**Assignment-4**DataPublishtoIOTDevice

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| AssignmentDate | 27October2022 |
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| MaximumMarks | 2 Marks |

# Question-1:

Write code and connections in wokwi for ultrasonic sensor. Whenever distance is less 100 cms send“alert”toibmcloudanddisplayindevicerecent events.

# Solution:

#include<WiFi.h>//libraryforwifi

#include<PubSubClient.h>//libraryforMQtt

voidcallback(char\*subscribetopic,byte\*payload,unsignedintpayloadLength);

//-------credentialsofIBMAccounts------

#defineORG"rdegyk"//IBMORGANITIONID

#define DEVICE\_TYPE "weather1 "//Device type mentioned in ibm watson IOT Platform#define DEVICE\_ID "weather1 "//Device ID mentioned in ibm watson IOT Platform#defineTOKEN"\_oa-3bajxqvCrO(6kW" //Token

Stringdata3;floatdist;

//--------Customisethe abovevalues charserver[]=ORG

".messaging.internetofthings.ibmcloud.com";//ServerName

char publishTopic[] = "iot-2/evt/Data/fmt/json";// topic name and type of event perform and formatinwhichdatatobesend

char subscribetopic[] = "iot-2/cmd/test/fmt/String";// cmdREPRESENT command type ANDCOMMAND IS TEST OF FORMAT STRING char authMethod[] = "use-token-auth";//authenticationmethod

char token[]= TOKEN;char clientId[]="d:" ORG ":"DEVICE\_TYPE":"DEVICE\_ID;//clientid

//

WiFiClientwifiClient;// creatingthe instanceforwificlient

PubSubClient client(server, 1883, callback ,wifiClient); //calling the predefined client id by passingparameterlikeserver id,portandwificredential

int LED = 4;inttrig=5;int echo = 18;voidsetup()

{

Serial.begin(115200);pinMode(trig,OUTPUT);pinMode(echo,INPUT);pinMode(LED, OUTPUT);delay(10); wificonnect();mqttconnect();

}

voidloop()//Recursive Function

{

digitalWrite(trig,LOW);digitalWrite(trig,HIGH);delayMicroseconds(10);digitalWrite(trig,LOW); floatdur = pulseIn(echo,HIGH);floatdist = (dur \* 0.0343)/2;Serial.print ("Distancein cm");Serial.println(dist);

PublishData(dist);delay(1000);if(!client.loop()) {mqttconnect();

}

}

/\*.....................................retrievingtoCloud \*/

void PublishData(float dist) {mqttconnect();//functioncallforconnectingtoibm

/\* creating the String in in form JSon to update the data to ibmcloud

\*/Stringobject;if(dist<100)

{

digitalWrite(LED,HIGH);Serial.println("object is near");object="Near";

}

else

{

digitalWrite(LED,LOW);Serial.println("no object found");object="No";

}

String payload = "{\"distance\":";payload += dist;payload += ",""\"object\":\"";payload+=object;payload+="\"}";

Serial.print("Sending payload: ");Serial.println(payload);if (client.publish(publishTopic,(char\*)payload.c\_str())) {

Serial.println("Publish ok");// if it sucessfully upload data on the cloud then it will print publish okinSerialmonitororelseitwill print publish failed

}else{

Serial.println("Publishfailed");

}

}

void mqttconnect() {if(!client.connected()){

Serial.print("Reconnecting client to ");Serial.println(server); while (!!!client.connect(clientId,authMethod,token)){ Serial.print("."); delay(500);

}

initManagedDevice();Serial.println();

}

}

voidwificonnect()//functiondefinationforwificonnect

{

Serial.println();Serial.print("Connectingto");

WiFi.begin("Wokwi-GUEST", "", 6);//passing the wifi credentials to establish the connectionwhile(WiFi.status()!=WL\_CONNECTED){ delay(500);

Serial.print(".");

}

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

}

void initManagedDevice() {if(client.subscribe(subscribetopic)){Serial.println((subscribetopic));

Serial.println("subscribetocmdOK");

}else{

Serial.println("subscribetocmdFAILED");

}

}

voidcallback(char\*subscribetopic,byte\*payload,unsignedintpayloadLength)

{

Serial.print("callback invoked for topic: ");Serial.println(subscribetopic);for(inti =0; i< payloadLength;i++){

//Serial.print((char)payload[i]); data3 +=(char)payload[i];

}

data3="";

}

Reference:https://wokwi.com/projects/347311168141918803



