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" to ibm cloud and display in device recent events.

Upload document with wokwi share link and ima1 ges of ib1m cloud

```
CODE•
#include <WiFi.h>
#include <PubSubClient.h> WiFiClient
wifiClient;
String data3;
#define ORG "4yi0vc"
{\it \#define \ DEVICE \ TYPE}^{11} {\it nodeMcu}^{11} {\it \#define}
DEVICE_ID 11 Assi,g1nment4" #define TOKEN
<sup>11</sup>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[] = IOKEN;
char\ clientid[] = {}^{11}d: {}^{11}\ ORG {}^{11\ 11}\ DEVICE\_TYPE {}^{11\ 1}\ DEVICE\_ID;
PubSubClient client(server<sub>1</sub> 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,
  OUTPIUT); pinMode(trigpin, OUTPUT);,
  pinMode(echopin, INPUT);
  wifiConnect(); mqttConnect();
 void loop() {
  bool is Nearby = dist < 10^{1} 0;
  digitalWrite(led, isNearby);
  publishData(); delay(S0<sup>1</sup>0);
  if (!client.loop()) { mqttCon1nect();
void wifiC011nect() {
  Serial.print( Connecting to"); serial.print("Wifi"); WiFi.begin("Wokwi-GUEST", "", 6);
  while (WiFi.status() != WL_CONNECTED) { delay(S00);
    Ser1al.pr1n<sup>t(II,II)</sup>;
```

```
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.c:onnect(clientld, 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.println1("subscribe to cmd FAILED");
void publishDa1ta()
  digitalWrite(trigpin,IOW);
  digitalWrite(trigpin,IHIGIH);
  delayMicroseconds(10); digitalWrite(trigpin,IOW);
  duration=pulseIn(echopin,H[GH);
  dist=duratio,n*speed/2;
  if(dist<100){
    String payload = "{\"Normail Distance\":"; payload += dist;
   payload += 11
    Serial.print("\n"); Serial.print(11 Sending
    payload:"); Serial.println(payload);
    if (client.publish(publishTopic, (char*) payloadl.c_str())) { Serial.println("IPrublish OK");
    if(dist>101 && dist<111){
    String payload = "{\11 Alert dlistance\1 payload += dist;
    payload +=
    \textbf{Serial.print(}^{11} \\ \textbf{\ } \textbf{\ } \textbf{\ } \textbf{Serial.print(}^{11} \\ \textbf{\ } \textbf{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);
      Serial.println("IPrublish FAILED");
 void callback(char* subscribeTopic, byte* payload, unsigned]int payloadLength){ Serial.print(11 callback invo,ked for
  topic:");
  Serial.println(subscribeTopic); for(int i=0;
  i<payload|Length; i++){
    dist+= (char)payload[i];
```

Serial.println("data:"+ data13); if(data3=

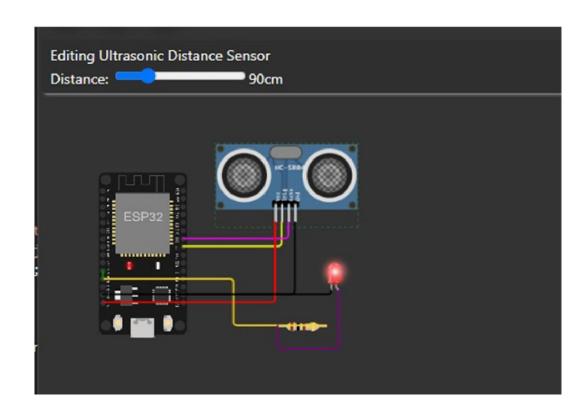
="lighton"){

data3="" \cdot_I

Serial.println(data3);

digitalWrite(led,HIGH);

OUTPUT



Sending payload: {"Normal Distance":89.95} Pulblish OK

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

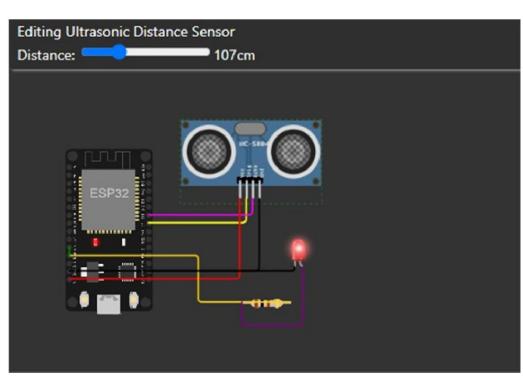
Sending payload: {"Normal Distance":89.95} PUJblisl-TI OK

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

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

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

1) when distance under 100 cm it wil show norm ol distionce

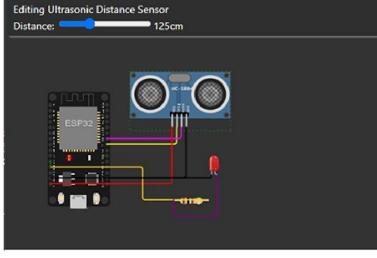


Sending payload: {"Alert distance":106.98} Warning crosses 110cm -- it automaticaly of the loop Sending payload: {"Alert distance":106.98} Warning crosses 110cm -- it automaticaly of the loop Sending payload: {"Alert distance":105.98} Warning cro5ses 110cm -- it automaticaly of the loop Sending payload: {"Alert distance":105.98} Warning crosses 110cm -- it automaticaly of the loop Sending payload: {"Alert distance":106.98} Warning crosses 110cm -- it automaticaly of the loop Sending payload: {"Alert distance":106.98}

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

Warning crosses 110cm -- it automaticaly of the loop

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



Sending payload:{"Alert distance":106.96} \-Jarning ,i;;rosses 110 m = it • to111aticaly of the 1<,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 $110 \, \mathrm{m}$. it utomaitic ly of the 1,00p

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.arnillg crosses 110 m - it automaticaly of the loop

\-Jarnir.g crosses 110<m - it automaticaly of the loop

Sendirlg payloa,d: {"Alert distanc@":106.98}

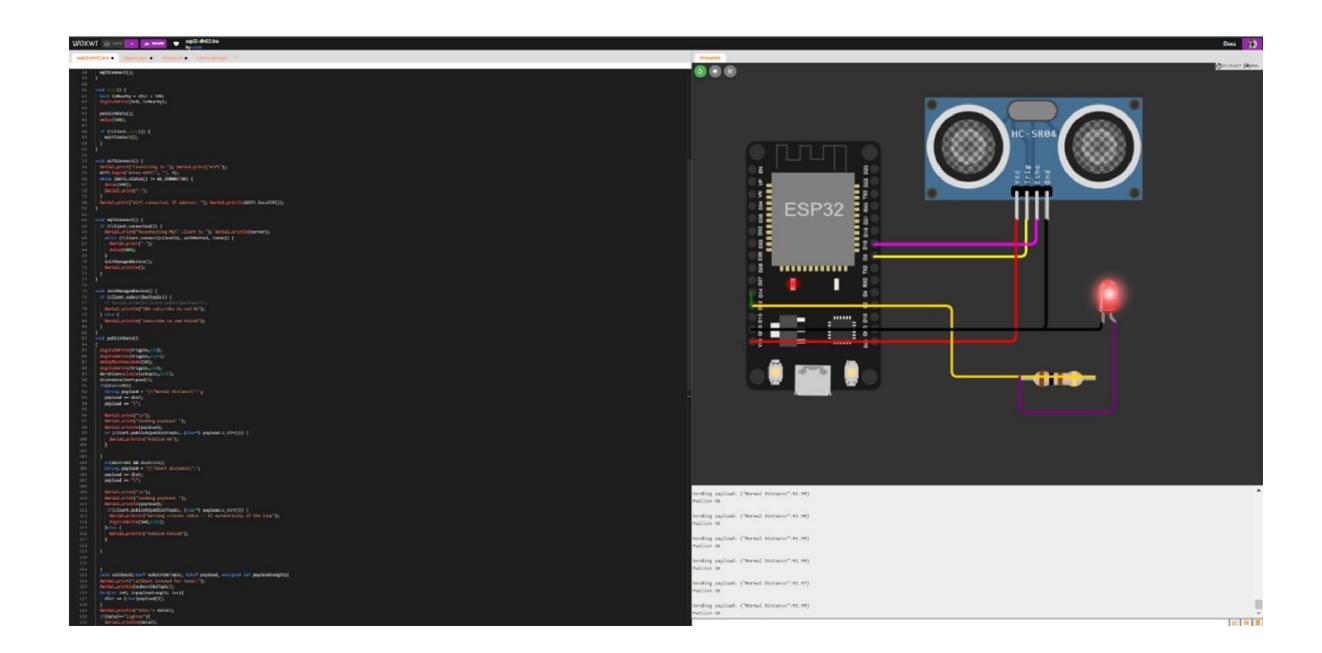
IBM CLOUD DUPUY

Recent Events Thie reci.!nt evel11ts. li:!lited show the liv-e:stream of da.ta thai i:!I coming and ,B.Oing from this device_

E'a'i!nt	ViiiiHi	Farm,at	La:5 , I Ri!'C I,,
Drn111	i*No,rme.1 Dis:1anc:E"::69.95}	j Ol'I	aiew s;e,cQOd,5, s.J!:0
Dai.a	r-N'ormal Dislanoe";;fl'9 5}	j!:ion	a lew 1:.eoom:ls 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 al30

Recentt i;;vents The receru events li31-.ci show the liq,:s-1r,e.am of datei 1hat is coming e.nd 10mg from ti11s 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 rew seconds ago
Oa:"	{'Alon d <stane<t":106.98< th=""><th>json</th><th>a few seconds ago</th></stane<t":106.98<>	json	a few seconds ago
0.&?11	{ Alon d- 1;.n •:106.911}		a few seconds ago
Datil	("Alt;I!cfitooQi":10ij'.1 1		a few seconds ago



Co1111ect io11Infor1naition

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.	JSO n	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