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SMART FUEL MANAGEMENT SYSTEM REALTIME MONITERING AND THEFT PREVENTION WITH IOT.

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ABSTRACT

In today's environment, digital approaches for measuring any quantity are required. Because current gasoline meters are analog, we are attempting to digitize them in order to display the fuel value digitally. In our project, we display the amount of fuel in the fuel tank digitally, such as 1 liter, 1.5 liter, 2 liter, and so on. Fuel theft is also a major issue all around the world. With our solution, if gasoline is stolen, a text message is sent to the owner of the bike, and a buzzer produces a noise to alert the owner of the bike. In typical car systems, such as displaying fuel availability digitally and preventing bike fuel theft, such systems are not implemented. The oil is one of the most significant assets in our modern world, engine oil inventory management is a crucial monitoring and control application. Vehicle oil expenditures may account for up to one-third of the total cost of maintaining a fleet. One of the most important strategies to cut running expenses and enhance efficiency is to have precise oil monitoring systems for engines. In our project, we display the amount of oil in an oil tank digitally, such as 1lit, 1.5lits, 2lits, and so on. Such a system is incorporated in the vehicle system, such as digitally displaying oil availability. Fuel theft is also a major issue all around the world.

Motorcycles are one of the most economical modes of motorized transport in many regions of the world, and they are also the most prevalent type of motor vehicle for the majority of the world's population. Worldwide, there are around 200 million motorbikes (including mopeds, motor scooters, and other motorized two and three-wheelers), or approximately 33 motorcycles per 1000 persons. This compares to around 590 million automobiles, or approximately 91 autos per 1000 persons. The majority of motorbikes, 58%, are in developing Asia's Southern and Eastern Asia, as well as Asia Pacific countries, excluding Japan, whereas 33% of vehicles (195 million) are concentrated in the United States and Japan.

Digital Fuel Indication and Fuel Theft Identification is a technology designed to address the growing issue of fuel theft in various industries such as transportation, mining, and agriculture. The system is composed of a fuel level sensor, a microcontroller, and a communication module that allows for real-time monitoring of fuel levels and detection of any anomalies or unauthorized fuel withdrawals. The fuel level sensor is installed in the fuel tank and measures the fuel level at regular intervals. This information is then transmitted to the microcontroller which processes the data and sends it to a centralized server through the communication module. The data is then analyzed in real-time to identify any discrepancies or unusual patterns. In the event of a fuel theft, the system can detect the anomaly and immediately notify the authorized personnel through SMS, email, or an alarm system. The system can also track the location of the fuel theft, allowing for quick and efficient recovery of the stolen fuel. Overall, this technology provides a comprehensive solution to fuel management and theft prevention, ensuring that businesses can operate with greater efficiency and security.

Keywords—ARDUINOUNO, IOT, FLOW SENSOR, ULTRASONIC SENSOR

1.INTRODUCTION

Everything is now digital in every profession. A digital meter is also installed in cars, although it does not display the precise level of the tank. As a result, we have no notion how much oil is in our tank. We simply get an estimate of the amount of oil. As a result, this issue is being considered for our project work of building a Digital (numeric) oil indicator system for vehicles that indicates the precise quantity of oil in terms of liters or milliliters. Most gas stations nowadays feature pumps that indicate the amount input but the quantity of oil filled in the customer's tank is substantially less than the stated figure.

Engine oils, which are used to lubricate engines and gearboxes, are subjected to high temperatures and pressures, as well as pollution from oxides, grease, sand, dust, metal particles, smoke, and so on. Certain qualities of lubricating oil are likely to alter during engine operation, reducing the level of oil. This has an impact on engine performance. Because oil is one of the most significant assets in our modern world, engine oil inventory management is a crucial monitoring and control application. Vehicle oil expenditures may account for up to one-third of the total cost of maintaining a fleet. One of the most important strategies to cut running expenses and enhance efficiency is to have precise oil monitoring systems for engines.

Digital fuel indication and theft identification are two important features that are increasingly being integrated into modern fuel management systems. With digital fuel indication, real-time monitoring of fuel levels in tanks and other fuel storage systems is made possible using electronic sensors and data communication technologies. This technology helps fuel managers and operators to accurately monitor fuel consumption and track inventory levels, which can improve efficiency and reduce costs. Additionally, digital fuel indication can also provide alerts when fuel levels are low or when there is a sudden drop in fuel levels, which can be indicative of fuel theft or leakage. To further combat fuel theft, theft identification technologies are being developed and integrated into fuel management systems. These technologies use various methods such as GPS tracking, tamper-proof locks, and real-time monitoring to detect and prevent fuel theft. By combining digital fuel indication and theft identification, fuel management systems can provide enhanced security and accountability for fuel usage, which

is especially important for businesses that rely heavily on fuel such as logistics companies and transportation providers.

2. LITERATURE SURVEY

[1] Today's world need digital techniques for measurement of any quantity conventional fuel meter are analog so that we trying to make it digitized to show the fuel value digitally. In our project we show the amount of fuel present in fuel tank digitally i.e. 1lits, 1.5lits, 2lits etc. Also fuel theft is measure problem in all over world. In our project if fuel gets theft then text message will send to owner of bike also buzzer makes noise so that owner of bike get aware. In traditional vehicle system such kind of system not implemented like display fuel availability digitally & fuel theft of bike can be avoided.

[2] A new approach is proposed to monitor the location of the vehicle, engine temperature, tyre pressure, oil level, speed control and load measurement of a vehicle. Even if the device is offline, the logs will be stored in the memory card and it can be used for future analysis. In addition to this theft control is introduced for the security of the vehicle. CC3200 microcontroller is connected with load cell to monitor the total weight of the vehicle and engine temperature is monitored using the temperature sensor. By GPS the location and speed of the vehicle is monitored periodically and the location is uploaded in the cloud environment.

[3] The primary concern of "An Automatic Car Engine Startup and Brake Oil Monitoring Using Sensors" is to monitor the level of brake oil and to monitor the exact amount of engine fuel in digital form. It also shows the importance of unimodal biometric in order to identify or to verify a person that wants to start the engine of the car.

[4] our project is to assess the condition of the engine oil using IoT technique and provide a detailed analysis of the same For assessing the condition of the oil conductivity sensor, Ph sensor and turbidity sensors are used and based on those values three differently colored LED's are used to indicate the oil condition.

[5] The deterioration rate of Lubricating oil in internal combustion engines is strongly dependent on the fuel quality, the ambient conditions and engine parameters like speed, distance travelled and Engine temperature etc.

[6] The design and development of capacitive sensor is some contribution towards the accurate fuel level measurement in automotive sector. Wide variety of existing fuel level sensors are available such as mechanical float type, load cell, ultrasonic transreceiver based and capacitive plate sensors.

[7] project is implemented on DE2 [I} (Development and Education) board, an external LCD (Liquid Crystal Display) of 16 columns and 4 row s and 4*4 keypad is interfaced via GPIO (General purpose input output) of the board. This paper will briefly describe the work flow and functioning of the project. The coding for keypad, LCD interfacing and of overall system is done by Verilog HDL [2} (Hardware Description Language).

[8] Telematics is an eminent technology which merges telecommunications and informatics. This blending of wireless telecommunication technologies along with computers is done ostensibly with the goal of conveying information over vast networks to handle vehicle information. The entire system consists of TeCU Telematics Control Unit, server and webpage application to monitor and to sense ample information's received from vehicle over the air.

[9] we are trying to develop a "Digital Fuel Meter" which will give the exact amount of fuel poured in the vehicle's fuel tank. The device circuit will be fitted in a small compartment inside the fuel tank and the meter reading will be shown on the LCD display outside the fuel tank.

