SMART BUS TRACKING USING GPS AND GSM

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Abstract: The transport following framework is a financially savvy and productive framework. Utilizing this framework four application will be created. First application is building up correspondence between school server and transport framework which is equipped for giving ongoing information with respect to the present area of transports. Second application is sending a gathering messages for example ready messages to the understudies holding up at the following stop, changes in current course, transport number, and so forth., henceforth it spares the hour of understudies. Third application is age of e-transport pass framework which is an eco-accommodating as there is no need of age of plastic transport passes. Last application is building up a crisis taking care of framework which will send ready messages all the while to school, police and emergency vehicle if there should arise an occurrence of mishaps.

Keywords: GPS and GSM Tracking system, student alert system, e-bus pass.

Introduction

The goal of this paper is to develop the safety of private and public vehicles which is a major concern now a days so having GPS vehicle tracking system ensures their safety while travelling. Vehicle tracking systems are commonly used by fleet operators for fleet management functions such as establishing communication between college server and bus system which is capable of providing real-time data regarding the current location of buses, sending a group messages i.e. alert messages to the students waiting at the next stop, changes in current route, bus number, etc., hence it saves the time of students, generation of e-bus pass system which is an eco-friendly as there is no need of generation of plastic bus passes, developing an emergency handling system which will send alert messages simultaneously to college, police and ambulance in case of accidents. A vehicle tracking system is an electronic device installed in a vehicle to enable the owner or a third party to track the vehicle location. It works using GPS and GSM technology designed to continuously monitor a moving Vehicle for doing so. A microcontroller is interfaced serially to a GSM Modem and GPS receiver used to send the position (Latitude and Longitude) of the vehicle from a remote place. The first fully operational GPS/Loran-based vessel monitoring system monitors the workstation, communications solutions, and onboard navigation systems providing an integrated capability for the marine fleet operator. The system is a powerful tool for the fleet operator in such applications as shipping, scheduling, harbor operations, and route verification. Moreover, this concept can be applied to the larger problem of safe transport of hazardous cargo. To meet the requirements of an intelligent vehicle monitoring system, the architecture integrates GPS, GSM and a Microcontroller in the whole and is used to prevent texting and calling of mobile phones while driving vehicles. If the driver is using the phone while the vehicle is in motion, it triggers a signal which notifies the cops with the vehicle's number plate and the location with the help of GPS system. It receives the mobile signal and detects the presence of mobile. This signal eventually triggers the microcontroller with a glowing LED. Due to the voltage fluctuation, the message is sent to the cops using GSM communication. The idea for robotized route and control of a portable stage uses an impromptu versatile remote sensor system to give navigational data to the portable stage inserted control framework. A wise, computerized vehicle following framework can resolve following issues, for example, late appearances to planned, ill-advised utilization of organization time and assets, hazardous driving propensities, alloted courses, wasteful dispatching, and passenger"s disappointment. This can prompt better traffic stream demonstrating and a superior comprehension of driver conduct. It incorporates different highlights like creativity, effortlessness of plan and simple execution. It is totally coordinated so that once it is executed in all vehicles, at that point it is anything but difficult to follow vehicle whenever.

I. POWER SUPPLY

The air conditioner voltage, normally 220V rms, is associated with a transformer, which steps that air conditioner voltage down to the degree of the ideal dc yield. A diode rectifier at that point gives a full-wave redressed voltage that is at first sifted by a straightforward capacitor channel to create a dc voltage. This subsequent dc voltage for the most part has some wave or air conditioning voltage variety. A controller circuit expels the waves and furthermore continues as before dc worth regardless of whether the info dc voltage fluctuates. This voltage guideline is typically gotten utilizing one of the prominent voltage controller IC units.

| TRANSFORMER | → | RECTIFIER | → | FILTER | → | IC REGULATOR | → | LOAD |

Fig. 1. Power supply

II. LEVEL SENSOR

In this circuit the test is utilized to gauge the water level. All the test leads are pulled high through the Vcc supply. They are set in the differential stature level. At that point the tests yields are given to 40106 NOT door IC.

At first when the tank is full all the test leads are contacted with water. Water is additionally a conductor. So the test leads become zero (0 Volt) which are altered to high flag (5 Volt) inverter. Since current stream constantly through in the ground way. At the point when the water level is diminished step by step, the immaculate test turns out to be high. That high sign is altered in to low by the inverter. At that point the comparing yield sign is given to microcontroller or other circuit so as to discover the water level. On the off chance that every one of the yields are in high state implies the tank water level likewise High. Generally all yields are Low means the tank water level additionally Low.
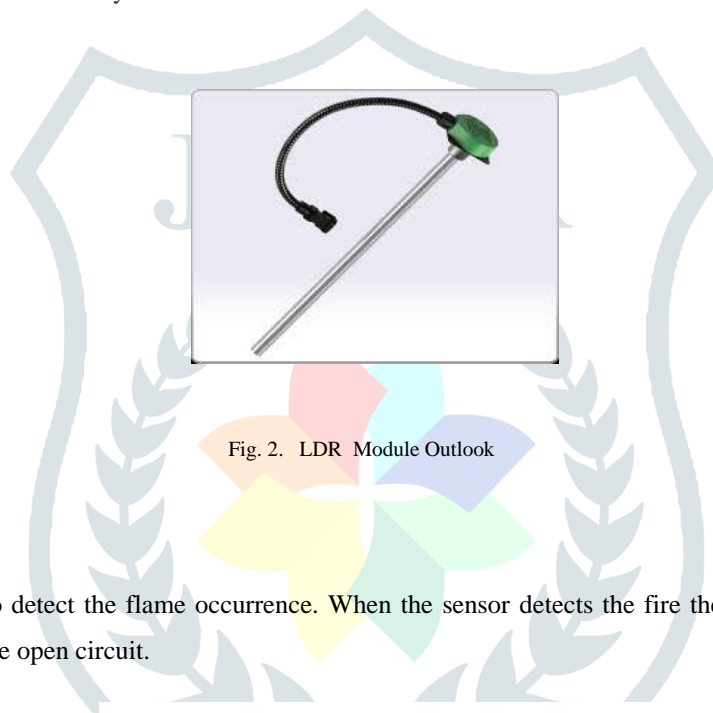
Fig. 2. LDR Module Outlook

III. FLAME SENSOR

The flame sensor is used to detect the flame occurrence. When the sensor detects the fire then it became short-circuit. When there is no fire the sensor become open circuit.

Fig. 3. FLAME SENSOR

IV. GPS MODULE

This is a third generation POT (Patch Antenna On Top) GPS module. This POT GPS receiver providing a solution that high position and speed accuracy performances as well as high sensitivity and tracking capabilities in urban conditions & provides standard NMEA0183 strings in "raw" mode for any microcontroller. The module provides current time, date, latitude, longitude, speed, altitude and travel direction / heading among other data, and can be used in a host of applications, including navigation, tracking systems, fleet management, mapping and robotics.

This is a standalone GPS Module and requires no external components except power supply decoupling capacitors. It is built with internal RTC Back up battery. It can be directly connected to Microcontroller's USART. The module is having option for connecting external active antenna if necessary.

The GPS chipsets inside the module are designed by MediaTek Inc., which is the world's leading digital media solution provider and largest fab-less IC company in Taiwan. The module can support up to 51 channels. The GPS solution enables small form factor devices. They deliver major advancements in GPS performances, accuracy, integration, computing power and flexibility. They are designed to simplify the embedded system integration process.
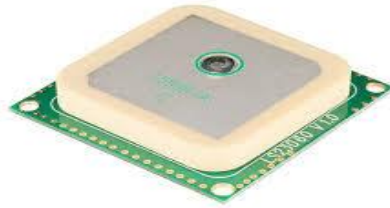
Fig. 4. GPS Module

V. LCD

It is a flat panel display or other electronic visual display that uses the light-modulating properties of liquid crystals. Liquid crystals do not emit light directly. LCDs are available to display arbitrary images (as in a general-purpose computer display) or fixed images with low information content, which can be displayed or hidden, such as preset words, digits, and 7-segment displays as in a digital clock. They use the same basic technology, except that arbitrary images are made up of a large number of small pixels, while other displays have larger elements.LCDs are used in a wide range of applications including computer monitors, televisions, instrument panels, aircraft cockpit displays, and signage. They are common in consumer devices such as DVD players, gaming devices, clocks,watches, calculators, and telephones, and have replaced cathode ray tube (CRT) displays in nearly all applications. They are available in a wider range of screen sizes than CRT and plasma displays, and since they do not use phosphors, they do not suffer image burn-in. LCDs are, however, susceptible to image persistence.

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Fig. 5. Humidity Sensor

VI. PIC MICROCONTROLLER

PIC microcontroller is a type of microcontroller. The abbreviation PIC means "fringe interface controller," despite the fact that that term is once in a while utilized these days. A microcontroller is a minimized microcomputer intended to administer the activity of implanted frameworks in engine vehicles, robots, office machines, therapeutic gadgets, portable radios, candy machines, home apparatuses, and different gadgets. A regular microcontroller incorporates a processor, memory, and peripherals. The PIC microcontrollers bid to specialists and experimenters, particularly in the fields of gadgets and mechanical autonomy. Key highlights incorporate wide accessibility, minimal effort, simplicity of reinventing with worked in EEPROM (electrically erasable programmable read-just memory), a broad gathering of free application notes, bottomless advancement apparatuses, and a lot of data accessible on the Internet. The PIC microcontrollers frequently show up under the brand name PIC miniaturized scale.
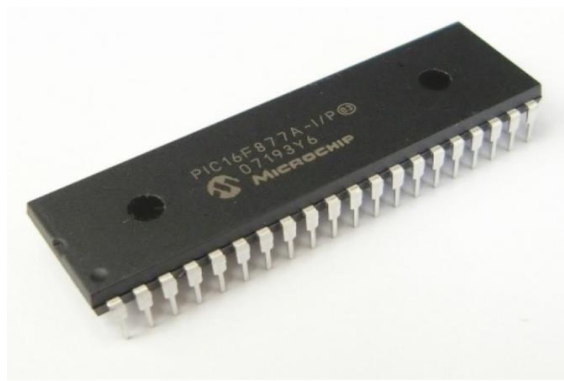
Fig. 6.   Pic Microcontroller

VII. KEYPAD

In a key cushion it has a one or more then one keys are set in a PCB. And every one of the keys are normally grounded. This is the principle contrast to contrasted with grid keypad. This key cushions having most extreme 8 quantities of keys. all the more then 8 keys are can not be associated in light of the fact that it is anything but an effective one. In the event that we need increasingly, at that point 8 kays implies, at that point no one but we can work it a lattice keypad.
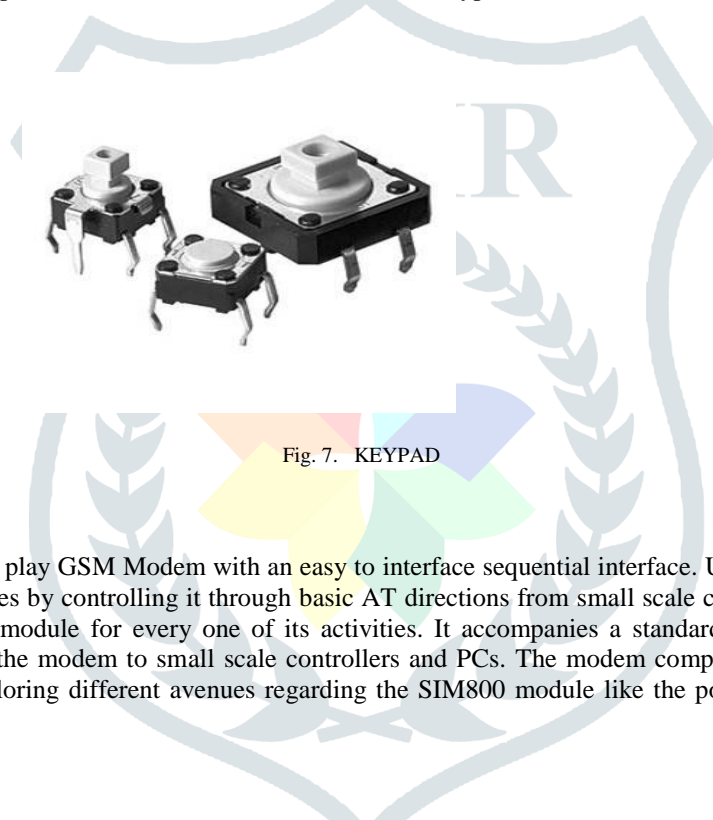

Fig. 7.   KEYPAD

VIII. GSM MODULE

This is an attachment and play GSM Modem with an easy to interface sequential interface. Use it to send SMS, make and get calls, and do other GSM activities by controlling it through basic AT directions from small scale controllers and PCs. It utilizes the profoundly prominent SIM800 module for every one of its activities. It accompanies a standard RS232 interface which can be utilized to effectively interface the modem to small scale controllers and PCs. The modem comprises of all the necessary outside hardware required to begin exploring different avenues regarding the SIM800 module like the power guideline, outer radio wire, SIM Holder, and so forth.

