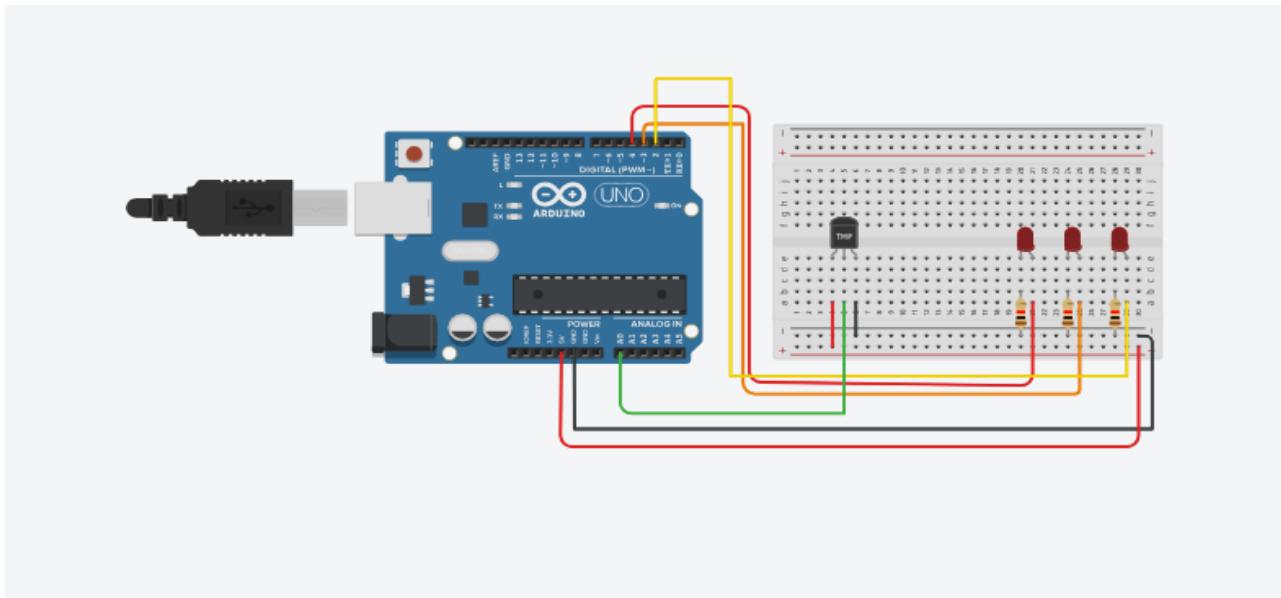


PRACTICAL 7

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);

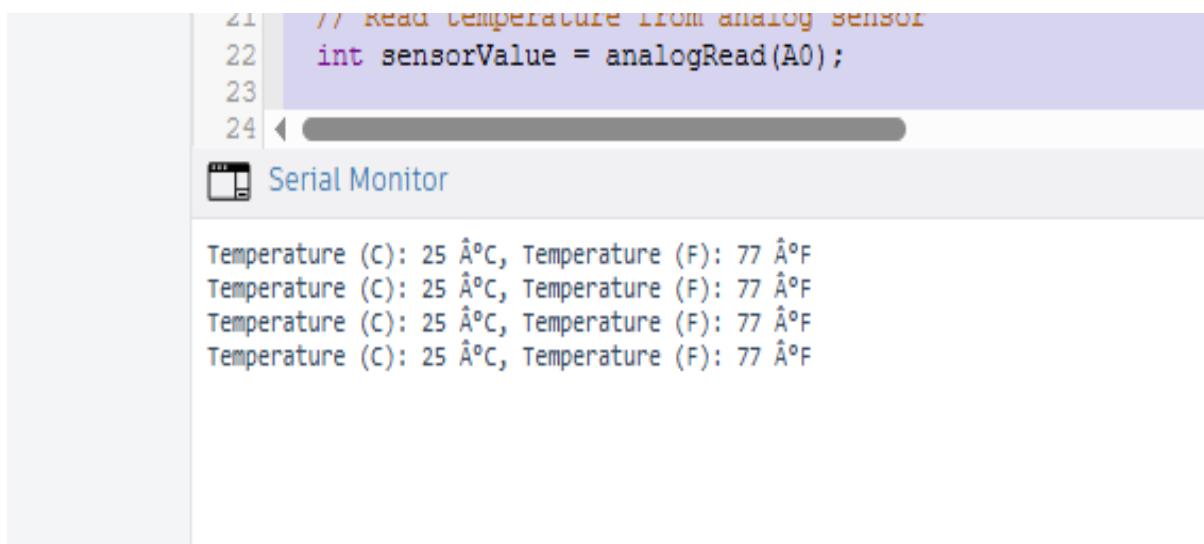
    // Convert sensor value to Celsius (assuming LM35 or similar sensor)
    celsius = map((sensorValue - 20) * 3.04, 0, 1023, -40, 125);
    fahrenheit = (celsius * 9.0 / 5.0) + 32; // Convert Celsius to Fahrenheit

    // 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:



The screenshot shows the Arduino IDE interface with the Serial Monitor window open. The code in the editor includes comments for reading temperature from an analog sensor and a variable declaration for the sensor value. The Serial Monitor window displays four lines of text, each showing the temperature in Celsius and Fahrenheit as 25 °C, 77 °F.

```
21 // Read temperature from analog sensor
22 int sensorValue = analogRead(A0);
23
24
Serial Monitor
```

```
Temperature (C): 25 °C, Temperature (F): 77 °F
```