Assignment: 2

Company: Smart-Internz

Domain: Internet of Things

Date: 27-5-2023

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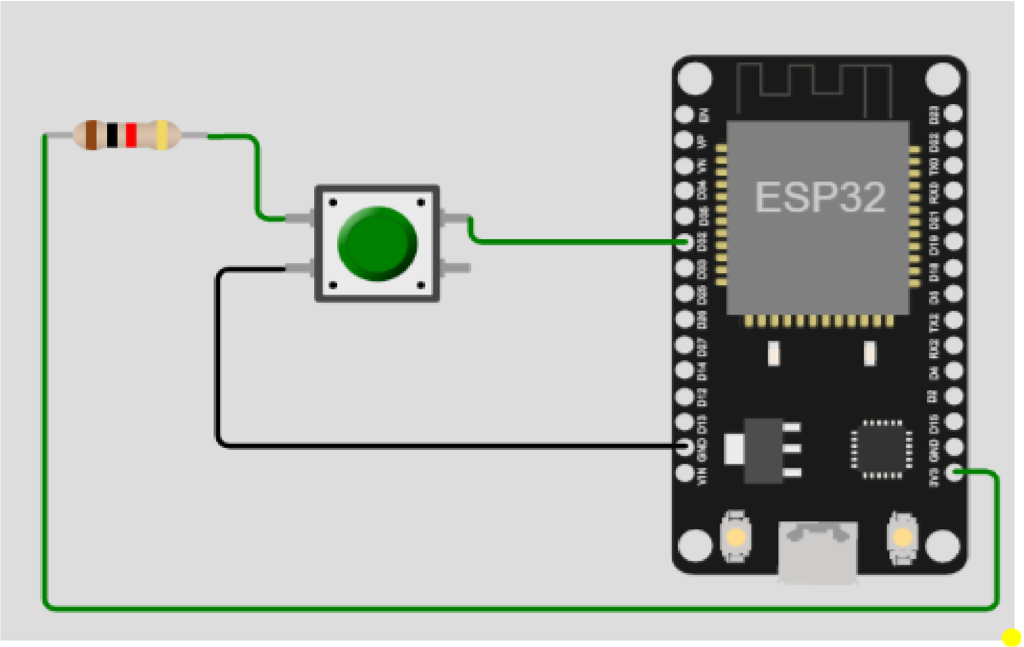
Reg. no.: 20BEC1055

Task: In Wokwi simulator, connect push button & upload 0 and 1 to IBM cloud.

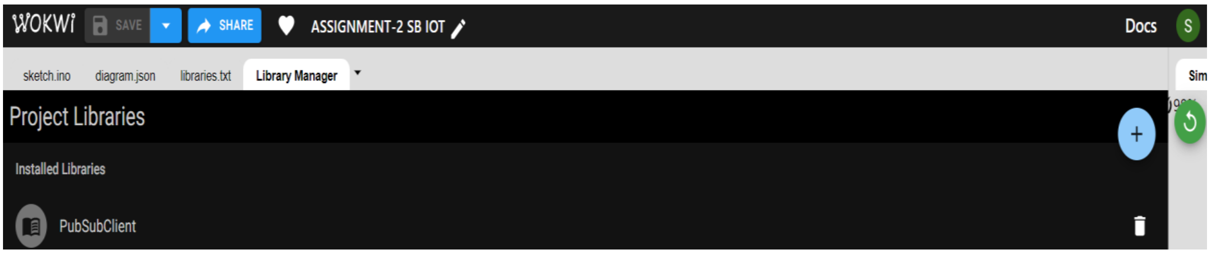
Wokwi Link:

https://wokwi.com/projects/365969714855667713

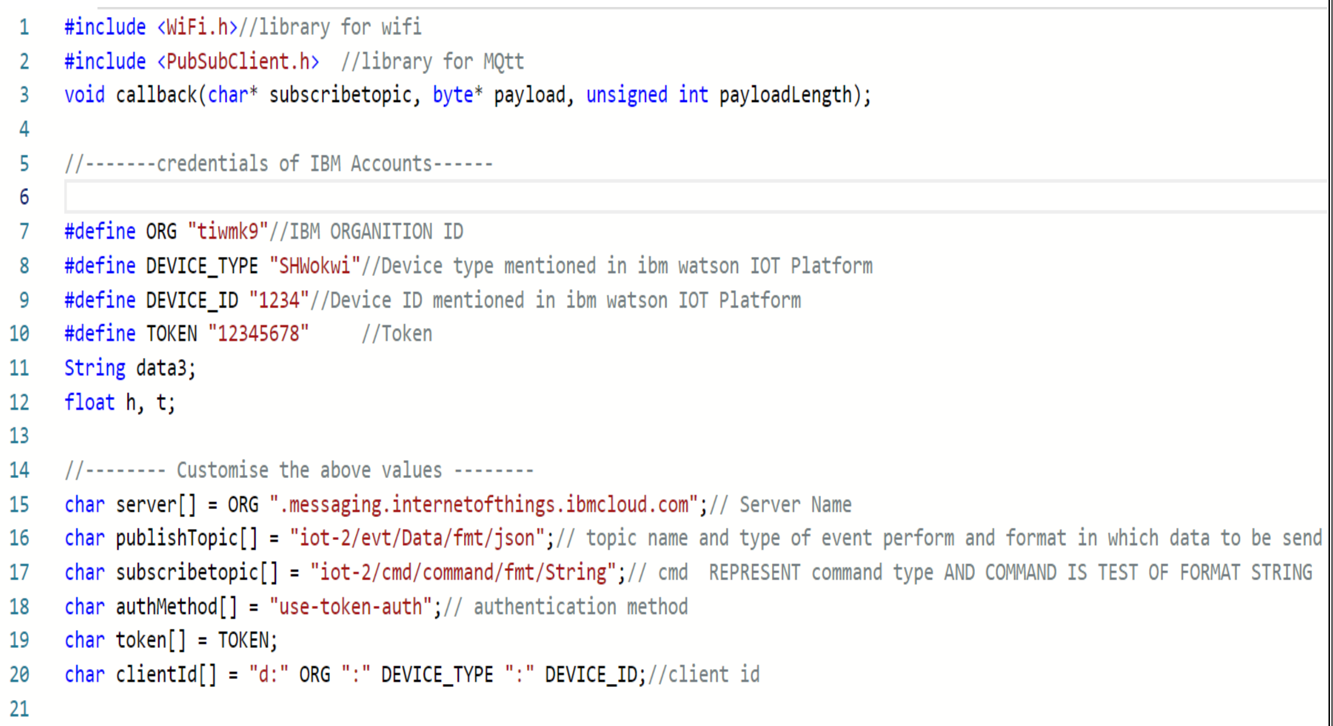
Circuit:



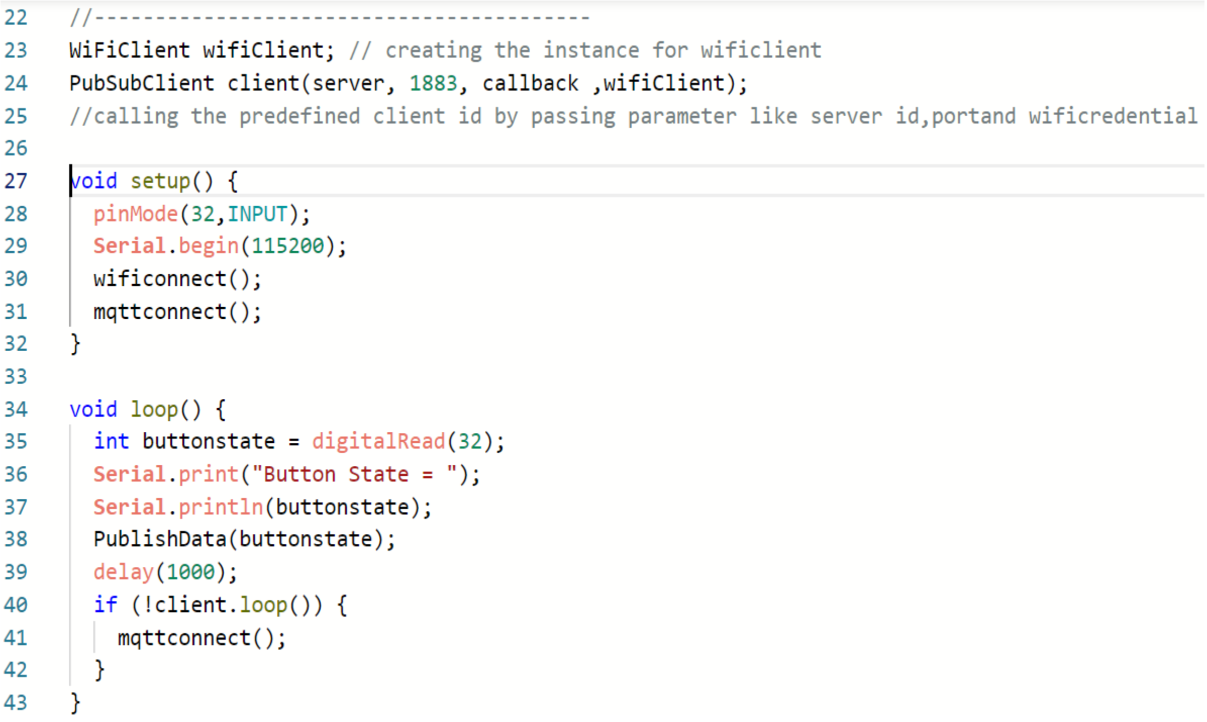
Add the PubSubClient library to the Library manager pane & run the code below



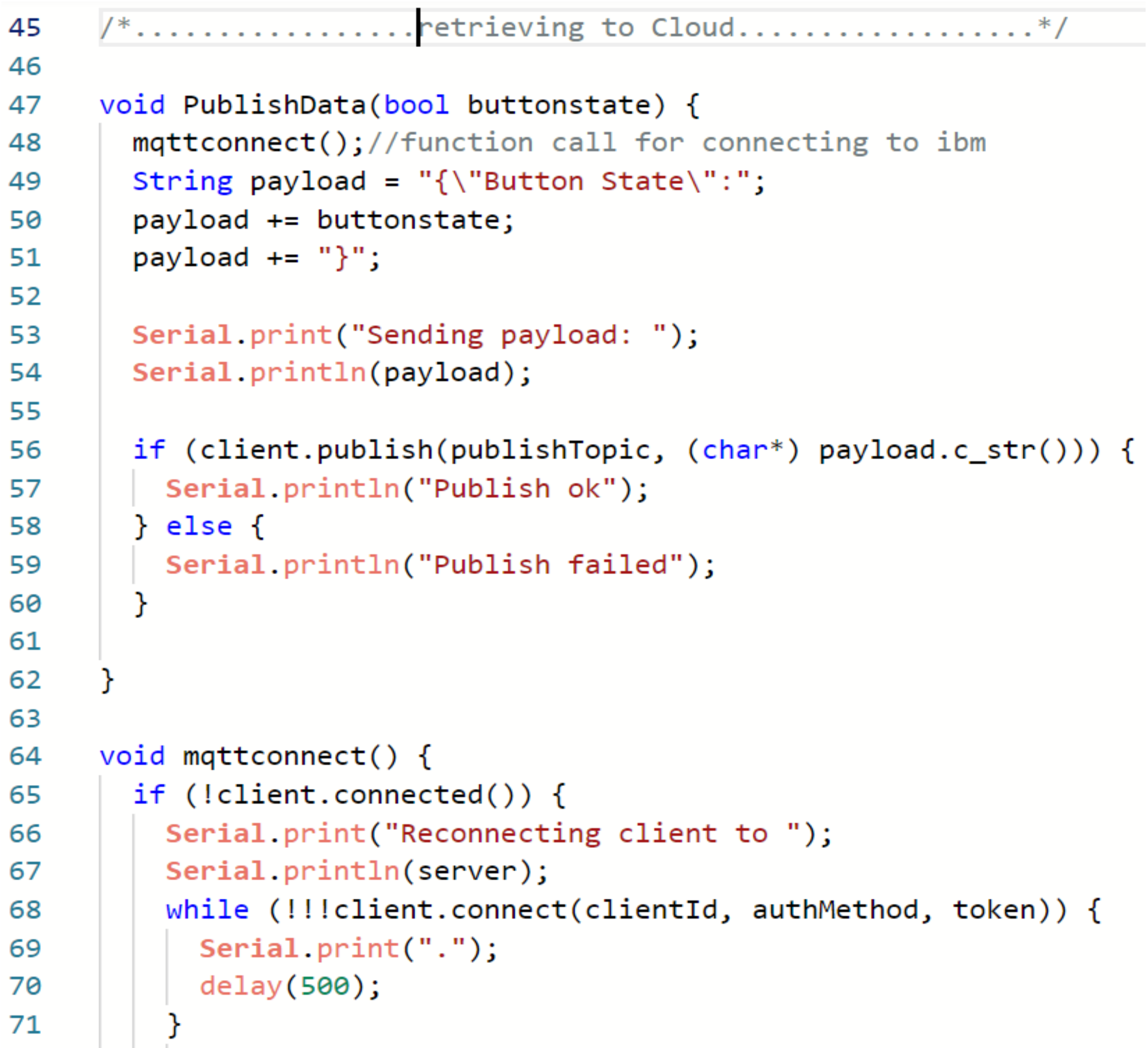
CODE:



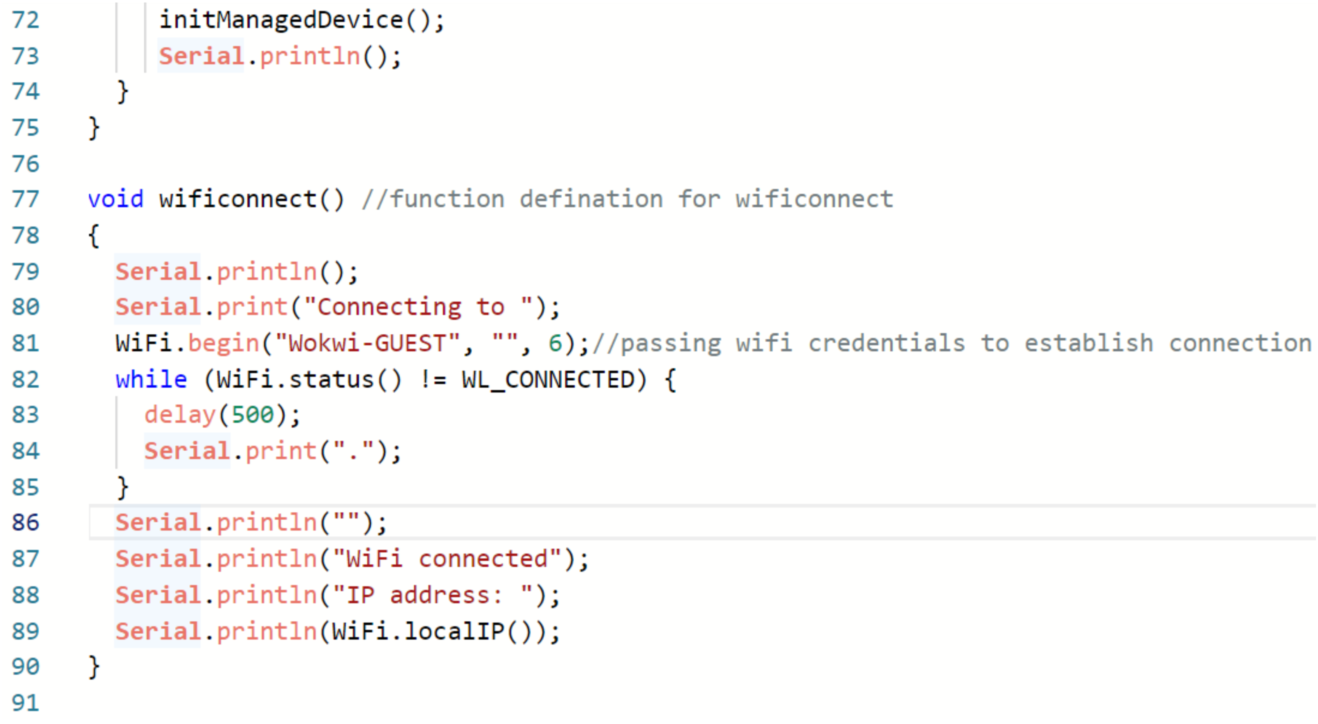
```
#include <WiFi.h>//library for wifi
#include <PubSubClient.h>  //library for MQtt
void callback(char* subscribetopic, byte* payload, unsigned int payloadLength);

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

#define ORG "tiwmk9"//IBM ORGANITION ID
#define DEVICE_TYPE "SHWokwi"//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;
float h, t;

//-------- 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

```



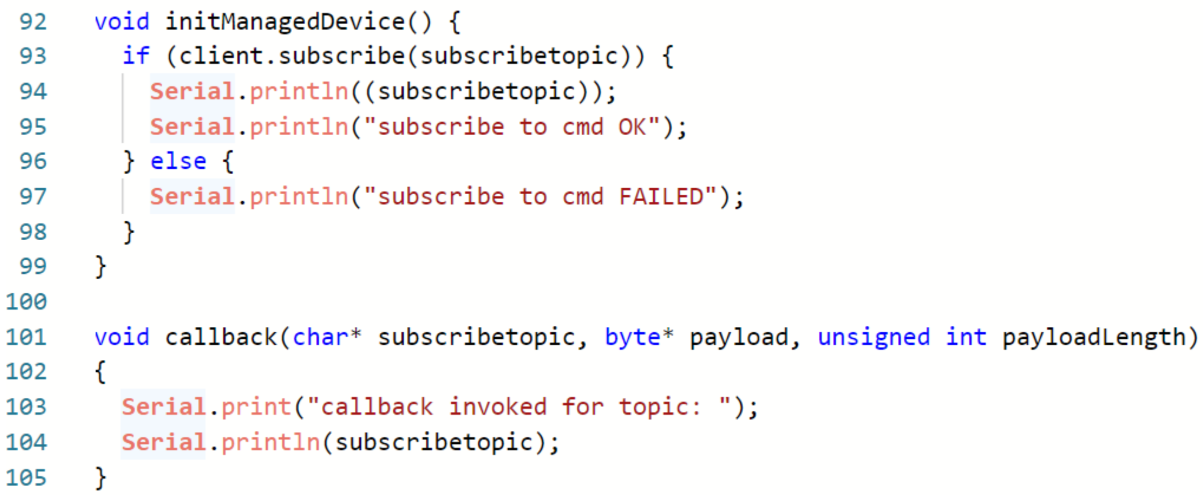
```
//-----------------------------------------
WiFiClient wifiClient; // creating the instance for wificlient
PubSubClient client(server, 1883, callback ,wifiClient);
//calling the predefined client id by passing parameter like server id,portand wificredential

void setup() {
  pinMode(32,INPUT);
  Serial.begin(115200);
  wificonnect();
  mqttconnect();
}

void loop() {
  int buttonstate = digitalRead(32);
  Serial.print("Button State = ");
  Serial.println(buttonstate);
  PublishData(buttonstate);
  delay(1000);
  if (!client.loop()) {
    mqttconnect();
  }
}
```



