ASSIGNMENT 4

Date	03 NOV 2022
Name	A.ARSHITHA
Team ID	PNT2022TMID34110
Project Name	SmartFarmer – IoT Enabled Smart Farming Application

QUESTION:

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.

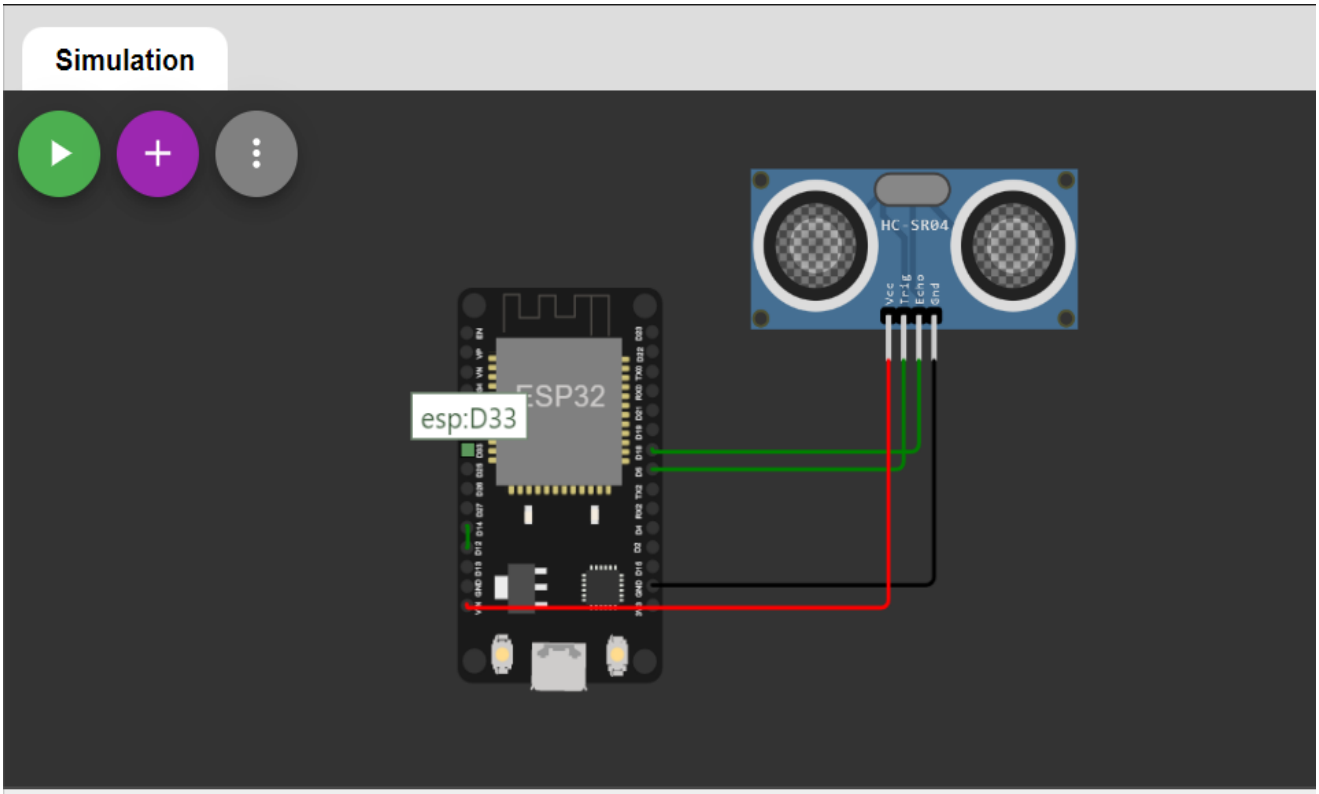
Upload document with wokwi share link and images of ibm cloud

CODE:

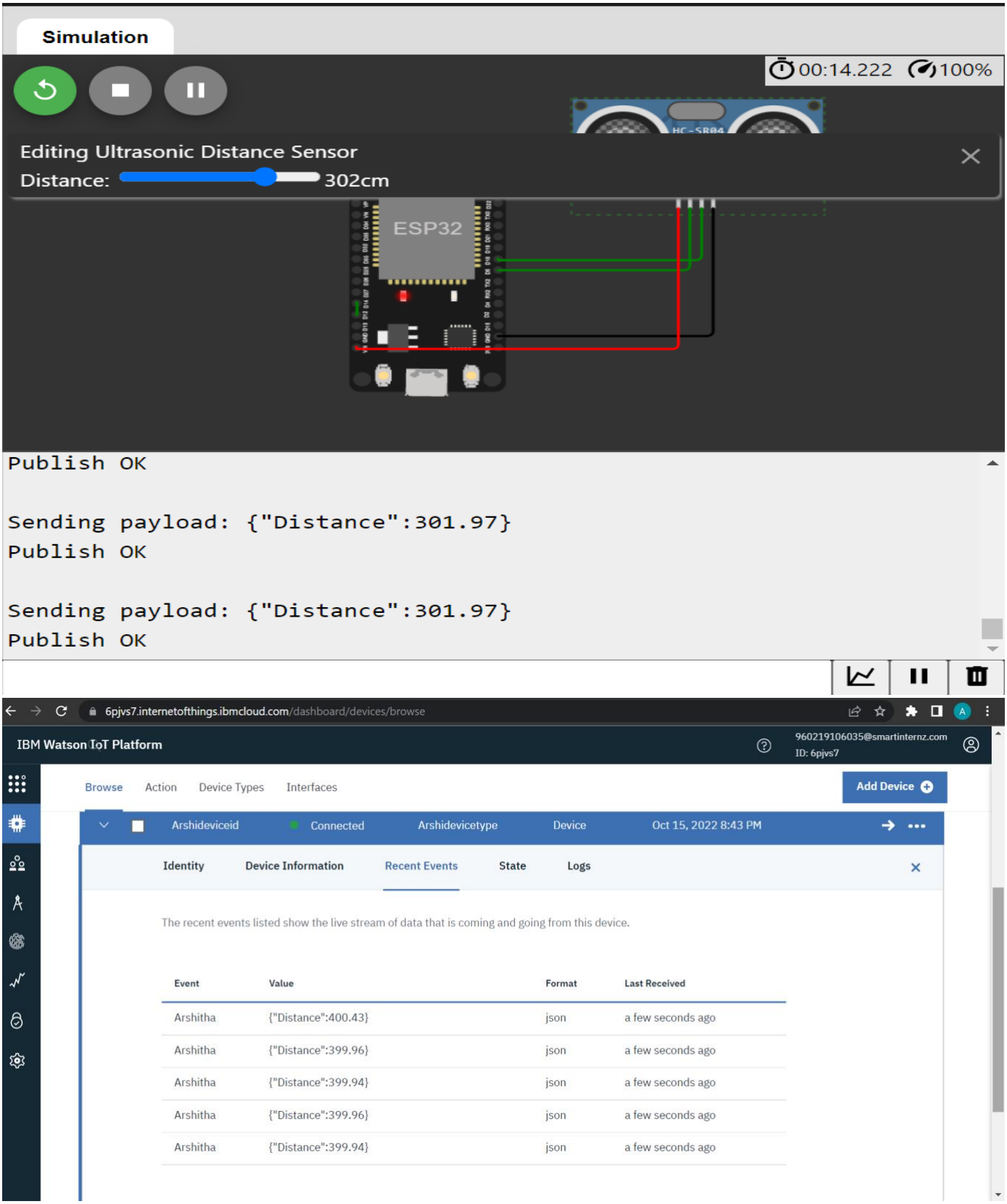
```
#include <WiFi.h>

#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "6pjvs7"
#define DEVICE_TYPE "Arshidevicetype"
#define DEVICE_ID "Arshideviceid"
#define TOKEN "tGfGvVl-F2luRl2bsG"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/Arshitha/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;
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){
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");
}
}
}
```

Connections:



Output:


Simulation
00:14.222
100%
HC-SR04
Editing Ultrasonic Distance Sensor
Distance:
302cm
ESP32
Publish OK
Sending payload: {"Distance":301.97}
Publish OK
Sending payload: {"Distance":301.97}
Publish OK
6pjvs7.internetofthings.ibmcloud.com/dashboard/devices/browse
IBM Watson IoT Platform
960219106035@smartinternz.com
ID: 6pjvs7
Browse
Action
Device Types
Interfaces
Add Device
Arshideviceid
Connected
Arshidevicetype
Device
Oct 15, 2022 8:43 PM
Identity
Device Information
Recent Events
State
Logs
The recent events listed show the live stream of data that is coming and going from this device.
Event
Value
Format
Last Received
Arshitha
{"Distance":400.43}
json
a few seconds ago
Arshitha
{"Distance":399.96}
json
a few seconds ago
Arshitha
{"Distance":399.94}
json
a few seconds ago
Arshitha
{"Distance":399.96}
json
a few seconds ago
Arshitha
{"Distance":399.94}
json
a few seconds ago

WOKWI LINK:
https://wokwi.com/projects/347396410892616275