IBM Assignment - 4

Done by Sanjay Karthick R

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.

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()
 {

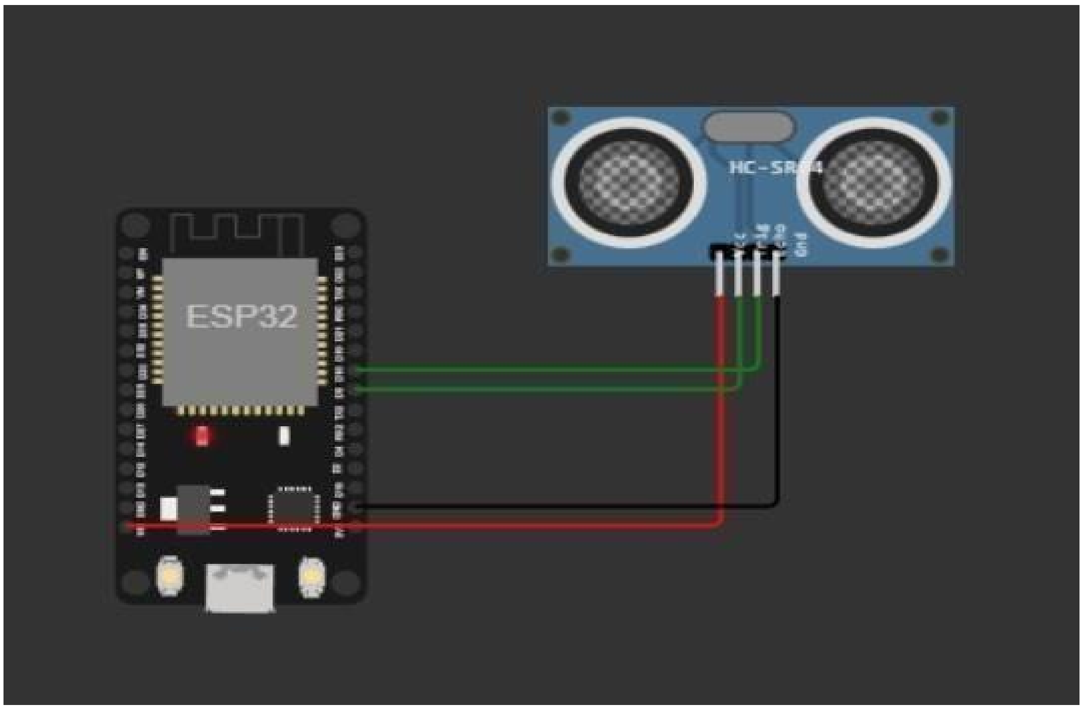
  publishData();
  delay(500);
if (!client.loop())
  {
    mqttConnect();
  }
 }
void
 wifiConnect()
 {
  Serial.print("Connecting      to      ");
  Serial.print("Wifi");
  WiFi.begin("Wokwi-GUEST", "", 6); while
  (WiFi.status() != WL_CONNECTED) {
    delay(500);
    Serial.print(".");
  }
  Serial.print("WiFi 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);
    }
    initManagedDevic
    e();
    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,L
   OW);
   digitalWrite(trigpin,HI
   GH);
   delayMicroseconds(10);
   digitalWrite(trigpin,LO
   W);
   duration=pulseIn(echopi
   n,HIGH);
   dist=duration*speed/2;

