Marwadi University	**Marwadi University** **Faculty of Technology** **Department of Information and Communication Technology**	
Subject: Foundation Skills in Sensor Interfacing (01CT11032)	**Aim:** To interface rain module with Arduino.	
Experiment No: 07	**Date: 08-01-22**	**Enrolment No: 92100133020**

Aim: To interface rain module with Arduino.

Apparatus: Rain Sensor, Arduino UNO, USB cable, jumper wires.

Theory:

A Rain sensor is a type of switching device which is used to detect the rainfall. Whenever there is rain the switch is normally closed. The sensing pad with series of exposed copper traces, together acts as a variable resistor like potentiometer whose resistance varies according to the amount of water on its surface. The resistance is inversely proportional to the amount of water. The more water on the surface means less resistance and good conductivity. The less water on the surface means more resistance and less conductivity. This sensor produces an output voltage according to the resistance, which by measuring we can determine whether it is raining or not.

Normally, a Rain Sensor has 2 components,

A Sensing Pad: This pad contains a series of exposed copper traces that is placed out in the open, possibly over the roof or where it can be easily come in contact with rainfall.

The Module: The sensor also contains an electronic module that connects the sensing pad to the Arduino. The module produces an output voltage according to the resistance of the sensing pad and is made available at an analog output pin.

This module has two LEDs. The Power LED will light up when the module is powered. The Status LED will light up when the digital output goes LOW.

Pin Configuration:

AO (Analog Output): This pin gives us an analog signal between the supply value (5V) to 0V.

DO (Digital Output): This pin gives digital output of internal comparator circuit.

GND: This pin is a ground connection.

VCC: This pin is connected to VCC (5V).

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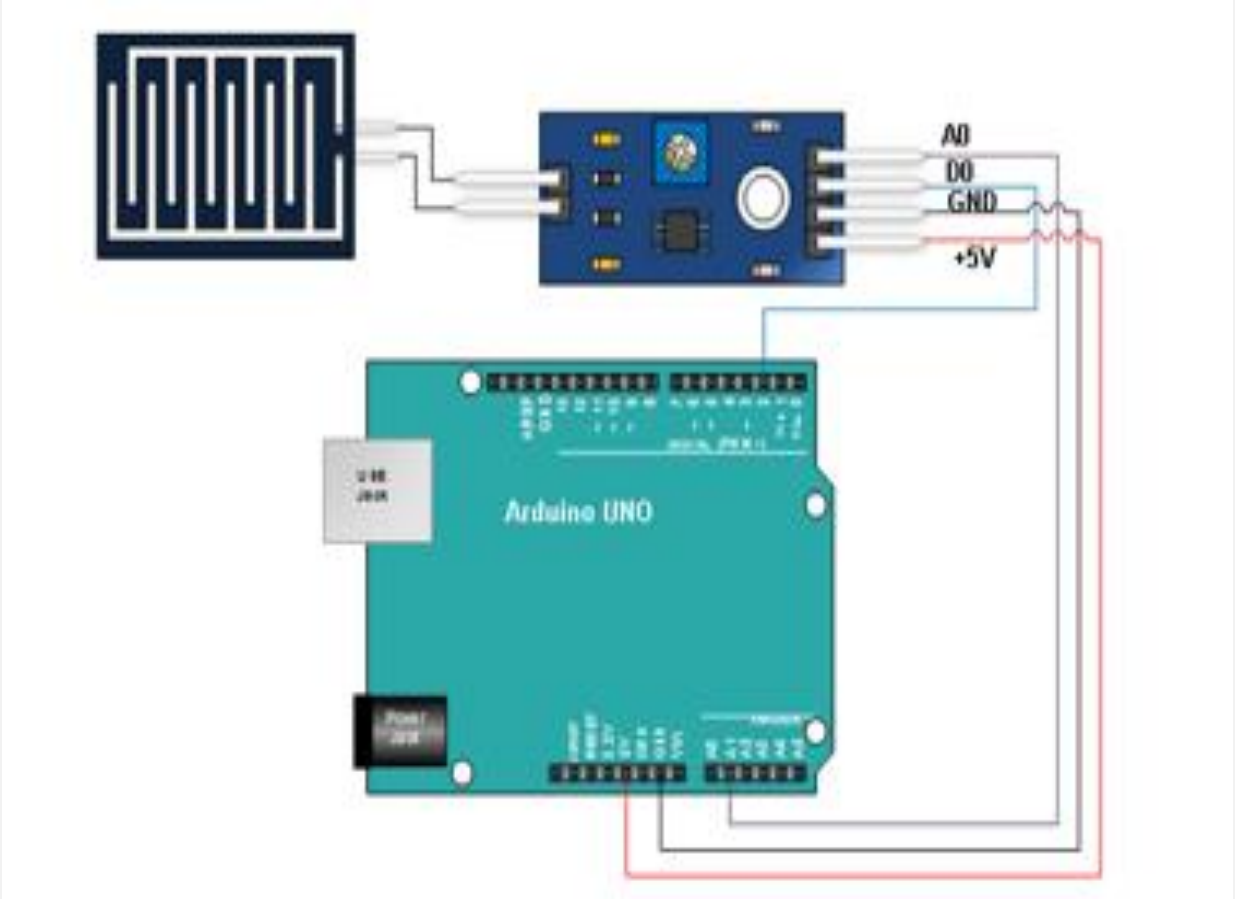
Interfacing Diagram:



Code:

```
#define sensorPower 7 #define sensorPin 8 void setup()
{
pinMode(sensorPower, OUTPUT); // Initially keep the sensor OFF
digitalWrite(sensorPower, LOW);
Serial.begin(9600);
} void loop()
{ int val = readSensor(); //get the reading from the function below and print it
Serial.print("Digital Output: "); Serial.println(val);
if (val) // Determine status of rain
{
Serial.println("Status: Clear");
```

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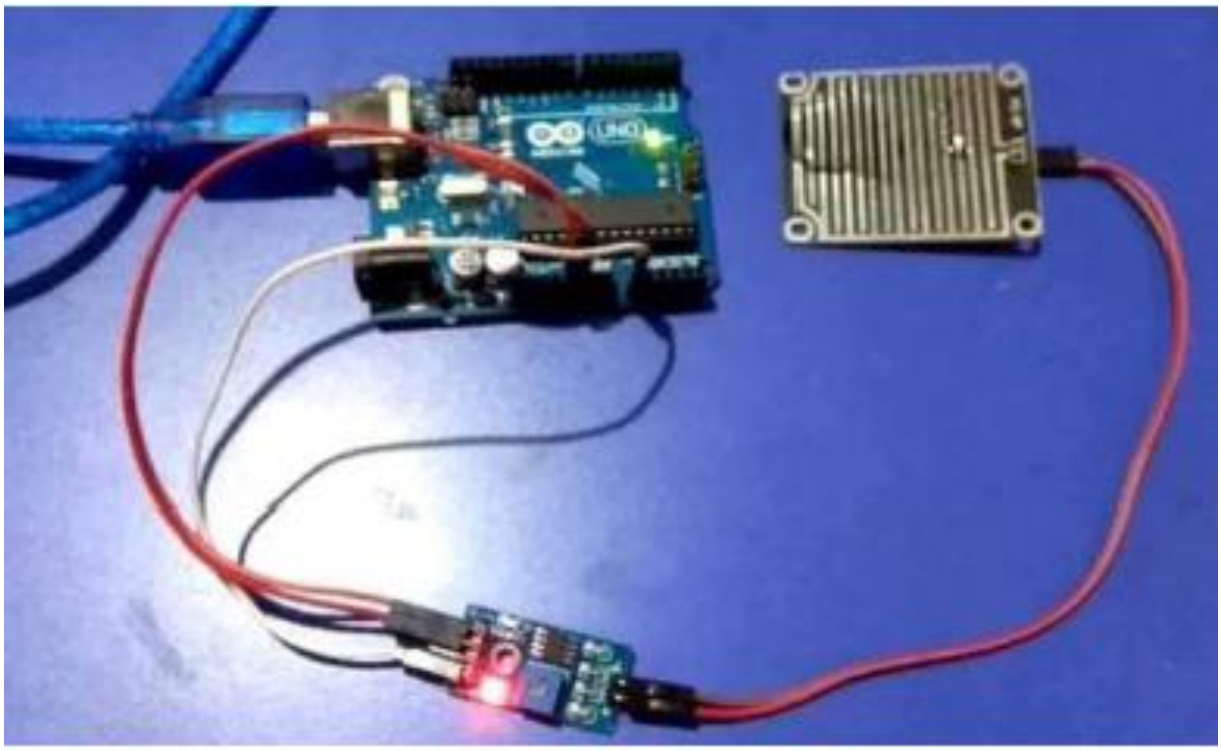
```
}
else
{
Serial.println("Status: It's raining");
}
delay(1000); // Take a reading every second
Serial.println();
}
int readSensor() // This function returns the sensor output
{
digitalWrite(sensorPower, HIGH); // Turn the sensor ON
delay(10); // Allow power to settle
int val = digitalRead(sensorPin); // Read the sensor output digitalWrite(sensorPower, LOW); // Turn the sensor OFF
return val;

}
```

Output:



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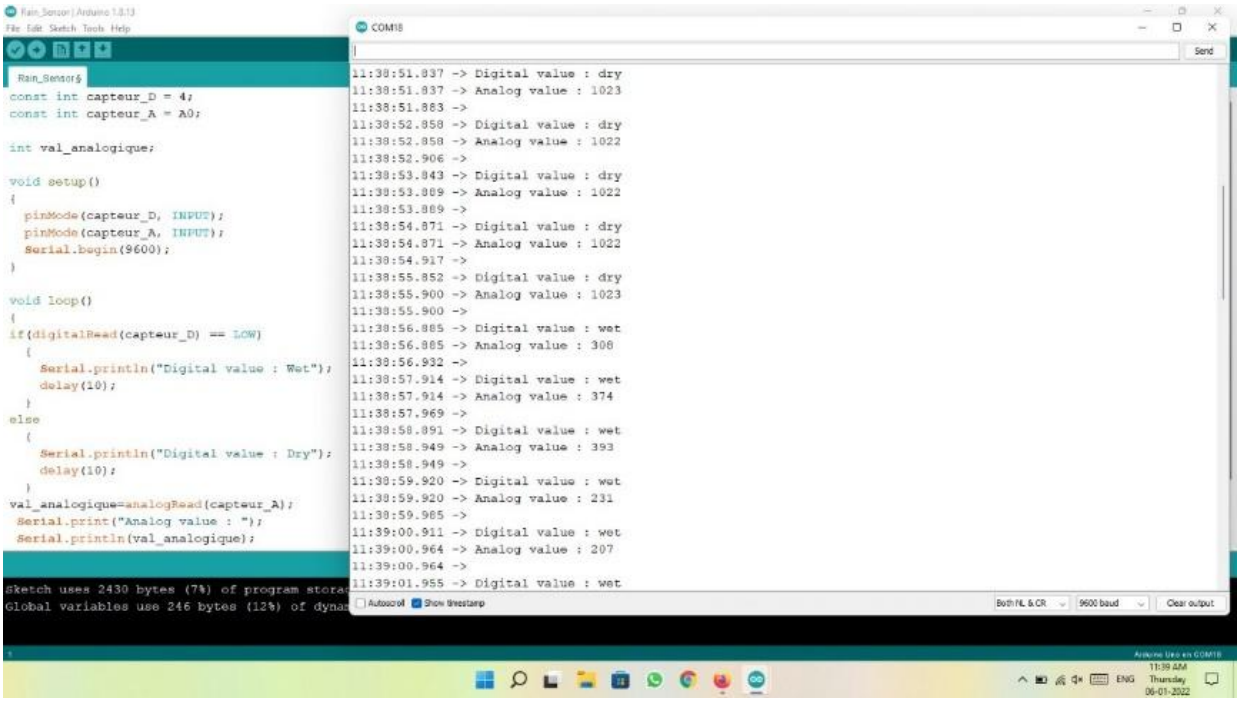
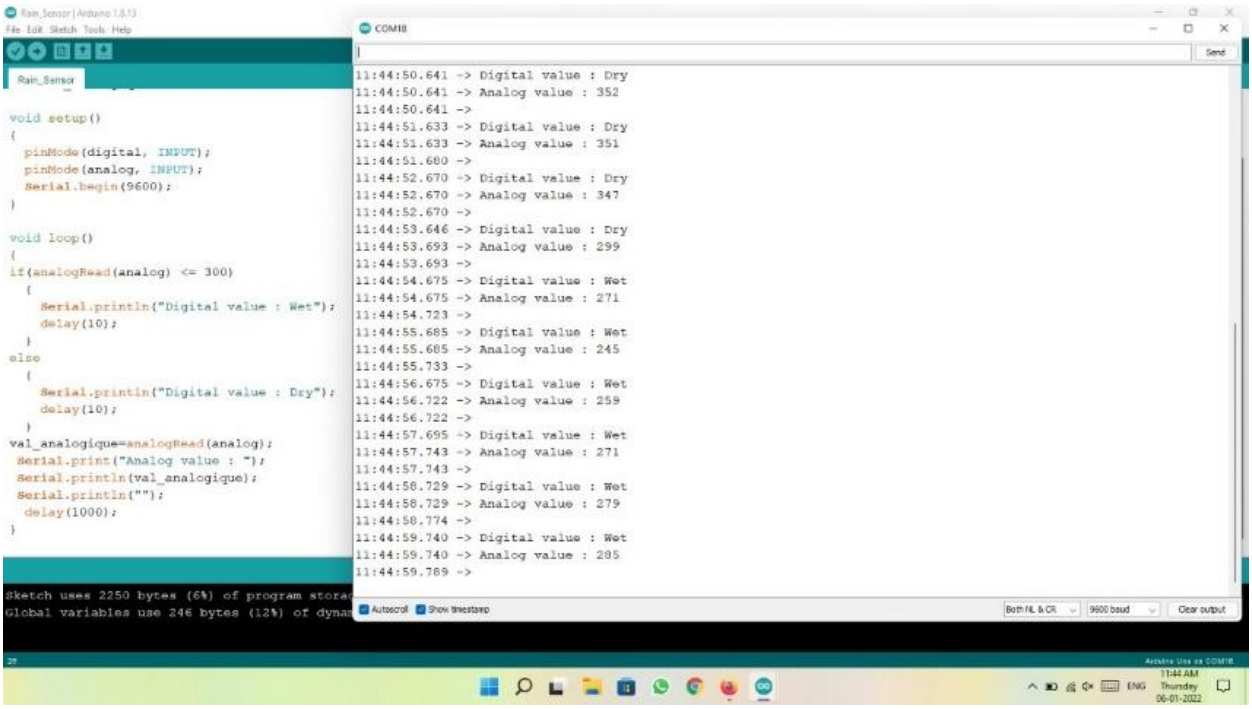
Observations:





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Conclusion:

Raindrop Sensor is a tool used for sensing rain. It consists of two modules, a rain board that detects the rain and a control module, which compares the analog value, and converts it to a digital value. The raindrop sensors can be used in the automobile sector to control the windshield wipers automatically, in the agriculture sector to sense rain and it is also used in home automation systems.