

Assignment - 4

Assignment Date	22 October 2022
Student Name	Kishore R
Team ID	PNT2022TMID43416
Project Name	Smart Waste Management System For Metropolitan Cities
Maximum Marks	2 Marks

Question:

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

PROGRAM:

```
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);
}

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:

WOKWI

sketch.ino diagram.json Library Manager

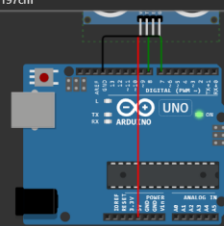
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2 const int ECHO_PIN = 8;
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4 // Anything over 400 cm (23200 us pulse) is "out of range"
5 const unsigned int max_dist = 23200;
6
7 void setup() {
8
9   // The Trigger pin will tell the sensor to range find
10  pinMode(TRIG_PIN, OUTPUT);
11  digitalWrite(TRIG_PIN, LOW);
12
13  //Set Echo pin as input to measure the time duration of pulse returning back from the d
14  pinMode(ECHO_PIN, INPUT);
15
16  // We'll use the serial monitor to view the sensor output
17  Serial.begin(9600);
18 }
19
20 void loop() {
21
22   unsigned long t1;
23   unsigned long t2;
24   unsigned long pulse_width;
25   float cm;
26   float inches;
27
28   // Hold the trigger pin high for at least 10 us
29   digitalWrite(TRIG_PIN, HIGH);
30   delayMicroseconds(10);
31   digitalWrite(TRIG_PIN, LOW);
32
33   // Wait for pulse on echo pin
34   while ( digitalRead(ECHO_PIN) == 0 );
```

Simulation

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Editing Ultrasonic Distance Sensor

Distance: 197cm



Distance Measured in cm : 199.79

Distance Measured in cm : 199.79

Distance Measured in cm : 199.79

Distance Measured in cm : 199.86

Assignment_4.pdf

Show all

WOKWI

sketch.ino diagram.json Library Manager

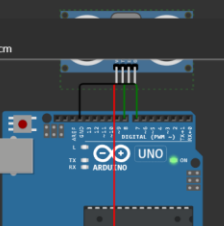
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30   delayMicroseconds(10);
31   digitalWrite(TRIG_PIN, LOW);
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33   // Wait for pulse on echo pin
34   while ( digitalRead(ECHO_PIN) == 0 );
```

Simulation

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Editing Ultrasonic Distance Sensor

Distance: 400cm



Distance Measured in cm : 356.97

Distance Measured in cm : 357.03

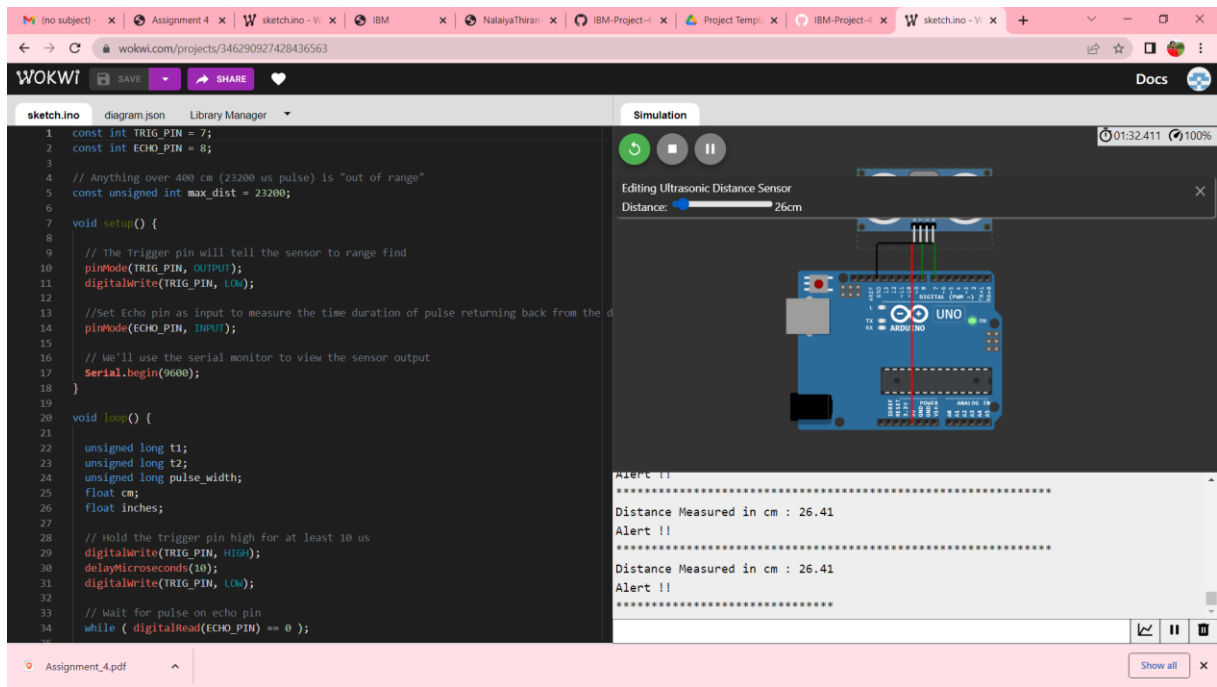
Distance Measured in cm : 357.03

Out of range

Out of range

Assignment_4.pdf

Show all



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