ASSIGNMENT-4

TEAM ID: PNT2022TMID32056

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:

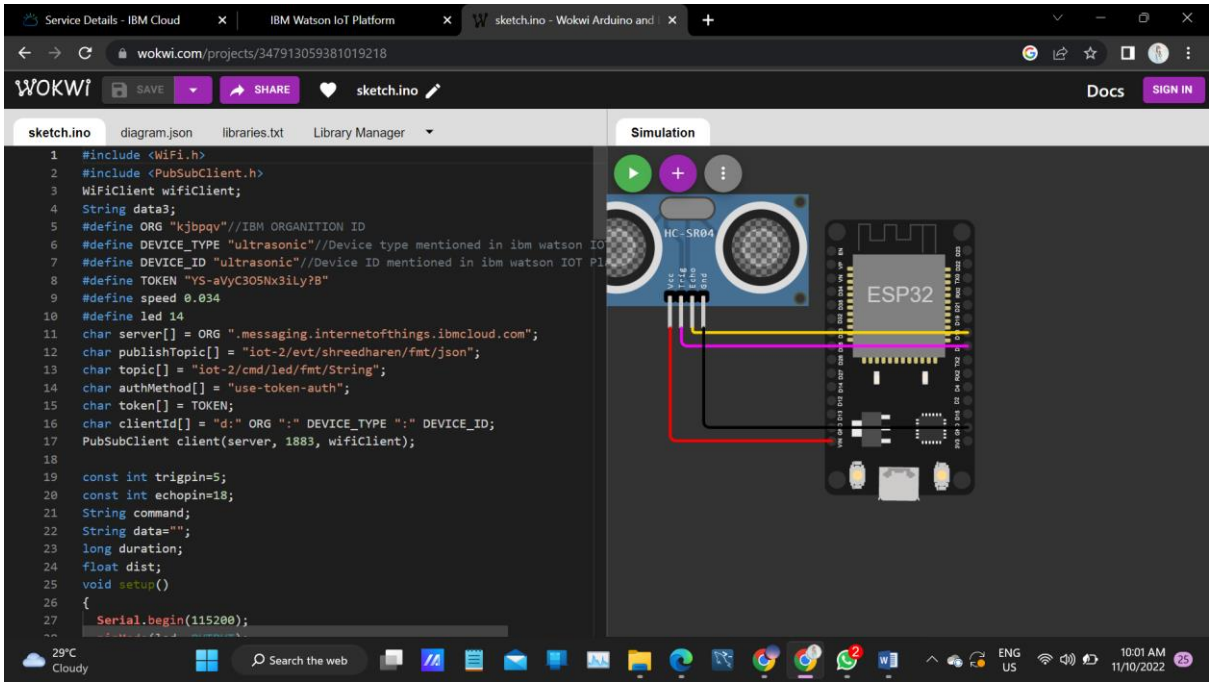
```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "kjbpqv"//IBM ORGANITION ID
#define DEVICE_TYPE "ultrasonic"//Device type mentioned in ibm watson IOT Platform
#define DEVICE_ID "ultrasonic"//Device ID mentioned in ibm watson IOT Platform
#define TOKEN "YS-aVyC3O5Nx3iLy?B"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/shreedharen/fmt/json";
char topic[] = "iot-2/cmd/led/fmt/String";
char authMethod[] = "use-token-auth";
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
PubSubClient client(server, 1883, wifiClient);

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

```
void setup()
{
  Serial.begin(115200);
  pinMode(led, OUTPUT);
  pinMode(trigpin, OUTPUT);
  pinMode(echopin, INPUT);
  wifiConnect();
  mqttConnect();
}

void loop() {
  bool isNearby = dist < 100;
  digitalWrite(led, isNearby);

  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("IBM 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");
  }

}
  if(dist>100){
  String payload = "{\"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");
  }

}



}
```

Output:


Service Details - IBM Cloud
IBM Watson IoT Platform
sketch.ino - Wokwi Arduino and
wokwi.com/projects/347913059381019218
WOKWI
SAVE
SHARE
sketch.ino
Docs
SIGN IN
sketch.ino
diagram.json
libraries.txt
Library Manager
Simulation
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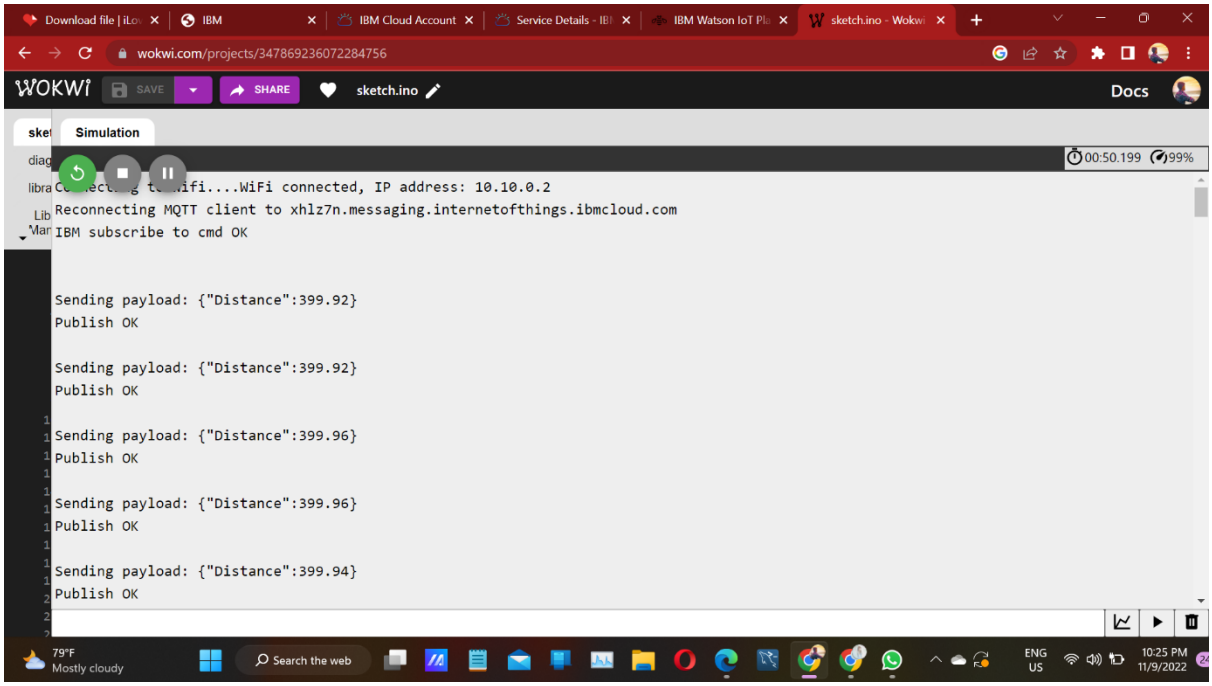
String command;
String data="";
long duration;
float dist;
void setup()
{
Serial.begin(115200);
HC-SR04
ESP32
29°C
Cloudy
Search the web
ENG
US
10:01 AM
11/10/2022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IBM
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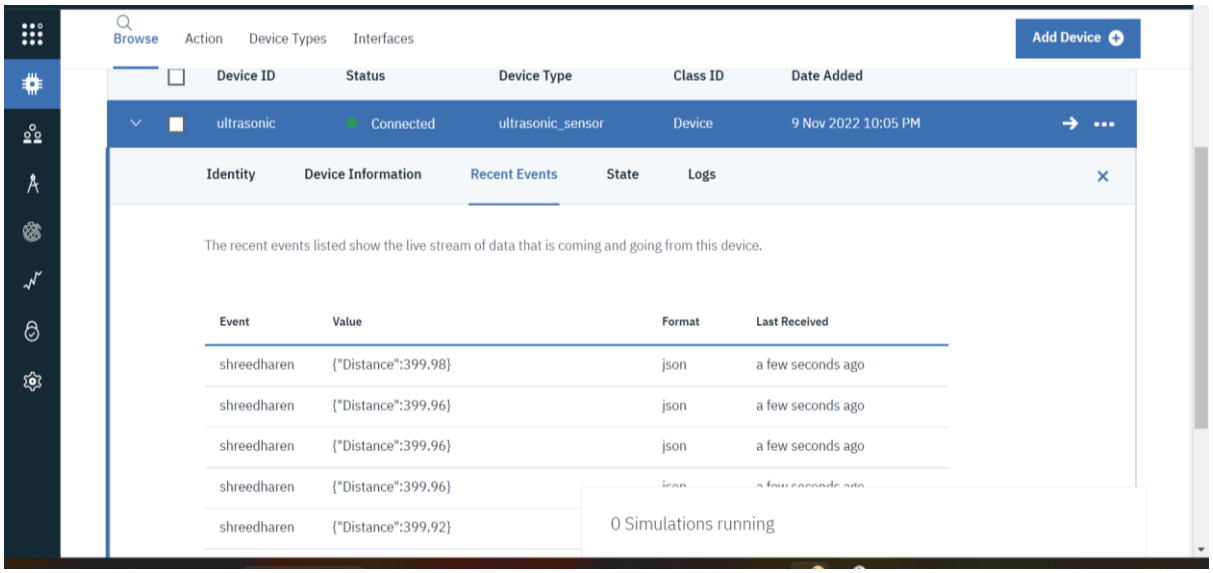
Service Details - IBI
IBM Watson IoT Pla
sketch.ino - Wokwi
wokwi.com/projects/347869236072284756
WOKWI
SAVE
SHARE
sketch.ino
Docs
Simulation
00:50.199
99%
wifi....WiFi connected, IP address: 10.10.0.2
Reconnecting MQTT client to xhlz7n.messaging.internetofthings.ibmcloud.com
IBM subscribe to cmd OK
Sending payload: {"Distance":399.92}
Publish OK
Sending payload: {"Distance":399.92}
Publish OK
Sending payload: {"Distance":399.96}
Publish OK
Sending payload: {"Distance":399.96}
Publish OK
Sending payload: {"Distance":399.94}
Publish OK
79°F
Mostly cloudy
Search the web
ENG
US
10:25 PM
11/9/2022



Cloud upload:

Wokwi link:

https://wokwi.com/projects/347913059381019218