Assignment-4

Assignment Date	20 October 2022
Student Name	MADALA TEJA
Student Roll Number	210419106059
Maximum Marks	2 Marks

Question-I:

Write code and connections in work for the ultrasonic sensor.

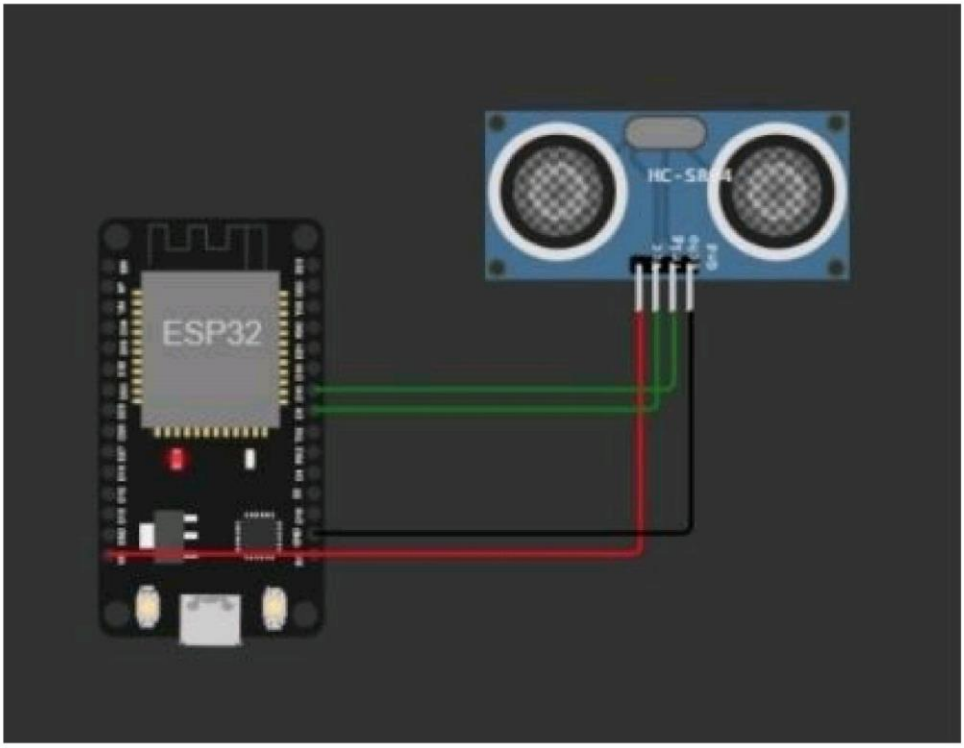
Whenever the distance is less than 100 cms send an "alert" to the IBM cloud and display in the device recent events.

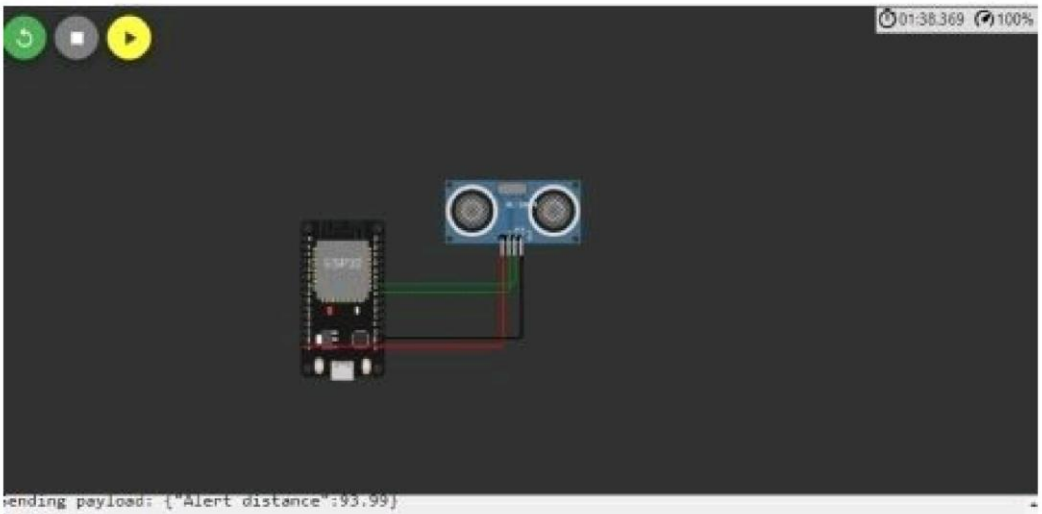
Upload document with wokwi share link and images of IBM cloud

Solution :

```
#include <WiFi.h>
#include <PubSubC1ient.h>
#include<ArduinoJson.h>

WiFiC1ient wifiC1ient;

#define ORG "nhpwjc"
#define DEVICE_TYPE "raspberypi"
#define DEVICE ID "12345"
#define TOKEN "123456789"
#define speed 0.034

char server[] = ORG " .messaging.internetofthings.ibmcloud.com" ;
char publish Topic[] - " iot -2/evt/Data/fmt/j son " ; char topic[] = "
iot-2/ cmd/home/fmt/String" ; char authMethod[] — "use-token-
auth" ; char token[] = TOKEN; char clientld[] -- "d:" ORG DEVICE TYPE
DEVICE ID; PubSubC1ient client(server, 1883, wifiC1ient); void
publishData();

const int trigpin=5;
const int
echopin=18; String
command; String
data="";

long duration;
int dist;

void setup()

  Serial begin(1152ØO);
  pinMode(trigpin,
  OUTPUT) ; pinMode
  (echopin, INPUT) ;
  wifiConnect();
  mqttConnect();
```

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

  if ( !client.loop())
    { mqttConnect();
void wifiConnect() {
  Serial. print("Connecting to 'I ); Serial. print( "Wifi " ) ;
  WiFi.begin( "Wokwi -GUEST" , "", 6)while (WiFi.status()
  WL CONNECTED) {delay(500);
    Serial. print(".");
   Serial. print("WiFi connected, IP address:          Serial. print In(WiFi. locallP());

void  mqttConnect()  {  if  (  !
  client. connected()) {
    Serial. print("Reconnecting MQTT client to Serial . println(server) ;
    while ( ! client. connect(clientld, authMethod, token)) { Serial. print
    (".");delay(1000);
    initManagedDevice( ) ;
    Serial. printlno;


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(tr1gp1n,• • LOW);
  duration=pulseln(echopin,HIGH);
  dist=duration*speed/2;

       <100){
    DynamicJsonDocumen          t
    doc(1024); String payload; doc [
    "AlertDistance   :   "   ]=dist;
    serializeJson(doc,   payload);
    delay (3000); Serial. print ( " " ) ;
    Serial. print("Sending payload: ");Serial. print In (payload) ;
    if (client. publish(pub1ishTopic, (char*) payload.c_str())) {
      Serial. print1n("Pub1ish OK");
    } else {
      Serial. print In("Publish FAILED");
```






```
ending payload: {"Alert distance":93.99}
ublish OK

ending payload: {"Alert distance":93.96}
ublish OK

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ublish OK

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ublish OK

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```

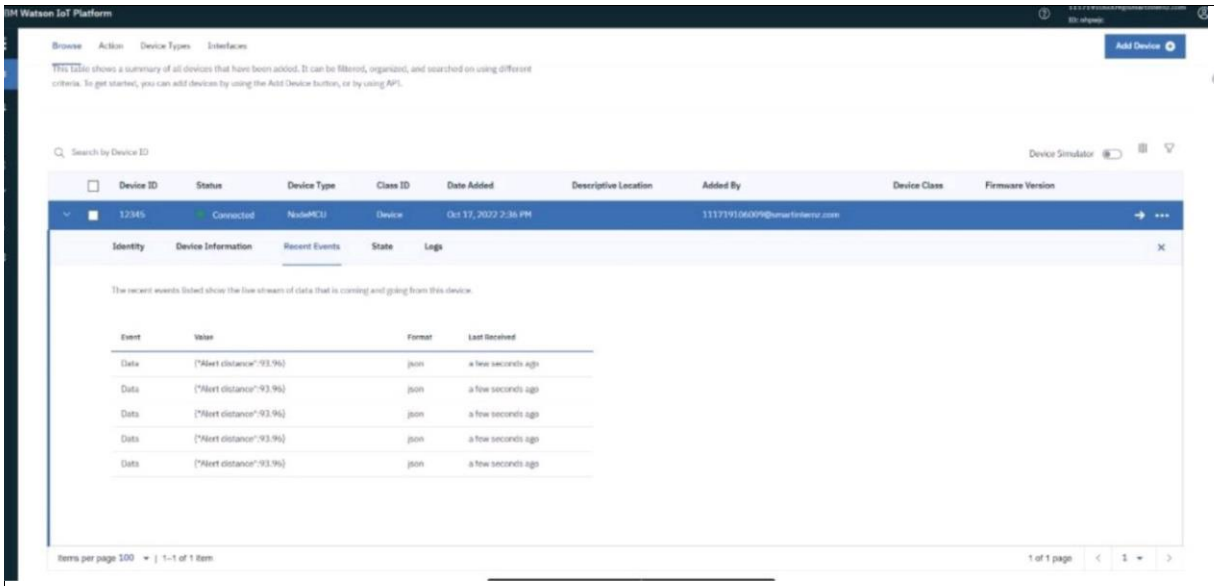
IBM Watson IoT Platform
Browse
Action
Device Types
Interfaces
Add Device
This table shows a summary of all devices that have been added. It can be filtered, organized, and searched on using different criteria. To get started, you can add devices by using the Add Device button, or by using API.
Search 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":93.9%}
json
a few seconds ago
Items per page: 100
1–1 of 1 item
1 of 1 page