

ASSIGNMENT-4

Assignment Date	2 NOV 2022
Student Name	SUDHARSUN.B
Student Roll Number	922119106102
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

PROGRAM:-

```
#include <WiFi.h>
#include <PubSubClient.h>
#include <ArduinoJson.h>

WiFiClient wifiClient;

#define ORG "wlidy7"
#define DEVICE_TYPE "sudharsun"
#define DEVICE_ID "sudharsun007"
#define TOKEN "sudharsun@163"
#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");

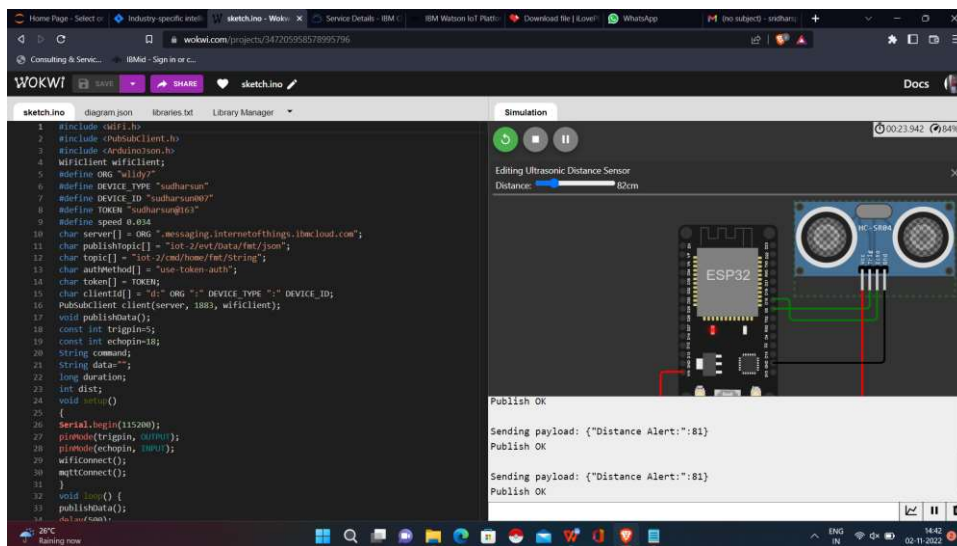
}

}

}

}
```

OUTPUT:-



Home Page - Select on...Industry-specific inte...sketch.luno - Wokwi Ar...Service Details - IBM...IBM Watson IoT P...Download file | Low...WhatsApp...two subjects - sudharsun...widsy7.internetofthings.ibmcloud.com/dashboard/devices/browseConsulting & Servic...IBMId - Sign in or c...IBM Watson IoT Platform9221191063102@smartinternz.comID: widsy7

BrowseActionDevice TypesInterfacesAdd Device

Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location
<input type="checkbox"/> sudharsun007	Connected	sudharsun	Device	Oct 31, 2022 12:10 PM	

IdentityDevice InformationRecent EventsStateLogs

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":81}	json	a few seconds ago
Data	{"Distance Alert":81}	json	a few seconds ago
Data	{"Distance Alert":81}	json	a few seconds ago

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26°C
Raining now

ENG
IN

14:42
02-11-2022