

ASSIGNMENT 4

Assignment Date :19 September 2022
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Maximum Marks : 2 marks
Project Title : IOT based safety gadget for child
Monitoring& Notification

Write code and connections in wokwi for ultrasonic sensor. Whenever distance is less than 100cms send "alert" to ibm cloud and display in devicerecent events.

CODE:

```
#include
<WiFi.h>#include<PubSub
Client.h>
voidcallback(char*subscribetopic,byte*payload,unsignedintpayloa
dLength);
//-----credentialsofIBMAccounts-----
#defineORG"Ashfaq1824"//IBMORGANITIONID
#defineDEVICE_TYPE"ESP32"//DevicetypementionedinibmwatsonIOTPlatform#defin
e DEVICE_ID "12345"//Device ID mentioned in ibm watson IOT
Platform#defineTOKEN"12345678"//Token
Stringdata3;
char server[] = ORG
".messaging.internetofthings.ibmcloud.com";charpublishTopic[]="
"iot-2/evt/Data/fmt/json";
charsubscribetopic[]="iot-
2/cmd/test/fmt/String";charauthMethod[]="use-
token-auth";
chartoken[]=TOKEN;
charclientId[]="d:"ORG":"DEVICE_TYPE":"DEVICE_ID;
WiFiClientwifiClient;
PubSubClient client(server, 1883,
callback ,wifiClient);const inttrigPin=5;
constintechoPin=18;
#defineSOUND_SPEED0.0341
ongduration;
float
distance;voids
etup(){
```

```

Serial.begin(115200);pinMode(trigPin,OUTPUT);pinMode(echoPin,INPUT);wifiConnect();
mqttConnect();
}
void loop()
{
digitalWrite(trigPin,LOW);delayMicroseconds(2);digitalWrite(trigPin,HIGH);delayMicroseconds(10);digitalWrite(trigPin,LOW);duration=pulseIn(echoPin,HIGH);
distance=duration*SOUND_SPEED/2;Serial.print("Distance(cm): ");Serial.println(distance);
if(distance<100)
{
Serial.println("ALERT!!");
delay(1000);PublishData(distance);delay(1000);
if(!client.loop())
{mqttConnect();
}
}
delay(1000);
}
void PublishData(float dist)
{mqttConnect();
String payload = "{"+"Distance\":";payload+=dist;
payload +=",\"ALERT!!\":"+"Distanceless than 100cms\":";payload+="}";
Serial.print("Sending payload:");
Serial.println(payload);

if(client.publish(publishTopic,(char*)payload.c_str())){
Serial.println("Publish ok");
}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);
}
}
}

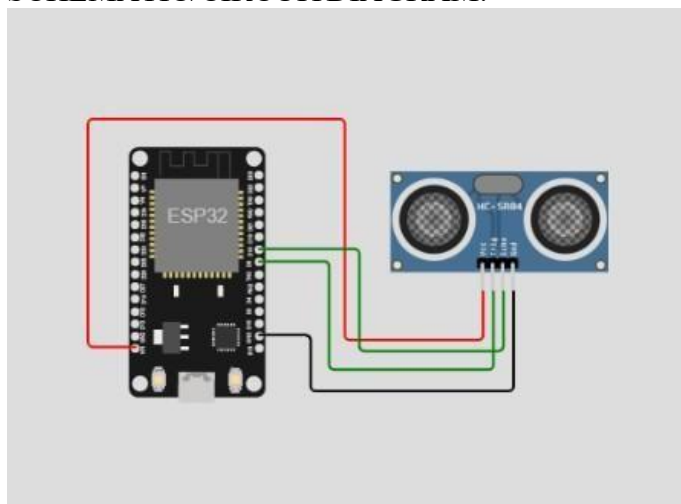
```

```

initManagedDevice();
Serial.println();
}
}
void wificonnect()
{
Serial.println();Serial.print("Connect
ing to ");WiFi.begin("Wokwi-
GUEST","",6);
while(WiFi.status()!=WL_CONNECTED)
{delay(500);
Serial.print(".");
}
Serial.println("");Serial.println("
WiFiconnected");Serial.println("I
Paddress:
");Serial.println(WiFi.localIP());
}
void initManagedDevice(){
if (client.subscribe(subscribetopic))
{Serial.println((subscribetopic));Serial.println("su
bscribetocmdOK");
}else{
Serial.println("subscribetocmdFAILED");
}
}
void callback(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);da
ta3="";
}

```

SCHEMATIC/CIRCUITDIAGRAM:



IBM CLOUD OUTPUT:

The screenshot displays the IBM Cloud Output interface. On the left is a dark sidebar with icons for various services. The main panel has a top navigation bar with tabs: 'Browse', 'Action', 'Device Types', and 'Interfaces'. A blue 'Add Device' button with a plus icon is in the top right. Below the tabs, there's a sub-navigation bar with 'Identity', 'Device Information', 'Recent Events' (which is underlined), 'State', and 'Logs'. A close button 'X' is on the far right of this bar. The main content area contains a text description: 'The recent events listed show the live stream of data that is coming and going from this device.' Below this is a table with four columns: 'Event', 'Value', 'Format', and 'Last Received'. The table lists four events, all labeled 'event_1', with JSON values containing distance and alert information, all in 'json' format, and all received 'a few seconds ago'.

Event	Value	Format	Last Received
event_1	{"distance":7,"Alert":"Distance less than 10"}	json	a few seconds ago
event_1	{"distance":9,"Alert":"Distance less than 10"}	json	a few seconds ago
event_1	{"distance":8,"Alert":"Distance less than 10"}	json	a few seconds ago
event_1	{"distance":9,"Alert":"Distance less than 10"}	json	a few seconds ago

WOKWILINK:

<https://wokwi.com/projects/322410731508073042>