

ASSIGNMENT 4:

WRITE CODE AND CONNECTIONS IN WOKWI FOR ULTRASONIC SENSOR. WHENEVER DISTANCE IS LESS THAN 100 CMS AND SEND ALERT TO IBM CLOUD AND DISPLAY IN DEVICE RECENT EVENTS.

WOKWI LINK:

<https://wokwi.com/projects/346225252832903763>

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);}
}
```

OUTPUT:

The screenshot displays the Wokwi online Arduino IDE interface. On the left, the sketch editor shows the following code:

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

On the right, the simulation window shows a virtual circuit with an Arduino Uno and an HC-SR04 ultrasonic sensor. The sensor is connected to the Arduino's TRIG and ECHO pins. The simulation output at the bottom displays the following data:

```
Measured distance: 395.91
Measured distance: 395.91
Measured distance: 395.91
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Measured distance: 395.91
Measured distance: 395.91
Measured distance: 395.91
```

The interface also includes a 'Simulation' tab with play, stop, and restart buttons, and a 'Restart the simulation' button. The top bar shows the project name 'sketch.ino' and the URL 'wokwi.com/projects/346225252832903763'.