Load and Call Functions in SRAM

Example Code Introduction for 32-bit NuMicro® Family

Information

Application	The example code demonstrates how to dump the binary code of a function, and fill the binary code to SRAM then call it.
BSP Version	M451 Series BSP V3.01.001
Hardware	Any M451 series boards

1 Function Description

1.1 Introduction

The example code has two steps to demonstrate

- Dump the binary code of a function.
- Fill the binary code to SRAM then call it.

1.2 Principle

In the example code, func_in_SRAM.c is executed in SRAM. To build your own function, modify the *RAM_func()* in func_in_SRAM.c to your own function. Then,

1. Define (i.e. Uncomment #define) `BUILD_FUNC` (in func_in_SRAM.h) to compile the code.
2. Find the size of RW_IRAM2 region. You can find similar content like following in map file.

```
Execution Region RW_IRAM2 (Base: 0x20007000, Size: 0x0000000c, Max: 0x00001000, ABSOLUTE)
```

3. Fill the size to `FUNC_SIZE` in func_in_SRAM.h.
4. Compile and run the code again to dump the function binary code to UART0. You have to connect UART0 to PC running console program to get the result.
5. Cut the result between "`--- Dump Begin ---`" & "`--- Dump End ---`", then paste to `FuncBin[]` array in main.c
6. Comment `#define BUILD_FUNC`, compile the code again and run it.

1.3 Demo Result

The default project is already well built to call function in SRAM. Please follow steps in previous session to build and test your own function.

2 Code Description

The example has well documented in source code. Please follow steps described in session 1.2 to build your own function to test.

3 Software and Hardware Environment

Software Environment

- BSP version
  - M451 Series BSP CMSIS V3.01.001
- IDE version
  - Keil uVision 5.18 or later

Hardware Environment

- Circuit components
  - Any M451 series boards

4 Directory Information

- EC_M451_Load_and_Call_Function_in_SRAM_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

5 How to Execute Example Code

1. Browsing into sample code folder by Directory Information (section 4) and double click Load_and_Call_Function_in_SRAM.uvproj.
2. Enter Keil compile mode
   a. Build
   b. Download
   c. Start/Stop debug session
3. Enter debug mode
   a. Run

6 Revision History

Date	Revision	Description
Jun. 14, 2019	1.00	Initial issue

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