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

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| --- | --- | --- |
| Group : | Student ID : | Name : |
| Student ID : | Name : |

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.

|  |
| --- |
| 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 | | 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 = eax + 30000h | | sub eax,20000h | ; eax = eax - 20000h | | sub ebx,20000h | ; ebx = ebx - 20000h |   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 |

**Assembly Language – Assembly LanguFundamentals (2)**

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3-2

1) Define WORD array myArray values 1234h、5678h、90ABh、0CDEh

|  |  |
| --- | --- |
| .data  ; Please write your code here.   |  | | --- | | myArray WORD 1234h, 5678h, 90ABh, 0CDEh |   .code  ;please write down your code to define WORD array above  Main PROC  mov ax, myArray+1 ; ax = 5678h  add ax, 2000h ; ax = 7678h  sub ax, 6444h ; ax = 1234h  ……  exit  main ENDP  END main |

2)Fill the memory status of array myArray below 

|  |  |  |  |
| --- | --- | --- | --- |
| 2000h | 34h | 2004h | ABh |
| 2001h | 12h | 2005h | 90h |
| 2002h | 78h | 2006h | DEh |
| 2003h | 56h | 2007h | 0Ch |

;fill the memory status e.g.1234h , 12h