M031 多应用程序跳转

NuMicro® 32 位系列微控制器范例代码介绍

文件信息

应用简述	此范例是 M031 通过 IAP 方式跳转到所需执行的应用程序
BSP 版本	M031 BSP CMSIS V3.03.000
开发平台	NuMaker-M031SD V1.1

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1 概述

此范例有3个M031应用程序，通过IAP方式，更改中断向量表地址，和MCU系统复位，跳转到所需执行的应用程序。

1.1 原理

此范例有3个应用程序：

- 应用程序 MultiLD 为放置在 LDROM 区域代码，开始地址为 0x100000；
- 应用程序 MultiAP1 为放置在 APROM 区域代码，开始地址为 0；
- 应用程序 MultiAP2 为放置在 APROM 区域代码，开始地址为 0x4000。

芯片配置为：

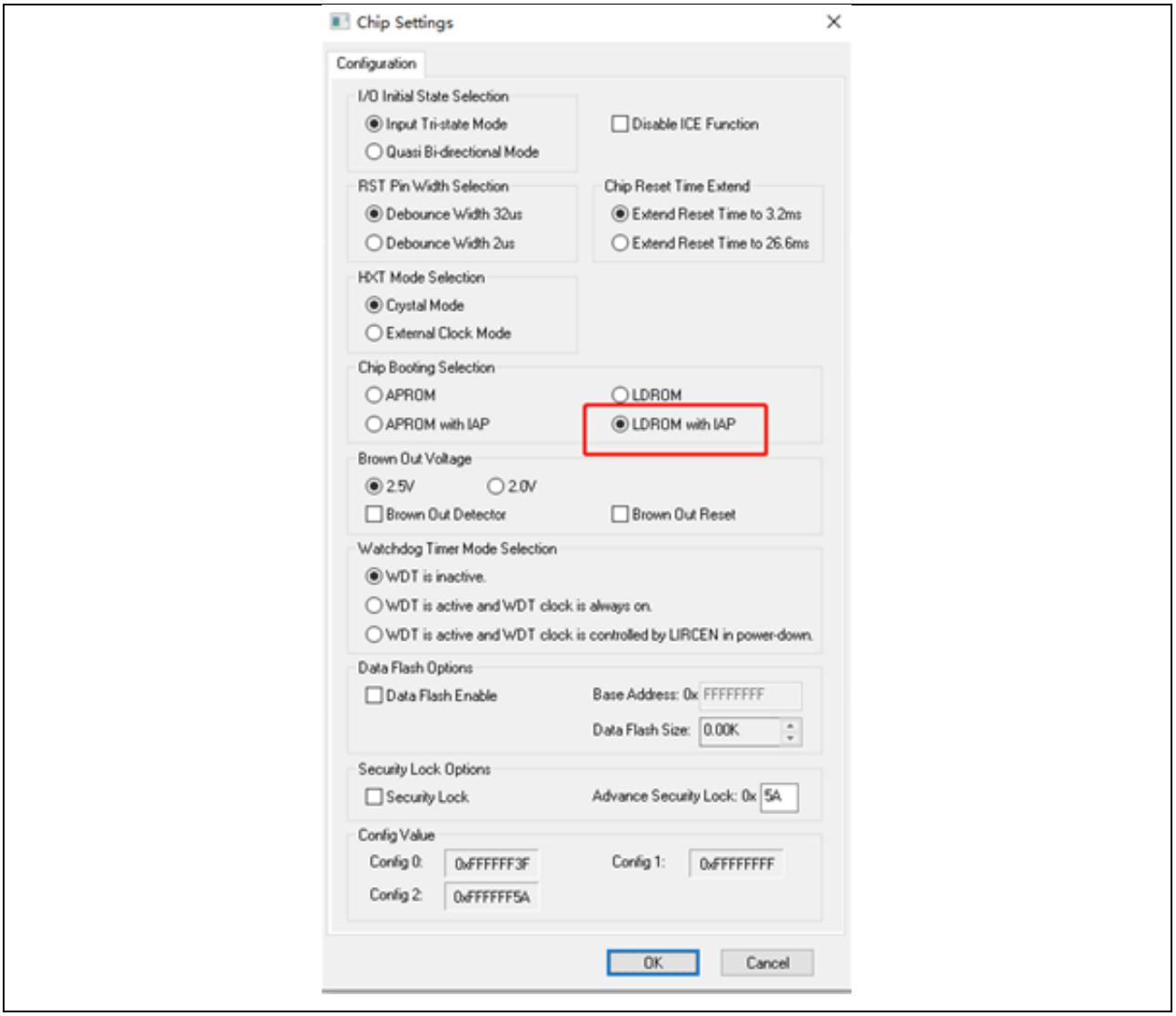

图 1-1 芯片配置

MultiLD Keil工程配置：

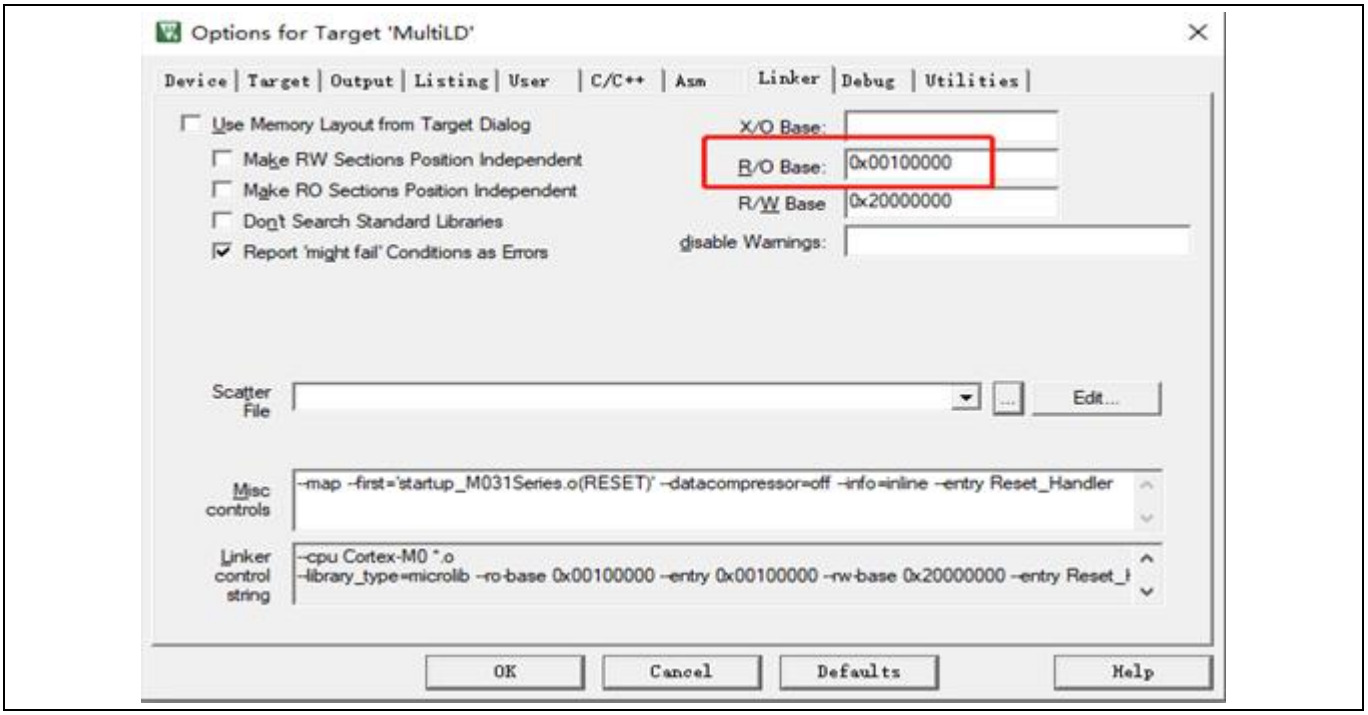

图 1-2 MultiLD Keil 工程配置

MultiAP1 Keil工程配置：

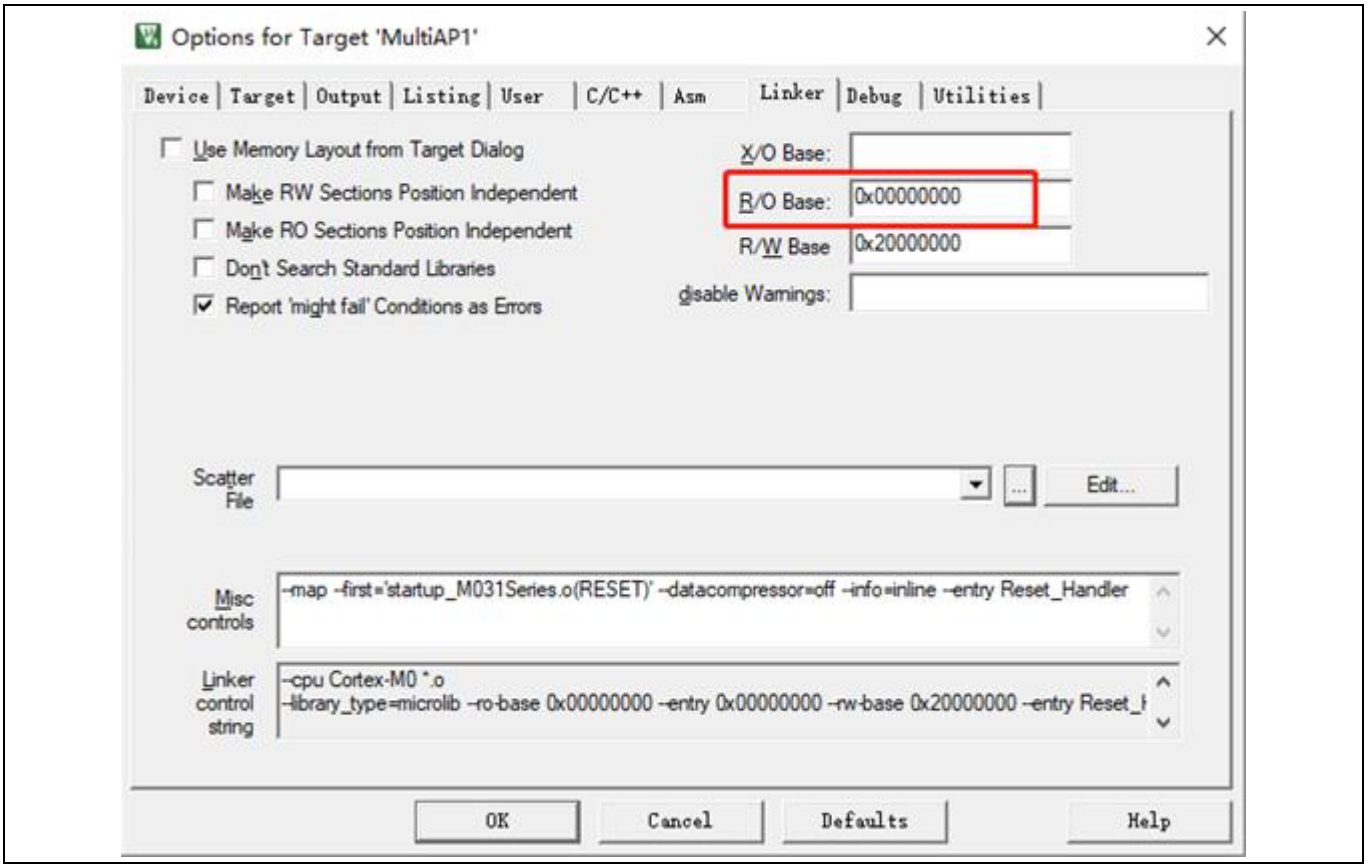

图 1-3 MultiAP1 Keil 工程配置

MultiAP2 Keil工程配置：

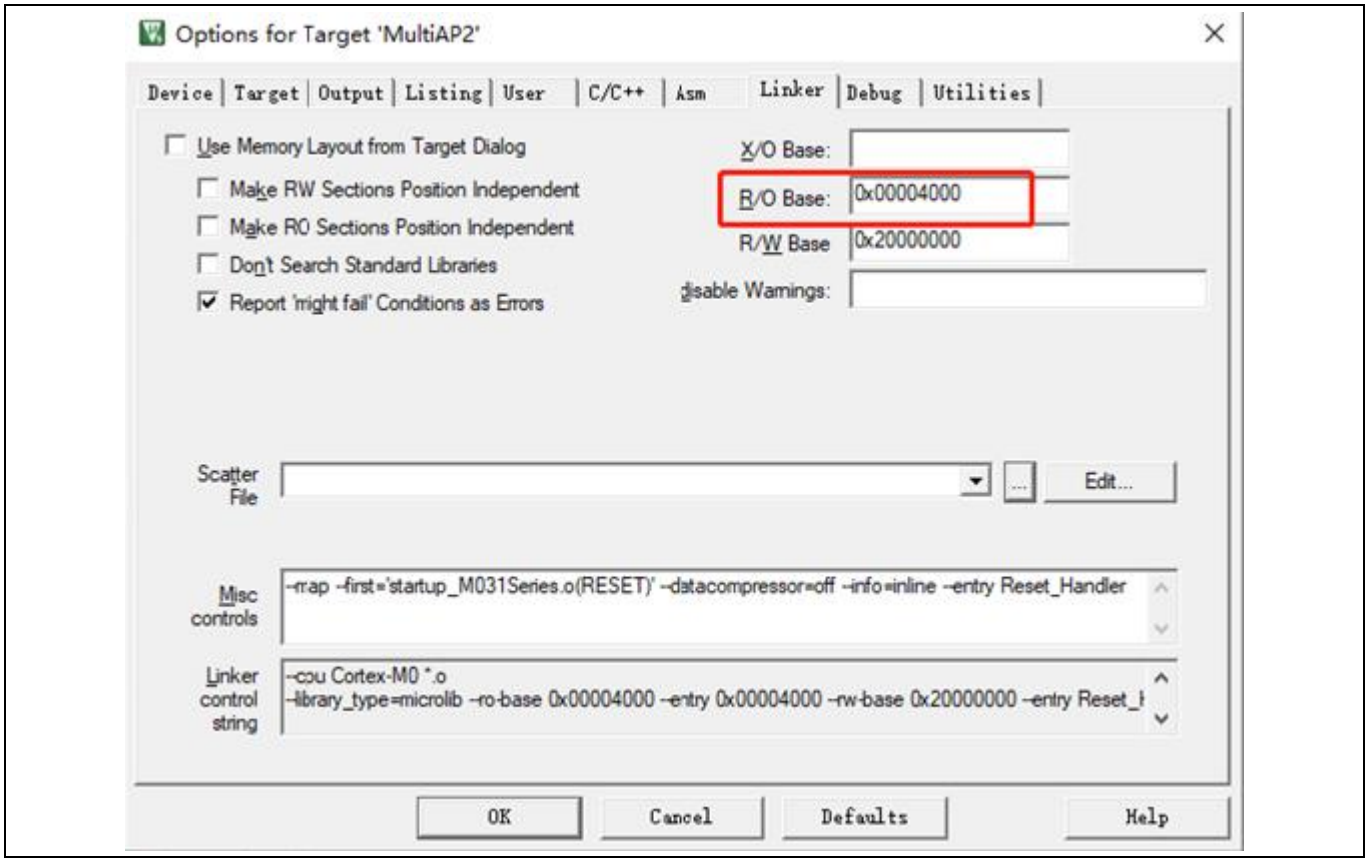

图 1-4 MultiAP2 Keil 工程配置

1.2 ICP 烧写程序

连接ICP工具，烧写应用程序到芯片。同时烧写MultiAP1.bin和MultiLD.bin文件和Chip CONFIG配置如下图1-5和图1-6：

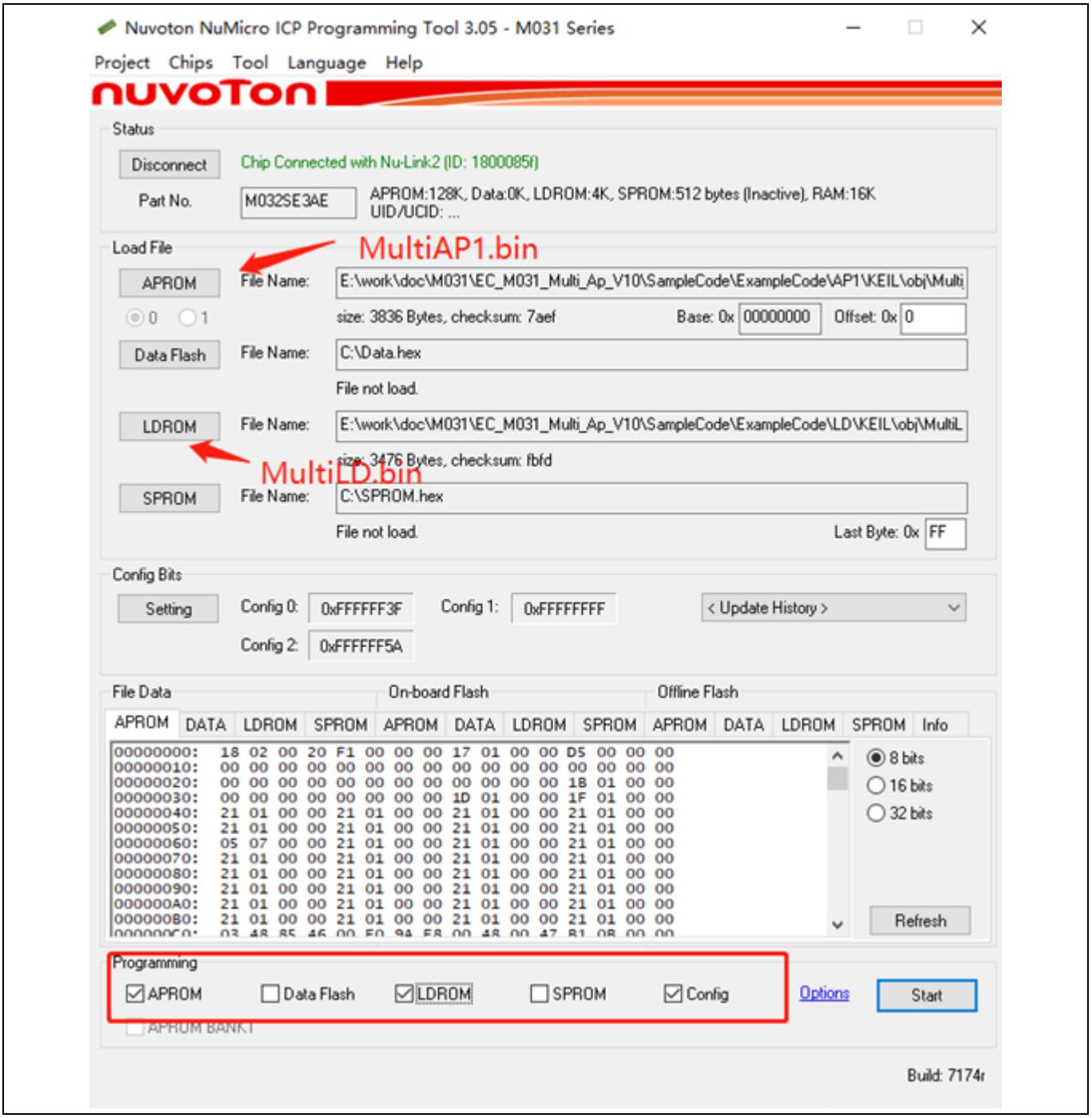

图 1-5 ICP 配置（MultiAP1.bin 和 MultiLD.bin 文件烧写）

再连接ICP工具，同样方式烧写应用程序MultiAP2.bin，注意程序偏移地址是0x4000。

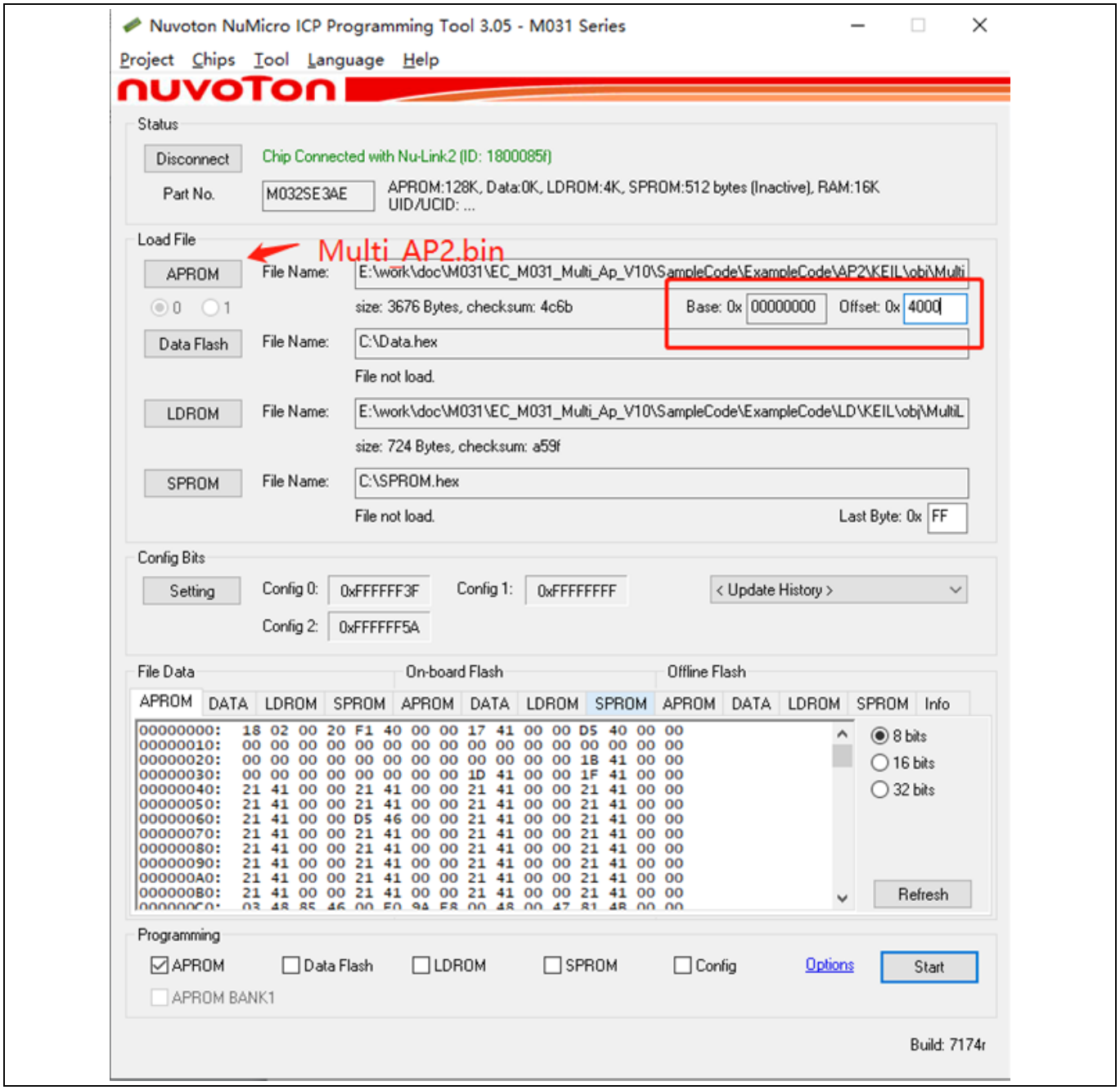

