

ASSIGNMENT 4

Date	03 Nov 22
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Project Name	Smart Waste Management System For Metropolitan cities

Write code and connections in wokwi for ultrasonic sensor.

Whenever distance is less than 100 cms send "alert" to ibm cloud and display in device recent events.

Upload document with wokwi share link and images of ibm cloud

CODE:

```
#include <WiFi.h>
#include <PubSubClient.h> WiFiClient
wifiClient;

#define ORG "nhpwjc"
#define DEVICE_TYPE "NodeMCU"
#define DEVICE_ID "USE YOUR ID"
#define TOKEN "USE YOUR TOKEN"
#define speed 0.034
  char server[] =
ORG
".messaging.internetofthings.ibmcloud.com"; char publishTopic[]
= "iot-2/evt/Data/fmt/json"; char topic[] = "iot-
2/cmd/home/fmt/String"; char authMethod[] = "use-tokenauth";
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
PubSubClient client(server, 1883, wifiClient); void publishData();
  const int trigpin=5;
const int echopin=18;
String command;
String data="";
long
duration;
float dist;

void
setup()
{
  Serial.begin(115200);
  pinMode(trigpin, OUTPUT);
```

```

    pinMode(echopin, INPUT); wifiConnect();
    mqttConnect();
} void loop() { publishData();

    delay(500);

    if (!client.loop()) { mqttConnect(); }
}

void wifiConnect() {
    Serial.print("Connecting to "); Serial.print("Wifi");
    WiFi.begin("Wokwi-GUEST", "", 6); while (WiFi.status() !=
    WL_CONNECTED) { delay(500);
        Serial.print("."); }
    Serial.print("WiFi connected, IP address: "); Serial.println(WiFi.localIP());
}

void mqttConnect() { if
    (!client.connected()) {
        Serial.print("Reconnecting MQTT client to "); Serial.println(server); while
        (!client.connect(clientId, authMethod, token)) { Serial.print("."); delay(500);
        } initManagedDevice(); Serial.println();
    } }

void initManagedDevice() { if
    (client.subscribe(topic)) {
        // Serial.println(client.subscribe(topic)); Serial.println("subscribe to cmd
        OK");
    } else {
        Serial.println("subscribe to cmd FAILED"); } } void
publishData()
{ digitalWrite(trigpin, LOW); digitalWrite(trigpin, HIGH);

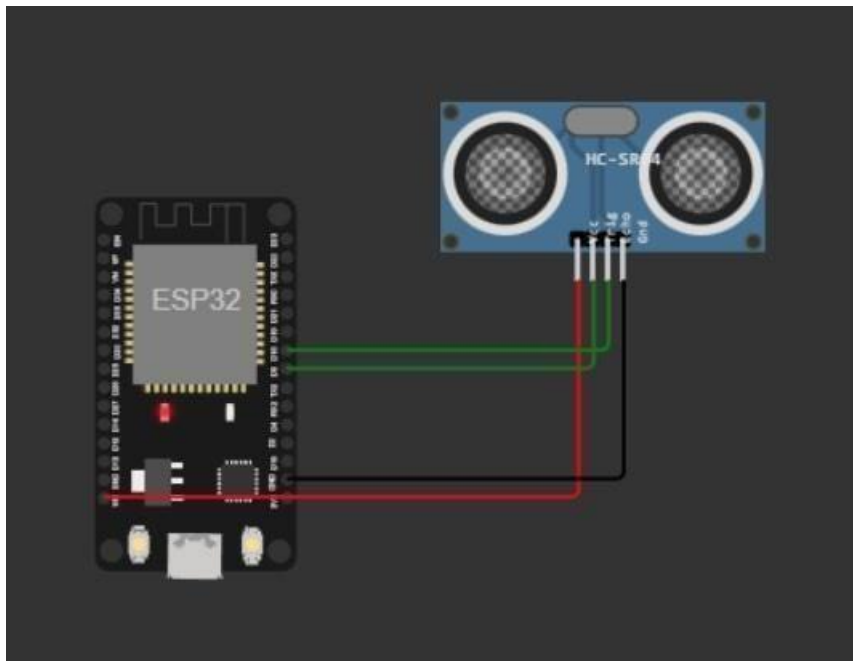
```

```

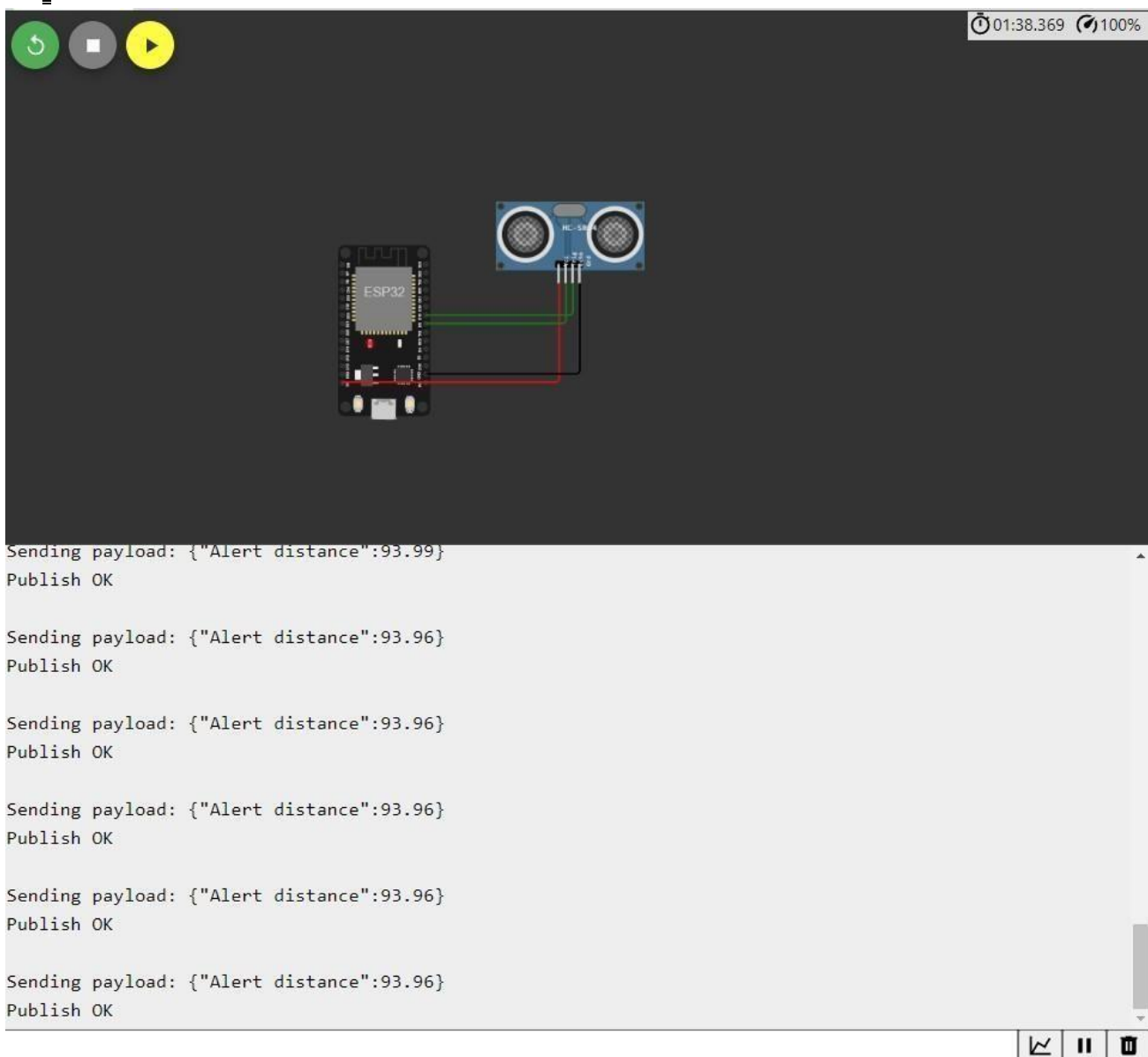
delayMicroseconds(10);
digitalWrite(trigpin,LOW);
duration=pulseIn(echopin,HIGH);
dist=duration*speed/2; if(dist<100){
  String payload = "{\"Alert distance\":\"";
  payload += dist; payload += "\"}";
  Serial.print("\n");
  Serial.print("Sending payload: "); Serial.println(payload);
  if (client.publish(publishTopic, (char*) payload.c_str())) {
    Serial.println("Publish OK");
  } else {
    Serial.println("Publish FAILED"); }
}
}

