

Assignment -4

Assignment Date	27 October 2022
Student Name	Charulatha H
Team ID	PNT2022TMID44390
Project Name	Project-Smart Farmer-IoT Enabled Smart Farming Application
Maximum Marks	2 Marks

Question-1:

Write code and connections in wokwi for ultrasonic. Whenever distance is less than 100 cms send “alert” to ibm cloud and display in device recent events.

```
#define ECHO_PIN 2
#define TRIG_PIN 3

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("person detected ");
  }
  else{
    Serial.print("Measured distance: ");
    Serial.println(readDistanceCM());
  }
  delay(100);
}
```

Solution:

Wokwi simulation interface showing the Arduino sketch and the simulated hardware setup.

Sketch Code:

```
1 #define ECHO_PIN 2
2 #define TRIG_PIN 3
3
4 void setup() {
5   Serial.begin(9600);
6   pinMode(TRIG_PIN, OUTPUT);
7   pinMode(ECHO_PIN, INPUT);
8 }
9
10 float readDistanceCM() {
11   digitalWrite(TRIG_PIN, LOW);
12   delayMicroseconds(2);
13   digitalWrite(TRIG_PIN, HIGH);
14   delayMicroseconds(10);
15   digitalWrite(TRIG_PIN, LOW);
16   int duration = pulseIn(ECHO_PIN, HIGH);
17   return duration * 0.034 / 2;
18 }
19
20 void loop() {
21   float distance = readDistanceCM();
22   if(distance <= 100)
23   {
24     Serial.println("person detected ");
25   }
26   else{
27     Serial.print("Measured distance: ");
28     Serial.println(readDistanceCM());
29   }
30   delay(100);
31 }
```

Simulation: The simulation shows an Arduino Uno connected to an HC-SR04 ultrasonic sensor. The sensor is connected to the Arduino's TRIG_PIN (pin 3) and ECHO_PIN (pin 2). The simulation is running, and the output shows "person detected ".

Wokwi simulation interface showing the Arduino sketch and the simulated hardware setup.

Sketch Code:

```
1 #define ECHO_PIN 2
2 #define TRIG_PIN 3
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30   delay(100);
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```

Simulation: The simulation shows an Arduino Uno connected to an HC-SR04 ultrasonic sensor. The sensor is connected to the Arduino's TRIG_PIN (pin 3) and ECHO_PIN (pin 2). The simulation is running, and the output shows "person detected " repeated multiple times.

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25   }
26   else{
27     Serial.print("Measured distance: ");
28     Serial.println(readDistanceCM());
29   }
30   delay(100);
31 }
```

Simulation 00:16:546 99%

Editing Ultrasonic Distance Sensor Distance: 141cm

Measured distance: 139.13
Measured distance: 139.13
Measured distance: 139.03
Measured distance: 139.03
Measured distance: 139.03
Measured distance: 139.03
Measured distance: 139.03

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25   }
26   else{
27     Serial.print("Measured distance: ");
28     Serial.println(readDistanceCM());
29   }
30   delay(100);
31 }
```

Simulation 00:20:562 101%

Editing Ultrasonic Distance Sensor Distance: 227cm

Measured distance: 223.96
Measured distance: 223.96
Measured distance: 223.96
Measured distance: 223.96
Measured distance: 223.96
Measured distance: 223.96
Measured distance: 223.96

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