ASSIGNMENT – 4

WOKWI SIMULATION

Assignment Date	7 th November 2022
Student Name	Abina.S
Student Roll Number	960219106004
Maximum Marks	2 Marks

Question:

Write a code and make a connection in WOKWI for ultrasonic sensor. Whenever distance is less than 100, send "alert" to IBM cloud and display in device recent events.

PROGRAM

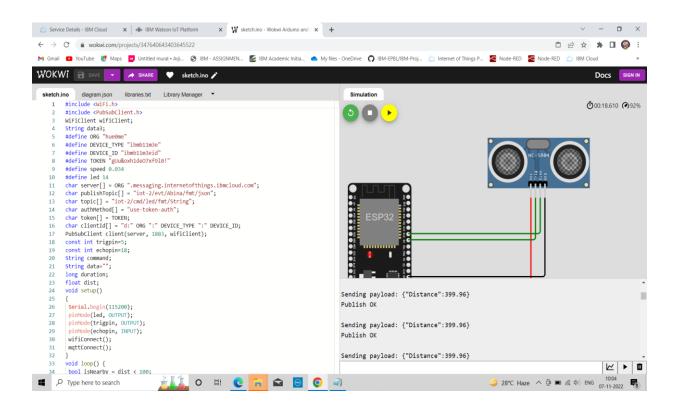
```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "hue0me"
#define DEVICE_TYPE "ibmb11m3e"
#define DEVICE ID "ibmb11m3eid"
#define TOKEN "gUu&oxh1de07xf910!"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/Abina/fmt/json";
char topic[] = "iot-2/cmd/led/fmt/String";
char authMethod[] = "use-token-auth";
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
PubSubClient client(server, 1883, wifiClient);
const int trigpin=5;
const int echopin=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;</pre>
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){</pre>
 String payload = "{\"Alert Distance\":";
 payload += dist;
```

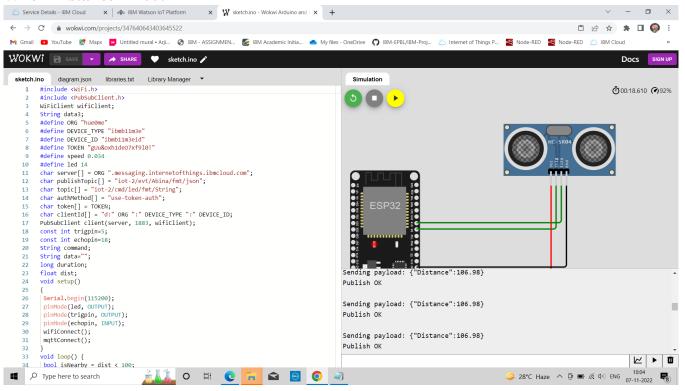
```
payload += "}";
Serial.print("\n");
Serial.print("Sending payload: ");
Serial.println(payload);
if (client.publish(publishTopic, (char*) payload.c_str())) {
Serial.println("Publish OK");
}
}
if(dist>100){
String payload = "{\"Distance\":";
payload += dist;
payload += "}";
Serial.print("\n");
Serial.print("Sending payload: ");
Serial.println(payload);
if(client.publish(publishTopic, (char*) payload.c_str())) {
Serial.println("Publish OK");
}else {
Serial.println("Publish FAILED");
}
}
}
```

OUTPUT:

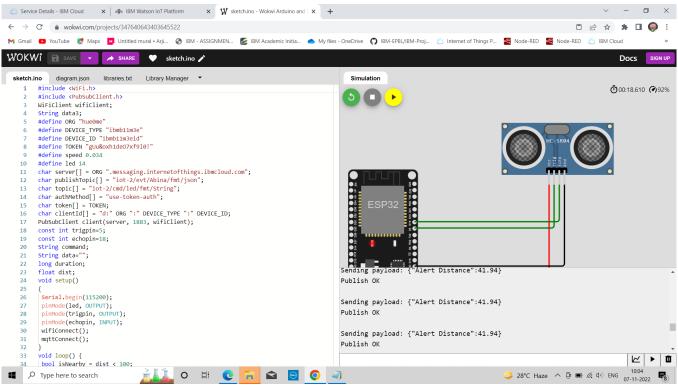
WOKWI SIMULATION



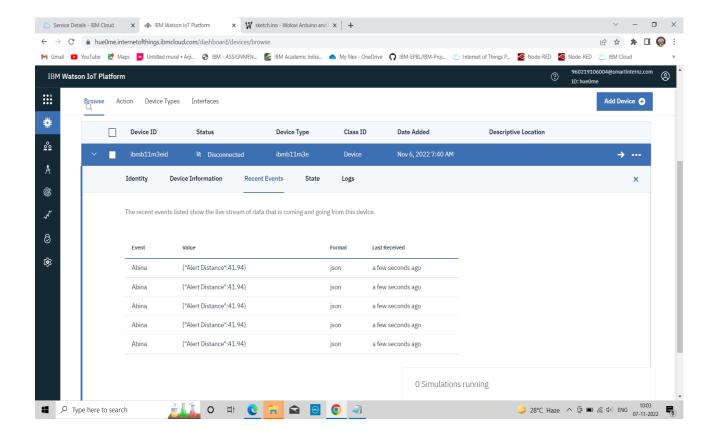
When Distance < 100:



When Distance > 100:



IBM CLOUD OUTPUT:



WOKWI LINK:

https://wokwi.com/projects/347639651525198420