图 1-6 ICP 配置（MultiAP2.bin 文件烧写）

1.3 执行结果

通过UART，连接到电脑串口工具，并根据提示，输入相应字符，运行结果如下图1-7：

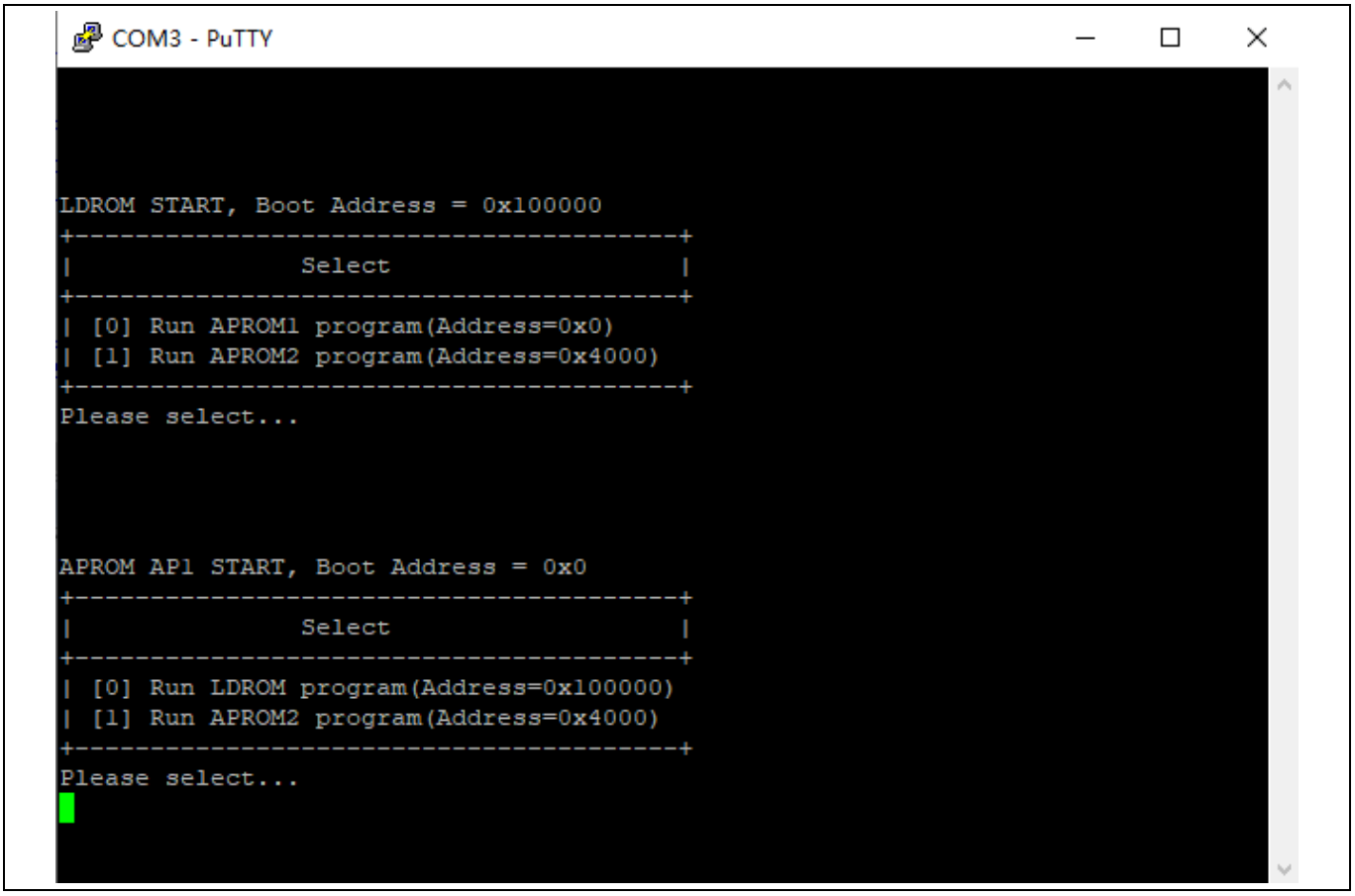

图 1-7 执行结果

2 代码介绍

设置中断向量地址及 MCU 系统复位

```
#define AP1_BASE_ADDRESS 0
#define AP2_BASE_ADDRESS 0x4000
#define LD_BASE_ADDRESS 0x100000
SYS_UnlockReg();
/* Enable FMC ISP function */
FMC_Open();
