

Assignment - 4

Assignment Date	22 October 2022
Student Name	Ganesh Raj S
Student Roll Number	95071914027
Maximum Marks	2 Marks

Question-1:

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 ~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("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:

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

WOKWI

SAVE SHARE

Docs

hc-sr04.ino

```
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
14 //Set Echo pin as input to measure the duration of
15 //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);
20 }
21
22 void loop() {
23
24 unsigned long t1;
25 unsigned long t2;
26 unsigned long pulse_width;
27 float cm;
28 float inches;
29
30 // Hold the trigger pin high for at least 10 us
```

Simulation

00:00.466 58%

Editing Ultrasonic Distance Sensor

Distance: 83cm

UNO

ARDUINO

The Measured Distance in cm : 84.14

Alert!!

Activate Windows

Go to Settings to activate Windows.

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

WOKWI

SAVE SHARE

Docs

hc-sr04.ino

```
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27 float cm;
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Simulation

00:00.599 62%

UNO

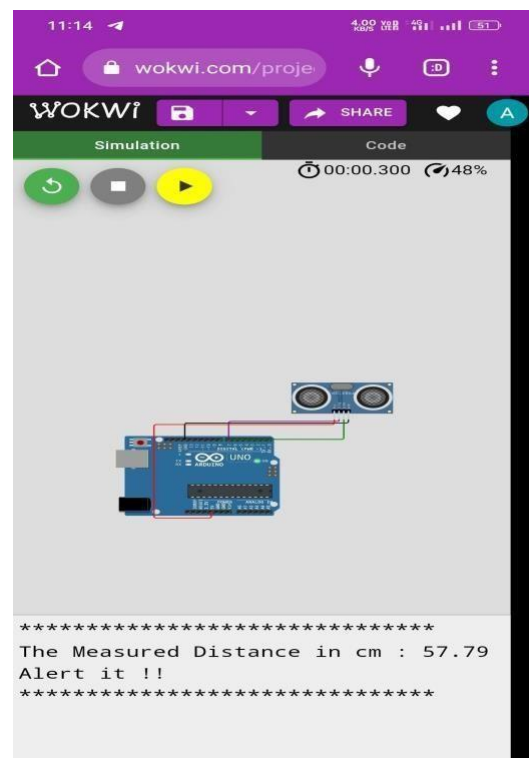
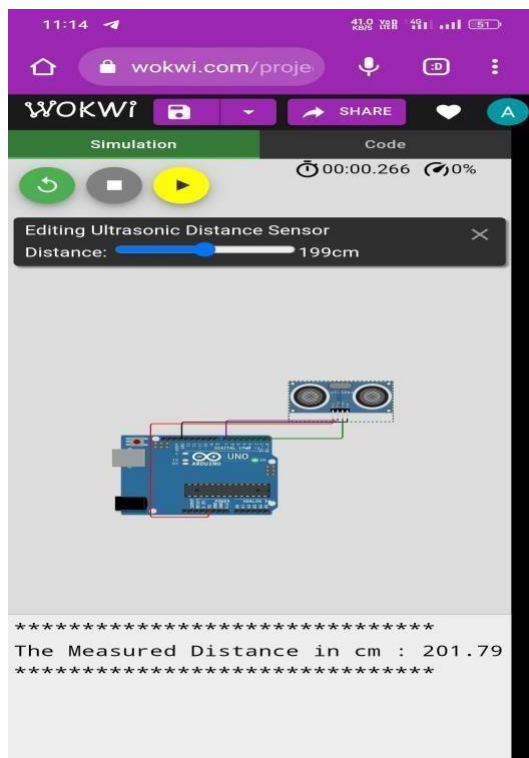
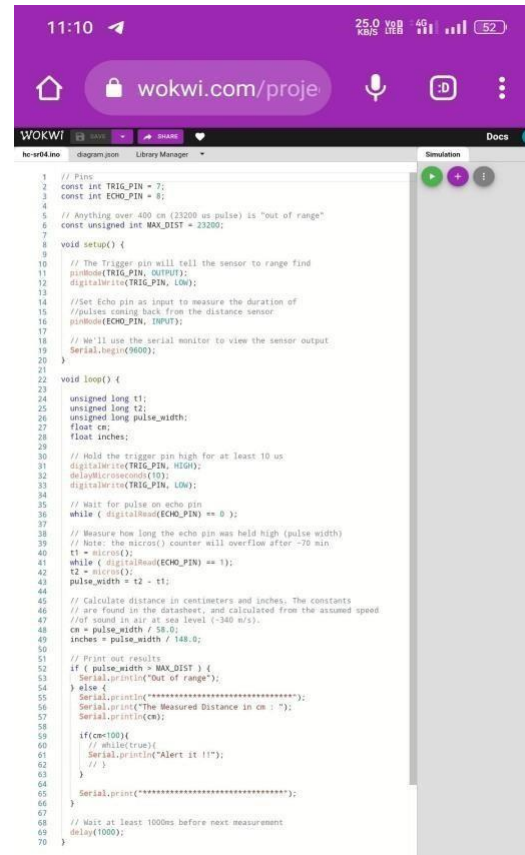
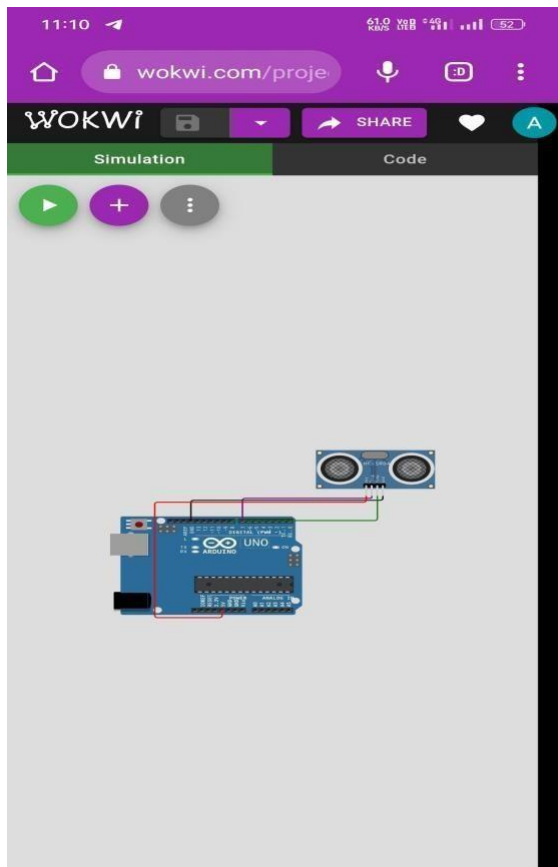
ARDUINO

The Measured Distance in cm : 227.10

Activate Windows

Go to Settings to activate Windows.

3) Simulation and code execution



Project Link:

<https://wokwi.com/projects/346475395140289108>

