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SuperH RISC engine C/C++ Compiler Package

APPLICATION NOTE: [Compiler Use Guide] Object uniting function use guide

This document explains how to use object uniting function in version 9.2 of the SupoerH RISC engine C/C++ compiler.

Table of contents

1. Outline

The function to unite two or more object files (mot file or hex file) with one was added to optimization linkage editor (optlnk.exe) V.9.04.00. When the object file is made for the multi core, this function is used.

In the development of the program for the multi core, two or more object files of each core might be made. It might be more convenient that these files are united with one to write the object file in FlashROM etc. Please use the function added for this case.

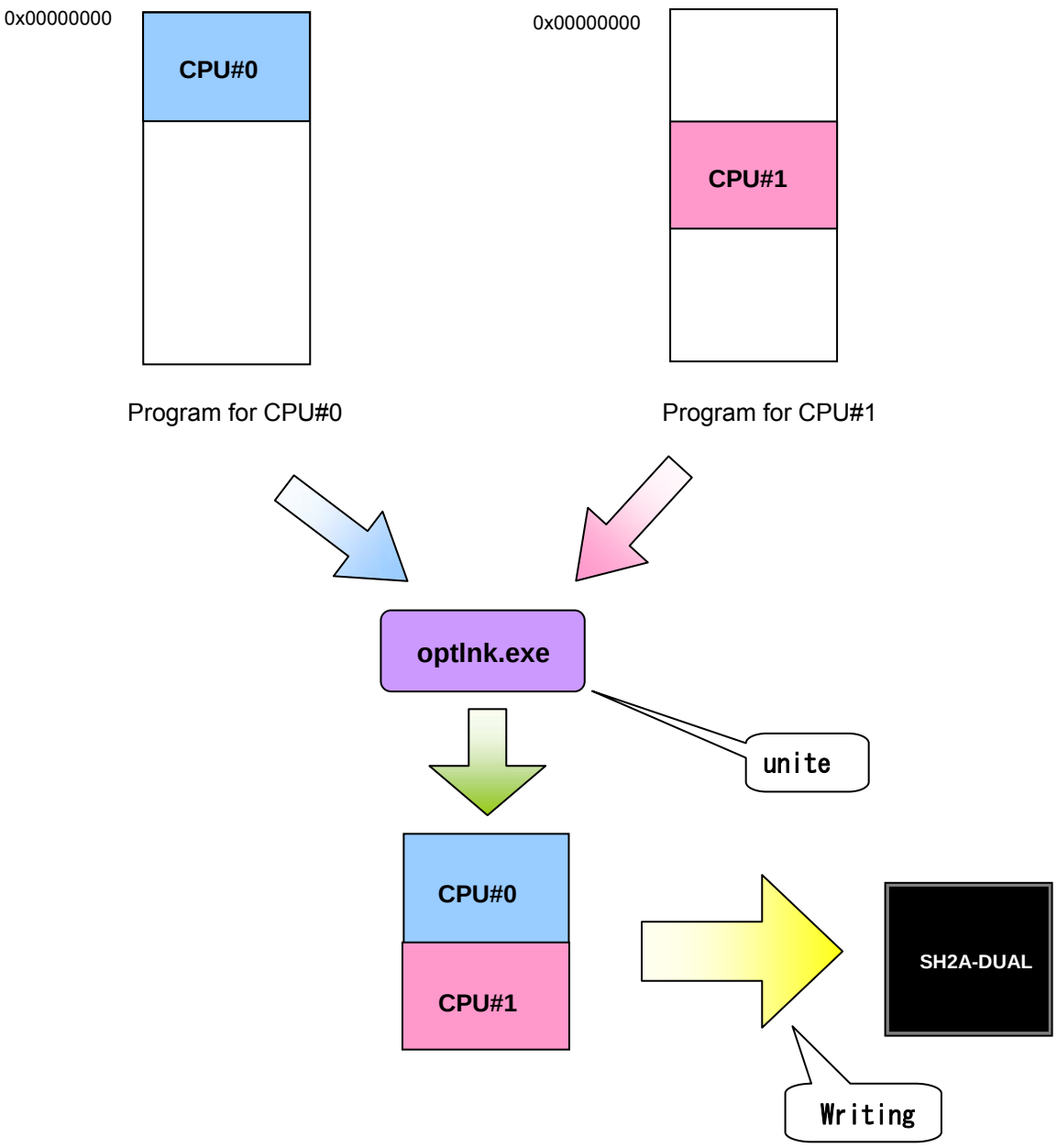


fig.1-1 Example of constructing object for SH2A-DUAL

2. Object uniting function

2.1 Outline of function

Optlnk.exe can unite two or more input hex file or mot file with one. This function is called mot/hex uniting function. The main feature is as follows.

- The input data is confirmed, and files are united in order with low address.
- Uniting information can be output to the file.
- The overlapping part is notified when there is data of the overlapping address.
- The mot file and the hex file cannot be input at the same time.

2.2 Command line

[Command line format]

optlnk.exe <InputFile>... –form=* [<Options>]

<InputFile>

*.mot - mot file generated with Renesas SHC compiler
*.hex - hex file generated with Renesas SHC compiler

<-form>

・ When hex files are united
-form=hex
・ When mot files are united
-form=stype

<Options>

-output=file name

Specification of output file name

※ The extension is automatically added when there is no extension in the file name specified for output.
※ The output file name becomes "<first file name>+_ combine +<extension>"
when there is no output specification.

-list

The information file is output.
The file name is <output file name > + .map.

-s9

Outputs the S9 record at the end even if the entry address exceeds 0x10000.

[Example of command]

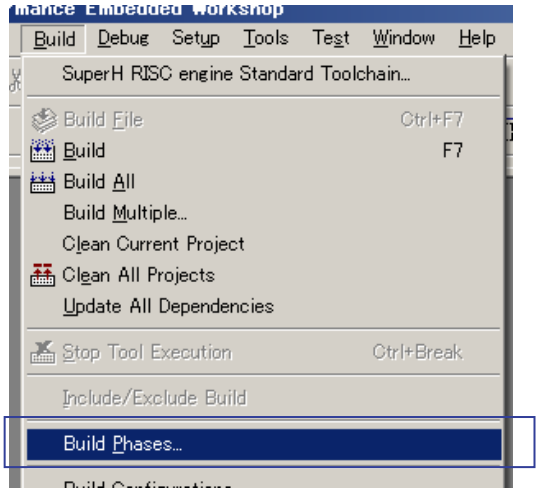
optlnk.exe a.mot b.mot –form=stype –output=combine.mot –list

(Content) “a.mot” is united with “b.mot” and “combine.mot” and information file “combine.map” are generated.

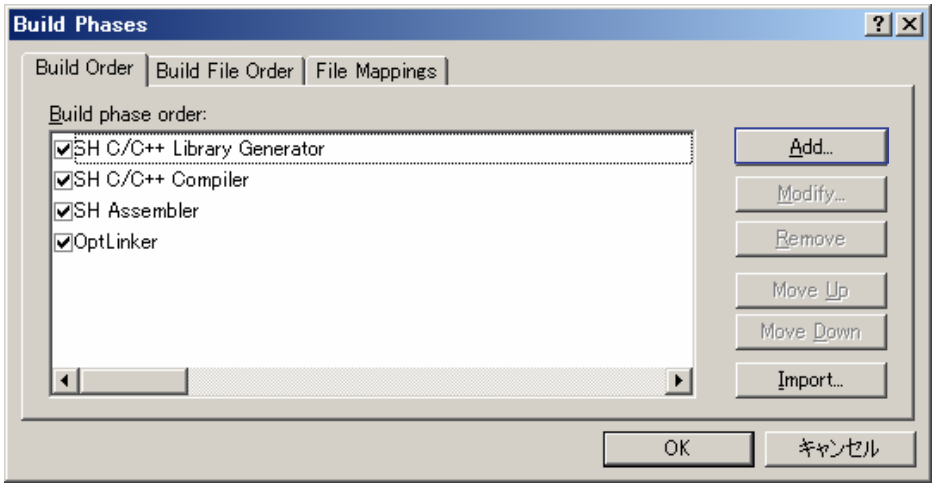
2.3 How to use in Renesas IDE

Please use “custom build phase” when you use the mot/hex uniting function from High-performance Embedded Workshop (Renesas IDE). The example of setting “custom build phase” is shown as follows.

