COE 205 Computer Organization & Assembly Language – Fall 2006

Assignment 2: Data Definition and Data Related Operators

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Due Date: Saturday, October 7, 2006

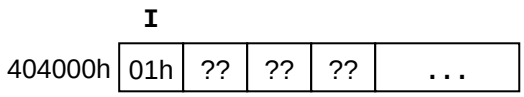
Q1. (3 pts) Declare a 32-bit signed integer variable and initialize it with the smallest possible negative decimal value.

Declare an uninitialized array of 100 16-bit unsigned integers.

Declare a string variable containing the word "COE205" repeated 20 times, and terminated with the null char.

Q2. (7 pts) Show the content of the individual bytes allocated in memory in hexadecimal for the following declarations. Assuming that the address of *I* is **404000h**, what are the addresses of J, K, and L? What is the total number of allocated bytes?

```
.DATA
I    SBYTE   1, -1
J    SWORD   10FFh, -256
K    DWORD   23456h
L    BYTE   'COE205'
```



Q3. (10 pts) Given the following definitions:

```
.DATA
wval      LABEL   WORD
barray    BYTE    10h, 20h, 30h, 6 DUP (0Ah)
ALIGN 4
warray    WORD    5 DUP(1000h)
pressKey  EQU     <"Press any key to continue ...",0>
darray    DWORD   5 DUP(56789ABh),
                  7 DUP(12345678h)
dval      LABEL   DWORD
prompt    BYTE    pressKey
```

What will be the value of EAX, AX, and AL after executing each of the following instructions? Assume that the address of *barray* is **404000h**.

a) `mov eax, TYPE warray`
b) `mov eax, LENGTHOF barray`
c) `mov eax, SIZEOF darray`
d) `mov eax, OFFSET warray`
e) `mov eax, OFFSET darray`
f) `mov eax, OFFSET prompt`
g) `mov eax, DWORD PTR barray`
h) `mov al, BYTE PTR darray`
i) `mov ax, wval`
j) `mov eax, dval`