RENESAS Tool News

The C/C++ Compiler Package for the SuperH RISC engine MCU Family Revised to V.9.03 Release 00

We have revised the C/C++ compiler package for the SuperH RISC engine MCU family from V.9.02 Release 00 to V.9.03 Release 00.

1. Product Concerned

The SuperH RISC engine family C/C++ compiler packages V.9

2. Descriptions of Revision

2.1 Windows Vista(R) Supported

You can run the revised product on Windows Vista(R) by using your user rights. However, the Manual Navigator tasks cannot be performed with this method, so use the following procedure to avoid this problem:

(1) Be logged on as a member of the administrator group.

(2) Open the property of the man_navi.exe file in Manuals folder, which is under the folder where High-performance Embedded Workshop has been installed.

(3) Check "Run this program as an administrator" in the Compatible tab.

Note:
The 64-bit Windows Vista has not been supported.

2.2 High-performance Embedded Workshop Updated to V.4.05.01

For details of the revision of the IDE to V.4.05.00, see RENESAS TOOL NEWS Document No. 081125/tn1, published on November 25, 2008, at
  http://tool-support.renesas.com/eng/toolnews/081125/tn1.htm
and to V.4.05.01, see RENESAS TOOL NEWS Document No, 090201/tn3, published on February 1, 2009, at

2.3 Simulator Debugger Updated to V.9.08.00

For details of the revision of the debugger to V.9.08.00, see
RENESAS TOOL NEWS Document No. 081216/tn1, published on December 16,
2008, at:

2.4 Functions Introduced to Compiler

(1) Option const_volatile

By using the const_volatile option, you can place a variable
with a const- and volatile-qualified initial value in either an
area containing initialized variables or an area containing
constants only.

(2) Bitwise operation built-in functions

The following built-in functions have been introduced so that
bitwise operations on memory can be performed by using bitwise
instructions (see NOTE):
- bset():   Sets a specified bit on memory to 1.
- bclr():   Sets a specified bit on memory to 0.
- bcopy():   Copies the value of a specified bit on memory
                 to another bit.
- bnotcopy(): Copies the inverted value of a specified bit
                 on memory to another bit.
   NOTE:
     Valid only when target MCUs are the SH-2A- or SH2A-FPU-cored.

2.5 Functions Introduced to Optimizing Linkage Editor

(1) The following options have been introduced:
  (a) Option cpu=stride

If the size of a section is larger than the address area in
which the section is to be placed in memory, the cpu=stride
option places the section in another larger area of the same
memory type, or splits the section into two or more so that
they can be placed in two or more address areas.
  (b) Option contiguous_section

When selected with cpu=stride, the contiguous_section option
places a section without splitting it in an address area of
the same memory type that is large enough to accommodate the
section.
  (c) Option show=all

Sub-option "all" has been introduced to option "show".

The contents of all lists are effectively output.

(2) The following functions have been introduced:
   (a) Generating a linkage map when errors have been eliminated.
   (b) Using binary files as input files to generate relocatable
       files

2.6 Problems Fixed in Compiler and Optimizing Linkage Editor
The following problems have been fixed:
 (1) Problem described in RENESAS TOOL NEWS Document No. 090116/tn1,
     published on January 16, 2009, at
       http://tool-support.renesas.com/eng/toolnews/090116/tn1.htm
     and RENESAS TOOL NEWS Document No. 090220/tn1,
     published on February 20, 2009, at
       http://tool-support.renesas.com/eng/toolnews/090220/tn1.htm
     The above Web site will be opened from February 20 on.

(2) Problem that the C4099 or C4098 internal error may arise

(3) Problem that the number of digits may be incorrect when "%G" is
    used in the standard library function sprintf()

(4) Problem that the operation code of the GBR-relative MOV instruction
    may be displayed incorrectly in a list file

(5) Problem described in RENESAS TOOL NEWS Document No. 090201/tn4,
    published on February 1, 2009, at
       http://tool-support.renesas.com/eng/toolnews/090201/tn4.htm

2.7 Changes Made to Specifications of Compiler
(1) The restrictions imposed on memory consumption in inline expansion
    have been removed. As a result, functions that could have not been
    expanded inline can be done so in some cases.

(2) When the result of a subtraction operation has overflown, the
    evaluation of the comparison between the result of the subtraction
    and zero is different from the previous version (see NOTE).
    NOTE:
      Depending on language specifications, the evaluation result is
      undefined.

    Example in C source program:

```
-----------------------
int a,b;
f()
{
   if (a-b < 0) {   // If a=0xfffffffe and b=0x7fffffff,
                // TRUE in V.9.02 and earlier,
                // FALSE in V.9.03
      g();
   }
}
-----------------------
```

(3) Under the condition that the logic_gbr option selected,
    optimization performing any GBR-relative access instruction as
    logical operations is strengthened.

Example in C source program:

```
char a,*b;
void func()
{
   *b = 0;
   a &= 1;
}
```

**When options -gbr=user and -logic_gbr selected in V.9.02
and earlier:**

```
  MOV.L    L11+2,R5  ; _b
  MOV.L    L11+6,R4  ; _a
  MOV.L    @R5,R2    ; b
  MOV      #0,R1        ; H'00000000
  MOV.B    R1,@R2    ; *(b)
  MOV.B    @R4,R0    ; a
  AND      #1,R0
  RTS
  MOV.B    R0,@R4    ; a
```

When options -gbr=user and -logic_gbr selected in V.9.03:

```
  MOV.L    L11+2,R5  ; _b
  MOV      #0,R6        ; H'00000000
```

```
MOV.L      @R5,R2    ; b
MOV.L      L11+6,R0  ; _a-(STARTOF $G0)
MOV.B      R6,@R2    ; *(b)
RTS
AND.B      #1,@(R0,GBR); a
-----------------------
```

3. How to Update Your Product and Purchase the Revised One

3.1 Updating

Online update is available free of charge if you are using the edition concerned. Use AutoUpdate Utility.

This service is being available from February 23 on.

Otherwise, download the update program of the product from

   http://www.renesas.com/shc_download

and then execute it. The above Web site will be opened from February 20 on.

NOTICE:

It is not allowed to update from any of the product V.8 or earlier to V.9.03 Release 00.

If necessary, please purchase the revised product.

3.2 First Ordering

When you place an order for the product, supply the following items of information to your local Renesas Technology sales office or distributor.

Product Type:	C/C++ compiler package for the SuperH RISC engine family
Version No.:	V.9.03
Release No.:	Release 00
Host OS:	Windows Vista, Windows XP, or Windows 2000

For the price of the product, contact the above office or distributor.