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# System for Observing and Recording School Buses in Real Time

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***Abstract---*** *Day by day Tracking system is much needed for the safety of students that can monitor by the parents. Parents need not worry about that student travelling. By making a software to track students by scanning their unique barcode while boarding/exiting the bus. Student will not be able to abscond the college after scan the barcode in case if the student abscond the college automatically a notification will be sent to the parents. Through this system the parent will be able to receive alert message to their present phone number even if the parent is offline. similarly while returning back to home. Sending Vehicle information like location details, speed, distance travelled. We can implement this software and widely for tracking Cabs, stolen vehicles, school buses etc.*

***Keywords---*** *GPS (Global Positioning System), GSM (Global System of Mobile Communication), Barcode Scanner.*

## I. INTRODUCTION

Due to drastic increase in population, it leads to increase in usage of public transportation like bus. More buses are available for passengers to travel different location. But on older days there was no facilities available like using mobile phone tracking with the help of GPS(global position system)and GSM(global system for mobile communication). So, now a day people change in android or IOS with the help of that people make use of tracking the buses. So it makes people more easier for travelling from one location to another. The main work made here is the android application system and it is developing day by day. This involves the implementation of college bus to track the route for daily usage. The system handle the data of current location with the help of real time tracking. This tracking helps the people to reach on time to their location with GPS\GSM. The tracking also helps the safety for people on daily or other basis. The main advantage in real time tracking are used to gather or fetch the details from the system. This system indicates the current location of the bus via GPS and sends the SMS to the user and it helps in avoiding missing the bus. Due to heavy traffic the bus may arrive late. The new system introduced in this paper is the barcode scanner. The barcode used for identifying the data of a user quickly. Barcode scanner is fixed at doors of the bus and when it scans the barcode it automatically sends the message to the parents. This helps the parents to check the students status with the help of tracking application. So this tracking application makes more user-friendly to the environment.

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## II. RELATED WORK

People do not waste time in waiting for transport in crowded area. so, people face many problems at that time[1]. The application is based on android, SQL domain and IOTs. The application is used to check the current location of the bus and helps the people to reach by time. The application will automatically display the bus route map for different locations &also it is used to track the bus location using client –serer technology. The latitude & longitude are used to calculate the distance of two location. The necessary details of people at every location catch-up with buses. The database used here is remote server. so it can be easily identified by client –server.

Now a days vehicle tracking are widely available in market & product to be of more cost[2]. The tracking system helps us to easily identify the location of the bus through mobile phones via SMSs (Short Message Service) is sent to the specific mobile number. The GPS (Global positioning system &GSM(Global System for Mobile communication) is used to identify the current location of the device by sending SMS. No internet connection are need to track the location of the bus & also reduce the cost. The benefit of the vehicle is it follow the same route daily & it also enhance the vehicle like breakdown and over speeding alert to the system.

In the year2017,the real-time tracking and the arrival of bus are more important for the bus drivers[3]. The traditional way of tracking GPS-GSM does not work on rural areas due to low signal. The best solution is smart tracking by the use of WI-FI, mobile application and it can be accessed through WI-FI router. When the bus comes to the terminal the WI-FI gets connected and the system sends the address. We can track the location of the bus with the help of mobile application. People can get the tracking application for free. This would prove a major breakthrough in reducing the crime rates and with the help of RFID tags we can achieve E-ticketing in buses

The paper[4] describe that the intelligent bus tracking system used to track the current location of the bus with the help of android application or app in mobile phones. The first server is for user and the second is for client. The waiting time for the user can be reduced. This application is used to track the bus location, bus timings, bus route, bus number, and delay time of the bus. These information are mainly dealing with terminals that as the device at the bus, at the bus stand and the master bus stand. The GSM transfer the information to the current user the mobile. Tracking used as both personal and business issue and it improves safety and security, communication purpose. So tracking plays the major role in day tom day life. Hence we can control the traffic and check the arrival to bus to our stop.

