ASSIGNMENT-4

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QUESTION:

Write code and connections in wokwi for ultrasonic sensor. Whenever distance is less than 100 cms send "alert" to ibm cloud anddisplay in device recent events. Upload document with wokwi share link and images of ibm cloud.

CODE:

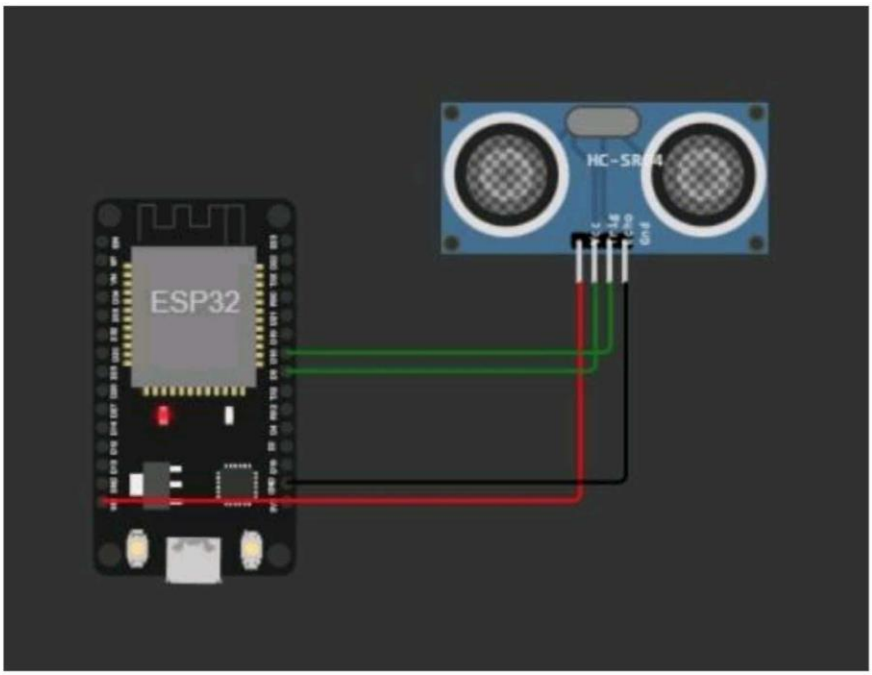
```
#include <WiFi.h>
#include <PubSubC1ient.h>
#include <ArduinoJson.h>

WiFiC1ient wifiC1ient;

#define ORG "lbklkq"
#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/j son ; char topic [ ] "iot-2/cmd/home/fmt/String" ; char authMethod [ ] - "use-token-auth" ; char token[] = TOKEN; char clientld[] -- ORG DEVICE TYPE DEVICE ID;
PubSubC1ient client(server, 1883, wifiC1ient);
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. print
In(WiFi.10ca11P());


void mqttConnect() { if ( !
  client. connected()) {
    Serial. print("Reconnecting MQTT client to Serial. println(server) ;
    while ( ! client. connect(clientld, authMethod, token)) { Serial. print
    (".");delay(1000);

    initManagedDevice() ;
```

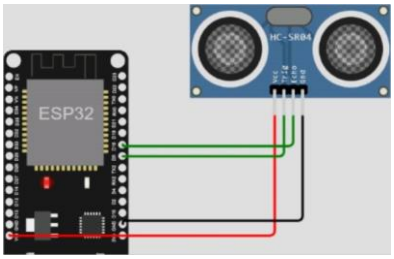
```
Serial . print Ino;


void initManagedDevice() {
  if (client. subscribe(topic)) {
     Serial. print In (client . subscribe (topic));
    Serial println("subscribe to cmd OK");
  } else {
    Serial println("subscribe to cmd FAILED");

void publishData()

  digitalWrite(trigp1n,  LOW);
  digitalWrite(trigpin,HIGH)  ;
  delayMicroseconds(10)       ;
  digitalWrite(trigp1n,  LOW);
  duration=pulseln(echopin,HI
  GH) ;dist=duration*speed/2;

  if(dist< 100){dist-
    lee-dist; icon="fa-
    trash" ;
  }else{ dist=e,
    icon="fa-trash-o"
    ;
  DynamicJsonDocument doc(1Ø24);
  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. print In (payload); if
  (client. publish(pub1ishTopic, (char* ) payload.c_str())) {
    Serial. print1n("Pub1ish OK");
  } else {
```

