COE 205 Computer Organization & Assembly Language – Spring 2008

Assignment 2: Data Definition and Data Related Operators

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Due Date: Wednesday, March 19, 2008

Q1. (2 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. (3 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'
```

```
            I
404000h  01h  ??  ??  ??  ...
```

Q3. (5 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`