Assignment-4

Assignment Date	20 October 2022
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Student Roll Number	210419106025
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();
```

```cpp
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");
```
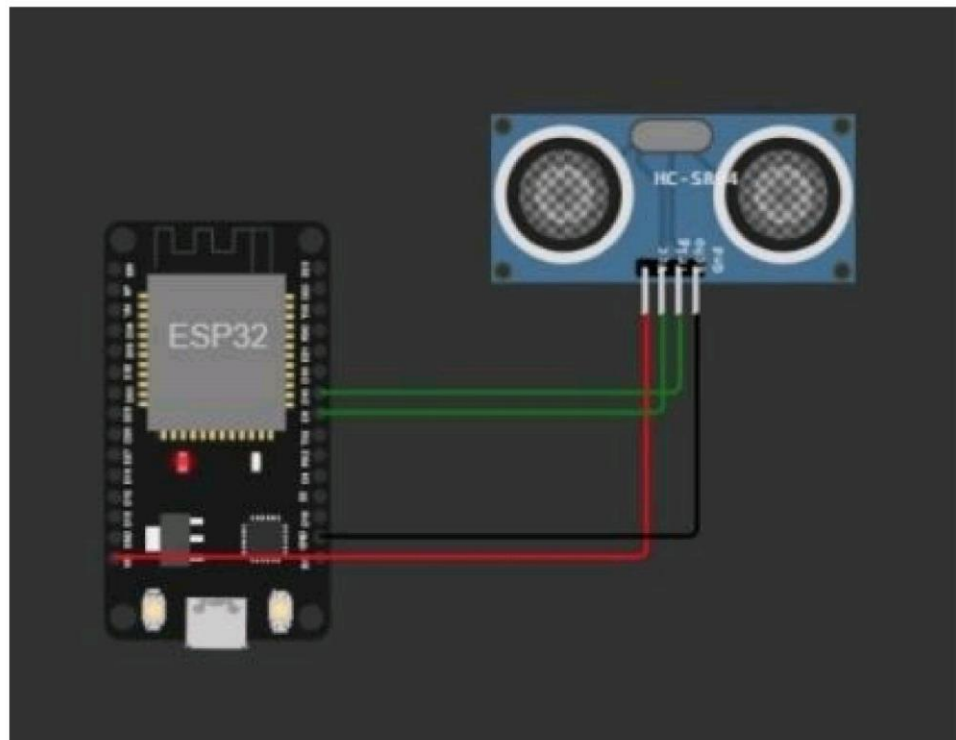
Sending payload: {"Alert distance":93.99}
Publish OK

Sending payload: {"Alert distance":93.96}
Publish OK

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Publish OK

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Publish OK

IM 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		1117191060098@smartinternz.com		

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   ‹   1 ▼   ›