

# **AN2557 IAP 실습**

**2009.11.20**

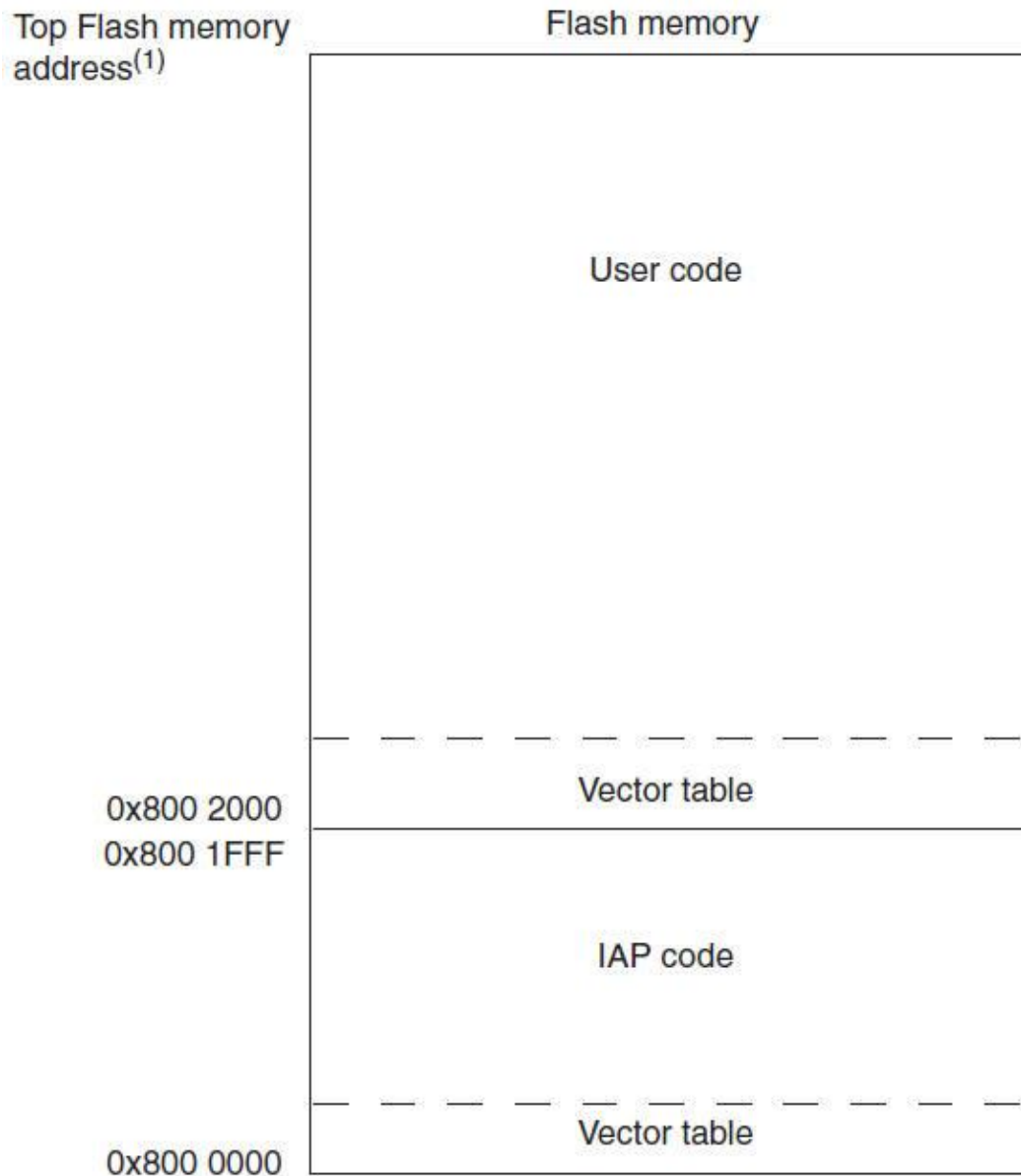
# In-Application Programming (IAP)

- In-Application Programming (IAP) – [BootLoader](#)
- STM 제공 AN2557 이용
  - 일종의 BootLoader의 개념이면서 Serial을 통해서 프로그램 다운로드

## [예제 소스]

- Src.5-1-1.AN2557.IAP.BootLoader
  - 기본적인 YModem download 기능의 IAP 프로그램
- Src.5-1-2.AN2557.IAP.binary\_template
  - STM 제공 예제 프로그램
  - LED를 제어의 단순한 일을 수행하는 예제
- Src.5-1-3.KeyInterrupt\_for\_AN2557.IAP
  - 이전 장에서 공부했던 KeyInterrupt 프로그램을 IAP를 이용해서 로딩할 수 있도록 변경한 것

# Flash memory usage



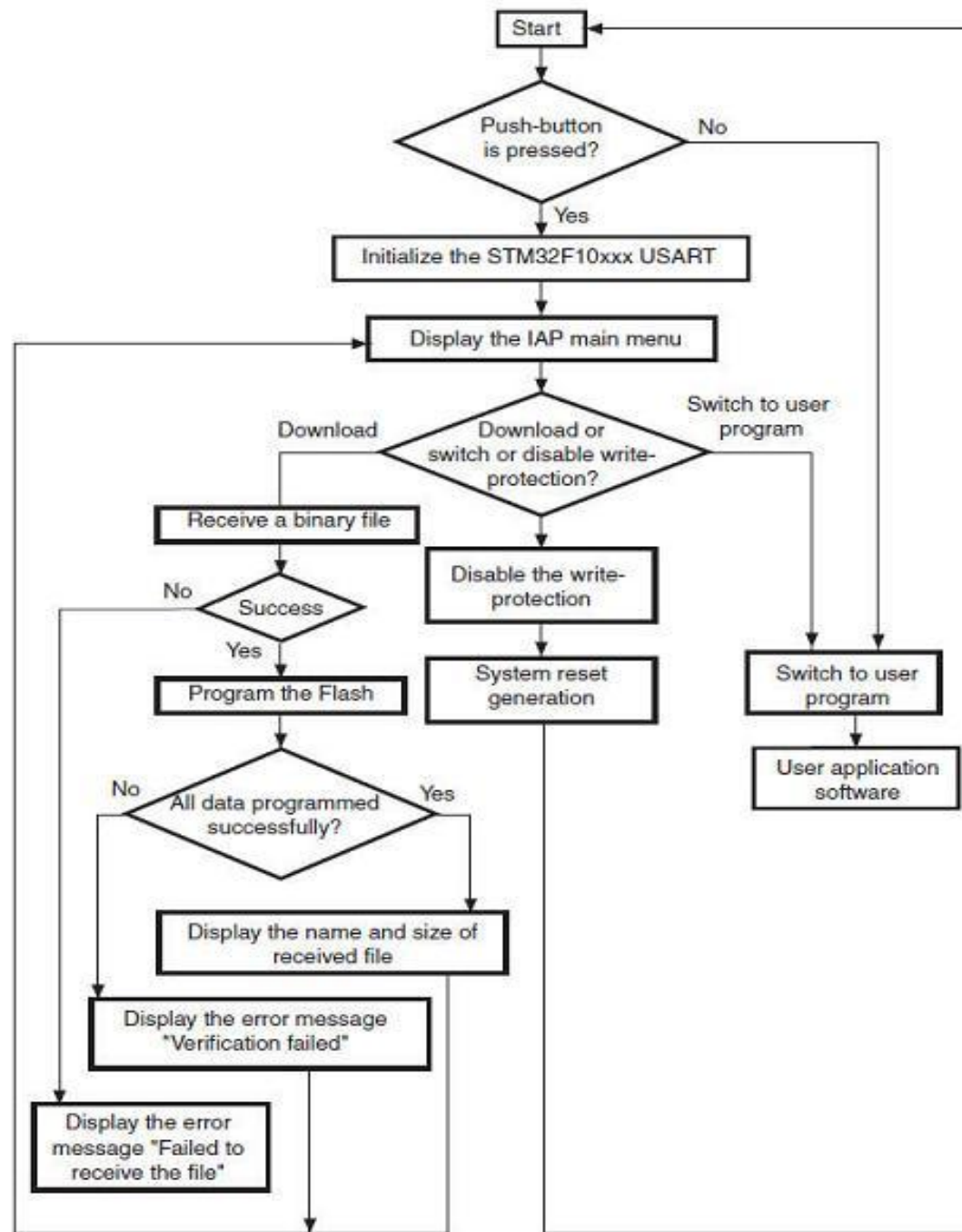
(1) Top Flash memory address is equal to 0x0801 FFFF for Medium-density devices, to 0x0803 FFFF for Connectivity Line devices and to 0x0807 FFFF for High-density devices.

# main 함수

```
typedef void (*pFunction)(void);
pFunction Jump_To_Application; uint32_t JumpAddress;
int main(void) {
..... .....
/* Test if Key push-button on STM3210X-EVAL Board is pressed */
if (STM_EVAL_PBGetState(Button_KEY) != 0x00) { /* If Key is pressed */
    IAP_Init(); /* Execute the IAP driver in order to re-program the Flash */
    Main_Menu ();

} else { /* Keep the user application running */
/* Test if user code is programmed starting from address "ApplicationAddress" */
if (((*(__IO uint32_t*)ApplicationAddress) & 0x2FFE0000 ) == 0x20000000)
{ /* Jump to user application */
    JumpAddress = *(__IO uint32_t*) (ApplicationAddress + 4);
    Jump_To_Application = (pFunction) JumpAddress;
    /* Initialize user application's Stack Pointer */
    __set_MSP(*(__IO uint32_t*) ApplicationAddress);
    Jump_To_Application();
}}}
```

# Flow chart



# stm32f10x\_flash.icf 변경 사항

- 아래의 내용은 IAR 컴파일러에서 사용하는 icf 파일의 일부
- **\_\_ICFEDIT\_size\_cstack\_\_**로 정의된 stack size를 변경해야 한다
- 이전에는 0x400으로 설정되어 있었다. 하지만 이 크기로는 프로그램을 YModem으로 다운로드 받는 행위를 하는데 있어서 매우 부족한 크기가 된다. 이를 **0x800으로 2배로 늘려서 잡아야만 한다.**

```
.....  
/*-Specials-*/  
define symbol __ICFEDIT_intvec_start__ = 0x08000000;  
/*-Memory Regions-*/  
define symbol __ICFEDIT_region_ROM_start__ = 0x08000000 ;  
define symbol __ICFEDIT_region_ROM_end__ = 0x0807FFFF;  
define symbol __ICFEDIT_region_RAM_start__ = 0x20000000;  
define symbol __ICFEDIT_region_RAM_end__ = 0x2000FFFF;  
/*-Sizes-*/  
define symbol __ICFEDIT_size_cstack__ = 0x800;  
define symbol __ICFEDIT_size_heap__ = 0x200;  
/**** End of ICF editor section. ###ICF###*/  
.....
```

# 다운로드 할 User Program 작성

- Src.5-1-2.AN2557.IAP.binary\_template
- Src.5-1-3.KeyInterrupt\_for\_AN2557.IAP

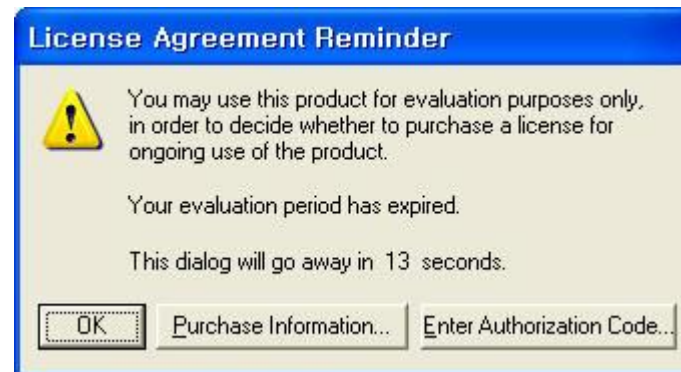
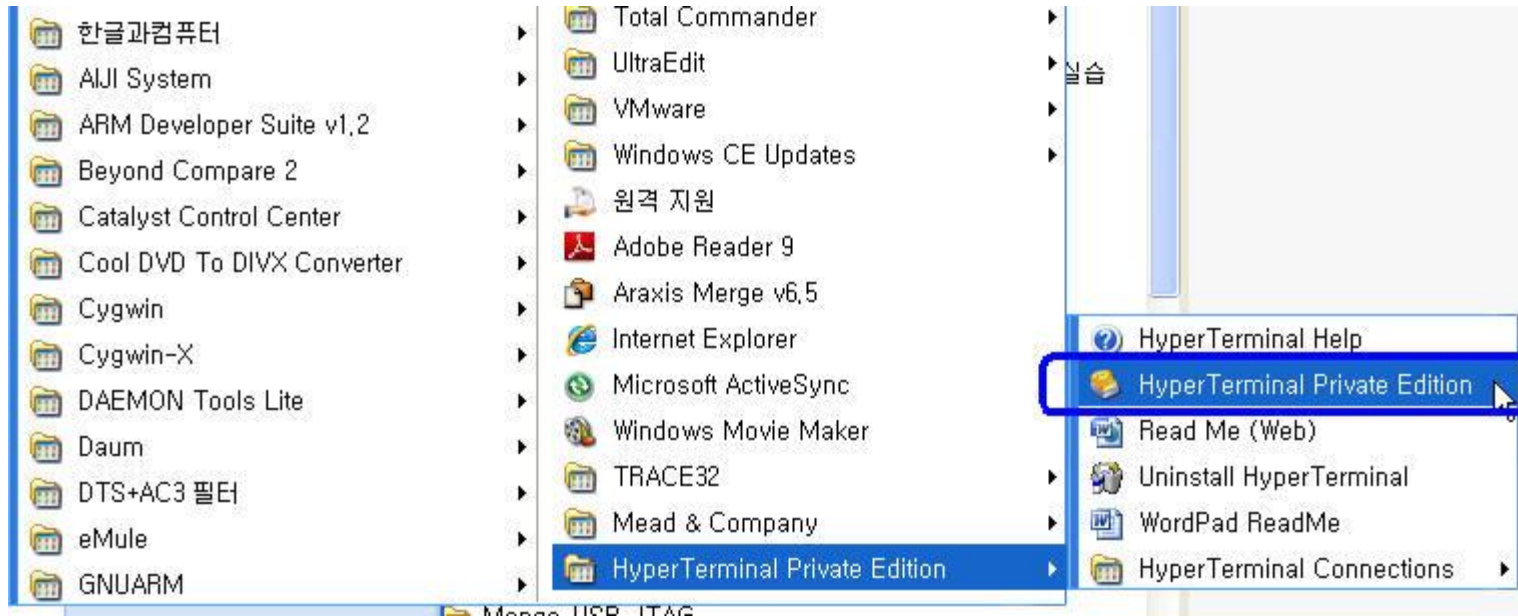
```
interrupt\project\IAP\...
c, don't touch! **
de\IcfEditor\ a_v1_
0x08000000;
= 0x08000000;
= 0x0807FFFF;
= 0x20000000;
= 0x2000FFFF;
= 0x400;
= 0x200;
**/

H\SourceCode\Src,5-1-3,KeyInterrupt_for_AN2557,IAP\project\IAR\stm32f10x_flash.icf
1 /*###ICF### Section handled by ICF editor, don't touch! ****
2 /*-Editor annotation file-*/
3 /* IcfEditorFile="$TOOLKIT_DIR$\config\ide\IcfEditor\ a_v1_0.
4 /*-Specials-*/
5 define symbol ICFEDIT intvec start = 0x08002000;
6 /*-Memory Regions-*/
7 define symbol ICFEDIT region ROM start = 0x08002000 ;
8 define symbol ICFEDIT region ROM_end = 0x0807FFFF;
9 define symbol ICFEDIT region RAM_start = 0x20000000;
10 define symbol ICFEDIT region RAM_end = 0x2000FFFF;
11 /*-Sizes-*/
12 define symbol ICFEDIT_size_cstack = 0x400;
13 define symbol ICFEDIT_size_heap = 0x200;

interrupt\src\hw_co...
WE091026,안동대\SourceCode\Src,5-1-3,KeyInterrupt_for_AN2557,IAP\src\hw_config.c
101 *****
102 void NVIC_Configuration(void)
103 {
104     NVIC_InitTypeDef NVIC_InitStructure;
105
106 #ifdef VECT_TAB_RAM
107     /* Set the Vector Table base location at 0x20000000 */
108     NVIC_SetVectorTable(NVIC_VectTab_RAM, 0x0);
109 #else /* VECT_TAB_FLASH */
110     /* Set the Vector Table base location at 0x08000000 */
111     NVIC_SetVectorTable(NVIC_VectTab_FLASH, 0x2000);
112 #endif
113
```

