www.ijiarec.com

ISSN:2348-2079

Volume-10 Issue-2

International Journal of Intellectual Advancements and Research in Engineering Computations

VEHICLE FUEL MONITORING AND ALARMING USING IoT

R.T. DINESHKUMAR M.TECH Assistant professor, MOHANAPRIYA. V, PREETHI. B, SOWMIYA. M UG Scholar

Computer Science and Engineering, Vivekanandha College Of Engineering For Women (Autonomous), Tiruchengode, Namakkal- 637205, Tamilnadu, India

ABSTRACT

In the latest instances we are continuously listening to about petrol bunk frauds. Most of the petrol bunks these days have manipulated the pumps such that it shows the quantity as entered however the volume of gas crammed in the customer's tank is tons lesser than the displayed value. I.et the pumps are tampered for the advantage of the petrol bunks owner. This outcomes in large income for the petrol bunks however at the equal time the clients are cheated. All the cars in India consist of analog meters as a result it is no longer feasible to exactly comprehend the quantity of gas presently in the automobile and additionally it is no longer feasible to pass take a look at the volume of gasoline crammed in the petrol bunk. In this mission we focal point on growing a digital show of the specific quantity of gasoline contained in the cars tank and additionally helps in move checking the extent of gas crammed at the petrol bunk. In addition to this the undertaking additionally tends to discover the mileage of the vehicle which is a time eating and tedious job to do manually via noting down the readings all the time and the proposed gadget will additionally exhibit the nearest petrol pump the usage of GPS when the gasoline tank goes in reserve mode and automatically speed reduce circuit attached.

Keywords: Arduino, fuel management, iot,ultrasonic sensor.

I. INTRODUCTION

The cutting-edge gas demonstrating framework in vehicle utilizes easy and computerized visuals for indicating surmised popularity of gasoline level, no longer exhibiting the quantity in numerical. This framework alluded demonstrates the fuel level in numerical by using making use of LCD. In India, mileage issue has risen to be a main trouble prompting purchasers stalling out in obscure sector when you consider that they forget about to take a look at the gasoline level. This proposed configuration can provide an method to cease this issue and manipulate the exorbitant utilization of the gasoline to the client by means of demonstrating mileage. This proposed configuration will be beneficial to manage the movement of the fuel in the vehicle, moreover constantly suggests the gas left and the kilometre it can cover. This is completed by controlling the gasoline use with the help of devices put in the fuel tank and when the gasoline tank receives unfilled a signal is given for the driver that the gas is void and the automobile will kill. On the premise of PIC 16F877A development of this sketch is done and to exhibit the gas that is reachable in the vehicle LCD exhibit is utilized as yield unit. The Characters got from the controller unit is these days proven and in addition the gas stage and the separation it can travel, so that the patron can power at the current fuel.

LITERATURE REVIEW

[1]"Intelligent Real Time Mileage indicator for motorbikes" via Jaimon Chacko Varghese, Binesh Ellupurayil Balachandran posted in the year 2014. It calculates the mileage of the automobile is displayed on the sprint board and the quantity of gas & the distant covered can additionally to recognised whilst travelling.

[2] "Ardunio primarily based digital gas gauage& vehicle monitoring system" byNitesh.K.A, Lohith.B.N published in the yr 2015. The gadget implements a digital display meter for averting gasoline theft & improve a device which also video display units the temperature of the engine ,seat belt warning & Alcohol content material via the usage of sensors in 4-wheelers.

[3]"GSM Based digital gas meter & gasoline theft detection using PIC Microcontroller" by way of Trupti K. Wable, Rajashree R. Shinde posted in the yr 2016.The implementation of the digital meter installed on the car and permitting a buzzer to point out gas theft.

[4] "Automatic tyre stress monitoring machine using wireless communication" by using Mr.Prashant. G.

Author for correspondence: R.T. DINESHKUMAR

Salunkhe, Harshal R. Kulthe,Mr. Saiprasad N. Kolhe , Mr.Ayaan A. Khan Published through 2017.This device implements a tyre pressure gadget that video display units the air stress of the tyre and indicators with a warning light.
[5] "Intelligent digital gasoline gauge alongside with engine locking gadget the usage of Ardunio" by way of M.Prakash, V.Raguna, K.Sowmitha, P.Thamilzamudham and Mrs. P. Nandhini. Published in the yr 2018 .By the usage of gas gauge the quantity of gas current in the tank is indicated if anyoneskips the sign as an alternative of going for walks in the back of the automobile by using GPS the police can lock the car engine .to unlock the approved character want to ship password to restart it.

II. EXISTING SYSTEM

ANALOG DIGITAL METER
With the enlargement of car utilization over the world, gasoline crucial has grew to become into a extremely good problem. Plan and usage of load telephone primarily based gasoline size estimates the specific stage of gasoline which include whilst gasoline filling process. There is a large variety of strategies for estimating gasoline level, extending from these utilising mechanical floats and capacitive and optical sensors to ultrasound strategies. These days all gasoline bunks having sorts of computerized shows unit so as to exhibit the estimation of fuel adding to the vehicle. Yet, the inconvenience of using load telephone is that it cannot be utilized for estimation of very responsive material, for example, petrol. So we selected to utilize ultrasonic method for petroleum stage dimension as it is a non – contact type estimation technique. In in all places at some point of the world all the car are having a easy gasoline meter. This meter shows three prerequisites of gas degree which are vacant, 1/2 and Full.

III. PROPOSED SYSTEM

We Connect the gas tank with the drift sensor to calculating the gasoline level. The output of the waft sensor will be in the fluctuating mode. So it is managed with the assist of the controller. The analog output of the sensor is given to the nodeMCU microcontroller board. The analog enter is transformed into digital with the Arduino programming language and show in the LCD Board. In our work, we are changing that analog gas detection meter into the digital show the place the degree of the gasoline will be detected and proven for the humans who are touring in that vehicle. With the assist of gas stage which has been sensed by using the sensor the mileage of the car will be calculated and displayed in the LCD. This helps the character to understand the distance which will be blanketed via the vehicle.
The effects are obtained via arduino board. And the arduino programming converts the length into distance.

BLOCK DIAGRAM

IV. COMPONENTS REQUIRED

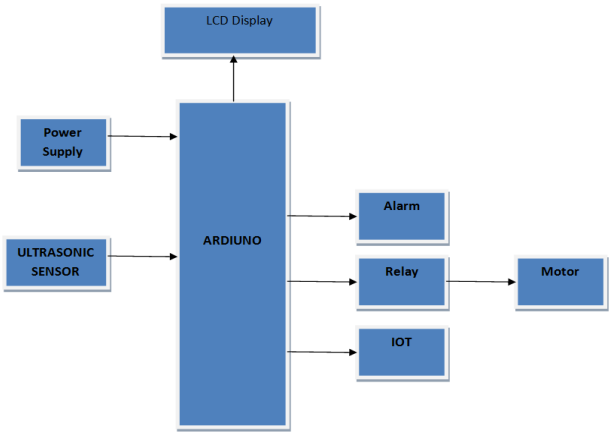
The components required for this project are categorized into two parts. The first one is the hardware requirement and the next is the software requirement.
HARDWARE REQUIREMENT

