Assignment -4

Data Publish to IOT

Device

Assignment Date	08 november 2022
Project name	IoT Based Safety Gadget for Child Safety Monitoring and Notification
Student Name	SR TharunKumar
Maximum Marks	2 Marks

Question-1:

Write code and connections in wokwi for ultrasonic sensor. Whenever distance is less 100 cms send “alert” to ibm cloud and display in device recent events.

Solution:

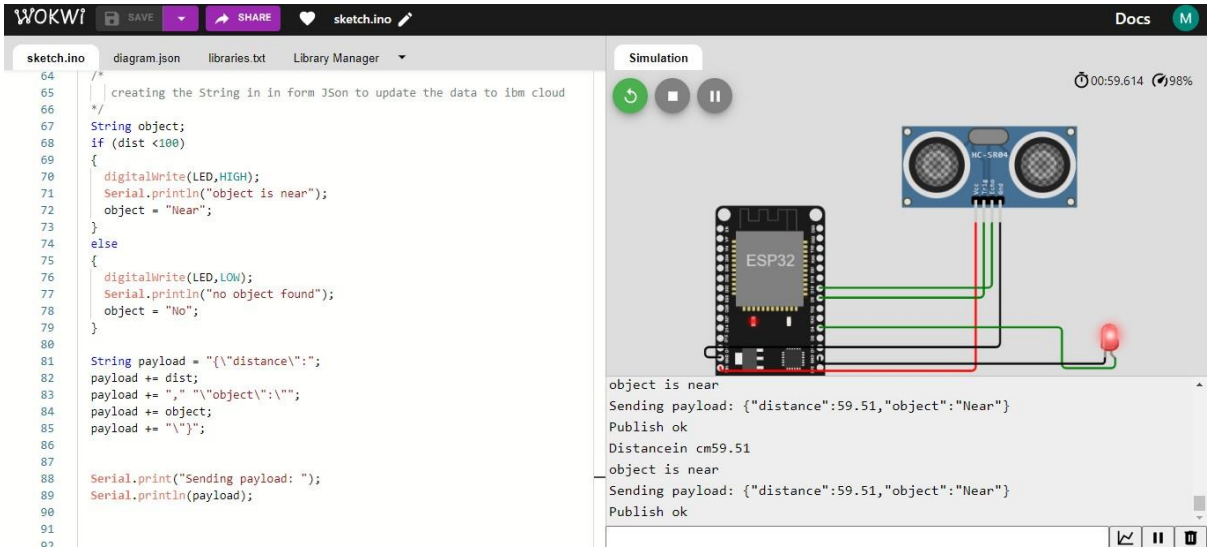
```
#include <WiFi.h>//library for wifi

#include <PubSubClient.h>//library for MQtt


void callback(char* subscribetopic, byte* payload, unsigned int payloadLength);


//-------credentials of IBM Accounts------


#define ORG "woa350"//IBM ORGANITION ID

#define DEVICE_TYPE "ifthihar "//Device type mentioned in ibm watson IOT Platform

#define DEVICE_ID “ifthihardev "//Device ID mentioned in ibm watson IOT Platform

#define TOKEN " uuc(6Dt-fjW7BD9u)2 "  //Token

String data3; float dist;


//-------- Customise the above values -------char server[] = ORG

".messaging.internetofthings.ibmcloud.com";// Server Name

char publishTopic[] = "iot-2/evt/Data/fmt/json";// topic name and type of event perform and format in which data to be send

char subscribetopic[] = "iot-2/cmd/test/fmt/String";// cmd REPRESENT command type AND

COMMAND IS TEST OF FORMAT STRING char authMethod[] = "use-token-auth";//

authentication method
```

