4/8/2022 comp Arch. HW 6.2

2)

```
myfunc:
addi $sp, $sp, -8 #adjust stack to make room for 2 items
sw $ra, 4($sp) #save return address
sw $a0, 0($sp) #save argument i. i = $a0
slt $t0, $a0, $zero #test if i<0
bne $t0, $zero, L1 #if i != 0, go to L1
addi $v0, $zero, 1 #if i <= 0, Return 1 to $v0
addi $sp, $sp, 8 #pop 2 items off stack
jr $ra #return to caller
L1: addi $a0, $a0, -1 #if i > 0, (i-1)
jal myfunc #call myfunc with (i-1)
lw $a0, 0($sp)
lw $ra, 4($sp)
addi $sp, $sp, 8 #Pop 2 times
addi $v0, $a0, 1 # 1+ myfunc(i-1))
jr $ra
```

2) The code doesn't work because it is an infinite loop. It adds 1 and subtracts 1 to myfunc so it is infinite

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```
addi $s0, $zero, $zero #xm = 0
addi $s1, $zero, 4     #am = 4
addi $s2, $zero, 1     #ym = 1
addi $s3, $zero, 7     #i = 7
```

caller

callee

```
x = $t0, y = $t1, a = $t2, s = $t3
sll $t3, $t0, $t2 # s = x * a
add $t3, $zero, $t1 # s = 0 + y
jr $ra
```

```
slti $s4, $s3, 7 #test if i <= 7
Beq $s4, $zero, L1 #go to L1
Else quit
L1: add $t0, $s0, $zero   } x = xm
    add $t1, $s2, $zero   } y = ym
    add $t2, $s1, $zero   } a = am
    addi $s2, $s2, 2  # ym + 2
    addi $s3, $s3, 1  # i + 1
    jal myadd
```