

ASSIGNMENT-4

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Write code and connections in wokwi for ultrasonic sensor. Whenever distance is less than 100cms, send “alert” to ibm cloud and display in 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;
```

```

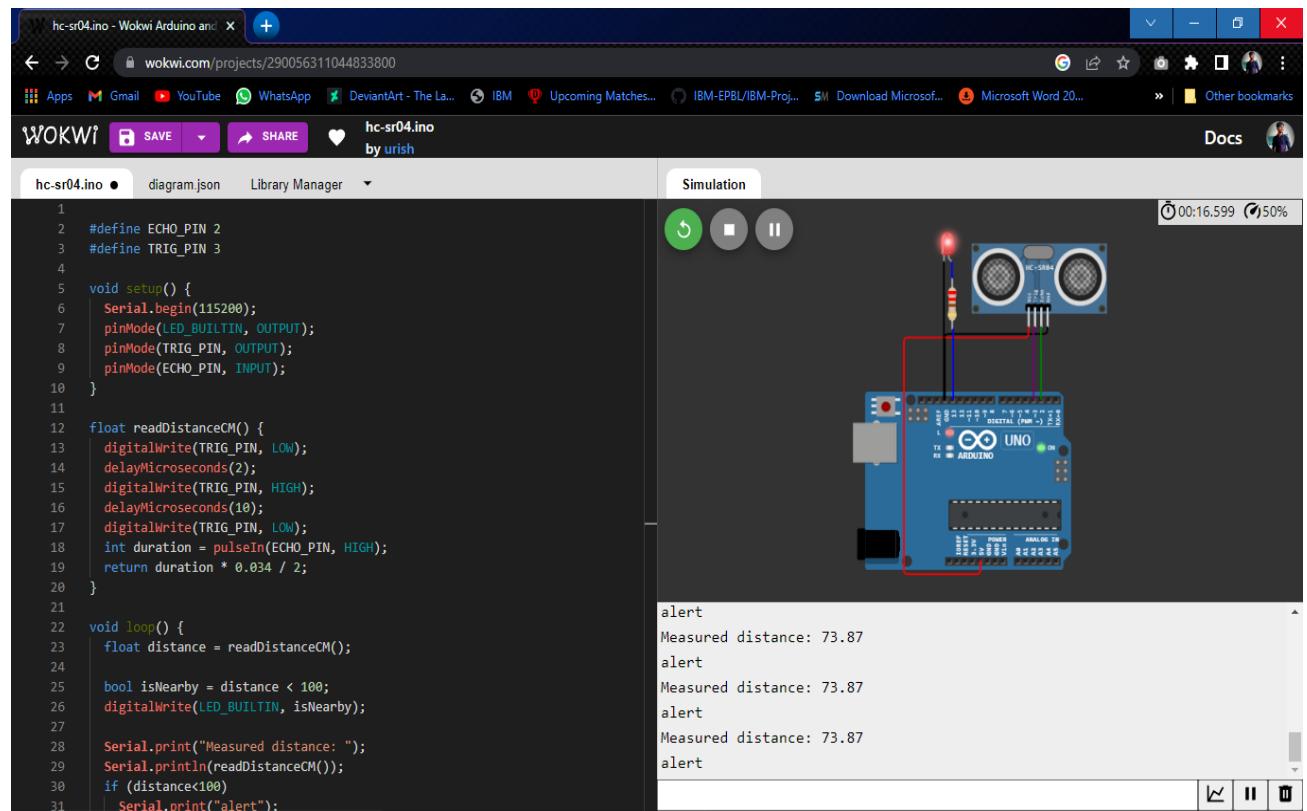
digitalWrite(LED_BUILTIN, isNearby);

Serial.print("Measured distance: ");
Serial.println(readDistanceCM());
if (distance<100)
    Serial.print("alert");
Serial.println();

delay(100);
}

```

OUTPUT;



The screenshot shows the Wokwi web-based development environment. On the left, the code for `hc-sr04.ino` is displayed:

```

1 #define ECHO_PIN 2
2 #define TRIG_PIN 3
3
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     if (distance<100)
30         Serial.print("alert");
31 }

```

On the right, the simulation window shows an Arduino Uno board connected to an HC-SR04 ultrasonic sensor. A red LED is connected to pin 13 (LED_BUILTIN). The serial monitor output shows the following text:

```

alert
Measured distance: 73.87
alert
Measured distance: 73.87
alert
Measured distance: 73.87
alert

```

hc-sr04.ino - Wokwi Arduino and C

wokwi.com/projects/290056311044833800

SAVE SHARE

WOKWI hc-sr04.ino by urish

Simulation

00:21.899 60%

```
1 #define ECHO_PIN 2
2 #define TRIG_PIN 3
3
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     if (distance<100)
30         Serial.print("alert");
31 }
```

Measured distance: 147.36

Measured distance: 147.36