Assignment -1

Home Automation

Assignment Date	09 September 2022
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Maximum Marks	2 Marks

Question:

1. Make a smart home in Tinkercad using 2+ sensors, Led, buzzer, in single code and circuit

Solution:

Code:

```
#include<Servo.h>

const int pingPin = 7;

int servoPin = 8;

int const gas_sensor = A1;

int limit = 400;

Servo servo1;

void setup() {
  // initialize serial communication:
  Serial.begin(9600);
  servo1.attach(servoPin);
  pinMode(A1,INPUT);  //gas sensor
  pinMode(2,INPUT);//pir sensor
  pinMode(4,OUTPUT); //resistor input
  pinMode(11,OUTPUT); //h drive motor enable
  pinMode(12,OUTPUT); //h drive input2
```

```
 pinMode(13,OUTPUT); //h drive input1
 pinMode(9,OUTPUT);// piezo input
 pinMode(A0,INPUT);//temperature sesnor
 digitalWrite(2,LOW); //make pir low
 digitalWrite(11,HIGH); //enabling h motor drive
}
void loop() {
 long duration, inches, cm;
 pinMode(pingPin, OUTPUT);
 digitalWrite(pingPin, LOW);
 delayMicroseconds(2);
 digitalWrite(pingPin, HIGH);
 delayMicroseconds(5);
 digitalWrite(pingPin, LOW);
 // The same pin is used to read the signal from the PING))): a HIGH pulse
 // whose duration is the time (in microseconds) from the sending of the ping
 // to the reception of its echo off of an object.
 pinMode(pingPin, INPUT);
 duration = pulseIn(pingPin, HIGH);
 // convert the time into a distance
 inches = microsecondsToInches(duration);
 cm = microsecondsToCentimeters(duration);
 // Automatic door using ultrasonic sensor
 servo1.write(0);
 Serial.print("|| Dist value = ");
 Serial.println(cm);
 if(cm < 40)
 {
```

```
  servo1.write(90);
  delay(2000);
}
else
{
  servo1.write(0);
}
// PIR with LED starts
int pir = digitalRead(2);
if(pir == HIGH)
{
  digitalWrite(4,HIGH);
  delay(1000);
}
else if(pir == LOW)
{
  digitalWrite(4,LOW);
}
 // Gas Sensor
int val = analogRead(gas_sensor); //read sensor value
  Serial.print("|| Gas Sensor Value = ");
  Serial.println(val);
  if (val > limit)
    {
       tone(9, 650);
    }
    delay(300);
    noTone(9);
```

```
  //temp with fan
  float value=analogRead(A0);
  float temperature=value*0.48;
  Serial.print("|| Temperature Value = ");
  Serial.println(temperature);
  if(temperature > 20)
  {
    digitalWrite(12,HIGH);
    digitalWrite(13,LOW);
  }
  else
  {
    digitalWrite(12,LOW);
    digitalWrite(13,LOW);
  }
}
long microsecondsToInches(long microseconds) {
  return microseconds / 74 / 2;
}
long microsecondsToCentimeters(long microseconds) {
  return microseconds / 29 / 2;
}
```

Output Screenshot: