

Assignment 4

Objective:

To develop a code and make connections in wokwi for ultrasonic sensor, whenever distance is less than 100 cm send “Alert” to IBM cloud and display in device recent events.

Code:

```
const int TRIG_PIN = 7;
const int ECHO_PIN = 8;

const unsigned int MAX_DIST = 23600;
void setup() {

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

  pinMode(ECHO_PIN, INPUT);

  Serial.begin(9600);
}
void loop() {

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

  digitalWrite(TRIG_PIN, HIGH);
  delayMicroseconds(10);
```

```
digitalWrite(TRIG_PIN, HIGH);
delayMicroseconds(10);
digitalWrite(TRIG_PIN, LOW);

while (digitalRead(ECHO_PIN) == 0);

t1 = micros();
while (digitalRead(ECHO_PIN) == 1);
t2 = micros();
pulse_width = t2 - t1;

cm = pulse_width / 58;
inches = pulse_width / 148.0;

if (pulse_width > MAX_DIST) {
  Serial.println("Out of range");
}
else
{
  Serial.print("The Measured Distance in cm: "); Serial.println(cm);
}
```

```
Serial.print("The Measured Distance in cm: "); Serial.println(cm);

if (cm < 100)
{
  {
    Serial.println("Alert! Object detected");
  }
}

}

delay(1000);
}
```

Stimulation:

WOKWI

simulation

```
1 const int TRIG_PIN = 7;
2 const int ECHO_PIN = 8;
3
4 const unsigned int MAX_DIST = 23600;
5 void setup() {
6
7   pinMode(TRIG_PIN, OUTPUT);
8   digitalWrite(TRIG_PIN, LOW);
9
10  pinMode(ECHO_PIN, INPUT);
11
12  Serial.begin(9600);
13 }
14 void loop() {
15
16   unsigned long t1;
17   unsigned long t2;
18   unsigned long pulse_width;
19   float cm;
20   float inches;
21
22   digitalWrite(TRIG_PIN, HIGH);
23   delayMicroseconds(10);
24   digitalWrite(TRIG_PIN, LOW);
25
26   while (digitalRead(ECHO_PIN) == 0);
27
28   t1 = micros();
29   while (digitalRead(ECHO_PIN) == 1);
30   t2 = micros();
31   pulse_width = t2 - t1;
32
33   cm = pulse_width / 58;
34   inches = pulse_width / 148.0;
35
36   if (pulse_width > MAX_DIST) {
```

Simulation

00:20.221 102%

HC-SR04

ARDUINO UNO

The Measured Distance in cm: 28.00
Alert! Object detected
The Measured Distance in cm: 28.00
Alert! Object detected
The Measured Distance in cm: 28.00
Alert! Object detected
The Measured Distance in cm: 28.00