Assignment -4
Wokwi Programming

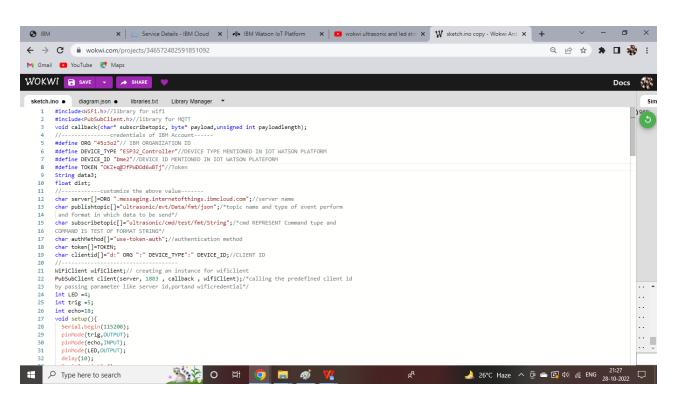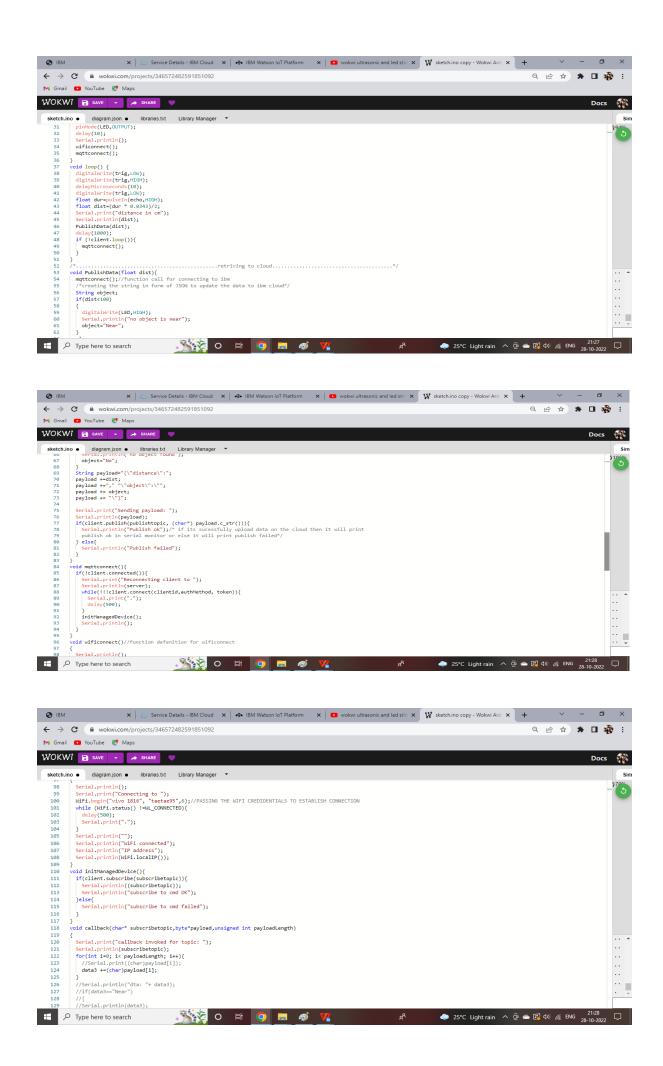| Assignment Date	29 October 2022
Student Name	V.Hema Dharshini
Student Roll Number	912419104009
Maximum Marks	2 Marks

Question-1:

