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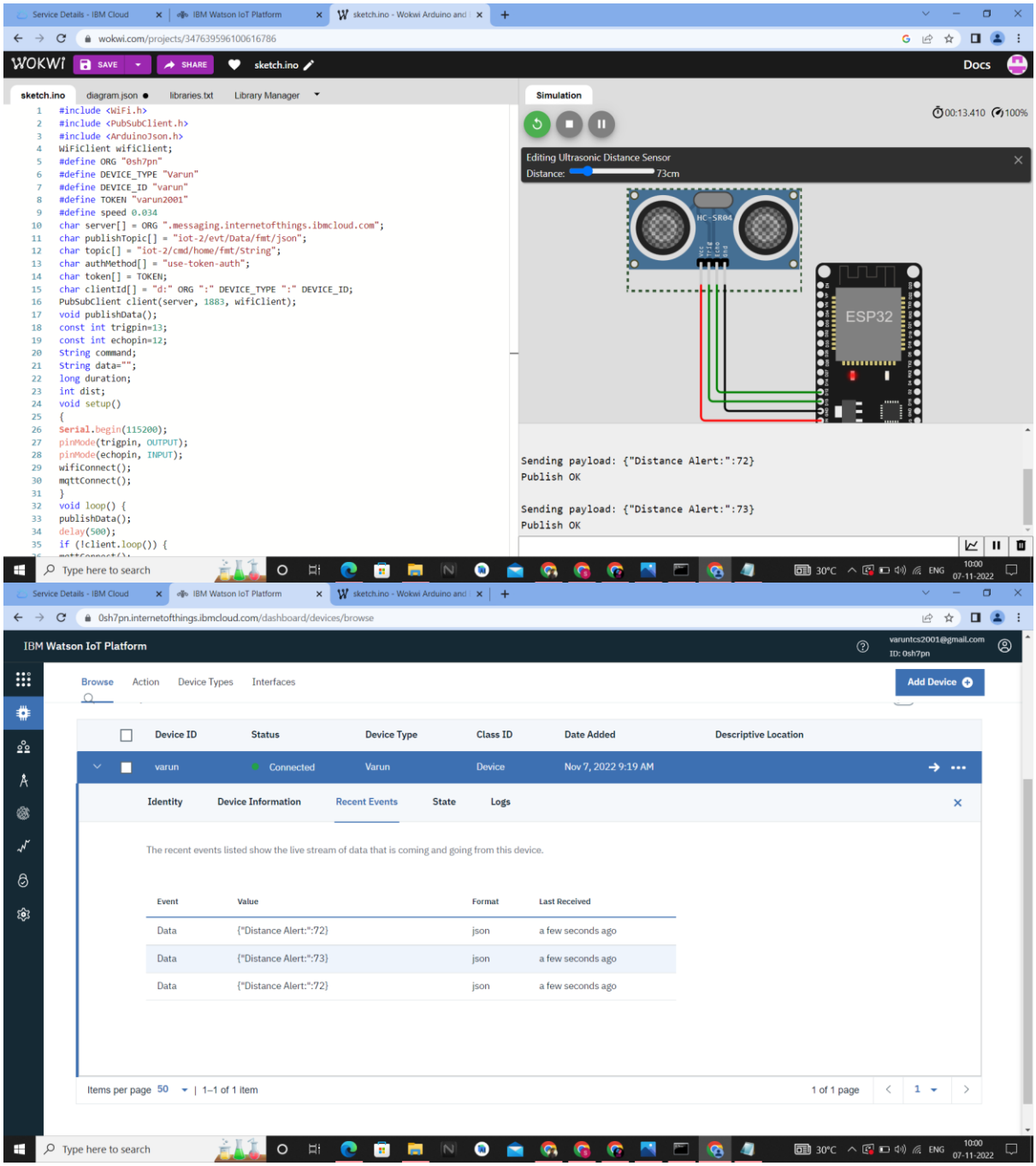
Assignment 4

```
#include <WiFi.h>
#include <PubSubClient.h>
#include <ArduinoJson.h>
WiFiClient wifiClient;
#define ORG "0sh7pn"
#define DEVICE_TYPE "Varun"
#define DEVICE_ID "varun"
#define TOKEN "varun2001"
#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=13;
const int echopin=12;
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(3000);
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");
}
}
}
```


Service Details - IBM Cloud
IBM Watson IoT Platform
sketch.ino - Wokwi Arduino and
wokwi.com/projects/347639596100616786
WOKWI
SAVE
SHARE
sketch.ino
Docs
sketch.ino
diagram.json
libraries.txt
Library Manager
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mqttConnect();
}
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delay(500);
if (!client.loop()) {
Simulation
00:13.410
100%
Editing Ultrasonic Distance Sensor
Distance:
73cm
HC-SR04
ESP32
Sending payload: {"Distance Alert:":72}
Publish OK
Sending payload: {"Distance Alert:":73}
Publish OK
Type here to search
30°C
ENG
10:00
07-11-2022

Service Details - IBM Cloud
IBM Watson IoT Platform
sketch.ino - Wokwi Arduino and
0sh7pn.internetofthings.ibmcloud.com/dashboard/devices/browse
IBM Watson IoT Platform
varuntcs2001@gmail.com
ID: 0sh7pn
Browse
Action
Device Types
Interfaces
Add Device
Device ID
Status
Device Type
Class ID
Date Added
Descriptive Location
varun
Connected
Varun
Device
Nov 7, 2022 9:19 AM
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:":72}
json
a few seconds ago
Data
{"Distance Alert:":73}
json
a few seconds ago
Data
{"Distance Alert:":72}
json
a few seconds ago
Items per page 50
1–1 of 1 item
1 of 1 page
1
Type here to search
30°C
ENG
10:00
07-11-2022