ASSIGNMENT 4

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Project Name	Smart Waste Management For Metropolitan Cities

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

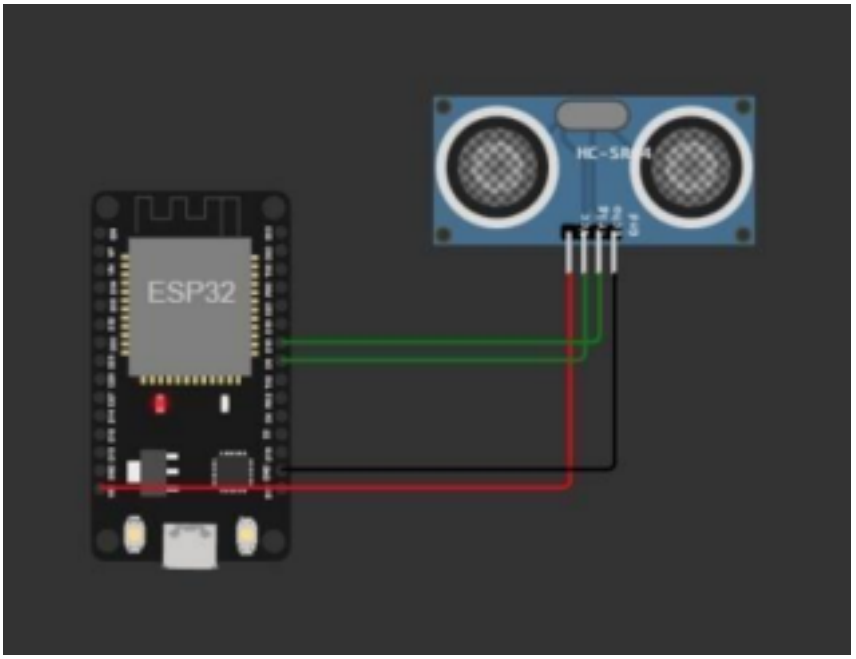
CODE:

```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient;

#define ORG "nhpwjc"
#define DEVICE_TYPE "NodeMCU"
#define DEVICE_ID "USE YOUR ID"
#define TOKEN "USE YOUR TOKEN"
#define speed 0.034

char server[] = ORG
".messaging.internetofthings.ibmcloud.com"; char
publishTopic[] = "iot-2/evt/Data/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 publishData(); wifiClient); void
client(server, 1883,

 const int trigpin=5;
const int
echopin=18; String
command;
String data="";
 long
```

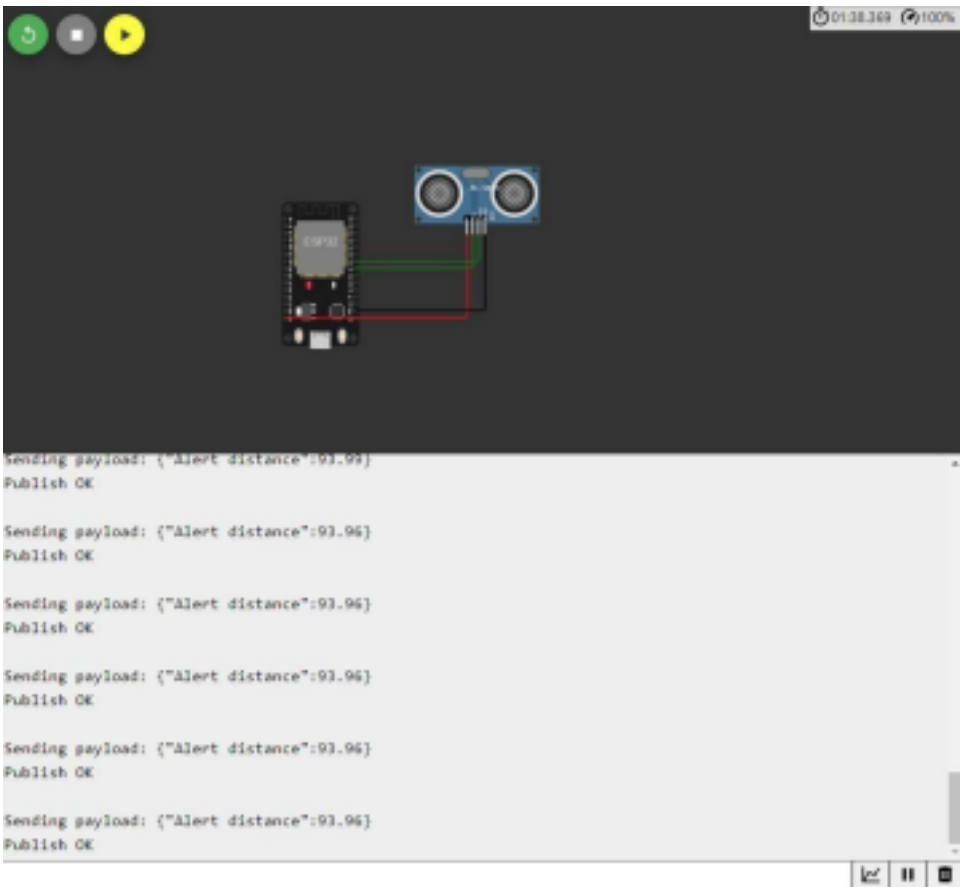
```
duration;
float dist;

 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(500);
     }
    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);
```

