Description:

This project demonstrates the simulation of a **Fire Alarm System** using **TinkerCAD**, integrating an **Arduino Uno**, **temperature sensor (LM35)**, **gas sensor (MQ2)**, **LED**, and a **piezo buzzer**. The system detects rising temperature and gas/smoke levels. When values exceed predefined thresholds, it activates alerts via an LED and a buzzer.

Working Principle:

- **LM35** outputs a voltage that increases with temperature (10mV per °C).
- **MQ2 Gas Sensor** detects gas concentration by varying its resistance, converting it into voltage output.
- The **Arduino** reads analog signals from both sensors and activates the **buzzer (pin 7)** and **LED (pin 13)** if readings cross thresholds (Temp ≥ 80°C or Gas ≥ 100 ppm).
- **Serial Monitor** is used for real-time sensor value observation.

Thresholds:

- Temperature: 80°C
- Gas concentration: 100 ppm (arbitrary unit for simulation)

🔌 **Main Components Used (with Short Notes):**

Component	Purpose
Arduino Uno	Main controller; reads sensor data and controls outputs.
LM35	Analog temperature sensor (0.01V/°C sensitivity).
MQ2	Gas sensor for detecting smoke/gas concentration.
Breadboard	For easy circuit connection.
LED	Visual alert for high temperature.
Piezo Buzzer	Audible alert for high gas concentration.
Resistors	Prevent damage to sensors/LED due to overcurrent.