ASSIGNMENT-4

WOKWI PROGRAM

ASSIGNMENT DATE	26 OCTOBER 2022
TEAM ID	IBM- PROJECT-PNT2022MID21348
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MAXIMUM MARK	2 MARKS

Smart Waste Management System for Metropolitan Cities

ASSIGNMENT 4:

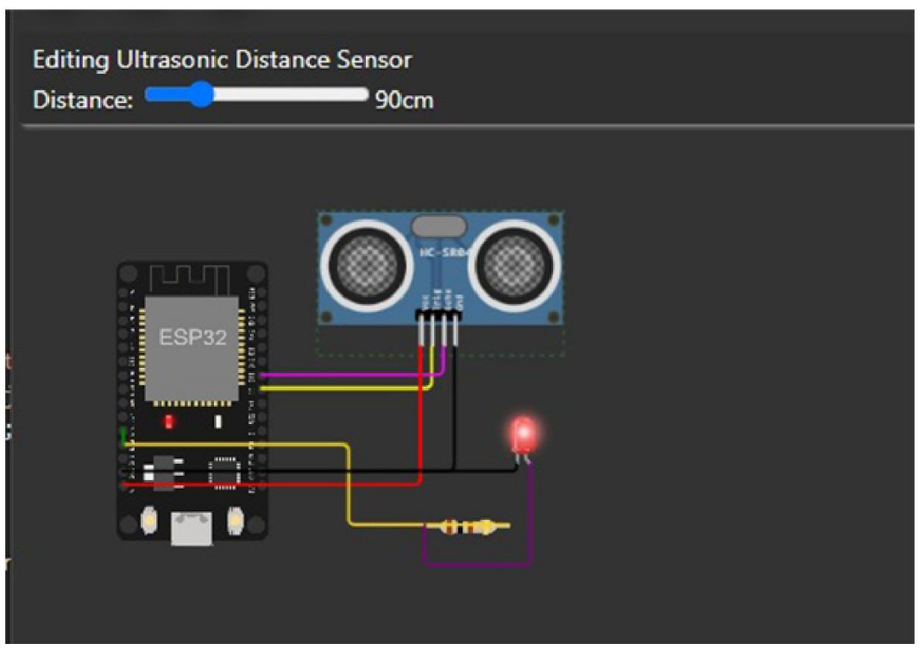
Write code a1nd connections in wokwi for ultraso1nic sensors.
Whenever distance is less than 100 ems send "alert[11] to ibm cloud and display in device recent events.
Upload document with wokwi share link and ima1ges of ib1m cloud

