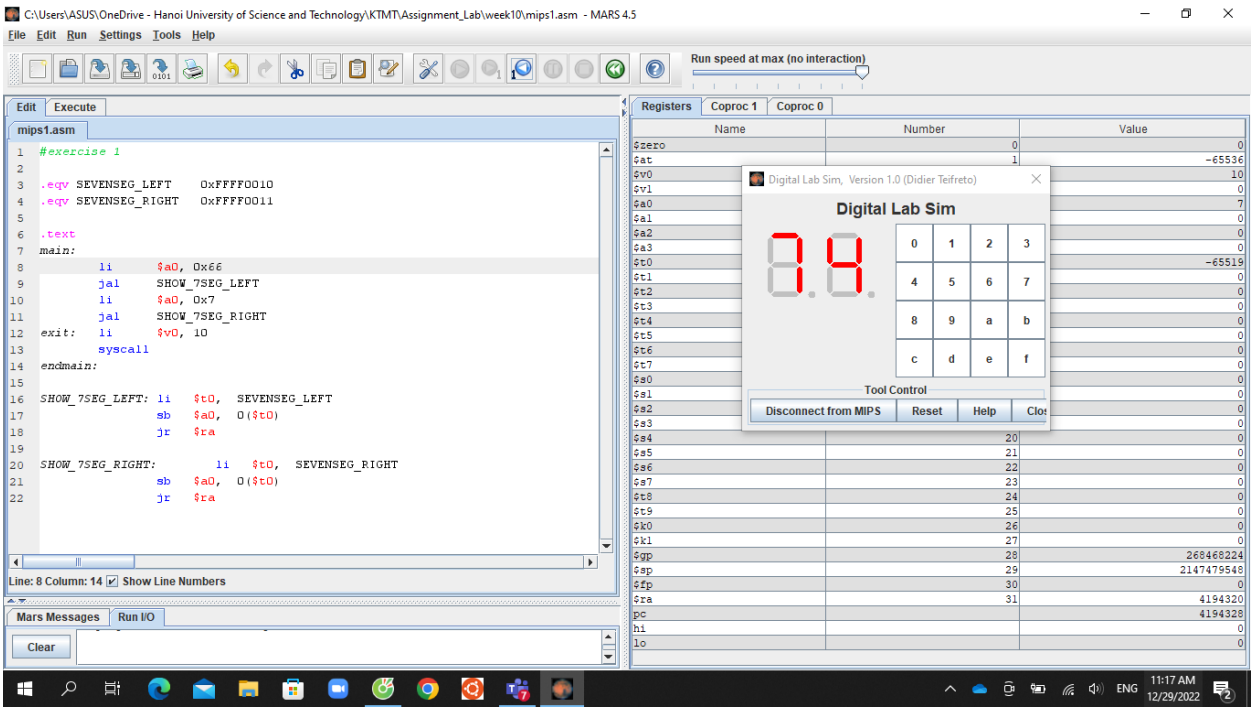
Nguyễn Kiều Trang – 20205174

Exercise 1:

```
.eqv SEVENSEG_LEFT    0xFFFF0010
.eqv SEVENSEG_RIGHT   0xFFFF0011

.text
main:
        li      $a0, 0x66
        jal     SHOW_7SEG_LEFT
        li      $a0, 0x7
        jal     SHOW_7SEG_RIGHT
exit:   li      $v0, 10
        syscall
endmain:

SHOW_7SEG_LEFT:     li   $t0,  SEVENSEG_LEFT
                    sb   $a0,  0($t0)
                    jr   $ra

SHOW_7SEG_RIGHT:    li   $t0,  SEVENSEG_RIGHT
                    sb   $a0,  0($t0)
                    jr   $ra
```

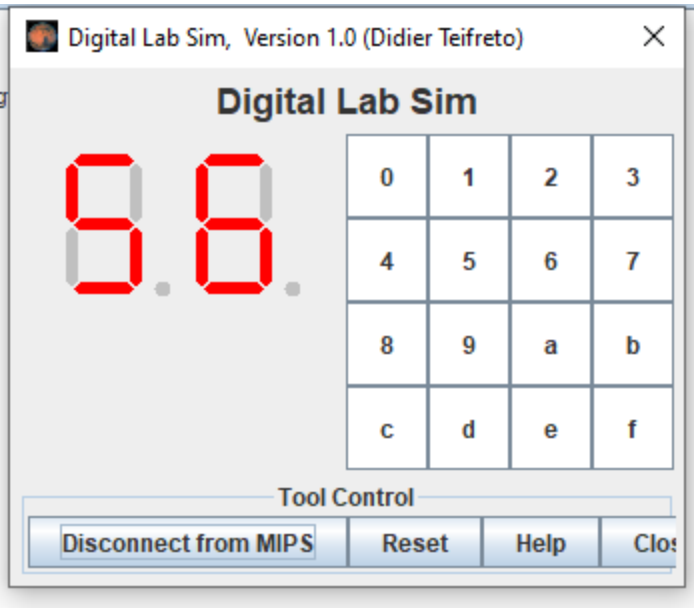

C:\Users\ASUS\OneDrive - Hanoi University of Science and Technology\KTMT\Assignment_Lab\week10\mips1.asm - MARS 4.5
File Edit Run Settings Tools Help
Run speed at max (no interaction)
Edit Execute
mips1.asm
#exercise 1
.eqv SEVENSEG_LEFT 0xFFFF0010
.eqv SEVENSEG_RIGHT 0xFFFF0011
.text
main:
li $a0, 0x66
jal SHOW_7SEG_LEFT
li $a0, 0x7
jal SHOW_7SEG_RIGHT
exit: li $v0, 10
syscall
endmain:
SHOW_7SEG_LEFT: li $t0, SEVENSEG_LEFT
sb $a0, 0($t0)
jr $ra
SHOW_7SEG_RIGHT: li $t0, SEVENSEG_RIGHT
sb $a0, 0($t0)
jr $ra
Line: 8 Column: 14 Show Line Numbers
Mars Messages Run I/O
Clear
Registers Coproc 1 Coproc 0
Name Number Value
$zero 0 0
$at 1 -65536
$v0 10
$v1 0
$a0 7
$a1 0
$a2 0
$a3 0
$t0 -65519
$t1 0
$t2 0
$t3 0
$t4 0
$t5 0
$t6 0
$t7 0
$s0 0
$s1 0
$s2 0
$s3 0
$s4 20 0
$s5 21 0
$s6 22 0
$s7 23 0
$t8 24 0
$t9 25 0
$k0 26 0
$k1 27 0
$gp 28 268468224
$sp 29 2147479548
$fp 30 0
$ra 31 4194320
pc 4194328
hi 0
lo 0
Digital Lab Sim, Version 1.0 (Didier Teifreto)
Digital Lab Sim
8.4.
0 1 2 3
4 5 6 7
8 9 a b
c d e f
Tool Control
Disconnect from MIPS Reset Help
ENG
11:17 AM
12/29/2022

Exercise 2:

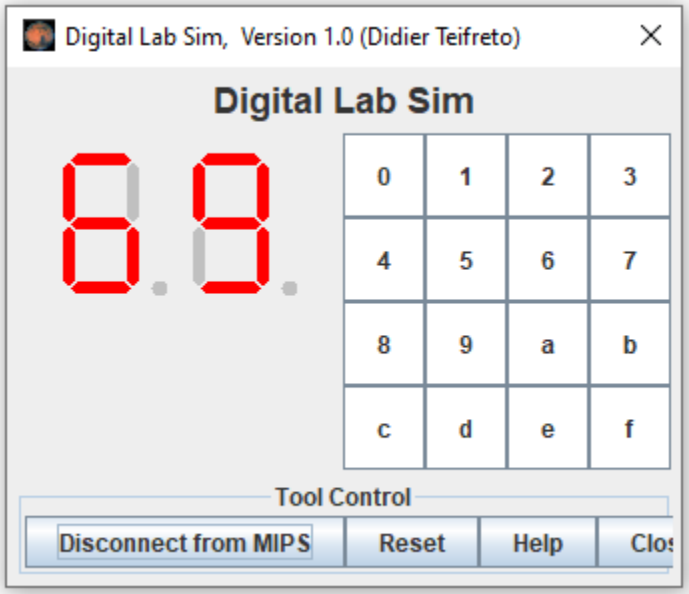
```
.eqv SEVENSEG_LEFT    0xFFFF0010
.eqv SEVENSEG_RIGHT   0xFFFF0011
.data
input: .asciiz "Input N: "
X: .word 0x3f,0x6,0x5b,0x4f,0x66,0x6d,0x7d,0x7,0xff,0x6f
.align 0
res: .space 80
.text
Nhapso:
#Input N
        la      $a0, input #address of input integer
        li      $v0, 4 #system call for string display
        syscall
        li      $v0, 5 #read interger system call
        syscall
        move    $s0, $v0 #store first integer in s0
Chia:
        #lay hang don vi
        li      $t3, 10
        div     $s0,$t3
        mflo    $s0
        mfhi    $t1 #chu so hang don vi
        #lay hang chuc
        div     $s0,$t3
        mfhi    $t2 #chu so hang chuc
```

```
main:
        #lay dia chi mang X
        la      $s1, X

        mul     $t5, $t1, 4
        add     $t0, $s1, $t5
        lw      $a0, 0($t0)
        jal     SHOW_7SEG_LEFT

        mul     $t5, $t2, 4
        add     $t0, $s1, $t5
        lw      $a0, 0($t0)
        jal     SHOW_7SEG_RIGHT
exit:   li      $v0, 10
        syscall
endmain:

SHOW_7SEG_LEFT:    li   $t0,  SEVENSEG_LEFT
                   sb   $a0,  0($t0)
                   jr   $ra

SHOW_7SEG_RIGHT:  li   $t0,  SEVENSEG_RIGHT
                   sb   $a0,  0($t0)
                   jr   $ra
```

```
Input N: 156

-- program is finished running
```




```
Input N: 1869

-- program is finished
```

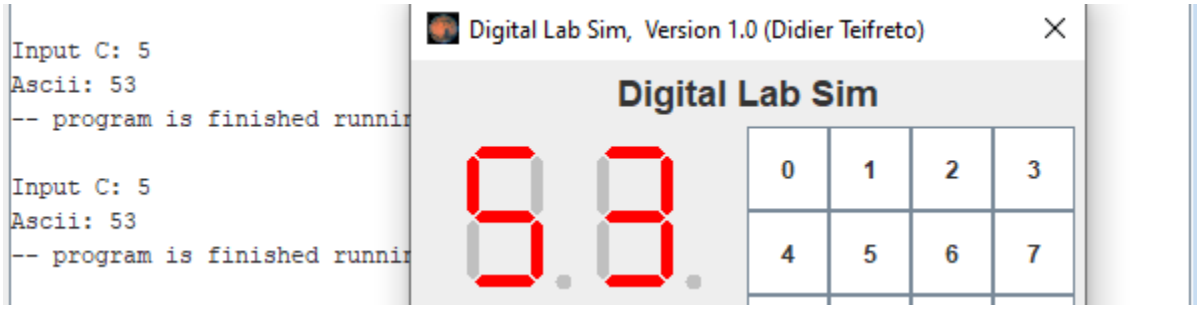


Exercise 3:

```
.eqv SEVENSEG_LEFT    0xFFFF0010
.eqv SEVENSEG_RIGHT   0xFFFF0011
.data
input: .asciiz "Input C: "
print: .asciiz "\nAscii: "
X: .word 0x3f,0x6,0x5b,0x4f,0x66,0x6d,0x7d,0x7,0xff,0x6f
.align 0
res: .space 80
.text
Nhapso:
#Input N
        la      $a0, input #address of input integer
        li      $v0, 4 #system call for string display
        syscall
        li      $v0, 12 #read character system call
        syscall
        move    $a3, $v0
        #chuyen ki tu qua so nguyen
        la      $a0, print #address of input integer
        li      $v0, 4 #system call for string display
        syscall

        li      $v0,1
        move    $a0,$a3
        syscall
        move    $s0, $a0
```

```
Chia:
        #lay hang don vi
        li      $t3, 10
        div     $s0,$t3
        mflo    $s0
        mfhi    $t1 #chu so hang don vi
        #lay hang chuc
        div     $s0,$t3
        mfhi    $t2 #chu so hang chuc

main:
        #lay dia chi mang X
        la      $s1, X

        mul     $t5, $t1, 4
        add     $t0, $s1, $t5
        lw      $a0, 0($t0)
        jal     SHOW_7SEG_LEFT

        mul     $t5, $t2, 4
        add     $t0, $s1, $t5
        lw      $a0, 0($t0)
        jal     SHOW_7SEG_RIGHT
exit:   li      $v0, 10
        syscall
endmain:

SHOW_7SEG_LEFT:     li   $t0,  SEVENSEG_LEFT
                    sb   $a0,  0($t0)
```

```
                jr   $ra


SHOW_7SEG_RIGHT:    li   $t0,  SEVENSEG_RIGHT
                sb   $a0,  0($t0)
                jr   $ra
```



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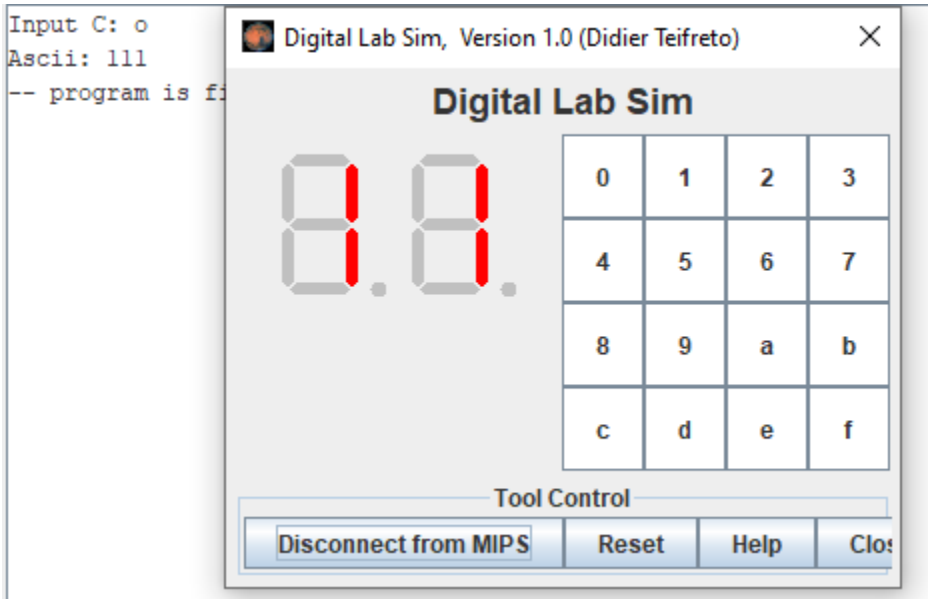

Exercise 4:

```
.eqv MONITOR_SCREEN 0x10010000
.eqv BLUE          0x000000FF
.eqv WHITE         0x00FFFFFF

.text
 li $k0, MONITOR_SCREEN
 add $t4,$k0,0
 li $t0,0
 li $t1,0
 li $s1,8

loop1:
            beq $t0,$s1,exit
            addi $t0,$t0,1
            li $t1,0
            j loop2
loop2:
            beq $t1,$s1,loop1
            add $t2,$t1,$t0
            div $t2,$t2,2
            mfhi $t2
            beq $t2,$zero,blue
            j white
 blue:
            li $t3, BLUE
            sw $t3, 0($t4)
            add $t4,$t4,4
```

```
        addi $t1,$t1,1
        j loop2
white:
        li $t3, WHITE
        sw $t3, 0($t4)
        add $t4,$t4,4
        addi $t1,$t1,1
        j loop2

exit:
```