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Intelligent Water Regulation Using IOT.

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***Abstract*— In urban areas the water supply to residence and commercial establishments are provided at a fixed flow rate. There are incidents of excess water drawn by certain customers/users i.e. water will be released unofficially which is considered as water theft. In this project it is proposed to develop an embedded based remote water monitoring and theft prevention system by taking the data of water supply at the consumer/user end.**

The overall objective of a distribution system is to deliver wholesome water to the consumer at particular area and in sufficient quantity and achieve continuity and maximum coverage at affordable cost. To attain this objective the organization has to evolve operating procedures to ensure that the system can be operated satisfactorily, function efficiently and continuously as far as possible at lowest cost. Here we are using ARDUINO UNO as our controller and also few sensors are arranged to detect the level of water in that particular tank. When tank level is get full. Automatically through relay water motor will get off. Temp sensor is used to monitor the temp of water. This all operations will be done through android app. firstly clean the tank after that send the message like tank clean. This project uses regulated 5V, 500mA power supply. 7805 three terminal voltage regulator is used for voltage regulation. Bridge type full wave rectifier is used to rectify the ac output of secondary of 230/12V step down transformer.

Keywords— Distributed Systems,ARDUINO UNO ,EMBEDDED SYSTEM,LEVEL SENSOR,TEMP SENSOR, Security and reliability issues in distributed applications

Introduction

With the continuous economic growth, the water demand of enterprises is also increasing. The monitoring of water resource for these enterprises can prevent the occurrence of stealing water and leaking water effectively. Therefore, the monitoring system of urban water supply has aroused extensive attention in recent years. Urban water supply networks form the link between drinking water supply and drinking water consumers. These large-scale networks are vital for the survival of urban life, for maintaining a healthy level of economic development, and for the continuous operation of factories and hospitals. In world, urban water supply systems are public enterprises, usually part of a local government, and the recent increased interest in privatizing public enterprises has not led to reforms of water systems. Nevertheless, in about 50 cities in the developing world, the water system either has been privatized or franchised to a non-governmental entity for its operation and maintenance.

I. Problem Statement

Water leakage issues – it might sounds easy and harmless. But in reality, you cannot take the water leakage issues as the easiest one. Since, water leakage might bring tons of health issues to your home. Water can be leaked due to many reasons like overflow of tank, pipe breakage, damage of water tank and more. In such cases, you might encounter the presence of water in your home and garden. If your rooms are drenched with water, how could you stay comfortable? Of course, you could not stay there. This is where you should consider using water leakage detection system. This is a PROJECT we are implementing the sensor is used through which will effectively sense or diagnose the area of water leakage. By that, you can seal the leakage right after. Water leakage is not something that will make your home drenched in water. Rather, it will

cause pests and rats problem. Since, these insects will grow where the water is present more. So this project is very useful to detect the leakage of water and over flow in a pipeline.

II. LITERATURE SURVEY

1.AUTOMATED HOUSEHOLD WATER SUPPLY MONITORING & BILLINGAUTHOR:- TANVIR RAHMAN TANZIA AHMED IBTEAZ HASAN MD. ASHRAFUL ALAM

The paper describes our research in household water supply monitoring & billing. Arduino mega 2560 was utilized in this project along with double relay for automation of the switching feature and water level sensors and water flow sensors was used to detect the level and the amount of water used respectively. The feature of this project is automatic switching of the DC water motor based on the level of water present in reservoir along with display of the amount of water used in each block. For the display, an LCD Alphanumeric display was used. We have also included a set capacity of usage for each floor and billing according to usage.

2. Smart Water Management Using IOT

AUTHOR:- Sayali Wadekar, Vinayak Vakare, Ramratan Prajapati, Shivam Yadav, Vijaypal Yadav

This paper presents an IOT device which help to manage and plan the usage of water. This system can be easily installed in residential societies. Sensors placed in the tank which continuously informs the water level at the current time. This information will be updated on the cloud and using an android application, user can visualize the water level on a Smartphone anywhere that is connected to Internet. According to the level of water in the tank the motor functioning will be automatically controlled, at low level of water motor will automatically turn on and when tank is about to fill up it will cut off.

3. Cloud Based Data Analysis and Monitoring of Smart Multi-level Irrigation System Using IoT.

Authors: Sanket Salvi, Pramod Jain S.A, Sanjay H.A

India is one of the countries with scarcest water resources in the world; due to poor utilization of the water resources, some parts of our country are facing the risk of draught. In order to conserve existing water resources and efficiently manage it for agriculture, recent advances in technology can be used. Internet of Things is one of such new technology which can help our country to reduce the overall impact of faulty water management in agriculture sector. In this paper, we have designed and developed a new framework for multilevel farming in urban area where cultivation space is limited. We have provided local node for each level with its individual local decision making system, sensors and actuators which is customized to the selected crop. These local nodes communicate to a centralized node via wireless communication. This centralized node is connected to a Cloud Server where the received data will be stored and processed. Cloud based data analysis and monitoring allows the user to analyze and monitor the irrigation system through internet providing ubiquitous access. Our Experimental results show reduced water consumption and better power utilization.

4. Smart Water Dripping System for Agriculture/ Farming.

Authors: Priyanka Padalalu, Sonal Mahajan, Kartikee Dabir, Sushmita Mitkar & Deepali Javale.

