

Assignment -4

Assignment Date	25 October 2022
Student Name	Madhumitha.M
Student Roll Number	813819106060
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.

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

//Anything over 400cm (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 10us
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 (pulsewidth)
//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 (~340m/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);
}

```

WOKWI SIMULATION:

Case 1:Distance less than 100 cm

WOKWI

SAVE SHARE

Docs m

hc-sr04.ino diagram.json Library Manager

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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;
```

Simulation

00:51.599 79%

Editing Ultrasonic Distance Sensor

Distance: 76cm

The Measured Distance in cm : 77.03

Alert!!

The Measured Distance in cm : 77.10

Alert!!

Case 2:Distance greater than 100 cms

WOKWI

SAVE SHARE

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hc-sr04.ino diagram.json Library Manager

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27 float cm;
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```

Simulation

01:15.632 86%

Editing Ultrasonic Distance Sensor

Distance: 136cm

The Measured Distance in cm : 137.93

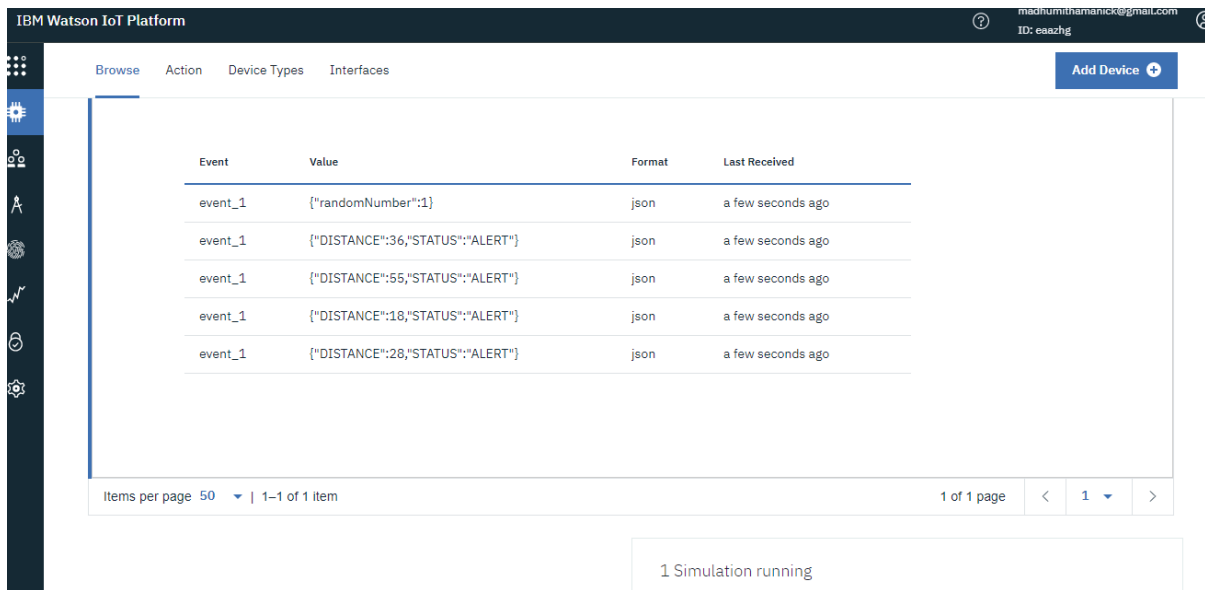
The Measured Distance in cm : 137.93

The Measured Distance in cm : 137.93

WOKWI LINK:

<https://wokwi.com/projects/346844033654456916>

IBM CLOUD:



The screenshot displays the IBM Watson IoT Platform interface. The top navigation bar includes the platform name, a user profile icon, and the user email 'madhumithamanick@gmail.com' with ID 'eaazhg'. The main navigation menu on the left contains icons for various functions. The central area shows a table of events under the 'Browse' tab. The table has four columns: Event, Value, Format, and Last Received. It lists five events, all with the format 'json' and received 'a few seconds ago'. The first event has a value of '{"randomNumber":1}', while the others are '{"DISTANCE":36,"STATUS":"ALERT"}', '{"DISTANCE":55,"STATUS":"ALERT"}', '{"DISTANCE":18,"STATUS":"ALERT"}', and '{"DISTANCE":28,"STATUS":"ALERT"}'. Below the table, a pagination bar indicates 'Items per page: 50' and '1 of 1 page'. A status box at the bottom right states '1 Simulation running'.

Event	Value	Format	Last Received
event_1	{"randomNumber":1}	json	a few seconds ago
event_1	{"DISTANCE":36,"STATUS":"ALERT"}	json	a few seconds ago
event_1	{"DISTANCE":55,"STATUS":"ALERT"}	json	a few seconds ago
event_1	{"DISTANCE":18,"STATUS":"ALERT"}	json	a few seconds ago
event_1	{"DISTANCE":28,"STATUS":"ALERT"}	json	a few seconds ago

Items per page: 50 | 1-1 of 1 item

1 of 1 page

1 Simulation running