

# RFID Based School Children Monitoring System

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**Abstract:** Recently, all over the world, the number of crime over children is increasing day by day. Student tracking is important to enhance security for children. In present time parents are worried about their children due to mishaps and missing of children. In case of child mishap school authorities penalized heavily so. At present time there is increases a number of child kidnapping and road accident cases. So for reduces this problems monitoring is necessary. Monitoring school buses and students has become an important issue due to the decision of whether it would be quicker to wait for the arrival of school bus or to hire a rickshaw as the bus is late to reach school. This paper focuses on children monitoring system, when child enters/exits from the bus. For implementing children monitoring system we use two technologies RFID (Radio frequency identification) and GSM (Global system for mobile communication). RFID technology locates the child position GSM will pass information about child to his or her parents. Children who travel to and from school by themselves without monitor by their parents are exposed to danger. This paper focuses on implementing children tracking system for every child attending school. The system consists of main units a bus unit. The bus unit system is used to detect when a child enters/exits from the bus. Childs information at entry/exit level will be recorded automatically when they pass by the scanner. At the same time parents will automatically receive the SMS from the system that inform their children enter/exits from bus. Also information of students will be displayed on LCD display. This system will benefit to parents, school children's and school administrator. This system will be also promising to enhance the safety of child during daily transportation.

**Keywords:** RFID, System integration, Transportation Safety, Monitoring, GSM.

## I. INTRODUCTION

The proposed system includes tracking the child's movement to and from school. Children safety is of at most 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) [1]. The information of child is send to their respective parents. With a numbers of students commuting a long distance to the school, school administrators and parents recognized the need for enhanced measures to ensure the safety of the children- 1)Parents are anxious about the children's safety. Monitoring the student will make overcome the limitation of safety. 2) Implement the monitoring system using RFID can offer additional security application for children.

However the existing systems are not powerful enough to prevent the crime against children. This system includes the bus unit and school unit. Bus unit consist of ARM7 controller, RFID tag, RFID reader, GSM, LCD. RFID system has good accuracy and security make it an ideal data collection. One of the main benefits of using RFID is to provide access to real-time information improving the efficiency and safety, significantly reducing management cost.

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 [1]. The paper proposed a bus safety system which was designed to control the entering/exiting of students from the bus [2].

This system does several tasks, including identifying personal information (Ex. Name) of each student using RFID tag, which will exchange the data with the RFID reader via radio waves, and displaying each student name into LCD display [2].

## II. SYSTEM DESIGN

### REQUIREMENT

Our system is designed with the following engineering requirements

- The system should recognize each child and detect when every child boards or leaves the bus.
- The system should have a database to store student's information.
- The system should be easy to re-configure.
- The communication should be reliable.

### DESIGN CONSTRAINTS

The constraints are the restriction on the design. The constraints considered in our system are

- The system should not be harmful for human beings or environment.
- Children's information should be available for authorized personal.

