Assignment -4

Assignment Date	02 November 2022
Student Name	Sanjhey Hariram SA
Student Roll Number	73771914163
Maximum Marks	2 Marks
Team ID	PNT2022TMID11664

Question:

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.

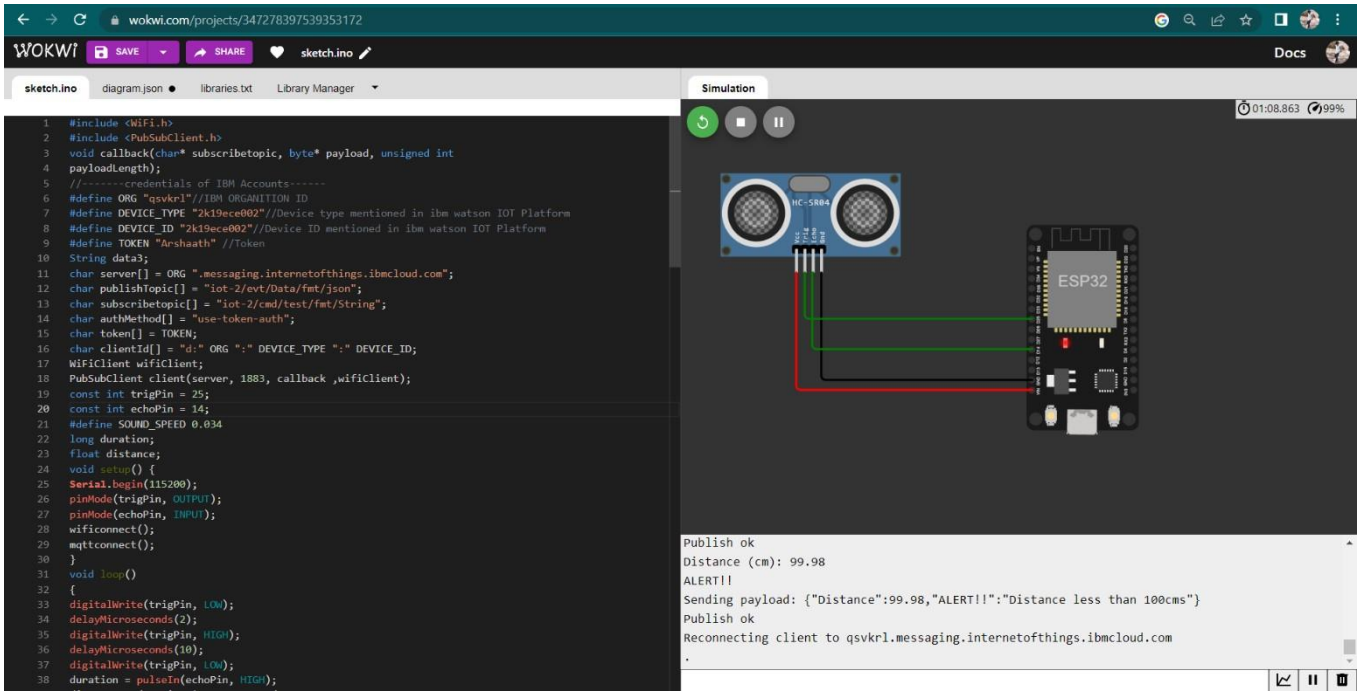
Code:

```
#include <WiFi.h>
#include <PubSubClient.h> void callback(char* subscribetopic,
byte* payload, unsigned int payloadLength);
//-------credentials of IBM Accounts------
#define ORG "qsvkrl"//IBM ORGANITION ID
#define DEVICE_TYPE "2k19ece002"//Device type mentioned in ibm watson IOT Platform
#define DEVICE_ID "2k19ece002"//Device ID mentioned in ibm watson IOT Platform
#define TOKEN "Arshaath" //Token String data3; char server[] =
ORG ".messaging.internetofthings.ibmcloud.com"; char
publishTopic[] = "iot-2/evt/Data/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); const int trigPin = 25; const int echoPin
= 14; #define SOUND_SPEED 0.034 long duration; float
distance; void setup() { Serial.begin(115200);
pinMode(trigPin, OUTPUT); pinMode(echoPin, INPUT);
wificonnect(); mqttconnect();
}
void loop()
{ digitalWrite(trigPin,
LOW); delayMicroseconds(2);
digitalWrite(trigPin,
HIGH);
delayMicroseconds(10);
digitalWrite(trigPin, LOW);
```

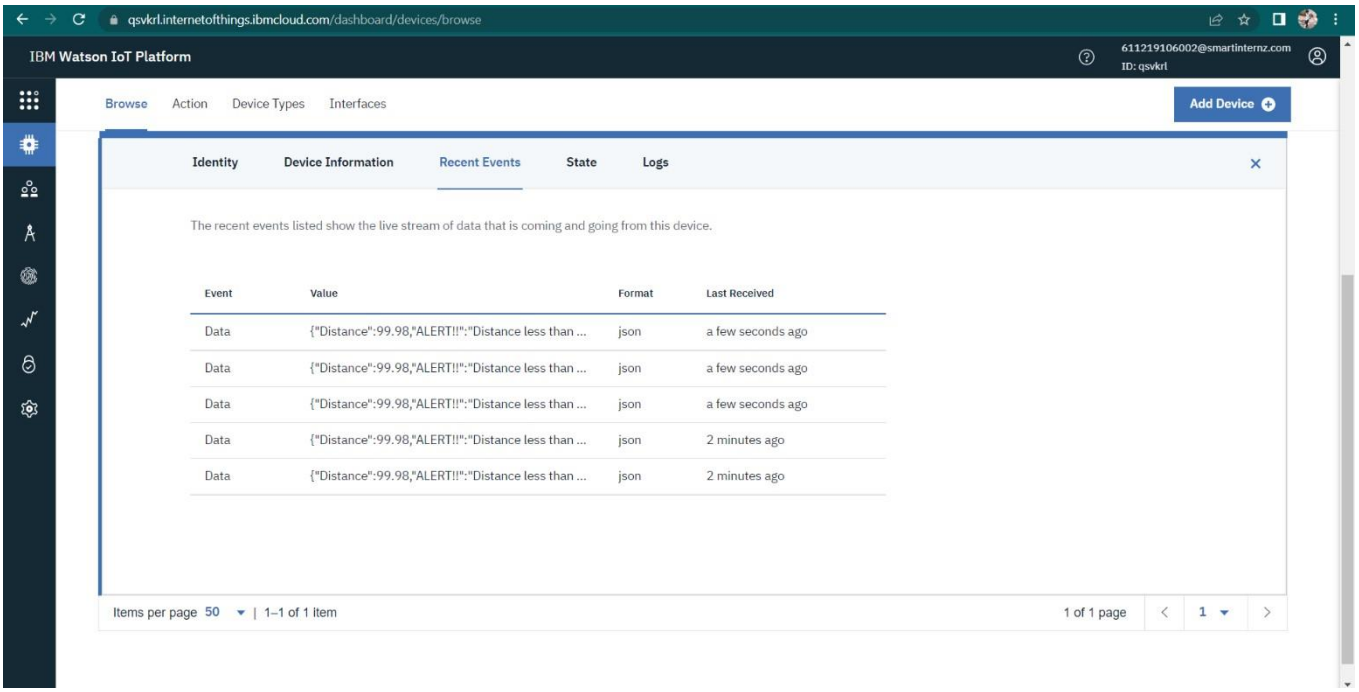
```
duration = pulseIn(echoPin, HIGH); distance
= duration * SOUND_SPEED/2;
Serial.print("Distance (cm): ");
Serial.println(distance); if(distance<100)
{
Serial.println("ALERT!!"); delay(1000);
PublishData(distance);
delay(1000); if
(!client.loop()) {
mqttconnect();
} }
delay(1000);
} void PublishData(float dist)
{ mqttconnect();
String payload = "{\"Distance\":"; payload += dist;
payload += ",\"ALERT!!\":""\"Distance less than 100cms\"";
payload += "}";
Serial.print("Sending payload: "); Serial.println(payload);
if (client.publish(publishTopic, (char*) payload.c_str())) {
Serial.println("Publish ok");
} else {
Serial.println("Publish failed");
} } void mqttconnect() {
if (!client.connected()) {
Serial.print("Reconnecting client 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(subscribetopic)) {
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; i++) {
//Serial.print((char)payload[i]); data3
+= (char)payload[i];
}
Serial.println("data: "+ data3); data3="";
}
```

Wokwi Output:



IBM Cloud Alert:



Wokwi Share Link:

https://wokwi.com/projects/347278397539353172