In the year 2016, there were vast increase in population for public transportation for people[5]. The smart system provides the real time information of the bus. The real time tracking brings the technology as GPS (global position system) and GPRS (general packet radio service) are more useful in tracking the bus. The remote user in google maps are used to track the location. The current location is stored in the server and we can retrieve with the help of remote user in google map. The user can get the application free of cost for real time tracking. By the help remote user the people come to know will the bus arrive or not. So this paper practically proves the modern fast era and cost efficient. These tracking are totally based on web application and it is user-friendly.

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The paper[6] implements that the unexpected traffic arises due to more population or bus on roads. For the passengers to make more efficient the real time bus tracking application is introduced and it reduces the waiting for bus at the bus stand for the arrival and newly it is introduced real time bus tracking system (RTBTS) with the help of global position system (GPS) the module works on it. The GPS send the information to the passengers, according to that they arrive with the help of web server. The module helps in sending the bus timings, delay of bus and the location of the bus. This transit helps the real time tracking with the help of mobile phone and it also helps the people to track the location more efficiently.

In this section, we will consider the case when the Hamiltonian $H(x)$ is au- tonomous. For the sake of simplicity, we shall also assume that it is $C^1$.

We shall first consider the question of nontriviality, within the general frame- work of $(A_\infty, B_\infty)$-subquadratic Hamiltonians. In the second subsection, we shall look into the special case when $H$ is $(0, b_\infty)$-subquadratic, and we shall try to derive additional information.

## III. PROPOSED SYSTEM

This system sent notification to the student before 10 minutes through GPS system. So the student start to come bus stop that can help a student to avoid missing the bus. In this system the barcode scanner is fixed in both doors of bus, while entering in bus student should scan the barcode present in ID card.

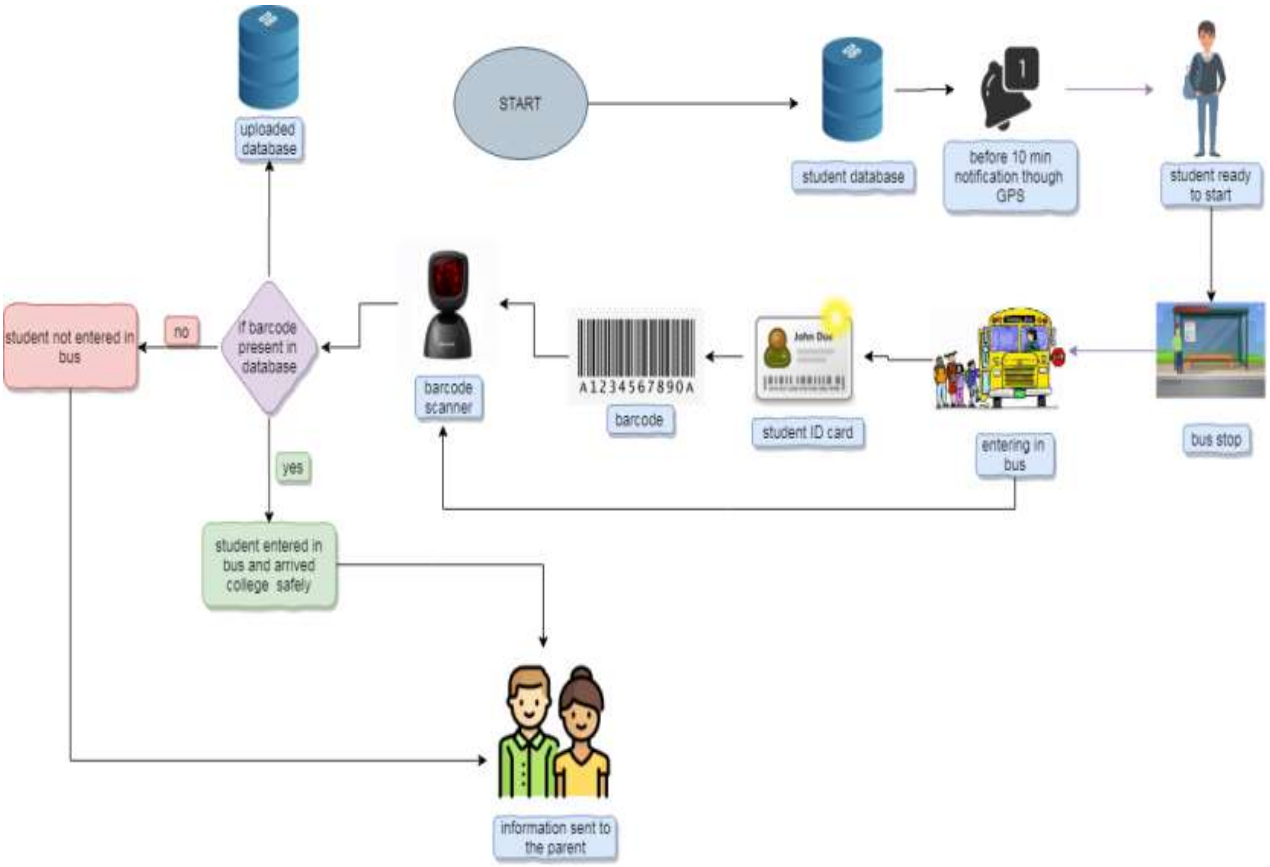


Fig. 1: Architecture of proposed system

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Barcode scanner scan the code. After scan the barcode the system check it with the database which is already uploaded student data. If the barcode matched to the database notification to respective student of parents that the student is safely entered the bus or if the barcode is not scanned sent notification to the respective parent that the student not entered in bus. similarly while exiting the bus the student again scan the code in the barcode again sent notification to the parent that the student arrived safely. As shown in fig.(1)

The system is classified into various modules:

- Alert system
- Barcode scanner
- Boarding
- Disembark
- Report to parents

### *3.1 Alert system*

By this system find the location of the bus and let the notification is sent to the mobile which is already uploaded in student database that the bus will arrived within 10 minute or which can be modify by using the particular software. So that the student can manage their time efficiently and reach their stop just before the bus arrives. By using this student did not miss the bus and arrived early to waiting for a bus.

### *3.2 Barcode scanner*

In this system a barcode scanner is fixed in both the doors in bus As shown Fig.(2). So that scans the barcode which is present in the ID card of student. When student scan the barcode only the doors are open. Barcode scanner scans that check the student database for sending notification

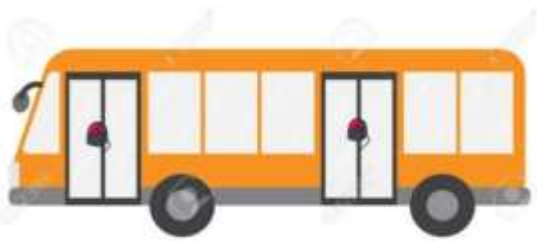

Fig. 2: Bus with barcode scanner

### *3.3 Boarding*

Once the student arrived in the bus stop. Bus was arrived on time. Before boarding into bus every student should scan the unique barcode present in the personal ID card in barcode scanner which fixed in door in bus. When the student scan the barcode it will check with the already uploaded database. Its check whether the barcode match or not with uploaded data.

### *3.4 Disembark*

Once the bus arrived to college, while exiting again the student have to scan the barcode to open the door. The barcode scanner again check whether the barcode match the uploaded database.

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### *3.5 Report to parents*

The system also collect every data and sent notification to the parents. When the student entering in bus barcode scanner fixed in doors scan the code. If it match the already uploaded database it sent notification to the parent that your ward has safely entered in bus (or) if the barcode is not scan that also notify to the parent that your ward is not entered in bus. Similarly while disembark in college. That helps the parent to check the student activity whether he/she safely entering in bus or cutting college.

## IV. CONCLUSION

The conclusion of this system is it is easy to find the bus using GPS system the application will automatically display the bus location it tracks and stored to the database and sends notification to the user. So by seeing this notification the user can wait or reschedule their journey. By this we can reduce waiting time of the user. This is system is more user friendly for the user to get information visually. In advance we are fixing the barcode scanner in both the doors in college buses. That scans and sends information to the parent. This helps the parent to checks the activity to the parents.

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