



An Information-Based School Bus Boarding Structure

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Abstract: This paper presents a method to watch pick-up/drop-from young children to boost the security of kids throughout the daily transportation to and from school. The main disadvantage to this technique would be that the deployment price is high. You will find commercial systems for monitoring children for example Bluetooth-based monitoring products which are created to be worn by children like a bracelet or perhaps a necklace. The machine includes two primary models, a bus unit along with a school unit. Public transit unit the machine can be used to identify whenever a child boards or leaves public transit. The microcontroller contained the AT instructions, designed in C, for delivering SMS. The code was verified utilizing a terminal program to make sure that microcontroller sent the right AT instructions to GSM modem. This post is conveyed towards the school unit that identifies which from the children didn't board or leave public transit and issues a reminder message accordingly. The machine includes a developed web-based database-driven application that facilitates its management and offers helpful details about the kids to approved personal. To enhance transportation safety, some schools use a bus supervisor to take care of the kids within the bus. An entire prototype from the suggested system was developed and examined to validate the machine functionality. The outcomes reveal that the machine is promising for daily transportation safety.

Keywords: Engineering Design; RFID; System Integration; Transportation Safety; Detection;

I. INTRODUCTION

Children safety factors are very important for their parents. Regardless of the best safety precautions, children, because of their insufficient abilities to safeguard themselves, may finish up in times that endanger their existence. To enhance transportation safety, some schools use a bus supervisor to take care of the kids within the bus. Nevertheless, human oversight or supervisor absence can always result in a heartbreaking ending as with the formerly reported tales. Within this paper, we concentrate on a specific risk connected using the daily bus trip back and forth from school. There has been a previous occurrence in which a child is forgotten within the bus and finally dies due to suffocation. This paper presents a method to watch the daily bus pick-up/drop-from children to boost the general safety from the daily bus transportation to/from soccer practice. The machine is aimed at instantly discovering whenever a child boards or leaves public transit and issue a reminder message whenever a child doesn't board or leave public transit to lessen the parents' concerns about while using bus for that daily transport of the children without having to be lost or forgotten.

II. PREVIOUS STUDY

The groups communicate the appropriate information using WLAN. The main disadvantage to this technique would be that the deployment price is high. You will find commercial systems for

monitoring children for example Bluetooth-based monitoring products which are created to be worn by children like a bracelet or perhaps a necklace. The disadvantages of the system are the module might not be convenient for kids and wide-scale deployment is costly. Authors report a monitoring system that employs Android terminals that communicate among themselves using Bluetooth technology to create groups. In this kind of monitoring, these products could be of a mobile application and may alert the mother and father if the youngster went outdoors a variety per them [1]. When the child walked outdoors this range, the unit will be sending a reminder towards the parent. Additionally, the applying transmits the position of the child using a physical map. One drawback to this kind of programs is they work only inside a limited range. Other items may depend on biometric features like the Kid track biometric system where the children scan their palms across palm readers once they go into the bus. It uses an infrared light to image the palm unique pattern. It uses eco-friendly and red LEDs to guarantee the scan work. Then, the scans are sent for mix-referencing against a safe and secure database of pre-registered users' designs. According to this, the administration will find the data of this bus, when and where it monitored the kid, where public transit was in those days. The disadvantages of the approach are that it's not automatic and hard for youthful children to put their palms properly

around the scanner. This leads to inaccurate data when the scanner didn't identify a child's palm.

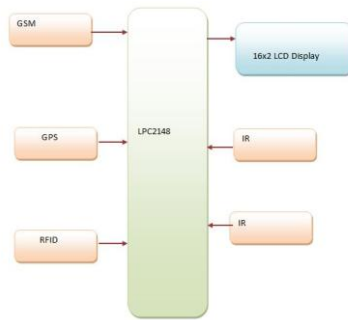


Fig.1. Proposed system Bus Unit

III. PROPOSED METHOD

The restrictions considered within our system are: The machine shouldn't be dangerous for human creatures or even the atmosphere. The unit should hurt the kid by any means [2]. The machine ought to be simple to re-configure. The communication ought to be reliable. The restrictions would be the limitations around the design. They're enforced through the atmosphere and also the customer. Our bodies were created using the following engineering needs: The machine should recognize each child and identify when every child boards or leaves public transit. The machine must have a database to keep student's information. The machine ought to provide a choice to choose from different Languages. Children's information ought to be readily available for approved personal. The machine is split into two primary models: bus unit situated within the chartered bus, along with a school unit situated within the school. Public transit unit accounts for discovering the kid as he boards or leaves public transit after which this post is delivered to the college unit. The college unit is a vital unit where it collects data all the buses, adds them somewhere database, inspections should there be missing children, also it transmits a text notification for their parents. Our suggested system offers the benefits below: Each child will put on a card with RFID tag mounted on it. Public transit unit accounts for delivering relevant tag information towards the school unit where it will likely be stored and processed. In line with the received information, various other children's information could be retrieved in the database for more processing. 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 price is reasonable. The machine is automatic and easy to use. Public transit unit will identify the kids once they board/leave public transit. It'll use RFID technology to do this purpose. Farfel treatments include a readers and tags. You will find three kinds of RFID visitors according to their frequency ranges, low frequency, high frequency and ultra-high frequency. We made

a decision to use UHF RFID readers, because it features a faster bandwidth than these. . Also, the space could be controlled to become short or lengthy as needed. The RFID readers are going to be situated within the chartered bus through the entrance. It will likely be placed where it'll only identify the kids when they're within the bus. However, if the child was outdoors close to the bus, the readers won't identify him. There are two kinds of RFID tags, passive and active tags. We chose passive RFID tags since there is a short studying range which fit our requirement to identify the kid as he is near to the readers. Furthermore, they're less expensive than active RFID tags and want no maintenance as opposed to active tags that require maintenance and regular substitute of battery. The college unit includes a server interfaced with GSM modem to get data in the bus. The server concurrently functions as database server and server for hosting the net-application designed to manipulate the machine setting, update, and query the machine database. Additionally, the server communicates by having an SMS gateway to transmit notification just in case a young child is detected missing. The database from the system needs to meet certain business rules. It will help to find out organizations, characteristics and associations from the database [3]. The company rules from the database in our system are: A young child could be in just one bus; however a bus might have many children. A young child has one or many relatives. A family member might have many children registered in the school. A bus might be driven by a number of motorists; however a driver can drive just one bus. A young child might have many attendance records, but an attendance record has one child. The administrator can also add, modify, delete or view details about students as well as their relatives, buses and motorists. However, each parent can observe the status of his/her children when they board/leave public transit each morning and mid-day. A prototype from the product is implemented and examined. Tests are very crucial part to validate the functionality from the suggested system. It ought to be concerned with the probability of finding a mistake and examining the functionality from the suggested system. The models were implemented individually initially plus they were examined to see if these were working correctly. Then, these were integrated and configured as needed for that system. The system test occurred for the models within our system: RFID readers and tags, GSM modems and college server. The RFID readers detect the kids once they board/leave public transit. It's situated within the bus. The GSM modem can be used to transmit this data towards the school unit. A microcontroller can be used to interface the RFID readers using the GSM modem. A terminal program was utilized to see if the readers can see

the tags by setting the readers parameters properly. A C-program was written to switch the information between your RFID readers and also the GSM modem via a microcontroller to ensure they interfaced correctly. When the microcontroller reads the information in the RFID readers, the Brought is going to be switched onto indicate the effective read from the tag number. Initially, GSM modems connectivity was examined using TMAS GSM-GPRS modem test program using the AT instructions that handle delivering and receiving SMS and calling. Two TMAS GSM/GPRS modems were utilized to transmit data in the bus unit towards the school unit. Certainly one of modems is situated within the bus unit to transmit SMS which consists of the tag serial figures to a different GSM modem within the school unit. The microcontroller contained the AT instructions, designed in C, for delivering SMS. The code was verified utilizing a terminal program to make sure that microcontroller sent the right AT instructions to GSM modem. In the school unit, there's a web server, in which the web-based application and database are located and stored. This server will get the information sent in the bus unit using a GSM modem, analyses and reserve it. It's also accountable for notifying the mother and father just in case of emergencies. First, the authentication is verified by trying valid/invalid username and/or password combinations. Whenever, the mixture is wrong, the access is refused. Then, the various benefits supplied by the net-based application were verified. Following the SMS is distributed in the first GSM modem; it's received through the second GSM modem that's interfaced towards the school server through the serial communication port and RS232 cable. A code designed in PHP reads the received SMS, updates the database, and notifies the mother and father if required [4]. You will find four text files, each for any certain time interval. For instance, if it's time in which the bus is collecting students using their houses in the morning, it opens the apply for entering public transit each morning. Next, it connects towards the database and in the students table it chooses the serial figures and compares these to individuals within the text file. Whether it will get a serial number that suits one out of the file, it chooses the student's ID and updates the related column to that particular time interval in the entry for your day within the attendance record table. The code works the following. First, it inserts a brand new row for every student who's indexed by the chartered bus system within the attendance record table using the date. The relaxation from the posts remains empty. Next it connects towards the serial communication port "COM1" and transmits some AT instructions to see the messages received through the modem. Then, it opens a text file and saves the messages inside it. If there's a young child who didn't

enter/leave public transit, the machine will get his relative's information in the database and transmits a notification within the selected language [5]. The PHP code written for that SMS gateway was examined. To make use of the SMS gateway, the next parameters are positioned: user ID, password, language, readers, and also the messages. The consumer ID and password receive through the gateway provider. The written text could be set to regardless of the user really wants to send. The word what needs to be set before writing the written text in order that it could be sent correctly? There are lots of integer values for various languages.

Operation:

In this project we are using LPC2148 is main controller. It belongs to ARM7 architecture. GSM and RFID modems are connected to controller through serial interface. Each student had one RFID tag. Controller will store all tags information after students getting into bus. If any parents want to know their students position, simply they need to send SMS to modem then status SMS will goto mobile. The system developed here uses RFID technology for student detection while boarding or leaving the bus. Every student is given a unique tag through the reader identifies student he/she boards or leaves the bus. The reader sends the details to microcontroller. The microcontroller sends the data to server through GPRS. The server verifies the database for student details and if any student didn't board/leave, the server informs to microcontroller about his absence. The microcontroller sends an alert to the corresponding parents about the absence of the student.

This project uses regulated 5V 500mA power supply. A 7805 three terminal voltage regulator is used for voltage regulation. Bridge type full wave rectifier is used to rectify the ac output of secondary of 230/12V step down transformer

Kit pic:



IV. CONCLUSION

RFID-based recognition unit situated 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 PHP code written for that SMS

gateway was examined. To make use of the SMS gateway, the next parameters are positioned: user ID, password, language, readers, and also the messages. This paper presented an RFID-based system that is aimed at improving the security of kids throughout the daily bus trip back and forth from the college. The consumer ID and password receive through the gateway provider. The mother and father can sign in to system website and monitor the particulars of the children. The machine inspections and detects which child didn't board or leave public transit and issues a reminder message for this effect. Additionally, the machine inspections the kids attendance and updates the database.

V. REFERENCES

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AUTHOR'S PROFILE

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