[10] This project acts as an attempt to conquer the running out of the fuel in the vehicles fuel tanks. Digital Gasoline Indicator is invented to detect the fuel level in the vehicle tank as the input and the percentage of the tank from its full capacity will be displayed on the LCD screen. This ultimately should simple to the user to estimate the fuel that they require to have for their journey. The fuel level detection circuit is used to detect the level of the fuel in the tank.

4.PROPOSED METHOD

As a result, we have no notion how much oil is in our tank. We simply get an estimate of the amount of oil. As a result, this issue is being considered for our project work of building a Digital (numeric) oil indicator system for vehicles that indicates the precise quantity of oil in terms of liters or milliliters. Most gas stations nowadays feature pumps that indicate the amount input but the quantity of oil filled in the customer's tank is substantially less than the stated figure.

Engine oil level monitoring with ultrasonic sensors allows users to monitor oil tank levels and consumption in order to discover problems and enhance fuel economy. The oil amount monitoring sensor developed for fuel management is the ultrasonic sensor. It may prevent drivers from stealing gasoline, optimize transportation costs, the driver's driving behavior, and aid statistical decisions, among other things. The ultrasonic sensor detects the amount of oil present and shows it on the LCD display. The project focuses on the fuel management system, which includes the theft alarm and sensors. Fuel theft may be avoided by installing a buzzer alarm while the theft is taking place. We can learn about the occurrence of gasoline theft by receiving an SMS when the theft occurs.

We can learn about the occurrence of gasoline theft by receiving an SMS when the theft occurs. A gas station cannot defraud the client when filling the tank. The message indicator allows us to prevent running out of gasoline in the fuel tank. The suggested system employs an ATMEGA328P microprocessor to manage the whole system.

5. SOFTWARE DESCRIPTION

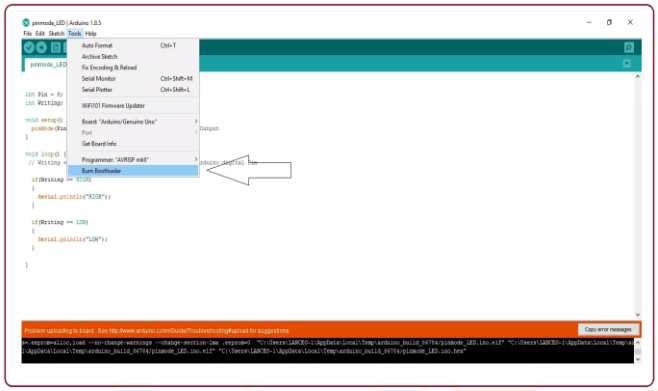
5.1.ARDUINO IDE

The Arduino IDE is an open-source program developed by Arduino.cc that is primarily used for authoring, compiling, and uploading code to practically all Arduino Modules. It is an official Arduino program that makes code compilation so simple that even a layperson with no prior technical expertise may start learning. It is accessible for all operating systems, including MAC, Windows, and Linux, and runs on the Java Platform, which has built-in functions and commands for debugging, editing, and compiling code. Arduino modules include the Arduino Uno, Arduino Mega, Arduino Leonardo, Arduino Mini, and many others. On the board of each of them is a microcontroller that has been programmed and takes data in the form of code.

The core code, also known as a sketch, written on the IDE platform will eventually generate a Hex File, which is then copied and uploaded into the board's controller. The IDE environment consists primarily of two fundamental components: the Editor and the Compiler, the former of which is used for creating the needed code

and the latter for compiling and uploading the code into the supplied Arduino Module. The top bar is called the Menu Bar, and it has five distinct options, as seen below. File - You can create a new window or open an existing one to write the code in. The number of additional categories into which the file choice is classified is shown in the table below.

Edit - Used for copying and pasting code with font changes Sketch - For compiling and programming Tools are mostly utilized in testing projects. This panel's Programmer portion is used to burn a bootloader to the new microcontroller. Help - If you are unsure about using software, thorough assistance is accessible, from installation to troubleshooting.



