





STM Library 설치 및 활용

2009.11.20

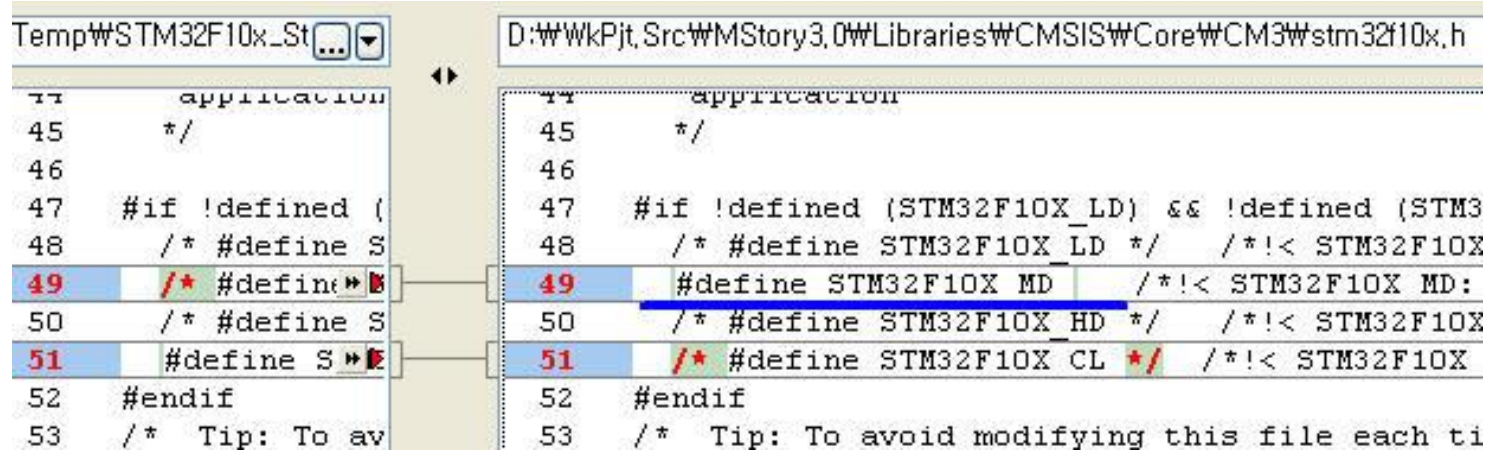
Library 다운로드

Firmware						
Reference	Description	Version	Date	Size	File	File
STM32F10x_StdPeriph_Lib	ARM-based 32-bit MCU STM32F10xxx standard peripheral library	3.1.2	Sep-2009			
STM32F10x_FW_Archive	Archive for legacy STM32F10xxx Firmware Library V2.0.3 and all related Firmware packages	2.0.3	Jul-2009			
STM32_USB-FS-Device_Lib	ARM-based 32-bit MCU STM32F10xxx USB Device Full Speed Library	3.0.1	May-2009			
STM32F10x_CEC_Lib	CEC (consumer electronic control) C library using the STM32F101xx, STM32F102xx and	2.0.0	May-			

- <http://www.st.com/mcu/devicedocs-STM32F103RB-110.html>
- http://www.st.com/stonline/products/support/micro/files/stm32f10x_stdperiph_lib.zip
- <http://www.st.com/stonline/products/support/micro/files/um0424.zip>
- stm32f10x_stdperiph_lib.zip 파일에서는 STM32F10x_StdPeriph_Lib_V3.1.2 폴더가 생성되고,
- um0424.zip에서는 STM32_USB-FS-Device_Lib_V3.0.1 폴더 생성

