Assignment -4

Assignment Date	02 November 2022
Student Name	VENGADESH G
Student Roll Number	922119106112
Maximum Marks	2 Marks

Question-1:

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.

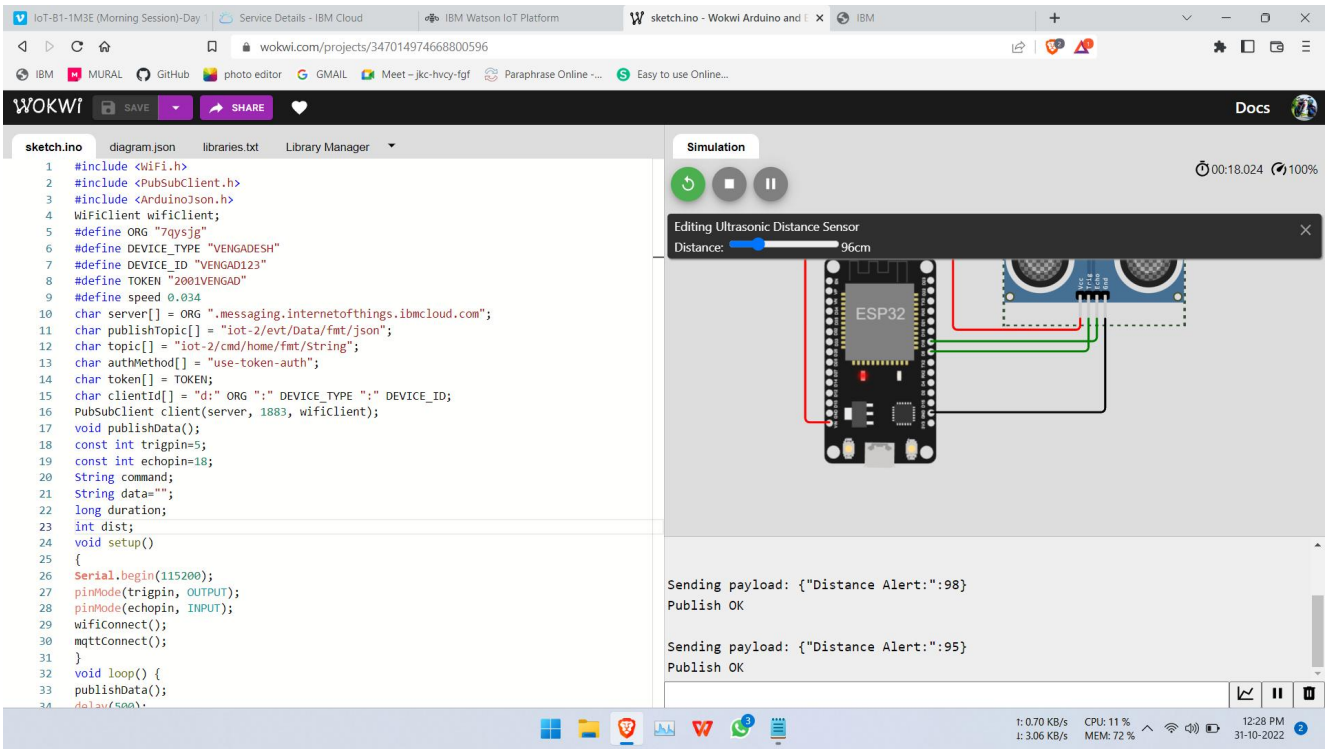
Upload document with wokwi share link and images of IBM cloud

Solution :

```
#include <WiFi.h>
#include <PubSubClient.h>
#include <ArduinoJson.h>
WiFiClient wifiClient;
#define ORG "7qysjg"
#define DEVICE_TYPE "VENGADESH"
#define DEVICE_ID "VENGAD123"
#define TOKEN "2001VENGAD"
#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");
}
}
}
```

