Assignment 4:

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

```
#include <WiFi.h>
#include <PubSubClient.h>

#include <ArduinoJson.h>

WiFiClient;

#define ORG "s12vsb"

#define DEVICE_TYPE "NodeMCU"

#define DEVICE_ID "12345"

#define TOKEN "12345678" #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=5; const
int echopin=18;

String command;
String

data=""; long
duration; int dist;
void setup()

{

Serial.begin(115200);
pinMode(trigpin, OUTPUT);
pinMode(echopin, INPUT);
wifiConnect(); mqttConnect();
```

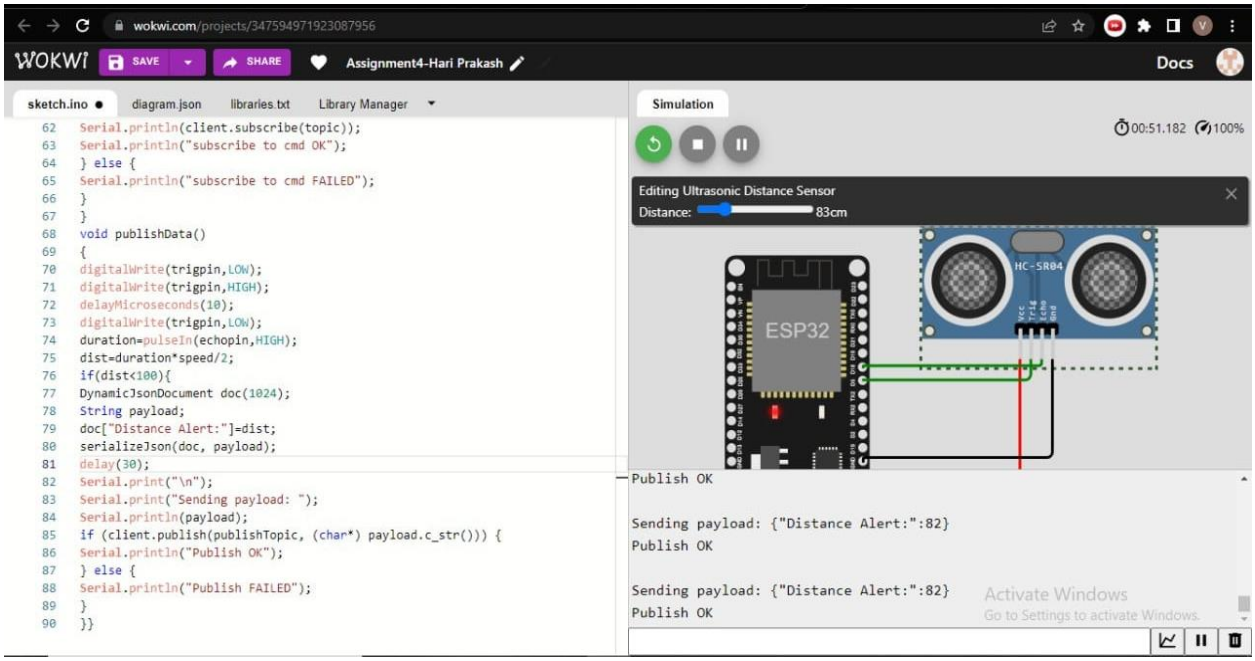
```
} void loop() {
publishData();
delay(500);

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(1000); }

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){

DynamicJsonDocument doc(1024);
String payload; doc["Distance
Alert:"]=dist; serializeJson(doc,
payload); delay(30);
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");
}
}
}
```

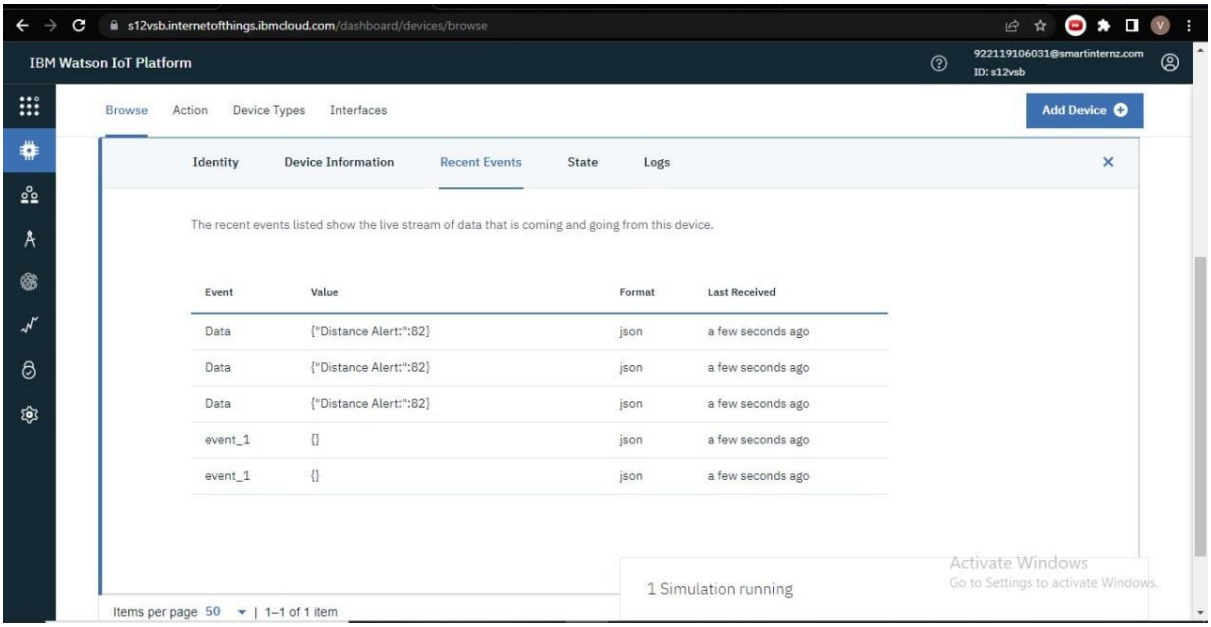
WOKWI LINK:

https://wokwi.com/projects/347642312680014418

OUTPUT:



CLOUD OUTPUT:


s12vsb.internetofthings.ibmcloud.com/dashboard/devices/browse
IBM Watson IoT Platform
922119106031@smartinternz.com
ID: s12vsb
Browse
Action
Device Types
Interfaces
Add Device
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
Data
{"Distance Alert:":82}
json
a few seconds ago
Data
{"Distance Alert:":82}
json
a few seconds ago
Data
{"Distance Alert:":82}
json
a few seconds ago
event_1
{}
json
a few seconds ago
event_1
{}
json
a few seconds ago
Items per page 50
1–1 of 1 item
1 Simulation running
Activate Windows
Go to Settings to activate Windows.