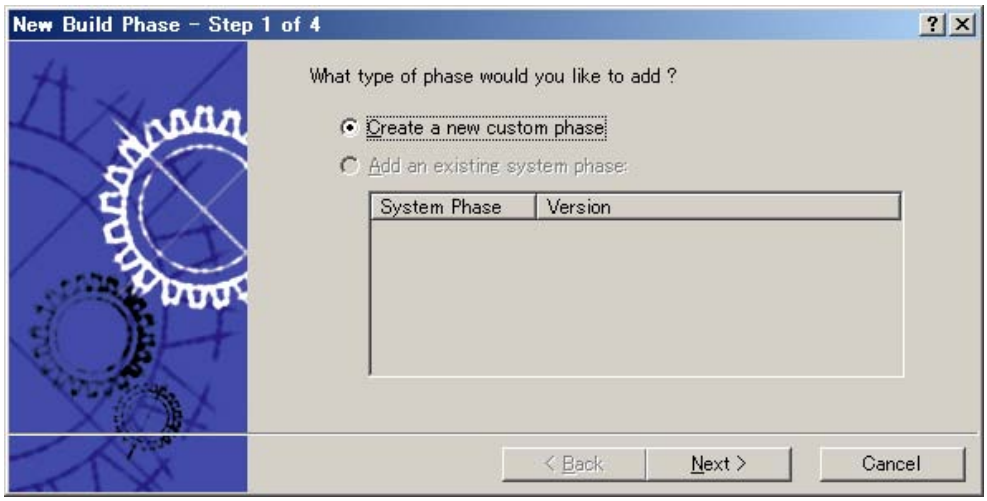
(1) HEW menubar → Build → Build Phases



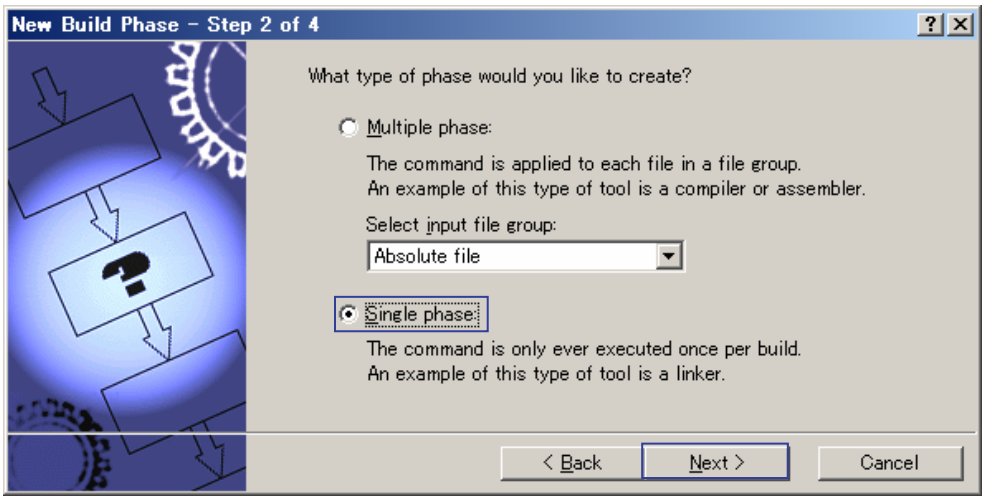
(2) “Add”



(3) “Create a new custom phase”

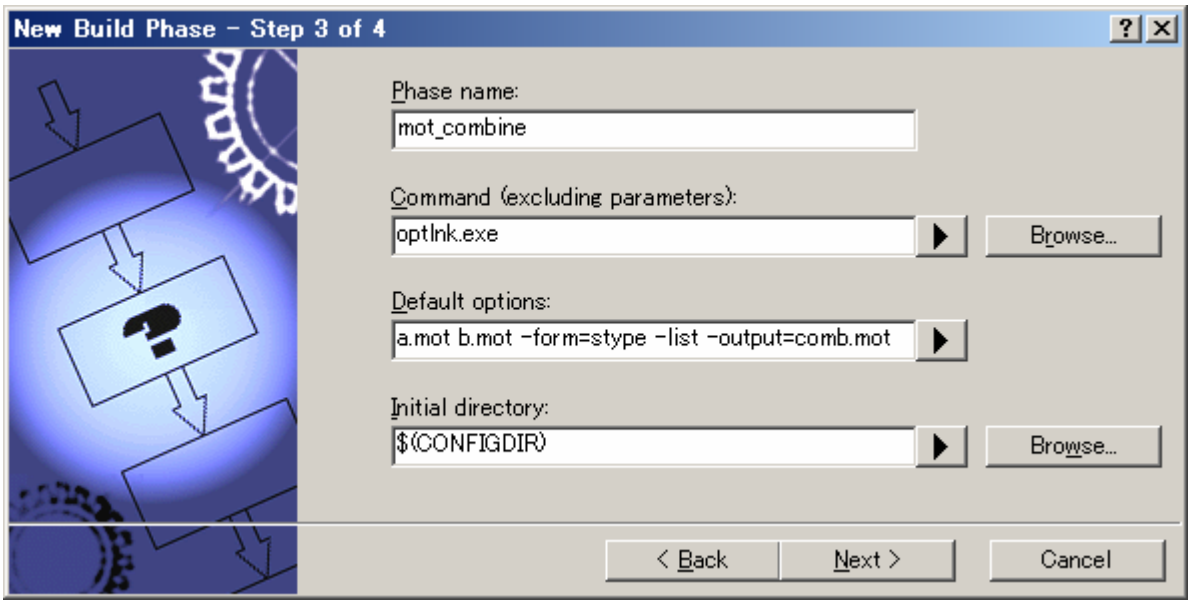


(4) Select “Single phase”,and “Next”

