School Children Transportation System using RFID and GSM

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Abstract: The aim of project is to provide complete security for children. The range, obstacle and accident detection devices are detected in the front of the bus to avoid collisions with another vehicle on the road. The system is placed on the bus because each student has a unique identification card, so once students begin to enter the bus, the RFID reader will collect students count and show them on screen in front of the driver. Then, after stopping the bus and leaving the bus, the driver will check your card to check for students inside the bus. If it exists, the system will display their names on the screen and then send a text message to the school address to make the correct decision. In addition, if the bus encounters an accident, the system will also send the message to the administration to inform them about the safe exit and the arrival of the bus to the destination.

Keywords: RFID, LCD, GSM, LED.

I. INTRODUCTION

The safety mechanism for the transportation bus and the children who travel from home to school and the resumption of homecoming is a separate component of the parents and the administration of the school. RFID tags are classified as active or negative. RFID tags will have internal memory and it can read or write the data into it. Negative RFIDs operate without a separate external power source and the power generated by the reader. This project uses negative labels. The reader has three main functions: Activate, Delete, Formulate and Decrypt. The antenna sends wireless signals to activate the brand and read and write data. School buses transport millions of children a day in different countries of the world. While there are many problems that can disturb parents with regard to the safety of children traveling to school, the newspaper plans to consider the safety of school buses through a bus-tracking system that will help transport children to school. Children of the school in a more secure way. How many students come and dropped, the count is difficult to maintain by driver. Which has increased significantly in recent years. This often led to the death of many students due to suffocation due to lack of interest in hair removal. Upon entering and leaving, this project aims to create an appropriate environment by following a set of safety and protection rules for school buses that will have a positive impact on the student and their family.

II. LITERATURE SURVEY

This paper proposed a bus safety system designed to control the entry / exit of bus students. The system performs many tasks, including the identification of personal information (such as the name) of each student using an RFID card, which will exchange data with an RFID reader using radio waves and display the name of each student on the LCD screen. This will allow the driver to know the number of students on the bus and the students who left the bus. In addition, the system has an emergency alert system in case a child is inside the bus after the bus stops at the destination by sending a text message to the school admins using GSM modem. In addition, if the bus leaves and arrives successfully from the source to the destination, it will inform the administration via SMS of its flight and successful arrival. The main new advantage of the proposed methodology is the use of efficient energy systems for support tasks. Although it is not within the exact range, the same data can be used to assess the time of departure and arrival, and the number of students traveling every day.

A. Related Work

There are tracking systems for children, such as Wireless tracking devices designed for children as a bracelet or necklace. In this type of tracking, these devices can be connected to a mobile application and alert parents if their child is out of range. If the child walks outside of this range, the device will send an alert to a parent. In addition, the application sends the child's location using a geographic map. A disadvantage of this type of application is that it operates only in a limited range. Other products may depend on biometric characteristics, such as a child's biomechanical system, where children control their comfort through a palm reader when they enter the bus [6]. It uses infrared light for a unique pattern image. The green and red LED lights are used to guarantee the scanning work. The cross-reference checks are sent to a secure database of pre-registered user patterns. Accordingly, the Department can find the information of that carrier, where and when the child was located, and where the bus was at that time. One disadvantage of this approach is that it is not difficult and small for young children to place their columns correctly in the scanner. This can result in inaccurate data if the scanner does not detect the comfort of a child.

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B. Similar Projects
1. School System based on RFID: This project provides a system to monitor or drop off schoolchildren to improve the safety of children during daily transportation to and from school. The system consists of two main units, a bus unit and a school unit. The bus unit uses the system to detect when the child is sitting or leaving the bus. This information is sent to the school unit that identifies children who did not board or leave the bus and issued a warning message accordingly. The system has a sophisticated web-based application that helps manage it and provides useful information about children to an authorized person. A prototype of the proposed system has implemented and tested to validate the function of the system.

2. Children’s School Transportation System: Millions of children need to move from home to school every day. The safe transportation of school children was a critical issue as it was often observed that children were trapped in the school bus at the bus station after going to school, missing the bus or traveling on the wrong bus without any means to track them. This project aims to find another solution to solve this problem through the development of the bus safety system, which will control the entry and exit of students from buses through an effective methodology in the use of energy. The process was not require any additional action on the part of the student and the drivers. The system will perform the entire process and allow the student to track while entering and leaving the bus. If all students wear seat belts, the bus driver may start the bus to avoid safety. If the bus trip is successful from the source to the destination, they will send a brief message to the administration to inform them of their departure and arrival.

III. PROPOSED SYSTEM

In the proposed system, we offer students unique RFID cards, read by RFID readers provided on the bus at the time of boarding and leaving, and the relevant message was sent to the parents’ mobile number with the date and time. In case of any obstacle in the way, the bell will be alerted and if the vehicle was detected by an accident detected by the vibration sensor and the console will be notified so that the console sends the warning message to the school administration with the time stamp.

A. Block Diagram of the Project

The block diagram of the design is as shown in Fig 1. It consists of power supply unit, microcontroller, GSM, RFID, obstacle & Vibration sensor, LCD and the Buzzer circuit. The brief description of each unit is explained as follows.

B. Working Procedure

The main objective of this project is to inform the parents of the children that the time to go to school is the time to board the school bus. Each student received a unique RFID card, which contained a unique number. The RFID tag was read by the RFID reader provided on the bus. Each time the reader read an RFID reader, the alarm message was sent to their personal phone number over time. The bus is connected to two sensitive devices, namely a vibration sensor and a barrier sensor. The vibration sensor detects any accident in the car. The sensor informs the controller about this and the console sends an alert message to the school administrator. The sensor detects obstacles in the road of the car and gives the bell. Here, in this project, we use the LPC2148 controller, the sensor units and the serial communication units, such as the RFID reader and the GSM modem connected to the microcontroller. The coding for this project was written in Embedded C and compiled using KEIL. The hexadecimal file created in the console was downloaded using the FLASHMAGIC program.
V. CONCLUSION & FUTURE SCOPE
The combination of RFID and GSM technologies in security system is important at this time, number of child accidents on the buses were likely to increase due to suffocation. In this project, the bus safety system has been developed for children of school age. Using this system, the relevant authorities, and the bus driver has been alerted because it is visible from the RFID card. At the same time, if there is a student on the bus, the system will do it Send a text message to the school address to make the right decision. The document shows that this RFID The technology-based tracking system continues to serve as one of the best solutions to improve safety on school buses, which It will reduce the incidents of forgetting the students inside the bus. If all students used seat belts, it would be allow the bus driver to start the bus to take safety precautions. In future, we use the GPS module that will read the location values from the satellite and send to the controller via the serial port. We can send those values to the web server so that the parents and the school management can easily track the live location of the vehicle, at any time. This GPS useful to track exact location of the bus in times when vehicle met with an accident.

VI. REFERENCES