- ARDUINO UNO
- BUZZER
- ULTRASONIC SENSOR
- LCD(16*02)
- L293D MOTOR DRIVER IC
- ESP8266 MODULE

SOFTWARE REQUIREMENT

- ARDUINO IDE SOFTWARE
- Proteus 1.2.1
- Android app
- PHP web page

Author for correspondence: R.T. DINESHKUMAR

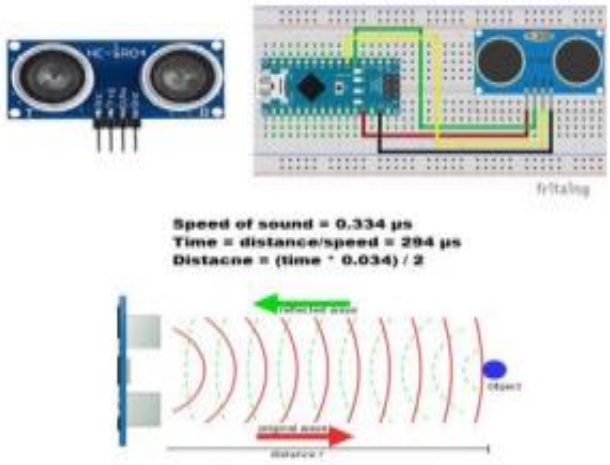


1. ULTRASOIC SENSOR

Water Level Monitoring

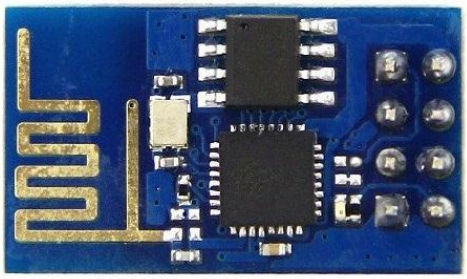
The Ultrasonic sensor is used to monitor the level of the water. It is achieved by measuring the distances. The distance can be calculated using the given formula

Distance = (speed of sound*time taken) /2 objects



2. ESP8266 WIFI MODULE

The receiving internet records via ESP8266 modem when interfaced with microcontroller or PC is tons much less tough as differentiated and Ethernet module when you consider that ESP is a SoC and Integrated TCP/IP way of life stack. AT firmware is supplied convenient to use bearing set with which it will in accepted be orchestrated or labored at a variety of Baud Rate (Supported 9600, 115200 or 57600). Plain Text may additionally be despatched via the modem via interfacing solely three warning signs of the successive interface of modem with microcontroller (TxD, RxD and GND). In this arrangement RTS and CTS symptoms of successive port interface of ESP Modem are associated with one another. The transmit banner of successive port of microcontroller is associated with of the consecutive interface get sign (RxD) of ESP Modem whilst get banner of microcontroller successive port is associated with transmit hail (TxD) of successive interface of ESP Modem.



Author for correspondence: R.T. DINESHKUMAR

3. BUZZER

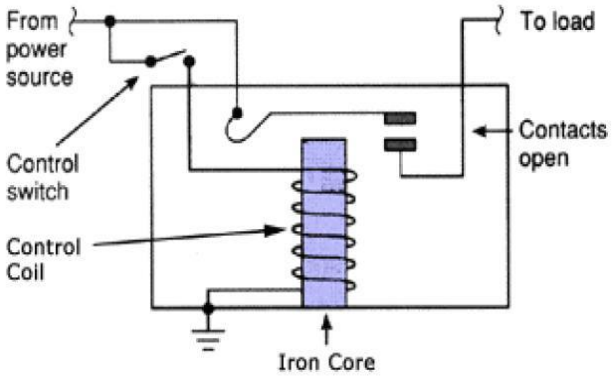
Buzzer or beeper is an audio signalling device. Buzzer will automatically turn on when alcohol is detected.

4. MOTOR

DC motor is used as a prototype to indicate the motion of the vehicle. When alcohol is detected we can slow it down to a certain speed by using pwm function when interfaced with Ardiuno using relay motor driving IC.

