Experiment 2.2

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Subject Name: IOT Lab **Subject Code: 20CSP-358**

1. Aim

Interfacing of Arduino/Raspberry Pi with temperature and humidity sensor with real time application. o measure the distance of an object using an ultrasonic sensor.

2. Apparatus / Simulator Used

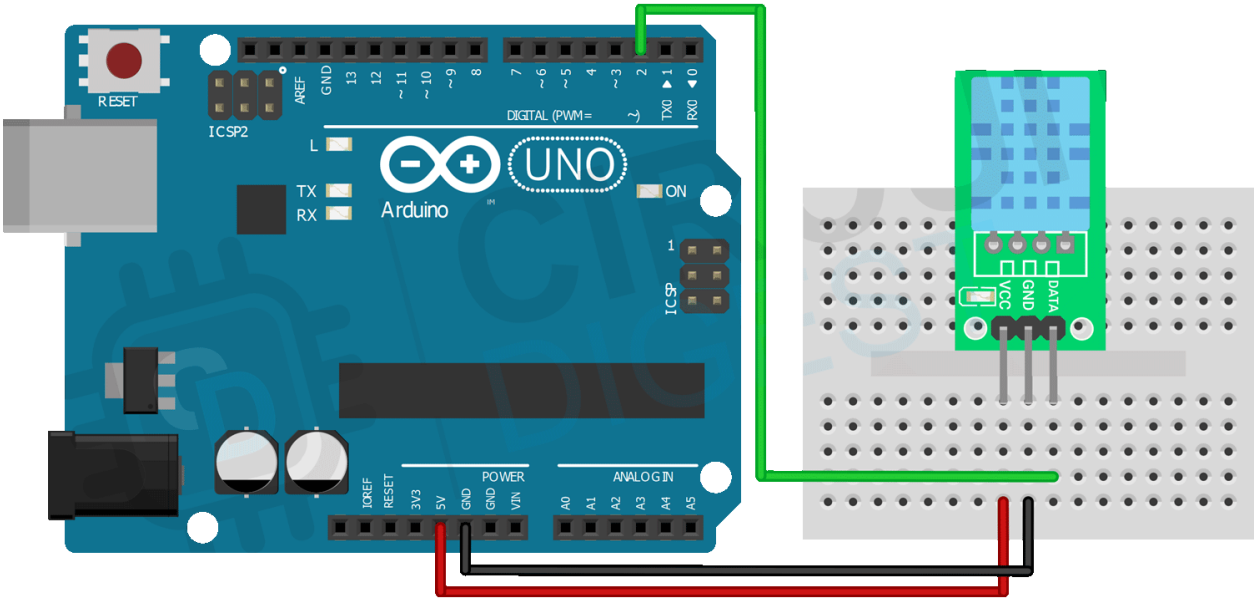
Components Required:

You will need the following components − •

3 jumping wires

- 1 Arduino Uno R3
- 1 humidity sensor
- 1 Aux cable

3. Circuit Diagram



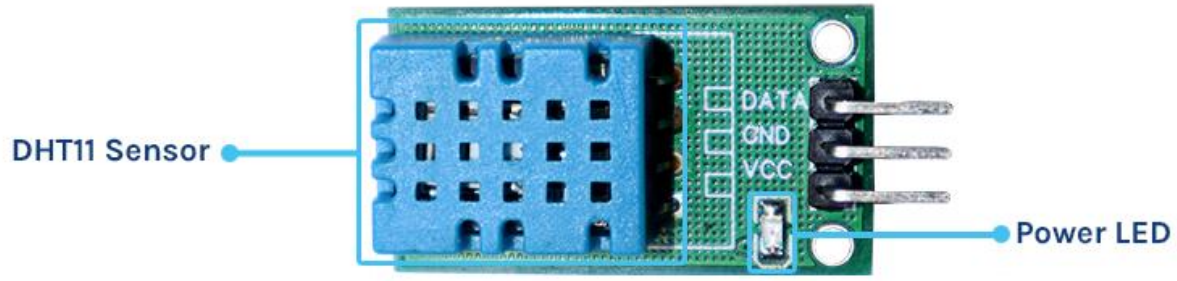
4. Theory

DHT11 Sensor:

DHT11 Module features a temperature & humidity sensor complex with a calibrated digital signal output. The exclusive digital-signal-acquisition technique and temperature & humidity sensing technology ensure high reliability and excellent long-term stability. This sensor includes an NTC for temperature measurement and a resistive-type humidity measurement component for humidity measurement. These are connected to a high-performance 8-bit microcontroller, offering excellent quality, fast response, anti-interference ability, and cost-effectiveness.

DHT11 Module Parts:

The DHT11 module has only a very low number of parts that includes the DHT11, pullup resistor, bypass capacitor, and power led with a current limiting resistor.



5. Code

```
#include <Adafruit_Sensor.h>
#include <DHT.h>
#include <DHT_U.h>
#define DHTTYPE    DHT11     // DHT 11
#define DHTPIN 2
DHT_Unified dht(DHTPIN, DHTTYPE);
uint32_t delayMS;

void setup() {
  Serial.begin(9600);
  dht.begin();
  sensor_t sensor;
  delayMS = sensor.min_delay / 1000;
}

void loop()
{
  sensors_event_t event;
```

```
  dht.temperature().getEvent(&event);
  Serial.print(F("Temperature: "));
  Serial.print(event.temperature);
  Serial.println(F("°C"));
  dht.humidity().getEvent(&event);
  Serial.print(F("Humidity: "));
  Serial.print(event.relative_humidity);
  Serial.println(F("%"));
  delay(delayMS);

}
```

6. Output