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**Question-1:**

**Write code and connections in wokwi for ultrasonic. Whenever distance is less than 100 cms send “alert” to ibm cloud and display in device recent events.**

**Solution:**

```
#define ECHO_PIN 2

#define TRIG_PIN 3

#define organization = "mmbh4c"

#define deviceType = "Ultrasonic"

#define deviceId = "pga460_sensor"

#define authMethod = "use-token-auth"

#define authToken = "123456789"

void setup() {

  Serial.begin(9600);

  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();
```

```
    if(distance <= 100)
```

```
    {
```

```
        Serial.println("person detected ");
```

```
    }
```

```
    else{
```

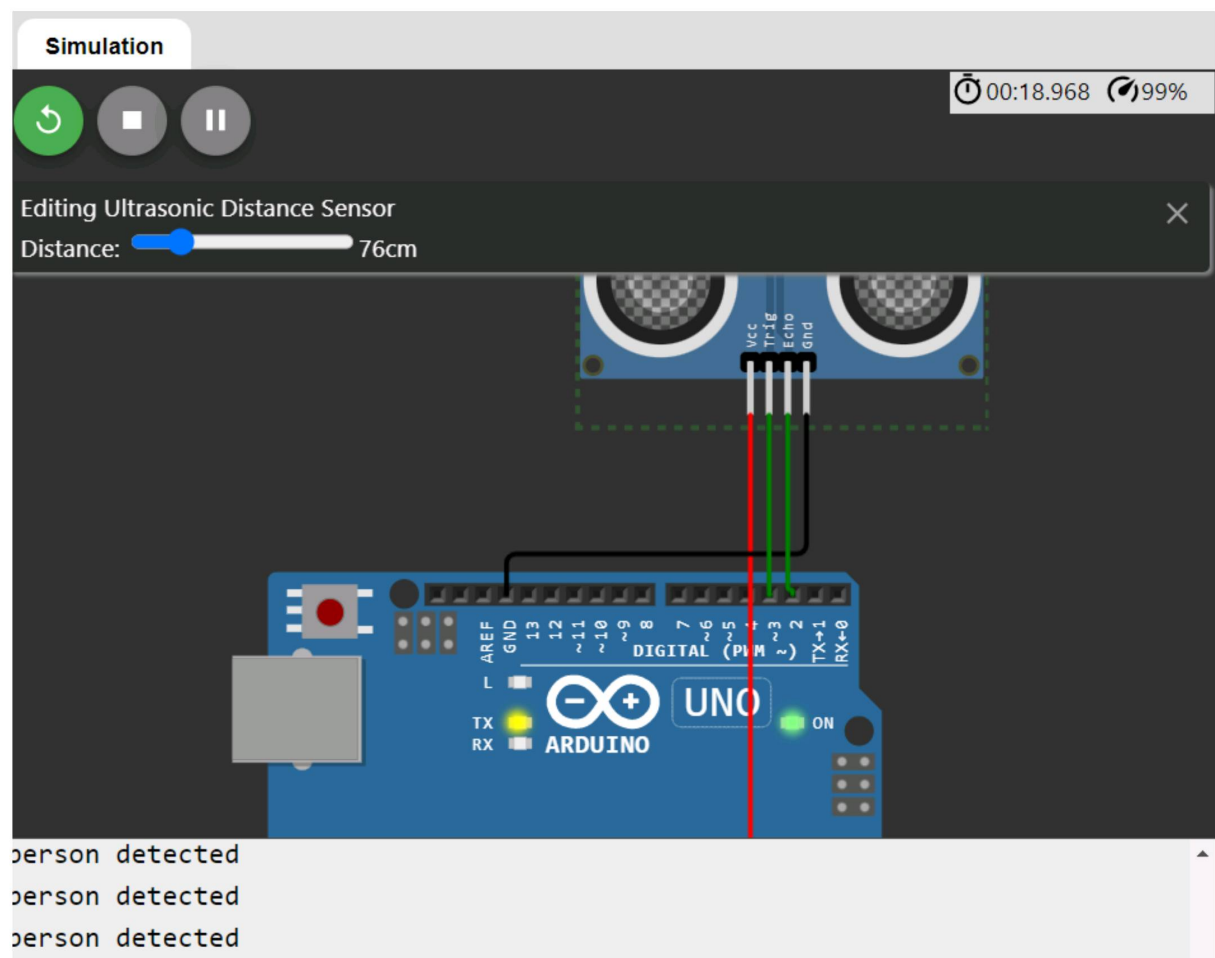
```
        Serial.print("Measured distance: ");
```

```
        Serial.println(readDistanceCM());
```

```
    }
```

```
    delay(1000);
```

```
}
```



Wokwi Link: <https://wokwi.com/projects/346094692918624851>

## IBM Cloud

### Device Recent Events

The screenshot shows the IBM Watson IoT Platform dashboard. The top navigation bar includes 'Browse', 'Action', 'Device Types', and 'Interfaces'. A search bar is present with the text 'Search by Device ID'. The main content area displays a list of devices. The device 'Ultrasonic\_1' is selected, and its details are shown in a modal window. The details include:

- Device ID:** Ultrasonic\_1
- Device Type:** Ultrasonic
- Date Added:** Oct 25, 2022 4:25 PM
- Added By:** 820419205501@smartinternz.com
- Connection Status:** Disconnected
- Last Connected:** Oct 25, 2022 4:28 PM
- Client Address:** 42.109.148.176 SecureToken
- Duration:** 2 minutes
- Data Transferred:** 2.7 KB

The screenshot shows the IBM Watson IoT Platform dashboard with the 'Recent Events' tab selected for the device 'Ultrasonic\_1'. The status is 'Connected'. The recent events listed show a live stream of data that is coming and going from this device. The events are as follows:

Event	Value	Format	Last Received
event_1	{"Persondetected": 1}	json	a few seconds ago
event_1	{"Persondetected": 1}	json	a few seconds ago
event_1	{"Persondetected": 1}	json	a few seconds ago
event_1	{"Persondetected": 1}	json	a few seconds ago
event_1	{"Persondetected": 1}	json	a few seconds ago

At the bottom of the dashboard, there is a status bar indicating '1 Simulation running'.