Assignment -4

Assignment Date	20 October 2022
Student Name	Kamala Kannan.M
Student Roll NumberTeam ID	210219106020/PNT2022TMID36769
Maximum Marks	2 Marks

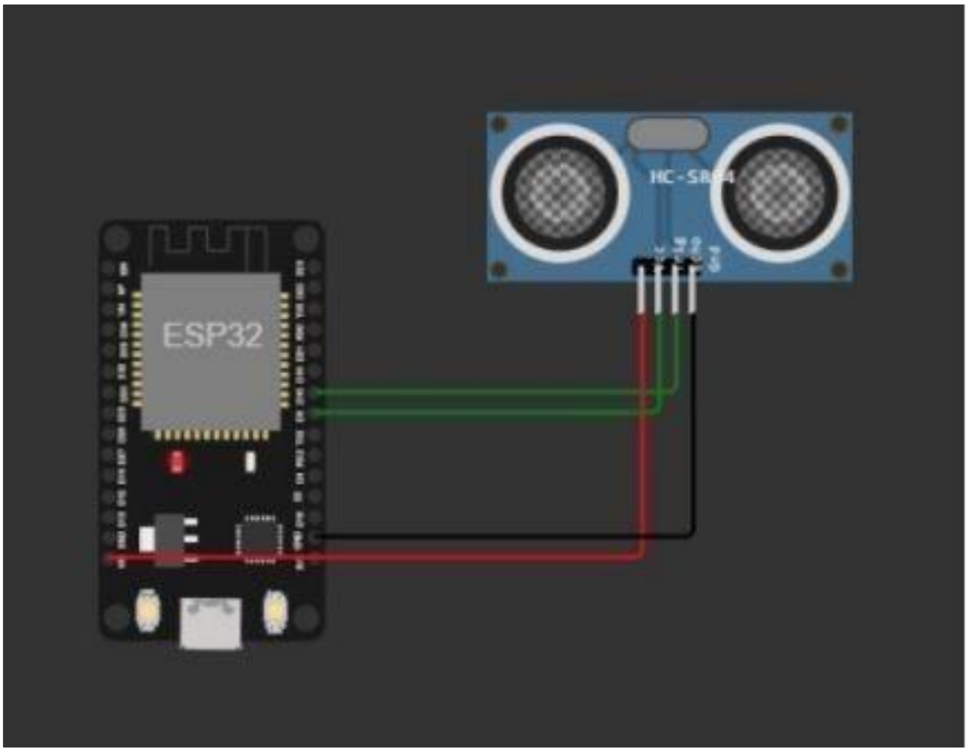
Question-1:

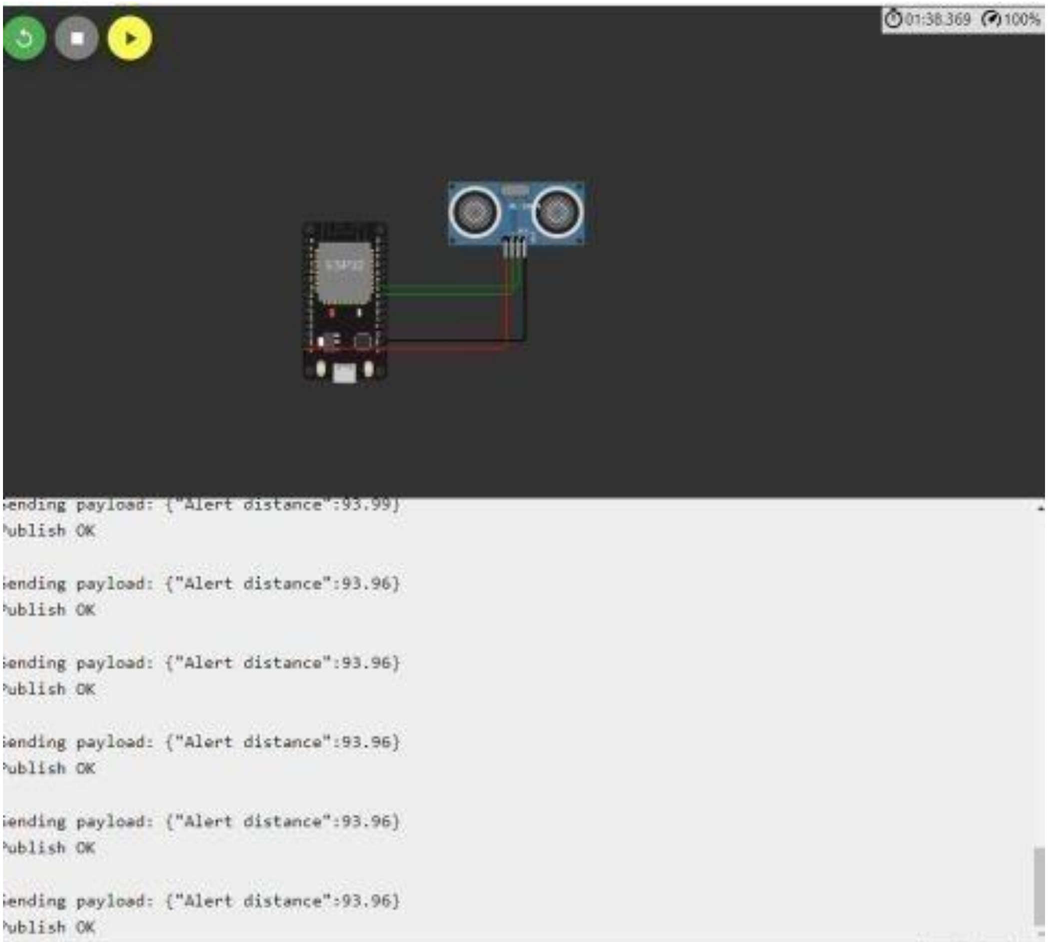
Write code and connections in wokwi for the ultrasonic sensor.
Whenever the distance is less than 100 cms send an "alert" to the IBM cloud and display in the device recent events.
Upload document with wokwi share link and images of IBM cloud

