Experiment 5

Interfacing Temperature and Humidity Sensor with Arduino in Tinkercad

AIM:

To interface a temperature and humidity sensor with an Arduino board using Tinkercad and display the sensor readings.

COMPONENTS REQUIRED:

1. Arduino Uno
2. DHT11 or DHT22 Temperature and Humidity Sensor
3. Resistor (10kΩ) – if required
4. Breadboard
5. Jumper wires

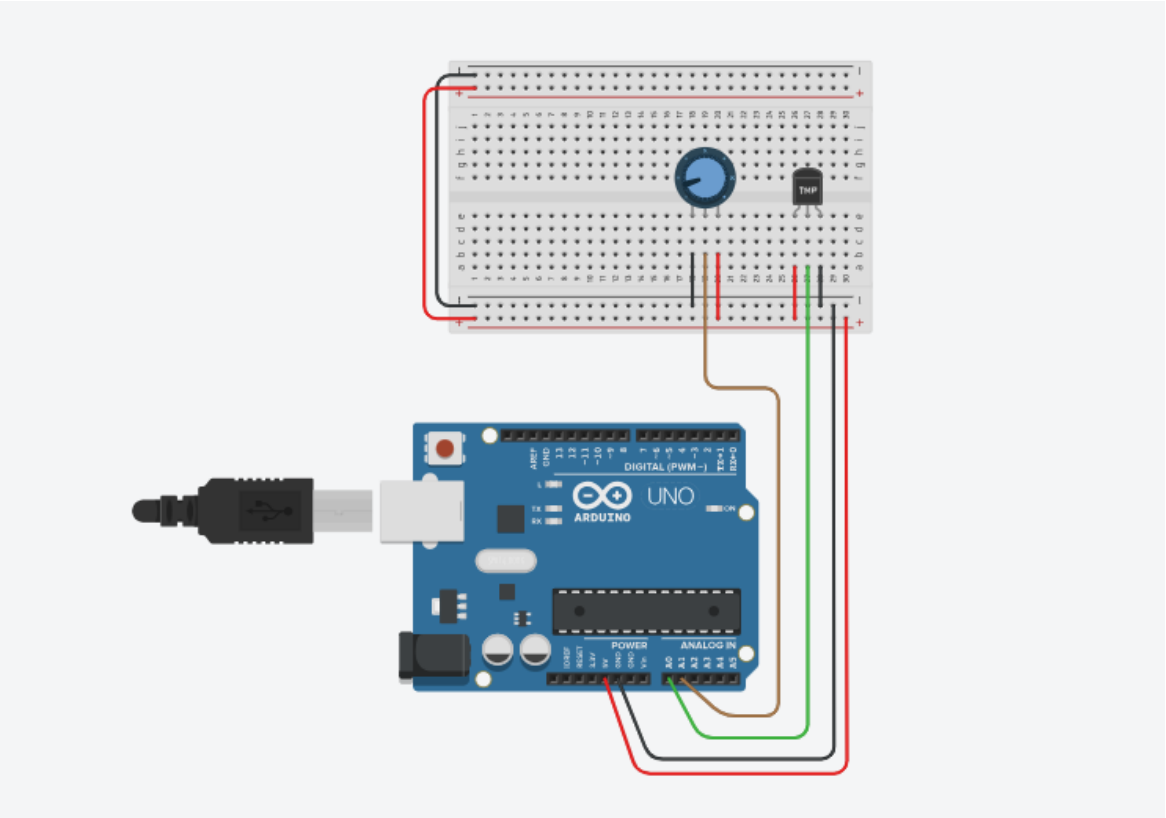
THEORY:

The DHT11/DHT22 sensor measures temperature and humidity using a capacitive humidity sensor and a thermistor. It sends the data digitally to the Arduino through a single data pin. The Arduino processes the signal and displays the values on the serial monitor.

STEPS FOR TINKERCAD:

1. Open Tinkercad and sign in.
2. Create a new circuit and search for "Arduino Uno" in components.
3. Add the DHT11/DHT22 sensor to the circuit.
4. Connect the **VCC** pin of the sensor to the **5V** pin of the Arduino.
5. Connect the **GND** pin of the sensor to the **GND** pin of the Arduino.
6. Connect the **Data** pin of the sensor to **Digital Pin 2** of the Arduino.
7. (Optional) Place a **10kΩ pull-up resistor** between the **VCC** and **Data** pin.
9. Click on "Start Simulation" to run the circuit.
10. Open the Serial Monitor to view temperature and humidity values.

Connection Diagram



Code:

```
const int analogIn = A0;

int humiditysensorOutput = 0;

// Defining Variables

int RawValue= 0;

double Voltage = 0;

double tempC = 0;

double tempF = 0;


void setup(){
```

```
  Serial.begin(9600);
  pinMode(A1, INPUT);
}

void loop(){

  RawValue = analogRead(analogIn);
  Voltage = (RawValue / 1023.0) * 5000; // 5000 to get millivots.
  tempC = (Voltage-500) * 0.1; // 500 is the offset
  tempF = (tempC * 1.8) + 32; // convert to F
  Serial.print("Raw Value = " );
  Serial.print(RawValue);
  Serial.print("\t milli volts = ");
  Serial.print(Voltage,0); //
  Serial.print("\t Temperature in C = ");
  Serial.print(tempC,1);
  Serial.print("\t Temperature in F = ");
  Serial.println(tempF,1);
  humiditysensorOutput = analogRead(A1);
  Serial.print("Humidity: "); // Printing out Humidity Percentage
  Serial.print(map(humiditysensorOutput, 0, 1023, 10, 70));
  Serial.println("%");

  delay(5000);  //iterate every 5 seconds
```

}

OUTPUT:

RESULT:

The temperature and humidity values will be displayed in the Serial Monitor, confirming successful interfacing of the DHT sensor with Arduino in Tinkercad.