Assignment -1

Tinkercad

Assignment Date	14 October 2022
Student Name	Venkatesh S
Student Roll Number	19EC256
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

Solution:

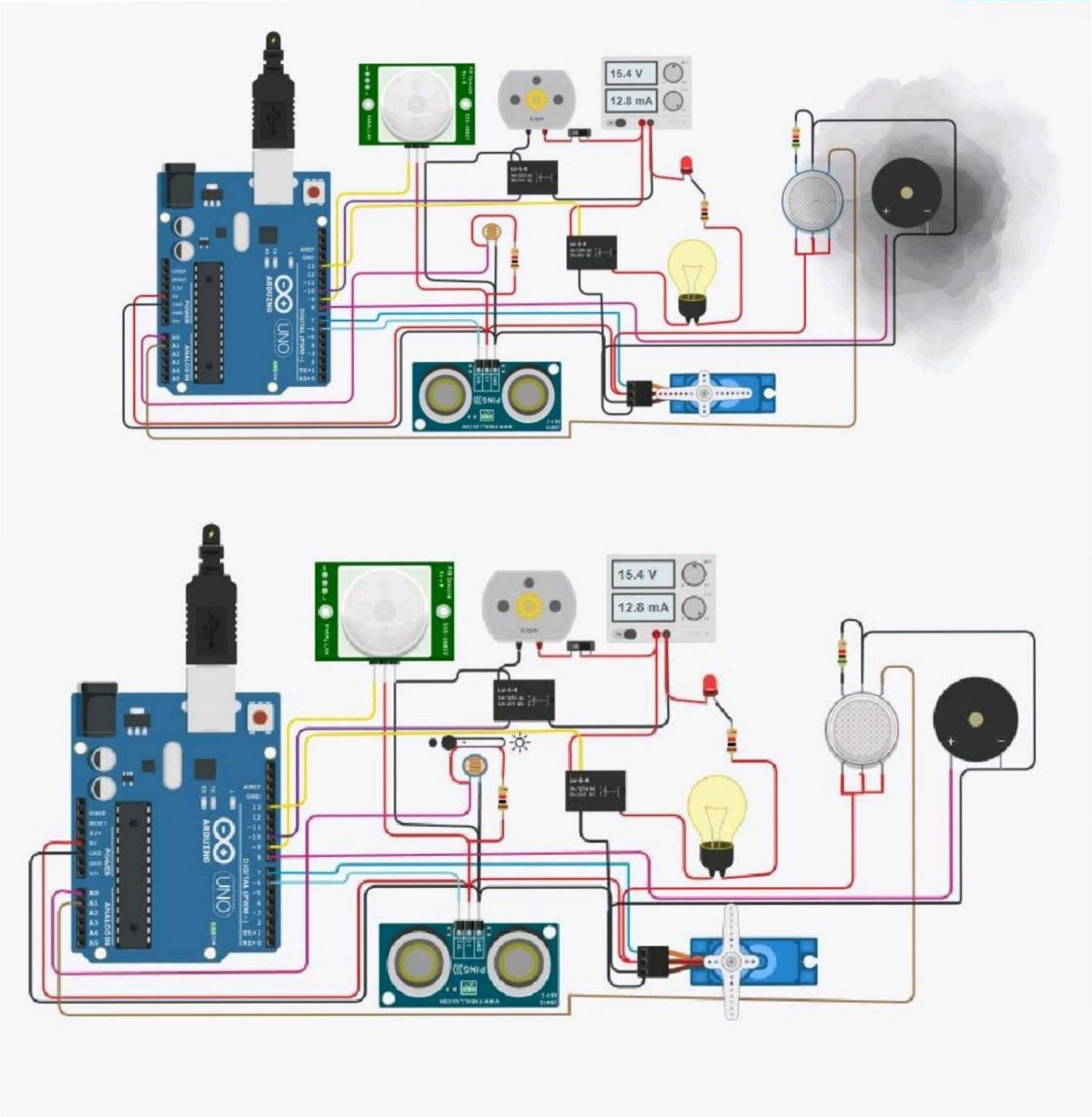
```
#include <Servo.h>

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);

}
```

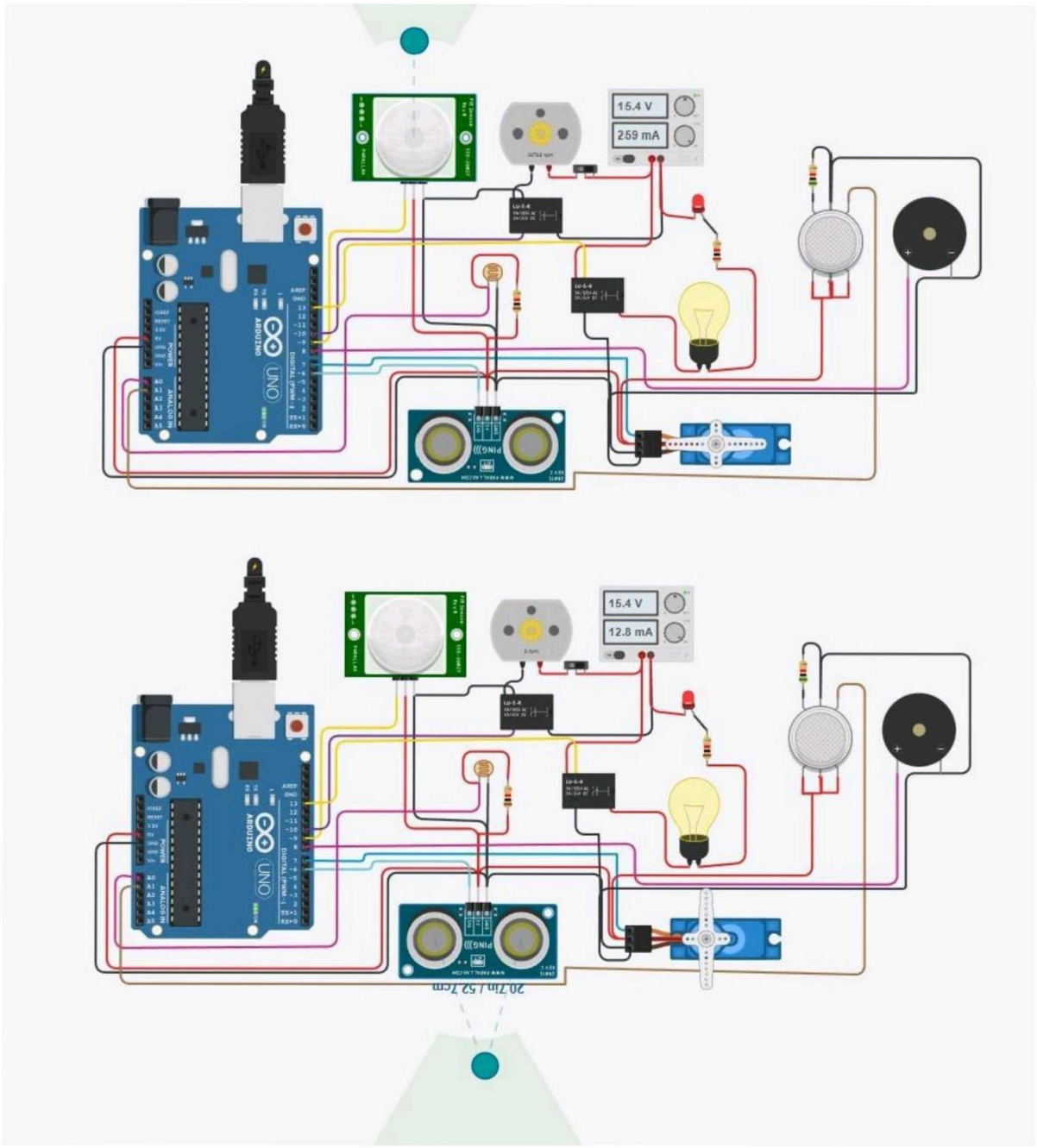
```
Servo servo_7;

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
}
```




15.4 V
259 mA
15.4 V
12.8 mA

Assignment -2

Python Programming

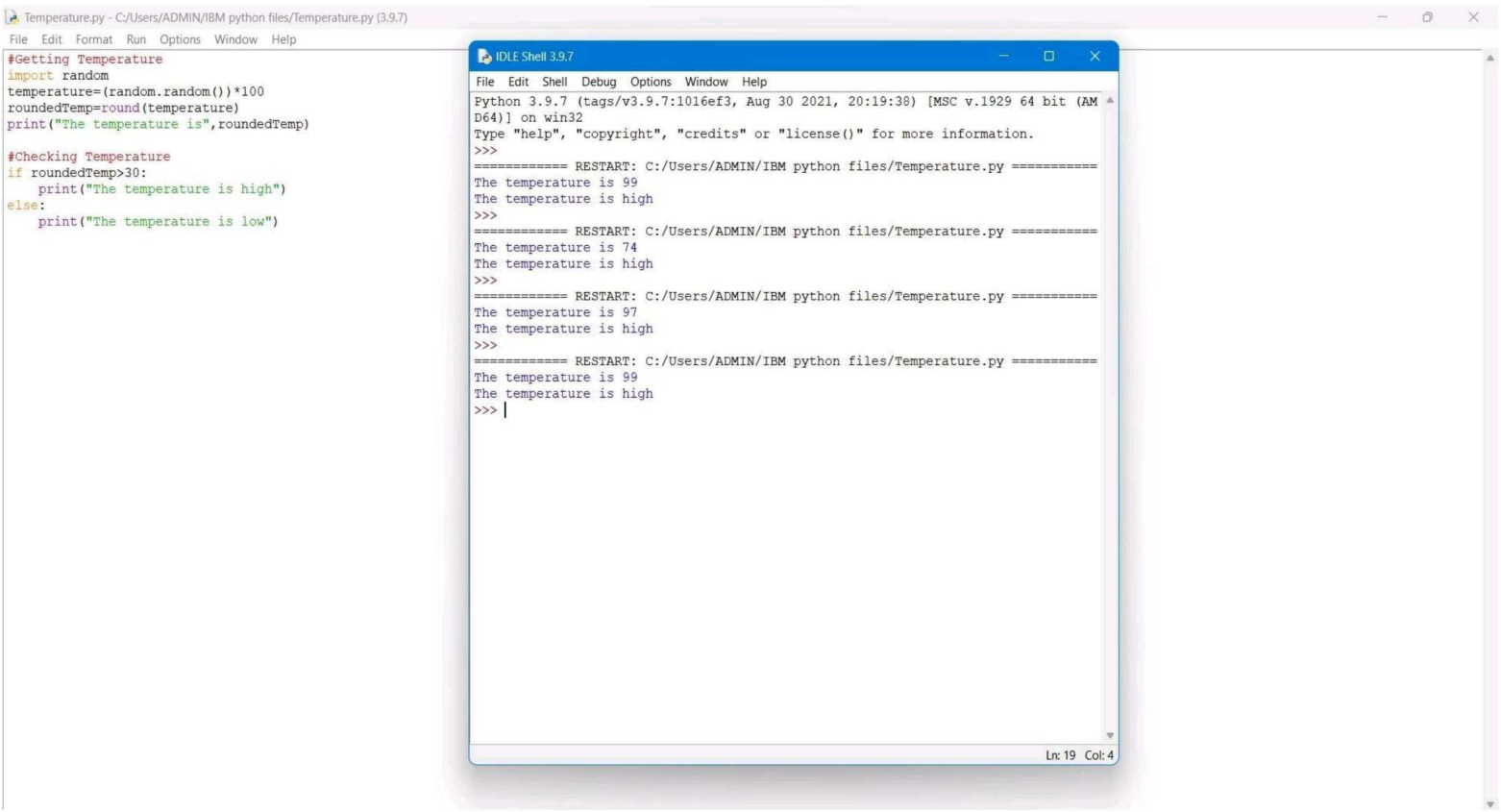
Assignment Date	14 October 2022
Student Name	Venkatesh S
Student Roll Number	19EC256
Maximum Marks	2 Marks

Question-1:

Build a python code, assume you get temperature and humidity values (Generated with random functions to a variable) and write a condition to continuously detect alarm in case of high temperature.

Solution :

```
#Getting Temperature

import random

temperature=(random.random())*100

roundedTemp=round(temperature)

print("The temperature is",roundedTemp)


#Checking Temperature

if roundedTemp>30:

   print("The temperature is high")

else:

   print("The temperature is low")
```


Temperature.py - C:/Users/ADMIN/IBM python files/Temperature.py (3.9.7)
File Edit Format Run Options Window Help
#Getting Temperature
import random
temperature=(random.random())*100
roundedTemp=round(temperature)
print("The temperature is",roundedTemp)
#Checking Temperature
if roundedTemp>30:
print("The temperature is high")
else:
print("The temperature is low")
IDLE Shell 3.9.7
File Edit Shell Debug Options Window Help
Python 3.9.7 (tags/v3.9.7:1016ef3, Aug 30 2021, 20:19:38) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
========== RESTART: C:/Users/ADMIN/IBM python files/Temperature.py ==========
The temperature is 99
The temperature is high
>>>
========== RESTART: C:/Users/ADMIN/IBM python files/Temperature.py ==========
The temperature is 74
The temperature is high
>>>
========== RESTART: C:/Users/ADMIN/IBM python files/Temperature.py ==========
The temperature is 97
The temperature is high
>>>
========== RESTART: C:/Users/ADMIN/IBM python files/Temperature.py ==========
The temperature is 99
The temperature is high
>>>
Ln: 19 Col: 4

Assignment -3

Python Programming

Assignment Date	14 October 2022
Student Name	Venkatesh S
Student Roll Number	19EC256
Maximum Marks	2 Marks

Question :

Write a python code for blinking led and traffic lights for Raspberry pi.

Solution :

```
Import  RP1.GPIOas GP10
import time

GPIO. setmode(GPIO.BOARD)
GPIO.setup(7, GPIO.OUT) #Green LED
GPIO.setup(11, GPI0.OUT)#Yellow LED
GPIO.setup(13, GPI0.OUT) #Red LED
GPI0.setup(15, GP10.IN, pull_up_down=GPIO.PUD_UP)#Button
def turn_on(pin, seconds):
    GPIO.output (pin,GPIO.HIGH)
    time.sleep(seconds)
def turn_off (pin, seconds):
    GPIO.output (pin, GPIO.LOW)
    time.sleep(seconds)
try:
    while True:
        button_state=GPIO.input (15)
        if button_state== True:
           turn_on(13,2)
           tum_off(13,.1)
           turn_on(7,4)
           turn_off(7,.11)
           turn_on(11,1)
           turn_off(11,1)
        else:
           if button_state== False:
              GPI0.output (7,GPIO.LOW)
              GPIO.output(11,GPIO.LOW)
```

```
                GP10.output (13,GPIO.LOW)
                time.sleep(.1)
except KeyboardInterrupt:
    GPIO.cleanup()
    print("Traffic Light Sequence Done")
```