# IOT BASED SYSTEM TO MEASURE WATER LEVEL IN TANK

AIM:

To design and develop IOT based system to measure the water level in the tank and give alert message to the users preventing overflow of water from tanks.

DESCRIPTION:

This Iot based system can be used to automatize the control of water level without human interference. This can also be used to gather information about the water level. To develop this system, we use ultrasonic sensor and rain sensor to monitor the water. Ultrasonic sensor is used to measure the level of water. Rain sensor is used to check if water is overflowing or not overflowing. We have a buzzer and led in the system which indicates whether the water is overflowing or not. We connect all these sensors to the raspberry pi3, raspberrypi3 is a tiny credit card size computer. Just add a keyboard, mouse, display, power supply, micro SD card with installed Linux Distribution and you'll have a fully fledged computer that can run applications from word processors and spreadsheets to games.

CIRCUIT DIAGRAM:
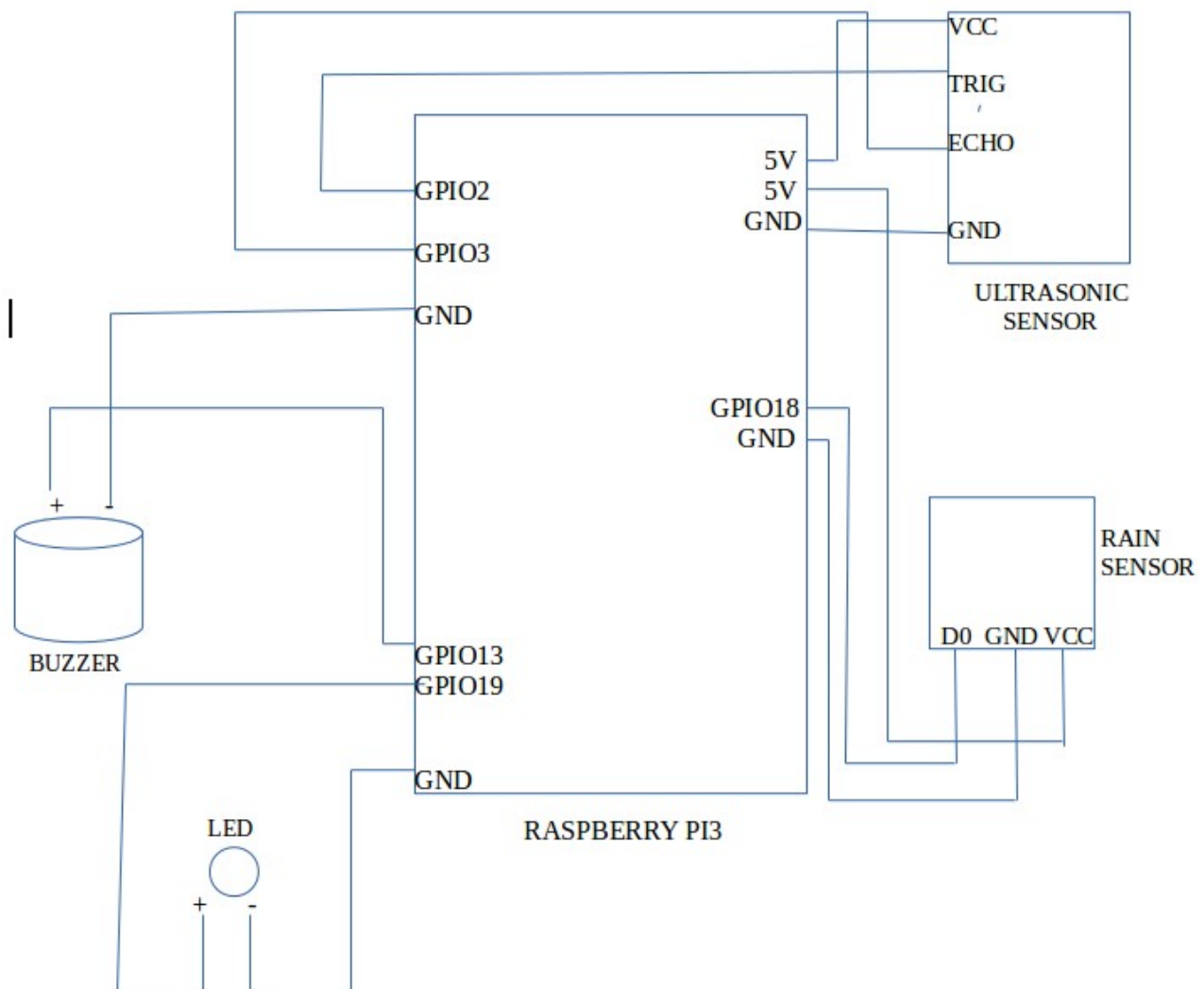
HARDWARE REQUIREMENTS:
- Raspberry pi3
- Power supply
- Ultrasonic sensor
- Rain sensor
- Buzzer
- VGA to HDMI Converter
- Jumper wires
- Resistors
- LED

