

## EXPERIMENT NO. 3 (Group A)

- **Aim:** Write an application to read temperature from the environment. If temperature crosses threshold value then it notifies with buzzer
- **Outcome:** At the end of this experiment we will studied about measuring temperature with the help of a temperature sensor.
- **Hardware Requirement:** Arduino IOT development board, DHT11 Jumper, wire
- **Software Requirement:** Arduino IDE

### Theory:

One of the many applications of Arduino is measuring temperature. In a project like a weather station you want to know the exact value using a wire Raspberry Pi temperature sensor makes it very easy to read it out and will only read the pin.

We need the temperature and humidity measurement to understand the environmental conditions for a given zone. We might use google or any whether predicting site for the same but often they do not show the real time data and most of the data is averaged out and often based on predicting algorithms. We might also need to measure temperature and humidity level of a closed chamber manufacturing process where controlling the temperature and humidity of a process is of utmost importance. In this practical we will be using Arduino Uno and DHT11 Temperature and Humidity Sensor to measure the ambient temperature and humidity in the air and display the measured values

### Component -

1. Arduino IOT development board
2. Temperature sensor DHT11
3. Jumper Wire
4. 4.7k  $\Omega$  resistor

### DHT11 / DHT 22:

The DHT11 contains two major components to detect humidity and temperature respectively.

The first component is using the Conductivity to measure the environment humidity. When humidity is changing, the polymer between two electrodes will change the conductivity, causing the resistance between electrodes to drop or rise. The chip on DHT11 will use it to determine correct humidity.

The DHT11 & DTH22 sensor can measure only one humidity as well as Temperature. They look kind of the same and have the same pinout, but their specs are different. Of the two, the DHT22 is more expensive and, undoubtedly, has better specifications. The DHT22 can measure temperatures from  $-40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$  with an accuracy of  $\pm 0.5^{\circ}\text{C}$ , while the DHT11 can measure temperatures from  $0^{\circ}\text{C}$  to  $50^{\circ}\text{C}$  with an accuracy of  $\pm 2^{\circ}\text{C}$ . In addition, the DHT22 sensor can measure relative humidity from 0 to 100% with an accuracy of 2-5%, while the DHT11 sensor can only measure relative humidity from 20 to 80% with an accuracy of 5%.

### 1.3. Specification

Supply Voltage: 3.3V to 5V

Range of Temperature reading:  $0\text{-}50^{\circ}\text{C}$  with  $\pm 2^{\circ}\text{C}$  accuracy

Range of Humidity reading: 20%~80% with  $\pm 5\%$  accuracy

Sampling Rate: 1Hz

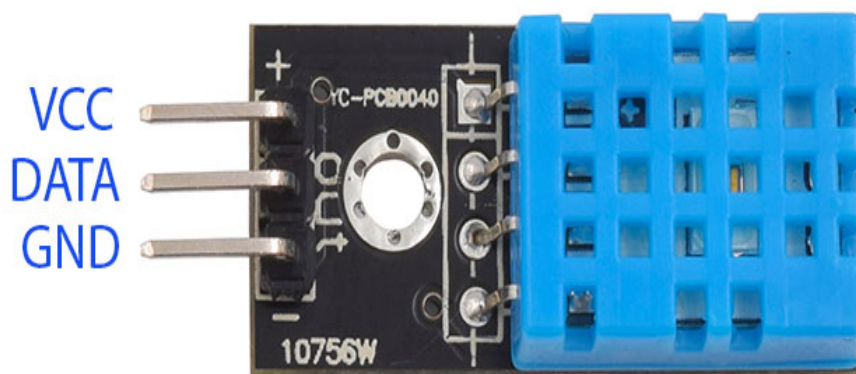
### 1.4. Pinout Diagram

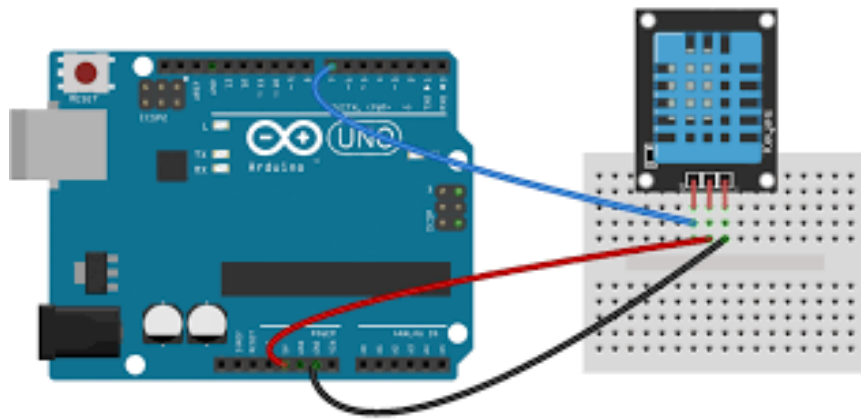
Pin      Function

GND- Ground

VCC- Voltage Supply

DATA- Signal Output(Digital)



**Conclusion:**

Thus we Studied read temperature from the environment & notify R temperature across the value threshold.