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Renesas Electronics Corporation

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H8/300L Series

Filling an Area with Constants (FILL)

Introduction

1. The software FILL stores a given 1-byte constant repeatedly in a specified data memory area.
2. The data memory area can be specified as desired.
3. The number of bytes for the area to be filled with the constant can be set within the range of 1 to 255 bytes.
4. This function is useful for initializing a RAM area.

Target Device

H8/300L Series

Contents

1. Arguments

Description		Memory area	Data length (bytes)
Input	Byte count (number of bytes)	R0L	1
	Constant	R0H	1
	Start address	R1	2
Output	—	—	—

2. Changes to Internal Registers and Flags

R0H	R0L	R1	R2	R3	R4	R5	R6	R7
×	×	×	•	•	•	•	•	•

I	U	H	U	N	Z	V	C
•	•	•	•	×	×	×	•

• : No change
× : Undefined
↕ : Result

3. Specifications

Program memory (bytes)
10
Data memory (bytes)
0
Stack (bytes)
0
Clock cycle count
3068
Reentrant
Possible
Relocation
Possible
Interrupt
Possible

4. Note

The clock cycle count in the specifications (3068) is for 255 bytes of constants.

5. Description

5.1 Details of functions

1. The following arguments are used with the software FILL:
   R0L: Sets, as an input argument, the number of bytes to be placed in the data memory area holding constants.
   R0H: Sets, as an input argument, 1-byte constants to be placed in the data memory area.
   R1: Sets, as an input argument, the start address of the data memory area that is to be filled with the constants.
2. The following figure illustrates the execution of the software FILL.
   When the input arguments are set as shown in (1), the constant H'34 set in R0H is placed in the data memory area as shown in (2).

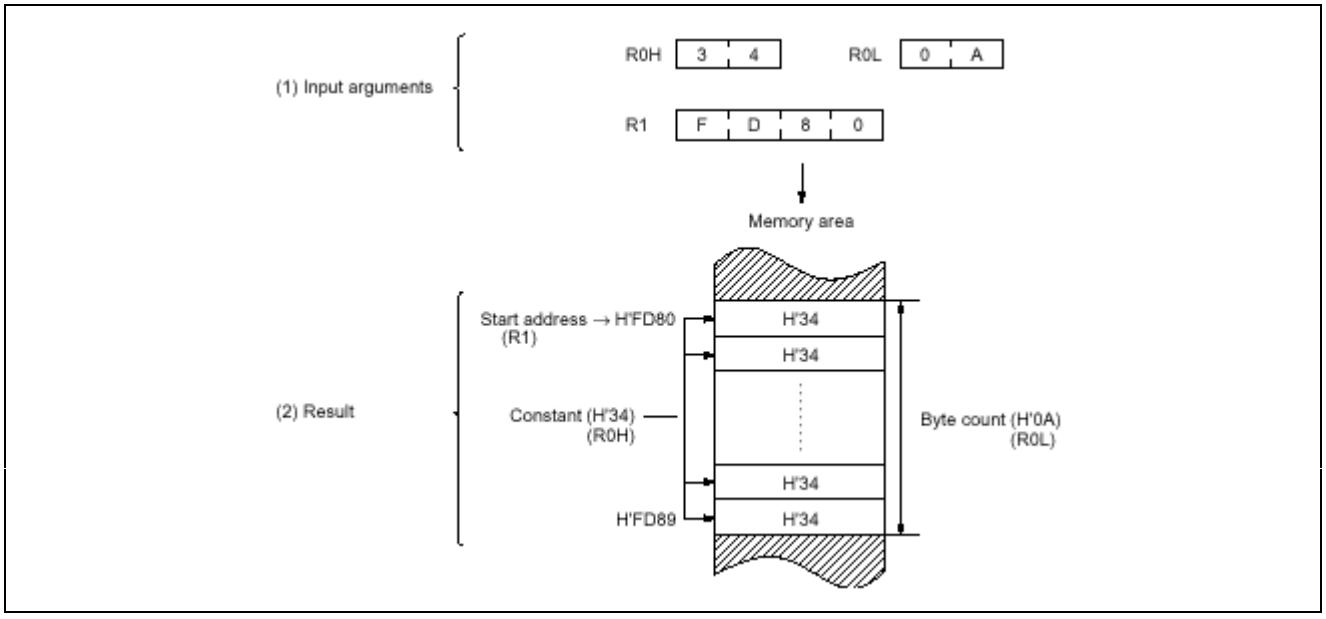


Figure 5.1 Example of Software FILL Execution

5.2 Notes on usage

1. R0L is one byte long and should satisfy the relation H'01 ≤ R0L ≤ H'FF.
2. Do not set "0" in R0L; otherwise, the software FILL cannot be terminated.

5.3 Data memory

The software FILL does not use the data memory.

5.4 Example of use

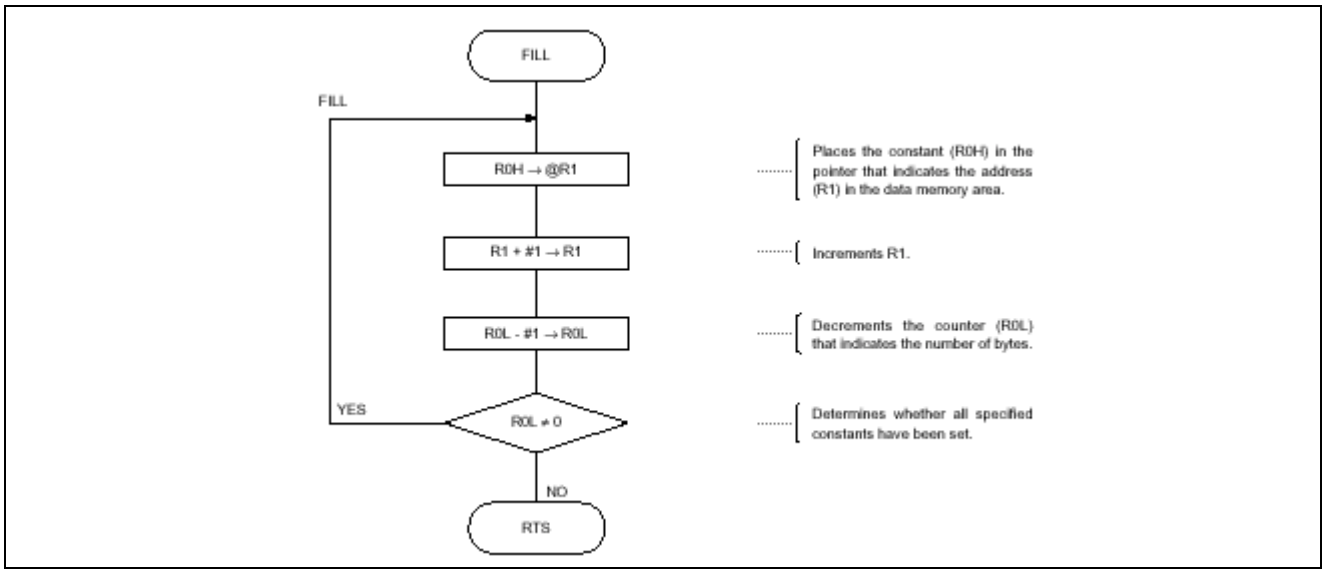
Set a constant, a byte count, and a start address in the arguments and call the software FILL as a subroutine.

```
WORK1   .DATA.B  0      ..... Reserves a data memory area (1 byte:
                               contents=H'00) in which the user program
                               places the number of bytes to be moved.
WORK2   .DATA.B  0      ..... Reserves a data memory area (1 byte:
                               contents=H'00) in which the user program
                               places constants.
WORK3   .RES.B   10     ..... Reserves a data memory area (10 bytes)
                               that is set by the software FILL.
        MOV.B    @WORK1, R0L ..... Places the number of bytes set by the user
                                   program in the R0L input argument.
        MOV.B    @WORK2, R0H ..... Places the constants set by the user
                                   program in the R0H argument.
        MOV.W    #WORK3, R1  ..... Places the start address of the data
                                   memory area allocated by the user
                                   program in the R1 argument.
        JSR      @FILL       ..... Calls the software FILL as a subroutine.
```

5.5 Operation

1. R1 is used as the pointer that indicates the address of the data memory area in which constants are placed.
2. The constant set in R0H in 16-bit absolute addressing mode are stored sequentially in the data memory area.
3. R0L is used as the pointer that indicates the number of bytes in the data memory area in which constants are placed. R0L is decremented each time the constant is placed in the data memory area until it reaches 0.

6. Flowchart


FILL
FILL
R0H → @R1
R1 + #1 → R1
R0L - #1 → R0L
YES
R0L ≠ 0
NO
RTS
Places the constant (R0H) in the pointer that indicates the address (R1) in the data memory area.
Increments R1.
Decrements the counter (R0L) that indicates the number of bytes.
Determines whether all specified constants have been set.

7. Program List

```
*** H8/300 ASSEMBLER VER 1.0B ** 08/18/92 11:04:12
PROGRAM NAME =
 1                                          ;*******************************************************************************
 2                                          ;*
 3                                          ;* 00 - NAME                    :FILL OF CONSTANT DATA (FILL)
 4                                          ;*
 5                                          ;*******************************************************************************
 6                                          ;*
 7                                          ;*      ENTRY   :R0L (Byte counter)
 8                                          ;*               R0H (Constant data)
 9                                          ;*               R1 (Start address)
10                                          ;*
11                                          ;*      RETURN  :NOTHING
12                                          ;*
13                                          ;*******************************************************************************
14                                          ;
15       FILL_cod C        0000                      .SECTION              FILL_code,CODE,ALIGN=2
16                                                   .EXPORT               FILL
17                                          ;
18       FILL_cod C                 00000000  FILL    .EQU $                ;Entry Point
19       FILL_cod C        0000     6890              MOV.B   R0H.@R1       ;Store constant data
20       FILL_cod C        0002     0B01              ADDS.W  #1,R1         ;Increment address pointer
21       FILL_cod C        0004     1A08              DEC.B   R0L           ;Decrement byte counter
22       FILL_cod C        0006     46F8              BNE     FILL          ;Branch if Z flag = 0
23                                          ;
24       FILL_cod C        0008     5470              RTS
25                                          ;
26                                                   .END
*****TOTAL ERRORS 0
*****TOTAL WARNINGS 0
```

Revision Record

		Description	
Rev.	Date	Page	Summary
1.00	Sep.18.03	—	First edition issued

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