Bài thực hành week10+11

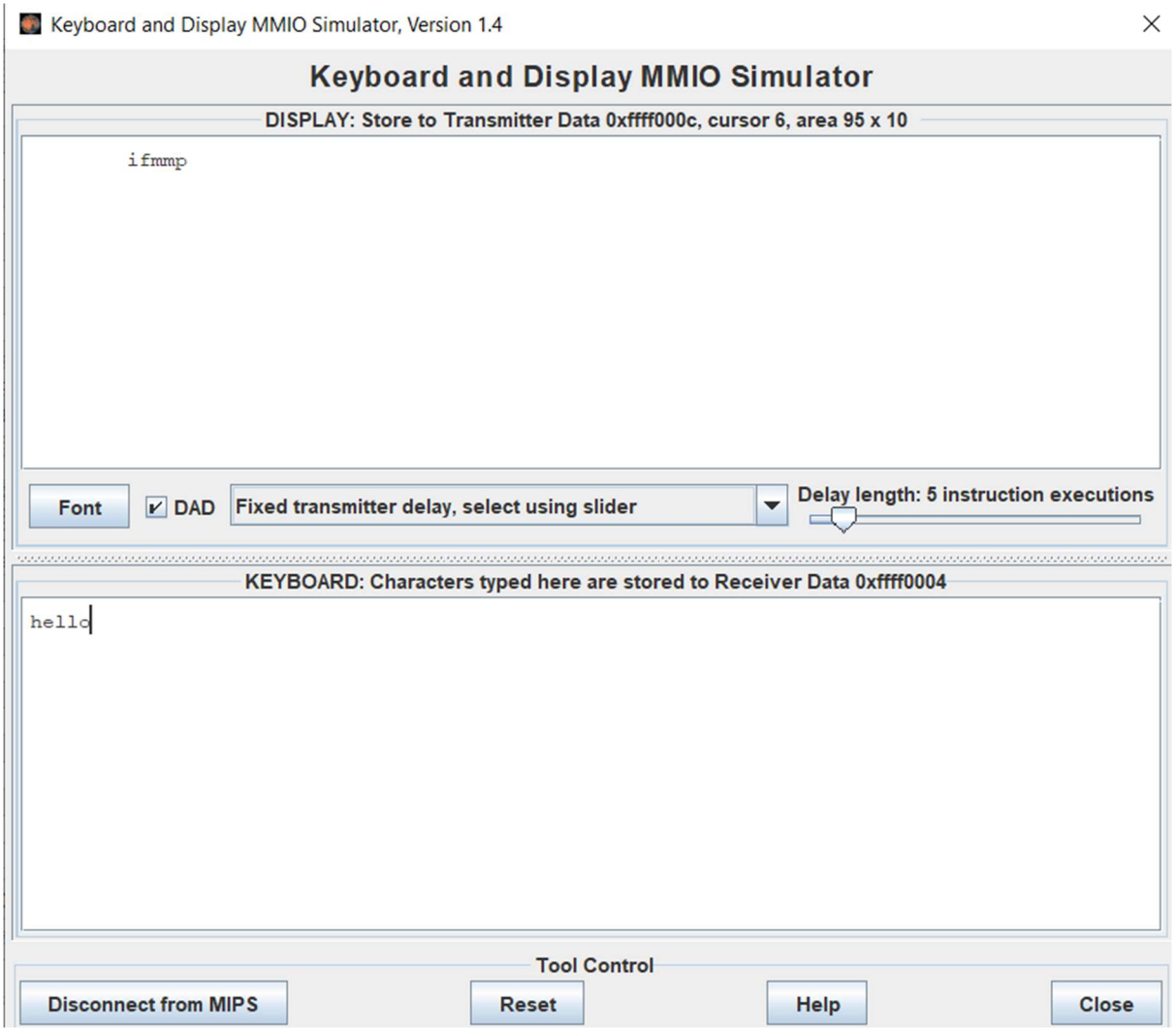
Asignment 4(week10):

Mã nguồn :

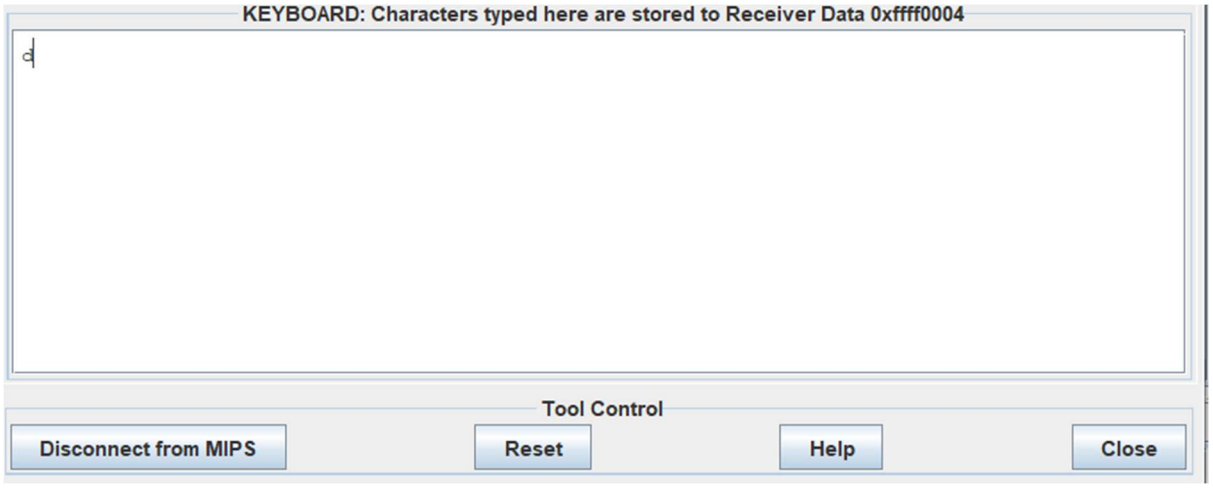
```
.eqv KEY_CODE 0xFFFF0004 # ASCII code from keyboard, 1 byte
.eqv KEY_READY 0xFFFF0000 # =1 if has a new keycode ?
# Auto clear after lw
.eqv DISPLAY_CODE 0xFFFF000C # ASCII code to show, 1 byte
.eqv DISPLAY_READY 0xFFFF0008 # =1 if the display has already to do
# Auto clear after sw
.text
li $k0, KEY_CODE
li $k1, KEY_READY
li $s0, DISPLAY_CODE
li $s1, DISPLAY_READY
loop: nop
WaitForKey: lw $t1, 0($k1) # $t1 = [$k1] = KEY_READY
nop
beq $t1, $zero, WaitForKey # if $t1 == 0 then Polling
nop
#-----------------------------------------------------
ReadKey: lw $t0, 0($k0) # $t0 = [$k0] = KEY_CODE
nop
#-----------------------------------------------------
WaitForDis: lw $t2, 0($s1) # $t2 = [$s1] = DISPLAY_READY
nop
beq $t2, $zero, WaitForDis # if $t2 == 0 then Polling
nop
#-----------------------------------------------------
```

```
Encrypt: addi $t0, $t0, 1 # change input key
        beq $t0, 69, end
        nop
        beq $t0, 101, end
        nop



#-----------------------------------------------
ShowKey: sw $t0, 0($s0) # show key
nop
#-----------------------------------------------
j loop
nop
#-------------------------------------------------------------
end:   li $v0, 10
       syscall
```

Kết quả :



Khi chạy kí tự ‘d’ thì chương trình kết thúc




```
-- program is finished running --
```

Assignment 1(week11):

```
#-----------------------------------------
# col 0x1 col 0x2 col 0x4 col 0x8
#
# row 0x1 0 1 2 3
# 0x11 0x21 0x41 0x81
#
# row 0x2 4 5 6 7
# 0x12 0x22 0x42 0x82
#
# row 0x4 8 9 a b
# 0x14 0x24 0x44 0x84
#
# row 0x8 c d e f
# 0x18 0x28 0x48 0x88
# #-----------------------------------------------------
# command row number of hexadecimal keyboard (bit 0 to 3)
# Eg. assign 0x1, to get key button 0,1,2,3
# assign 0x2, to get key button 4,5,6,7
# NOTE must reassign value for this address before reading,
# eventhough you only want to scan 1 row
.eqv IN_ADRESS_HEXA_KEYBOARD 0xFFFF0012
# receive row and column of the key pressed, 0 if not key pressed
# Eg. equal 0x11, means that key button 0 pressed.
# Eg. equal 0x28, means that key button D pressed.
.eqv OUT_ADRESS_HEXA_KEYBOARD 0xFFFF0014
.text
main:   li $t1, IN_ADRESS_HEXA_KEYBOARD
        li $t2, OUT_ADRESS_HEXA_KEYBOARD

return:
```

```
        li $t3, 0x08 # check row 4 with key C, D,E, F
        sb $t3, 0($t1 ) # must reassign expected row
        lb $a0, 0($t2) # read scan code of key button
        li $v0, 34 # print integer (hexa)
        syscall
        li $a0, 100 # sleep 100ms
        li $v0, 32
        syscall
#---------------------------------------
li $t4, 0x04 # check row 3 with key 8,9,a,b
        sb $t4, 0($t1 ) # must reassign expected row
        lb $a0, 0($t2) # read scan code of key button
        li $v0, 34 # print integer (hexa)
        syscall
        li $a0, 100 # sleep 100ms
        li $v0, 32
        syscall
#---------------------------------------
li $t5, 0x02 # check row 2 with key 4,5,6,7
        sb $t5, 0($t1 ) # must reassign expected row
        lb $a0, 0($t2) # read scan code of key button
        li $v0, 34 # print integer (hexa)
        syscall
        li $a0, 100 # sleep 100ms
        li $v0, 32
        syscall
#---------------------------------------
li $t6, 0x01 # check row 1 with key 0,1,2,3
        sb $t6, 0($t1 ) # must reassign expected row
        lb $a0, 0($t2) # read scan code of key button
        li $v0, 34 # print integer (hexa)
        syscall
```

```
        li $a0, 100 # sleep 100ms
        li $v0, 32
        syscall
#---------------------------------------
j return
```