BANNARI AMMAN INSTITUTE OF TECHNOLOGY, SATHYAMANGALAM

Department of Computer Science and Engineering

IOT Assignment

Topic : **Write a 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.**

Name: Aravindhan P

CODE:-

```cpp
// 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.print(cm);
    Serial.print(" cm \t");
    Serial.print(inches);
    Serial.println(" in");
  }

  // Wait at least 60ms before next measurement
  delay(60);
}
```

OUTPUT:

WOKWI   SAVE   SHARE   Docs   SIGN UP

hc-sr04.ino   diagram.json   Library Manager

Simulation   00:08.266   100%
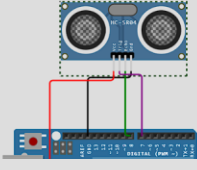
```
42      Serial.begin(9600);
43   }
44
45   void loop() {
46
47     unsigned long t1;
48     unsigned long t2;
49     unsigned long pulse_width;
50     float cm;
51     float inches;
52
53     // Hold the trigger pin high for at least 10 us
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55     delayMicroseconds(10);
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57
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59     while ( digitalRead(ECHO_PIN) == 0 );
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61     // Measure how long the echo pin was held high (pulse width)
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64     while ( digitalRead(ECHO_PIN) == 1);
65     t2 = micros();
66     pulse_width = t2 - t1;
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68     // Calculate distance in centimeters and inches. The constants
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70     //of sound in air at sea level (~340 m/s).
71     cm = pulse_width / 58.0;
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74     // Print out results
75     if ( pulse_width > MAX_DIST ) {
76       Serial.println("Out of range");
77     } else {
78       Serial.print(cm);
79       Serial.print(" cm \t");
80       Serial.print(inches);
81       Serial.println(" in");
82     }
83
84     // Wait at least 60ms before next measurement
85     delay(60);
86   }
```

Editing Ultrasonic Distance Sensor   ×
Distance: 312cm

****
The Measured Distance in cm : 201.79
****

```
316.41 cm       124.00 in
316.41 cm       124.00 in
316.48 cm       124.03 in
316.41 cm       124.00 in
316.41 cm       124.00 in
316.41 cm       124.00 in
316.41 cm       124.00 in
```

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