Assignment -4

ASSIGNMENT DATE	**05 NOV 2022**
STUDENT NAME	**V.DIVESH**
STUDENT ROLL NO	**920819106016**
MAXIMUM MARK	**2 MARKS**

Question-1:

Write code and connections in wokwi for the ultrasonic sensor. Whenever the distance is less than100 cms send an "alert" to the IBMcloud 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>WiFiClientwifiClient;
String data3;



#define ORG "v6wg8x"
#define DEVICE_TYPE "nodeMcu"#define DEVICE_ID "NodeMCU" #define TOKEN
"123456789"
#define speed 0.034
#define led 14



void callback(char* topic, byte* playload,unsigned intpayloadLength);



char server[] = ORG
".messaging.internetofthings.ibmcloud.com";char publishTopic[] = "iot- 2/evt/Data/fmt/json";
char topic[] = "iot-2/cmd/test/fmt/String";char authMethod[] = "use-token-auth"; char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":"DEVICE_ID;
PubSubClient client(server, 1883, callback ,wifiClient);
void publishData();



constinttrigpin=5; constintechopin=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 = "{\"Normal 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>101 &&dist<111){

           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("Warning crosses 110cm -- itautomaticaly of the loop"); digitalWrite(led,HIGH);
           }else {
   Serial.println("Publish FAILED");
           }



       }


       }
       void callback(char* subscribeTopic, byte*payload, unsigned intpayloadLength){




   Serial.print("callback invoked for topic:");
   Serial.println(subscribeTopic); for(inti=0; i<payloadLength; i++){ dist +=
   (char)payload[i];
```

```
    }
Serial.println("data:"+ data3);if(data3=="lighton"){ Serial.println(data3);
digitalWrite(led,HIGH);
    }
    data3="";
}
```

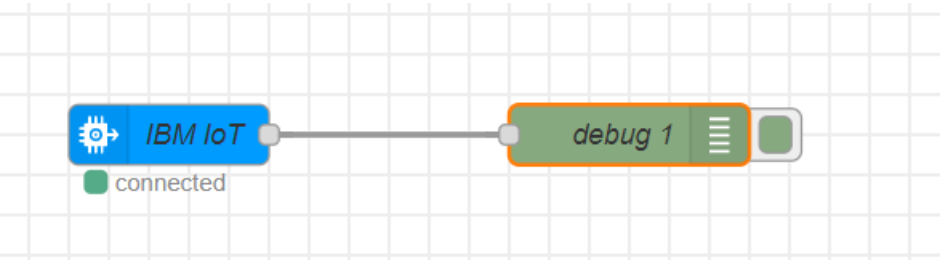
Output:

Recent Events

The recent events listed show the live stream of data that is coming and going from this device.

Event	Value	Format	Last Received
Data	{"Normal Distance":85.99}	json	a few seconds ago
Data	{"Normal Distance":85.99}	json	a few seconds ago
Data	{"Normal Distance":85.99}	json	a few seconds ago
Data	{"Normal Distance":85.95}	json	a few seconds ago
Data	{"Alert distance":110.98}	json	a few seconds ago

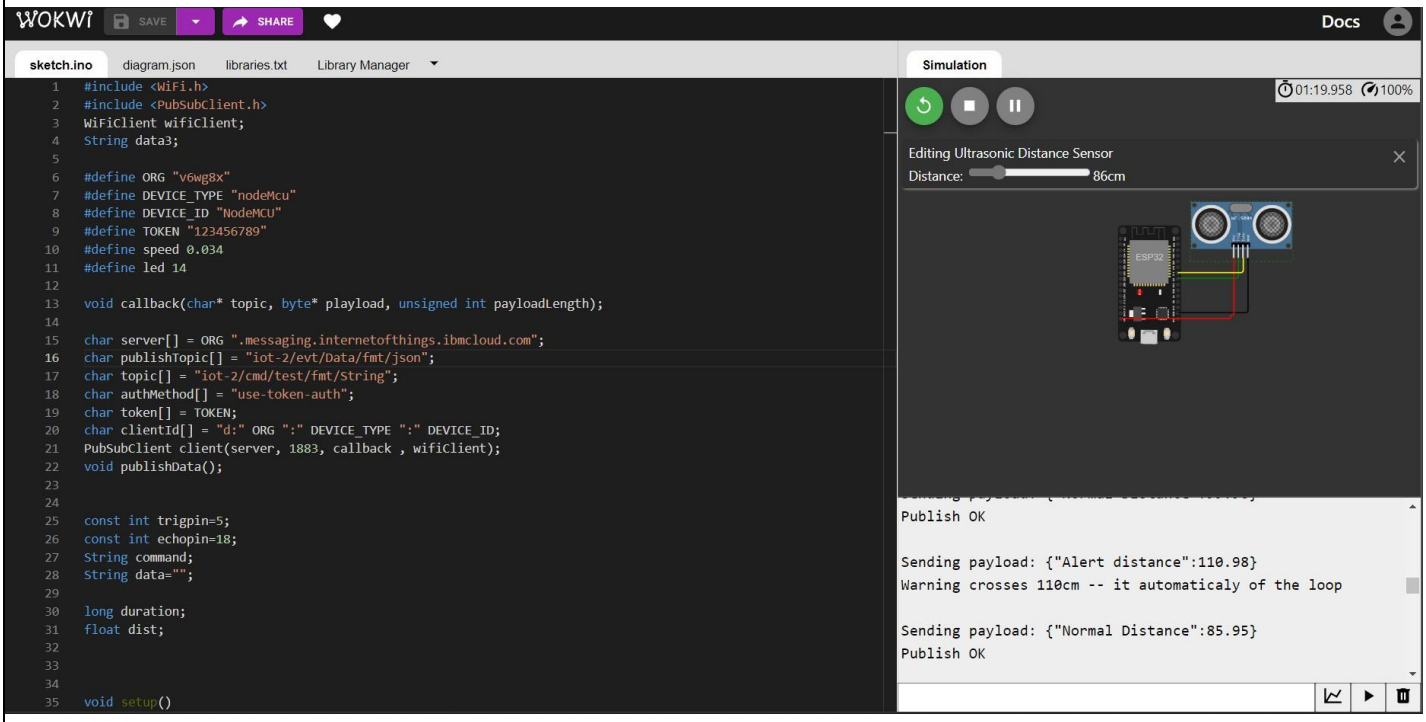
```
Sending payload: {"Normal Distance":99.98}
Publish OK

Sending payload: {"Normal Distance":99.98}
Publish OK

Sending payload: {"Alert distance":110.98}
Warning crosses 110cm -- it automaticaly of the loop

Sending payload: {"Normal Distance":85.95}
Publish OK
```



Connection Information

Basic connection information about this device.

Device ID	NodeMCU
Device Type	nodeMcu
Date Added	Nov 1, 2022 7:27 PM
Added By	312319104058@smartinternz.com
Connection Status	**Disconnected** Last Connected: Nov 1, 2022 7:58 PM Client Address: 145.40.94.93 Insecure Duration: a few seconds Data Transferred: 1.5 KB

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