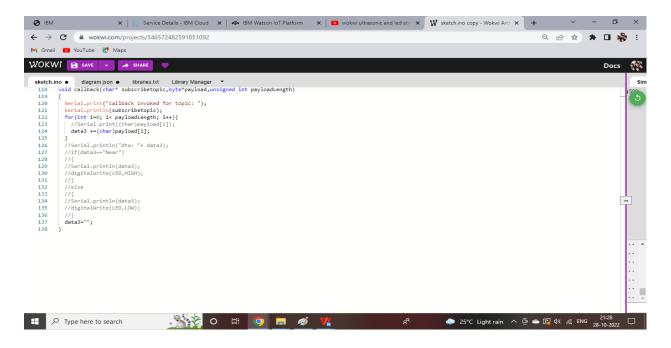Write code and connections in wokwi for ultrasonic sensor.
Whenever distance is less than 100 cms send "alert" to ibm cloud
and display in device recent events.
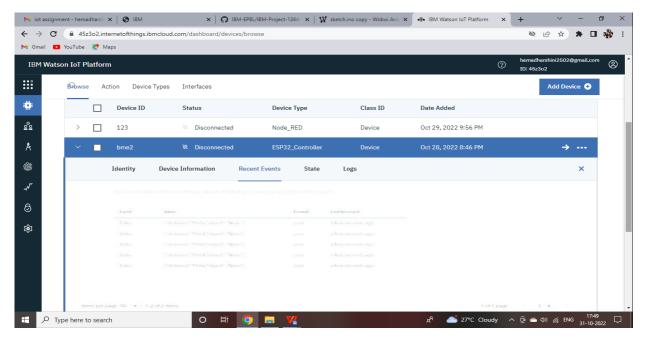Upload document with wokwi share link and images of ibm cloud.
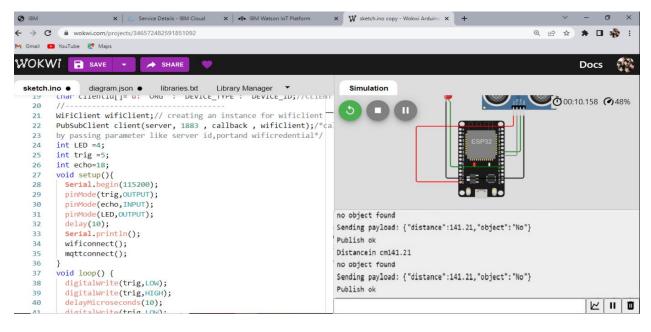
Solution:
Coding:-

```
 31     pinMode(LED,OUTPUT);
 32     delay(10);
 33     Serial.println();
 34     wificonnect();
 35     mqttconnect();
 36   }
 37   void loop() {
 38     digitalWrite(trig,LOW);
 39     digitalWrite(trig,HIGH);
 40     delayMicroseconds(10);
 41     digitalWrite(trig,LOW);
 42     float dur=pulseIn(echo,HIGH);
 43     float dist=(dur * 0.0343)/2;
 44     Serial.print("distance in cm");
 45     Serial.println(dist);
 46     PublishData(dist);
 47     delay(1000);
 48     if (!client.loop()){
 49       mqttconnect();
 50     }
 51   }
 52   /*..............................retriving to cloud.......................................*/
 53   void PublishData(float dist){
 54     mqttconnect();//function call for connecting to ibm
 55     /*creating the string in form of JSON to update the data to ibm cloud*/
 56     String object;
 57     if(dist<100)
 58     {
 59       digitalWrite(LED,HIGH);
 60       Serial.println("no object is near");
 61       object="Near";
 62     }
```

```
 66     Serial.println("no object found");
 67       object="No";
 68   }
 69   String payload="{\"distance\":";
 70   payload +=dist;
 71   payload +="," "\"object\":\"";
 72   payload += object;
 73   payload += "\"}";
 74
 75   Serial.print("Sending payload: ");
 76   Serial.println(payload);
 77   if(client.publish(publishtopic, (char*) payload.c_str())){
 78     Serial.println("Publish ok");/* if its sucessfully upload data on the cloud then it will print
 79     publish ok in serial monitor or else it will print publish failed*/
 80   } else{
 81     Serial.println("Publish failed");
 82   }
 83 }
 84 void mqttconnect(){
 85   if(!client.connected()){
 86     Serial.print("Reconnecting client to ");
 87     Serial.println(server);
 88     while(!!!client.connect(clientid,authMethod, token)){
 89       Serial.print(".");
 90       delay(500);
 91     }
 92     initManagedDevice();
 93     Serial.println();
 94   }
 95 }
 96 void wificonnect()//function defenition for wificonnect
 97 {
 98   Serial.println();
```

```
 98    Serial.println();
 99    Serial.print("Connecting to ");
100    WiFi.begin("vivo 1816", "taetae95",6);//PASSING THE WIFI CREDIDENTIALS TO ESTABLISH CONNECTION
101    while (WiFi.status() !=WL_CONNECTED){
102      delay(500);
103      Serial.print(".");
104    }
105    Serial.println("");
106    Serial.println("WiFi connected");
107    Serial.println("IP address");
108    Serial.println(WiFi.localIP());
109  }
110  void initManagedDevice(){
111    if(client.subscribe(subscribetopic)){
112      Serial.println((subscribetopic));
113      Serial.println("subscribe to cmd OK");
114    }else{
115      Serial.println("subscribe to cmd failed");
116    }
117  }
118  void callback(char* subscribetopic,byte*payload,unsigned int payloadLength)
119  {
120    Serial.print("callback invoked for topic: ");
121    Serial.println(subscribetopic);
122    for(int i=0; i< payloadLength; i++){
123      //Serial.print((char)payload[i]);
124      data3 +=(char)payload[i];
125    }
126    //Serial.println("dta: "+ data3);
127    //if(data3=="Near")
128    //{
129    //Serial.println(data3);
```

```
118    void callback(char* subscribetopic,byte*payload,unsigned int payloadLength)
119    {
120      Serial.print("callback invoked for topic: ");
121      Serial.println(subscribetopic);
122      for(int i=0; i< payloadLength; i++){
123        //Serial.print((char)payload[i]);
124        data3 +=(char)payload[i];
125      }
126      //Serial.println("dta: "+ data3);
127      //if(data3=="Near")
128      //{
129      //Serial.println(data3);
130      //digitalWrite(LED,HIGH);
131      //}
132      //else
133      //{
134      //Serial.println(data3);
135      //digitalWrite(LED,LOW);
136      //}
137      data3="";
138    }
```

DATA SENT TO IBM CLOUD ON NO OBJECT DETECTED


```
19    char clientid[]= u: ORG : DEVICE_TYPE : DEVICE_ID;//CLIENT
20    //-----------------------------------
21    WiFiClient wificlient;// creating an instance for wifaclient
22    PubSubClient client(server, 1883 , callback , wifiClient);/*ca
23    by passing parameter like server id,portand wificredential*/
24    int LED =4;
25    int trig =5;
26    int echo=18;
27    void setup(){
28      Serial.begin(115200);
29      pinMode(trig,OUTPUT);
30      pinMode(echo,INPUT);
31      pinMode(LED,OUTPUT);
32      delay(10);
33      Serial.println();
34      wificonnect();
35      mqttconnect();
36    }
37    void loop() {
38      digitalWrite(trig,LOW);
39      digitalWrite(trig,HIGH);
40      delayMicroseconds(10);
41      digitalWrite(trig,LOW);
```

```
no object found
Sending payload: {"distance":141.21,"object":"No"}
Publish ok
Distancein cm141.21
no object found
Sending payload: {"distance":141.21,"object":"No"}
Publish ok
```

DATA SENT TO IBM CLOUD ON OBJECT BEING DETECTED

OUTPUT:

https://wokwi.com/projects/346780783662334547