III. BLOCK DIAGRAM

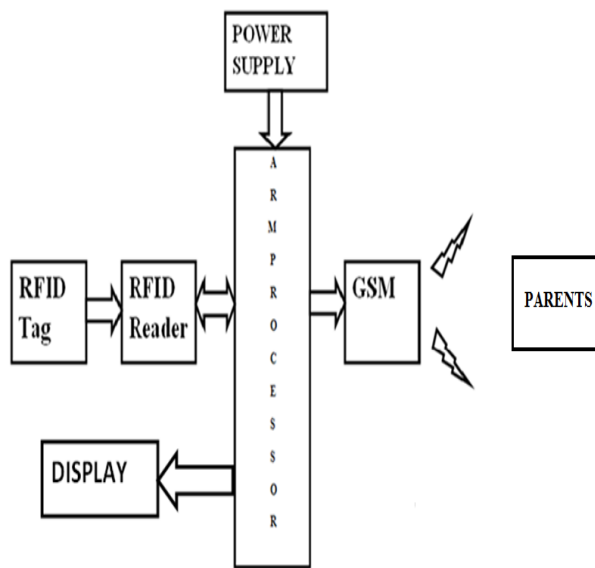


Fig. 1 Block diagram of the proposed system

IV. SYSTEM FLOW CHART

A. Entry Level-

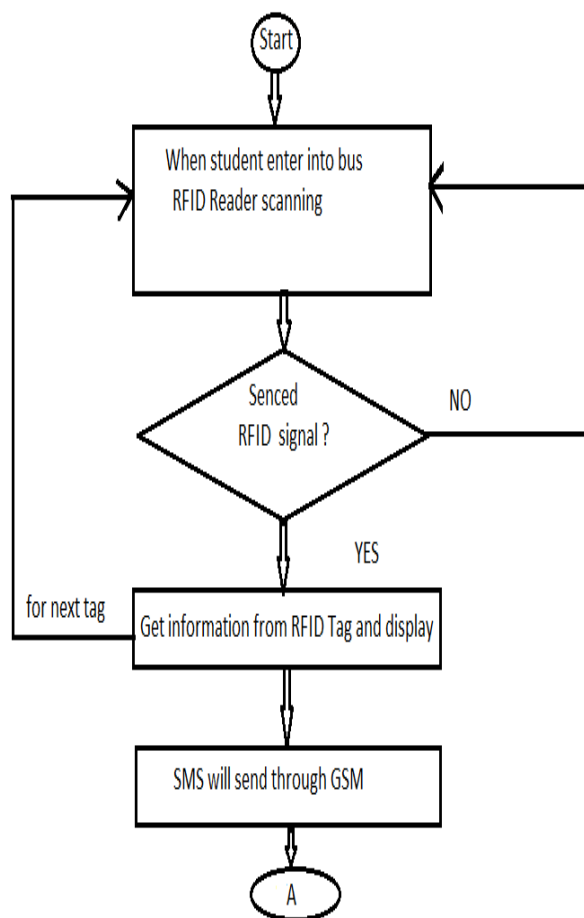


Fig. 2 Entry level flowchart

B. Exit Level

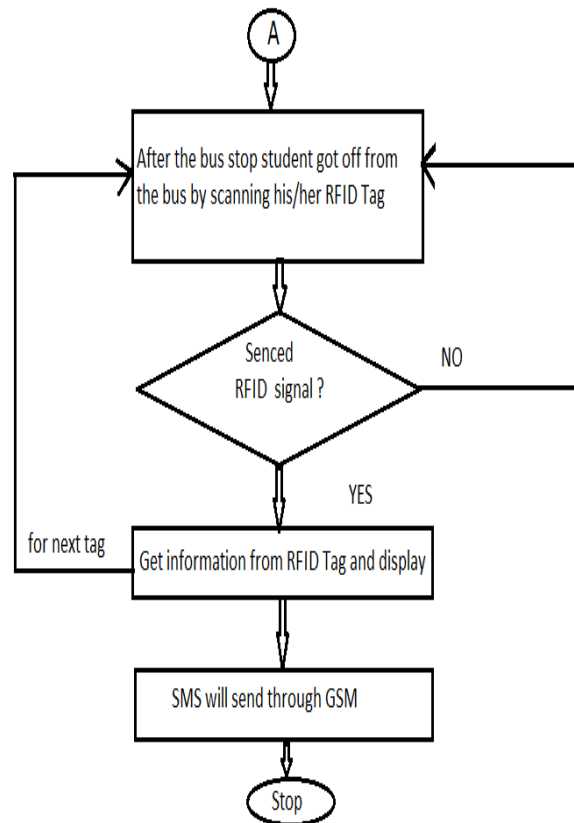


Fig.3. Exit level flowchart

V. WORKING PRINCIPLE

The working principle of this system is divided into two parts that is each student carries a card which contains an unique identification number, now when the student enters the school bus, before that he should scan his card, for that are two switches one is for arrival and another is for safe departure, so while living from home to school the student will need to press the arrival switch and then enter in the school bus, now as soon as he will scan the card a message will be send through GSM to his parents that their child has went to school.



