

ASSESSMENT-4

ASSESSMENT DATE	05 November 2022
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REGISTER NUMBER	621319106078
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 a table of recent events for a device. The table has columns for Event, Value, Format, and Last Received. The events show distances greater than 100 cm, indicating the object is out of range.

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