IBM Assignment - 4

QUESTION

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.

Parthasarathi.S

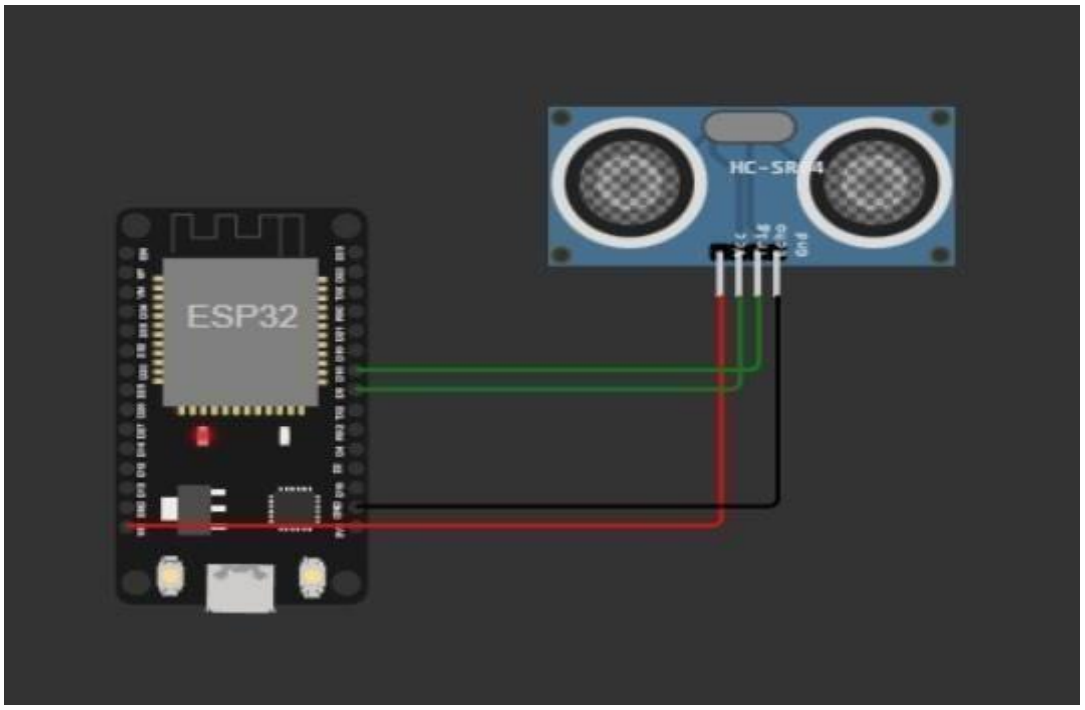
CODE:

```
#include <WiFi.h>
#include <PubSubClient.h>
#include <ArduinoJson.h>
```

```
 WiFiClient wifiClient;

 #define ORG "1bklkq"
 #define DEVICE_TYPE "abcd"
 #define DEVICE_ID "rasp"
 #define TOKEN "12345678"
 #define speed 0.034

 char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
 char publishTopic[] = "iot-2/evt/abcd_1/fmt/json"; char topic[]
 = "iot-2/cmd/home/fmt/String"; char authMethod[] = "use-token-
 auth"; 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="";
 String lat="14.167589";
 String lon="80.248510";
 String name="point2";
 String icon="";

 long duration; int
 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(1000);
      }
      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){
      dist=100-dist; icon="fa-
      trash";
    }else{ dist=0;
      icon="fa-trash-
      o";
    }
    DynamicJsonDocument doc(1024);
    String payload;
    doc["Name"]=name;
    doc["Latitude"]=lat;
    doc["Longitude"]=lon;
    doc["Icon"]=icon;
    doc["FillPercent"]=dist;
    serializeJson(doc, payload);
    delay(3000);
    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");
    }
  }
```

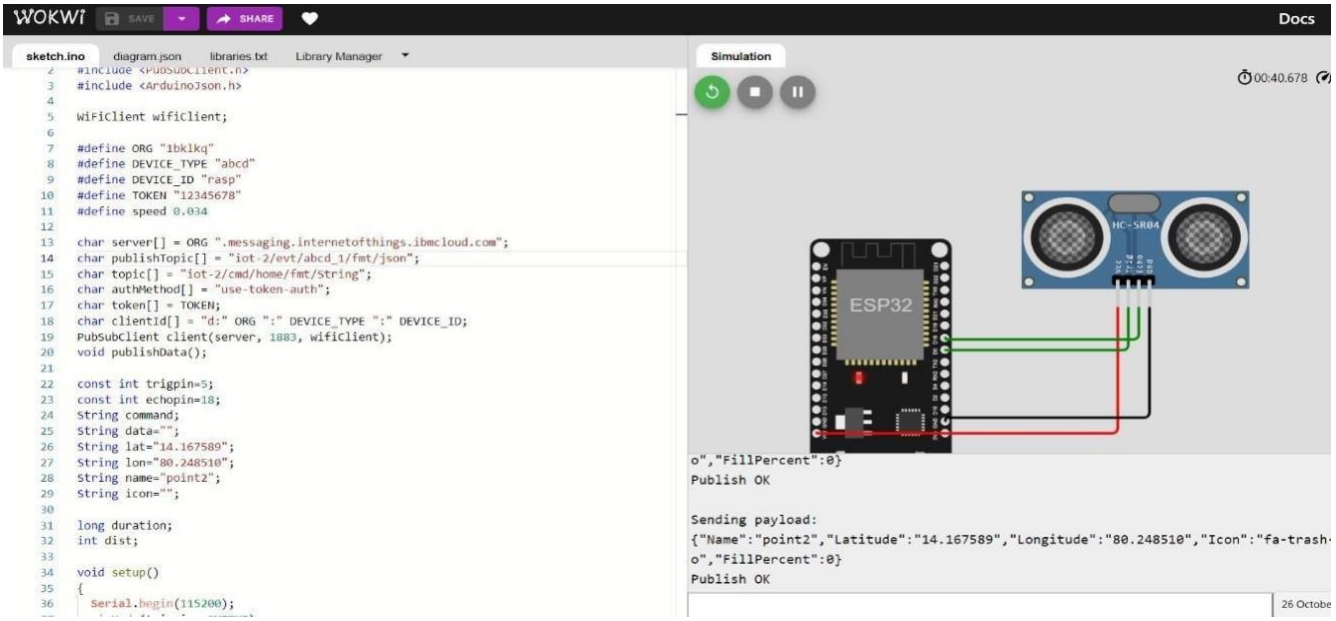
Connections:



WOKWI LINK:

https://wokwi.com/projects/346587874175484499

OUTPUT:


WOKWI
SAVE
SHARE
Docs
sketch.ino
diagram.json
libraries.txt
Library Manager
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#include <ArduinoJson.h>
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#define ORG "1bklkq"
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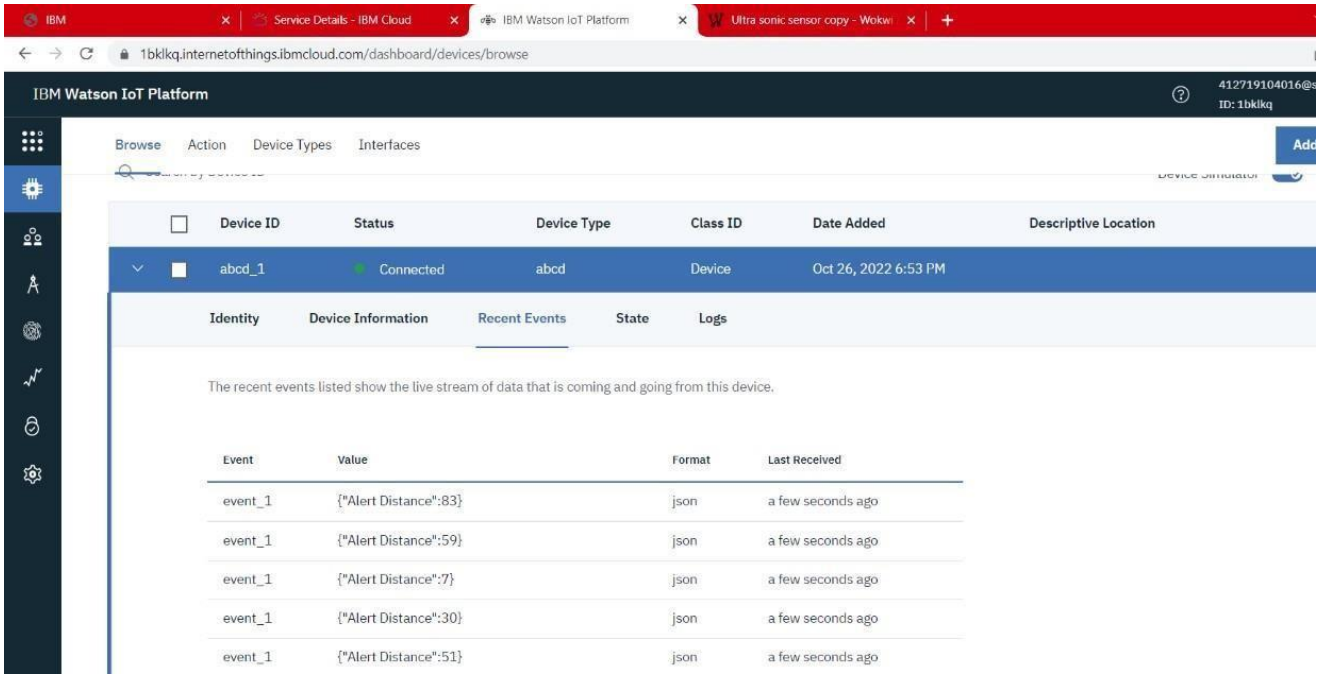
const int echopin=18;
String command;
String data="";
String lat="14.167589";
String lon="80.248510";
String name="point2";
String icon="";
long duration;
int dist;
void setup()
{
Serial.begin(115200);
Simulation
00:40.678
HC-SR04
ESP32
o","FillPercent":0}
Publish OK
Sending payload:
{"Name":"point2","Latitude":"14.167589","Longitude":"80.248510","Icon":"fa-trash
o","FillPercent":0}
Publish OK


IBM
Service Details - IBM Cloud
IBM Watson IoT Platform
Ultra sonic sensor copy - Wokwi
1bklkq.internetofthings.ibmcloud.com/dashboard/devices/browse
IBM Watson IoT Platform
412719104016@s
ID: 1bklkq
Browse
Action
Device Types
Interfaces
Add
Device ID
Status
Device Type
Class ID
Date Added
Descriptive Location
abcd_1
Connected
abcd
Device
Oct 26, 2022 6:53 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":83}
json
a few seconds ago
event_1
{"Alert Distance":59}
json
a few seconds ago
event_1
{"Alert Distance":7}
json
a few seconds ago
event_1
{"Alert Distance":30}
json
a few seconds ago
event_1
{"Alert Distance":51}
json
a few seconds ago