EAST WEST UNIVERSITY

Department of Computer Science and Engineering

**Course Title:** Internet Of Things

**Code:** CSE406

**Section:** 1

**LAB-02**

## Submitted To:

Dr. Raihan Ul Islam

Associate Professor

Department of Computer Science & Engineering

## Submitted by

Name: Maisha Rahman

ID: 2022-1-60-371

**Task: How Water Level Sensor Works and Interface it with Arduino**

A water level sensor works by detecting the conductivity of water through exposed conductive traces, allowing it to measure the presence or depth of water. It provides both analog and digital outputs—analog gives a continuous range of values based on water depth, while digital triggers at a preset threshold. To interface it with an Arduino, the sensor's VCC and GND are connected to the Arduino's 5V and GND pins, while the signal pin (A0 for analog or D0 for digital) is connected to a corresponding input pin. In analog mode, the Arduino reads values from 0 to 1023 using analogread(), which can then be mapped to represent water level in millimeters or percentage. Calibration is essential for accurate readings, and it's recommended to power the sensor only when taking readings to reduce corrosion over time. The digital output can be used for simple threshold-based alarms. This setup is cost-effective, easy to implement, and suitable for basic water level monitoring applications.

**Tools:**

1. Arduino Board (Arduino Uno)
2. Water Level Sensor Module (conductive type with analog & digital output)
3. Jumper Wires (male-to-female or male-to-male)
4. Breadboard (optional, for prototyping)
5. USB Cable (for uploading code to Arduino)
6. Computer with Arduino IDE installed
7. Resistors (optional, for signal conditioning or LED indicators)
8. LEDs

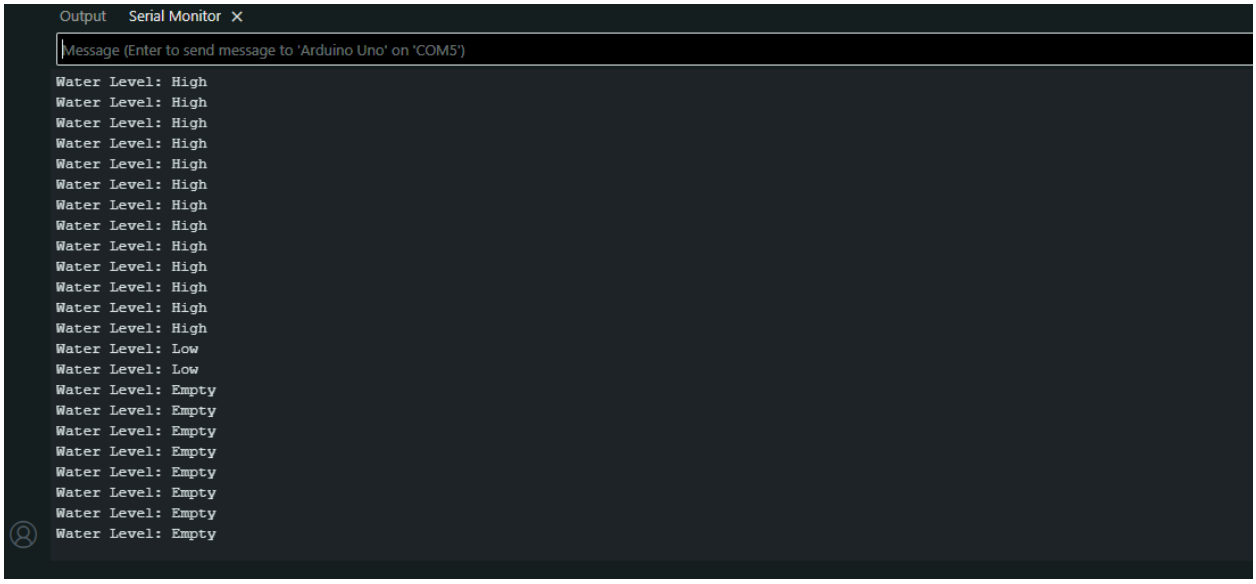
**Github Link : https://github.com/RahMaisha/IOT-Water-Level-Detection.git**

## Arduino UNO 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 = 420;
int upperThreshold = 520;

// Declare pins to which LEDs 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;
}
```

## Output Image:




## Physical Built Image: