

ASSIGNMET 3

Assignment Date	18 May 2023
Student Name	Y.Nieaas arif
Student Roll Number	812020106024

QUESTION 3;

build wowki product ,use ultrasonic sensor and detect the distance from the object,whenever distance is less than 100cms uplod the value to the ibm cloud. in recent device events upload the data from wokwi

Program

```
//Pins 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 duration of //pulses coming
    back from the distance sensor pinMode(ECHO_PIN, INPUT );
    Serial// We'll use the serial monitor to view the sensor output Serial.begin(9600);
} 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 (- 340m/s)
cm=pulse_width/ 58 ; inches = pulse_width/148.0;
// Print out results if (pulse_width>MAX_DIST){
Serial.println("Out of range");
} else{
Serial.println("*****");
Serial.print("The Measured Distance in
cm: "); Serial.println(cm); if( cm < 100 ){
Serial//while(true){
Serial.println("A
lert!!");
//}

}
Serial.print("*****"); }
//wait at least 1000ms before next measurement delay(1000);
}

```

Output

If the distance is less than 100 cms ,it alerts.

WOKWI

sketch.ino diagram.json Library Manager

```

1 //Pins
2 const int TRIG_PIN = 7;
3 const int ECHO_PIN = 8;
4
5 //Anything over 400 cm (23200 us pulse) is "out of range"
6 const unsigned int MAX_DIST = 23200;
7
8 void setup(){
9
10 // The Trigger pin will tell the sensor to range find
11 pinMode(TRIG_PIN, OUTPUT);
12 digitalWrite(TRIG_PIN, LOW);
13 //Set Echo pin as input to measure the duration of
14 //pulses coming back from the distance sensor
15 pinMode(ECHO_PIN, INPUT );
16 // We'll use the serial monitor to view the sensor output
17 Serial.begin(9600);
18 }
19
20 void loop() {
21   unsigned long t1;
22   unsigned long t2;
23   unsigned long pulse_width;
24   float cm;
25   float inches;

```

Simulation

00:10.464 100%

Editing Ultrasonic Distance Sensor

Distance: 2cm

```

***
The Measured Distance in cm: 368.00
*****Out of range
*****
The Measured Distance in cm: 197.00
*****
***
The Measured Distance in cm: 2.00
Alert!!
*****

```

31°C Cloudy

7.2 KBps 2.0 KBps

ENG IN 12:20 28-10-2022

WOKWI

sketch.ino diagram.json Library Manager

```

1 //Pins
2 const int TRIG_PIN = 7;
3 const int ECHO_PIN = 8;
4
5 //Anything over 400 cm (23200 us pulse) is "out of range"
6 const unsigned int MAX_DIST = 23200;
7
8 void setup(){
9
10 // The Trigger pin will tell the sensor to range find
11 pinMode(TRIG_PIN, OUTPUT);
12 digitalWrite(TRIG_PIN, LOW);
13 //Set Echo pin as input to measure the duration of
14 //pulses coming back from the distance sensor
15 pinMode(ECHO_PIN, INPUT );
16 // We'll use the serial monitor to view the sensor output
17 Serial.begin(9600);
18 }
19
20 void loop() {
21   unsigned long t1;
22   unsigned long t2;
23   unsigned long pulse_width;
24   float cm;
25   float inches;

```

Simulation

00:10.464 100%

The Measured Distance in cm: 2.00

Alert!!

0.2 KBps 0.0 KBps

ENG IN 12:21 28-10-2022

Wokwi project simulation interface showing a sketch and a simulated circuit.

Sketch Code:

```
1 // Pins
2 const int TRIG_PIN = 7;
3 const int ECHO_PIN = 8;
4
5 // Anything over 400 cm (23200 us pulse) is "out of range"
6 const unsigned int MAX_DIST = 23200;
7
8 void setup(){
9
10 // The Trigger pin will tell the sensor to range find
11 pinMode(TRIG_PIN, OUTPUT);
12 digitalWrite(TRIG_PIN, LOW);
13 // Set Echo pin as input to measure the duration of
14 // pulses coming back from the distance sensor
15 pinMode(ECHO_PIN, INPUT );
16 // We'll use the serial monitor to view the sensor output
17 Serial.begin(9600);
18 }
19 void loop() {
20   unsigned long t1;
21   unsigned long t2;
22   unsigned long pulse_width;
23   float cm;
24   float inches;
25 }
```

Simulation: The circuit diagram shows an Arduino Uno connected to an HC-SR04 ultrasonic sensor. The sensor's VCC is connected to the Arduino's 5V pin, GND to GND, TRIG to pin 7, and ECHO to pin 8. The simulation output shows the measured distance in cm: 91.00, followed by an "Alert!!" message, and then 124.00 cm.

Simulation output:

```
*****
The Measured Distance in cm: 91.00
Alert!!
*****
The Measured Distance in cm: 124.00
*****
```

Link:

<https://wokwi.com/projects/346743469024215636>