Assignment-4

Assignment Date	30 October 2022
Student Name	Mr.R.Sharadh
Student Roll Number	AC19UCS103
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.

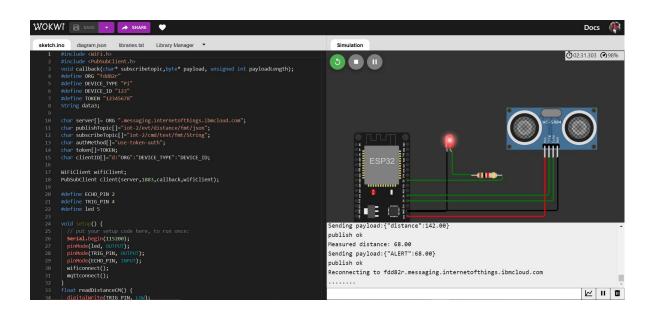
Solution:

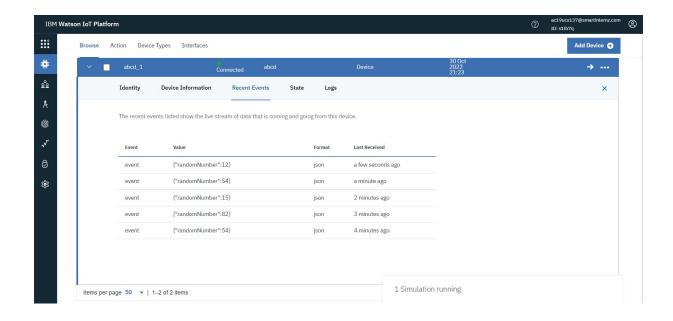
```
#include <WiFi.h> #include
<PubSubClient.h>
void callback(char* subscribetopic,byte* payload, unsigned int payloadLength);
#define ORG "fdd82r"
#define DEVICE TYPE "Pi"
#define DEVICE ID "123"
#define TOKEN "12345678"
String data3;
char server[]= ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[]="iot-2/evt/distance/fmt/json";
char subscribeTopic[]="iot-2/cmd/test/fmt/String";
char authMethod[]="use-token-auth";
char token[]=TOKEN;
char clientID[]="d:"ORG":"DEVICE_TYPE":"DEVICE_ID;
WiFiClient wifiClient;
PubSubClient client(server,1883,callback,wifiClient);
#define ECHO PIN 2
#define TRIG PIN 4
#define led 5
void setup() {
 // put your setup code here, to run
 once: Serial.begin(115200);
 pinMode(led, OUTPUT);
 pinMode(TRIG PIN, OUTPUT);
 pinMode(ECHO_PIN, INPUT);
 wificonnect();
 mqttconnect();
float readDistanceCM() {
```

```
digitalWrite(TRIG_PIN, LOW);
 delayMicroseconds(2);
 digitalWrite(TRIG_PIN, HIGH);
 delayMicroseconds(10);
 digitalWrite(TRIG_PIN, LOW); int
 duration=random(1,200);
 //Serial.println(duration);
 //duration = pulseIn(ECHO_PIN, HIGH);
 return duration;
 //Serial.println(duration);
}
void loop() {
 float distance = readDistanceCM();
 //Serial.println(distance);
 bool isNearby = distance < 100;
 digitalWrite(led, isNearby);
 Serial.print("Measured distance: ");
 Serial.println(distance);
 if(distance<100){ PublishData2(dist
 ance);
 }else{ PublishData1(dista
  nce);
 }
 //PublishData(distance);
 delay(1000);
 if(!client.loop()){ mqttc
 onnect();
 }
 //delay(2000);
void PublishData1(float
 dist){ mqttconnect();
 String payload= "{\"distance\":";
 payload += dist;
 payload+="}";
 Serial.print("Sending payload:");
 Serial.println(payload);
```

```
if(client.publish(publishTopic,(char*)payload.c_str())){    Serial.pri
  ntln("publish ok");
 } else{
  Serial.println("publish failed");
 }
void PublishData2(float
 dist){ mqttconnect();
 String payload= "{\"ALERT\":"; payload
 += dist;
 payload+="}";
 Serial.print("Sending payload:");
 Serial.println(payload);
 if(client.publish(publishTopic,(char*)payload.c str())){ Serial.pri
  ntln("publish ok");
 } else{
  Serial.println("publish failed");
 }
}
void
 mqttconnect(){ if(!client.connected()){
 Serial.print("Reconnecting to ");
 Serial.println(server);
  while(!!!client.connect(clientID, authMethod,
   token)){ Serial.print(".");
   delay(500);
  initManagedDevice();
  Serial.println();
 }
}
void
 wificonnect(){ Serial.println();
 Serial.print("Connecting to");
 WiFi.begin("Wokwi-GUEST","",6);
 while(WiFi.status()!=WL_CONNECTED){ delay(500);
  Serial.print(".");
 Serial.println("");
 Serial.println("WIFI CONNECTED");
 Serial.println("IP address:");
```

```
Serial.println(WiFi.localIP());
void
 initManagedDevice(){ if(client.subscribe(subscribeTo
 pic)){ Serial.println((subscribeTopic));
 Serial.println("subscribe to cmd ok");
 }else{
  Serial.println("subscribe to cmd failed");
 }
void callback(char* subscribeTopic, byte* payload, unsigned int
 payloadLength){ Serial.print("callback invoked for topic:");
 Serial.println(subscribeTopic);
 for(int i=0; i<payloadLength;</pre>
 i++){ data3 += (char)payload[i];
 Serial.println("data:"+ data3);
 if(data3=="lighton"){ Serial.p
 rintln(data3);
 digitalWrite(led,HIGH);
 }else{ Serial.println(data3);
  digitalWrite(led,LOW);
 data3="";
```





REFERENCE: https://wokwi.com/projects/3469609276119455785