SCHOOL BUS SURVEILLANCE SYSTEM USING IOT

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Abstract: *Now a-days with the increase in the crime rate and accidents, parents worry about their children when they are going to schools. And many children find themselves locked in a school bus in the bus parking lot after falling asleep on their way to school, miss the bus, or leave at the wrong station. This project makes use of the applicability of radio frequency identification (RFID) technology for tracking and monitoring children during their trip to and from school on school busses. And it has the advantage of efficient tracking capabilities, low cost and easy maintenance. The individual RFID tags are effective and it is used for tracking and monitoring children. Fire sensor is also used in this project to detect any fire accidents. Speed of the bus also can be calculated and send a message to the parents through GSM. The system consists of three main units, bus unit, parent unit and school unit. The bus unit is used to detect when a child enters/exits from the bus using RFID Card. This information is communicated to the parent unit and school unit that identify the presence of children.*

Keywords: **RFID, school Bus, Student tracking, route**

1. INTRODUCTION

The increase in number of accidents, traffic and unfortunate events, parents are often concerned about their child's safety. The stress increases when they are not able to track the school bus. Not all the schools have a tracking application, so it is essential to introduce this system in as many schools as possible. Using the application, parents would be able to track the school bus when it arrives and departs to and from the school. The live location can be tracked by the parents. The school organization and parents can continuously monitor the bus and also keep in check with the driver's behavior. This will ensure the students safety while pick up and drop off. In case of emergency, the scheme helps the parents to receive immediate location notifications. If the schools installs this application in their bus, accidents can be reduced to a great extent .In case if , any natural events like floods or heavy rainfall occurs, the parents will know that their children might arrive late.

I. 2. LITERATURE SURVEY

Dr. M. V. Vyawahare [1] created and tried a vehicle global positioning framework to follow the specific area of a vehicle. This paper has portrayed the structure and execution of the school transport global positioning framework. A frenzy switch is set insidethe vehicle for the security of the understudies. A cell phone application can be downloaded by the guardians which will consistently show the area of the transport. The framework wasable to tentatively show it's compelling presentation to follow the school transport ;in this way guaranteeing the guardians of their kid's wellbeing

In present time because of increment in number of capturing and street mishap cases, guardians consistently stress over their kids' security. This undertaking suggests an android based arrangement which helps guardians to follow their youngsters area continuously. To follow the area Active RFID module is utilized and to recognize the character of the youngster a biometric distinguishing proof is utilized which is in worked in the framework. At whatever point a youngster loads up a transport, the biometric recognizable proof is done in the transport, and the framework will distinguish the kid and update sign on a server will send notice to the guardians who comprise of current area and time. Guardians can see the area of transport, they will be told when the youngsters is getting into a transport or getting down from a transport [2].

In today financial and traffic condition nobody can predicts at wat time and when the necessary transportation of an individual can show up .The point of the administrative work to give an application which can be utilized for understudies with the goal that they can deal with the time during all days helpfully and get to their vehicle point at the opportune time and not lose the transport or some other school transportation get gave by the school. M. S. Minu et al [3] expected to utilize IOT idea with the assistance of Arduino to execute proposed framework.

On evaluating the previous work of school transport following, checking and cautioning framework, there is a likelihood to sort different philosophies and distinguish new patterns. One among them is a test for vehicle following, observing and alarming framework. Presently a-days with the expansion in the crime percentage and mishaps, guardians stress over their kids when they are going to schools. What's more, numerous youngsters end up secured a school transport in the transport parking area subsequent to nodding off on their approach to class, miss the transport, or leave at an inappropriate station. Paper [4] utilizes the materialness of radio recurrence distinguishing proof (RFID) innovation for following and observing youngsters during their outing to and from school on school transports. What's more, it has the upside of proficient following capacities, ease and simple upkeep. The individual RFID labels are viable and it is utilized for following and checking youngsters. Fire sensor is likewise utilized in this task to distinguish any fire mishaps. Speed of the transport additionally can be determined and make an impression on the guardians through GSM. The framework comprises of three principle units, transport unit, parent unit and school unit. The transport unit is utilized to distinguish when a kid enters/exits from the transport utilizing RFID Card. This data is imparted to the parent unit and school unit that distinguish the nearness of youngsters. The framework tracks the school transport by the IOT and furthermore gets an alarm if the transport crosses as far as possible.

It is significant for each school to have a dependable and secure transportation administration to guarantee the wellbeing of the understudies. It causes the school organization to viably deal with their transport armada and possibly lessen accidents. This is the place vehicle checking produces results. The proposed framework in [5] gives continuous data about different boundaries of the vehicle like the area, the course, the

speed, the rundown of travelers, the adherence of drivers to calendar and considerably more. The framework further permits the guardians to be advised when their ward lands or sheets the transport. In this framework, we utilize RFID and GPS advancements and associate them to a distant server over WiFi utilizing an ESP8266 microcontroller. A Ublox 6M GPS module is utilized to locate the current geographic directions of the vehicle's area just as the speed it is going at. A MFRC522 RFID peruser recognizes every understudy as they board or land the vehicle by perusing the id from their RFID labels. The framework utilizes the ESP8266 to transfer the data from the peripherals to a database in the web server. The data can be gotten to by the guardians through a versatile application and this encourages them track their wards successfully. The school organization can likewise get to the application to guarantee understudy security and contact a driver or a parent. The application likewise permits the organization to be educated regarding crises or objections.

These days, guardians are bothered about school going youngsters on account of the expanding number of instances of missing understudies. Now and again, understudies need to hang tight an any longer an ideal opportunity for appearance of their school transport. There exist some correspondence advances that are utilized to guarantee the wellbeing of understudies. However, these are unequipped for offering effective types of assistance to guardians. Paper [6] presents the advancement of a school transport observing framework, equipped for offering beneficial types of assistance through rising advances like Internet of Things (Iota). The proposed IoT based framework tracks understudies in a school transport utilizing a mix of RFID/GPS/GSM/GPRS innovations. Notwithstanding the following, an expectation calculation is executed for calculation of the appearance time of a school-transport. Through an Android application, guardians can constantly screen the transport course and figure appearance time of the transport.

Savvy instruction is one key part of keen urban communities. Shrewd instruction is frequently considered as utilizing PCs in the study halls. Notwithstanding, there are numerous elements outside the study hall that can affect a youngster's nature of instruction. One key factor in numerous nations is the quality and the measure of time a kid spends in the school transport every day to drive to and from their School. This experience has been to a great extent overlooked. Be that as it may, with right now accessible Internet of Things (IoT) advances, it is conceivable to fabricate frameworks that can give total perceivability into this part of a youngster's life. Paper [7] presents the structure and usage of an IoT-based framework that permits guardians, schools and administrative bodies to follow the states of solace and wellbeing inside a school transport in a constant way. The proposed framework straightforwardly interfaces with the transport utilizing the OBD/CAN interface and passes on these boundaries to a focal server utilizing 3G/4G network and the MQTT convention. An assortment of reports for different partner for transport solace, security and participation are then created from this ongoing information giving total perceivability into conditions inside each school transport.

Aravindhan Athavan et al., [8] introduced a lifetime information securing system for vehicles with decreased memory necessities and constant (brisk) information access and investigation. Their framework comprises of µBlox C027-G35 pack which is utilized as the primary gadget for information procurement and preparing with builtin GSM/GPRS modem, OBDII with CAN Interface, OBDII to CAN Converter, and far off (cloud) server. The structure pre-forms the examples gathered by the microcontroller and spare it to the server. This pre-handling altogether decreases the measure of information spared and conveyed to the server and makes the investigation less complex. In the first place, the controller obtains in-vehicle information from the OBDII. At that point, the information is put away on the controller for the span of the vehicle's outing. When the excursion closes, the information is imparted from the controller to the cloud server utilizing the GSM/GPRS modem. At long last, when information arrives at the server, information

investigation is performed and information is made. Also, theauthors gives steps of advancement of system which incorporate choosing the application, inferring information sources and wellspring of information, planning information structure (size of information), characterizing convention to move information to the server, structuring and designing an information server, and recognizing the reasonable controller. Moreover, a test application has been made to actualize the reasonable system.

Michele Carignani et al., [9] fabricated a framework that plans to coordinate the in-vehicle CAN/OBD system and IoT system of remote gadgets with an Intelligent Transport System. This framework is fit for conveying non-security basic administrations to clients and machines. The framework comprises of OBD and a presentation associated with a CPU. Furthermore, various guidelines and conventions are utilized to speak with the WSN and the Internet. The considered conventions incorporate GPRS/3G, IEEE 802.15.4, IEEE 802.11p, 6LoWPAN, CoAP, and RESTful web administrations. In addition, an extension is recommended to extract all ready produced information. For instance, WSN/ODB hub needs to digest information originating from OBD interface as a web asset where every asset can be tended to utilizing a URI. Utilizing OBDII, it is conceivable to accumulate vehicle status data like motor RPM, motor coolant temperature, vehicle speed, mass wind current, and oxygen voltage, choke, and fuel framework status.

E. Ceuca et al. [10] actualized an electrical vehicle global positioning framework utilizing GPS/GSM and OBD drivers. The framework utilizes GPS/GSM to follow the vehicle area, and to send the area arranges occasionally to a capacity server. The framework additionally associated the vehicle with driver's telephone utilizing Automatic Link that can recognize any sort of crash and utilize the cell phone to report the collide with 911 giving them the required data like the area, driver name and the vehicle depiction. The OBD driver was utilized to peruse the vehicle speed and other data and to correspond this data with vitality recuperation so as to diminish the vitality utilization as portrayed in [4]. The OBD was likewise used to show cordial coherent data about the vehicle state utilizing a versatile App.

3. PROPOSED SYSTEM

Android based solution which assists parents to track their children location in real time using arduino controller. To track the location active RFID module is used to show 6 different static locations of bus. Before using the system, Users - driver, admin, parents needs to login in App with their login ID and password. Block diagram of proposed system is shown in figure below:

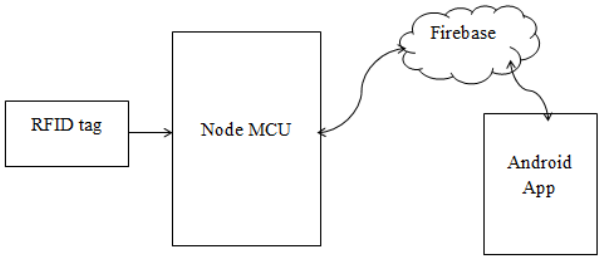


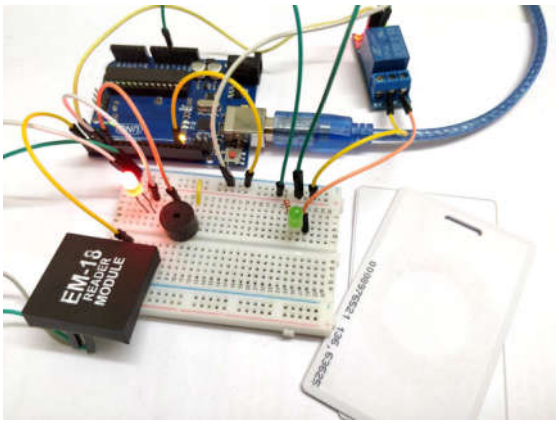
Fig.1 proposed system

RFID tag acts as identification card for children. As soon as card is scan at reader, driver, admin and parents comes to know that child has enter in bus. Driver knows how many children are there

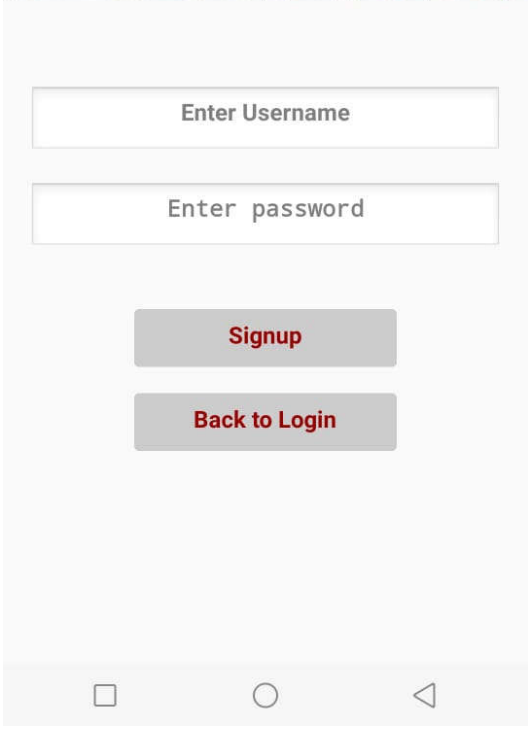
and which route he has to follow. Admin has data of driver and he knows his location. Parents will get a message when children enter in bus and when he lives. Parents have given an extra facility to change boarding station as per their wish, for this they have to send request to admin. Android App updates every data.

4. Results

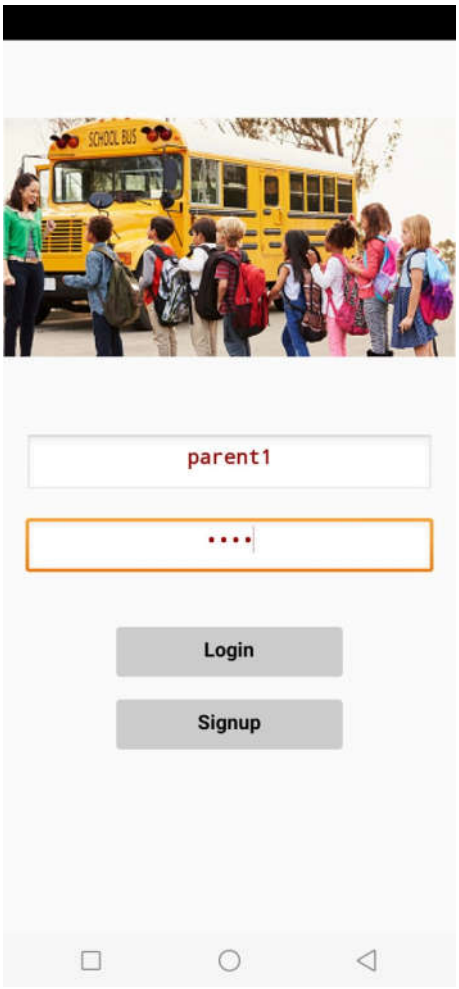
Hardware Module



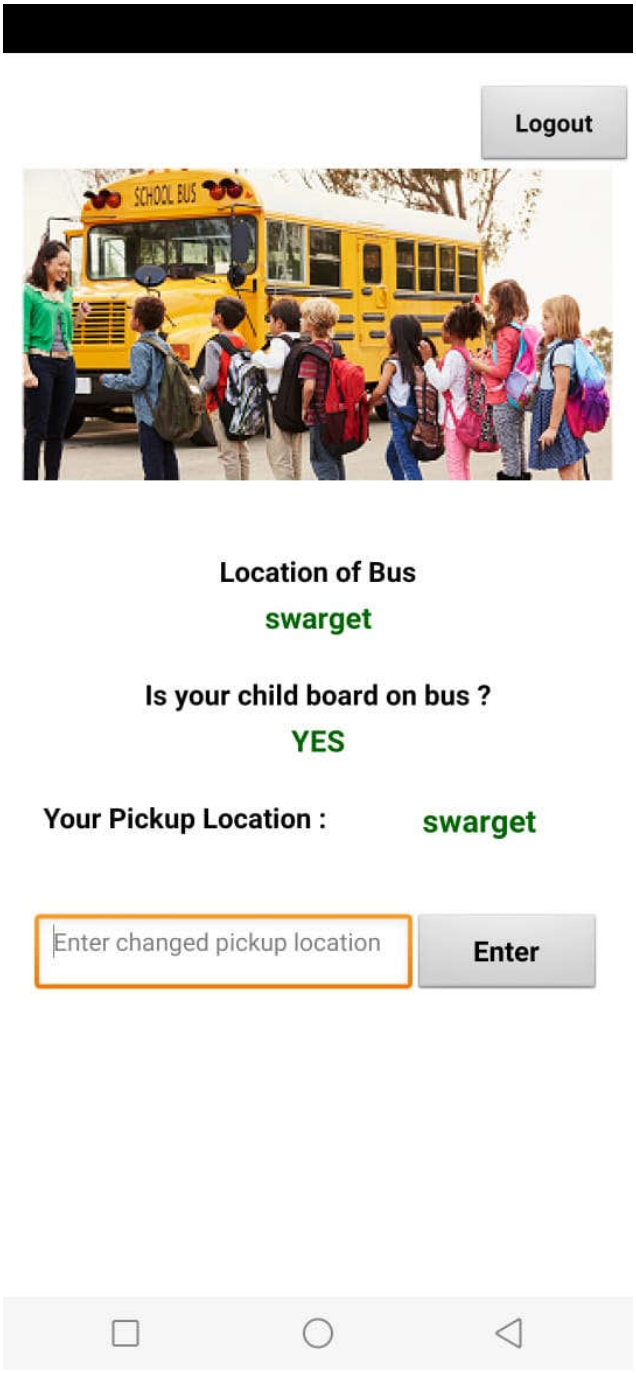
Registration

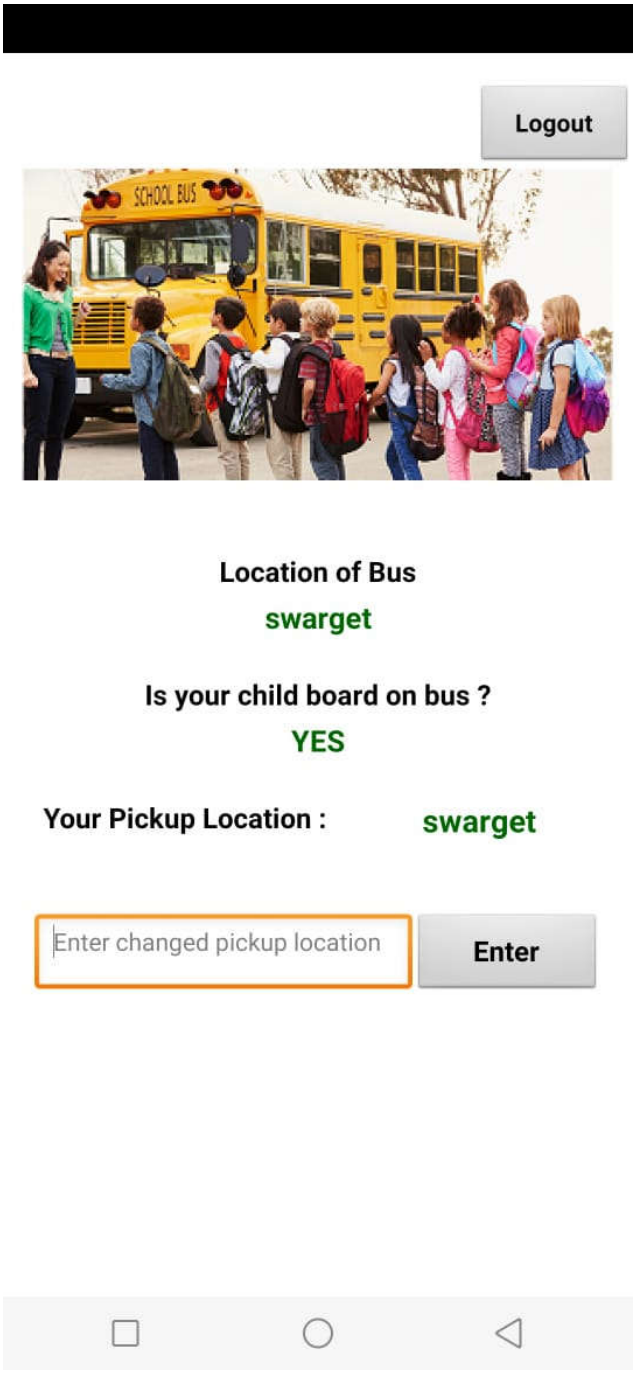


Login

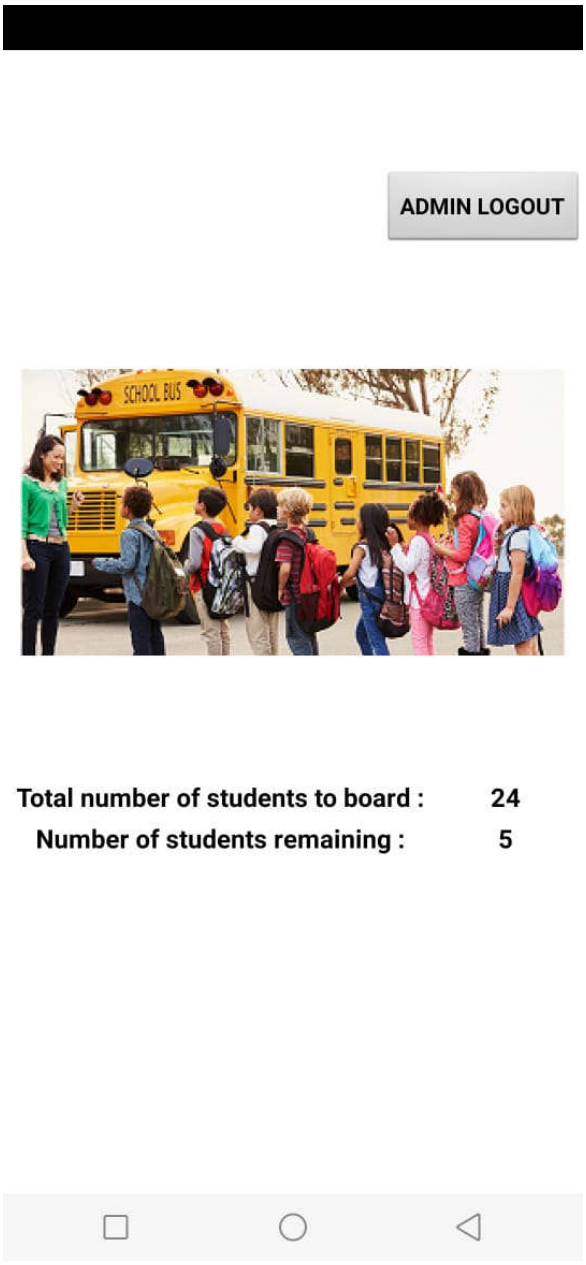


View Bus Status


Logout
SCHOOL BUS
Location of Bus
swarget
Is your child board on bus ?
YES
Your Pickup Location : swarget
Enter changed pickup location
Enter



View Students Counter


ADMIN LOGOUT
SCHOOL BUS
Total number of students to board : 24
Number of students remaining : 5

5. Conclusion

This proposed system aims at enhancing the safety of children during the daily transportation to and from school. RFID Reader located inside the bus detects the RFID tags of the child. It sends instant notification with the relevant data from the school database server via internet. The parents can log into the Application and monitor the details of their children and track the location of the bus. The admin can have a live tracking of the bus. The application can be developed further so that the school transportation departments can drive the maximum advantage from the application. Further this system can be enhanced by Parking Management System, having VANET for bus to bus communication. This system can be extended for full-time monitoring of children that will be helpful for parents and guardians at minimum cost.

Appendix

An appendix, if needed, should appear before the acknowledgments.

Acknowledgments

These should be brief and placed at the end of the text before the references.

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