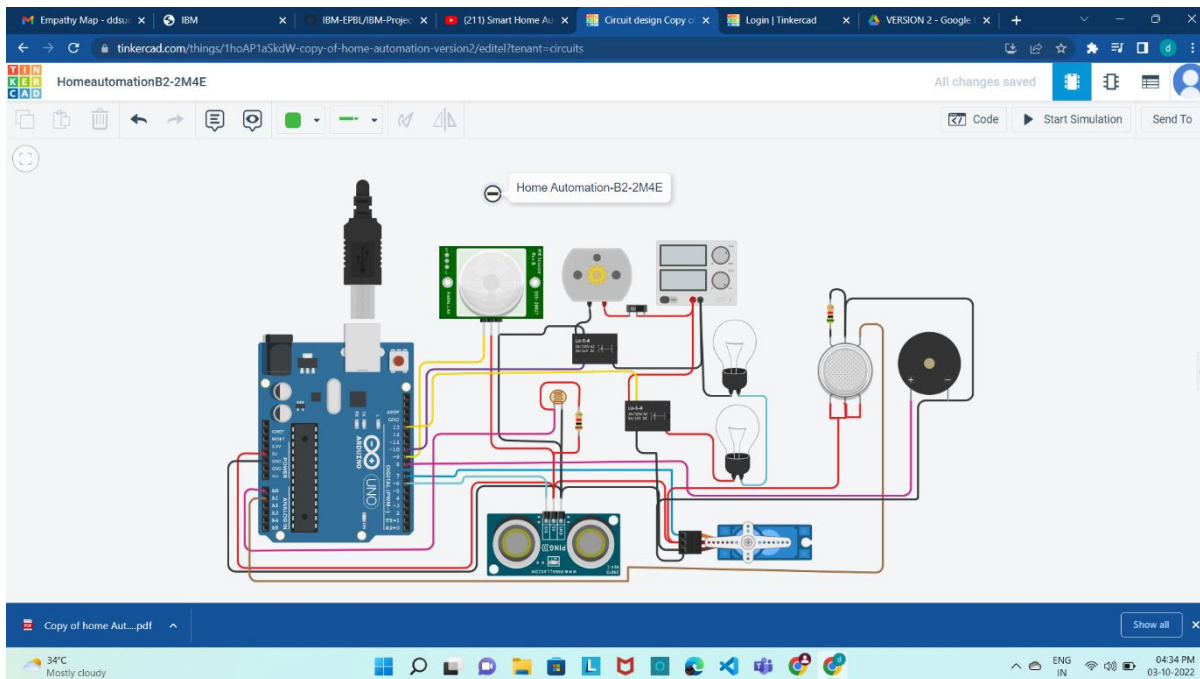


B2-2M4E

Title	Hazardous Area Monitoring for Industrial Plant powered by IoT
Team Members	Devadharshini.S, Amancharla VishnuPriya, Dandolu Sujitha, Aruna V R
Assignment	Home Automation in Tinkercad

Circuit Diagram:



Component List:

Components Needed:

Component List

Name	Quantity	Component
U1	1	Arduino Uno R3
PING1	1	Ultrasonic Distance Sensor
SERVO1	1	Positional Micro Servo
PIR1	1	-3.651413186287641, -219.29556834379855, -151.61364581348164 PIR Sensor
M1	1	DC Motor
K1 K2	2	Relay SPDT
P1	1	22.299999999999997, 5 Power Supply
S1	1	Slideswitch
R1	1	Photoresistor
R2	1	1 kΩ Resistor
L1 L2	2	Light bulb
GAS1	1	Gas Sensor
PIEZ01	1	Piezo
R3	1	5 kΩ Resistor

Simulation Code:

```
#include <Servo.h>

int output1Value = 0;

int sen1Value = 0;

int sen2Value = 0;

int const gas_sensor = A1;

int const LDR = A0;

int limit = 400;

long readUltrasonicDistance(int triggerPin, int echoPin)
{
    pinMode(triggerPin, OUTPUT); // Clear the trigger
    digitalWrite(triggerPin, LOW);
    delayMicroseconds(2);
    // Sets the trigger pin to HIGH state for 10 microseconds
    digitalWrite(triggerPin, HIGH);
    delayMicroseconds(10);
    digitalWrite(triggerPin, LOW);
    pinMode(echoPin, INPUT);
```

```

// Reads the echo pin, and returns the sound wave travel time in microseconds
return pulseIn(echoPin, HIGH);
}

Servo servo_7;

void setup()
{
  Serial.begin(9600);          //initialize serial communication
  pinMode(A0, INPUT);          //LDR
  pinMode(A1, INPUT);          //gas sensor
  pinMode(13, OUTPUT);          //connected to relay
  servo_7.attach(7, 500, 2500); //servo motor

  pinMode(8, OUTPUT);          //signal to piezo buzzer
  pinMode(9, INPUT);           //signal to PIR
  pinMode(10, OUTPUT);          //signal to npn as switch
  pinMode(4, OUTPUT);           //Red LED
  pinMode(3, OUTPUT);           //Green LED

}

void loop()
{

  //-----light intensity control-----//
  //-----
  int val1 = analogRead(LDR);
  if (val1 > 500)
  {
    digitalWrite(13, LOW);

    Serial.print("Bulb ON = ");
    Serial.print(val1);

  }
}

```

```

else
{
    digitalWrite(13, HIGH);
    Serial.print("Bulb OFF = ");
    Serial.print(val1);
}

//-----
//----- light & fan control -----//
//-----

sen2Value = digitalRead(9);
if (sen2Value == 0)
{
    digitalWrite(10, LOW); //npn as switch OFF
    digitalWrite(4, HIGH); // Red LED ON, indicating no motion
    digitalWrite(3, LOW); //Green LED OFF, since no Motion detected
    Serial.print("  || NO Motion Detected  ");
}

if (sen2Value == 1)
{
    digitalWrite(10, HIGH); //npn as switch ON
    delay(5000);
    digitalWrite(4, LOW); // RED LED OFF
    digitalWrite(3, HIGH); //GREEN LED ON , indicating motion detected
    Serial.print("  || Motion Detected!  ");
}

//-----
// ----- Gas Sensor -----//
//-----

int val = analogRead(gas_sensor); //read sensor value

```

```

Serial.print(" | Gas Sensor Value = ");
Serial.print(val);                                //Printing in serial monitor
//val = map(val, 300, 750, 0, 100);
if (val > limit)
{
    tone(8, 650);
}
    delay(300);
    noTone(8);

//-----
//----- servo motor -----//
//-----

sen1Value = 0.01723 * readUltrasonicDistance(6, 6);
if (sen1Value < 100)
{
    servo_7.write(90);
    Serial.print(" | Door Open! ; Distance = ");
    Serial.print(sen1Value);
    Serial.print("\n");

}
else
{
    servo_7.write(0);
    Serial.print(" | Door Closed! ; Distance = ");
    Serial.print(sen1Value);
    Serial.print("\n");
}
delay(10); // Delay a little bit to improve simulation performance
}

```

Simulation