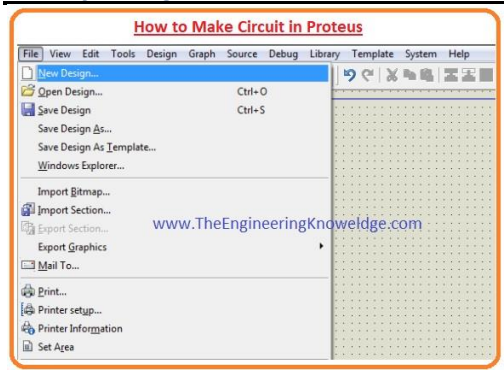
PROTEUS

Proteus is a tool for simulating, designing, and sketching electrical circuits. The Labcenter electronic created it. You may also create two-dimensional circuits with proteus. You may use this engineering program to build and simulate various electrical and electronic circuits on your personal PCs or laptops. There are various advantages of simulating circuits on proteus before implementing them in practice. Circuit design on the proteus requires less time than real circuit building. The probability of mistake is lower with software simulation, such as loose connections, which take a long time to discover in an actual circuit. Circuit simulations have the key advantage that if some circuit components are not feasible, you can still build them.

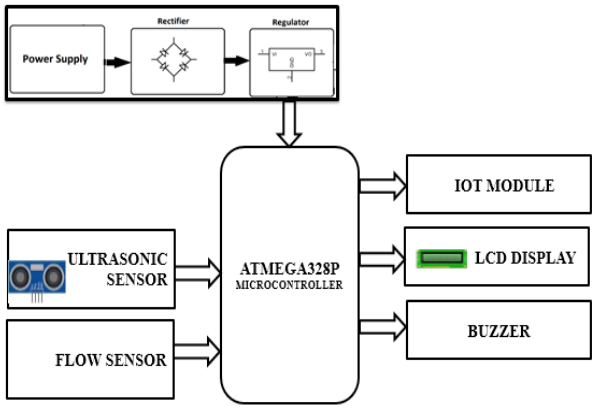
There is no risk of any electrical component in proteus burning or being damaged. An oscilloscope, for example, is one of the most costly electronic equipment available in proteus. With proteus, you may determine several circuit parents such as current, voltage value of every component, and resistance at any point, which is extremely difficult in an actual circuit.

PROTEUS FEATURES

- The first is used to plan and diagram various circuits, and the second is for developing PCB layout.
- The first is ISIS, which was used to model and design circuits.
- The second is ARES, which is employed in printed circuit board design. Moreover, it offers functionality for the PCB's three-dimensional design perspective.



6. HARDWARE BLOCK DIAGRAM



HARDWARE BLOCK DIAGRAM

6.1 HARDWARE EXPLANATION

In my project, I use Bluetooth Module to regulate dc speed by speech recognition. If the voice recommends, the speed control ATMEGA328P microcontroller to dc motor through L293D driver. And the temperature level of the DC motor is sensed by the temperature sensor, and the values are presented on the LCD. Via the dc motor running voltage, the potentiometer was compared to the maximum speed of the dc motor. The LCD indicates whether the dc motor speed exceeds the maximum voltage. Otherwise, we have control over the speed of speech recognition everywhere.

METHODS

MODULE LIST

•Power Supply

•Atmega328p Microcontroller

•Ultrasonic sensor

•Flow sensor

•Nodemcu

•Lcd

•Buzzer

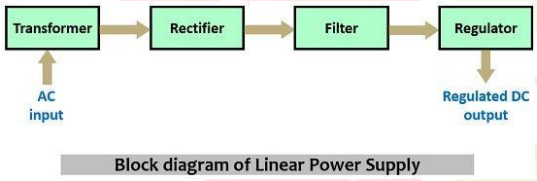
7. MODULE DESCRIPTION

7.1 POWER SUPPLY

The power supply may be described as an electrical equipment that provides power to electrical loads. This device's primary job is to convert the electrical current from a source to the precise voltage, frequency, and current required to supply the load. These power sources are sometimes referred to as electric power converters. Some supplies are standalone loads, but others are built within the appliances that they regulate. The power supply circuit is found in a wide range of electrical and electronic devices. Power supply circuits are grouped into several sorts based on the amount of power they provide to circuits or devices.

For example, microcontroller-based circuits are typically 5V DC regulated power supply (RPS) circuits that may be created using several methods for converting power from 230V AC to 5V DC. The power supply block diagram is detailed here, as well as the step-by-step conversion of 230V AC to 12V DC.

- The 230V AC is converted to 12v using a step-down converter.
- The bridge rectifier converts alternating current to direct current.
- A capacitor filters the alternating current ripples and supplies them to the voltage regulator.
- Lastly, a voltage regulator limits the voltage to 5V, and a blocking diode is utilized to capture the pulsing waveform.



Block diagram of Linear Power Supply

7.2. TRANSFORMER

The electrical transformer receives an alternating current voltage on the main winding and provides a separate alternating current voltage on the secondary winding (a lower one). This AC output voltage must correspond to the DC voltage we aim to achieve in the end. For example, if we want a 12 VDC output, the transformer's secondary winding must have an AC value of at least 9 volts. Electric Converter a power transformer Vp = 1.41 x 9 = 12.69 volts is the peak value at the transformer secondary winding. Although though this figure is quite near to what we were looking for, it is not recommended since we need to account for voltage dips at various stages (blocks) of the power supply**.**

Bridge Rectifier (rectifier diodes)

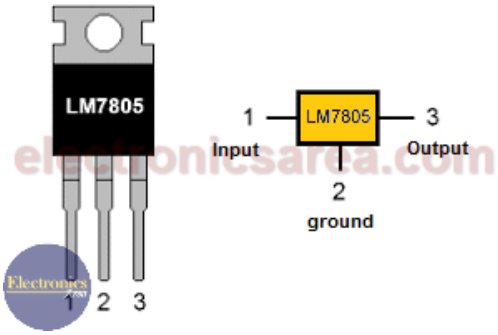
The rectifier bridge converts the secondary winding's alternating current voltage to pulsing direct current voltage. (Observe the diagram). In our example, we utilize a 12 wave rectifier to remove the negative portion of the wave.

Filter (capacitors)

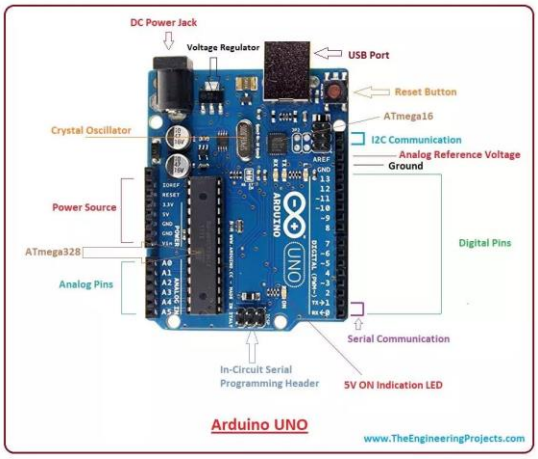
A filter is a series of one or more parallel electrolytic capacitors that flatten or smooth the preceding wave, removing the alternating current (AC) component given by the rectifier. These capacitors are charged to the greatest voltage that the rectifier can give and discharged when the pulsing signal stops. Have a look at the image above.

Regulator of voltage

The voltage regulator accepts the signal from the filter and provides a constant voltage (say, 12 DC volts) independent of load or voltage changes.



