

1. Assume that the state of the 8088 registers and memory just prior to the execution of each instruction from (a) to (e) is as follows:
(AX) = 0010H, (BX) = 0020H, (CX) = 0040H, (DX) = 0002H (DI) = 0200H,
(DS:100H)=10H, (DS:101H)=00H, (DS:120H)=FFH, (DS:121H)=FFH,
(DS:200H)=30H, (DS:201H)=00H, (DS:210H)=40H, (DS:211H)=00H.

What result is produced in the destination operand by executing the instruction?

- a. SHR AX, 1 08H
 b. DEC BYTE PTR [0210H] 3FH
 c. SUB BL, CL E0H
 d. INC BYTE PTR [DI]+1 01H
 e. MUL DX 20H

2. What is the result in AL after executing each step of the following instructions?

XOR AL, AL AL = 00H
 OR AL, 80H AL = 80H
 ROR AL, 1 AL = 40H

3. Implement the following expression in assembly language, using 32-bit integers (you may modify any registers you wish):

`eax = -dword1 + (edx - ecx) + 1`

(NOT GRADED) `sub edx,ecx`

`mov eax,dword1`

`neg eax ; eax = -dword1`

`add eax,edx`

`inc eax`

4. Write a sequence of instructions that use STOSD to fill each position of **arrayD** with the largest possible 32-bit positive integer:

`arrayD SDWORD 20 DUP(?)`

;(first 4 statements may be in any order)

`mov eax,7FFFFFFh`

`mov edi,OFFSET arrayD`

`mov ecx,LENGTHOF arrayD`

`cld`

`rep stosd`

5. How does using the LEA instruction differ from using the OFFSET operator with MOV?

c. LEA is effective for obtaining the address of a stack parameter.

6. Write a near procedure that divides a double word signed number over 2 and does not destroy the contents of registers? What is the largest of that number without divide overflow interrupt?

a)Dividem PROC near uses DX AX BX

`Mov BX, 2`

`Mov DX, 0ffffh ; Dividend Most Significant Word, any number of four hex digits will do`

`Mov AX, 1234H ; Dividend Least Significant Word, any number of four hex digits will do`

`IDIV BX`

`Ret`

`Dividem ENDP`

b) largest positive number in AX is 0111111111111111b, multiply by two (SHL AX, 1) =

FFFEH, DX = 0000H

7. Explain what happens when PUSH EAX instruction executes. Make sure to show where AH and AL are stored. (Assume SP=0100H and SS=0200H)? Stack location is SS*10H+SP=02100H, puts AH in 020fdH and AL in 020fcH and SP becomes FCH
8. Explain how OUTSW instruction operates. Sends the word content of DS:SI to output port stored in DX and increment/decrement SI based on D flag
9. If the SEGMENT directive identifies the start of a segment, what type of memory organization is in effect? Full Memory
10. Encode the following instruction in machine code
- a. `MOV WORD PTR [BP+DI+1234h],0ABCDH =C7833412CDABH`
- b. `ADD [BX+DI+1234H],AX = 01813412H`

11. Convert the following opcode into instructions

a. 8A24H

b. BF2001H

12. What is the single instruction that changes the content of AX from binary to unpacked BCD? ____AAM_____

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