Internet Of Things

Fire Alarm System

Submitted by :

Name: Sahil Vyas

Roll no. 5970 SYCS C

Fire alarm system

How the Fire Alarm System works?

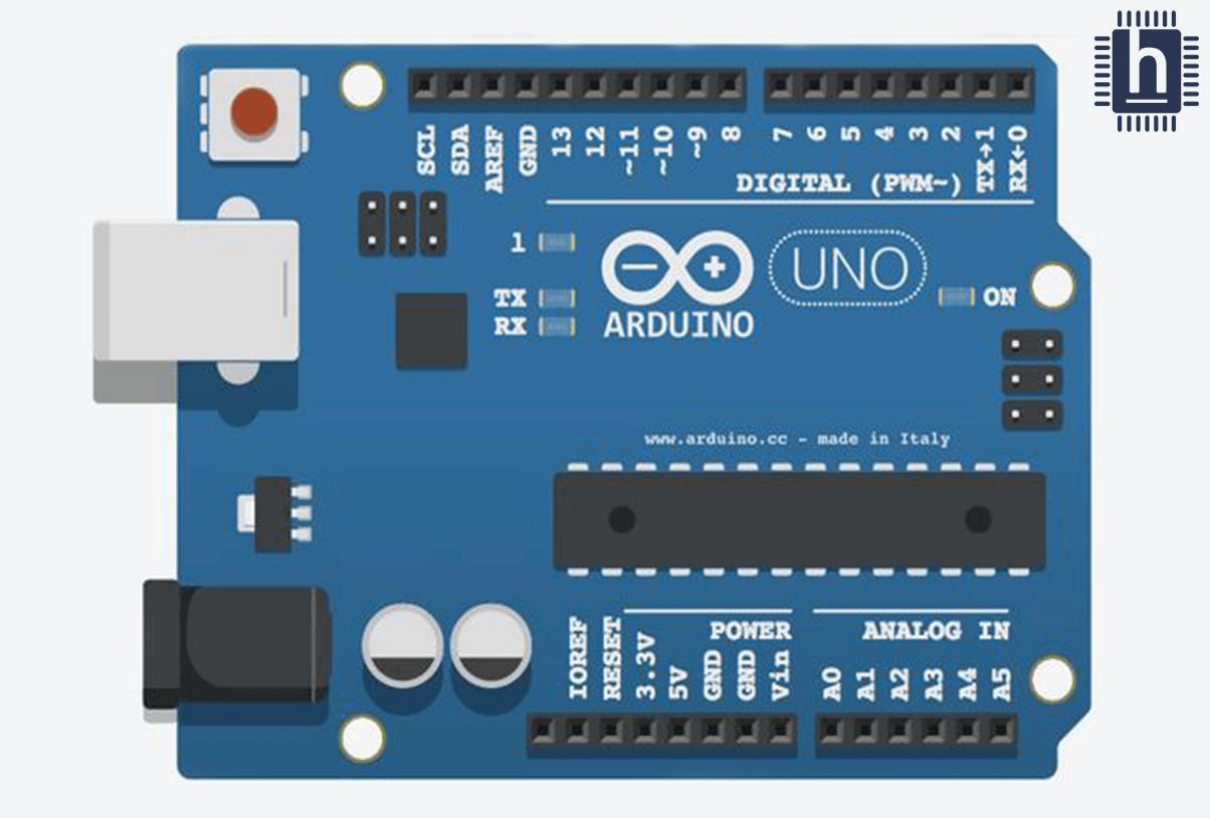
The system works on a simple principle, by detecting the infra-red light by a photodiode on the sensor module it gives logic 1 as output if flame is detected else it gives 0 as output. The Arduino which is continuously monitoring the output of the module performs further takes such as activating the buzzer and LED, sending an alert message.

Now let's learn how to put everything together.

Supplies:

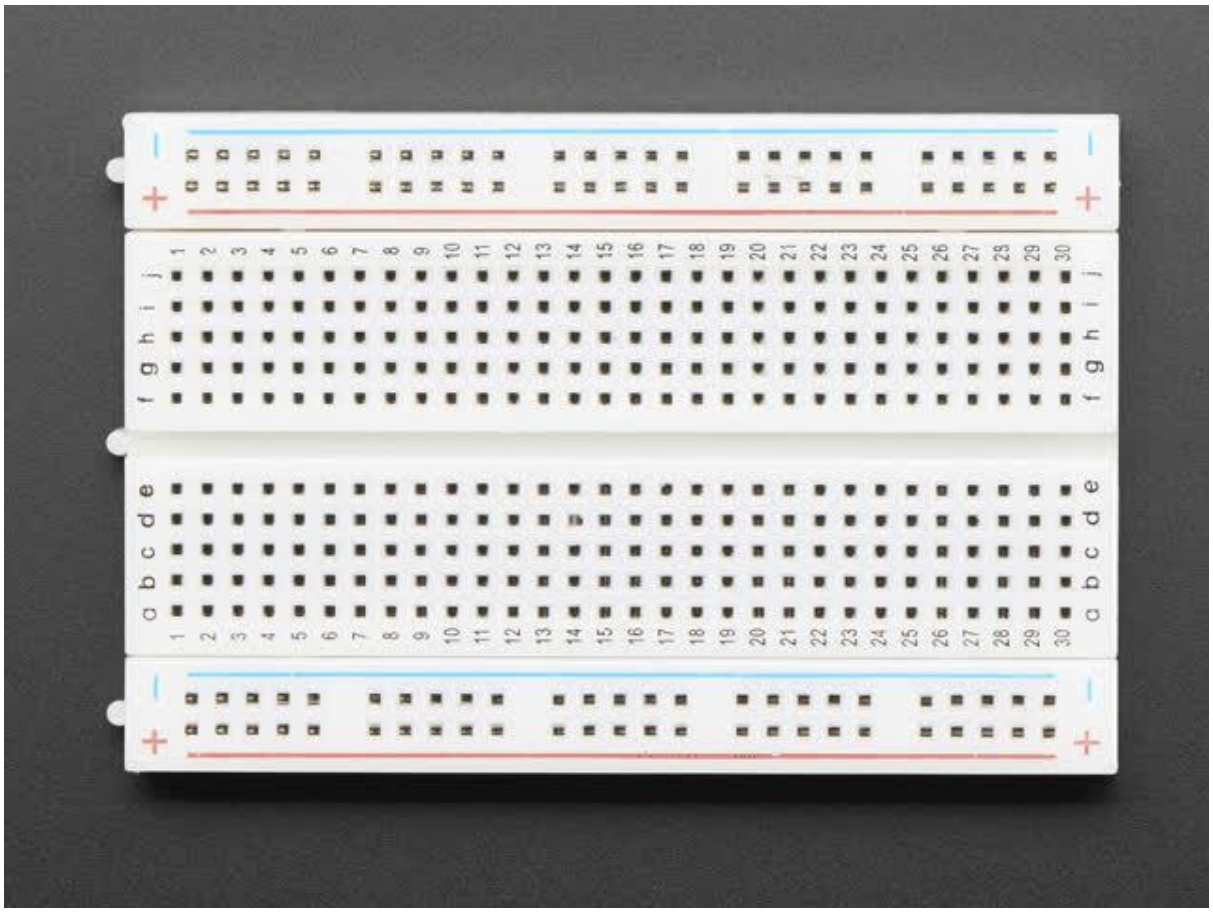
- Arduino Uno
- Breadboard
- Gas sensor
- Temperature sensor
- Piezo
- Led
- Resistor

Arduino uno board



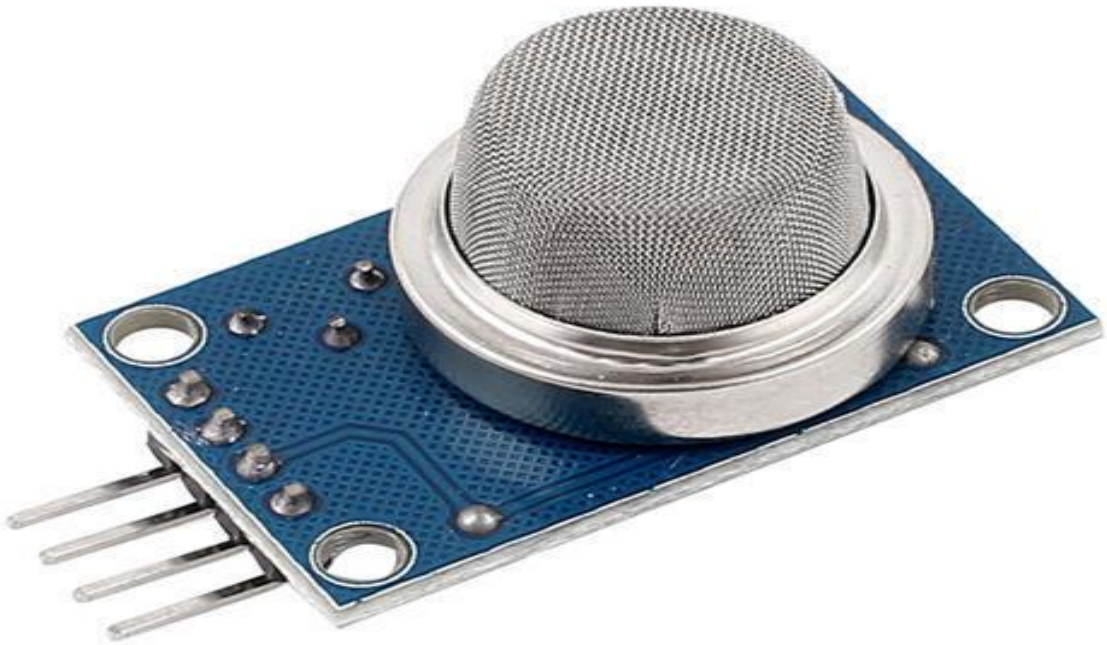
The Arduino Uno is an **open**-source microcontroller board based on the Microchip ATmega328P microcontroller and developed by Arduino.cc. The board is equipped with sets of digital and analog input/output (I/O) pins that may be interfaced to various expansion boards (shields) and other circuits.

