SMART TRANSPORTATION TRACKING SYSTEM ENHANCED WITH ANDROID APPLICATION

U.Logeshwaran, S.Santhanalakshmi, Mr.M.Sudhakaran,
UG Student, Ganadipathy Tulsi's Jain Engineering College, Kaniyambadi, Vellore
Assistant professor, Ganadipathy Tulsi's Jain Engineering College, Kaniyambadi, Vellore
Associate professor, Ganadipathy Tulsi's Jain Engineering College, Kaniyambadi, Vellore

Abstract

Bus tracking is an application that tracks a bus and gathers the distance to each station along its route. Tracking System involves the installation of an electronic device in a vehicle, with an installed Android App on any SMART phone to enable the Administrator/User to track the vehicle's location. There are two applications one for server and the other for the client. Buses carry GPS devices· to track bus positions. By this positions to server are periodically updated. Client application displays map showing the position of bus. The server will monitor location and will store its data in the database. It is a real-time system as this method automatically sends the information on the GPS system to a central computer or system/SMART phone. Since this is an android application we use SQLite server database for the backend. Buzzer is included to intimate whether the student paid the fees or not.

1. INTRODUCTION

In present time due to increase in number of kidnapping and road accident cases, parents always worry about their children. This paper recommends a SMS based solution which assists parents to track their children location in real time. To track the location GPS module is used and to identify the identity of the child a RFID card is used which is in built in the system. Whenever a child boards a bus, the RFID tag located in his identity card will be detected by the reader present in the bus and the system will identify the child and will send a text message to the parents consisting the current location and time. For this purpose android application is developed in which the current location of the child is updated. In this way the parents and teachers will be able to keep record of their kid's whereabouts. School bus plays an essential role in carrying most of children everyday all over the world. While there are several problems that might disturb the parents with respect to the travel of school going kids; the paper aspires to look into initiating the safety with respect of school buses through bus tracking and security system that will help the school kids' transportation in a protected and more secure way. The circumstance of forgetting kids on the bus is one of the problems suffered, that has risen considerably in recent years. This has often led to the demise of many students due to suffocation. An article published in India says in every eight minutes a child goes missing as data published by national crime records bureau. Statistical report says that around 50,000 children go missing every year from which 42% children are not found.
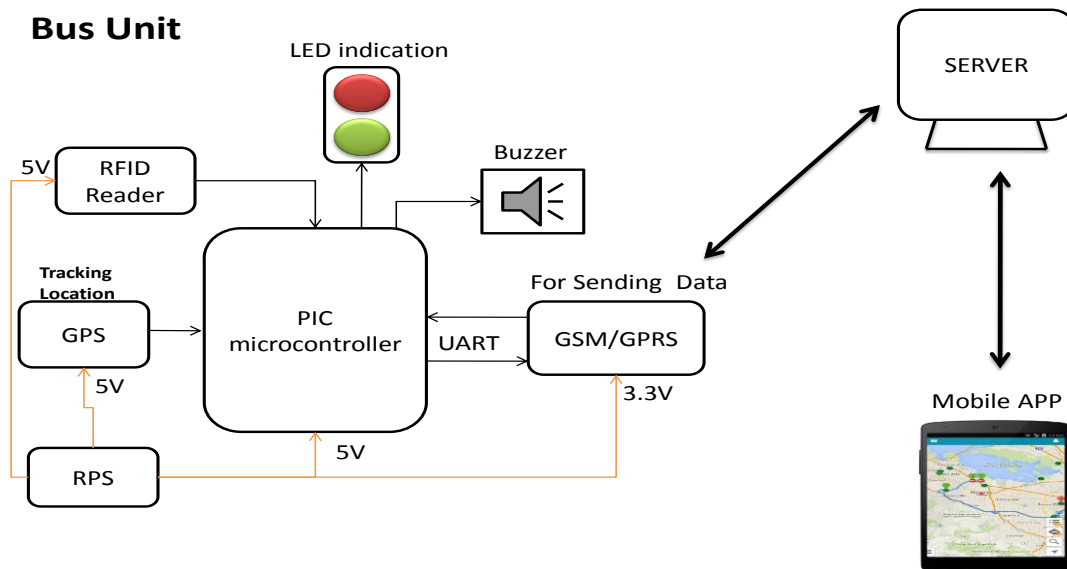
Fig.1.Block diagram

