

## A.Kaviya Assignment -4

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.

Solution:

```
#define ECHO_PIN 2
#define TRIG_PIN 3
#define organization ="c9ybtp"
#define deviceType=" Arduino"
#define deviceId ="20020"
#define authMethod ="use-token-auth"
#define authToken ="123456789"
void setup() {
  // put your setup code here, to run once:
  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() {
  // put your main code here, to run repeatedly:
  float distance = readDistanceCM();
  if(distance <= 100)
  {
    Serial.println("person detected ");
  }
  else{
    Serial.print("Measured distance: ");
    Serial.println(readDistanceCM());
  }
}
```

```
delay(1000);
```

```
}
```

Input :

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

```
1 #define ECHO_PIN 2
2 #define TRIG_PIN 3
3 #define organization ="c9ybtp"
4 #define deviceType=" Arduino"
5 #define deviceId ="20020"
6 #define authMethod ="use-token-auth"
7 #define authToken ="123456789"
8 void setup() {
9   // put your setup code here, to run once:
10  Serial.begin(9600);
11  pinMode(TRIG_PIN,OUTPUT);
12  pinMode(ECHO_PIN, INPUT);
13 }
14 float readDistanceCM() {
15  digitalWrite(TRIG_PIN, LOW);
16  delayMicroseconds(2);
17  digitalWrite(TRIG_PIN, HIGH);
18  delayMicroseconds(10);
19  digitalWrite(TRIG_PIN, LOW);
20  int duration = pulseIn(ECHO_PIN, HIGH);
21  return duration * 0.034 / 2;
22
23
24
25 }
26
27 void loop() {
28  // put your main code here, to run repeatedly:
```

On the right, the 'Simulation' tab shows a virtual circuit. An HC-SR04 ultrasonic sensor module is connected to an Arduino Uno. The sensor's VCC pin is connected to the Arduino's 5V pin, and its GND pin is connected to a GND pin. The TRIG pin is connected to digital pin 3, and the ECHO pin is connected to digital pin 2. The Arduino board is shown with its standard components, including the ATmega328P microcontroller and various passive components.

# Output:

The screenshot displays 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 ="c9ybtpr"
4 #define deviceType=" Arduino"
5 #define deviceId ="20020"
6 #define authMethod ="use-token-auth"
7 #define authToken ="123456789"
8 void setup() {
9   // put your setup code here, to run once:
10  Serial.begin(9600);
11  pinMode(TRIG_PIN, OUTPUT);
12  pinMode(ECHO_PIN, INPUT);
13 }
14 float readDistanceCM() {
15  digitalWrite(TRIG_PIN, LOW);
16  delayMicroseconds(2);
17  digitalWrite(TRIG_PIN, HIGH);
18  delayMicroseconds(10);
19  digitalWrite(TRIG_PIN, LOW);
20  int duration = pulseIn(ECHO_PIN, HIGH);
21  return duration * 0.034 / 2;
22 }
23
24
25 }
26
27 void loop() {
28   // put your main code here, to run repeatedly:
```

On the right, the 'Simulation' tab shows a virtual circuit with an HC-SR04 sensor connected to an Arduino Uno. The sensor's VCC is connected to the Arduino's 5V pin, GND to GND, TRIG to digital pin 3, and ECHO to digital pin 2. The simulation output window displays the following data:

00:08.245 98%

Measured distance: 395.27  
Measured distance: 395.25  
Measured distance: 395.27  
Measured distance: 395.25  
Measured distance: 395.25  
Measured distance: 395.25  
Measured distance: 395.25  
Measured distance: 395.25

The Windows taskbar at the bottom shows the system time as 18:14 on 01-11-2022.

**Wokwi Link:** <https://wokwi.com/projects/347128758734422612>

# IBM CLOUD

## Device Recent Events

The screenshot shows the IBM Watson IoT Platform interface. The browser address bar displays the URL: `c9ybtp.internetofthings.ibmcloud.com/dashboard/devices/drilldown/arduino:20020?returnTo=/devices/browse`. The page title is "Device Drilldown - 20020". A left sidebar contains navigation links: "Device Credentials", "Connection Information", "Recent Events", "State", "Device Information", "Metadata", "Diagnostics", "Connection Logs", and "Device Actions". The main content area is titled "Device Credentials" and includes a description: "You registered your device to the organization. Add these credentials to the device to connect it to the platform. After the device is connected, you can navigate to view connection and event details." Below this, a table lists the device's credentials:

Organization ID	c9ybtp
Device Type	arduino
Device ID	20020
Authentication Method	use-token-auth
Authentication Token	123456789

At the bottom of the page, a status bar indicates "0 Simulations running". The Windows taskbar at the bottom shows the time as 18:23 on 01-11-2022.

The screenshot shows the "Recent Events" section of the IBM Watson IoT Platform. The browser address bar displays the URL: `c9ybtp.internetofthings.ibmcloud.com/dashboard/devices/browse`. The page title is "IBM Watson IoT Platform". The left sidebar contains navigation links: "Browse", "Action", "Device Types", and "Interfaces". The main content area displays a table of recent events:

Event	Value	Format	Last Received
event_1	{"version":1,"author":"Anonymous maker","edito...	json	a few seconds ago
event_1	{"version":1,"author":"Anonymous maker","edito...	json	a few seconds ago
event_1	{"version":1,"author":"Anonymous maker","edito...	json	a few seconds ago
event_1	{"version":1,"author":"Anonymous maker","edito...	json	a few seconds ago
event_1	{"version":1,"author":"Anonymous maker","edito...	json	a few seconds ago

At the bottom of the page, a status bar indicates "1 Simulation running". The Windows taskbar at the bottom shows the time as 18:28 on 01-11-2022.