ASSIGNMENT – 4

Assignment Date	7 November 2022
Team ID	PNT2022TMID27861
Project Name	Gas Leakage Detection and Alerting System
Maximum Marks	2 Marks

ASSIGNMENT TOPIC:

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.

CODE:

```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
#define ORG "jp76he"
#define DEVICE_TYPE "Assignment4"
#define DEVICE_ID "311510052627"
#define TOKEN "311519106005"
#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=2;
const int echopin=15;
String command;
String data="";
long duration;
float dist;

void setup()
{
Serial.begin(115200);
pinMode(trigpin, OUTPUT);
pinMode(echopin, INPUT);
wifiConnect();
mqttConnect();
}
void loop() {
publishData();
```

```cpp
    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("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 = "{\"Alert distance\":";
    payload += dist;
```
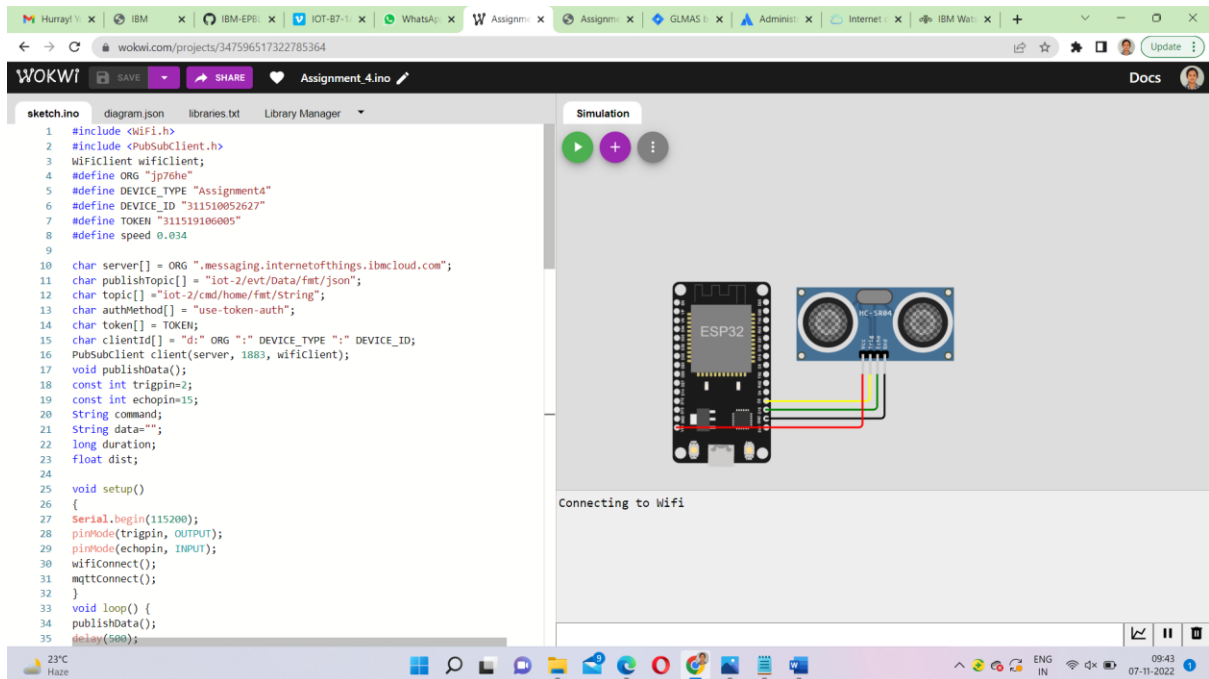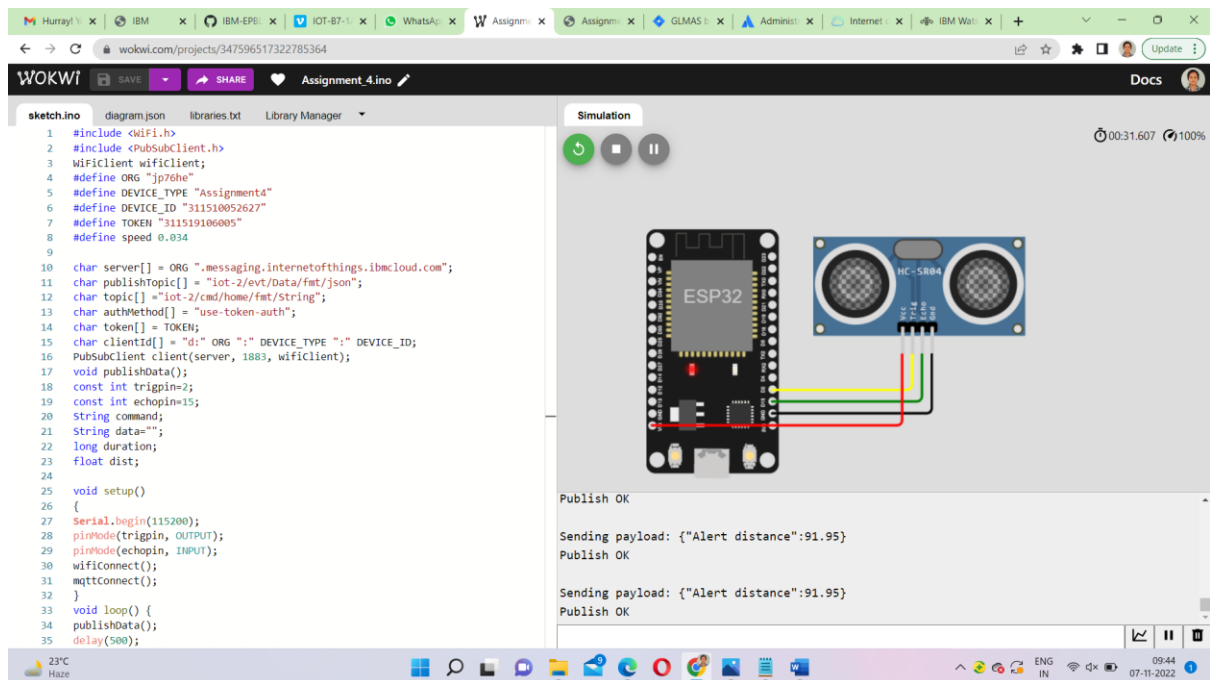
```
    payload += "}";
    Serial.print("\n");
    Serial.print("Sending payload: ");
    Serial.println(payload);
    if (client.publish(publishTopic, (char*) payload.c_str())) {
      Serial.println("Publish OK");
      } else {
        Serial.println("Publish FAILED");
      }
        }
        }
```

CONNECTIONS:

OUTPUT:

OUTPUT IN IOT CLOUD PLATFORM: