

[Notes]

R20TS0051EJ0100

Rev.1.00

July 16, 2016

C Compiler Package for RH850 Family

Outline

When using the CC-RH C Compiler Package for the RH850 Family, take note of the problem described in this note regarding the following point.

1. Scope of optimization (No. 11)

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

1. Scope of Optimization (No. 11)

1.1 Applicable Product

CC-RH V1.00.00 to V1.03.00

1.2 Details

The scope of optimization might vary due to the environment* where the CC-RH compiler is operating with an option other than -Onothing specified so that processing for optimization is selected.

This may lead to differences in generated code even when the source code is unchanged. Even in cases where this effect is seen, the generated code will still operate in accord with the statements in the C source file. However, the differences in the generated code might affect the timing of execution by the program.

*: Here, "environment" refers to dependences on file names, folder names, options, environmental variables of PC, and other factors.

1.3 Example

[C source]

```

int    XXX = 0;
void   funcion01( void );
void   funcion01( void )
{
    int i = 0;
    DIT di = { 0, 0 };

    while( i < XXX ){
        di = func_01(i);

        if((ary[i] != 0xc0)&&(ary[i] != 0xc1)){

            if( ((lgflg[di.int_01] & (1UL<<di.int_02)) != 0UL ) || ((lgflg_sb[di.int_01] &
(1UL<<di.int_02)) != 0UL) ){
                long_001[di.int_01] &= ~(1UL<<di.int_02);
                long_sub001[di.int_01] &= ~(1UL<<di.int_02);
                if( ((lgflg[di.int_01] & (1UL<<di.int_02)) != 0UL ) && ((lgflg_sb[di.int_01] &
(1UL<<di.int_02)) != 0UL) ){
                    long_001[di.int_01] |= (1UL<<di.int_02);
                    long_sub001[di.int_01] |= (1UL<<di.int_02);
                }else if((lgflg[di.int_01] & (1UL<<di.int_02)) != 0UL ){
                    long_001[di.int_01] |= (1UL<<di.int_02);
                }else if((lgflg_sb[di.int_01] & (1UL<<di.int_02)) != 0UL){
                    long_sub001[di.int_01] |= (1UL<<di.int_02);
                }else{
                }
                lgflg[di.int_01] &= ~(1UL<<di.int_02);
                lgflg_sb[di.int_01] &= ~(1UL<<di.int_02);
            }
        }
        ++i;
    }
}

```

Extracts showing differences in the generated code

Pattern 1

```

...
shl 0x00000002, r5
mov #_lgflg, r2
add r5, r2
ld.w 0x00000000[r2], r5
mov 0x00000001, r6
shl r7, r6, r7
not r7, r7
and r7, r5
st.w r5, 0x00000000[r2]
...

```

Pattern 2

```

...
mov 0x00000001, r2
shl r5, r2, r5
not r5, r5
ld.bu 0x00000001[r3], r6
shl 0x00000008, r6
ld.bu 0x00000000[r3], r7
or r7, r6
ld.bu 0x00000003[r3], r7
shl 0x00000008, r7
ld.bu 0x00000002[r3], r8
or r8, r7
shl 0x00000010, r7
or r6, r7
shl 0x00000002, r7
mov #_lgflg, r6
add r7, r6
ld.w 0x00000000[r6], r7
and r5, r7
st.w r7, 0x00000000[r6]
...

```

Compared to pattern 1, redundant instructions have been generated in pattern 2 since the scope was narrowed, so optimization did not work to some extent. However, there are no problems with operation of the generated code.

1.4 Workaround

Compare results with the last results of generation when rebuilding is needed. In cases where a difference appears, re-evaluate the code or use the last result of generation.

1.5 Schedule for Fixing the Problem

This problem will be fixed in the next revision.

Revision History

Rev.	Date	Description	
		Page	Summary
1.00	July 16, 2016	-	First edition issued

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