IMPLEMENTING AN NFC (NEAR FIELD COMMUNICATION) FOR SCHOOL CHILDREN TRANSPORTATION SAFETY ENHANCEMENT SYSTEM

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ABSTRACT: Safe transportation of school children has been an important issue as it is often seen that children find themselves locked in a school bus at a bus stop after going to school, missing a bus, or riding the wrong bus No way to break in. The planning project leaks a security system that blocks the entry and exit of the Bus. The NFC TAG will be scanned by NFC scanner device and GCM. GPS technologies to ensure the entering and exiting of all students To and from the school bus in a safer manner. The system will do all the process and allow the student to be tracked while entering and leaving the bus. If the bus journey is successful from the source to destination, the application is user friendly, which uses Google API's to fetch the current location and GPS to track the school bus in real time.

KEYWORDS: NFC, GCM, GPS, Google API, Android Application.

I. INTRODUCTION

This project presents a system to monitor the daily bus pick-up/drop-off of children to enhance the overall safety of the daily bus transportation to school. The plan did not offer a security system that would allow entry / exit of the information of the Bus. If you do not find what you are looking for then just ask. Students should be admitted by regular supervising drivers for the eligibility of the characters. This plan should take care of the security safeguards for the purpose of recording, helping in recording recordings.

II. RELATED WORK

EXISTING SYSTEM:

In some sophisticated schools, there exists a tracking system that use techniques of virtual fence known as Geo fencing which compares the entity position with a predetermined zone or a point of interest, checking if the entity is inside or outside an area. Those techniques do not allow full coverage of the course, making difficult to determine if the bus is travelling in a planned path.

PROPOSED SYSTEM:

Android based application consists of 2 mode, driver mode and emergency mode, Driver Mode Commode Utility In the third-order exit mode, it is possible to include the Traction track to create an individual record. Provision a system to provide remote access to the remote tracking system. Monitoring the entrance and exit of students by using a scanner device, The NFC TAG will be scanned by NFC scanner device, this system ensures the entering and exiting of all students to and from the school bus in a safer manner. For faster communication, an SMS through a server based tracking system, which is a mobile based application, where SMS is sent by the users to know the location of the bus to go to the central server and vice versa. The limitations of these approaches are the exact location of the school bus cannot be known. They are time consuming and a main server is required to co-ordinate. GSM/GPRS hardware are required.

III.METHODOLOGY

ATMEL 16A MICROCONTROLLER:

The Atmel 16-bit AVR RISC consolidation file microcontroller combines 8KB programmable flash memory, 1KB SRAM, 512K EEPROM and a convert 10-bit A / D to 6 or 8 channels. The device supports a 16 MIPS at 16 MHz and the function is between 2.7 and 5.5 volts.
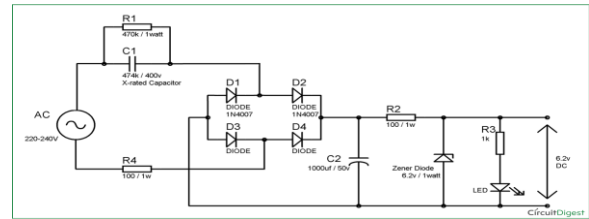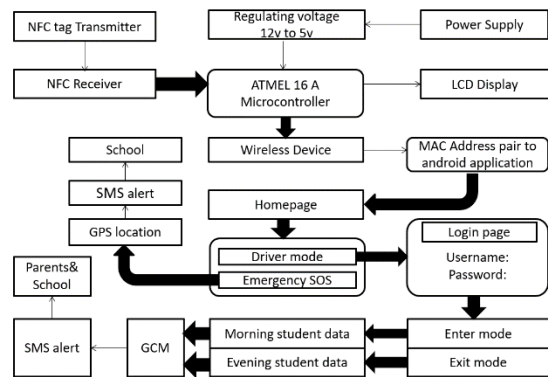

Fig: 1 Proposed System Block Diagram

Register File:

The Register File is optimized for the AVR Enhanced RISC instruction set. In order to achieve the required performance and flexibility, the following input/output schemes are supported by the Register File.

POWER SUPPLY:

The present chapter presents the function of the circuits constructs the filters, rectors, and regulators of tension. Commenting on a voltage alternating, a tension direct constant is always a refreshing tension alternating, but is a ninety-one continuation, and infinitely more effective to fix a tension direct fix. The regulation is generally based on the regulator's tension IC, which precedes a tension DC and a four's tension DC in a lower, which rests on the input DC voltage varies if the output load connected to the DC voltage changes.

Fig: 2 Circuit Diagram of Power Supply

IC VOLTAGE REGULATORS:

These regulators have tension compressor a class of circuits integrated large utility. The unit circuit integration regulator content circuits in source, compliance with compliance, command and protection charges in a single circuit integration. By the way, in the CI interface of the construction of the cellar diffraction that to regulate the tension discs of the circuits, the function is externally sensitive in mime. This unit IC provides positive regulation, dynamic tension positive fix or direct tension regulation. A power supply can be constructed using a transformer connected to the AC power line for fire to pass the alternating voltage to the desired amplitude, this rectifying the alternating voltage, filtering with a condenser and a filter RC, if desired, and finally by regulating the DC voltage using an IC regulator. The regulators try to select all the furnishings of the charge ranging from centenary dampers, corresponding to powers ranging from watts to days of watts.

LCD DISPLAY:

LCD stands for authorization to liquid crystals. LCD is a large utility for replacing LEDs (LEDs with segments or multiple LEDs with multiples). A crypto currency module is for low price and other great possibilities in the most basic utility in practice.

Fig: 3 LCD Display

NFC:

The identification for radiofrequency (NFC) is the ultimatum in the synchronous files that use the electromagnetic radiofrequencies fields to transmit donations to the new high-speed attachment and auto-authentication of authentication. Certainly, the neat processor no batteries and are powered and read at short range via magnetic fields (electromagnetic induction). The utility uses a single local power source and the most desirable radio (electromagnetic radiation at radio frequencies). These contents of information stocks electronically which give you the most interesting distance of miles. Unlike a barcode, the label does not need to be in sight of the reader and can be integrated into the Region.
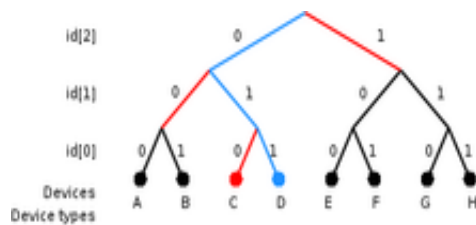

Fig: 4 Tag Matching Process

OPERATING FREQUENCIES:

Different NFC systems operate at a variety of radio frequencies. Each range of frequencies offers its own operating range, power requirements, and performance. Different ranges may be subject to different regulations or restrictions that limit what applications they can be used for the operating frequency determines which physical materials propagate RF signals. Less metals and liquids present in the grocery store with more gross probes in the practice. In particular, these ultimate quotes function in ultra-high frequency (UHF) range do not functionally correct for proximity to liquids or metal.

Fig: 5 NFC Tag and NFC Device

PEOPLE TRACKING:

People tracking system are used just as asset tracking system. Hospitals and jails are most general tracking required places. Hospital uses NFC tags for tracking their special patients. In emergency patient and other essential equipment can easily track. It will be mainly very useful in mental care hospitals where doctors can track each and every activity of the patient. Hospitals also use these NFC tags for locating and tracking all the activities of the newly born babies. The best use of the people tracking system will be in jails. It becomes an easy tracking system to track their inmates.

BLUETOTH MODULE:

It uses for many applications such as wireless headphones, the gaming contours, the wireless sours, the wireless keyboard and many other mainstream applications. There is a port of <100 m where you can find the luminary and the receiver, the conditions geography and the language. It's the protocol normalization of IEEE 802.15.1, which tracks the level of builders of personnel (PAN). Use the technology radio spectrum spread to high frequency (FHSS) to send donations for all voices. Use the communication sieve to communicate with your app. It communicates with the microcontroller in the utility port sire (USART).

Fig: 6 Bluetooth

Command Mode:

When we want to change settings of HC-05 Bluetooth module like change password for connection, baud rate, Bluetooth device's name etc. To do this, HC-05 has AT commands. To use HC-05 Bluetooth module in AT command mode, connect "Key" pin to High (VCC). Default Baud rate of

HC-05 in command mode is 38400bps. Following are some AT command generally used to change setting of Bluetooth module. To send these commands, we have to connect HC-05 Bluetooth module to the PC via serial to USB converter and transmit these commands through serial terminal of PC.
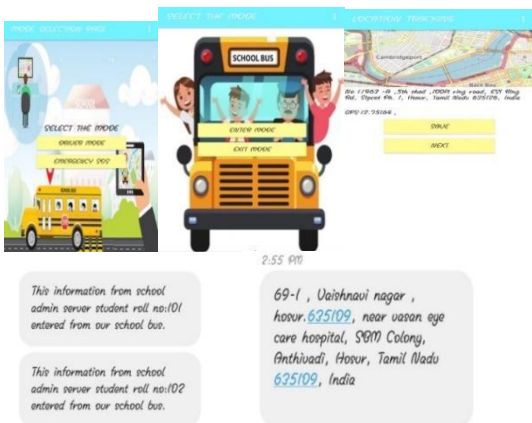
IV. EXPERIMENTAL RESULTS

Fig: 7 Experimental Results

The result is the Android Application and Mobile notification of students Enter and Exit from the Bus. The Message is sent automatically to Parents and School by using this Android Application. Application for the purpose of getting notifications From Bus Driver to Parents and School. This application is also used to fetch the current location and GPS to track the school bus in real time. Driver mode and emergency mode, the driver mode is used for student entry and exit mode in the school bus and emergency mode is used for tracking the school bus live location. This system will control the entry and exit of students To and from the bus using scanner device. The NFC TAG will be scanned by NFC scanner device. GPS technologies to ensure the entering and exiting of all students to and from the school bus in a safer manner. This implementation relies on the NFC and (GCM) Google cloud message to make an efficient communication. The system is stable, highly-scalable and reliable.

V. CONCLUSION

This system describes a method to track school buses and provide interaction in more efficient and effective way resulting in greater reliability and security. Since, we are making use of an android application; the hardware is required for implementation. The application also helps to maintain a systematic record of students, contacts of parent/authority. The project is successfully designed and tested which provides accurate locations and efficient safety measures in case of emergencies. This allows the school management and parents to have a peace of mind and helps them to carry out their schedule in a tension free manner.

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