In the proposed smart bus tracking system that can transmit the location information in real time, Real time bus tracking system incorporates a hardware mmdevice installed in the vehicle and a remote Tracking server and android application. The information is transmitted to tracking server using GSM/GPRS. Tracking server stores this information in database. Once the longitude and latitude values are uploaded on the server, the user can view the location of the college bus with the help of android application, which he can see it through the Google maps integrated in it. By using RFID reader, the system identify whether the student paid the transportation fees or not if they are not paid the fees, the information will be send to the tracking server via GSM/GPRS. Simultaneously the alarm and LED will be ON to alert the college bus driver.

2. SOFTWARE DETAILS

CCS COMPILER

A compiler is a computer program (or set of programs) that transforms source code written in a programming language (the source language) into another computer language (the target language, often having a binary form known as object code). The most common reason for wanting to transform source code is to create an executable program. This integrated C development environment gives developers the capability to quickly produce very efficient code from an easily maintainable high level language. The compiler includes built-in functions to access the PIC microcontroller hardware such as READ_ADC to read a value from the A/D converter. Discrete I/O is handled by describing the port characteristics in a PROGRAM. Functions such as INPUT and OUTPUT_HIGH will properly maintain the tri-state registers. Variables including structures may be directly mapped to memory such as I/O ports to best represent the hardware structure in C.

PROTEUS 7.0 SIMULATION TOOL

Proteus 7.0 is a Virtual System Modelling (VSM) that combines circuit simulation, animated components and microprocessor models to co-simulate the complete microcontroller based designs.

This is the perfect tool for engineers to test their microcontroller designs before constructing a physical prototype in real time.

