RENESAS Tool News

RENESAS TOOL NEWS on October 16, 2015: 151016/tn4

RL78 Family C Compiler Package V1 (without IDE) Revised to V1.02.00

We will be revising V1 of the RL78 Family C Compiler Package (without IDE), which is for use with the e2 studio, from V1.01.00 to 1.02.00.

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1. Descriptions of Revision

1.1 Enhanced optimization

The performance of the generated code has been improved.

1.2 Added options

The following options have been added.

(1) -g_line

The information for the debugging of source code is enhanced in optimization.

(2) -stack_protector

Code for detecting stack smashing by a specified function is generated. Specifically, functions having structures, unions, or arrays with local variables exceeding 8 bytes are detected.

(3) -stack_protector_all

Code for detecting stack smashing by any function is generated.

(4) -misra2012

The source code is checked against the MISRA-C:2012 rules.

(5) -Osame_code

Multiple instances of the same sequence of instructions in the same section of a compilation unit are integrated and converted into a function.

1.3 Added #pragma directives

The following #pragma directives have been added.

(1) #pragma stack_protector

Code which detects stack smashing by a specified function is

generated.

(2) #pragma no_stack_protector

Code which detects stack smashing by a specified function is not generated.

1.4 Added options

The following option has been added.

(1) -SYmbol_forbid

The deletion of specified symbols not referred to is inhibited.

1.5 Extensions to the -Optimize option

symbol_delete, speed, and safe have been added to the parameters of the -Optimize option.

(1) symbol_delete

Variables and functions to which nothing refers are deleted. Be sure to also specify the "entry" option when using this in compilation.

(2) speed

Only forms of optimization other than those which raise the possibility of lowering the speed of the object code proceed.

(3) safe

Only forms of optimization other than those which raise the possibility of restricting variables and functions through their attributes proceed.

1.6 Restriction on the -Binary option

A restriction on the -Binary option has been added.

Restriction:

Binary files for which the -Binary option is specified can only be allocated to the address range from 0 to 0x0FFFF. Create assembly source code as shown below when allocating a binary file to the address range from 0x10000.

```
--------------------------
 .SECTION BIN_SEC, TEXTF
 $BINCLUDE(tp.bin)
--------------------------
```

1.7 Extensions to CRC calculation

CCITT, 16-CCITT-MSB, 16-CCITT-MSB-LITTLE-2, 16, and 32-ETHERNET can be specified for the -CRc option operation in addition to 16-CCITT-MSB-LITTLE-4, 16-CCITT-LSB, and SENT-MSB in the previous version.

(1) CCITT

The result of calculation is obtained by applying CRC-16-CCITT to the input MSB first, with the initial value of the result

being 0xFFFF, and XOR inversion.

(2) 16-CCITT-MSB

The result of calculation is obtained by applying CRC-16-CCITT to the input MSB first.

(3) 16-CCITT-MSB-LITTLE-2

The input is a 2-byte unit with little endian. The result of calculation is obtained by applying CRC-16-CCITT to the input MSB first.

(4) 16

The result of calculation is obtained by applying CRC-16 to the input LSB first.

(5) 32-ETHERNET

The result of calculation is obtained by applying CRC-32-ETHERNET to the input. The initial value of the result is 0xFFFFFFFF, and is XOR inverted and the bit order is reversed.

1.8 Added functions

The following functions have been added to the standard library.

(1) calloc

A span of memory is allocated and initialized to zero.

(2) free

Releases memory.

(3) malloc

Allocates memory.

(4) realloc

Re-allocates memory.

1.9 Changes to startup routines

Statements of the const attribute have been deleted from the startup routines for devices which have no mirror space.

1.10 Rectified points for caution

The problems regarding the following four points, of which we informed you in RENESAS TOOL NEWS Document No. 151001/tn2, have been fixed.

1. The output of code which rewrites argument values which have been pushed onto the stack (CCRL#002)
2. Return values of the memcmp, _COM_memcmp_ff, strcmp and _COM_strcmp_ff functions becoming incorrect (CCRL#003)
3. Return values of the strtoul and _COM_strtoul_ff functions becoming incorrect (CCRL#004)
4. Non-default section names being used with the reserved words __sectop and __secend, and with the startof and sizeof operators (CCRL#005)

For details of this problem, see the following page:

https://www.renesas.com/search/keyword-search.html#genre=document&q=151001tn2

The problems regarding the two points below have been fixed.

- Function definitions in K&R format
  (formal parameters of floating-point type)
- Function definitions in K&R format
  (formal parameters of near pointer)

1.11 Added note

A note on the following point has been added.

(1) Definition of comparison functions bsearch and qsort in K&R format

For details of the note, see the user's manual at the link on the web page below.

The user's manual will be available from October 20.

https://www.renesas.com/search/keyword-search.html#genre=document&q=r20ut3123

RL78 Compiler CC-RL User's Manual
(Document No.: R20UT3123EJ0102)
11.2.6 Definition of comparison functions bsearch and qsort in K&R format

1.12 Changed note

The details of the note on the following point have been changed.

(1) Separation operator

For details of the note, see the user's manual at the link on the web page below.

https://www.renesas.com/search/keyword-search.html#genre=document&q=r20ut3123

RL78 Compiler CC-RL User's Manual
(Document No.: R20UT3123EJ0102)
11.3.5 Separation operators

1.13 Addition of basic facility

- Support for Windows 10 (32- and 64-bit) has been added.

2. Updating Your Product and Ordering the Revised Product

2.1 Updating

Download and install the stand-alone version of CC-RL V1.02.00 from the following URL.

https://www.renesas.com/rl78_c_download

The above program will be available from October 20.

2.2 Ordering

When ordering, please contact your local Renesas Electronics marketing offices or distributor.

Before purchasing, you can evaluate its performance and functionality by using the evaluation edition of this product. To do so, download the evaluation edition from the web site at:
https://www.renesas.com/tool_evaluation
The installer will be available on this site from October 20.
