# Interfacing LM35 Temperature Sensor with Arduino

This project involves interfacing an LM35 temperature sensor with an Arduino to measure and display temperature in both Celsius and Fahrenheit.

The sensor's output is read through an analog pin on the Arduino, processed, and displayed on the Serial Monitor.

## Components Used:

### LM35 Temperature Sensor

Description: The LM35 is a temperature sensor that provides an analog output voltage proportional to the temperature. It has an accuracy of 0.5C and outputs 10mV per degree Celsius.

Working Principle: The LM35 generates an analog voltage that increases by 10mV for every 1C rise in temperature. This voltage is fed into the Arduinos analog input pin and is used to calculate the temperature.

Applications: Used in weather stations, thermostats, and heating control systems.

### Arduino (any model)

Description: Arduino is a microcontroller platform used for building digital devices and interactive projects. It reads inputs, processes them, and provides outputs.

Working Principle: Arduino operates using a microcontroller, which executes the code uploaded to it and interacts with external components (like sensors, motors, etc.).

Applications: Used for prototyping electronic projects, automation systems, and IoT applications.

### Jumper Wires

Description: Flexible, insulated wires used to make electrical connections between components.

Working Principle: Jumper wires provide the electrical path for signals and power, connecting components to the Arduino.

Applications: Used in electronic projects for connecting sensors, motors, and power supplies.

### Breadboard

Description: A solderless platform used for prototyping circuits without soldering.

Working Principle: The breadboard has a grid of holes that allow easy insertion of components and jumper wires, ensuring quick and reliable connections.

Applications: Used to design and test circuits before finalizing them on a PCB.

## Working of the Project:

1. The LM35 sensor detects temperature and outputs a voltage corresponding to the temperature in Celsius (10mV/C).

2. The Arduino reads the sensors analog signal from the sensor pin, converts it to a voltage value, and calculates the temperature.

3. The calculated temperature (in Celsius and Fahrenheit) is displayed on the Serial Monitor.