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IoT Enabled Children Safety System

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Abstract - *With the rising statistics of traffic accidents and child abduction, there is a need for a robust system that enables constant tracking for a specific child by there're specific parent who are on their way commuting from and to schools. These things are possible with the help of emerging of Internet of Things (IoT) technology, in addition to Radio Frequency Identification (RFID), developing such system becomes feasible. This system provides complete visibility children tracking. In this paper, we propose a complete low cost design and implementation of an IoT based system that allows schools, parents and authority to track the movement of the children during their presence in the school bus, which guarantees comfort for parents and safety for children. The system is based on, a low cost Nano RFID reader and a GPRS module both interfaced with Arduino microcontroller. The Nano RFID reader is used as an interface for providing the reader with a mean to access the internet over 3G/4G network. We build Mysql database and deploy it on the cloud platform, which makes building applications and deploying them fast, secure, easy and scalable. We also develop a Java GUI; with secure login grant admin access, for a complete visibility and control over the system users on internet.*

Key Words: Child Abduction, Children Tracking, Child Safety, Radio Frequency Identification, Low Cost Design.

1. INTRODUCTION

As we know that the population of the urban areas are increasing day by day so with it unemployment is also increasing and this give birth to the dirt of the society that is the crime. So to live in such an environment we always worried about our loved once and for there wellbeing. This project is basically for tracking the small child and help them if they are in some kind of trouble. So we want to feel safe and with that we also want to protect our loved ones. So we have developed this project to track or to keep an eye on our loved ones. India's population is estimated to be around 133.92 cr and ranked number 2nd in the list of World countries population. Furthermore, the percentage of school students is calculated to be around 21.2%, which translates to roughly 28.25 cr children that go to school 5 days a week for more about thirty weeks around the year. According to NHR (National Human Rights Commission of India) every year around 40,000 children are abducted. On the other hand, this means every day, fleets of school buses fill up the roads delivering children to schools in morning time and back home at noon, which means larger carbon footprint, more traffic jams and lost time in the roads. So to secure our children we have to always keep an eye on them. So by considering all this we have developed this project.

2. LIYERATURE SURVAY

A. *Recognize the speed of bus and calculate the arrival time.*

It is a IOT based project and their approach is to monitor school bus in this new era of smart cities. As there first attempt was to recognize the speed of bus and calculate the arrival time of child to inform their parents. They started their project by using accelerometer sensor and GPRS connectivity module to make it real time.

B. *Monitored by the Parent far away from their Child.*

Children's security has always been a priority problem whose solution must constantly be improved. As we know now a days the crime rate in the city is rising day by day so the people are concern about there life as well as there loved once.

So there are different paper published about the technique or the system to keep track on their child so this is one of that paper. So to know if our child is safe so we are keeping track or to get notify about them like "if they have reached the school or not ?" , "IS there any emergency at the school?"

So we can get continuous notification from the school about the child that is far away from them. Efficiently tracking capabilities is tested in children's tracking and monitoring during their trip to and from school by school buses.

3. FUTURE SCOPE

In future we can add Camera Module for live monitoring and Face detection. We can also plan to apply the same RFID based access control system for school entrance monitoring and attendance. In case of Emergency we can directly notify our location to the nearest Hospital. Payment gateway for bus fees can get added to application

A. Proposed System.

The Architecture consists of various components such as Sensors e.g. RFID, GPS etc. Getaway Devices, Servers and Mobile Devices and Communication Protocols e.g. Wi-Fi module. An IoT Framework for Addressing Parents Concerns

about Safety of School and processes all the information that it acquires from these multiple Gateway Devices. After the processing these information it can send alerts or notifications to the parents or staff members with the help of native mobile app or a web application installed on their mobile phones. The Cloud Server acts a backup server and the data and the log is replicated periodically into the Cloud. The Cloud Server will help in recovery management when the Main Server fails.

B. System Architecture.

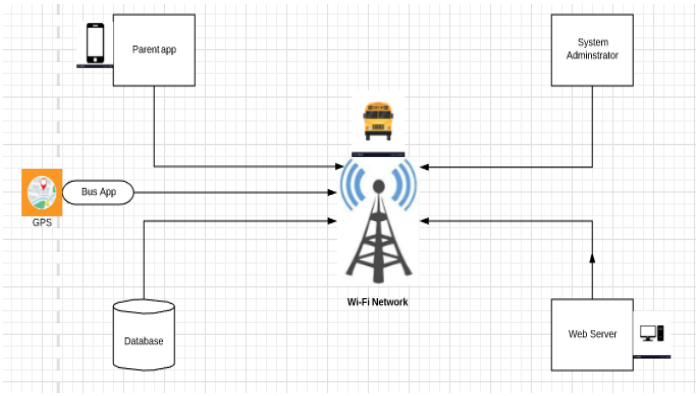


Fig -1: System Architecture

The system basically emphasizes on children's safety using IoT. Following are the components of system:

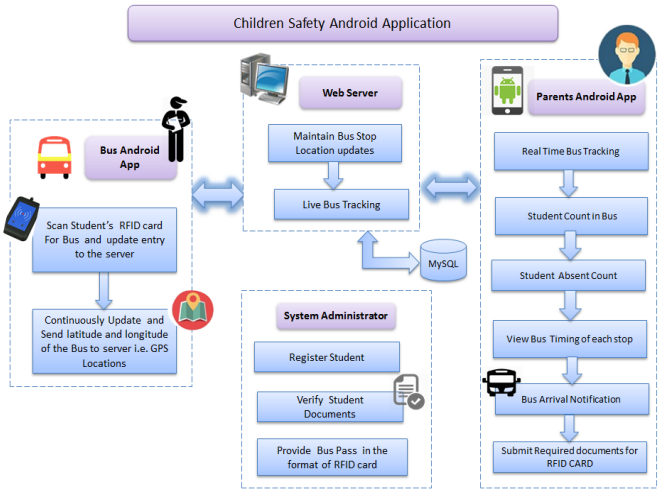
Web Server: IoT is a network of tiny innovations like the sensors which can be attached to possibly anything available and then make them communicate with the cloud server without any human interaction. Here the web server will connect all the other components in the system as shown. As the database is the online one it will be stored on the web server.

System Administrator: In order to monitor other elements in the database a system administrator is required. System administrator will keep an eye on other elements in the network. Being more specific, here the system administrator will be the school as it will look after everything on the network.

Bus Application: The school bus will be embodied with various elements such as camera, a GPS module and a RFID scanner. The GPS module will continuously track the location of bus which can be monitored on the Parents app whereas the RFID scanner will scan the student ID card.

Parent Application: The student ID card will contain an RFID tag at the back which they will scan at the RFID scanner module present on the bus. As soon as students scan the RFID tag, one notification showing that the student has entered the bus will pop up on the parents app. via this parent can check all the activities going on in the bus in which their children's are boarded.

Database: Whenever there comes an application, it usually comes with login information. Therefore in order to access the Parent App they will require an ID and password for the same. Now this information regarding Parent App will be saved on the Database. Similarly all the information regarding the Buss App as well as the System Administrator will be saved on the Database.



4. SYSTEM SPECIFICATIONS

Hardware Requirements

Processor	: Intel i7 Processor
Speed	: 2.8 GHz.
Hard Disk	: 1 TB.
Monitor	: 15VGA Colour.
Mouse	: Logitech.
Ram	: 8 Gb.

Software Requirements

Operating system	: Windows 10.
Front End	: Java
Database	: SQLite, Firebase.
IDE	: Android Studio
Programming Language	: Java, Android.

5. PROPOSED SYSTEM

The Architecture consists of various components such as Sensors e.g. RFID, GPS etc. Getaway Devices, Servers and Mobile Devices and Communication Protocols e.g. Wi-Fi module. An IoT Framework for Addressing Parents Concerns about Safety of School and processes all the information that

it acquires from these multiple Gateway Devices. After the processing these information it can send alerts or notifications to the parents or staff members with the help of native mobile app or a web application installed on their mobile phones. The Cloud Server acts a backup server and the data and the log is replicated periodically into the Cloud. The Cloud Server will help in recovery management when the Main Server fails.

6. CONCLUSIONS

We propose a solution to the security issue of children on their way to school, with the main objective to improve the municipality service of children transportation.

We will develop a technological solution comprising various types of elements. Firstly we will equipe the school bus with GPS technology for tracking and RFID technology to ensure children's presence on board. Using a native Android application that interact with a mobile RFID reader, data are sent to a server that keeps in touch with child parents.

REFERENCES

[1] Juan Zambada, Ricardo Quintero, Ramon Isijara, Ricardo Galeana, Luis Santillan, "An IoT based scholar bus monitoring system", Computer Science Department Technological Institute of Culiacan. Sinaloa, Mexico.

[2] Leonardo D'Errico, Fabio Franchi, Fabio Graziosi, Claudia Rinaldi, Francesco Tarquini, "Design and implementation of a children safety system based on IoT technologies", Center of Excellence DEWS, University of L'Aquila, L'Aquila, Italy .

[3] Tundor CERLINCA, Remus PRODAN, Cornel TURCU, Marius CERLINCA, "A Distributed RFID Based System for Patients' Identification and Monitoring," Stefan cel Mare University of Suceava 13 University Street, Suceava.