SMARTBRIDGE EXTERNSHIP (Internet Of Things)

ASSIGNMENT 2

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In wokwi connect push button and upload 0 and 1 to ibm cloud

Code:

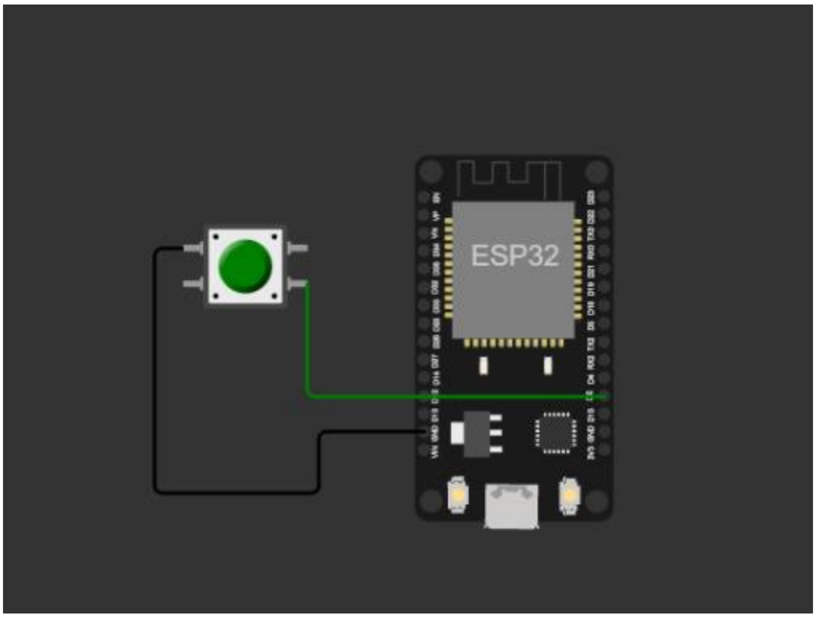
```
sk#include <WiFi.h>//library for wifi
#include <PubSubClient.h>//library for MQtt
#define button 4
#define LED 5
int buttonPin;

void callback(char* subscribetopic, byte* payload, unsigned int payloadLength);

//-------credentials of IBM Accounts------

#define ORG "xmighh"//IBM ORGANITION ID
#define DEVICE_TYPE "asses2"//Device type mentioned in ibm watson IOT Platform
#define DEVICE_ID "1234"//Device ID mentioned in ibm watson IOT Platform
#define TOKEN "12345678"     //Token
String data3;

//-------- Customise the above values --------
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";// Server Name
char publishTopic[] = "iot-2/evt/Data/fmt/json";// topic name and type of event perform and format in which data to be send
char subscribetopic[] = "iot-2/cmd/command/fmt/String";// cmd  REPRESENT command type AND COMMAND IS TEST OF FORMAT STRING
char authMethod[] = "use-token-auth";// authentication method
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;//client id



WiFiClient wifiClient; // creating the instance for wificlient
PubSubClient client(server, 1883, callback ,wifiClient); //calling the predefined client id by passing parameter like server id,portand wificredential
void setup() {
  pinMode(buttonPin, INPUT_PULLUP);
  Serial.begin(9600);
   wificonnect();
  mqttconnect();
}

void loop() {
  int buttonState = digitalRead(buttonPin);

  if (buttonState == HIGH) {
    Serial.println("Button state: 1");
    } else {
    Serial.println("Button state: 0");
  }



  delay(100);
  if (!client.loop()) {
    mqttconnect();
  } // Adjust delay as needed
}
```

```
/*.....................................retrieving to Cloud...............................*/


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() //function defination for wificonnect
{
  Serial.println();
  Serial.print("Connecting to ");


  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("subscribe to cmd OK");
  } else {
    Serial.println("subscribe to cmd FAILED");
  }
}

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);
digitalWrite(LED,HIGH);
  }
  else
  {
Serial.println(data3);
digitalWrite(LED,LOW);
  }
data3="";
}
```