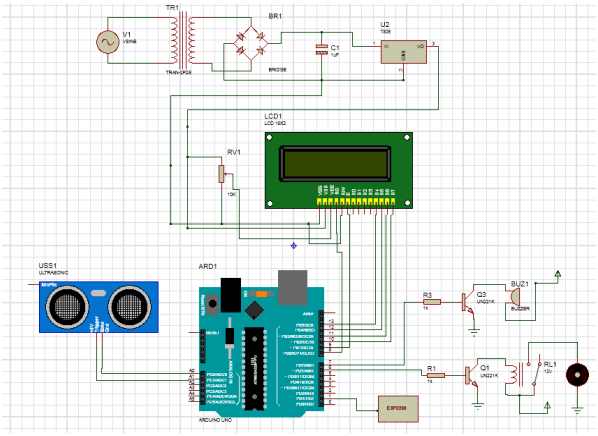
5. RELAY

We understand that most of the excessive quit industrial utility units have relays for their fine working. Relays are easy switches which are operated each electrically and mechanically. Relays consist of a n electromagnet and additionally a set of contacts. The switching mechanism is carried out with the assist of the electromagnet. There are additionally different running standards for its working. But they fluctuate in accordance to their applications. Most of the gadgets have the software of relays. The principal operation of a relay comes in locations the place solely a low-power sign can be used to manipulate a circuit. It is additionally used in locations the place solely one sign can be used to manage a lot of circuits.The excessive give up purposes of relays require excessive electricity to be pushed by way of electric motors and so on. Such relays are referred to as contactors



6. CIRCUIT DIAGRAM

Author for correspondence: R.T. DINESHKUMAR



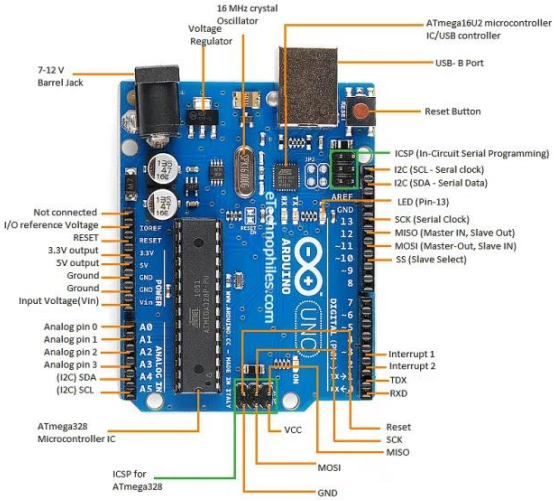
7. MICROCONTROLLER ARDUINO

Arduino Uno is primarily based on AVR microcontroller referred to as Atmega328. This controller comes with 2KB SRAM, 32KB of flash memory, 1KB of EEPROM. Arduino Board comes with 14 digital pins and 6 analog pins. ON-chip ADC is used to pattern these pins. A sixteen MHz frequency crystal oscillator is geared up on the board. Following parent indicates the pinout of the Arduino Uno Board.

Pin description

There are various I/O digital and analog pins positioned on the board which operates at 5V. These pins come with fashionable running scores ranging between 20mA to 40mA. Internal pull-up resistors are used in the board that limits the modern-day exceeding from the given running conditions. However, too lots enlarge in present day makes these resisters vain and damages the device.LED. Arduino Uno comes with built-in LED which is related thru pin thirteen Providing HIGH price to the pin will flip it ON and LOW will flip it OFF. Vin. It is the enter voltage supplied to the Arduino Board. It is unique than 5 V provided via a USB port. This pin is used to grant voltage. If a voltage is supplied via electricity jack, it can be accessed thru this pin.5V. This board comes with the capability to grant voltage regulation. 5V pin is used to furnish output regulated voltage. The board is powered up the usage of three approaches i.e. USB, Vin pin of the board or DC energy jack.USB helps voltage round 5V whilst Vin and Power Jack guide a voltage stages between 7V to 20V. It is endorsed to operate the board on 5V. It is vital to notice that, if a voltage is furnished thru 5V or 3.3V pins, they end result in bypassing the voltage law that can injury the board if voltage surpasses from its limit.GND. These are floor pins. More than one floor pins are supplied on the board which can be used as per requirement.Reset. This pin is integrated on the board which resets the application walking on the board. Instead of bodily reset on the board, IDE comes with a characteristic of resetting the board via programming.IOREF. This pin is very beneficial for supplying voltage reference to the board. A protect is used to examine the voltage throughout this pin which then pick the applicable strength source.PWM. PWM is furnished via 3,5,6,9,10, 11pins. These pins are configured to provided 8-bit output PWM.SPI. It is acknowledged as Serial Peripheral Interface. Four pins 10(SS), 11(MOSI), 12(MISO), 13(SCK) grant SPI verbal exchange with the assist of SPI library. AREF. It is referred to as Analog Reference. This pin is used for imparting a reference voltage to the analog inputs. TWI. It is known as Two-wire Interface. TWI verbal exchange is accessed via Wire Library. A4 and A5 pins are used for this purpose. Serial Communication. Serial conversation is carried out via two pins known as Pin zero (Rx) and Pin 1 (Tx).Rx pin is used to acquire information whilst Tx pin is used to transmit data, External Interrupts. Pin two and three are used for imparting exterior interrupts. An interrupt is known as by means of offering LOW or altering value.

