

## Assignment -4 WOKWI SIMULATION

Assignment Date	23 October 2022
Student Name	M.GOKUL NITHISH
Student Roll Number	211419104085
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: [projecta - Wokwi Arduino and ESP32 Simulator](#)

```
#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:

The screenshot displays the Wokwi IDE interface. On the left, the code for `hc-sr04.ino` is shown, which defines pins for an ultrasonic sensor and an LED, and implements a distance-measuring function. On the right, a simulation shows an Arduino Uno board connected to an HC-SR04 ultrasonic sensor. The sensor's VCC pin is connected to the Arduino's 5V pin, GND to GND, TRIG to digital pin 3, and ECHO to digital pin 2. A red LED is connected to digital pin 13 (anode) and pin 12 (cathode). The simulation window includes a play button and a plus sign for adding components. The bottom status bar shows the system temperature as 29°C, cloudiness, and the time as 17:58 on 28-10-2022.

```

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

```

WOKWI

projects - Wokwi Arduino and E... x +

https://wokwi.com/projects/346141727303664212

SAVE SHARE

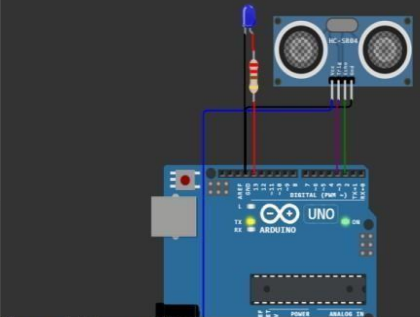
Docs SIGN UP

hc-sr04.ino diagram.json Library Manager

```
1
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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

00:06.794 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

projects - Wokwi Arduino and E... x +

https://wokwi.com/projects/346141727303664212

SAVE SHARE

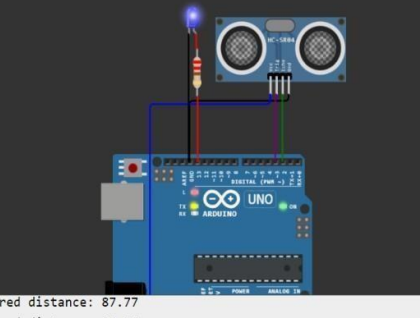
Docs SIGN UP

hc-sr04.ino diagram.json Library Manager

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23 void loop() {
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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

00:17.136 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