

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, LOW);

  while (digitalRead(ECHO_PIN) == 0);
  t1 = micros();
```

```
  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);

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

  delay(1000);
}
```

STIMULATION

WOKWI

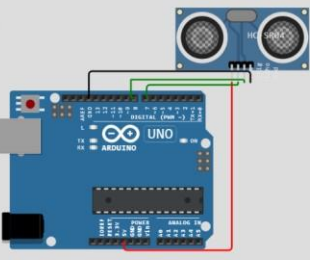
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Docs

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```
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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 }
```

Simulation



Alert! Object detected
The Measured Distance in cm:
95.00
Alert! Object detected
The Measured Distance in cm:
95.00
Alert! Object detected

29°C Cloudy ENG 15:58