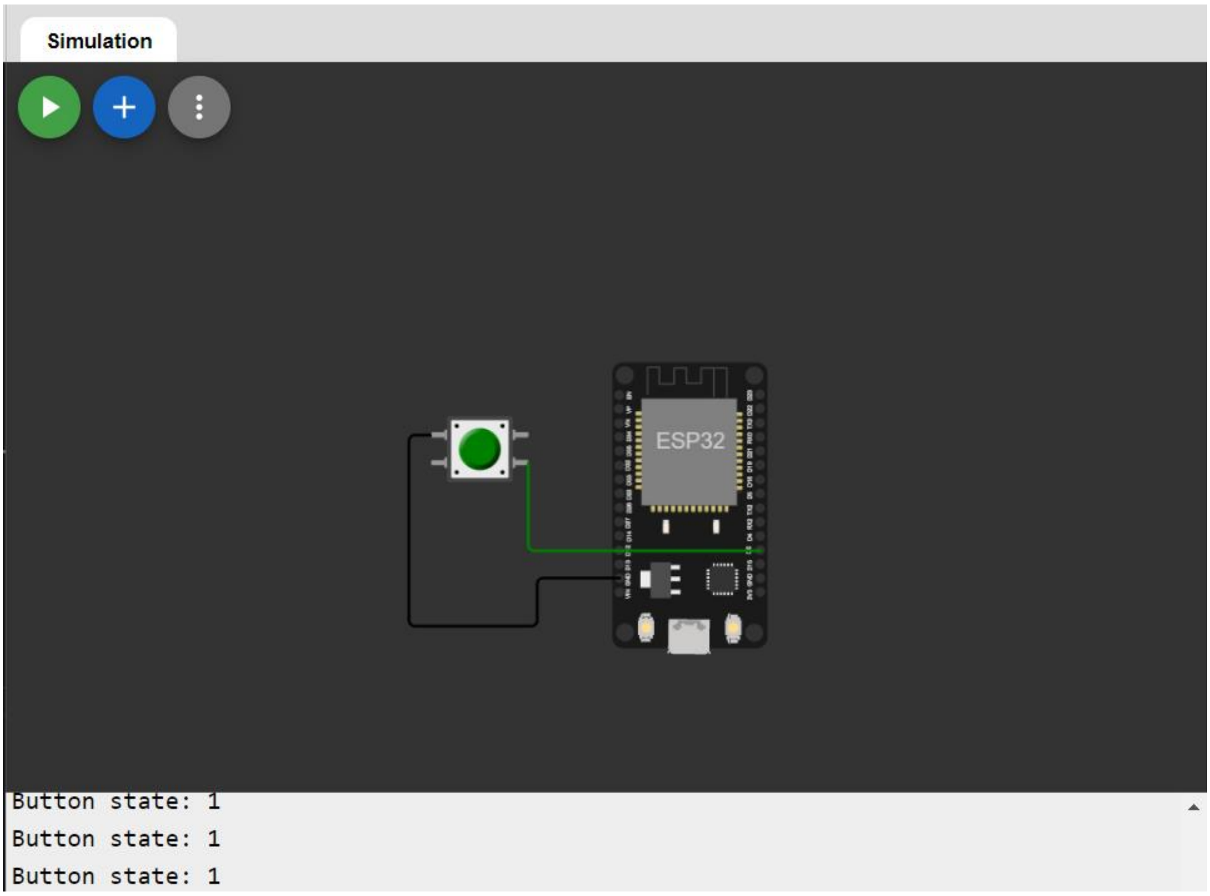
diagram.json

```
{
  "version": 1,
  "author": "Sneha",
  "editor": "wokwi",
  "parts": [
    { "type": "wokwi-esp32-devkit-v1", "id": "esp", "top": 0, "left": 0, "attrs": {} },
    {
      "type": "wokwi-pushbutton",
      "id": "btn1",
      "top": 38.73,
      "left": -124.27,
      "attrs": { "color": "green" }
    }
  ],
  "connections": [
    [ "esp:TX0", "$serialMonitor:RX", "", [] ],
    [ "esp:RX0", "$serialMonitor:TX", "", [] ],
    [ "esp:D2", "btn1:2.r", "green", [ "h0" ] ],
    [ "btn1:1.l", "esp:GND.2", "black", [ "h-14.53", "v130", "h87.73", "v-32.73" ] ]
  ],
  "dependencies": {}
}
```

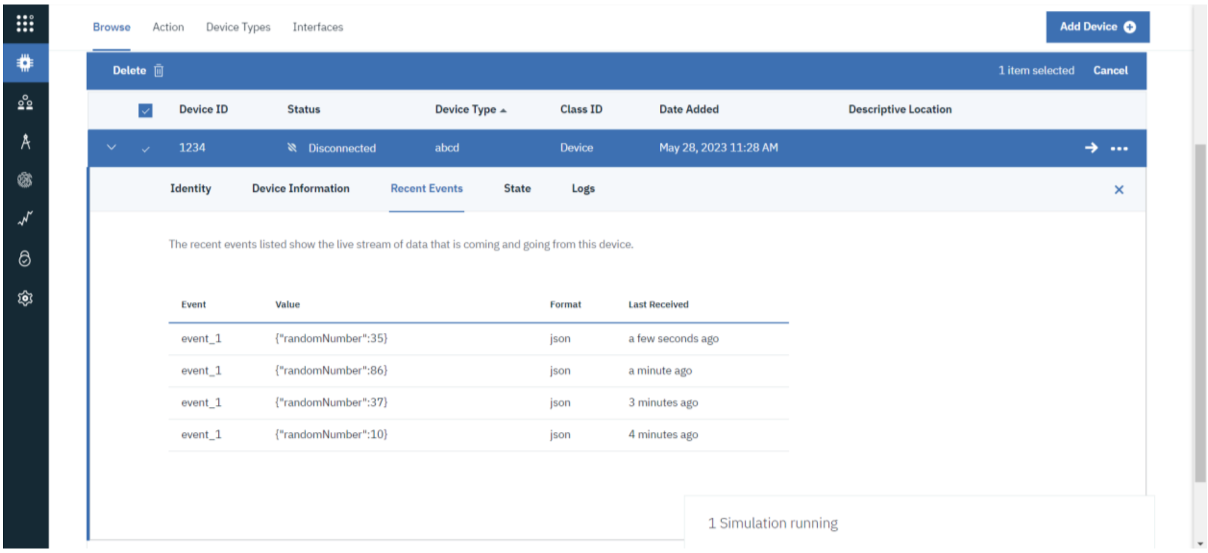
<u>Diagram:</u>



Outputs:



```
Button state: 1
Button state: 1
Button state: 1
```



Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location
1234	Disconnected	abcd	Device	May 28, 2023 11:28 AM	

The recent events listed show the live stream of data that is coming and going from this device.

Event	Value	Format	Last Received
event_1	{"randomNumber":35}	json	a few seconds ago
event_1	{"randomNumber":86}	json	a minute ago
event_1	{"randomNumber":37}	json	3 minutes ago
event_1	{"randomNumber":10}	json	4 minutes ago

1 Simulation running