REVIEW ON RFID and GSM Based College Bus Tracking System

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ABSTRACT

This paper describes an automated attendance management system that can be employed at professional gatherings of different types (conferences, exhibitions, training courses, etc.) and scales (from small-to-medium seminars and workshops to large congresses and technical shows). The system is based on application of RFID, mobile communication and IT technologies. It is capable of collecting, recording and processing data on participants of a technical gathering and their activities, attendance or different sessions, visiting different exhibition booths, etc. The system can also generate real-time combined detail reports on attendance, inflow and outflow of the participants during the event, their most and least preferred interests and activities, etc. This can be done for a multitude of locations and premises, and during an extended period of time.

**Keywords:** Active RFID, GSM message, cellular phone, kindergarten, RFID, Biometric, GSM Modem.

I. INTRODUCTION

Traditionally, the security of kindergartens is highly relied on the human's effort and attention like guardians and teachers. However, if there is no active informing service provide by kindergartens usually, parents have no idea of when and whether their children safely arrive in their classroom after they are picked up by school bus. Every morning the student attendance offers the first hand information of children safety. But sometimes it is complicated to exactly track the attendance since the children arrive in a period of time in the morning and some of them come with their parents and some come by school bus. So we develop an active RFID attendance system to overcome the barriers and mistakes of manually taking attendance and combine the wireless GSM message service to provide real time responses to their parents' cellular phone. Parents can check the message and understand when their children are safely arrived. On the contrary, a noticing message will be broadcasted to administrators and parents if the children do not show up in a class on time so that the adults have the enough time to check out these particular children and prevent accident happens. Another main purpose of the system is used to relieve the traffic jam around the kindergarten after class, parents drive to school to pick up their children at the same time. Many cars would get stuck by the kindergarten because they all temporarily park in front of the school and wait the guardians to find out their children and bring them out. The traffic chaos is more serious especially on rainy days or the kindergarten is located on a busy district. With the prior distributed RFID tags carried by parents, the system can detect the approaching cars in a specific

distance and identify the children who would be picked up next. Thus, the school broadcasting system would read the children name and guardians could bring them out so that these parent cars can pick up their children without additional waiting. The rest of this paper is organized as follows. Section 2 describes the variety of RIFD applications on different domains. Section 3 presents the system architecture and describes how to construct the active student attendance system with RFID and how to solve the traffic jam around kindergartens after class. Section 4 details the encountered barriers while implementing the system with the chosen equipments. Finally, section 5 concludes the paper and describes our future works.

II. METHODS AND MATERIAL
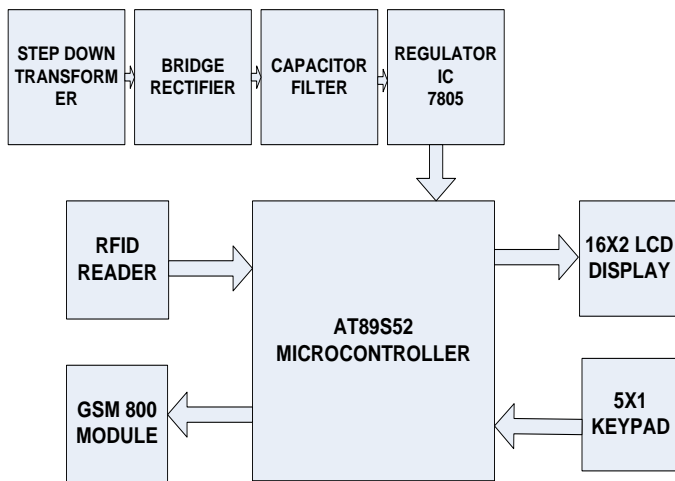
Figure1. Block Diagram of Proposed System

The main components of the project are 8051 based microcontroller, 16×2 LCD, and RFID reader module.

First we'll see the basic connections with respect to the microcontroller. Here, we'll need to connect a crystal, a reset circuit and external access.

To use the on-chip oscillator, an 11.0592 MHz quartz crystal is connected to pins 18 (XTAL2) and 19 (XTAL1) of the microcontroller. Two 33pF ceramic capacitors are connected from the crystal to ground.

The reset on the 8051 microcontroller is active high i.e. upon applying a high pulse to RST pin, the microcontroller will reset. A 10KΩ resistor is connected from the RST (Pin 9) of the microcontroller to ground.

A 10µF electrolytic capacitor is connected between the positive supply and RST pin. A push button is connected across the capacitor.

The External Access pin (Pin 31) is connected to positive supply using a 10KΩ resistor. This completes the basic connections with respect to microcontroller.

Now we'll connect the LCD to microcontroller. To adjust the contrast of the display, a pot is connected to contrast adjust pin i.e. Pin 3 of LCD.

First, connect the three control pins of the LCD i.e. RS, RW and E to P3.6, GND and P3.7. Then connect the 8 data pins of the LCD display to PORT1 pins of the microcontroller.

After connecting the display, now we are going to connect the RFID reader module. Connect the TX pin of RFID Reader to RXD pin i.e. P3.0 of the microcontroller. Similarly, connect the RX pin of RFID Reader to TXD pin i.e. P3.1 of the microcontroller.

Finally, a button is connected to P3.3 (IN) to view the attendance details.

The aim of this project is to design an RFID Technology based Attendance System using 8051 microcontroller, in which the attendance of students or employees is automatically recorded with the swipe of a card. The working of the project is explained here.

When this circuit is powered ON, initially the microcontroller will display the message as Swipe the card on the LCD display. When the RFID reader detects the ID card, it will send the unique card no to the microcontroller via serial terminal.

With the help of suitable programming, we need to compare the received card no. with the numbers that are already stored in the microcontroller or any database.

Once, if any of these numbers are match with the received card no., then the corresponding name stored in that no. is displayed on the LCD display and also the attendance for the name stored in the corresponding number is marked.

By pressing the button, the attendance recording will be closed and the details are displayed on the LCD repeatedly until the microcontroller has been reset.

A. RFID Reader

III. RESULTS AND DISCUSSION

To test the operation of the system prototype including several RFID readers by using one prototype board of the RFID reader, it changes the value of the on-board DIP switch to stimulate different room locations. RFID reader device is used to sense the identification tags of participants and transmit the information to the remote server.

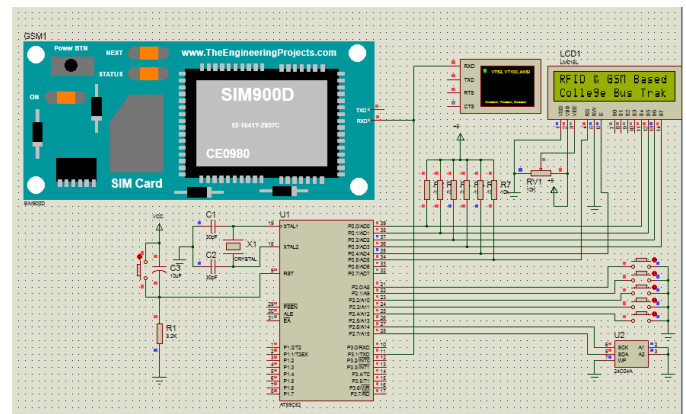Figure bellow shows Proteus simulation of proposed system

Figure 2. Proteus Simulation of Proposed System

IV. CONCLUSION

This paper demonstrates how an automation of attendance system can be implemented using RFID, Biometric, and GSM Modem. Also the paper presents the successful development and prototyping of a low-cost event attendance and tracking management system. It is based on the use of RFID technology combined with the use of wireless communications and data analytics delivered by the system server.

The future enhancements in the system can be that the doors of the classrooms, laboratories etc. are managed by the system itself and are unlocked and locked accordingly. Software can be made for the mobile phones and then using the mobile phones GPS (Global Positioning System) the location of the student can be known all over the place and not only the campus. The same ID card can also be used for other functionality of the university like the library card for issuing of books and for example the exam identification card.

V. REFERENCES

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