Water Level Detection System using Arduino and Water Sensor

Course: CSE 406

Section: 1

Lab : 2

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ID: 2021-3-60-052

1. Title:

Water Level Detection System using Arduino and Water Sensor

2. Objective:

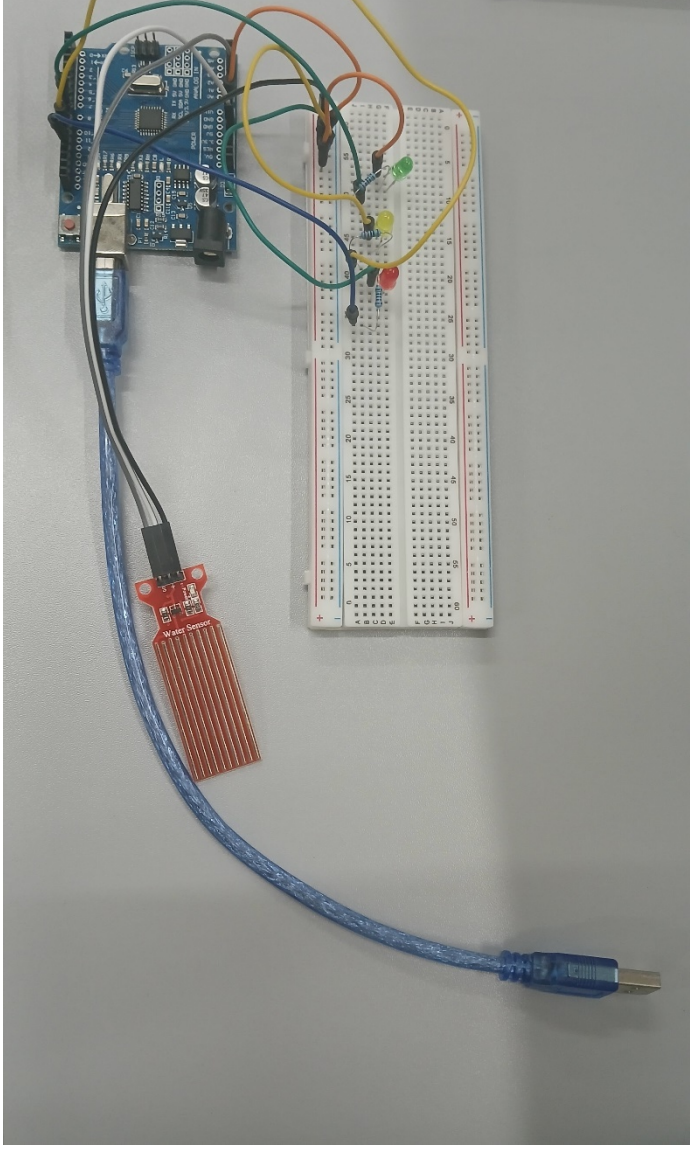
To build a simple water level detection system using an Arduino, a water level sensor, and LEDs to indicate different levels of water depth.

3. Components Required:

- Arduino Uno
- Water Level Sensor
- Breadboard
- Jumper Wires
- 3 LEDs (Red, Yellow, Green)
- 3 Resistors (220Ω or similar)
- USB Cable for power and programming

4. Circuit Description:

- The **water level sensor** is connected to **analog pin A0** of the Arduino.
- **Red LED** is connected to **digital pin 13**, **Yellow to pin 12**, and **Green to pin 8**.
- Each LED has a series resistor to prevent damage.
- Based on the analog value received from the water sensor, different LEDs light up to indicate **low**, **medium**, or **high**-water levels.



5. Arduino Code:

```
#define LED_RED 13

#define LED_YELLOW 12

#define LED_GREEN 8


void setup(){

  Serial.begin(9600);     // Start serial communication at 9600 baud

  pinMode(LED_RED, OUTPUT);

  pinMode(LED_YELLOW, OUTPUT);

  pinMode(LED_GREEN, OUTPUT);

}


void loop(){
```

```
 int sensor = analogRead(A0); // Read analog value from water sensor
 Serial.println(sensor);      // Print sensor value to Serial Monitor

 digitalWrite(LED_GREEN, LOW);
 digitalWrite(LED_YELLOW, LOW);
 digitalWrite(LED_RED, LOW);

 if(sensor > 20 && sensor <= 100){
   digitalWrite(LED_GREEN, HIGH); // Low water level
 }
 else if(sensor > 100 && sensor <= 200){
   digitalWrite(LED_YELLOW, HIGH); // Medium water level
 }
 else if(sensor > 200){
   digitalWrite(LED_RED, HIGH); // High water level
 }
}
```

6. Working Principle:

- The water level sensor detects how deep the water has reached its surface.
- This signal is sent to the Arduino in analog form.
- Depending on the range of values:
    - **0–100** triggers the **Green LED** (Low level),
    - **101–200** triggers the **Yellow LED** (Medium level),
    - **Above 200** triggers the **Red LED** (High level).

7. Observations:

Sensor Value	Water Level	LED Indicated
0–100	Low	Green
101–200	Medium	Yellow
201+	High	Red

8. Conclusion:

The project successfully demonstrates a basic water level detection system. By using simple analog readings, it provides a visual indicator of water depth using LEDs. This system can be applied to water tanks, aquariums, and other water storage monitoring scenarios.