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H8/300H Tiny Series

Clearing RAM Using a Standard Function

Introduction

This document describes how to clear the user RAM area in the H8/3664 to 0s using a standard function.

Target Device

H8/300H Tiny Series H8/36014 CPU

Contents

1. Specifications

- The user RAM area in the H8/3664 ranges from H'FB80 to H'FF7F. You can clear the range from H'FB80 to H'FD7F to 0s.
- First, you use the memset function, which is a standard function, to initialize the bits in the specified range to 1s.
- Then you use the memset function to clear the bits to 0s.

2. Description of Functions

This task describes how to initialize the bits in the specified area of the user RAM area used by the H8/3664 to 1s and then clear them to 0s using the memset function.

3. Description of Operation

Figure 1 shows the operation. As shown in Figure 1, clear RAM to 0s through software processing. Since H'FF7E and H'FF7F in the user RAM area are used to execute the memset function, you can clear only the range from H'FB80 to H'FD7F to 0s.

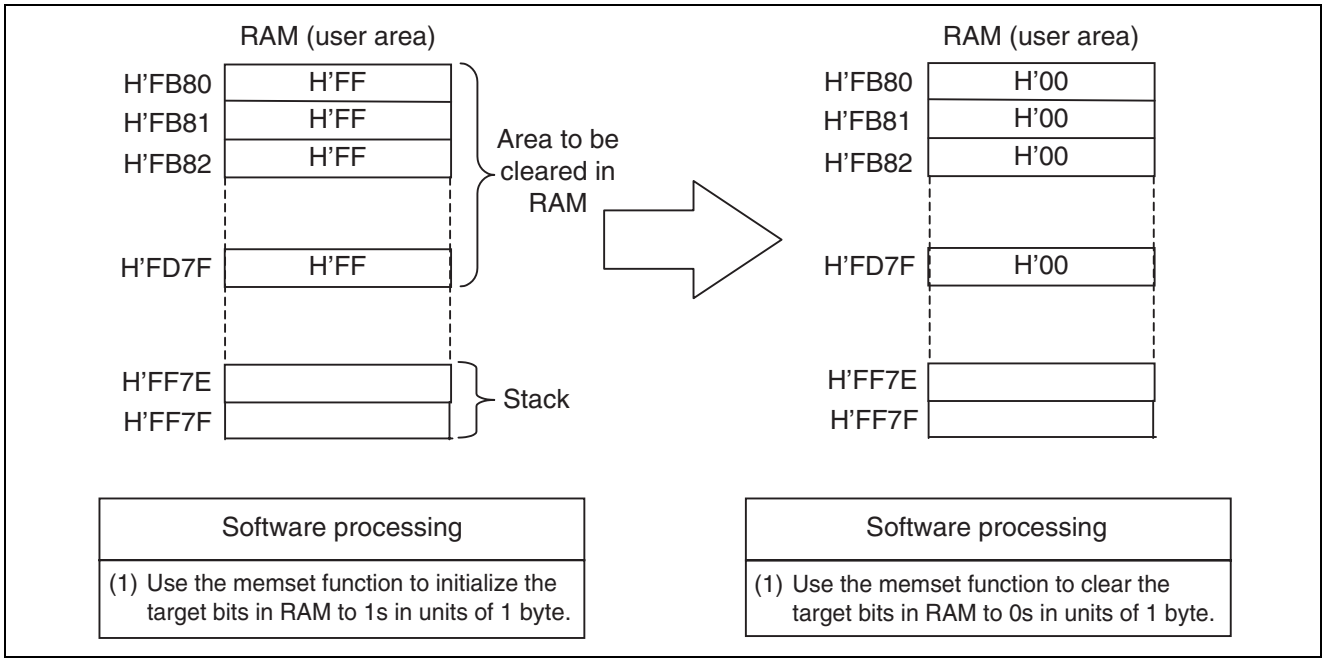


Figure 1 Operation

3.1 Processing Time

Table 1 shows the length of time required to clear 512 bytes to 0s.

The system clock frequency (ϕ) is 16 MHz.

Table 1 Time Required to Clear RAM to 0s

Target address	Number of bytes to be cleared to 0s	Processing time
H'FB80 to H'FD7F	512 bytes	132.0 µs

4. Description of Software

4.1 About the modules

Table 2 lists the modules used in this task.

Table 2 Description about the Modules

Module	Label	Description
Main routine	main	Uses standard functions to initialize the bits at the specified addresses to 1s and clear them to 0s.
Standard function	memset	Sets the specified number of specified characters from the beginning of the specified memory area.

4.2 About the Arguments

Table 3 lists the arguments used in this task.

Table 3 Description about the Arguments

Label	Data type	Set value	Function
RAM_START	char	H'FB80	Beginning address of the target area in RAM to clear 0s
RAM_END	char	H'FD7F	Ending address of the target area in RAM to clear 0s

4.3 About the Registers

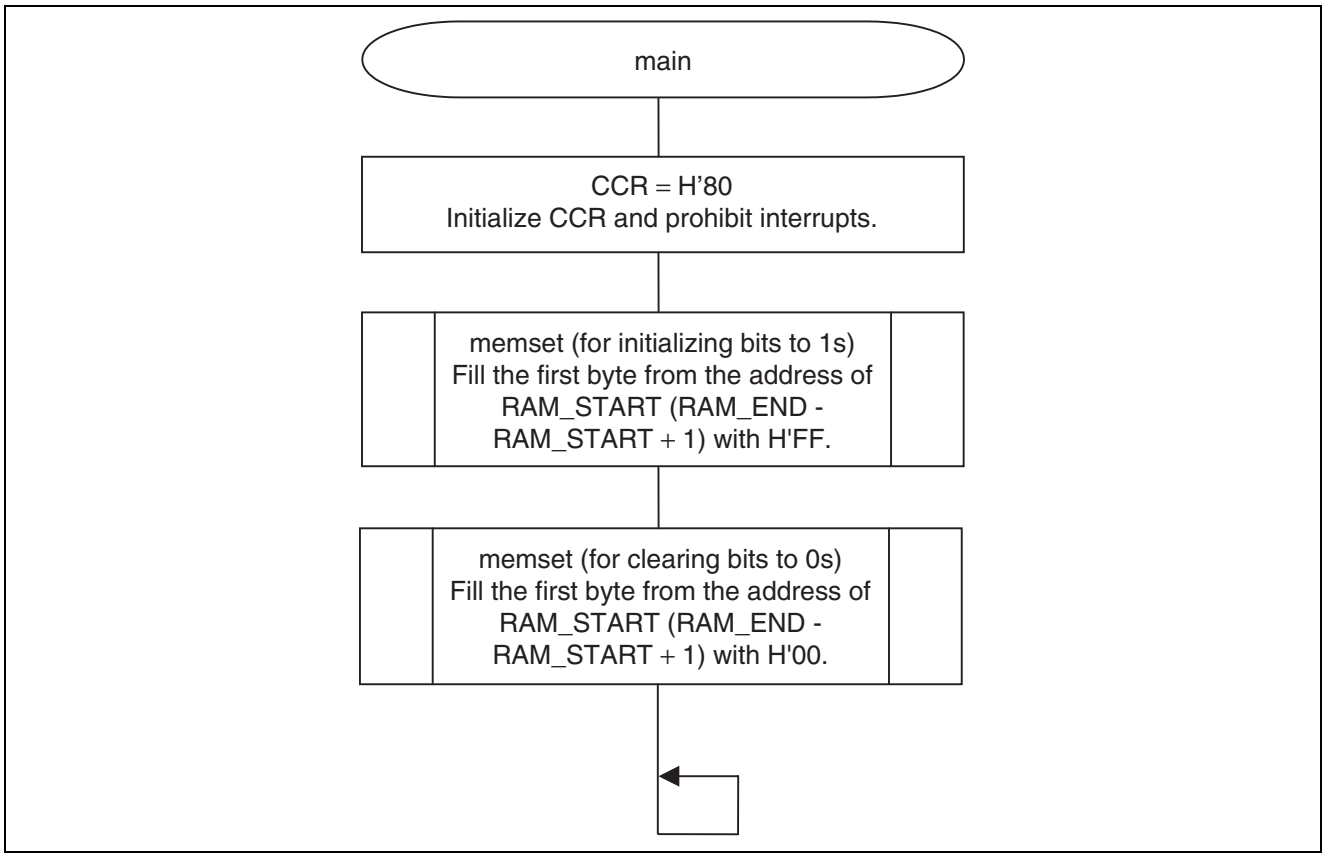
No registers are used in this task.

4.4 About RAM

In this task, H'FF7E and H'FF7F in the user RAM area are used as the stack area to execute the memset function.

5. Flowchart

5.1 Main routine



- Specified Link Addresses

Section	Address
CV1	H'0000
P	H'0100

6. Program Listing

```
/************************************************************/
/*                                                          */
/*  H8/300HN Series -H8/3664-                               */
/*  Application Note                                        */
/*                                                          */
/*  'RAMclear'                                              */
/*                                                          */
/*  External Clock : 16MHz                                  */
/*  Internal Clock : 16MHz                                  */
/*  Sub Clock      : 32.768kHz                              */
/*                                                          */
/************************************************************/

#include   <machine.h>
#include   <string.h>

/************************************************************/
/*  Symbol Definition                                       */
/************************************************************/
#define RAM_START  (volatile unsigned char *)0xFB80         /* The first address of RAM         */
#define RAM_END    (volatile unsigned char *)0xFD7F         /* The end address of RAM           */

/************************************************************/
/*  Function define                                         */
/************************************************************/
void       main ( void );

/************************************************************/
/*  Vector Address                                          */
/************************************************************/
#pragma section    V1                                       /* VECTOR SECTION SET               */
void (*const VEC_TBL1[])(void) = {
    main                                                    /* 00 Reset                         */
};

#pragma entry main(sp=0xFF80)
#pragma section                                             /* P                                */
/************************************************************/
/*  Main Program                                            */
/************************************************************/
void main ( void )
{
    set_ccr(0x80);                                          /* Initialize CCR/Interrupt Disable */

    memset(RAM_START, 0xFF, (RAM_END-RAM_START+1));         /* The initialization of RAM        */

    memset(RAM_START, 0x00, (RAM_END-RAM_START+1));         /* RAM clear                        */
    while(1);
}
```

Revision Record

Rev.	Date	Description	
		Page	Summary
1.00	Dec.20.03	—	First edition issued

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