Marwadi University	**Marwadi University** **Faculty of Technology** **Department of Information and Communication Technology**	
Subject: Foundation Skills in Sensor Interfacing (01CT11032)	**Aim:** To sense the moisture of soil	
Experiment No: 08	**Date: 23-01-22**	**Enrolment No: 92100133020**

Aim: To sense the moisture of soil

Apparatus: Soil Moisture sensor, Comparator IC, Arduino UNO, Jumper Wire

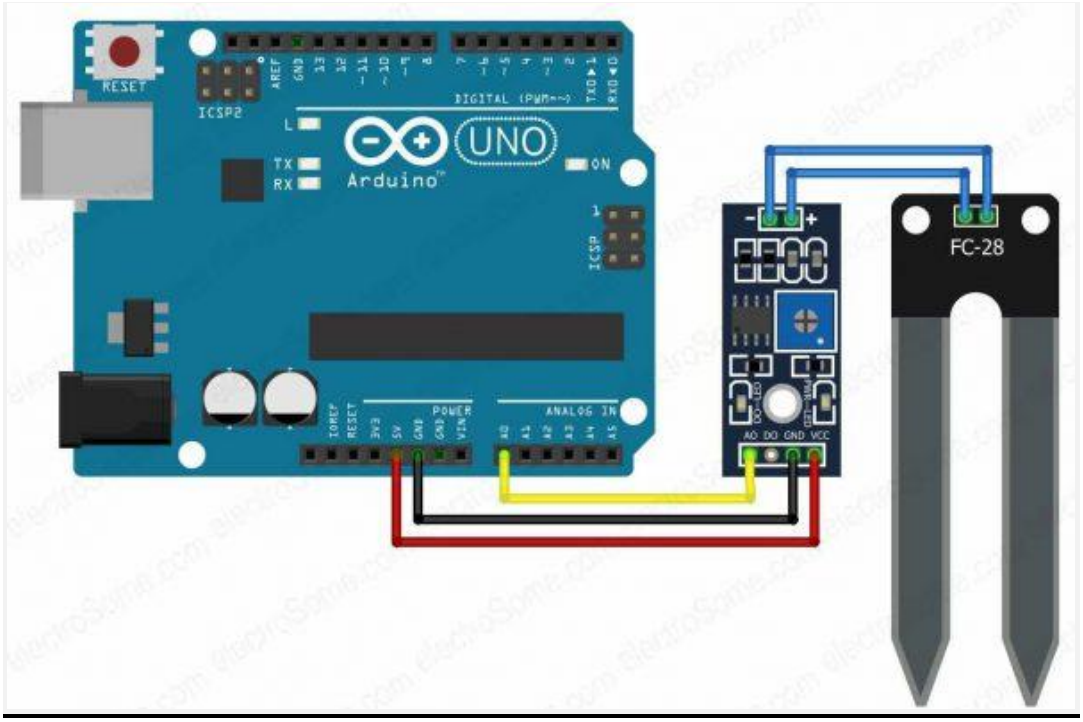
Theory:

The Soil Moisture Sensor measures soil moisture grace to the changes in electrical conductivity of the earth (soil resistance increases with drought). The electrical resistance is measured between the two electrodes of the sensor. A comparator activates a digital output when a adjustable threshold is exceeded.

Now the working and wiring of this project is same as the Rain Sensor. We have to connect the Arduino to the Comparator IC and then IC to the Sensor. So the very first step is to connect the Vcc of the IC with the +5V pin on the Arduino UNO. Then connect the ground pin with the GND on the Arduino. Now connect the Ao pin with the declared analog pin in the code i.e. A0 – A5. Now connect the Do pin of the IC with the declared pin in the code i.e. D0 – D13. Now one the other end of the IC there are two terminal for the gathering data from the sensor. So we need to connect both the pin with the Sensor using jumper wire.

Now everything is done its time to upload the code as given below.

