



# RFID-INTEGRATED SAFETY IMPROVEMENT METHOD FOR SCHOOL CHILDREN TRANSPORTATION

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**Abstract:** The security mechanism towards the transportation via a bus/van and also to the kids travelling at home towards the school and recommence to house is essential aspect towards the parents and also to the school management.

The primary purpose of this project would be to supply the total to safeguard young children. Range and Obstacle recognition and accident detected sensors are implanted around the front top of the bus to prevent collision with another vehicle on the highway. The work contain RFID, GSM and Obstacle recognition and accident detected sensors are implanted around the front top of the bus to prevent collision with another vehicle on the highway.

The machine is positioned in bus since each student has a card which contains a distinctive number together with his Or her name, so when the students start entering public transit, the RFID readers will capture their names and display them right into a screen placed while watching driver. Then following the bus stopped and students departed in the bus, the motive force will scan his card to make certain, should there be still students within the bus. Should there be the machine displays their names in to the screen after which it'll send SMS towards the school management to accept right decision. As well as when the bus met accident the machine may also send the content towards the management to tell them the safe departure and arrival from the bus towards the destination.

**Keywords:** Bus safety system, RFID detection, GSM

## I. INTRODUCTION

School buses transfer countless children daily in a variety of regions. While there many problems that might disturb the mother and father concerning the travel safety of children, the paper promises to consider presenting access safety according of faculty buses through bus tracking system that can help the school children's transportation inside a secure and safer way. The supervision from the regularity of scholars throughout their exit and entry in the bus is tough to become controlled by motorists, which brought to endangering child safety.

The phenomenon of failing to remember kids around the bus is among the problems endured through the children that has elevated considerably recently. It has frequently brought towards the dying of numerous students due to suffocation

because of the insufficient attention of derivers. This project, through exit and entry tracks, aims to produce a appropriate atmosphere by using certain group of criteria of safety and security for college bus that have a positive effect on a student as well as their family.

**Keywords -** Bus Safety System, RFID (RF Identification), GSM modem.

This project suggested a bus safety system which is built to control the entering/exiting of scholars in the bus. This technique does several tasks, including identifying private information of every student using RFID tag that will exchange the information using the RFID readers via radio waves, and displaying each student name into Liquid crystal display. This can allow the driver to understand the amount of students within the bus and also the students who



departed in the bus. Furthermore, the machine comes with an emergency system which will alert in situation if there's a young child within the bus following the bus stops in the destination by delivering an SMS towards the school management via GSM modem. Additionally, when the bus depart and arrive effective in the source to destination, it'll inform the management with an SMS about its effective departure and arrival. The important thing novel feature from the suggested methodology is using energy-efficient systems to aid the duties. Though not within strictly within the scope, exactly the same data may be used to measure the duration of departure and arrival, quantity of students travels every day.

## II Hard Ware System:

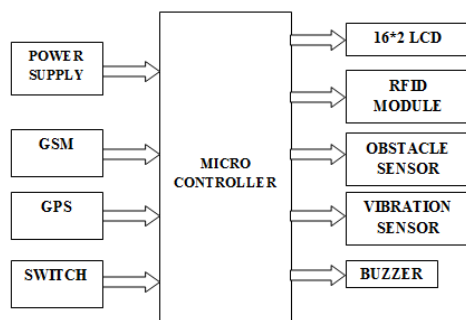


Fig.1: Block Diagram

This project is mainly used for safety transportation of children travelling from school to home and again from home to school. The RFID scans the ID card of the children while entering in to the bus and displays them in front of the driver. After the bus has stopped the students get down from the bus. The driver again will scan the ID cards to make sure that children has got down from the bus. If any child remains in the bus the system will display their names on the screen and this message will be send to school management. Even if bus met with the accident the message will be given to the management at which destination the accident has occurred so management can take the right decision.

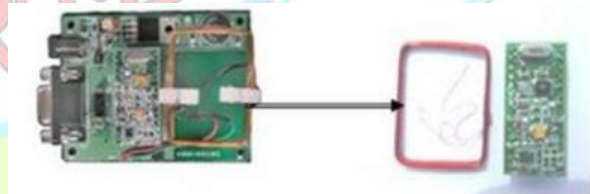
## RFID-Technology:

Recently, RF identification technologies have moved from obscurity into mainstream applications which help speed the handling of product which and materials. RFID allows identification from the distance and unlike to earlier bar-code technology. RFID tags support a bigger group of unique IDs than barcode symbols and may incorporate additional data for example manufacturer, product type as well as measure ecological factors for example temperature. In addition, RFID systems can discern a variety of tags found in the same general area without human assistance.

Rf identification (RFID) is term is used to explain a method that transmits the identity the object wirelessly using radio waves. RFID technology is assembled with the most general Automatic Identification (Auto ID) technologies.

An RFID system consists of two separate components: a tag and a reader.

The tag contains an antenna linked to a small microchip that contains as much as two kilobytes of information. The readers or scanner functions much like a bar code scanner. However, while a bar code scanner utilizes a laser light to scan the bar code, an RFID scanner uses electromagnetic waves. To deliver these waves, the scanner uses an antenna that transmits a signal contacting the tags antenna.



RFID Module

Fig.2: RFID Module

## GSM Modem:

A GSM modem actually works having a GSM wireless network. A wireless modem behaves just like a dial-up modem. The primary distinction between them is the fact that a dial-up modem transmits and receives data via a fixed phone line while a wireless modem transmits and receives data through radio waves.



A GSM modem is definitely an exterior device or perhaps a PC Card / PCMCIA Card. through serial cable we can connect GSM modem to computer. A GSM modem by means of your personal computer Card / PCMCIA Card is made for use having a notebook. It ought to be placed into among the PC Card / PCMCIA Card slots of the note book.



Fig .3: GSM Modem

#### ARM7TDMI:

ARM is brief form for advanced RISC machine which is produced by Phillips. ARM7 relies upon reduced instruction set computing architecture. ARM7 is ideal and broadly used processor family in embedded system applications. . The benefit of low power consumption and occasional COST increases the plethora of applications from portable devices to just about all embedded electronic market. It's preloaded with lots of in-built features and peripherals which makes it more effective and reliable option for a high finish application developer. Additionally, it supports both 32-bit and 16-bit instructions via ARM and THUMB instruction set.

#### Liquid Crystal-Display:

LCD means Liquid Crystal Display. LCD is finding endemic use replacing LEDs (seven segment LEDs or any other multi segment LEDs) due to the following reasons:

1. The declining prices of LCDs.
2. The opportunity to display figures, and graphics. This really is as opposed to LEDs, are restricted to figures along with a couple of figures.
3. Incorporation of the refreshing controller in to the LCD, therefore relieving the CPU from the task of refreshing the

LCD. In comparison, the LED should be refreshed through the CPU to help keep displaying the information.

#### MAX232:

Max232 IC is really a specialized circuit making standard voltages as needed by RS232 standards. This IC provides best noise rejection and incredibly reliable against discharges and short circuits. MAX232 IC chips are generally known as line motorists. To make sure bandwidth between PC and microcontroller, the baud rate and current amounts of Microcontroller and PC ought to be the same. The current amounts of microcontroller are logic1 and logic i.e., logic 1 is 5V and logic is 0V. However for PC, RS232 current levels are thought and they're: logic 1 is taken as -3V to -25V and logic as 3V to 25V. So, to be able to equal these current levels, MAX232 IC can be used.

#### Buzzer:

The piezo buzzer produces seem according to reverse from the piezoelectric effect. These buzzers may be used alert a person of the event to a switching action, counter signal or sensor input. They're also utilized in alarm circuits. The buzzer creates a same noisy seem regardless of the current variation put on it. It includes piezo crystals between two conductors. Whenever a potential is used across these crystals, they move on one conductor and pull alternatively. This, push and pull action, produces a seem wave. Most buzzers produce seem in the plethora of two to four kHz. The Red lead is attached to the Input and also the Black lead is linked to Ground.



Fig 4: Piezoelectric Buzzer





### **SENSORS:**

The sensor is mainly supposed to have been utilized in home security systems for recognition of moving objects, but could be effectively involved with intelligent children's toys, automatic door opening devices, and sports training and phone-less-speed measurement equipment. Infrared sensors are characterized by high sensitivity, affordable and so are broadly used. Ultrasound motion recognition sensors are characterized by small power consumption, appropriate cost and sensitivity. It why this sort of sensor is usually found in home, office and vehicle home alarm systems. . Sensors frequently occasions require a laborious tuning process. .

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### **III Advantages:**

The machine uses RFID tags for kid's recognition which isn't dangerous because it uses frequency ranges which are safe and legally approved. The deployment cost is reasonable. The system is automatic and user friendly.

### **IV Conclusion:**

This project presented an RFID-based system that is aimed at improving the safety of kids throughout the daily bus trip back and forth from the college. RFID-based recognition unit located within the bus detects the RFID tags worn through the children. After that it transmits, using a GSM modem, the appropriate data somewhere database server. The machine checks and detects which child didn't board or leave public transit and issues a reminder message for this effect. Additionally, the machine checks the kid's attendance and updates the database. The mother and father can sign in to system website and monitor the facts of the children.

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