# CIS 11 - Computer Architecture - Assignment 4

- [ ] 4.2.8 Section Review, Questions 1, 2, 3, 4, 5, 6

***Use the following data for Questions 1-5:***

.data

val1 BYTE 10h

val2 WORD 8000h

val3 DWORD 0FFFFh

val4 WORD 7FFFh

1. Write an instruction that increments **val2**.

inc val2

2. Write an instruction that subtracts **val3** from EAX.

sub eax,val3

3. Write instructions that subtract **val4** from **val2**.

sub val2,val4

4. If **val2** is incremented by 1 using the ADD instruction, what will be the values of the Carry and Sign flags?

0 and 0

5. If **val4** is incremented by 1 using the ADD instruction, what will be the values of the Overflow and Sign flags?

PL: 1 and OV: 0

6. Where indicated, write down the values of the Carry, Sign, Zero, and Overflow flags after each instruction has executed:

mov ax,7FF0h

add al,10h ; a. CF = 0 SF = 1 ZF = 0 OF = 1

add ah,1 ; b. CF = 1 SF = 0 ZF = 1 OF =0

add ax,2 ; c. CF = 0 SF = 1 ZF = 0 OF = 1

- [ ] 4.3.8 Section Review, Questions 1,2,3,4,5

1. *(True/False):* The OFFSET operator always returns a 16-bit value.

FALSE

2. *(True/False):* The PTR operator returns the 32-bit address of a variable.

FALSE

3. *(True/False):* The TYPE operator returns a value of 4 for doubleword operands.

TRUE

4. *(True/False):* The LENGTHOF operator returns the number of bytes in an operand.

FALSE

5. *(True/False):* The SIZEOF operator returns the number of bytes in an operand.

TRUE

- [ ] 4.4.5 Section Review, Questions 4,5

4. *(True/False):* The LOOP instruction first checks to see whether ECX is not equal to zero; then LOOP decrements ECX and jumps to the destination label.

FALSE

5. *(True/False):* The LOOP instruction does the following: It decrements ECX; then, if ECX is not equal to zero, LOOP jumps to the destination label.

TRUE

- [ ] 4.10 Programming Exercises, Question 7