7.3 ARDUINO UNO



The Arduino UNO is a highly useful electrical component that has a USB interface, 14 digital I/O pins (of which 6 are used for PWM), 6 analog pins, and an Atmega328 microcontroller. It also supports three communication protocols: Serial, I2C, and SPI. The Arduino Uno is a microcontroller board designed by Arduino.cc that is based on the Atmega328 microprocessor and is the original Arduino board (UNO means "one" in Italian). The software for creating, compiling, and uploading code to Arduino boards is known as the Arduino IDE (Integrated Development Environment), and it is available for free download from the Arduino Official Site. It features a 5V working voltage and an input voltage range of 7V to 12V. The highest current rating of the Arduino UNO is 40mA.As a result, the load should not surpass this present rating or you may damage the board. It has a crystal oscillator with an operating frequency of 16MHz. The Arduino Uno Pinout consists of 14 digital pins numbered D0 through D13. It also includes 6 analog pins numbered A0 to A5. It also contains 1 Reset Pin, which is used to programmatically reset the board. To reset the board, we must set this pin to LOW. It also includes 6 Power Ports with varying voltage levels. Six of the 14 digital ports are utilized to generate PWM pulses with an 8-bit resolution. D3, D5, D6, D9, D10, and D11 are the PWM pins of the Arduino UNO.

PINS General Pin functions

LED: The Arduino Uno includes a built-in LED, which is linked through pin 13. Giving a HIGH value to the pin will turn it ON, while providing a LOW value will turn it OFF.

Vin: That is the voltage supplied to the Arduino Board. It is not the same as the 5 V delivered via a USB port. This pin is used to provide power. If a voltage is supplied by a power jack, it can be accessed via this pin.

5V: This board includes the ability to regulate voltage. The 5V pin is utilized to provide output voltage regulation. The board is powered in three ways: through USB, the board's

Vin pin, or the DC power connection:

USB supports voltages of roughly 5V, whereas Vin and Power Jack do not.It is advised that the board be powered by 5V. It is vital to remember that supplying a voltage through

5V or 3.3V:

This pins results in bypassing the voltage regulator, which might harm the board if the voltage exceeds its limit.

GND.

They are called ground pins. On the board, there are many ground pins that may be utilized as needed.

Reset.

This pin is built into the board and is used to reset the program that is executing on it. Instead of a physical reset button on the board, the IDE includes a function for resetting the board through programming.

IOREF

This pin is highly important for giving the board with a voltage reference. The voltage across this pin is read using a shield.

PWM

PWM is supplied by pins 3,5, 6, 9, 10, and 11. These pins are set up to produce PWM at an 8-bit resolution.

SPI

Serial Peripheral Interface is the name of it. With the aid of the SPI library, four pins—10(SS), 11(MOSI), 12(MISO), and 13(SCK)—provide SPI communication.

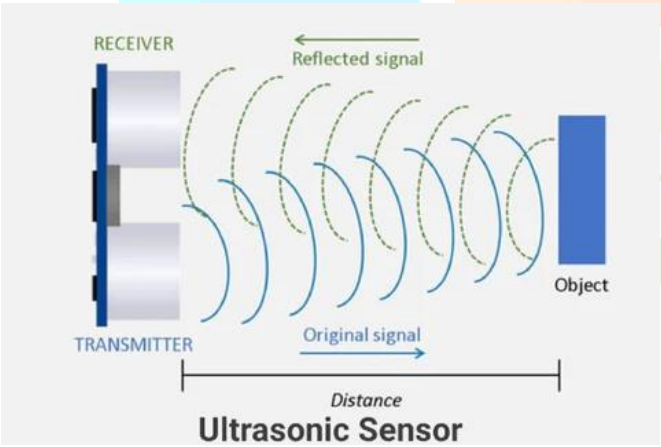
AREF.

It goes under the name Analog Reference. The analog inputs receive a reference voltage from this pin.

TWI.

The name of it is Two-wire Interface. Wire Library provides access to TWI communication. For this, A4 and A5 pins are employed. serial transmission. Pin 0 (Rx) and Pin 1 are the two pins used for serial transmission (Tx). Data is transmitted using the Tx pin, while data is received using the Rx pin. Outside interruptions. External power is supplied using Pins 2 and 3.

7.4. ULTRASONIC SENSOR



An ultrasonic sensor is an electronic device that uses ultrasonic sound waves to detect the distance between two objects and transforms the reflected sound into an electrical signal. Ultrasonic waves move quicker than audible sound (i.e. the sound that humans can hear). The transmitter (which generates sound using piezoelectric crystals) and the receiver are the two primary components of ultrasonic sensors (which encounters the sound after it has travelled to and from the target).

