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RFID-based System for School Children Transportation Safety

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ABSTRACT : This paper presents a system to monitor pick-up/drop-off of school children to enhance the safety of children during the daily transportation from and to school. The system consists of two main units, a bus unit and a school unit. The bus unit the system is used to detect when a child boards or leaves the bus. This information is communicated to the school unit that identifies which of the children did not board or leave the bus and issues an alert message accordingly. The system has a developed web-based database-driven application that facilities its management and provides useful information about the children to authorized personal. A complete prototype of the proposed system was implemented and tested to validate the system functionality. The results show that the system is promising for daily transportation safety.

Keywords: RFID; system integration;arm7; transportation safety; detection

I. INTRODUCTION

Children safety is of utmost importance to their parents. Despite the best safety measures, children, due to their lack of skills to protect themselves, may end up in a situation that endangers their life (e.g. crossing the road without paying attention to traffic). In this paper, we focus on a particular risk associated with the daily bus trip to and from school. There have been previous incidents where a child is forgotten in the bus and eventually die because of suffocation. To improve transportation safety, some schools employ a bus supervisor to look after the children inside the bus. Nonetheless, human oversight or supervisor absence may still lead to a heartbreaking ending as in the previously cited stories.

This paper presents a system to monitor the daily bus pick-up/drop-off of children to enhance the overall safety of the daily bus transportation to/from school. The system aims at automatically detecting when a child boards or leaves the bus and issue an alert message when a child does not board or leave the bus to reduce the parents' concerns about using the bus for the daily transport of their children without being lost or forgotten.

II. HARDWARE SETUP

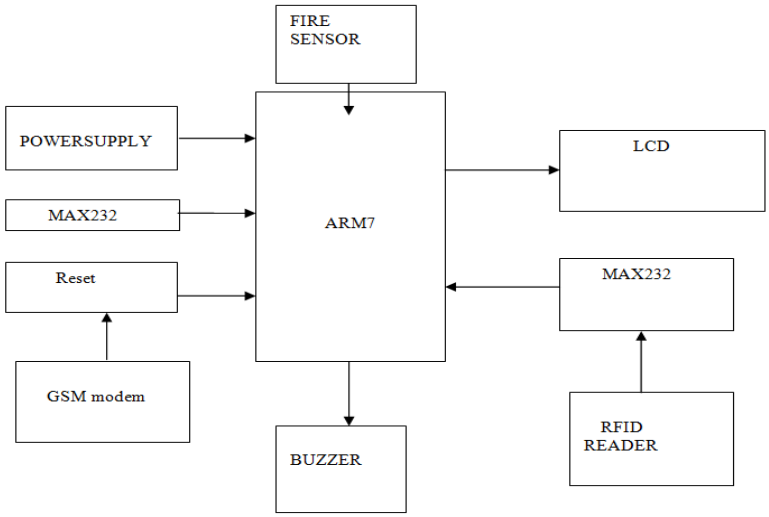

Figure 1: The Proposed System Architecture

III. SOFTWARE USED

Keil compiler is software used where the machine language code is written and compiled. After compilation, the machine source code is converted into hex code which is to be dumped into the microcontroller for further processing. Keil compiler also supports C language code.

Two TMAS GSM/GPRS modems were used to send data from the bus unit to the school unit. One of modems is located in the bus unit to send SMS which contains the tag serial numbers to another GSM modem in the school unit.

the communication between these GSM modems were tested using Terminal program by sending SMS from the first GSM modem using AT commands. The second GSM modem received the SMS that the first GSM modem sent. the word "Testing" was sent successfully from the first GSM modem and the second GSM.

