

SMART VEHICLE TRACKING USING GPS

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Abstract - Vehicle tracking system is a process in which electronic device installed for the tracking purpose which would be the cheapest source of vehicle track. This system is used for tracking and positioning of any vehicle by using Global positioning System (GPS) and (GSM) this system is continuously control and monitoring report the status of vehicle which is only possible by the reporting frequency of GPS tracking Device at sends the frequency message send to the GPS. Now a day's increasing density of vehicle on road is becoming the problem for traffic control. People will monitor and track their vehicles for the safety concerns with the help of our Android applications .Last few year we used the process of manual attendance has been carried out which is not time consuming but also provides erroneous result. So Automated time and Attendance monitoring system provides many benefits to organization.

Key Words: GPS, GSM, PIC18F4520, RFID.

1.INTRODUCTION

Vehicle tracking system is a miniature model of Global Positioning System (GPS).GPS is used to find out the position or location of the vehicle around the world. This implementation introduces an android based tracking system .With the help of the GPS value; we can calculate the distance with respect to time. The direction and the distance are fed into the microcontroller and that will be transmitted to GSM through digital modulation techniques. At the receiver end the signal will be detected and demodulated with digital demodulation technique. Then the signal will be given to the android mobile. The android application specifically designed for this implementation. The software for the microcontroller interfacing with GSM, GPS is return in embedded C. Public transportation system is the main problem witch play an increasingly important role in the way people move around their communities. It is very cost effective mode of transport. Due to reason such as heavy traffic and roadwork etc., Most of the busses delayed in time .People have to wait for long time in the bus terminus without even knowing when the bus will arrive or not .Anyone who want to use public transportation system, can find the time of arrival of particular bus at the Particular destination even at their homes and plan their departure from whom accordingly. But the bus arrival time cannot be

guaranteed due to unexpected delay in traffic congestion .Our main focus is to provide the user with such a system which will reduce waiting time for bus and will provide him with all necessary details regarding the arrival/departure time of the bus, its real location and expected waiting time. So a systematic tracking system is required to find out the current location of the bus and the dynamic arrival time. For best tracking result, GPS and GSM technologies are used. Application that provides you exact location now a day's kid's safety is first priority comes in the parents mind.

There are many crimes related to student/kids such as kidnapping ,missing of children's in the school time .Sometimes student go to the school but they not reach to the school and vice versa .That is why to overcome this major problem we develop the system that takes regularly attendance when student enter and exit from the bus and advantage is attendance is not manually it is digitally .When student enter and exit from the bus message is send to their parents for that purpose 2 RFID tags are used first for entering in the bus another for exiting from bus. We also including 3 important keys, these are breakdown key, traffic key, emergency key.

LITERATURE REVIEW-

For bus tracking many designs that have been proposed and implemented.in the case of implementation or in the case of the system design all proposed methods and implementation are unique. The real time bus monitoring system GPS module is installed on the buses for the transmission of real time location of bus to receiver boards which is installed on the bus [1].

V.Yamuna,G.Rupavani,et al.proposed GNSS based bus monitoring system. The main objective of this system is to reduce the waiting time of passenger in bus stop by sending information about the location of bus to the passenger through SMS [2].

The paper presented by EI-Medany,W.;AL-Omaray et al describes a real time tracking system that provides accurate localization of the tracked vehicle with low cost.GM862 cellular quad band module is used for implementation. A monitoring server and a graphical user interface on a website is also developed using Microsoft SQL Server 2003 and ASP. Net to view the proper location of a vehicle on a specific map. The paper also provides information regarding the vehicle status such as speed, mileage [3].

Tracking systems are rarely available in the market and available system are not good and effective systems are costly. The above stated system is much economical than other systems are currently available now in the market. This suggested system helps to getting information and location of collage bus by using mobile or smart phone. But we got some lagging point in this system, there is a only provision for tracking and this tracking is based only on SMS. There is a no real time view of location for bus and also there is no any application based on mobile for tracking [4].

PROPOSED SYSTEM-

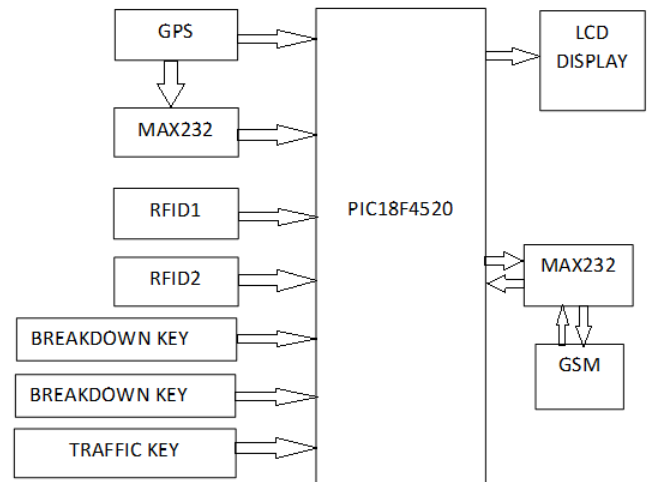
Vehicle tracking is important process in travelling time. In day to day life there is need of effortless transport so we are providing an android based application which will provide the all system information of vehicle tracking and monitoring. To develop a system to locate your stolen vehicle easily using your mobile without any extra cost .To develops a system which insures vehicle security and smooth fleet management. The dispatcher and felt manager can sense accurate position of vehicle also its arrival and destination location. The location of the bus can be observed continuously using GPS system. The GPS satellites transmit signals to GPS receiver. These receivers statically receive signals GPS satellite transmits data that indicates the location and current time of the vehicle.



Figure 1: Architecture of bus tracking system

The figure shows the tracking system architecture, which defines the intercommunication among these components. The basic level components include android applications, communication network along with satellite. User application is android based applications which will include the GPS tracker.

BLOCK DIAGRAM-



PIC18F4520-We use 40 pin PIC18F4520 IC. Here F stands for flash memory that means there are no any effect of power off and data loss. It have 5 ports available. For communication we use 36 I/O pins. This is low power microcontroller having various memories as follows EEPROM memory, SRAM data memory and Flash program memory. Another advantageous are A/D 13 channel convertor, it supports many serial communication like SPI, I2C because of these advantages we are using PIC.

GPS-Global Positioning System is constellation of 24 satellites orbiting the earth. These satellites use radio signals to broadcast location information. A GPS tracking device (GPS receiver) on the ground picks up the signals from the satellites to determine the location of an entity anywhere in the world and gives parameter like time, latitude, longitude, altitude etc. GPS is also called as NAVSTAR (Navigation System for Timing and Ranging).

GSM-GSM is nothing but Global System for Mobile. We use GSM as a server. As per user request GSM takes coordinates from GPS through controller and send to user via GSM.

MAX232-MAX232 is used for establishing serial communication between microcontroller and other peripheral devices. This IC is used to convert TTL/CMOS logic level to RS logic. It converts voltage level also. The controller operates in TTL logic level from 0V to 5V whereas the serial communication in PC works on RS232 standard from -25V to +25V.This makes difficulties to establish the direct link between them. So we use MAX232 as a convertor.

RFID-RFID is nothing but Radio Frequency Identification and refers a technology whereby digital data encoded in RFID tags are captured by a reader via radio waves. RFID is

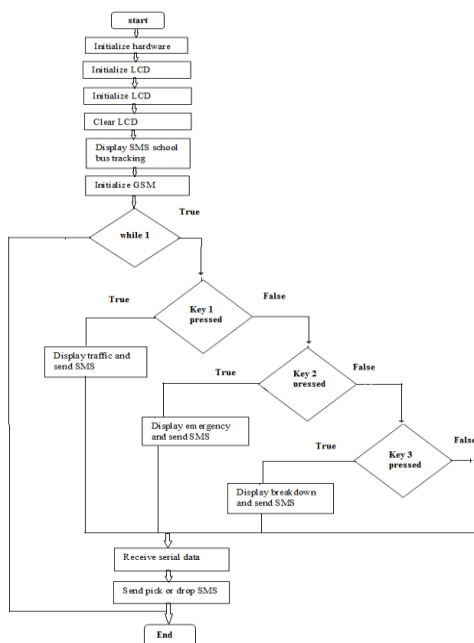
similar to bar-coding in that data from a tag or label are captured by a device that stores the data in data base .it has many advantages over barcode system. The most notable is that RFID tag data can read outside the line of side whereas barcodes must be aligned with the optical scanner.

LCD DISPLAY-LCD screen is an electronic display module .a 6X2 is very basic module and is commonly used in various device and circuits .these modules are preferred over seven segment and other multi segment LEDs .A LCD 6X2 means it can display 6 character per line means it can display 32 character at a time this is the major advantage of LCD

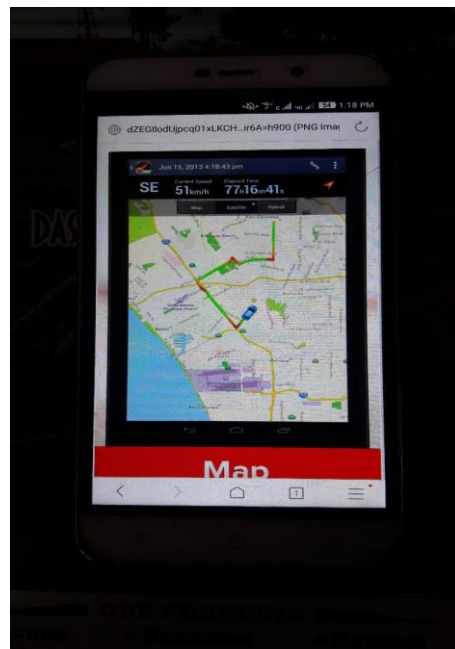
ALGORITHM-

1. Initialize hardware.
2. Initialize LCD.
3. Initialize SMS.
4. Clear LCD
5. Display message
6. Entering in the loop
7. If(key 1 is pressed) display traffic, send SMS to user traffic key
8. If(key 2 is pressed) display emergency, send SMS to user traffic key
9. If(key 3 is pressed) display breakdown, send SMS to user traffic key
10. Received serial data
11. Card detector If (Wiegand data flag=0)
12. Send SMS pick up to particular number
13. If(wiegand data flag1=0)
14. Send SMS drop to particular number

FLOWCHART-



GPS VEHICLE TRACKING WITH ANDROID BASED APPLICATION



CONCLUSION-

This system is successfully designed implemented and tested we reduces the waiting time for bus the system involved the tracking of bus at any location at any time.

Also this system is designed for kid’s safety.by using RFID tag we take attendance digitally.

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