Introduction to MIPS Assembly (Answers)

1.) What values (in decimal) will be in registers $t0, $t1, and $t2 after this program executes?

li $t0, 3
li $t1, 4
addu $t2, $t0, $t1

$t0: 3, $t1: 4, $t2: 7

2.) What values (in decimal) will be in registers $t0 and $t1 after this program executes?

li $t0, 6
li $t1, 4
subu $t0, $t0, $t1

$t0: 2, $t1: 4

3.) What values (in decimal) will be in registers $t0, $t1, and $t2 after this program executes?

li $t0, 3
li $t1, 4
move $t2, $t0
move $t0, $t1
move $t1, $t2

$t0: 4, $t1: 3, $t2: 3

4.) What value (in signed decimal) will be in register $t0 after this program executes?

li $t0, 7
nor $t0, $zero, $t0
addiu $t0, $t0, 1

Note: this question originally just said "in decimal", which is ambiguous. The original answer posted also wasn't correct. Here is the follow through:

5.) What values (in decimal) will be in registers $t0, $t1, and $t2 after this program
executes?

li $t0, 2
li $t1, 7
multu $t0, $t1
mflo $t2

$t0: 2, $t1: 7, $t2: 14

6.) What values (in decimal) will be in registers $t0, $t1, and $t2 after this program
executes?

li $t0, 24
li $t1, 3
divu $t0, $t1
mflo $t2

$t0: 24, $t1: 3, $t2: 8

7.) What will the following program print, if run with SPIM?

li $a0, 12
li $v0, 1
syscall

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8.) What value (in decimal) will be in register $t0 after this program executes?

li $t0, 7
ori $t0, $t0, 8

$t0: 15 (7 = 0111, 8 = 1000, OR yields 1111 = 15)

9.) What value (in decimal) will be in register $t0 after this program executes?

li $t0, 7
andi $t0, $t0, 8

$t0: 0 (7 = 0111, 8 = 1000, AND yields 0000 = 0)
10.) What value (in decimal) will be in register $t0 after this program executes?

li $t0, 7
xori $t0, $t0, 9

$t0: 14 (7 = 0111, 9 = 1001, XOR yields 1110 = 14)

11.) What value (in decimal) will be in register $t0 after this program executes?

li $t0, 7
xori $t0, $t0, 15

$t0: 8 (7 = 0111, 15 = 1111, XOR yields 1000 = 8)

12.) What does the following program print, if run with SPIM?

li $a0, 3
li $v0, 1
syscall
li $a0, '\n'
li $v0, 11
syscall
li $a0, 7
li $v0, 1
syscall

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13.) What does the following program print, if run with SPIM?

```
li $a0, 4
li $v0, 1
syscall
li $a0, 8
li $v0, 1
syscall
```

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14.) What does the following program print, if run with SPIM?

```
.data
foo:
    .asciiz "Some string\n"
bar:
    .asciiz "Some other string\n"
main:
  la $a0, foo
  li $v0, 4
  syscall
  li $v0, 10
  syscall
```

Some string

15.) What does the following program print, if run with SPIM?

```
.data
foo:
    .ascii "alpha"
bar:
    .asciiz "beta"
main:
  la $a0, foo
  li $v0, 4
  syscall
  li $v0, 10
  syscall
```

alphabeta

16.) What does the following program print, if run with SPIM, and 13 is input by the user?

```
li $v0, 5
syscall
addiu $a0, $v0, 7
li $v0, 1
syscall
```

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