/*Disable all interrupts*/
NVIC->ICER[0] = 0xFFFFFFFF;

FMC_SetVectorPageAddr(AP2_BASE_ADDRESS);
/* Reset CPU only to reset to new vector page */
// SYS_ResetCPU();
/* Reset System to reset to new vector page. */
NVIC_SystemReset();
```

3 软件与硬件需求

- 软件需求
  - BSP 版本
    - M031_Series_BSP_CMSIS_V3.03.000
  - IDE 版本
    - Keil uVersion 5.26
- 硬件需求
  - 电路组件
    - NuMaker-M031SD V1.1

4 目录信息

EC_M031_Multi_Ap_V1.00	
Library	Sample code header and source files
CMSIS	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

图 4-1 目录信息

5 范例程序执行

1. 通过 ICP 工具连接芯片，进入 Config Bits->Setting 配置，更改 Chip booting selection 为 LDROM with IAP。
2. 编译程序，连接 ICP 工具进入下载模式
   - 分别打开 MultiLD，MultiAP1，MultiAP2 工程进行完整编译；
   - 连接 ICP 工具，并下载程序；
   - MultiLD 程序放置于 LDROM；
   - MultiAP1 程序放置于 APROM，偏移地址为 0；
   - MultiAP2 程序放置于 APROM，偏移地址为 0x4000；
   - 进行下载。
3. 重新上电复位 mcu
   - 执行代码；
   - 通过串口输入提示字符即可跳转到所需应用。

6 修订纪录

Date	Revision	Description
2021.05.25	1.00	1. 初始发布.

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