3. HARDWARE DETAILS

- PIC microcontroller

- GPS

- GSM/GPRS

- Buzzer

- SMPS

- RFID

4. REUSLTS AND DISCUSSIONS
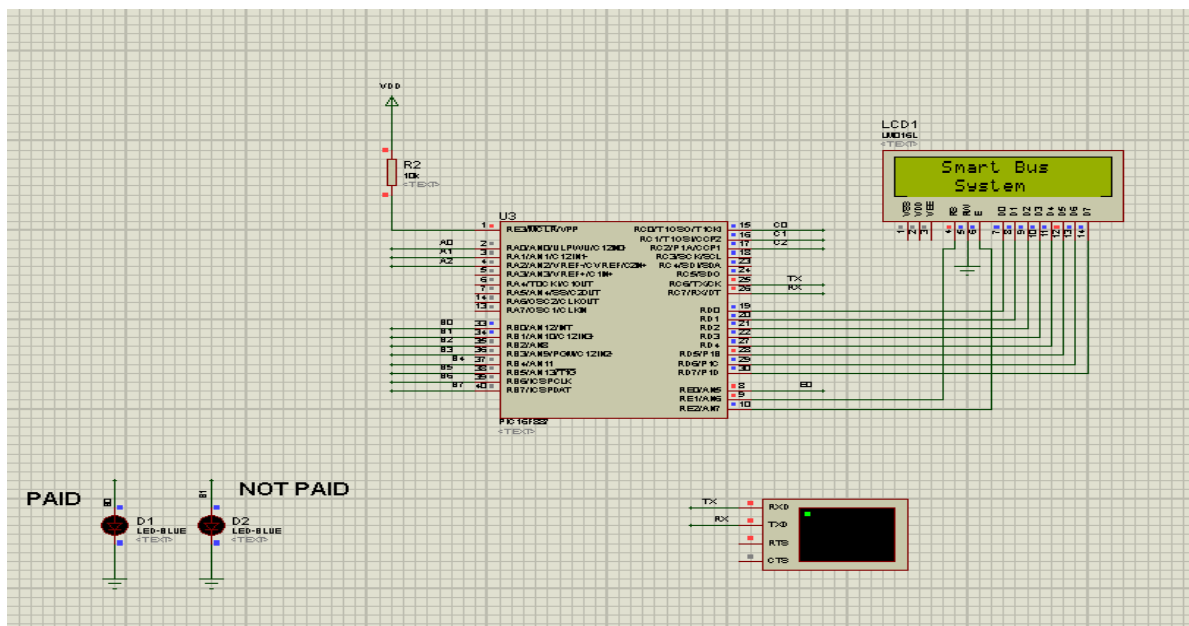
A.SOFTWARE RESULTS

INITIAL CONDITION

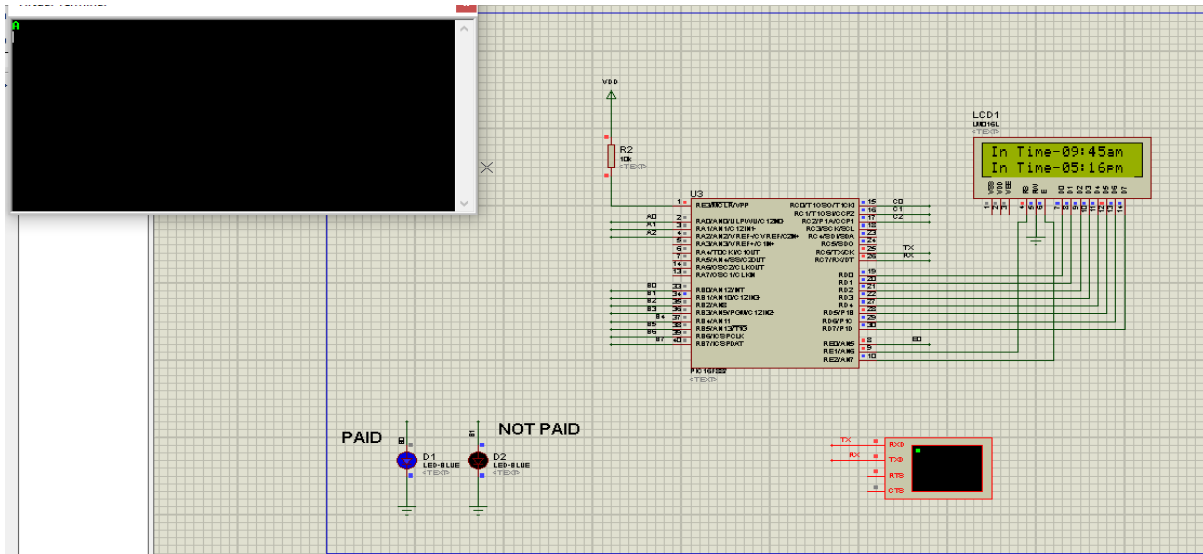Fig.4.1. Initial condition

STUDENT FEES DETAILS (PAID)

Fig.4.2. Student fees details (PAID)

