ASSIGNMENT-4

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Smartwastemanagementformetropolitancities

Question:

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

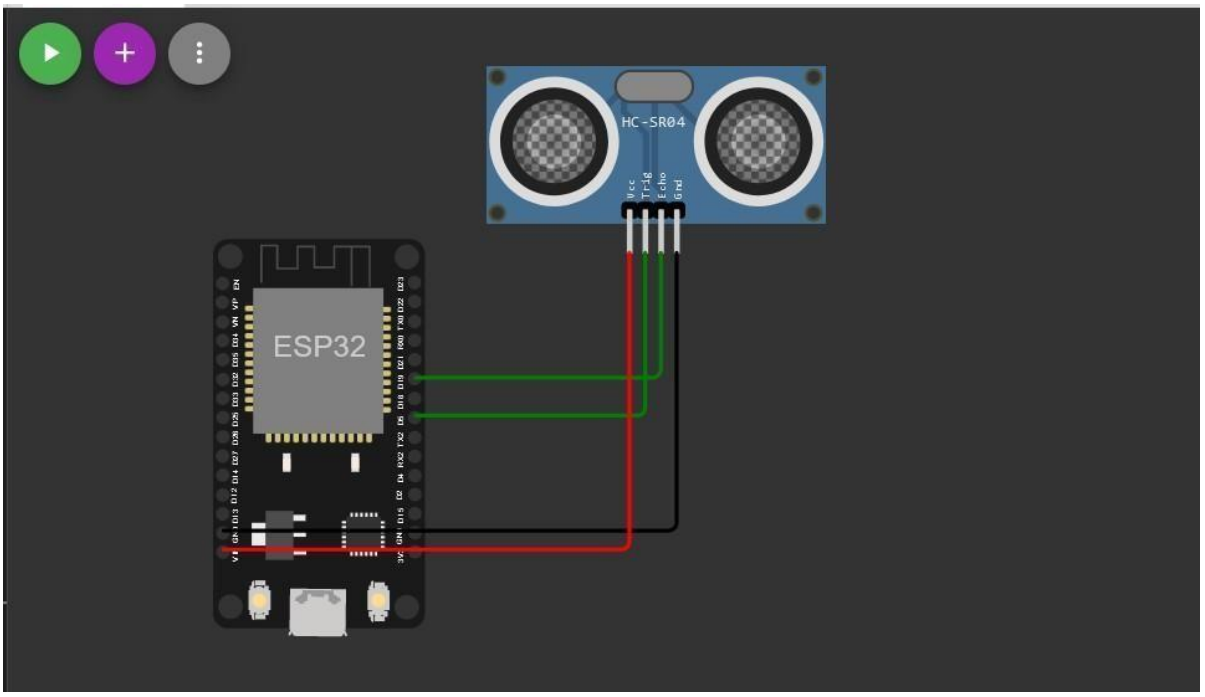
Code:

```
#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
```

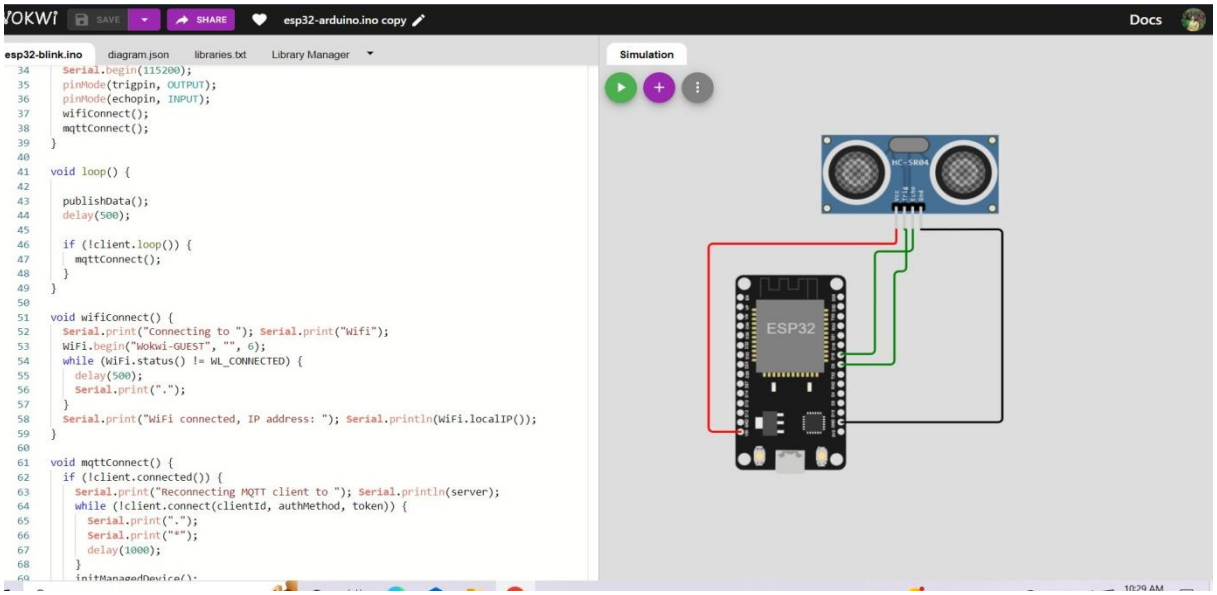
```
name="Alert";Stringic
on="";
 long
 duration;intdi
 st;
 voidsetup()
 {
  Serial.begin(115200);pinMo
  de(trigpin,
  OUTPUT);pinMode(echopin
  ,
  INPUT);wifiConnect();mqtt
  Connect();
 }
 void loop()
  {publishData(
  );delay(500);
  if(!client.loop()){
   mqttConnect();
  }
 }

 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");
  }
```

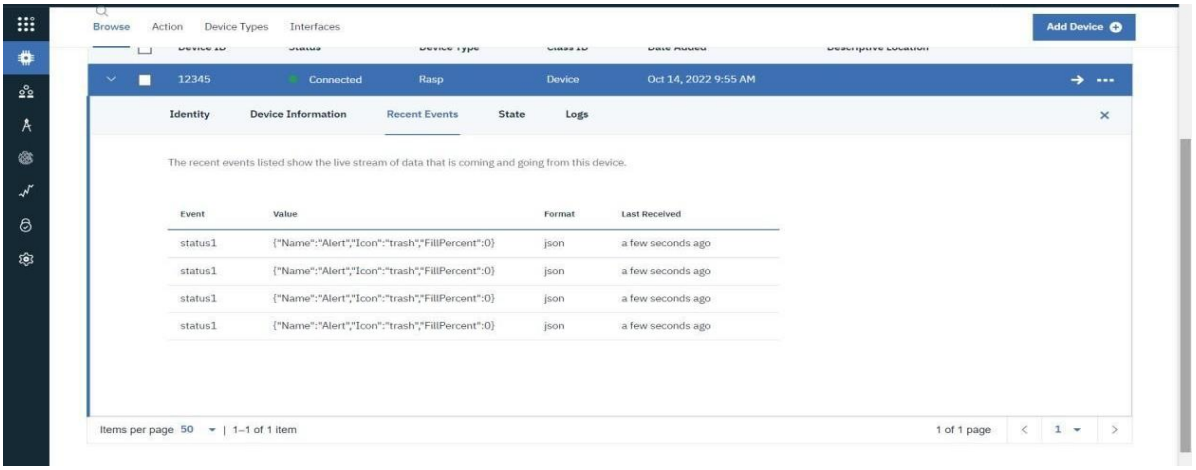
```
  else{
    Serial.println("subscribetocmdFAILED");
  }
}

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:




Browse
Action
Device Types
Interfaces
Add Device
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