

Assignment -1

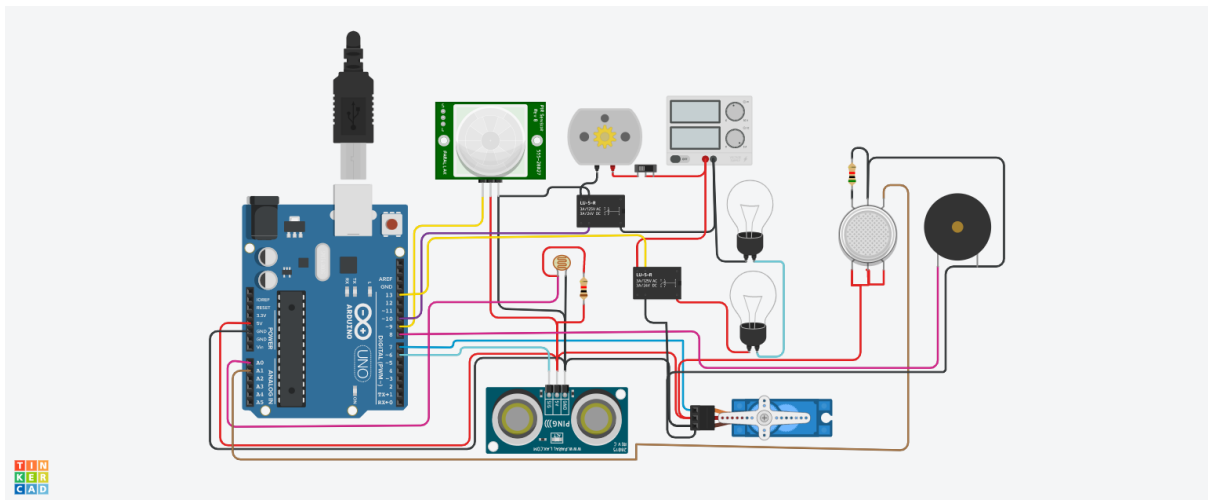
HOME AUTOMATION

Assignment Date	21 September 2022
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Maximum Marks	2 Marks

Question-1:

Make a home automation with Tinkercad , add 2-3 sensors ,led ,buzzers and make a common code and circuit. Multiple detections and alarms should be given.

CIRCUIT DIAGRAM:



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(3000);
        digitalWrite(4, LOW); // RED LED OFF
        digitalWrite(3, HIGH); //GREEN LED ON , indicating motion detected
        Serial.print("    || Motion Detected!  ");
    }
    delay(300);

//-----
// ----- 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
}

```