METRO STATE UNIVERSITY

ICS 232 Computer Organization & Architecture
Homework 7 – Irvine Chapter 2 & 4 - 10 points
Due Date: 10/16/2024

Name:

Note: Please post your homework to ICS232 D2L on or before the due date.

Irvine Chapter 2 - x86 Processor Architecture
Irvine Chapter 4 – Data Transfers, Addressing, Arithmetic

1. In a MOV instruction, which operand is the source and which is the destination?

   The first operand is the destination, the second is the source.

2. (True/False): The EIP register cannot be the destination operand of a MOV instruction.

   False

3. In the operand notation used by Intel, what does reg/mem32 indicate?

   Register that is 32 bits.

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4. What will be the value of the destination operand after each of these instructions?

```
var2 WORD  1000h, 2000h, 3000h, 4000h
var3 SWORD -16, -42
var4 DWORD 12345

     MOV  AX, var2        a. var2 moves to the AX
register.

     MOV  AX, [var2 + 4] b. var2 + 4 offset moves to
the AX register.

     MOV  AX, var3        c.  var3 moves to the AX
register.

     MOV  AX, [var3 - 2] d. var3 – 2 offset moves into
var3.

     MOV  AX, LENGTHOF var2   e. moves the number of
elements in var2 to the AX register.

     MOV  AX, SIZEOF var3     f. moves the number of
bytes into the ACX register.
```

5. Write instructions that subtract val4 from val2.

sub val2, val4

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6. What will be in the registers as executing this code

```
myBytes   BYTE 10h,20h,30h,40h
myWords   WORD 8Ah,3Bh,72h,44h,66h
myDoubles DWORD 1,2,3,4,5
myPointer DWORD myDoubles

          mov  esi,OFFSET myBytes
          mov  al,[esi]                ; a. AL = 10h
          mov  al,[esi+3]              ; b. AL = 40h
          mov  esi,OFFSET myWords + 2
          mov  ax,[esi]                ; c. AX = 3Bh
          mov  edi,8
          mov  edx,[myDoubles + edi]   ; d. EDX = 3
          mov  edx,myDoubles[edi]      ; e. EDX = 3
          mov  ebx,myPointer
          mov  eax,[ebx+4]             ; f. EAX = 2
```

7. What will be the final value of EAX in this example?

```
          mov  eax,0
          mov  ecx,10    ; outer loop counter
     L1:  mov  eax,3
          mov  ecx,5     ; inner loop counter
     L2:  add  eax,5
          loop L2        ; repeat inner loop
          loop L1        ; repeat outer loop
```

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Prepare for next class by reading lecture notes Irvine Chapter 5 and 6

Complete Project 1

Continue working on Your Group Project

Optional Questions:

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1. Now that the semester is about one-half way complete, do you have any comments about the first half and how would you like the second half to be improved?

The first half went great, I don't think of any improvements I would recommend. Everything was straight forward from the beginning and everything has been on track with the schedule.