Author for correspondence: R.T. DINESHKUMAR



V. RESULT

The system shows the following values: 1. Fuel in Liter 2.Est.Distance 3. KMph (per hour) 4.KMpl (per liter). The experimental set-up is design and fabricated as per the specification mention above further the experimental set-up is analyse for different inclination of fuel tank and to study its effect on the amount of fuel present in the tank. The LED display is use to show exact amount of fuel in the tank and the distance to be travelled by vehicle. This paper merely present the design and fabrication parts of experimental set-up. Further experimentation can be done for various inclination in later stage.

VI. FUTURE ENHANCEMENT

In future the proposed technique can be improved by adding fuel cells at different places of fuel tank to measure exact fuel levels at different conditions like Banking of road for particular densities at different altitude conditions of vehicle and a buzzer to announce the user about the abnormal conditions like low level, half level and full levels of the fuel tank to refill or warn themselves.

VII. CONCLUSION

The System will point out the gas degree and at the accuracy will be higher than the present structures additionally how tons distance it can tour With the assist of the Android Application character will be aware of the close by petrol pump and the availability of petrol each time the petrol will get decrease than specific level. The measurements are taken so the accuracy stage is of percentage ninety five to 98.Thusit is an environment friendly system made by way of retaining in thinking the petroleum thefts at the a variety of petrol pumps at the time of filling of tanks. The current usual and the micro controller primarily based waft kind dimension strategies are a long way from precise and are on the conservative. A extra environment friendly and dependable sensing science is the ultrasonic vary sensing device with a micro controller which has corrective motion code in-built that is utilized to the gas sensor sign primarily based on measurements to furnish incredibly correct size of the stage of gasoline in tank. In case cross petrol bunk ability mechanically limit car pace.

REFFERENCE

1. Bucci G, Landi C. Numerical method for transit time measurement in ultrasonic sensor applications. IEEE Trans Instrum Meas. 1997;46(6):1241-46. doi: 10.1109/19.668262.
2. Betta G, Pietrosanto A, Scaglione A. A digital liquid level transducer based on opticalfiber. IEEE Trans Instrum Meas. 1996;45:551555.

Author for correspondence: R.T. DINESHKUMAR

3. Udayavalli. M.Omamageswari, Embedded system based intelligent digital fuel Gauge. IPASJ Int J Electron Commun (IIJEC). 2014;2(March-April):V.
4. Dhande KD, Sarang R. gogilwar, Sagar Yele, VivekGandhewar, Fuel level measurement techniques: systematic survey. Int J Res Advent Technol.
5. Varghese JC, Balachandran BE. Low cost intelligent real time fuel mileage indicator for motorbikes. IJITEE. 2013;2(5).
6. Lei Chan, Xinmin Dong, Jie Han's. Development of Ultrasonic instrument for sealed container's liquid level measurement. 2006. IEEE. doi: 10.1109/WCICA.2006.1713333
7. Mohansundaram S, Manikandan P. Design and implementation of load cell based fuel level measurement.
8. Gupta D, Singh BKr, Panwar K. A prototyping model for fuel level detector and optimizer. Afr J Basic Appl Sci. 2012:226-9. ISSN 2079-2034.
9. Available from: http://www.en.wikipedia.org/wiki/PIC_microcontroll. Wikipedia.

Author for correspondence: R.T. DINESHKUMAR