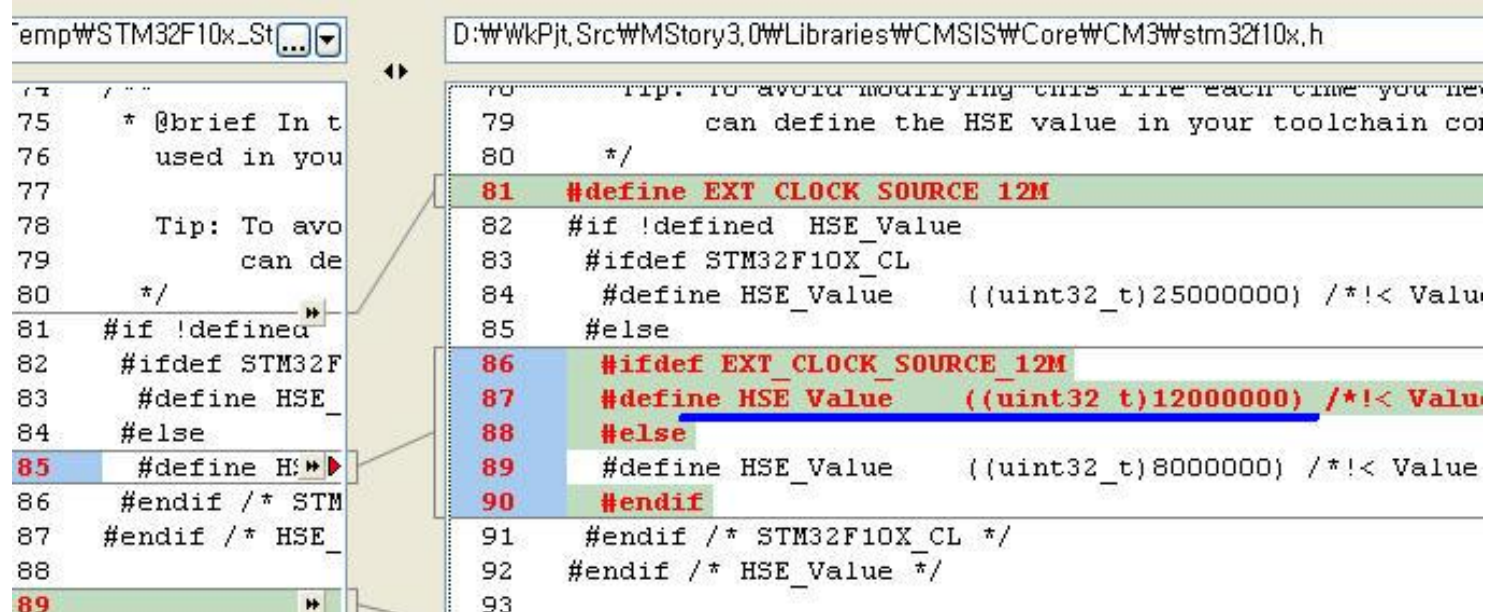
Library 수정 작업 (1)

- \\CMSIS\\Core\\CM3\\stm32f10x.h



```
Temp\\STM32F10x_St... D:\\WkPjt,Src\\MStory3,0\\Libraries\\CMSIS\\Core\\CM3\\stm32f10x,h
71 application
45 */
46
47 #if !defined (
48 /* #define S
49 /* #define S
50 /* #define S
51 #define S
52 #endif
53 /* Tip: To av

71 application
45 */
46
47 #if !defined (STM32F10X_LD) && !defined (STM3
48 /* #define STM32F10X_LD */ /*!< STM32F10X
49 #define STM32F10X_MD /*!< STM32F10X MD:
50 /* #define STM32F10X_HD */ /*!< STM32F10X
51 /* #define STM32F10X_CL */ /*!< STM32F10X
52 #endif
53 /* Tip: To avoid modifying this file each ti
```



```
Temp\\STM32F10x_St... D:\\WkPjt,Src\\MStory3,0\\Libraries\\CMSIS\\Core\\CM3\\stm32f10x,h
75 /* @brief In t
76 used in you
77
78 Tip: To avo
79 can de
80 */
81 #if !defined
82 #ifdef STM32F
83 #define HSE_
84 #else
85 #define HSE_
86 #endif /* STM
87 #endif /* HSE_
88
89

79 tip: to avoid modifying this file each time you ne
79 can define the HSE value in your toolchain co
80 */
81 #define EXT_CLOCK_SOURCE_12M
82 #if !defined HSE_Value
83 #ifdef STM32F10X_CL
84 #define HSE_Value ((uint32_t)25000000) /*!< Valu
85 #else
86 #ifdef EXT_CLOCK_SOURCE_12M
87 #define HSE_Value ((uint32_t)12000000) /*!< Valu
88 #else
89 #define HSE_Value ((uint32_t)8000000) /*!< Value
90 #endif
91 #endif /* STM32F10X_CL */
92 #endif /* HSE_Value */
93
```

