

IMPLEMENTATION OF SCHOOL BUS MONITORING USING RFID

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Abstract--In the previous task of school bus tracking, monitoring and alerting system, there are many categories and methodologies. At present because of increased number of kidnapping and road accident cases, parents worry about their children's security. The project makes use of the applicability of Radio Frequency Identification (RFID) reader for tracking, monitoring children during their trip to on school busses. This system identify the children and update log to server will send notification to the parents of current location at the time. Parents can see the location of bus, they will be notified when the childre is getting into a bus or getting down from the bus. Fire sensor is also used in this project to any fire accidents. A device is placed inside the bus which determines the position of the bus using Global Positioning System (GPS). The proposed system will offer more security in checking drunk and drive, speed control, missing children's, accident and many etc. Radio frequency Identification is used to identify the children in the bus with the help of RFID reader present in the bus. GSM system for sending the message to parent and smart school bus system. The system tracks the school bus by the IOT and also gets an alert if the bus crosses the speed limit. In this project to implement the childrens safety using RFID Technology.

Keywords--Global Position System, Radio Frequency Identification, Sensors, Wifinetwork, IoT.

I. INTRODUCTION

Smart school bus plays an essential role in carrying most of the children all over the world in everyday. The commute of childrens from home to school and back has always been a source of concern for parents. Childrensoften get on the wrong buses and get off at the wrong stops. Bus drivers may not be able to identify all the childrens and will not know in time if a student is missing. Parents have no way of knowing if their ward is safe until the evening when the school bus returns. While some of schools have already implemented GPS tracking of buses using GSM and they do not ensure absolutely safe. Millions of children need to travel from home to school every day. These parents, obtaining a safe transport for

their children is a critical issue for smart school bus[1]. The alert or notification system alerts the parent when the id from their child's RFID reader is read by the RFID tag which causes the microcontroller to invoke a server script to push notification to the parent's mobile. For the bus and the childrens onboard will be monitored accurately throughout the commute. This system imediate notification parents by SMS whenever children enters or leaves school bus, this will assure parents that children are safely reached to home and school [2]. Usually the parents keep calling the driver to check the present location of bus as well as to ensure their ward has boarded the bus. There is always an uncertainty the element of in this process

involved . It is always possible for the driver to mistake childrent for another or to give wrong information [3]This paper also suggested a bus safety mechanism which is designed to count the entry/exit of students from the school bus. The project to look into introduce access safety in of school buses and secure through school bus tracking and monitoring system that will helpful of the school children’s safe and secure way.

II. PROBLEMIDENTIFICATION

Problem Statement The objective of this proposed system is to develop an application which will help to provide security for school going children’s. This allows parents and management to check the status of security of smart school bus by using Iot. The proposed system will provide various facilities of speed control, check drunk and drive, missing children’s, accident emergencies, inappropriate drop. which are helpful for children security.

III. LITERATURE SURVEY

This project ideas is to put an end to incidents like Innocent school children are ending their lives for unworthy reasons. There are many systems which provide secure to the school childrens. The use of Radio Frequency Identification makes it easier to maintain and use information, but could not give the certain information about the situation in the bus In this system does not provide anyother information when children are in critical situations . The smart school bus to track the live location of the school bus for the speed recovery when it is to accidents [1].The proposed system to overcome problem of public transportation. Wireless sensor network are being in used for monitoring of bus RFID system and record the time of arrival of buses at bus stops. This system is in work for detecting the delay and arrival time of buses [2].

IV.PROPOSED SYSTEM

In this system arduinouno microcontroller has been used. The system consists of two units, bus unit, and parent unit. Bus unit consists of RFID Reader, different sensors and WiFi module to issue the alert messages to parents when their children boards or leaves the bus. Fire sensor will be placed within the bus unit to detect fire and issues alert messages by giving the location of the bus using wifi module and IOT. School bus unit consists of RFID Reader and wifi Module. The entire data in two units will be processed by using arduinouno microcontroller.

ADVANTAGES

- Improving schedule of bus timing.
- Avoid kidnapping and road accident.
- Updates are real time and hence reliable.
- Reduced traffic in clumsy areas.
- Makes people to avoid unexpected delay.

V. OVERVIEW

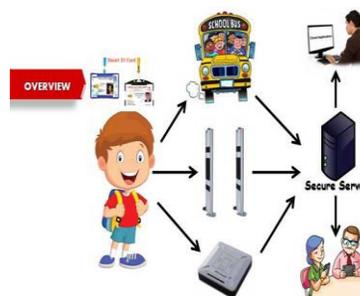


Fig 1.Process Diagram

VI.WORKING PRINCIPLE

The two main sensor integrations to the microcontroller are the FIRE Sensor and the RFID reader. The RFID reader uniquely identifies each student entering the bus by means of the RFID tag embedded in the student ID cards. Both these readings are fed to the ESP8266 microcontroller. RFID Reader placed in school bus and RFID tag is fed with school id card. Every time RFID

reads the student card means, It give the information about student came to school or not to our parents, school and vehicle driver. In case of any fire detect in bus means, temperature sensor alerts the buzzer. This information's are continuously monitored in lcd display. These details are view in webpage via wifi module.

wrong, worst case scenario you can replace the chip for a few dollars and the start over again of Aruino.

B. LCD display

The LCD Display always use devices made up LCD of computers and digital watches and also DVD and CD players in the Liquid Crystal display. They have to become very common and have taken a giant leap in the screen display of industry by clearly replace the use of Cathode Ray Tubes . Cathode Ray Tubes draws more power than LCD and are also bigger and heavier and then display. The Liquid Crystal Displays have made displays thinner than CRT's. And then even while comparing to the LCD screen to an LED screen, and the power consumption is lesser than as it works on the basic principle of blocking the light rather than dissipating in the display. All of the have seen an LCD, but no one knows the exact working of it. These take a look at the working of an Liquid Crystal Display.

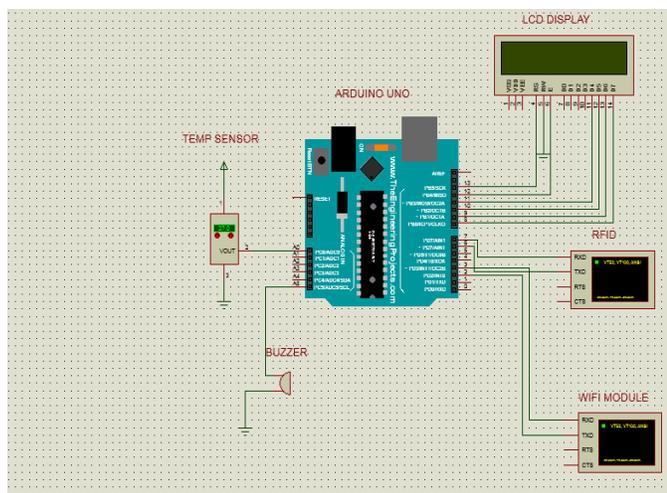


Fig 2.Circuit Diagram

VII.COMPONENTS DETAILS

A .Arduino Uno

Microcontroller of ARDUINO UNO of board based on the ATmega328P. The 14 digital input/output pins , 6 analog input, a 16 MHz quartz crystal and a USB connection, a power jack, an ICSP reset and header button. These are everything contains needed to support the microcontroller; The simply connected it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get the started of Arduino microcontroller. Now You can tinker with your UNO without worrying too much about doing something is

C. RFID module

The EM-18 RFID Reader component operating at 125kHz is an low-cost result for your RFID based submission. The Bibliophile component comes with an on-chip antenna and can be powered up with a 5V power supply. Power-up the component and connect the transmit pin of the module to receive pin of your microcontroller. Show your card within the understanding distance and the card number is thrown at the output. Optionally the component can be configured for also a weigh and output. Passive tags are the humblest, smallest and inexpensive version of an RFID tag as they do not contain a built-in power source and therefore cannot initiate message with a reader. Semi-passive tags have built-in sequences and do not require energy from the reader field to power the computer chip. This allows them

to job with much lower signal power levels and act over greater distances. It uses electromagnetic field to mechanically identify and track tags attached to objects. In our system we are going to use RFID booklover to identify the child.



Fig 3.RFID

D.WIFI Module

The ESP8266 WiFi Unit is a independent SOC with linked TCP/IP bodybuilding stack that can give any microcontroller admission to your WiFi system. The ESP8266 is adept of either holding an submission or offloading all Wi-Fi interacting functions from another claim processor. Every ESP8266 segment comes pre-programmed with an AT information set firmware, sense, you can simply hook this up to your Arduino device and get about as much WiFi-ability as a WiFi Protection offers The ESP8266 component is an enormously cost effective board with a huge, and ever rising, public.

