

## Assignment -4 WOKWI SIMULATION

Assignment Date	23 October 2022
Student Name	M.BALA SUBRAMANIAN
Student Roll Number	211419104037
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:

**LINK:**<https://wokwi.com/projects/346141727303664212>

```
#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": "sindhuj",
  "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:

The screenshot displays the Wokwi online Arduino IDE interface. The project is named "hc-sr04.ino". The code is as follows:

```

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

```

The simulation on the right shows an Arduino Uno connected to an HC-SR04 ultrasonic sensor. The sensor's VCC pin is connected to the 5V pin on the Arduino, GND to GND, TRIG to digital pin 3, and ECHO to digital pin 2. A built-in LED is connected to digital pin 13 (anode) and pin 12 (cathode).

WOKWI

SAVE SHARE

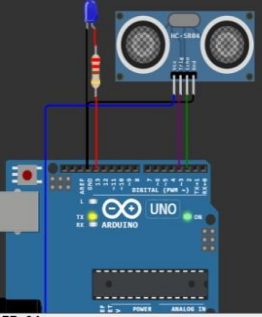
Docs SIGN UP

hc-sr04.ino diagram.json Library Manager

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30   Serial.println(readDistanceCM());
31
32   delay(100);
33 }
34
```

Simulation

00:06.794 92%



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

29°C Cloudy

17:58 28-10-2022

WOKWI

SAVE SHARE

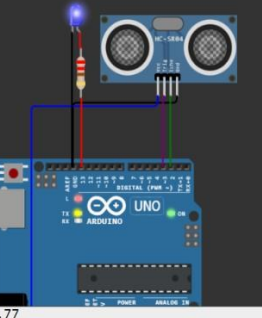
Docs SIGN UP

hc-sr04.ino diagram.json Library Manager

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29   Serial.print("Measured distance: ");
30   Serial.println(readDistanceCM());
31
32   delay(100);
33 }
34
```

Simulation

00:17.136 85%



Measured distance: 87.77  
Measured distance: 87.77  
Measured distance: 87.77  
Measured distance: 87.77  
Measured distance: 87.77  
Measured distance: 87.67  
Measured distance: 87.75

29°C Cloudy

17:58 28-10-2022