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Άσκηση 1

```
fib:
    addi $sp, $sp, -12
    sw $ra, 0($sp)
    sw $s0, 4($sp)
    slt $t0, $a0, 2
    beq $t0, $zero, else
    addi $v0, $zero, $a0
    addi $sp, $sp, 12
    jr $ra
else:
    addi $a0, $a0, -1
    sw $a0, 0($sp)
    jal fib
    add $s0, $v0, $zero
    lw $a0, 0($sp)
    addi $a0, $a0, -2
    jal fib
    add $v0, $v0, $s0
    lw $ra, 0($sp)
    lw $s0, 4($sp)
    addi $sp, $sp, 12
    jr $ra
```

Άσκηση 2

```
Main:
addi $t0, $a0, 23
addi $sp, $sp, -23
addi $t3, $sp, 0
addi $v0, $t3, 0
addi $t0, $zero, 65

Loop:
beq $a0, $t0, Exit
move $t2, $s0
addi $t4, $zero, 0
lw $t1, 0($a0)
bne $t1, $t2, Loop_2
slt $t5, $t4, $a1
beq $t5, $t4, proc_1
bne $t5, $t4, proc_2
sw $s1, 0($t3)
addi $a0, $a0, 1
addi $t3, $t3, 1
j Loop

Loop_2:
addi $t2, $t2, 1
addi $t4, $t4, 1
bne $t1, $t2, J_Loop
```

```
proc_1:
sub $t2, $t2, $a1
move $t1, $t2
proc_2: addi $t4, $zerom 26
sub $t4, $t4, $a1
add $t2, $t2, $t4
move $t1, $t2

Exit:
addi $sp, $sp, 23
jr $ra
```

CHARALAMPOS PAPADOPOULOS n=25 -> DIBSBMBNQPT QBQBEPQPVMPT

Άσκηση 3

```
ackermann:
    addi $sp, $sp, -12
    sw $ra, 0($sp)
    sw $s0, 4($sp)
    sw $s1, 8($sp)
    beq $a0, $zero, recursive_case
    beq $a1, $zero, base_case
    beq $a0, $zero, base_case

    addi $s0, $a0, -1
    addi $s1, $a1, -1
    move $a0, $s0
    move $a1, $v0
    jal ackermann
    move $s1, $v0
    move $a0, $s0
    move $a1, $s1
    jal ackermann
    b end_ackermann

base_case:
    addi $v0, $a1, 1        # A(0, n) = n + 1
    b end_ackermann
```

```
recursive_case:
    move $a0, $a0
    addi $a1, $zero, 1
    jal ackermann

end_ackermann:
    lw $ra, 0($sp)
    lw $s0, 4($sp)
    lw $s1, 8($sp)
    addi $sp, $sp, 12
    jr $ra
```