ASSIGNMENT 4

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Project Name	IOT Based Smart Crop Protection System

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

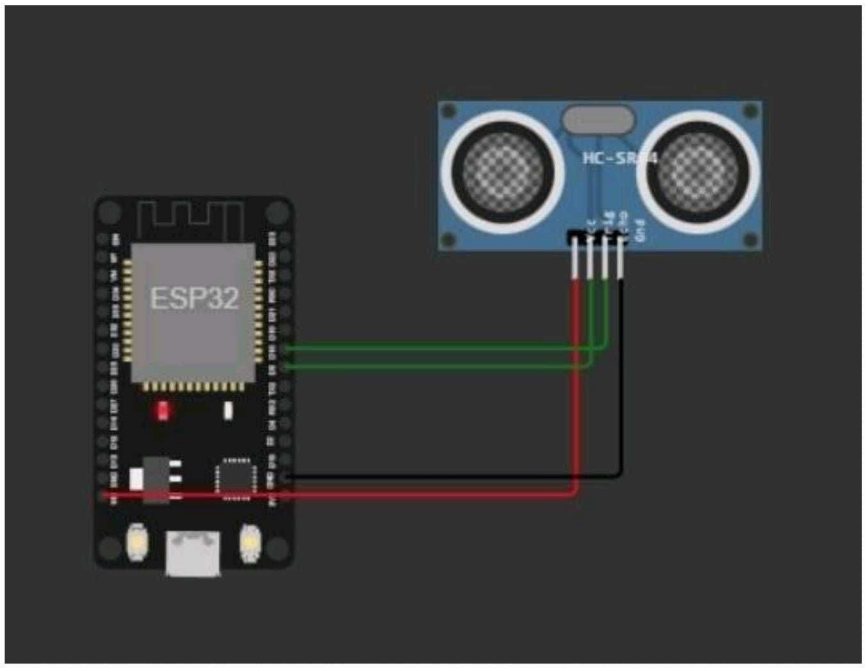
CODE:

```
#include <WiFi.h>
#include <PubSubClient.h> WiFiClient 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-tokenauth"; char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID; PubSubClient client(server,
1883, wifiClient); void publishData();
 const int trigpin=5;
const int echopin=18;
String command;
String data="";   long
duration; float
dist;

 void
setup()
{
    Serial.begin(115200); pinMode(trigpin,
    OUTPUT);
```

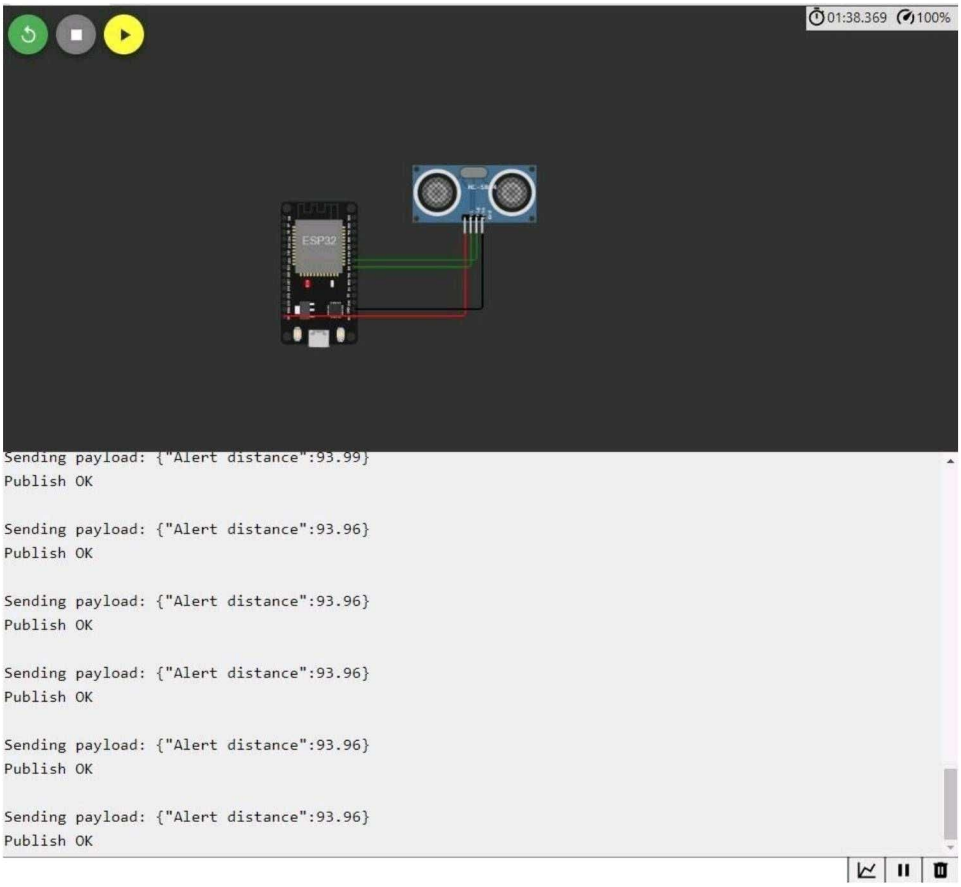
```
  pinMode(echopin, INPUT); wifiConnect();
  mqttConnect();
} void loop() {  publishData(); delay(500);

  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:


01:38.369
100%
ESP32
Sending payload: {"Alert distance":93.99}
Publish OK
Sending payload: {"Alert distance":93.96}
Publish OK
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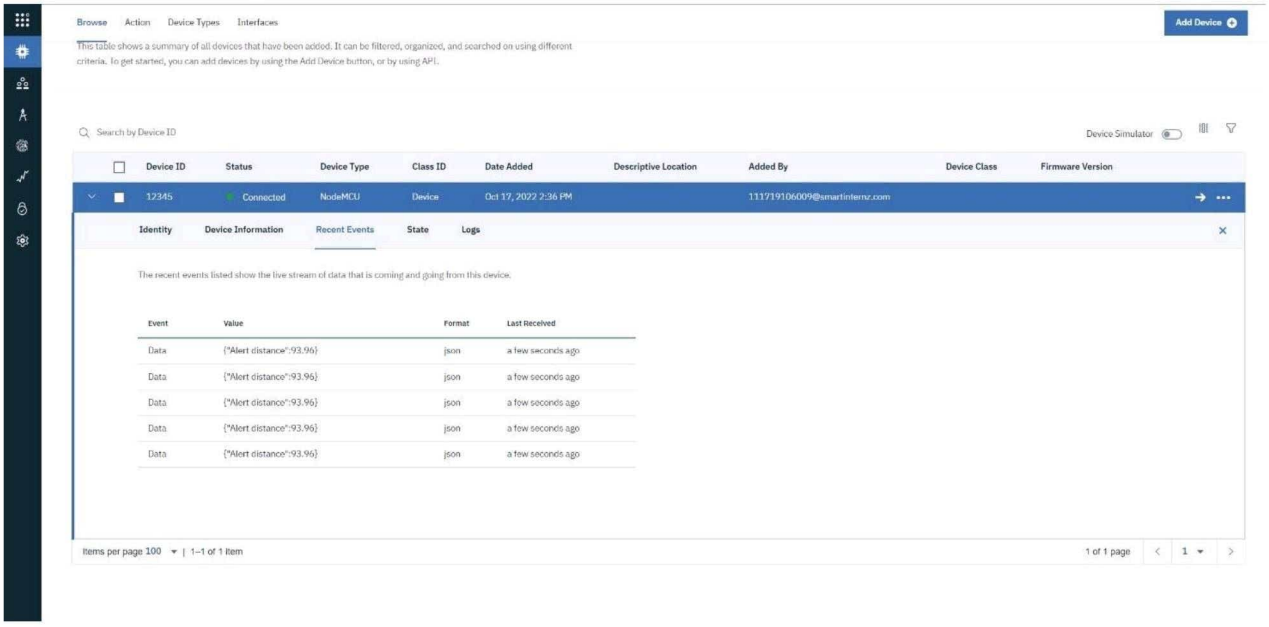
Publish OK



WOKWI LINK -

https://wokwi.com/projects/346405970317935188