Assignment

4WokwiAssignmen

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Date	24-11-2022
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MaximumMarks	2Marks

AssignmentQuestion:
Writecodeandconnections inwokwiforultrasonicsensor.
Wheneverdistanceislessthan
100cmssend"alert"toibmcloudanddisplayindevicerecentevents.

WokowiLink:https://wokwi.com/projects/347327129936986708

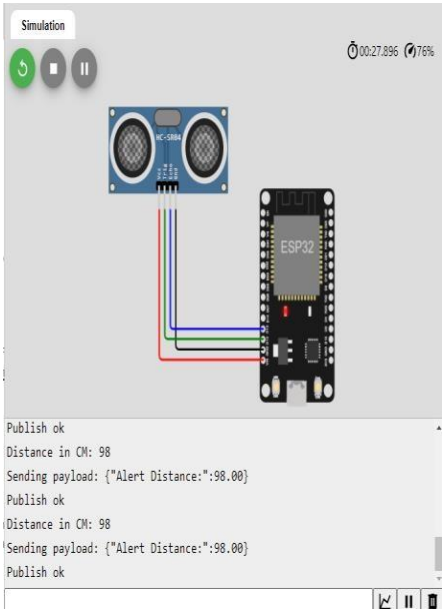
```
#include<WiFi.h>//libraryforwifi
#include<PubSubClient.h>//libraryforMQtt

#defineECHO_GPIO12
#defineTRIGGER_GPIO13
#defineMAX_DISTANCE_CM100//Maximumof5meters#include"Ul
trasonic.h"

Ultrasonicultrasonic(13,12);i
ntdistance;

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

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

#defineORG "kizp10"//IBMORGANITIONID
#defineDEVICE_TYPE"IOTdevice"//DevicetypementionedinibmwatsonIOTPlatform#def
ine DEVICE_ID "1234567890"//Device ID mentioned in ibm watson IOT
Platform#defineTOKEN"1234567890"    //Token
Stringdata3;
floath,t;
//--------Customisetheabovevalues--------
charserver[]=ORG".messaging.internetofthings.ibmcloud.com";//ServerNamechar
publishTopic[] = "iot-2/evt/Data/fmt/json";// topic name and type of
```

