ASSIGNMENT 4

Write code and connections in wokwi for the ultrasonic sensor.Whenever the distance is less than 100 cms send an "alert" to the IBM cloud and display in the device recent events. Upload document with wokwi share link and images of IBM cloud.

CODE:

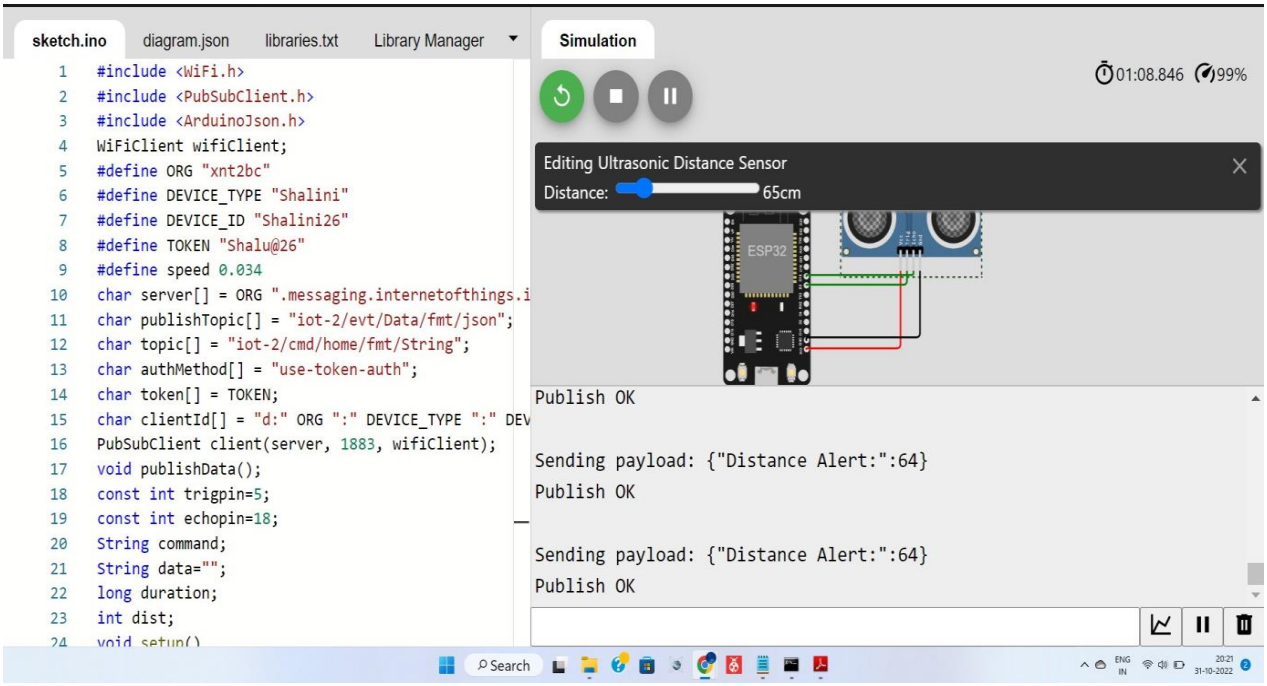
```
#include  <WiFi.h>

#include <PubSubClient.h>

#include <ArduinoJson.h>

WiFiClient wifiClient;

#define ORG "xnt2bc"

#define DEVICE_TYPE "Shalini"

#define DEVICE_ID "Shalini26"

#define TOKEN "Shalu@26"

#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 client(server, 1883, wifiClient);

void publishData();

const int trigpin=5;

const int echopin=18;

String command;

String data="";

long duration;

int dist;
```

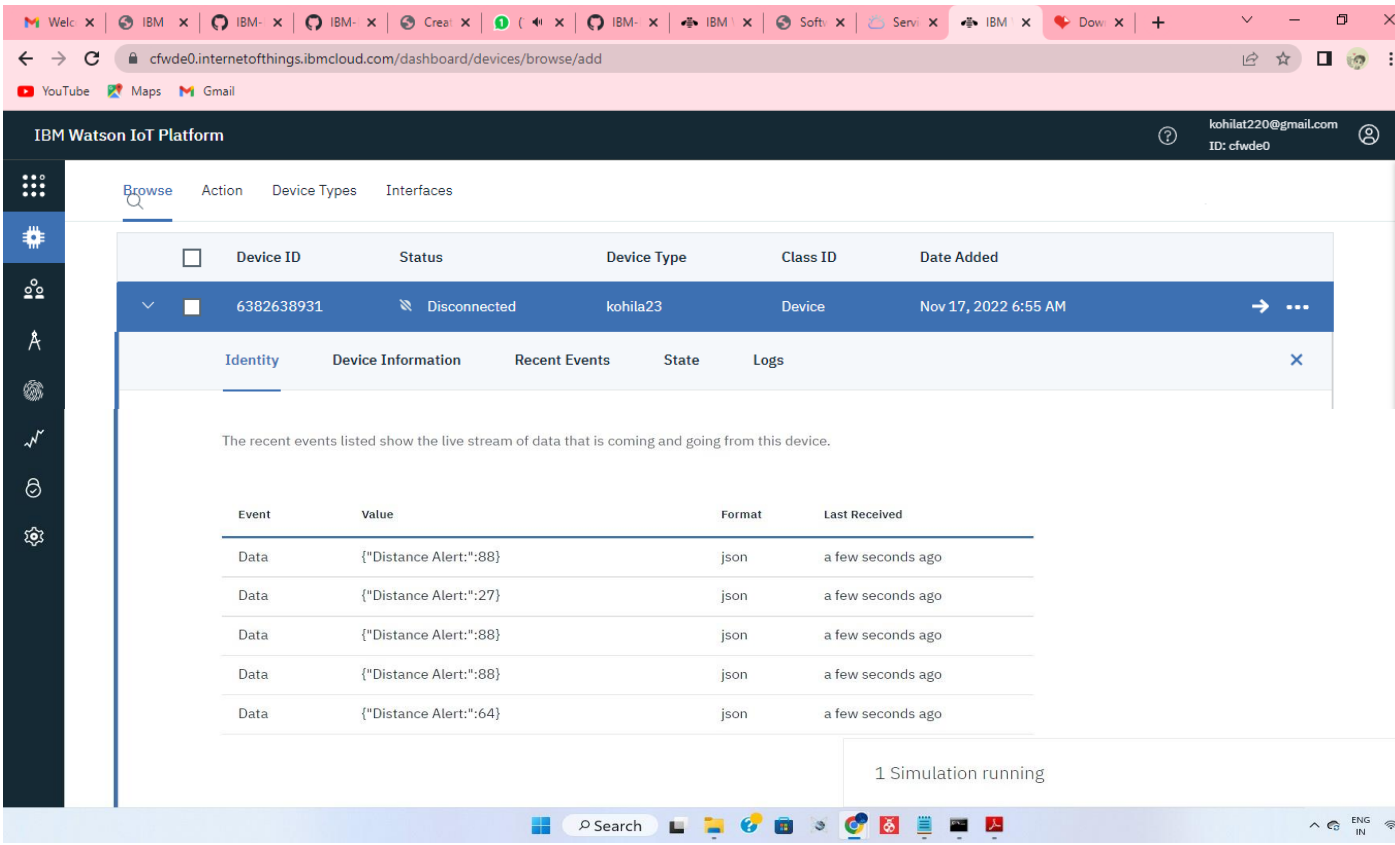
```
void setup()
{
Serial.begin(115200);
pinMode(trigpin, OUTPUT);
pinMode(echopin, INPUT);
wifiConnect();
mqttConnect();
}
void loop() {
publishData();
delay(500);
if (!client.loop()) {
mqttConnect();
}
}
void wifiConnect() {
Serial.print("Connecting to "); Serial.print("Wifi");
WiFi.begin("Wokwi-GUEST", "", 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(1000);
}
```

```
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)
{
DynamicJsonDocument doc(1024);
String payload;
doc["Distance Alert:"]=dist;
serializeJson(doc, payload);
delay(3000);
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:




cfwde0.internetofthings.ibmcloud.com/dashboard/devices/browse/add
YouTube
Maps
Gmail
IBM Watson IoT Platform
kohilat220@gmail.com
ID: cfwde0
Browse
Action
Device Types
Interfaces
Device ID
Status
Device Type
Class ID
Date Added
6382638931
Disconnected
kohila23
Device
Nov 17, 2022 6:55 AM
Identity
Device Information
Recent Events
State
Logs
The recent events listed show the live stream of data that is coming and going from this device.
Event
Value
Format
Last Received
Data
{"Distance Alert:":88}
json
a few seconds ago
Data
{"Distance Alert:":27}
json
a few seconds ago
Data
{"Distance Alert:":88}
json
a few seconds ago
Data
{"Distance Alert:":88}
json
a few seconds ago
Data
{"Distance Alert:":64}
json
a few seconds ago
1 Simulation running
Search