

Assignment - 4	
Assignment Date	22 October 2022
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Student Roll Number	610819106042
Maximum Marks	2 Marks

Question-I:

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

Solution:

```
// 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);

    // 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 40
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("The Measured Distance 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:

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

WOKWt VB SAVE

Docs

hc-sr04.ino diagram ison

Lbrary Manager

Shnulation

- // Pins Öoo:00A66

- const int TRIG_PIN 7; 00 >

- const int EGO PIN 8;

4

// Anything over cm (232eø us pulse) is "out of range" Editing Ultrasonic Distance 6 const unsigned

int PAX_DIST • 232ee•, Distance. 83an

7

8void setup() {

9

// The Trigger pin will tell the sensor to range find

11 a-JTPUT);

12

UNO

13

14//Set Echo pin as input to measure the duration of . AROUINO

//pulses coming back from the distance sensor

16 IWUT);

17

18 // we • ll use the serial

monitor to view the sensor

output 19 Serial.begin(96ee);

20

21

22void loop() {

23

- unsigned long t1

- unsigned long t2;

- unsigned long pulse_width The Measured Distance in cm : 84.14 27 float cm;Alert !!

28float inches;

29

```
// Hold the trigger pin high for at least 10 us
```

- If the distance is more than 100 cms, it won't alert.

WOKWOT

[SHARE](#)

hc-sr04.ino 'agramjson

Library Manager

Simulation

- // Pins 00:00.599

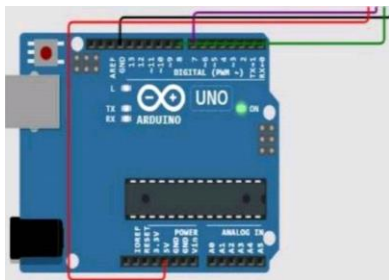


- const int TRIG_PIN = 00;

- const int ECHO_PIN = 8;

- // Anything over 400 cm (23200 us pulse) is "out of range"
- const unsigned int MAX_DIST = 2320;

7



- pinMode(TRIG_PIN, OUTPUT);
digitalWrite(TRIG_PIN, LOW);

- // The Trigger pin will tell the sensor to range find

11

12

13

14 // Set Echo pin as input to measure the duration of
// pulses coming back from the distance sensor

16 pinMode(ECHO_PIN, INPUT);

17

18 // We'll use the serial monitor to view the sensor output

19 Serial.begin(9600);

21

22 void loop() {

23

- unsigned long t1; // Start time
- unsigned long t2; // The Measured Distance in cm : 227.10
- unsigned long pulse_width;

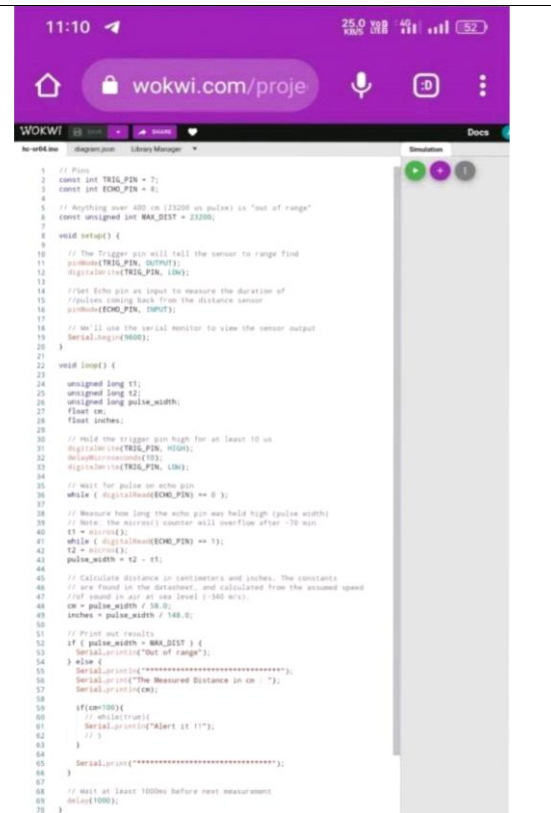
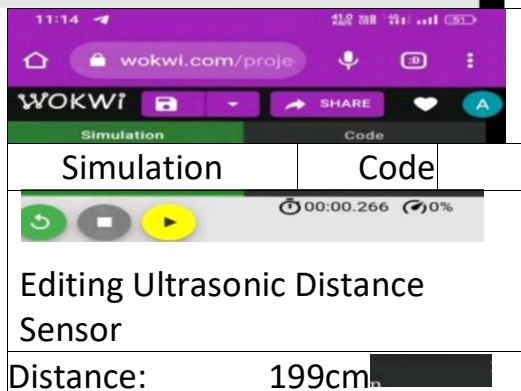
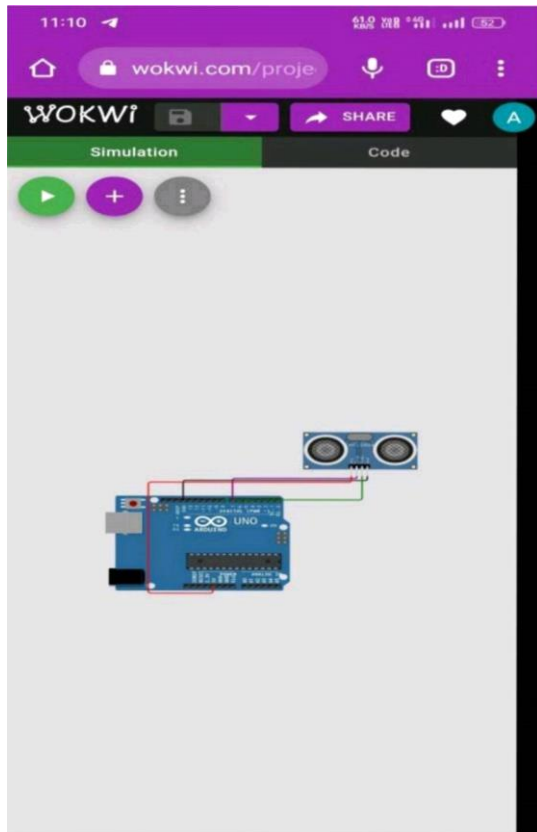
- float cm; Activate Windows
- float inches; Go to Settings to activate Windows

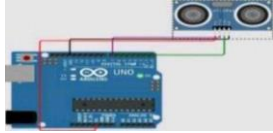
29

// Hold the trigger pin high for at least 10 us

11

3) Simulation and code execution





The Measured Distance in cm201
.79

11:14 4G LTE 88% 50% 48%

wokwi.com/proje

WOKWI

Simulation Code

00:00.300 48%

```
*****  
The Measured Distance in cm : 57.79  
Alert it !!  
*****
```