[Notes]

C Compiler Package for RH850 Family

Outline

When using the CC-RH C compiler package for the RH850 family, note the following points.

1. Using a goto statement to move to a label in a switch statement (No.16)

2. Math library functions that contain FPU instructions (No.17)

Note: The number which follows the description of a precautionary note is an identifying number for the precaution.

1.   Using a goto Statement to Move to a Label in a switch Statement (No.16)

1.1   Applicable Products

CC-RH V1.00.00 to V1.06.00

1.2   Details

When a goto statement to move to a label in a switch statement is used, an unintended case label clause may be executed.

1.3   Conditions

This problem arises if all of conditions (1) to (4) are met.

(1) The clause of the last case label or the last default label in a switch statement contains a break statement.

(2) A switch statement after the break statement of (1) contains a label.

(3) There is a goto statement to move to the label of (2).

(4) There is no break statement to exit from the clause of the label of (2).

1.4 Example

The following is an example of the problem. Characters in red are the parts that correspond to the conditions.

```
 1:  void func(int c) {
 2:    switch (c) {
 3:      case 'a':
 4:        func1();
 5:        break;
 6:      case 'b':
 7:        func2();
 8:        goto LABEL;   // Condition (3)
 9:      default:
10:        func3();
11:        break;        // Condition (1)
12:  LABEL:              // Condition (2)
13:        func4();
14:    }
15:  }
```

- Line 11: Condition (1) is met since the clause of the last default label in a switch statement contains a break statement.

- Line 12: Condition (2) is met since a label "LABEL" exists after the break statement of Condition (1).

- Line 8: Condition (3) is met since a goto statement to move to the label "LABEL" of Condition (2) exists.

    Additionally, Condition (4) is met since there is no break statement to exit from the clause of the label "LABEL".

Supplement: In the above case, when c == 'b' holds in the processing of the switch statement of line 2, the correct operation is to execute processing in the order from func2() to func4(), but the clause of case 'a' is also executed improperly after processing from func2() to func4().

1.5 Workarounds

To avoid this problem, take any of the following steps:

(1) Do not describe a label after the break statement of Condition (1).

(2) Add a break statement at the location where to exit the switch statement from the label of Condition (2).

(3) Replace the switch statement with an equivalent if statement.

1.6 Schedule for Fixing the Problem

This problem will be fixed in the next version. The release date has not yet been decided.

2. Math Library Functions That Contain FPU Instructions (No.17)

2.1 Applicable Products

CC-RH V1.00.00 to V1.06.00

2.2 Details

Math library functions that contain FPU instructions may contain a double-precision FPU instruction. Because of this, an FPU exception occurs in MCUs that implement no double-precision FPU.

2.3 Conditions

This problem arises if both conditions (1) and (2) are met. In the correct specifications, the math library functions in (2) must use only single-precision FPU instructions for using FPU instructions. However, double-precision FPU instructions are incorrectly contained in the part of the processing.

(1) One of the following libraries is linked. [Note 1]

- ➢ lib ¥ v850e3v5 ¥ rhf4n.lib
- ➢ lib ¥ v850e3v5 ¥ rhf4z.lib
- ➢ lib ¥ v850e3v5 ¥ libmf.lib

(2) One of the following math library functions in the libraries in (1) is used.

- ➢ coshf()
- ➢ sinhf()
- ➢ tanhf()
- ➢ expf()
- ➢ cosh()[Note 2]
- ➢ sinh()[Note 2]
- ➢ tanh()[Note 2]
- ➢ exp()[Note 2]

Note 1: You can also determine which library has been linked by checking the argument of the -library option in the link map file.

Note 2: This math library function is not contained in lib ¥ v850e3v5 ¥ libmf.lib, and therefore if this library has been linked, this function is not applicable.

2.4 Workaround

Link either of the following libraries that do not contain FPU instructions:

- ➢ lib ¥ v850e3v5 ¥ rhs4n.lib
- ➢ lib ¥ v850e3v5 ¥ softfloat ¥ libmf.lib

2.5 Schedule for Fixing the Problem

This problem will be fixed in the next version. The release date has not yet been decided.

Revision History

Rev.	Date	Description	
		Page	**Summary**
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