Assignment -1

Internet of Things (IoT)

Assignment Date	12 November 2022
Student Name	P.N Niranjann
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Maximum Marks	2 Marks

Question-1:

Make smart home with atleast 2 sensors and led, buzzer. in tinkercad

ANSWER

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

}
```

```
#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()
```

```
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 Monitor

```
    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);
```

Serial Monitor

```
    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);

```

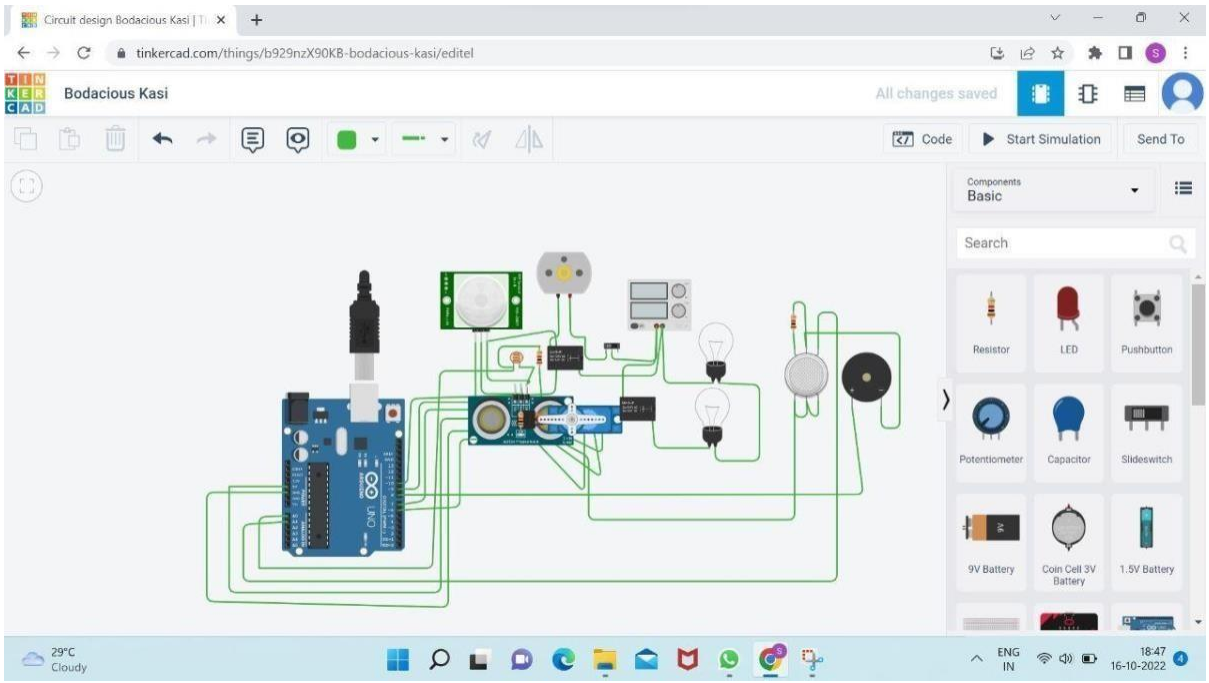
```
     }
     delay(300);
     noTone(8);

  //-----------------------------------------------------------------
       //-------  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


Circuit design Bodacious Kasi
tinkercad.com/things/b929nzX90KB-bodacious-kasi/editel
Bodacious Kasi
All changes saved
Code
Start Simulation
Send To
Components
Basic
Search
Resistor
LED
Pushbutton
Potentiometer
Capacitor
Slideswitch
9V Battery
Coin Cell 3V Battery
1.5V Battery
29°C
Cloudy
ENG
IN
18:47
16-10-2022