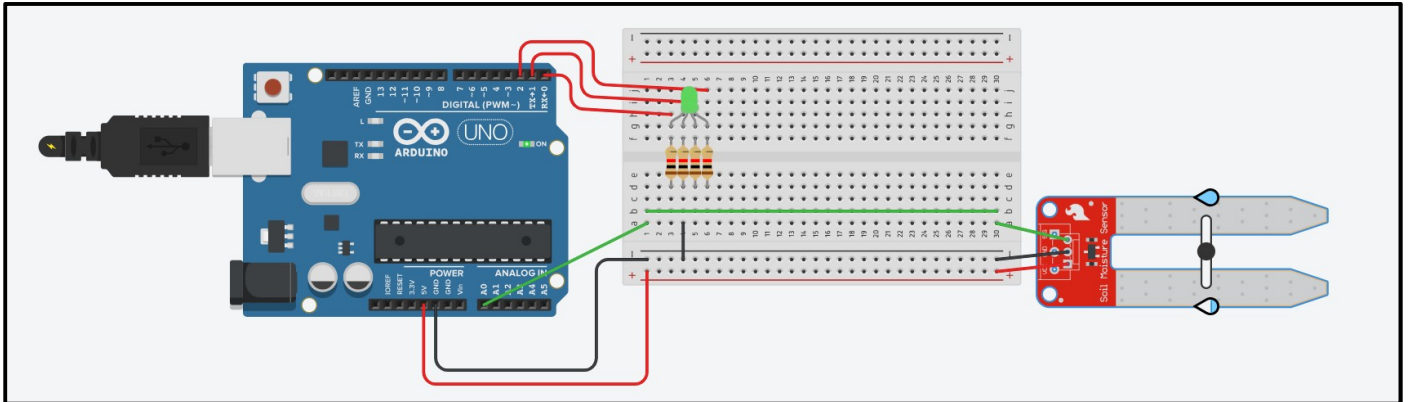


Experiment-4 Soil moisture detection using Moisture Sensor

Aim:- Detect the level of soil moisture and trigger the RGB LED for “dry”, “wet” and “no action” status.

Apparatus:-



Software Code:-

```
int a,b;
void setup()
{
  pinMode(A0, INPUT);
  pinMode(0, OUTPUT);
  pinMode(1, OUTPUT);
  pinMode(2, OUTPUT);
}
void loop()
{
  a = analogRead(A0);
  b = map(a,0,1023,0,255);
  if(b>150){
    digitalWrite(0,HIGH);
    digitalWrite(1,LOW);
    digitalWrite(2,LOW);
  }else if(b<100){
    digitalWrite(1,HIGH);
    digitalWrite(2,LOW);
    digitalWrite(0,LOW);
  }else{
    digitalWrite(2,HIGH);
    digitalWrite(1,LOW);
    digitalWrite(0,LOW);
  }
}
```

New Commands Used:-

- i. **void setup()** : This function is called once when the program starts. It is used to initialize settings, such as pin modes and serial communication.
- ii. **pinMode()** : This command configures the specified pin to behave either as an input or an output.
- iii. **void loop()** : This function runs continuously after the setup() function. It contains the main logic of the program.
- iv. **analogRead()** : This command reads the value from the specified analog pin (A0 in this case) and returns a value between 0 and 1023, corresponding to the voltage level (0V to 5V).
- v. **map(value,fromLow,fromHigh,toLow,toHigh)** : This function maps a number from one range to another. However, in this case, using map() directly for temperature conversion is not appropriate for the LM35 sensor, as it outputs 10 mV per degree Celsius. The mapping should be based on the actual voltage output of the sensor.
- vi. **digitalWrite()** : This command sets the specified digital pin to either HIGH (turns on the LED) or LOW (turns off the LED).

Conclusion:-

In this project, we explored how to use an **Arduino** to read moisture levels from a **moisture sensor** and control an **LED** based on the sensor readings. The moisture sensor detects the water content in the soil, and the Arduino processes this data to determine whether the soil is dry, moist, or wet.