**PPPAssembly Language – Assembly Language Fundamentals (1)**

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3-1 Basic Elements of Assembly Language

Objective: Basic Architecture of Assembly Language

Answer the following question (marked a and b in comment) in the assembly code below.

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| --- |
| TITLE Add and Subtract (AddSub.asm)  ; This program adds and subtracts 32-bit integers.  INCLUDE Irvine32.inc  .data  ; a.The following code have an error on it, try to find it  ; and explain it. |
| |  |  | | --- | --- | |  | ANS: (remember to add your explanation) | | Val1 BYTE 11001011b | Val3 BYTE 0E7h  因為16進位開頭若有英文，必須寫0在前方便識別 | | Val2 BYTE 120 | | Val3 BYTE E7h | |
| .code  main PROC  ; b. Give comment of each line below   |  |  | | --- | --- | | mov ebx,50000h | ; ebx = 50000h | | add eax,30000h | **; eax = 30000h** | | sub eax,20000h | **; eax = 10000h** | | sub ebx,20000h | **; ebx = 30000h** |   L1: exit  main ENDP  END main |

c. Suppose registers below has not executed any instructions yet, the registers value will be:

|  |  |  |  |
| --- | --- | --- | --- |
| EAX | 00000000h | EBP | 0018ff94h |
| EBX | 00001000h | ESP | 0018ff8ch |
| ECX | 00000000h | ESI | 00000000h |
| EDX | 00401000h | EDI | 00000000h |

What will happen if the program stops at L1?

|  |  |  |  |
| --- | --- | --- | --- |
| EAX | **00010000h** | EBP | 0018ff94h |
| EBX | **00030000h** | ESP | 0018ff8ch |
| ECX | **00000000h** | ESI | 00000000h |
| EDX | **00401000h** | EDI | 00000000h |