If Student had paid the fees LED will glow & display student in time
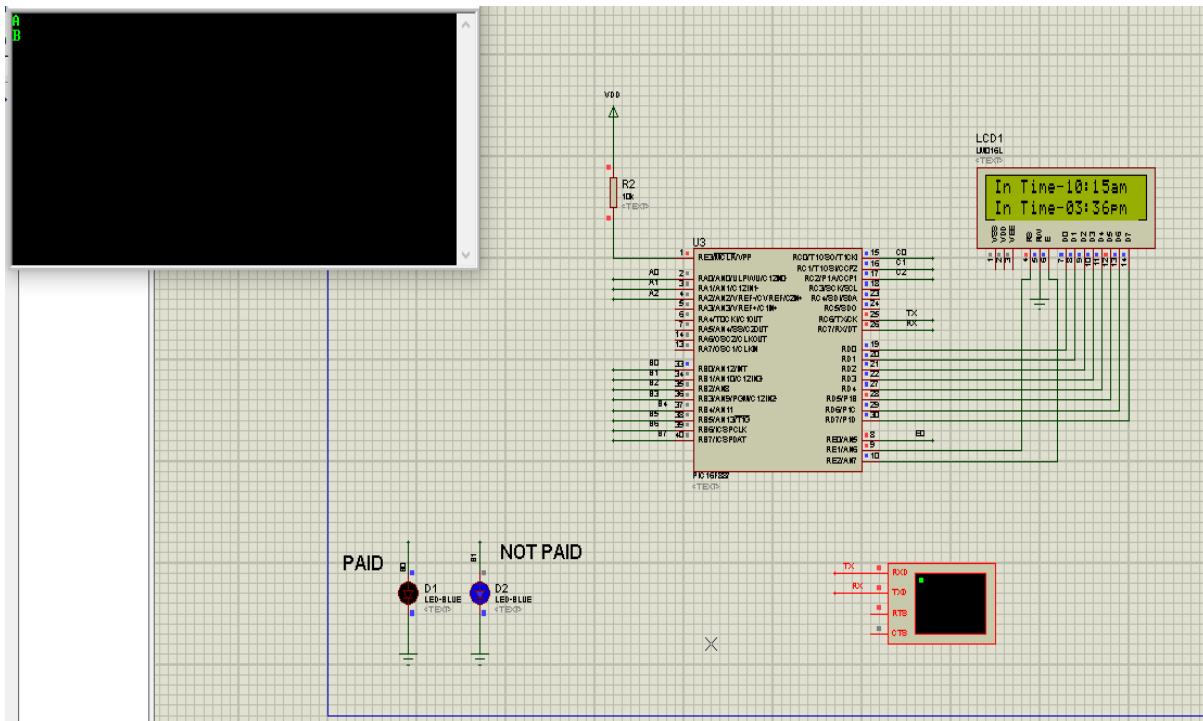
STUDENT FEES DETAILS (NOT PAID)

Fig.4.3.Student fees details (NOT PAID)

If Student had not paid the fees LED will glow & display student in time

B. HARDWARE RESULTS

STUDENT FEES DETAILS (PAID)

Fig.5.1. Student fees details (PAID)

When student enter into the bus everyone will show the ID, RFID scan & information send to server & server will analyse and send information to GPS through GSM and display the detail (paid) & LED glow.
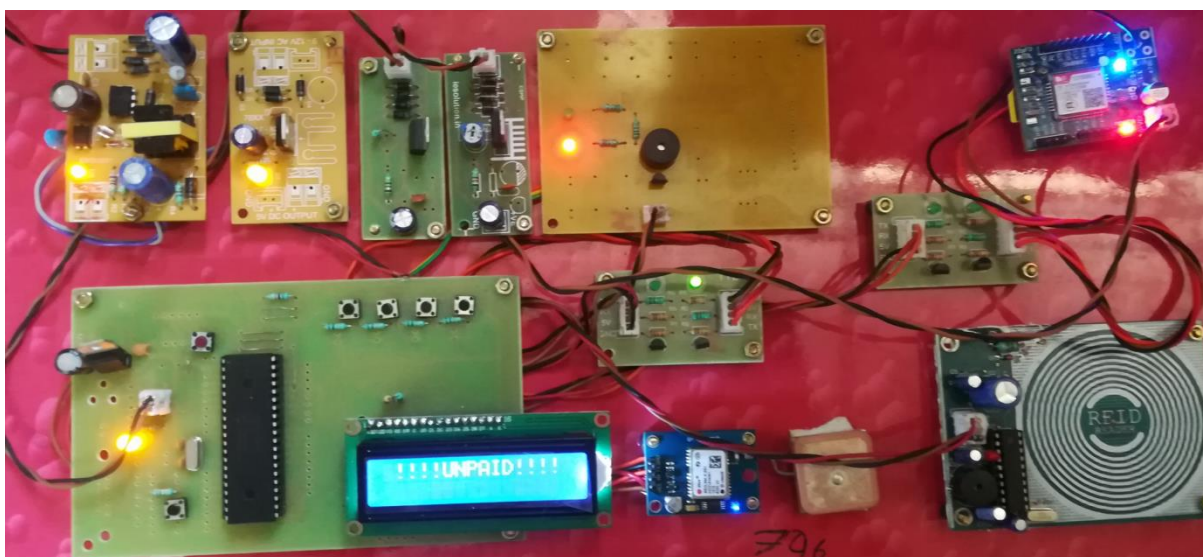
STUDENT FEES DETAILS (NOT PAID)

Fig.5.2. Student fees details (NOT PAID)

When student enter into the bus everyone will show the ID, RFID scan & information send to server & server will analyse and send information to GPS through GSM and display the detail (unpaid) & buzzer sound will hear.

