RFID Imparted Student Monitoring System

P.DevaPriya[1], N.NandhiniDevi[2], S.SwathiPriya[3], Mrs. D. Divya[4]

[1 2 3] *student members, Department of Information Technology*
[4] *staff member, Department of Information Technology*
Anjalai Ammal Mahalingam Engineering College,
Kovilvenni, Thiruvarur, India.

Abstract---*Student monitoring is important to enhance security for children. In present time, parents are worried about their children due to mishaps and missing of children. The existing system consists of three main units, a bus unit, parent 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 parent unit as well as school unit. In the proposed system, RFID tag is issue to every student. While entering the bus, using GSM parents will automatically receive the SMS from the system that inform their children enter/exits from the bus. The device called "RFID IMPARTED STUDENT MONITORING DEVICE" is used to sending the messages to the parent's mobile phone while the school bus entry/exit the school.*

Keywords- RFID, GSM, ARDUINO UNO

I. INTRODUCTION

The proposed system includes monitoring 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. The information of child is send to their respective parents. School administrators and parents recognized the need for enhanced measures to ensure the safety of the children- 1) Parents is anxious about the children's safety. Monitoring the student will make overcome the limitation of safety. 2) Implement the monitoring system using RFID (Radio Frequency Identification Reader) can offer additional security application for children. However the existing systems are not powerful enough to prevent the crime against children. 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. The paper proposed a bus safety system which was designed to control the entering/exiting of students from the bus.

II. EXISTING SYSTEM

The existing system is used to detect when a child boards or leaves the bus. The system also tracks the school bus by the GPS when the school unit wants to and also gets an alert from the school unit. The system has developed an android as well as web-based database application that facilities its management and provides useful information about the children to the parents and authorization. A system is used to track the children using a child module that transmits the tracking information to a database and a mobile device. The disadvantages of this system are that the module may not be convenient for children and wide-scale deployment is also expensive.

A.RFID Technology:

RFID readers are devices that wirelessly communicate with tags to identify the item connected to each tag and possibly associate the tagged item with related data. In other words, readers send electromagnetic signal to the tag and read its response. They generally transmit their observations to a controller and a computer system running RFID software. The antenna of the RFID reader emits radio signals to activate the tag. When an RFID tag passes through the electromagnetic zone, it detects the reader's activation signal. The reader decodes the data encoded in the tag's integrated circuit (silicon chip) and the data is passed to the host computer for processing.

Microcontroller Arduino:

It's an open-source physical computing platform based on a simple microcontroller board, and a

development environment for writing software for the board. Arduino can be used to develop interactive objects, taking inputs from a variety of switches or sensors, and controlling a variety of lights, motors, and other physical outputs. The Arduino Mega 2560 is a microcontroller board based on the ATmega2560. A 16 MHz crystal oscillator USB connection, a power jack, an ICSP header, and a reset button.

III. GPS

The GPS (Global Positioning satellite) system comprises of a fleet of satellites that orbit the earth in a geo synchronous manner. At least three satellites are required to accurately triangulate the exact position based on the latitude-longitude imaginary lines. In addition to giving the location parameters such as altitude, speed, course, number of satellites communicating and so on. GPS is a multiple satellite based radio positioning system and to compute position, velocity and time parameters to high degree of accuracy. GPS delivers with high sensitivity and accuracy with low power consumption.

IV. PROPOSED SYSTEM

Millions of children need to commute between homes to school every day. Safer transportation of school children has been a critical issue as it is often observed that, kids find themselves locked in the school bus at the bus stop after going to school, they miss the bus, or ride the wrong bus with no way to track them. While there many issues that might disturb the parents regarding the travel safety of school going children. The system is used 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 is used to detect when a child boards or leaves the bus. This information is communicated to the parent. Also the students reached the school or the student is leaving from school notification or SMS is sent to the parent unit. The Arduino based Device is developed to enhance the student's security system. RFID Tag is issued to the students uniquely. RFID Tag is shown to the RFID Reader. Sending messages to the parent's mobile phone while their children entry/exit the bus. As well as sending messages to the parent's mobile phone while the school bus entry/exit the school.
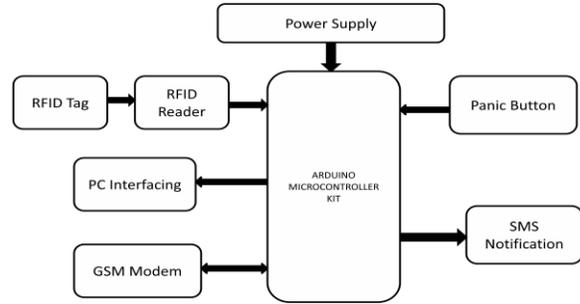
SYSTEM ARCHITECTURE

