



Department of CSE

Lab-2 : Water Level Detection System Using Arduino

Submitted by

Name of Student: Zihad Khan

Student Id: 2022-2-60-107

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Submitted to

Dr. Raihan Ul Islam

Associate Professor

Department of Computer Science and Engineering

Introduction

Water is one of the most vital resources, and its efficient use is essential. This project aims to create a simple water level monitoring system using an Arduino and a water level sensor. The system detects the level of water and gives visual feedback using three LEDs to indicate whether the tank is empty, half-full, or full. It can be used in households, agriculture, or industries for effective water management.

Components Used

- Arduino Uno
- Water Level Sensor
- Breadboard
- Red, Yellow, and Green LEDs
- 220Ω Resistors
- Jumper Wires
- USB Cable

Circuit Connection

Arduino Pin	Connected To	Description
D7	Sensor Power (VCC)	Powers water level sensor
A0	Sensor Output Signal	Reads sensor analog output
D2	Red LED (with resistor)	Indicates Low water level
D3	Yellow LED (with resistor)	Indicates Medium water level
D4	Green LED (with resistor)	Indicates High water level
GND	Common Ground	Ground connection

All the parts are connected on a breadboard, which keeps everything neat and easy to manage.

Arduino code :

```
// Sensor pins

#define sensorPower 7
#define sensorPin A0

// Value for storing water level

int val = 0;

/* Change these values based on your calibration values */

int lowerThreshold = 200;
int upperThreshold = 400;

// Declare pins to which LED are connected

int redLED = 2;
int yellowLED = 3;
int greenLED = 4;

void setup() {

    Serial.begin(9600);
    pinMode(sensorPower, OUTPUT);
    digitalWrite(sensorPower, LOW);

    // Set LED pins as an OUTPUT
    pinMode(redLED, OUTPUT);
    pinMode(yellowLED, OUTPUT);
    pinMode(greenLED, OUTPUT);

    // Initially turn off all LEDs
    digitalWrite(redLED, LOW);
    digitalWrite(yellowLED, LOW);
    digitalWrite(greenLED, LOW);
}

void loop() {

    int level = readSensor();

    if (level == 0) {

        Serial.println("Water Level: Empty");
        digitalWrite(redLED, LOW);
        digitalWrite(yellowLED, LOW);
        digitalWrite(greenLED, LOW);
    }

    else if (level > 0 && level <= lowerThreshold) {

        Serial.println("Water Level: Low");
        digitalWrite(redLED, HIGH);
    }
}
```

```

        digitalWrite(yellowLED, LOW);
        digitalWrite(greenLED, LOW);
    }

    else if (level > lowerThreshold && level <= upperThreshold) {

        Serial.println("Water Level: Medium");
        digitalWrite(redLED, LOW);
        digitalWrite(yellowLED, HIGH);
        digitalWrite(greenLED, LOW);
    }

    else if (level > upperThreshold) {

        Serial.println("Water Level: High");
        digitalWrite(redLED, LOW);
        digitalWrite(yellowLED, LOW);
        digitalWrite(greenLED, HIGH);
    }

    delay(1000);
}

//This is a function used to get the reading
int readSensor() {

    digitalWrite(sensorPower, HIGH);
    delay(10);
    val = analogRead(sensorPin);
    digitalWrite(sensorPower, LOW);

    return val;
}

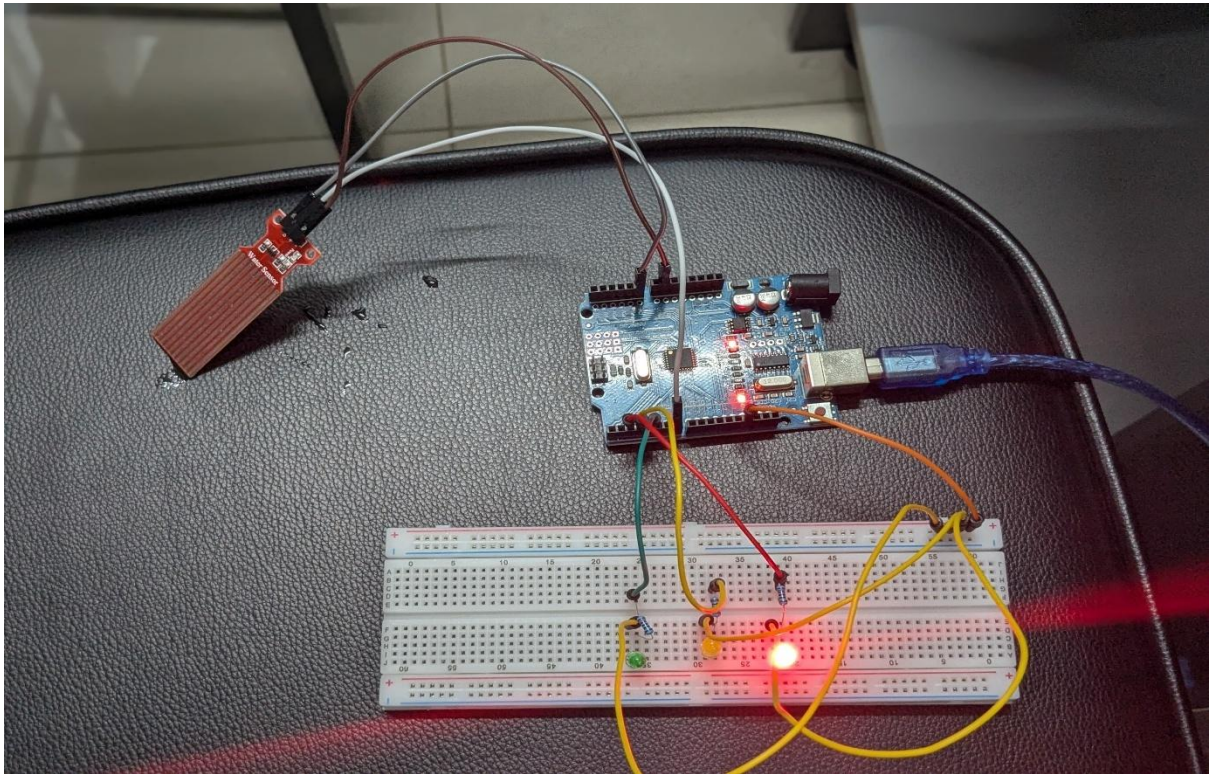
```

Water Level Sensor Value and LED Status

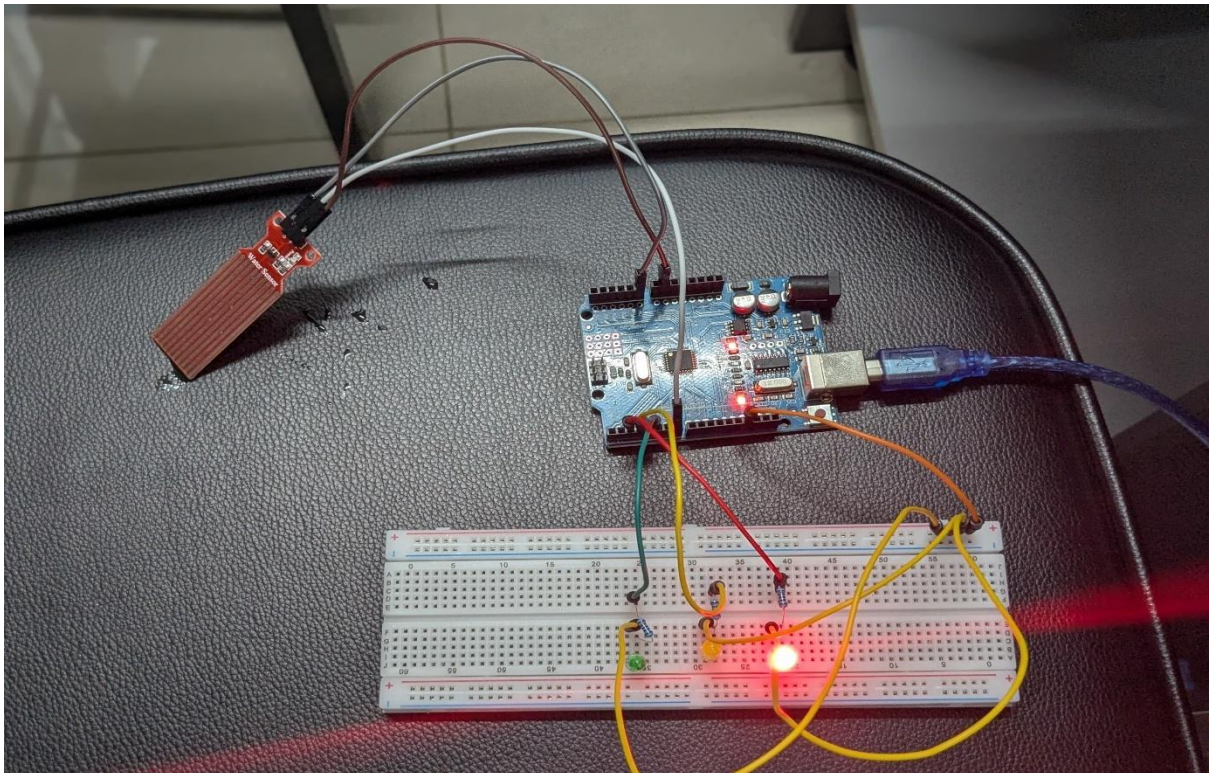
Water Level	Sensor Value Range	LED Status
Empty	0	All LEDs OFF
Low	1 to 200	Red LED ON
Medium	201 to 400	Yellow LED ON
High	Above 400	Green LED ON

Circuit Overview Through Images

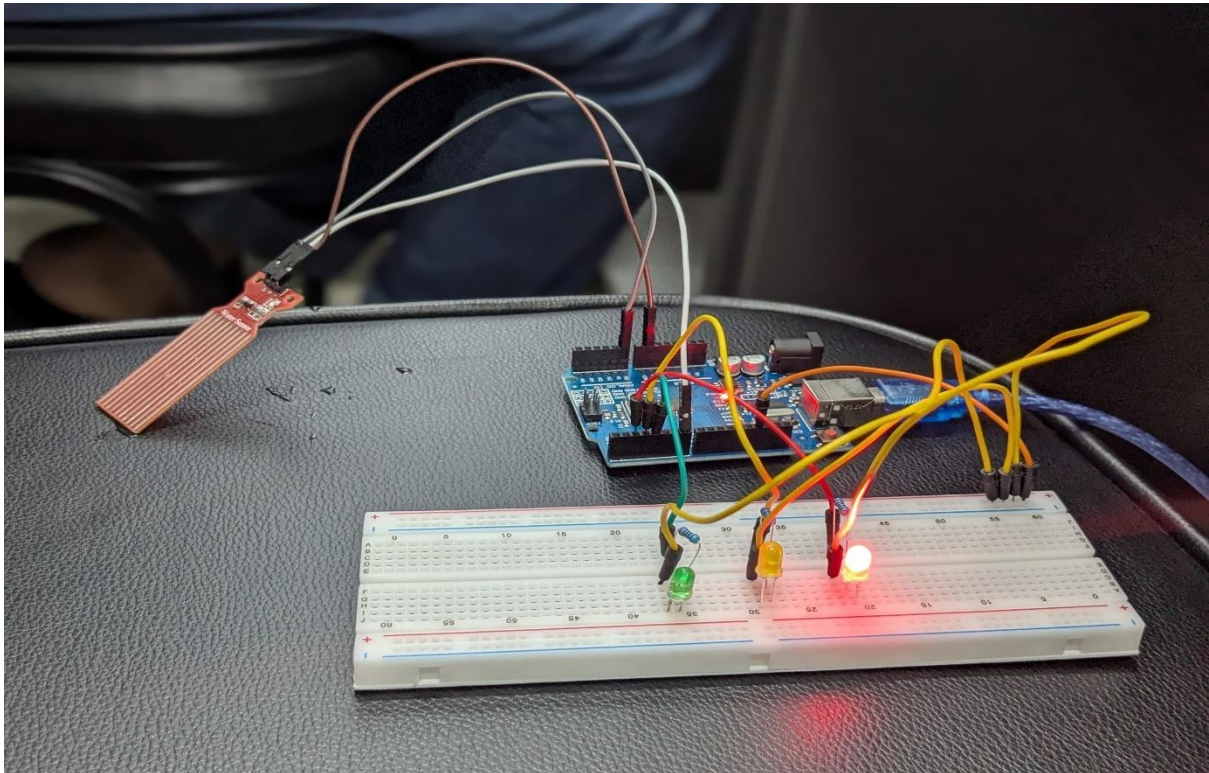
Full setup on breadboard.



