

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"UI
trasonic.h"

Ultrasonicultrasonic(13,12);i
ntdistance;

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

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

#defineORG "kizp10"//IBMORGANITIONID
#defineDEVICE_TYPE"IOTdevice"//DevicetypementionedinibmwatsonIOTPlatform#define
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";//clidtid
```

```
//--.....--
```

```
WiFiClientwifiClient;//creatingtheinstance forwificlient
```

```
PubSubClientclient(server,1883,callback,wifiClient);//callingthepredefinedclidtidby  
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 updatethedatatato 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");

```

```

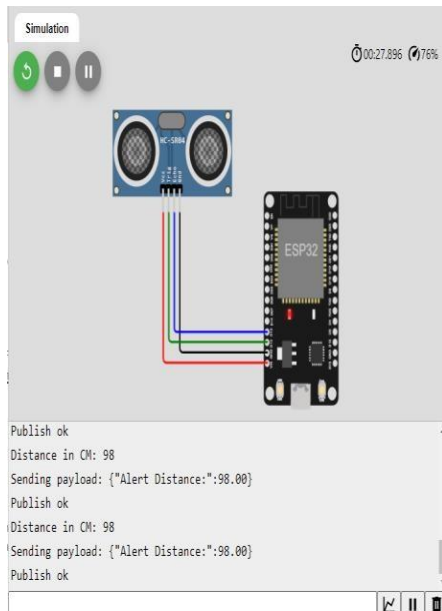
WiFi.begin("Wokwi-GUEST", "", 6); // passing the wifi credentials to establish the connection
while(WiFi.status() != WL_CONNECTED){ delay(500);
  Serial.print(".");
}
Serial.println(""); Serial.println("
WiFi
connected"); Serial.println("IP
address:
"); Serial.println(WiFi.localIP());
}

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

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];
  }
  Serial.println("data:" + data3); if
  (data3 == "lighton")
  {
    Serial.println(data3);
else
  {
    Serial.println(data3);
  }
  data3 = "";
}

```

When the distance is less than 100 cm the alert is not sent to the IBM cloud



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

When the distance is more than 100cm the alert is not sent to the IBM cloud

