ASSIGNMENT – 1

HOME AUTOMATION

Assignment Date	19 September, 2022
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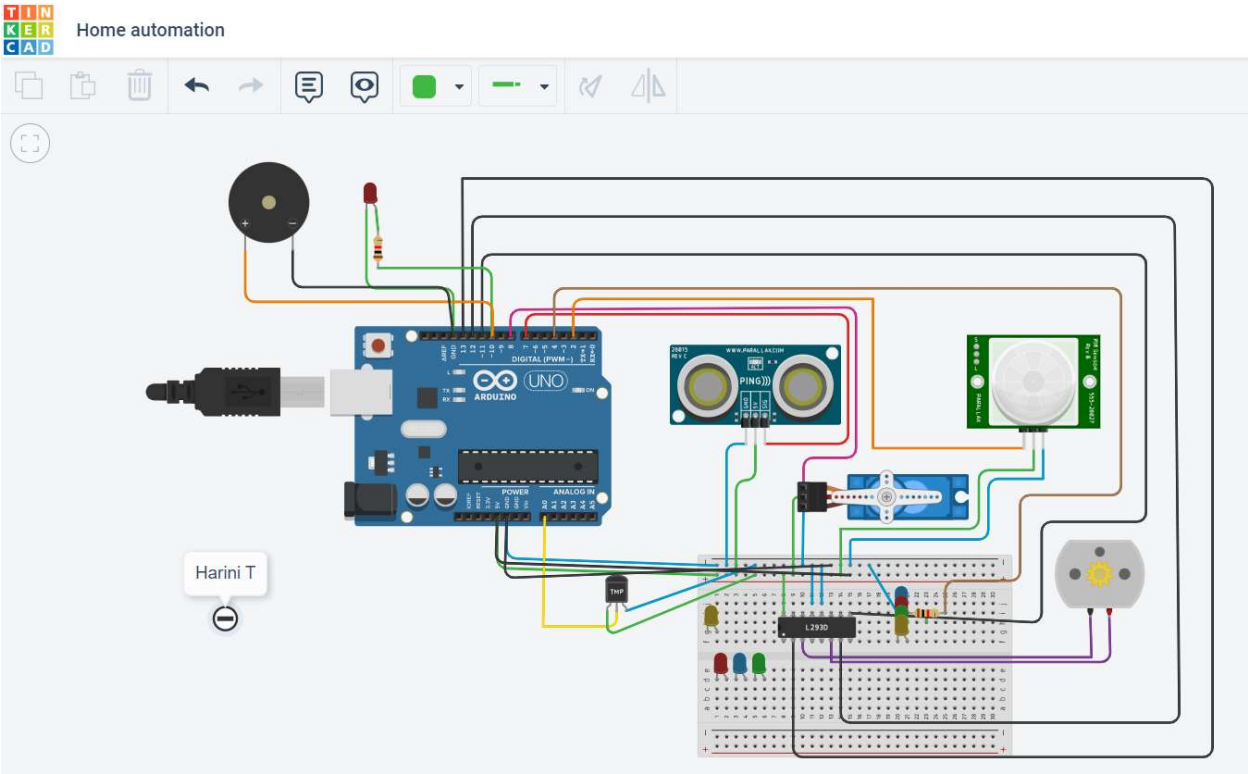
Maximum Marks	2 marks

Question 1:

Build a smart home in Tinkercad with 2 sensors, an Led and a buzzer

Solution:

Circuit Diagram:



Source code:

```
#include<Servo.h>
const int pingPin = 7;
int servoPin = 8;

Servo servo1;

void setup() {
  // initialize serial communication:
  Serial.begin(9600);
  servo1.attach(servoPin);
  pinMode(2,INPUT);
  pinMode(4,OUTPUT);
  pinMode(11,OUTPUT);
  pinMode(12,OUTPUT);
  pinMode(13,OUTPUT);
  pinMode(A0,INPUT);
  digitalWrite(2,LOW);
  digitalWrite(11,HIGH);
   pinMode(2, INPUT);
  pinMode(10,OUTPUT);
}

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);

//Serial.print(inches);
//Serial.print("in, ");
//Serial.print(cm);
//Serial.print("cm");
//Serial.println();
//delay(100);

servo1.write(0);

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);
}
//burglar alarm
Serial.println(digitalRead(2));
if (digitalRead(2) == 1) {
  digitalWrite(10, HIGH);
} else {
  digitalWrite(10, LOW);
}
delay(10);
```

```
  //temp with fan
  float value=analogRead(A0);
  float temperature=value*0.48;

  Serial.println("temperature");
  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;
}
```