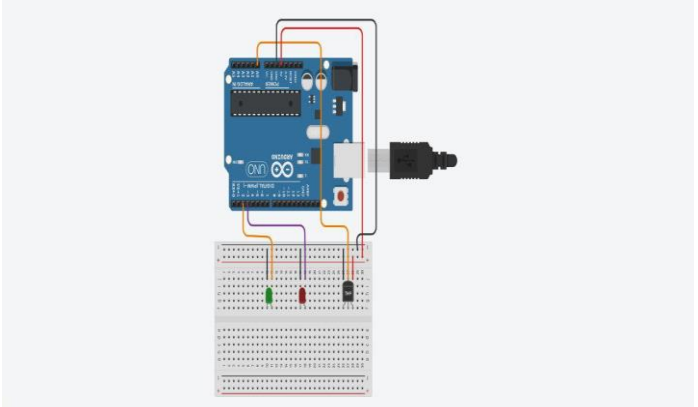
Al-Mustaqbal University
Department of Advanced digital design
Class: four
Subject: Medical electronic system lab
Lecturer: Dr. zahraa hashim
Eng. Ali Ibrahim

"Temperature sensor(LM35) experiment using Arduino"

Objective :The purpose of this experiment is to understand how to use an LM35 temperature sensor with an Arduino to measure temperature and use these measurements to control a lamp. This technology can be used in home automation applications such as controlling the air conditioning or lighting system based on the temperature in the room.

Materials:

1. Arduino board (such as Arduino Uno)



2. LM35 temperature sensor
3. Lamp (eg LED)
4. Resistant (suitable for LED)
5. Wiring needed

Wiring:

1. Connect the positive pin (Vcc) of the LM35 temperature sensor to the 5V pin on the Arduino.
2. Connect the Signal pin of the LM35 temperature sensor to one of the Analog Input pins on the Arduino (such as A0).
3. Connect the negative (GND) pin of the LM35 temperature sensor to the GND pin on the Arduino.
4. Connect the anode (long end) of the LED with one resistor from the pin to pin 13 on the Arduino, and the cathode (short end) to pin GND on the Arduino.

Arduino Code:

```
int sensorPin = 0;
int greenLED =2;
int redLED = 3;

void setup() {
  pinMode(greenLED , OUTPUT);
  pinMode(redLED , OUTPUT);
  Serial.begin(9600);

}

void loop() {
  int sensorValue = analogRead(sensorPin);
  float temp = sensorValue * 0.48828125;

  Serial.print("Temperature :");
  Serial.println(temp);
  delay(1000);

  if(temp>=30){
    digitalWrite(redLED,HIGH);
    digitalWrite(greenLED,LOW);
  }else{
    digitalWrite(redLED,LOW);
```

```
  digitalWrite(greenLED,HIGH);
 }
 }
```

This code reads the temperature value from the LM35 temperature sensor and converts it to temperature in Celsius. Then the turning on and off of the lamp (LED) is controlled based on the measured temperature value.