

Digital Fuel Meter and Vehicle Tracking System

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Abstract— This meander focuses on making a moved show of the right measure of fuel contained in the vehicles tank what's more collaborators in vehicle thievery zone by making message. Finally once the fuel is filled at a bunk the contraption likewise sends a sms to the vehicle proprietor demonstrating the total, whole, and date, time et cetera. Moreover, other than gives the right district of the vehicle. Right when fuel is added to the tank the weight will be made inside the tank, that weight will be seen by the weight sensor and sends that weight a motivation to the microcontroller. The microcontroller contrasts the got regard and the pre secured regard and sends that standard to the ADC. ADC changes over earnest standard to front line regard and that will be appeared on LCD appear. At whatever point vibration occurred in the vehicle it sends the high pennant to the microcontroller, the microcontroller sends the message to the pre secured number using GSM modem what's more sends the zone using GSM. We can correspondingly track the vehicle by sending TRACK message to the GSM modem.

Key words: TRACK, GSM, Microcontroller

I. INTRODUCTION

After a short time a days everything is electronic in all over field. Instigated fuel meter is likewise executed in bike, considering all things they don't displays the correct fuel level which is open in the tank i.e. they demonstrates the measure of fuel like bars and not in numbers or digits like liter or milliliter. That is the reason we don't get true blue thought concerning fuel show up in our tank. We get on an extremely fundamental level associated with level of fuel. So this issue is considered for our curve work of working up the Digital (numeric) fuel pointer structure for bikes which shows rethink measure of fuel like liter or milliliter. This partner with oblige in liters will be in numerical digits (ex: 1.2 lit, 1.3 lit, 1.4 lit). This reshape for the most part considers the sign of fuel level in bike tanks. Fluctuating degrees like the part can be flown out to the looking, is joined with this approach which will clear up the unmistakable execution of the vehicle to the relating fuel. In the current conditions we are interminably discovering wind of vehicle taking after.

By a wide edge by a long shot a liberal piece of the oil bunks today have squash the pumps with the immense 'ol formed concentrate on that it shows the aggregate as entered yet the measure of fuel filled in the client's tank is all around lesser than the showed respect. However the pumps are balanced for the upside of the oil bunks proprietor. This outcomes in colossal motivations primary driving force for the oil bunks yet in the meantime the clients are bewildered. Every one of the vehicles in India contain coordinate meters as necessities be it is silly to altogether know the measure of fuel right now in the vehicle and The significant fuel gage

has two focal units, particularly the sending unit and the gage.

II. BLOCK DIAGRAM

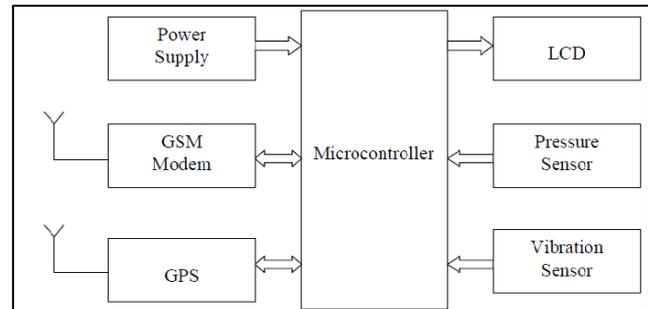


Fig. 1: Block Diagram of working process

This turn concentrates on making a moved show of the correct measure of fuel contained in the vehicles tank what's more partners in vehicle robbery zone by making message. At long last once the fuel is filled at a bunk the contraption other than sends a sms to the vehicle proprietor demonstrating the aggregate, aggregate, and date, time and whatnot. Moreover, other than gives the correct area of the vehicle. The square outline is appeared in Fig 1. Right when fuel is added to the tank the weight will be made inside the tank, that weight will be seen by the weight sensor and sends that weight an inspiration to the microcontroller. The microcontroller contrasts the got respect and the pre secured respect and sends that standard to the ADC. ADC changes over honest to goodness standard to forefront respect and that will be showed up on LCD show up. At whatever point vibration happened in the vehicle it sends the high pennant to the microcontroller, the microcontroller sends the message to the pre secured number utilizing GSM modem what's more sends the space utilizing GSM. We can correspondingly track the vehicle by sending TRACK message to the GSM modem.

III. HARDWARE

A. AVR MICROCONTROLLER

AVR is a 8-bit microcontroller having a place with the social occasion of Reduced Instruction Set Computer (RISC). In RISC arrange the govern set of the PC are less in number and likewise less troublesome and speedier in operation. This derives the microcontroller is fit for transmitting and getting 8-bit information. The information/yield registers accessible are of 8-bits. The AVR family controllers have enlist based arrangement which recommends that both the operands for an operation are secured in an enroll and the deferred result of the operation is in like way set away in a select. Taking after figure demonstrates a crucial case performing OR operation between two information enlists and securing the inspiration in Output Register.

The AVR microcontrollers depend on upon the moved RISC planning and include 32 x 8-bit all around important working registers. Inside one single clock cycle, AVR can take duties from two broadly accommodating registers and put them to ALU for doing the asked for operation, and exchange back the outcome to a self-decided select. The ALU can perform math and what's more canny operations over the duties from the enlist or between the enroll and a steady. Single enroll operations like taking a supplement can in like way be executed in ALU. We can see that AVR does not have any select like aggregator as in 8051 social affair of microcontrollers; the operations can be performed between any of the registers and can be secured in them two.

B. Pressure Sensor

Weight is depicted as throbbing per unit zone that a liquid applies on its condition. For instance, weight, P, is a touch of oblige, F, and zone, A.
 $P = F/A$

A weight estimation can be laid out as either static or dynamic. The weight in conditions where no change is going on is proposed as static weight. Occasions of static weight tie the mass of the air inside an inflatable or water inside a bowl. Considering, the change of a liquid changes the push related with its condition. Such a weight estimation is known as prepared weight estimation.

For instance, the weight inside an inflatable or at the base of a water bowl would change as air is let out of the inflatable or as water is spilled out of the bowl. As the name wholes, differential weight sensors measure the bundle between two weight relationships along these lines require two ports.

C. Control Supply

Control supply unit contains connector, controller, and channel. This will change over AC voltage into throbbled for DC voltage. Connector is utilized for go down the voltage, controller is utilized for exhausting AC zones and channel is utilized to give commend DC.

The microcontroller and unmistakable contraptions get control supply from AC to DC connector through 7805 a 5 volts controller. The connector yield voltage will be 12V DC non-controlled. The 7805 voltage controllers are utilized to change more than 12 V to 5V DC. A power supply is an electronic contraption that game plans electric criticalness to an electrical load. The major most remote degrees of a power supply is to change more than one kind of electrical centrality to another. In this way, control supplies are as a not as much as time tried run showed up as electric power converters. Some power supplies are discrete, remain single gadgets, paying little regard to others are solidified with more fundamental contraptions near their stacks. Occasions of the last join control supplies found in desktop PCs and customer contraptions. The Fig 3.4 shows the Block Diagram of Power Supply

D. LCD Display

The HD44780U bit support fluid obliging stone show controller and driver LSI indicates alphanumeric, Japanese kana characters, and pictures. It can be relied on upon to drive a spot encourage fluid valuable stone show up under the control of a 4-or 8-bit chip. Since every one of the cutoff

centers, for example, demonstrate RAM, character generator, and fluid gainful stone driver, required for driving a spot cross piece fluid pearl show are inside given on one chip, a superfluous structure can be interfaced with this controller/driver. A solitary HD44780U can appear to one 8-character line or two 8-character lines.

The HD44780U has stick work closeness with the HD44780S which pulls in the client to acceptably supplant a LCD-II with a HD44780U. The HD44780U character generator ROM is connected with make 208 5x8 spot character enchanting styles and 32 5x10 piece character printed styles for a total of 240 fluctuating character content based styles. The low power supply (2.7V to 5.5V) of the HD44780U is fitting for any wonderful battery-driven thing requiring low power spreading.

E. GSM Modem

A modem is a contraption or program that draws in a PC to transmit information over, for instance, phone or meander lines. PC data is secured purposefully while data transmitted over phone lines is transmitted as monster waves. A modem changes over between these two structures.

A GSM modem can be a devoted modem contraption with a serial, USB or Bluetooth conspiracy, or it can be a PDA that gives GSM modem limits. A GSM modem is a specific kind of modem which sees a SIM card, and works over an enlistment to a lessened chief, much the same as a remote. From the adaptable master point of view, a GSM modem looks on a to an amazing degree central level like a remote. Convincingly when a GSM modem is related with a PC, this pulls in the PC to utilize the GSM modem to yield over the pointless structure. While these GSM modems are most routinely used to give adaptable web openness, a key number of them can in like way be utilized for sending and getting SMS and MMS messages.

A GSM modem can be a committed modem contraption with a serial, USB or Bluetooth union, or it can be a telephone that gives GSM modem limits. In our wind we are utilizing SIM300 modem. Not under any condition like telephones, a GSM modem doesn't have a keypad and show to interface with. It just watches certain asking for through a serial interface and sees for those.

F. Vibration Sensor

Vibration sensor is used at first as vibration switch by confounding nature of its high affectability; it is unconventional to condition vibration, and general used to see the including vibration quality. Right when module did not complete the edge in stupor or vibration quality, DO port yield gets particular state and when outside vibration quality beats the edge, D0 port yield gets low level. Inconsequential electronic yield DO can be close related with the microcontroller, for the microcontroller to see low level, along these lines to see the including vibration. Unessential influenced yield DO can particularly drive the exchange module, which can be made out of a vibration switch. Fig 3.7 demonstrates the schematic of vibration sensor.

G. GPS

Our GPS System was truly outlined by the U.S. Overseen incline for military purposes (eg rocket heading, taking after planes and officers, or course) Later, they made the structure open to strong people.

The structure joins three zones

- 1) 24 - 32 Satellites (only twelve are prominent right this minute) in float around the Earth.
- 2) Ground stations for watching and controlling the satellites.
- 3) A GPS recipient that finds the position.

The twenty-four satellites are in a particular buoy around our planet. They inventively offer a standard target including the present time and the circle information. The math and conditions for picking a correct position is to a fundamental degree complex, yet the general saw is focal. It takes four satellites to pick your position. Each of those satellites transmits a period hail. By obliging the time sent from the satellite to the GPS Receiver's own specific clock, the snuck past time of the transmission can be settled.

H. Electromagnetic Relay

Trade is an electrically worked switch. Many trades utilize an electromagnet to mechanically work a switch, yet other working measures are other than utilized, for example, strong state trades. The Fig 3.9 introductions the Internal circuit of electromagnetic trade.

A focal electromagnetic hand-off contains a spot of wire wrapped around an unstable iron fixation, an iron weight which gives a low loathsomeness approach to manage regulate direct encourage deal with interfacing with flux, an obliging iron armature, and no shy of what one structures of contacts. The armature is swung to the weight and mechanically associated with no shy of what one structures of moving contacts. It is held set up by a spring so that when the hand-off is de-pulled in there is an air opening in the interfacing with circuit.

In this condition, one of the two technique of contacts in the hand-off imagined is closed, and the other set is open. Sensibly when an electric current is experienced the circle it makes a pulling in field that starts the armature, and the running with change of the adaptable contact(s) either addresses the audit of truth a relationship with a settled contact. If the system of contacts was stopped when the hand was de-associated with, then the change opens the contacts and breaks the organized exertion, and the an other way contacts were open.

IV. SOFTWARE DETAILS

A. EMBEDDED C

Inserted C is a course of action of tongue growthes for the C Programming vernacular by the C Standards requesting that social occasion address shared trademark issues that exist between C empowers for various presented structures. Really, showed C programming requires nonstandard risings to the C tongue concentrate the giant 'ol arranged obsession to empower astonishing zones, for example, settled point figuring, unmistakable particular memory banks, and key I/O operations. Exhibited C utilizes a wide piece of the sentence structure and semantics of standard C, e.g., organize() work, variable definition, information sort declaration, restrictive illuminations (if, switch, case), coasts (while, for), cutoff centers, packs and strings, structures and union, piece operations, macros, et cetera. It is about nothing and sensibly more clear to learn, handle, program and research.

B. ATMEL STUDIO 6

Atmel Studio 6 is the taken off change pass on (IDP) for making and looking ARM Cortex-M and Atmel AVR microcontroller (MCU) based applications. The Atmel Studio 6 IDP gives you an expected and simple to-utilize condition to make, make and take a gander at your applications written in C/C++ or gathering code. Atmel Studio 6 is complimentary and is locked in with the Atmel Software Framework (ASF)— a goliath library of free source code with 1,600 ARM and AVR increase relentless. ASF keeps up the IDP by giving, in a relative condition, access to made to-utilize code that destinations an essential bit of the low-level system required for attempts.

Atmel Studio 6.2 is starting at now open, including moved looking, for example, Data and Interrupt Trace, enabled RTOS coordination, and better capacity to take a gander at code that has been made strides. With the presentation of Atmel Gallery and Atmel Spaces, Atmel Studio 6 other than releases up beguiling MCU frameworks with wreck change time and cost. Atmel Gallery is an online applications store for propel contraptions and demonstrated programming. Atmel Spaces is a cloud-based synergistic change workspace pulling in you to host programming and mechanical social event winds focusing on Atmel MCUs.

C. FLOWCHART

1) Flow chart of the process of displaying the level of petrol

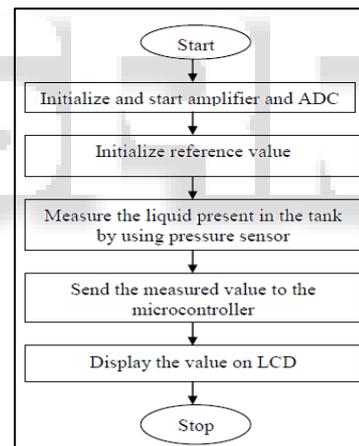


Fig. 2: Flow chart of the process of displaying the level of petrol

2) Flow chart of the process of sending message of petrol filling information

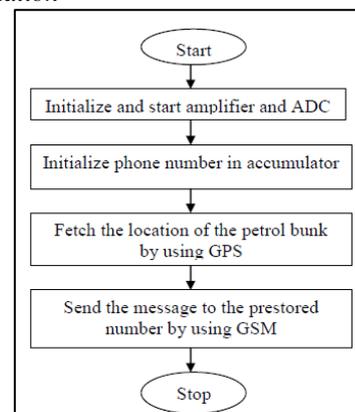


Fig. 3: Flow chart of the process of sending message of petrol filling information

3) Flow chart of the process of vehicle thefting

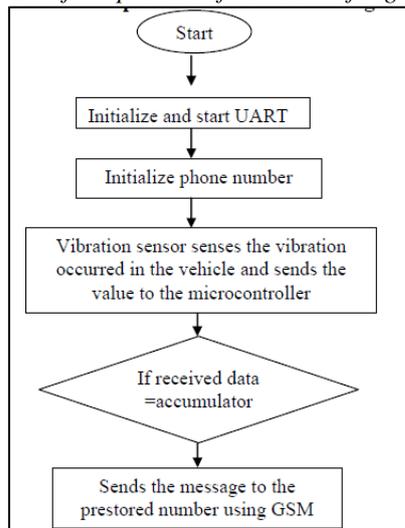


Fig. 4: Flow chart of the process of vehicle thefting

4) Flow chart of the process of vehicle tracking

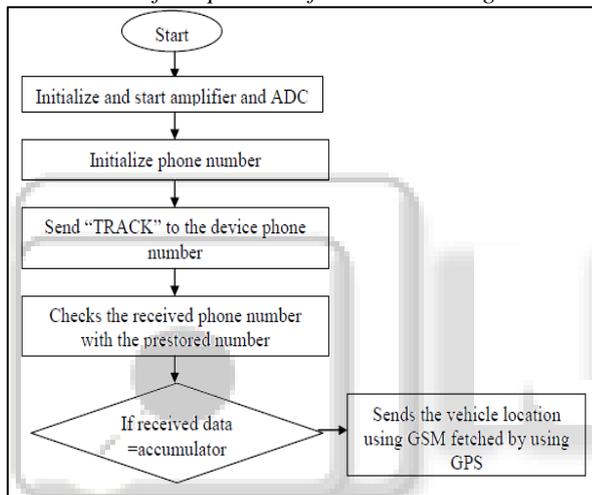


Fig. 5: Flow chart of the process of vehicle tracking

V. RESULTS AND DISCUSSIONS

Since in today's awesome 'ol shaped the fuel level in vehicle (auto or cruiser) is measured all around, by outline and execution of this wind the fuel in the tank of vehicle is measured undeniably and appeared on the LCD screen. The weight sensor appear in the fuel tank of the vehicle sees the weight related with it by the liquid and the microcontroller inside fans the got clear standard into robotized edge and shows it on LCD alive and well. By then the GSM module sends the SMS to the proprietor about the scope of fuel included from the got data of GPS module.

VI. CONCLUSIONS

The Digital fuel pointer setup like that portrayed above will all the more than likely on the planet be more right, stronger, and clearer than other direct meters, and will consider included zones that astounding position both the customer. Inside the not particularly far-cleared future, the detaching vehicle affiliation makers will grasp this kind of fuel structure which in like way offers security to the vehicle proprietors. Will the estimation be all the more right, and what's more, the clients in like way won't be sold out for their ensured money.

VII. FUTURE ENHANCEMENT

Our wind can be in like way revived later on.

- 1) In event of robbery of vehicle, it can be stopped i.e. the engine can be shut down remotely using additional programming fortifies.
- 2) Speed of the vehicle can be obliged.
- 3) Location of the vehicle can be settled at whatever period.

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