

### **3.4P - Arduino Control using Sensors**

#### **Summary**

- Temperature and humidity measuring system for this assignment was developed using Arduino Uno and DHT22 sensor. The system is meant to read the moisture in the air and the temperature and display the readings on the serial monitor of the computer. I began by setting the circuit and ensured that the DHT22 sensor was well connected to the Arduino board, with the DATA pin connected to digital pin 2, VCC to 5V and GND to ground. To connect it to the sensor I uploaded the necessary DHT11 sensor library on the Arduino integrated development environment.
- Then came the writing of the code and uploading of the written code into the Arduino. It was designed to sample, at two seconds period, the temperature and humidity from the sensor and display it on the serial monitor. I ensured that the sensor provides valid information through using the system by checking on the values in different contexts after the upload or the sketch was complete. As for data, temperature and humidity data were presented in real time, as examples of digital sensors that can be used in measuring environmental data.

#### **Reflection**

- Firstly, it meant that due to the possibility of proper construction of the hardware, writing the necessary code and, finally, the receipt of real-time data from the DHT22 sensor, I can say that I met all the learning outcomes. The system worked smoothly and the Serial Monitor always displayed the identities of the temperature and humidity readings.
- The greatest thing which I realized in this assignment was how to access digital sensors of Arduino in order to collect and analyze environmental information. Since environmental parameters are generally captured through sensors, Das and Wong have identified that there is need to understand how sensors operate and how data from these sensors can be used. This is widely applied in smart homes, climate and weather tracking and, farming among other areas.
- While inherent to building my project, this particular challenge reintroduced me to Arduino programming and working with analog sensors, as well as introduced me to digital sensors as they require different approaches and coding methods. One new thing I learned from this task is libraries, especially the DHT sensor library which is an important aid for integrating sensors in Arduino project.
- This ability will be used in projects of environmental monitoring, for example , when creating a home automation system that is able change internal climate dependent on temperature and humidity level. Furthermore, it offers further advanced strategies in various areas including the IoT, using many sensors to capture real-time data and set off corresponding responses.

## Arduino Code

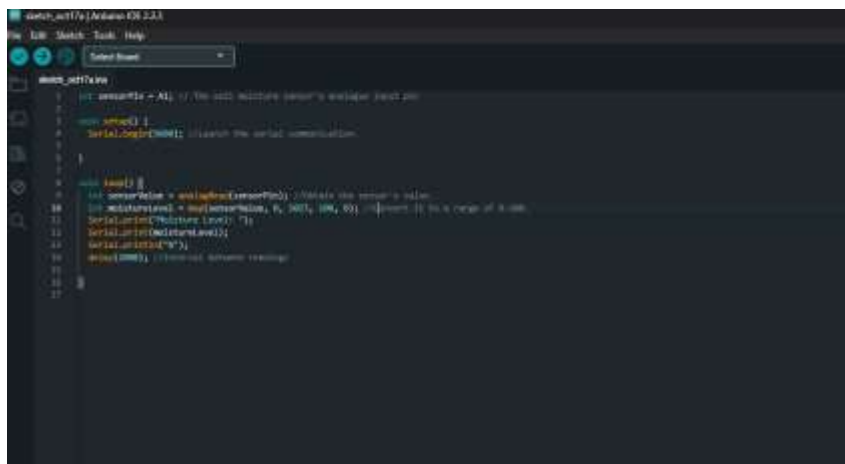
```

int sensorPin = A1; // The soil moisture sensor's analogue input pin

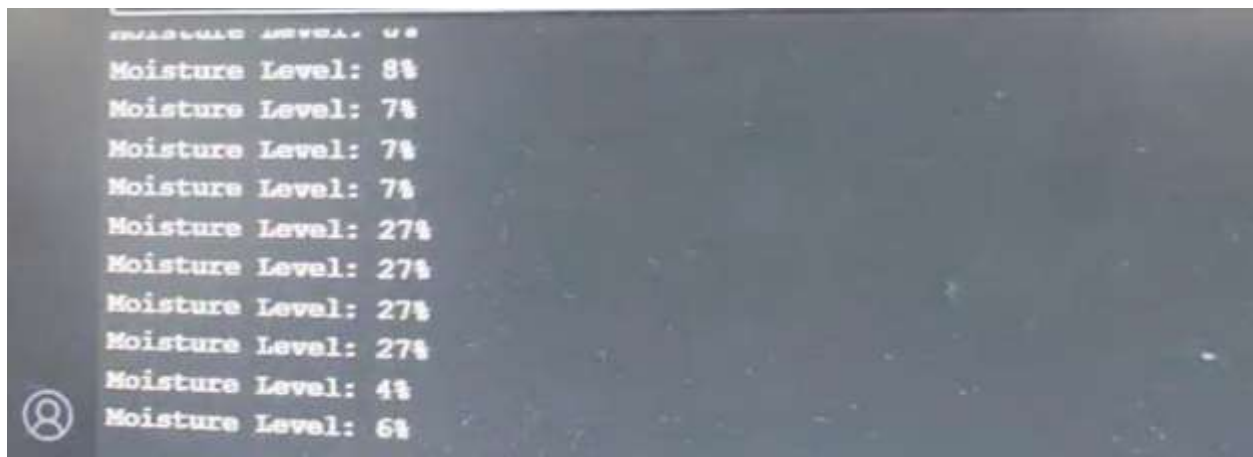
void setup() {
  Serial.begin(9600); //Launch the serial communication.
}

void loop() {
  int sensorValue = analogRead(sensorPin); //Obtain the sensor's value.
  int moistureLevel = map(sensorValue, 0, 1023, 100, 0); //Convert it to a range of 0-100.
  Serial.print("Moisture Level: ");
  Serial.print(moistureLevel);
  Serial.println("%");
  delay(2000); //Interval between readings
}

```



## Evidence of the Output



Drive Link

[https://drive.google.com/file/d/1IX2grDQ2ds00k\\_zHw6ED7JFrXf1H8jF1/view?usp=sharing](https://drive.google.com/file/d/1IX2grDQ2ds00k_zHw6ED7JFrXf1H8jF1/view?usp=sharing)

You Tube Link

<https://youtu.be/k4SR-IhbEm8>