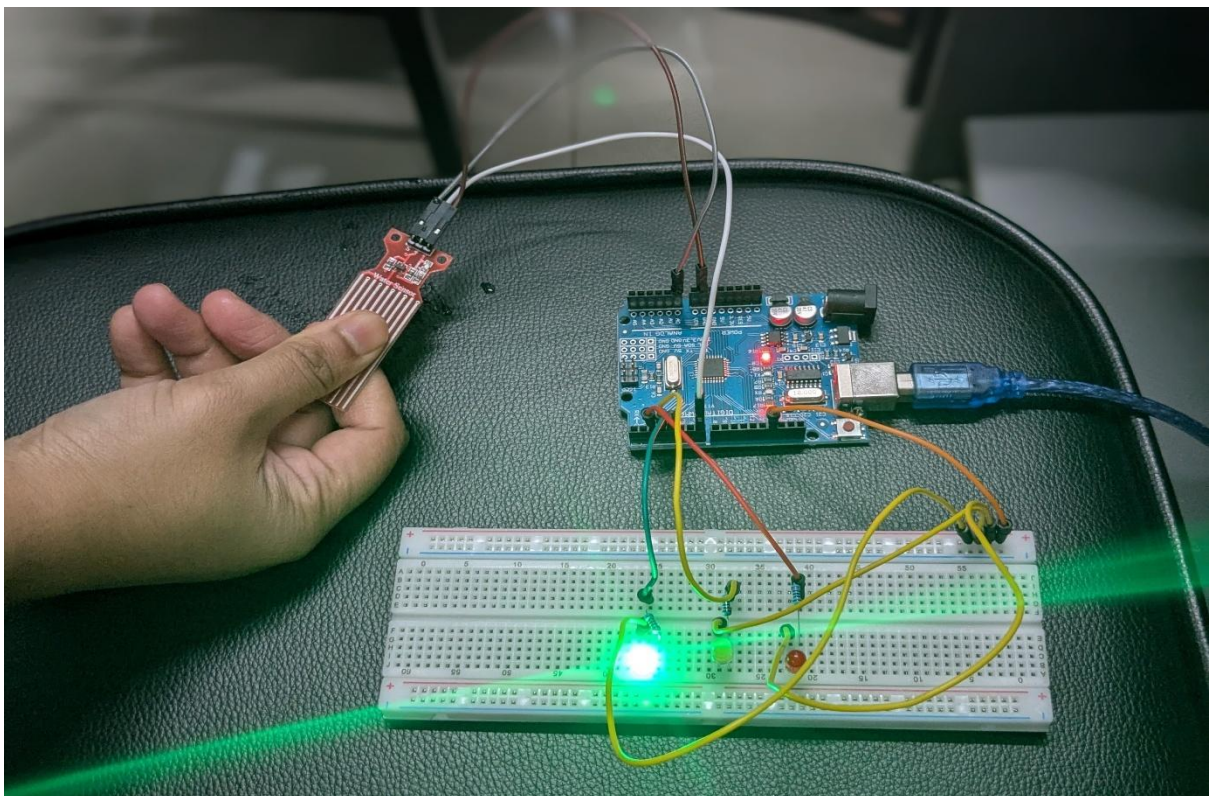
Red LED on, indicating low water level



Yellow LED on, indicating medium water level



Green LED on, indicating high water level



Conclusion:

This project provides an easy and effective way to keep track of water levels using basic electronics. The different LEDs light up to show the current water level at a glance, making it simple to understand. By carefully managing when the sensor gets power, the system helps the sensor stay functional for longer. Overall, it's an affordable and useful solution that can be easily improved with features like notifications or remote monitoring down the line.

Github Link:

[https://github.com/Zihad107/CSE406/tree/master/Lab-02\(Water%20Level%20Detection\)](https://github.com/Zihad107/CSE406/tree/master/Lab-02(Water%20Level%20Detection))