

WRITE-UP FOR TINKERING LAB PROJECT

PROJECT NAME – SMOKE DETECTOR AND ALARM GENERATOR

NAME OF THE GROUP MEMBERS-

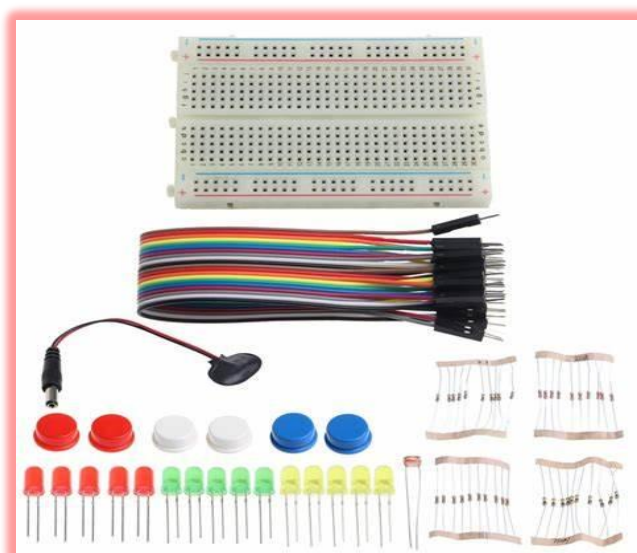
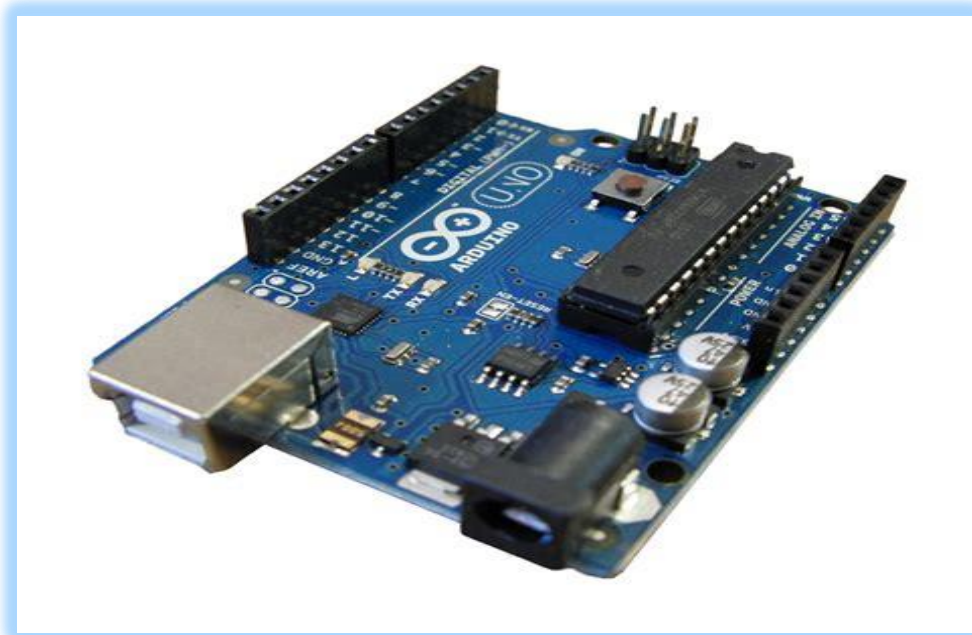
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PURPOSE OF THE PROJECT:

The goal of this project is to create and implement a smoke detector and alarm generator system that can quickly and accurately identify smoke and generate an alarm to notify building occupants of its presence. The system should be dependable, affordable, simple to keep, and able to run for long periods of time without requiring frequent battery changes. The system will be put to the test in a variety of real-world situations as part of the project to make sure it offers the best fire protection possible.

MATERIALS REQUIRED FOR PROJECT:

- 9-volt battery
- battery connector
- small speaker or buzzer
- 9-volt battery clip
- photoresistor or light-dependent resistor (LDR)
- 10K ohm resistor
- small breadboard or circuit board
- small enclosure or container to house the detector
- Led lights
- ARDUINO/ESP32
- GAS SENSOR KIT
- Jumper wires
- Breadboard



PROCEDURE FOR THE PROJECT:

Connect the smoke sensor module to the Arduino board. Use a breadboard and jumper wires to connect the smoke sensor module to the Arduino board. Connect the VCC pin of the smoke sensor module to the 5V pin on the Arduino board, connect the GND pin to the GND pin on the Arduino board, and connect the DO pin to pin 2 on the Arduino board.

Connect the buzzer to the Arduino board. Connect the positive pin of the buzzer to pin 9 on the Arduino board and the negative pin of the buzzer to the GND pin on the Arduino board.

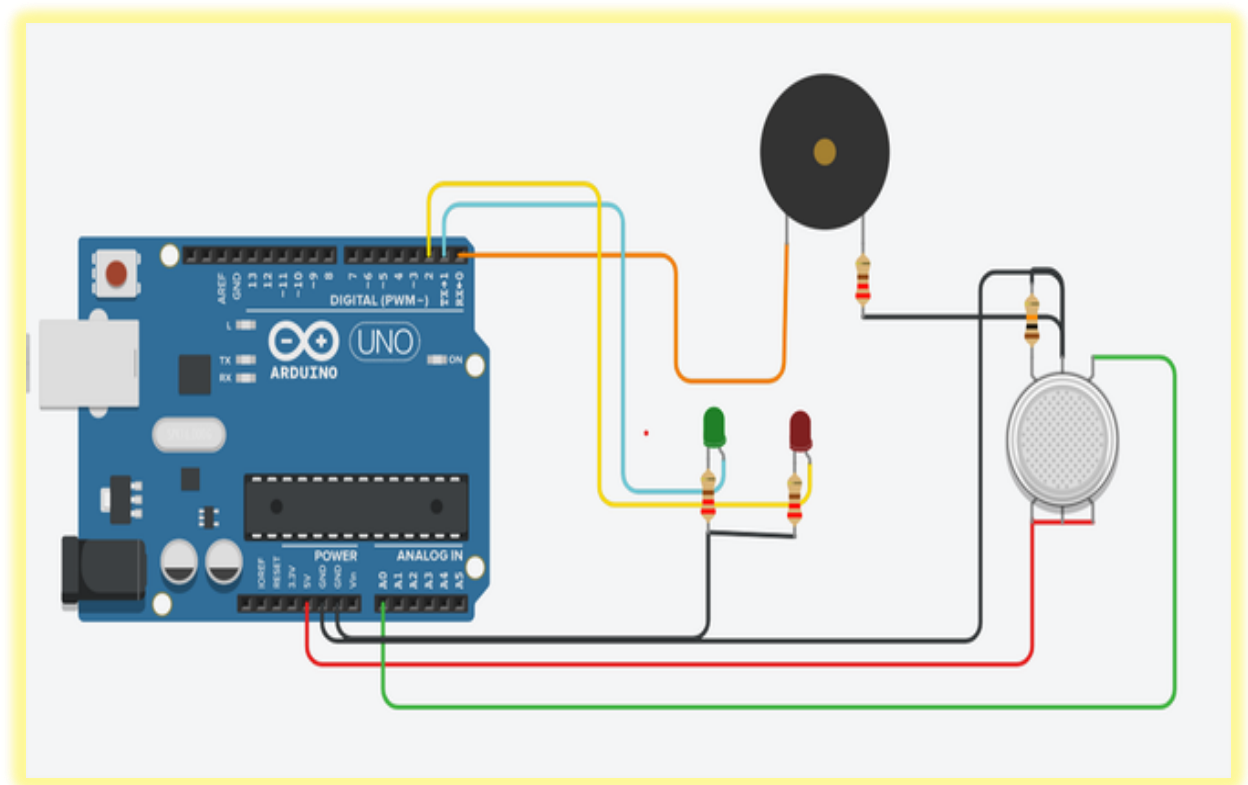
Connect the LED to the Arduino board. Connect the positive pin of the LED to pin 13 on the Arduino board and the negative pin of the LED to the GND pin on the Arduino board.

Write the code. Open the Arduino IDE and write the code to detect smoke using the smoke sensor module. Use the `digitalRead` function to read the smoke sensor module's DO pin status. If smoke is detected, turn on the LED and the buzzer.

Upload the code to the Arduino board. Connect the Arduino board to your computer using a USB cable and upload the code to the board using the upload button in the Arduino IDE.

Test the smoke detector. Blow smoke towards the smoke sensor module and observe the LED and buzzer response. If smoke is detected, the LED and buzzer should turn on to alert you to the presence of smoke.

SAMPLE CIRCUIT DIAGRAM:



SOME APPLICATIONS OF THE PROJECT:

When smoke particles in the air reach a certain concentration, smoke detectors can detect them and sound an alert. They have many crucial uses and play a crucial part in ensuring the protection of people and property.

- 1) Home Safety: The main purpose of smoke alarms in homes is to warn occupants of a fire so they can leave the building without risk.
- 2) Smoke detectors are required in all commercial structures, including workplace buildings, hotels, and hospitals. They offer early fire monitoring, which is crucial for the protection of patients and visitors.
- 3) Role in Industrial Settings: Industrial settings, including factories, warehouses, and chemical facilities, also make use of smoke detectors. They can aid in preventing explosions and other dangerous circumstances, making them especially crucial in environments where flammable materials (whose ignition temperature is lower than or equivalent to room temperature) are present.
- 4) Transportation: Smoke detectors are used to identify fire and smoke in ships, trains, and aeroplanes. Passenger protection is thus guaranteed.....