ASSIGNMENT-4

S.HARIHARAN
421319106011(batch9)
Smartwastemanagementformetropolitancities

Question:

Writecodeandconnectionsinwokwiforultrasonicsensor.Wheneverdistanceis less than 100 centimetersit should send "alert" to IBM cloud and display in devicerecentevents

Code:

```
#include<WiFi.h>
#include
<PubSubClient.h>#includ
e<ArduinoJson.h>
WiFiClient

wifiClient;#defineOR

G"9tg03j"

#defineDEVICE_TYPE"RaspberryPi"#define
DEVICE_ID"12345"
#defineTOKEN"12345678"
#definespeed0.034

charserver[]=ORG".messaging.internetofthings.ibmcloud.com";charp
ublishTopic[]="iot-2/evt/status1/fmt/json";
chartopic[]="iot-
2/cmd/home/fmt/String";charauthMethod[]="
use-token-auth";
chartoken[]=TOKEN;
charclientId[]="d:"ORG":"DEVICE_TYPE":"DEVICE_ID;

PubSubClientclient(server,1883,wifiClient);vo
idpublishData();

constinttrigpin=5;
constintechopin=19;St
ring
command;Stringdata=
"";String
```

```cpp
name="Alert";Stringic
on="";
 long
 duration;intdi
 st;
 voidsetup()
 {
   Serial.begin(115200);pinMo
   de(trigpin,
   OUTPUT);pinMode(echopin
   ,
   INPUT);wifiConnect();mqtt
   Connect();
 }
 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("WiFiconnected,IPaddress:");Serial.println(WiFi.localIP());
 }
 voidmqttConnect(){
   if(!client.connected()){
    Serial.print("ReconnectingMQTTclientto");Serial.println(server);whi
    le (!client.connect(clientId, authMethod, token)) {Serial.print(".");
     Serial.print("*");
     delay(1000);
    }
    initManagedDevice();Se
    rial.println();
   }
 }

 voidinitManagedDevice(){
if (client.subscribe(topic))
{Serial.println(client.subscribe(topic));Serial.pr
intln("subscribetocmdOK");
   }
```
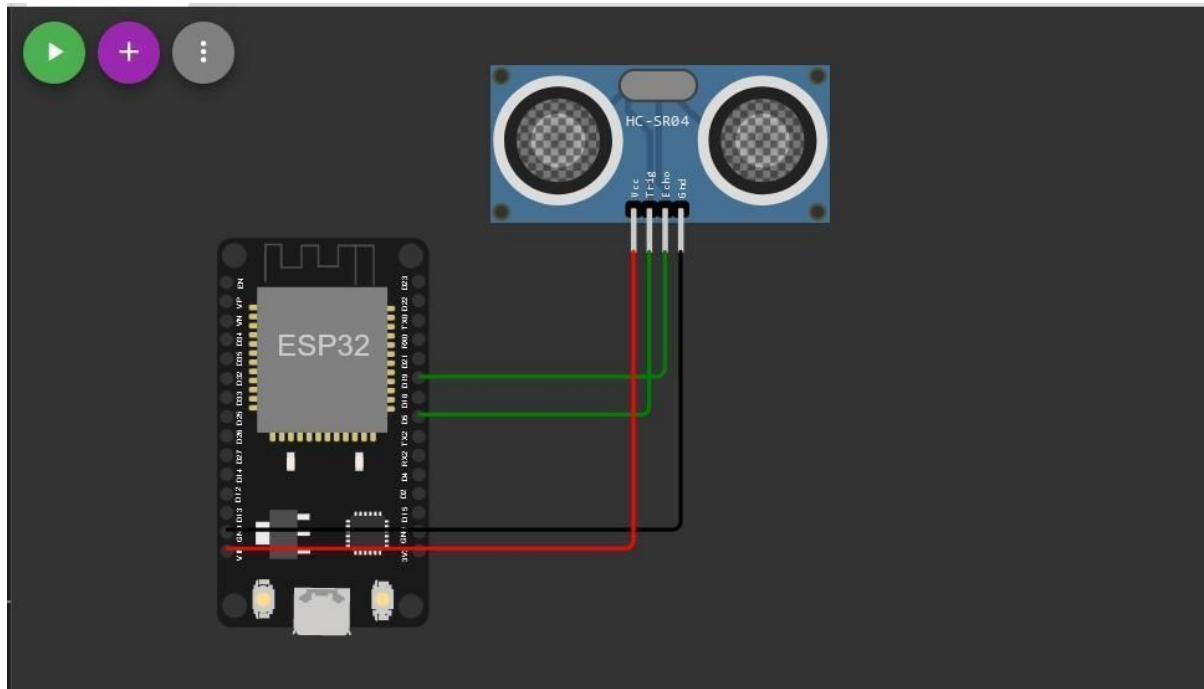
```
    else{
      Serial.println("subscribetocmdFAILED");
    }
}

voidpublishData()
{
  digitalWrite(trigpin,LOW);digital
  Write(trigpin,HIGH);delayMicrose
  conds(10);digitalWrite(trigpin,LO
  W);duration=pulseIn(echopin,HIG
  H);dist=duration*speed/2;if(dist<1
  00){
    dist=100-
    dist;icon="Not-
    Crashed";
  }
  else{dis
    t=0;
    icon="Crashed";
  }
  DynamicJsonDocument
  doc(1024);String
  payload;doc["Name"]=name;doc["I
  mpact"]=icon;doc["Distance"]=dist
  ;serializeJson(doc,
  payload);delay(3000);
  Serial.print("\n");Serial.print("Sendi
  ngpayload:");Serial.println(payload);
  if(client.publish(publishTopic,(char*)payload.c_str())){Serial.println
    ("PublishOK");
  }
  else{
    Serial.println("PublishFAILED");
  }
}
```

DIAGRAM:

OUTPUT:


```
34   Serial.begin(115200);
35   pinMode(trigpin, OUTPUT);
36   pinMode(echopin, INPUT);
37   wifiConnect();
38   mqttConnect();
39 }
40
41 void loop() {
42
43   publishData();
44   delay(500);
45
46   if (!client.loop()) {
47     mqttConnect();
48   }
49 }
50
51 void wifiConnect() {
52   Serial.print("Connecting to "); Serial.print("Wifi");
53   WiFi.begin("Wokwi-GUEST", "", 6);
54   while (WiFi.status() != WL_CONNECTED) {
55     delay(500);
56     Serial.print(".");
57   }
58   Serial.print("WiFi connected, IP address: "); Serial.println(WiFi.localIP());
59 }
60
61 void mqttConnect() {
62   if (!client.connected()) {
63     Serial.print("Reconnecting MQTT client to "); Serial.println(server);
64     while (!client.connect(clientId, authMethod, token)) {
65       Serial.print(".");
66       Serial.print("*");
67       delay(1000);
68     }
69     initManagedDevice();
```

Add Device ⊕

	Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location
∨ ☐	12345	● Connected	Rasp	Device	Oct 14, 2022 9:55 AM	→ •••

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
status1	{"Name":"Alert","Icon":"trash","FillPercent":0}	json	a few seconds ago
status1	{"Name":"Alert","Icon":"trash","FillPercent":0}	json	a few seconds ago
status1	{"Name":"Alert","Icon":"trash","FillPercent":0}	json	a few seconds ago
status1	{"Name":"Alert","Icon":"trash","FillPercent":0}	json	a few seconds ago

Items per page 50 ▼ | 1–1 of 1 item   1 of 1 page   ‹   1 ▼   ›