

M480 WiFi TCP服务器

NuMicro® 32 位系列微控制器范例代码介绍

文件信息

| 代码简述 | 本范例使用 M480 UART 驱动 ESP8266,实现 TCP 服务器功能 | |
|-------|---|--|
| BSP版本 | M480 Series BSP CMSIS V3.04.000 | |
| 开发平台 | NuMaker-IoT-M487 v1.3 | |

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1 功能介绍

1.1 简介

本范例程序代码使用M480系列芯片,通过UART1驱动ESP8266 WiFi模块,建立无线存取点,并提供TCP服务器功能。当计算机透过WiFi连接到ESP8266无线存取点后,可以开启浏览器观察NuMaker-IoT-M487 SW2(GPIO F11) 和 SW3(GPIO G5) 按键的状态。

1.2 原理

范例程序核心使用了ESP-AT Lib函式库。ESP-AT Lib是一个AT命令解析器,用于使用AT命令与ESP8266 WiFi模块通信。ESP-AT Lib提供了Station和Access point无线网络管理API,并提供了BSD socket相似的API,方便应用程序建立主从式架构的网络应用。

程序里一开始让ESP8266模块进入Access point模式,接着开启HTTP 80端口,等待网络连接。此时可以让计算机接入SSID为"ESP_AccessPoint"且Key为"12345678"的无线存取点,并自动取得IP。最后打开浏览器,连接80埠,取得目前NuMaker-IoT-M487 SW2和SW3按键的状态。

1.3 执行结果

```
Lecount Jean Fam VT

File Eds Satup Control Mondow Empicode Help

FroeRIOS is starting ...

Starting ESP application!

Initializing ESP-AT Lib

Library Initialized!

Station disconnected from access point with MAC address: 7C:7A:91:97:7A:07

Device reset detected!

Device reset detected!

Device reset detected!

Device reset detected!

ESP-AT Lib initialized!

SEP-AT Lib initialized!

SEP-AT Lib initialized!

Server netconn created

Server netconn created

Server netconn coreated

Server netconn listens on port 80

New station connected to access point with MAC address: 7C:7A:91:97:7A:07

IP 192.108.4.2 assigned to station with MAC address: 7C:7A:91:97:7A:07

Netconn new client connected. Starting new thread...

Netconn data received, 277 bytes

Main page request

Netconn data received, 277 bytes

Main page request

Netconn new client connected. Starting new thread...

Netconn hew connect client thion accepteread created!

Output

Netconn data received, 277 bytes

Main page request

Netconn new client connected. Starting new thread...

Netconn new client connected...
```



2 代码介绍

设置 ESP8266 模块为 Access point 模式:

```
/* Enable access point only mode */
if ((res = esp_set_wifi_mode(ESP_MODE_AP, 1, NULL, NULL, 1)) == espOK)
{
    printf("ESP set to access-point-only mode\r\n");
}
else
{
    printf("Problems setting ESP to access-point-only mode: %d\r\n", (int)res);
}

/* Configure access point */
    res = esp_ap_configure("ESP_AccessPoint", "12345678", 10, ESP_ECN_WPA2_PSK, 5, 0, 0,
NULL, NULL, 1);

if (res == espOK)
{
    printf("Access point configured!\r\n");
}
```

开启80 埠服务:

```
/*
  * First create a new instance of netconn
  * connection and initialize system message boxes
  * to accept clients and packet buffers
  */
server = esp_netconn_new(ESP_NETCONN_TYPE_TCP);

if (server != NULL)
{
    printf("Server netconn created\r\n");

    /* Bind network connection to port 80 */
    res = esp_netconn_bind(server, 80);
```



```
if (res == espOK)
        {
            printf("Server netconn listens on port 80\r\n");
            * Start listening for incoming connections
            * on previously binded port
            res = esp netconn listen(server);
            while (1)
            {
                 * Wait and accept new client connection
                 * Function will block thread until
                 * new client is connected to server
                 */
                res = esp_netconn_accept(server, &client);
                if (res == espOK)
                {
                    printf("Netconn new client connected. Starting new thread...\r\n");
                     * Start new thread for this request.
                     * Read and write back data to user in separated thread
                     * to allow processing of multiple requests at the same time
                     */
                    if (esp_sys_thread_create(NULL, "client",
(esp_sys_thread_fn)netconn_server_processing_thread, client, 512, ESP_SYS_THREAD_PRIO))
                    {
                        printf("Netconn client thread created\r\n");
                    }
                    else
                    {
                        printf("Netconn client thread creation failed!\r\n");
                        /* Force close & delete */
                        esp_netconn_close(client);
```



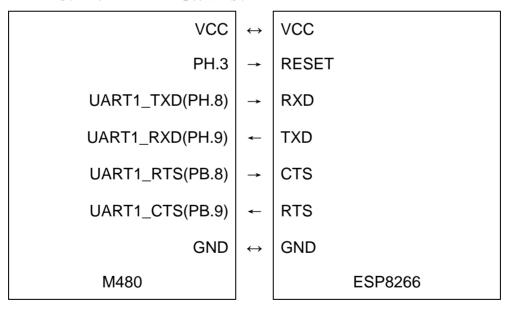
```
esp_netconn_delete(client);
                }
            }
            else
            {
                printf("Netconn connection accept error!\r\n");
                break;
            }
        }
    }
    else
    {
        printf("Netconn server cannot bind to port\r\n");
    }
}
else
{
    printf("Cannot create server netconn\r\n");
}
```



3 软件与硬件环境

- 软件环境
 - BSP 版本
 - ◆ M480 Series BSP CMSIS V3.04.000
 - IDE 版本
 - ◆ Keil uVersion 5.26
- 硬件环境
 - 电路组件
 - ◆ NuMaker-IoT-M487
 - ◆ ESP8266 模块
 - 示意图

M480 通过 UART1 接口与 ESP8266 模块连接。





4 目录信息

EC_M480_WiFi_TCPServer_V1.00

Library Sample code header and source files

Cortex® Microcontroller Software Interface Standard

(CMSIS) by Arm® Corp.

Device CMSIS compliant device header file

StdDriver All peripheral driver header and source files

SampleCode

ExampleCode Source file of example code

ThirdParty

FreeRTOS A real time operating system available for free

download. Its official website is: http://www.freertos.org/

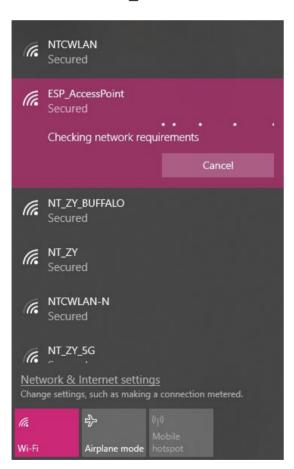
ESP_AT_Lib ESP_AT Library commands parser is generic, platform

independent, library for communication with ESP8266 WiFi module using AT commands. Its official website is https://majerle.eu/documentation/esp at/html/index.html



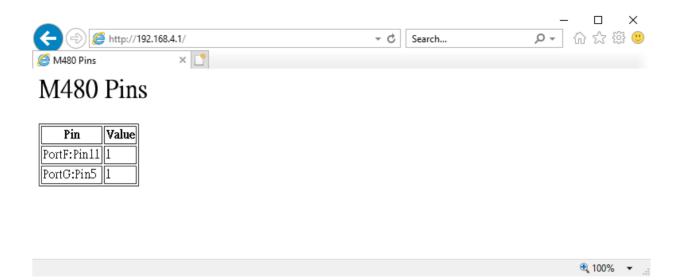
5 如何执行范例程序

- 1. 根据目录信息章节进入 ExampleCode 路径中的 KEIL 文件夹,双击 M480_WiFi_TCPServer.uvproj。
- 2. 进入编译模式接口
 - a. 编译
 - b. 下载代码至内存
 - c. 进入/离开除错模式
- 3. 进入除错模式接口
 - a. 执行代码
- 4. 计算机连接"ESP AccessPoint"无线存取点 (key:12345678)





5. 打开浏览器,并输入 http://192.168.4.1/





6 修订纪录

| Date | Revision | Description |
|--------------|----------|-------------|
| Oct. 7, 2019 | 1.00 | 1. 初始发布. |



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