**目标代码执行**

本次作业为目标代码的执行，该说明中提供个人测试集的四元式和目标代码以及Mars运行目标代码的结果。

1. **四元式**

int returnyear()

#RET = 2018 + 0

GOTO returnyear\_end

returnyear\_end:

ret returnyear

int add()

#RET = x + y

GOTO add\_end

add\_end:

ret add

void error()

$t1 = 1 + 0

If err\_typ != $t1

Then Goto Label1

printf string 0 \n

GOTO Label0

Label1:

$t2 = 2 + 0

If err\_typ != $t2

Then Goto Label2

printf string 1 \n

GOTO Label0

Label2:

$t3 = 3 + 0

If err\_typ != $t3

Then Goto Label4

printf string 2 \n

GOTO Label3

Label4:

printf string 3 \n

Label3:

Label0:

error\_number = error\_number + 1

GOTO error\_end

error\_end:

ret error

int cumulative\_sum()

If x <= y

Then Goto Label5

push 3

call error

GOTO Label6

Label5:

If y <= 100

Then Goto Label7

push 1

call error

GOTO Label8

Label7:

If x >= -100

Then Goto Label9

push 2

call error

GOTO Label10

Label9:

$t5 = x - y

If $t5 == 0

Then Goto Label11

push x

$t6 = x + 1

push $t6

push y

call cumulative\_sum

$t7 = #RET + 0

push $t7

call add

#RET = #RET + 0

GOTO cumulative\_sum\_end

GOTO Label12

Label11:

#RET = x + 0

GOTO cumulative\_sum\_end

Label12:

Label10:

Label8:

Label6:

cumulative\_sum\_end:

ret cumulative\_sum

char returnc()

If void\_index >= 5

Then Goto Label13

void\_index = void\_index + 1

call returnc

#RET = #RET + 0

GOTO returnc\_end

GOTO Label14

Label13:

#RET = 67 + 0

GOTO returnc\_end

Label14:

returnc\_end:

ret returnc

char output()

Label15:

printf string 4 \N

printf char input \n

#RET = input + 0

GOTO output\_end

If 1 == 0

Then Goto Label16

GOTO Label15

Label16:

output\_end:

ret output

int register\_disaster()

t1 = 1 + 0

t2 = 1 + 0

t3 = 1 + 0

t4 = 1 + 0

t5 = 1 + 0

t6 = 1 + 0

t7 = 1 + 0

t8 = 1 + 0

t9 = 1 + 0

t10 = 1 + 0

t11 = 1 + 0

t12 = 1 + 0

$t11 = t1 + t2

$t11 = $t11 + t3

$t11 = $t11 + t4

$t11 = $t11 + t5

$t11 = $t11 + t6

$t11 = $t11 + t7

$t11 = $t11 + t8

$t11 = $t11 + t9

$t11 = $t11 + t10

$t11 = $t11 + t11

#RET = $t11 + t12

GOTO register\_disaster\_end

register\_disaster\_end:

ret register\_disaster

void warning()

warning\_end:

ret warning

void test()

char\_test = 65 + 0

letters[0] = 49

letters[1] = 50

letters[2] = 97

i = 10 + 0

$t12 = 65 + 0

If char\_test != $t12

Then Goto Label18

Label19:

$t13 = 131 + char\_test

$t14 = letters[1]

$t13 = $t13 + $t14

$t15 = letters[0]

$t13 = $t13 - $t15

$t16 = letters[2]

$t13 = $t13 - $t16

$t17 = i \* 1

$t13 = $t13 + $t17

int\_test = $t13 + 0

i = i - 1

If i < 0

Then Goto Label20

GOTO Label19

Label20:

GOTO Label17

Label18:

$t19 = 97 + 0

If char\_test != $t19

Then Goto Label21

$t20 = 221 + char\_test

$t21 = letters[1]

$t20 = $t20 + $t21

$t22 = letters[0]

$t20 = $t20 - $t22

$t23 = letters[2]

$t20 = $t20 - $t23

$t24 = i \* 1

int\_test = $t20 + $t24

GOTO Label17

Label21:

int\_test = -1 + 0

Label17:

printf string 5 \n

printf string 6 \N

printf int int\_test \n

i = 10 + 0

Label22:

If i < 5

Then Goto Label24

$t25 = 10 + 0

If i != $t25

Then Goto Label27

char\_test = 65 + 0

GOTO Label26

Label27:

$t26 = 57 + 0

If i != $t26

Then Goto Label28

char\_test = 66 + 0

GOTO Label26

Label28:

$t27 = 8 + 0

If i != $t27

Then Goto Label29

char\_test = 67 + 0

GOTO Label26

Label29:

$t28 = 55 + 0

If i != $t28

Then Goto Label30

char\_test = 68 + 0

GOTO Label26

Label30:

$t29 = 6 + 0

If i != $t29

Then Goto Label31

char\_test = 69 + 0

GOTO Label26

Label31:

char\_test = 70 + 0

Label26:

GOTO Label25

Label24:

$t30 = 2 \* i

$t30 = $t30 / 2

$t30 = $t30 + 48

$t30 = $t30 - 0

$t31 = 0 + 0

If $t30 != $t31

Then Goto Label33

char\_test = 65 + 0

GOTO Label32

Label33:

$t32 = 48 + 0

If $t30 != $t32

Then Goto Label34

char\_test = 48 + 0

GOTO Label32

Label34:

char\_test = 71 + 0

Label32:

Label25:

i = i - 1

If i < 0

Then Goto Label23

GOTO Label22

Label23:

push char\_test

call output

push 4

call error

test\_end:

ret test

void main()

t1 = 1 + 0

t2 = 2 + 0

label = 48 + 0

label1 = 49 + 0

label2 = 50 + 0

printf string 7 \n

scanf int x

scanf int y

printf string 8 \n

scanf char input

i = 0 + 0

Label35:

$t34 = i \* 1

$t34 = $t34 - 1

$t34 = $t34 + 1

push x

push y

call cumulative\_sum

$t35 = #RET + 0

result[$t34] = $t35

If 0 == 0

Then Goto Label36

GOTO Label35

Label36:

i = 1 + 0

Label37:

result[i] = i

i = i + 1

$t37 = y - x

If i >= $t37

Then Goto Label38

GOTO Label37

Label38:

i = 1 + 0

If x < -100

Then Goto Label39

If y > 100

Then Goto Label41

If x > y

Then Goto Label43

printf string 9 \N

$t38 = result[0]

printf int $t38 \n

GOTO Label44

Label43:

Label44:

GOTO Label42

Label41:

Label42:

GOTO Label40

Label39:

Label40:

printf string 10 \N

call returnyear

$t39 = #RET + 0

printf int $t39 \n

push input

call output

c = #RET + 0

If c != 99

Then Goto Label45

printf string 11 \N

printf int t1 \n

GOTO Label46

Label45:

printf string 12 \N

printf int t2 \n

Label46:

call returnc

c = #RET + 0

$t42 = c + 0

If $t42 != 67

Then Goto Label47

printf string 13 \n

GOTO Label48

Label47:

printf string 14 \n

Label48:

call warning

call test

printf string 15 \N

printf int i \n

printf string 16 \N

push 0

push 0

push 0

push 0

push 0

push 0

push 0

push 0

push 0

push 0

push 0

push 0

call register\_disaster

$t43 = #RET + 0

printf int $t43 \n

exit

1. **目标代码**

.data

$String0:.asciiz"Max value limit."

$String1:.asciiz"Min value limit."

$String2:.asciiz"Invalid Input."

$String3:.asciiz"Error Type Not Define."

$String4:.asciiz"Letter is "

$String5:.asciiz""

$String6:.asciiz"Complex Expression = "

$String7:.asciiz"Please Input Lower Bound and Upper Bound:"

$String8:.asciiz"Please Input A Char:"

$String9:.asciiz"X sum to Y = "

$String10:.asciiz"It's already "

$String11:.asciiz"It is Lower c."

$String12:.asciiz"It is not Lower c"

$String13:.asciiz"\\tReturnC is Upper C.\\n"

$String14:.asciiz"ReturnC is not Upper C"

$String15:.asciiz"Final i = "

$String16:.asciiz"Register\_Disater = "

.text

add $fp, $sp, $zero

addi $gp, $gp, 8192

j main

returnyear:

sw $t0, 0($sp)

sw $t1, -4($sp)

sw $t2, -8($sp)

sw $t3, -12($sp)

sw $t4, -16($sp)

sw $t5, -20($sp)

sw $t6, -24($sp)

sw $s0, -28($sp)

sw $s1, -32($sp)

sw $s2, -36($sp)

sw $s3, -40($sp)

sw $s4, -44($sp)

sw $s5, -48($sp)

sw $s6, -52($sp)

sw $fp, -56($sp)

sw $ra, -60($sp)

add $fp, $zero, $sp

addi $sp, $sp, -64

li $v0, 2018

j returnyear\_end

returnyear\_end:

lw $ra, 4($sp)

lw $fp, 8($sp)

lw $s6, 12($sp)

lw $s5, 16($sp)

lw $s4, 20($sp)

lw $s3, 24($sp)

lw $s2, 28($sp)

lw $s1, 32($sp)

lw $s0, 36($sp)

lw $t6, 40($sp)

lw $t5, 44($sp)

lw $t4, 48($sp)

lw $t3, 52($sp)

lw $t2, 56($sp)

lw $t1, 60($sp)

lw $t0, 64($sp)

addi $sp, $sp, 64

jr $ra

add:

addi $sp, $sp, 8

sw $t0, -12($sp)

sw $t1, -16($sp)

sw $t2, -20($sp)

sw $t3, -24($sp)

sw $t4, -28($sp)

sw $t5, -32($sp)

sw $t6, -36($sp)

sw $s0, -40($sp)

sw $s1, -44($sp)

