INNOVATIVE PROJECT- ARDUINO USING EMBEDDED ‘C’ (CSE1002)

FIRE & SMOKE, GAS DETECTOR WITH ALARM SYSTEM

SUBMITTED TO THE PRESIDENCY UNIVERSITY, BENGALURU IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE INNOVATIVE PROJECT- ARDUINO USING EMBEDDED ‘C’

By

Name: S P BRAHMA CHAITANYA

Roll No: 20211CIT0110

Under the supervision of

Ms. PAVITHRA N

Assistant Professor

Department of Computer Science Engineering

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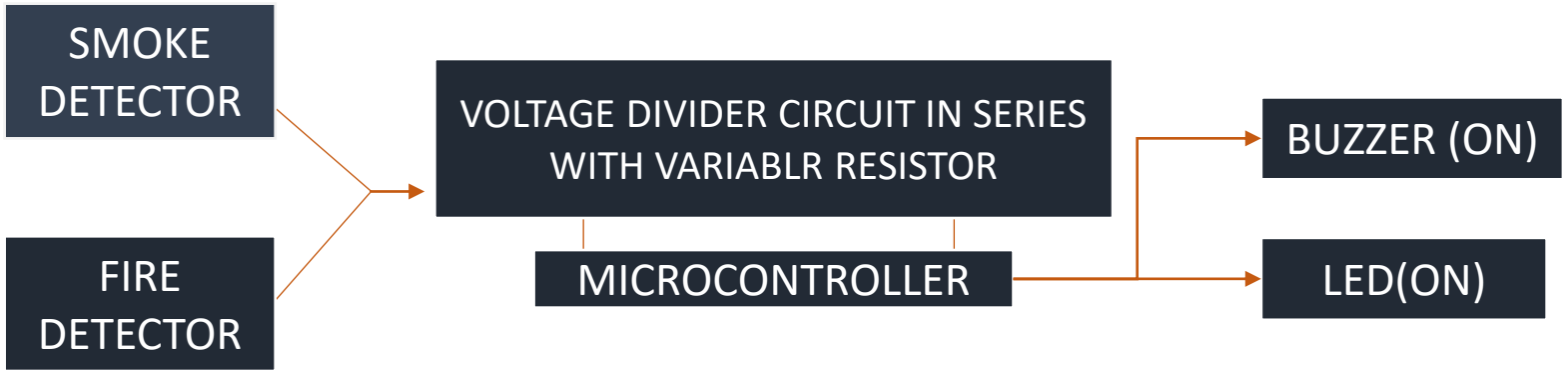
PRESIDENCY UNIVERSITY

Private University Estd. in Karnataka State by Act No. 41 of 2013

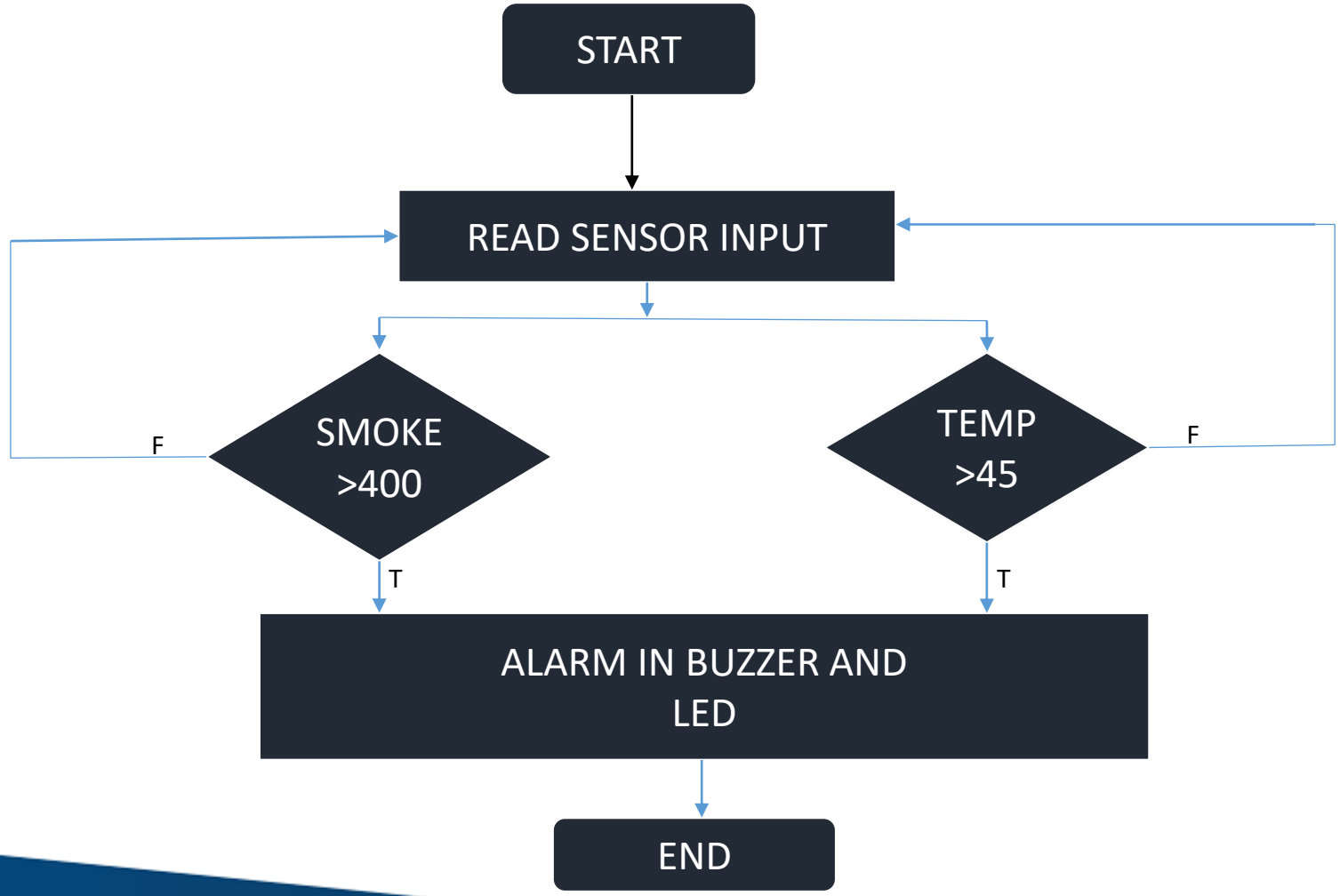
ABOUT PROJECT



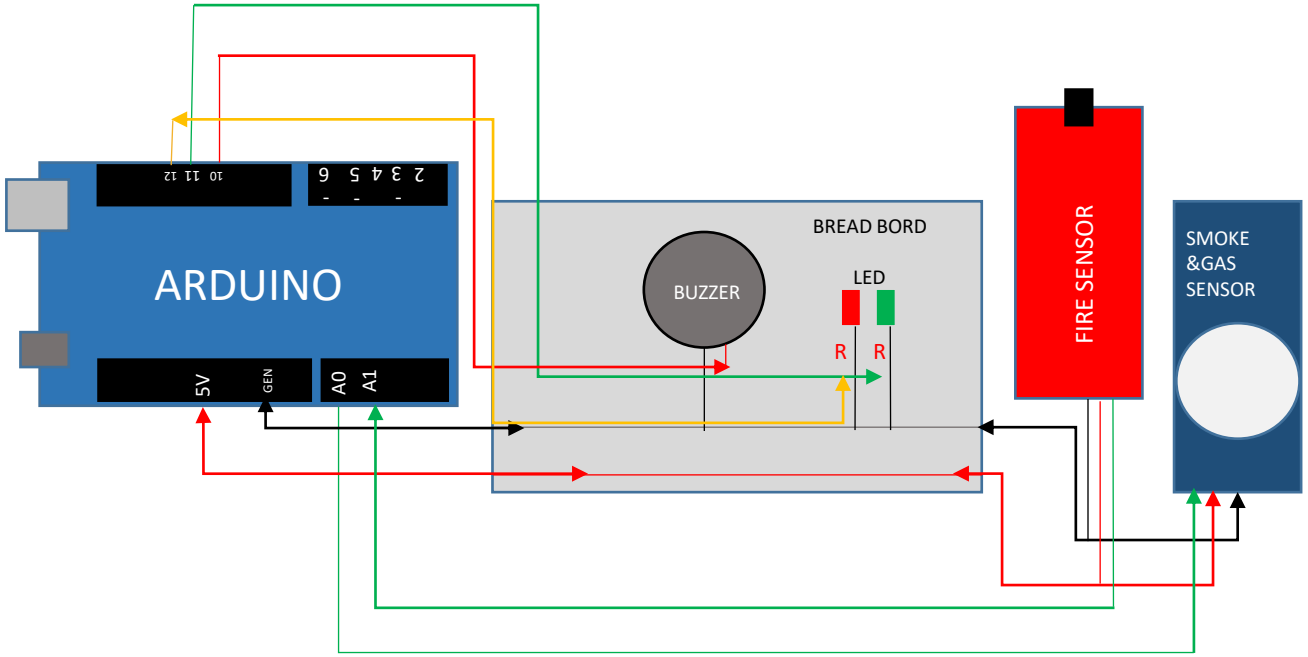
- ARDUINO IS CONNECTED TO FIRE AND SMOKE SENSOR, SENSORS ARE CONNECTED TO VOLTAGE DIVIDER CIRCUIT IN SERIES WITH VARIABLE RESISTOR,WHICH IS USED TO CHANGE SENSITIVITY.

- WHEN THESE SENSORS DETECT SMOKE,GAS AND FIRE ,THE SENSOR RESISTANCE CHANGES AS A RESULT VOLTAGE AND RESISTIVITY CHANGES ,WHICH CAN BE READ BY THE MICROCONTROLLER , AS A RESULT ARDUINO TURNS ON THE BUZZER AND LED.