CODE•

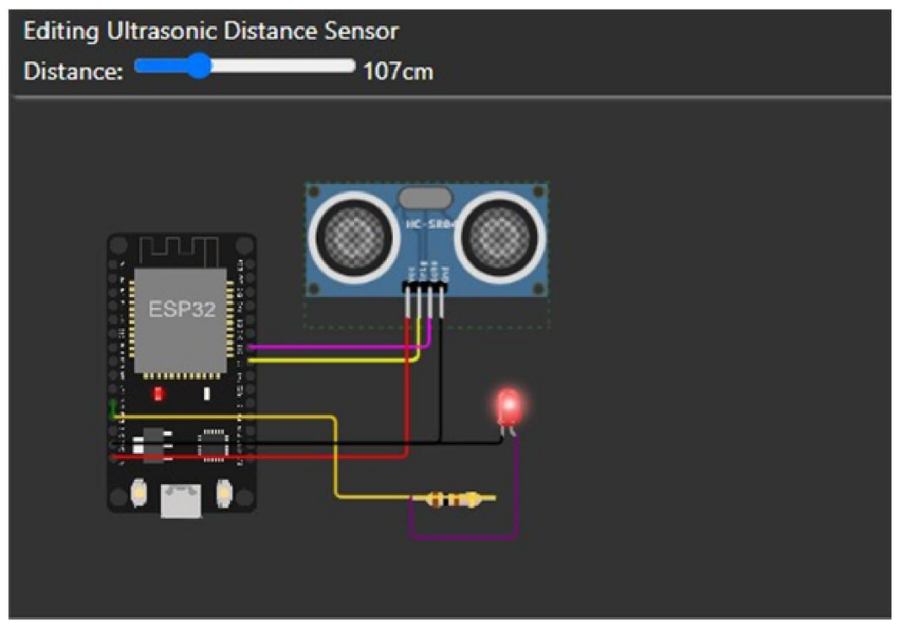
```
#include <WiFi.h>
#include <PubSubClient.h> WiFiClient
wifiClient;
String data3;
#define ORG "4yi0vc"
#define DEVICE TYPE [11]nodeMcu[11] #define
DEVICE_ID [11]Assi,g1nment4" #define TOKEN
[11]123456789"
#define speed 0.034
#define led 14
char server[]= ORG ".messaging.internetofthings.ibmcloud.com"; char publishTopic[] = [11]iot-
2/evt/Data/fmt/json";
char topic[] = "iot-2/cmd/home/fmt/String"; char authMethod[]
= [11] U1se-token-auth";
char token[] = lOKEN;
char clientid[] = [11]d:[11] ORG [11 11] DEVICE_TYPE [11 1] DEVICE_ID;
PubSubClient client(server1 1883, wifiClient); void
publishData();
canst int trigpin=S; canst int
echopin=18; String command;
String data="";
long duration; float
dist; void setup()
{
  Serial.begin(115200); pinMode(led,
  OUTP1UT); pinMode(trigpin, OUTPUT);
  pinMode(echopin, INPUT);
  wifiConnect(); mqttConnect();
}
 void loop() {
  bool isNearby = dist< 10[1]0;
  digitalWrite(led, isNearby);

  publishData(); delay(S0[1]0);

  if (!client.loop()) { mqttCon1nect();
  }
}
void wifiC011nect() {
  Serial.print([11]Connecting to"); serial.print("Wifi"); WiFi.begin("Wokwi-
GUEST", "", 6);
while (WiFi.status() != WL_CONNECTED) { delay(S00);
  Se r1a I.pr1nt( ll ll);
}
```

```
 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(500);
    }
    initManagedDevice(); Serial.println();
  }
}

void initManagedDevice() {
  if (client.subscribe(topic)) {
    // Serial.println(client.subscribe(topic)); Serial.println("IBM
    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){
    String payload = "{\"Normail Distance\":"; payload += dist;
    payload += "}";

    Serial.print("\n"); Serial.print("Sending
    payload:"); Serial.println(payload);
    if (client.publish(publishTopic, (char*) payload.c_str())) { Serial.println("IPublish OK");
    }

  }
    if(dist>101 && dist<111){
    String payload = "{\"Alert distance\":"; payload += dist;
    payload += "}";

    Serial.print("\n"); Serial.print("Sending
    payload:"); Serial.println(payload);
     if(client.publish(publishTopic, (char*) payload.c_str())) {
       Serial.println("Warning crosses 110cm -- it automaticaly of the loop"); digitalWrite(led,HIGH);
    }else {
       Serial.println("IPublish FAILED");
    }

  }


  }
  void callback(char* subscribeTopic, byte* payload, unsigned int payloadLength){ Serial.print("callback invoked for
  topic:");
  Serial.println(subscribeTopic); for(int i=0;
  i<payloadLength; i++){
    dist+= (char)payload[i];
  }
  Serial.println("data:"+ data3); if( data3=
  ="lighton" ){
    Serial.println(data3);
    digitalWrite(led,HIGH);
  }
  data3="" ·I
}
```

