LM35 interfacing with Arduino Uno

Aim:

The LM35 is a temperature sensor that provides an analog output proportional to the temperature in Celsius. When connected to an Arduino Uno, it can be used to measure and display the ambient temperature.

**Components Needed:**

* LM35 temperature sensor
* Arduino Uno
* Jumper wires
* Breadboard (optional)
* USB cable to connect Arduino to PC

**Pin Connections:**

1. **LM35 Pins:**
   * **VCC (Pin 1)**: Connect this to the 5V pin of the Arduino.
   * **Output (Pin 2)**: Connect this to any analog input pin of the Arduino (e.g., A0).
   * **GND (Pin 3)**: Connect this to the GND pin of the Arduino.
2. **Arduino Uno Pins:**
   * **5V**: Supplies power to the sensor.
   * **A0**: Receives the analog signal from the LM35.
   * **GND**: Common ground for the Arduino and LM35.

Code:

// Define the analog pin connected to the LM35 sensor

const int lm35Pin = A0;

void setup() {

// Start the serial communication to send the data to the computer

Serial.begin(9600);

}

void loop() {

// Read the analog value from the LM35 sensor

int sensorValue = analogRead(lm35Pin);

// Convert the analog reading (0 - 1023) to a voltage (0 - 5V)

float voltage = sensorValue \* (5.0 / 1023.0);

// Convert the voltage to temperature in Celsius

float temperatureC = voltage \* 100.0;

// Print the temperature to the Serial Monitor

Serial.print("Temperature: ");

Serial.print(temperatureC);

Serial.println(" °C");

// Wait a second before taking another reading

delay(1000);

}

### Procedure:

1. Open the Arduino IDE.
2. Connect the Arduino to your computer via USB.
3. Select the correct board and port from the "Tools" menu.
4. Upload the code to your Arduino.
5. Open the Serial Monitor (Ctrl+Shift+M) to view the temperature readings in real-time.