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Renesas Electronics website: http://www.renesas.com

April 1st, 2010
Renesas Electronics Corporation

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R8C/Tiny Series

General-purpose Program for Converting from 1-byte BCD Code to HEX Code

1. Abstract

This program converts 1-byte BCD code into 1-byte HEX code.

2. Introduction

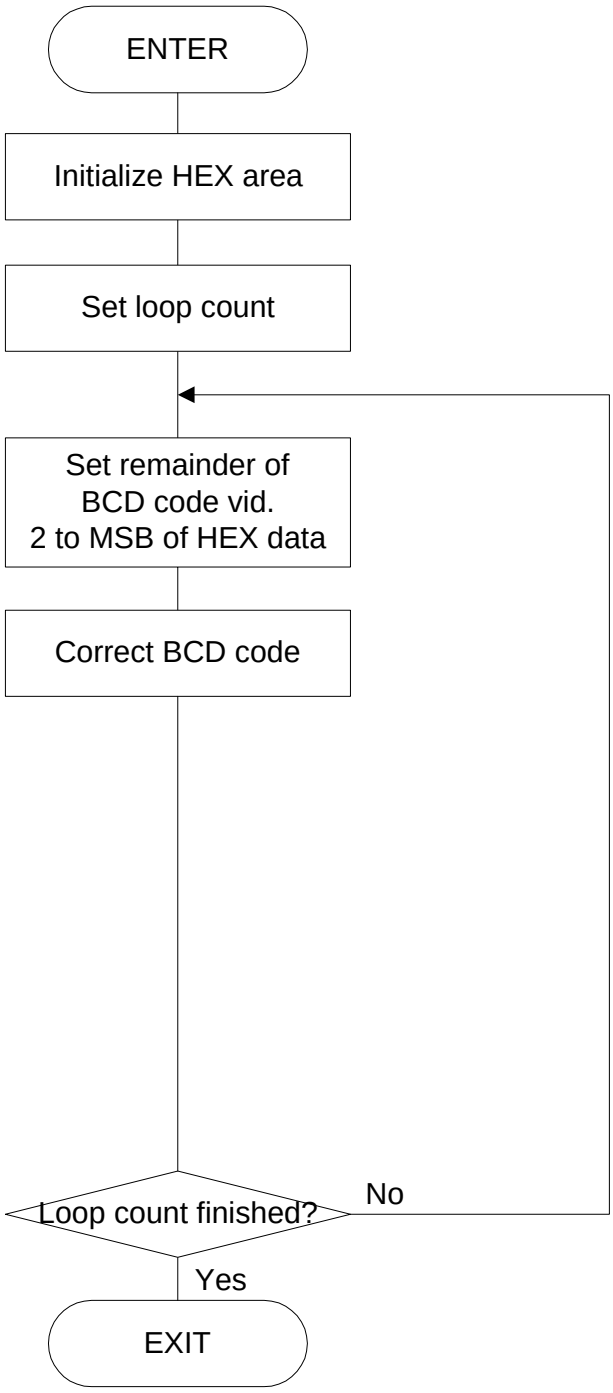
This program converts 1-byte BCD code into 1-byte HEX code. Set the BCD code in R0H. The HEX code is output to R0L.

In this program, the BCD code is divided by 2 (shifted right) and the remainder is loaded into the register as HEX code. If a significant bit is transferred from the BCD's high-order digit to the low-order digit, numeric correction is applied.

Subroutine name : BCDtoHEX_1byte	ROM capacity : 19 bytes
Interrupt during execution : Accepted	Number of stacks used : None

Register/memory	Input	Output	Usage condition
R0L	-	HEX code	←
R0H	BCD code	Indeterminate	←
R1L	-	00_{16}	Loop count
R1H	-	-	Unused
R2	-	-	Unused
R3	-	-	Unused
A0	-	-	Unused
A1	-	-	Unused
Usage precautions	The BCD code is destroyed as a result of program execution.		

3. Flowchart


ENTER
Initialize HEX area
Set loop count
Set remainder of
BCD code vid.
2 to MSB of HEX data
Correct BCD code
Loop count finished?
No
Yes
EXIT

4. The example of a reference program

```
                .include apl.inc                        ; special page include file
;***************************************************************************************
;                                                                                      *
;    R8C Program Collection No. 20                                                    *
;    CPU          : R8C/Tiny                                                           *
;                                                                                      *
;***************************************************************************************
VromTOP         .EQU        00D000H                     ; 12Kbyte Flash version
;                                                       ;
;=======================================================================================
;    Title: Converting from BCD code to HEX code
;    Outline: Converts 1-byte BCD code into 1-byte HEX code
;    Input:    ------------------------------>  Output:
;    R0L ( )                                   R0L (HEX code)
;    R0H (BCD code)                            R0H (Indeterminate)
;    R1L ( )                                   R1L (Indeterminate)
;    R1H ( )                                   R1H (Unused)
;    R2   ( )                                  R2   (Unused)
;    R3   ( )                                  R3   (Unused)
;    A0   ( )                                  A0   (Unused)
;    A1   ( )                                  A1   (Unused)
;    Stack amount used: None
;    Notes:
;=======================================================================================
                .SECTION    PROGRAM,CODE                ;
                .ORG        VromTOP                     ; ROM area
BCDtoHEX_1byte:                                         ;
    MOV.B       #0,R0L                                  ; Initializes HEX area
    MOV.B       #8,R1L                                  ; Sets loop count
BCDtoHEX_1byte_10:                                      ;
    SHL.B       #-1,R0H                                 ; Shifts most significant bit
    RORC.B          R0L                                 ;
    BTST        3+8,R0                                  ;
    JEQ         BCDtoHEX_1byte_20                       ;
    SUB.B       #3,R0H                                  ;
BCDtoHEX_1byte_20:                                      ;
    ADJNZ.B         #-1,R1L,BCDtoHEX_1byte_10           ; --> Executes next BCD digit
    RTS                                                 ;
;                                                       ;
                .END                                    ;
```

5. Reference

SOFTWARE MANUAL
R8C/Tiny Series SOFTWARE MANUAL
(Acquire the most current version from Renesas web-site)

6. Web-site and contact for support

Renesas Web-site

http://www.renesas.com

Contact for Renesas technical support

Mail to : support_apl@renesas.com

REVISION HISTORY

Rev.	Date	Description	
		Page	Summary
1.00	Jul 08, 2002	-	First edition issued

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