

COL216 Assignment 5

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Test Cases

(All these cases have been taken considering

ROW_ACCESS_DELAY = 10 & COL_ACCESS_DELAY = 2)

1. Test Case:

N = 0

M = 3

Files = Nil

2. Test Case:

N = 3

M = 0

File 1:

main:

add \$t1, \$t2, \$t3

add \$t3, \$t4, \$t6

exit:

File 2:

main:

sw \$t4 1000(\$t0)

lw \$t1, 1000(\$t0)

add \$t1, \$t2, \$t3

add \$t3, \$t4, \$t6

exit:

File 3:

main:

addi \$t1, \$t2, 3

sub \$t4, \$t1, \$t6

mul \$t2, \$t1, \$t4

exit:

3. Test Case:

N = 1

M = 4

File 1:

main:

addi \$t1, \$t7, 20

add \$t1, \$t2, \$t3

sub \$t3, \$t4, \$t6

mul \$t7, \$t8, \$t9

exit:

4. Test Case:

N = 1

M = 5

File 1:

main:

addi \$t1, \$t7, 20

add \$t1, \$t2, \$t3

sub \$t3, \$t4, \$t6

mul \$t7, \$t8, \$t9

exit:

5. Test Case:

N = 1

M = 3

File 1:

main:

addi \$t1, \$t7, 20

add \$t1, \$t2, \$t3

sub \$t3, \$t4, \$t6

mul \$t7, \$t8, \$t9

exit:

6. Test Case:

N = 1

M = 55

File 1:

main:

addi \$s0, \$zero, 1000

addi \$s1, \$zero, 2500

addi \$t0, \$zero, 1

addi \$t1, \$zero, 2

addi \$t2, \$zero, 3

addi \$t3, \$zero, 4

sw \$t0, 0(\$s0)

sw \$t1, 0(\$s1)

sw \$t2, 4(\$s0)

sw \$t3, 4(\$s1)

sw \$s1, 0(\$s1)

sw \$s1, 0(\$s0)

sw \$t0, 0(\$s1)

exit:

7. Test Case:

N = 1

M = 45

File 1:

main:

```
addi $s0, $zero, 1000
addi $s1, $zero, 2500
addi $t0, $zero, 1
addi $t1, $zero, 2
addi $t2, $zero, 3
addi $t3, $zero, 4
lw $t0, 0($s0)
lw $t1, 0($s1)
lw $t2, 4($s0)
lw $t3, 4($s1)
```

exit:

8. Test Case:

N = 1

M = 12

File 1:

main:

```
addi $s0, $zero, 1000
addi $s1, $zero, 2500
addi $t0, $zero, 1
addi $t1, $zero, 2
addi $t2, $zero, 3
addi $t3, $zero, 4
lw $t0, 0($s0)
lw $t1, 0($s1)
lw $t2, 4($s0)
lw $t3, 4($s1)
```

exit:

9. Test Case:

N = 1

M = 53

File 1:

main:

```
addi $s0, $zero, 1000
addi $s1, $zero, 2500
addi $t0, $zero, 1
addi $t1, $zero, 2
addi $t2, $zero, 3
addi $t3, $zero, 4
sw $t0, 0($s0)
sw $t1, 0($s1)
sw $t2, 4($s0)
sw $t3, 4($s1)
```

```
lw $t0, 0($s0)
lw $t1, 0($s1)
lw $t2, 4($s0)
lw $t3, 4($s1)
```

exit:

10. Test Case:

N = 1

M = 70

File 1:

main:

```
addi $s0, $zero, 1000
addi $s1, $zero, 2500
addi $t0, $zero, 1
addi $t1, $zero, 2
addi $t2, $zero, 3
addi $t3, $zero, 4
lw $t0, 0($s0)
lw $t1, 0($s1)
lw $t2, 4($s0)
lw $t3, 4($s1)
lw $t0, 0($s1)
lw $s1, 0($s0)
```

exit:

11. Test Case:

N = 1

M = 115

File 1:

main:

```
addi $s0, $zero, 1000
addi $s1, $zero, 2500
addi $t0, $zero, 1
addi $t1, $zero, 2
addi $t2, $zero, 3
addi $t3, $zero, 4
sw $t0, 0($s0)
sw $t1, 0($s1)
lw $t2, 0($s1)
sw $t2, 4($s0)
sw $t3, 0($s1)
lw $t0, 0($s0)
lw $s0, 0($s1)
lw $t2, 4($s0)
lw $t3, 4($s1)
```

exit:

12. Test Case:

N = 1

M = 150

File 1:

main:

```
addi $s0, $zero, 1000
addi $s1, $zero, 2500
addi $s2, $zero, 3600
addi $s3, $zero, 4600
addi $s4, $zero, 5600
addi $s5, $zero, 6600
addi $t0, $zero, 1
addi $t1, $zero, 2
addi $t2, $zero, 3
addi $t3, $zero, 4
sw $t0, 0($s5)
sw $t0, 0($s0)
sw $t1, 0($s1)
sw $t2, 4($s0)
sw $t3, 0($s2)
sw $s10, 0($s3)
sw $t4, 4($s1)
lw $t9, 0($s2)
lw $t5, 0($s0)
lw $t6, 0($s1)
lw $t7, 4($s0)
lw $t8, 4($s1)
sw $s11, 0($s4)
```

exit:

13. Test Case:

N = 1

M = 115

File 1:

main:

```
addi $s0, $zero, 1000
addi $s1, $zero, 2500
addi $t0, $zero, 1
addi $t1, $zero, 2
addi $t2, $zero, 3
addi $t3, $zero, 4
sw $t0, 0($s0)
sw $t1, 0($s1)
lw $t2, 0($s1)
sw $t2, 4($s0)
sw $t3, 0($s1)
lw $t0, 0($s0)
lw $s0, 0($s1)
```

```
        lw $t2, 4($s0)
        lw $t3, 4($s1)
exit:
```

14. Test Case:

N = 1
M = 150

File 1:

main:

```
    addi $s0, $zero, 1000
    addi $s1, $zero, 2500
    addi $s2, $zero, 3600
    addi $s3, $zero, 4600
    addi $s4, $zero, 5600
    addi $s5, $zero, 6600
    addi $t0, $zero, 1
    addi $t1, $zero, 2
    addi $t2, $zero, 3
    addi $t3, $zero, 4
    sw $t0, 0($s5)
    sw $t0, 0($s0)
    sw $t1, 0($s1)
    sw $t2, 4($s0)
    sw $t3, 0($s2)
    sw $s10, 0($s3)
    sw $t4, 4($s1)
    lw $t9, 0($s2)
    lw $t5, 0($s0)
    lw $t6, 0($s1)
    lw $t7, 4($s0)
    lw $t8, 4($s1)
    sw $s11, 0($s4)
```

exit:

15. Test Case:

N = 1
M = 47

File 1:

main:

```
    addi $s0, $zero, 1000
    addi $s1, $zero, 2500
    addi $s2, $zero, 3600
    addi $s3, $zero, 4600
    addi $s4, $zero, 5600
    addi $s5, $zero, 6600
    addi $t0, $zero, 1
```

```

addi $t1, $zero, 2
addi $t2, $zero, 3
addi $t3, $zero, 4
sw $t0, 0($s0)
sw $t1, 0($s1)
sw $t3, 0($s2)
sw $t2, 4($s0)
sw $t4, 4($s1)
addi $t3, $t0, 1
lw $t5, 0($s0)
lw $t6, 0($s1)
lw $t9, 0($s2)
lw $t7, 4($s0)
lw $t8, 4($s1)

```

exit:

16. Test Case:

N = 1

M = 47

File 1:

main:

```

addi $s0, $zero, 1000
addi $s1, $zero, 2500
addi $s2, $zero, 3600
addi $s3, $zero, 4600
addi $s4, $zero, 5600
addi $s5, $zero, 6600
addi $t0, $zero, 1
addi $t1, $zero, 2
addi $t2, $zero, 3
addi $t3, $zero, 4
sw $t0, 0($s0)
sw $t1, 0($s1)
sw $t3, 0($s2)
sw $t2, 4($s0)
sw $t4, 4($s1)
add $s0, $s0, $zero
add $t3, $t0, $t11
sub $t3, $t0, $t11
lw $t5, 0($s0)
mul $t5, $t5, $t1
lw $t6, 0($s1)
lw $t9, 0($s2)
lw $t7, 4($s0)
lw $t8, 4($s1)
add $s1, $s0, $zero
slt $t8, $t1, $t2

```

exit:

17. Test Case:

N = 1

M = 300

File 1:

main:

```
addi $s0, $zero, 1000
addi $s1, $zero, 2500
addi $s2, $zero, 3600
addi $s3, $zero, 4600
addi $s4, $zero, 5600
addi $s5, $zero, 6600
addi $t0, $zero, 1
addi $t1, $zero, 2
addi $t2, $zero, 3
addi $t3, $zero, 4
lw $t5, 0($s0)
sw $t0, 0($s0)
sw $t1, 0($s1)
sw $t3, 0($s2)
sw $t2, 4($s0)
lw $s1, 0($s2)
sw $t4, 4($s1)
addi $s1, $t3, 0
lw $t5, 0($s0)
lw $t6, 0($s1)
lw $t9, 0($s2)
lw $t7, 4($s0)
lw $t8, 4($s1)
```

exit:

18. Test Case:

N = 1

M = 400

File 1:

main:

```
addi $s0, $zero, 1000
addi $s1, $zero, 2500
addi $s2, $zero, 3600
addi $s3, $zero, 4600
addi $s4, $zero, 5600
addi $s5, $zero, 6600
addi $t0, $zero, 1
addi $t1, $zero, 2
addi $t2, $zero, 3
addi $t3, $zero, 4
sw $t0, 0($s0)
sw $t1, 0($s1)
```



```

lw $t1, 4($s1)
mul $t1, $t1, $t0
sw $t3, 0($s2)
sw $t2, 4($s0)
sw $t4, 4($s1)
addi $t3, $t0, 1
lw $t5, 0($s0)
lw $t6, 0($s1)
lw $t9, 0($s2)
lw $t7, 4($s0)
lw $t8, 4($s1)

```

exit:

19. Test Case:

N = 1

M = 400

File 1:

main:

```

addi $s0, $zero, 1000
addi $s1, $zero, 2500
addi $s2, $zero, 3600
addi $s3, $zero, 4600
addi $s4, $zero, 5600
addi $s5, $zero, 6600
addi $t0, $zero, 1
addi $t1, $zero, 2
addi $t2, $zero, 3
addi $t3, $zero, 4
sw $t0, 0($s0)
sw $t1, 0($s1)
sw $t3, 0($s2)
sw $t2, 4($s0)
lw $s1, 0($s2)
sw $t4, 4($s1)
addi $s1, $t3, 0
j here
lw $t5, 0($s0)
lw $t6, 0($s1)

```

here:

```

addi $t6, $t6, 5
sw $t1, 4($s2)
sw $t0, 0($s2)
lw $t9, 0($s2)
lw $t7, 4($s0)
lw $t8, 4($s1)

```

exit:

20. Test Case:

N = 1

M = 70

File 1:

main:

```
addi $s0, $zero, 1000
addi $s1, $zero, 2500
addi $s2, $zero, 3600
addi $s3, $zero, 4600
addi $s4, $zero, 5600
addi $s5, $zero, 6600
```

here:

```
addi $t0, $zero, 1
addi $t1, $zero, 2
addi $t2, $zero, 3
addi $t3, $zero, 4
sw $t0, 0($s0)
sw $t1, 0($s1)
sw $t3, 0($s2)
sw $t2, 4($s0)
sw $t4, 4($s1)
add $t5, $t5, $t0
beq $t5, $t0, here
lw $t5, 0($s0)
lw $t6, 0($s1)
addi $t6, $t6, 5
sw $t1, 4($s2)
sw $t0, 0($s2)
lw $t9, 0($s2)
lw $t7, 4($s0)
lw $t8, 4($s1)
```

exit:

21. Test Case:

N = 1

M = 150

File 1:

main:

```
addi $s0, $zero, 1000
addi $s1, $zero, 2500
addi $s2, $zero, 3600
addi $s3, $zero, 4600
addi $s4, $zero, 5600
addi $s5, $zero, 6600
addi $t0, $zero, 1
addi $t1, $zero, 2
addi $t2, $zero, 3
addi $t3, $zero, 4
sw $t0, 0($s0)
```

```

sw $t1, 0($s1)
sw $t3, 0($s2)
sw $t2, 4($s0)
lw $t4, 0($s1)
addi $t3, $t4, 1
lw $t5, 0($s2)
addi $t5, $t5, 1
lw $t6, 0($s1)
lw $t9, 0($s2)
lw $t7, 4($s0)
lw $t8, 4($s1)

