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 documents in wokwi, share link and images of ibm cloud.

Solution:

Wokwi Link : https://wokwi.com/projects/346470950137496148

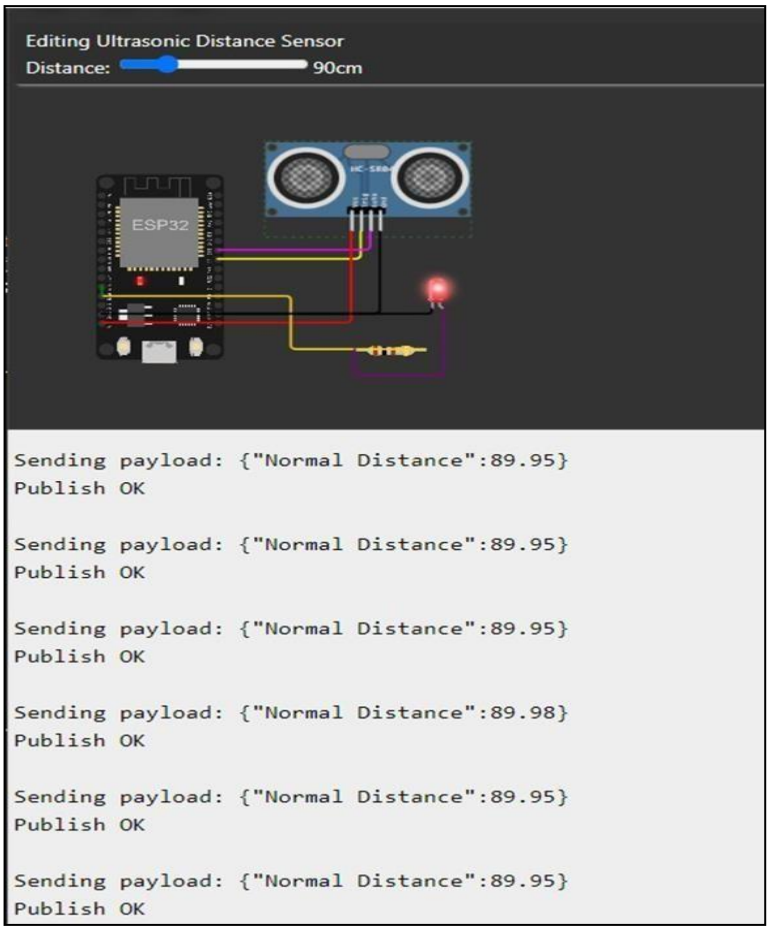
```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "4yi0ve"
#define DEVICE_TYPE "nodeMcu"
#define DEVICE ID 'Assignment4" #define TOKEN "123456789"
#define speed 0.034 #define led 14
char server[] ORG" messaging internetofthings.ibmclo char publish Topic[] = "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 I 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()
{
pinMode(led, OUTPUT);
Senal.begin(115200); pinMode(trigoin, 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", "", 6);
while (WiFi.status() !=
WL_CONNECTED)
{
delay(500);
Serial.print(".");
}
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 (Iclient.connect(clientId, authMethod, token))
{
Serial.print(".");
delay(500);
}
```

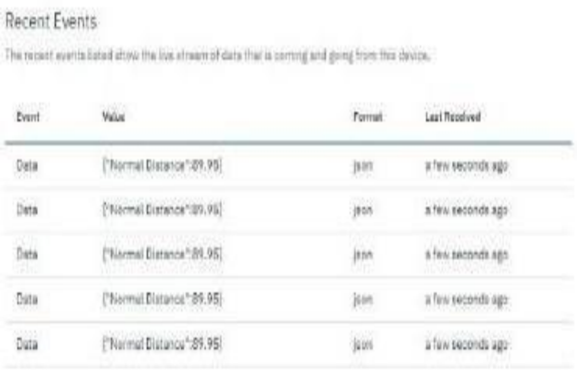
```
initManagedDevice();
Serial.println();
}
}
void initManaged Device()
{ if (client
subscribe(topic)) {
Serial.println("IBM subscribe to cmd OK");
}
else
{
Serial printin("subscribe to cmd FAILED"),
}
}
void publishData()
{
digitalWrite(trigpin,LOW);
digitalWrite(trigpin, HIGH);
delayMicroseconds(10);
digitalWrite(trigpin, LOW);
duration=pulseIn(echopin,
HIGH); dist=duration*speed/2;
if(dist<100)
{
String payload="{\"Normal
Distance\":"; payload + dist, payload
+= "}"; Serial print("\n");
Senal print("Sending payload: ");
Serial.println(payload);
if (client.publish(publish Topic, (char*) payload c_str()))
{
Serial.println("Publish 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(publish Topic, (char) payload.c_str()))
{
Serial.println("Warning crosses 110cm it automaticaly of the loop");
digitalWrite(led,HIGH);
}
else
{
Serial.println("Publish FAILED");
}
}
}
void callback(char* subscribeTopic, byte payload, unsigned int payloadLength)
{
Serial.print("callback invoked for
topic: "); Serial
printin(subscribeTopic); for(int i=0;
i<payloadLength; i++){ dist +=
(char)payload[1];
}
Serial printin("data" + data3);
if(data 3="lighton"){
Serial printin(data 3), digitalWrite(led,HIGH)
}
```

```
        data3=""
        }
```

Output:



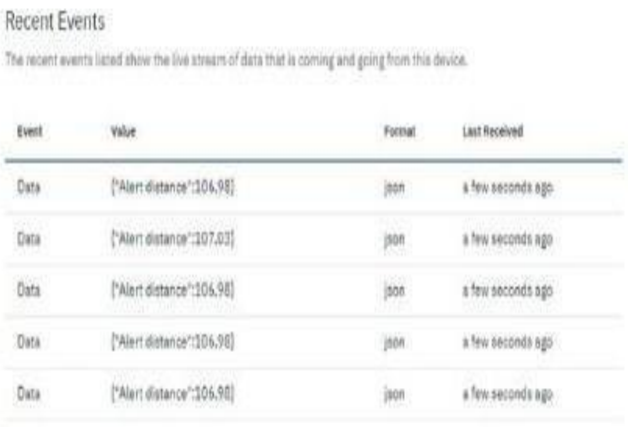
```
Sending payload: {"Normal Distance":89.95}
Publish OK

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

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

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

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

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



Recent Events

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

Event	Value	Format	Last Received
Data	{"Normal Distance":89.95}	json	a few seconds ago
Data	{"Normal Distance":89.95}	json	a few seconds ago
Data	{"Normal Distance":89.95}	json	a few seconds ago
Data	{"Normal Distance":89.95}	json	a few seconds ago
Data	{"Normal Distance":89.95}	json	a few seconds ago



Recent Events

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":106.98}	json	a few seconds ago
Data	{"Alert distance":107.03}	json	a few seconds ago
Data	{"Alert distance":106.98}	json	a few seconds ago
Data	{"Alert distance":106.98}	json	a few seconds ago
Data	{"Alert distance":106.98}	json	a few seconds ago