Assignment-I

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Problem:

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

Program:

```
RIG_PIN const int T  = 10; // Arduino pin connected to Ultrasonic Sensor's TRIG pin
const int ECHO_PIN   = 9; // Arduino pin connected to Ultrasonic Sensor's ECHO pin
const int BUZZER_PIN = 2;// Arduino pin connected to Piezo Buzzer's pin
co
nst int LED_PIN = 7;
const int DISTANCE_THRESHOLD_MAX = 40; // centimeters
const int DISTANCE_THRESHOLD_MIN =0;
const int TEMP_THRESHOLD=10;
const int TEMP_THRESHOLD1=70;

// variables will change:
float duration_us, distance_cm;
int sensorPin = 0;
void setup() {
  Serial.begin (9600);     // initialize serial port
  pinMode(TRIG_PIN, OUTPUT);   // set arduino pin to output mode
  pinMode(ECHO_PIN, INPUT);    // set arduino pin to input mode
```

```
  pinMode(BUZZER_PIN, OUTPUT); // set arduino pin to output mode
}

void loop() {

  digitalWrite(TRIG_PIN, HIGH);
  delayMicroseconds(10);
  digitalWrite(TRIG_PIN, LOW);



  duration_us = pulseIn(ECHO_PIN, HIGH);

  distance_cm = 0.017 * duration_us;

  if(distance_cm >= DISTANCE_THRESHOLD_MIN&&distance_cm <
DISTANCE_THRESHOLD_MAX)
  {    int reading = analogRead(sensorPin);

    float voltage = reading * 5.0;
    voltage /= 1024.0;



    Serial.print(voltage); Serial.println(" volts");
    digitalWrite(BUZZER_PIN, HIGH);



    float temperatureC = (voltage - 0.5) * 100 ;

   Serial.println(" degrees C");
   if(temperatureC<TEMP_THRESHOLD){
    digitalWrite(BUZZER_PIN, HIGH);
```

```
    digitalWrite(LED_PIN, HIGH);
    Serial.print("Temperature is below average \n");
  }
  else if(temperatureC>TEMP_THRESHOLD1){
    digitalWrite(BUZZER_PIN, HIGH);
    digitalWrite(LED_PIN, HIGH);
    Serial.print("Temperature is above average \n");
  }

  else{
        digitalWrite(BUZZER_PIN, LOW);
           digitalWrite(LED_PIN, LOW);




  }

}
 else if(distance_cm>=40&&distance_cm<=120){
   digitalWrite(BUZZER_PIN, HIGH);
   digitalWrite(LED_PIN, HIGH);


 Serial.print("Distance: ");
 Serial.print(distance_cm);
 Serial.println(" cm");

 delay(500);
}
else{
```

```
    digitalWrite(BUZZER_PIN,LOW);
    digitalWrite(LED_PIN, LOW);
  }
}
```

Circuit Diagram: