Name: **Id#**

COE 301/ICS 233, Term 172

Computer Architecture & Assembly Language

Quiz# 3

Date: Thursday, March 1, 2018

Q1. Fill in the blank in each of the following questions:

(1) The pseudo instruction *ble $s2, $s1, Next* is implemented by the following minimum MIPS instructions:

_____
_____
_____
_____

(2) Assume that the instruction *bne $t0, $t1, NEXT* is at address 0x00400020 in the text segment, and the label NEXT is at address 0x00400010. Then, the address stored in the assembled instruction for the label NEXT is _____.

(3) Assuming that variable Array is defined as shown below:

```
Array: .byte 1, 2, -3, 4
```

After executing the following sequence of instructions, the content of the three registers is $t1=_____, $t2=_____, and $t3=_____.

```
la   $t0, Array
lb   $t1, 2($t0)
lh   $t2, 2($t0)
lw  $t3, 0($t0)
```

(4) The content of register **$t0** after executing the following code is _____:

```
        li $s1, 0x4321
        xor $t0, $t0, $t0
Next:
        andi $t1, $s1, 0xf
        add $t0, $t0, $t1
        srl  $s1, $s1, 4
        bne $s1, $0, Next
```

Q2. Write a MIPS assembly fragment for the following IF statement:

if ([(a == b) || (c== d)] && (a < c)) then b = d ;

Assume that variables a, b, c, and d are stored into registers $s0, $s1, $s2, and $s3, respectively.

Q3. Write a MIPS assembly fragment for displaying the binary content of register $s0. Note that the system call for printing a an integer in $a0 sets $v0 to 1.