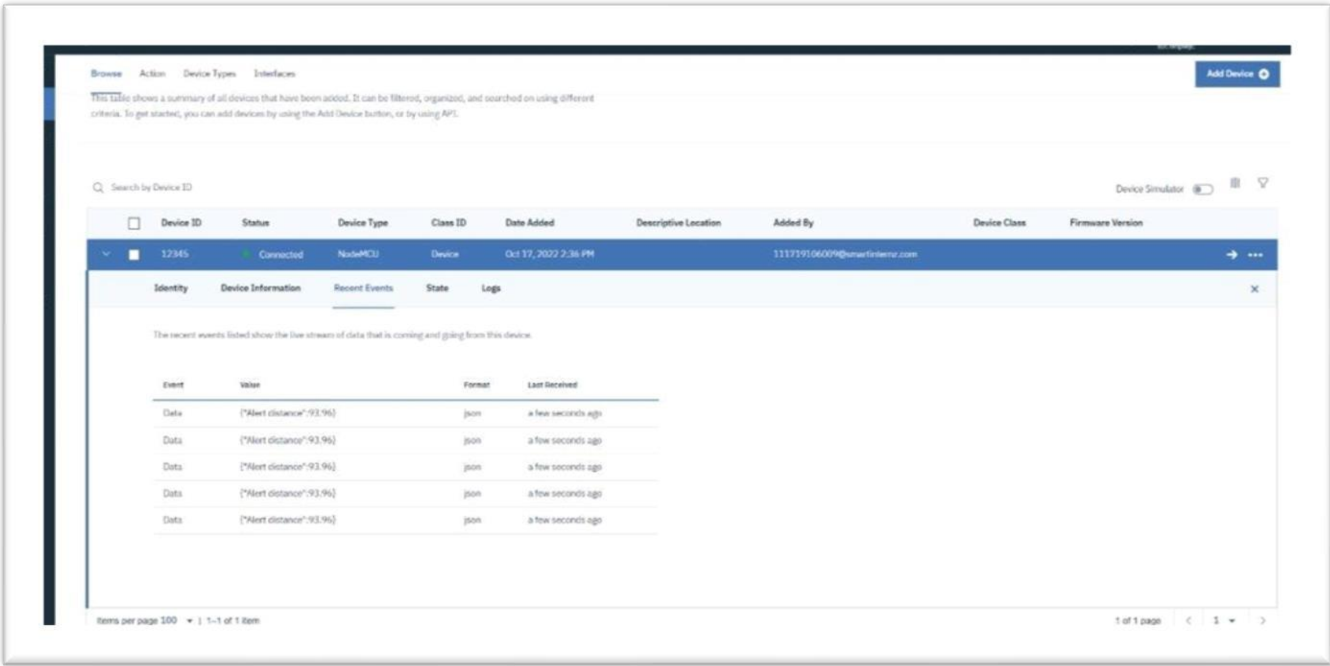
Solution :

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

WiFiClient wifiClient;

#define ORG "1vqi0j"
#define DEVICE_TYPE "raspberypi"
#define DEVICE_ID "12345"
#define TOKEN "123456789"
#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-tokenauth"; 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");
    }
  }
}
```


HC-SR04
ESP32


01:38.369
100%
ending payload: {"Alert distance":93.99}
'ublish OK
ending payload: {"Alert distance":93.96}
'ublish OK
ending payload: {"Alert distance":93.96}
'ublish OK
ending payload: {"Alert distance":93.96}
'ublish OK
ending payload: {"Alert distance":93.96}
'ublish OK
ending payload: {"Alert distance":93.96}
'ublish OK


Browse
Action
Device Types
Interfaces
Add Device
This table shows a summary of all devices that have been added. It can be filtered, organized, and searched on using different criteria. To get started, you can add devices by using the Add Device button, or by using API.
Search by Device ID
Device Simulator
Device ID
Status
Device Type
Class ID
Date Added
Descriptive Location
Added By
Device Class
Firmware Version
12345
Connected
NodeMCU
Device
Oct 17, 2022 2:36 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
Data
{"Alert distance":93.96}
json
a few seconds ago
Data
{"Alert distance":93.96}
json
a few seconds ago
Data
{"Alert distance":93.96}
json
a few seconds ago
Data
{"Alert distance":93.96}
json
a few seconds ago
Data
{"Alert distance":93.96}
json
a few seconds ago
Items per page 100
1–1 of 1 item
1 of 1 page