COE 205, Term 032

Computer Organization & Assembly Programming

Quiz# 4

Date: Sunday, April 11, 2004

Q1. Write an assembly program to change the content of register AL by resetting the least significant two bits (i.e., bits AL1 and AL0), setting the two most significant bits (i.e., bits AL7 and AL6), and complementing all the other bits (i.e., bits AL5, AL4, AL3 and AL2). For example, suppose that AL=00**0111**10, your code should change the content of AL to 11**1000**00.

```
AND   AL, 11111100B
OR    AL, 11000000B
XOR   AL, 00111100B
```

Q2. Write an assembly program to multiply the **signed** content of register AL by **49.75** based on shift and addition/subtraction instructions using the smallest number of instructions possible. Assume that you can use Pentium instructions.

```
MOV AH, AL ; value to be multiplied is stored in AL (call it val)
MOV BL, AL
SHL AL, 5     ; AL = 32*val
SHL BL, 4     ; BL = 16*val
ADD AL, BL  ; AL= 48*val
SHL AH, 1     ; AH = 2*val
ADD AL, AH ; AL = 50*val
SAR AH, 3     ; AH = 0.25*val
SUB AL, AH  ; AL= 49.75*val
```