Temperature Monitoring System

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Introduction

- What is a Temperature Monitoring System?
- Importance in real-world applications
- Objective: Real-time temperature tracking using sensors

Project Objective

- Monitor temperature continuously
- Display temperature on LCD/Serial Monitor
- Alert when temperature crosses threshold (optional)

Hardware Components

- Arduino Uno
- Temperature Sensor (LM35/DHT11)
- LCD Display (16x2) / Serial Monitor
- Breadboard, Jumper Wires
- Power Supply / USB Cable

Software Tools

- Arduino IDE
- Embedded C/C++
- Serial Monitor (for output/debugging)

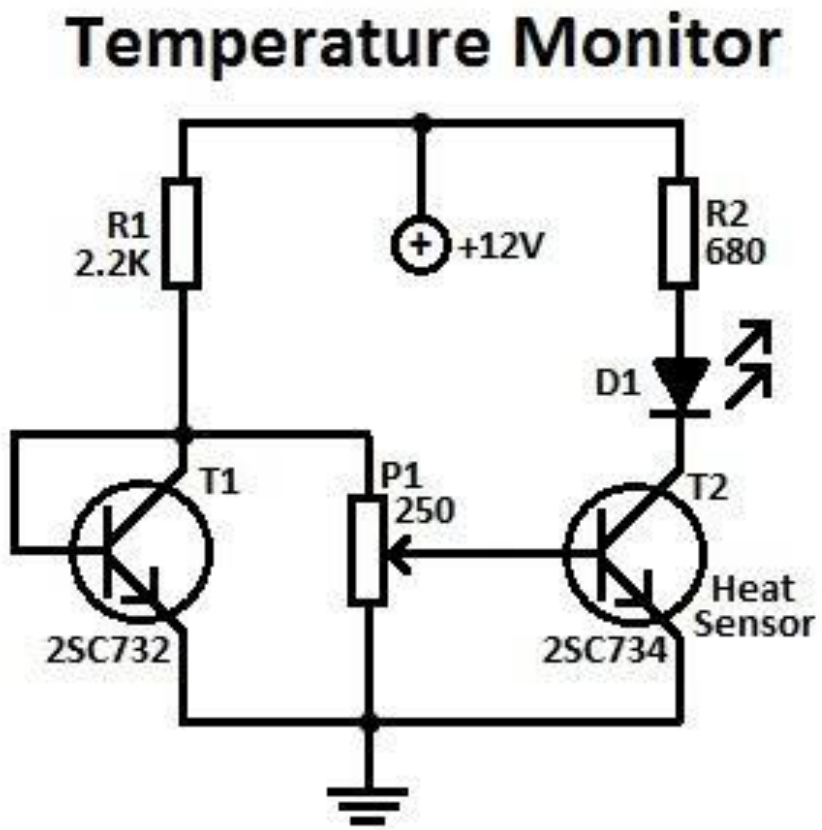
System Block Diagram

- [Temperature Sensor] → [Microcontroller] → [LCD Display / Serial Output]

Working Principle

- Sensor reads ambient temperature
- Sends data to microcontroller
- MCU processes and displays data
- Optional alert if threshold is crossed

Circuit Diagram



Arduino Code

```
#include <LiquidCrystal.h>
LiquidCrystal lcd(12, 11, 5, 4, 3, 2);
int sensorPin = A0;
void setup() {
  lcd.begin(16, 2);
}
void loop() {
  int reading = analogRead(sensorPin);
  float voltage = reading * 5.0 / 1024;
  float tempC = voltage * 100;
  lcd.setCursor(0, 0);
  lcd.print("Temp: ");
  lcd.print(tempC);
  lcd.print(" C");
  delay(1000);
}
```

Output Screenshot

- Insert LCD/Serial output screenshot
- Insert image of circuit setup

Applications

- Industrial Automation
- Agriculture (Greenhouses)
- Smart Homes / IoT
- Health Monitoring

Conclusion

- Successfully implemented a real-time temperature monitoring system
- Can be extended with wireless communication
- Useful in many embedded applications