FIR Filtering: Basic Assembly Exercise for TI TMS320C54x (%x Chinese Version)*

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Abstract

You will work through a section of TI TMS320C54x assembly code by hand. The instructions include multiplication of fractional numbers in two's complement representation.

1 [U+6C47] [U+7F16] [U+7EC3] [U+4E60]

ßYA1b[U+7801]Θa Two's Complement and Fractional Arithmetic for 16-bit Processors[1]ΔAddressing Modes for TI TMS320C54x[2]Δ *Mnemonic Instruction Set*[?] 3AMΘ

```
FIR_len .set    3

; Assume:
;   BK = 3
;   AR0 = 1
;   AR2 = 1000h
;   AR3 = 1004h
;
;   FRCT = 1

     stl     A,*AR3+%
     rptz    A,(FIR_len-1)
     mac     *AR2+0%,*AR3+0%,A
```

“";" [U+5F00] [U+5934] Ab [U+7801] Λ [U+4E3A] [U+91CA] Θl [U+8FD9], [U+91CA] ΛØ [U+8BC9] [U+4F60] leEstl [U+6267] Λ [U+
"h" [U+7ED3] 0x [U+5F00] [U+5934] AW [U+4E3A] d [U+8FDB] j W [U+503C] Θ

Example 1

1000h Π0x1000 d [U+8FDB] jW [U+503C] 4096Θ

[U+8BBE] f [U+4E3A] 1000hA5AW[[U+4E3A]:

*Version 1.7: Jul 18, 2004 1:37 am GMT-5

†http://cnx.org/content/m10022/2.19/

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[1] "Two's Complement and Fractional Arithmetic for 16-bit Processors" <http://cnx.org/content/m10808/latest/>

[2] "Addressing Modes for TI TMS320C54x" <http://cnx.org/content/m10806/latest/>

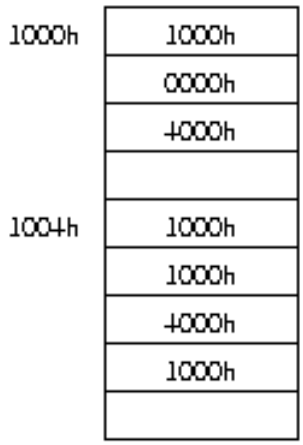

Figure 1: 5AW[ß.([U+6267] Λ)

lvΣstlΔ rptz Π mac ,Λ [U+6267] Λb [U+7801] ‘H A [U+8F85] L5H AR2 Π AR3 AW [U+503C] [U+8BB0] [U+5F55] lFigure 2,AΘ Figure 3 ,AΘ

A	AR2	AR3	
00 0000 8000h	1000h	1004h	at start of code
			after stl instruction
			after rptz instruction
			after first mac instruction
			after second mac instruction
			after third mac instruction

Figure 2: [U+6267] Λ [U+7ED3] i

l [U+7EC3] [U+4E60] [U+8FC7] 1ˆ‘H A h40L5H,LlHh–l ßWl**(fractional arithmetic mode)**YΘl [U+8FD9] [U+79CD] Y,4DSP Complement and Fractional Arithmetic for 16-bit Processors[3] 4 [U+8BE6] [U+7EC6] AyΘ

[3] "Two's Complement and Fractional Arithmetic for 16-bit Processors" <http://cnx.org/content/m10808/latest/>

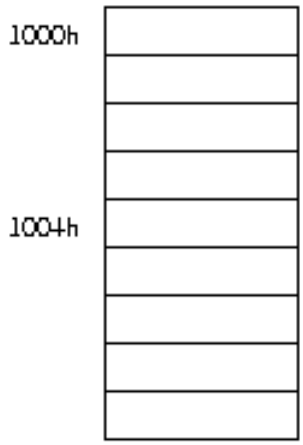

Figure 3: 5AW[ß.([U+6267] Λ)