To compute the distance between the sensor and the item, the sensor measures the time it takes from the transmitter's sound emission to its contact with the receiver. The formula for this computation is D = 12 T x C (where D is the distance and T is the time). T is the time, and C is the sound speed (343 meters per second). For example, if a scientist directed an ultrasonic sensor at a box and the sound bounced back in 0.025 seconds, the distance between the ultrasonic sensor and the box would be or about 4.2875 meters.

D = 0.5 x 0.025 x 343

Ultrasonic sensors are mostly utilized as proximity sensors. These may be found in self-parking technologies and anti-collision safety systems in automobiles. In addition to robotic obstacle detection systems, ultrasonic sensors are employed in industrial technologies. Ultrasonic sensors are less vulnerable to interference from smoke, gas,

and other airborne particles than infrared (IR) sensors in proximity sensing applications (albeit the physical components are still impacted by factors such as temperature). Ultrasonic sensors are also utilized as level sensors in closed containers to detect, monitor, and manage liquid levels (such as vats in chemical factories). Most notably, ultrasonic technology has allowed the medical profession to create pictures of interior organs, spot malignancies, and monitor the health of infants in the womb.

7.5. FLOW SENSOR

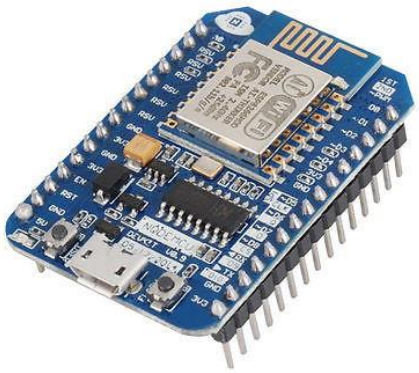
A flow sensor (sometimes known as a "flow meter") is an electrical device that detects or controls the flow rate of liquids and gases via pipes and tubes. Flow sensors are often connected to gauges to provide measurements, but they may also be linked to computers and digital interfaces. HVAC systems, medical gadgets, chemical plants, and septic systems are all popular places to find them. Flow sensors can detect leaks, blockages, pipe breaks, and variations in liquid content caused by pollution or contamination. Flow sensors are classified into two types:

- Contact flow sensors and
- Non-contact flow sensors.

Contact flow sensors are employed in situations where it is not expected that the liquid or gas being monitored would become blocked in the pipe when it comes into touch with the sensor's moving elements.

Non-contact flow sensors, on the other hand, have no moving components and are typically employed when the liquid or gas being monitored might otherwise be polluted or physically changed by coming into touch with moving parts.

NODEMCU



NodeMCU is a free and open-source LUA-based firmware for the ESP8266 wifi chip. NodeMCU firmware comes with the ESP8266 Development board/kit, i.e. NodeMCU Development board, as a result of investigating capability with the ESP8266 chip. v0.9 NodeMCU Dev Board/Kit v0.9 NodeMCU Development Board/Kit (Version1) Because NodeMCU is an open-source platform, its hardware design is available for editing, modification, and building. The ESP8266 wifi enabled chip is used in the NodeMCU Dev Kit/board. The Espressif Systems ESP8266 is a low-cost Wi-Fi chip that supports the TCP/IP protocol. The ESP8266 WiFi Module has further information about the ESP8266. Version2 (V2) of the NodeMCU Dev Kit is available, i.e. NodeMCU Development Board v1.0 (Version2), which typically comes in black colored PCB.

NodeMCU Development Boards provides further information about the market's NodeMCU Boards. NodeMCU Dev Kit contains Analog (A0) and Digital (D0-D8) pins similar to Arduino. It supports serial communication

protocols such as UART, SPI, I2C, and others. We may link it to serial devices as I2C equipped LCD displays, Magnetometer HMC5883, MPU-6050 Gyro meter + Accelerometer, RTC chips, GPS modules, touch screen displays, SD cards, and so on using such serial protocols. The NodeMCU Development board has wifi, analog and digital pins, and serial connection protocols. To begin utilizing NodeMCU for IoT applications, we must first understand how to write/download NodeMCU firmware on NodeMCU Development Boards.

