Assignment–4

Write code and connections in wokwi for ultra sonic sensor.When ever distance is less than 100 cm send “alert” to ibm cloud and display in device recent events

Date	22 October 2022
TeamID	PNT2022TMID02387
ProjectName	IOT-based Smart Crop Protection System forAgriculture
MaximumMarks	2 Marks

PROGRAM:

```
//ARDUINOPINS(TRIGGERPIN,ECHO
PIN)const int TRIG_PIN=
7;constintECHO_PIN=8;

//Anythingover400cm(23200uspulse)is"outofrange"constunsignedintmax_
dist=23200;
voidsetup()
{

  //TheTriggerpinwilltellthesensortorangefindpinMode(TRIG_PIN,OUTPUT)
  ;
  digitalWrite(TRIG_PIN,LOW);
  //SetEchopinasinputto measurethe time durationofpulsereturning backfrom thedistancesensorpinMode(ECHO_PIN,INPUT);
```

```
    //We'llusethe serialmonitortoviewthesensoroutput
    Serial.begin(9600);

}

voidloop(){

    unsigned long t1;unsignedlong
    t2; unsigned longpulse_width;
    float cm;floatinches;
    //Holdthetriggerpinhighforatleast10us
    digitalWrite(TRIG_PIN,
    HIGH);delayMicroseconds(10);
    digitalWrite(TRIG_PIN,LOW);
    //Waitforpulseonechopin
    while(digitalRead(ECHO_PIN)==0);
    // Measure how long the echo pin was held high (pulsewidth)//Note:
    themicros()counterwilloverflowafter
    ~70 mint1 = micros();while(digitalRead(ECHO_PIN)== 1);t2=micros();
    pulse_width=t2-t1;
    // Calculate distance in centimeters and inches. The constants //arefoundinthe
    datasheet,andcalculatedfromtheassumedspeed
    //ofsoundinairatsealevel(~340m/s).cm=pulse_widt
    h/58.0;
    inches=pulse_width/148.0;
    //Printoutresults

    if(pulse_width >max_dist ){
        Serial.println("Outofrange");
    } else
        {Serial.println("**********");Serial.print("Distance
        Measuredincm:");
```

```
      Serial.println(cm);if(cm
<100){
          //while(true){
          Serial.println("Alert!!");
          //}
      }

      Serial.print("******************************");
   }

   // Wait at least1000ms before next measurementdelay(1000);
}
```

OUTPUT:

WOKWi SAVE SHARE Docs SIGN IN

sketch.ino ● diagram.json ● Library Manager

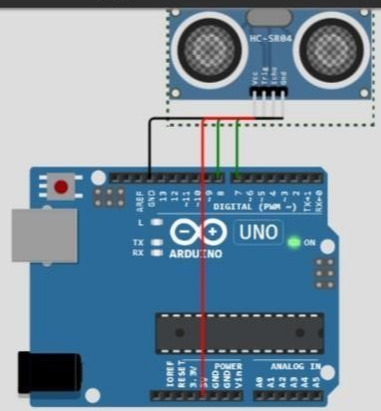
```
1
2
3
4
5   // ARDUINO PINS (TRIGGER PIN, ECHO PIN)
6   const int TRIG_PIN = 7;
7   const int ECHO_PIN = 8;
8
9   // Anything over 400 cm (23200 us pulse) is "out of range"
10  const unsigned int max_dist = 23200;
11
12  void setup() {
13
14    // The Trigger pin will tell the sensor to range find
15    pinMode(TRIG_PIN, OUTPUT);
16    digitalWrite(TRIG_PIN, LOW);
17
18    //Set Echo pin as input to measure the time duration of pulse returning back from the d
19    pinMode(ECHO_PIN, INPUT);
20
21    // We'll use the serial monitor to view the sensor output
22    Serial.begin(9600);
23  }
24
25  void loop() {
26
27    unsigned long t1;
28    unsigned long t2;
29    unsigned long pulse_width;
30    float cm;
31    float inches;
32
33    // Hold the trigger pin high for at least 10 us
34    digitalWrite(TRIG_PIN, HIGH);
```

Simulation

01:27.258 99%

Editing Ultrasonic Distance Sensor

Distance: 2cm




```
**********
Distance Measured in cm : 2.07
Alert !!
**********
Distance Measured in cm : 2.00
Alert !!
**********
```

WOKWi SAVE SHARE Docs SIGN IN

sketch.ino ● diagram.json ● Library Manager

```
1
2
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25  void loop() {
26
27    unsigned long t1;
28    unsigned long t2;
29    unsigned long pulse_width;
30    float cm;
31    float inches;
32
33    // Hold the trigger pin high for at least 10 us
34    digitalWrite(TRIG_PIN, HIGH);
```

Simulation

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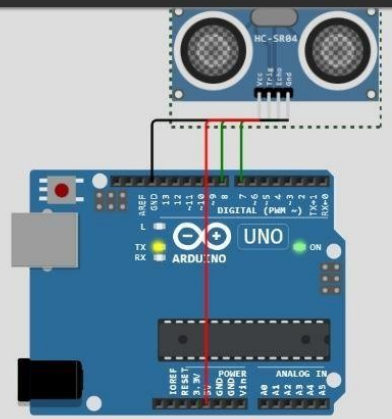
Editing Ultrasonic Distance Sensor

Distance: 268cm




```
Distance Measured in cm : 271.79
************************************************************
Distance Measured in cm : 271.72
************************************************************
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************************************************************
Distance Measured in cm : 271.79
```