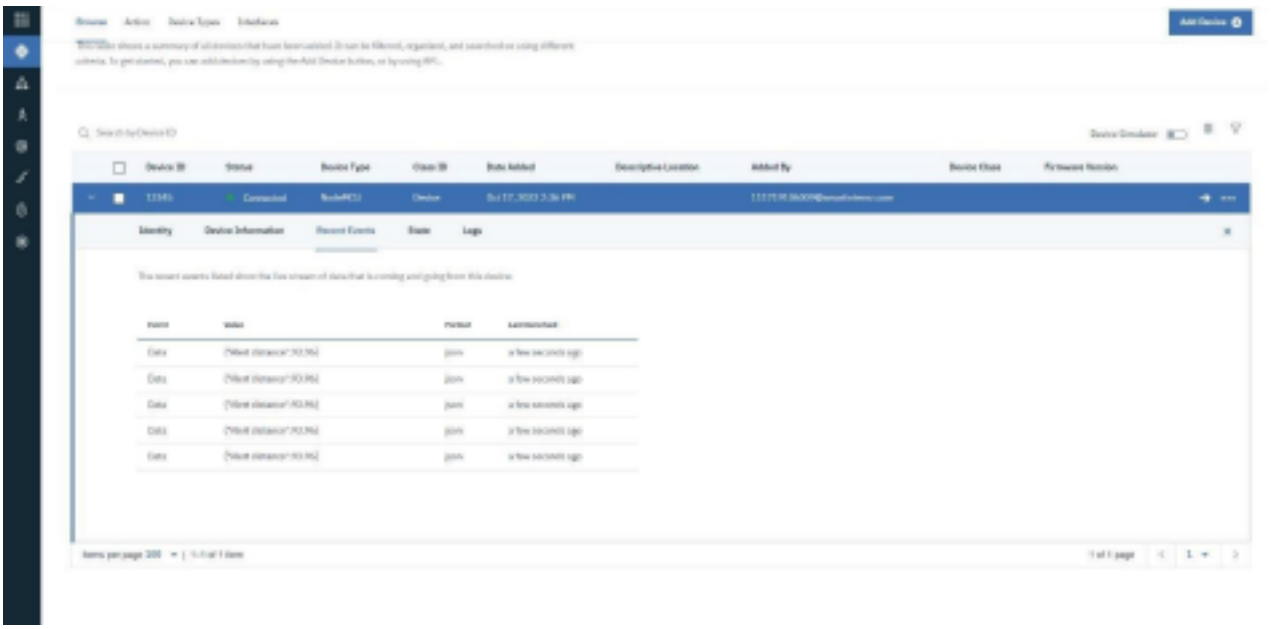
```
  duration=pulseIn(echopin,HIGH);
  dist=duration*speed/2;
  if(dist<100){
    String payload = "{\"Alert distance\":";
    payload += dist;
    payload += "}";
    Serial.print("\n");
    Serial.print("Sending payload: ");
    Serial.println(payload);
    if (client.publish(publishTopic, (char*) payload.c_str()))
      { Serial.println("Publish OK");
    } else {
      Serial.println("Publish FAILED");
    }
  }
}
```

CONNECTIONS:



OUTPUT:





WOKWI LINK -

https://wokwi.com/projects/346405970317935188