Water Level Monitoring using Blynk Application in IoT

C.Navaneethan, S.Meenatchi

Abstract: One of the Precious and important resource in the earth maybe water. Now a days people need everything happen smarter other than olden days techniques used. In this paper Internet of Things (IOT) Based on the concept that to define energy conservation in tank level water monitoring system(sense and monitor). The Main objective is to have a sensor which detects the level of water and it should notify the user about the water level which is currently available in the tank. The Ultrasonic Sensor is placed at the top of the tank in which we will measure the level of water and the if the distance of the water from the sensor gets increased, it means that the water in the tank gets low and finally after reaching to an extent the system should notify a warning message to the user. The Major requirement would be Ultrasonic sensor which senses level of water (in distance)from the top of the tank to the bottom of the tank. The sensor is connected to the system using the Wi-Fi of NODE MCU (ESP8266) .The Blynk library is installed and connected in the arduino. The Blynk application is used to get the values and the notification send to the mobile for the user purpose. The user can get notified that the tank is empty and can take further steps to fill the water in the tank.

Keywords: Sensor(Ultrasonic Sensor),ESP8266-Node MCU, Blynk Application, Tank water level, Wi-Fi

I. INTRODUCTION

As we are all aware about water resources significant as well as consequences (if water Scarcity means). Knowingly or unknowingly wasting water by manually (more usage) or leakages or unnecessarily opened tap in home tank this are some of the example in which day-to-day life happening. With this wasting water level we are losing our precious water resources. To avoid all those current technologies which will applicable to reduce in the sense conserve the energy in future. Here current technology Internet of things (IOT) Involve and to conserve the energy. Because Internet of things is defined as "Everyday things get connected for smarter tomorrow". With the help of IOT trends we can conserve the energy and can achieve through the embedded based conservation techniques in IOT.

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1.1 Scope of the Paper

Now a days Smart phone users increase around the world .In order to make this efficient evolution to smart recent technology called IOT helps to make more efficient.This project gives the idea to the users to connect IOT technology with Smart Phone.This implies Water level monitoring done with the help of Smart phone in the sense Android Application.

1.2 Objective of the work

As a Smart technology with quality implications gives the better result when compare with Existing System.This work about the water level sensing inside the tank and connect it to Node Mcu(which holds wi-fi module to send message)to send status of the tank to Blynk application through Ardunio ide code.This givesidea that things get connected over network make smarter change for tomorrow.These days everything based on the smart phone and its applications.So this project would be useful in upcoming generations.

II. RELATED WORK

In this paper water level detection is done by the ultrasonic sensor,when the water level reaches below a threshold value which is specified by the user,the senser notifies the ardunio uno.data uploaded to the Cloud storage and android app get the notification[1]. In this paper based on water wastage prevention and making it as automatic one to control over wastage.Main aim of this paper is making automatic control to prevent water wastage with help of embedded components using wi-fi module to send data[2]

In this paper based on water level monitoring based on GSM technology and pump control system.the Ultrasonic sensor fixed and measure the distance send message to the user about status of water level This Paper aimed sense level of water with the help of sensor and GSM Technology[3].

In this paper based on two major components: Microcontroller and Zigbee module for wireless sensor networks. Here system observe the water quality using Microcontroller as well as Zigbee module.Implemented in Raspberry pi which creates gateway and cloud technology.it makes system can monitor the data anywhere in the world.Since it is a

Internet based system which supports web application also[4]

In this paper implemented based on real time scenario. This paper give solution is that low cost integrate sensory which permit to observe the water quality. with the help of internet data collected ,transferred to cloud and this data received by consumer owned terminal[5]

In this paper based on design and develop real time water level monitoring and its quality.with the help of more than one sensor values sensed and send it to Raspberry pi which send data to the cloud.this data can see anywhere in the world as well as Since it is a Internet based system which supports web application also[6]

III. PROPOSED SYSTEM

The Aim of the paper is to design system in which monitors the level of water and notifies the user if the level becomes too low. The ultrasonic sensor measures the distance between the tank's top and the water to notify the user when the water is reduced to a certain limit. The project starts with the connection of components. That is the ultrasonic sensor with the NODE MCU.

After the connection the components are connected to the software. The next thing is the requirement of the specified board in the software. The code can only be executed and uploaded if the com port and the board are correctly set. The arduino software just combines the components with the code and the blynk application which is the mobile based application to notify the user. The code in the software also requires blynk libraries to get connected The Major requirement would be Ultrasonic sensor which senses level of water (in distance)from the top of the tank to the bottom of the tank The sensor is connected to the system using the Wifi of NODE MCU (ESP8266) The blynk library is installed and connected in the arduino. The blynk application is used to get the values and the notification in the mobile of the user. The user can get notified that the tank is empty and can take further steps to fill the water in the tank. After the blynk application received the values from the sensor it will alert the user to take further steps dvantages of Proposed System:

- This project is cheaper than the existing system project. it requires simple components.
- Simpler solution when compare with existing system for water level monitoring based android application.
- Very accurate maintenance
- Reduces energy.
- This system used Blynk application to indicate the water level.

System Architecture:
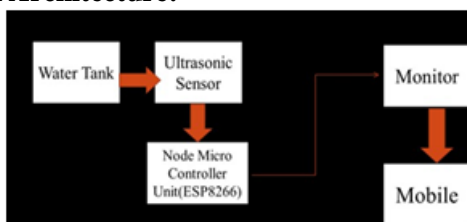
IV. IMPLEMENTATION DETAILS

 This system will follow the below Algorithm:
- The ultrasonic sensor measures the distance between the tank's top and the water to notify the user when the water is reduced to a certain limit.
- The project starts with the connection of components. That is the ultrasonic sensor with the Node MCU. After the connection the components are connected to the software.
- The next thing is the requirement of the specified board in the software. The code can only be executed and

uploaded if the com port and the board are correctly set.
- The Arduino software just combines the components with the code and the blynk application which is the mobile based application to notify the user. The code in the software also requires blynk libraries to get connected.
- The Major requirement would be Ultrasonic sensor which senses level of water (in distance)from the top of the tank to the bottom ofthe tank.The sensor is connected to the system using the Wifi of NODE MCU(ESP8266) The blynk library is installed and connected in the arduino.
- The blynk application is used to get the values and the notification in the mobile of the user.
- The user can get notified that the tank is empty and can take further steps to fill the water in the tank.
- After the blynk application received the values from the sensor it will alert the user to take further steps whenever the water level exceeds given limit.

4.1 System Flowchart
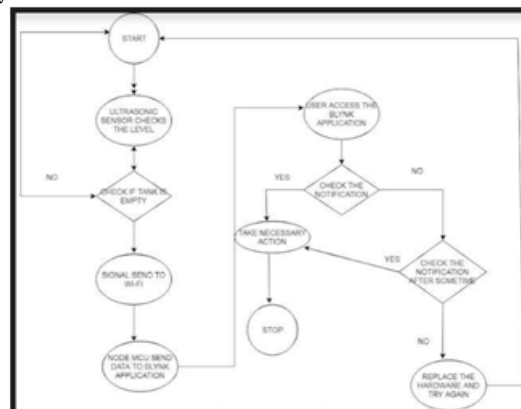
4.2 Coding Implementation

```
#define BLYNK_PRINT Serial

#include <ESP8266WiFi.h>

#include

<BlynkSimpleEsp8266.h>

// You should get Auth Token in the Blynk App.

// Go to the Project Settings (nut icon).

char auth[] = "80991ca78d7d43c39a3f9f3713f54bde";

// Your WiFi credentials.

// Set password to "" for open

networks. char ssid[] = "gpch";

char pass[] =

"1234567890"; #define

TRIGGERPIN D1 #define

ECHOPIN D2 WidgetLCD

lcd(V1);

void setup()

{

// Debug console
```