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

void PublishData(bool buttonstate) {
  mqttconnect();//function call for connecting to ibm
  String payload = "{\"Button State\":";
  payload += buttonstate;
  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);
    }
```

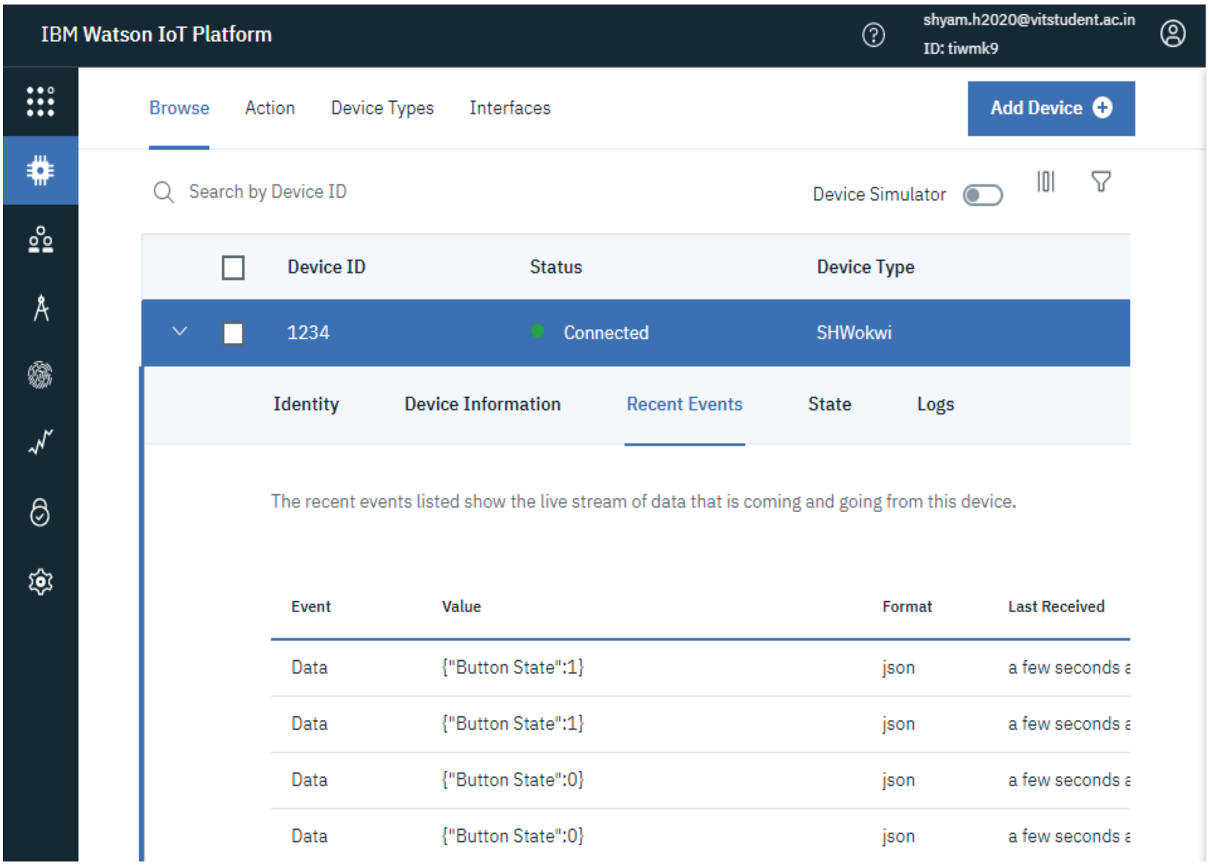


```
    initManagedDevice();
    Serial.println();
  }
}

void wificonnect() //function defination for wificonnect
{
  Serial.println();
  Serial.print("Connecting to ");
  WiFi.begin("Wokwi-GUEST", "", 6);//passing wifi credentials to establish 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);
}
```

OUTPUT:



Device ID	Status	Device Type
1234	● Connected	SHWokwi

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 a
Data	{"Button State":1}	json	a few seconds a
Data	{"Button State":0}	json	a few seconds a
Data	{"Button State":0}	json	a few seconds a

RESULT: Given task was carried out successfully.