FLOW CHRAT OF THE SYSTEM

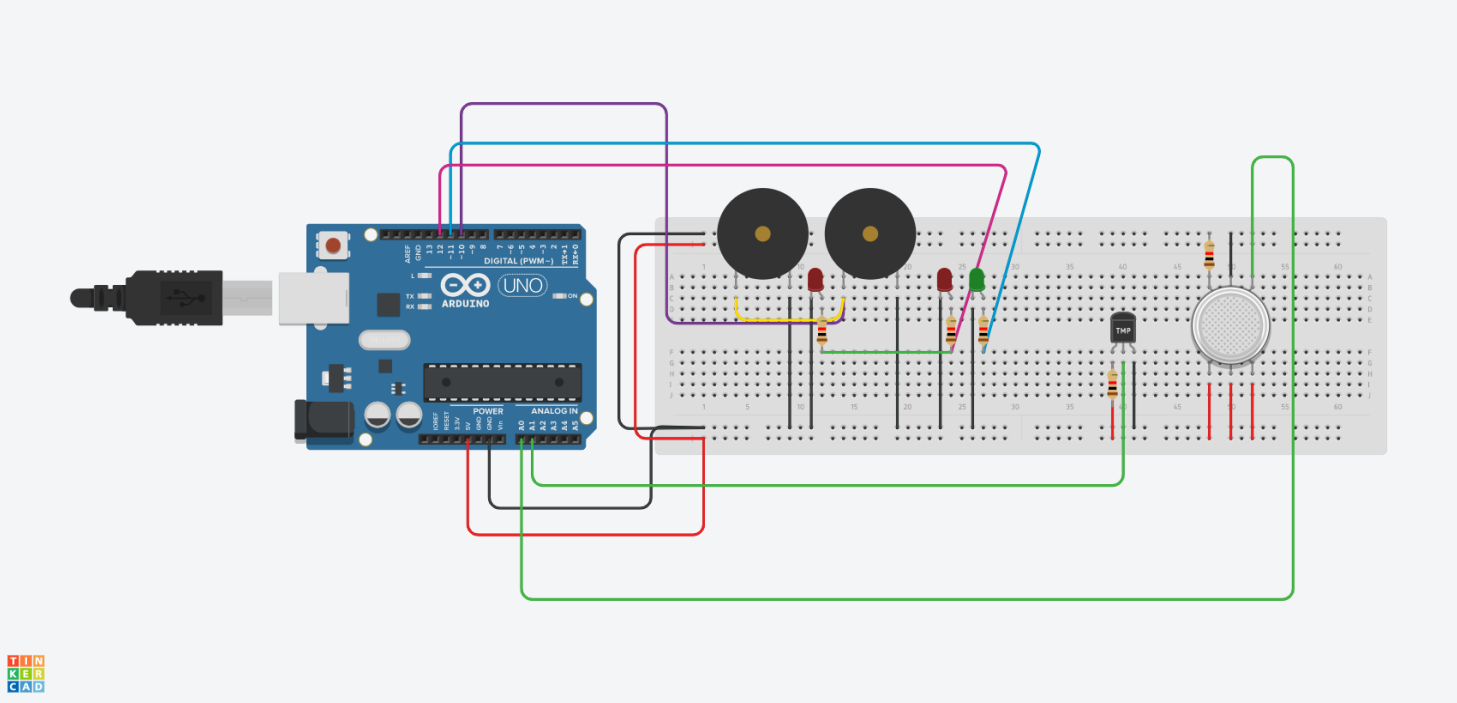


CIRCUIT AND STEPS INVOLVED



- Arduino is connected to **a fire and a smoke sensor with an alarm system**.
- The sensor is connected to a voltage divider circuit in series with a **variable resistor.**
- The variable resistor is used to **change sensitivity.**
- When flammable gaseous and fire elements come into contact with the **sensor, as it detects.**
- As a result, the sensor's resistance changes.
- The voltage across the sensor changes as the resistance changes and this value can be read by a **microcontroller**.
- **ARDUINO turns on the buzzer and LED.**

TINKERCAD



TINKERCAD LINK:

https://www.tinkercad.com/things/8PtHo59Sd5r-fire-and-smoke-ipc-97/editel?sharecode=qJLFFjZr09xbiQEQfz3_mdMyAdwqmnLF4U38QPmWXgA

INPUT

SMOKE SENSOR **A0**

FIRE SENSOR **A1**

OUTPUT

BUZZER **10**

LED **11, 12**

PROJECT TIMELINE

Phase 1: PRE CONSTRUCTION
ACCESSIBILITY OF REQUIREMENTS AND MATERIALS REQUIRED

Phase 2: DESIGN
HARDWARE CONSTRUCTION

Phase 3: DEVELOPMENT
SOFTWARE CODING (PROGRAMMING)

Phase 4: TESTING
TO VERIFY

Phase 5: POST CONSTRUCTION
LAUNCH THE PROJECT

EXTENDED OBJECTIVES AND APPLICATIONS

Alarm system – It is to notify the building residents if there is any Smoke or Fire that is forming within the dwelling.

•When it detects Smoke and Fire, it begins Trigger Alarm, alerting the building residents regarding danger and intimate immediate vicinity of the fire**.**

•**The alarm system's primary goal is to avoid further property damage and loss of life.**

Automated Intimation Program – While there is detection of any degree of fire or smoke, when it is connected with **Bluetooth and GSM,**

• **It sends an alert Notification via APP and SMS to the residents** of the premises **or an alert SMS to the nearest FIRE STATION to intimate them about the ongoing emergency.**

Automated Sprinkler - Water and CO2 GAS – When it detects any degree of fire, it begins to **Sprinkle water and Carbon Dioxide(CO2) Gas to prevent additional damage and extinguish the fire.**

CHALLENGES FACED

- Proper placement of detectors is critical in the design of a fire and gas system to ensure the coverage is adequate to detect hazards at their incipient stage, in order to prevent escalation.

- As the fire and smoke that spread within a building can be affected by various factors such as geometry, dimension layout, and usage of the building.

THANKYOU