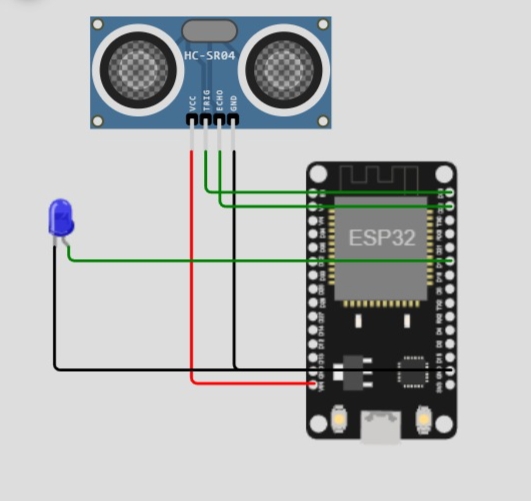
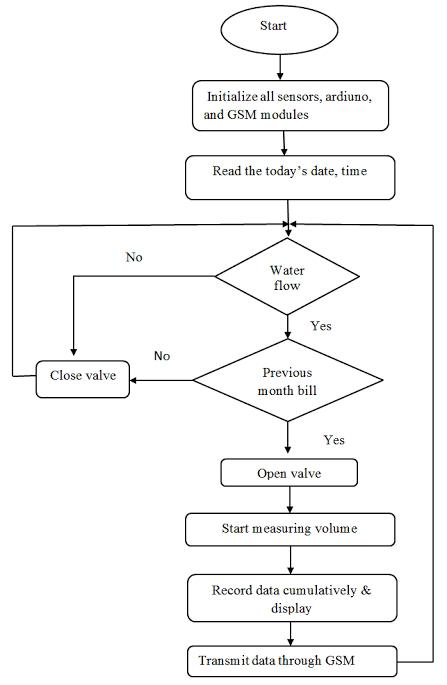
**CREATING SMART WATER MANAGEMENT**

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**SYSTEM FLOWCHART**



**SOURCE CODE**

Import machine

Import time

# Pin assignments for the ultrasonic sensor

TRIGGER\_PIN = 23 # GPIO23 for trigger

ECHO\_PIN = 22 # GPIO22 for echo

# Pin assignment for the LED

LEAK\_LED\_PIN = 19 # GPIO19 for the LED

# Set the pin modes

Trigger = machine.Pin(TRIGGER\_PIN, machine.Pin.OUT)

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

Leak\_led = machine.Pin(LEAK\_LED\_PIN, machine.Pin.OUT)

# Function to measure distance using the ultrasonic sensor

Def measure\_distance():

# Generate a short trigger pulse

Trigger.value(0)

Time.sleep\_us(5)

Trigger.value(1)

Time.sleep\_us(10)

Trigger.value(0)

# Measure the echo pulse duration to calculate distance

Pulse\_start = pulse\_end = 0

While echo.value() == 0:

Pulse\_start = time.ticks\_us()

While echo.value() == 1:

Pulse\_end = time.ticks\_us()

Pulse\_duration = pulse\_end – pulse\_start

# Calculate distance in centimeters (assuming the speed of sound is 343 m/s)

Distance = (pulse\_duration \* 0.0343) / 2 # Divide by 2 for one-way travel

Return distance

# Function to check for a water leak

Def check\_for\_leak():

# Measure the distance from the ultrasonic sensor

Distance = measure\_distance()

# Set the threshold distance for detecting a leak (adjust as needed)

Threshold\_distance = 10 # Adjust this value based on your tank setup

If distance < threshold\_distance:

# If the distance is less than the threshold, a leak is detected

Return True

Else:

Return False

# Main loop

While True:

If check\_for\_leak():

# Blink the LED to indicate a leak

Leak\_led.value(1) # LED ON

Time.sleep(0.5)

Leak\_led.value(0) # LED OFF

Time.sleep(0.5)

Else:

Leak\_led.value(0) # LED OFF

Time.sleep(1) # Delay between measurements

This code monitors water flow using a flow sensor, calculates water usage, and sends an email notification when the usage exceeds a threshold. Please adapt and extend this code to your specific hardware and requirements for a complete smart water management system.