REVIEW ON ADVANCE STUDENT IDENTITY CARD WITH GSM-GPS-RFID FOR CHILD SECUIRITY

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Abstract - *With the increase of the crime rate, children's security is the one of the big problem. The safety mechanism to the transportation bus and to the children travelling from home to the school and resume back to home and also the android application which will keep track on the student location whenever needed by the parents and to the school management. Also the application will get notification after going out of safe zone. This paper aims to provide the total security for school children. Range and Obstacle detection and accident detected sensors are implanted on the front surface of the bus in order to avoid collision with another vehicle on the Road. Each student is tagged with unique code and GSM chipset. Wireless communication technology (IEEE 802.4.15) is used to inform the status of the bus to the school principal and the student status to the concerned parents. The absentee record of the student will be send to the concerned parent before leaving the children entry point. The return information is also informed to the parent using GSM technology. The results are favorably good to meet the challenges of the security issues.*

Key Words: **RFID READER, GSM MODULE, GPS MODULE, 8051 MICROCONTROLLER**

1. INTRODUCTION

School children safety is the most significant component encouraged to precede research with the support of advanced technology. Several bitter incidents forced to develop an innovative methodology to provide secure life for children. Parents are unable to feel comfortable until the child resumed back to home safely. Missing of the students at school premises, anti-social elements kidnappings etc. are increasing in an advance. Technology should be imperative to safe guard the society. The developed working model considered RFID Technology and GSM technology. The status of the children is readily available with the school principal and with the parent time to time. The return status of the child is secured by providing the message to the parent in advance is encouraged to meet the challenges in the children security. The working model is developed and tested periodically for constant monitoring.

This paper is aimed to build a system which can notify the Parent about their Child's status by using RFID and GSM technology. Radio Frequency Identification (RFID) Card Readers provide a low-cost solution to read passive RFID transponder tags up to 2 inches away. The RFID Card Readers can be used in a wide variety of hobbyist and commercial applications, including access control, automatic identification, robotics navigation, inventory tracking, payment systems, and car immobilization. The RFID card reader read the RFID tag in range and outputs unique identification code of the tag at baud rate of 9600bps. The data from RFID reader can be interfaced to be read by microcontroller or PC. This GSM Modem can accept any GSM network operator SIM card and act just like a mobile phone with its own unique phone number. Advantage of using this modem will be that use of its RS232 port to communicate and develop embedded applications. Applications like SMS Control, data transfer, remote control and logging can be developed easily. The modem can either be connected to PC serial port directly or to any microcontroller. This paper is built on 8051 micro controller which is interfaced with RFID and GSM module. An LCD is also interfaced in the project which displays the status of the system.

School buses transfer lot of children daily in various countries around the world. While there are many problems that might disturb the parents regarding the safety transportation of school going children, the paper is looking into introducing the bus controlling system that will help the school children in a secure and safer way. The supervision of the regularity of students during their entry and exit from the bus is difficult for the drivers,which led to endangering child safety. It has been increasing significantly in the recent years .This paper through entry and exit recordings, aims to create a suitable environment by following certain set of criteria of security and safety for school bus that will have a positive impact on the student and their family.

In this paper ,GSM module ,RFID Tag which will exchange the data with the RFID reader via radio waves and displaying each student names and roll no into the LCD Display.

2. LITERATURE SURVEY

Akash Moodbidri, Hamid Shahnasser, proposed a system of smart wearable device to track the child and find the location by using Arduino. It also uses SMS system to get the current location as a SMS. It can be used in any cellphone and doesn't necessarily require an expensive smartphone and not a very tech savvy individual to operate. The purpose of this device is to help parents locate their children with ease.The secondary measure implemented was using a

bright SOS Light and distress alarm buzzer present on the wearable device which when activated by the parents via SMS text should display the SOS signal brightly and sound an alarm which a bystander can easily spot as a sign of distress.[1]

Dhiraj Sunehra, Pottabathini Laxmi Priya, Ayesha Bano, proposed a GPS-GSM technology using ARM7microcontroller board. Through SMS the link got from GPS module is sent to the parents mobile through GSM module. Children Location Monitoring System (CLMS) state-of-the-art accessibility, comfort, energy efficiency and security to the children going to school.It also has a school monitoring system database developed using Visual Basic 6.0 which is used to monitor children from school.[2]

G. Bharathi, L.Ramurthy proposed a mechanism to trace the missed student using GSM- GPS technology. An ARM 7 is used to process the given information and to send the appropriate location of the missed student by adopting the GSM technology. The Missed student Latitude and Altitude locations are determined by adopting the GPS Technology. This is all carried out when the child is out of the safe zone or the coverage area prescribed by the school and the parents combined. And also when parents request for the location, its request is send through parents mobile to the GSM module in child's device, which will send signal to ARM, this will take the Latitude and Altitude location from GPS module and send back to the GSM which will return bac the location to the parents mobile.[3]
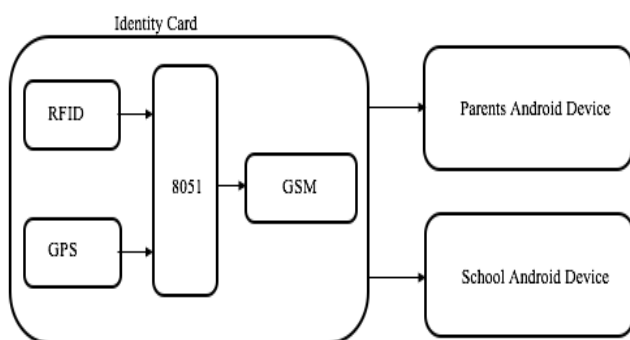
3. PROPOSED SYSTEM

Fig -1: Block diagram

INPUT-STAGE: -

1. **RFID: -** RFID systems consist of three components: an RFID tag or smart label, an RFID reader, and an antenna. RFID tags contain an integrated circuit and an antenna, which are used to transmit data to the RFID reader (also called an interrogator). The reader then converts the radio waves to a more usable form of data. Information collected from the tags is then transferred through a communications

interface to a host computer system, where the data can be stored in a database and analyzed at a later time. In our project we are using RFID technology for children's authentication.

2. **GPS**: - GPS is a device that is capable of receiving information from GPS satellites and then to calculate the device's geographical position using the. In our system this module will give the current position of the child.

PROCESSING-STAGE: -

1. **Micro-controller (89s2051):-** All the outputs from Input modules are received by microcontroller for processing. Microcontroller takes the appropiate decissions in order to process the signal received signal.
   Output from GPS: - will get the longitude and latitude of the current position of the child.
   Output from RFID: - get the user authentication key to authenticate the student.

OUTPUT-STAGE: -

1. **GSM:-**the text message is send to the parents and school mobile device containing the current position of the student.

4. HARDWARE USED

4.1 GSM module

GSM/GPRS module is used to establish communication between a computer and a **GSM-GPRS system**. **Global System for Mobile communication (GSM)** is an architecture used for mobile communication in most of the countries. Also they have **IMEI** (International Mobile Equipment Identity) number similar to mobile phones for their identification.

4.2 GPS module

A **GPS navigation device**, **GPS receiver**, or simply **GPS** is a device that is capable of receiving information from GPS satellites and then to calculate the device's geographical position.
A GPS device can retrieve from the GPS system location and time information in all weather conditions, anywhere on or near the Earth.

4.3 8051 microcontroller

The Intel 8051 microcontroller is one of the most popular general purpose microcontrollers in use today. The success of the Intel 8051 spawned a

number of clones, which are collectively referred to as the MCS-51 family of microcontrollers. The Intel 8051 is an 8-bit microcontroller which means that most available operations are limited to 8 bits. There are 3 basic "sizes" of the 8051: Short, Standard, and Extended.

4.4 RFID Reader

Radio-frequency identification(RFID)
uses electromagnetic fields to automatically identify and track tags attached to objects. The tags contain electronically-stored information. Passive tags collect energy from a nearby RFID reader's interrogating radio waves. Active tags have a local power source (such as a battery) and may operate hundreds of meters from the RFID reader. Unlike a barcode, the tag need not be within the line of sight of the reader, so it may be embedded in the tracked object. RFID is one method for Automatic Identification and Data Capture

5. SOFTWARE USED

Android Studio – An android application which will send the message to the system with the child for requesting the current position/location of the child. And when the revert is received the location co-ordinates are shown on the google maps.

6. APPLICATION

1. Smart Bag Tracking System

We have made use of reusable passive RFID tags for the postal service. Every postal node (post offices), is equipped with RFID reader which is coupled to a micro-controller which syncs its data to our backend system. The backend processes the data and displays the same to the respective persons as well as to the respective authority. The system also determines the most cost optimized path - calculated before the parcel is dispatched and updates itself according to the accident points. Our solution makes use of the RFID solution to track the booked parcel bags. As a baggage is sealed, it is allotted with a RFID tag and tracking ID generated using RFID tag, Date and time stamp. There is a feedback mechanism to check if the parcel has reached the desired destination. This technology tracks out the accident points and hence necessary actions can be taken at those points.

2. Attendance System

Nowadays, attend system in schools and colleges is generally based on paper. So sometimes this process causes errors and also takes more time. So

this project uses RFID technology to make a note of every student entering into the classroom and also to calculate the time resides in the class. In this system, every student is allotted with an RFID tag. The process of attendance can be done by placing the card near the RFID reader. The main concept of this attendance system using RFID is to maintain the attendance record. Every student is allotted with a particular authorized tag. This RFID tag can be used to swipe to record the attendance in front of the RFID reader.

3. Military RFID GPS Tracking Systems

The Orion data network is the leader in smart IoT enable devices to track, monitor and recover assets in real-time without the need for GSM networks. Orion active RFID tags use UHF networks that can be deployed in static or remote sites giving unparalleled visibility of assets and military operatives. Completely wireless and sim-free, Orion will protect and monitor armouries, track individuals in real-time training exercises or when live in the field and provide security applications for security-critical sites. NFC Group tags are low-cost, rugged devices that can attach to weaponry, monitor on-site assets and streamline supply chain movements effectively.

7. CONCLUSION

The child safety wearable device is capable of acting as a smart IoT device. It provides parents with the real-time location of child. The Identity card can be enhanced much more in the future by using highly compact modules which can be sewed into fabrics. Also a more power efficient model will have to be created which will be capable of holding the battery for a longer time.

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