

Assignment – 4

Write code and connections in wokwi for ultrasonic sensor. Whenever distance is less than 100cms send “alert” to ibm cloud and display in device recent events

Date	07 November 2022
Team ID	PNT2020TMID13187
Project Name	SMART FARMER – IoT ENABLED SMART FARMING APPLICATION
Maximum Marks	4 Marks

PROGRAM :

```
// ARDUINO PINS (TRIGGER PIN, ECHO PIN)
const int TRIG_PIN = 7;
const int ECHO_PIN = 8;

// Anything over 400 cm (23200 us pulse) is "out of range"
const unsigned int max_dist = 23200;

void setup() {

    // The Trigger pin will tell the sensor to range find
    pinMode(TRIG_PIN, OUTPUT);
    digitalWrite(TRIG_PIN, LOW);

    //Set Echo pin as input to measure the time duration of pulse returning back from the distance sensor
    pinMode(ECHO_PIN, INPUT);

    // We'll use the serial monitor to view the sensor output
    Serial.begin(9600);
    717819F245
```

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```

}

void loop() {

    unsigned long t1;
    unsigned long t2;
    unsigned long pulse_width;
    float cm;
    float inches;

    // Hold the trigger pin high for at least 10 us
    digitalWrite(TRIG_PIN, HIGH);
    delayMicroseconds(10);
    digitalWrite(TRIG_PIN, LOW);

    // Wait for pulse on echo pin
    while ( digitalRead(ECHO_PIN) == 0 );

    // Measure how long the echo pin was held high (pulse width)
    // Note: the micros() counter will overflow after ~70 min
    t1 = micros();
    while ( digitalRead(ECHO_PIN) == 1);
    t2 = micros();
    pulse_width = t2 - t1;

    // Calculate distance in centimeters and inches. The constants
    // are found in the datasheet, and calculated from the assumed speed
    // of sound in air at sea level (~340 m/s).
    cm = pulse_width / 58.0;
    inches = pulse_width / 148.0;

    // Print out results

```

```
if ( pulse_width > max_dist ) {  
  Serial.println("Out of range");  
} else {  
  Serial.println("*****");  
  Serial.print("Distance Measured in cm : ");  
  Serial.println(cm);  
  
  if(cm<100){  
    // while(true){  
    Serial.println("Alert !!");  
    // }  
  }  
  
  Serial.print("*****");  
}  
  
// Wait at least 1000ms before next measurement  
delay(1000);  
}
```

OUTPUT :

The image shows the Wokwi IDE interface. On the left, the code for an Arduino Uno is displayed in the sketch editor. The code defines two pins, TRIG_PIN (7) and ECHO_PIN (8), and sets up the pins for output and input. The loop function measures the distance using the ultrasonic sensor and prints the result to the serial monitor. The right side of the interface shows a simulation of the Arduino Uno with the ultrasonic sensor connected. The sensor's distance is set to 2cm in the simulation window. The serial monitor displays the output of the code, showing the distance measured in cm and an alert message.

```
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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

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Editing Ultrasonic Distance Sensor

Distance: 2cm

Distance Measured in cm : 2.07

Alert !!

Distance Measured in cm : 2.00

Alert !!

WOKWI

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sketch.ino • diagram.json • Library Manager

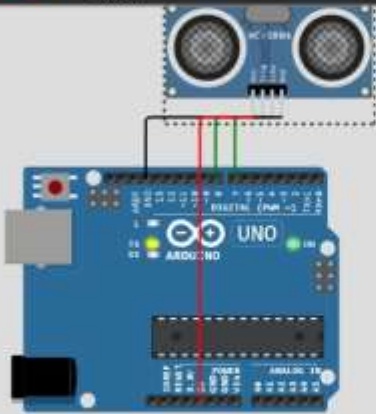
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```

Simulation

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Editing Ultrasonic Distance Sensor

Distance: 268cm



Distance Measured in cm : 271.79

Distance Measured in cm : 271.72

Distance Measured in cm : 271.72

Distance Measured in cm : 271.79

Project Link : <https://wokwi.com/projects/346290927428436563>