



AUTOMATIC ROOM TEMPERATURE CONTROLLER

Chirag Sehgal
PROJECT 1

- **ABSTRACT:**

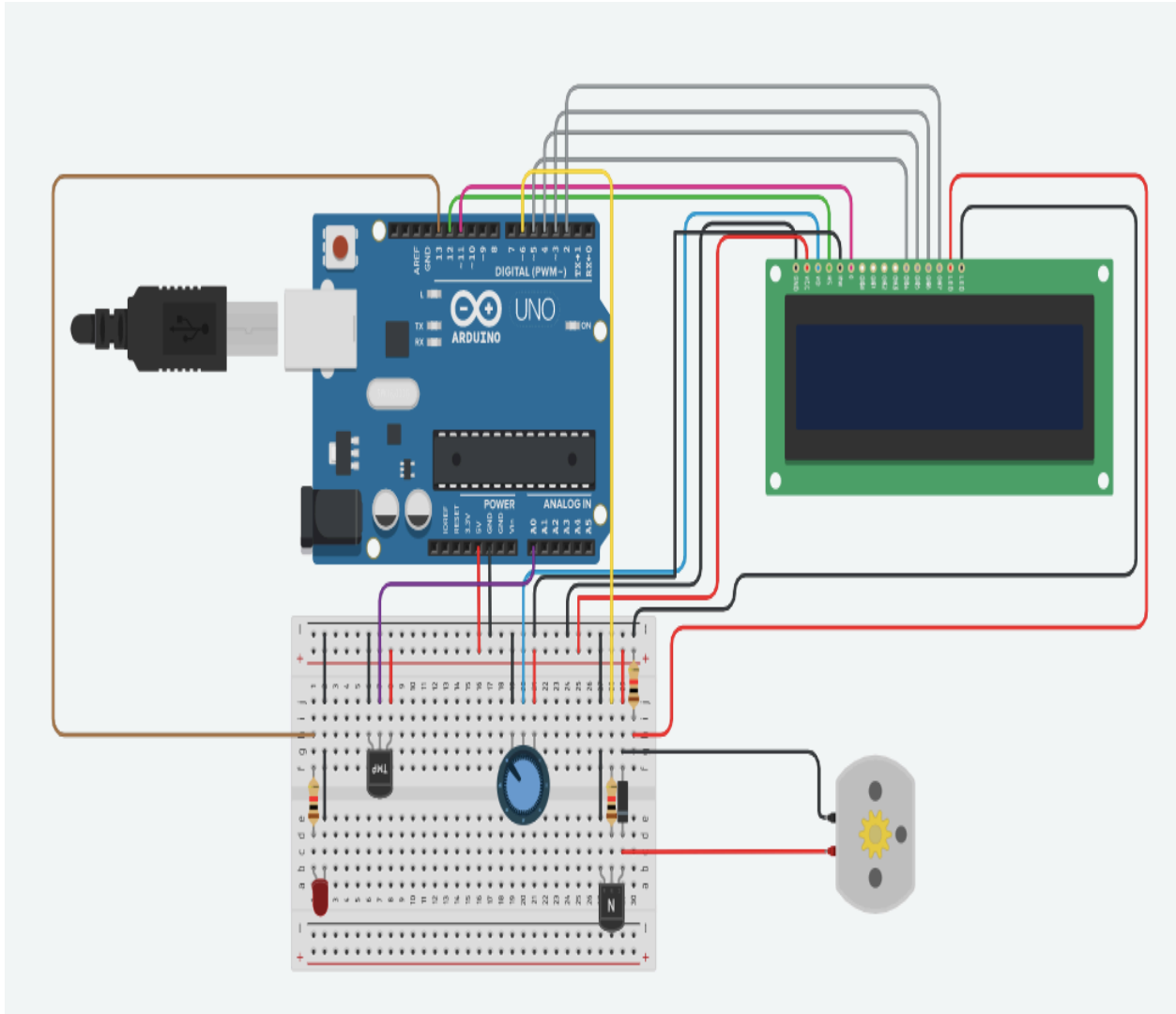
Automatic temperature control system is an important application used in almost all modern gadgets and smart homes. The system for controlling temperature automatically is achieved by using Arduino Uno-based microcontroller system. Arduino Uno due to its increased popularity finds its varied range of applications. Temperature sensor and Arduino Uno are the hardware used interfaced with computer, and the temperature is controlled in the room. Temperature is displayed on LCD display employing A0 pin of hardware with the help of analog pin utilizing pulse width modulation (PWM).