Water scarcity has been a big issue for agriculture. This proposed idea is beneficial to the farmers to irrigate the farms efficiently using an automated irrigation system based on soil temperature, moisture and pH. Respective sensors are used to find the soil water content level and based on this microcontroller drives the servo motor and pump. Irrigation status is updated to the database using PC. This technique works by installing sensors in the field to monitor the soil temperature, moisture and type of soil, which transmits the data to the microcontroller for estimation of accurate quantity of water as per the requirements. The collected data is updated from time to time to the server and can be accessed via an Android app. The subsequent watering of plants can be controlled using the aforementioned app. depending upon the type of soil and crop, the fertilizers are suggested by applying Naïve Bayes algorithm on the database. The estimated amount of rain is predicted using weather forecasting using Web scraper and the crops are watered accordingly, i.e., is a heavy rainfall is predicted then the system will automatically reduce the water supplied to the crops.

5.Automated Drinking Water Supply System and Theft Identification Using Embedded Technology.

Authors: Sagar Khole, Tushar Kolape, Mrs. A. P. More

In order to implement the proposed water supply system, each consumer should be provided with an embedded based water flow monitoring system consisting of a microcontroller to record the flow rate using a flow sensor and to transmit the same to a remote monitoring station using wireless transmitter and it is also provided with an electrically operated solenoid valve to supply water to the consumers. The valve turns on/off to stop the water supply whenever the flow rate exceeds a predefined limit. The solenoid valves are also controlled using real time clock to control flow of water accordingly for a fixed duration of time. It is proposed to employ a GSM modem

for wireless communication so that the information can be passed to particular responsible officer's cell phone for immediate action.

III. SYSTEM ARCHITECTURE OVERVIEW

In Existing work some other automated water level monitoring systems are also present, but so far most of the methods have some shortcomings in practice.
We tried to overcome these problems and implemented an efficient automated water level monitoring and controlling system. Our intension of this research work was to establish a flexible, economical, easy configurable and most importantly, a portable system which can solve our water wastage problem. In this project, we introduce the project of water level monitoring as well as controlling with IOT and android application.

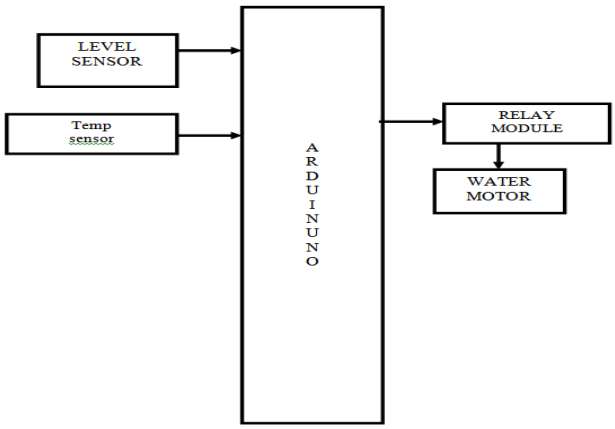


Fig: system Architecture

A. Related Work

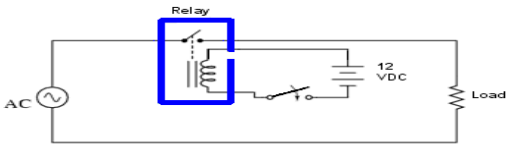
Componant information:

1. **Adriano Micro controller:**

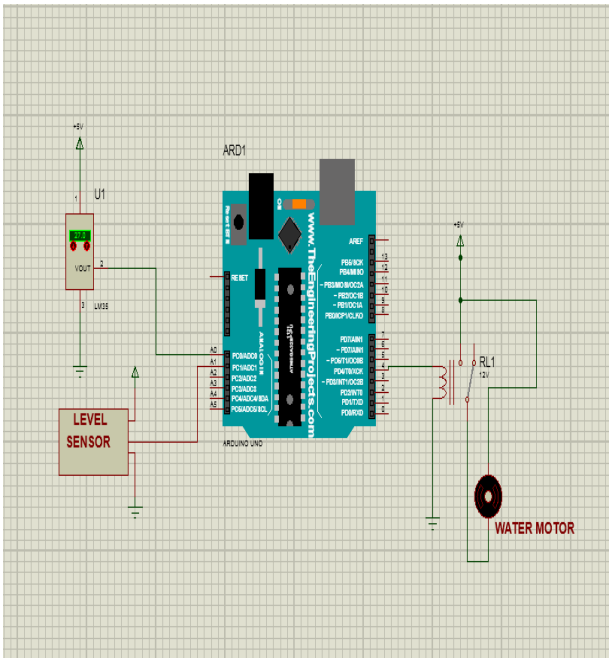
Arduino is an open-source electronics platform based on easy-to-use hardware and software. Arduino boards are able to read inputs - light on a sensor, a finger on a button, or a Twitter message - and turn it into an output - activating a motor, turning on an LED, publishing something online. You can tell your board what to do by sending a set of instructions to the microcontroller on the board. To do so you use the Arduino programming language (based on Wiring), and the Arduino Software (IDE), based on Processing.

2. Relay:

All relays contain a sensing unit, the electric coil, which is powered by AC or DC current. When the applied current or voltage exceeds a threshold value, the coil activates the armature, which operates either to close the open contacts or to open the closed contacts. When a power is supplied to the coil, it generates a magnetic force that actuates the switch mechanism. The magnetic force is, in effect, relaying the action from one circuit to another. The first circuit is called the control circuit; the second is called the load circuit.



Simulation Diagram:



Conclusion

Water is one of the most important basic needs for all living beings. But unfortunately a huge amount of water is being wasted because of uncontrolled use and exploitation of water resource. We tried to overcome these problems and implemented an efficient automated water level monitoring and controlling system. Our intension of this research work was to establish a flexible, economical, easy configurable and most importantly, a portable system which can solve our water wastage problem.

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