SONA COLLEGE OF TECHNLOGY,SALEM

ELECTRONICS AND COMMUNICATION ENGINEERING

U23EC302 - DIGITAL ELECTRONICS

<<PROJECT REPORT>>

BY,

TEAM : CRUZZERS

DEPT : BE-ECE (II year)

SEC : B

DIGITAL THERMOMETER

AIM:

To design a Digital thermometer using the IC-LM35 to provide an accurate, reliable, and quick measurement of temperature in various applications.

APPARATUS:

S.NO	APPARTAUS	RANGE	QTY
1.	IC LM35	-	1
2.	I^2C Bus	-	1
3.	BREADBOARD	-	1
4.	7 Segment LCD Display	-	1
5.	HIGHWATT BATTERY	**9v**	1
6.	HW CONNECTOR	**-**	1
7.	ARDUINO UNO	**-**	1
8.	**Jumper Wires**	-	1

Theory:

A digital thermometer is a device used to measure temperature and display the readings in a digital format. The LM35 temperature sensor is at the core of this project, providing a precise and linear output directly proportional to the temperature.

Objective:

The objective of this project is to design and implement a digital thermometer using the LM35 sensor to accurately measure and display real-time temperature in a reliable, cost-effective, and user-friendly manner for various applications such as medical, environmental, or industrial monitoring.

Procedure:

Step 1: Understand the LM35 Sensor

The LM35 outputs a voltage proportional to the temperature (10mV/°C).

Pin configuration:

Pin 1: VCC (5V).

Pin 2: Output (connect to analog pin on Arduino).

Pin 3: GND (ground).

Step 2: Circuit Design

1. Connect the LM35 sensor:

Pin 1 (VCC) to the 5V pin of the Arduino.

Pin 2 (Output) to the A0 analog pin of the Arduino.

Pin 3 (GND) to the GND pin of the Arduino.

2. For output display:

If using an LCD, connect it to Arduino using 4-bit or I2C communication.

Alternatively, use the Serial Monitor for displaying results.

Step 3: Code for Arduino

Step 4: Testing the Project

1. Upload the code to the Arduino using the Arduino IDE.

2. Open the Serial Monitor then check the LCD display.

3. Place the LM35 sensor in different environments to observe temperature changes.

Outcome

The digital thermometer will display the temperature in °C using the LM35 sensor, with results visible on either the Serial Monitor or LCD display.

Applications:

1. Medical: Monitor body temperature.
2. Environmental: Measure room or ambient temperature.
3. Industrial: Track machine or storage unit temperatures.
4. Educational: Learning tool for students and hobbyists.
5. Safety: Detect overheating or fire risks.

Project Cost:

1. IC LM35	- INR 180
2. I²C Bus	- INR 60

3. 7 Segment Display - INR 130
4. Arduino Uno - INR 570
5. High Watt Battery - INR 30

TEAM : CRUZZERS

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