```

exit:

22. Test Case:

N = 2

M = 70

File 1:

main:

```

addi $s0, $zero, 1000
addi $s1, $zero, 2500
addi $t0, $zero, 1
addi $t1, $zero, 2
addi $t2, $zero, 3
addi $t3, $zero, 4
lw $t0, 0($s0)
lw $t1, 0($s1)
lw $t2, 4($s0)
lw $t3, 4($s1)
lw $t0, 0($s1)
lw $s1, 0($s0)

```

exit:

File 2:

main:

```

addi $s0, $zero, 1000
addi $s1, $zero, 2500
addi $t0, $zero, 1
addi $t1, $zero, 2
addi $t2, $zero, 3
addi $t3, $zero, 4
lw $t0, 1000
lw $t1, 0($s1)
lw $t2, 4($s0)
lw $t3, 4($s1)
lw $t0, 0($s1)
lw $s1, 0($s0)

```

exit:

23. Test Case:

N = 5

M = 400

File 1:

main:

```
addi $s0, $zero, 1000
addi $s1, $zero, 2500
addi $t0, $zero, 1
addi $t1, $zero, 2
addi $t2, $zero, 3
addi $t3, $zero, 4
sw $t0, 0($s0)
sw $t1, 0($s1)
sw $t2, 4($s0)
sw $t3, 4($s1)
sw $s1, 0($s1)
sw $s1, 0($s0)
sw $t0, 0($s1)
```

exit:

File 2:

main:

```
addi $s0, $zero, 1000
addi $s1, $zero, 2500
addi $t0, $zero, 1
addi $t1, $zero, 2
addi $t2, $zero, 3
addi $t3, $zero, 4
lw $t0, 0($s0)
lw $t1, 0($s1)
lw $t2, 4($s0)
lw $t3, 4($s1)
```

exit:

File 3:

main:

```
addi $s0, $zero, 1000
addi $s1, $zero, 2500
addi $t0, $zero, 1
addi $t1, $zero, 2
addi $t2, $zero, 3
addi $t3, $zero, 4
lw $t0, 0($s0)
lw $t1, 0($s1)
lw $t2, 4($s0)
lw $t3, 4($s1)
lw $t0, 0($s1)
lw $s1, 0($s0)
```

exit:

File 3:

main:

```
addi $s0, $zero, 1000
addi $s1, $zero, 2500
addi $t0, $zero, 1
addi $t1, $zero, 2
addi $t2, $zero, 3
addi $t3, $zero, 4
sw $t0, 0($s0)
sw $t1, 0($s1)
lw $t2, 0($s1)
sw $t2, 4($s0)
sw $t3, 0($s1)
lw $t0, 0($s0)
lw $s0, 0($s1)
lw $t2, 4($s0)
lw $t3, 4($s1)
```

Exit:

File 4:

main:

```
addi $s0, $zero, 1000
addi $s1, $zero, 2500
addi $s2, $zero, 3600
addi $s3, $zero, 4600
addi $s4, $zero, 5600
addi $s5, $zero, 6600
addi $t0, $zero, 1
addi $t1, $zero, 2
addi $t2, $zero, 3
addi $t3, $zero, 4
sw $t0, 0($s5)
sw $t0, 0($s0)
sw $t1, 0($s1)
sw $t2, 4($s0)
sw $t3, 0($s2)
sw $s10, 0($s3)
sw $t4, 4($s1)
lw $t9, 0($s2)
lw $t5, 0($s0)
lw $t6, 0($s1)
lw $t7, 4($s0)
lw $t8, 4($s1)
sw $s11, 0($s4)
```

exit:

File 5:

main:

```
addi $s0, $zero, 1000
addi $s1, $zero, 2500
addi $t0, $zero, 1
addi $t1, $zero, 2
addi $t2, $zero, 3
addi $t3, $zero, 4
sw $t0, 0($s0)
sw $t1, 0($s1)
lw $t2, 0($s1)
sw $t2, 4($s0)
sw $t3, 0($s1)
lw $t0, 0($s0)
lw $s0, 0($s1)
lw $t2, 4($s0)
lw $t3, 4($s1)
```

exit:

24. Test Case:

N = 3

M = 50

File 1:

main:

```
addi $s0, $zero, 1000
addi $s1, $zero, 2500
addi $t0, $zero, 1
addi $t1, $zero, 2
addi $t2, $zero, 3
addi $t3, $zero, 4
```

exit:

File 2:

main:

```
add $s0, $zero, $s0
add $s1, $zero, $s1
addi $t0, $zero, 1
addi $t1, $zero, 2
addi $t2, $zero, 3
addi $t3, $zero, 4
```

exit:

File 3:

main:

```
sub $s0, $zero, $s0
mul $s1, $zero, $s1
addi $t0, $zero, 1
addi $t1, $zero, 2
```

```
        addi $t2, $zero, 3
        addi $t3, $zero, 4
exit:
```

25. Test Case:

N = 2

M = 150

File 1:

main:

```
        addi $s0, $zero, 1000
        addi $s1, $zero, 2500
        addi $t0, $zero, 1
        addi $t1, $zero, 2
        addi $t2, $zero, 3
        addi $t3, $zero, 4
        sw $t0, 0($s0)
        sw $t1, 0($s1)
        sw $t2, 4($s0)
        sw $t3, 4($s1)
        sw $s1, 0($s1)
        sw $s1, 0($s0)
        sw $t0, 0($s1)
```

exit:

File 2:

main:

```
        addi $s0, $zero, 1000
        addi $s1, $zero, 2500
        addi $t0, $zero, 1
        addi $t1, $zero, 2
        addi $t2, $zero, 3
        addi $t3, $zero, 4
```

exit:

26. Test Case:

N = 2

M = 50

File 1:

main:

```
        addi $s0, $zero, 1000
        addi $s1, $zero, 2500
        addi $t0, $zero, 1
        addi $t1, $zero, 2
        addi $t2, $zero, 3
        addi $t3, $zero, 4
        sw $t0, 0($s0)
        sub $s0, $zero, $s0
        mul $s1, $zero, $s1
```

```
        add $s0, $zero, $s0
exit:
```

File 2:

```
main:
    addi $s0, $zero, 1000
    addi $s1, $zero, 2500
    addi $t0, $zero, 1
    addi $t1, $zero, 2
    addi $t2, $zero, 3
    addi $t3, $zero, 4
exit:
```

27. Test Case:

N = 3
M = 100

File 1:

```
main:
    addi $s0, $zero, 1000
    addi $s1, $zero, 2500
    addi $t0, $zero, 1
    addi $t1, $zero, 2
    addi $t2, $zero, 3
    addi $t3, $zero, 4
    sw $t0, 0($s0)
    sub $s0, $zero, $s0
    mul $s1, $zero, $s1
    sw $t0, 4($s1)
    add $s0, $zero, $s0
exit:
```

File 2:

```
main:
    addi $s0, $zero, 1000
    addi $s1, $zero, 2500
    addi $t0, $zero, 1
    addi $t1, $zero, 2
    addi $t2, $zero, 3
    sw $t0, 0($s0)
    addi $t3, $zero, 4
exit:
```

File 3:

```
main:
    add $s0, $zero, $t2
    addi $s1, $zero, 1000
    addi $t0, $zero, 1
```



```

addi $t1, $zero, 2
addi $t2, $zero, 3
sw $t0, 12($s1)
addi $t3, $zero, 4
sub $t7, $t9, $t1

```

exit:

28. Test Case:

N = 2

M = 200

File 1:

main:

```

addi $s0, $zero, 1000
addi $s1, $zero, 2500
addi $t0, $zero, 1
addi $t1, $zero, 2
addi $t2, $zero, 3
addi $t3, $zero, 4
lw $t0, 0($s0)
lw $t1, 0($s1)

```

exit:

File 2:

main:

```

addi $s0, $zero, 4000
addi $s1, $zero, 2500
addi $t0, $zero, 6
addi $t1, $zero, 7
addi $t2, $zero, 8
addi $t3, $zero, 9
add $t4, $t5, $t6
addi $t5, $zero, 9
addi $t9, $zero, 10
addi $t6, $zero, 11
addi $t5, $zero, 12
addi $t7, $zero, 13
addi $t8, $zero, 14
addi $t9, $zero, 15
lw $t4, ($s0)

```

exit:

29. Test Case:

N = 2

M = 150

File 1:

main:

```

addi $s0, $zero, 1000

```

```

addi $s1, $zero, 2500
addi $t0, $zero, 1
addi $t1, $zero, 2
addi $t2, $zero, 3
addi $t3, $zero, 4
lw $t0, 0($s0)
lw $t1, 0($s1)

```

exit:

File 2:

main:

```

addi $s0, $zero, 4000
addi $s1, $zero, 2500
addi $t0, $zero, 6
addi $t1, $zero, 7
addi $t2, $zero, 8
addi $t3, $zero, 9
add $t4, $t5, $t6
addi $t5, $zero, 9
addi $t9, $zero, 10
addi $t6, $zero, 11
addi $t5, $zero, 12
addi $t7, $zero, 13
addi $t8, $zero, 14
addi $t9, $zero, 15
lw $t4, ($s0)

```

exit:

30. Test Case:

N = 3

M = 70

File 1:

main:

```

addi $s0, $zero, 1000
addi $s1, $zero, 2500
addi $t0, $zero, 1
addi $t1, $zero, 2
addi $t2, $zero, 3
addi $t3, $zero, 4
sw $t0, 0($s0)

```

exit:

File 2:

main:

```

addi $s0, $zero, 1000
addi $s1, $zero, 2500
addi $t0, $zero, 1
addi $t1, $zero, 2

```

```
addi $t2, $zero, 3
addi $t3, $zero, 4
sw $t0, 0($s0)
```

exit:

File 3:

main:

```
addi $s0, $zero, 4000
addi $s1, $zero, 2500
addi $t0, $zero, 6
addi $t1, $zero, 7
addi $t2, $zero, 8
addi $t3, $zero, 9
lw $t4, ($s0)
add $t4, $t5, $t6
addi $t5, $zero, 9
addi $t9, $zero, 10
addi $t6, $zero, 11
addi $t5, $zero, 12
addi $t7, $zero, 13
addi $t8, $zero, 14
addi $t9, $zero, 15
```

exit:

31. Test Case:

N = 2

M = 150

File 1:

main:

```
addi $s0, $zero, 1000
addi $s1, $zero, 2500
addi $t0, $zero, 1
addi $t1, $zero, 2
addi $t2, $zero, 3
addi $t3, $zero, 4
sw $t0, 0($s0)
```

exit:

File 2:

main:

```
addi $s0, $zero, 4000
addi $s1, $zero, 2500
addi $t0, $zero, 6
addi $t1, $zero, 7
addi $t2, $zero, 8
addi $t3, $zero, 9
lw $t4, ($s0)
add $t4, $t5, $t6
```

```
addi $t5, $zero, 9
addi $t9, $zero, 10
addi $t6, $zero, 11
addi $t5, $zero, 12
addi $t7, $zero, 13
```

exit:

32. Test Case:

N = 2

M = 100

File 1:

main:

```
addi $s2, $s2, 4
addi $s1, $s1, 0
addi $s2, $s2, 4
lw $s3, 0($s1)
```

exit:

File 2:

main:

```
addi $s1, $s1, 4
addi $s0, $s0, 0
addi $s0, $s0, 4
lw $s2, 3000($s1)
addi $s0, $s0, 4
sw $s5, 3000($s1)
addi $s0, $s0, 4
addi $s0, $s0, 4
addi $s0, $s0, 4
addi $s0, $s0, 4
addi $s0, $s0, 4
addi $s0, $s0, 4
addi $s0, $s0, 4
lw $s6, 3000($s1)
addi $s0, $s0, 4
addi $s0, $s0, 4
addi $s0, $s0, 4
addi $s0, $s0, 4
addi $s0, $s0, 4
addi $s0, $s0, 4
addi $s0, $s0, 4
addi $s0, $s0, 4
addi $s0, $s0, 4
addi $s0, $s0, 4
addi $s0, $s0, 4
addi $s0, $s0, 4
```

exit: