计算机组织 HW2

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2.6：b f = A[B[g]+1]

2.6.1：

sll $t0, $s1, 2

add $t0, $s7, $t0

lw $t0, 0($t0)

addi $t0, $t0, 1

sll $t0, $t0, 2

add $t0, $s6, $t0

lw $s0, 0($t0)

2.6.2：

7

2.6.3：

6

2.6.4

F = A[g-3]

2.6.5

$s0 = 300 addr 264

2.6.6

Op rs rt rd

Addi $s6, $s6, -20 0 22 22

Add $s6, $s6, $s1 0 22 17 22

Lw $s0, 8($s6) 35 22 16

2.16.1 a

$t2 = 1

2.16.2

1010 1101 0001 0000 0000 0000 0000 0100

To

1111 1111 1111 1111 1111 1111 1111 1111

2.16.3

可以。可以。

2.19.1 a

a $s1 b $s2

compare:

addi $sp, $sp, -4

sw $ra, 0($sp)

add $s0, $a0, $0

add $s1, $a1, $0

jal sub

addi $t1, $0, 1

beq $v0, $0, exit

slt $t2, $0, $v0

bne $t2, $0, exit

addi $t1, $0, $0

exit:

add $v0, $t1, $0

lw $ra, 0($sp)

addi $sp, $sp, 4

jr $ra

sub:

sub $v0, $a0, $a1

jr $ra

16instructions

2.19.2

compare:

addi $sp, $sp, -4

sw $ra, 0($sp)

sub $t0, $a0, $a1

addi $t1, $0, 1

beq $t0, $0, exit

slt $t2, $0, $t0

bne $t2, $0, exit

addi $t1, $0, $0

exit

add $v0, $t1, $0

lw $ra, 0($sp)

addi $sp, $sp, 4

jr $ra

12instructions

2.19.3

after calling function compare:

old $sp => 0x7ffffffc ???

$sp => –4 $ra

after calling function sub:

old $sp => 0x7ffffffc ???

–4 $ra

$sp => –8 $ra

2.20.1 a

FACT: addi $sp, $sp, –8

sw $ra, 4($sp)

sw $a0, 0($sp)

add $s0, $0, $a0

slti $t0, $a0, 2

beq $t0, $0, L1

addi $v0, $0, 1

addi $sp, $sp, 8

jr $ra

L1: addi $a0, $a0, –1

jal FACT

mul $v0, $s0, $v0

lw $a0, 0($sp)

lw $ra, 4($sp)

addi $sp, $sp, 8

jr $ra

2.20.2

FACT: addi $sp, $sp, -4

sw $ra, 4($sp)

add $s0, $0, $a0

add $s2, $0, $1

LOOP: slti $t0, $s0, 2

bne $t0, $0, DONE

mul $s2, $s0, $s2

addi $s2, $s0, $s2

j LOOP

DONE: add $v0, $0, $s2

lw $ra, 4($sp)

addi $sp, $sp, 4

jr $ra

非递归25，递归45

2.20.3

input 4:

old $sp => 0xnnnnnnnn ???

–4 $ra

$sp => –8 $a0

input 3:

old $sp => 0xnnnnnnnn ???

–4 $ra

–8 $a0

–12 $ra

$sp => –16 $a0

input 2:

old $sp => 0xnnnnnnnn ???

–4 $ra

–8 $a0

–12 $ra

–16 $a0

–20 $ra

$sp => –24 $a0

input 1:

old $sp => 0xnnnnnnnn ???

–4 $ra

–8 $a0

–12 $ra

–16 $a0

–20 $ra

–24 $a0

–28 $ra

$sp => –32 $a0

2.24 a

2.24.1

0x00000012

2.24.2

0x00000080

2.24.3

0x00000011

2.25 a

2.25.1

lui $t1, top\_16\_bits

ori $t1, $t1, bottom\_16\_bits

2.25.2

no

2.25.3

no

2.25.4

no

2.25.5

add $t1, $zero, $zero

addi $t2, $zero, top\_8\_bits

sll $t2, $t2, 24

or $t1, $t1, $t2

addi $t2, $zero, nxt1\_8\_bits

sll $t2, $t2, 16

or $t1, $t1, $t2

addi $t2, $zero, nxt2\_8\_bits

sll $t2, $t2, 24

or $t1, $t1, $t2

ori $t1, $t1, bot\_8\_bits

2.25.6

0x12345678

2.25.7

t0 = (0x1234 << 16) || 0x5678;