**PROJECT TITLE: SMART WATER MANAGEMENT**

**NAME :** RAMALAKSHMI M

**REGNO : 953021106053**

**COLLEGE CODE : 9530**

**COLLEGE NAME :** ST.MOTHER THERESA ENGINEERING

COLLEGE

**TEAM NAME :** PROJ\_201032\_TEAM\_1

**GITHUB LINK :**

**PROBLEM  STATEMENT:**

Need of this project is to avoid wastage of water.Because sometimes people forget to off the motor when tank is full,because of that water get wasted.To avoid this problem this project came into picture.By using this water level indicator system we can monitor water level and consumption of water.

**OBJECTIVE:**

Water level indicator with monitoring will develop considering fulfillment of following objective:

kitchen system with actuator,level indicator for UV water purifie.Ladies hostel water tank with actuator ,water level indicator,monitoring using pump.To log data of water consumption in ladies hostel.To get alarm using GSM module whenever tank is full.

**COMPONENTS :**

Breadboard

Potentiometer

Diode

Resistor

Aurdino

LCD

Battery

DC Motor

Ultrasonic Sensor

**PROCEDURE :**

Working of this project is very simple I have used Ultrasonic sensor module which sends the sound waves in the water tank and detects reflection of sound waves that is ECHO. First of all I need to trigger the ultrasonic sensor module to transmit signal by using Arduino and then wait to receive ECHO. Arduino reads the time between triggering and received ECHO.  We know that speed of sound is around 340 m/s. so we can calculate distance by using given formula:

Distance= (travel time/2) \* speed of sound

Where speed of sound is approximately 340m per second.

By using this methods we get distance from sensor to water surface. After it we need to calculate water level.

Now we need to calculate the total length of water tank. As we know the length of water tank then we can calculate the water level by subtracting resulting distance coming from ultrasonic from total length of tank. And we will get the water level distance. Now we can convert this water level in to the percent of water, and can display it on LCD.

CODE:

// include the library code:

#include <LiquidCrystal.h>

// initialize the library with the numbers of the interface pins

LiquidCrystal lcd(12, 11, 5, 4, 3, 2);

int cm = 0;

int pump = 8;

bool STOP\_pump = HIGH ;

bool RUN\_pump = LOW ;

void setup()

{

Serial.begin(9600);

pinMode(pump,OUTPUT);

lcd.begin(16, 2);

digitalWrite(pump,RUN\_pump);

}

void loop()

{

// measure the ping time in cm

cm = 0.01723 \* readUltrasonicDistance(7, 7);

// convert to inches by dividing by 2.54

int level = map(cm, 400 , 10, 0 , 100);

lcd.setCursor(0, 0);

lcd.print( "Tank Level");

lcd.setCursor(0, 1);

lcd.print(level);

lcd.setCursor(3, 1);

lcd.print("%");

if( level >=99){

digitalWrite(pump,STOP\_pump);

}

else if( level <95) {

digitalWrite(pump,RUN\_pump);

}

else {

digitalWrite(pump,STOP\_pump); // this is for safety in case.

}

}

long readUltrasonicDistance(int triggerPin, int echoPin)

{

pinMode(triggerPin, OUTPUT); // Clear the trigger

digitalWrite(triggerPin, LOW);

delayMicroseconds(2);

// Sets the trigger pin to HIGH state for 10 microseconds

digitalWrite(triggerPin, HIGH);

delayMicroseconds(10);

digitalWrite(triggerPin, LOW);

pinMode(echoPin, INPUT);

// Reads the echo pin, and returns the sound wave travel time in microseconds

return pulseIn(echoPin, HIGH);

}

SOFTWARE :

* **ARDUINO**

Arduino integrated development environment (ide) is an open source ide that allows users to write code and upload it to any arduino board. arduino ide is written in java and is compatible with windows, macos and linux operating systems.

**ADVANTAGES:**

Power saver.

Save money by using less electricity and water.

Sends an alert to let you know water is too high or too low.

Automatically adjusts water levels.

**APPLICATIONS:**

Can be used in factories, commercial complexes, apartments, home.

Fuel tank level gauging.

Automatically turn ON/OFF pumps .

Irrigation control .