

ASSIGNMENT – 1

HOME AUTOMATION

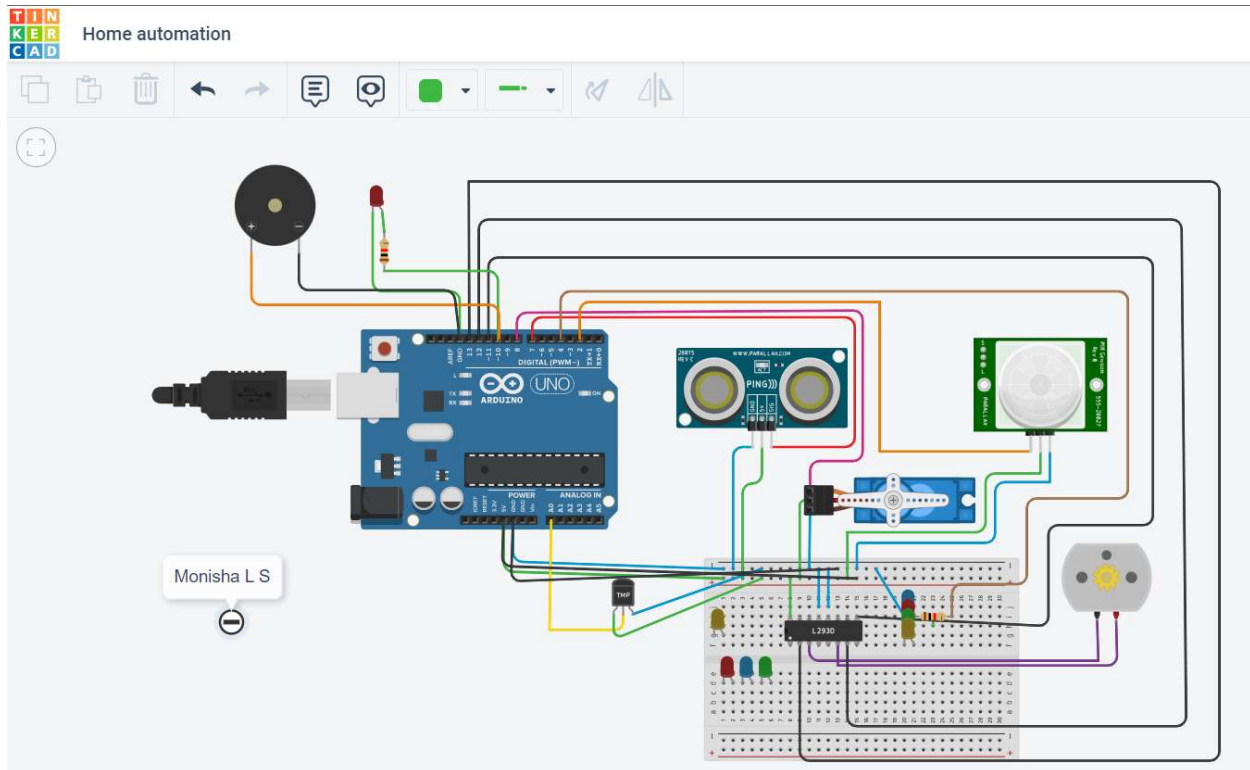
Assignment Date	19 September, 2022
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Maximum Marks	2 marks

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;  
}
```