Fig. 8.   GSM Module

IX. EXISTING SYSTEM

Because of fast increment in populace, there is requirement for productive open transportation framework. There is expanded weight on open transportation like transport in view of populace. Along these lines remote client needs a keen framework which gives continuous data of transport. This framework understands the downside of current open transportation framework. So our framework handle every one of the information like current area of transport , the executives of transports and its calendar. The constant following of transport should be possible by our proposed framework and this data is then given to remote client who need to realize the ongoing transport data. A few innovations like GPS (Worldwide Situating Framework), Google maps and GPRS (General Bundle Radio Assistance) are utilized for improvement reason.
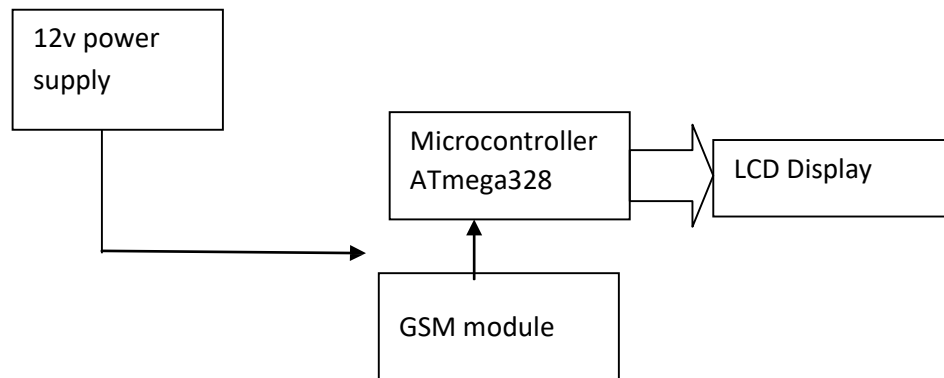
Fig. 9. Existing System

X. PROPOSED SYSTEM

Here two separate modules are created as appeared in figure. One is server module present in school and another is the transport module present in school transports. In server module a microcontroller is associated with GSM, GPS, Microcontroller and two IR Sensors, Together this framework is associated with school server. GSM framework is associated with microcontroller for sending messages. Server module will get longitude and scope esteem from transport module. This will gives the present area of transport and it very well may be seen on the guide from html document. This will assist the executives with keeping track everything being equal.
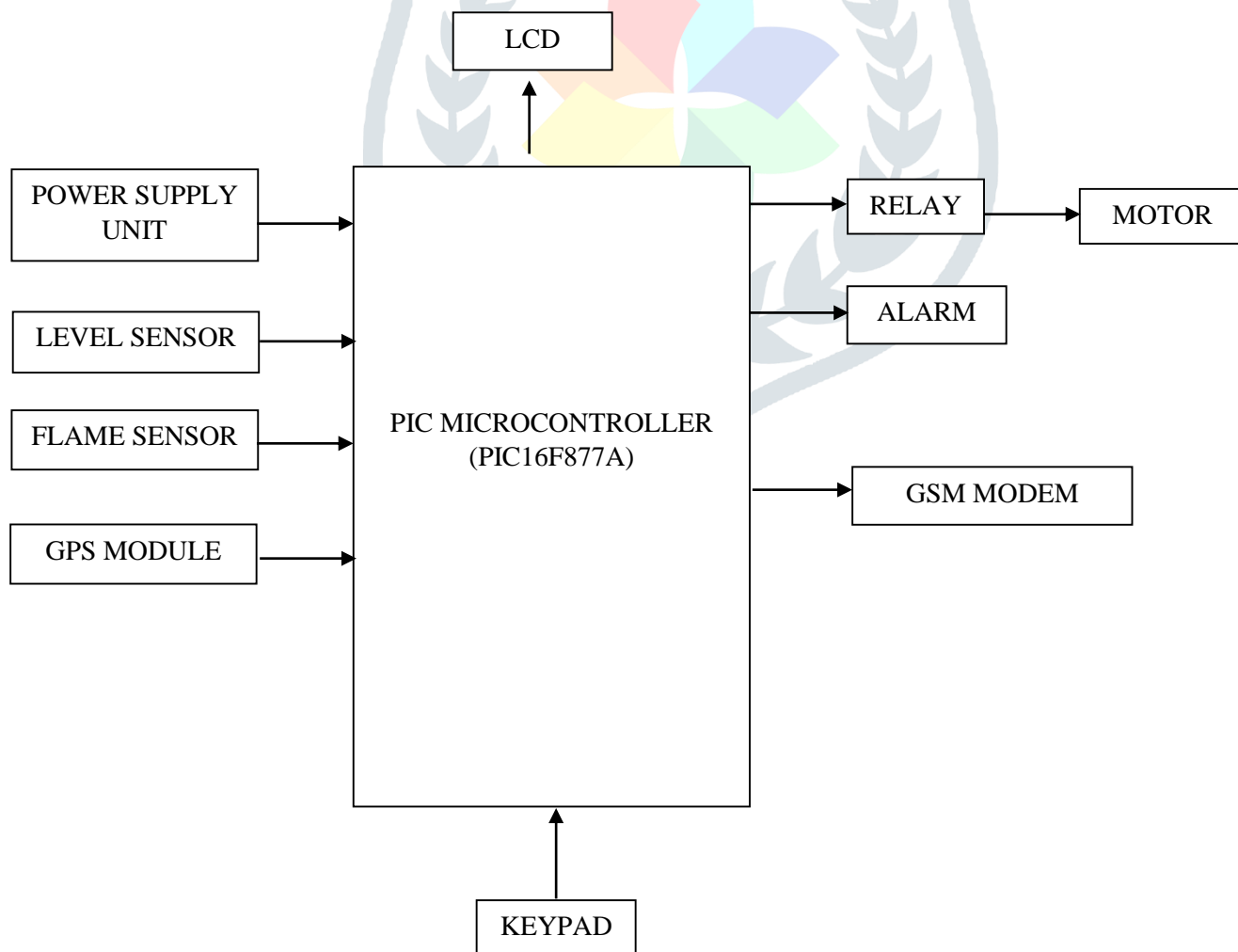