Interfacing Diagram:



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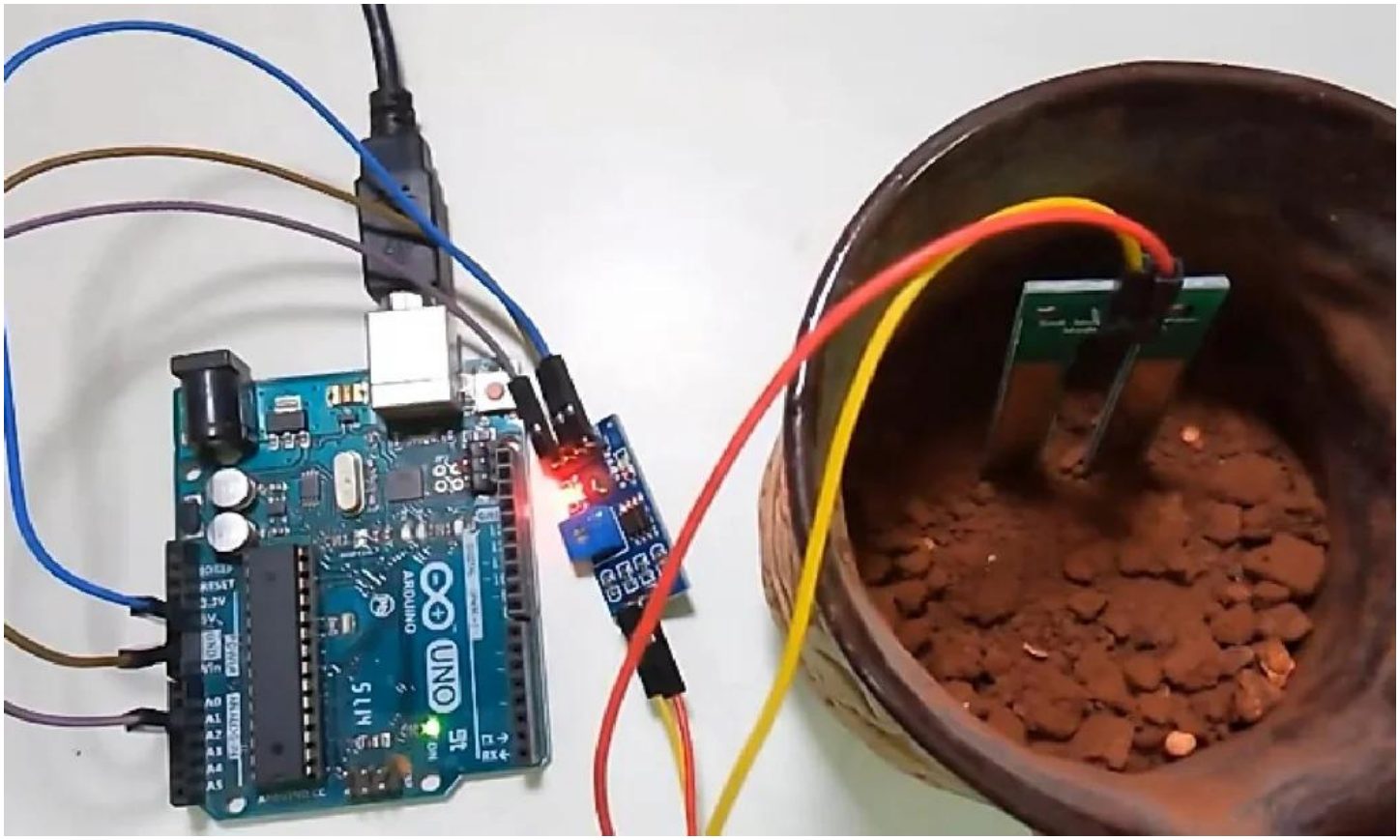
Code:

```
int sensorPin = A0;
int sensorValue;
int limit = 300;

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

void loop() {

 sensorValue = analogRead(sensorPin);
 Serial.println("Analog Value : ");
 Serial.println(sensorValue);

delay(1000);
}
```

Output:



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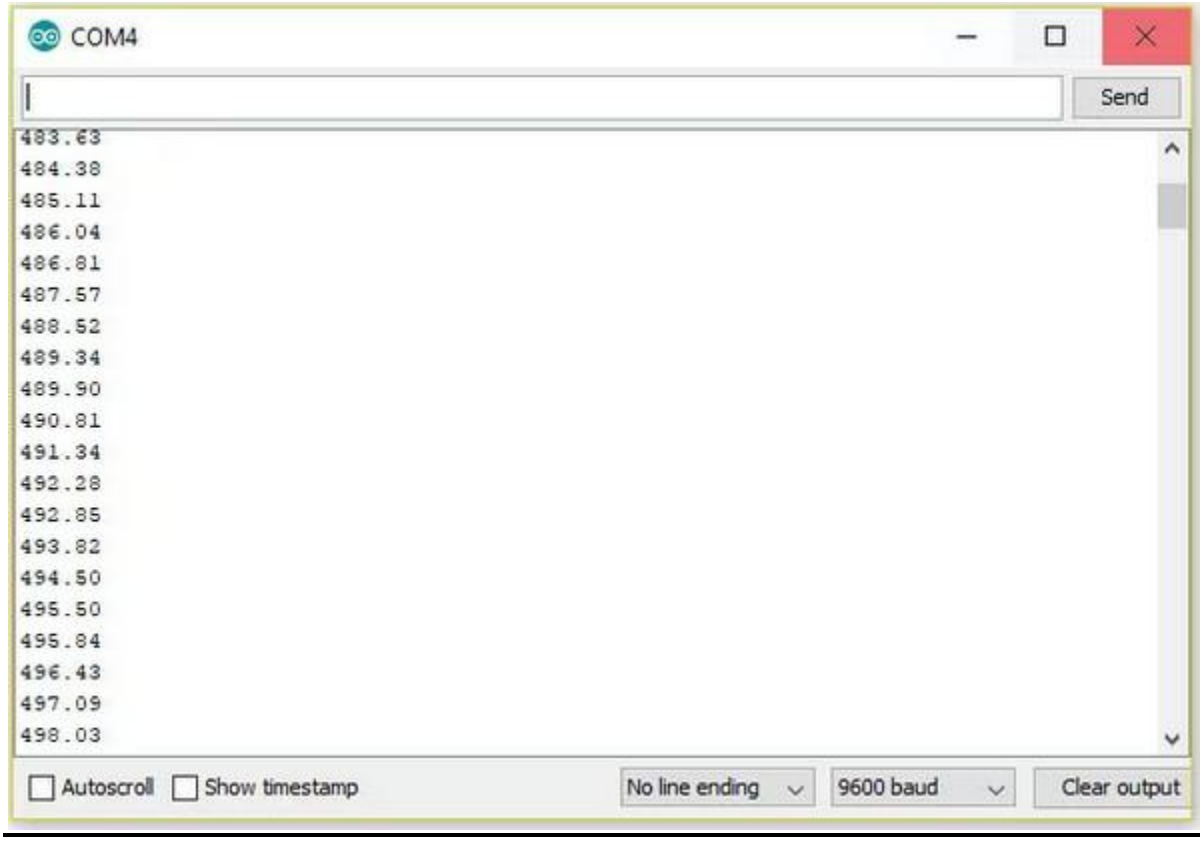
Observations:



Conclusion:

By completion of the above task we are able to perform the task of sensing and measuring the moisture of the soil and can take action accordingly. For example if we want to add automatic sprinkler to our garden. So we can easily perform that task by declaring anyone digital pin as output which is connected with the water pump or the sprinkler. We just have to do some changes in the code where we have to determine the threshold value or we can say the range in which the sprinkler should get ON or OFF. By doing the above tasks we can also implement it into our day to day life.

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Post Session Exercise:

Task 1 : Automatic Sprinkler System

Code :

```
int sensorPin = A0;
int sensorValue;
int limit = 300;

void setup() {
 Serial.begin(9600);
 pinMode(13, OUTPUT);
}

void loop() {

 sensorValue = analogRead(sensorPin);
 Serial.println("Analog Value : ");
 Serial.println(sensorValue);

 if (sensorValue<limit) {
 digitalWrite(13, HIGH);
 }
 else {
 digitalWrite(13, LOW);
 }

 delay(1000);
}
```