Assignment 4

WOKWI PROGRAM

Assignment Date	23 OCT 2022
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Maximum Marks	2 Matts

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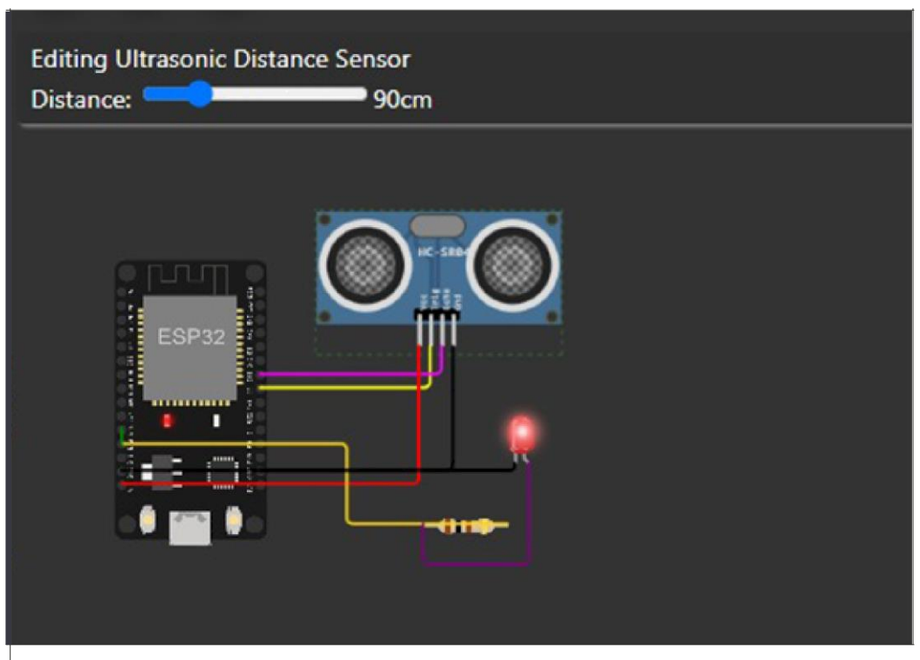
Smart Waste Management System for Metropolitan Cities
ASSIGNMENT 4:
Write code and connections in wokwi for ultrasonic sensors.
Whenever distance is less than 100 cms send "alert" to ibm cloud and display in device recent events.
Upload document with wokwi share link and images of ibm cloud

EBBE

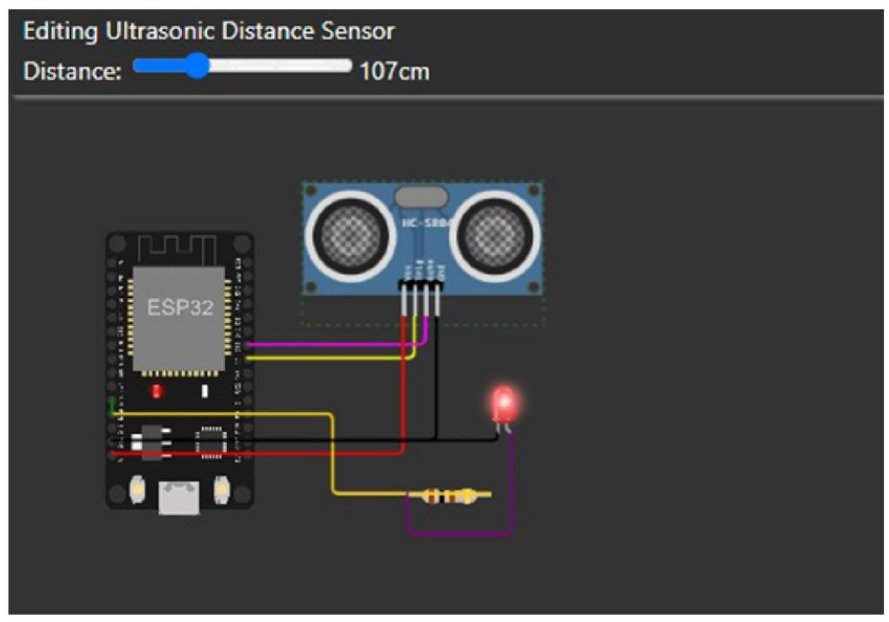
```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data 3;
#define ORG "4yi0vc"
#define DEVICE_TYPE "nodeMcu"
#define DEVICE_ID "Assignment4"
#define TOKEN "123456789"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/Data/fmt/json”;
char topic[] = "iot-2/cmd/home/fmt/String”;
char authMethod[] = "use-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;
float dist;
void setup()

  Serial. begin(115200);
  pinMode(led, OUTPUT);
  pinMode(trigpin, OUTPUT);
  pinMode(echopin, INPUT);
  wifiConnect();
  mqttConnect();

 void loop()
  bool isNearby = dist < 100;
  digitalWrite(led, isNearby);

  publishData();
  delay(500);

  if (!client.loop())
    mqttConnect();


void wifiConnect()
  Serial. print("Connecting to "); Serial. print(”Wifi");
  WiFi. begin("Wokwi-GUEST", "", s);
  while (WiFi.status() != WL_CONNECTED) {
    delay(500);
    Serial. print(".");
```

```
 Serial. print("WiFi  connected,  IP address:  ");  Serial.println(WiFi.localIP());


void  mqttConnect() {
  if (!cIient.connected()) (
     Serial. print("Reconnecting  MQTT  client  to  "); Serial.println(server);
     while (!cIient.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);
  deIayMicroseconds(10);
  digitalWrite(trigpin,LOW);
  duration=puIseIn(echopin,HIGH);
  dist=duration”speed/2;
  if(dist< 100){
     String payload = "(\"NormaI Distance\":";
     payload  += dist;
     payload  += "}";

     SeriaI. print("\n");
     Serial. print("Sending  payload:  ");
     Serial. printIn(payload);
  if  (client. publish(publishTopic,  (char”)  payload.c_str()))  {
     Serial. printIn("PubIish  OK");



if(dist> 101 && dist< 111)(
String  payload  =  "(\"AIe1 distance\":”;
payload  += dist;
payload  += ")";

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


void callback(char* subscribeTopic, byte* payload, unsigned int payloadLength){
Serial.print("callback invoked for topic:");
Serial.println(subscribeTopic);
for(int i=0; i<payIoadLength; i++)(
   dist  += (char)payIoad[i];

Serial.println("data:"-I- data 3);
if(data 3=="lighton")(
   Serial. println(data 3);
   digitaIWrite(Ied,HIGH);

data 3="";
```

Ou u

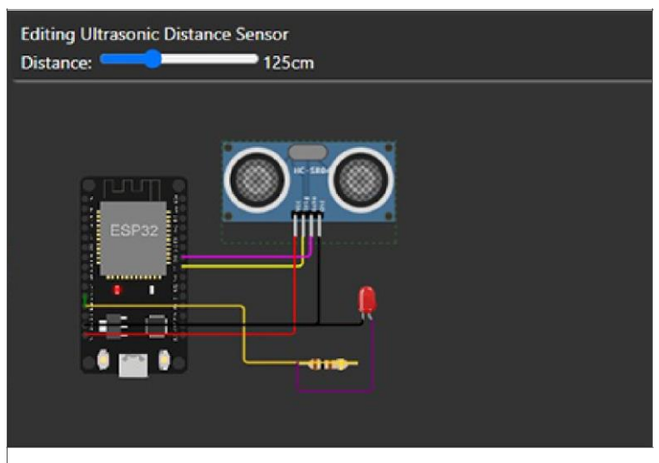



```
Sending payload: {“Normal Distanae”:89.95}
Publish OK

Sending payload: (“Normal Di5tanCR :89.95}
Publish OK

Sending payload: {“Normal Distance”:89.95}
Publish OK

Sending payload: @“Norma1 Distance”:89.98
Publish OK

Send1ng payload: {"Nor’ma1 Dzstance":89.95}
Publ1sh OK

Sending payload: (“Normal Distance”:89.95a
Publish OK
```




```
Sendżng pay1oad: {"A1ert  d1stance":1Oó.98}
Waming crozses 110cm -- it automaticaly of the loop

Sending payload: (”Alert distanae":106.98}
Waming crosses 110cm    it automaticaly of the loop

Sending payload: (“Alsrt distanae“:1B6.98}
Waming crosses ll0cm    it automaticaly of the loop

Sending payload: \“Alert distance“:106.98}
Waming crosses 1I0cm    it automaticely of the loop

Sending payload: (”AlRrt distance":106.98}
Waming crosses llecm -- it automaticaly of the loop

Sendżng pay1oad: {"A1ert d1stanCe":1Oó.98}
Waming crozses 110cm    it automaticaly of the loop
```

1) when distanae under **100** cm
itwil show normal distanae




```
Send*ng payload: ("Ależ dżstante":166.96}
Waming crosses 1łecm -• it automaticzły of the loqp

Sending payload: (“Alert distance’:ie .  )
Waming cresses llBcm -- it autbmaticały of the loop

Sendżng payload  ("Al ent dżstance"  106.98}
Harn1ng cresses 116cm -- 1t  automatźcaJ y eT the  loop

Sending payload: (“Alert distance’:106.98)
Waming crosses 110cm -- it automaticaJy of the loop

Sending payload: ("Alert  dżstance":106.98}
Harnżng crosses 11ec- --  iŁ automati CaJ y od the  loop

Sending payload: (“AleM distance’:106.96)
Waming crosses l10cm -- it eutomaticeJy of the loqp
```

2) whendistonce cross *ł00* cm
itwil showALERT with waming message
distanae

when it cross above JJB cm ittotaly
move to ifl state once it reduce to JJB it on again

IBM CLOUD OUPUT

Recent Events

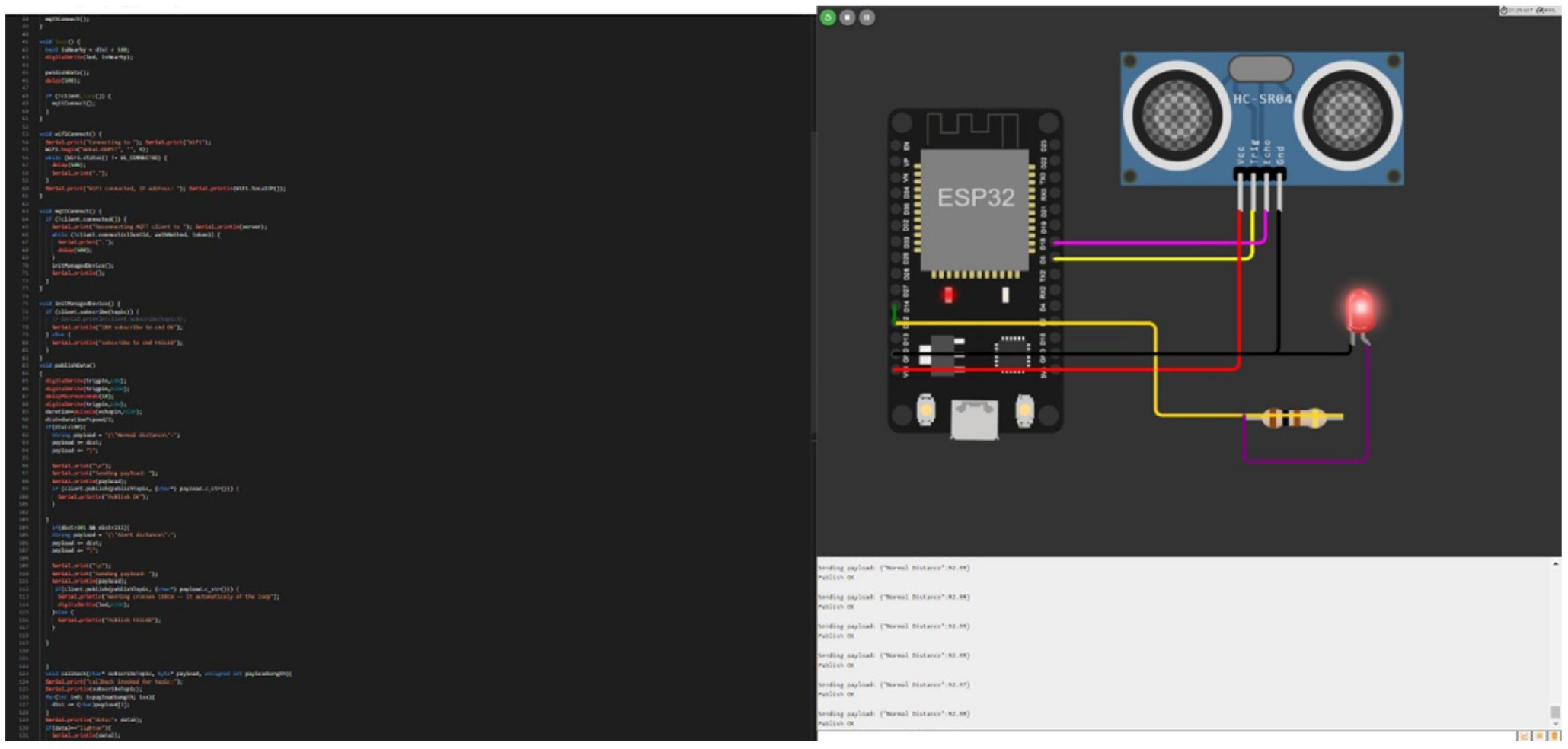
The recent events listed show the live stream of data that is coming and going from this device.

Even ł	Yal e		Last Received
Data	-' h ermal Dis:an że'":89.9 tj	jSO0	a few seconds ago
Data	h ormal D is•ance".69.95]	json	a'ex’sezonosago
Da•a	:. Ł. ormal D i+•an -e"J89.95}	] 6ON	a ‘ev. seconcz ago
Data	hormsl Dis•an oe“.89.95i	jSOn	a few seconds ago
Data	h ormal D is-an.e".89.95]	json	a few seconds ago

Recei t Events

The recent events listed show the live stream of data that is coming and going from this device.

Evenl	Value	Format	Lcsł Rece
0a:a	["Alert distance":106.98]	json	a few seconds ago
D a:a	'' Alei• d› s\anc•. .107.03:	ISC tt	a ”^..5' se:cDds agO
Data	” Ater: dlstąnce."106.98.	jSOn	a few seconds ago
Da!a	,“ Aler* d'stanc . .106.98 ;	ı* Cn	a few seconds ago
Data	.' Atert d›stancs :t06.96.	ı scn	a few seconds ago



Coni»ectioi» Inforn ation

Basic connection information about this device.

Device ID	Assignment4
Oevice Type	nodeMcu
Date Added	23 Oct 2022 07:20
Added @	920219104302 łź'«smar\internz.com
Connection Status	Disconneted Last Connected: 23 Oct 2022 16:57 Client Address: 145.40.94.93 Insecure Duration: 3 minutes Data Transferred: 14.4 KB

Recent Events

The recent ex'en:E li»:»d sno'.'.’ the I pi ytt ean o" data that ≦ coming and yo”n¿ f om .ns de'.›c°..

Event	Valuc	Format	Last Received
Data	|"Normal Distance":92,99/	json	a fe'a seconds ago
Data	{"Normal Distance":92.99/	json	a fe'a seconds ago
Da:a	{"Normal Distance":92.99:	json	a fe'a seconds ago
Dara	{"Normal Distance":92,99:	json	a fe'a seco-nds ago
Dara	{"Normal Distance":92,99/	json	a fe'a seco-nds ago

WORIś FLOW LIIśE IN description