Fig. 4 Overall setup of system

In second part of the system when the student will leave from school and before entering into bus he need to scan the card again before that he should press the departure switch first and scan the card, after scanning the card a message will be send again through GSM to this parents. That their child has left from school and entered into the bus.

### VI. RESULT

The RFID and GSM are connected with ARM microcontroller and varying data is send to GSM modem which is simultaneously displayed on LCD and also message to parents. Through this experiment and implementation we came to know that the student can be monitored using RFID and sent the status as SMS to the particular mobile successfully. System can be controlled via short message service from anywhere that covered by GSM service.

- of the 8<sup>th</sup> IEEE GCC Conference and Exhibition, Muscat, Oman. 1-4 February, 2015.
- [2] Maryan Said Al-Ismaili, Ali Al-Mahruqi, Dr. Jayavrinda Vrindavanam, Department of Computer and Electronic Engineering, Caledonin College of Engineering, "BUS SAFETY SYSTEM FOR SCHOOL CHILDREN USING RFID AND SIM900 GSM MODEM" International Journal of Latest Trends in Engineering and Technology (IJLTET)
  - [3] V. Sivasankaron, S. Muruganand, Azha Periasamy Bharathiar University, Coimbatore, India "ADVANCED EMBEDDED SYSTEM ASSISTED GSM AND RFID BASED SMART SCHOOL MANAGEMENT SYSTEM". International Journal Of Advanced Research in Electrical, Electronics & Instrumentation Engineering Vol.2, Issue 7, July 2013.
  - [4] N. Vinod Kumar, H. Somasekhar Kottam College Of engg. "CHILDREN TRACKING SYSTEM BASED ON RFID TECHNOLOGY", International Journal of Research.
  - [5] Amit Sachan, (2012) "MICROCONTROLLER BASED SUBSTATION MONITORING & CONTROL SYSTEM WITH GSM MODEM", IOSR Journal of electrical & electronic engg.

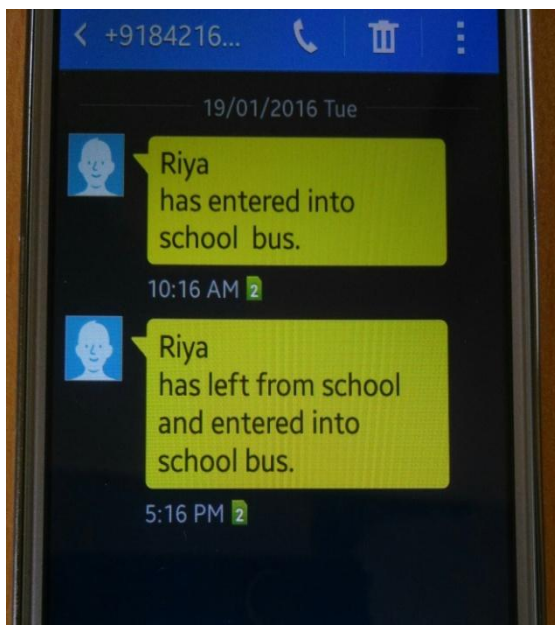


Fig.5 The Parent notification messages

### VII. CONCLUSION

This paper presents RFID based systems that enhance the safety of child during the daily bus trip to and from the school. The implementation of project focuses on monitoring child's position and is send to its parent. The effectively utilization of RFID with GSM technology is successfully designed and implemented on laboratory scale. The accuracy level or security level may be extended to the public level. Development in RFID and GSM technology continue to wider reading ranges yields faster processing as real time system.

### REFERENCES

- [1] Anwar Ali-Lawati, Shaikha Al-Jahdhami, Asma Al-Belushi, Dalal Al-Adawi, Medhat Awadalla and Dawood Al-Abri, Department of Electrical and Computer Engineering, Sultan Qaboos University, "RFID BASED SYSTEM FOR SCHOOL CHILDREN TRANSPORTATION SAFETY ENHANCEMENT" proceedings