

## SMARTBRIDGE – IOT EXTERNSHIP

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<b>Reg No: 20BLC1029</b>	<b>Assignment 3</b>

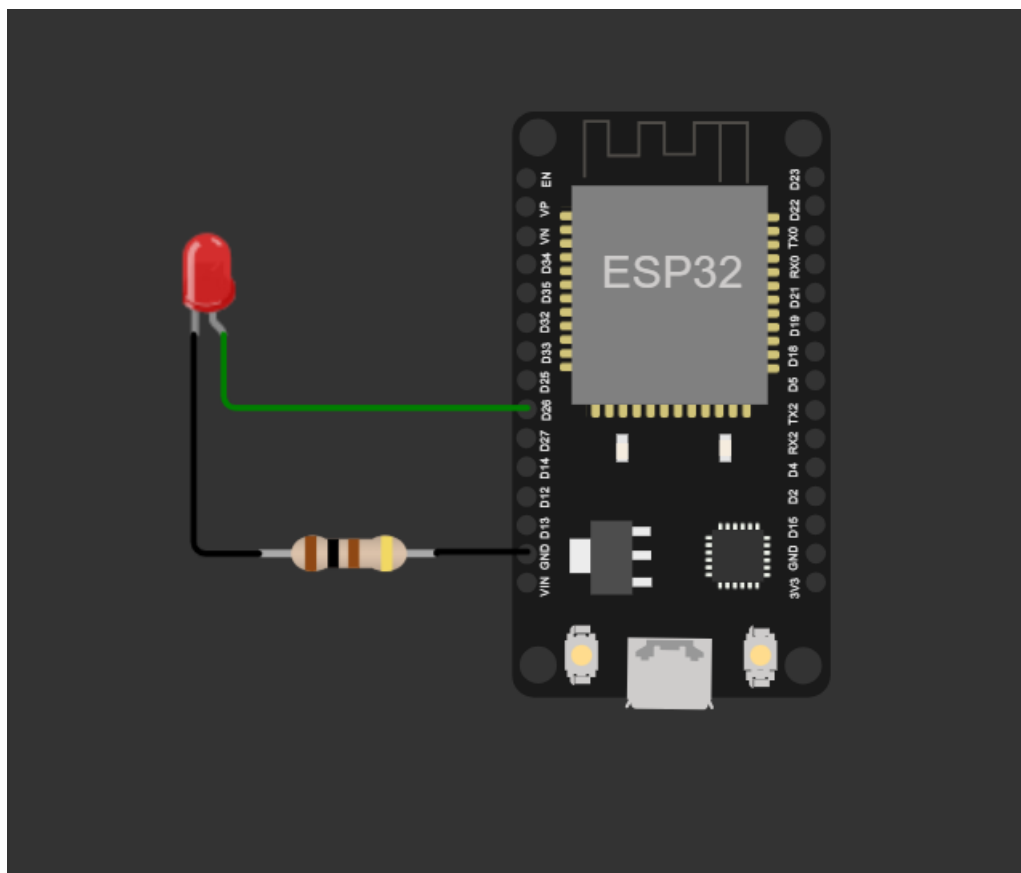
### TASK:

In Wokwi, add a LED and switch it ON and OFF from Node-Red.

### LINK:

<https://wokwi.com/projects/365072974192459777>

### CIRCUIT DIAGRAM:



## CODE:

```
1  #include <WiFi.h>//library for wifi
2  #include <PubSubClient.h>//library for MQTT
3
4  #define LED 26
5
6  void callback(char* subscribetopic, byte* payload, unsigned int payloadLength);
7
8  //-----credentials of IBM Accounts-----
9  #define ORG "1uw3rp"//IBM ORGANITION ID
10 #define DEVICE_TYPE "abcd"//Device type mentioned in ibm watson IOT Platform
11 #define DEVICE_ID "1234"//Device ID mentioned in ibm watson IOT Platform
12 #define TOKEN "12345678" //Token
13 String data3;
14
15 //----- Customise the above values -----
16 char server[] = ORG ".messaging.internetofthings.ibmcloud.com";// Server Name
17 char publishTopic[] = "iot-2/evt/Data/fmt/json";// topic name and type of event perform
18 char subscribetopic[] = "iot-2/cmd/command/fmt/String";// cmd REPRESENT command type A
19 char authMethod[] = "use-token-auth";// authentication method
20 char token[] = TOKEN;
21 char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;//client id
22
23 //-----
24 WiFiClient wificlient; // creating the instance for wificlient
25 PubSubClient client(server, 1883, callback ,wificlient); //calling the predefined client
```

```
27 void setup() {
28     Serial.begin(115200);
29     pinMode(LED,OUTPUT);
30     delay(10);
31     Serial.println();
32     wificlient.connect();
33     mqttconnect();
34 }
35
36 void loop() {
37     delay(1000);
38     if (!client.loop()) {
39         mqttconnect();
40     }
41 }
42
43 void mqttconnect() {
44     if (!client.connected()) {
45         Serial.print("Reconnecting client to ");
46         Serial.println(server);
47         while (!client.connect(clientId, authMethod, token)) {
48             Serial.print(".");
49             delay(500);
50         }
51         initManagedDevice();
52         Serial.println();
53     }
54 }
```

```

55 void wificonnect() { //function defination for wificonnect
56     Serial.println();
57     Serial.print("Connecting to ");
58
59     WiFi.begin("Wokwi-GUEST", "", 6); //passing the wifi credentials to establish the conn
60     while (WiFi.status() != WL_CONNECTED) {
61         delay(500);
62         Serial.print(".");
63     }
64     Serial.println("");
65     Serial.println("WiFi connected");
66     Serial.println("IP address: ");
67     Serial.println(WiFi.localIP());
68 }
69
70 void initManagedDevice() {
71     if (client.subscribe(subscribetopic)) {
72         Serial.println((subscribetopic));
73         Serial.println("subscribe to cmd OK");
74     }
75     else {
76         Serial.println("subscribe to cmd FAILED");
77     }
78 }

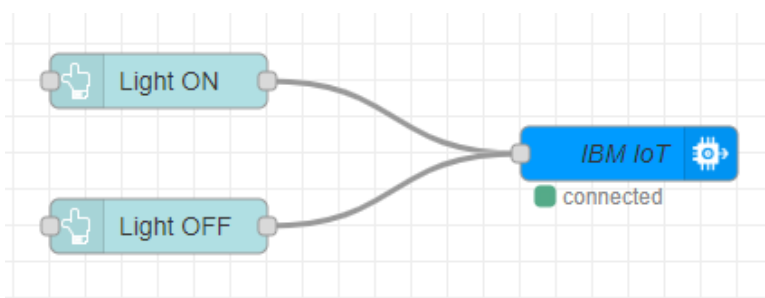
```

```

80 void callback(char* subscribetopic, byte* payload, unsigned int payloadLength) {
81     Serial.print("callback invoked for topic: ");
82     Serial.println(subscribetopic);
83     for (int i = 0; i < payloadLength; i++) {
84         data3 += (char)payload[i];
85     }
86     Serial.println("data: "+ data3);
87     if(data3=="lighton") {
88         Serial.println(data3);
89         digitalWrite(LED,HIGH);
90     }
91     else {
92         Serial.println(data3);
93         digitalWrite(LED,LOW);
94     }
95     data3="";
96 }

```

## NODE RED FLOW DIAGRAM:



## NODE PROPERTIES:

**Edit button node**

Delete

Cancel

Done

⚙️ Properties

⚙️

📄

🖼️

📏 Group

[Home] Default

▼

✎

📏 Size

auto

🖼️ Icon

optional icon

🔤 Label

Light ON

📖 Tooltip

optional tooltip

🔥 Color

optional text/icon color

🔥 Background

optional background color

☑ When clicked, send:

Payload

▼ a<sub>z</sub> lighton

Topic

▼ msg. topic

➔ If msg arrives on input, emulate a button click:

☐

</> Class

Optional CSS class name(s) for widget

🏷 Name

Name

**Edit button node**

Delete

Cancel

Done

⚙️ Properties

⚙️

📄

🖼️

📏 Group

[Home] Default

▼

✎

📏 Size

auto

🖼️ Icon

optional icon

🔤 Label

Light OFF

📖 Tooltip

optional tooltip

🔥 Color

optional text/icon color

🔥 Background

optional background color

☑ When clicked, send:

Payload

▼ a<sub>z</sub> lightoff

Topic

▼ msg. topic

➔ If msg arrives on input, emulate a button click:

☐

</> Class

Optional CSS class name(s) for widget

🏷 Name

Name

Edit ibmiot out node

Delete

Cancel

Done

Properties

Authentication

API Key

API Key

IBMIotapi

Output Type

Device Command

Device Type

abcd

Device Id

1234

Command Type

command

Format

String

Data

Data

QoS

0

Name

IBM IoT

Service

registered

## NODE RED DASHBOARD:

Home

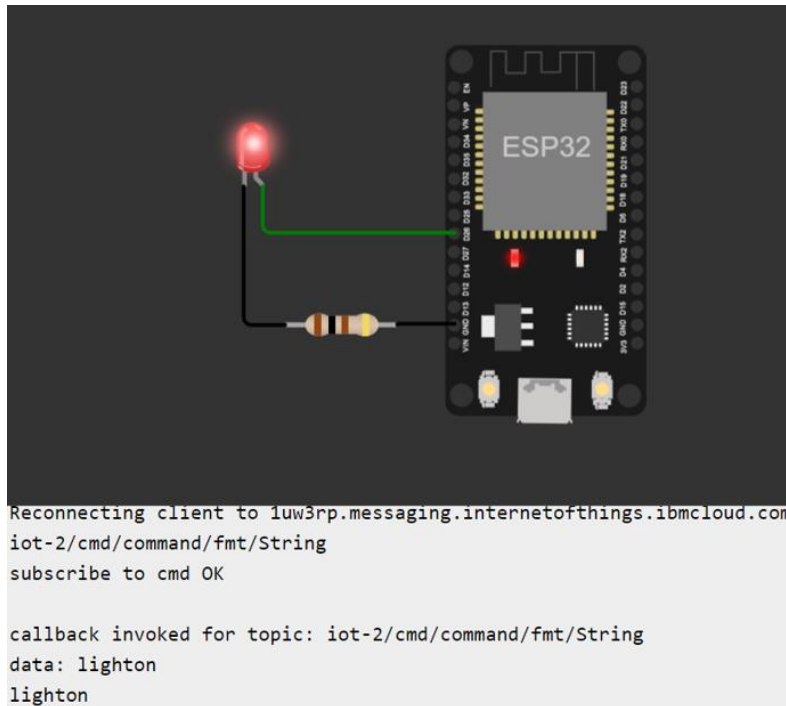
Default

LIGHT ON

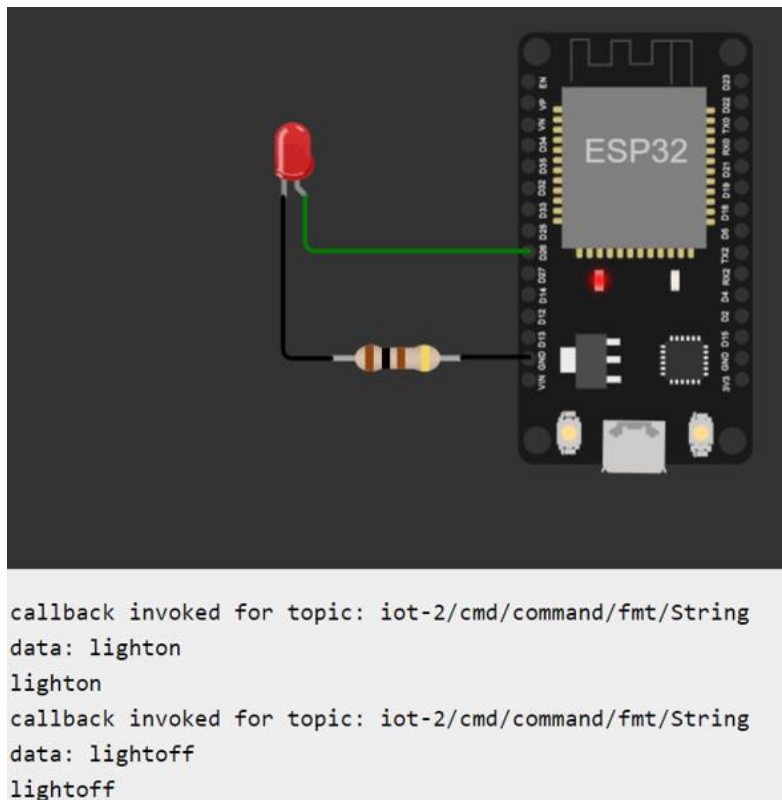
LIGHT OFF

## OUTPUT:

When “LIGHT ON” button is clicked on the dashboard-



When “LIGHT OFF” button is clicked on the dashboard-



### Serial Monitor Output-

```
Connecting to ....  
WiFi connected  
IP address:  
10.10.0.2  
Reconnecting client to 1uw3rp.messaging.internetofthings.ibmcloud.com  
iot-2/cmd/command/fmt/String  
subscribe to cmd OK  
  
callback invoked for topic: iot-2/cmd/command/fmt/String  
data: lighton  
lighton  
callback invoked for topic: iot-2/cmd/command/fmt/String  
data: lightoff  
lightoff
```

### RESULT:

The given task was implemented successfully.