



Temp36 Sensor Arduino Testing

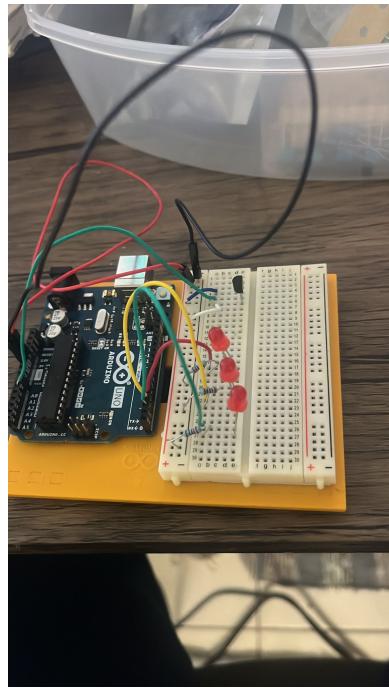
Status	Completed
Assign	k kennedy freitas
Type	Learning

Objectives

Control of 3 LEDS based on the read temperature of the sensor.

🎯 Summary:

1. Reads **temperature** from the **TMP36 sensor**.
2. Converts the **analog signal (0-1023)** to **voltage (0-5V)**.
3. Converts **voltage to temperature (°C)**.
4. Prints the values to the **Serial Monitor** for debugging.
5. Controls **three LEDs**:
 - **1st LED turns on at 20°C.**
 - **2nd LED turns on at 22°C.**
 - **3rd LED turns on at 24°C.**
6. Repeats every 500ms.



Code

```
const int sensorPin = A0;
const float baselineTemp = 20.0;

void setup() {
    Serial.begin(9600); // Initialize serial communication

    for (int pin = 2; pin < 5; pin++) {
        pinMode(pin, OUTPUT);
        digitalWrite(pin, LOW);
    }
}

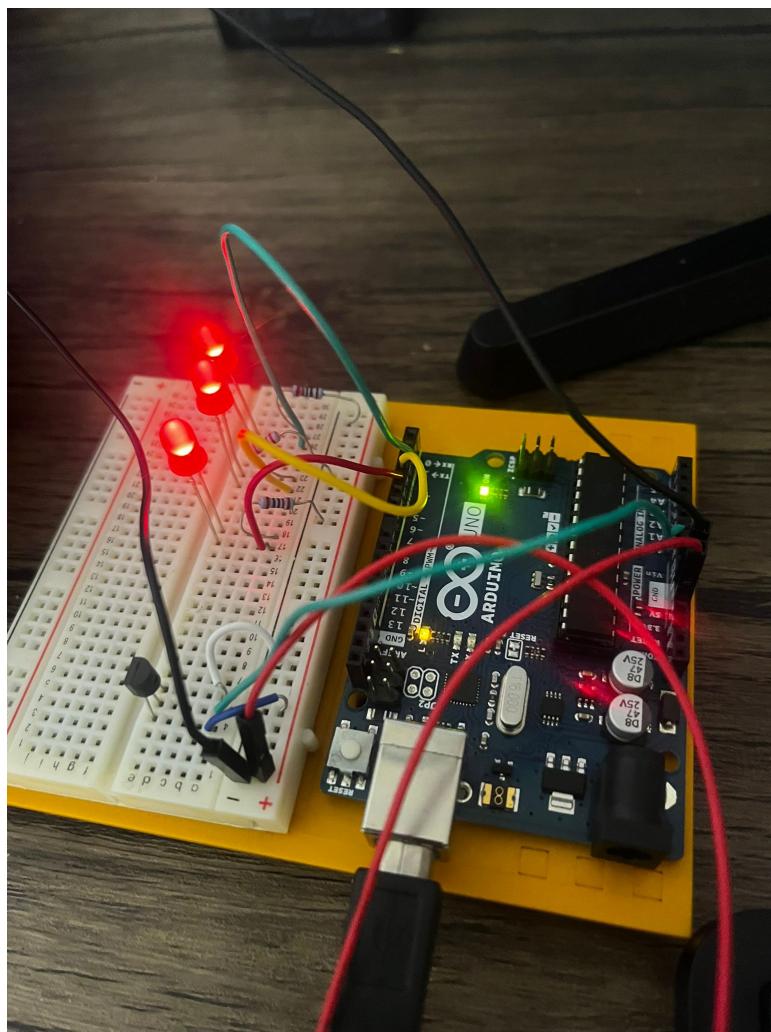
void loop() {
    // Read and convert sensor value
    int sensorVal = analogRead(sensorPin); // Read from A0 (0-1023)
    float voltage = sensorVal * (5.0 / 1023.0); // Convert ADC to voltage
    float temperature = (voltage - 0.5) * 100; // Convert voltage to temperature

    // Print values
    Serial.print("Sensor Value: "); Serial.print(sensorVal);
    Serial.print(", Volts: "); Serial.print(voltage, 2); // 2 decimal places
    Serial.print(", Temperature: "); Serial.print(temperature, 2); // 2 decimal places
}
```

```
Serial.print(", degrees C: "); Serial.println(temperature);

// Control LEDs based on temperature
digitalWrite(2, temperature >= baselineTemp);
digitalWrite(3, temperature >= baselineTemp + 2);
digitalWrite(4, temperature >= baselineTemp + 4);

delay(500); // Allow time for readings to stabilize
}
```



Bugs & Errors

Issue with Sensor calibration.

Base temp values are quite high due to calibration error which provide innacurate temperature readings

```
Output Serial Monitor X

Message (Enter to send message to 'Arduino Uno' on 'COM7')

Sensor Value: 547, Volts: 2.67, degrees C: 217.35
Sensor Value: 544, Volts: 2.66, degrees C: 215.88
Sensor Value: 535, Volts: 2.61, degrees C: 211.49
Sensor Value: 541, Volts: 2.64, degrees C: 214.42
Sensor Value: 538, Volts: 2.63, degrees C: 212.95
Sensor Value: 543, Volts: 2.65, degrees C: 215.40
Sensor Value: 540, Volts: 2.64, degrees C: 213.93
Sensor Value: 544, Volts: 2.66, degrees C: 215.88
```