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Student safetyProvider Using LPC2148 & GSM GPS RFID

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Abstract: -The paper is to develop a system to monitor pick-up/drop-off of school children to enhance the safety of children during the daily transportation from and to school.A lot of children need to commute between homes to school every day. In recent days safertransportation of school children has been a critical issue as it is often observed that, the child is forgotten in the busand also find that the bus being diverted from actual route. This project intends to find yet another solution to solvethese problems by developing a bus safety system that will control the entry and exit of students from the buses throughan advanced methodology. The proposed system uses RFID (Radio Frequency Identification), GPS technology to trackthe current position of the bus, GSM to send notification to parents regarding student and an ultrasonic sensor withbuzzer to create special attention to drivers to avoid accidents.

Keywords: LPC 2148 , GSM, GPS, Ultrasonic sensor, Buzzer,RFID, Student safety.

1. INTRODUCTION

School children safety is the most significant componentencouraged to precede research with the support of advancedtechnology. Several bitter incidents forced to develop aninnovative methodology to provide secure life for children.Parents are unable to feel comfortable until the child resumedback to home safely. Missing of the students at schoolpremises, anti-social elements kidnappings etc. are increasingin an advance. Technology should be imperative to safe guardthe society. The developed working model considered RF IDTechnology and an advanced LPC 2148 microcontroller and GSMtechnology. The status of the children is readily available withthe school principal and with the parent time to time. Thereturn status of the child is secured by providing the messageto the parent in advance is encouraged to meet the challengesin the children security. The working model is developed andtested periodically for constant monitoring.School buses transfer millions of children daily in various countries around the world. While thereare many issues that might disturb the parents regarding the safety transportation of

school going children, the paperintends to look into introducing access safety in respect of School buses through bus tracking system thatwill help theschool Children transportation in a secure and safer way. The supervision of the regularity of students during their entryand exit from the bus is difficult for the drivers, which led to endangering child safety. It has been increasingsignificantly in recent years. This project, through entry and exit recordings, aims to create a suitable environment byfollowing certain set of criteria of security and safety for school bus that will have a positive impact on the student andtheir family.This system does several tasks, including identifying personal information (E.g. Name) of each student usingRFID tag, which will exchange the data with the RFID reader via radio waves and displaying each student name intoLCD display

1. RELATED WORK

Purpose

Children safety is of utmost 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. This project develops 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.

Description

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.

BLOCK DIAGRAM:

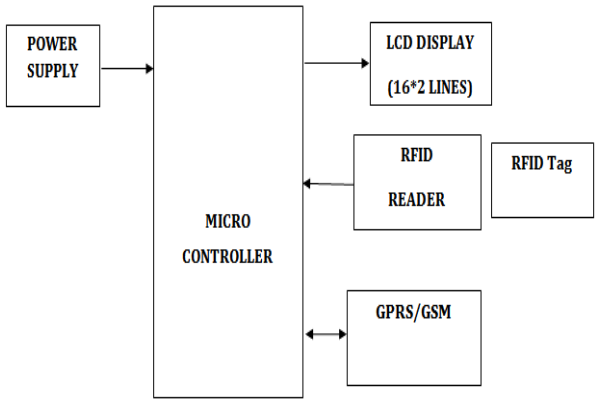

Fig:-1 **Project Block Diagram**

In [1] system uses the autonomous clustering technique to monitor the children in group and when separated. Eachchild is provided with an android mobile with them. A group of students are indicated as G. When this group G comesnear to the tag T, it collects the group ID and sends to the server through mesh network. It uses Bluetooth to send theinformation which is one to one. If communication between neighboring mobile is interfered then collision occurs. It uses LPC 2148 microcontroller with GSM, GPS and voice playback unit. The LPC 2148 microcontroller triggers voice play back unit when the child cries. If the voice is matched it sends the alertmessage to their respective parents. Special application called eclipse is created in the mobile which can create new applications (SMSMAP).[3]Provides safety to the students in the bus stops using Intelligent Transportation System Telecommunication Technology(ITST).Here the Intelligent Bus Stop (IBS) detects the RFID tags of the students and indicates the student's presence inbus stop to the passing vehicles by a sign board with a flash light. It also indicates the cars by showing symbol in theGPS.[4] System will handle, safe route planning, rerouting of routes, school bus position tracking, safety enhancementapplications for drivers, warnings for surrounding vehicles and training schemes for school bus drivers. The averagespeed of cars was significantly reduced by the flashing bus stops. The evaluation will focus on usefulness,effectiveness, acceptance in a user perspective.