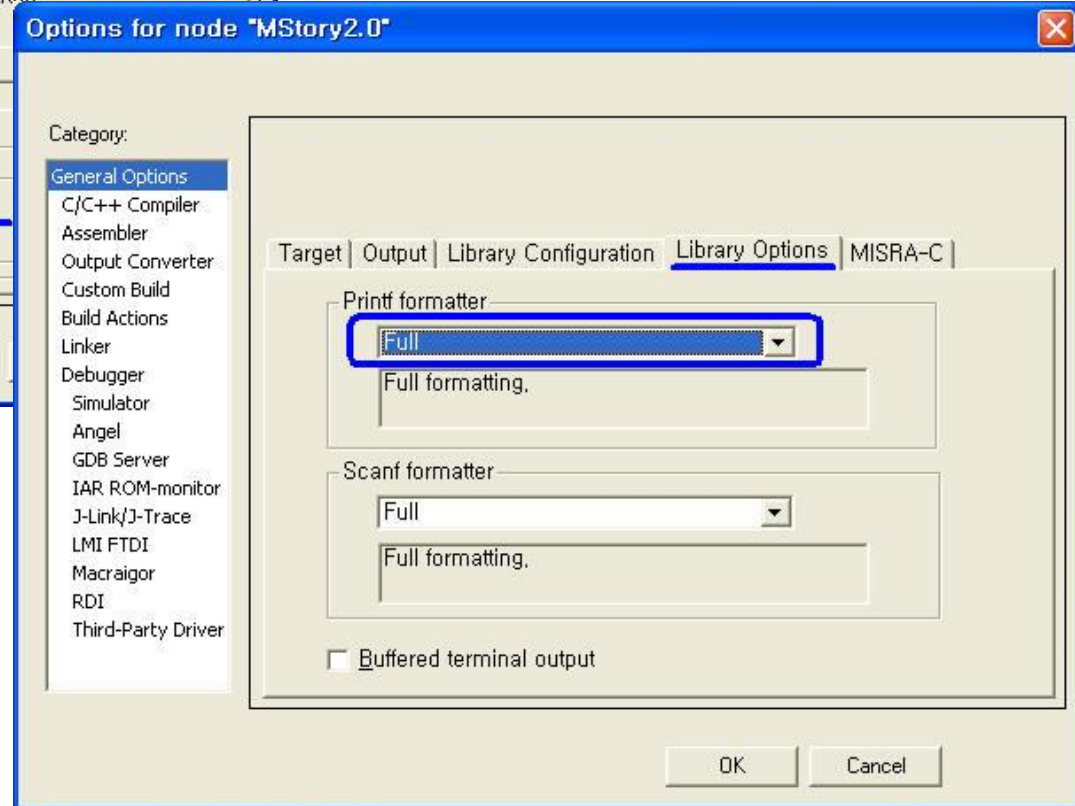
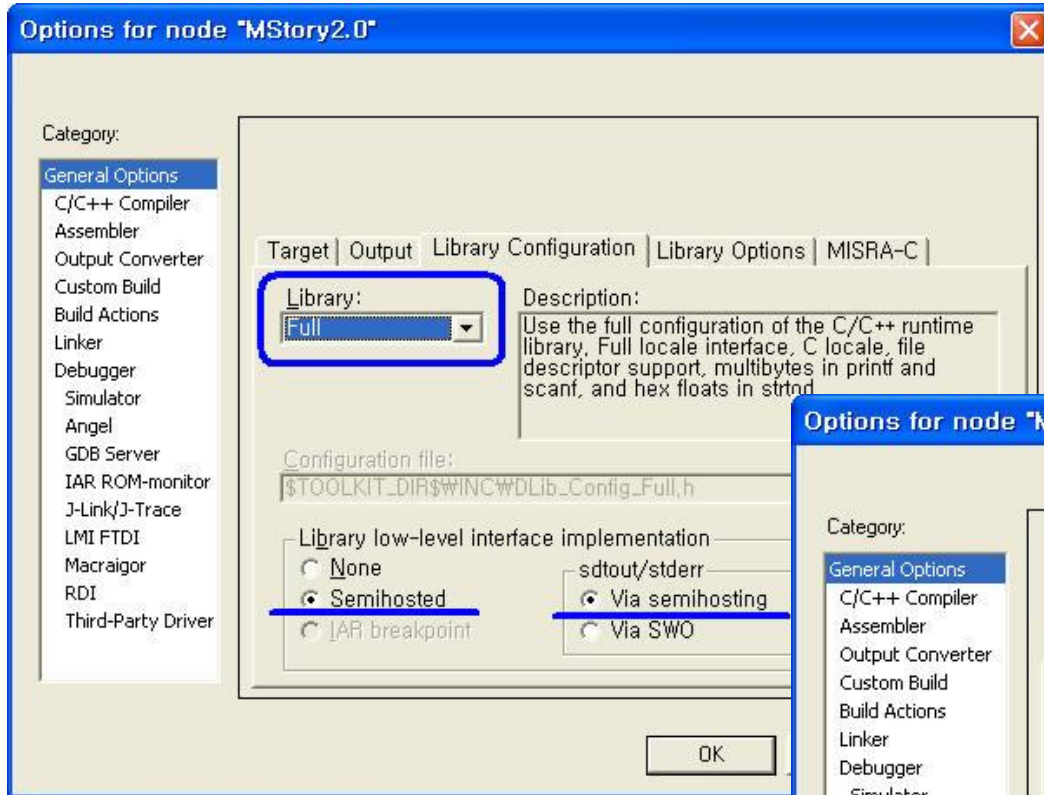
Library 수정 작업 (2)

- \CMSIS\Core\CM3\system_stm32f10x.c

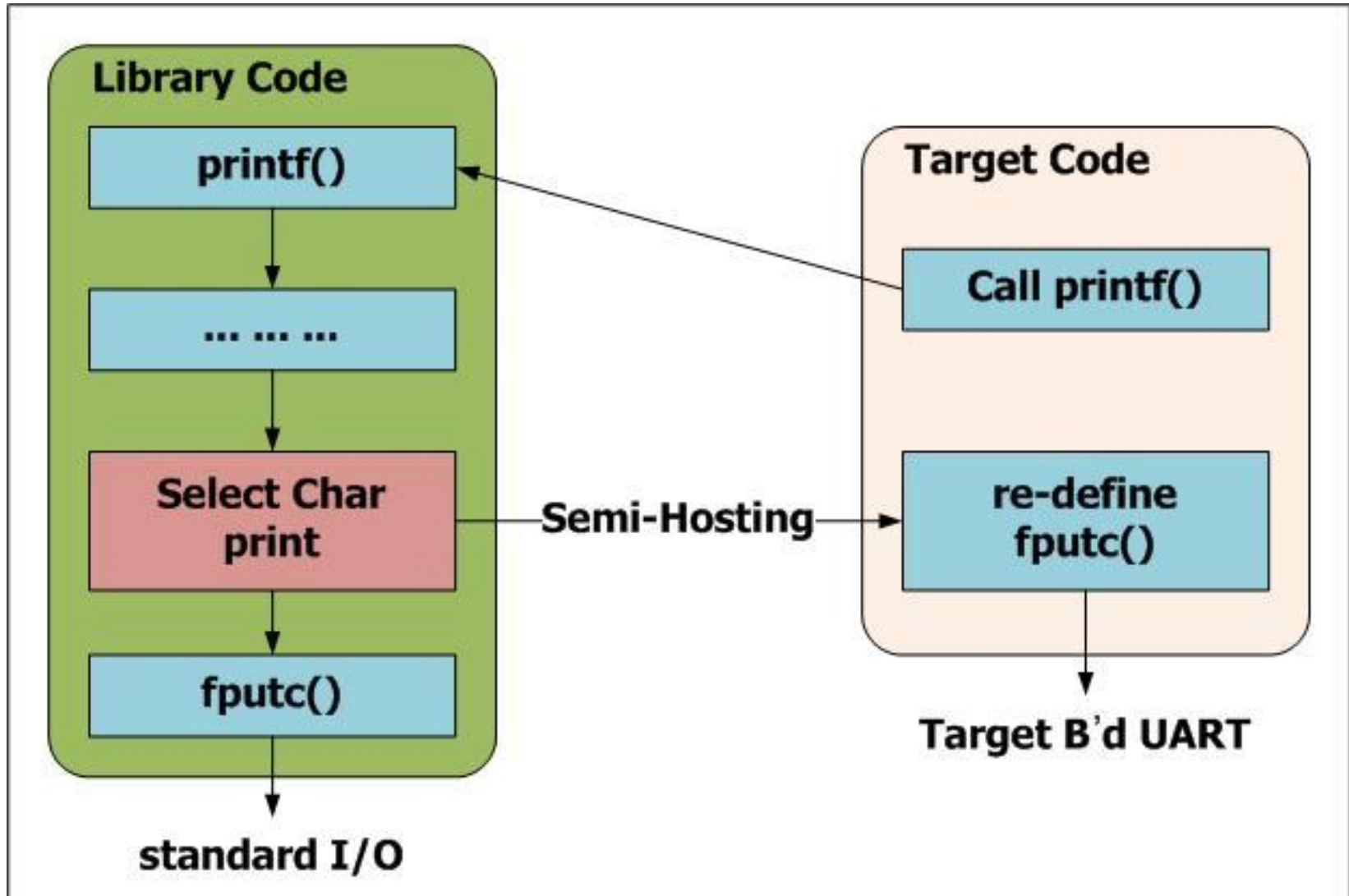
```
TM ... D:\WkPjt Src\WkStory3.0\WLibraries\CMSIS\Core\CM3\system_stm32f10x.c
882 RCC_CFGR_PLLMULL9);
/* P
883 #else
RCC- 884 /* PLL configuration: PLLCLK = HSE * 9 = 72 MHz */
RCC- 885 RCC->CFGR &= (uint32_t)((uint32_t)~(RCC_CFGR_PLLSRC | RCC_CFGR_PLL
886 RCC_CFGR_PLLMULL));
:lse 887 #ifdef EXT_CLOCK_SOURCE_12M
/* 888 RCC->CFGR |= (uint32_t)(RCC_CFGR_PLLSRC_HSE | RCC_CFGR_PLLMULL6);
RCC- 889 #else
890 RCC->CFGR |= (uint32_t)(RCC_CFGR_PLLSRC_HSE | RCC_CFGR_PLLMULL9);
RCC- 891 #endif
:ndit / 892 #endif /* STM32F10X_CL */
893
```

- SetSysClockTo72() 함수의 내용 중의 일부
- 8M를 사용할 경우 이를 이용 72M를 만들기 위해서는 9를 곱해야 한다.
- 12M를 사용하기 때문에 이를 이용해서 72M를 만들려면 6을 곱해야 함

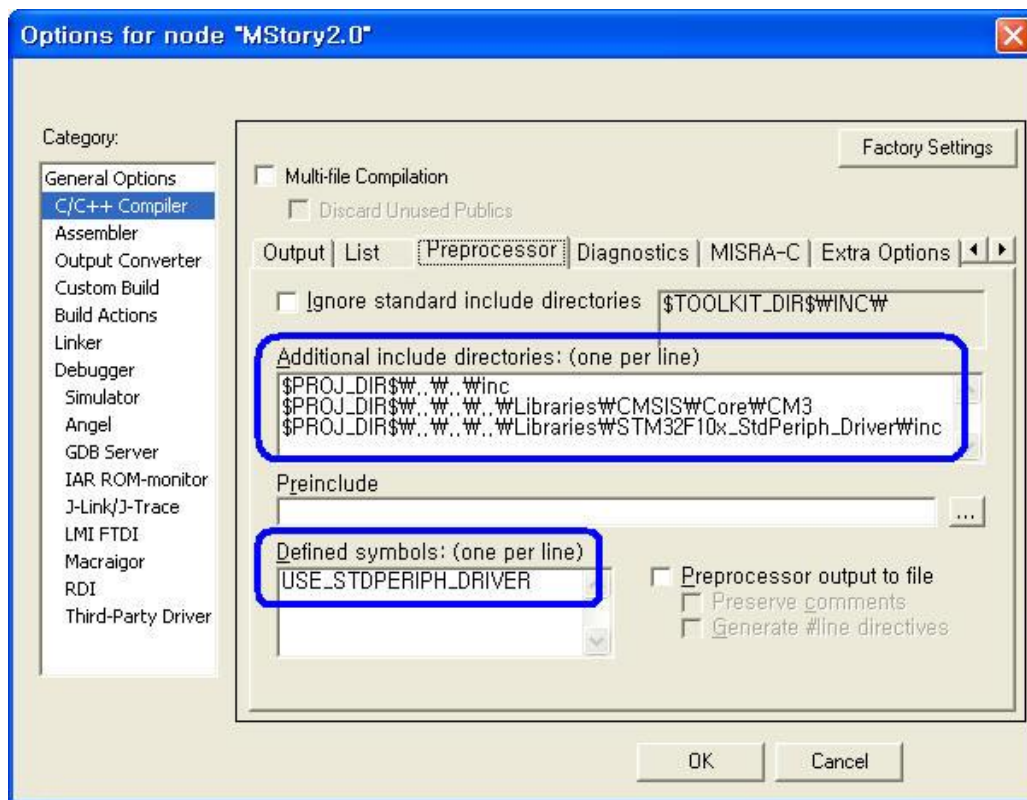
Project Option 수정 (1)



Semi-Hosting



Project Option 수정 (2)



<stm32f10x.h>

#ifdef **USE_STDPERIPH_DRIVER**

 #include "stm32f10x_conf.h"

#endif

- 라이브러리 내용 변경 없이 각종 configuration 변경 가능

stm32f10x_conf.h

```
/* Includes */ /* Uncomment the line below to enable peripheral */
/* #include "stm32f10x_dma.h" */
#include "stm32f10x_gpio.h"
#include "stm32f10x_rcc.h"
#include "stm32f10x_usart.h"
#include "misc.h" /* High level functions for NVIC and
                    SysTick (add-on to CMSIS functions) */

/* #define USE_FULL_ASSERT    1 */
#ifdef USE_FULL_ASSERT
    #define assert_param(expr) ((expr) ? (void)0 : assert_failed((uint8_t
        *)__FILE__, __LINE__))
    void assert_failed(uint8_t* file, uint32_t line);
#else
    #define assert_param(expr) ((void)0)
#endif /* USE_FULL_ASSERT */
```


assert_param 사용 예제

```
void RCC_APB2PeriphClockCmd(uint32_t RCC_APB2Periph,
    FunctionalState NewState)
{
    /* Check the parameters */
    assert_param(IS_RCC_APB2_PERIPH(RCC_APB2Periph));
    assert_param(IS_FUNCTIONAL_STATE(NewState));
    if (NewState != DISABLE)
    {
        RCC->APB2ENR |= RCC_APB2Periph;
    }
    else
    {
        RCC->APB2ENR &= ~RCC_APB2Periph;
    }
}
```

- Cortex microcontroller software interface standard
- CMSIS는 ARM사에서 제시하고 있는 표준
- ARM사는 자사의 M3 Core을 사용하는 서로 다른 반도체 회사들 간의 Firmware의 호환성을 높이기 위해서 CMSIS를 발표
- 현재 모든 칩 제조사들은 모든 예제 코드들을 CMSIS에 맞춰서 제공

Instruction	CMSIS	CMSIS Interrupt control function	Description
CPSIE I	void __enable_irq(void)	void NVIC_SetPriorityGrouping(uint32_t priority_grouping)	Set the priority grouping
CPSID I	void __disable_irq(void)	void NVIC_EnableIRQ(IRQn_t IRQn)	Enable IRQn
CPSIE F	void __enable_fault_irq(void)	void NVIC_DisableIRQ(IRQn_t IRQn)	Disable IRQn
CPSID F	void __disable_fault_irq(void)	uint32_t NVIC_GetPendingIRQ(IRQn_t IRQn)	Return true (IRQ-Number) if IRQn is pending
ISB	void __ISB(void)		
DSB	void __DSB(void)		
DMB	void __DMB(void)		
REV	uint32_t __REV(uint32_t int_val)	void NVIC_SetPendingIRQ(IRQn_t IRQn)	Set IRQn pending
REV16	uint32_t __REV16(uint32_t int_val)	void NVIC_ClearPendingIRQ(IRQn_t IRQn)	Clear IRQn pending status
REVSH	uint32_t __REVSH(uint32_t int_val)	uint32_t NVIC_GetActive(IRQn_t IRQn)	Return the IRQ number of the active interrupt
RBIT	uint32_t __RBIT(uint32_t int_val)	void NVIC_SetPriority(IRQn_t IRQn, uint32_t priority)	Set priority for IRQn
SEV	void __SEV(void)	uint32_t NVIC_GetPriority(IRQn_t IRQn)	Read priority of IRQn
WFE	void __WFE(void)	void NVIC_SystemReset(void)	Reset the system
WFI	void __WFI(void)		