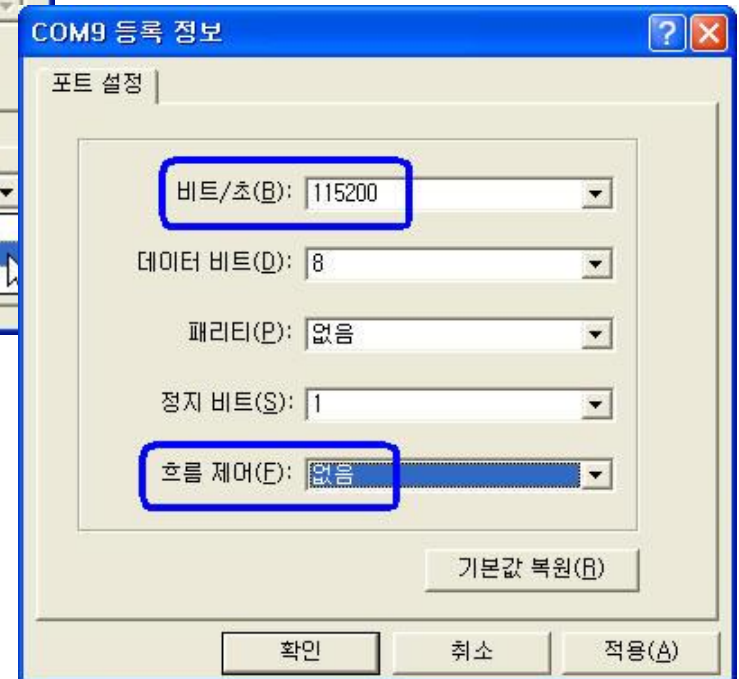
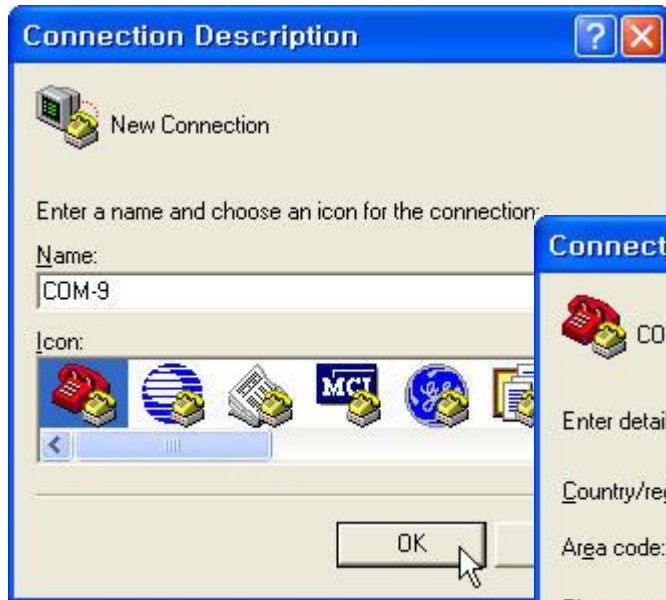
# Hyper Terminal 이용 (1)

- HyperTerminal Private Edition 6.3.exe

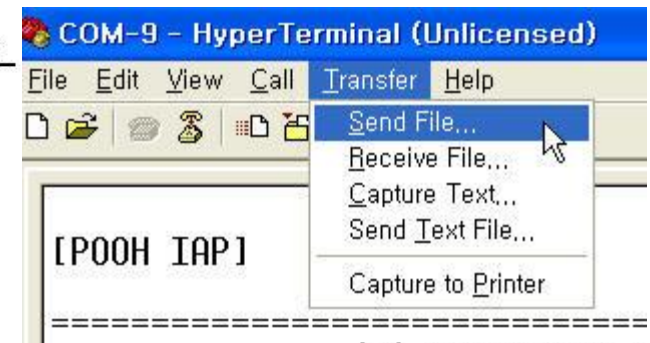
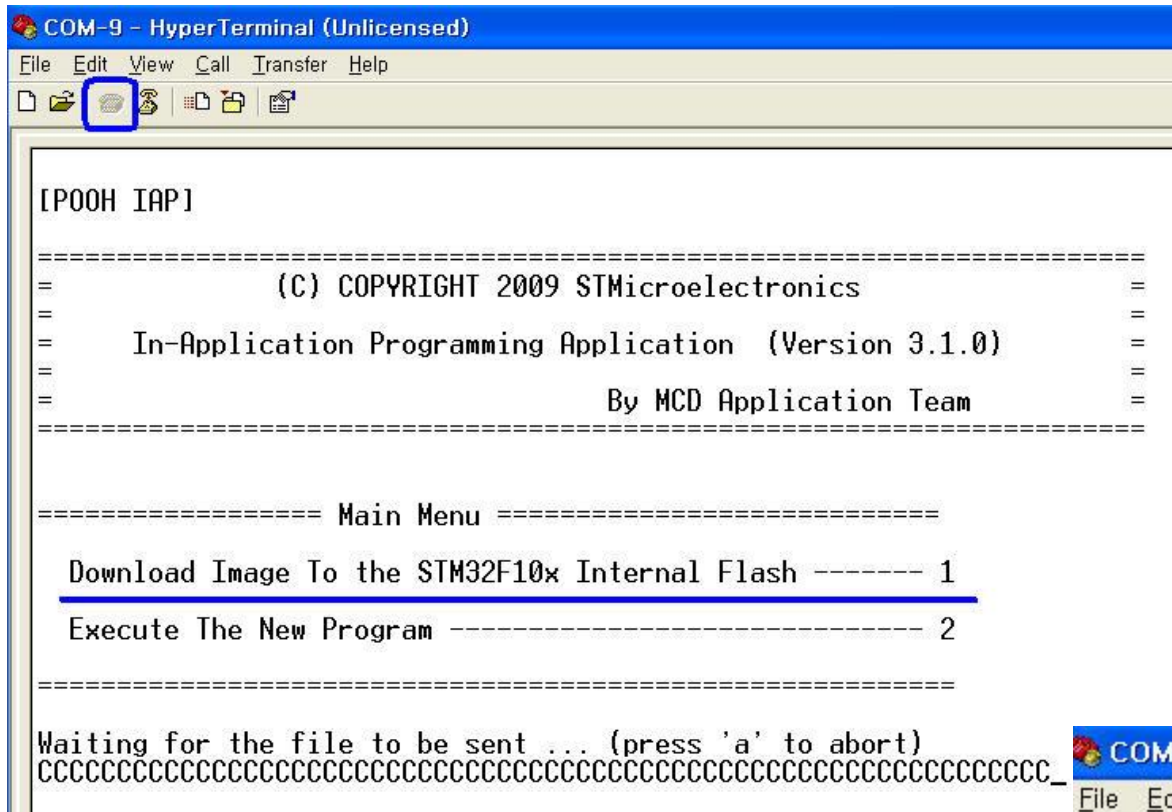




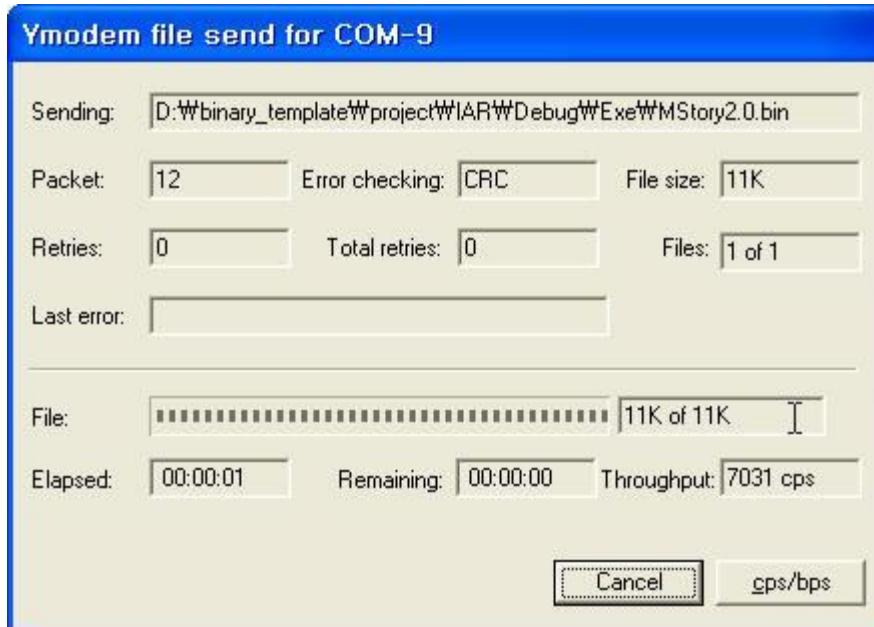
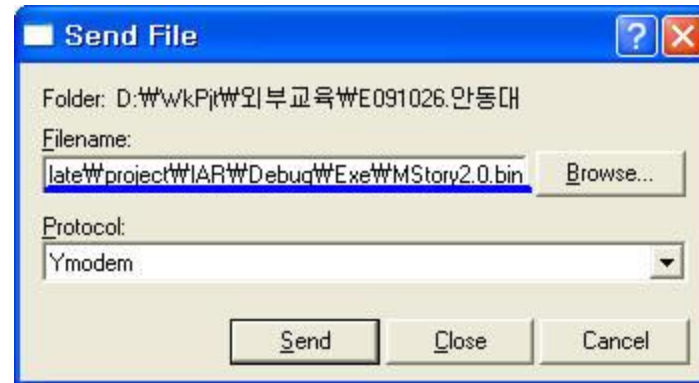
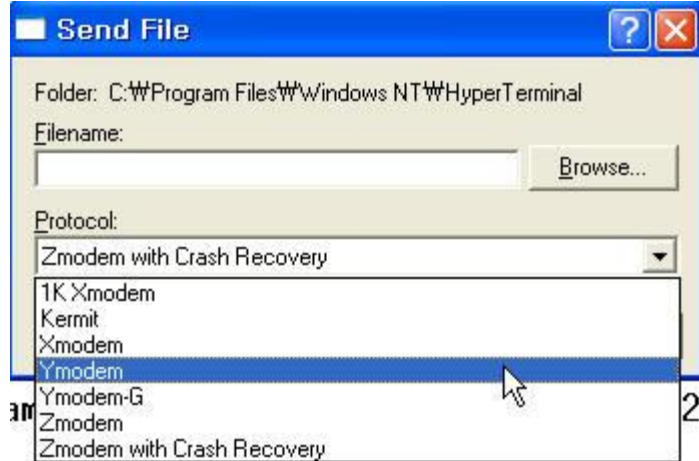
# Hyper Terminal 이용 (2)



# Hyper Terminal 이용 (3)



# Hyper Terminal 이용 (4)



Waiting for the file to be sent ... (press 'a' to abort)  
CCCCC

Programming Completed Successfully!

Name: MStory2.0.bin  
Size: 11249 Bytes