OUTPUT




```
Sending payload: {"Normal Distance":89.95}
Publish OK

Sending payload:{"'Normal Distance":89.95}
Publisl-OTKI

Sending payload:{"Normal Distance":89.95}
PUJblisl-TI OK

Sending payload:{"Normal Distance":89.98}
Publish OK

Sending payload:{"Normal Distance":89.95}
PUJblisl-TI OK

Sending payload:{"Normal Distance":89.95}
PUJblish OK
```




```
Sending payload:{"Alert distance":106.98}
Warning crosses 110cm -- it automaticaly of the loop

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Warning crosses 110cm -- it automaticaly of the loop
```
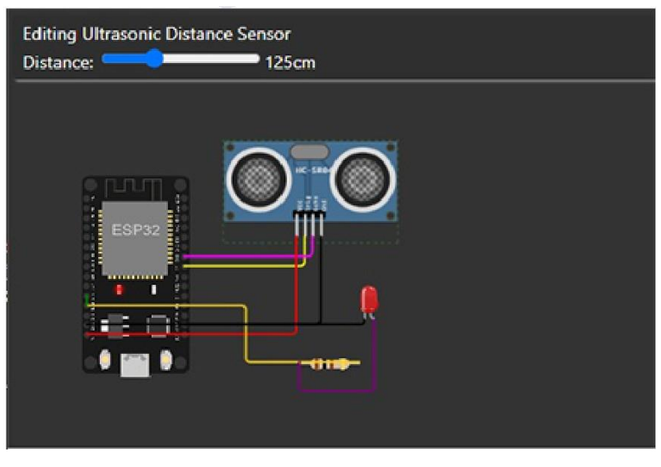

1) when distance under 1001cm
it wil show norm1ol dist1once




```
Sending payload:{"Alert distance":106.96}
\-Jarning ,i:;rosses 110 m ". it • to111aticaly of the l<,op

S@ndiog payloa,d:{"Al@rt distanc@":106.98}
War"'nir11g cros.s.es 110,i:m -- it automaticaly cf t e loop

Sending payloa·d:{"Alert distance'":106.98}
hlaimi11g crosses 110 m ". it utomaitic ly of the l,oop

S@ndir.g payloa.d: {"Al•rt distanc@":106.98}
\-'Jarning ,cr,os.s.es 110<m -- it automaticaly of the loop

Sending p•yloa-d:{"Alert distance":106.98}
\J.arni11g crosses 110 m ". it auto■aticaly of the loop

Sendir1g payloa.d: {"Alert distanc@":106.98}
\-Jarnir.g crosses 110<m ". it automaticaly of the loop
```

2) when distance cross 100 cm
it wil show ALERT with warning mes,sage
distance

when it cross above 110 cm it totaly
move to iff state once it reduce to 110 it on again

IBM CLOUD DUPUY

Recent Events

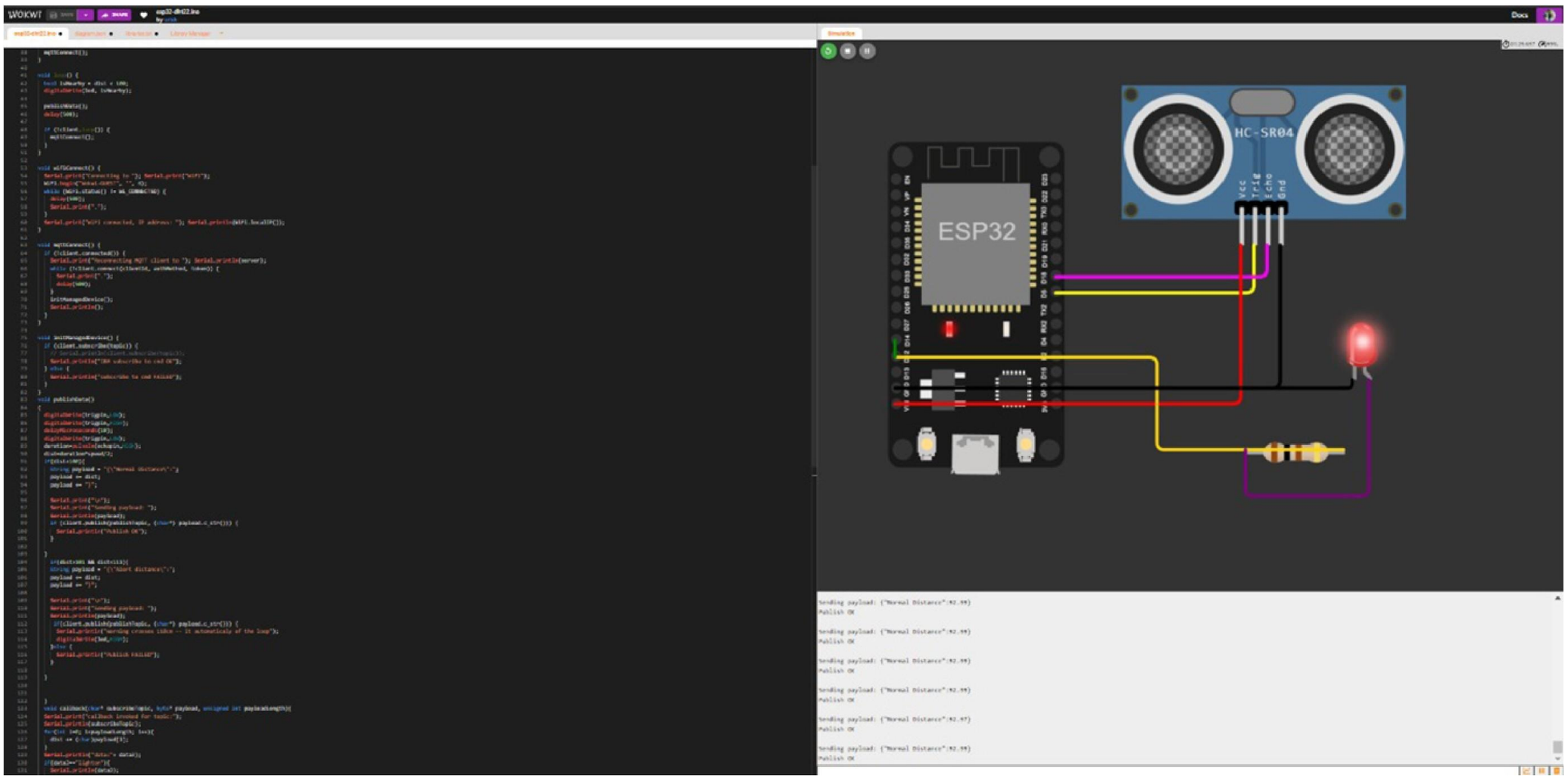
Thie reci.!nt eve111ts. li:!lited show the liv-e :stream of da.ta thai i:!I coming and ,B.Oing from this device_

