Solution to HW 4, hand assembly problems

3c2. For the given assembly language program, hand assemble the program to machine language code using the hexadecimal representation.

3c7. At what address is the result stored for this program?

Solution: The following listing shows the assembled code. The result is stored at location $0xC20D$. Most people forgot that the branch instructions use the relative addressing mode, taking an offset in two’s complement notation as operand. The `swi` instruction (the next instruction after the `bne`) is located at $0xC20C$, so we need a relative offset which, when added to $0xC20C$, yields $0xC204$. This offset is $F8$.

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3c2.asm Assembled with CASM12Z 9/24/2003 4:01:20 PM PAGE 1

C200 1 org $c200
C200 [01] C604 2 ldab #count
C202 [01] 8610 3 ldaa #num1
C204 [01] 8B10 4 more: adda #num1
C206 [03] 7AC20D 5 staa result
C209 [01] 53 6 decb
C20A [03] 26F8 7 bne more
C20C [09] 3F 8 swi
C20D 9 count equ $04
C20D 10 num1 equ $10
C20D 11 result rmb $01
C20E 12 end

Symbol Table

COUNT 0004
MORE C204
NUM1 0010
RESULT C20D
```