COE 205, Term 031
Computer Organization & Assembly Programming
Quiz# 2 (21/10/03)

Student Name: **KEY SOLUTION**   **ID:**   **Section: 03**

Question 1: Based on the following directives, show the content of the memory allocated, assuming that the first byte is allocated at address 0000H in the data segment.

A	DB	-1, 255
	DW	0FAH
	DD	-250
B	DB	`33`
K	EQU	33
C	DW	`24`
	DW	OFFSET B
	DB	2 DUP (2, 4, 2 DUP('A`))

Variable name	Offset	Content	Variable name	Offset	Content
A	**0000**	**FF**		**0010**	**41**
	0001	**FF**		**0011**	**41**
	0002	**FA**		**0012**	**02**
	0003	**00**		**0013**	**04**
	0004	**06**		**0014**	**41**
	0005	**FF**		**0015**	**41**
	0006	**FF**			
	0007	**FF**			
B	**0008**	**33**			
	0009	**33**			
C	**000A**	**32**			
	000B	**34**			
	000C	**08**			
	000D	**00**			
	000E	**02**			
	000F	**04**			

Question 2: Suppose that the registers initially contain the following values, and the memory content is as indicated in **question 1**.

AX = F2E9H BX = 0000H CX = 08A0H DX = F1E0H
SI = 0006H DI = 0010H BP = C2E1H SP = 1330H
DS = 1EC0H ES = 2FF4H CS = 2ADFH SS = 5000H
IP = E731H

Show the contents of the registers and memory locations after the execution of each of the following instructions. Specify the addressing modes of the source and destination operands in each instruction.

Instruction	Addressing Mode	
	Destination	Source
1. **ADD AX, [BX+16]**	**Register**	**Based**
AX = F2E9H + [0000+ 10H] = F2E9H + 4141H = 33EDH ➜ AX = 33EDH		
2. **MOV BH, Byte PTR A + 4**	**Register**	**Direct**
Byte PTR A + 4 = A[4] = 06 ➜ BH = 06		
3. **ADD CL, [SI-2]**	**Register**	**Indexed**
CL = AOH **[SI -2] = [0006 – 2] =[0004] = 06 ➜ CL = 06**		
4. **MOV BYTE PTR [BX+DI+1], -1**	**Based- Indexed**	**Immediate**
[BX + DI + 1] = [0000 + 0010 + 1] = [0011] = FFH **➜ [0011] = FFH**		
5. **MOV Word PTR B, OFFSET C**	**Direct**	**Immediate**
OFFSET C = 000AH **➜ [0008] = 000AH**		
6. **MOV DX, [BX][SI]**	**Register**	**Based- Indexed**
[BX + SI] = [0000 + 0006] = [0006] = FFFFH **➜ DX = FFFH**		

Question 3: Determine the starting and ending (physical) addresses of the code segment.

CS = 2ADFH

STARTING ADDRESS: 2ADF x 10H + 0000H = 2ADF0H

ENDING ADDRESS: 2ADF x 10H + FFFFH = 3ADEFH

Question 4: What is the physical address of the next instruction to be fetched from memory.

Next instruction located at address CS x 10 H + IP

$$2ADF \times 10H + E731H = 39521H$$

Question 5: Determine the physical address of the source operand in the following instruction:

MOV AX, [BX+DI+10H]

Physical address = PA

PA   = DS x 10H + BX + DI + 10H
        = 1EC00H + 0000H + 0010 + 10H
        = 1EC20H

➔ PA = 1EC20H