**FLOOD MONITORING SYSTEM USING IOT**

**PHASE 4**

**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 ; WEBSOCKET FOR COMMUNICATION

● IOT DEVICE -ESP32

● SENSOR USED -Ultrasonic sensor

● Buzzer

**CIRCUIT DIAGRAM:**



**PYTHON SCRIPT:**

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

**HTML SCRIPT:**

<!DOCTYPE html>

<html>

<head>

    <title>Water Level Monitoring Platform</title>

    <link rel="stylesheet" type="text/css" href="styles.css">

</head>

<body>

    <header>

        <h1>Water Level Monitoring Platform</h1>

    </header>

    <main>

        <div class="data">

            <h2>Water Level</h2>

            <p id="waterLevel">-- cm</p>

        </div>

        <div class="data">

            <h2>Status</h2>

            <p id="status">--</p>

        </div>

    </main>

    <footer>

        <button id="startButton">Start Monitoring</button>

        <button id="stopButton" disabled>Stop Monitoring</button>

    </footer>

    <script src="script.js"></script>

</body>

</html>

**OUTPUT: **