

Lab 2

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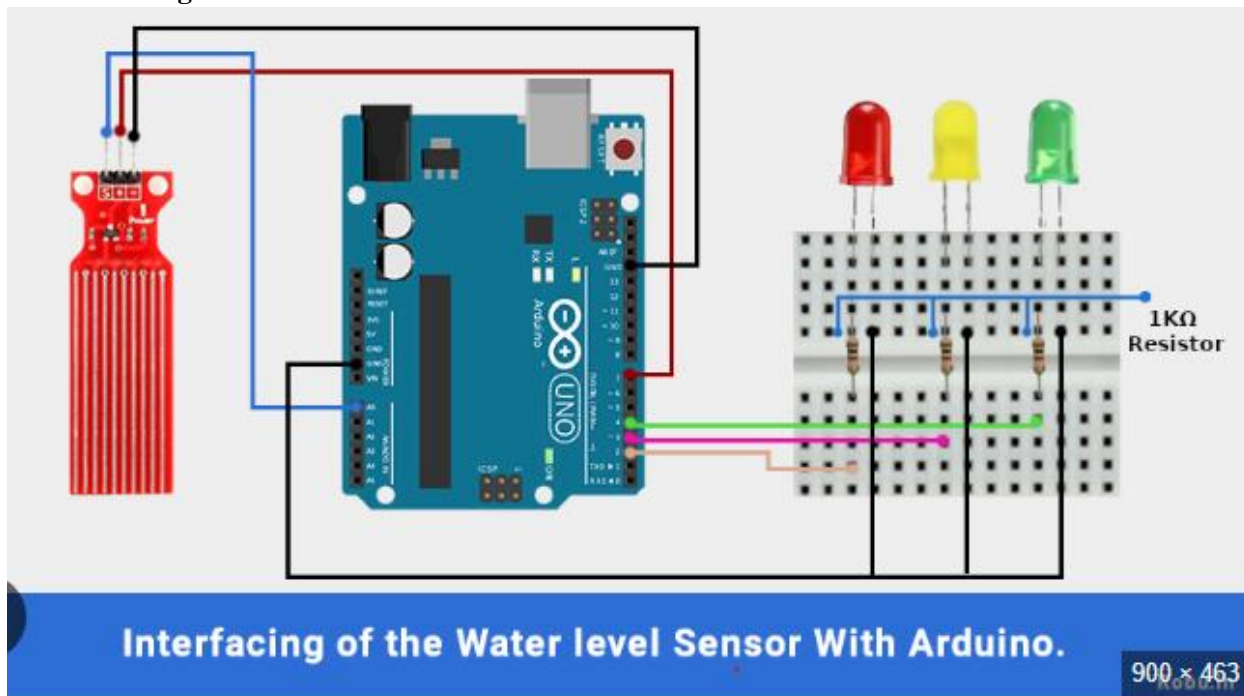
To detect the water level using a **water level sensor** connected to an Arduino, and display the level using **Green, Yellow, and Red LED indicators**:

- **Green:** Low water level
- **Yellow:** Medium water level
- **Red:** High water level

Components Required:

| Component | Quantity |
|--------------------|-----------------|
| Arduino UNO | 1 |
| Water Level Sensor | 1 |
| Red LED | 1 |
| Yellow LED | 1 |
| Green LED | 1 |
| 1Ω Resistors | 3 |
| Breadboard | 1 |
| Jumper Wires | As needed |
| USB Cable | 1 |
| Water Container | 1 |

3. Circuit Diagram:



4. Theory:

The water level indicator uses electrical conductivity to detect the presence of water. Each level (low, medium, high) is connected to probes placed at different heights in the container. When water touches a probe, it completes a circuit, triggering the respective LED.

5. Procedure:

1. Insert three conductive wires (probes) at different heights inside the container.
2. Connect each probe to a digital pin on the Arduino.
3. Connect the green, yellow, and red LEDs to three other digital pins using 220Ω resistors.
4. Upload the code to the Arduino board.
5. Slowly fill the container with water and observe the LED indicators:
 - Green turns ON at low level.
 - Yellow turns ON at medium level.
 - Red turns ON at high level.

6. Observation Table:

| Analog Value | Range | Water Level | Green LED | Yellow LED | Red LED |
|--------------|--------|-------------|-----------|------------|---------|
| 0–299 | Low | ON | OFF | OFF | |
| 300–599 | Medium | OFF | ON | OFF | |
| 600–1023 | High | OFF | OFF | ON | |

7. Result:

The Arduino-based system successfully detected water levels using the water sensor and displayed the corresponding status using LED indicators.

8. Conclusion:

This experiment effectively demonstrates how analog water sensors can be used with Arduino to monitor and indicate water levels visually. It can be expanded for practical applications like automatic tank filling or warning systems.