Automated Water Meter Reading System

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Abstract - The Internet of things (IoT) is the inter-networking of bodily gadgets, vehicles (additionally called linked gadgets and clever gadgets), buildings, and different objects embedded with electronics, software, sensors, actuators, and community connectivity which allow those gadgets to accumulate and alternate data. It turned into important to take gain of to be had technology to serve human. Water is one of the primary elements of the lifestyles for the human; it needs to be explanation of intake. Automatic meter studying facilitates within side the explanation and distribution of water intake for person every in step with his need. The proposed gadget may be very correct within side the extraction and calculation of bills. It permits the water enterprise to far flung manage for the water meter in patron premises. The gadget makes use of WiFi community to attach water meter with Water Company. An Arduino micro-controller makes use of as manage basis, its issued suitable command in step with the enter readings.

1.INTRODUCTION

Automatic water meter studying is the generation of mechanically gathering intake, diagnostic, and standing information from water meter gadgets and shifting that information to a imperative database for billing and analyzing. This generation specifically saves software companies the cost of periodic journeys to every bodily area to examine a meter. Another benefit is that billing may be primarily based totally on close to real-time intake in place of on estimates primarily based totally on beyond or anticipated intake. these well-timed facts coupled with evaluation can assist each software companies and customer's higher manage the use and manufacturing of water intake.

2. PROPOSED SYSTEM

The proposed paintings on this paper ambitions at the layout and implementation version of water billing and control component in India. It to assist the water carrier carriers to display the meter readings from the location. A excessive percent of water is misplaced because of incorrect control. The incorrect utilization of water ought to be solved via way of means of digital means, with none human interplay in an effort to paintings with transparency and prevent. The reason of this paintings is to offer an implementation method for water intake and controlling which lets in consumer to be detected at a far-off location. This layout integrates powerful answers for issues confronted via way of means of India's water distribution device along with incorrect water intake pipe line fault leakage. It consists of micro-controller primarily based totally embedded era and wi-fi conversation technique to discover the water intake. Moreover, accumulating the meter readings for billing techniques from all customers is a tough and time ingesting venture which calls for an exquisite wide variety of labors.
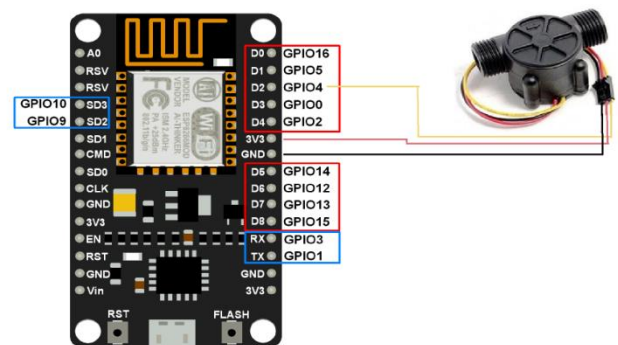

Fig -1: Circuit Diagram

3. OBJECTIVE AND MOTIVATION

Automatic water meter analyzing is a generation that routinely collects intake, diagnostic, , and standing records from the water meter and transmits those records to the central database for billing and analysis. This generation essentially lets in the software organization to make repeated journeys for every people. The bodily place of the meter analyzing. Another gain is that billing may be primarily based totally on almost real-time intake in place of on beyond or expected intake and manufacturing estimates.

4. System Architecture

4.1 Development Tools

Software Requirements:
Operating system: Windows XP or higher
Technology Used: Cloud Computing and IOT
 IDE: Arduino IDE
lang used for database: PHP Server: Apache (xampp Server) Server.

Hardware Requirements
Processor: intel core i3
Motherboard: Genuine Intel
RAM: Min 1 GB
Hard Disk: 80 GB
Electronics: Flow sensor, Node MCU Module, Relay, Solenoid valve, Power supply.

4.2 Modules

Flow Sensor:

Fig -2: Flow Sensor

Flow meters have proven excellent devices for measuring water flow, and now it is very easy to build a water management system using the renowned water flow sensor YF-S201. This sensor sits in line with the water line and contains a pinwheel sensor to measure how much water has moved through it. There is an integrated magnetic Hall-Effect sensor that outputs an electrical pulse with every revolution. After the text edit has been completed, the paper is ready for the template. Duplicate the template file by using the Save As command, and use the naming convention prescribed by your conference for the name of your paper. In this newly created file, highlight all of the contents and import your prepared text file. You are now ready to style your paper.
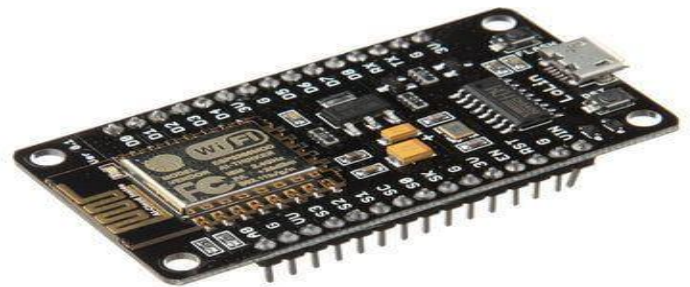
Node MCU:

Fig -3: Node MCU

Node MCU is Associate in Nursing open provide IoT platform. It consists of computer code that runs at the ESP8266 Wi-Fi SoC from express if Systems, and hardware that's whole} totally at the ESP-12 module. The term" Node MCU" through default refers back to the firmware rather than the event kits. The firmware makes use of the Lua scripting language. it's primarily based totally at the eLua project, and created on the Express if Non-OS SDK for ESP8266. It makes use of the many open supply projects, as well as lua-cjson and spiffs.

Solenoid Valve:

Fig -4: Solenoid Valve

In the case of a generally closed (fail-secure closed) solenoid valve whilst 12 volts is carried out the solenoid valve opens permitting waft. When the 12 volts are eliminated from the solenoid valve then the valve will routinely near and save you waft alongside the pipe. For a generally open solenoid valve then the other is true, i.e. the solenoid valve fail-secure function is open and whilst energy (12v) is carried out the solenoid valve will energy near. 12 Volt solenoid valves are commonly found.
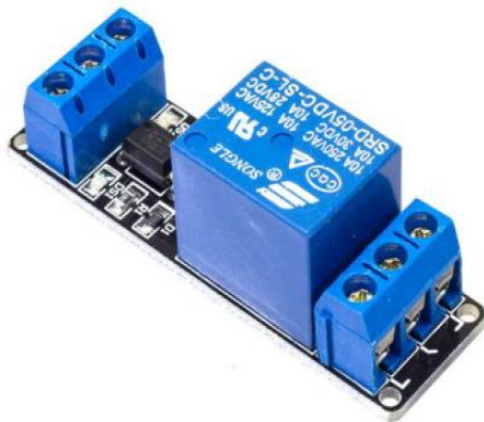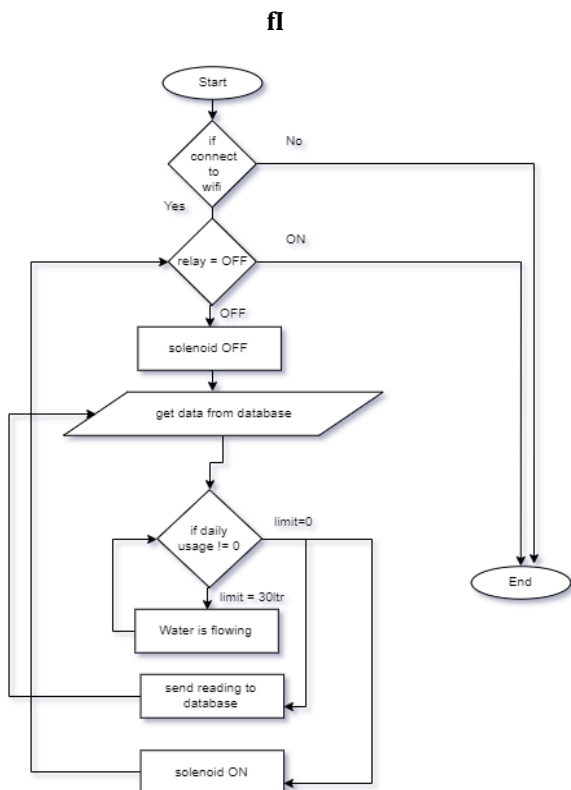
Relay:

Fig -4: Relay

Relay is an electromechanical tool that makes use of an electric powered contemporary to open or near the contacts of a switch. The single-channel relay module is a great deal greater than only a simple relay, it accommodates of additives that make switching and connection less difficult and act as signs to expose if the module is powered and if the relay is energetic or not.

5. FLOW GRAPH:

A flow chart could be a diagram that depicts a process, system or pc algorithm. they're wide employed in multiple fields to document, study, plan, improve and communicate typically complicated processes in clear, easy-to-understand diagrams. Flowcharts, generally spelled as flow charts, use rectangles, ovals, diamonds and doubtless various alternative shapes to outline the sort of step, together with connecting arrows to define flow and sequence. they'll vary from simple, hand-drawn charts to comprehensive computer-drawn diagrams depiction multiple steps and routes. If we tend to think about all the assorted styles of flowcharts, they are one amongst the most common diagrams on the planet, utilized by each technical and non-technical folks in various fields.

6. CONCLUSION:

Water each day it turns into greater scarce because of weather and growing temperature, and use it unwisely, billing gadget the usage of Automatic water Meter analyzing assist to preserved and explanation intake it. Automatic water Meter analyzing is one approach analyzing and processing information routinely with pc and communication. The improvement of automatic water meter analyzing gadget applied wi-fi era the usage of WiFi module gadget for information transmission changed into proven. In the existing paintings wi-fi meter analyzing gadget is designed to degree the quantity of water used and to close down the electricity deliver remotely whenever the customer did now no longer renew the acquisition of water. The deployment of the proposed gadget makes use of the present WiFi network, wherein the water meter gadget can ship its readings at once to a server software the usage of a WiFi the system of tracking water go with the drift rate, transmitting the usage, calculating the invoice etc. is thru pre-programmed Arduino controller. Automatic water Meter analyzing avoids the human intervention, gives green meter analyzing, keep away from the billing Mistakes and decrease the preservation cost. It shows the corresponding records on LCD for consumer notification.

7. FUTURE SCOPE

Customers might be capable of screen their water utilization and may appearance over to benefit and lessen use of water to lessen each economic in addition to environmental loses. User might be capable of pay on the premise of pay as you move schema. water ingesting utilization can be reduced.

8. REFERENCES

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