Breadboard :



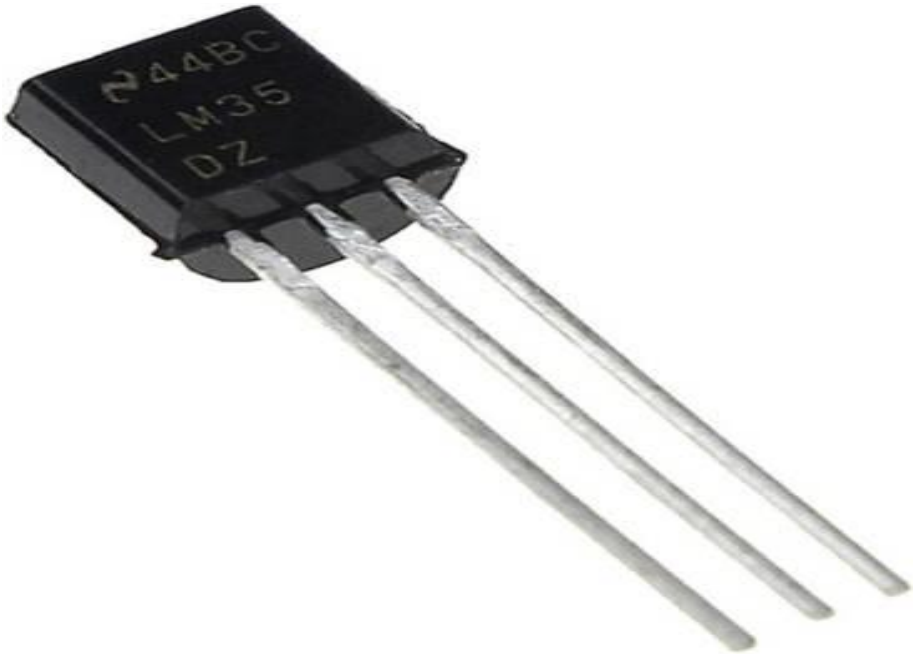
A breadboard is **a solderless device for temporary prototype with electronics and test circuit designs**. Most electronic components in electronic circuits can be interconnected by inserting their leads or terminals into the holes and then making connections through wires where appropriate.

Gas sensor :



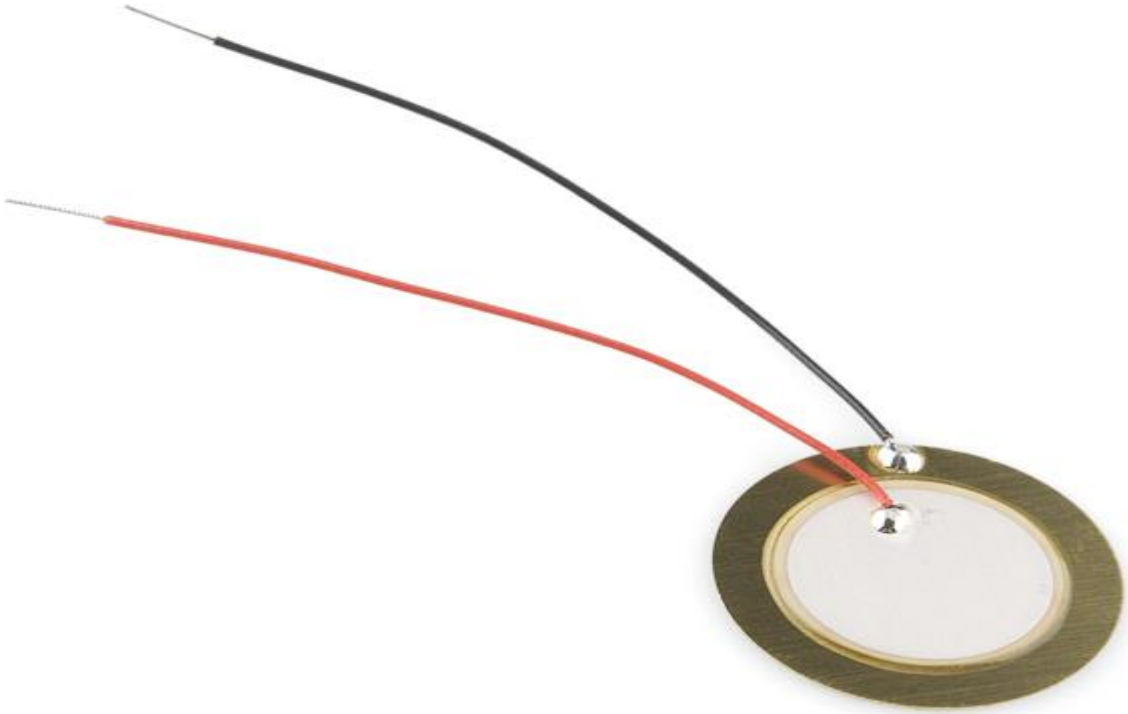
Gas sensors (also known as gas detectors) are **electronic devices that detect and identify different types of gasses**. They are commonly used to detect toxic or explosive gasses and measure gas concentration. ... This type of sensor employs a chemiresistor which comes in contact and reacts with target gasses.

Temperature sensor :



A temperature sensor is **a device used to measure temperature**. This can be air temperature, liquid temperature or the temperature of solid matter. There are different types of temperature sensors available and they each use different technologies and principles to take the temperature measurement.