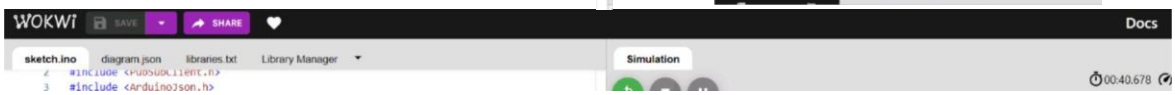
```
Serial. print In("Publish FAILED");
```

CONNECTIONS:


ESP32

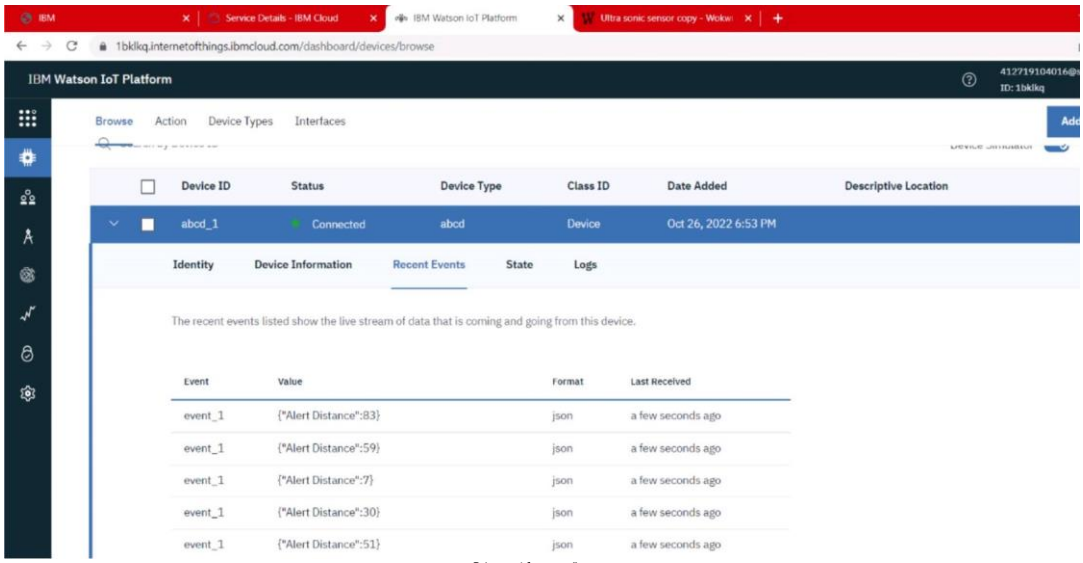
OUTPUT:





000

```
5  WiFiClient wifiClient;
6
7            *define ORG "lbklkq" 8 *define DEVICE TYPE "abcd"
9            *define DEVICE_ID "rasp" 10       *define TOKEN "12345678"

11    *define speed0.034
12

13   char server[] =         ".messaging.internetofthings. ibmcloud.ccn";
14   char publishTopic[] "iot-2/evt/abcd_1/fmt/json";
15   char topic()
16   char autW4ethod[J "use-token-auth";
17   char token[l — TCKEN;
18   char clientld[l              ORG " " DEVICE TYPE              DEVICE ID;
19   Pubsubclient client(server, 1883, wificlient);
```




```
20void publishData();
21
22   const int trigpin=s;
23   const int echopin=18•,
24   String c—and;

        Serial.begin(115200);

25   string data="
26   string lat-"14.167589";
27   String Ion-
     "RO.24851Ø";

28   String name="point2";
29   String icon="";

31   long duration;
32   int dist;

34   void setup()
35
46
```

o" , "FillPercent " : 0}
Publish OK

Sending payload :

{ "Name" : "point2" , "Latitude" : "14.167589" , "Longitude" : "8e.24851B" "Icon" : "fa-trash• o" , "FillPercent" :
Publish OK

26 Octobe