2. IMPLEMENTATION

LPC2148:

The LPC2148 microcontrollers are based on a 32/16 bit ARM7TDMI-S CPU with real-time emulation and embedded trace support, that combines the microcontroller with embedded high speed flash memory ranging from 32 kB to 512 kB. A 128-bit wide memory interface and a unique accelerator architecture enable 32-bit code execution at the maximum clock rate. Forcritical code size applications, the alternative 16-bit Thumb mode reduces code by more than 30

% with minimal performance penalty. Due to their tiny size and low power consumption, LPC2148 are ideal for applications where miniaturization is a key requirement, such as access control and point-of-sale. A blend of serial communications interfaces ranging from a USB 2.0 Full Speed device, multiple UARTs, SPI, SSP to I2Cs, and on-chip SRAM of 8 kB up to 40 kB, make these devices very well suited for communication gateways and protocol converters, soft modems, voice recognition and low end imaging, providing both large buffer size and high processing power. Various 32-bit timers, single or dual 10-bit ADC(s), 10-bit DAC, PWM channels and 45 fast GPIO lines with up to nine edge or level sensitive external interrupt pins make these microcontrollers particularly suitable for industrial control and medical systems.

RFID reader

An RFID reader's function is to interrogate RFID tags. The expedient of interrogation is wireless and because the distance is relatively short; line of optical discernment between the reader and tags is not compulsory. A reader contains an RF module, which acts as both a transmitter and receiver of radio frequency signals. The transmitter consists of an oscillator to engender the carrier frequency; a modulator to impinge data commands upon this carrier signal and an amplifier to boost the signal enough to arouse the tag. The receiver has a demodulator to extract the returned data and additionally contains an amplifier to fortify the signal for processing. A microprocessor forms the control unit, which employs an operating system and recollection to filter and store the data. The data is now yare to be sent to the network.

GSM Global System for Mobile Communications, originally GroupeSpecial Mobile), is a standard developed by the European Telecommunications Standards Institute (ETSI) to describe the protocols for second-generation (2G) digital cellular networks used by mobile phones, first deployed in Finland in July 1991. As of 2014 it has become the de facto global standard for mobile communications - with over 90% market share, operating in over 219 countries and territories. 2G networks developed as a replacement for first generation (1G) analog cellular networks, and the GSM standard originally described a digital, circuit-switched network optimized for full duplex voice telephony. This expanded over time to include data communications, first by circuit-switched transport, then by packet data transport via

GPRS (General Packet Radio Services) and EDGE (Enhanced Data rates for GSM Evolution or EGPRS). Subsequently, the 3GPP developed third-generation (3G) UMTS standards followed by fourth-generation (4G) LTE Advanced standards, which do not form part of the ETSI GSM standard.

Liquid Crystal Display

LCD stands for **L**iquid **C**rystal **D**isplay. LCD is finding wide spread use replacing LEDs (seven segment LEDs or other multi segment LEDs) because of the declining prices of LCDs. The ability to display numbers, characters and graphics. This is in contrast to LEDs, which are limited to numbers and a few characters.

Incorporation of a refreshing controller into the LCD, thereby relieving the CPU of the task of refreshing the LCD. In contrast, the LED must be refreshed by the CPU to keep displaying the data. Ease of programming for characters and graphics.

A Light Dependent Resistor

(LDR) or a photo resistor is a device whose resistivity is a function of the incident electromagnetic radiation. Hence, they are light sensitive devices. They are also called as photo conductors, photo conductive cells or simply photocells. They are made up of semiconductor materials having high resistance. There are many different symbols used to indicate a LDR, one of the most commonly used symbol.

3. EXPERIMENTAL RESULTS

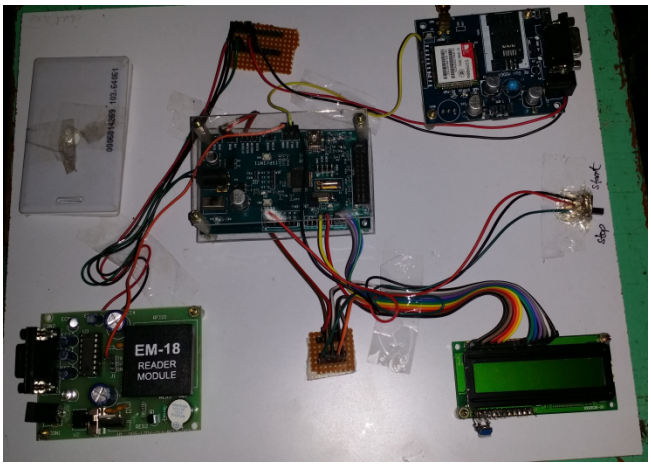

Fig:-2 Project KIT with All Components

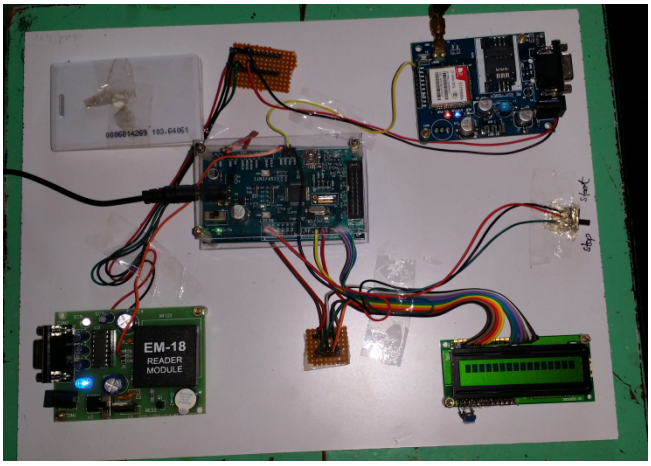

Fig:-3 Kit In Running Process

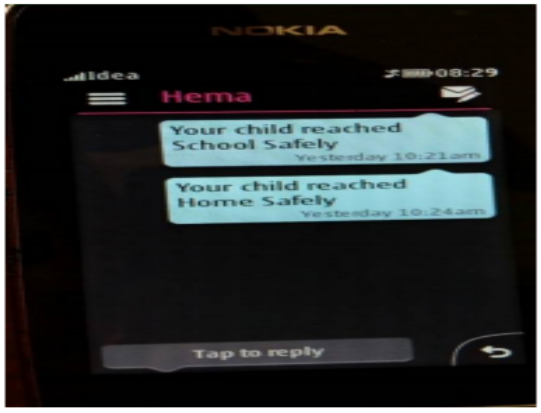

Fig: - 4 Results on Phone

4. CONCLUSION

Thus this system ensures child safetyby using RFID to detect the children while boarding the bus, updates theattendance during daily trip to and from the school by sending SMS to parent and school server using GSM. It also usesultrasonic sensor to detect any obstacle and givesspecial intimation to driver through buzzer,if no obstacles are presentand thus avoids accidents and provides safer transportation. GPS stipulates the current location of the bus and send themessage to the school server.This system can be further implemented using active RFID which can be detected easily by the RFID readerwithin a minimum range and to improve driver's attention an Omni directional antenna can be used to detect thepresence of the students in all directions. Further in case if the driver attends phone calls during the motion of the busan alert notification to the server can be provided.

5. REFERENCES

[1]. I.F. Akyildiz, T. Melodia, and K.R. Chowdhury, ''Wireless Multimedia Sensor Networks: Applications and Testbeds,'' Proc. IEEE, vol. 96, no. 10, pp. 1588-1605, Oct. 2008.

[2].I.F. Akyildiz, W. Su, Y. Sankarasubramaniam, and E. Cayirci, ''Wireless Sensor Networks: A Survey,'' Elsevier Comput. Netw.,vol. 38, no. 4, pp. 393-422, Mar. 2002.

[3].Y. Liu and S.K. Das, ''Information-Intensive Wireless Sensor Networks: Potential and Challenges,'' IEEE Commun. Mag., vol. 44, no. 11, pp. 142-147, Nov. 2006.

[4].RockwellRockwell Automation, Oct. 2011. [Online]. Available: www.rockwellautomation.com

[5]. T.T.-O. Kwok and Y.-K. Kwok, ''Computation and Energy Efficient Image Processing in Wireless Sensor Networks Based on Reconfigurable Computing,'' in Proc. ICPPW, Columbus,OH, USA, Aug. 2006, pp. 43-50.

[6]. R. Kleihorst, B. Schueler, A. Danilin, and M. Heijligers, ''SmartCamera Mote with High Performance Vision System,'' in Proc. Workshop DSC, Boulder, CO, USA, Oct. 2006, pp. 1-5.

[7]. A.Munir, A. Gordon-Ross, and S. Ranka, ''Parallelized Benchmark- Driven Performance Evaluation of SMPs and Tiled Multi-Core Architectures for Embedded Systems,'' in Proc. IEEE IPCCC, Austin, TX, USA, Dec. 2012, pp. 416-423.

[8]. ''Tilera Multicore Development Environment: ILib API Reference Manual'' Tilera Official Documentation, TILERA, Apr. 2008.

[9]. A.Y. Dogan, D. Atienza, A. Burg, I. Loi, and L. Benini, ''Power/ Performance Exploration of Single-Core and Multi-Core Processor Approaches for Biomedical Signal Processing,'' in Proc.Workshop PATMOS, Madrid, Spain, Sept. 2011, pp. 102-111.

[10]. M. Coates, ''Distributed Particle Filters for Sensor Networks,'' in Proc. IEEE/ACM 3rd Int'l Symp. IPSN, Berkeley, CA, USA, Apr. 2004, pp. 99-107.

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