

## ASSESSMENT-4

ASSESSMENT DATE	05 November 2022
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REGISTER NUMBER	621319106063
MARKS	2 Marks

### 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:

```
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
30   delay(100);
31 }
32
```

The simulation output shows the following measured distances:

```
Measured distance: 73.76
Measured distance: 73.87
Measured distance: 73.87
Measured distance: 73.78
Measured distance: 73.88
Measured distance: 73.78
Measured distance: 73.88
Measured distance: 73.78
```

Link: <https://wokwi.com/projects/347469980153938516>

When object distance is >100:

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

Event	Value	Format	Last Received
event_1	{"Distance":367,"object":"no"}	json	a few seconds ago
event_1	{"Distance":275,"object":"no"}	json	a few seconds ago
event_1	{"Distance":271,"object":"no"}	json	a few seconds ago
event_1	{"Distance":372,"object":"no"}	json	a few seconds ago
event_1	{"Distance":155,"object":"no"}	json	a few seconds ago

1 Simulation running

## When object distance is <100:

The screenshot displays a web interface for managing IoT devices. A sidebar on the left contains navigation icons. The main content area shows a table of devices, with one device selected and its details expanded. The 'Recent Events' tab is active, showing a stream of data events. A status box at the bottom right indicates '1 Simulation running'.

Navigation: Browse, Action, Device Types, Interfaces. Add Device (+)

Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location
12345	Disconnected	NodeMCU	Device	Oct 25, 2022 5:18 PM	

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":57,"object":"near"}	json	a few seconds ago
event_1	{"Alert Distance":45,"object":"near"}	json	a few seconds ago
event_1	{"Alert Distance":19,"object":"near"}	json	a few seconds ago
event_1	{"Alert Distance":93,"object":"near"}	json	a few seconds ago
event_1	{"Alert Distance":63,"object":"near"}	json	a few seconds ago

1 Simulation running