**Test Cases**

// Test case 1 (all operator)

addi $t0, $zero, 100

addi $t1, $zero, 50

add $t3, $t0, $t1

sub $t4, $t0, $t1

mul $t5, $t0, $t1

slt $t6, $t0, $t1

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// Test case 2 (lw, sw)

lw $t2, 124

sw $t3, 256

lw $t4, 0($sp)

sw $t5, 0($sp)

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// Test case 3 (infinite loop)

addi $t0, $zero, 123

addi $t1, $zero, 321

label\_1:

j label\_2

label\_2:

j label\_1

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// Test case 4 (general)

addi $t0, $zero, 52

addi $t1, $zero, 25

addi $s0, $zero, 25

add $t2, $t0, $t1

sub $t3, $t0, $t1

mul $t4, $t0, $t1

bne $s0, $t1, label\_bne

beq $t0, $t4, label\_beq

slt $s1, $s0, $t0

slt $v1, $t4, $t2

j label\_j

label\_beq:

mul $s1, $s1, $s1

label\_bne:

add $s3, $t4, $t2

j label\_j

test:

addi $t9, $zero, 100

j end

label\_j:

sub $t8, $t1, $t0

j test

end:

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// Test case 5(empty)

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// Test case 6 (general with lw and sw)

sw $t0, 124

lw $t1, 56

add $s1, $t0, $t1

sub $s2, $s1, $t1

mul $s3, $s2, $s1

beq $s2, $t0, label\_1

bne $s3, $s2, label\_2

label\_2:

add $s1, $s1, $s1

lw $t4, 0($sp)

label\_1:

sub $s2, $s2, $s2

sw $t4, 0($sp)

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// Test case 7(extra arguments)

addi $t0, $zero, 21, $t3

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// Test case 8 (less arguments)

addi $t0, $zero

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// Test case 9(add overflow)

addi $t0, $zero, 10000

addi $t1, $zero, 10000

addi $t2, $zero, 20

mul $t0, $t0, $t1

mul $t0, $t2, $t0

add $t2, $t0, $t0

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// Test case 10(mul overflow)

addi $t0, $zero, 10000

addi $t1, $zero, 10000

addi $t2, $zero, 20

mul $t0, $t0, $t1

mul $t0, $t2, $t0

mul $t2, $t0, $t0

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// Test case 11(sub overflow)

addi $t0, $zero, 10000

addi $t1, $zero, 10000

addi $t2, $zero, 20

mul $t0, $t0, $t1

mul $t0, $t2, $t0

addi $t5, $zero, -1

mul $t1, $t0, $t5

sub $t2, $t0, $t1

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// Test case 12(addi to large constant)

addi $t0, $zero, 2000000000

addi $t1, $t0, 2000000000

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// Test case 13(label used without defining)

sw $t0, 124

lw $t1, 56

add $s1, $t0, $t1

sub $s2, $s1, $t1

mul $s3, $s2, $s1

beq $s2, $t0, label\_1

bne $s3, $s2, label\_2