign on it. Toward the finish of class, teacher will reclaim the participation paper and keep it as a record.

Regularly, the participation paper require much time to sign for class. Understudies additionally neglect to sign that participation and they were accepting missing that class. The issue likewise will happen when speaker neglect to convey the participation paper to class. Understudies need to compose their name on a bit of paper and now and then understudy will take change to cheat in process getting the participation. The appropriate answer for this issue is by structure a framework that will record participation naturally.

In this venture, RFID framework used to record understudy participation naturally. It will utilized understudy ID card as RFID tag and a RFID peruser. This RFID framework will be incorporate with programming. This technique is more viable to counteract issue in process getting participation physically.

II. LITERATURE SURVEY

Engineerical Systems, Inc., USA [1-2] Provided An Overview of optical and laser scanning (fingerprint, barcode, ID document, etc.). The relevant technologies and systems have been well developed and widely employed, primarily in the entrance control, security, products and resource following, deal checkpoint, and so forth frameworks. Recently they additionally found their way into meeting following applications.

iButton. Maxim Integrated, USA [3] Explained about the scanning tools are normally well integrated with the relevant application software run upon both mobile and desktop computer systems and devices. The moderately negative component of the scanning based systems is the halfway interfering character of the attendance enrollment: the agents need to physically scan their identifiers each time they pass the passageway scanner (whether a hand-held or stationary

In huge occasions this could make lining and "bottlenecks". The above drawbacks are likewise valid the contact-type labels, scratch dandies, cards, and so forth., for instance.

H. Wegleiter et al [4-6] proposes a Proximity and RFID sensing. This methodology is frequently founded on the inductance coupling guideline where a recipient can be provided with data remotely through the electromagnetic field produced by a transmitter. Recently, extensive research and development carried out to improve the performance of RFID systems. Among them are: an automatic tuning method to maximize read range, performance improvement of RFID tags when attaching them onto a metallic surface.

X. Yao et al [7-8] develops an optimization of modulation procedures for inactive RFID labels without resounding conditions and so on. Due to these and various other improvements, the RFID arrangement is currently altogether more widely accepted, and implemented for the object identification in many areas such as libraries, supermarkets, logistics warehouses, and so on.

J. S. Lee et al [9] Describes the Wireless Network Technology Besides detecting the inflow of participants, the RFID reader should be able to transfer the data to a remote server wirelessly. Therefore, to select a suitable low cost solution for a wireless communication for the reader. The use of the standard mobile phone communication option was put aside (but not entirely discarded) due to a higher cost and dependency on the provider reliability. Three other available solutions for wireless communication have been considered:

Manan Mehta [10-11] However this system can be even more cost effective if ESP8266 module is used instead of MRF24WB0MA Wi-Fi module, and it only came to the market in August 2014. It costs 3 times less than the MRF24B0MA. Moreover, with the add-on MCU feature, one can use ESP8266 as the host controller for the RFID reader, rather than the existing MCU LM3S6950.

III. PROBLEM DEFINITION

These days, there are heaps of colleges around our nation and the college comprises of understudy up to 10 thousand. To deal with a lot of understudy might be issue particularly to get the participation. Presently, procedure to get participation in lion's share colleges still utilized the manual procedure.

In this undertaking, RFID framework used to record understudy participation consequently. It will utilized understudy ID card as RFID tag and a RFID per user. This RFID framework will be incorporate with programming.

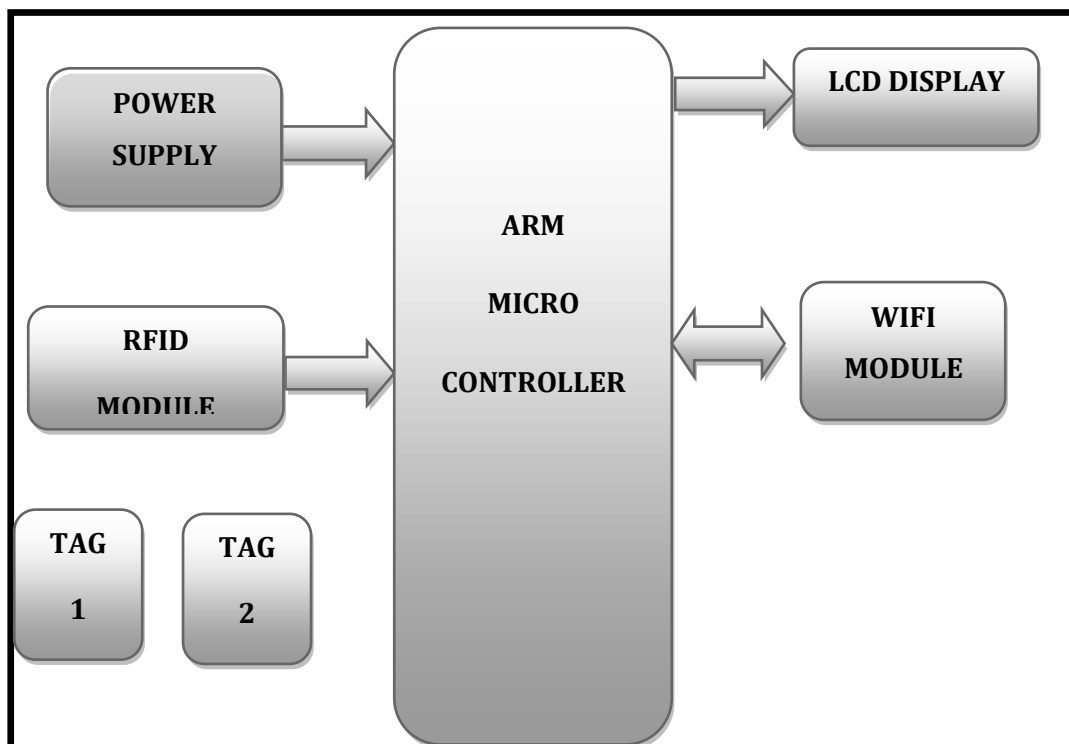


Fig1. Block Diagram of the proposed system

IV. DESIGN ANALYSIS

The project has been fully verified and checked with hardware components that are integrated together for the purpose of application design. The program burned into the ARM7 processors when plugged into the PCB is interactive with other components already placed in the circuit. The initialization process will be done by connecting the power supply to used modules i.e arm board, wifi ESP8266 and RFID along with pin configuration. After supply will be connected then it will check for predefined Wi-Fi which is required to connect with the saved user name and passwords in the program. Once it is connected to wi-fi mentioned in program then display indicates connected to wifi. Here in our paper we were used webservice which is used to integrate the data about attendance. We were used Thingspeak server for integrating the data like absence and presence. As the thing speak will be working with analog representation graph we were used zero for absence and one for presence.



Fig.1 Wi-Fi Initializing, connection to server and access to authentication cards

After initialization the system will be providing access to swipe the rfid cards to indicate the presence or absence. The same will be displaying as In for presence and out for Absence. If the student arrived into class it calculates the count as one and leaving from the class then it indicates count as two. If count will be one then showing as IN and if count will be two it indicates as OUT.



Fig2: Displaying student details like in and out on LCD

V. Result Analysis

The project is aimed to design and implementation of RFID based student automatic attendance management system. This project is developed with LPC2148 ARM microcontroller, when students are In/Out from class room, seminar hall etc. it will capture the In-time and Out-time. Also we will get the overall report. Below output details we will get from keil u vision tool. Here In-time indicate “100” and Out-time indicates “0”.

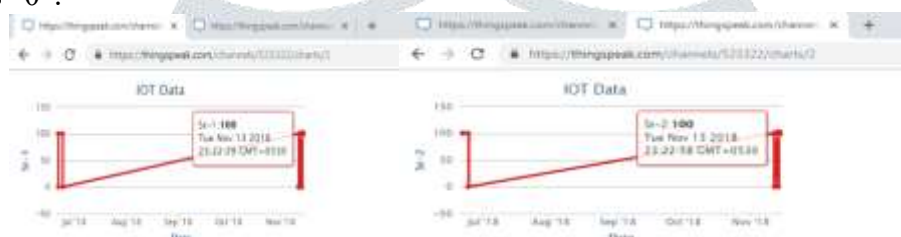


Fig3: Reporting details in web server for 2 students

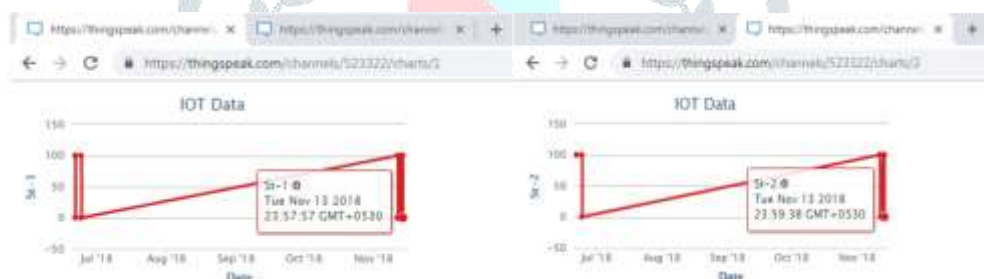


Fig.4. Out details of students in web server for 2 students

CONCLUSION

The design and implementation of a RFID primarily based automatic attendance management device that is the intention and goal of this paper changed into effectively carried out. This device gives an effective and more handle technique of taking attendance when in comparison to the guide machine. Data are more organized, the device is user pleasant, information manipulation and retrieval is accomplished through the graphical interface. The system maybe implemented in any academic organization.

Finally the hardware and software part of the RFID based attendance system is completed and is successfully interfaced with the arm processor. Complete hardware was implemented on bread board and test to work as expected.

FUTURE SCOPE OF THE WORK

This thesis presents the simplicity, effective and more handle technique of taking automated attendance system by using the RFID.

However the accuracy of current strategies can be improved by using a webcam can be integrated into the system to monitor the person who swaps the card, thus avoiding the problem of a person scanning in for another person. The attendance system can be enhanced to biometric technology which is a full proof technique that captures a person's unique biological or physical features and prevents unauthorized activities.

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