**PHASE 3**

**DEVELOPE MY PROJECT**

**ULTRASONIC SENSOR :**

Ultrasonic sensors are versatile devices that use sound waves at ultrasonic frequencies to detect and measure distances to objects. They have a wide range of applications, including:

**Level Sensing:** Ultrasonic sensors can be used to measure the level of liquid or solid materials in containers. This is valuable in industrial applications, such as monitoring the level of liquids in tanks or grains in silos.

**Liquid Level Measurement:** Ultrasonic sensors can be used to measure the level of liquid in open channels, like rivers or streams, for environmental monitoring or control of water resources.

**SIMULATION OF SENSOR:**

**Simulation link:** [https://wokwi.com/projects/370120579512492033](wokwi)

**PYTHON SCRIPT:**

import time

import machine

import dht

# Define GPIO pins

TRIG\_PIN = machine.Pin(2, machine.Pin.OUT)

ECHO\_PIN = machine.Pin(3, machine.Pin.IN)

BUZZER\_PIN = machine.Pin(4, machine.Pin.OUT)

def distance\_measurement():

# Trigger ultrasonic sensor

TRIG\_PIN.on()

time.sleep\_us(10)

TRIG\_PIN.off()

# Wait for echo to be HIGH (start time)

while not ECHO\_PIN.value():

pass

pulse\_start = time.ticks\_us()

# Wait for echo to be LOW (end time)

while ECHO\_PIN.value():

pass

pulse\_end = time.ticks\_us()

# Calculate distance

pulse\_duration = time.ticks\_diff(pulse\_end, pulse\_start)

distance = pulse\_duration / 58 # Speed of sound (343 m/s) divided by 2

return distance