SOFTWARE REQUIREMENTS:

- Raspbian Stretch OS

PYTHON LIBRARIES USED:

- Rpi, GPIO as GPIO (To access GPIO Pins of Raspberry Pi)
- Time library (For time delay)

CODE:

```
import RPi.GPIO as GPIO
from time import sleep
from gpiozero import Buzzer, InputDevice
import time
GPIO.setmode(GPIO.BCM)
GPIO.setup(2,GPIO.OUT)
GPIO.setup(3,GPIO.IN)
GPIO.setup(18,GPIO.IN)
GPIO.setup(19,GPIO.OUT,
GPIO.setup(26, GPIO.OUT,initial=GPIO.LOW)
TRIG=2
ECHO=3
GPIO.output(TRIG, False)
time.sleep(2)
def val():
        GPIO.output(TRIG, True)
        time.sleep(0.00001)
        GPIO.output(TRIG, False)
        while GPIO.input(ECHO)==0:
                pulse_start = time.time()
        while GPIO.input(ECHO)==1:
                pulse_end = time.time()
                pulse_duration = pulse_end – pulse_start
                distance = pulse_duration*17150
                distance = round(distance, 2)
        return distance
```

```
def loop():
        status = 1
        tmp = GPIO.input(18);
        if tmp != status:
                print("Water overflowing")GPIO.output(19,GPIO.HIGH)
                GPIO.output(26,GPIO.LOW)
        else:
                print("water not overflowing")
                GPIO.output(19,GPIO.LOW)
                GPIO.output(26,GPIO.HIGH)
                time.sleep(1)
        while True:
                 print("WATER LEVEL MONITORING SYSTEM")
                loop()
                x=val()
                print("LEVEL in the unit of Centimeters:")
                print (x)
                time.sleep(1)
```

