Assignment-4

Date	25 November 2022
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ProjectName	IoT Based Smart Crop Protection System forAgriculture

Question:

Write code and connections in wokwi for ultrasonic sensors. That whenever distance is less than 100cmssend"alert"toibmcloudanddisplay indevicerecentevents.

Uploaddocumentwithwokwishare linkandimages.

Wokwi:

https://wokwi.com/projects/347957641491776082

Code:

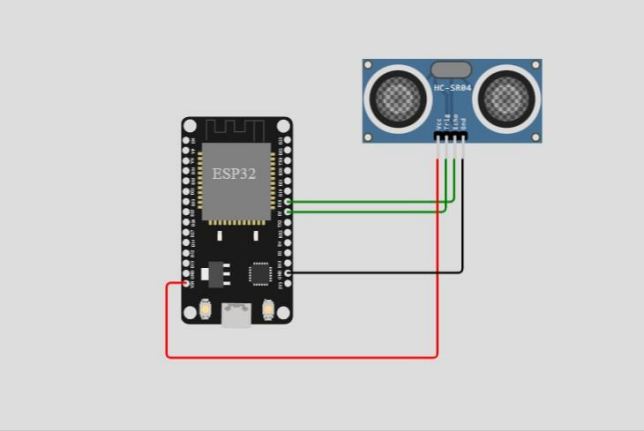
```
#include<WiFi.h>#include<
PubSubClient.h>

WiFiClientwifiClient;

#define ORG
"tw9ckq"#define
DEVICE_TYPE
"jade"#defineDEVICE_ID"701
0"
#defineTOKEN"9944893843"
#definespeed0.034

char server[] =
ORG".messaging.internetofthings.ibmcloud.com";charpublishTopic
[]= "iot-2/evt/status1/fmt/json";
char topic[] = "iot-
2/cmd/home/fmt/String";charauthMethod[]="us
e-token-auth";
chartoken[]=TOKEN;
charclientId[]="d:"ORG":"DEVICE_TYPE":"DEVICE_ID;
PubSubClient client(server, 1883,
wifiClient);void publishData();
const int
trigpin=5;const int
echopin=18;Stringcomm
and;Stringdata="";
long
duration;float
dist;
```

```
voidsetup()
{
        Serial.begin(115200);pinM
        ode(trigpin,
        OUTPUT);pinMode(echopin,I
        NPUT);
```

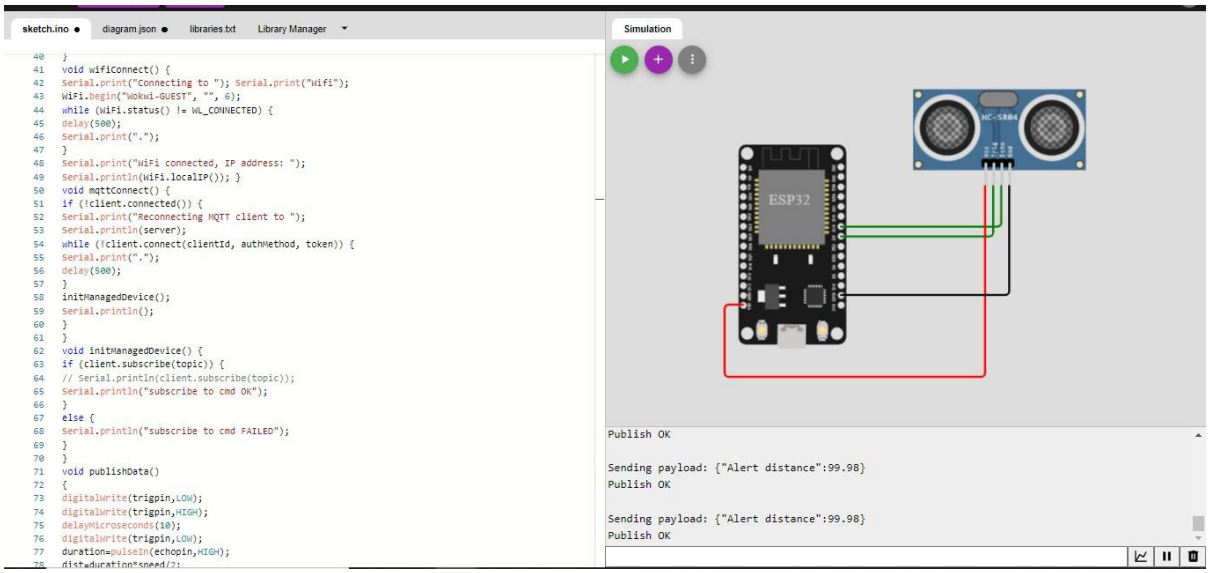
```
        wifiConnect();
        mqttConnect();
}
voidloop(){
        publishData();
        delay(500);
          if(!client.loop()){
               mqttConnect();
        }
}

voidwifiConnect(){
        Serial.print("Connecting to ");
        Serial.print("Wifi");WiFi.begin("Wokwi-GUEST", "",6);
        while(WiFi.status()!=WL_CONNECTED){dela
               y(500);
               Serial.print(".");
        }
        Serial.print("WiFiconnected,IPaddress:");
        Serial.println(WiFi.localIP());
}
voidmqttConnect(){
        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();
        }
}
voidinitManagedDevice(){
        if(client.subscribe(topic)){
        Serial.println("subscribetocmdOK");
        }
        else{
               Serial.println("subscribetocmdFAILED");
        }
}
voidpublishData()
{
        digitalWrite(trigpin,LOW);digit
        alWrite(trigpin,HIGH);delayMicr
        oseconds(10);digitalWrite(trigp
        in,LOW);duration=pulseIn(echopi
        n,HIGH);dist=duration*speed/2;i
        f(dist<100){
               String payload = "{\"Alert
               distance\":";payload+=dist;
               payload+="}";
               Serial.print("\n");
```

```
            Serial.print("Sendingpayload:");
            Serial.println(payload);
            if(client.publish(publishTopic,(char*)payload.c_str())){
                  Serial.println("PublishOK");
            }
            else{
                  Serial.println("PublishFAILED");
            }
      }
}
```

Diagram:



WokwiOutput:



IBMcloudoutput: