IOT_Phase 3

DEVELOPMENT PART 1

To develop a python script on the IOT sensors to send real-time water consumption data to the data-sharing platform.

1) ESP32

```
import machine
import time

# Initialize the HC-SR04 sensor
trigger_pin = machine.Pin(14)
echo_pin = machine.Pin(13)

def read_distance():
# Trigger the sensor to measure distance
trigger_pin.on()
time.sleep_us(10)
trigger_pin.off()

# Measure the time for the echo pulse
while echo_pin.value() == 0:
pulse_start = time.ticks_us()

while echo_pin.value() == 1:
pulse_end = time.ticks_us()

# Calculate distance in centimeters
pulse_duration = time.ticks_diff(pulse_end, pulse_start)
distance = (pulse_duration * 0.0343) / 2

return distance

try:
while True:
# Read the water level from the HC-SR04 sensor
distance = read_distance()
print(f"Water Level: {distance} cm")
time.sleep(2)  # Read data every 2 seconds
except Exception as e:
print("Error:", str(e))
```

2) ULTRASONIC SENSOR:

```
import machine
import time

# Initialize the HC-SR04 sensor
trigger_pin = machine.Pin(14)
echo_pin = machine.Pin(13)
sensor = HCSR04(trigger_pin=trigger_pin, echo_pin=echo_pin)

try:
while True:
# Read the water level from the HC-SR04 sensor
distance = sensor.distance_cm()
print(f"Water Level: {distance} cm")
time.sleep(2)  # Read data every 2 seconds
except Exception as e:
print("Error:", str(e))
```

3)OLED:

```
from machine import Pin, I2C
import ssd1306

# ESP32 Pin assignment
i2c = I2C(0, scl=Pin(22), sda=Pin(21))

oled_width = 128
oled_height = 64
oled = ssd1306.SSD1306_I2C(oled_width, oled_height, i2c)

oled.text('Hello, Wokwi!', 10, 10)
oled.show()
```