CREATING A FLOOD MONITORING AND EARLY WARNING SYSTEM

FLOOD MONITORING AND EARLY WARNING SYSTEM USING ULTRASONIS SENSOR

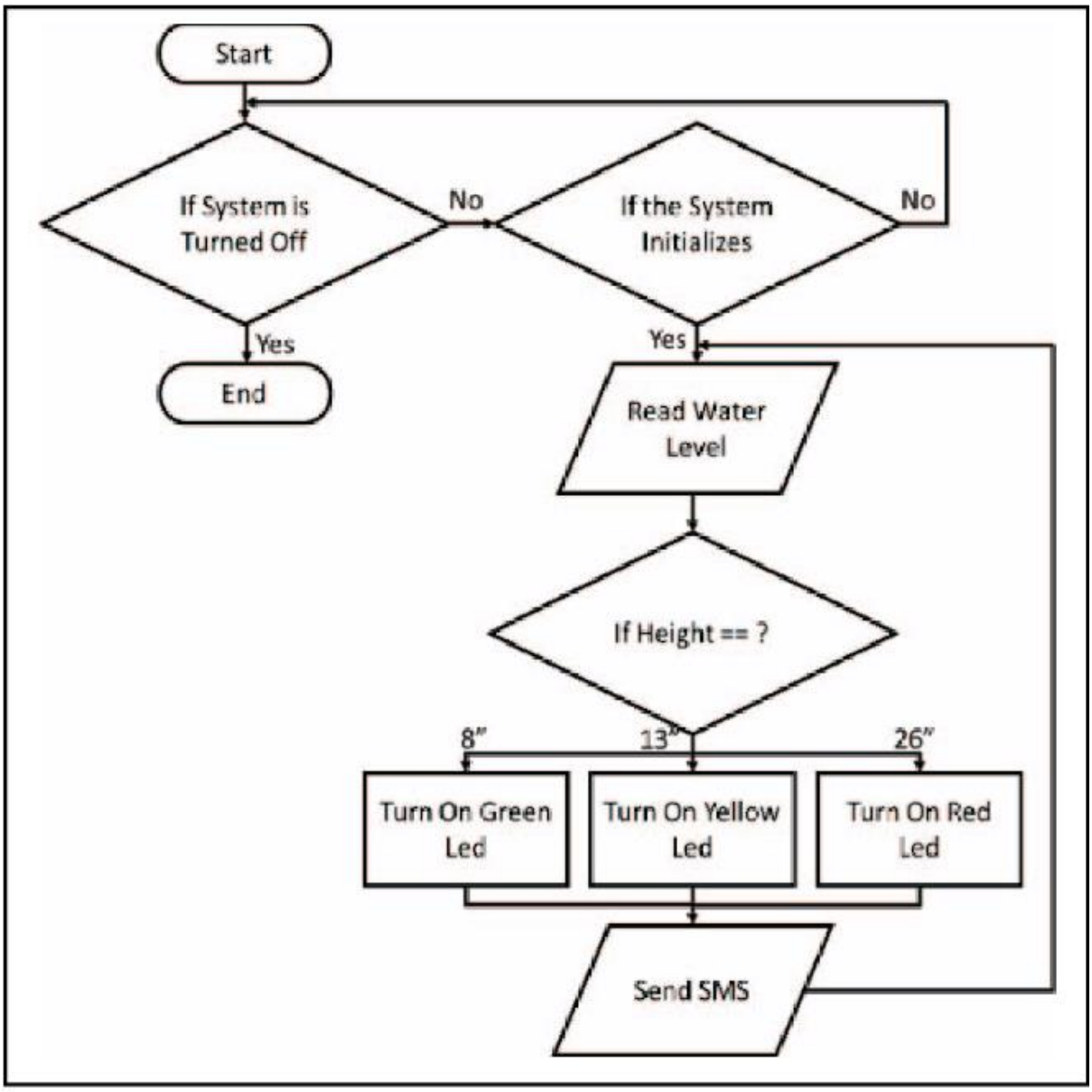

Fig. 2. System Flowchart

SOURCE CODE:

```
import RPi.GPIO as GPIO
import requests
import time

# Ultrasonic sensor GPIO pins
TRIG_PIN = 23
ECHO_PIN = 24

# Wok Wi API endpoint and API key
WOKWI_API_ENDPOINT = "https://api.wokwi.com/things/flood-monitoring"
WOKWI_API_KEY = "YOUR_WOKWI_API_KEY"

# Initialize GPIO settings
GPIO.setmode(GPIO.BCM)
GPIO.setup(TRIG_PIN, GPIO.OUT)
GPIO.setup(ECHO_PIN, GPIO.IN)

def measure_distance():
    # Send a short pulse to trigger the ultrasonic sensor
    GPIO.output(TRIG_PIN, True)
    time.sleep(0.00001)
    GPIO.output(TRIG_PIN, False)

    # Measure the time it takes for the echo to return
    while GPIO.input(ECHO_PIN) == 0:
```

```
        pulse_start = time.time()

    while GPIO.input(ECHO_PIN) == 1:
        pulse_end = time.time()

    pulse_duration = pulse_end - pulse_start

    # Calculate distance using the speed of sound (34300 cm/s)
    distance = pulse_duration * 17150
    return distance

def send_flood_alert(distance):
    if distance < 30:  # You can adjust this threshold based on your setup
        payload = {
            "status": "Flood Alert",
            "distance": distance
        }
        headers = {
            "Authorization": f"Bearer {WOKWI_API_KEY}"
        }
        response = requests.post(WOKWI_API_ENDPOINT, json=payload,
headers=headers)
        print("Flood Alert Sent to Wok Wi")
    else:
        print("No Flood Detected")

try:
```

```
    while True:
        distance = measure_distance()
        send_flood_alert(distance)
        time.sleep(60)  # Check for flood every minute

except KeyboardInterrupt:
    print("Measurement stopped by User")
    GPIO.cleanup()
```

This program continuously measures the distance detected by the ultrasonic sensor and sends a flood alert to the Wok Wi website if the measured distance is less than 30 cm (you can adjust this threshold based on your specific use case). Make sure you have the required Python libraries installed ('RPi.GPIO' and 'requests') before running the program. You can install them using the following commands

pip install RPi.GPIO requests

Please ensure you have the necessary hardware components connected to your Raspberry Pi, and you have registered and obtained your API key from the Wok Wi website before running the code.