

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": "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 shows the Wokwi IDE interface. On the left, the code editor displays the following C++ code for an Arduino Uno:

```

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

```

On the right, the simulation window shows a 3D model of an Arduino Uno board 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 red LED is connected to digital pin 13 (anode) and pin 12 (cathode). The simulation window includes a play button, a plus button, and a settings button.

The bottom status bar shows the system temperature as 29°C Cloudy, the time as 17:58, and the date as 28-10-2022.

WOKWI

https://wokwi.com/projects/346141727303664212

SAVE SHARE

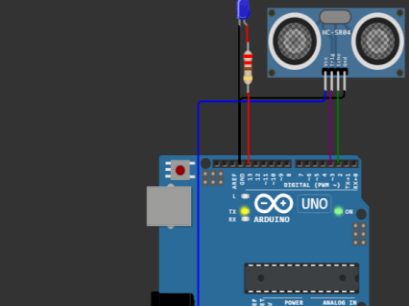
Docs SIGN UP

hc-sr04.ino diagram.json Library Manager

```
1
2
3 #define ECHO_PIN 2
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16   digitalWrite(TRIG_PIN, HIGH);
17   delayMicroseconds(10);
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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

00:06.794 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

ENG IN 17:58 28-10-2022

WOKWI

https://wokwi.com/projects/346141727303664212

SAVE SHARE

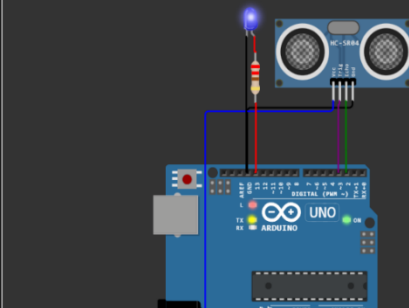
Docs SIGN UP

hc-sr04.ino diagram.json Library Manager

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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

00:17.136 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

ENG IN 17:58 28-10-2022