Assignment 1

Smart Waste Management System

Build a smart home in tinkercad use atleast 2 sensors,led,buzzar in a circuit simulate in a single code.

Apparatus Required:

S.no	Components	Quantity
1	Ardino	1
2	Ultrasonic Distance Sensor	1
3	Microservo	1
4	Photo Resistor	1
5	PIR Sensor	1
6	DC Motor	1
7	Relay	2
8	Power Supply	1
9	Buzzer	1
10	Photo Sensor	1
11	Resistor	2
12	Bulb	2
13	Gas Switch	1
14	Slide Switch	1

Code:

```
#include <Servo.h>

int output1Value = 0;

int sen1Value = 0;

int sen2Value = 0;

int const gas_sensor = A1;

int const LDR = A0;
```

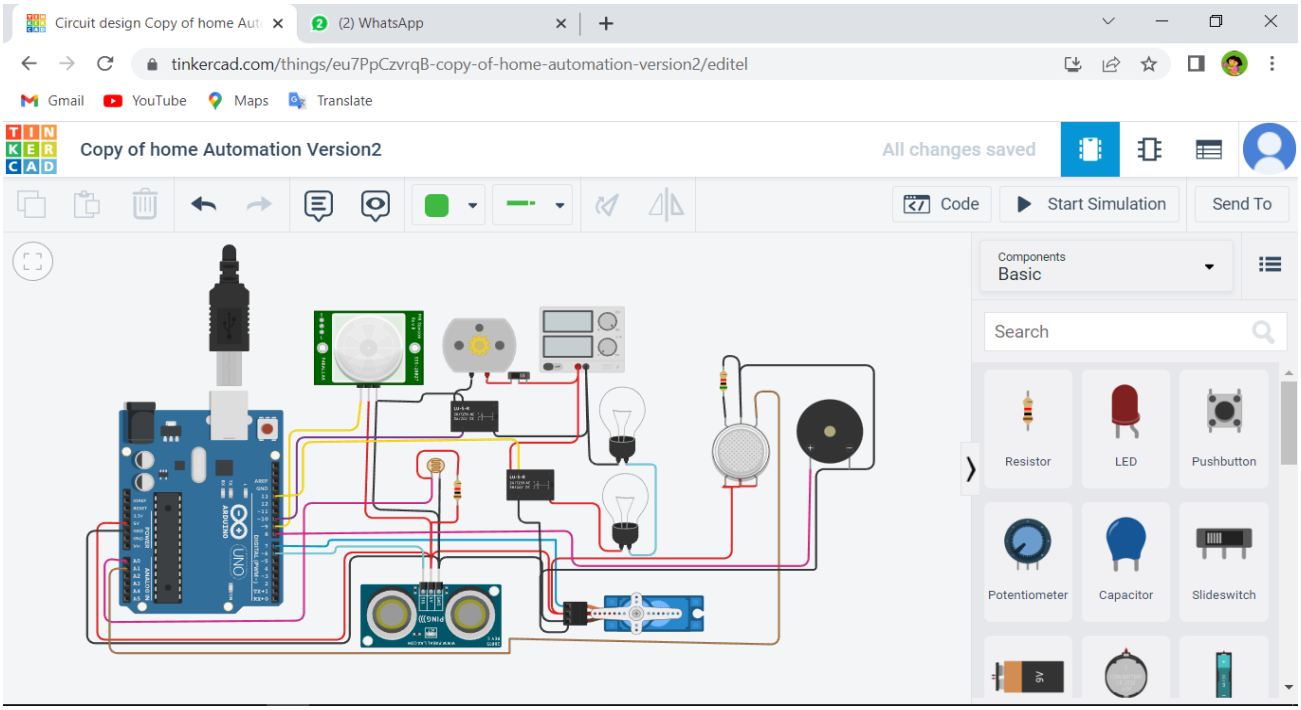
```
int limit = 400;
long readUltrasonicDistance(int triggerPin, int echoPin)
{
  pinMode(triggerPin, OUTPUT);  // Clear the trigger
  digitalWrite(triggerPin, LOW);
  delayMicroseconds(2);
// Sets the trigger pin to HIGH state for 10 microseconds
  digitalWrite(triggerPin, HIGH);
  delayMicroseconds(10);
  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
}
```

Output: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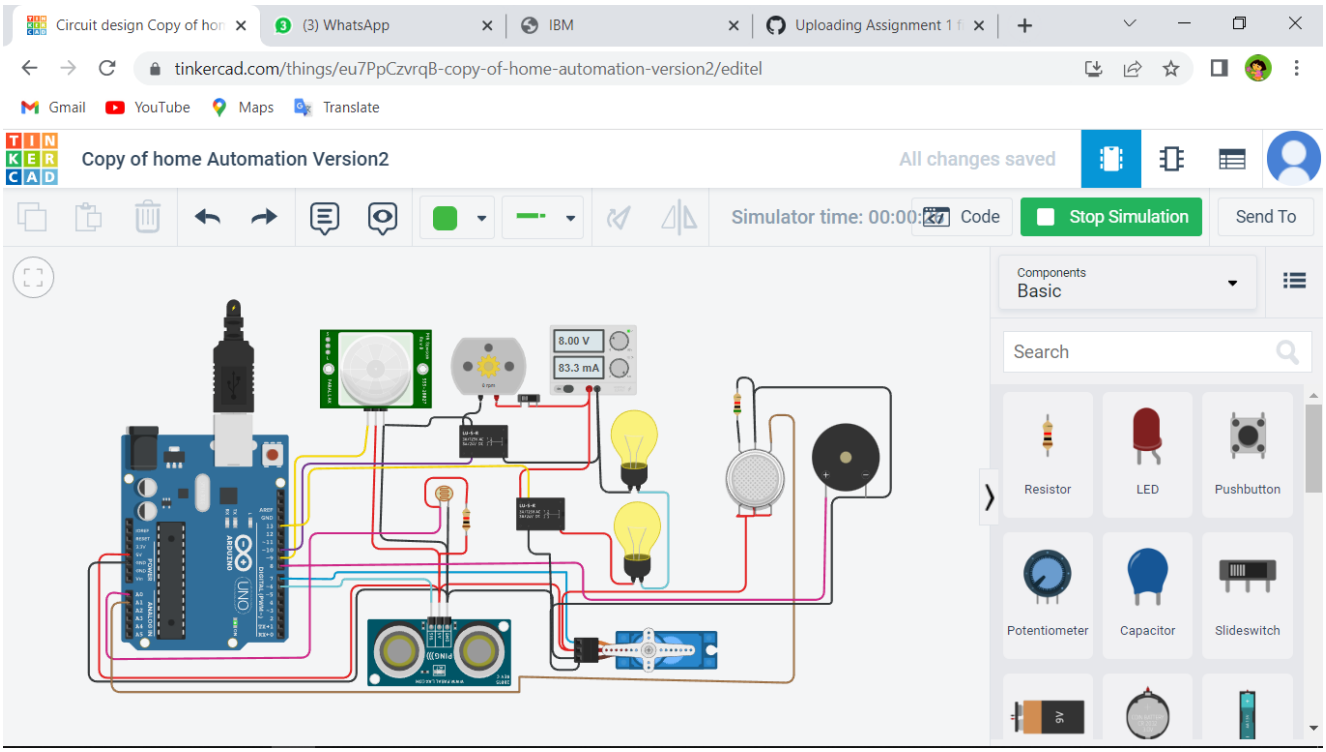
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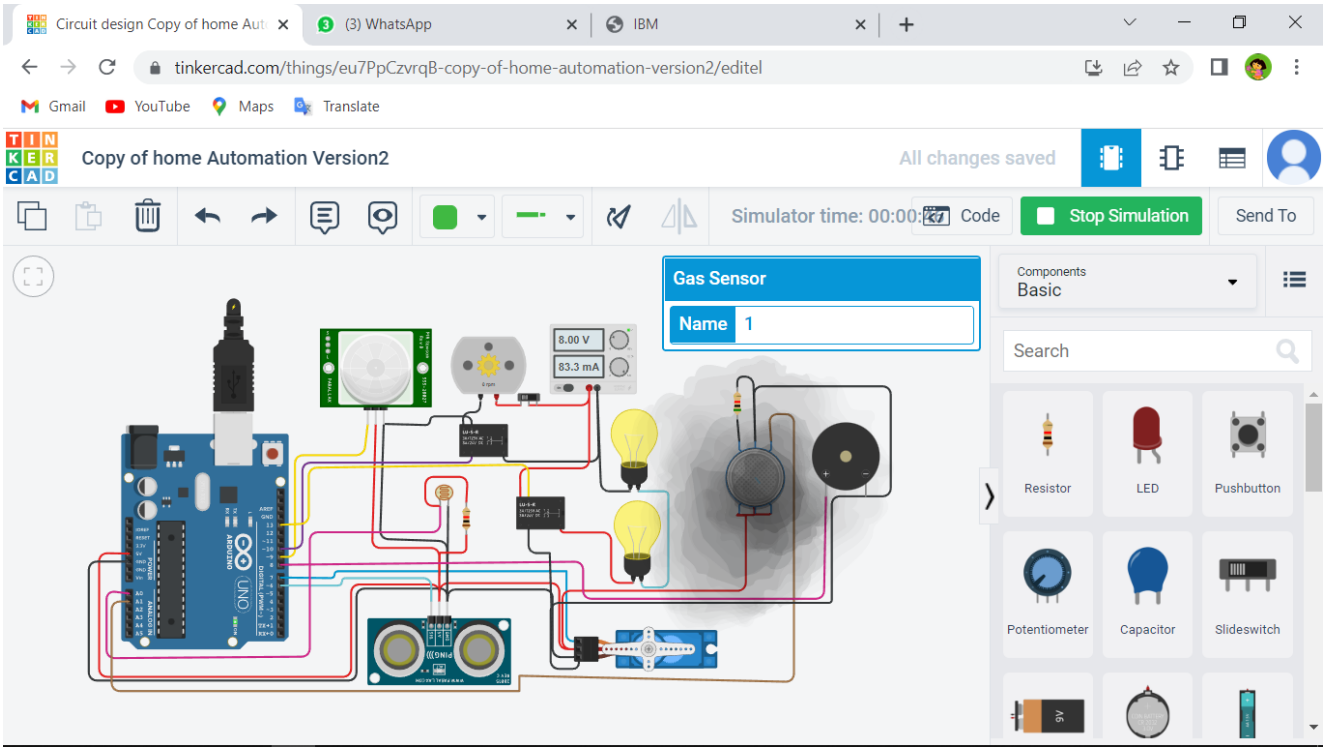
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