

NWEN242 Homework Assignment 2

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Question 1

Part A

Yes

Part B

No

Question 2

```
    addi $t0, $zero, 0 # i = 0
ILOOP:
    slt $t3, $t0, $s0
    bne $t3, $zero, ILOOPEND # if i >= a

    addi $t1, $zero, 0 # i = 0
JLOOP:
    slt $t3, $t1, $s1 # j < b
    bne $t3, $zero, JLOOPEND # if j >= b

    add $t3, $t1, $t2 # $t3 = i + j
    sll $t4, $t2, 2    # j * 4
    add $t4, $s2, $t4 # $t4 = ED[j * 4]
    sw  $t3, 0($t4)   # D[j * 4] = $t3

    addi $t1, $t1, 1 # j++
    j JLOOP
JLOOPEND:

    j ILOOP
ILOOPEPEND:
```

Question 3

Assuming $a = \$a0$ $b = \$a1$ $c = \$a2$ $d = \$a3$

```
func_f:
    addi $sp, $sp, -8
    sw $ra, 0($sp)
    sw $a0, 4($sp)
    move $a1, $a2 # set up argument $a0 = a $a1 = c
    jal FUNC # call func
    # restore variable a and return pointer
    lw $ra, 0($sp)
    lw $t0, 4($sp)
    addi $sp, $sp, 8 # restore stack pointer
    add $r0, $r0, $t0 # make return value of a+func()
    jr $ra # return with result in $r0
```

Question 4

The value of the word at address 0x10000000 is 0x11223344 and the value of the word at 0x10000010 is 0x11?????? with the ?'s being undefined

Question 5

Inputs are A, B, C and D. Output is O

A	B	C	D	O
0	0	0	0	0
1	0	0	0	1
0	1	0	0	1
1	1	0	0	0
0	0	1	0	1
1	0	1	0	0
0	1	1	0	0
1	1	1	0	1
0	0	0	1	1
1	0	0	1	0
0	1	0	1	0
1	1	0	1	1
0	0	1	1	0
1	0	1	1	1
0	1	1	1	1
1	1	1	1	0

Question 6

$$\begin{aligned}
 &(A * \bar{B} * \bar{C} * \bar{D}) + \\
 &(\bar{A} * B * \bar{C} * \bar{D}) + \\
 &(\bar{A} * \bar{B} * C * \bar{D}) + \\
 &(\bar{A} * \bar{B} * \bar{C} * D) + \\
 &(A * B * C * \bar{D}) + \\
 &(A * B * \bar{C} * D) + \\
 &(A * \bar{B} * C * D) + \\
 &(\bar{A} * B * C * D)
 \end{aligned}$$

Question 7

T=0 is the initial state