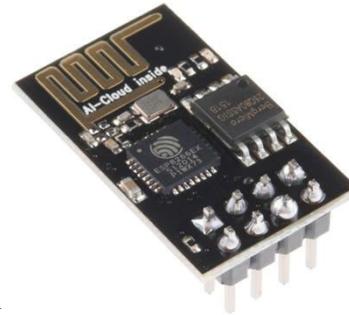


Fig 4.WIFI

E.Buzzer

A **buzzer** is a small yet efficient module to add sound features to our scheme/system. It is very minor and compact 2-pin building hence can be readily used on breadboard, Perf Board and even on PCBs which makes this a widely used constituent in most electronic requests.



Fig 5.Buzzer

F.Arduino IDE

Location (IDE) is a cross-platform application that is written in roles from C and C++. It is used to inscribe and upload programs to Arduino well-suited boards, but also, through the help of 3rd party hearts, other vendor growth boards.the basis code for the IDE is free under the GNU Over-all Public License, version 2.The Audrina IDE supports the languages C and C++ using singular rules of code arranging. The Arduino IDE supplies a software

library from the Wiring scheme, which delivers many common input and output actions. User-written cryptogram only wants two basic purposes, for starting the draught and the main program loop, that are compiled and related with a program stub *main()* into an executable recurring decision-making package with the GNU toolchain, also comprised with the IDE distribution. The Arduino IDE employs the package *avrdude* to change the executable code into a text file in hexadecimal indoctrination that is burdened into the Arduino board by a loader program in the panel's firmware.



Fig 6. Arduino IDE

VIII. SYSTEM TESTING

Aexample of the proposed system has been organized and tested in a lab situation. The demo consisted of one RFID reader, two UHF antennas, a Gateway consecutively the Linus operating system, and few RFID tags. The antennas were installed at the main entrance of the lab and the RFID reader was associated to the laptop through Ethernet cable. A package was industrialized to apply the reading algorithm and show the consequences to the user. The lab testing started with regulating the two antennas based on their polarization in such a way to maximize the reading prospect of the tags inside and outside the lab, which mimics spotting the tags inside and outside the school bus. Many tag interpretation trails have been carried out under measured tag alignment and promotion from the ground. This was indispensable in order to recognize the

discoveryconduct of the RFID reader. The GUI was industrialized to show the map of the bus route and a list of students' names. The situations to be tested included perceiving a student when he/she enters or leaves the bus, perceiving when a student greeneriesthe bus at the wrong address, detecting a student after he/she is left behind, and the engine is off and the door is locked, and detecting when a scholar enters a wrong bus. The scheme was tested, and all situations were satisfied [7].

IX. SYSTEM IMPLEMENTATION

In this paper, school bus tracking and intensive care has been proposed. RFID is used for the documentation of the children. Each scholar has their separate RFID tag with the help of the RFID tag the student can checked by their parents and also by school. When the student enters or exits from the bus the bibliophile records and transfer data in the folder. For every entry and exit RFID tag is detected by the RFID reader. The number of students can be totaled in the bus. Here front door is careful as the entry door and rear door is measured as the exit door. Instrument is fixed on both the doors and the sensor total the exit and admission of the student. Only one being can entrance or exit at a time. The RFID reader read the tag and send an alert communication to their individual parents through GPS and GSM component. The obverse door sensor increase the count. The rear door beamdecrease the count and both the sensor analyze the total number of undergraduates present. Fire sensor is used to detect if any fire coincidence occurs, it will send an alert memorandum to parents, school, and fire engine. The pursuing system details will be sent to the waiter at the school side for packing and on the mobile device to the parents. The evidence of students is stored in a catalogue at a school side [1].

X.CONCLUSION

The smart school bus monitoring system is a user friendly tool for parents to check up on their kids and school administration to monitor the drivers. In summary, this project has built a school bus security system that provides comprehensive security to the commute. The system has real time tracking, children identification, and provision to monitor excess speed, detours, unscheduled stops, delays, accidents and student absence. This paper has described the design and application of the school bus following system.

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