CPE 235 Assembly Language and Microprocessors
Quiz #4

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Q1) Study the following 8086 assembly code, then answer the questions below. Assume that the starting offset address of the data segment is 30H.

```
NUMBER_OF_ELEMENTS EQU  5

SEG1        SEGMENT
ARRAY1      DB 0, 1, 2, 3, 4, 5, 6, 7, 8, 9
ORG  50H
ARRAY2      DB 10 DUP(0)
SEG1        ENDS

SEG2        SEGMENT
        ASSUME CS:(1)_____, DS:(2)_____
MAIN        PROC        FAR
            MOV AX, SEG1
            MOV ES, AX
            MOV DS, AX

            MOV CX, NUMBER_OF_ELEMENTS
            MOV SI, OFFSET ARRAY1
            MOV DI, OFFSET ARRAY2
            CALL COPY_MEMORY
MAIN ENDP

COPY_MEMORY PROC    NEAR        USES CX SI DI
AGAIN:      MOV AL, [SI]
            MOV [DI], AL
            INC SI
            INC DI
            LOOP AGAIN
            RET
COPY_MEMORY ENDP

SEG2  ENDS
END MAIN
```

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CX = 5
SI : offset
DI : offset

AL -> 01

[DI.] = 01

a) In which format is this code written? (Models or full segment definition)?

full segment definition ✓ 1

b) What is the purpose of the ASSUME directive?

to define and named the segment ✓ 1

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c) What should be filled in blanks 1 and 2 next to the "ASSUME" directive above in order for the code to assemble properly?

1. Segment 2. name of segment

d) What is the difference between a "NEAR" and a "FAR" procedure?

NEAR: Uses particular Register and must define the Register the Register will be use

FAR: uses any Register

e) What will be the values of the following registers after executing the code?

AL: 89 SI: 09

CX: 0 DI: 19

Q2) Write an 8086 assembly code that is equivalent (achieves the same functionality) to these instructions:

a) XCHG AL, CL

```
mov BL, AL
mov DL, CL
mov CL, BL
mov AL, DL
```

b) STOSW → ES:DI →

```
mov ES:[DI], AX
inc DI
inc DI
```