SMARTBRIDGE – IOT EXTERNSHIP

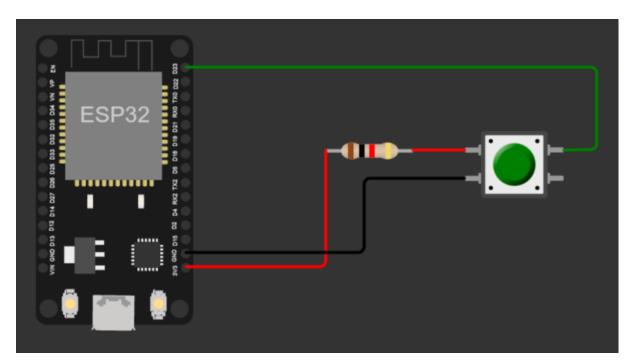| Name: Yukteshwar R	University: VIT Chennai
Reg No: 20BLC1029	Assignment 2

TASK:

In Wokwi, connect a push button and upload the button status values '0' and '1' to the IBM cloud.

LINK:

https://wokwi.com/projects/365796969566678017

CIRCUIT DIAGRAM:

CODE:

```
1    #include <WiFi.h>//library for wifi
2    #include <PubSubClient.h>//library for MQtt
3    void callback(char* subscribetopic, byte* payload, unsigned int payloadLength);
4
5    #define ORG "1uw3rp"//IBM ORGANITION ID
6    #define DEVICE_TYPE "abcd"//Device type mentioned in ibm watson IOT Platform
7    #define DEVICE_ID "1234"//Device ID mentioned in ibm watson IOT Platform
8    #define TOKEN "12345678"     //Token
9
10   char server[] = ORG ".messaging.internetofthings.ibmcloud.com";// Server Name
11   char publishTopic[] = "iot-2/evt/Data/fmt/json";// topic name and type of event perform
12   char subscribetopic[] = "iot-2/cmd/command/fmt/String";// cmd  REPRESENT command type A
13   char authMethod[] = "use-token-auth";// authentication method
14   char token[] = TOKEN;
15   char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;//client id
16
17   WiFiClient wifiClient; // creating the instance for wificlient
18   PubSubClient client(server, 1883, callback ,wifiClient); //calling the predefined clier
19
20   void setup() {
21     pinMode(23,INPUT);
22     Serial.begin(115200);
23     wificonnect();
24     mqttconnect();
25   }
26   void loop() {
27     int buttonstate = digitalRead(23);
28     Serial.print("Button State = ");
29     Serial.println(buttonstate);
30     PublishData(buttonstate);
31     delay(1000);
32     if (!client.loop()) {
33       mqttconnect();
34     }
35   }
```

```
40   void PublishData(bool buttonstate) {
41     mqttconnect();//function call for connecting to ibm
42     String payload = "{\"Button State\":";
43     payload += buttonstate;
44     payload += "}";
45
46     Serial.print("Sending payload: ");
47     Serial.println(payload);
48     if (client.publish(publishTopic, (char*) payload.c_str())) {
49       Serial.println("Publish ok");
50     } else {
51       Serial.println("Publish failed");
52     }
53   }
```

```cpp
55  void mqttconnect() {
56    if (!client.connected()) {
57      Serial.print("Reconnecting client to ");
58      Serial.println(server);
59      while (!!!client.connect(clientId, authMethod, token)) {
60        Serial.print(".");
61        delay(500);
62      }
63      initManagedDevice();
64      Serial.println();
65    }
66  }
```
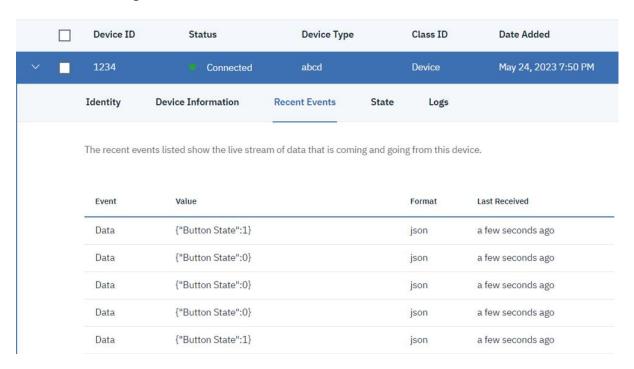
```cpp
68  void wificonnect(){
69    Serial.println();
70    Serial.print("Connecting to ");
71
72    WiFi.begin("Wokwi-GUEST", "", 6);//passing wifi credentials to establish connection
73    while (WiFi.status() != WL_CONNECTED) {
74      delay(500);
75      Serial.print(".");
76    }
77    Serial.println("");
78    Serial.println("WiFi connected");
79    Serial.println("IP address: ");
80    Serial.println(WiFi.localIP());
81  }
82
83  void initManagedDevice() {
84    if (client.subscribe(subscribetopic)) {
85      Serial.println((subscribetopic));
86      Serial.println("subscribe to cmd OK");
87    } else {
88      Serial.println("subscribe to cmd FAILED");
89    }
90  }
91
92  void callback(char* subscribetopic, byte* payload, unsigned int payloadLength)
93  {
94    Serial.print("callback invoked for topic: ");
95    Serial.println(subscribetopic);
96  }
```

OUTPUT:

IBM Cloud Output-

	Device ID	Status	Device Type	Class ID	Date Added
☐ 1234		● Connected	abcd	Device	May 24, 2023 7:50 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	{"Button State":1}	json	a few seconds ago
Data	{"Button State":0}	json	a few seconds ago
Data	{"Button State":0}	json	a few seconds ago
Data	{"Button State":0}	json	a few seconds ago
Data	{"Button State":1}	json	a few seconds ago

IBM Watson IoT Platform — yukteshwar.r2020@vitstudent.ac.in — ID: 1uw3rp

Browse   Action   Device Types   Interfaces   Add Device ⊕

Search by Device ID   Device Simulator

	Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location
☐ 1234		● Connected	abcd	Device	May 24, 2023 7:50 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	{"Button State":1}	json	a few seconds ago
Data	{"Button State":0}	json	a few seconds ago
Data	{"Button State":0}	json	a few seconds ago
Data	{"Button State":0}	json	a few seconds ago
Data	{"Button State":1}	json	a few seconds ago

Serial Output-

```
Button State = 1
Sending payload: {"Button State":1}
Publish ok
Button State = 1
Sending payload: {"Button State":1}
Publish ok
Button State = 1
Sending payload: {"Button State":1}
Publish ok
Button State = 0
Sending payload: {"Button State":0}
Publish ok
Button State = 0
Sending payload: {"Button State":0}
Publish ok
```

RESULT:

The given task was implemented successfully.