Fig 10. Proposed System

At the point when any understudy pays the transport expenses the subtleties are stacked to school database and in cut off module, an e-transport pass will be sent to the enlisted portable number of understudy by GSM of server module. This e-transport pass goes about as a receipt and an ID for understudy and now he can demonstrate this message to transport driver and utilize the transport office. It facilitates the weight of understudy just as the executives.

In the transport module a microcontroller is associated with mishap discovery framework, When transport start moving starting with one stop then onto the next the transport module start figuring the separation and when limit arrives at the framework consequently sends message to every one of the individuals from next quit utilizing GSM module. In school server module one caution is joined. On the off chance that any such message shows up, this caution starts ringing. The programmed framework triggers when MEMS sensors detects the stun, if edge point of confinement is crossed programmed messages are sent to school, emergency vehicle and police about the mishap area.

A. RELAY

Hand-off is an electrically worked switch. Current moving through the loop of the hand-off makes an attractive field which draws in a switch and changes the switch contacts. The loop current can be on or off so transfers have two switch positions and they are twofold toss (changeover) switches. Transfers enable one circuit to switch a second circuit which can be totally isolated from the first. For instance a low voltage battery circuit can utilize a hand-off to switch a 230V AC mains circuit. There is no electrical association inside the hand-off between the two circuits; the connection is attractive and mechanical.

The curl of a transfer passes a generally enormous current, regularly 30mA for a 12V hand-off, yet it tends to be as much as 100mA for transfers intended to work from lower voltages. Most ICs (chips) can't give this present and a transistor is normally used to enhance the little IC current to the bigger worth required for the hand-off loop.

B. ALARM

A ringer or beeper is a flagging gadget, normally electronic, commonly utilized in autos, family unit machines, for example, a microwave, or game shows. It most normally comprises of various switches or sensors associated with a control unit that decides whether and which catch was pushed or a preset time has passed, and more often than not enlightens a light on the fitting catch or control board, and sounds an admonition as a persistent or discontinuous humming or blaring sound. At first this gadget depended on an electromechanical framework which was indistinguishable from an electric chime without the metal gong (which makes the ringing commotion).

RESULT & CONCLUSION

The Brilliant school transport following framework utilizes the remote correspondence strategy and was effectively structured and tried for continuous information. The framework has the upsides of little size, low costs, full-highlighted and ground-breaking expansibility. It very well may be effectively introduced and utilized in the transports to facilitate the weight of transport office as the instructive foundations have huge number of transports. This framework depends on installed framework and can likewise be created on android stage. This is a savvy and complex versatile vehicle checking framework that could stay aware of quick infrastructural development . This framework demonstrated to be significantly more effective and created great outcomes, for example, Sending area of transport to school, if there should arise an occurrence of mishap sends Alarm to school, police and ambulance,Finding transport area as for stop number, If the transport is in the scope of 500mtrs-2000mts Send cautions message to the understudies holding up in the following stop, Age of e-transport pass subsequently eco benevolent.

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