iJRASET

International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL
FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

www.ijraset.com

Call: ⓒ08813907089 | E-mail ID: ijraset@gmail.com

TrackTot: Student Tracking Application for School Bus

Sarthak Chaturvedi[1], Ratnesh Kumar Gupta[2], Aditya Rana[3]

[1, 2, 3]B. Tech, Computer Science Engineering, Lovely Professional University, Phagwara, Punjab, India

Abstract: In today's world, it is common for parents to have a check over their children and to worry about them when they are traveling to school. A decade ago issues like this couldn't be handled easily but now with the advent of technology, these things can be taken care of easily. But the main problem that still persists is that only the elite category of schools are able to afford it. Therefore, we come up with a paper which proposes a reliable and efficient "TrackTot" i.e. School Bus Security Solution with Tracking System which is generalized in the form of an Android Application. The application basically comprises of three independent interfaces Admin i.e. the school, Attendant i.e. the bus conductor to make entries, and the Parents who will get notification onboarding and getting off the bus. This interface will facilitate parents to have an eye on the security of their child while he/she is off to school. While the school authorities are also able to have a check over the busses and the students by means of the Admin module. This page also proposes to give real-time access to the child's location to parents by means of a conductor or attendant.
Keyword: Tracking, Secure, Child Safety, Notification, QR-Code, School bus

I. INTRODUCTION

In today's world security is the topic of utmost concern and the increase in the number of kidnappings or mishaps with children, has genuinely increased a sense of tension among parents especially when their child is off to school i.e. transportation. While the risk is at its peak when then the student is neither in the premises of school nor in that of home. And to be straight it is not possible for a working parent to drop his child at school on a daily basis. Therefore, the parents are always in a dilemma that their child is safe and to have a check over that they are prone to calling drivers and conductors about their child's presence and the current location of the bus. And to generalize that there is always a sense of mistake on the driver's end in misinterpreting the student with someone else.

Therefore, a solution is needed which can:
1) Provide notification to parents whenever their child boards or gets off the bus.
2) The application can provide real-time access to the driver's location to have a check.
3) It must be easier enough such that it poses no difficulty to the bus staff.
4) The parent may contact the bus attendant in times of need.
5) Attendants, as well as the school, can check at any moment of time about the students who have boarded the bus.

The paper, therefore, presents an application that can run on the phone and can make use of a QR code scanner to authenticate and verify the students who all have boarded or left the bus. The application also makes use of location so that the parents can get real-time access to the current location of the bus. Apart from this, the application provides an additional feature of contacting the bus staff whenever needed and attendance which can be checked on the school and the bus's end.

Therefore, the main objective of the enforcement of the system is to provide ease not only to the parents but to the authorities that the child is safe and making interaction much easier and reliant.

II. LITERATURE SURVEY

This survey consists of several papers of the past that are related to the safety of children while going to school, live location, and tracking. The feature that was common among all was unique identification, location tracking.

The most important feature common among most of them was location tracking. Therefore, G Jemilda proposed a paper of the same. The location was parsed in real-time by means of a driver who switches it on once he is on the way to take in children from their station to school, which is then transmitted to all the registered users. In later papers, the location was implemented by means of a separate GPS device installed on the bus. This system was more reliable and robust in nature with very few chances of failure, but the issue with this system was that it required additional hardware which is expensive to handle and also difficult to integrate with the application present on the mobile phone.

In advanced papers, there was the use of an independent app for attendants and drivers which constantly transmits signals to all parents and authorities. This process is easier and cheap to process but requires constant operation on the bus staff's end. And, thus in these papers, the use of inbuilt GPS became common.

While Snehal P.Umratkar made an application based on the child's safety. This application made use of separate notifications for each child. The author made an application in which the conductor had to manually make an entry of the child who enters or leaves the bus. To make the process technologically advanced RFID readers were used by Mayur Bhor. Here RFID tags were uniquely identified and issued in the name of each child and were therefore aligned to the ID cards of each child. The driver can therefore scan these tags to mark the entry and exit of a child. While in advanced papers RFID tags were automated to the location by means of GPS. And a scan of these tags would also help keep a count of the number of students who have boarded the bus. In later papers, QR Code scanners were seen as an alternative to RFID which could easily be scanned by means of mobile phones. While a notification was also issued to the parents whenever a scan of the student was done. Thus, after all, such cases, the QR Code solution came out to be the best solution.

After authentication is done i.e. the child has boarded the bus, the notification is successfully delivered to the parents and the school authorities.

However, in later stages, a few authors like Amit Boyar and S.Dukre came up with an idea of a GSM module that made the connection between the scanning device on the bus and the server of the school. In this approach, SMS was sent as a notification from the vehicle to the central server of the school which in turn communicates with the parents by means of SMS/E-Mail. Therefore, this approach didn't use any mobile phone. While most of the solutions today make use of mobile phones and their correspondence for easier implementation of the above system.

P.Ambedkar made use of GPS in school buses in which signals were passed on from the system to the central server from where they were dispatched to individual parents. While a number of other papers made direct use of app notification instead of SMS alert. While there were a lot more solutions based on a similar approach like that of Supriya S Sinha in which the system provided the estimated time of arrival of the child. Miss M.R. Desai's approach made statistics of location and time arrival. While I.kormaz gave an extra edge by showing the expected route of the bus i.e. if there is any change in the original route of the system and it even sends an alert on such cases.

The literature survey eventually brought us to a verdict that Smart-phone based solutions are most viable in nature and easy to implement.

Thus learning from the above outcome the proposed system makes use of automated authentication and identification of each child while he/she is traveling through the bus to school. It makes use of location tracking and provides a sense of ease and security by providing a notification when the child boards or leaves the bus without any expense on hardware and an interface that could be easily used by parents as well as attendants of the bus.

III. PROPOSED SYSTEM

In the proposed system we are basically making use of several independent functionalities which eventually provide security to children and a sense of satisfaction to parents. When a child boards the bus the ID card with the child is scanned by means of a QR code scanner by the conductor.

And a notification is sent to the parent immediately. Location access is also given to the parent so that they can get the current status of the bus. While a notification is again sent to the parent when the child leaves the bus. Attendants and Admin can have a check of the students in the bus by the attendance table. On the other hand, the admin can add, delete and update bus details at any instant of time.

A. Scope Of The Project
To build a safe environment for primary students and a sense of relief to working parents who cannot drop or pick their child on a daily basis. Parents are updated about the child's status and can get access to the location easily.

B. Objectives
1) To provide proper security to the child and assurance to parents
2) To make a single interface of Admin, Attendant, and Parent.
3) The scope of addition so that functionalities can be added later.

C. Description of The Module

There are three basic modules in the system which are mentioned below:

1) Admin: Admin gets special powers of addition, deletion, and updating of buses. Then he can see the running status of any bus at any time. And can also check the attendance of any bus at any instant of time.
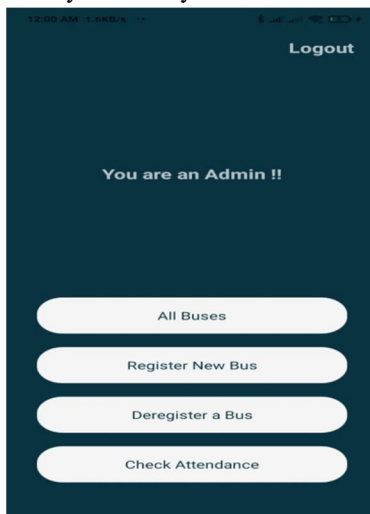

2) Attendant: The attendant takes control of the bus and has to scan the ID card when a child enters and leaves the bus. A notification is sent to the parents when the child has boarded or left school. when finding his location continuously surfaced to each of the parents.
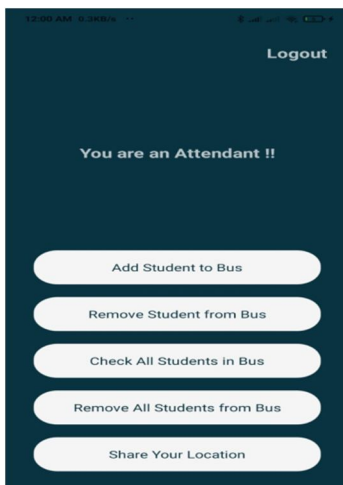
3) Parent: They get a notification of the child's status and can view the location at any instant of the time.
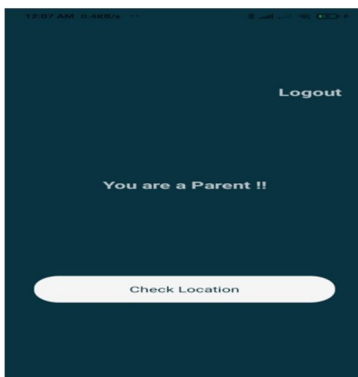
IV. DATA FLOW DIAGRAM (DFD)
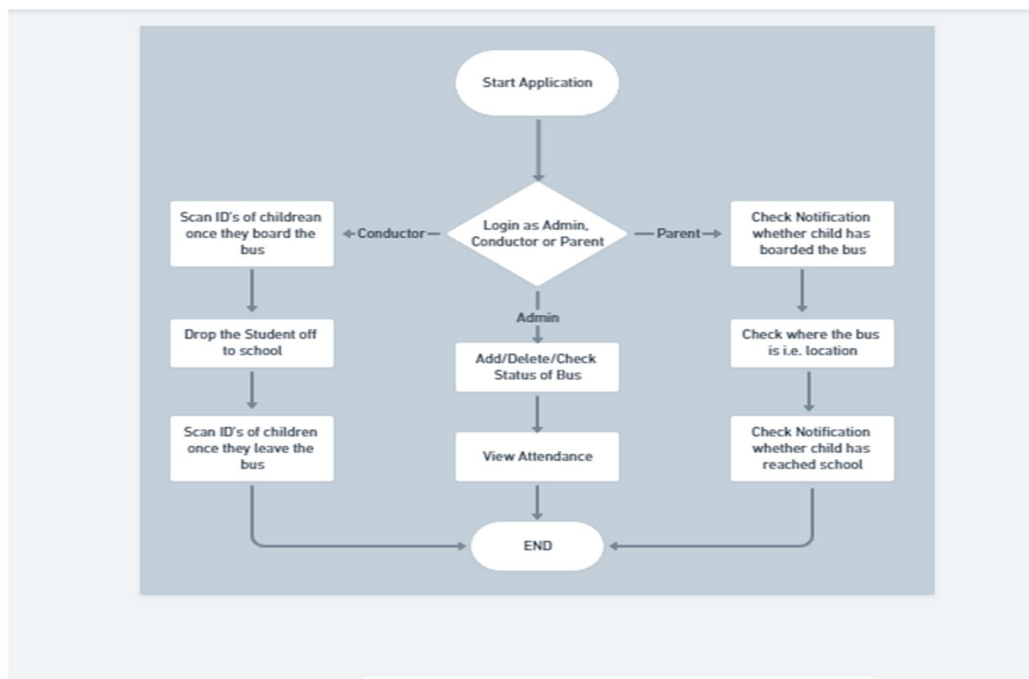
V. CONCLUSION

The main motive of the application is to provide safety and security to the child as crime is at an alarming rate where kidnapping, accidents, and death are all caused outside the school campus. The proposed system will provide a sense of security and a safe environment for the child. The child is provided with an ID card by the school which has a QR code embedded in it. By using this system parents will get a notification about their child and live tracking too. While the system is easier to use for attendants also who are generally not skilled.

VI. ACKNOWLEDGMENT

REFERENCE

[1] G. Jemilda, R. Balakrishnan, B. Johnson, G. Linga Sangeet h "Mobile
[2] Application for College Bus Tracking" March 2015.
[3] Snehal P. Umratkar, Prof. Ram Kumar Secure Child - Children Tracking
[4] Android Application March 2015
[5] Bhor, Mayur & Shinde, Dinesh & Mane, Pranoti. (2017). Children
[6] Safety and School Bus Tracking Solution. International Journal of
[7] Electrical, Electronics, and Computer Systems (IJEECS). 5. 19-22.
[8] Amit Bhoyar, Jagdish Pimple "GPS based real-time vehicle tracking
[9] system for kids safety using RFID and GSM" 2018.
[10] P.Ambedkar, P . Suresh Babu "Smart School Bus for Children Transportation Safety Enhancement with IoT" July 2017
[11] Supriya Sinha, Pooja Sahu, Monika Zade, Roshni Jambhulkar, Prof.
[12] Shrikant V. Sonekar "Real-Time College Bus Tracking Application for
[13] Android Smartphone" Feb 2017
[14] M. R. Desai, Mr.Prajwal Kumar Takkalaki, Mr.Manjunath Bhapri,
[15] Mr.Amal Kiran Marshalli, Mr.Gourish Malage "STUDENTS TRACKING
[16] SYSTEM FOR SCHOOL BUS" June 2017
[17] [8]I. Korkmaz, A. Camci, C. Cengiz, D. Dirik, E. Cekci and F. M.
[18] Akbaba, "A Smart School Bus Tracking System," 2019 International
[19] Symposium on Networks, Computers and Communications (ISNCC),
[20] Istanbul, Turkey, 2019, pp. 1-6, doi: 10.1109/ISNCC.2019.8909188.

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)