

St. No:  
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## EENG410 / INFE410 - Microprocessors I

### Quiz # 1 (Fall 2009/2010)

1. (%36) Find the status of the CF, PF, AF, ZF and SF flags as well as the value of register AX after the execution of the following instructions?

a) MOV BX,237AH  
MOV AX,9FABH  
MOV [SI],AX  
ADD [SI],AX

$$\begin{array}{r} 9FAB \\ + 95AB \\ \hline \end{array}$$

$$\begin{array}{r} 1001\ 1111\ 1010\ 1011 \\ + 1001\ 1111\ 1010\ 1011 \\ \hline 0011\ 1111\ 0101\ 0110 \end{array}$$

AX = 9FABH  
CF = 1, PF = 1, AF = 1, ZF = 0, SF = 0

b) MOV AH,7FH  
ADD AH,81H  
MOV AL,8BH  
ADC AL,AH

$$\begin{array}{r} 7F \\ + 81 \\ \hline 00 \end{array} \quad CF = 1$$

$$\begin{array}{r} 8B \\ + 00 \\ \hline 8B \end{array}$$

$$\begin{array}{r} 1000\ 1011 \\ + 0000\ 0001 \\ \hline 1000\ 1100 \end{array}$$

AX = 008CH  
CF = 0, PF = 0, AF = 0, ZF = 0, SF = 1

2. Given that SS=2400, SP=8631H, AX=4FA6H, and DX=8C3FH,

a) (18) What are the contents of registers AL, DH and SP after the execution of the following lines of instructions?

PUSH AX  
PUSH DX  
POP AX  
POP DX

After the execution

AX = 8C3FH  
DX = 4FA6H  
SP = 8631H

AL = 3FH
DH = 4FH
SP = 8631H

b) (12) What is the Physical Address of the memory location pointed by the stack pointer, SP, after the execution of the above instructions?

$$\begin{array}{r} 24000 \\ + 8631 \\ \hline 2C631H \end{array}$$

Phys. Add = 2C631H

(34)

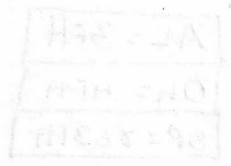
3. Assume that the following two arrays (A and B) are given.

A = 15, 24, 17, 12, 14, 23, 11, 22, 16, 12  
B = 12, 23, 28, 19, 15, 19, 25, 18, 26, 21

Write a program that compares each element of arrays A and B and save the smaller element in array C.

.MODEL SMALL  
.STACK 64  
.DATA  
A DB 15, 24, 17, 12, 14, 23, 11, 22, 16, 12  
B DB 12, 23, 28, 19, 15, 19, 25, 18, 26, 21  
C DB 10 DUP(?)  
.CODE

MAIN: MOV AX, @DATA  
MOV DS, AX  
MOV CX, 10  
MOV SI, OFFSET A  
MOV DI, OFFSET B  
MOV BX, OFFSET C  
BACK: MOV AL, [SI]  
CMP AL, [DI]  
JA OVER  
MOV [BX], AL  
JMP NEXT  
OVER: MOV DL, [DI]  
MOV [BX], DL  
NEXT: INC SI  
INC DI  
INC BX  
LOOP BACK  
MOV AH, 4CH  
INT 21H  
END MAIN



TH38 = 90