   if(dist<1
   00){
     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");
    }
  }
```

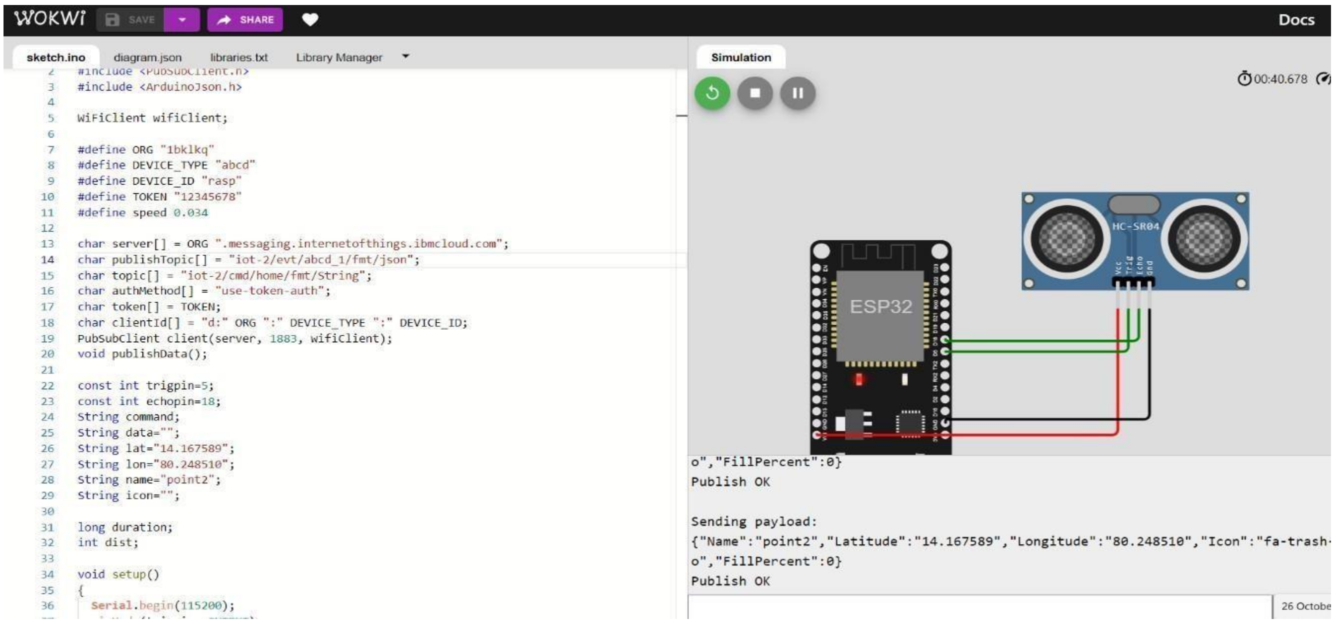
Connections:



WOKWI LINK:

https://wokwi.com/projects/346587874175484499

OUTPUT:



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char publishTopic[] = "iot-2/evt/abcd_1/fmt/json";
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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;
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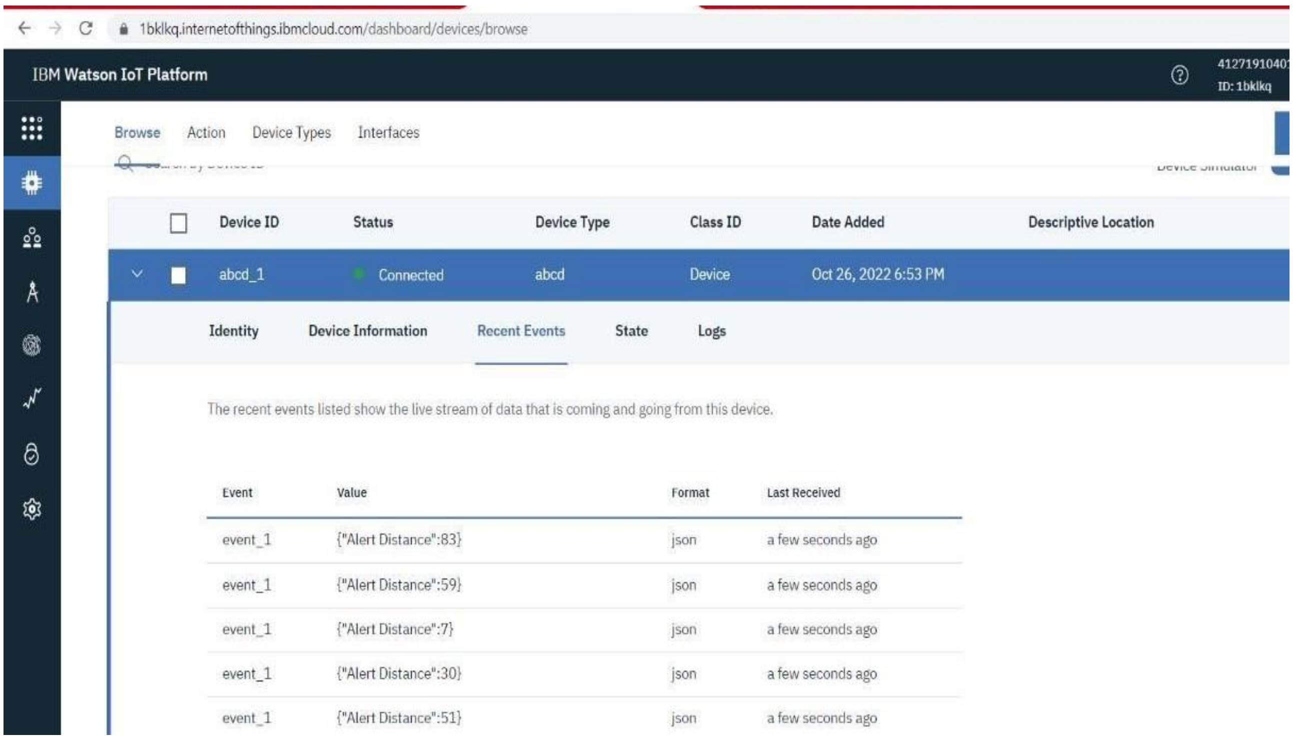
String command;
String data="";
String lat="14.167589";
String lon="80.248510";
String name="point2";
String icon="";

long duration;
int dist;

void setup()
{
  Serial.begin(115200);
```

```
o","FillPercent":0}
Publish OK

Sending payload:
{"Name":"point2","Latitude":"14.167589","Longitude":"80.248510","Icon":"fa-trash-
o","FillPercent":0}
Publish OK
```


1bklkq.internetofthings.ibmcloud.com/dashboard/devices/browse

IBM Watson IoT Platform

Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location
abcd_1	Connected	abcd	Device	Oct 26, 2022 6:53 PM	

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