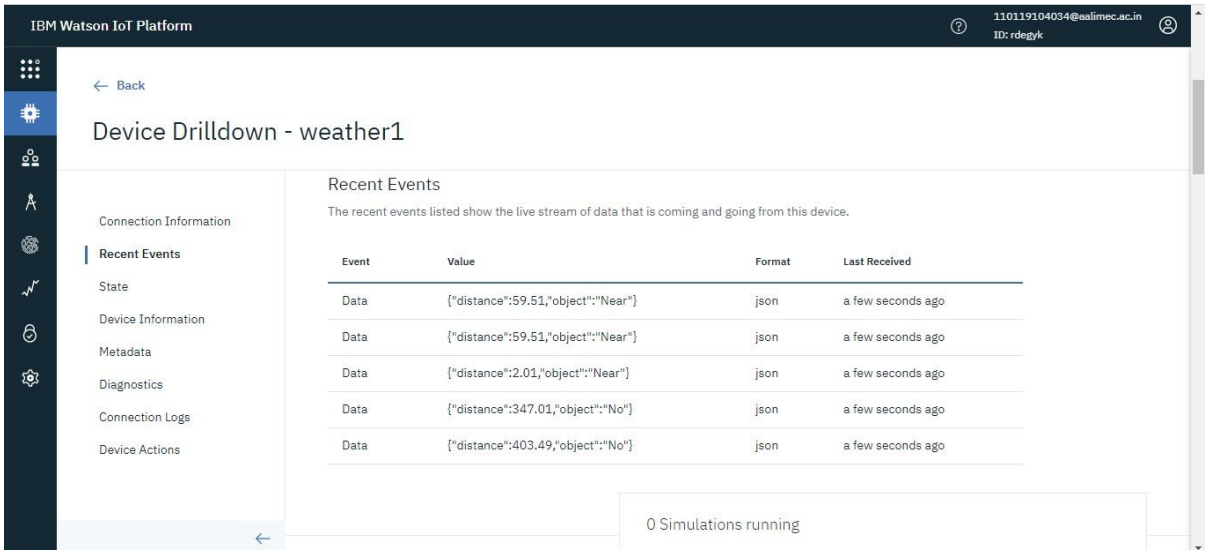
```
char token[] = TOKEN; char clientId[] = "d:" ORG ":" DEVICE_TYPE
":" DEVICE_ID;//client id

//.....
WiFiClient wifiClient; // creating the instance for wificlient
PubSubClient client(server, 1883, callback ,wifiClient); //calling the predefined client id by passing parameter like server id,portand wificredential

int LED = 4;
int trig = 5;
int echo = 18;
void setup()
{
Serial.begin(115200);
pinMode(trig,OUTPUT);
pinMode(echo,INPUT);
pinMode(LED, OUTPUT);
delay(10); wificonnect();
mqttconnect();
}
void loop()// Recursive Function
{
 digitalWrite(trig,LOW);
digitalWrite(trig,HIGH);
delayMicroseconds(10);
digitalWrite(trig,LOW);   float
dur = pulseIn(echo,HIGH); float
dist = (dur * 0.0343)/2;
Serial.print ("Distancein cm");
Serial.println(dist);
```

```
  PublishData(dist);
delay(1000); if
(!client.loop()) {
mqttconnect();
  }
}
/*.....retrieving to Cloud..... */

void PublishData(float dist) {
mqttconnect();//function call for connecting to ibm
  /*      creating the String in in form JSon to update the data to ibm
cloud
  */ String
object; 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 ok in Serial monitor or else it will print publish failed
 } else {
   Serial.println("Publish failed");
 }
}
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();
 }
}
void wificonnect() //function defination for wificonnect
{
 Serial.println();
 Serial.print("Connecting to ");
 WiFi.begin("Wokwi-GUEST", "", 6);//passing the wifi credentials to establish the connection
while (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("subscribe to cmd OK");
  } else {
    Serial.println("subscribe to cmd 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++) {
//Serial.print((char)payload[i]);     data3 +=
(char)payload[i];
  }
data3="";
}
```




IBM Watson IoT Platform
110119104034@aalimec.ac.in
ID: rdegyk
Back
Device Drilldown - weather1
Connection Information
Recent Events
State
Device Information
Metadata
Diagnostics
Connection Logs
Device Actions
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
{"distance":59.51,"object":"Near"}
json
a few seconds ago
Data
{"distance":59.51,"object":"Near"}
json
a few seconds ago
Data
{"distance":2.01,"object":"Near"}
json
a few seconds ago
Data
{"distance":347.01,"object":"No"}
json
a few seconds ago
Data
{"distance":403.49,"object":"No"}
json
a few seconds ago
0 Simulations running