```

CONNECTIONS:



OUTPUT:



The screenshot shows a simulation environment for a microcontroller project. At the top, there is a dark grey header bar with three circular buttons (green with a refresh icon, grey with a square icon, and yellow with a play icon) on the left, and a timer displaying '01:38.369' and '100%' on the right. The central workspace is dark grey and contains a 3D model of an ESP32 microcontroller board connected to an HC-SR04 ultrasonic sensor module. The sensor module is blue with two circular sensors. Wires connect the sensor's VCC to the ESP32's 5V pin, GND to GND, and the trigger pin to a digital pin on the ESP32. Below the workspace is a light grey terminal window with a scroll bar on the right. It contains the following log output:

```
Sending payload: {"Alert distance":93.99}  
Publish OK  
  
Sending payload: {"Alert distance":93.96}  
Publish OK  
  
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Publish OK  
  
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Publish OK  
  
Sending payload: {"Alert distance":93.96}  
Publish OK  
  
Sending payload: {"Alert distance":93.96}  
Publish OK
```

At the bottom right of the terminal window, there is a small toolbar with three icons: a left-pointing arrow, a pause symbol, and a trash can icon.

This Table shows a summary of all devices that have been added. It can be filtered, organized, and searched on using different criteria. To get started, you can add devices by using the Add Device button, or by using API.

Search by Device ID

Device Simulator ☐

<input type="checkbox"/>	Device ID	Status	Device Type	Class ID	Date Added	Description Location	Added By	Device Class	Firmware Version
<input checked="" type="checkbox"/>	12345	Connected	NodeMCU	Device	Oct 17, 2022 2:36 PM		111719106009@smartinterrz.com		

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
Data	{"Alert distance":93.96}	json	a few seconds ago
Data	{"Alert distance":93.96}	json	a few seconds ago
Data	{"Alert distance":93.96}	json	a few seconds ago
Data	{"Alert distance":93.96}	json	a few seconds ago
Data	{"Alert distance":93.96}	json	a few seconds ago

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WOKWI LINK -

<https://wokwi.com/projects/346405970317935188>