7.6. LCD

LCD 16*2 stands for Liquid Crystal Display, which is a flat panel display technology used in computer monitors and Televisions, smartphones, tablets, mobile devices, and so forth. Both LCD and CRT screens appear identical, however their functionality is distinct. Instead of electron diffraction as in a glass display, a liquid crystal display features a backlight that illuminates each pixel in a rectangular network. Every pixel has a blue, red, and green sub-pixel that may be toggled ON/OFF. When all of these pixels are deactivated, it appears black; when all of the sub-pixels are enabled, it appears white. Several color combinations may be achieved by varying the brightness of each light.

PIN CONFIGRATION

- Pin1 (Ground): This pin connects the ground terminal.
- Pin2 (+5 Volt): This pin provides a +5V supply to the LCD
- Pin3 (VE): This pin selects the contrast of the LCD.
- Pin4 (Register Select): This pin is used to connect a data pin of an MCU & gets either 1 or 0. Here, data mode = 0 and command mode =1.
- Pin5 (Read & Write): This pin is used to read/write data.
- Pin6 (Enable): This enables the pin must be high to perform the Read/Write procedure. This pin is connected to the data pin of the microcontroller to be held high constantly.
- Pin7 (Data Pin): The data pins are from 0-7 which are connected through the microcontroller for data transmission. The LCD module can also work on the 4-bit mode through working on pins 1, 2, 3 & other pins are free.
- Pin8 – Data Pin 1
- Pin9 – Data Pin 2
- Pin10 – Data Pin 3
- Pin11 – Data Pin 4

- Pin12 – Data Pin 5
- Pin13 – Data Pin 6
- Pin14 – Data Pin 7
- Pin15 (LED Positive): This is a +Ve terminal of the backlight LED of the display & it is connected to +5V to activate the LED backlight.
- Pin16 (LED Negative): This is a -Ve terminal of a backlight LED of the display & it is connected to the GND terminal to activate the LED backlight.

BUZZER

A beeper or buzzer is an electromechanical, piezoelectric, or mechanical type of auditory signaling device. The primary function of this is to transform the audio signal to sound. In general, it is powered by DC voltage and is utilized in timers, alarm devices, printers, alarms, computers, and so on. It may make various sounds such as alert, music, bell, and siren according on the design. The buzzer's pin arrangement is illustrated below. It has two pins, one positive and one negative. The '+' sign or a longer terminal represents the positive terminal of this. The positive terminal is supplied by 6 volts, while the negative terminal is represented by the '-'symbol or short terminal and is linked to the GND terminal.

CONCLUSION

This inquiry exposes and analyzes fuel management system challenges and how to solve them using an automated electronic system. The article discusses both the hardware and software components of the system.This information sent to the IOT.

Using IOT technology and the ATMEGA328P, this is a novel technique of building and deploying a low-cost circuit to detect fuel theft attempts. There is no question that in the future, every vehiclecwill be outfitted with this one-of-a-kind kit. The proposed plan will assist us in resolving the fuel theft issue. As a result, larcenists will be unable to steal the gasoline or car by any means, and it gives total protection. A digital fuel meter is used to prevent fuel theft and to indicate the amount of fuel in the tank. 8.**ADVANTAGES:**

- The major advantage of this idea is that it prevents fuel theft. By supplying the buzzer, we can effectively prevent fuel theft.
- This technique is suitable to all types of vehicles, such as cars and motorcycles.

- This system appears to be tiny and compact, and it is readily put on automobiles. Customers cannot be duped by fueling stations.

9.APPLICATIONS

- It may be used with any sort of vehicle. This may be installed in transit buses to detect petrol theft.
- This principle may be applied to a variety of sectors or businesses.

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