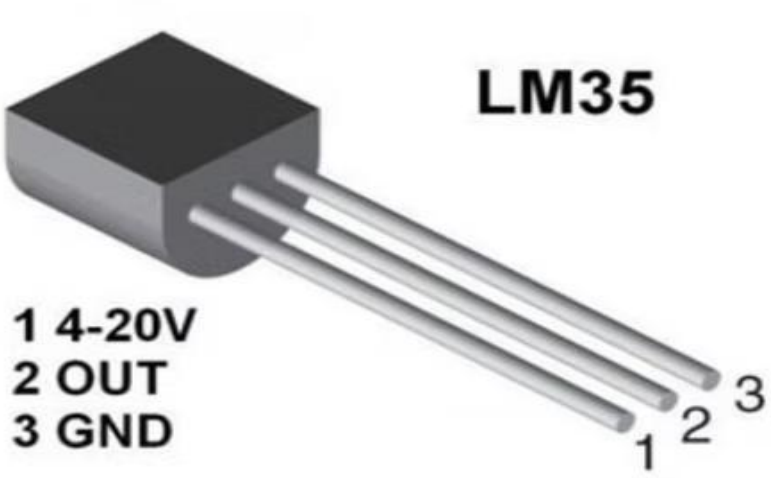
#2:Fire Alarm System Project by Interfacing Arduino with Temperature & Gas Sensor || TinkerCAD Projects

Hardware Requirements.

#Arduino board is a microcontroller that is used to accept inputs from sensors connected and provide an output action on the desired device connected to it. The sensor inputs can be from light-detecting sensors, motion sensors (Ultrasonic or IR), temperature sensors, etc. The output from this device can be received through other output devices such as LED, Buzzer, Serial monitor, etc.

2. **LM-35 Temperature Sensor**



LM-35 Flame Sensor

M-35 #Temperature Sensor gives an analog output based on the instantaneous temperature value. This analog output is proportional to the instantaneous input.

3. **Gas sensor**

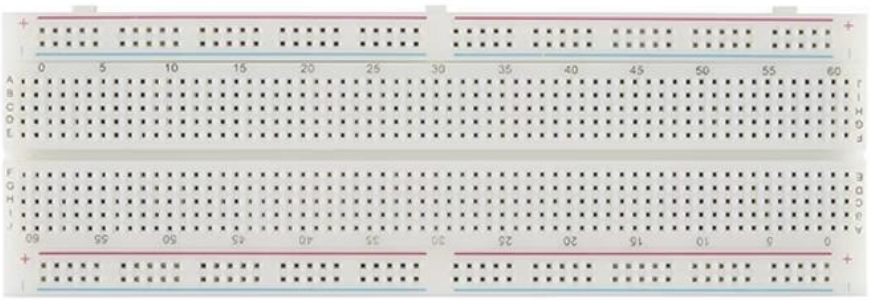
MQ2 Gas sensor

The gas #sensor is used to measure the concentration or presence of gas in the atmosphere. It is also used to detect smoke in the air. Based on the gas, a potential difference is generated by changing the resistance of the material present inside the sensor. The output is measure in terms of Voltage.

4. **Resistors**

1k Ohm Resistor

Resistors are passive devices that restrict the flow of current or divide the voltage through the circuit. The input power passes through these resistors and then to the sensors to avoid damage.



Breadboard

Breadboard

The breadboard is the basic component of any circuit building process. All components, be it input sensors or output display devices are connected to the power supply, microcontroller using wired connections through a breadboard. The holes in the breadboard are in series. There are various sizes like full-sized, half-sized, and mini breadboard.

6. **LED**

LED

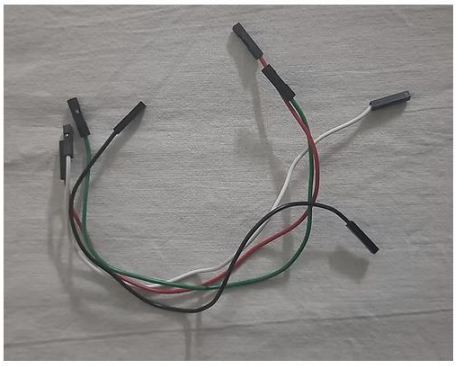
Light Emitting Diode is a commonly used light source. It is a semiconductor that emits light when current flows through it.

7. **Piezo Buzzer**

Piezo Buzzer

It is an electrical component that generates a beep sound on receiving an input. It works on the principle of #piezo crystal.

