Introduction

Water Level sensor works on the principal of conduction. When the sensor is immersed in water or any other conductive liquid, the resistance of the sensor changes. This in turn produces an analog voltage signal which is dependent on the level of water. As shown in below figure, depending on the level of water the resistance of water level sensor decreases. For example, if level of the water is high, it measures low resistance. That resistor can be measured by using multimeter.

Objective:

During this activity, you will help students to achieve following objectives:

▪ Understanding principle and operations of Water Level sensor.
▪ Design algorithm and flowchart to sense water level using Water Level sensor.
▪ Programming Water Level sensor using Arduino API for Intel Genuino.
▪ Interfacing Water Level sensor with Intel Genuino using analog pin A0.
**Introduction**

Soil moisture sensor has two probes, and the resistance between the two probes is determined by the moisture in the soil. As shown in below figure, more the moisture, less is the resistance and vice-versa. This change in resistance can be measured by using multimeter.

![Diagram showing soil moisture sensor with high and low resistance](image)

**Objective:**

During this activity, you will help students to achieve following objectives:

- Understanding principle and operations of Soil Moisture sensor.
- Design algorithm and flowchart to sense moisture of soil using Soil Moisture sensor.
- Programming Soil Moisture sensor using Arduino API for Intel Genuino.
- Interfacing Soil Moisture sensor with Intel Genuino using analog pin A0.
Algorithm

Step 1  Assign analog pin A0 to Moisture Sensor
Step 2  Define and initialize SensorValue to 0, i.e int SensorValue=0
Step 3  Read SensorPin and store value in SensorValue variable
Step 4  if sensor value is equal to or greater than 500 then print "WET"
Step 5  if sensor value is equal to or less than 200 then print "DRY"
Flowchart

START

Assign Analog A0 to Moisture Sensor

Define and initialize Moisture Sensor value to 0

Read the Sensor Value and store in SensorValue variable

IF SensorValue >= 500

YES

Print WET

NO

Print DRY

END
# Programming

```c
#define MoistureSensor A0

void setup() {
  Serial.begin(9600);
}

void loop() {
  int sensorValue = analogRead(MoistureSensor);
  if(sensorValue >= 500)
  {
    Serial.println("WET ");
  } else
    Serial.println("DRY ");
  delay(1); // delay in between reads for stability
}
```
Hardware

Instructions:

- Connect GND pin of Soil Moisture sensor to GND on the Genuino board
- Connect Out pin of Soil Moisture sensor to A0 on the Genuino board
- Connect VCC pin of Soil Moisture sensor to 5V on the Genuino board
- Connect power supply to the Genuino and USB to USB Client Port on the Genuino
- Open Arduino IDE under Tools → Board select Intel® Genuino
- Under Tools → Serial Port select the Com # where the Genuino is connected to
- Write the above code on Arduino IDE
- Upload to the Genuino by clicking the upload button
- Monitor the value of the soil moisture sensor in the Serial Monitor

Hardware Connection

<table>
<thead>
<tr>
<th>Genuino pin</th>
<th>Soil Moisture Sensor Pin</th>
</tr>
</thead>
<tbody>
<tr>
<td>5V</td>
<td>VCC</td>
</tr>
<tr>
<td>GND</td>
<td>GND</td>
</tr>
<tr>
<td>Analog pin 0</td>
<td>Signal</td>
</tr>
</tbody>
</table>
Circuit Diagram: