P5测试文档

X-Y-Z

X: 冲突前序指令类型

Y: 后续指令位于D级时，前序指令的级数

Z: 产生冲突的寄存器

测试指令：

**Addu:**

**Ori\_E\_RS(addu):**

ori $t0, $zero, 8

addu $t1, $t0, $zero

180@00003000: $ 8 <= 00000008

220@00003004: $ 9 <= 00000008

**Ori\_M\_RS(addu)**

ori $t0, $zero, 8

ori $t2, $zero, 12

addu $t1, $t0, $zero

180@00003000: $ 8 <= 00000008

220@00003004: $10 <= 0000000c

260@00003008: $ 9 <= 00000008

**Ori\_W\_RS(addu)**

ori $t0, $zero, 8

ori $t2, $zero, 12

ori $t3, $zero, 13

addu $t1, $t0, $zero

180@00003000: $ 8 <= 00000008

220@00003004: $10 <= 0000000c

260@00003008: $11 <= 0000000d

300@0000300c: $ 9 <= 00000008

**Ori\_E\_RT(addu)**

ori $t0, $zero, 8

addu $t1, $zero, $t0

180@00003000: $ 8 <= 00000008

220@00003004: $ 9 <= 00000008

**Ori\_M\_RT(addu)**

ori $t0, $zero, 8

ori $t2, $zero, 12

addu $t1, $zero, $t0

180@00003000: $ 8 <= 00000008

220@00003004: $10 <= 0000000c

260@00003008: $ 9 <= 00000008

**Ori\_W\_RT(addu)**

ori $t0, $zero, 8

ori $t2, $zero, 12

ori $t3, $zero, 13

addu $t1, $zero, $t0

180@00003000: $ 8 <= 00000008

220@00003004: $10 <= 0000000c

260@00003008: $11 <= 0000000d

300@0000300c: $ 9 <= 00000008

**Lui\_E\_RS(addu)**

lui $t0, 8

addu $t1, $t0, $zero

180@00003000: $ 8 <= 00080000

220@00003004: $ 9 <= 00080000

**Lui\_M\_RS(addu)**

lui $t0, 8

lui $t2, 12

addu $t1, $t0, $zero

180@00003000: $ 8 <= 00080000

220@00003004: $10 <= 000c0000

260@00003008: $ 9 <= 00080000

**Lui\_W\_RS(addu)**

lui $t0, 8

lui $t2, 12

lui $t3, 14

addu $t1, $t0, $zero

180@00003000: $ 8 <= 00080000

220@00003004: $10 <= 000c0000

260@00003008: $11 <= 000e0000

300@0000300c: $ 9 <= 00080000

**Lui\_W\_RT(addu)**

lui $t0, 8

addu $t1, $zero, $t0

180@00003000: $ 8 <= 00080000

220@00003004: $ 9 <= 00080000

**Lui\_w\_RT(addu)**

lui $t0, 8

lui $t2, 12

addu $t1, $zero, $t0

180@00003000: $ 8 <= 00080000

220@00003004: $10 <= 000c0000

260@00003008: $ 9 <= 00080000

**Lui\_W\_RT(addu)**

lui $t0, 8

lui $t2, 12

lui $t3, 14

addu $t1, $zero, $t0

180@00003000: $ 8 <= 00080000

220@00003004: $10 <= 000c0000

260@00003008: $11 <= 000e0000

300@0000300c: $ 9 <= 00080000

**R\_E\_RS(addu)**

lui $t0, 8

addu $t1, $zero, $t0

addu $t2, $t1, $zero

180@00003000: $ 8 <= 00080000

220@00003004: $ 9 <= 00080000

260@00003008: $10 <= 00080000

**R\_M\_RS(addu)**

lui $t0, 8

addu $t1, $zero, $t0

addu $t3, $t0, $t0

addu $t2, $t1, $zero

180@00003000: $ 8 <= 00080000

220@00003004: $ 9 <= 00080000

260@00003008: $11 <= 00100000

300@0000300c: $10 <= 00080000

**R\_W\_RS(RT)(addu)**

lui $t0, 8

addu $t1, $zero, $t0

addu $t3, $t0, $t0

addu $t4, $t0, $t0

addu $t2, $t1, $t1

180@00003000: $ 8 <= 00080000

220@00003004: $ 9 <= 00080000

260@00003008: $11 <= 00100000

300@0000300c: $12 <= 00100000

340@00003010: $10 <= 00100000

**Ld\_E\_RS(RT)(addu)**

ori $t0, $zero, 8

ori $t1, $zero, 12

ori $t2, $zero, 16

ori $t3, $zero, 20

ori $t4, $zero, 24

ori $t5, $zero, 28

sw $t1, 0($t0)

ori $s0, $zero, 4

ori $s1, $zero, 8

ori $s2, $zero, 12

lw $t6, 0($t0)

addu $t7, $t6, $t6

180@00003000: $ 8 <= 00000008

220@00003004: $ 9 <= 0000000c

260@00003008: $10 <= 00000010

300@0000300c: $11 <= 00000014

340@00003010: $12 <= 00000018

380@00003014: $13 <= 0000001c

380@00003018: \*00000008 <= 0000000c

460@0000301c: $16 <= 00000004

500@00003020: $17 <= 00000008

540@00003024: $18 <= 0000000c

580@00003028: $14 <= 0000000c

660@0000302c: $15 <= 00000018

**Ld\_M\_RS(RT)(addu)**

ori $t0, $zero, 8

ori $t1, $zero, 12

ori $t2, $zero, 16

ori $t3, $zero, 20

ori $t4, $zero, 24

sw $t1, 0($t0)

ori $s0, $zero, 4

ori $s1, $zero, 8

ori $s2, $zero, 12

lw $t6, 0($t0)

ori $t5, $zero, 28

addu $t7, $t6, $t6

180@00003000: $ 8 <= 00000008

220@00003004: $ 9 <= 0000000c

260@00003008: $10 <= 00000010

300@0000300c: $11 <= 00000014

340@00003010: $12 <= 00000018

340@00003014: \*00000008 <= 0000000c

420@00003018: $16 <= 00000004

460@0000301c: $17 <= 00000008

500@00003020: $18 <= 0000000c

540@00003024: $14 <= 0000000c

580@00003028: $13 <= 0000001c

620@0000302c: $15 <= 00000018

**Ld\_W\_RS(RT)(addu)**

ori $t0, $zero, 8

ori $t1, $zero, 12

ori $t2, $zero, 16

ori $t3, $zero, 20

ori $t4, $zero, 24

sw $t1, 0($t0)

ori $s0, $zero, 4

ori $s1, $zero, 8

ori $s2, $zero, 12

lw $t6, 0($t0)

ori $t5, $zero, 28

ori $t8, $zero, 32

addu $t7, $t6, $t6

180@00003000: $ 8 <= 00000008

220@00003004: $ 9 <= 0000000c

260@00003008: $10 <= 00000010

300@0000300c: $11 <= 00000014

340@00003010: $12 <= 00000018

340@00003014: \*00000008 <= 0000000c

420@00003018: $16 <= 00000004

460@0000301c: $17 <= 00000008

500@00003020: $18 <= 0000000c

540@00003024: $14 <= 0000000c

580@00003028: $13 <= 0000001c

620@0000302c: $24 <= 00000020

660@00003030: $15 <= 00000018

**Jal\_E\_RS(RT)(addu)**

ori $t0, $zero, 8

ori $t1, $zero, 12

ori $t2, $zero, 16

jal change1

addu $t3, $ra, $ra

ori $t4, $zero, 20

ori $t5, $zero, 24

change1:

ori $t6, $zero, 20

180@00003000: $ 8 <= 00000008

220@00003004: $ 9 <= 0000000c

260@00003008: $10 <= 00000010

300@0000300c: $31 <= 00003014

340@00003010: $11 <= 00006028

380@0000301c: $14 <= 00000014

**Jal\_M\_RS(RT)(addu)**

ori $t0, $zero, 8

ori $t1, $zero, 12

ori $t2, $zero, 16

jal change1

ori $t4, $zero, 20

ori $t5, $zero, 24

change1:

addu $t3, $ra, $ra

ori $t6, $zero, 20

ori $t7, $zero, 24

$ 8 <= 00000008

$ 9 <= 0000000c

$10 <= 00000010

$31 <= 00003014

$12 <= 00000014

$11 <= 00006028

$14 <= 00000014

$15 <= 00000018

**Jal\_W\_RS(RT)(addu)**

ori $t0, $zero, 8

ori $t1, $zero, 12

ori $t2, $zero, 16

jal change1

ori $t4, $zero, 20

ori $t5, $zero, 24

change1:

ori $t6, $zero, 20

addu $t3, $ra, $ra

ori $t6, $zero, 20

ori $t7, $zero, 24

$ 8 <= 00000008

$ 9 <= 0000000c

$10 <= 00000010

$31 <= 00003014

$12 <= 00000014

$14 <= 00000014

$11 <= 00006028

$14 <= 00000014

$15 <= 00000018

**Ori\_E\_RS(ori)**

ori $t0, $zero, 8

ori $t1, $t0, 12

180@00003000: $ 8 <= 00000008

220@00003004: $ 9 <= 0000000c

**Ori\_M\_RS(ori)**

ori $t0, $zero, 8

ori $t2, $zero, 20

ori $t1, $t0, 12

180@00003000: $ 8 <= 00000008

220@00003004: $10 <= 00000014

260@00003008: $ 9 <= 0000000c

**Ori\_W\_RS(ori)**

ori $t0, $zero, 8

ori $t2, $zero, 20

ori $t3, $zero, 24

ori $t1, $t0, 12

180@00003000: $ 8 <= 00000008

220@00003004: $10 <= 00000014

260@00003008: $11 <= 00000018

300@0000300c: $ 9 <= 0000000c

**Subu\_E\_RS(ori)**

ori $t0, $zero, 8

ori $t1, $zero, 20

ori $t2, $zero, 24

ori $t3, $zero, 12

ori $t4, $zero, 16

subu $t5, $t0, $t1

ori $t6, $t5, 13

180@00003000: $ 8 <= 00000008

220@00003004: $ 9 <= 00000014

260@00003008: $10 <= 00000018

300@0000300c: $11 <= 0000000c

340@00003010: $12 <= 00000010

380@00003014: $13 <= fffffff4

420@00003018: $14 <= fffffffd

**Subu\_M\_RS(ori)**

ori $t0, $zero, 8

ori $t1, $zero, 20

ori $t2, $zero, 24

ori $t3, $zero, 12

ori $t4, $zero, 16

subu $t5, $t0, $t1

ori $t7, $zero, 20

ori $t6, $t5, 13

180@00003000: $ 8 <= 00000008

220@00003004: $ 9 <= 00000014

260@00003008: $10 <= 00000018

300@0000300c: $11 <= 0000000c

340@00003010: $12 <= 00000010

380@00003014: $13 <= fffffff4

420@00003018: $15 <= 00000014

460@0000301c: $14 <= fffffffd

**Subu\_W\_RS(ori)**

ori $t0, $zero, 8

ori $t1, $zero, 20

ori $t2, $zero, 24

ori $t3, $zero, 12

ori $t4, $zero, 16

subu $t5, $t0, $t1

ori $t7, $zero, 20

ori $t8, $zero, 24

ori $t6, $t5, 13

180@00003000: $ 8 <= 00000008

220@00003004: $ 9 <= 00000014

260@00003008: $10 <= 00000018

300@0000300c: $11 <= 0000000c

340@00003010: $12 <= 00000010

380@00003014: $13 <= fffffff4

420@00003018: $15 <= 00000014

460@0000301c: $24 <= 00000018

500@00003020: $14 <= fffffffd

**Ld\_E\_RS(ori)**

ori $t0, $zero, 8

ori $t1, $zero, 20

ori $t2, $zero, 4

ori $t3, $zero, 12

ori $t4, $zero, 16

sw $t0, 0($t1)

lw $t5, 0($t1)

ori $t6, $t5, 13

180@00003000: $ 8 <= 00000008

220@00003004: $ 9 <= 00000014

260@00003008: $10 <= 00000004

300@0000300c: $11 <= 0000000c

340@00003010: $12 <= 00000010

340@00003014: \*00000014 <= 00000008

420@00003018: $13 <= 00000008

500@0000301c: $14 <= 0000000d

**Ld\_M\_RS(ori)**

ori $t0, $zero, 8

ori $t1, $zero, 20

ori $t2, $zero, 4

ori $t3, $zero, 12

ori $t4, $zero, 16

sw $t0, 0($t1)

lw $t5, 0($t1)

ori $t7, $zero, 20

ori $t6, $t5, 13

180@00003000: $ 8 <= 00000008

220@00003004: $ 9 <= 00000014

260@00003008: $10 <= 00000004

300@0000300c: $11 <= 0000000c

340@00003010: $12 <= 00000010

340@00003014: \*00000014 <= 00000008

420@00003018: $13 <= 00000008

460@0000301c: $15 <= 00000014

500@00003020: $14 <= 0000000d

**Ld\_W\_RS(ori)**

ori $t0, $zero, 8

ori $t1, $zero, 20

ori $t2, $zero, 4

ori $t3, $zero, 12

ori $t4, $zero, 16

sw $t0, 0($t1)

lw $t5, 0($t1)

ori $t7, $zero, 20

ori $t8, $zero, 24

ori $t6, $t5, 13

180@00003000: $ 8 <= 00000008

220@00003004: $ 9 <= 00000014

260@00003008: $10 <= 00000004

300@0000300c: $11 <= 0000000c

340@00003010: $12 <= 00000010

340@00003014: \*00000014 <= 00000008

420@00003018: $13 <= 00000008

460@0000301c: $15 <= 00000014

500@00003020: $24 <= 00000018

540@00003024: $14 <= 0000000d

**Jal\_E\_RS(ori)**

ori $t0, $zero, 8

ori $t1, $zero, 20

jal change1

ori $t2, $ra, 8

ori $t3, $zero, 14

change1:

ori $t4, $zero, 18

ori $t5, $zero, 22

ori $t6, $zero, 26

180@00003000: $ 8 <= 00000008

220@00003004: $ 9 <= 00000014

260@00003008: $31 <= 00003010

300@0000300c: $10 <= 00003018

340@00003014: $12 <= 00000012

380@00003018: $13 <= 00000016

420@0000301c: $14 <= 0000001a

**Jal\_M\_RS(ori)**

ori $t0, $zero, 8

ori $t1, $zero, 20

jal change1

ori $t2, $zero, 4

ori $t3, $zero, 14

change1:

ori $t4, $ra, 18

ori $t5, $zero, 22

ori $t6, $zero, 26

180@00003000: $ 8 <= 00000008

220@00003004: $ 9 <= 00000014

260@00003008: $31 <= 00003010

300@0000300c: $10 <= 00000004

340@00003014: $12 <= 00003012

380@00003018: $13 <= 00000016

420@0000301c: $14 <= 0000001a

**Jal\_W\_RS(ori)**

ori $t0, $zero, 8

ori $t1, $zero, 20

jal change1

ori $t2, $zero, 4

ori $t3, $zero, 14

change1:

ori $t7, $zero, 6

ori $t4, $ra, 18

ori $t5, $zero, 22

ori $t6, $zero, 26

180@00003000: $ 8 <= 00000008

220@00003004: $ 9 <= 00000014

260@00003008: $31 <= 00003010

300@0000300c: $10 <= 00000004

340@00003014: $15 <= 00000006

380@00003018: $12 <= 00003012

420@0000301c: $13 <= 00000016

460@00003020: $14 <= 0000001a

**Lw:**

**R\_E/M/W\_RS(lw)**

ori $t0, $zero, 4

ori $t1, $zero, 8

ori $t2, $zero, 9

ori $t3, $zero, 12

sw $t1, 0($t0)

sw $t2, 4($t0)

sw $t3, 8($t0)

occasion1: #R\_E\_RS

subu $t4, $t1, $t0

lw $t5, 0($t4)

occasion2: #R\_M\_RS

subu $t5, $t3, $t0

ori $zero, $zero, 5

lw $t6, 0($t5)

occasion3: #R\_W\_RS

addu $t6, $t0, $t1

ori $s0, $zero, 12

ori $s1, $zero, 16

lw $t7, 0($t6)

$ 8 <= 00000004

$ 9 <= 00000008

$10 <= 00000009

$11 <= 0000000c

\*00000004 <= 00000008

\*00000008 <= 00000009

\*0000000c <= 0000000c

$12 <= 00000004

$13 <= 00000008

$13 <= 00000008

$14 <= 00000009

$14 <= 0000000c

$16 <= 0000000c

$17 <= 00000010

$15 <= 0000000c

**I\_E/M/W\_RS(lw)**

ori $t0, $zero, 4

ori $t1, $zero, 8

ori $t2, $zero, 9

ori $t3, $zero, 12

sw $t1, 0($t0)

sw $t2, 4($t0)

sw $t3, 8($t0)

occasion1: #R\_E\_RS

ori $t4, $zero, 4

lw $t5, 0($t4)

occasion2: #R\_M\_RS

ori $t5, $zero, 8

ori $zero, $zero, 5

lw $t6, 0($t5)

occasion3: #R\_W\_RS

ori $t6, $zero, 12

ori $s0, $zero, 12

ori $s1, $zero, 16

lw $t7, 0($t6)

$ 8 <= 00000004

$ 9 <= 00000008

$10 <= 00000009

$11 <= 0000000c

\*00000004 <= 00000008

\*00000008 <= 00000009

\*0000000c <= 0000000c

$12 <= 00000004

$13 <= 00000008

$13 <= 00000008

$14 <= 00000009

$14 <= 0000000c

$16 <= 0000000c

$17 <= 00000010

$15 <= 0000000c

**Ld\_E/M/W\_RS(lw)**

ori $t0, $zero, 4

ori $t1, $zero, 8

ori $t2, $zero, 12

ori $t3, $zero, 16

sw $t0, 0($zero)

sw $t1, 0($t0)

sw $t2, 0($t1)

sw $t3, 4($t1)

occasion1: #ld\_E\_RS

lw $t4, 0($t0)

lw $t5, 0($t4)

occasion2: #ld\_M\_RS

lw $t5, -4($t0)

addu $zero, $zero, $t1

lw $t6, 0($t5)

occasion: #ld\_W\_RS

lw $t6, 4($t0)

ori $s0, $zero, 1

ori $s1, $zero, 2

lw $t7, 0($t6)

$ 8 <= 00000004

$ 9 <= 00000008

$10 <= 0000000c

$11 <= 00000010

\*00000000 <= 00000004

\*00000004 <= 00000008

\*00000008 <= 0000000c

\*0000000c <= 00000010

$12 <= 00000008

$13 <= 0000000c

$13 <= 00000004

$14 <= 00000008

$14 <= 0000000c

$16 <= 00000001

$17 <= 00000002

$15 <= 00000010

由于DM的容量只有4KB，因此31号寄存器中的值不可能作为lw指令中的寻址

**Sw:**

**R\_E/M/W\_RS/RT(sw)**

ori $t0, $zero, 4

ori $t1, $zero, 8

ori $t2, $zero, 12

ori $t3, $zero, 16

ori $t4, $zero, 20

occasion1: #R\_E\_RS

addu $t5, $t0, $t1

sw $t2, 0($t5)

occasion2: #R\_M\_RS

subu $t6, $t2, $t1

ori $s0, $zero, 12

sw $t3, 4($t6)

occasion3: #R\_W\_RS

subu $t7, $t4, $t0

ori $s1, $zero, 4

ori $s2, $zero, 8

sw $t4, 0($t7)

occasion4: #R\_E\_RT

subu $t5, $t1, $t0

sw $t5, 0($t0)

occasion5: #R\_M\_RT

subu $t5, $t2, $t0

ori $s0, $zero, 2

sw $t5, 4($t2)

occasion6: #R\_W\_RT

addu $t6, $t3, $t4

ori $s0, $zero, 1

ori $s1, $zero, 2

sw $t6, 0($t1)

$ 8 <= 00000004

$ 9 <= 00000008

$10 <= 0000000c

$11 <= 00000010

$12 <= 00000014

$13 <= 0000000c

\*0000000c <= 0000000c

$14 <= 00000004

$16 <= 0000000c

\*00000008 <= 00000010

$15 <= 00000010

$17 <= 00000004

$18 <= 00000008

\*00000010 <= 00000014

$13 <= 00000004

\*00000004 <= 00000004

$13 <= 00000008

$16 <= 00000002

\*00000010 <= 00000008

$14 <= 00000024

$16 <= 00000001

$17 <= 00000002

\*00000008 <= 00000024

**I\_E/M/W\_RS/RT(sw)**

ori $t0, $zero, 4

ori $t1, $zero, 8

ori $t2, $zero, 12

ori $t3, $zero, 16

ori $t4, $zero, 20

occasion1: #I\_E\_RS

ori $t5, $zero, 12

sw $t2, 0($t5)

occasion2: #I\_M\_RS

ori $t6, $zero, 4

ori $s0, $zero, 12

sw $t3, 4($t6)

occasion3: #I\_W\_RS

ori $t7, $zero, 16

ori $s1, $zero, 4

ori $s2, $zero, 8

sw $t4, 0($t7)

occasion4: #I\_E\_RT

lui $t5, 3

sw $t5, 0($t0)

occasion5: #I\_M\_RT

lui $t5, 1

ori $s0, $zero, 2

sw $t5, 4($t2)

occasion6: #I\_W\_RT

ori $zero, $zero, 9

ori $s0, $zero, 1

ori $s1, $zero, 2

sw $zero, 0($t1)

$ 8 <= 00000004

$ 9 <= 00000008

$10 <= 0000000c

$11 <= 00000010

$12 <= 00000014

$13 <= 0000000c

\*0000000c <= 0000000c

$14 <= 00000004

$16 <= 0000000c

\*00000008 <= 00000010

$15 <= 00000010

$17 <= 00000004

$18 <= 00000008

\*00000010 <= 00000014

$13 <= 00030000

\*00000004 <= 00030000

$13 <= 00010000

$16 <= 00000002

\*00000010 <= 00010000

$16 <= 00000001

$17 <= 00000002

\*00000008 <= 00000000

**Ld\_E/M/W\_RS\_RT(sw)**

ori $t0, $zero, 4

ori $t1, $zero, 8

ori $t2, $zero, 12

ori $t3, $zero, 16

ori $t4, $zero, 20

sw $t0, 0($zero)

sw $t1, 0($t0)

sw $t2, 4($t0)

sw $t3, 8($t0)

occasion1: #ld\_E\_RS

lw $t5, 0($t0)

sw $t2, 0($t5)

occasion2: #ld\_M\_RS

lw $t6, 0($t0)

ori $s0, $zero, 12

sw $t3, 4($t6)

occasion3: #ld\_W\_RS

lw $t7, 4($t0)

ori $s1, $zero, 4

ori $s2, $zero, 8

sw $t4, 0($t7)

occasion4: #ld\_E\_RT

lw $t5, 0($t2)

sw $t5, 0($t0)

occasion5: #ld\_M\_RT

lw $t5, 4($t2)

ori $s0, $zero, 2

sw $t5, 4($t2)

occasion6: #ld\_W\_RT

lw $t6, 4($t0)

ori $s0, $zero, 1

ori $s1, $zero, 2

sw $t6, 0($t1)

$ 8 <= 00000004

$ 9 <= 00000008

$10 <= 0000000c

$11 <= 00000010

$12 <= 00000014

\*00000000 <= 00000004

\*00000004 <= 00000008

\*00000008 <= 0000000c

\*0000000c <= 00000010

$13 <= 00000008

\*00000008 <= 0000000c

$14 <= 00000008

$16 <= 0000000c

\*0000000c <= 00000010

$15 <= 0000000c

$17 <= 00000004

$18 <= 00000008

\*0000000c <= 00000014

$13 <= 00000014

\*00000004 <= 00000014

$13 <= 00000000

$16 <= 00000002

\*00000010 <= 00000000

$14 <= 0000000c

$16 <= 00000001

$17 <= 00000002

\*00000008 <= 0000000c

**(jal\_sw的情况)**

**Beq:**

**R\_E/M/W\_RS/RT(beq)(equal)**

ori $t0, $zero, 4

ori $t1, $zero, 8

ori $t2, $zero, 12

ori $t3, $zero, 16

subu $t4, $t0, $t1

occasion1: #R\_E\_RS

addu $t5, $t0, $t1

beq $t5, $t2, change1

ori $s0, $zero, 1

ori $s1, $zero, 2

change1:

ori $s2, $zero, 3

ori $s3, $zero, 4

occasion2: #R\_M\_RS

addu $t6, $t0, $t1

ori $s0, $zero, 1

beq $t6, $t2, change2

ori $s0, $zero, 1

ori $s1, $zero, 2

change2:

ori $s2, $zero, 3

ori $s3, $zero, 4

occasion3: #R\_W\_RS

addu $t7, $t0, $t1

ori $s0, $zero, 1

ori $s1, $zero, 2

beq $t7, $t2, change3

ori $s0, $zero, 1

ori $s1, $zero, 2

change3:

ori $s2, $zero, 3

ori $s3, $zero, 4

occasion4: #R\_E\_RT

subu $t5, $t1, $t2

beq $t4, $t5, change4

ori $s0, $zero, 1

ori $s1, $zero, 2

change4:

ori $s2, $zero, 3

ori $s3, $zero, 4

occasion5: #R\_M\_RT

subu $t6, $t1, $t2

ori $s0, $zero, 1

beq $t4, $t6, change5

ori $s0, $zero, 1

ori $s1, $zero, 2

change5:

ori $s2, $zero, 3

ori $s3, $zero, 4

occasion6: #R\_W\_RT

subu $t7, $t1, $t2

ori $s0, $zero, 1

ori $s1, $zero, 2

beq $t4, $t7, change6

ori $s0, $zero, 1

ori $s1, $zero, 2

change6:

ori $s2, $zero, 3

ori $s3, $zero, 4

$ 8 <= 00000004

$ 9 <= 00000008

$10 <= 0000000c

$11 <= 00000010

$12 <= fffffffc

$13 <= 0000000c

$16 <= 00000001

$18 <= 00000003

$19 <= 00000004

$14 <= 0000000c

$16 <= 00000001

$16 <= 00000001

$18 <= 00000003

$19 <= 00000004

$15 <= 0000000c

$16 <= 00000001

$17 <= 00000002

$16 <= 00000001

$18 <= 00000003

$19 <= 00000004

$13 <= fffffffc

$16 <= 00000001

$18 <= 00000003

$19 <= 00000004

$14 <= fffffffc

$16 <= 00000001

$16 <= 00000001

$18 <= 00000003

$19 <= 00000004

$15 <= fffffffc

$16 <= 00000001

$17 <= 00000002

$16 <= 00000001

$18 <= 00000003

$19 <= 00000004

**R\_E/M/W\_RS/RT(beq)(unequal)**

ori $t0, $zero, 4

ori $t1, $zero, 8

ori $t2, $zero, 12

ori $t3, $zero, 16

subu $t4, $t0, $t1

occasion1: #R\_E\_RS

addu $t5, $t0, $t1

beq $t5, $t3, change1

ori $s0, $zero, 1

ori $s1, $zero, 2

change1:

ori $s2, $zero, 3

ori $s3, $zero, 4

occasion2: #R\_M\_RS

addu $t6, $t0, $t1

ori $s0, $zero, 1

beq $t6, $t3, change2

ori $s0, $zero, 1

ori $s1, $zero, 2

change2:

ori $s2, $zero, 3

ori $s3, $zero, 4

occasion3: #R\_W\_RS

addu $t7, $t0, $t1

ori $s0, $zero, 1

ori $s1, $zero, 2

beq $t7, $t3, change3

ori $s0, $zero, 1

ori $s1, $zero, 2

change3:

ori $s2, $zero, 3

ori $s3, $zero, 4

occasion4: #R\_E\_RT

subu $t5, $t1, $t2

beq $t3, $t5, change4

ori $s0, $zero, 1

ori $s1, $zero, 2

change4:

ori $s2, $zero, 3

ori $s3, $zero, 4

occasion5: #R\_M\_RT

subu $t6, $t1, $t2

ori $s0, $zero, 1

beq $t3, $t6, change5

ori $s0, $zero, 1

ori $s1, $zero, 2

change5:

ori $s2, $zero, 3

ori $s3, $zero, 4

occasion6: #R\_W\_RT

subu $t7, $t1, $t2

ori $s0, $zero, 1

ori $s1, $zero, 2

beq $t3, $t7, change6

ori $s0, $zero, 1

ori $s1, $zero, 2

change6:

ori $s2, $zero, 3

ori $s3, $zero, 4

$ 8 <= 00000004

$ 9 <= 00000008

$10 <= 0000000c

$11 <= 00000010

$12 <= fffffffc

$13 <= 0000000c

$16 <= 00000001

$17 <= 00000002

$18 <= 00000003

$19 <= 00000004

$14 <= 0000000c

$16 <= 00000001

$16 <= 00000001

$17 <= 00000002

$18 <= 00000003

$19 <= 00000004

$15 <= 0000000c

$16 <= 00000001

$17 <= 00000002

$16 <= 00000001

$17 <= 00000002

$18 <= 00000003

$19 <= 00000004

$13 <= fffffffc

$16 <= 00000001

$17 <= 00000002

$18 <= 00000003

$19 <= 00000004

$14 <= fffffffc

$16 <= 00000001

$16 <= 00000001

$17 <= 00000002

$18 <= 00000003

$19 <= 00000004

$15 <= fffffffc

$16 <= 00000001

$17 <= 00000002

$16 <= 00000001

$17 <= 00000002

$18 <= 00000003

$19 <= 00000004

**I\_E/M/W\_RS/RT(beq)(equal)**

ori $t0, $zero, 4

ori $t1, $zero, 8

ori $t2, $zero, 12

ori $t3, $zero, 16

subu $t4, $t0, $t1

occasion1: #I\_E\_RS

ori $t5, $zero, 16

beq $t5, $t3, change1

ori $s0, $zero, 1

ori $s1, $zero, 2

change1:

ori $s2, $zero, 3

ori $s3, $zero, 4

occasion2: #I\_M\_RS

ori $t6, $zero, 16

ori $s0, $zero, 1

beq $t6, $t3, change2

ori $s0, $zero, 1

ori $s1, $zero, 2

change2:

ori $s2, $zero, 3

ori $s3, $zero, 4

occasion3: #I\_W\_RS

ori $t7, $zero, 16

ori $s0, $zero, 1

ori $s1, $zero, 2

beq $t7, $t3, change3

ori $s0, $zero, 1

ori $s1, $zero, 2

change3:

ori $s2, $zero, 3

ori $s3, $zero, 4

occasion4: #I\_E\_RT

ori $t5, $zero, 8

beq $t1, $t5, change4

ori $s0, $zero, 1

ori $s1, $zero, 2

change4:

ori $s2, $zero, 3

ori $s3, $zero, 4

occasion5: #I\_M\_RT

ori $t6, $zero, 8

ori $s0, $zero, 1

beq $t1, $t6, change5

ori $s0, $zero, 1

ori $s1, $zero, 2

change5:

ori $s2, $zero, 3

ori $s3, $zero, 4

occasion6: #I\_W\_RT

ori $t7, $zero, 8

ori $s0, $zero, 1

ori $s1, $zero, 2

beq $t1, $t7, change6

ori $s0, $zero, 1

ori $s1, $zero, 2

change6:

ori $s2, $zero, 3

ori $s3, $zero, 4

$ 8 <= 00000004

$ 9 <= 00000008

$10 <= 0000000c

$11 <= 00000010

$12 <= fffffffc

$13 <= 00000010

$16 <= 00000001

$18 <= 00000003

$19 <= 00000004

$14 <= 00000010

$16 <= 00000001

$16 <= 00000001

$18 <= 00000003

$19 <= 00000004

$15 <= 00000010

$16 <= 00000001

$17 <= 00000002

$16 <= 00000001

$18 <= 00000003

$19 <= 00000004

$13 <= 00000008

$16 <= 00000001

$18 <= 00000003

$19 <= 00000004

$14 <= 00000008

$16 <= 00000001

$16 <= 00000001

$18 <= 00000003

$19 <= 00000004

$15 <= 00000008

$16 <= 00000001

$17 <= 00000002

$16 <= 00000001

$18 <= 00000003

$19 <= 00000004

**I\_E/M/W\_RS/RT(beq)(unequal)**

ori $t0, $zero, 4

ori $t1, $zero, 8

ori $t2, $zero, 12

ori $t3, $zero, 16

subu $t4, $t0, $t1

occasion1: #I\_E\_RS

ori $t5, $zero, 16

beq $t5, $t2, change1

ori $s0, $zero, 1

ori $s1, $zero, 2

change1:

ori $s2, $zero, 3

ori $s3, $zero, 4

occasion2: #I\_M\_RS

ori $t6, $zero, 16

ori $s0, $zero, 1

beq $t6, $t2, change2

ori $s0, $zero, 1

ori $s1, $zero, 2

change2:

ori $s2, $zero, 3

ori $s3, $zero, 4

occasion3: #I\_W\_RS

ori $t7, $zero, 16

ori $s0, $zero, 1

ori $s1, $zero, 2

beq $t7, $t2, change3

ori $s0, $zero, 1

ori $s1, $zero, 2

change3:

ori $s2, $zero, 3

ori $s3, $zero, 4

occasion4: #I\_E\_RT

ori $t5, $zero, 8

beq $t2, $t5, change4

ori $s0, $zero, 1

ori $s1, $zero, 2

change4:

ori $s2, $zero, 3

ori $s3, $zero, 4

occasion5: #I\_M\_RT

ori $t6, $zero, 8

ori $s0, $zero, 1

beq $t2, $t6, change5

ori $s0, $zero, 1

ori $s1, $zero, 2

change5:

ori $s2, $zero, 3

ori $s3, $zero, 4

occasion6: #I\_W\_RT

ori $t7, $zero, 8

ori $s0, $zero, 1

ori $s1, $zero, 2

beq $t2, $t7, change6

ori $s0, $zero, 1

ori $s1, $zero, 2

change6:

ori $s2, $zero, 3

ori $s3, $zero, 4

$ 8 <= 00000004

$ 9 <= 00000008

$10 <= 0000000c

$11 <= 00000010

$12 <= fffffffc

$13 <= 00000010

$16 <= 00000001

$17 <= 00000002

$18 <= 00000003

$19 <= 00000004

$14 <= 00000010

$16 <= 00000001

$16 <= 00000001

$17 <= 00000002

$18 <= 00000003

$19 <= 00000004

$15 <= 00000010

$16 <= 00000001

$17 <= 00000002

$16 <= 00000001

$17 <= 00000002

$18 <= 00000003

$19 <= 00000004

$13 <= 00000008

$16 <= 00000001

$17 <= 00000002

$18 <= 00000003

$19 <= 00000004

$14 <= 00000008

$16 <= 00000001

$16 <= 00000001

$17 <= 00000002

$18 <= 00000003

$19 <= 00000004

$15 <= 00000008

$16 <= 00000001

$17 <= 00000002

$16 <= 00000001

$17 <= 00000002

$18 <= 00000003

$19 <= 00000004

**Ld\_E/M/W\_RS/RT(beq)(equal)**

ori $t0, $zero, 4

ori $t1, $zero, 8

ori $t2, $zero, 12

ori $s0, $zero, 1

sw $t0, 0($zero)

sw $t1, 4($zero)

sw $t2, 8($zero)

ori $s0, $zero, 1

ori $s1, $zero, 2

occasion1: #ld\_E\_RS

lw $t3, 0($t0)

beq $t3, $t1, change1

ori $s0, $zero, 1

ori $s1, $zero, 2

change1:

ori $s2, $zero, 2

ori $s3, $zero, 3

occasion2: #ld\_M\_RS

lw $t4, 0($t0)

ori $s2, $zero, 2

beq $t4, $t1, change2

ori $s0, $zero, 1

ori $s1, $zero, 2

change2:

ori $s2, $zero, 2

ori $s3, $zero, 3

occasion3: #ld\_W\_RS

lw $t5, 0($t0)

ori $s2, $zero, 2

ori $s3, $zero, 3

beq $t5, $t1, change3

ori $s0, $zero, 1

ori $s1, $zero, 2

change3:

ori $s2, $zero, 2

ori $s3, $zero, 3

occasion4: #ld\_E\_RT

lw $t6, 0($t0)

beq $t6, $t1, change4

ori $s0, $zero, 1

ori $s1, $zero, 2

change4:

ori $s2, $zero, 2

ori $s3, $zero, 3

occasion5: #ld\_M\_RT

lw $t7, 0($t0)

ori $s2, $zero, 2

beq $t7, $t1, change5

ori $s0, $zero, 1

ori $s1, $zero, 2

change5:

ori $s2, $zero, 2

ori $s3, $zero, 3

occasion6: #ld\_W\_RT

lw $t8, 0($t0)

ori $s2, $zero, 2

ori $s3, $zero, 3

beq $t8, $t1, change6

ori $s0, $zero, 1

ori $s1, $zero, 2

change6:

ori $s2, $zero, 2

ori $s3, $zero, 3

$ 8 <= 00000004

$ 9 <= 00000008

$10 <= 0000000c

$16 <= 00000001

\*00000000 <= 00000004

\*00000004 <= 00000008

\*00000008 <= 0000000c

$16 <= 00000001

$17 <= 00000002

$11 <= 00000008

$16 <= 00000001

$18 <= 00000002

$19 <= 00000003

$12 <= 00000008

$18 <= 00000002

$16 <= 00000001

$18 <= 00000002

$19 <= 00000003

$13 <= 00000008

$18 <= 00000002

$19 <= 00000003

$16 <= 00000001

$18 <= 00000002

$19 <= 00000003

$14 <= 00000008

$16 <= 00000001

$18 <= 00000002

$19 <= 00000003

$15 <= 00000008

$18 <= 00000002

$16 <= 00000001

$18 <= 00000002

$19 <= 00000003

$24 <= 00000008

$18 <= 00000002

$19 <= 00000003

$16 <= 00000001

$18 <= 00000002

$19 <= 00000003

**Ld\_E/M/W\_RS/RT(beq)(unequal)**

ori $t0, $zero, 4

ori $t1, $zero, 8

ori $t2, $zero, 12

ori $s0, $zero, 1

sw $t0, 0($zero)

sw $t1, 4($zero)

sw $t2, 8($zero)

ori $s0, $zero, 1

ori $s1, $zero, 2

occasion1: #ld\_E\_RS

lw $t3, 0($t0)

beq $t3, $t0, change1

ori $s0, $zero, 1

ori $s1, $zero, 2

change1:

ori $s2, $zero, 2

ori $s3, $zero, 3

occasion2: #ld\_M\_RS

lw $t4, 0($t0)

ori $s2, $zero, 2

beq $t4, $t0, change2

ori $s0, $zero, 1

ori $s1, $zero, 2

change2:

ori $s2, $zero, 2

ori $s3, $zero, 3

occasion3: #ld\_W\_RS

lw $t5, 0($t0)

ori $s2, $zero, 2

ori $s3, $zero, 3

beq $t5, $t0, change3

ori $s0, $zero, 1

ori $s1, $zero, 2

change3:

ori $s2, $zero, 2

ori $s3, $zero, 3

occasion4: #ld\_E\_RT

lw $t6, 0($t0)

beq $t0, $t6, change4

ori $s0, $zero, 1

ori $s1, $zero, 2

change4:

ori $s2, $zero, 2

ori $s3, $zero, 3

occasion5: #ld\_M\_RT

lw $t7, 0($t0)

ori $s2, $zero, 2

beq $t0, $t7, change5

ori $s0, $zero, 1

ori $s1, $zero, 2

change5:

ori $s2, $zero, 2

ori $s3, $zero, 3

occasion6: #ld\_W\_RT

lw $t8, 0($t0)

ori $s2, $zero, 2

ori $s3, $zero, 3

beq $t0, $t8, change6

ori $s0, $zero, 1

ori $s1, $zero, 2

change6:

ori $s2, $zero, 2

ori $s3, $zero, 3

$ 8 <= 00000004

$ 9 <= 00000008

$10 <= 0000000c

$16 <= 00000001

\*00000000 <= 00000004

\*00000004 <= 00000008

\*00000008 <= 0000000c

$16 <= 00000001

$17 <= 00000002

$11 <= 00000008

$16 <= 00000001

$17 <= 00000002

$18 <= 00000002

$19 <= 00000003

$12 <= 00000008

$18 <= 00000002

$16 <= 00000001

$17 <= 00000002

$18 <= 00000002

$19 <= 00000003

$13 <= 00000008

$18 <= 00000002

$19 <= 00000003

$16 <= 00000001

$17 <= 00000002

$18 <= 00000002

$19 <= 00000003

$14 <= 00000008

$16 <= 00000001

$17 <= 00000002

$18 <= 00000002

$19 <= 00000003

$15 <= 00000008

$18 <= 00000002

$16 <= 00000001

$17 <= 00000002

$18 <= 00000002

$19 <= 00000003

$24 <= 00000008

$18 <= 00000002

$19 <= 00000003

$16 <= 00000001

$17 <= 00000002

$18 <= 00000002

$19 <= 00000003

**Jal\_M/W\_RS/RT(beq)(equal)**

ori $t0, $zero, 4

ori $t1, $zero, 0x00003014

ori $t2, $zero, 0x00003034

ori $t3, $zero, 0x00003058

ori $t4, $zero, 0x00003078

occasion1: #jal\_M\_RS

jal change1

ori $s0, $zero, 1

ori $s1, $zero, 2

change1:

beq $ra, $t1, change11

ori $s0, $zero, 1

ori $s1, $zero, 2

change11:

ori $s2, $zero, 2

ori $s3, $zero, 3

occasion2: #jal\_W\_RS

jal change2

ori $s0, $zero, 1

ori $s1, $zero, 2

change2:

ori $s2, $zero, 2

beq $ra, $t2, change21

ori $s0, $zero, 1

ori $s1, $zero, 2

change21:

ori $s2, $zero, 2

ori $s3, $zero, 3

occasion3: #jal\_M\_RT

jal change3

ori $s0, $zero, 1

ori $s1, $zero, 2

change3:

beq $t3, $ra, change31

ori $s0, $zero, 1

ori $s1, $zero, 2

change31:

ori $s2, $zero, 2

ori $s3, $zero, 3

occasion4: #jal\_W\_RT

jal change4

ori $s0, $zero, 1

ori $s1, $zero, 2

change4:

ori $s2, $zero, 2

beq $t4, $ra, change41

ori $s0, $zero, 1

ori $s1, $zero, 2

change41:

ori $s2, $zero, 2

ori $s3, $zero, 3

$ 8 <= 00000004

$ 9 <= 00003014

$10 <= 00003034

$11 <= 00003058

$12 <= 00003078

$31 <= 0000301c

$16 <= 00000001

$16 <= 00000001

$17 <= 00000002

$18 <= 00000002

$19 <= 00000003

$31 <= 0000303c

$16 <= 00000001

$18 <= 00000002

$16 <= 00000001

$17 <= 00000002

$18 <= 00000002

$19 <= 00000003

$31 <= 00003060

$16 <= 00000001

$16 <= 00000001

$17 <= 00000002

$18 <= 00000002

$19 <= 00000003

$31 <= 00003080

$16 <= 00000001

$18 <= 00000002

$16 <= 00000001

$17 <= 00000002

$18 <= 00000002

$19 <= 00000003

**Jal\_M/W\_RS/RT(beq)(unequal)**

ori $t0, $zero, 4

ori $t1, $zero, 0x00003010

ori $t2, $zero, 0x00003030

ori $t3, $zero, 0x00003050

ori $t4, $zero, 0x00003070

occasion1: #jal\_M\_RS

jal change1

ori $s0, $zero, 1

ori $s1, $zero, 2

change1:

beq $ra, $t1, change11

ori $s0, $zero, 1

ori $s1, $zero, 2

change11:

ori $s2, $zero, 2

ori $s3, $zero, 3

occasion2: #jal\_W\_RS

jal change2

ori $s0, $zero, 1

ori $s1, $zero, 2

change2:

ori $s2, $zero, 2

beq $ra, $t2, change21

ori $s0, $zero, 1

ori $s1, $zero, 2

change21:

ori $s2, $zero, 2

ori $s3, $zero, 3

occasion3: #jal\_M\_RT

jal change3

ori $s0, $zero, 1

ori $s1, $zero, 2

change3:

beq $t3, $ra, change31

ori $s0, $zero, 1

ori $s1, $zero, 2

change31:

ori $s2, $zero, 2

ori $s3, $zero, 3

occasion4: #jal\_W\_RT

jal change4

ori $s0, $zero, 1

ori $s1, $zero, 2

change4:

ori $s2, $zero, 2

beq $t4, $ra, change41

ori $s0, $zero, 1

ori $s1, $zero, 2

change41:

ori $s2, $zero, 2

ori $s3, $zero, 3

$ 8 <= 00000004

$ 9 <= 00003010

$10 <= 00003030

$11 <= 00003050

$12 <= 00003070

$31 <= 0000301c

$16 <= 00000001

$16 <= 00000001

$17 <= 00000002

$18 <= 00000002

$19 <= 00000003

$31 <= 0000303c

$16 <= 00000001

$18 <= 00000002

$16 <= 00000001

$17 <= 00000002

$18 <= 00000002

$19 <= 00000003

$31 <= 00003060

$16 <= 00000001

$16 <= 00000001

$17 <= 00000002

$18 <= 00000002

$19 <= 00000003

$31 <= 00003080

$16 <= 00000001

$18 <= 00000002

$16 <= 00000001

$17 <= 00000002

$18 <= 00000002

$19 <= 00000003

**Jal\_M\_RS(jr)**

ori $t0, $zero, 4

ori $t1, $zero, 0x00003010

ori $t2, $zero, 0x00003030

ori $t3, $zero, 0x00003050

ori $t4, $zero, 0x00003070

occasion1: #jal\_M\_RS

jal change1

ori $s0, $zero, 1

ori $s1, $zero, 2

ori $s2, $zero, 2

ori $s3, $zero, 3

change1:

jr $ra

ori $s0, $zero, 1

ori $s1, $zero, 2

$ 8 <= 00000004

$ 9 <= 00003010

$10 <= 00003030

$11 <= 00003050

$12 <= 00003070

$31 <= 0000301c

$16 <= 00000001

$16 <= 00000001

$17 <= 00000002

$18 <= 00000002

$19 <= 00000003

$16 <= 00000001

$17 <= 00000002

$18 <= 00000002

$19 <= 00000003

$16 <= 00000001

$17 <= 00000002

$18 <= 00000002

$19 <= 00000003

$16 <= 00000001

**Jal\_W\_RS(jr)**

ori $t0, $zero, 4

ori $t1, $zero, 0x00003010

ori $t2, $zero, 0x00003030

ori $t3, $zero, 0x00003050

ori $t4, $zero, 0x00003070

occasion1: #jal\_W\_RS

jal change1

ori $s0, $zero, 1

ori $s1, $zero, 2

ori $s2, $zero, 2

ori $s3, $zero, 3

change1:

ori $s3, $zero, 3

jr $ra

ori $s0, $zero, 1

ori $s1, $zero, 2

$ 8 <= 00000004

$ 9 <= 00003010

$10 <= 00003030

$11 <= 00003050

$12 <= 00003070

$31 <= 0000301c

$16 <= 00000001

$19 <= 00000003

$16 <= 00000001

$17 <= 00000002

$18 <= 00000002

$19 <= 00000003

$19 <= 00000003

$16 <= 00000001

$17 <= 00000002

$18 <= 00000002

$19 <= 00000003

$19 <= 00000003

ori $t0, $zero, 4

ori $t1, $zero, 8

ori $t2, $zero, 0x00003000

ori $s0, $zero, 1

ori $s1, $zero, 2

ori $s2, $zero, 3

occasion1: #R\_E\_RS

addu $t3, $t0, $t2

jr $t3

ori $s0, $zero, 1

ori $s1, $zero, 2

ori $s2, $zero, 3

$ 8 <= 00000004

$ 9 <= 00000008

$10 <= 00003000

$16 <= 00000001

$17 <= 00000002

$18 <= 00000003

$11 <= 00003004

$16 <= 00000001

$ 9 <= 00000008

$10 <= 00003000

$16 <= 00000001

$17 <= 00000002

$18 <= 00000003

$11 <= 00003004

$16 <= 00000001

$ 9 <= 00000008

$10 <= 00003000

**R\_M\_RS(jr)**

ori $t0, $zero, 4

ori $t1, $zero, 8

ori $t2, $zero, 0x00003000

ori $s0, $zero, 1

ori $s1, $zero, 2

ori $s2, $zero, 3

occasion1: #R\_M\_RS

addu $t3, $t0, $t2

ori $s0, $zero, 1

jr $t3

ori $s0, $zero, 1

ori $s1, $zero, 2

ori $s2, $zero, 3

$ 8 <= 00000004

$ 9 <= 00000008

$10 <= 00003000

$16 <= 00000001

$17 <= 00000002

$18 <= 00000003

$11 <= 00003004

$16 <= 00000001

$16 <= 00000001

$ 9 <= 00000008

$10 <= 00003000

$16 <= 00000001

$17 <= 00000002

$18 <= 00000003

$11 <= 00003004

$16 <= 00000001

$16 <= 00000001

$ 9 <= 00000008

$10 <= 00003000

**R\_W\_RS(jr)**

ori $t0, $zero, 4

ori $t1, $zero, 8

ori $t2, $zero, 0x00003000

ori $s0, $zero, 1

ori $s1, $zero, 2

ori $s2, $zero, 3

occasion1: #R\_W\_RS

addu $t3, $t0, $t2

ori $s0, $zero, 1

ori $s1, $zero, 2

jr $t3

ori $s0, $zero, 1

ori $s1, $zero, 2

ori $s2, $zero, 3

$ 8 <= 00000004

$ 9 <= 00000008

$10 <= 00003000

$16 <= 00000001

$17 <= 00000002

$18 <= 00000003

$11 <= 00003004

$16 <= 00000001

$17 <= 00000002

$16 <= 00000001

$ 9 <= 00000008

$10 <= 00003000

$16 <= 00000001

$17 <= 00000002

$18 <= 00000003

$11 <= 00003004

$16 <= 00000001

$17 <= 00000002

$16 <= 00000001

**I\_E\_RS(jr)**

ori $t0, $zero, 4

ori $t1, $zero, 8

ori $t2, $zero, 0x00003000

ori $s0, $zero, 1

ori $s1, $zero, 2

ori $s2, $zero, 3

occasion1: #R\_E\_RS

ori $t3, $t2, 0

jr $t3

ori $s0, $zero, 1

ori $s1, $zero, 2

ori $s2, $zero, 3

$ 8 <= 00000004

$ 9 <= 00000008

$10 <= 00003000

$16 <= 00000001

$17 <= 00000002

$18 <= 00000003

$11 <= 00003000

$16 <= 00000001

$ 8 <= 00000004

$ 9 <= 00000008

$10 <= 00003000

$16 <= 00000001

$17 <= 00000002

$18 <= 00000003

$11 <= 00003000

$16 <= 00000001

$ 8 <= 00000004

**I\_M\_RS(jr)**

ori $t0, $zero, 4

ori $t1, $zero, 8

ori $t2, $zero, 0x00003000

ori $s0, $zero, 1

ori $s1, $zero, 2

ori $s2, $zero, 3

occasion1: #R\_M\_RS

ori $t3, $t2, 0

ori $s0, $zero, 1

jr $t3

ori $s0, $zero, 1

ori $s1, $zero, 2

ori $s2, $zero, 3

$ 8 <= 00000004

$ 9 <= 00000008

$10 <= 00003000

$16 <= 00000001

$17 <= 00000002

$18 <= 00000003

$11 <= 00003000

$16 <= 00000001

$16 <= 00000001

$ 8 <= 00000004

$ 9 <= 00000008

$10 <= 00003000

$16 <= 00000001

$17 <= 00000002

$18 <= 00000003

$11 <= 00003000

$16 <= 00000001

$16 <= 00000001

$ 8 <= 00000004

**I\_W\_RS(jr)**

ori $t0, $zero, 4

ori $t1, $zero, 8

ori $t2, $zero, 0x00003000

ori $s0, $zero, 1

ori $s1, $zero, 2

ori $s2, $zero, 3

occasion1: #R\_W\_RS

ori $t3, $t2, 0

ori $s0, $zero, 1

ori $s1, $zero, 2

jr $t3

ori $s0, $zero, 1

ori $s1, $zero, 2

ori $s2, $zero, 3

$ 8 <= 00000004

$ 9 <= 00000008

$10 <= 00003000

$16 <= 00000001

$17 <= 00000002

$18 <= 00000003

$11 <= 00003000

$16 <= 00000001

$17 <= 00000002

$16 <= 00000001

$ 8 <= 00000004

$ 9 <= 00000008

$10 <= 00003000

$16 <= 00000001

$17 <= 00000002

$18 <= 00000003

$11 <= 00003000

$16 <= 00000001

$17 <= 00000002

**Ld\_E\_RS(jr)**

ori $t0, $zero, 0X00003004

ori $t1, $zero, 0X00003008

ori $s0, $zero, 0

ori $s0, $zero, 0

sw $t0, 0($zero)

sw $t1, 4($zero)

ori $s0, $zero, 0

ori $s0, $zero, 0

occasion1: #ld\_E\_RS

lw $t2, 0($zero)

jr $t2

ori $s0, $zero, 0

ori $s0, $zero, 0

ori $s0, $zero, 0

$ 8 <= 00003004

$ 9 <= 00003008

$16 <= 00000000

$16 <= 00000000

\*00000000 <= 00003004

\*00000004 <= 00003008

$16 <= 00000000

$16 <= 00000000

$10 <= 00003004

$16 <= 00000000

$ 9 <= 00003008

$16 <= 00000000

$16 <= 00000000

\*00000000 <= 00003004

\*00000004 <= 00003008

$16 <= 00000000

$16 <= 00000000

$10 <= 00003004

**ld\_M\_RS(jr)**

ori $t0, $zero, 0X00003004

ori $t1, $zero, 0X00003008

ori $s0, $zero, 0

ori $s0, $zero, 0

sw $t0, 0($zero)

sw $t1, 4($zero)

ori $s0, $zero, 0

ori $s0, $zero, 0

occasion1: #ld\_M\_RS

lw $t2, 0($zero)

ori $s0, $zero, 0

jr $t2

ori $s0, $zero, 0

ori $s0, $zero, 0

ori $s0, $zero, 0

$ 8 <= 00003004

$ 9 <= 00003008

$16 <= 00000000

$16 <= 00000000

\*00000000 <= 00003004

\*00000004 <= 00003008

$16 <= 00000000

$16 <= 00000000

$10 <= 00003004

$16 <= 00000000

$16 <= 00000000

$ 9 <= 00003008

$16 <= 00000000

$16 <= 00000000

\*00000000 <= 00003004

\*00000004 <= 00003008

$16 <= 00000000

$16 <= 00000000

$10 <= 00003004

**ld\_W\_RS(jr)**

ori $t0, $zero, 0X00003004

ori $t1, $zero, 0X00003008

ori $s0, $zero, 0

ori $s0, $zero, 0

sw $t0, 0($zero)

sw $t1, 4($zero)

ori $s0, $zero, 0

ori $s0, $zero, 0

occasion1: #ld\_W\_RS

lw $t2, 0($zero)

ori $s0, $zero, 0

ori $s0, $zero, 0

jr $t2

ori $s0, $zero, 0

ori $s0, $zero, 0

ori $s0, $zero, 0

$ 8 <= 00003004

$ 9 <= 00003008

$16 <= 00000000

$16 <= 00000000

\*00000000 <= 00003004

\*00000004 <= 00003008

$16 <= 00000000

$16 <= 00000000

$10 <= 00003004

$16 <= 00000000

$16 <= 00000000

$16 <= 00000000

$ 9 <= 00003008

$16 <= 00000000

$16 <= 00000000

\*00000000 <= 00003004

\*00000004 <= 00003008

$16 <= 00000000

$16 <= 00000000

$10 <= 00003004