E'a'i!nt	Vi!il!H!	Farm,at	La:5,I Ri!'C L,,
Drn111	i•No,rme.l Dis:1anc:E":.69.95}	j Ol'l	aiew s;e,cQOd,5, s.J!:o
Dai.a	r-N'ormal Dislanoe";;fl'9.. 5}	j!:ion	a lew 1:.eoom:!s ai1:o
Data	-No-rmal Ois1.an«i"::fl'9.95}	j:son	a *lew* Se.t(ld& a.go,
011111	l"Nonnal Di•oon0<>":a9.95)	j:son	a icw | .:iKOOi:b qo
Da;:-a	*i* Normal Dis1anOE!"::B'9_'95}	json	a iew seconds a130

Recentt i;;vents

The reeeru events li3l-.ci show the liq,:s-1r,e.am of datei 1hat is coming e.nd 10mg from tti1s device.

E...,I	V•lue	Formml	LulReocm:d
Oa:a,	{'Alort d, tanoe':106. SI		a few seconds ago
O.,.	{"Alon dilitanot":107.03\	JSOn	a few seconds ago
Oa:"	{'Alon d<Stane<t":106.981	json	a few seconds ago
0.&?ll	{'Alon d- 1;.n •:106.911}		a few seconds ago
Datil	{"Alt;!!cfitooQi":1Oij'.1 1		a few seconds ago



Co1111ect io11 Infor1naition

Basic co nee ion in ormation about this device.

Device ID	Assignmen 4
Device Type	nodeMcu
Date Added	23 Oct 20.22 07:20
Added By	'920219 10 302@smartinternz.com
Connection Status	Disconnec ed Last Connected: 01 NOV 202216:5'7 Clien Address: 145 ..40.94.93 Insecure Duration: 4 minutes Data Transferred: 1 .4 KB

Recent Eve11ts

The recent events Listed shows the live stream of data that is coming and going om his device.

E n	Value	Format	Last Received
Da a	{" orn1al Distanc:e":92.99.	JSOn	a few seconds ago
Da a	{" orn1al Distance":92.99.	JSOn	a few seconds ago
Da a	{" orn1al Distance":92.99.	JSOn	a few seconds ago
Da a	{" ormal Distance":92.99.	JSOn	a few seconds ago
Da a	{" orn1al Distance":92.99	JSOn	a few seconds ago