

FLOOD MONITORING SYSTEM USING IOT

PHASE 3

SENSOR DESIGN SIMULATION AND CODE

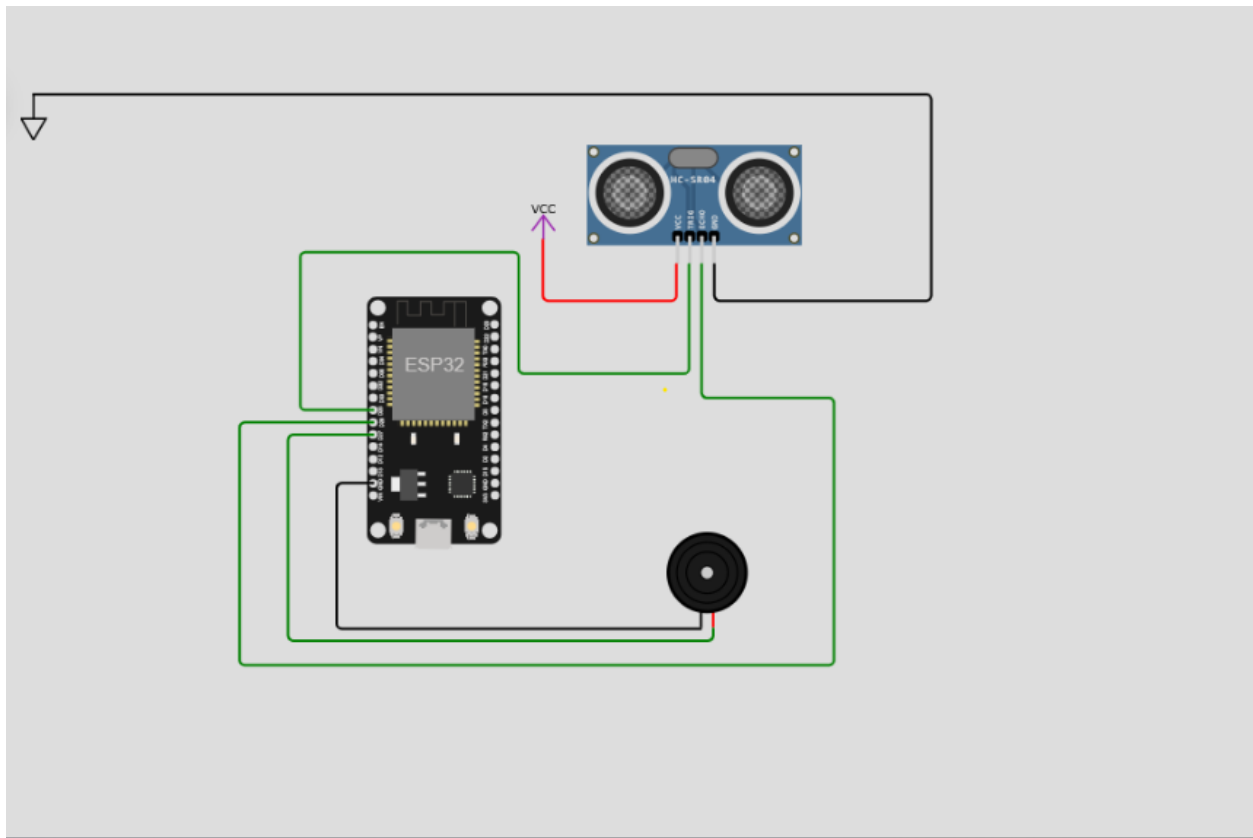
AIM:

To design and simulate water level monitoring sensor using ESP32 as an IoT Interface with python program.

COMPONENTS USED:

- SOFTWARE USED- WOKWI
- IoT DEVICE -ESP32
- SENSOR USED -Ultrasonic sensor
- Buzzer

CIRCUIT DESIGN:



CODE:

```
import machine
import time

# Define GPIO pin numbers
TRIG_PIN = 2 # GPIO2 for Trigger
ECHO_PIN = 4 # GPIO4 for Echo
BUZZER_PIN = 5 # GPIO5 for Buzzer
WATER_LEVEL_THRESHOLD = 30 # Adjust this value as needed (in
centimeters)

# Initialize GPIO pins
trig = machine.Pin(TRIG_PIN, machine.Pin.OUT)
echo = machine.Pin(ECHO_PIN, machine.Pin.IN)
buzzer = machine.Pin(BUZZER_PIN, machine.Pin.OUT)

while True:
    # Trigger the ultrasonic sensor
    trig.value(0)
    utime.sleep_us(2)
    trig.value(1)
    utime.sleep_us(10)
    trig.value(0)

    # Read the echo pulse duration
    duration = machine.time_pulse_us(echo, 1, 30000) # 30,000us (30ms)
    timeout

    # Convert the duration to distance (in centimeters)
    distance = duration / 58.0 # Speed of sound is approximately 343 m/s (34300
cm/s)

    print("Distance: {:.2f} cm".format(distance))

    # Check if the water level is below the threshold
    if distance < WATER_LEVEL_THRESHOLD:
```

```
# Water level is below the threshold, sound the buzzer
buzzer.value(1)
else:
    # Water level is above the threshold, turn off the buzzer
    buzzer.value(0)

utime.sleep(1) # Delay for 1 second to avoid continuous readings
```

OUTPUT:

