RENESAS Tool News

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A Note on Using the C/C++ Compiler Package for the M16C Series, R8C Family of MCUs (M3T-NC30WA) V.6.00 Release 00

When using the C/C++ compiler packages for the M16C series, R8C family of MCUs, take note of the following problem:

- With changing the value of a variable by using a cast expression that converts the address of the variable to far pointer type

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1. Description

If a constant is assigned to a variable; then the value is changed by using a cast expression that converts the address of the variable to far pointer type, the value will stay unchanged.

1.1 Conditions

This problem arises if the following conditions are all satisfied:

(1) Any of the following compile options is used:
-O, -O1 through -O5, -OR, -OS, -ORM(-OR_MAX), and -OSM(-OS_MAX)

(2) A constant is assigned to a variable. In this case is included any constant that substitutes for an expression as a result of optimization.
Note, however, that external variables and volatile-qualified variables are both excluded.

(3) After the assignment expression in (2), the variable in (2) is referenced.

(4) The address of the variable in (2) is converted to pointer type by using a cast expression, and then this expression is used to change the value of the above variable.

(5) The expression in (4) is placed between the expressions in (2) and (3).

(6) Between the expressions in (2) and (3) exist no function calls or no inline-assemble functions.

(7) The attribute of the pointer type in (4) is far.

1.2 Example

```
-----------------------------------------------------------
 unsigned int      gui;

 void func(void)
 {
    unsigned int aui;

    aui = 0;              /* Condition (2) */
    *(int far *)&aui = 1;    /* Conditions (4), (5), (6), (7) */
    gui = aui;            /* Condition (3) */
 }
-----------------------------------------------------------
```

2. Workaround

To avoid this problem, place a dummy asm function between the expressions in Conditions (2) and (3).

```
-----------------------------------------------------------

 unsigned int      gui;

 void func(void)
 {
    unsigned int aui;

    aui = 0;
    *(int far *)&aui = 1;
    asm();                /* Dummy asm function placed */
    gui = aui;
 }
-----------------------------------------------------------
```

3. Schedule of Fixing the Problem

We plan to fix this problem in the next version of the product.

be included. The URLs in the Tool News also may be subject to change or become invalid without prior notice.