

ASSIGNMENT 4

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Project Name	IOT based Smart crop protection system for Agriculture

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 speed0.034
  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);

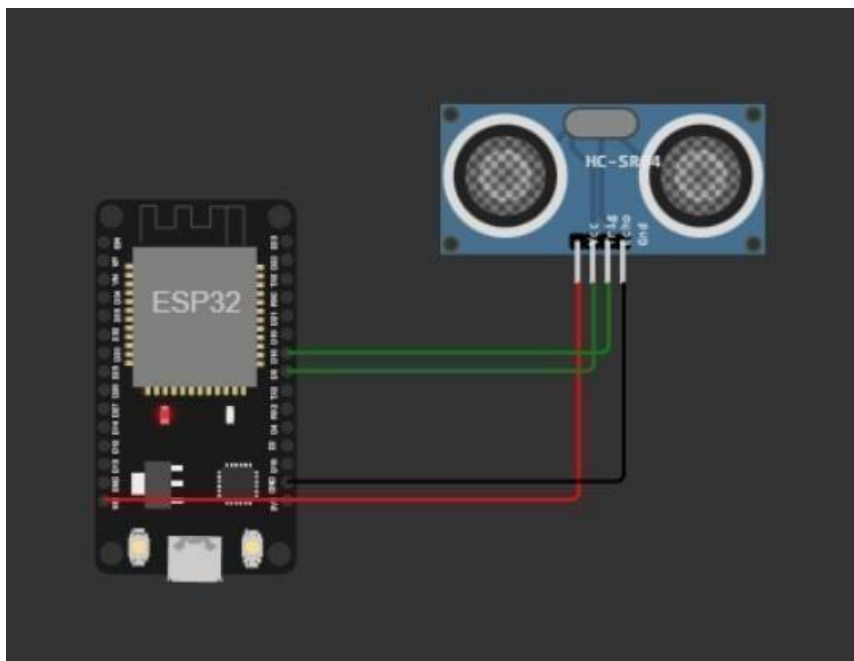
```

```

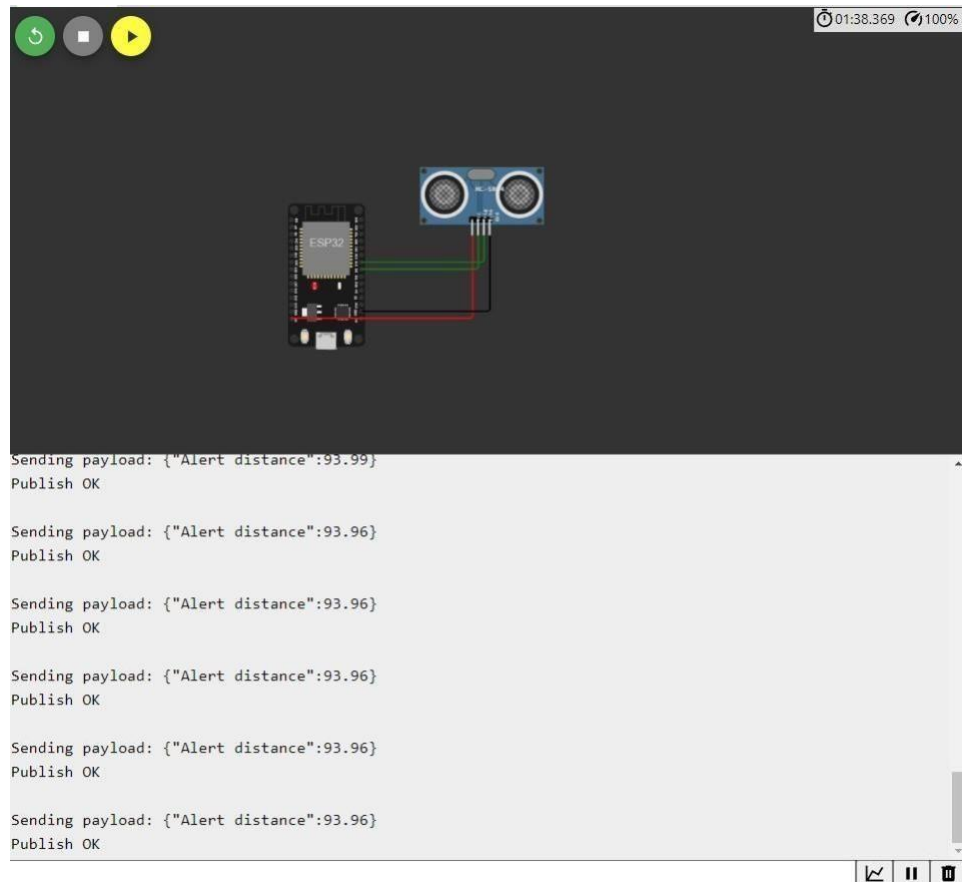
delayMicroseconds(10);
digitalWrite(trigpin,LOW);
duration=pulseIn(echopin,HIGH);
dist=duration*speed/2; if(dist<100){
  String payload = "{\"Alert distance\":\"";
  payload += dist; payload += "\"}";
  Serial.print("\n");
  Serial.print("Sending payload: "); Serial.println(payload);
  if (client.publish(publishTopic, (char*) payload.c_str())) {
    Serial.println("Publish OK");
  } else {
    Serial.println("Publish FAILED"); }
}
}

```

CONNECTIONS:



OUTPUT:



Wokwi Device Management Interface

Table showing device details for ID 12345:

Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location	Added By	Device Class	Firmware Version
12345	Connected	NodeMCU	Device	Oct 17, 2022 2:36 PM		111719106009@smartinternz.com		

Recent Events:

Event	Value	Format	Last Received
Data	{"Alert distance":93.96}	json	a few seconds ago
Data	{"Alert distance":93.96}	json	a few seconds ago
Data	{"Alert distance":93.96}	json	a few seconds ago
Data	{"Alert distance":93.96}	json	a few seconds ago
Data	{"Alert distance":93.96}	json	a few seconds ago

WOKWI LINK -

<https://wokwi.com/projects/346736730579141203>