Assignment 01

Tinkercad

Assignment date	16.09.2022
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Maximum mark	2marks

QUESTION :

Write a code and make smart home with atleast 2 sensor and led,buzzer using tinkercad.

SOLUTION:

```
#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
}
```