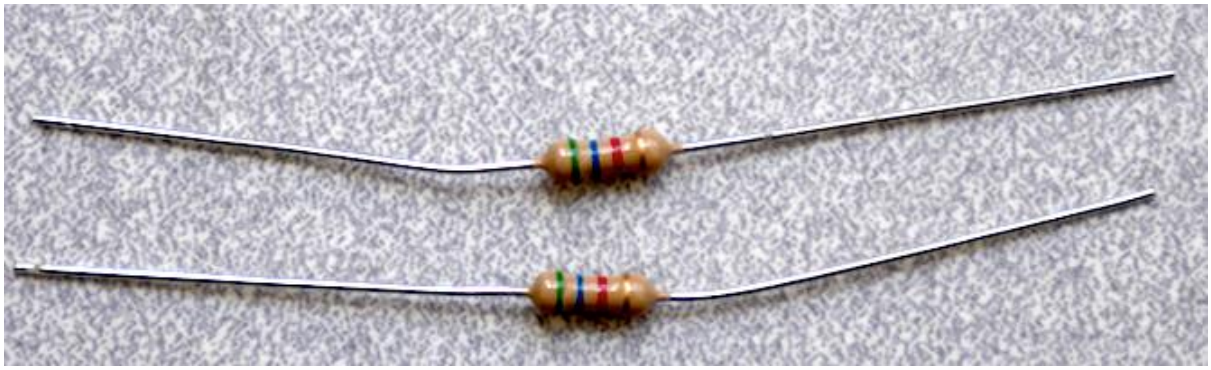
Piezo :



Piezo buzzers are **simple devices that can generate basic beeps and tones**. They work by using a piezo crystal, a special material that changes shape when voltage is applied to it. If the crystal pushes against a diaphragm, like a tiny speaker cone, it can generate a pressure wave which the human ear picks up as sound.

Led :

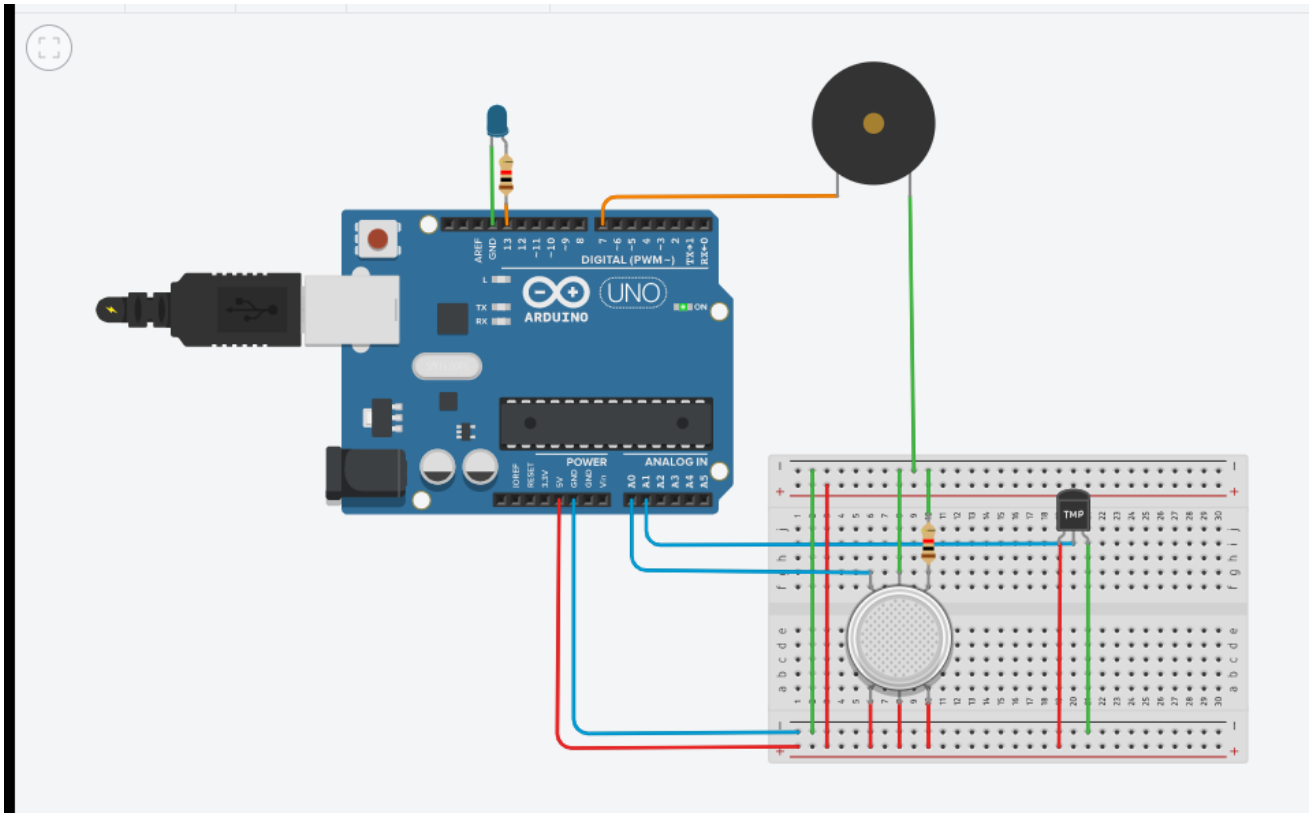
Resistor :



Explanation of project

The fire alarm project is **designed for developing a temperature control system using thermistor**. This simple fire alarm circuit using thermistor can be developed on your own over a solderless breadboard by following simple steps. Hence, it can be considered as a fire alarm mini project.