8. Jumper Wires



Jumper Wires

Circuit Connections and its Working:

Firstly, we need to connect one line of the breadboard to the ground and the other to the power supply. This is done by connecting the 5V pin of the Arduino Board to one line of connection pins on the breadboard. The other line of the breadboard is connected to the ground terminal of the Arduino Board. These lines will be connected to other devices.

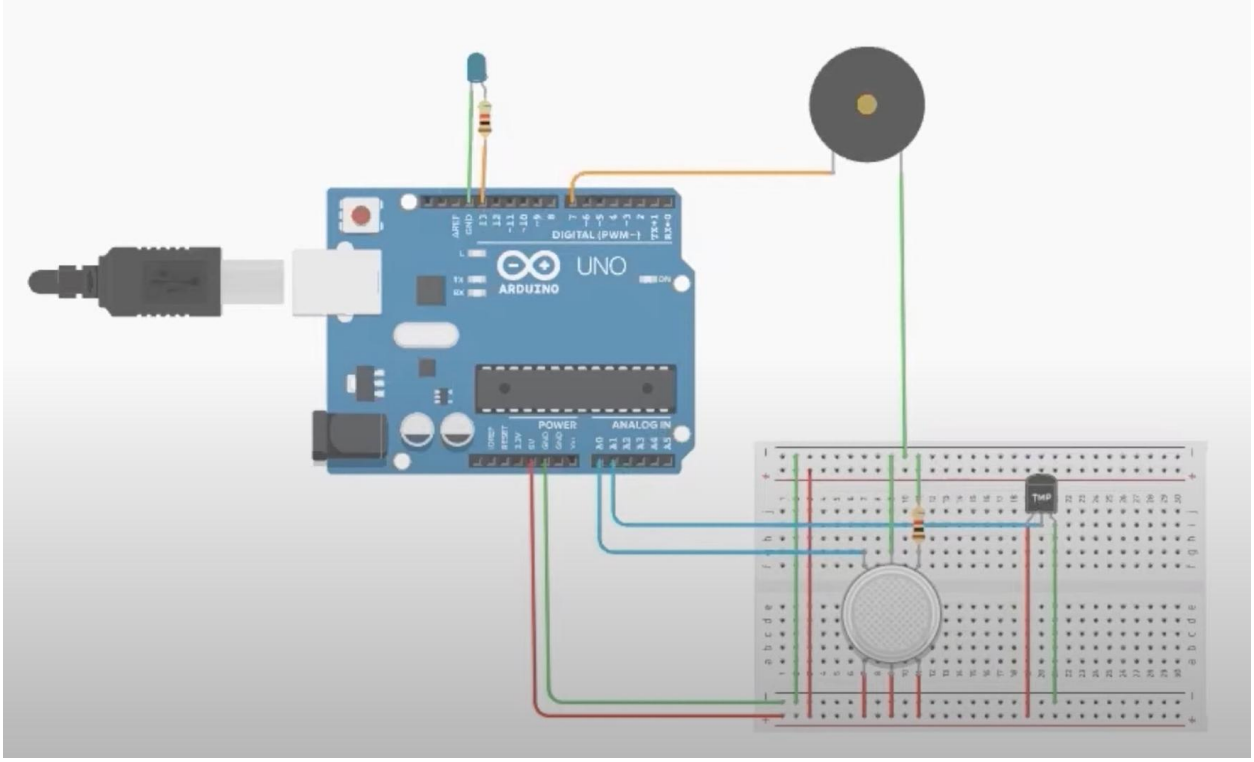
The Temperature sensor has three pins. Ground, Vout, and Vs (Supply). The Vs pin that has a range of 4-20V is connected to the power supply line of the breadboard. The Ground terminal of the sensor is connected to the ground line of the breadboard. The Vout terminal of the temperature sensor is connected to one of the Analog pins of the Arduino Board, A1.

Now let us learn how the connections are done with the Gas sensor. This sensor has 6 pins. 3 pins of the gas sensor are directly connected to the power supply line of the breadboard. Amongst the other 3 pins of the sensor, one pin is connected to one of the Analog pins of the Arduino Board, A0. The pin in the middle is connected to the ground line of the breadboard. The third pin of the sensor is connected to a resistor and then connected to the ground line.

The piezo buzzer is externally connected to the circuit. The ground pin of the #buzzer is connected to the ground line of the breadboard. Another pin of the buzzer is connected to the digital pin, PIN 7 of the Arduino Board.

Lastly, the LED is connected to the Arduino directly. The cathode of the LED is connected to the GND pin of Arduino and the anode of the LED is connected through a resistor to the digital pin 13 of the Arduino.

Ckt diagram:



Code: https://github.com/sami-118/tinker-cad-project.git