Assignment -4

Assignment Date	20 October 2022
Student Name	PRIYANKA S
Student Roll Number	111519104105
Maximum Marks	2 Marks

Question-1:

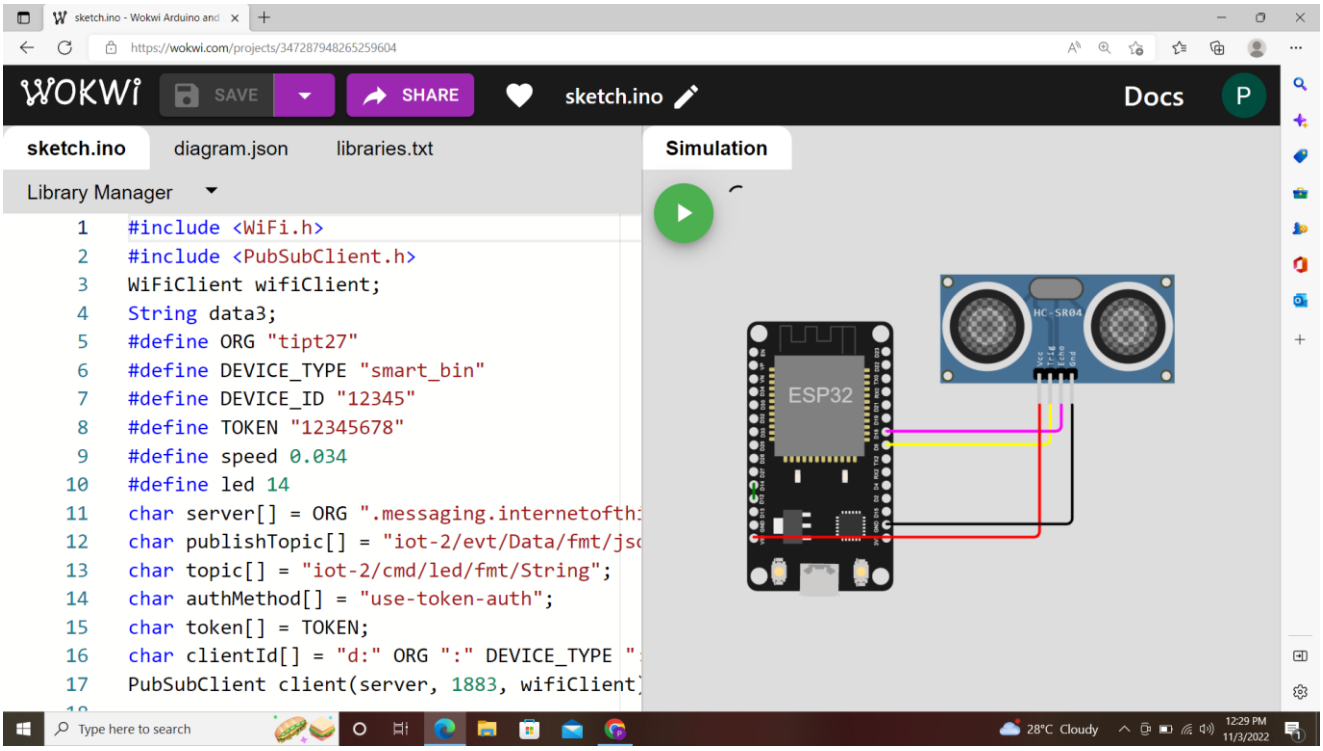
Write code and connections in wokwi for the ultrasonic sensor.
Whenever the distance is less than 100 cms send an "alert" to the IBM cloud and display in the device recent events.
Upload document with wokwi share link and images of IBM cloud

Solution :

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

WiFiClient wifiClient;

#define ORG "tipt27"
#defineDEVICE_TYPE"smart_bin
"
#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/led/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["AlertDistance:"]=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");
    }
  }
}
```

WOKWI LINK :https://wokwi.com/projects/347287948265259604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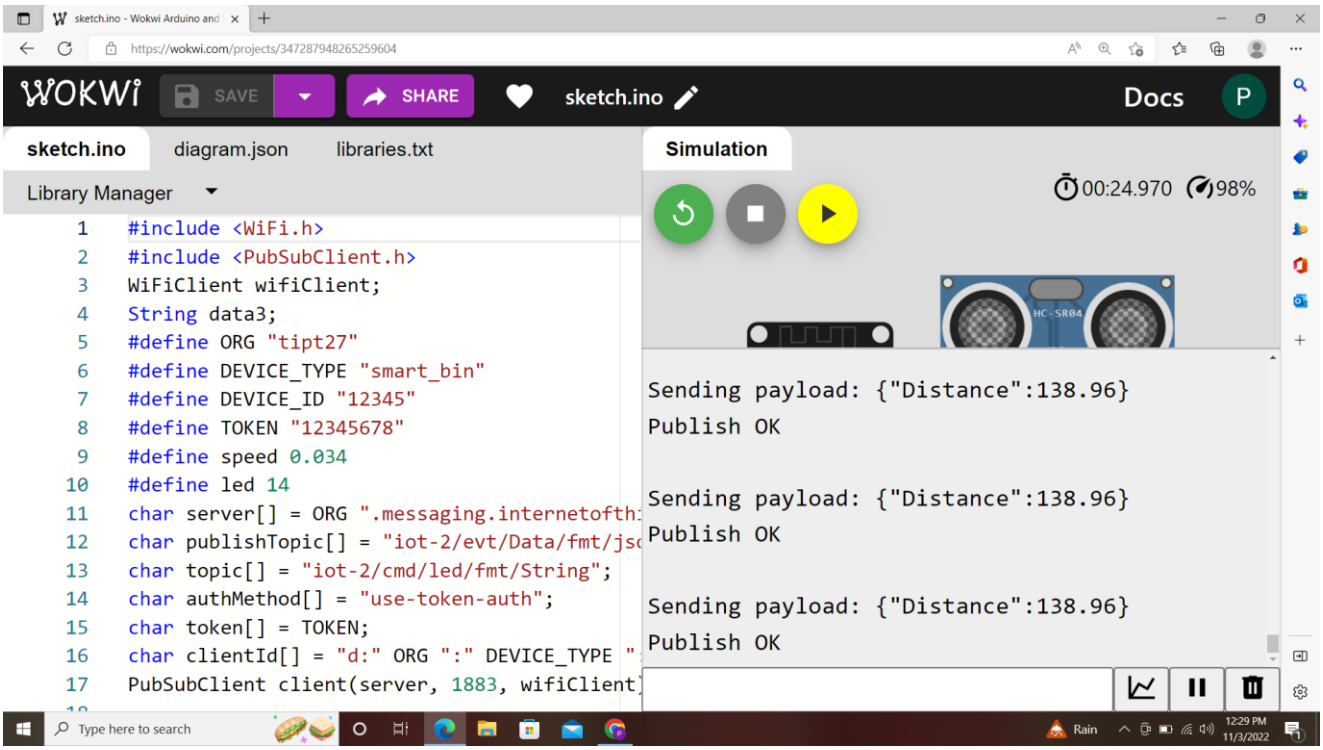
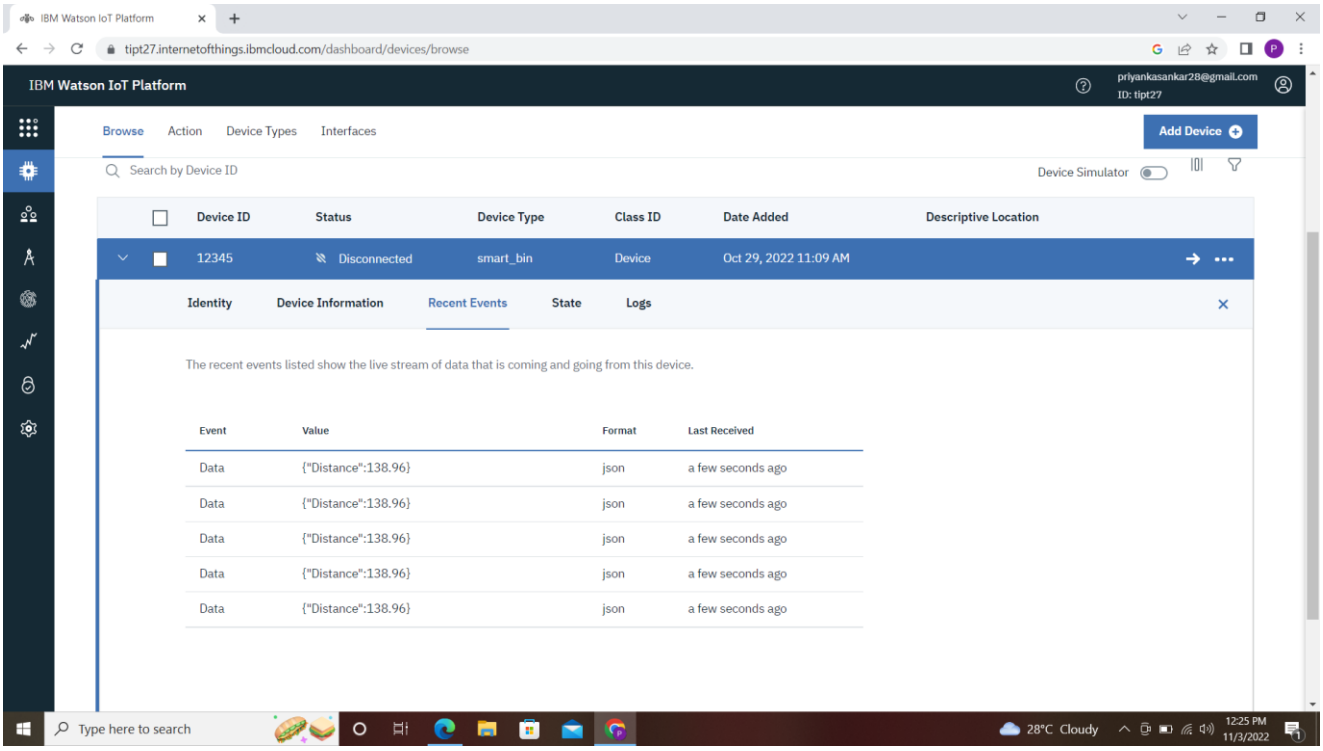
https://wokwi.com/projects/347287948265259604
WOKWI
SAVE
SHARE
sketch.ino
Docs
sketch.ino
diagram.json
libraries.txt
Library Manager
Simulation
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "tipt27"
#define DEVICE_TYPE "smart_bin"
#define DEVICE_ID "12345"
#define TOKEN "12345678"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofth
char publishTopic[] = "iot-2/evt/Data/fmt/js
char topic[] = "iot-2/cmd/led/fmt/String";
char authMethod[] = "use-token-auth";
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE "
PubSubClient client(server, 1883, wifiClient
ESP32
HC-SR04
Type here to search
28°C Cloudy
12:29 PM
11/3/2022


sketch.ino - Wokwi Arduino and
https://wokwi.com/projects/347287948265259604
WOKWI
SAVE
SHARE
sketch.ino
Docs
sketch.ino
diagram.json
libraries.txt
Library Manager
Simulation
00:24.970
98%
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "tipt27"
#define DEVICE_TYPE "smart_bin"
#define DEVICE_ID "12345"
#define TOKEN "12345678"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofth
char publishTopic[] = "iot-2/evt/Data/fmt/js
char topic[] = "iot-2/cmd/led/fmt/String";
char authMethod[] = "use-token-auth";
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE "
PubSubClient client(server, 1883, wifiClient
HC-SR04
Sending payload: {"Distance":138.96}
Publish OK
Sending payload: {"Distance":138.96}
Publish OK
Sending payload: {"Distance":138.96}
Publish OK
Type here to search
Rain
12:29 PM
11/3/2022


IBM Watson IoT Platform
tipt27.internetofthings.ibmcloud.com/dashboard/devices/browse
IBM Watson IoT Platform
priyankasankar28@gmail.com
ID: tipt27
Browse
Action
Device Types
Interfaces
Add Device
Search by Device ID
Device Simulator
Device ID
Status
Device Type
Class ID
Date Added
Descriptive Location
12345
Disconnected
smart_bin
Device
Oct 29, 2022 11:09 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":138.96}
json
a few seconds ago
Data
{"Distance":138.96}
json
a few seconds ago
Data
{"Distance":138.96}
json
a few seconds ago
Data
{"Distance":138.96}
json
a few seconds ago
Data
{"Distance":138.96}
json
a few seconds ago
Type here to search
28°C Cloudy
12:25 PM
11/3/2022