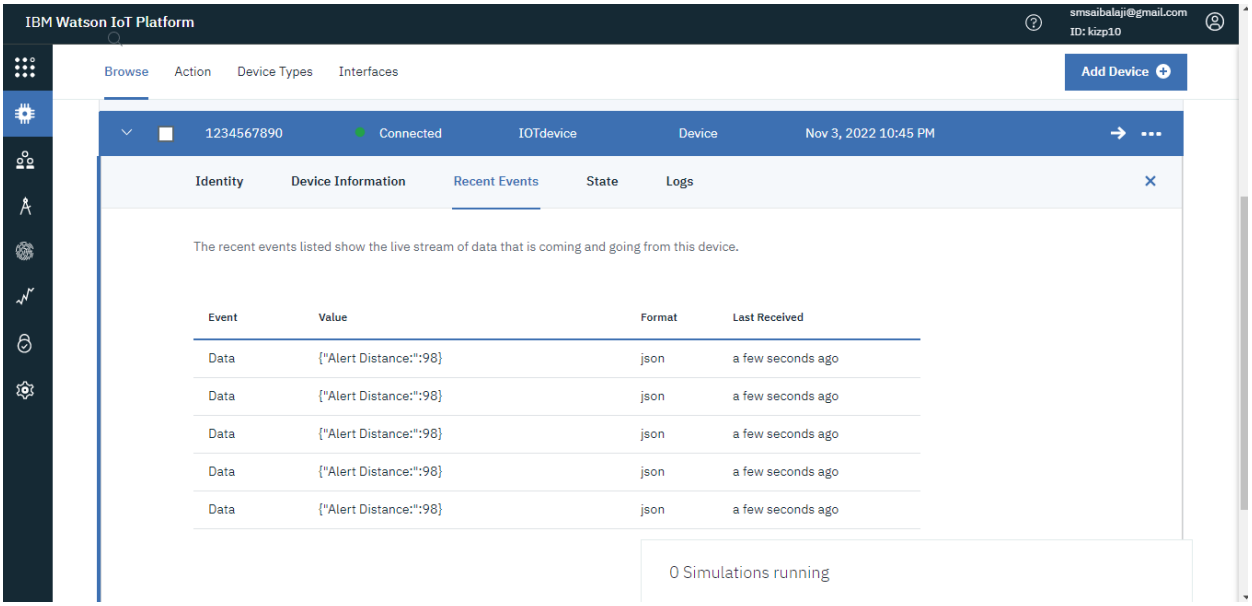
```
eventperformandformatin whichdatatobe send
char subscribetopic[] = "iot-2/cmd/command/fmt/String";// cmdREPRESENT
commandtypeANDCOMMANDISTESTOFFORMATSTRING
charauthMethod[]="use-token-
auth";//authenticationmethodchartoken[] =TOKEN;
charclientId[]="d:"ORG":"DEVICE_TYPE":"DEVICE_ID;//clientid


//--.....-.....-.....-.....-.....--
WiFiClientwifiClient;//creatingtheinstance forwificlient
PubSubClientclient(server,1883,callback,wifiClient);//callingthepredefinedclientidby
passing parameterlikeserverid,portandwificredential

voidsetup()//configureingthe ESP32
{
  Serial.begin(115200);del
  ay(10);Serial.println();wi
  ficonnect();mqttconnect
  ();
}

voidloop()//RecursiveFunction
{

  distance=ultrasonic.read(CM);if
  (distance < 100)
  {Serial.print("Distance in CM:
  ");Serial.println(distance);Publis
  hData(distance);delay(1000);
    if (!client.loop())
      {mqttconnect();
    }

  }

  delay(1000);
```

```
}

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

 void PublishData(float temp)
  {mqttconnect();//functioncallforconnectingtoibm
  /*
    creatingtheStringin in formJSonto updatethedatato ibmcloud
  */
  String payload = "{\"Alert
  Distance:\":";payload+=temp;
  payload+="}";


  Serial.print("Sendingpayload:");
  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
willprintpublish okinSerialmonitororelseitwill printpublishfailed
  }else{
   Serial.println("Publishfailed");
  }

 }

 voidmqttconnect(){
  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("C
  onnectingto");
```

```
  WiFi.begin("Wokwi-GUEST","", 6);//passingthewificredentialstoestablishtheconnection
  while(WiFi.status()!=WL_CONNECTED){delay(500);
   Serial.print(".");
  }
  Serial.println("");Serial.println("
  WiFi
  connected");Serial.println("IP
  address:
  ");Serial.println(WiFi.localIP());
 }

 voidinitManagedDevice(){
  if (client.subscribe(subscribetopic))
   {Serial.println((subscribetopic));Serial
   .println("subscribetocmdOK");
  }else{
   Serial.println("subscribetocmdFAILED");
  }
 }

 voidcallback(char*subscribetopic,byte*payload,unsignedintpayloadLength)
 {
  Serial.print("callbackinvokedfortopic:");
  Serial.println(subscribetopic);
  for(inti=0;i<payloadLength;i++){
   //Serial.print((char)payload[i]);
   data3+=(char)payload[i];
  }
  Serial.println("data:"+data3);if
  (data3== "lighton")
  {
   Serial.println(data3);
else
  {
   Serial.println(data3);
  }
  data3 ="";
 }
```

Whenthedistanceislessthan100cmthealertisnotsenttotheIBMcloud


Simulation
00:27.896
76%
ESP32
Publish ok
Distance in CM: 98
Sending payload: {"Alert Distance:":98.00}
Publish ok
Distance in CM: 98
Sending payload: {"Alert Distance:":98.00}
Publish ok


IBM Watson IoT Platform
smsaibalaji@gmail.com
ID: kizp10
Browse
Action
Device Types
Interfaces
Add Device
1234567890
Connected
IOTdevice
Device
Nov 3, 2022 10:45 PM
Identity
Device Information
Recent Events
State
Logs
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:":98}
json
a few seconds ago
Data
{"Alert Distance:":98}
json
a few seconds ago
Data
{"Alert Distance:":98}
json
a few seconds ago
Data
{"Alert Distance:":98}
json
a few seconds ago
Data
{"Alert Distance:":98}
json
a few seconds ago
0 Simulations running

Whenthedistanceismorethan100cmthealertisnotsenttotheIBMcloud