sw $s2, -48($sp)

sw $s3, -52($sp)

sw $s4, -56($sp)

sw $s5, -60($sp)

sw $s6, -64($sp)

sw $fp, -68($sp)

sw $ra, -72($sp)

add $fp, $zero, $sp

addi $sp, $sp, -76

lw $t7, 0($fp)

lw $t8, -4($fp)

add $v0, $t7, $t8

j add\_end

add\_end:

lw $ra, 4($sp)

lw $fp, 8($sp)

lw $s6, 12($sp)

lw $s5, 16($sp)

lw $s4, 20($sp)

lw $s3, 24($sp)

lw $s2, 28($sp)

lw $s1, 32($sp)

lw $s0, 36($sp)

lw $t6, 40($sp)

lw $t5, 44($sp)

lw $t4, 48($sp)

lw $t3, 52($sp)

lw $t2, 56($sp)

lw $t1, 60($sp)

lw $t0, 64($sp)

addi $sp, $sp, 76

jr $ra

error:

addi $sp, $sp, 4

sw $t0, -20($sp)

sw $t1, -24($sp)

sw $t2, -28($sp)

sw $t3, -32($sp)

sw $t4, -36($sp)

sw $t5, -40($sp)

sw $t6, -44($sp)

sw $s0, -48($sp)

sw $s1, -52($sp)

sw $s2, -56($sp)

sw $s3, -60($sp)

sw $s4, -64($sp)

sw $s5, -68($sp)

sw $s6, -72($sp)

sw $fp, -76($sp)

sw $ra, -80($sp)

add $fp, $zero, $sp

addi $sp, $sp, -84

li $t9, 1

sw $t9, -4($fp)

lw $t7, 0($fp)

lw $t8, -4($fp)

bne $t7, $t8, Label1

la $a0, $String0

li $v0, 4

syscall

addi $a0, $zero, 10

li $v0, 11

syscall

j Label0

Label1:

li $t9, 2

sw $t9, -8($fp)

lw $t7, 0($fp)

lw $t8, -8($fp)

bne $t7, $t8, Label2

la $a0, $String1

li $v0, 4

syscall

addi $a0, $zero, 10

li $v0, 11

syscall

j Label0

Label2:

li $t9, 3

sw $t9, -12($fp)

lw $t7, 0($fp)

lw $t8, -12($fp)

bne $t7, $t8, Label4

la $a0, $String2

li $v0, 4

syscall

addi $a0, $zero, 10

li $v0, 11

syscall

j Label3

Label4:

la $a0, $String3

li $v0, 4

syscall

addi $a0, $zero, 10

li $v0, 11

syscall

Label3:

Label0:

lw $t7, 20($gp)

addi $t9, $t7, 1

sw $t9, 20($gp)

j error\_end

error\_end:

lw $ra, 4($sp)

lw $fp, 8($sp)

lw $s6, 12($sp)

lw $s5, 16($sp)

lw $s4, 20($sp)

lw $s3, 24($sp)

lw $s2, 28($sp)

lw $s1, 32($sp)

lw $s0, 36($sp)

lw $t6, 40($sp)

lw $t5, 44($sp)

lw $t4, 48($sp)

lw $t3, 52($sp)

lw $t2, 56($sp)

lw $t1, 60($sp)

lw $t0, 64($sp)

addi $sp, $sp, 84

jr $ra

cumulative\_sum:

addi $sp, $sp, 8

sw $t0, -36($sp)

sw $t1, -40($sp)

sw $t2, -44($sp)

sw $t3, -48($sp)

sw $t4, -52($sp)

sw $t5, -56($sp)

sw $t6, -60($sp)

sw $s0, -64($sp)

sw $s1, -68($sp)

sw $s2, -72($sp)

sw $s3, -76($sp)

sw $s4, -80($sp)

sw $s5, -84($sp)

sw $s6, -88($sp)

sw $fp, -92($sp)

sw $ra, -96($sp)

add $fp, $zero, $sp

addi $sp, $sp, -100

lw $t7, 0($fp)

lw $t8, -4($fp)

sub $t9, $t7, $t8

blez $t9, Label5

li $t9, 3

sw $t9, 0($sp)

subi $sp, $sp, 4

jal error

j Label6

Label5:

lw $t7, -4($fp)

subi $t9, $t7, 100

blez $t9, Label7

li $t9, 1

sw $t9, 0($sp)

subi $sp, $sp, 4

jal error

j Label8

Label7:

lw $t7, 0($fp)

subi $t9, $t7, -100

bgez $t9, Label9

li $t9, 2

sw $t9, 0($sp)

subi $sp, $sp, 4

jal error

j Label10

Label9:

lw $t7, 0($fp)

lw $t8, -4($fp)

sub $t9, $t7, $t8

sw $t9, -20($fp)

lw $t7, -20($fp)

beq $t7, $zero, Label11

lw $t9, 0($fp)

sw $t9, 0($sp)

subi $sp, $sp, 4

lw $t7, 0($fp)

addi $t9, $t7, 1

sw $t9, -24($fp)

lw $t9, -24($fp)

sw $t9, 0($sp)

subi $sp, $sp, 4

lw $t9, -4($fp)

sw $t9, 0($sp)

subi $sp, $sp, 4

jal cumulative\_sum

addi $t9, $v0, 0

sw $t9, -28($fp)

lw $t9, -28($fp)

sw $t9, 0($sp)

subi $sp, $sp, 4

jal add

addi $v0, $v0, 0

j cumulative\_sum\_end

j Label12

Label11:

lw $t7, 0($fp)

addi $v0, $t7, 0

j cumulative\_sum\_end

Label12:

Label10:

Label8:

Label6:

cumulative\_sum\_end:

lw $ra, 4($sp)

lw $fp, 8($sp)

lw $s6, 12($sp)

lw $s5, 16($sp)

lw $s4, 20($sp)

lw $s3, 24($sp)

lw $s2, 28($sp)

lw $s1, 32($sp)

lw $s0, 36($sp)

lw $t6, 40($sp)

lw $t5, 44($sp)

lw $t4, 48($sp)

lw $t3, 52($sp)

lw $t2, 56($sp)

lw $t1, 60($sp)

lw $t0, 64($sp)

addi $sp, $sp, 100

jr $ra

returnc:

sw $t0, -8($sp)

sw $t1, -12($sp)

sw $t2, -16($sp)

sw $t3, -20($sp)

sw $t4, -24($sp)

sw $t5, -28($sp)

sw $t6, -32($sp)

sw $s0, -36($sp)

sw $s1, -40($sp)

sw $s2, -44($sp)

sw $s3, -48($sp)

sw $s4, -52($sp)

sw $s5, -56($sp)

sw $s6, -60($sp)

sw $fp, -64($sp)

sw $ra, -68($sp)

add $fp, $zero, $sp

addi $sp, $sp, -72

lw $t7, 24($gp)

subi $t9, $t7, 5

bgez $t9, Label13

lw $t7, 24($gp)

addi $t9, $t7, 1

sw $t9, 24($gp)

jal returnc

addi $v0, $v0, 0

j returnc\_end

j Label14

Label13:

li $v0, 67

j returnc\_end

Label14:

returnc\_end:

lw $ra, 4($sp)

lw $fp, 8($sp)

lw $s6, 12($sp)

lw $s5, 16($sp)

lw $s4, 20($sp)

lw $s3, 24($sp)

lw $s2, 28($sp)

lw $s1, 32($sp)

lw $s0, 36($sp)

lw $t6, 40($sp)

lw $t5, 44($sp)

lw $t4, 48($sp)

lw $t3, 52($sp)

lw $t2, 56($sp)

lw $t1, 60($sp)

lw $t0, 64($sp)

addi $sp, $sp, 72

jr $ra

output:

addi $sp, $sp, 4

sw $t0, -4($sp)

sw $t1, -8($sp)

sw $t2, -12($sp)

sw $t3, -16($sp)

sw $t4, -20($sp)

sw $t5, -24($sp)

sw $t6, -28($sp)

sw $s0, -32($sp)

sw $s1, -36($sp)

sw $s2, -40($sp)

sw $s3, -44($sp)

sw $s4, -48($sp)

sw $s5, -52($sp)

sw $s6, -56($sp)

sw $fp, -60($sp)

sw $ra, -64($sp)

add $fp, $zero, $sp

addi $sp, $sp, -68

Label15:

la $a0, $String4

li $v0, 4

syscall

lw $t9, 0($fp)

addi $a0, $t9, 0

li $v0, 11

syscall

addi $a0, $zero, 10

li $v0, 11

syscall

lw $t7, 0($fp)

addi $v0, $t7, 0

j output\_end

li $t7, 1

beq $t7, $zero, Label16

j Label15

Label16:

output\_end:

lw $ra, 4($sp)

lw $fp, 8($sp)

lw $s6, 12($sp)

lw $s5, 16($sp)

lw $s4, 20($sp)

lw $s3, 24($sp)

lw $s2, 28($sp)

lw $s1, 32($sp)

lw $s0, 36($sp)

lw $t6, 40($sp)

lw $t5, 44($sp)

lw $t4, 48($sp)

lw $t3, 52($sp)

lw $t2, 56($sp)

lw $t1, 60($sp)

lw $t0, 64($sp)

addi $sp, $sp, 68

jr $ra

register\_disaster:

addi $sp, $sp, 48

sw $t0, -52($sp)

sw $t1, -56($sp)

sw $t2, -60($sp)

sw $t3, -64($sp)

sw $t4, -68($sp)

sw $t5, -72($sp)

sw $t6, -76($sp)

sw $s0, -80($sp)

sw $s1, -84($sp)

sw $s2, -88($sp)

sw $s3, -92($sp)

sw $s4, -96($sp)

sw $s5, -100($sp)

sw $s6, -104($sp)

sw $fp, -108($sp)

sw $ra, -112($sp)

add $fp, $zero, $sp

addi $sp, $sp, -116

li $t9, 1

sw $t9, 0($fp)

li $t9, 1

sw $t9, -4($fp)

li $t9, 1

sw $t9, -8($fp)

li $t9, 1

sw $t9, -12($fp)

li $t9, 1

sw $t9, -16($fp)

li $t9, 1

sw $t9, -20($fp)

li $t9, 1

sw $t9, -24($fp)

li $t9, 1

sw $t9, -28($fp)

li $t9, 1

sw $t9, -32($fp)

li $t9, 1

sw $t9, -36($fp)

li $t9, 1

sw $t9, -40($fp)

li $t9, 1

sw $t9, -44($fp)

lw $t7, 0($fp)

lw $t8, -4($fp)

add $t9, $t7, $t8

sw $t9, -48($fp)

lw $t7, -48($fp)

lw $t8, -8($fp)

add $t9, $t7, $t8

sw $t9, -48($fp)

lw $t7, -48($fp)

lw $t8, -12($fp)

add $t9, $t7, $t8

sw $t9, -48($fp)

lw $t7, -48($fp)

lw $t8, -16($fp)

add $t9, $t7, $t8

sw $t9, -48($fp)

lw $t7, -48($fp)

lw $t8, -20($fp)

add $t9, $t7, $t8

sw $t9, -48($fp)

lw $t7, -48($fp)

lw $t8, -24($fp)

add $t9, $t7, $t8

sw $t9, -48($fp)

lw $t7, -48($fp)

lw $t8, -28($fp)

add $t9, $t7, $t8

sw $t9, -48($fp)

lw $t7, -48($fp)

lw $t8, -32($fp)

add $t9, $t7, $t8

sw $t9, -48($fp)

lw $t7, -48($fp)

lw $t8, -36($fp)

add $t9, $t7, $t8

sw $t9, -48($fp)

lw $t7, -48($fp)

lw $t8, -40($fp)

add $t9, $t7, $t8

sw $t9, -48($fp)

lw $t7, -48($fp)

lw $t8, -44($fp)

add $v0, $t7, $t8

j register\_disaster\_end

register\_disaster\_end:

lw $ra, 4($sp)

lw $fp, 8($sp)

lw $s6, 12($sp)

lw $s5, 16($sp)

lw $s4, 20($sp)

lw $s3, 24($sp)

lw $s2, 28($sp)

lw $s1, 32($sp)

lw $s0, 36($sp)

lw $t6, 40($sp)

lw $t5, 44($sp)

lw $t4, 48($sp)

lw $t3, 52($sp)

lw $t2, 56($sp)

lw $t1, 60($sp)

lw $t0, 64($sp)

addi $sp, $sp, 116

jr $ra

warning:

sw $t0, 0($sp)

sw $t1, -4($sp)

sw $t2, -8($sp)

sw $t3, -12($sp)

sw $t4, -16($sp)

sw $t5, -20($sp)

sw $t6, -24($sp)

sw $s0, -28($sp)

sw $s1, -32($sp)

sw $s2, -36($sp)

sw $s3, -40($sp)

sw $s4, -44($sp)

sw $s5, -48($sp)

sw $s6, -52($sp)

sw $fp, -56($sp)

sw $ra, -60($sp)

add $fp, $zero, $sp

addi $sp, $sp, -64

warning\_end:

lw $ra, 4($sp)

lw $fp, 8($sp)

lw $s6, 12($sp)

lw $s5, 16($sp)

lw $s4, 20($sp)

lw $s3, 24($sp)

lw $s2, 28($sp)

lw $s1, 32($sp)

lw $s0, 36($sp)

lw $t6, 40($sp)

lw $t5, 44($sp)

lw $t4, 48($sp)

lw $t3, 52($sp)

lw $t2, 56($sp)

lw $t1, 60($sp)

lw $t0, 64($sp)

addi $sp, $sp, 64

jr $ra

test:

sw $t0, -116($sp)

sw $t1, -120($sp)

sw $t2, -124($sp)

sw $t3, -128($sp)

sw $t4, -132($sp)

sw $t5, -136($sp)

sw $t6, -140($sp)

sw $s0, -144($sp)

sw $s1, -148($sp)

sw $s2, -152($sp)

sw $s3, -156($sp)

sw $s4, -160($sp)

sw $s5, -164($sp)

sw $s6, -168($sp)

sw $fp, -172($sp)

sw $ra, -176($sp)

add $fp, $zero, $sp

addi $sp, $sp, -180

li $t9, 65

sw $t9, -4($fp)

li $t7, 49

addi $t9, $zero, 3

sll $t9, $t9, 2

sub $t9, $fp, $t9

sw $t7, 0($t9)

li $t7, 50

li $t8, 1

addi $t9, $t8, 3

sll $t9, $t9, 2

sub $t9, $fp, $t9

sw $t7, 0($t9)

li $t7, 97

li $t8, 2

addi $t9, $t8, 3

sll $t9, $t9, 2

sub $t9, $fp, $t9

sw $t7, 0($t9)

li $t9, 10

sw $t9, -24($fp)

li $t9, 65

sw $t9, -28($fp)

lw $t7, -4($fp)

lw $t8, -28($fp)

bne $t7, $t8, Label18

Label19:

lw $t8, -4($fp)

addi $t9, $t8, 131

sw $t9, -32($fp)

li $t8, 1

addi $t7, $t8, 3

sll $t7, $t7, 2

sub $t7, $fp, $t7

lw $t9, 0($t7)

sw $t9, -36($fp)

lw $t7, -32($fp)

lw $t8, -36($fp)

add $t9, $t7, $t8

sw $t9, -32($fp)

addi $t7, $zero, 3

sll $t7, $t7, 2

sub $t7, $fp, $t7

lw $t9, 0($t7)

sw $t9, -40($fp)

lw $t7, -32($fp)

lw $t8, -40($fp)

sub $t9, $t7, $t8

sw $t9, -32($fp)

li $t8, 2

addi $t7, $t8, 3

sll $t7, $t7, 2

sub $t7, $fp, $t7

lw $t9, 0($t7)

sw $t9, -44($fp)

lw $t7, -32($fp)

lw $t8, -44($fp)

sub $t9, $t7, $t8

sw $t9, -32($fp)

lw $t7, -24($fp)

li $t8, 1

mul $t9, $t7, $t8

sw $t9, -48($fp)

lw $t7, -32($fp)

lw $t8, -48($fp)

add $t9, $t7, $t8

sw $t9, -32($fp)

lw $t7, -32($fp)

addi $t9, $t7, 0

sw $t9, 0($fp)

lw $t7, -24($fp)

subi $t9, $t7, 1

sw $t9, -24($fp)

lw $t7, -24($fp)

subi $t9, $t7, 0

bltz $t9, Label20

j Label19

Label20:

j Label17

Label18:

li $t9, 97

sw $t9, -56($fp)

lw $t7, -4($fp)

lw $t8, -56($fp)

bne $t7, $t8, Label21

lw $t8, -4($fp)

addi $t9, $t8, 221

sw $t9, -60($fp)

li $t8, 1

addi $t7, $t8, 3

sll $t7, $t7, 2

sub $t7, $fp, $t7

lw $t9, 0($t7)

sw $t9, -64($fp)

lw $t7, -60($fp)

lw $t8, -64($fp)

add $t9, $t7, $t8

sw $t9, -60($fp)

addi $t7, $zero, 3

sll $t7, $t7, 2

sub $t7, $fp, $t7

lw $t9, 0($t7)

sw $t9, -68($fp)

lw $t7, -60($fp)

lw $t8, -68($fp)

sub $t9, $t7, $t8

sw $t9, -60($fp)

li $t8, 2

addi $t7, $t8, 3

sll $t7, $t7, 2

sub $t7, $fp, $t7

lw $t9, 0($t7)

sw $t9, -72($fp)

lw $t7, -60($fp)

lw $t8, -72($fp)

sub $t9, $t7, $t8

sw $t9, -60($fp)

lw $t7, -24($fp)

li $t8, 1

mul $t9, $t7, $t8

sw $t9, -76($fp)

lw $t7, -60($fp)

lw $t8, -76($fp)

add $t9, $t7, $t8

sw $t9, 0($fp)

j Label17

Label21:

li $t9, -1

sw $t9, 0($fp)

Label17:

la $a0, $String5

li $v0, 4

syscall

addi $a0, $zero, 10

li $v0, 11

syscall

la $a0, $String6

li $v0, 4

syscall

lw $t9, 0($fp)

addi $a0, $t9, 0

li $v0, 1

syscall

addi $a0, $zero, 10

li $v0, 11

syscall

li $t9, 10

sw $t9, -24($fp)

Label22:

lw $t7, -24($fp)

subi $t9, $t7, 5

bltz $t9, Label24

li $t9, 10

sw $t9, -80($fp)

lw $t7, -24($fp)

lw $t8, -80($fp)

bne $t7, $t8, Label27

li $t9, 65

sw $t9, -4($fp)

j Label26

Label27:

li $t9, 57

sw $t9, -84($fp)

lw $t7, -24($fp)

lw $t8, -84($fp)

bne $t7, $t8, Label28

li $t9, 66

sw $t9, -4($fp)

j Label26

Label28:

li $t9, 8

sw $t9, -88($fp)

lw $t7, -24($fp)

lw $t8, -88($fp)

bne $t7, $t8, Label29

li $t9, 67

sw $t9, -4($fp)

j Label26

Label29:

li $t9, 55

sw $t9, -92($fp)

lw $t7, -24($fp)

lw $t8, -92($fp)

bne $t7, $t8, Label30

li $t9, 68

sw $t9, -4($fp)

j Label26

Label30:

li $t9, 6

sw $t9, -96($fp)

lw $t7, -24($fp)

lw $t8, -96($fp)

bne $t7, $t8, Label31

li $t9, 69

sw $t9, -4($fp)

j Label26

Label31:

li $t9, 70

sw $t9, -4($fp)

Label26:

j Label25

Label24:

li $t7, 2

lw $t8, -24($fp)

mul $t9, $t7, $t8

sw $t9, -100($fp)

lw $t7, -100($fp)

li $t8, 2

div $t7, $t8

mflo $t9

sw $t9, -100($fp)

lw $t7, -100($fp)

addi $t9, $t7, 48

sw $t9, -100($fp)

lw $t7, -100($fp)

subi $t9, $t7, 0

sw $t9, -100($fp)

li $t9, 0

sw $t9, -104($fp)

lw $t7, -100($fp)

lw $t8, -104($fp)

bne $t7, $t8, Label33

li $t9, 65

sw $t9, -4($fp)

j Label32

Label33:

li $t9, 48

sw $t9, -108($fp)

lw $t7, -100($fp)

lw $t8, -108($fp)

bne $t7, $t8, Label34

li $t9, 48

sw $t9, -4($fp)

j Label32

Label34:

li $t9, 71

sw $t9, -4($fp)

Label32:

Label25:

lw $t7, -24($fp)

subi $t9, $t7, 1

sw $t9, -24($fp)

lw $t7, -24($fp)

subi $t9, $t7, 0

bltz $t9, Label23

j Label22

Label23:

lw $t9, -4($fp)

sw $t9, 0($sp)

subi $sp, $sp, 4

jal output

li $t9, 4

sw $t9, 0($sp)

subi $sp, $sp, 4

jal error

test\_end:

lw $ra, 4($sp)

lw $fp, 8($sp)

lw $s6, 12($sp)

lw $s5, 16($sp)

lw $s4, 20($sp)

lw $s3, 24($sp)

lw $s2, 28($sp)

lw $s1, 32($sp)

lw $s0, 36($sp)

lw $t6, 40($sp)

lw $t5, 44($sp)

lw $t4, 48($sp)

lw $t3, 52($sp)

lw $t2, 56($sp)

lw $t1, 60($sp)

lw $t0, 64($sp)

addi $sp, $sp, 180

jr $ra

main:

sw $t0, -856($sp)

sw $t1, -860($sp)

sw $t2, -864($sp)

sw $t3, -868($sp)

sw $t4, -872($sp)

sw $t5, -876($sp)

sw $t6, -880($sp)

sw $s0, -884($sp)

sw $s1, -888($sp)

sw $s2, -892($sp)

sw $s3, -896($sp)

sw $s4, -900($sp)

sw $s5, -904($sp)

sw $s6, -908($sp)

sw $fp, -912($sp)

sw $ra, -916($sp)

add $fp, $zero, $sp

addi $sp, $sp, -920

li $t9, 1

sw $t9, 32($gp)

li $t9, 2

sw $t9, 36($gp)

li $t9, 48

sw $t9, 44($gp)

li $t9, 49

sw $t9, 48($gp)

li $t9, 50

sw $t9, 52($gp)

la $a0, $String7

li $v0, 4

syscall

addi $a0, $zero, 10

li $v0, 11

syscall

li $v0, 5

syscall

addi $t9, $v0, 0

sw $t9, 0($fp)

li $v0, 5

syscall

addi $t9, $v0, 0

sw $t9, -4($fp)

la $a0, $String8

li $v0, 4

syscall

addi $a0, $zero, 10

li $v0, 11

syscall

li $v0, 12

syscall

addi $t9, $v0, 0

sw $t9, -8($fp)

li $t9, 0

sw $t9, 28($gp)

Label35:

lw $t7, 28($gp)

li $t8, 1

mul $t9, $t7, $t8

sw $t9, -816($fp)

lw $t7, -816($fp)

subi $t9, $t7, 1

sw $t9, -816($fp)

lw $t7, -816($fp)

addi $t9, $t7, 1

sw $t9, -816($fp)

lw $t9, 0($fp)

sw $t9, 0($sp)

subi $sp, $sp, 4

lw $t9, -4($fp)

sw $t9, 0($sp)

subi $sp, $sp, 4

jal cumulative\_sum

addi $t9, $v0, 0

sw $t9, -820($fp)

lw $t7, -820($fp)

lw $t8, -816($fp)

addi $t9, $t8, 4

sll $t9, $t9, 2

sub $t9, $fp, $t9

sw $t7, 0($t9)

beq $zero, $zero, Label36

j Label35

Label36:

li $t9, 1

sw $t9, 28($gp)

Label37:

lw $t7, 28($gp)

lw $t8, 28($gp)

addi $t9, $t8, 4

sll $t9, $t9, 2

sub $t9, $fp, $t9

sw $t7, 0($t9)

lw $t7, 28($gp)

addi $t9, $t7, 1

sw $t9, 28($gp)

lw $t7, -4($fp)

lw $t8, 0($fp)

sub $t9, $t7, $t8

sw $t9, -828($fp)

lw $t7, 28($gp)

lw $t8, -828($fp)

sub $t9, $t7, $t8

bgez $t9, Label38

j Label37

Label38:

li $t9, 1

sw $t9, 28($gp)

lw $t7, 0($fp)

subi $t9, $t7, -100

bltz $t9, Label39

lw $t7, -4($fp)

subi $t9, $t7, 100

bgtz $t9, Label41

lw $t7, 0($fp)

lw $t8, -4($fp)

sub $t9, $t7, $t8

bgtz $t9, Label43

la $a0, $String9

li $v0, 4

syscall

addi $t7, $zero, 4

sll $t7, $t7, 2

sub $t7, $fp, $t7

lw $t9, 0($t7)

sw $t9, -832($fp)

lw $t9, -832($fp)

addi $a0, $t9, 0

li $v0, 1

syscall

addi $a0, $zero, 10

li $v0, 11

syscall

j Label44

Label43:

Label44:

j Label42

Label41:

Label42:

j Label40

Label39:

Label40:

la $a0, $String10

li $v0, 4

syscall

jal returnyear

addi $t9, $v0, 0

sw $t9, -836($fp)

lw $t9, -836($fp)

addi $a0, $t9, 0

li $v0, 1

syscall

addi $a0, $zero, 10

li $v0, 11

syscall

lw $t9, -8($fp)

sw $t9, 0($sp)

subi $sp, $sp, 4

jal output

addi $t9, $v0, 0

sw $t9, -12($fp)

lw $t7, -12($fp)

li $t8, 99

bne $t7, $t8, Label45

la $a0, $String11

li $v0, 4

syscall

lw $t9, 32($gp)

addi $a0, $t9, 0

li $v0, 1

syscall

addi $a0, $zero, 10

li $v0, 11

syscall

j Label46

Label45:

la $a0, $String12

li $v0, 4

syscall

lw $t9, 36($gp)

addi $a0, $t9, 0

li $v0, 1

syscall

addi $a0, $zero, 10

li $v0, 11

syscall

Label46:

jal returnc

addi $t9, $v0, 0

sw $t9, -12($fp)

lw $t7, -12($fp)

addi $t9, $t7, 0

sw $t9, -848($fp)

lw $t7, -848($fp)

li $t8, 67

bne $t7, $t8, Label47

la $a0, $String13

li $v0, 4

syscall

addi $a0, $zero, 10

li $v0, 11

syscall

j Label48

Label47:

la $a0, $String14

li $v0, 4

syscall

addi $a0, $zero, 10

li $v0, 11

syscall

Label48:

jal warning

jal test

la $a0, $String15

li $v0, 4

syscall

lw $t9, 28($gp)

addi $a0, $t9, 0

li $v0, 1

syscall

addi $a0, $zero, 10

li $v0, 11

syscall

la $a0, $String16

li $v0, 4

syscall

sw $zero, 0($sp)

subi $sp, $sp, 4

sw $zero, 0($sp)

subi $sp, $sp, 4

sw $zero, 0($sp)

subi $sp, $sp, 4

sw $zero, 0($sp)

subi $sp, $sp, 4

sw $zero, 0($sp)

subi $sp, $sp, 4

sw $zero, 0($sp)

subi $sp, $sp, 4

sw $zero, 0($sp)

subi $sp, $sp, 4

sw $zero, 0($sp)

subi $sp, $sp, 4

sw $zero, 0($sp)

subi $sp, $sp, 4

sw $zero, 0($sp)

subi $sp, $sp, 4

sw $zero, 0($sp)

subi $sp, $sp, 4

sw $zero, 0($sp)

subi $sp, $sp, 4

jal register\_disaster

addi $t9, $v0, 0

sw $t9, -852($fp)

lw $t9, -852($fp)

addi $a0, $t9, 0

li $v0, 1

syscall

addi $a0, $zero, 10

li $v0, 11

syscall

li $v0, 10

syscall

1. **Mars结果**

Please Input Lower Bound and Upper Bound:

3

7

Please Input A Char:

cX sum to Y = 25

It's already 2018

Letter is c

It is Lower c.1

\tReturnC is Upper C.\n

Complex Expression = 100

Letter is 0

Error Type Not Define.

Final i = 1

Register\_Disater = 12

-- program is finished running --

Please Input Lower Bound and Upper Bound:

5

-5

Please Input A Char:

CInvalid Input.

It's already 2018

Letter is C

It is not Lower c2

\tReturnC is Upper C.\n

Complex Expression = 100

Letter is 0

Error Type Not Define.

Final i = 1

Register\_Disater = 12

-- program is finished running --

Please Input Lower Bound and Upper Bound:

-200

200

Please Input A Char:

gMax value limit.

It's already 2018

Letter is g

It is not Lower c2

\tReturnC is Upper C.\n

Complex Expression = 100

Letter is 0

Error Type Not Define.

Final i = 1

Register\_Disater = 12

-- program is finished running –

1. **指令条数及分类**



