EX NO.:	TEMPERATURE SENSOR USING FIREBASE CLOUD PLATFORM
Date:	

AIM:

To Write a program to measure the temperature and execute by interfacing LM35 sensor with Arduino/ Raspberry pi and upload the measured data over Google Firebase Cloud Platform.

COMPONENTS REQUIRED:

COMPONENTS	NOS
Arduino Uno	1
LM35 temperature sensor	1
Wifi module	1
Jumper Wire	5

PROCEDURE:

Step 1: Go to Firebase Console.

Step 2: Create a new project, name it, and follow the prompts to set up.

Step 3: Under the “Build” section, select “Realtime Database” and create a new database. Set it to “Start in test mode” for simplicity.

Step 4: Go to the “Project Settings” and get your **Firebase Database URL** and **API Key**.

Step 5: Connect the power supply **VCC** to 5V pins on the Arduino.

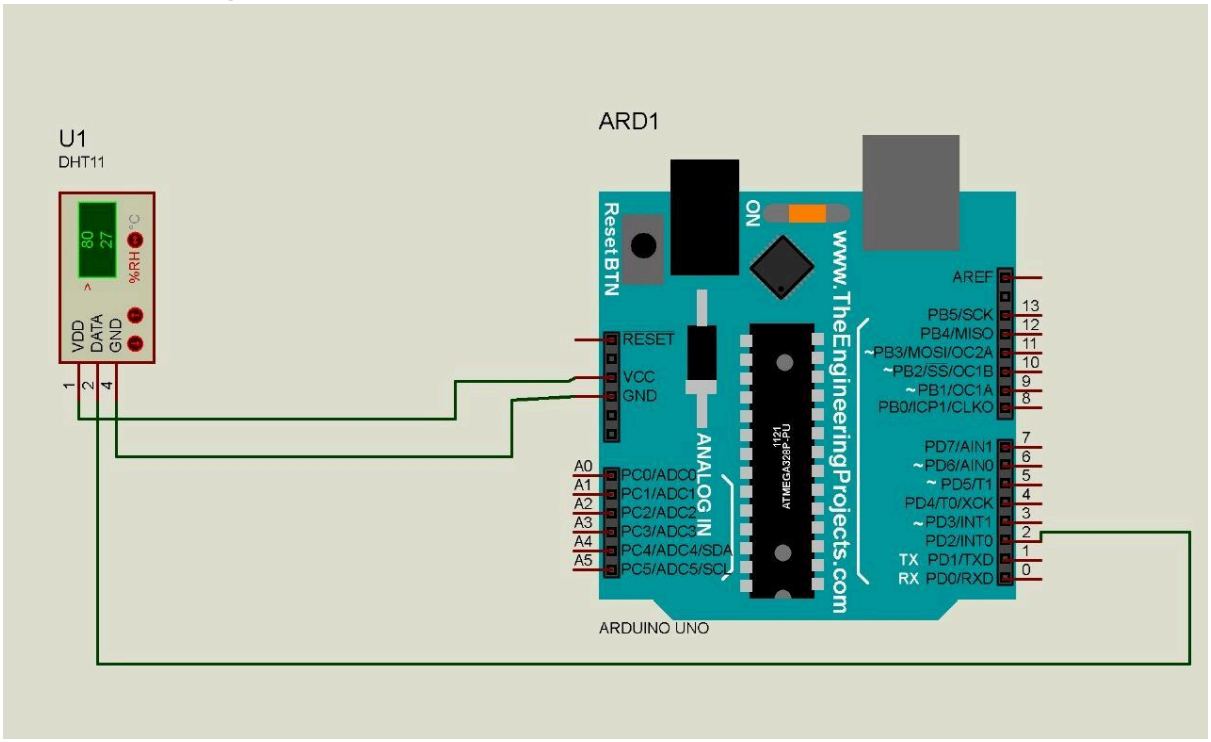
Step 6: Connect the GND pin of the LM35 temperature sensor to one of the GND pins on the Arduino.

Step 7: **Output** to an analog input pin.

Step 8: Connect **TX** of ESP8266 to **RX** of Arduino and **RX** of ESP8266 to **TX** of Arduino

Through a voltage divider to lower the voltage from 5V to 3.3V.

Schematic diagram:

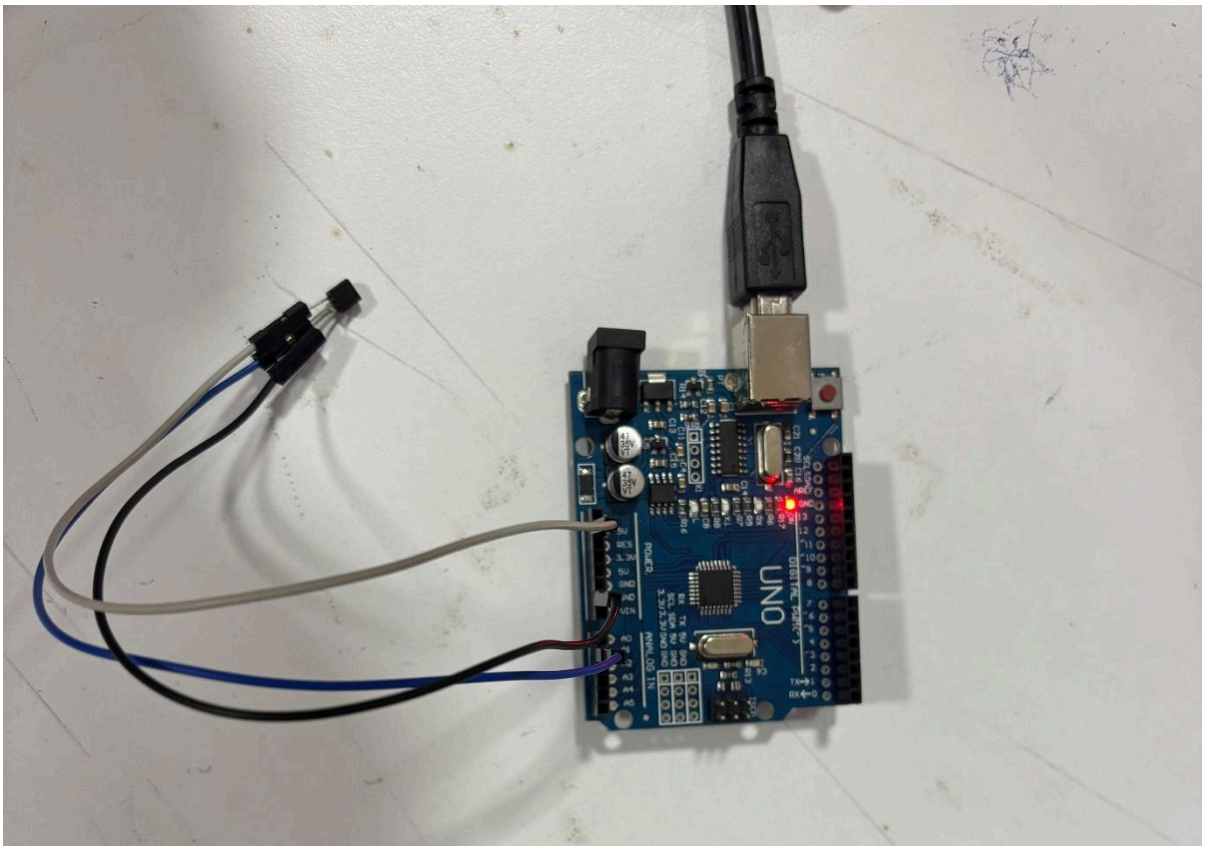


Program:

```
#include <ESP8266WiFi.h>

#include <FirebaseESP8266.h>

#define WIFI_SSID "your-ssid"

#define WIFI_PASSWORD "your-password"

#define FIREBASE_HOST "your-database-name.firebaseio.com"  // Use the URL from Firebase Project Settings

#define FIREBASE_AUTH "your-firebase-database-secret"  // Use the API key from Firebase Project Settings

// Define the analog pin where LM35 is connected

const int lm35Pin = A0;

FirebaseData firebaseData;

void setup() {

  Serial.begin(9600);

  // Connect to Wi-Fi
```

```
  WiFi.begin(WIFI_SSID, WIFI_PASSWORD);
  Serial.print("Connecting to Wi-Fi");
  while (WiFi.status() != WL_CONNECTED) {
    delay(500);
    Serial.print(".");
  }
  Serial.println(" connected!");
  // Initialize Firebase
  Firebase.begin(FIREBASE_HOST, FIREBASE_AUTH);
  Firebase.reconnectWiFi(true);
}
void loop() {
  int sensorValue = analogRead(lm35Pin);
  float temperatureC = (sensorValue / 1024.0) * 500.0;  // LM35 gives 10mV per degree
Celsius
  Serial.print("Temperature: ");
  Serial.print(temperatureC);
  Serial.println(" °C");
  // Upload data to Firebase
  if (Firebase.pushFloat(firebaseData, "/temperature", temperatureC)) {
    Serial.println("Data uploaded to Firebase");
  } else {
    Serial.print("Error uploading data: ");
    Serial.println(firebaseData.errorReason());
  }
  delay(10000);  // Delay between readings, e.g., 10 seconds
}
```

Output:



Result:

Thus the temperature sensor using firebase cloud platform was executed successfully.