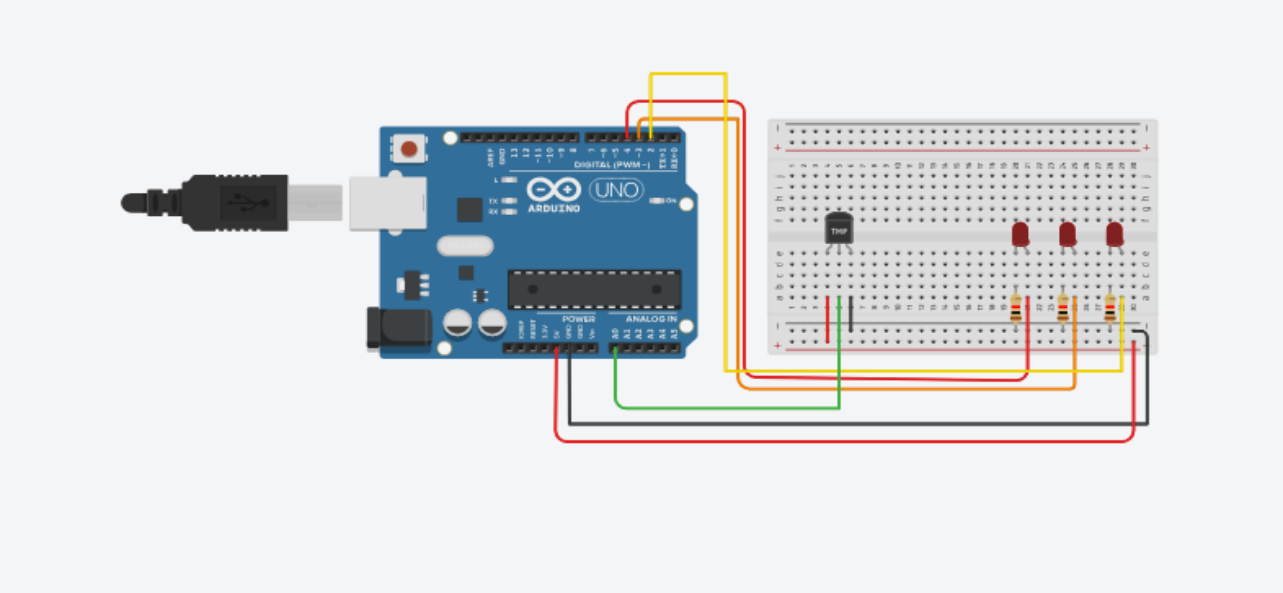
PRACTICAL 7

Simulation Arduino Interfacing with temperature sensor



PROGRAM:

```
// Declare variables
int baselineTemp = 0;
int celsius = 0;
int fahrenheit = 0;

void setup() {
  // Set up the analog pin for temperature sensor and serial monitor
  pinMode(A0, INPUT);
  Serial.begin(9600);

  // Set up LED pins
  pinMode(2, OUTPUT);
  pinMode(3, OUTPUT);
  pinMode(4, OUTPUT);
```

```
}

void loop() {
  // Set threshold temperature to activate LEDs
  baselineTemp = 40;

  // Read temperature from analog sensor
  int sensorValue = analogRead(A0);

  // Convert sensor value to Celsius (assuming LM35 or similar sensor)
  celsius = map((sensorValue - 20) * 3.04, 0, 1023, -40, 125);
  fahrenheit = (celsius * 9.0 / 5.0) + 32; // Convert Celsius to Fahrenheit

  // Print the temperature to the Serial Monitor
  Serial.print("Temperature (C): ");
  Serial.print(celsius);
  Serial.print(" °C, ");
  Serial.print("Temperature (F): ");
  Serial.print(fahrenheit);
  Serial.println(" °F");

  // Control LEDs based on the temperature thresholds
  if (celsius <= baselineTemp) {
    digitalWrite(2, HIGH);  // Turn ON LED on pin 2 if temp is below or equal to baselineTemp
    digitalWrite(3, LOW);   // Turn OFF LED on pin 3
    digitalWrite(4, LOW);   // Turn OFF LED on pin 4
  }
  else if (celsius > baselineTemp && celsius <= baselineTemp + 10) {
    digitalWrite(2, LOW);   // Turn OFF LED on pin 2
    digitalWrite(3, HIGH);  // Turn ON LED on pin 3 if temp is between baselineTemp and
baselineTemp + 10
```

```
    digitalWrite(4, LOW);   // Turn OFF LED on pin 4
  }
  else {
    digitalWrite(2, LOW);   // Turn OFF LED on pin 2
    digitalWrite(3, LOW);   // Turn OFF LED on pin 3
    digitalWrite(4, HIGH);  // Turn ON LED on pin 4 if temp is higher than baselineTemp + 10
  }
  // Wait a moment before the next reading
  delay(1000);
}
```

OUTPUT: