

Assignment – 4

Date	29 October 2022
Team ID	PNT2022TMID38167
Project Name	Project – Smart Farmer - IOT based Smart Farming Application
Maximum Marks	2 Marks

Question:

Write code and connections in wokwi for the ultrasonic sensor.

Whenever the distance is less than 100 cms send an "alert" to the IBM cloud and display in the device recent events.

Upload document with wokwi share link and images of IBM cloud

Solution:

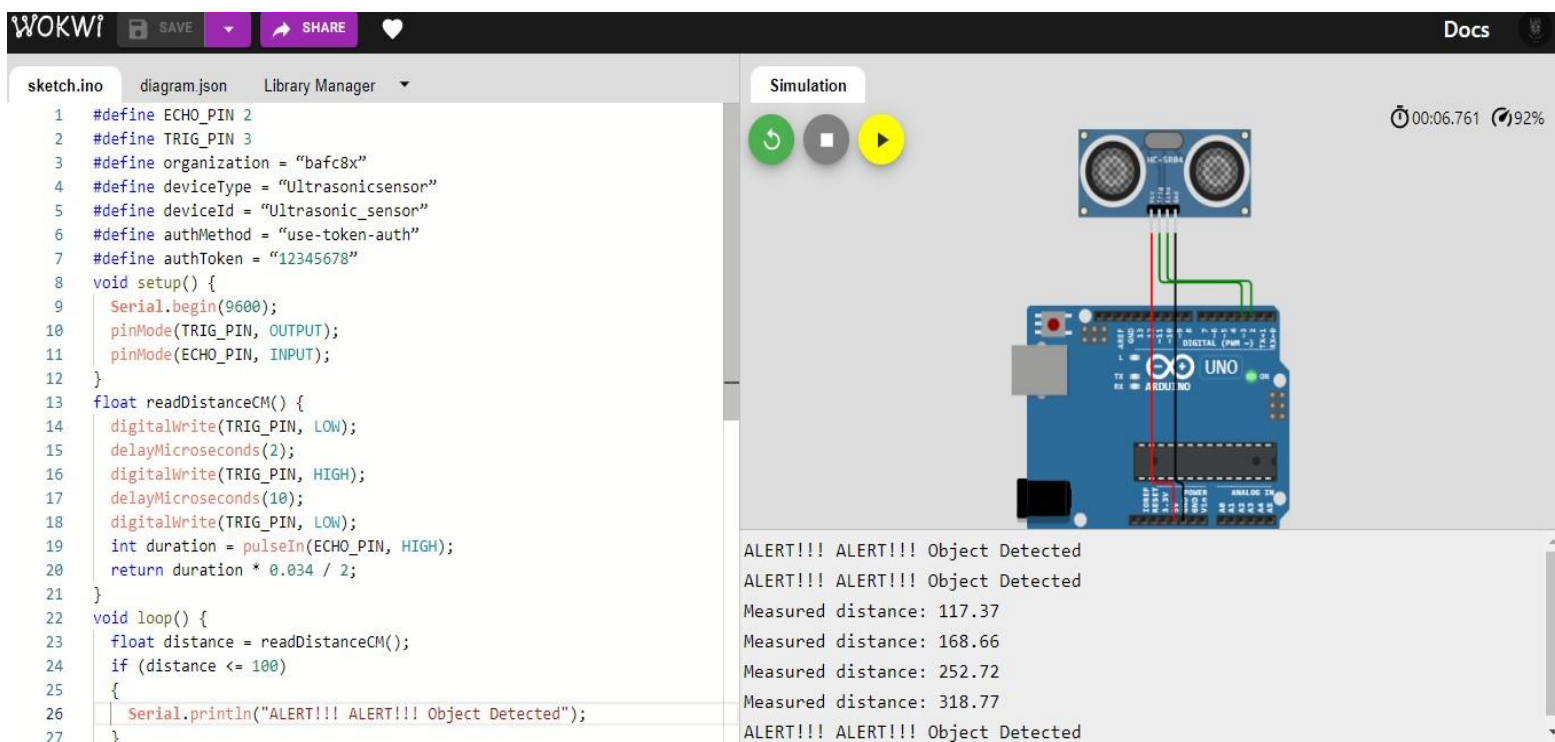
```
#define ECHO_PIN 2
#define TRIG_PIN 3
#define organization = "bafc8x"
#define deviceType = "Ultrasonicsensor"
#define deviceId = "Ultrasonic_sensor"
#define authMethod = "use-token-auth"
#define authToken = "12345678"
void setup()
{
    Serial.begin(9600);
    pinMode(TRIG_PIN, OUTPUT);
    pinMode(ECHO_PIN, INPUT);
}
float readDistanceCM()
{
    digitalWrite(TRIG_PIN, LOW);
    delayMicroseconds(2);
    digitalWrite(TRIG_PIN, HIGH);
    delayMicroseconds(10);
    digitalWrite(TRIG_PIN, LOW);
    int duration = pulseIn(ECHO_PIN, HIGH);
    return duration * 0.034 / 2;
}
void loop()
{
    float distance = readDistanceCM();
```

```

    if (distance <= 100)
    {
        Serial.println("ALERT!!! ALERT!!! Object Detected");
    }
    else
    {
        Serial.print("Measured distance: ");
        Serial.println(readDistanceCM());
    }
    delay(1000);
}

```

Simulation Output:



The screenshot shows the Wokwi online IDE interface. On the left, the 'sketch.ino' file contains the following code:

```

1  #define ECHO_PIN 2
2  #define TRIG_PIN 3
3  #define organization = "bafc8x"
4  #define deviceType = "Ultrasonicsensor"
5  #define deviceId = "Ultrasonic_sensor"
6  #define authMethod = "use-token-auth"
7  #define authToken = "12345678"
8  void setup() {
9      Serial.begin(9600);
10     pinMode(TRIG_PIN, OUTPUT);
11     pinMode(ECHO_PIN, INPUT);
12 }
13 float readDistanceCM() {
14     digitalWrite(TRIG_PIN, LOW);
15     delayMicroseconds(2);
16     digitalWrite(TRIG_PIN, HIGH);
17     delayMicroseconds(10);
18     digitalWrite(TRIG_PIN, LOW);
19     int duration = pulseIn(ECHO_PIN, HIGH);
20     return duration * 0.034 / 2;
21 }
22 void loop() {
23     float distance = readDistanceCM();
24     if (distance <= 100)
25     {
26         Serial.println("ALERT!!! ALERT!!! Object Detected");
27     }
28 }

```

On the right, the 'Simulation' window shows an Arduino Uno board connected to an HC-SR04 ultrasonic sensor. The output console displays the following sequence of messages:

```

ALERT!!! ALERT!!! Object Detected
ALERT!!! ALERT!!! Object Detected
Measured distance: 117.37
Measured distance: 168.66
Measured distance: 252.72
Measured distance: 318.77
ALERT!!! ALERT!!! Object Detected

```

Wokwi Share Link

<https://wokwi.com/projects/346738716669117011>

IBM Cloud Device Details:

IBM Watson IoT Platform

arundhonisri7@gmail.com
ID: bafc8x

← Back

Device Drilldown - Ultrasonic_sensor

Connection Information

Recent Events

State

Device Information

Metadata

Diagnostics

Connection Logs

Device Actions

Connection Information

Basic connection information about this device.

Device ID

Ultrasonic_sensor

Device Type

Ultrasonicsensor

Date Added

Oct 28, 2022 12:15 PM

Added By

arundhonisri7@gmail.com

Connection Status

Disconnected

Last Connected

Oct 29, 2022 10:31 AM

Client Address

145.40.94.93 Insecure

Duration

a few seconds

Data Transferred

1.1 KB

1 Simulation running

IBM Cloud Device Recent Events

Watson IoT Platform

arundhonisri7@gmail.com
ID: bafc8x

Search by Device ID

Device Simulator ☒

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Device ID	Status	Device Type	Class ID	Date Added
Ultrasonic_sensor	Disconnected	Ultrasonicsensor	Device	Oct 28, 2022 12:15 PM

Identity

Device Information

Recent Events

State

Logs

The recent events listed show the live stream of data that is coming and going from this device.

Event	Value	Format	Last Received
Event	{"ALERT!!! ALERT!!! Object Detected":42}	json	a few seconds ago
Event	{"ALERT!!! ALERT!!! Object Detected":19}	json	a few seconds ago
Event	{"ALERT!!! ALERT!!! Object Detected":83}	json	a few seconds ago
Event	{"ALERT!!! ALERT!!! Object Detected":16}	json	a few seconds ago
Event	{"ALERT!!! ALERT!!! Object Detected":50}	json	a few seconds ago

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Line Chart of IBM Cloud Device