- **INTRODUCTION:**

This study presents the design and implementation of an automatic room temperature control system. An automatic room temperature control system is a self-regulating temperature system which uses a set point or value to maintain the temperature of a room. This system allows the user to set a desired temperature which is then compared to the room temperature measured by a temperature sensor and with the help of a microcontroller, the system responds by showing the command on the screen automatically depending on the temperature difference. The FAN command is triggered when the room temperature is higher than the set temperature and the heater command is triggered when the room temperature is lower than the set temperature.

- **METHODOLOGY:**

CIRCUIT DIAGRAM:



CODE:

```
1  const int temp_trans_pin = A0;
2  const int Heater_pin = 13;
3  const int FAN_pin = 6;
4
5  //Set the range of the desire temperature
6
7  float MinTemp = 20, MaxTemp = 25; // Room temp [20-25]
8
9  #include<LiquidCrystal.h>
10
11  LiquidCrystal LCD (12,11,5,4,3,2);
12
13  void setup(){
14  LCD.begin(16,2);
15    pinMode(Heater_pin, OUTPUT);
16    pinMode(FAN_pin, OUTPUT);
17
18    LCD.print("Room Temp(C): ");
19    LCD.setCursor(2,1);
20    LCD.print(MinTemp); LCD.print("-"); LCD.print(MaxTemp)
21
22    delay(2000);
23  }
24  void loop(){
25    float Eqv_volt,SensorTemp;
26    Eqv_volt = analogRead(temp_trans_pin)*5.0/1023;
27    SensorTemp=100.0*Eqv_volt-50.0;
28
29    LCD.clear();
30    LCD.print("Sensor Reading: ");
31    LCD.setCursor(2,1);
32    LCD.print(SensorTemp); LCD.print("C");
33
34    delay(2000);
35
36    if(SensorTemp > MaxTemp){
37    LCD.clear();
38    LCD.print("Temp is HIGHER!");
```

```
39     LCD.setCursor(0,1); LCD.print("Turn On FAN!");
40     for (int i=0; i<=255; i++){
41         analogWrite(FAN_pin, i);
42     }
43     delay(2000);
44
45     LCD.clear();
46     LCD.print("Now Temp is OK!");
47     LCD.setCursor(0,1);
48     LCD.print("Turn OFF FAN!");
49     for (int i=255; i>=0; i--){
50         analogWrite(FAN_pin, i);
51     }
52     delay(2000);
53 }
54 else if (SensorTemp < MaxTemp){
55     LCD.clear();
56     LCD.print("Temp is LOWER!");
57     LCD.setCursor(0,1);
58     LCD.print("Turn ON HEATER!");
59
60     digitalWrite(Heater_pin,HIGH);
61
62     delay(3000);
63
64     LCD.clear();
65     LCD.print("Temp is OK!");
66     LCD.setCursor(0,1);
67     LCD.print("Turn OFF HEATER!");
68     delay(1000);
69     digitalWrite(Heater_pin, LOW);
70     LCD.clear();
71 }
72 else if (SensorTemp>MinTemp && SensorTemp<MaxTemp){
73     LCD.clear();
74     LCD.print("Temp is Normal!");
75     LCD.setCursor(2,1);
76     LCD.print("Turn OFF ALL!");
```

```

74     LCD.print("Temp is Normal!");
75     LCD.setCursor(2,1);
76     LCD.print("Turn OFF ALL!");
77     delay(1000);
78     LCD.clear();
79 }
80
81 else {
82     LCD.clear();
83     LCD.print("Something Went Wrong");
84     LCD.setCursor(2,1);
85     LCD.print("Wrong in the Circuit");
86     delay(1000);
87     LCD.clear();
88 }
89     delay(1000);
90 }

```

- **CONCLUSION:**

I have designed a simple method of temperature control system automatically. Utilizing the concept cooling after certain temperature, Arduino-based hardware along with display hardware. Any value of temperature can be generalized in this work by altering the code. The work is focused mainly on temperature control, and no other parameter is involved. This seems to be robust way of handling only temperature control on automatic basis. This can be extremely useful for persons of physical disability.

LINK:

<https://www.tinkercad.com/things/a1IRadnWEGg>