

Advanced School Bus Transportation System

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Abstract— Smart instruction is one key part of brilliant urban communities. Shrewd training is frequently considered as utilizing PCs in the study halls. Notwithstanding, there are numerous elements outside the study hall that can affect a kid's nature of training. One key factor in numerous nations is the quality and the measure of time a kid spends in school transport every day to drive to and from their School. This experience has been to a great extent overlooked. In any case, as of now accessible GSM innovations, it is conceivable to manufacture frameworks that can give total permeability into this part of a youngster's life. This paper displays the structure and execution of an IoT-based framework that permits guardians, schools and administrative bodies to follow the states of solace and security inside a school transport in a continuous way. The proposed framework legitimately interfaces with the transport utilizing the OBD/CAN interface and passes on these parameters to a focal server utilizing 3G/4G availability and the MQTT convention. An assortment of reports for a different partner for transport solace, wellbeing and participation are then created from this constant information giving total permeability into conditions inside each school transport.

Keywords: GSM, Sensors, GPS, Smart School Bus

I. INTRODUCTION

The ongoing development of GSM Technology has empowered us to consider the logical variables that can affect understudies' life and thusly on their training and learning results. Kids far and wide invest an unreasonable measure of energy making a trip to and from school. Numerous youngsters in creating to created countries use school transports which could conceivably be directed by the administration. What occurs inside a school transport including the earth, the measure of time took and so forth is commonly not known. This is particularly obvious when the school transports are worked by private administrators. A piece of shrewd training is to bring more straightforwardness into what goes on in a mode of school transport and to take fitting administrative and strategy activities dependent on such information. For instance, there ought to be requirements on the most extreme measure of time a youngster spends on a school transport just as the natural, wellbeing.

This paper proposes a framework which instruments each school transport with sensors that gather data about the conditions in a mode of transport and transmit it progressively to a server utilizing the telecom foundation. This data about each transport is then investigated and reports are produced for the school just as for the Ministry of Education on different perspectives like condition, time, security and so forth.

II. LITERATURE SURVEY

Aravindhnan Athavan et al. introduced lifetime information securing system for vehicles with diminished memory necessities and continuous (fast) information access and examination. Their framework comprises of μ Blox C027-G35 pack which is utilized as the principle gadget for information obtaining and preparing with inherent GSM/GPRS modem, OBDII with CAN Interface, OBDII to CAN Converter, and remote (cloud) server. The structure pre-forms the examples gathered by the microcontroller and spare it to the server. This pre-preparing altogether diminishes the measure of information spared and imparted to the server and makes the investigation less complex. To start with, the controller secures in-vehicle information from the OBDII. At that point, the information is put away on the controller for the span of the vehicle's outing. When the excursion closes, the information is imparted from the controller to the cloud server utilizing the GSM/GPRS modem. At long last, when information achieves the server, information investigation is performed and learning is made. Likewise, the creators give ventures of the advancement of the system which incorporate choosing the application, inferring information sources and wellspring of info information, planning information structure (size of information), characterizing convention to exchange information to the server, structuring and arranging an information server, and distinguishing the appropriate controller. Moreover, a test application has been made to execute a reasonable system.

Michele Carignan et al. manufactured a framework that plans to coordinate the in-vehicle CAN/OBD system and IoT system of remote gadgets with an Intelligent Transport System. This framework is fit for conveying non-security basic administrations to clients and machines. The framework comprises of OBD and a showcase associated with a CPU. Also, various principles and conventions are utilized to speak with the WSN and the Internet. The considered conventions incorporate GPRS/3G, IEEE 802.15.4, IEEE 802.11p, 6LoWPAN, CoAP, and RESTful web administrations. Additionally, an extension is proposed to extract all readily produced information. For instance, the WSN/OBD hub needs to digest information originating from the OBD interface like a web asset where every asset can be tended to utilizing a URI. Utilizing OBDII, it is conceivable to accumulate vehicle status data like motor RPM, motor coolant temperature, vehicle speed, mass wind stream, and oxygen voltage, throttle, and fuel framework status.

E. Ceuca et al. executed an electrical vehicle following a framework utilizing GPS/GSM and OBD drivers. The framework utilizes GPS/GSM to follow the vehicle area, and to send the area arranges intermittently to a capacity server. The framework additionally associated the vehicle with driver's telephone utilizing Automatic Link that can distinguish any sort of accident and utilize the cell phone to

report the collide with 911 giving them the required data like the area, driver name, and the vehicle portrayal. The OBD driver was utilized to peruse the vehicle speed and other data and to correspond this data with vitality recuperation so as to diminish the vitality utilization as portrayed in [4]. The OBD was likewise used to show cordial comprehensible data about the vehicle state utilizing a portable App.

III. EXISTING METHOD

A transport wellbeing framework which was intended to control the entering/leaving of understudies from the transport. This framework completes a few assignments, including distinguishing individual data of every understudy utilizing RFID tag, which will trade the information with the RFID peruser through radio waves and showing every understudy name into LCD show. This will let the driver know the number of understudies inside the transport and the understudies who left from the transport. In addition, the framework has a crisis framework that will alarm on the off chance that if there is a tyke inside the transport after the transport stops at the goal by sending an SMS to the school the executives through GSM modem. On the off chance that the transport withdraws and arrive fruitful from the source to goal, it will educate the administration through an SMS about its effective takeoff and entry. The key element of the proposed technique is the utilization of vitality effective frameworks to help the assignments. Despite the fact that not inside carefully in the extension, similar information can be utilized to evaluate the season of flight and landing, a number of understudies ventures every day.

IV. PROPOSED SYSTEM

In the proposed technique, the purchaser can deal with every single burden which sums vitality utilization by knowing their vitality use now and again. This strategy not just gives two-route correspondences between the utility and the buyer. Another gigantic bit of leeway of this framework is that it tells the customer and utility at the occasion of the meter altering. By this data, the buyer and utility can control the altering are to lessen vitality crises.

A. Application

- Application of this framework as its name demonstrates that uniquely plan for kids' or school understudies.
- Very accommodating in light of the fact that guardians got every single notice on the cell phone without the nearness of parent himself.

1) System Design

In this paper, we are going to perceive how to interface GSM Module to Atmega328. There are various types of GSM modules accessible in the market. We are utilizing the most prevalent module dependent on Simcom SIM900 and Atmega328 Uno for this instructional exercise. Interfacing a GSM module to Atmega328 is entirely straightforward. You just need to make 3 associations between the gsm module and Atmega328. So let us get to business!

A GSM Module is essentially a GSM Modem (like SIM 900) associated with a PCB with various kinds of yield taken from the board – state TTL Output (for Atmega328, 8051 and different microcontrollers) and RS232 Output to

interface straightforwardly with a (PC). The board will likewise have sticks or arrangements to append mic and speaker, to take out +5V or different estimations of intensity and ground associations. This kind of arrangements fluctuates with various modules.

Bunches of assortments of GSM modem and GSM Modules are accessible in the market to look over. For our undertaking of interfacing a gsm modem or module to Atmega328 and henceforth send and get SMS utilizing Atmega328 – it's in every case great to pick an Atmega328 good GSM

We use SIM900 GSM Module – This implies the module underpins correspondence in a 900MHz band. We are from India and a large portion of the versatile system suppliers in this nation work in the 900Mhz band. On the off chance that you are from another nation, you need to check the portable system band in your general vicinity. A greater part of United States portable systems works in an 850Mhz band (the band is either 850Mhz or 1900Mhz). Canada works fundamentally on the 1900 Mhz band. It would be ideal if you perused this wiki passage on GSM Frequency Bands far and wide.

Check the power necessities of GSM module – GSM modules are made by various organizations. They all have diverse information power supply specs. You have to twofold check your GSM modules control necessities. In this instructional exercise, our gsm module requires a 12 volts info. So we feed it utilizing a 12V,1A DC power supply. I have seen gsm modules which require 15 volts and some different sorts which needs just 5 volts info. They vary with makers. In the event that you are having a 5V module, you can control it straightforwardly from Atmega328's 5V out.

Unique finger impression Sensor Module or Finger Print Scanner is a module which catches unique mark picture and after that changes over it into the comparable layout and spares them into its memory on chose ID (area) by Atmega328. Here all the procedure is directed by Atmega328 like taking a picture of unique mark, convert it into layouts and putting away area and so forth.

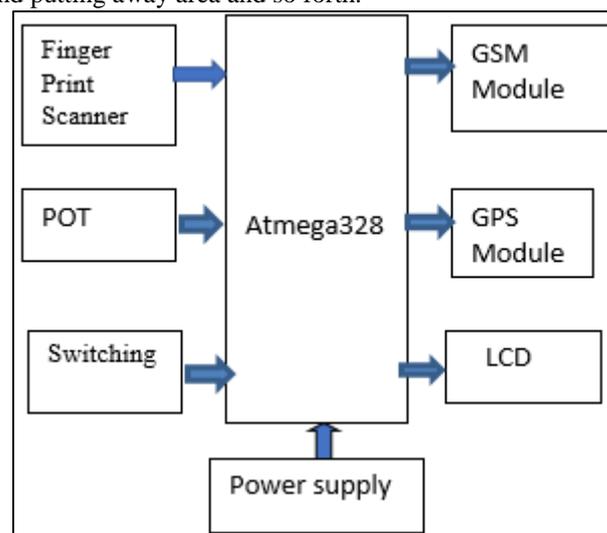


Fig. 1: System architecture

V. RESULTS & CONCLUSION

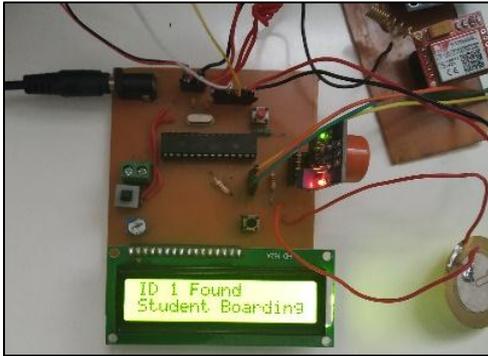


Fig. 2: Student ID While Boarding bus



Fig. 3: Accident Detection Alert

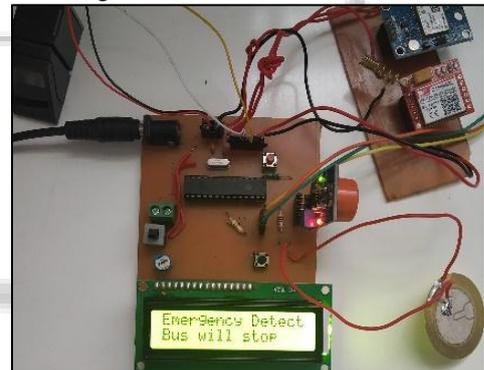


Fig. 4: Emergency Alert

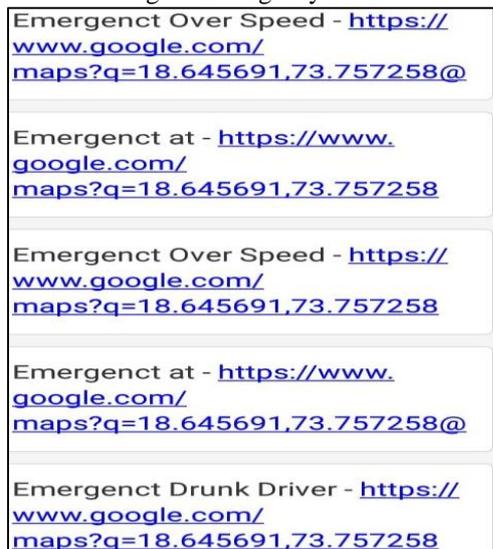


Fig. 5: Notification through SMS

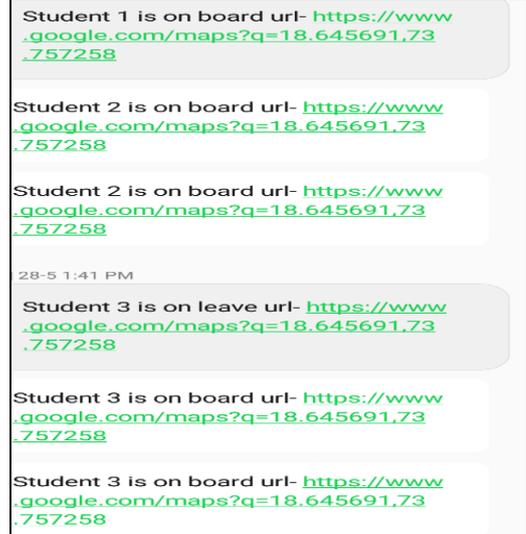


Fig. 5: Notification through SMS

VI. GPS MODULE



Fig. 6: GPS Module

The NEO-6M GPS module is shown in the figure below. It comes with an external antenna and doesn't come with header pins. So, you'll need to get and solder some.

- This module has an external antenna and a built-in EEPROM.
- Interface: RS232 TTL
- Power supply: 3V to 5V
- Default baud rate: 9600 bps
- Works with standard NMEA sentences

The NEO-6M GPS module has four pins: VCC, RX, TX, and GND. The module communicates with the Arduino via serial communication using the TX and RX pins, so the wiring couldn't be simpler:

NEO-6M GPS Module	Wiring to Arduino UNO
VCC	5V
RX	TX pin defined in the software serial
TX	RX pin defined in the software serial
GND	GND

Table 1:

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