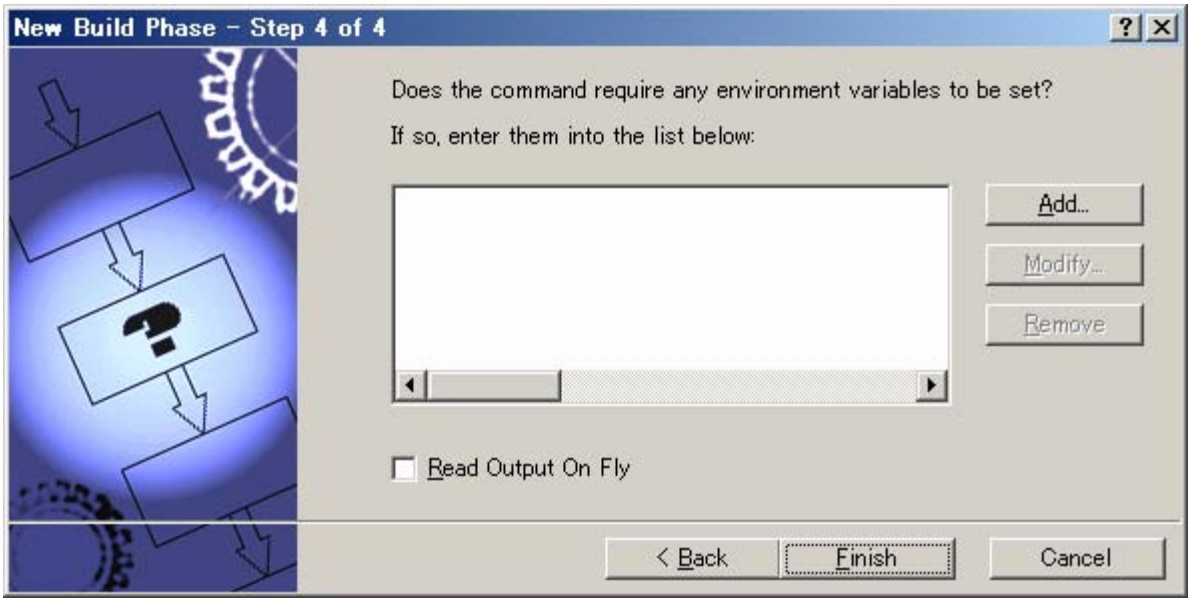


(5) Select “Single phase”,and “Next”

- Phase name：Please input the name of custom build phase.
- Command：Please specify optlnk.exe.
  Ex: C:¥Program Files¥Renesas¥Hew¥Tools¥Renesas¥Sh¥9_2_0¥bin¥optlnk.exe
- Default options：
  (1) Please specify the input file.
  (2) Please specify -form=stype or -form=hex.
  (3) Additionally, please specify a necessary option.
  Ex: a.mot b.mot -form=stype -list -output=comb.mot
  (1) (2) (3)
- Initial directory：Please specify the directory where the input file exists.



(6) “Finish"



2.4 Information file

The following information is included in the information file.

- Version information and link time
- Specified options
- Error message
- **Entry address**
- **Information of uniting**
- **Information of repetition**

*** Entry address ***

mot file：Entry address on end record
hex file：Start address on start record

※ This is displayed at numbers except 0.

*** Combine information ***

All data records in the input file are output.

(1) File name
(2) Start address
(3) End address
(4) Size

*** Conflict information ***」

Information on the record where the address overlaps is output.

The title is always output even when there is no content.

```
*** Entry address ***
00000100

*** Combine information ***
FILE                START           END             SIZE
   (1)               (2)            (3)             (4)
file_name1
                    00000000        00001fff        1fff
file_name2
                    00002000        00003fff        1fff
file_name1
                    00004000        000040ff        ff
file_name3
                    00004000        000042ff        2ff
file_name2
                    00004200        000042ff        ff

*** Conflict information ***
FILE                START           END             SIZE
Conflict 1
                    00004000        000040ff        ff
file_name1
file_name3

Conflict 2
                    00004200        000042ff        ff
file_name2
file_name3
```

2.5 Error message

- The case of input two or more files with different entry address

  L1305 (W) Entry address in "file" conflicts : "address"

  The entry address of the file previously input becomes effective.

- The case of the address overlaps

  L2420 (E) "file1" overlap address "file2" : "address"

  The address is a head of the overlapping address.
  When two or more overlaps exist, all information is output.

- The case of the input file is not correct

  L3003 (F) Illegal file format "file name"

2.6 Note

- Record type and byte count

  The record type and byte count are the same as the input file.
  Formats are not united.

- Notes when hex files unite

  When hex files are united, 02 and 04 records are deleted.

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Revision Record <revision history,rh>

		Description	
Rev.	**Date**	**Page**	**Summary**
1.00	Apr.1.08	—	First edition issued

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