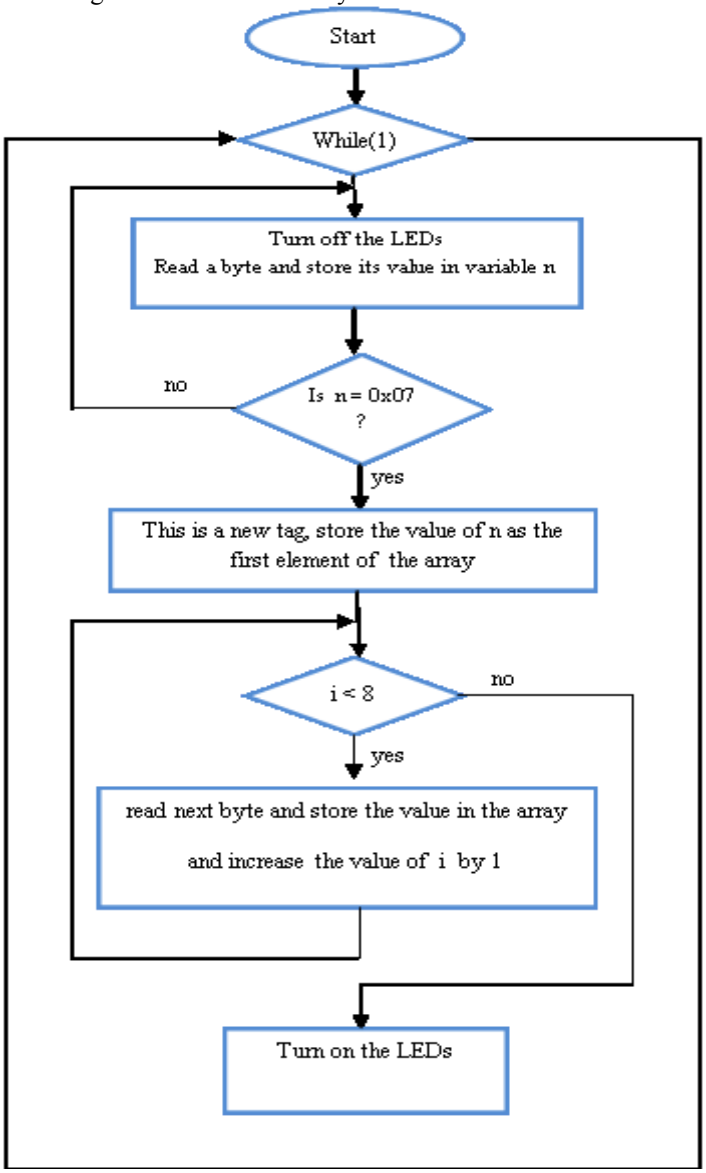

Figure 2: flow chart of process

Bus Unit

The bus unit consists of an RFID reader, a GSM modem and a control unit as shown in figure 3. The RFID reader detects the children when they board/leave the bus. It is located inside the bus. The GSM modem is used to send this data to the school unit. A microcontroller is used to interface the RFID reader with the GSM modem.

Figure 3: Bus Unit

The RFID Reader

The Reader was connected to a PC using RS232 cable. A terminal program was used to check if the reader can read the tags by setting the reader parameters appropriately (baud rate, start bit, data bits, stop bit, parity check bit).

SMS Notifications

The PHP code written for the SMS gateway was tested. To use the SMS gateway, the following parameters are set: user ID, password, language, recipients, and the messages. The user ID and password are given by the gateway provider. The language has to be set before writing the text so that it can be sent properly.

Figure 4 :The full integrated system

IV. CONCLUSION

This paper presented an RFID-based system that aims at enhancing the safety of children during the daily bus trip to and from the school. RFID-based detection unit located inside the bus detects the RFID tags worn by the children. It then sends, via a GSM modem, the relevant data to the system database server. The system checks and detects which child did not board or leave the bus and issues an alert message to this effect. In addition, the system checks the children attendance and updates the database. The parents can log into system website and monitor the details of their children.

REFERENCES

[1] "*4 year old, forgotten in a school bus, dies*". Available at: http://www.muscatdaily.com/Archive/Oman /4-year-old-forgotten-in-a-school-bus-dies [Accessed: 11 Aug. 2014]

[2] Toumi, H., "*Four-year-old girl left alone in school bus dies*". Available at: http://gulfnews.com/ news/gulf/qatar/four-year-old-girl-left-alone-in-school-bus-dies-1.628394 [Accessed: 11 Aug. 2014]

[3] Saranya, J.; Selvakumar, J., "*Implementation of children tracking system on android mobile terminals*," Communications and Signal Processing (ICCSP), 2013 International Conference on , vol., no., pp.961,965, 3-5 April 2013.

[4] Mori, Y.; Kojima, H.; Kohno, E.; Inoue, S.; Ohta, T.; Kakuda, Y.; Ito, A, "*A Self-Configurable New Generation Children Tracking System Based on Mobile Ad Hoc Networks Consisting of Android Mobile Terminals*," Autonomous Decentralized Systems (ISADS), 2011 10th International Symposium on , vol., no., pp.339,342, 23-27 March 2011.

[5] Shu, C., "*Guardian Uses Bluetooth Low Energy Tech To Keep Your Child Safe*" Available at: http://techcrunch.com/2013/10/09/guardian-uses-bluetooth-low-energy-tech-to-keep-your-child-safe/