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April 1st, 2010
Renesas Electronics Corporation

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R8C/Tiny Series

General-purpose Program for Converting from Uppercase Alphabet to Lowercase Alphabet

1. Abstract

This program converts an uppercase English alphabet in ASCII code into a lowercase English alphabet in ASCII code.

2. Introduction

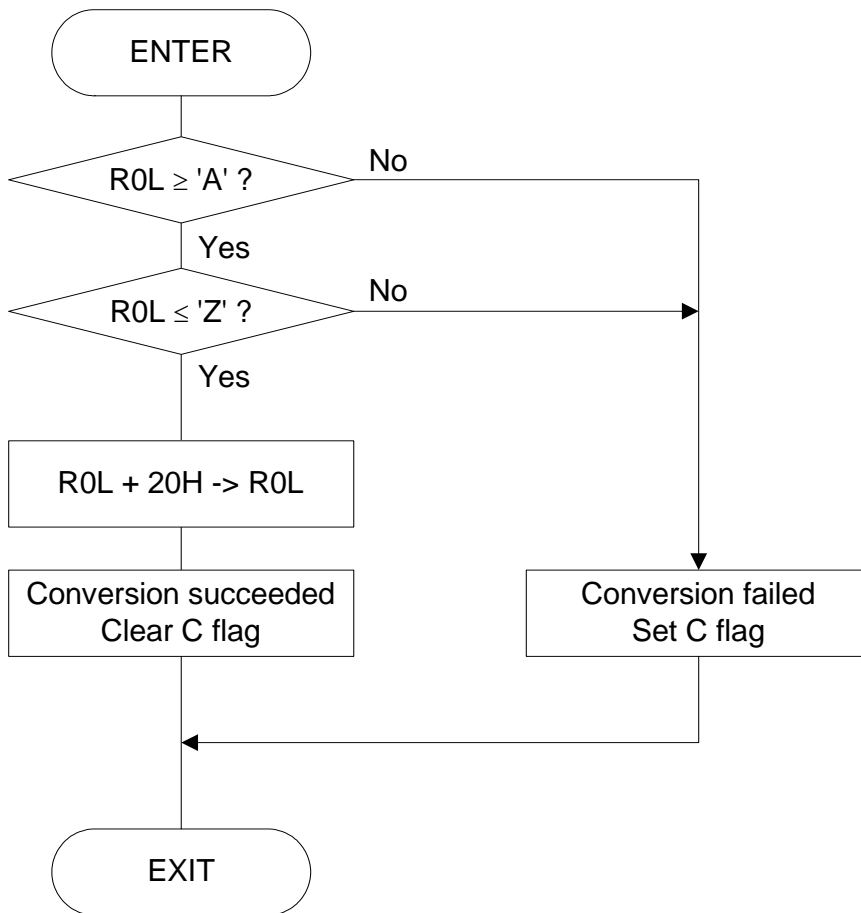
This program converts an uppercase English alphabet in ASCII code into a lowercase English alphabet in ASCII code. Set the uppercase English alphabet in ASCII code in R0L. The converted lowercase English alphabet in ASCII code is output to R0L. Conversion information is output to the C flag.

C	Meaning
0	Uppercase alphabet converted into lowercase alphabet
1	No converted because inconvertible code was input

Subroutine name : TOWER	ROM capacity : 16 bytes
Interrupt during execution : Accepted	Number of stacks used : None

Register/memory	Input	Output	Usage condition
R0L	Uppercase alphabet (ASCII)	Lowercase alphabet (ASCII)	←
R0H	-	-	Unused
R1	-	-	Unused
R2	-	-	Unused
R3	-	-	Unused
A0	-	-	Unused
A1	-	-	Unused
C flag	-	Conversion information	←
Usage precautions			

3. Flowchart



4. The example of a reference program

```

        .include    apl.inc                ; special page include file
;*****
;
;
;   R8C Program Collection No. 27        *
;   CPU           : R8C/Tiny            *
;
;*****
VromTOP   .EQU    00D000H                ; 12Kbyte Flash version
;
;=====
=====
;   Title: Converting ASCII code uppercase alphabet into lowercase alphabet
;   Contents of processing:
;       The ASCII code input in R0L is converted from an uppercase English alphabet into
;       a lowercase English alphabet and the result is returned to R0L. No conversion is
;       performed if any code is input in R0L that is not an uppercase English alphabet.
;   Procedure: (1) Input ASCII code in R0L.
;              (2) Call the subroutine.
;              (3) Converted ASCII code is loaded into R0L.
;   Result: The C flag is cleared to 0 when the code was converted from a uppercase alphabet
;           into an lowercase alphabet. The C flag is set to 1 when the code was not converted.
;   Input: -----> Output:
;   R0L (ASCII code)          R0L (ASCII code)
;   R0H ( )                   R0H (Unused)
;   R1 ( )                    R1 (Unused)
;   R2 ( )                    R2 (Unused)
;   R3 ( )                    R3 (Unused)
;   A0 ( )                    A0 (Unused)
;   A1 ( )                    A1 (Unused)
;   Stack amount used: None
;=====
=====
        .SECTION PROGRAM, CODE           ;
        .ORG    VromTOP                  ; ROM area
TOLOWER:
        CMP.B   #'A',R0L                 ; Uppercase alphabet 'A' or above?
        JLTU    TOLOWNON                 ; --> No (not converted)
        CMP.B   #'Z',R0L                 ; Uppercase alphabet 'Z' or below?
        JGTU    TOLOWNON                 ; --> No (not converted)
        ADD.B   #20H,R0L                 ; Converts from uppercase alphabet into lowercase alphabet
        FCLR    C                        ; Sets "converted" information
        RTS
TOLOWNON:
        FSET    C                        ; Sets "not-converted" information
        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	Dec 24, 2003	-	First edition issued

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