OUTPUT:
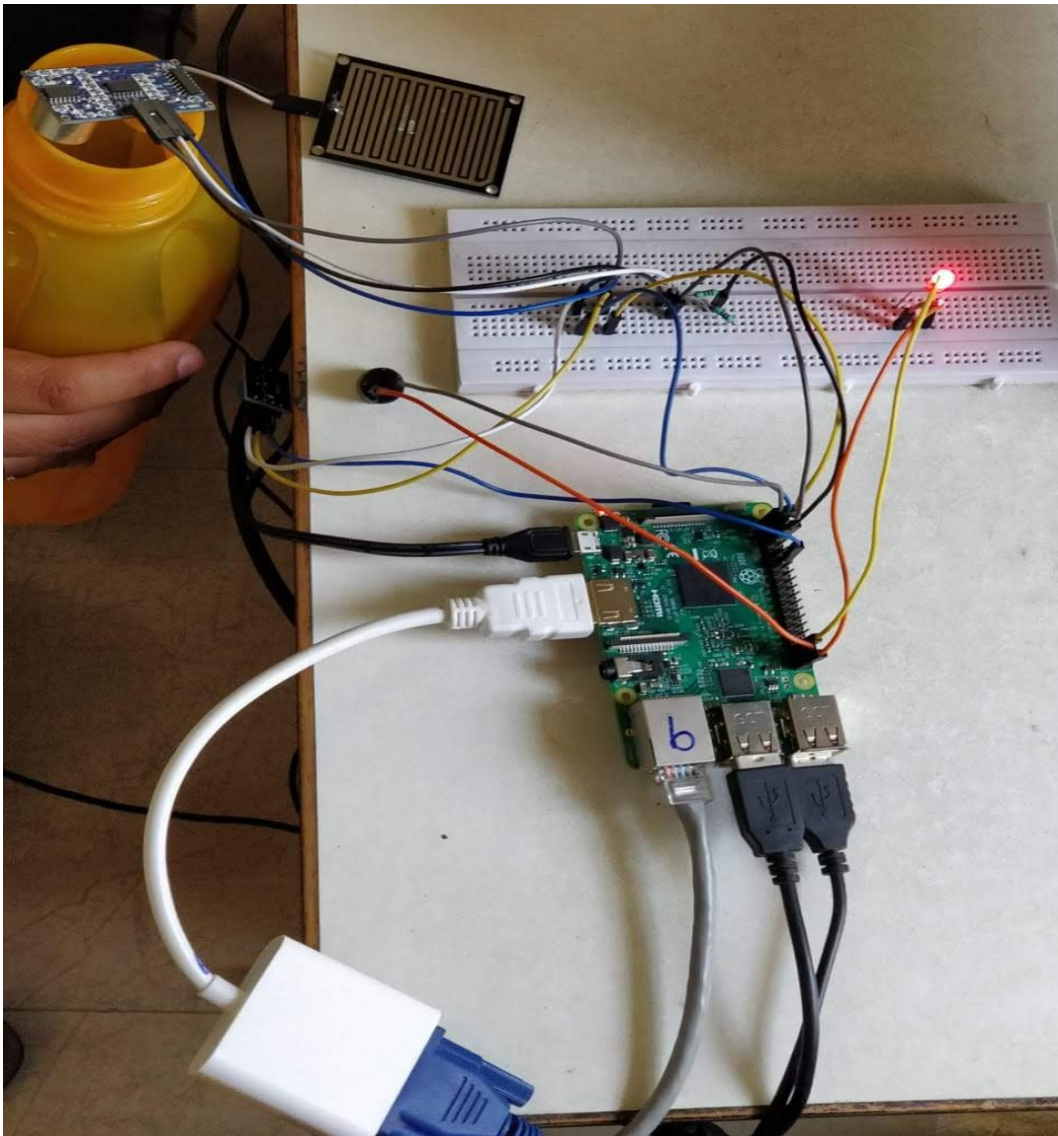
```
=============================== RESTART ===============================
>>> %Run fire.py
    WATER LEVEL MONITORING SYSTEM
    water not overflowing
    LEVEL in the unit of Centimeters:
    3.46
    WATER LEVEL MONITORING SYSTEM
    water not overflowing
    LEVEL in the unit of Centimeters:
    3.13
    WATER LEVEL MONITORING SYSTEM
    Water overflowing
    LEVEL in the unit of Centimeters:
    3.02
    WATER LEVEL MONITORING SYSTEM
    Water overflowing
    LEVEL in the unit of Centimeters:
    2.63
    WATER LEVEL MONITORING SYSTEM
    Water overflowing
    LEVEL in the unit of Centimeters:
    2.68
    WATER LEVEL MONITORING SYSTEM
    Water overflowing
    LEVEL in the unit of Centimeters:
    2.58
    WATER LEVEL MONITORING SYSTEM
    Water overflowing
    LEVEL in the unit of Centimeters:
    2.62
```

CONCLUSION:

Our project has used Ultrasonic sensor and rain sensor to detect and to measure the water level in the tank preventing overflow of water from tanks.