Fig 1

A. RFID Tag

RFID tagging is an ID system that uses small radio frequency identification devices for identification and tracking purposes. An RFID tagging system includes the tag itself, a read/write device, and a host system application for data collection, processing, and transmission. An RFID tag (sometimes called

Fig 2

an RFID transponder) consists of a chip, some memory and an antenna.

B. RFID Reader

A RFID reader is a device used to gather 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. RFID is a technology similar in theory to bar codes. However, the RFID tag does not have to be scanned directly, nor does it require line-of-sight to a reader. The RFID tag it must be within the range of an RFID reader, which ranges from 3 to 300 feet, in order to be read. RFID technology allows several items to be quickly scanned and enables fast identification of a particular product, even when it is surrounded by several other items.
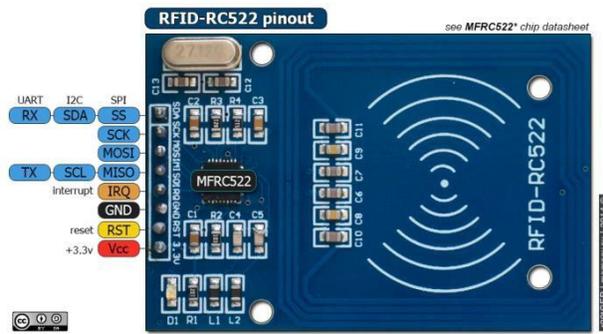
Fig 3

C.Arduino UNO

The Arduino Uno is a microcontroller board based on the ATmega328. It has 14 digital Input/output, 6 analog inputs, a 16 MHz crystal oscillator, a USB connection, and a reset button. It contains everything needed to support the microcontroller, simply connect it to a computer with a USB cable or power it with an AC to DC adapter or battery to get started. The Arduino Uno can be powered via the USB connection or with an external power supply. The power source is selected automatically.

Fig 4

D.GSM

GSM (Global System for Mobile communication) Modem - RS232 is built with Dual Band GSM engine - SIM900A, works on frequencies 900/ 1800 MHz. The Modem is coming with RS232 interface, which allows you connect PC as well as microcontroller with RS232 Chip. The onboard Regulated Power supply allows you to connect wide range unregulated power suppl. Using this modem, you can make audio calls, SMS, Read SMS, attend the incoming calls and internet connect through simple AT commands.

Fig 5

V. CONCLUSION AND FUTURE SCOPE

The integration of RFID and GSM technologies for safety and security purpose is very important nowadays due to increase in accidents of children gets missed out at the bus which may lead to death due to suffocation. RFID-based detection unit located inside the bus detects the RFID tags worn by children. It then sends the relevant data to the Arduino. Using GSM the SMS will be send to the parents while the children entry/exit the bus and also the school bus entry/exit the school. The return information message is sending to the parent in an advance will be an added advantage of the children from kidnapping. In future it has to be enhanced; not only sending the message to parent but also receiving the message from the parent mobile number and also calling facilities will be added.

REFERENCE

[1]. Malliga, R. Narmatha, T. (2016) ''RFID based System for School children Transportation Safety Enhancement'' Journal of Advanced Research in Computer Science and Software Engineering, Volume 6, Issue 4, April 2016.

[2]. Maryam Said Al-Ismaili, Ali Al- Mahruqi, Dr. Jayavrinda Vrindavanam (2015) ''Bus Safety System for School Children Using RFID and SIM900 GSM MODEM'' Journal of Latest Trends in Engineering and Technology (IJLTET), Vol. 5 Issue 1 January 2015.

[3]. Vinodkumar, N. Somasekar, H. (2015) ''CHILDREN TRACKING SYSTEM BASED ON RFID TECHNOLOGY'' journal of Research in Advanced engineering Technologies, Volume 5, Issue 1 NOV 2015.

[4]. Vidyasagar, K. Balaji,G. Narendra Reddy, K. (2015) ''RFID-GSM imparted School children Security System'' Journal, Foundation of Computer Science FCS, Volume 2 – No.2, June 2015.