

#### Assignment -4

Assignment Date	29 October 2022
Student Name	JAISHREE J
Student Roll Number	GCTC1914116
Maximum Marks	2 Marks

##### Question-1:

**Write code and connections in wokwi for the ultrasonic sensor.**

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

##### Code:

```
#define ECHO_PIN 2
#define TRIG_PIN 3

void setup() {
  Serial.begin(115200);
  pinMode(LED_BUILTIN, OUTPUT);
  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(); bool  
  
isNearby = distance < 100;  
  
digitalWrite(LED_BUILTIN, isNearby);  
  
Serial.print("Measured distance: ");  
Serial.println(readDistanceCM());  
  
delay(100);  
}
```

#### DIAGRAM.JSON:

```
{  
  
  "version": 1,  
  "author": "sindhuja",  
  "editor": "wokwi",  
  "parts": [  
    {  
      "type": "wokwi-arduino-uno",  
      "id": "uno",  
      "top": 275.99,  
      "left": 47.73, "rotate": 0,  
      "hide": false,  
      "attrs": {}  
    },  
    {  
      "type": "wokwi-resistor",  
      "id": "r1",  
      "top": 165.87,  
      "left": 142.81,  
      "rotate": 90,  
      "hide": false,  
      "attrs": { "value": "220" }  
    },  
    {  
      "type": "wokwi-led",  
      "id": "led",  
      "top": 87.29,
```

```
    "left": 147.05,  
    "rotate": 0,  
    "hide": false,  
    "attrs": { "color": "blue" }  
  },  
  {  
    "type": "wokwi-hc-sr04",  
    "id": "ultrasonic",  
    "top": 108.43,  
    "left": 196.5, "rotate": 0,  
    "hide": false,  
    "attrs": { "distance": "180" }  
  }  
],  
"connections": [  
  [ "uno:GND.1", "ultrasonic:GND", "black", [ "v-8", "*", "v8" ] ],  
  [ "uno:2", "ultrasonic:ECHO", "green", [] ],  
  [ "uno:3", "ultrasonic:TRIG", "purple", [ "*", "v4" ] ],  
  [ "uno:5V", "ultrasonic:VCC", "blue", [ "v16", "h-96", "*", "v12" ] ],  
  [ "uno:GND.1", "led:C", "black", [] ],  
  [ "r1:1", "led:A", "red", [] ],  
  [ "uno:13", "r1:2", "red", [] ]  
]  
}
```

## OUTPUT:

hc-sr04.ino

diagram.json

Library Manager

```
1
2
3 #define ECHO_PIN 2
4 #define TRIG_PIN 3
5
6 void setup() {
7   Serial.begin(115200);
8   pinMode(LED_BUILTIN, OUTPUT);
9   pinMode(TRIG_PIN, OUTPUT);
10  pinMode(ECHO_PIN, INPUT);
11 }
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
23 void loop() {
24   float distance = readDistanceCM();
25
26   bool isNearby = distance < 100;
27   digitalWrite(LED_BUILTIN, isNearby);
28
29   Serial.print("Measured distance: ");
30   Serial.println(readDistanceCM());
31
32   delay(100);
33 }
34
```

Simulation

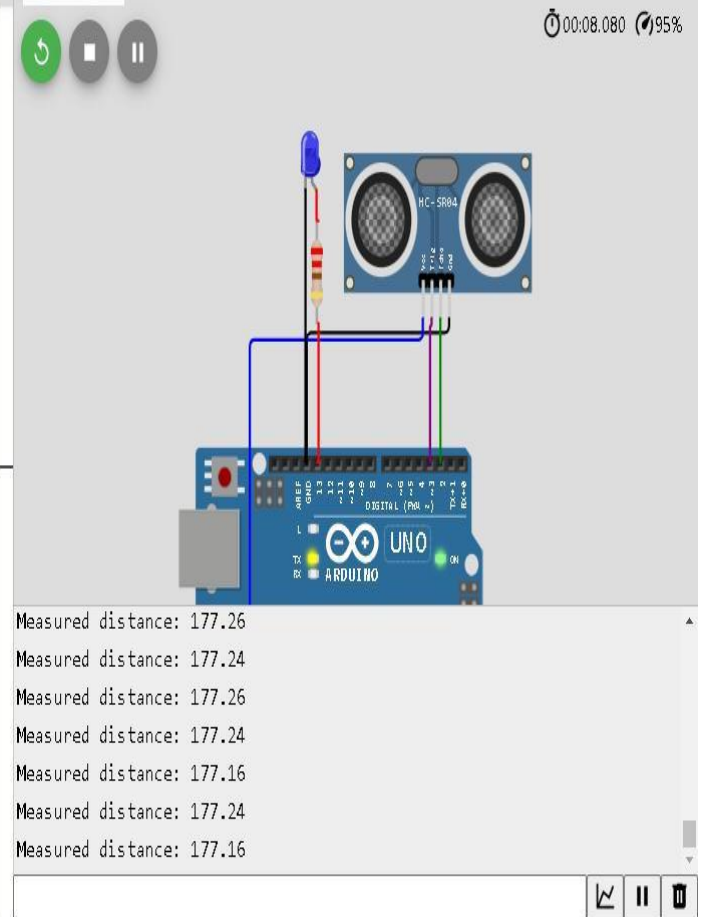
00:03.966 72%

```

4 void setup() {
5   Serial.begin(115200);
6   pinMode(LED_BUILTIN, OUTPUT);
7   pinMode(TRIG_PIN, OUTPUT);
8   pinMode(ECHO_PIN, INPUT);
9 }
10
11 float readDistanceCM() {
12   digitalWrite(TRIG_PIN, LOW);
13   delayMicroseconds(2);
14   digitalWrite(TRIG_PIN, HIGH);
15   delayMicroseconds(10);
16   digitalWrite(TRIG_PIN, LOW);
17   int duration = pulseIn(ECHO_PIN, HIGH);
18   return duration * 0.034 / 2;
19 }
20
21 void loop() {
22   float distance = readDistanceCM();
23
24   bool isNearby = distance < 100;
25   digitalWrite(LED_BUILTIN, isNearby);
26
27   Serial.print("Measured distance: ");
28   Serial.println(readDistanceCM());
29
30   delay(100);
31 }
32

```

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Measured distance: 177.26  
 Measured distance: 177.24  
 Measured distance: 177.26  
 Measured distance: 177.24  
 Measured distance: 177.16  
 Measured distance: 177.24  
 Measured distance: 177.16