# Homework Assignment #2 – MIPS Coding

*NOTE: All numbers in this assignment are decimal numbers unless stated otherwise.*

⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯

1. (10 points) After the following instructions, what will be the value in $t0?

ori $t0, $0, 21

xori $t0, $t0, 3

1. (10 points) Assume the current values in $t0 and $t1 are 0 and 1, respectively. What will be the content in $t0 after the following instructions?

xori $t0, $t1, 6

srl $t0, $t0, 2

1. (10 points) Suppose $t0 is storing 10. After the following instructions, what will be the value in $t0?

addi $t0, $t0, 10

andi $t0, $t0, 7

srl $t0, $t0, 2

1. (10 points) Assume the current values in $t0 and $t1 are 0 and 1, respectively. What will the content in $t0 be after the following instructions?

sll $t1, $t1, 4

xor $t0, $t0, $t1

1. (10 points) Suppose $t0 is storing 10, $t1 is storing 20. After the following instructions, what will be the value in $t2?

sub $t2, $t0, $t1

ori $t2, $t0, 3

xor $t2, $t2, $t1

1. (10 points) Suppose word array A stores 0,1,2,3,4,5,6,7,8,9, in this order. Assume the starting address of A is in $s0. After the following instructions, what will be the values this array?

lw $t0, 16($s0)

add $t1, $t0, $s0

sw $t0, 0($t1)

1. (10 points) Assume the content of array A is 0,1,2,3,4,5,6,7,8,9, and the starting address of A is in $t0. What will the content in this array be after the following instructions?

addi $t1, $0, 8

add $t1, $t1, $t0

lw $t1, 0($t1)

sw $t1, 4($t0)

1. (10 points) Assume the current values in $t0 and $t1 are 0 and 1, respectively. What will be the content in $t0 after the following instructions?

beq $t0, $t1, L1

L0: add $t0, $t0, $t1

beq $t0, $t1, L0

L1: add $t0, $t0, $t1

1. (10 points for both sub problems) (Exercise 2.4.1(p. 182) in the 4th edition of the textbook) Assume that the variables f,g,h are assigned to registers $s0, $s1, $s2, respectively. Assume that the base address of the arrays A and B are registers $s6 and $s7, respectively.

(a) f = g + h + B[4];

(b) f = g - A[B[4]];

For the C statements above, what is the corresponding MIPS assembly code?