1677

```
Serial.begin(9600)
;
Serial.begin(9600)
;
pinMode(TRIGGERPIN,
OUTPUT); pinMode(ECHOPIN,
INPUT);
delay(1000);
Blynk.begin(auth, ssid,
pass); lcd.clear();
lcd.print(0, 0, "Distance in cm");
// You can also specify server:
//Blynk.begin(auth, ssid, pass, "blynk-cloud.com", 8442);
 //Blynk.begin(auth, ssid, pass, IPAddress(192,168,1,100),
                          8442);
                       }
}
else if(distance<=15)
{
Blynk.email("prasannaravi1818@gmail.com","WATE
R LEVEL MONITORING","Tank is full..Right
Now"); Blynk.notify("water tank is full");
}
Blynk.run();
}
```

2. Applications:

- ❖ It helps to measure level of fuel which is currently available in motor vehicles.
- ❖ This kind of application will help institutions like Schools,Colleges…

V.   RESULT

```
void loop()
{
lcd.clear();
lcd.print(0, 0, "Distance in cm");
digitalWrite(TRIGGERPIN, LOW); delay
Microseconds(3);
digitalWrite(TRIGGERPIN, HIGH);
delayMicroseconds(1000);
digitalWrite(TRIGGERPIN, LOW);
long duration = pulseIn(ECHOPIN, HIGH); long
```

```
distance = (duration/2) / 29.1;
Serial.print(distance);
Serial.println("Cm");
lcd.print(7, 1, distance);
if(distance>=150)
{
Blynk.email("prasannaravi1818@gmail.com","WATER
LEVEL MONITORING","Tank is empty..Right Now");
Blynk.notify("water tank is empty");
```
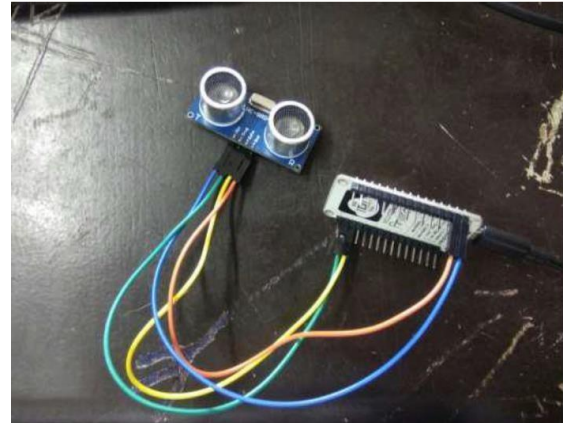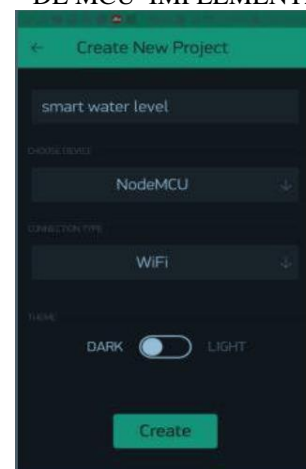

FIGURE: ULTRASONIC SENSOR + NODE MCU IMPLEMENTATION

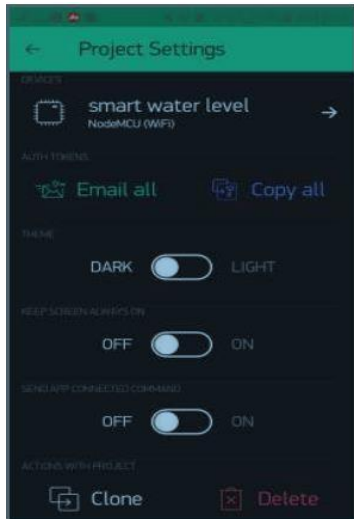FIGURE-BLYNK APPLICATION   INTERFACE

FIGURE- APPLICATION SETTINGS

FIGURE- FINAL OUTPUT –SHOWS THE WATER
LEVEL IN CM

VI. CONCLUSION

Thus the IOT enabled water level monitoring system is done using the components and the notification is sent using blynk application. The system can be further developed with more sensors and can be extended. With the help of sensors and hardware components we can conserve the water in the sense control the unnecessary water wasting and saving the electricity also. By giving alert message to the user (mobile) about water level to conserve the energy. Moreover this particular application useful for Home,Small scale industries. Finally, the paper based simple components implemented which make efficient, cost wise this is cost effective. Hence this paper gives the lyrealiable solution to the users.

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