

ASSESSMENT-4

ASSESSMENT DATE	05 November 2022
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MARKS	2 Marks

PROBLEM:

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);
}
```

SIMULATION:

The screenshot shows the Wokwi web interface for simulating an Arduino Uno project. The sketch.ino file contains the following code:

```
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   delay(100);
30 }
31 }
```

The simulation output shows the following measured distances:

- Measured distance: 62.88
- Measured distance: 62.88
- Measured distance: 62.97
- Measured distance: 62.88
- Measured distance: 62.88
- Measured distance: 62.88
- Measured distance: 62.88
- Measured distance: 62.97

Link: <https://wokwi.com/projects/347467477102363218>

When object distance is >100:

The screenshot shows the Wokwi interface with the 'Recent Events' tab selected. The table displays the following events:

Event	Value	Format	Last Received
event_1	{"Distance":313,"Object":"No"}	json	a few seconds ago
event_1	{"Distance":251,"Object":"No"}	json	a few seconds ago
event_1	{"Distance":145,"Object":"No"}	json	a few seconds ago
event_1	{"Distance":140,"Object":"No"}	json	a few seconds ago
event_1	{"Distance":369,"Object":"No"}	json	a few seconds ago

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1 Simulation running

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Device Simulator ⏸️ 📶 🔍

❑	Device ID	Status	Device Type	Class ID	Date Added	Description Location
▼ ❑	123456	Disconnected	NodeMCU	Device	Nov 5, 2022 10:37 AM	→ ...

Identity **Device Information** Recent Events State Logs ✕

The recent events listed show the live stream of data that is coming and going from this device.

Event	Value	Format	Last Received
event_1	{"Alert Distance":95,"Object":"near"}	json	a few seconds ago
event_1	{"Alert Distance":14,"Object":"near"}	json	a few seconds ago
event_1	{"Alert Distance":8,"Object":"near"}	json	a few seconds ago
event_1	{"Alert Distance":13,"Object":"near"}	json	a few seconds ago
event_1	{"Alert Distance":5,"Object":"near"}	json	a few seconds ago

1 Simulation running