WOWKI SHARE LINK : https://wokwi.com/projects/347202339824730706


wokwi.com/projects/347014974668800596
WOKWI
SAVE
SHARE
Docs
sketch.ino
diagram.json
libraries.txt
Library Manager
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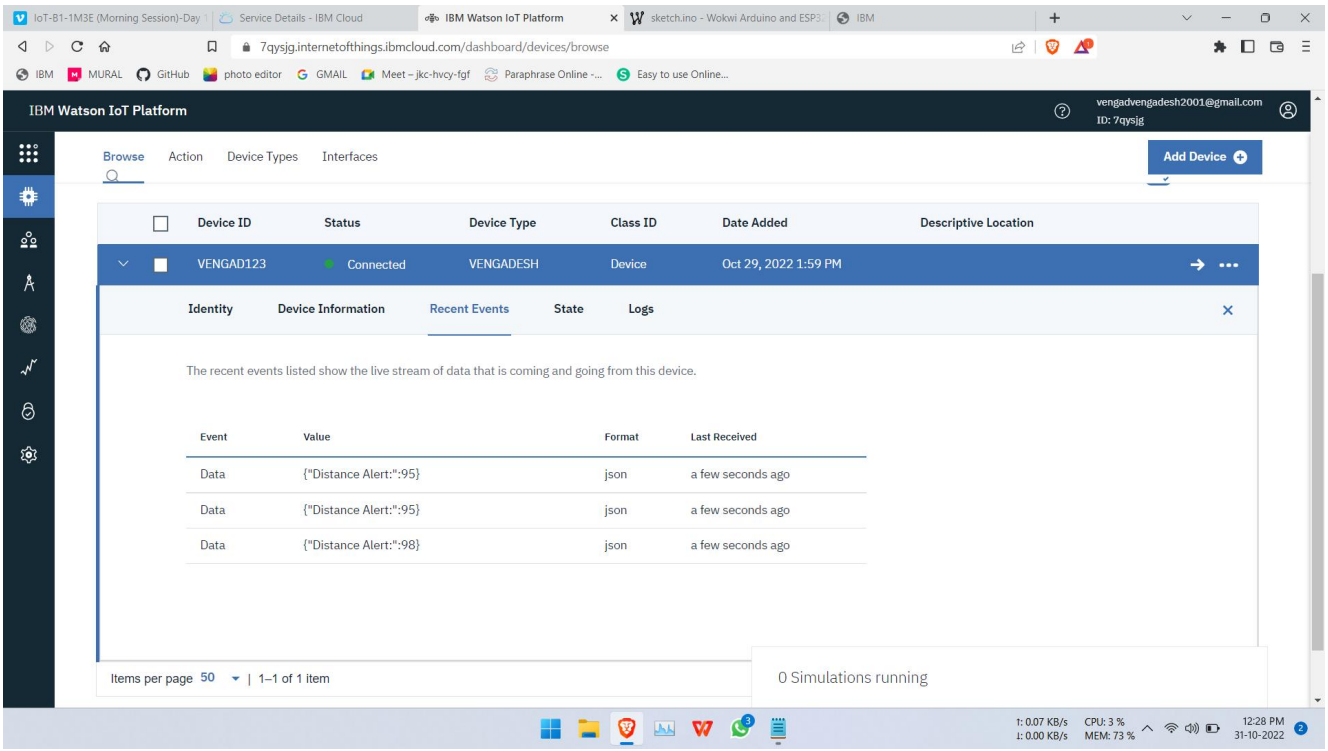
wifiConnect();
mqttConnect();
}
void loop() {
publishData();
Simulation
00:18.024
100%
Editing Ultrasonic Distance Sensor
Distance:
96cm
ESP32
Sending payload: {"Distance Alert:":98}
Publish OK
Sending payload: {"Distance Alert:":95}
Publish OK
12:28 PM
31-10-2022


7qysjg.internetofthings.ibmcloud.com/dashboard/devices/browse
IBM Watson IoT Platform
vengadvengadesh2001@gmail.com
ID: 7qysjg
Browse
Action
Device Types
Interfaces
Add Device
Device ID
Status
Device Type
Class ID
Date Added
Descriptive Location
VENGAD123
Connected
VENGADESH
Device
Oct 29, 2022 1:59 PM
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:":95}
json
a few seconds ago
Data
{"Distance Alert:":95}
json
a few seconds ago
Data
{"Distance Alert:":98}
json
a few seconds ago
Items per page 50
1–1 of 1 item
0 Simulations running
12:28 PM
31-10-2022