East West University

Internet of Things (CSE-406)

Lab report 2

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Experiment Title:

Water Level Detection using Arduino and Water Sensor with LED Indicators

Objective:

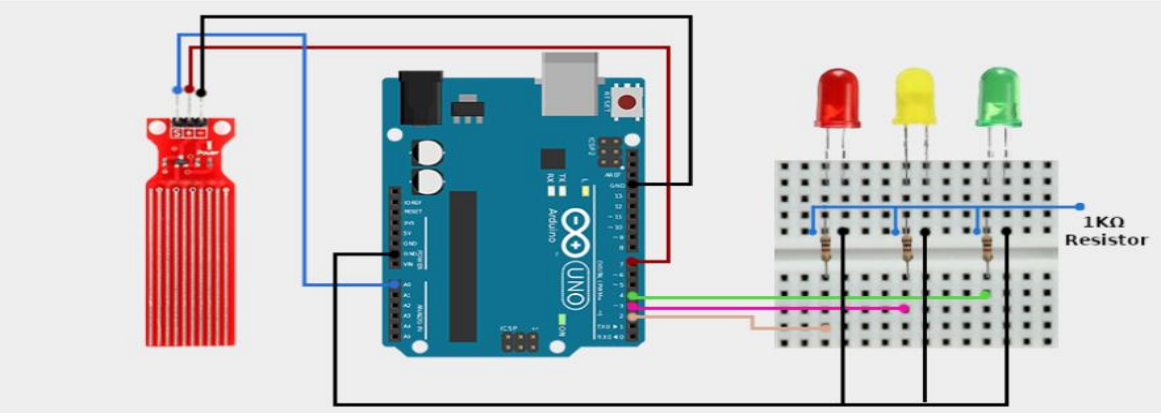
To design and implement a water level monitoring system using an Arduino Uno, water level sensor, and three LEDs to indicate different water levels:

- **Red LED** for **High**
- **Yellow LED** for **Medium**
- **Green LED** for **Low**

Components Used:

1. Arduino Uno
2. Water Level Sensor
3. Red LED
4. Yellow LED
5. Green LED
6. Resistors (1KΩ)
7. Jumper wires
8. Breadboard
9. USB cable and PC

Circuit Diagram:



Working Principle:

The water sensor detects the water level by measuring the conductivity between its traces. It outputs an analog signal corresponding to the water level:

- **Higher water** = **Higher analog value**
- **Lower water** = **Lower analog value**

Based on the analog value from the sensor:

- If the value is **> 520**, the **Red LED** lights up (High level)
- If the value is **between 420 and 520**, the **Yellow LED** lights up (Medium level)
- If the value is >0 and **<= 420**, the **Green LED** lights up (Low level)
- If the value is =0 then the sensor is empty

Arduino Code: https://github.com/akashsaha0075/CSE_406-IoT-/blob/main/Lab_2/water_sensor_LED.ino

Observation:

Water Level (Analog Reading)	**LED On**	**Status**
level == 0	No	Empty
level > 0 && level <= 420	Green	Low
level > 420 && level <= 520	Yellow	Medium
level > 520	Red	High

Conclusion:

This lab successfully demonstrated how to monitor water level using an Arduino and a water level sensor. The LED indicators provided a visual representation of water levels. This system can be useful in real-life applications such as overhead tanks, irrigation, or flood warning systems.

Future Improvements:

- Add a buzzer for high-level alert.
- Display values on an LCD.
- Connect to IoT platform (e.g., Blynk, ThingSpeak) for remote monitoring.