Delivery Sprint-1

Industry-Specific Intelligent Fire Management System

TEAM ID:

PNT2022TMID35457

Create a fire detection alarm system that includes a Gas sensor, Flame sensor and temperature sensors to detect any changes in the environment. Based on the temperature readings and if any Gases are present the buzzer will make a sound and alert the people. If any flame is detected the sprinklers will be switched on automatically. Emergency alerts are displayed on the LCD and notified to the authorities and Fire station.

PLATFORM:

Tinkercad

WORKFLOW:

1. Create a Tinkercad student account and start a new circuit with a name

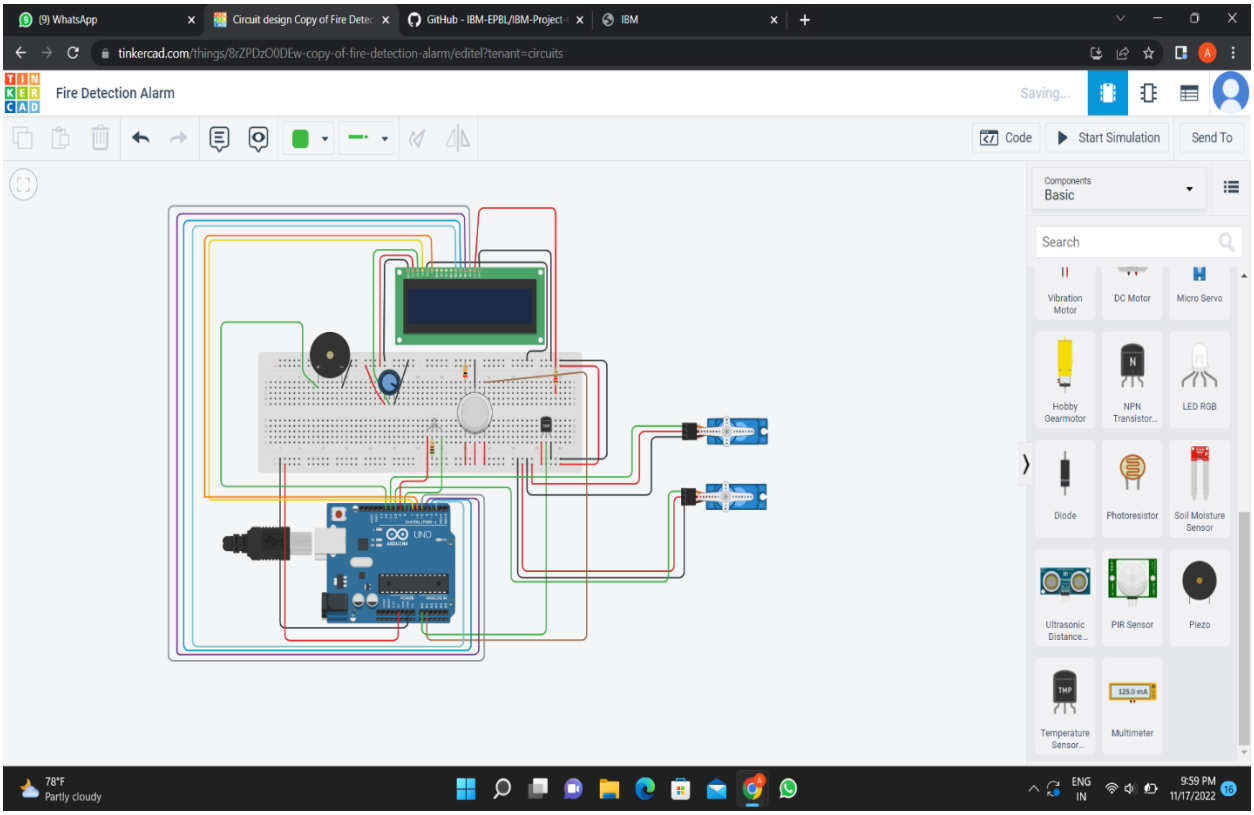
2. Select the required components for the project with your model and Connect

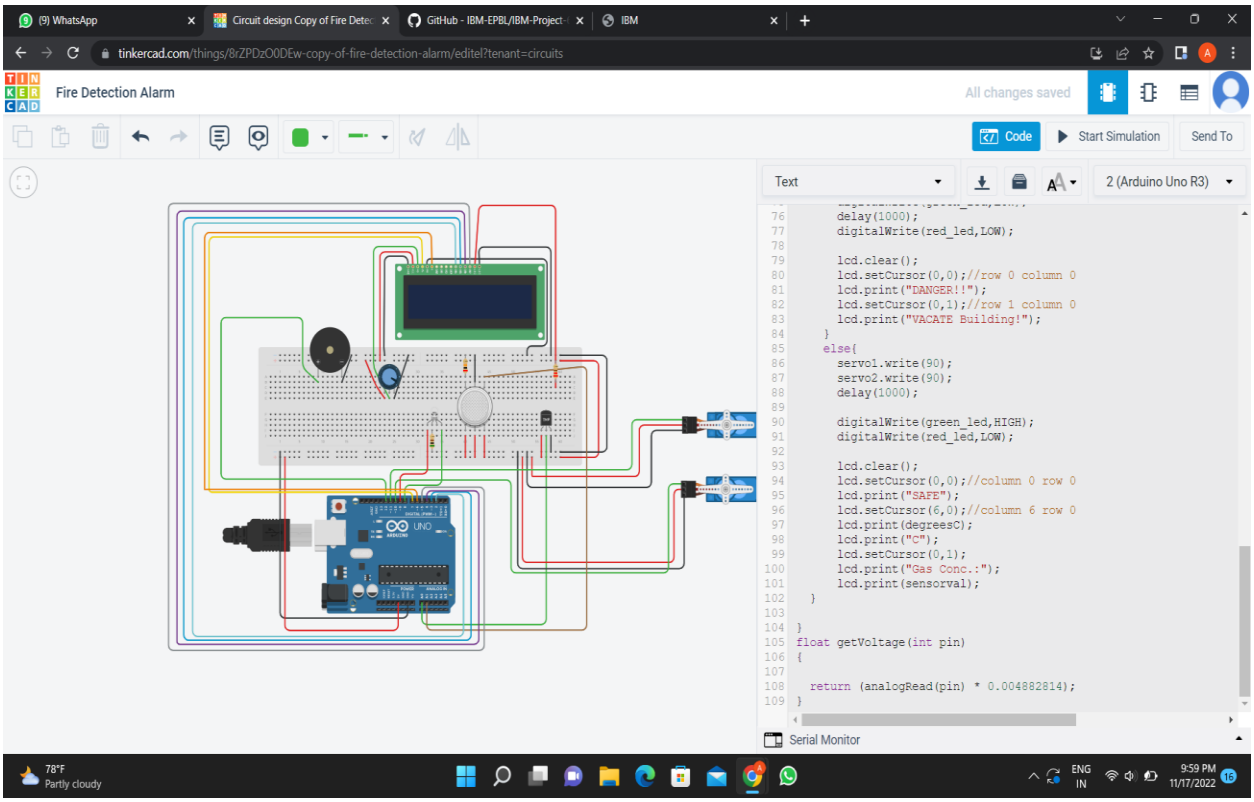
the components properly

3. Then code the required program to proceed for your Project and execute it

4. Finally the output is shown like in the below figure

CIRCUIT CONNECTION:





CODE:

```
#include<Servo.h>//header file for servo
#include <LiquidCrystal.h>//header file for LCD
//first of all we will use the  TMP36 which is a temperature sensor that outputs
//a voltage that's proportional to the ambient temperature.
// We'll use analog input 0 to measure the temperature sensor's signal pin.
//Temparature Sensor
const int temperaturePin = 0; //The output of tmp36 is connected to A0 of arduino
const int buzzer = 12; //buzzer is connected to D12 on the arduino
//Gas Sensor
int gasSensorPin=A1;//Gas sensor output is connected to A1 of Arduino
int sensorval;//For storing the value sensed by gas sensor

//Doors
Servo servo1,servo2;
int servo1Pin=11;
int servo2Pin=10;

//RGB LED
int red_led=9;//Red terminal of RGB LED is connected to D9 of Arduino
int green_led=8;//Green terminal of RGB LED is connected to D8 of Arduino

//LCD
```

```
LiquidCrystal lcd(7, 6, 2, 3, 4, 5);//Sets the interfacing pins on Arduino that are connected to LCD
//7-Rs,6-E(Enable), 5,4,3,2 are the inputs->4 bit mode
void setup()
{
  pinMode(buzzer, OUTPUT);//set the pin connected to the buzzer as an output
  servo1.attach(servo1Pin);
  servo2.attach(servo2Pin);
  servo1.write(90);//Intially both doors are closed(i.e, 90 degrees)
  servo2.write(90);
  delay(2000);
  pinMode(red_led,OUTPUT);
  pinMode(green_led,OUTPUT);
  //Serial.begin(9600);
  lcd.begin(16,2);//initialisation of 16*2 LCD
}
void loop()
{
          //for buzzer and tmp36 temp sensor
          float voltage, degreesC;
          voltage = getVoltage(temperaturePin);
          degreesC = (voltage - 0.5) * 100.0;
          sensorval=analogRead(gasSensorPin);
          //Serial.print(sensorval);
         if(degreesC>37 || sensorval>700)
```

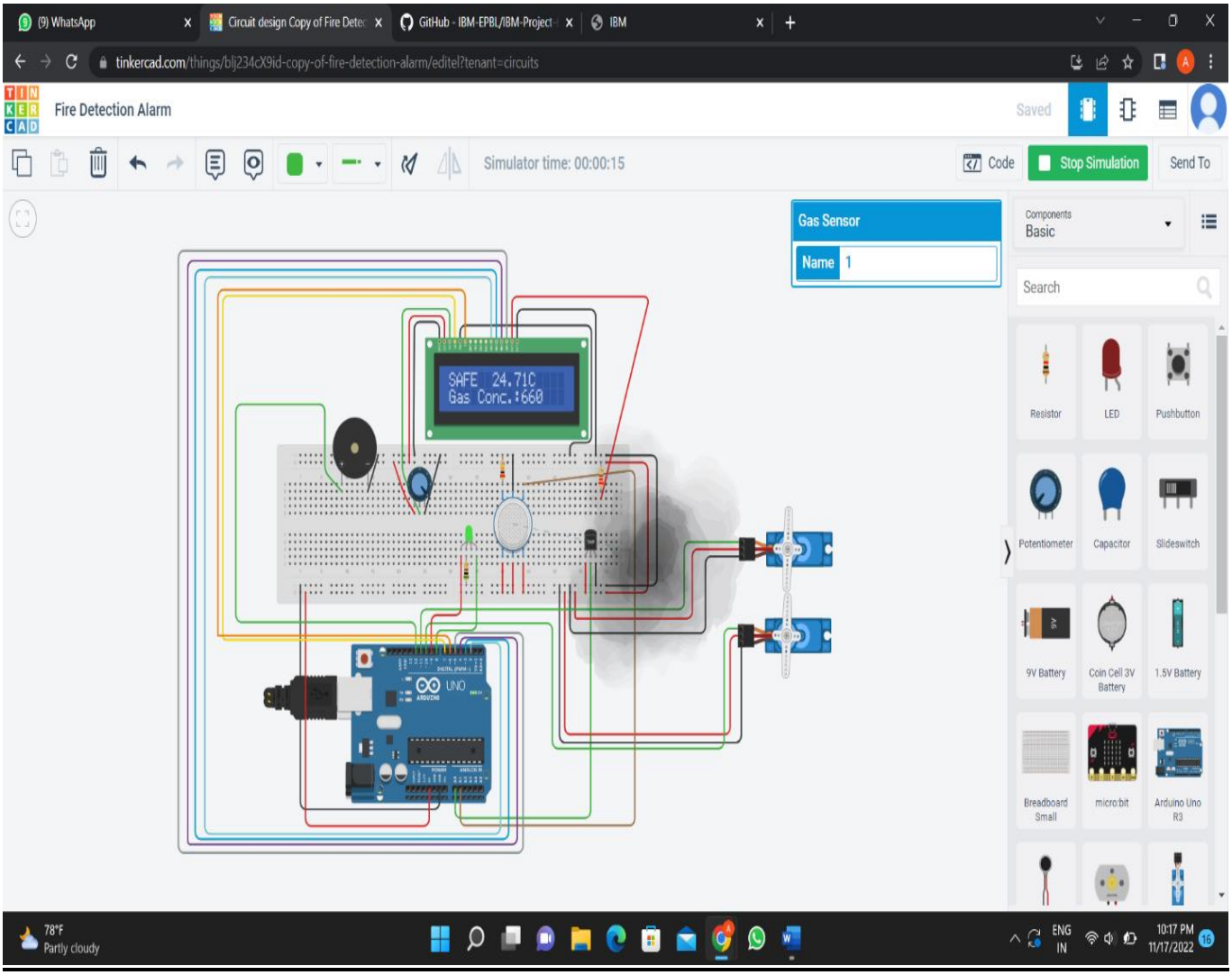
```
    {
digitalWrite(buzzer, LOW);
tone(buzzer, 800, 800);
delay(200);  //delay
tone(buzzer,600,800);
delay(200);
servo1.write(0);
servo2.write(0);
delay(1000);
digitalWrite(red_led,HIGH);
digitalWrite(green_led,LOW);
delay(1000);
digitalWrite(red_led,LOW);
lcd.clear();
lcd.setCursor(0,0);//row 0 column 0
      lcd.print("DANGER!!");
lcd.setCursor(0,1);//row 1 column 0
lcd.print("VACATE Building!");
    }
    else{
servo1.write(90);
servo2.write(90);
delay(1000);
 digitalWrite(green_led,HIGH);
digitalWrite(red_led,LOW);
```

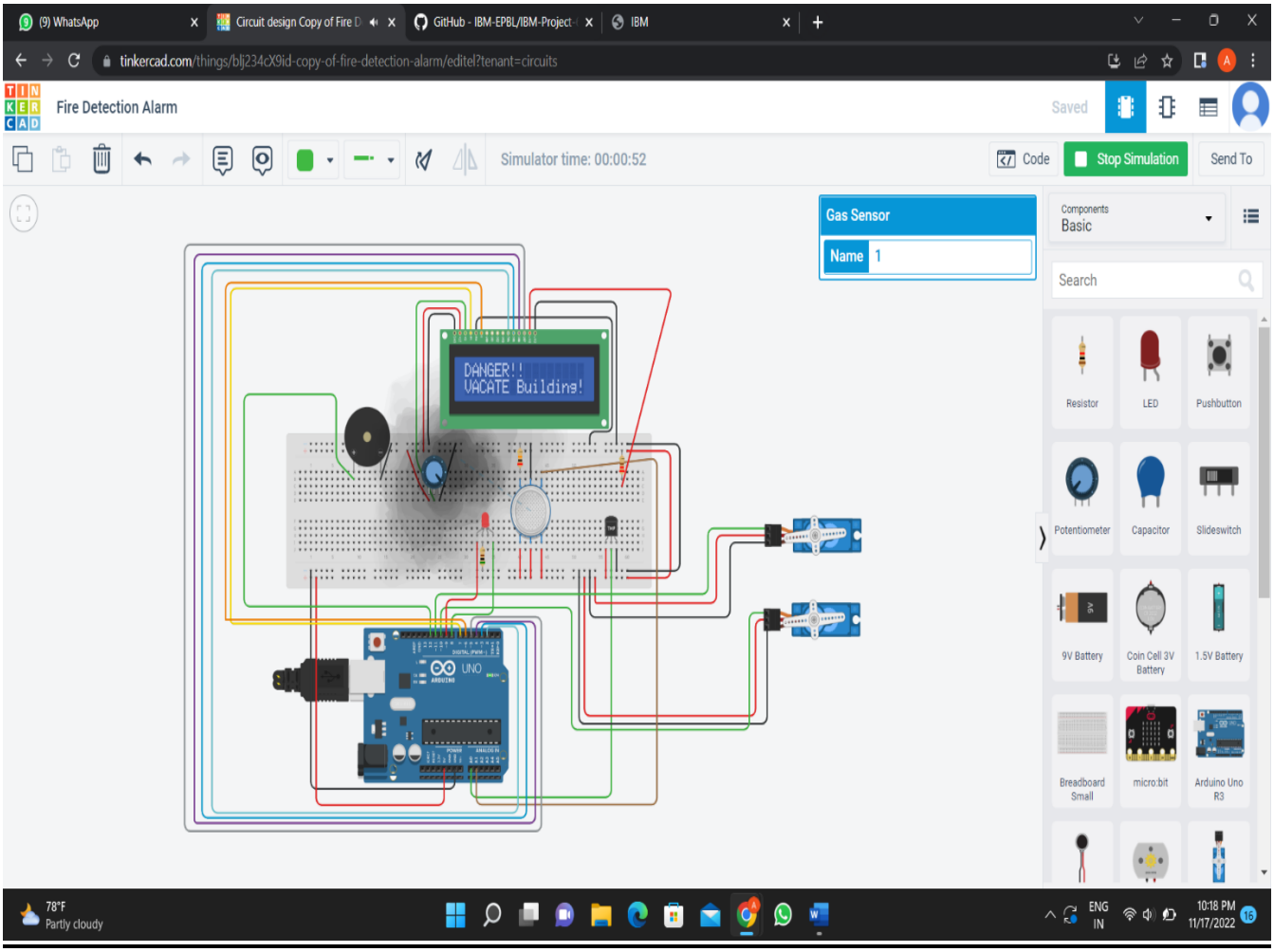
```
      lcd.clear();
      lcd.setCursor(0,0);//column 0 row 0
      lcd.print("SAFE");
      lcd.setCursor(6,0);//column 6 row 0
      lcd.print(degreesC);
      lcd.print("C");
      lcd.setCursor(0,1);
      lcd.print("Gas Conc.:");
      lcd.print(sensorval);
  }

}
float getVoltage(int pin)
{

  return (analogRead(pin) * 0.004882814);
}
```

OUTPUT:


(9) WhatsApp
Circuit design Copy of Fire Dete
GitHub - IBM-EPBL/IBM-Project
IBM
tinkercad.com/things/blj234cX9id-copy-of-fire-detection-alarm/editel?tenant=circuits
Fire Detection Alarm
Saved
Simulator time: 00:00:15
Code
Stop Simulation
Send To
Gas Sensor
Name 1
Components
Basic
Search
SAFE 24.71C
Gas Conc.:660
Resistor
LED
Pushbutton
Potentiometer
Capacitor
Slideswitch
9V Battery
Coin Cell 3V Battery
1.5V Battery
Breadboard Small
micro:bit
Arduino Uno R3
78°F
Partly cloudy
ENG
IN
10:17 PM
11/17/2022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Circuit design Copy of Fire D
GitHub - IBM-EPBL/IBM-Project
IBM
tinkercad.com/things/blj234cX9id-copy-of-fire-detection-alarm/editel?tenant=circuits
Fire Detection Alarm
Saved
Simulator time: 00:00:52
Code
Stop Simulation
Send To
Gas Sensor
Name 1
DANGER!!
VACATE Building!
Components
Basic
Search
Resistor
LED
Pushbutton
Potentiometer
Capacitor
Slideswitch
9V Battery
Coin Cell 3V Battery
1.5V Battery
Breadboard Small
micro:bit
Arduino Uno R3
78°F
Partly cloudy
ENG
IN
10:18 PM
11/17/2022