CONCLUSION

Combining RFID, GPS and GSM advances for safety and security reason is incredibly vital. Presently, as a result of increase in mishaps of kids getting out at wrong stations or children getting missed out at the bus this may lead to demise due to suffocation. This proposal shows that RFID based school bus tracking technology is a feasible alternative for supervising and tracing the pupils during their drive to and from school. Additionally, the expense associated with tagging of material is moderately low. In this manner the system is capable of notifying parents/guardians through text message once the child enters/leaves the varsity, enabling parents/guardians to trace the bus, helping smooth and safer rides to the various destinations.

REFERENCE

1. Abid Khan, Ravi Mishra, "GPS-GSM Based Tracking System," International Journal of Engineering Trends and Technology, Vol, 3, Issue 2, 2012

2 .Akshay Shetty, Harshad Shinde, Ashwath Kumar, Ankit Verma, Popat Borse, " Proposed BLE(Bluetooth Low Energy) – Based Safety System for School Bus Network," International Journal of Technical Research and Applications, Vol. 3, Issue 5, 5th (September-October 2015), pp.272-274

3. Children injured after drunk driver rams school bus into railing of bridge.See more at: http:// indianexpress.com/ article/cities/ chandigarh/children-injured-after-drunk-driver-rams-school-bus-intorailing-of bridge/#sthash.f8k6D7Vz.dpuf/

4. Dhivya M. and Kathiravan S., "Hybrid driver safety, vigilance and security system for vehicle," Innovations in Information, Embedded and Communication Systems, 2015 International Conference on, Coimbatore, 2015, pp. 1-6.

5. India's missing children, by the number. Link available at: http: // blogs.wsj.com/indiarealtime/2012/10/16/indias-missing-children-bythe-numbers/

6. Khaled Shaaban, Abdelmoula Bekkali, Elyes Ben Hamida, Abdullah Kadri,"Smart Tracking System for School Buses using Passive RFID Technology to Enhance Child Safety," Journal of Traffic and Logistics Engineering,Vol,1,No.2, December, 2013.

7. Mori, Y.; Kojima, H.; Kohno, E.; Inoue, S.; Ohta, T.; Kakuda, Y.; Ito, A, "A Self-Configurable New Generation Children Tracking System Based on Mobile Ad Hoc Networks Consisting of Android Mobile Terminals," Autonomous Decentralized Systems (ISADS), 2011, 10th International Symposium , vol., no., pp.339,342, 23-27 March 2011.

8. Nitin Shyam, Narendra Kumar, Maya Shashi, Devesh Kumar, " SMS Based Kids Tracking and Safety System by using RFID and GSM," International Journal of Innovative Science, Engineering and Technology, Vol. 2, Issue 5, May, 2015.

9. R.K. Pateriya, Sangeeta Sharma, "The Evolution of RFID Security and Privacy: A Research Survey," in IEEE International Conference on Communication Systems and Network Technologies, 2011.

10. Saranya. J, Selvakumar. J, "Implementation of children tracking system on android mobile terminals," Communications and Signal Processing International Conference, Vol., no., pp.961, 965, 3-5 April 2013.

11. Shu, C., "Guardian Uses Bluetooth Low Energy Tech To Keep Your Child Safe" Available at: http://techcrunch.com/2013/10/09/guardianuses-bluetooth-low-energy-tech-to-keep-your-child-safe/

12. S.S Pethakar, N.Srivastava, S.D.Suryavanshi," GPS and GSM Based Vehicle Tracking and Employee Security System," International Journal of Computer Applications (0975-8887), Vol. 62, No.6, January, 2013.