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April 1st, 2010
Renesas Electronics Corporation

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SH/Tiny Series (SH7125) E10A-USB Emulator

How to Use Command Lines (Command Batch Files)

Overview

The SH/Tiny series (SH7125) E10A-USB emulator is available for creating and executing a command batch file through the command line function. It is also possible to set the execution timing and execute the command batch file. This document describes how to create and execute the command batch file by using the E10A-USB emulator.

The contents described in this document generally apply for emulators which use the High-performance Embedded Workshop manufactured by Renesas.

Contents

1. Specifications

The Renesas High-performance Embedded Workshop has a command line function, which is available on the [Command Line] window, and the E10A-USB emulator supports debugging operation with the use of this function. When a file describing each command in the input order is created, command batch processing is enabled. In addition, the executed result of the command line is recorded as a log file, which is useful for creating a command batch file.

Two methods can be used to execute the command batch file: selecting a file on the [Command Line] window and setting an execution timing to execute the file upon the generation of that timing.

2. Functional Descriptions

This document explains how to create and execute a batch file by using the sample program included in the package that can be downloaded from the Renesas website.

The version of each tool is as follows:

E10A-USB Emulator Software V.2.08 Release 01

3. Software Preparation

3.1 Introduction

Install the software provided in the CD-ROM of the E10A-USB emulator to expand the sample program (tutorial workspace) to be used with this document on your personal computer.

The software in the CD-ROM of the E10A-USB emulator can also be installed on a personal computer in which the High-performance Embedded Workshop has already been installed. In this case, some dialog boxes may be skipped in the installation process.

3.2 Installing the E10A-USB Emulator Software

Execute HewInstMan.exe from the CD-ROM of the E10A-USB emulator.

For details on installation, refer to the setup guide for the E10A-USB emulator on the Renesas website and follow the directions shown on the screen during installation. The full installation procedure is not described here.

3.3 Installing Other Necessary Software

(1) When the auto-update utility is selected upon installation of software, it is possible to check the latest version of tools on the Internet.

4. Operations

This section explains how to activate the High-performance Embedded Workshop (HEW) and how to create and execute the command batch file in the following steps.

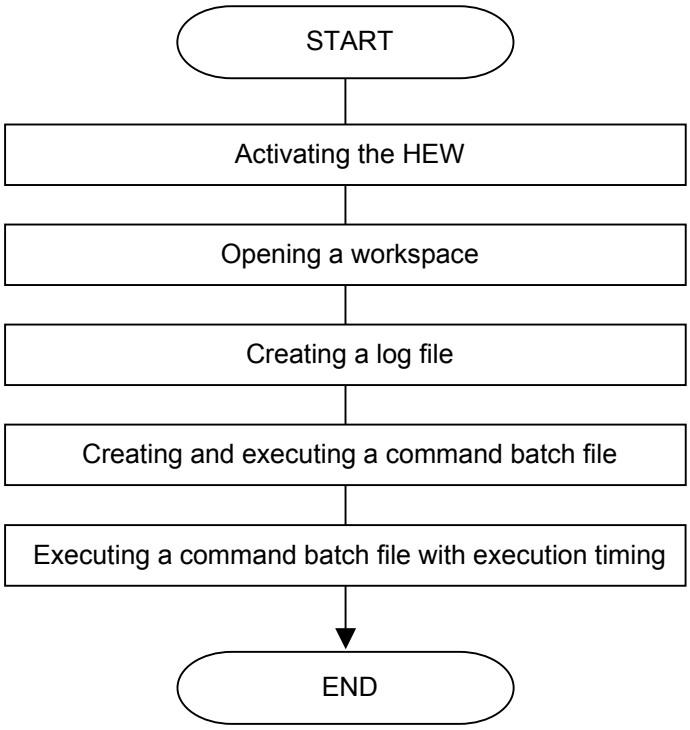
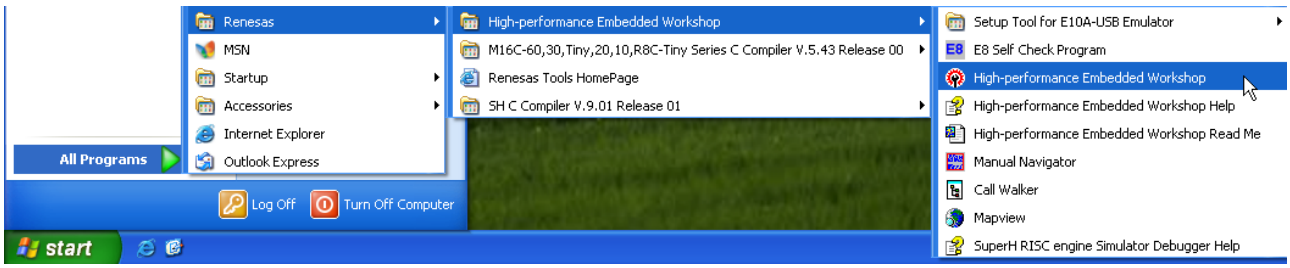


Figure 4.1 Procedures for Sample Program Execution

4.1 Activating the High-performance Embedded Workshop

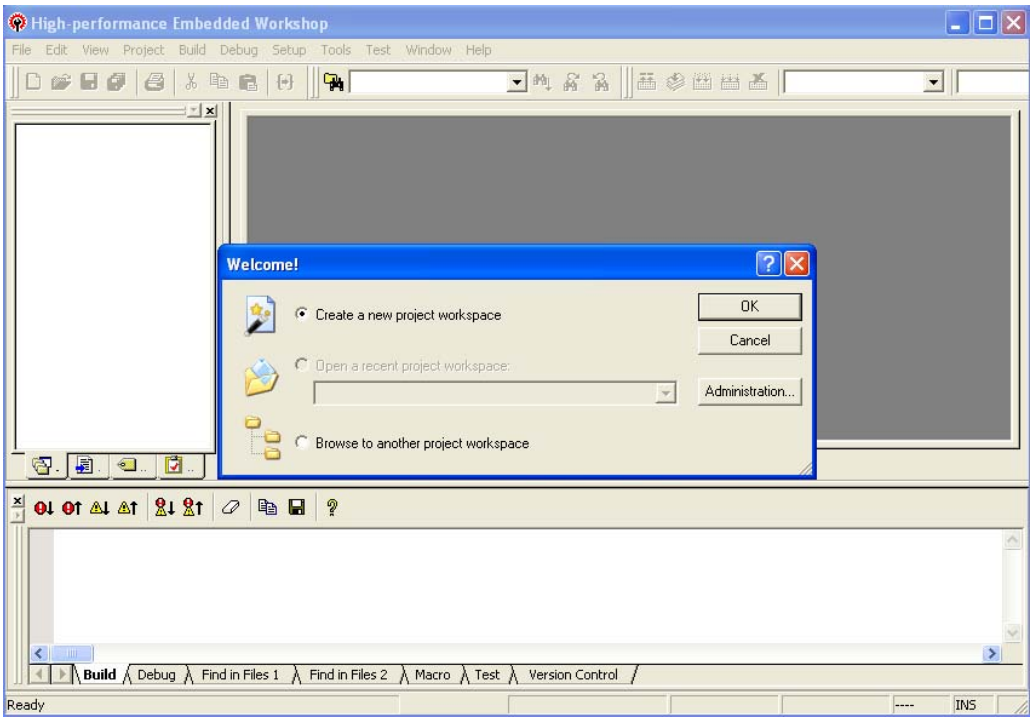
First, connect the E10A-USB emulator with the user system to the host computer via the USB cable and check that debugging is enabled.

Next, activate the High-performance Embedded Workshop by opening the [Start] menu and selecting [All Programs], [Renesas], [High-performance Embedded Workshop], and [High-performance Embedded Workshop], in that order.

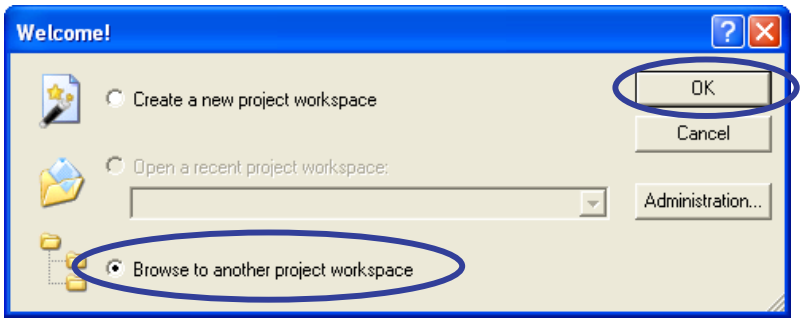


4.2 Opening a Workspace

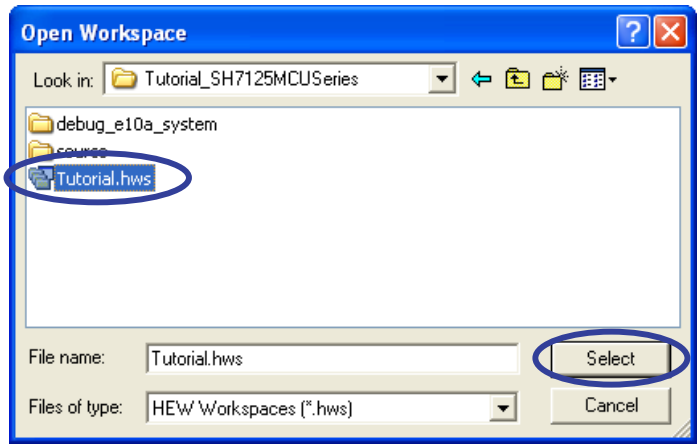
(1) The [Welcome!] dialog box will appear on the High-performance Embedded Workshop screen.



Select the [Browse to another project workspace] radio button in the [Welcome!] dialog box and click on the [OK] button.



(2) The [Open Workspace] dialog box will appear.



When the software from the CD-ROM of this product has been installed, workspace “Tutorial.hws” is stored in the folder structure shown below (standard location). Specify the correct location by opening the folders in order. Select the workspace “Tutorial.hws” and click on the [Open] button.

C:¥WorkSpace¥Tutorial¥E10A-USB¥SH-2¥SH7080Series¥Tutorial_SH7125MCUSeries¥Tutorial.hws
C:¥WorkSpace └Tutorial └E10A-USB └SH2 └SH7080Series └Tutorial_SH7125MCUSeries └Tutorial.hws

Note: The above directory may not be specifiable depending on the software version. In this case, select the following directory.

<High-performance Embedded Workshop installation directory>

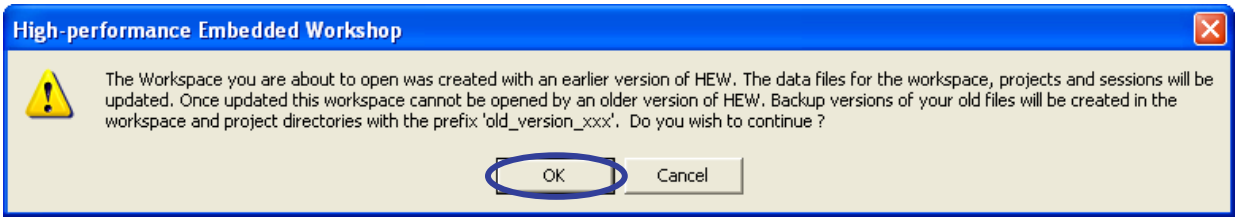
¥Tools¥Renesas¥DebugComp¥Platform¥E10-USB\SH-2¥SH7080Series¥Tutorial_SH7125MCUSeries

Directory examples:

C: ¥hew3¥Tools¥Renesas¥DebugComp¥Platform¥E10-USB¥SH-2¥SH7080Series¥Tutorial_SH7125MCUSeries

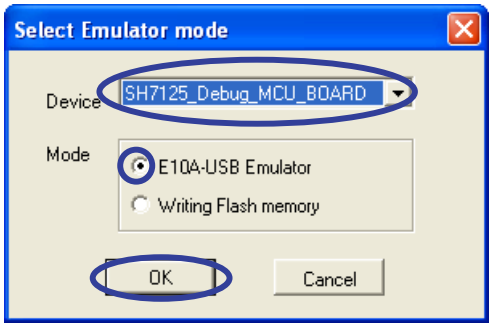
C: ¥hew2¥Tools¥Renesas¥DebugComp¥Platform¥E10-USB¥SH-2¥SH7080Series¥Tutorial_SH7125MCUSeries

(3) If the workspace version is not the latest available, the following dialog box will appear. To update to the new version, click on the [OK] button.

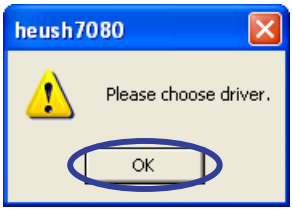


(4) If the following dialog box appears, click on the [OK] button.

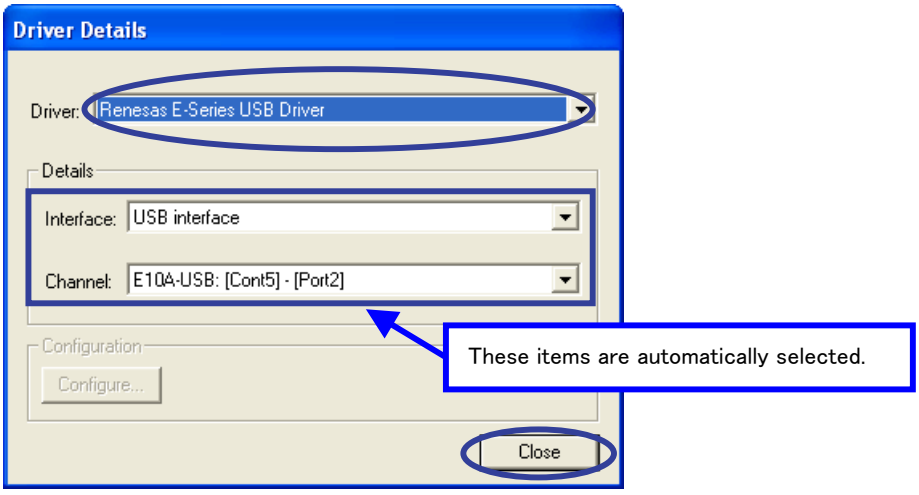
(5) The [Select Emulator mode] dialog box will appear. Select [SH7125_Debug_MCU_BOARD] for the [Device] combo box and [E10A-USB Emulator] for [Mode], and click on the [OK] button.



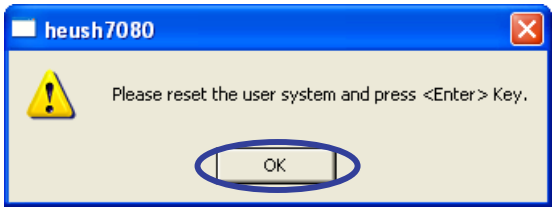
(6) The [heush7080] dialog box will appear for the first time only. Click on the [OK] button.



(7) The [Driver Details] dialog box will appear for the first time only. Select “Renesas E-Series USB Driver” for [Driver] and click on the [Close] button.

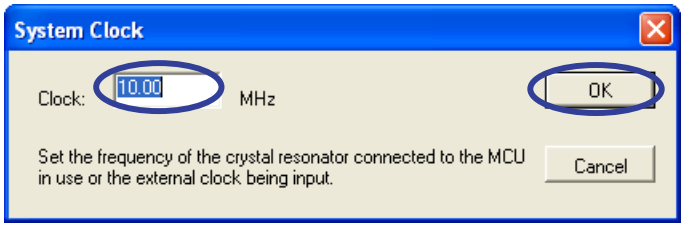


(8) The [heush7080] dialog box will appear. After the reset switch (RESET_SW) is pushed once on the hardware, click on the [OK] button.



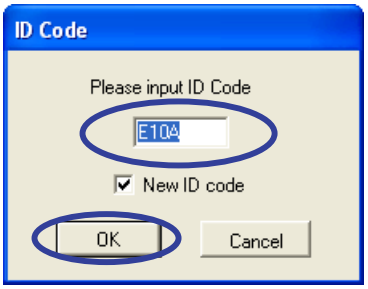
In the HS7125EDB01H/1, a board in the user system explained in this document, SW4 corresponds to RESET_SW.

(9) The [System Clock] dialog box will appear. Set the external clock frequency for use and click on the [OK] button.

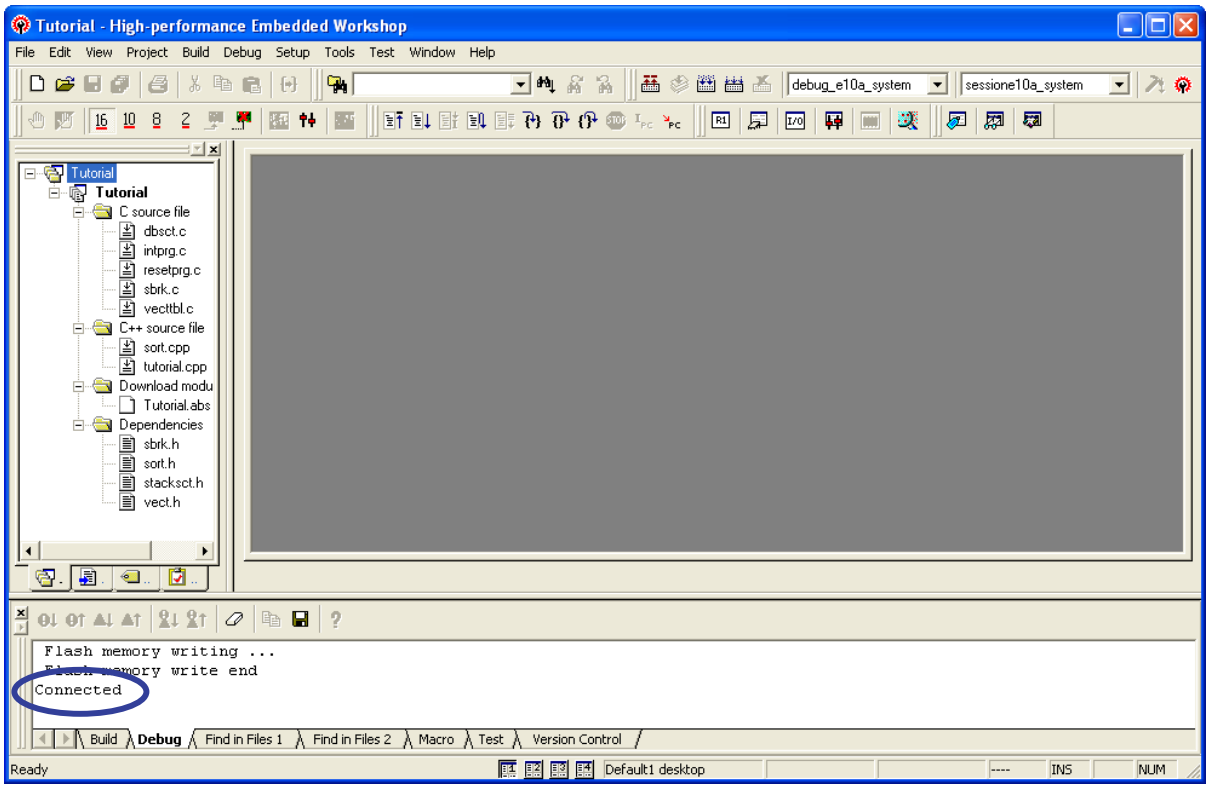


In this document, the external clock frequency is input as 10.00 MHz.

(10) The [ID Code] dialog box will appear. In this document, do not change [E10A] (initial value) for [Please input ID Code]; simply click on the [OK] button.



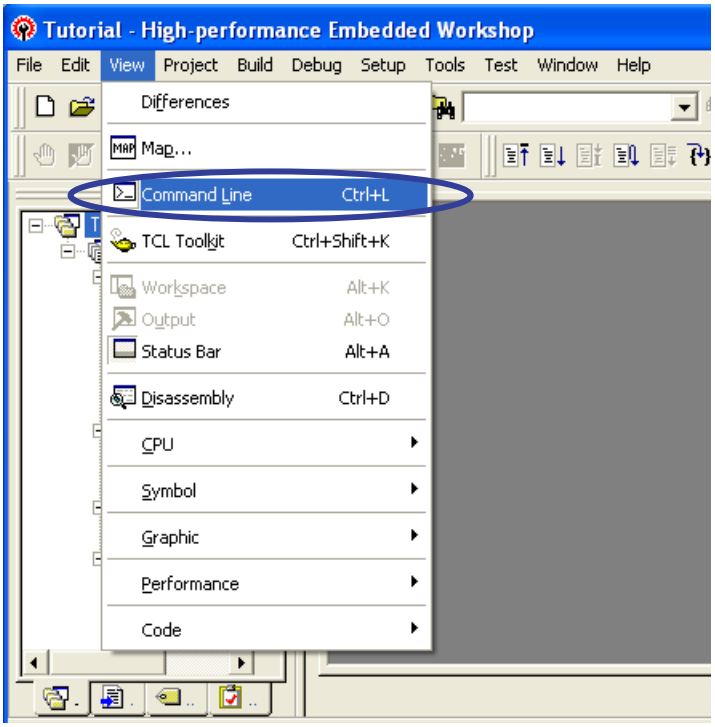
(11)The E10A-USB emulator will be connected and operation on the High-performance Embedded Workshop screen be enabled. When the connection is complete, [Connected] will be displayed on the [Debug] tab in the [Output] window.



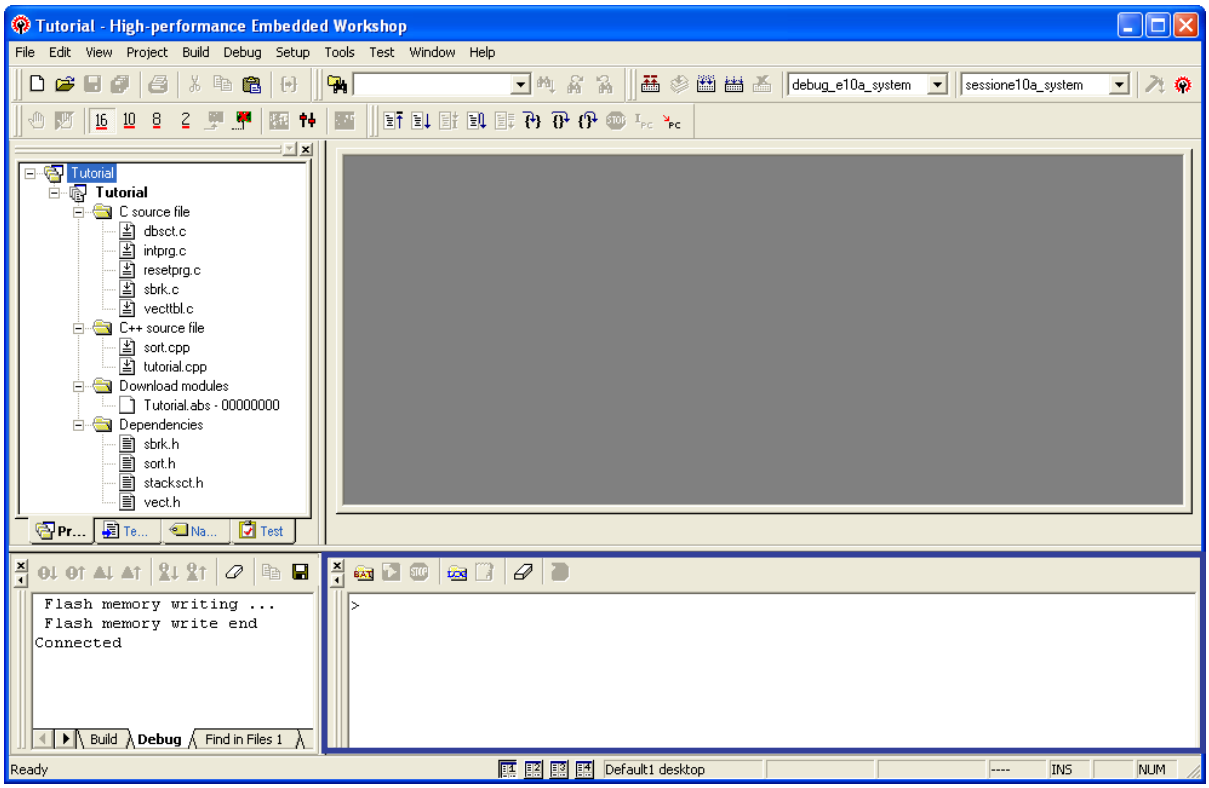
4.3 Creating a Log File

First, the following describes how to create a log file that is useful for creating a command batch file.

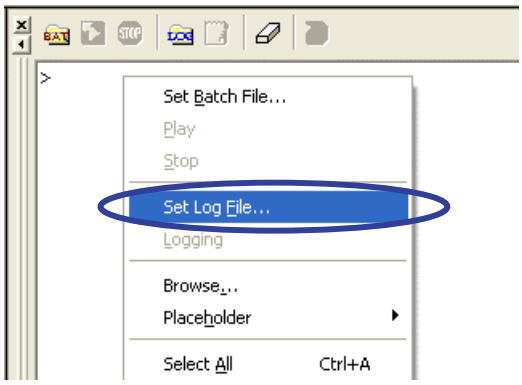
(1) Select [Command Line] from the [View] menu.



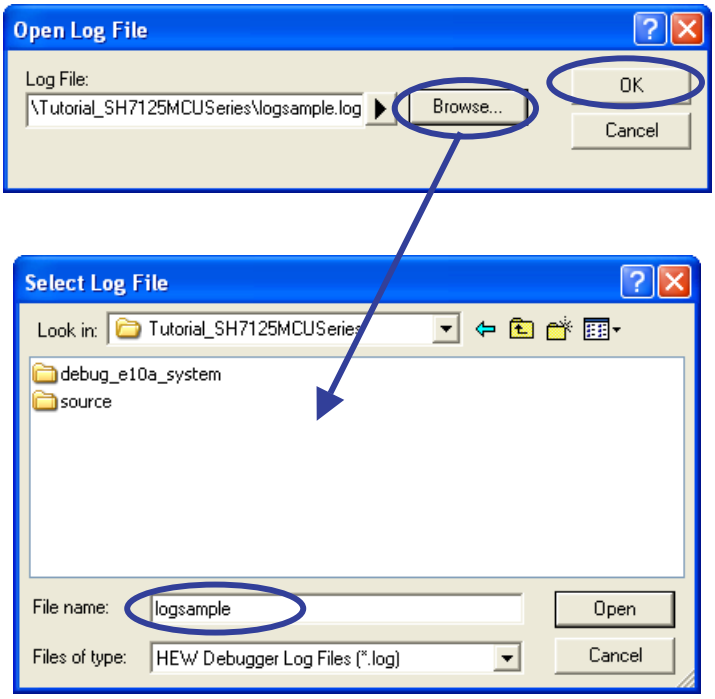
The [Command Line] window will appear.



(2) Click on the [Command Line] window with the right-hand mouse button and select [Set log File…].



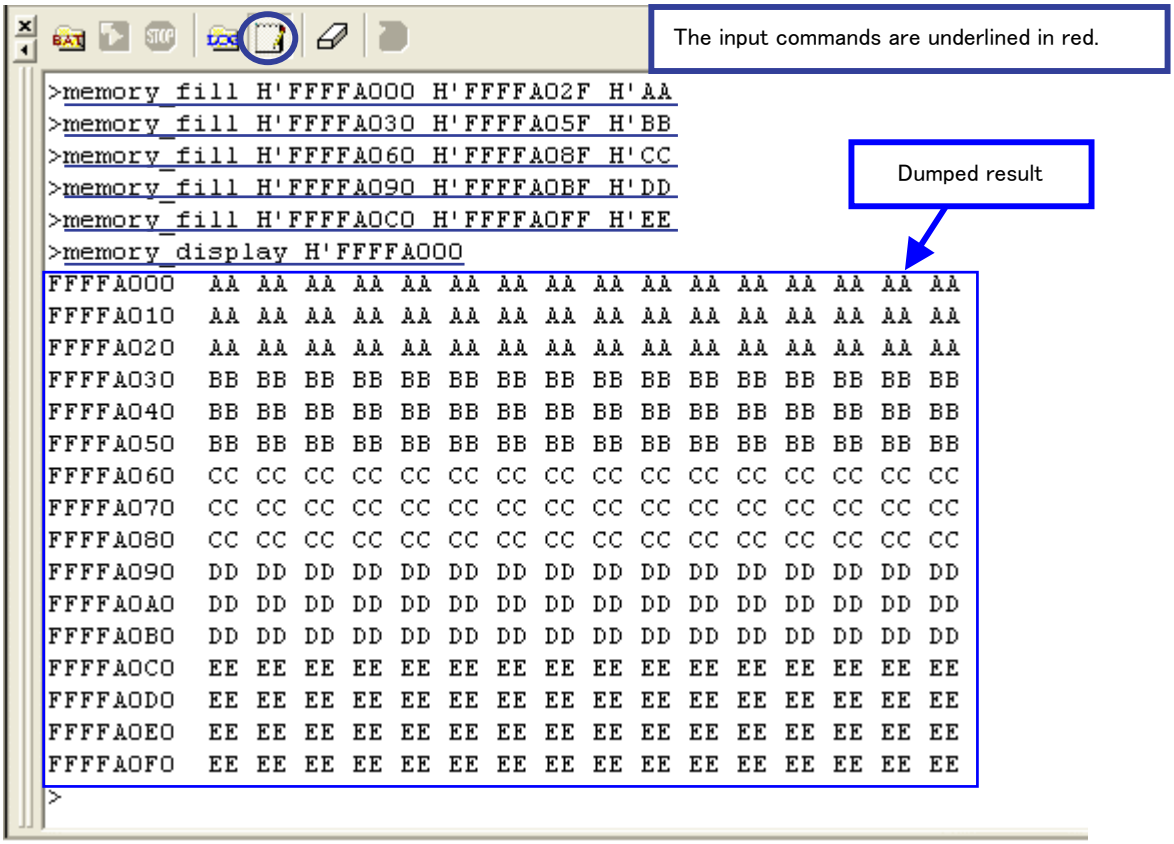
(3) The [Open Log File] dialog box will appear. Click on [Browse] to select the output destination of the log file and click on the [OK] button. The file name is set as “logsample” here.



After clicking on [OK], logging starts in the [Command Line] window and all commands that have been entered are recorded in the log file.

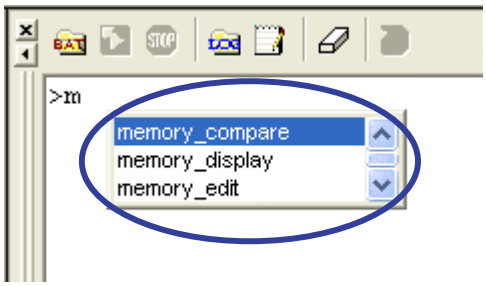
(4) Input the following commands in the [Command Line] window. These commands mean that any data is written in part of the on-chip RAM area (H'FFFFA000 to H'FFFFA0FF) of the SH7125 MCU to dump the result.

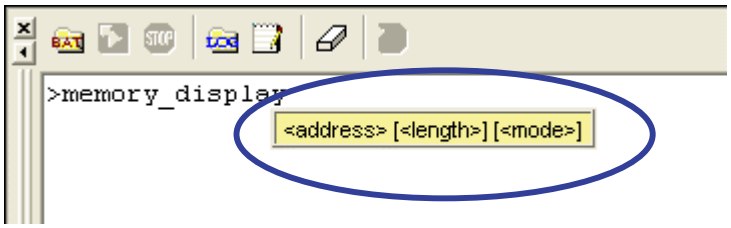
After commands have been input, select the [Toggle Logging] icon to end logging (if the icon has been pressed, logging is started).



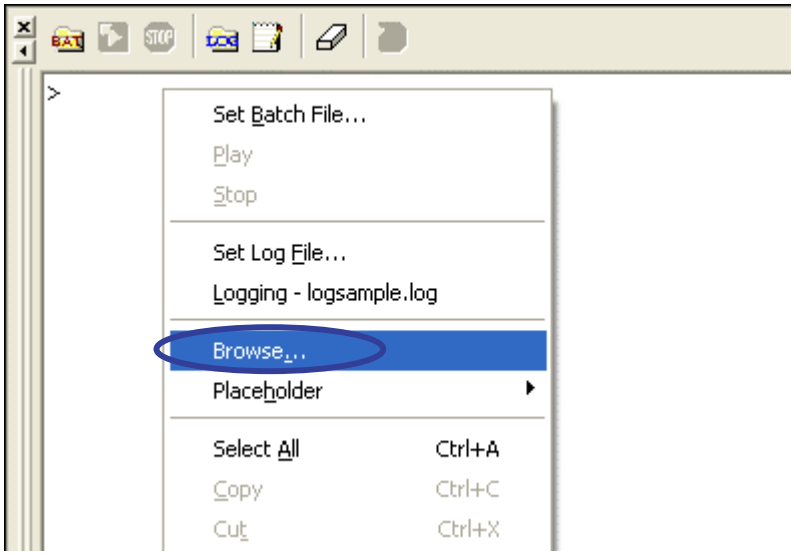
Note: For the memory area, refer to the memory map in the hardware manual of the target MCU.

(5) Command lines are listed in the emulator manual or online help file. Even if you don't know details of commands, when a character is input on the [Command Line] window, there is a useful function that shows a guide for related commands and parameters.





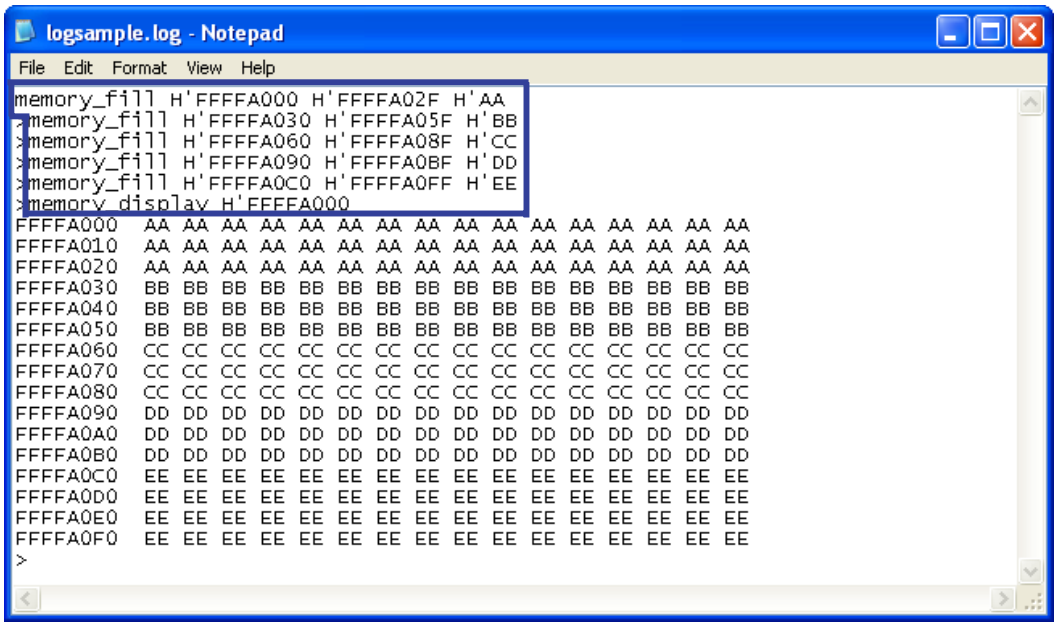
When a file name is specified in a command such as file_load, it is convenient to click with the right-hand mouse button on [Browse…] in the [Command Line] window and select the name in the browser.



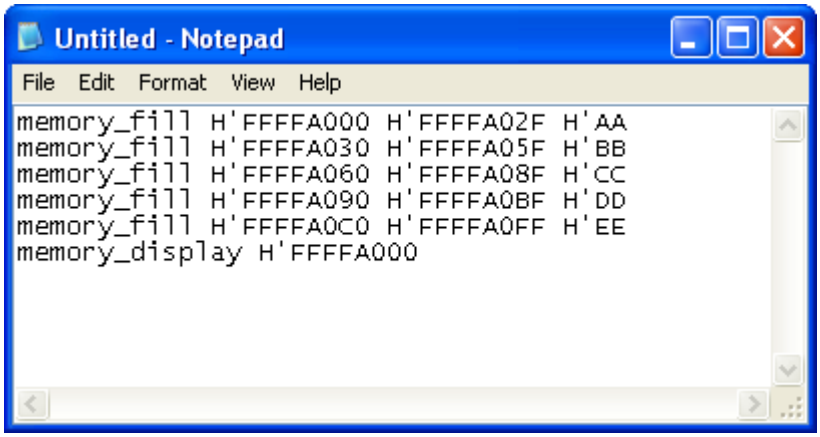
4.4 Creating and Executing a Command Batch File

This section explains how to create and execute the command batch file using “logsample.log”, created in section 4.3, as an example.

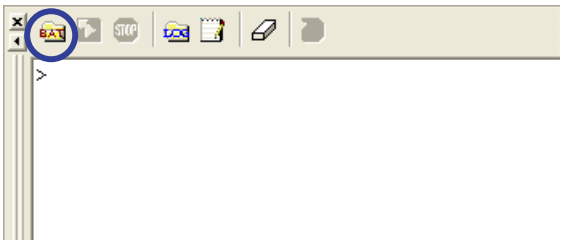
(1) Extract only the commands that have been input in the [Command Line] window from the created log file, using a text editor, etc.



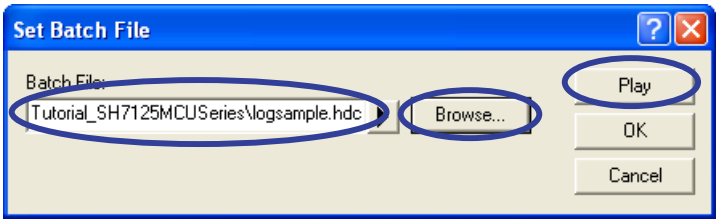
(2) Save the extracted file as an “.hdc” type. Here, the file is called “logsample.hdc”.



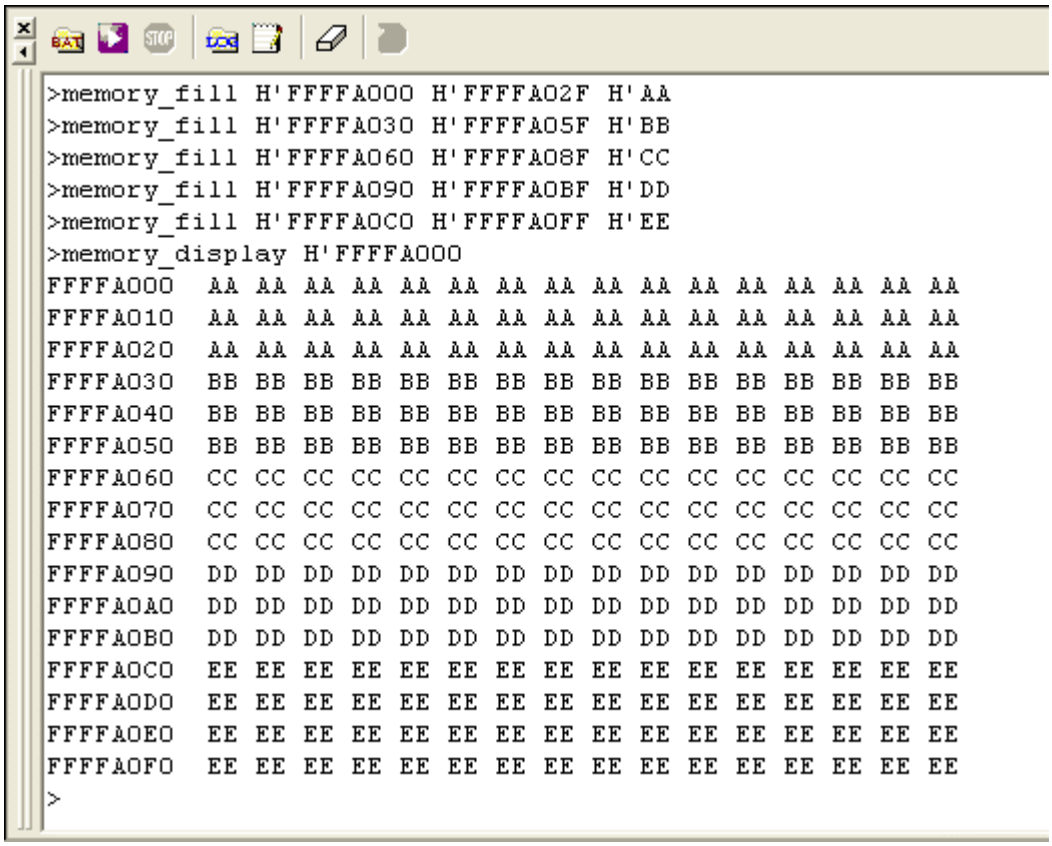
(3) Select the [Batch File] icon in the [Command Line] window.



(4) The [Set Batch File] dialog box will appear. Click on [Browse…] to select the batch file to be executed and click on the [Play] button. The created file “logsample.hdc” is selected here.



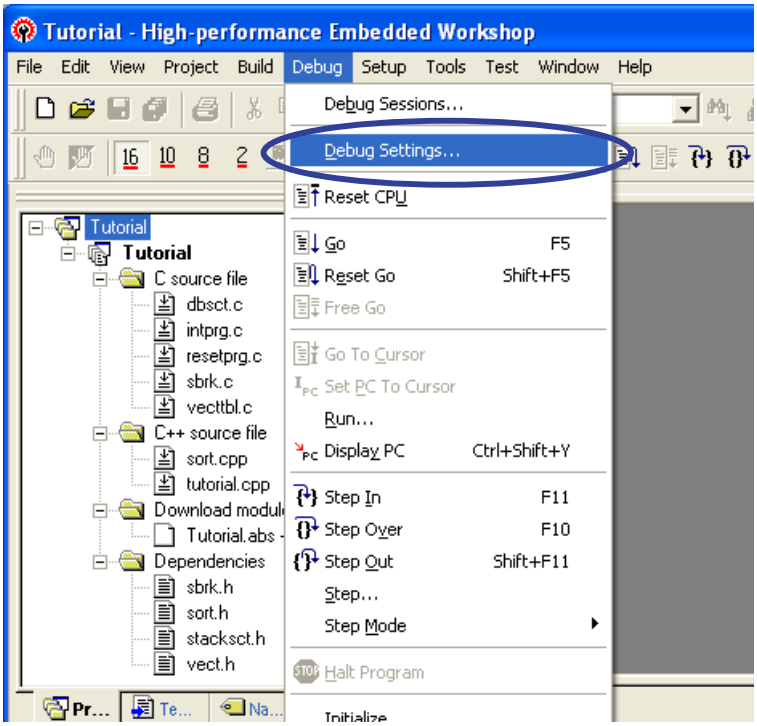
(5) The contents of the executed command batch file are displayed in the [Command Line] window. It is possible to check that commands the same as those in the created command batch file have been executed.



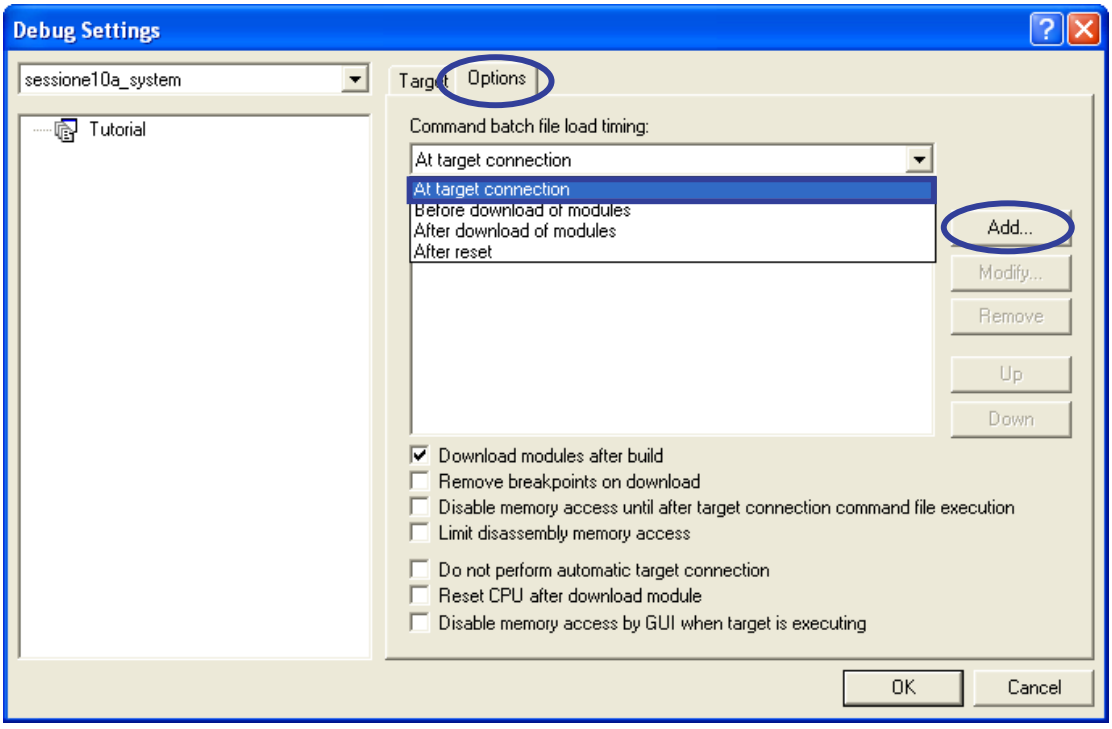
4.5 Executing a Command Batch File with Execution Timing

This section explains how to set the execution timing of the command batch file and execute the file upon the generation of that timing.

(1) Select [Debug Settings…] from the [Debug] menu.



(2) The [Debug Settings] dialog box will appear. Select the execution timing in the [Command batch file load timing] combo box on the [Options] tab and click on [Add…]. Here, “At target connection” is selected.



There are four timings for execution of the command batch file:

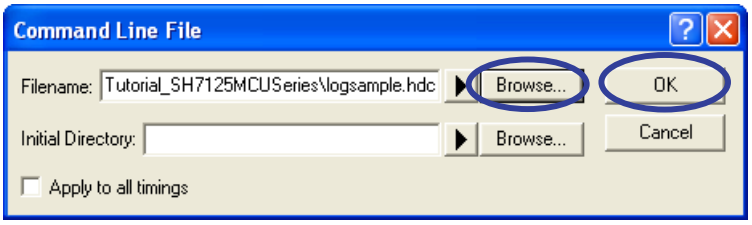
"At target connection" → The file is executed when the E10A-USB emulator is connected to the user system.

"Before download of modules" → The file is executed immediately before starting download of the program.

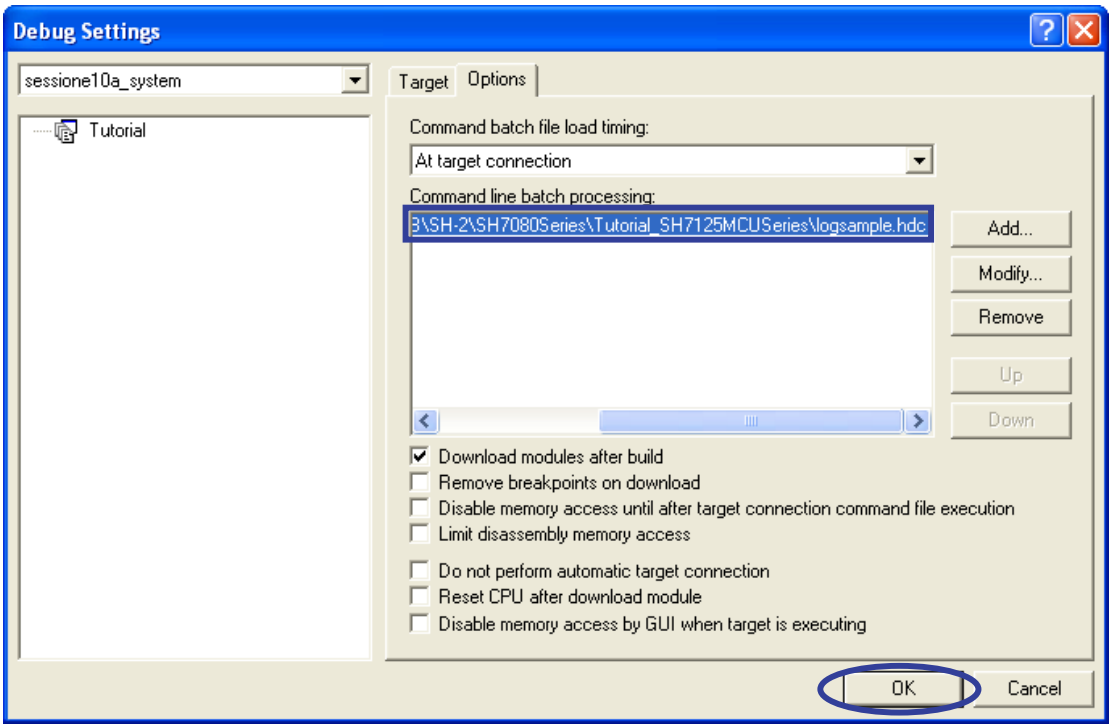
"After download of modules" → The file is executed when downloading of the program ends.

"After reset" → The file is executed when the CPU is reset.

(3) The [Command Line File] dialog box will appear. Click on [Browse…] to select the command batch file to be executed and click on the [OK] button. The file "logsample.hdc", created in section 4.4, is selected here.

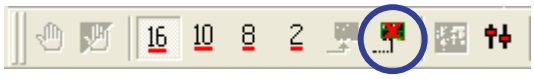


(4) In the [Debug Settings] dialog box, the address of the selected command batch file is displayed in the [Command line batch processing] field on the [Options] tab. If the selected command batch file is correct, click on the [OK] button.



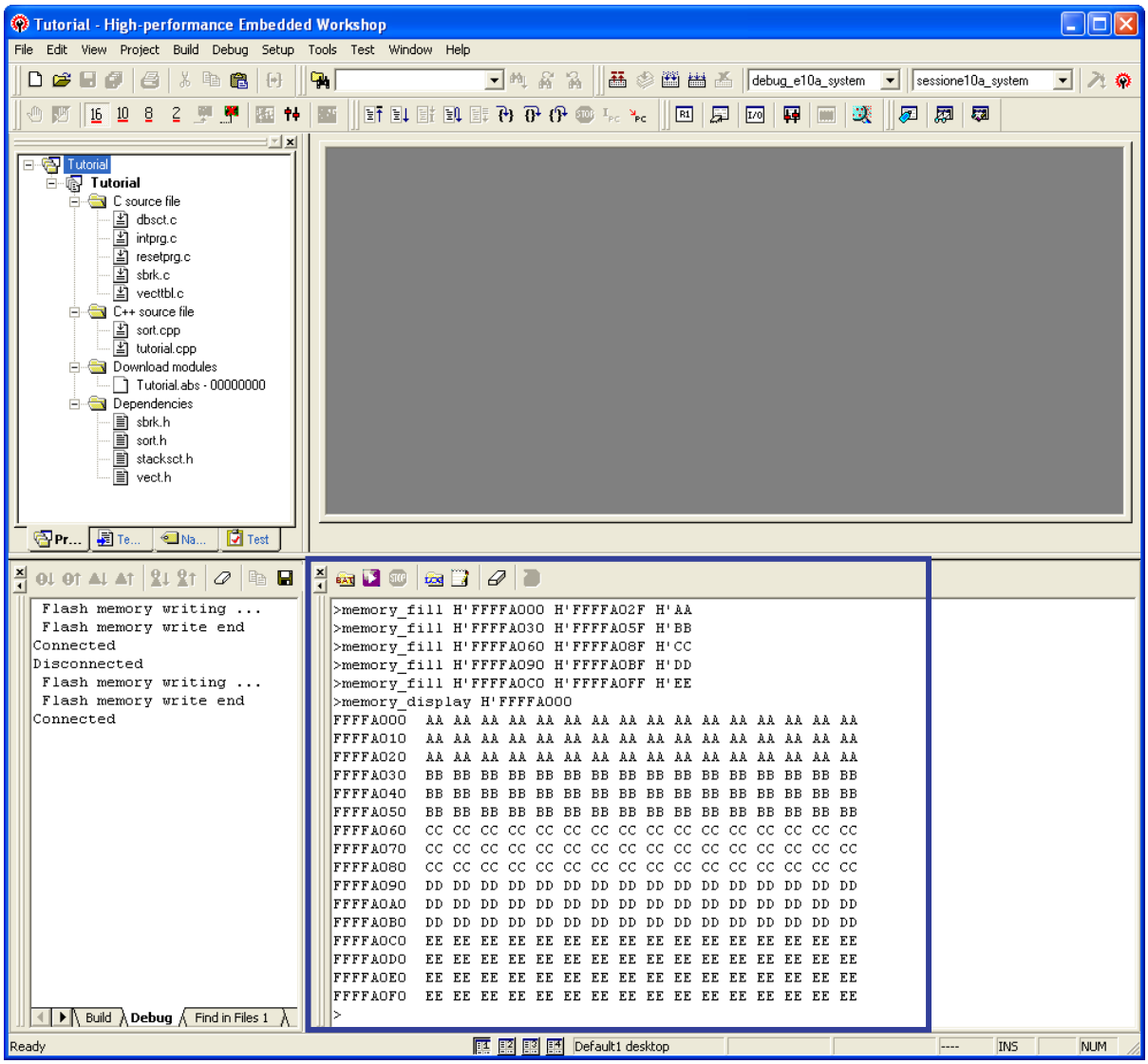
The [Command line batch processing] field is displayed for each execution timing. It is possible to set batch files for each of the four execution timings.

(5) Check if the command batch file is actually executed when the E10A-USB emulator is connected. Select the [Disconnect] icon to disconnect the E10A-USB emulator.



(6) Select the [Connect] icon and reconnect the E10A-USB emulator (for the procedure, refer to (4) to (8) in section 4.2).

(7) When connection is complete, the contents of the executed command batch file are displayed in the [Command Line] window. It is possible to check that commands the same as those in the selected command batch file have been executed.

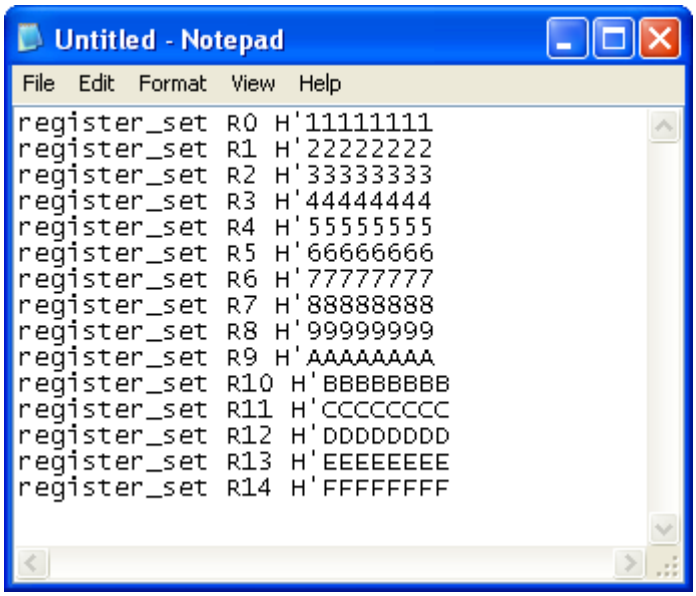


(8) Next, the following describes an example where the execution timing is “After reset” and a command batch file having the following contents is set and executed. (To create the command batch file and set the execution timing, refer to section 4.3 to (4) in section 4.5.)

【Contents of the Command Batch File】

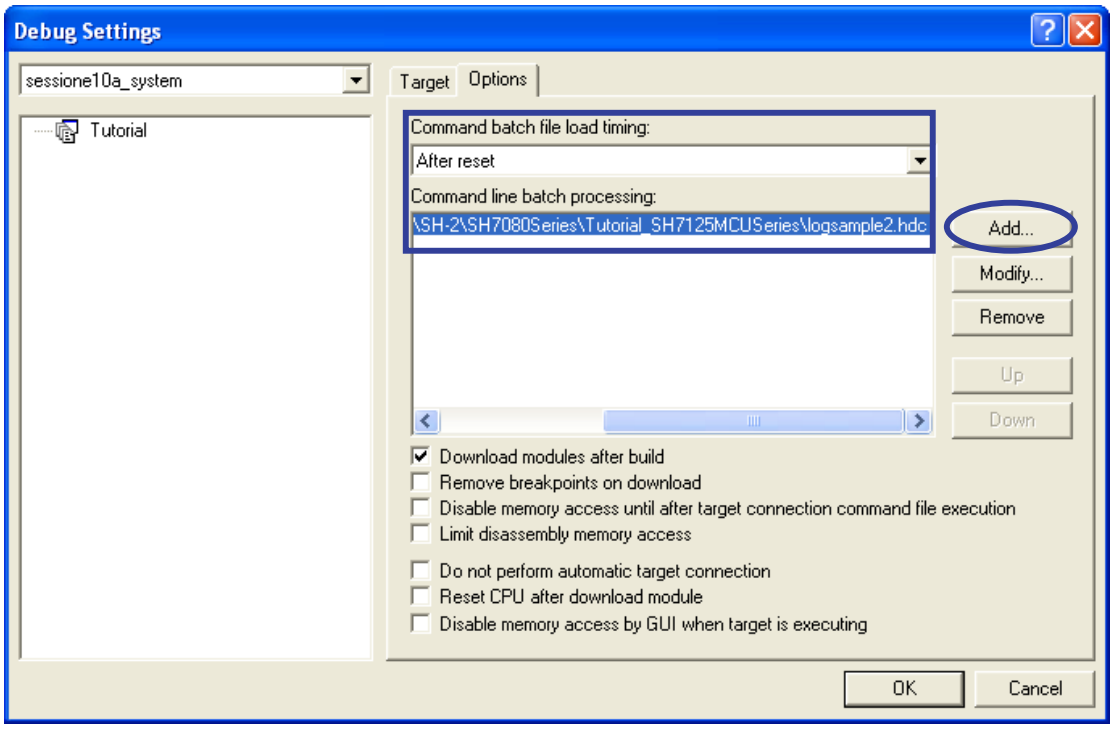
These commands mean that any data is written in general-purpose registers R0 to R14 of the SH7125 MCU.

As described in (1) and (2) in section 4.4, extract only the commands that have been input in the [Command Line] window from the created log file, using a text editor, etc., and save the extracted file as an “.hdc” type. Here, the file is called “logsample2.hdc”.

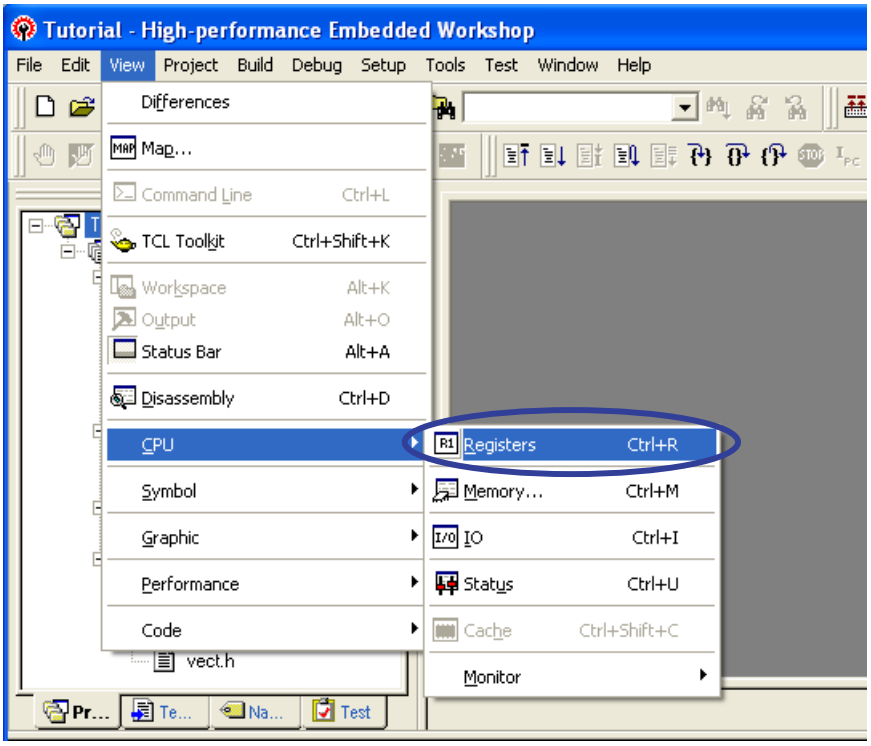


【Setting Contents of the Execution Timing】

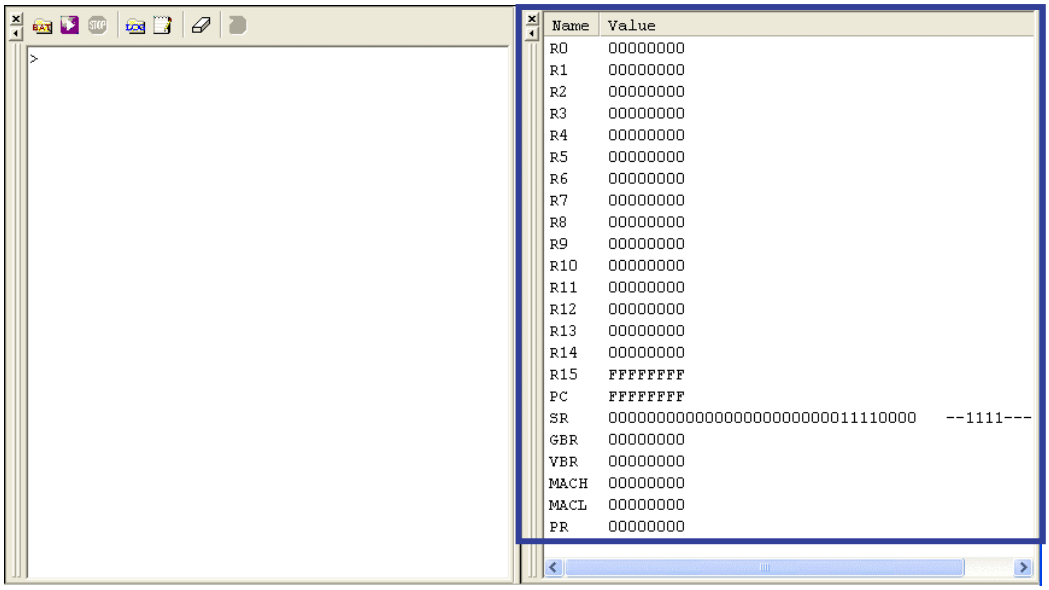
Specify the [Command batch file load timing] combo box as “After reset”, click on [Add…], and select the “logsample2.hdc” file.



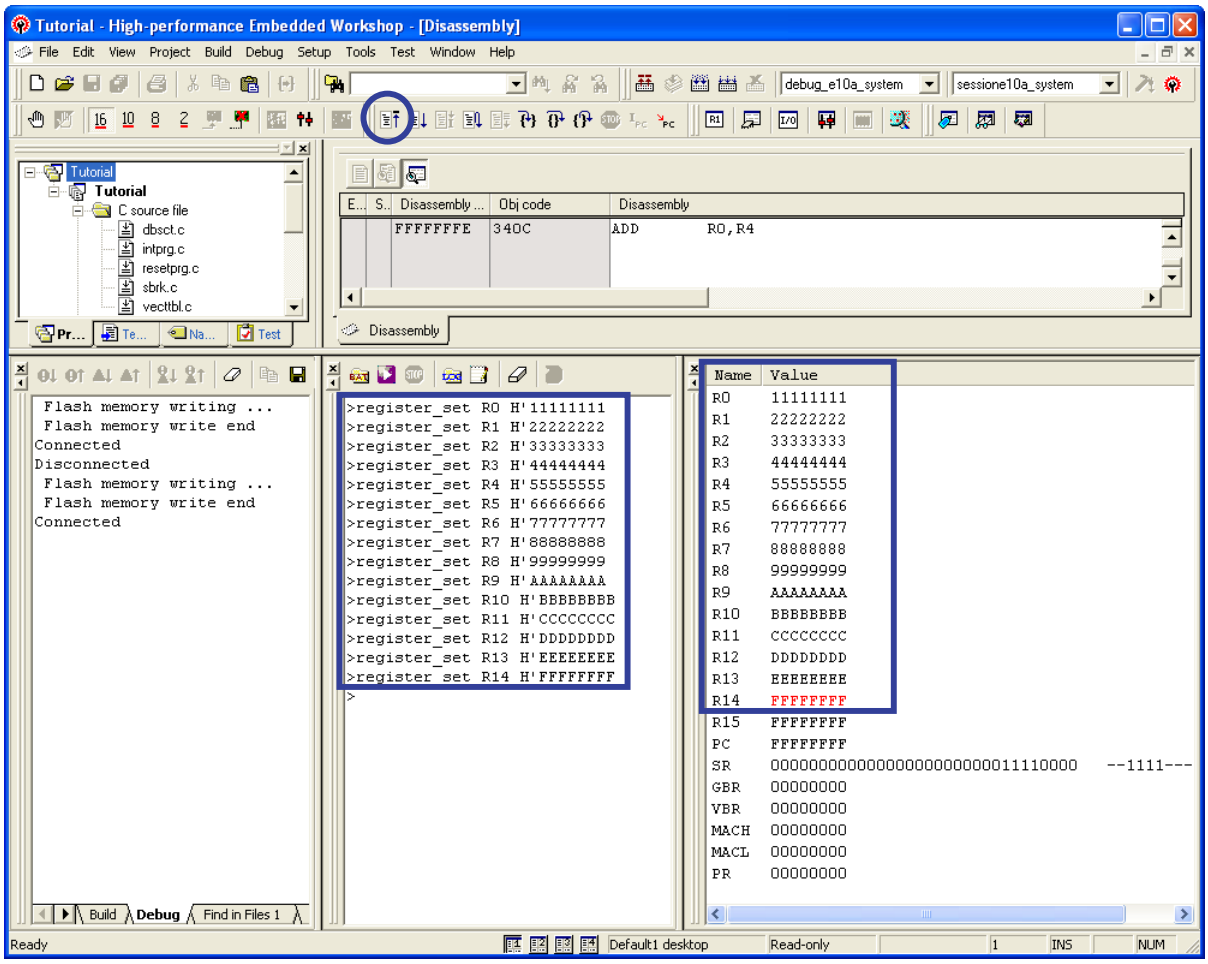
(9) To check if the above command batch file has been executed correctly after CPU reset, open the [Register] window. Select [View] -> [CPU] -> [Registers].



The [Register] window will open.



(10) When the [Reset CPU] icon is selected, the contents of the executed command batch file will be displayed in the [Command Line] window, which will show if the value in the [Register] window has been rewritten.



(11) Next, the following describes an example where the execution timing is “Before download of modules” or “After download of modules” and the command batch file having the following contents is set and executed. (To create the command batch file and set the execution timing, refer to section 4.3 to (4) in section 4.5.)

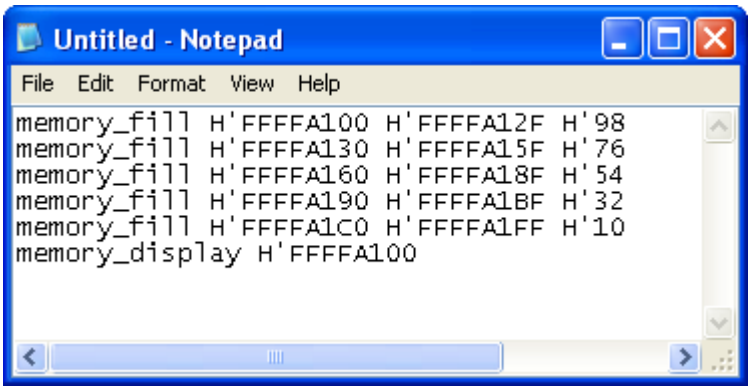
Note:

When multiple load modules are loaded, note that the command batch file cannot be changed in each file (the extension is “.abs”).

【Contents of the Command Batch File for “Before download of modules”】

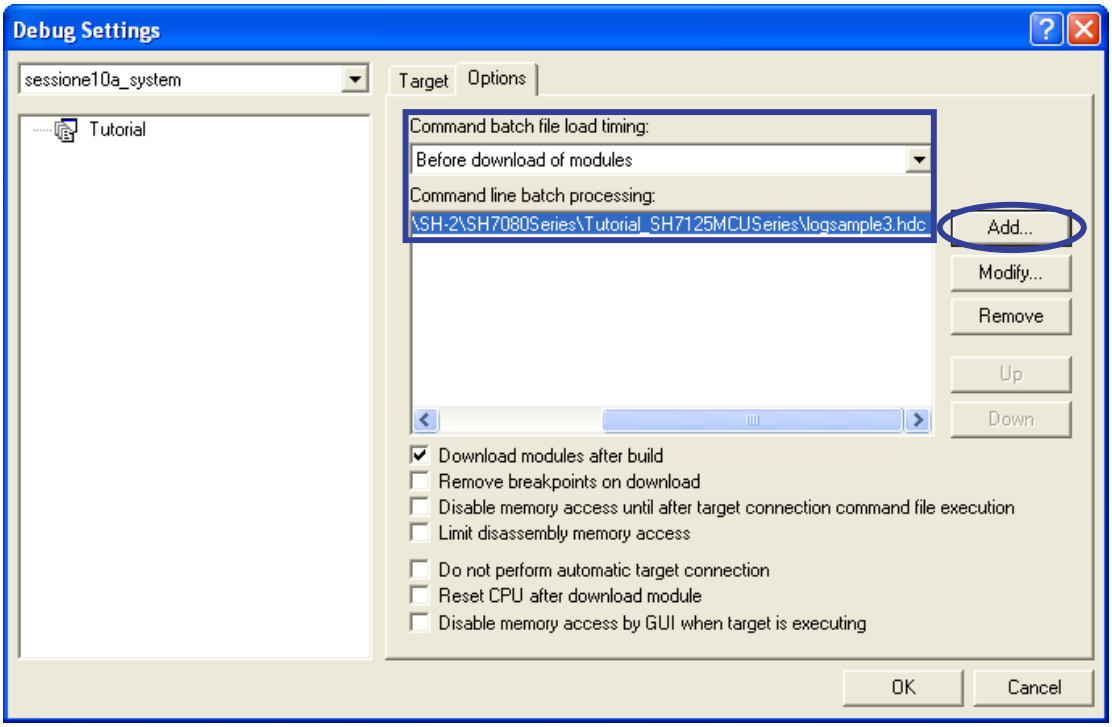
These commands mean that any data is written in part of the on-chip RAM area (H’FFFFA100 to H’FFFFA1FF) of the SH7125 MCU to dump the result.

As described in (1) and (2) in section 4.4, extract only the commands that have been input in the [Command Line] window from the created log file, using a text editor, etc., and save the extracted file as an “.hdc” type. Here, the file is called “logsample3.hdc”.



【Setting Contents of the Execution Timing for “Before download of modules”】

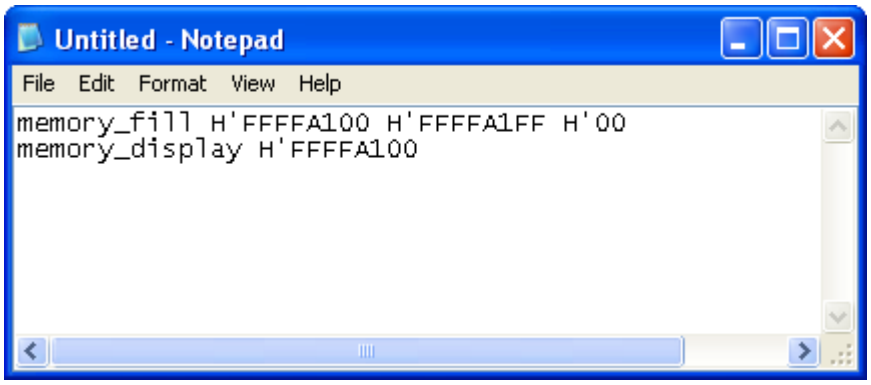
Specify the [Command batch file load timing] combo box as “Before download of modules”, click on [Add…], and select the “logsample3.hdc” file.



【Contents of the Command Batch File for “After download of modules”】

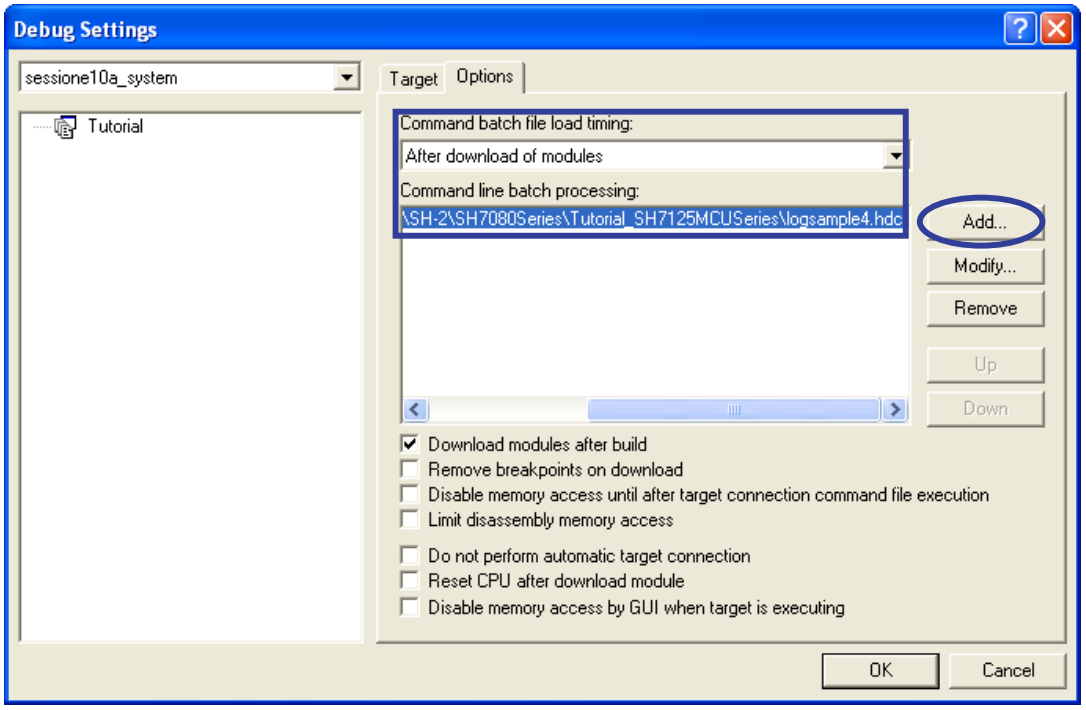
These commands mean that “H’00” is written in part of the on-chip RAM area (H’FFFFA100 to H’FFFFA1FF) of the SH7125 MCU to dump the result.

As described in (1) and (2) in section 4.4, extract only the commands that have been input in the [Command Line] window from the created log file, using a text editor, etc., and save the extracted file as an “.hdc” type. Here, the file is called “logsample4.hdc”.

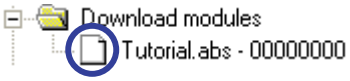


【Setting Contents of the Execution Timing for “After download of modules”】

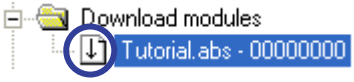
Specify the [Command batch file load timing] combo box as “After download of modules”, click on [Add…], and select the “logsample4.hdc” file.



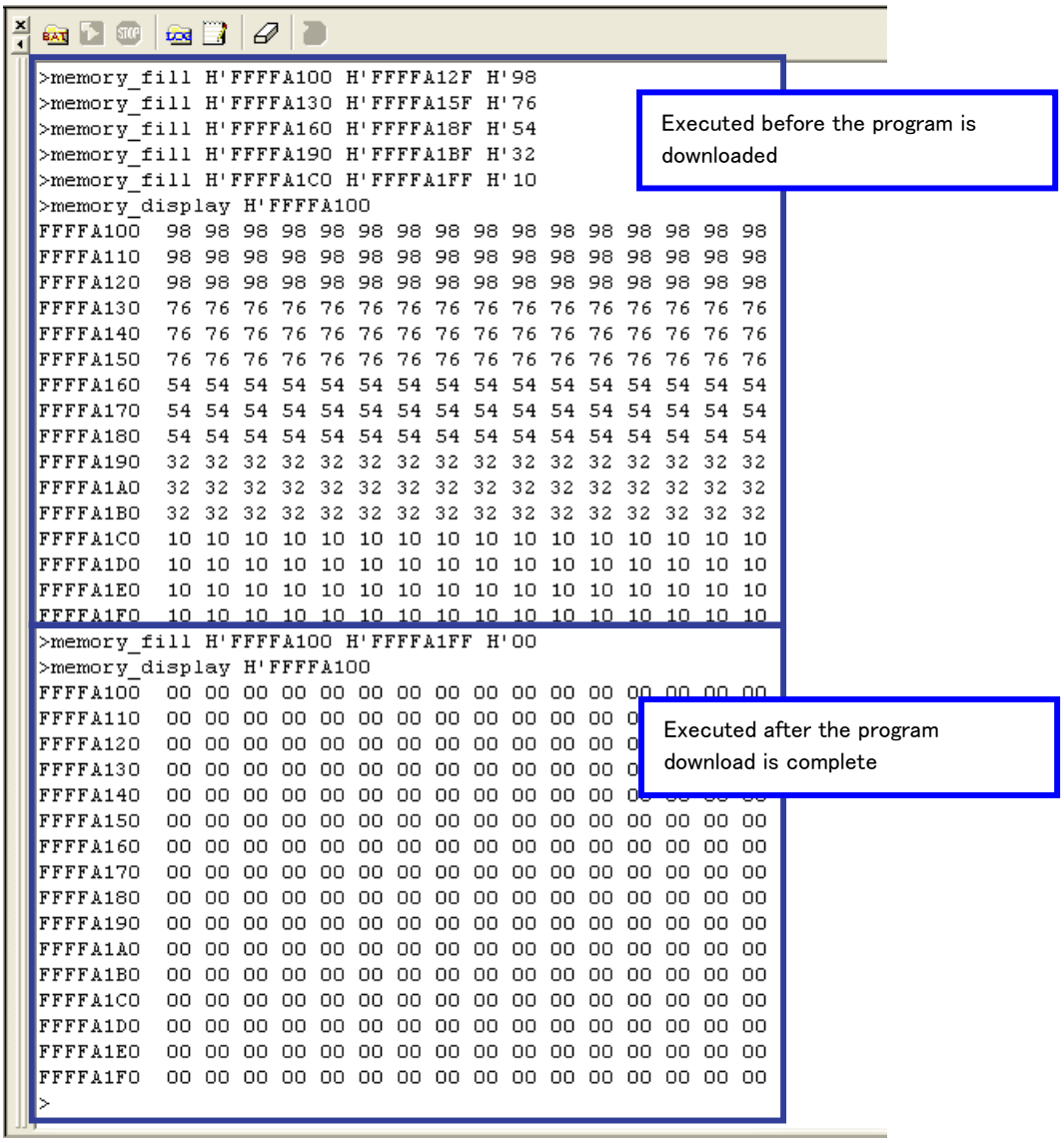
(12) To download the program, double-click on [Tutorial.abs-00000000] of [Download modules] in [Workspace].



When the program has been downloaded, a downward arrow is added to the icon.



(13) When the program is downloaded, a command batch file that has been set at the execution timing of “Before download of modules” is executed. When the program download is complete, a command batch file that has been set at the execution timing of “After download of modules” is executed. The executed results are then displayed in the [Command Line] window.



This is the end of the explanation on creating and executing the command batch file.

5. Frequently Asked Questions

5.1 Is it possible to reuse a command line which has been previously input?

A command line which has been previously input can be displayed again when the upward arrow is clicked while the control key of the keyboard is pressed at the lowest position when the prompt (“>”) is displayed on the [Command Line] window. When such a command is displayed again, it can be edited and executed by using the leftward or rightward arrow key.

5.2 Is there any method to use the command batch file effectively?

(1) Automatically setting the bus state controller (BSC)

When the external memory (SDRAM) is connected to the MCU, correct access may be implemented for the first time when the bus state controller is set. In this case, prepare the command batch file that uses the “memory_fill” command and substitutes the set values of each register of the bus state controller. When this command batch file is set for the execution timing “At target connection” or “After reset”, it becomes possible to access the external memory area or download the program to that area immediately after the emulator is started or the reset command is executed.

[Example of a Command Batch File]

```
! memory_fill <start> <end> <data> <mode> <state>    /* <state>: N = not verify */
memory_fill     h’a4fd0008    h’a4fd000b    h’36db0600    long    n
memory_fill     h’a4fd000c    h’a4fd000f     h’36db4600    long    n
memory_fill     h’a4fd0010    h’a4fd0011    h’55aa    word    n
      …
```

Note: To use this method to set the bus state controller for the MCU, refer to the set value by using a keyword such as ‘bus state controller’ or ‘SDRAM’ to search FAQs in the hardware manual of each MCU or on the Renesas website.

(2) Example of external address enable (EAE) operation in the H8S bus control register (BCRL)

In the H8S/2655 MCU, by default, the last half of the on-chip ROM area may be the external address. In this case, when the next command batch file is created and registered for “Before download of modules”, the program can be downloaded correctly within the whole on-chip ROM area.

[Example of a Command Batch File]

```
! If H8S/2655, BCRL = h’fed5, EAE = bit 5 (0 = on-chip ROM, 1 = external address)
memory_fill     h’fed5    h’fed5    h’1c
```

5.3 Is there any note when a file is specified with the command line?

When a file is specified with the command line, use a placeholder. When a directory that is not included in the placeholder is specified, use an absolute path. If an absolute path is used, the file cannot be correctly referred to when it is moved to other machines or an environment where the contents of a path are different; in such a case, reset the file.

5.4 If “Not currently available” is displayed during execution of a command batch file, what steps should be taken?

Insert the Sleep command. Adjust the sleep time depending on the operating environment.

[Example of a Command Batch File]

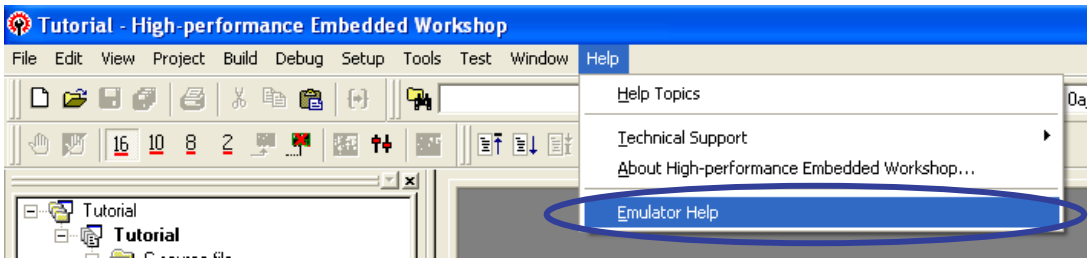
! Method to display “Not currently available” with the memory_fill command (approximately a 3-second wait is inserted)

memory_fill h’0000 h’ffff 0

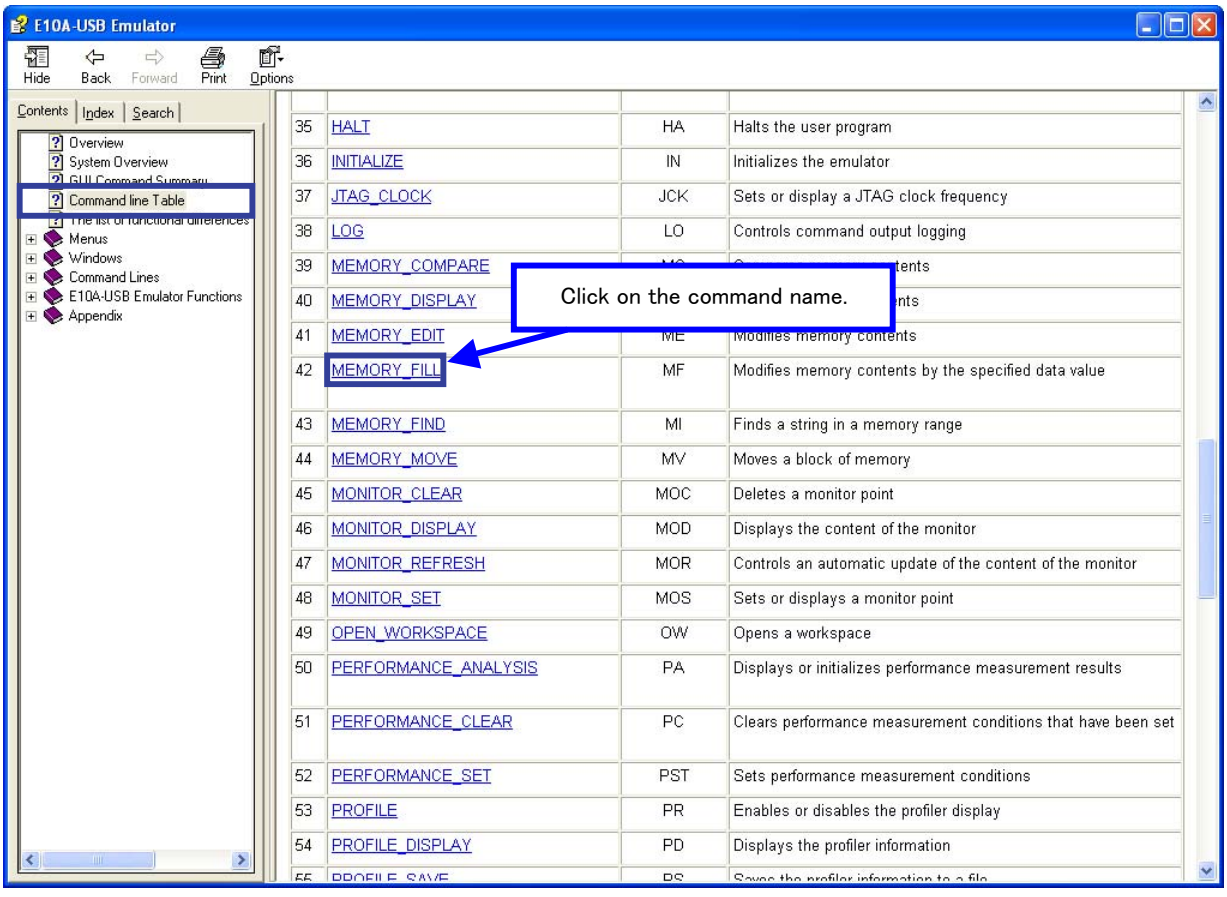
sleep d’3000

5.5 Is there any list of commands that can be used for the command line?

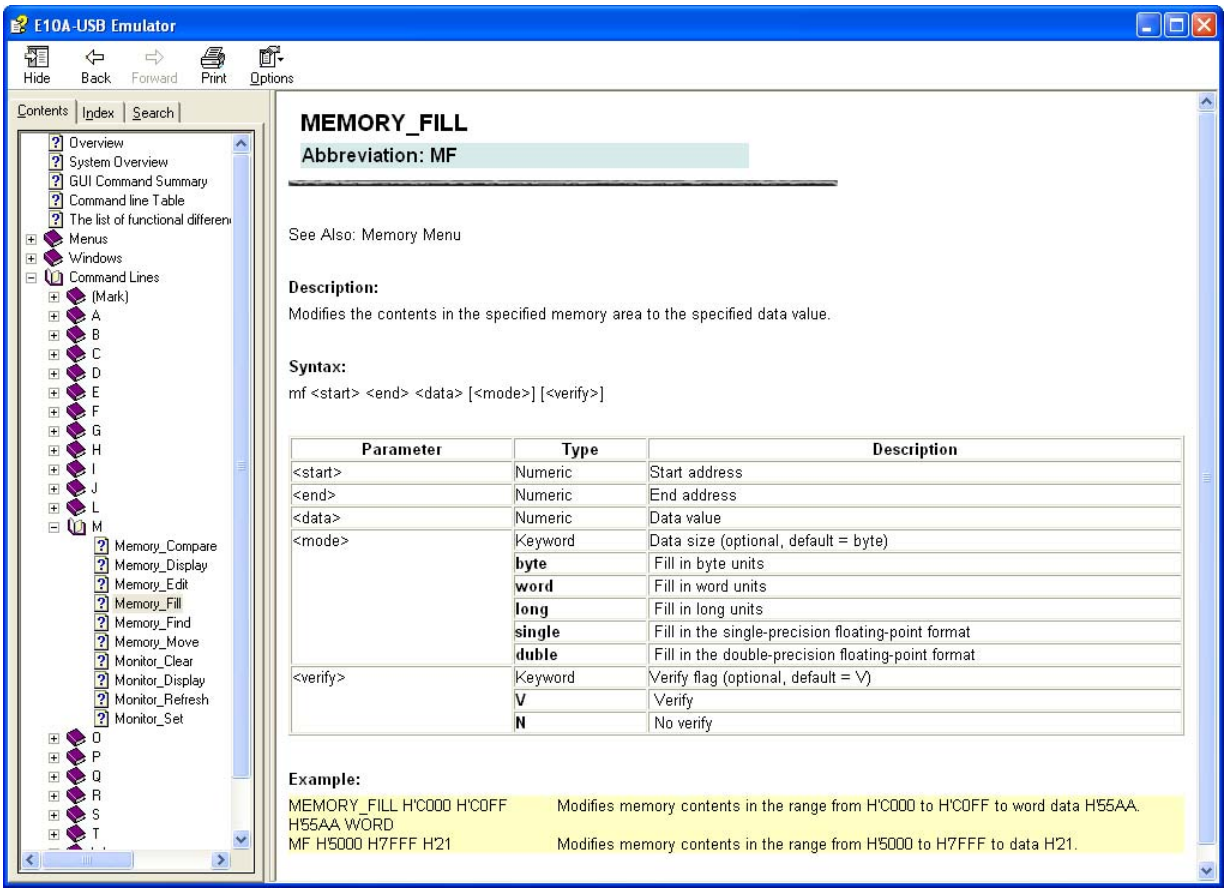
A list in the help menu of the High-performance Embedded Workshop indicates the usable commands and formats. Select [Emulator Help] from the [Help] menu.



When [Command line Table] in [Contents] is selected, a list of command lines is displayed. To see the details of a command format, click on a command name.



Details of the selected command will be displayed.



The emulator help information is stored in a folder created at installation of the High-performance Embedded Workshop; this folder is named “Emulator.chm”.

【Example of a Folder】

C:¥Program Files¥Renesas¥Hew¥Tools¥Renesas¥DebugComp¥Platform¥E10A-USB¥SH-2¥SH7080Series

6. Related Documents

The E10A-USB emulator and High-performance Embedded Workshop provide many other useful functions not mentioned in this document. Please refer to the following related documents for important information such as detailed specifications, technical information, or restrictions on each product.

【Documents Related to the E10A-USB Emulator】

- SuperH™ Family E10A-USB Emulator User's Manual
- SuperH™ Family E10A-USB Emulator Additional Document for User's Manual (Supplementary Information on Using the SH7125 Series Debugging MCU Board)
- SuperH™ Family E10A-USB Emulator Additional Document for User's Manual (Supplementary Information on Using the SH7125 and SH7124)
- Limitations on SuperH™ Family E10A-USB Emulator

【Documents Related to High-Performance Embedded Workshop】

- High-performance Embedded Workshop User's Manual
- High-performance Embedded Workshop Release Note

【Documents Related to MCU】

- SH7125 Group, SH7124 Group Hardware Manual
- SH-1/SH-2/SH-DSP Software Manual

【Document Related to SuperH™ Family C/C++ Compiler Package】

- SuperH™ C/C++ Compiler Package User's Manual

Visit the following Renesas websites for information on this product:

Global site: http://www.renesas.com/e10a_usb

Japanese site: http://japan.renesas.com/e10a_usb

Renesas Website and Customer Support

Renesas Technology Website:
http://www.renesas.com/

Customer Support:
http://www.renesas.com/inquiry
csc@renesas.com

Revision Record

Rev.	Date	Description	
		Page	Summary
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