Automated School Bus Tracking System

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Abstract-: **Managing the school bus fleet mandated by federal and state regulations. In addition to the use of a vehicle-specific paint colour (school bus yellow), school buses are fitted with exterior and ensuring the safety of school students is a huge challenge for any school. A school bus tracking application provides assistance in ensuring student transportation safety and reduces parental anxiety regarding student safety. It helps school transport managers to communicate better with school bus drivers, know the location of a school bus, receive instant warnings on traffic jams, weather conditions, and handle emergency situations immediately. Our solutions support schools in managing their transportation effectively.**

I. INTRODUCTION

General Description-

A school bus is a type of bus owned, leased, contracted to, or operated by a school or school district and regularly used to transport students to and from school or school-related activities, but not including a charter bus or transit bus. Around the world, various configurations of buses are used; the most iconic examples are the yellow school buses seen in the United States and Canada.

School buses are purpose-built vehicles distinguished from other types of buses by design characteristics warning lights (to give them traffic priority) and multiple safety devices. Purpose-built vehicles for student transport are less common. Depending on location, students ride to school on transit buses (on school-only routes), coaches, or a variety of other buses.
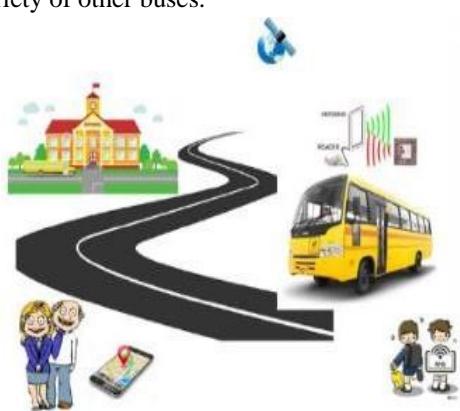
Fig 1. A view of Buses

II. LITERATURE SURVEY

A literature review has showed there are many studiesintroduced i.e a system[1] to monitor pick-up and drop-off service of schoolchildren to raise the value of the security of the children during the daily transportation from and to the school. A system has a developed web-based database driven application that facilities its administration and provides useful information aboutthe children to authorization. This system major drawback is it uses web based application for admin and parents too. Parents could not able get notify easily in convenient and safer manner.Another research [2] introduced a system that monitorschildren inside the bus in a safer manner. It usesthe combination of RFID (Radio Frequency Identification), GPS (Global Positioning System)and GPRS (General Packet Radio Service) technologies. Each student carries a unique RFID card embedded in each of the student'sschool bags. When the student enters or exits fromthe bus the reader records and transfer data in the database.

Goals-

The Goal of this project are:

- Reduce paperwork and save time and money with mobile and cloud-based location management system
- Eliminate duplicate data entry and errors in time and attendance entries
- Improve visibility to track and manage student attendance across multiple campuses
- Real-time status tracking of leave requests
- Automatic calculation of leave and reward points accrued.
- Keep the parents informed about the student's performance via Email & SMS alerts.
- Increased security and confidentiality with role-based permissions to users.

III. EXISTING SYSTEM

Existing system only send message regarding the location and it is not efficient . And sends message using internet API which may fail at times.

- Existing system has delay duration of 1 minute.
- Drivers feel uncomfortable experience at night.
- Parents and school wants to know bus details Real-Time.

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IV. PROPOSED SYSTEM

In today's scenario, avoiding any mishap with the children has become an important issue for both the parents and school management. we provide **School Bus Tracking Solution with application** through which one can easily monitor the school bus along with the students in it so that you never lose sight of your child. It is a one stop solution for live tracking, route management, automated SMS, emergency preparedness, student attendance and more. **Automated School bus tracking Application** emphasizes on accuracy, efficiency, safety and security and has no match in these dimensions. Ensuring the safety of your children can never get easier and more effective.

This project has the following features:

- **In Bus Attendance**
- **Route Adherence**
- **Live Tracking**
- **Driver Analysis**
- **Driver Identification**
- **Emergency Management**
- **Pick/ Drop SMS**
- **Speed Alerts**
- **Ignition/ Stoppage Report**
- **Downloadable Reports**

Proposed Mechanism:

- The system should provide the information about technical aspects of bus
- The system should be able to provide the information to queries asked by end user.
- The system should provide the other supporting information and links to the useful resources.

QUERY AND SOLUTION

- There are several constraints found with the system. The performance of the system depends on the school. It is necessary for the school to always check the user queries and provide the timely response.
- This will make the information useful for the parents , regular update of information like rainfall, climate changes and accidents etc. is essential for system administrator..
- **System Administrator** Should Continuously update the system and act as interface between parents and school
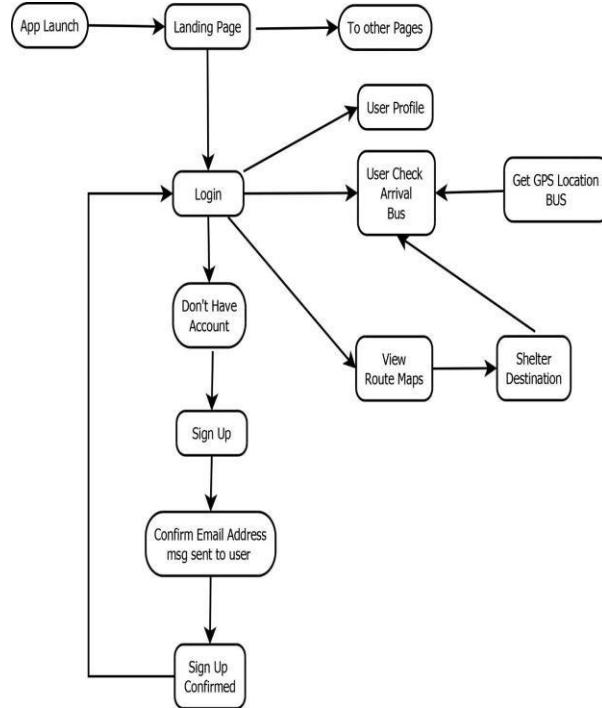
Fig2: Mechanism of Proposed System

V. MODULES DESCRIPTION

EXPERT INFORMATION

- The Bus information and route gathering phase is an important in any system development as it establishes the foundation for the new system development. For our system development we have gathered the information from the school
- Gathering routes from school
- By interacting with the drivers of every bus
- By collecting data of problem faced by drivers.

THE LOCATION TRACKING

- The phase is helpful in tracking the bus which is active.
- In this phase we have defined the scope of work by specifying functions, and constraints of the proposed system.

SCHOOL BUS INFORMATION

- The will geographical information of the region In which the bus travels
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VI. ALGORITHM

Algorithm Used While Tacking The Bus
Here since we deal with components for the implementations the Algorithm is Explained in a step-by-step process.

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1. Start
2. Get the current location coordinates of the bus from the GPS.
3. Get the coordinates of the prominent locations and bus stop from the area set to which the current location coordinates of the bus correspond.
4. Calculate the Haversian distance between the coordinates obtained from step 1 to each of the coordinates obtained in step 2.
5. Calculate the minimum Haversian distance from the results of step 4.
6. Return the minimum obtained distance from step 5 to the server.

VII. CONCLUSION

It has been a great pleasure for me to work on this exciting and challenging project. This project proved good for me as it provided practical knowledge of not only programming in java to some extent Web Application and firebase Server, but also about all handling procedure related with **"AUTOMATION O SCHOOL BUS".** It also provides knowledge about the latest technology used in developing web enabled application technology that will be great demand in future. This will provide better opportunities and guidance in future in developing projects independently.

The project is fully fledged and user friendly, End users will be lightened in using this software because it is easy to have bills and reports and mostly all contents to be entered are to selected from combo box.

VIII. REFERENCES

Implementation of automated school bus tracking system

- Chen et al. (2010). Toward Real-Time Precise Point Positioning: Differential GPS Based on IGS Ultra Rapid Product,SICE Annual Conference, The Grand Hotel, Taipei, Taiwan August 18-21.

- Zonar, 2013. Zpass: Student Ridership Tracking. International research.4 (1), 20-25. Available Online: http://www.zonarsystems.com/products/zpas s-student-tracking/.

- Maryam Said Al-Ismaili et al. ―Bus Safety System for School Children Using RFID and SIM900 GSM MODEM ‖, International Journal of Latest Trends in Engineering and Technology (IJLTET).

- birami et al. ―Embedded Based School Children Safety Enhancement Using RFID‖ ,International Journal of Innovative Research in Computer and Communication Engineering (An ISO 3297: 2007 Certified Organization) Vol. 4, Issue 3, March 2016.

- Panaskar Prajakta et al. ― RFID Based School Children Monitoring System‖, International Journal of Advanced Research in Computer and Communication Engineering Vol. 5, Issue 1, January 2016 .