Assignment - 2

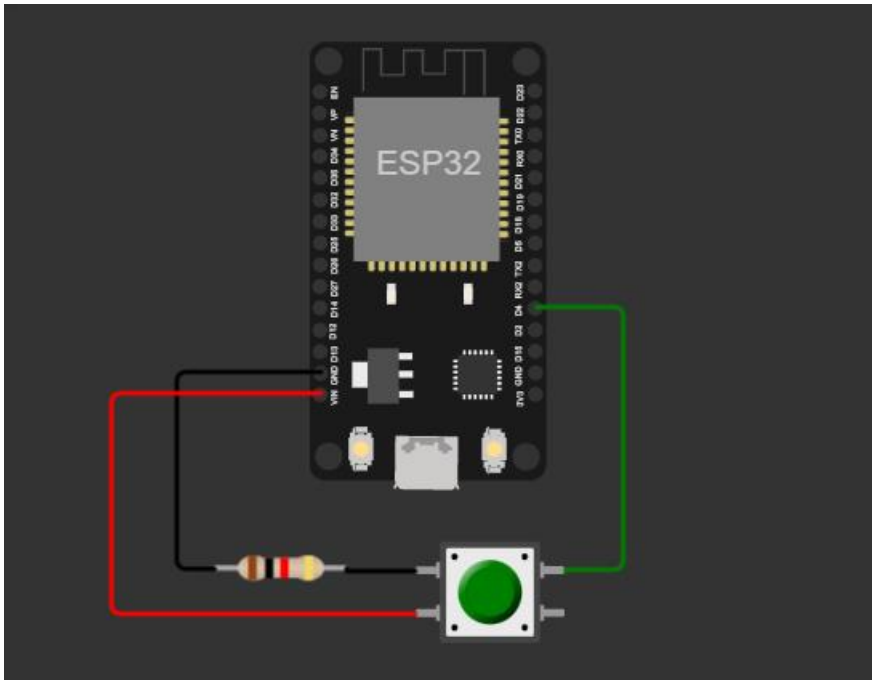
Apoorv Gupta
20BCT0117

Date: 26/05/23

Uploading data on IBM Cloud

Q- Using ESP32, make a circuit in Wokwi using a push button to send 0s and 1s to IBM Cloud.

Circuit:



For testing we will use builtin LED : pin no. – 2(GPIO2) to check if the push button is working or not.

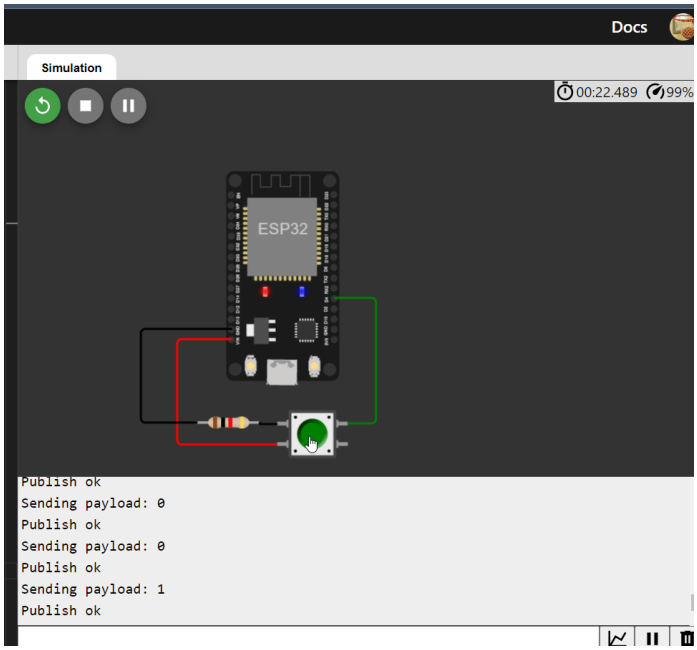
Code:

```
#include <WiFi.h>
#include <PubSubClient.h>
#define OUT 4

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

#define ORG "#######"   // it should remain confidential
#define DEVICE_TYPE "VirtualIoT"
#define DEVICE_ID "5901"
#define TOKEN "########"  // it should remain confidential
String data3;

char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/Data/fmt/json";
char subscribetopic[] = "iot-2/cmd/command/fmt/String";
char authMethod[] = "use-token-auth";
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;

WiFiClient wifiClient;
PubSubClient client(server, 1883, callback, wifiClient);

void setup(){
  Serial.begin(115200);
  pinMode(OUT, INPUT);
  pinMode(LED_BUILTIN, OUTPUT);
  delay(10);
  Serial.println();
  wificonnect();
  mqttconnect();
}

void loop(){
  int state = digitalRead(OUT);
  digitalWrite(LED_BUILTIN, state);
  PublishData(state);
  delay(1000);
  if (!client.loop()) {
    mqttconnect();
  }
}

void PublishData(int value) {
  mqttconnect();
  String payload = String(value);

  Serial.print("Sending payload: ");
```

```
  Serial.println(payload);

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

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("Connecting to ");

  WiFi.begin("Wokwi-GUEST", "", 6);
  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 FAIOUT");
  }
}

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++) {
```

```
    data3 += (char)payload[i];
  }
  Serial.println("data: " + data3);

}
```

OUTPUTS:

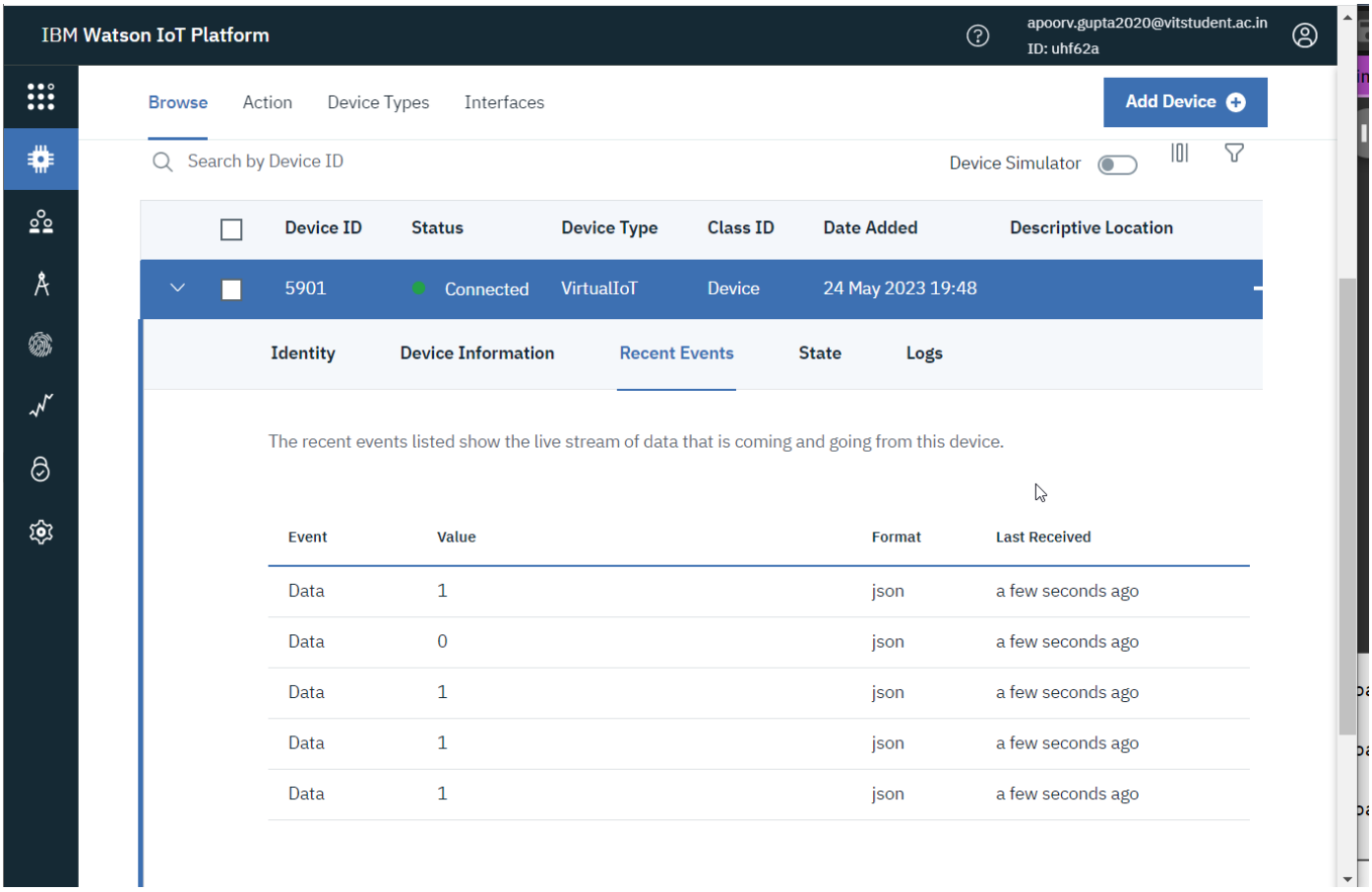


LED Glows(Blue)

Serial Monitor:

```
Connecting to ....
WiFi connected
IP address:
10.10.0.2
Reconnecting client to uhf62a.messaging.internetofthings.ibmcloud.com
iot-2/cmd/command/fmt/String
subscribe to cmd OK

Sending payload: 0
Publish ok
Sending payload: 0
Publish ok
Sending payload: 1
Publish ok
Sending payload: 1
Publish ok
Sending payload: 1
Publish ok
Sending payload: 0
Publish ok
Sending payload: 1
```

IBM Cloud output:



Wokwi Project Link:

[Assignment2Push - Wokwi ESP32, STM32, Arduino Simulator]