RENESAS Tool News

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A Note on Using the C/C++ Compiler package--M3T-CC32R-- for the M32R MCU Family --With Calculating the Stack Usage of Run-Time Operation Routines of Type float--

Please take note of the following problem in using the C/C++ compiler package--M3T-CC32R-- for the M32R MCU family:

- With calculating the stack usage of run-time operation routines of type float

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1. Product and Versions Concerned

The C/C++ compiler package--M3T-CC32R--for the M32R MCU family
V.4.20 Release 1 through V.5.01 Release 00

2. Description

When the stack usage is calculated by using stk32R (a stack size calculation utility) included in the product package, the stack usage of some run-time operation routines in the standard library cannot be calculated.

2.1 Conditions

This problem occurs if the following conditions are both satisfied:
(1) A program containing any of the following operations is compiled by using the -stack option to generate a the stack amount usage file (with filename extension .stk):
(a) Converts an object of type float to of type unsigned int.
(b) Subtracts between objects of type float.
(c) Converts an object of type unsigned int to of type float.
(d) Converts an object of type double to of type unsigned int.
(2) The stack usage is calculated by using stk32R with the following

conditions being both satisfied:
(a) The stk32R reads the stack amount usage file generated in (1).
(b) Any of the stack amount usage files for the standard library m32RcR.stk, m32RcRM.stk, and m32RcRL.stk is selected by using the -l option.

2.2 Examples

Source code (sample.c):

```
-----------------------------------------------------------------
float f1,f2,f3;
unsigned u;
double d;
void func(void)
{
   u = f1;      /* Condition (1)-(a) */
   f1 = f2 - f3; /* Condition (1)-(b) */
   f2 = u;      /* Condition (1)-(c) */
   u = d;       /* Condition (1)-(d) */
}
-----------------------------------------------------------------
```

Command line:

```
-----------------------------------------------------------------
cc32R -stack -c sample.c
stk32R -efunc -lm32RcR.stk sample.stk
-----------------------------------------------------------------
```

Because the stack size information of the run-time operation routine that is used when any of the four operations in Condition 1 is performed is not contained in the specified stack amount usage file for the standard library, stack size cannot be calculated, resulting in stack size being displayed as follows:

```
-----------------------------------------------------------------
*** Stack Size ***

        12 bytes
              12 bytes + _100_Fdtou
              12 bytes + _100_Futos
              12 bytes + _100_Fsubs
              12 bytes + _100_Fstou
-----------------------------------------------------------------
```

3. Workaround

To avoid this problem, perform the following steps:

(1) Download and uncompress the m32RcR_lacked.zip file from the Web page at:
http://tool-support.renesas.com/eng/toolnews/081016/tn7.htm
This Web page will be opened from November 6 on.

(2) Store the uncompressed file m32RcR_lacked.stk on the directory the environment variable M32RLIB specifies.

(3) Then type -lm32RcR_lacked.stk in the command line of stk32R.

Example of command line:

```
----------------------------------------------------------------------
stk32R -efunc -lm32RcR.stk -lm32RcR_lacked.stk sample.stk
----------------------------------------------------------------------
```

Stack size is calculated and displayed as follows:

```
----------------------------------------------------------------------
*** Stack Size ***

        24 bytes
----------------------------------------------------------------------
```