Design of the project.



CODE:

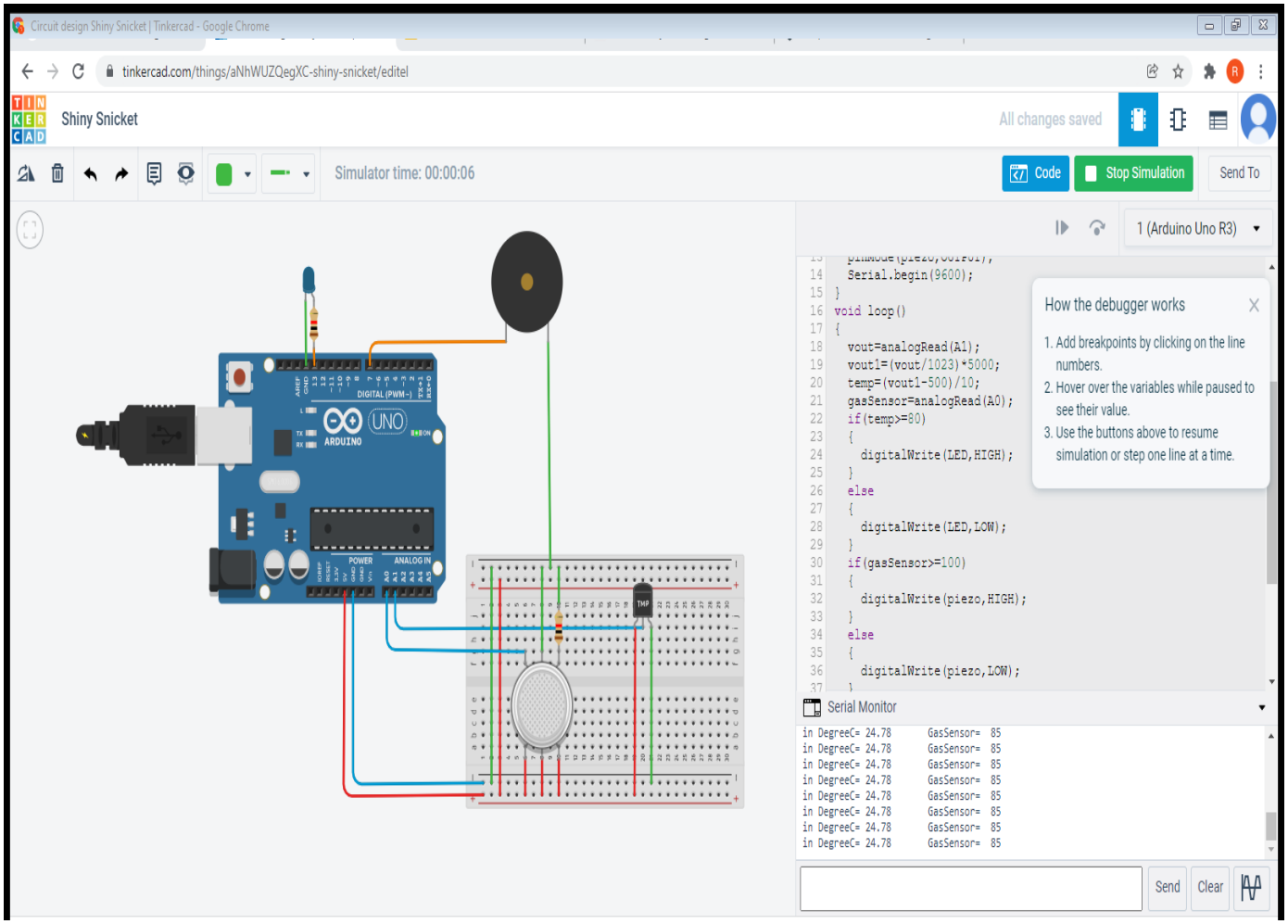
```
float temp;
float vout;
float vout1;
int LED=13;
int gasSensor;
int piezo=7;

void setup()
{
  pinMode(A0,INPUT);
  pinMode(A1,INPUT);
```

```
  pinMode(LED,OUTPUT);
  pinMode(piezo,OUTPUT);
  Serial.begin(9600);
}
void loop()
{
  vout=analogRead(A1);
  vout1=(vout/1023)*5000;
  temp=(vout1-500)/10;
  gasSensor=analogRead(A0);
  if(temp>=80)
  {
    digitalWrite(LED,HIGH);
  }
  else
  {
    digitalWrite(LED,LOW);
  }
  if(gasSensor>=100)
  {
    digitalWrite(piezo,HIGH);
  }
  else
```

```
  {
    digitalWrite(piezo,LOW);
  }
  Serial.print("in DegreeC=");
  Serial.print(" ");
  Serial.print(temp);
  Serial.print("\t");
  Serial.print("GasSensor= ");
  Serial.print(" ");
  Serial.print(gasSensor);
  Serial.println();
  delay(1000);
}
```

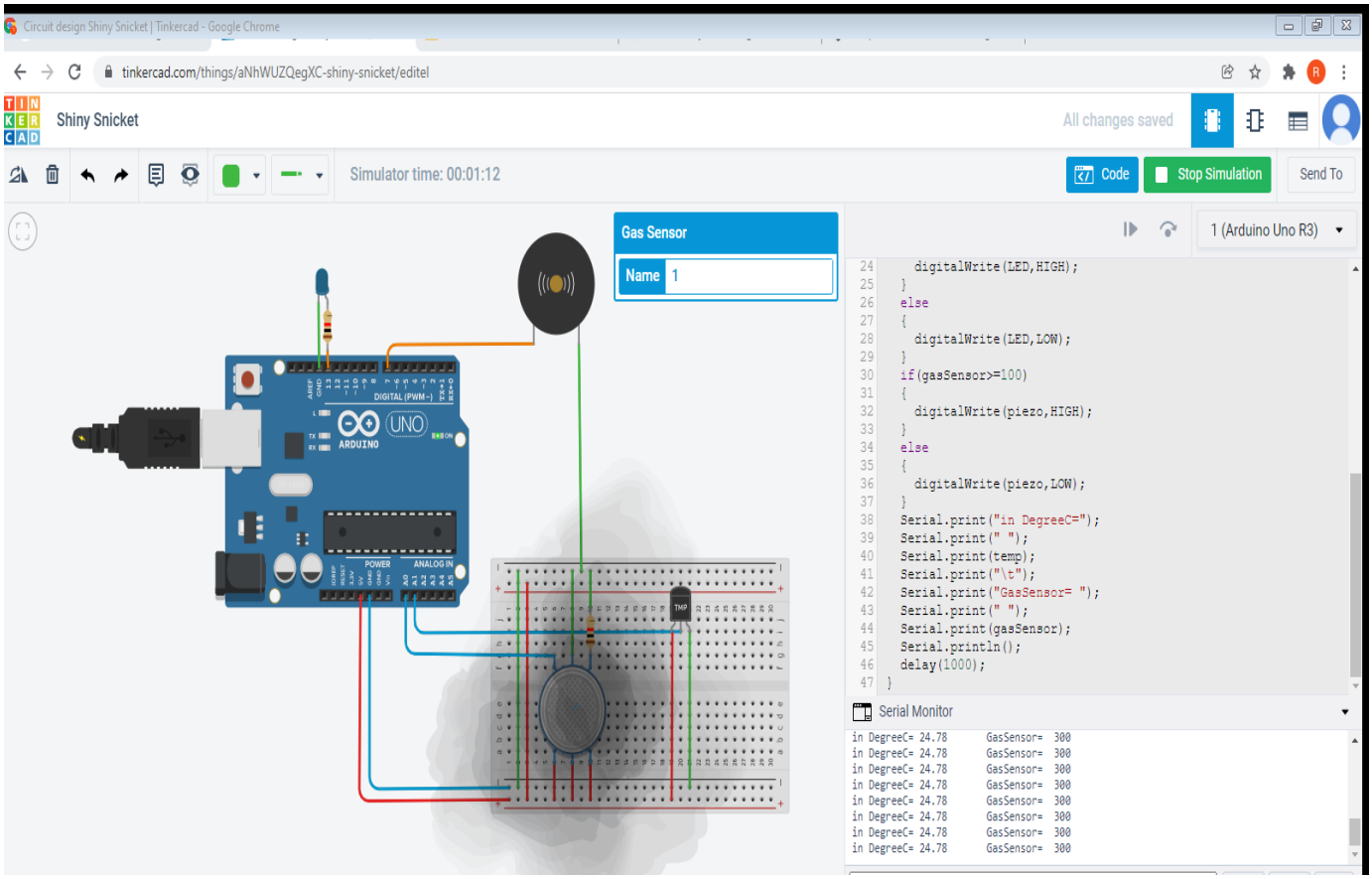
OUTPUT:

1) RUN THE PROGRAM:



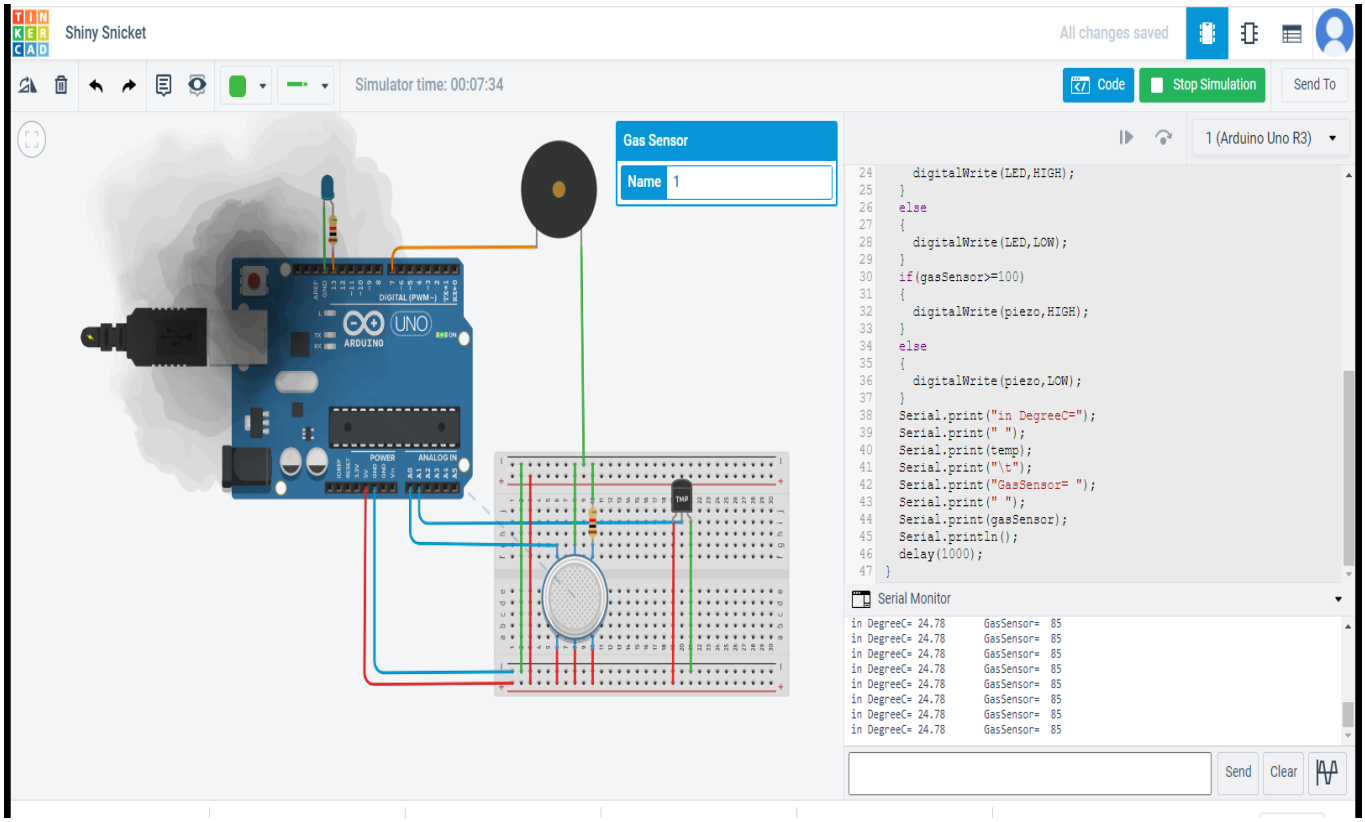
After starting the simulation the initial values are

In degreeC: 24.78 Gas sensor : 85



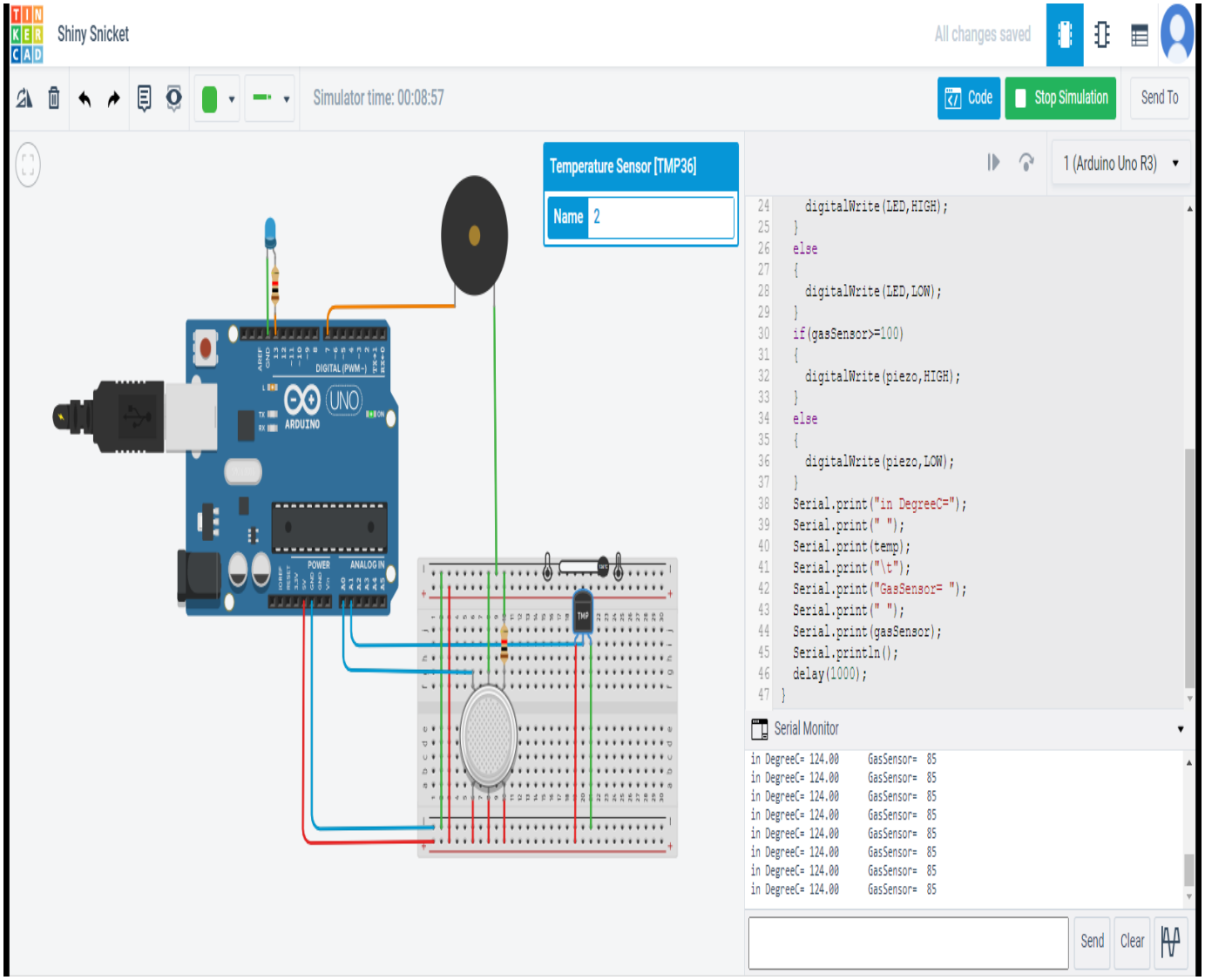
As you can see the smoke is concentrated around the gas sensor the piezo is buzzing and the value of

In degreeC: 24.78 Gas sensor : 300



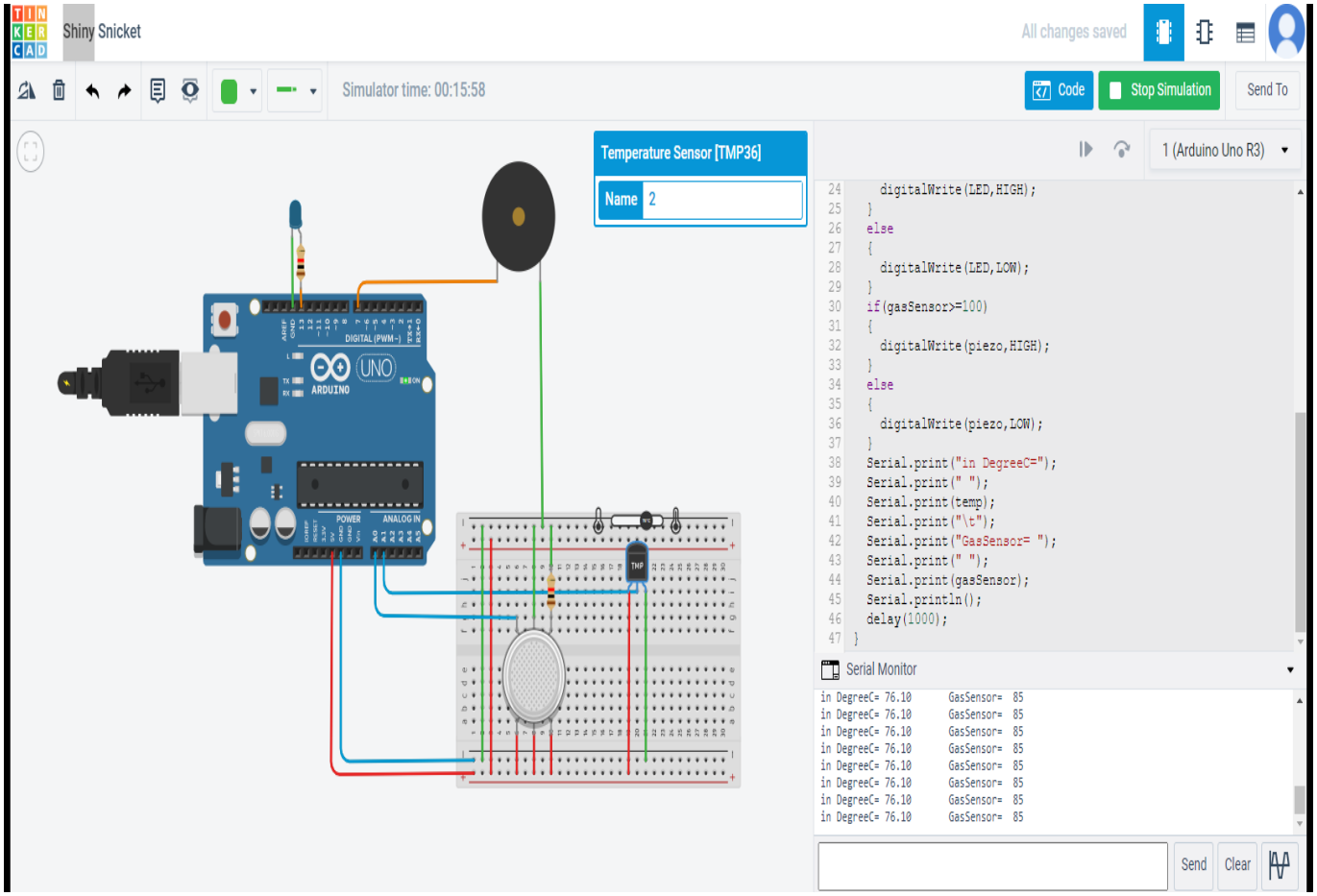
After moving smoke away from the gas sensor the value drop to 85 which is less than 100 which threshold value we give so the piezo stops buzzing.

Now lets observe the temperature sensor :



After increasing temperature the led started glowing. And also the temperature is 124.98 and threshold value is greater than equal to 80

After dropping temperature 76.10 the led stops glowing



Thank you……..