**­­­­Computer Architecture Lab Report Week 5ư**

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Assignment 1Create a new project to implement the program in Home Assignment 1. Compile  
and upload to simulator. Run and observe the result. Go to data memory section,  
check how test string are stored and packed in memory.

#Laboratory Exercise 5, Assignment 1

.data

message: .asciiz "Cong nghe thong tin Viet Nhat"

.text

li $v0, 4 # $v0 = 4

la $a0, message # Dia chi cua test duoc ghi vao $a0

syscall

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Assignment 2Create a new project to print the sum of two register $s0 and $s1 according to  
this format:  
“The sum of (s0) and (s1) is (result)”

#Laboratory Exercise 5, Assignment 2

.data

str1: .asciiz "The sum of "

str2: .asciiz " and "

str3: .asciiz " is "

.text

li $s0, 6 # number1 = 6

li $s1, 9 # number2 = 9

add $t0, $s0, $s1 # $t0 = Sum of 6 and 9

# Print string "str1"

li $v0, 4

la $a0, str1

syscall

# Print $s0

li $v0, 1

move $a0, $s0

syscall

# Print string "str2"

li $v0, 4

la $a0, str2

syscall

# Print $s1

li $v0, 1

move $a0, $s1

syscall# Print string "str3"

li $v0, 4

la $a0, str3

syscall

# Print $t0

li $v0, 1

move $a0, $t0

syscall

Exit: li $v0, 10

syscall

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Kết quả sau khi chạy đúng như lý thuyết.

Assignment 3Create a new project to implement the program in Home Assignment 2. Add  
more instructions to assign a test string for y variable and implement strcpyfunction. Compile and up

#Laboratory Exercise 5, Assignment 3

.data

x: .space 32 # destination string x, empty

y: .asciiz "Hello world" # source string y

.text

strcpy: add $s0,$zero,$zero # $s0 = i = 0

la $a1, y # Load address of y to $a1

la $a0, x # Load address of x to $a0

L1: add $t1,$s0,$a1 # $t1 = $s0 + $a1 = i + y[0]

# = address of y[i]

lb $t2,0($t1) # $t2 = value at $t1 = y[i]

add $t3,$s0,$a0 # $t3 = $s0 + $a0 = i + x[0]

# = address of x[i]

sb $t2,0($t3) # x[i]= $t2 = y[i]

beq $t2,$zero,end\_of\_strcpy # if y[i] == 0, exit

nop

addi $s0,$s0,1 # $s0 = $s0 + 1 <-> i = i + 1

j L1 # next character

nop

end\_of\_strcpy:

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=> Kết quả cho ra đúng với lý thuyết.

Assignment 4Accomplish the Home Assignment 3 with syscall function to get a string from  
dialog and show the length to message dialog.

#Laboratory Exercise 5, Assignment 4

.data

string: .space 50

Message1: .asciiz "Nhap xau: "

Message2: .asciiz "Do dai xau la: "

.text

main:

get\_string: li $v0, 54 # Get a string from dialog

la $a0, Message1 # Load address of the Message1 to $a0

la $a1, string # Load address of input buffer "string" to $a1

la $a2, 50 # Maximum number of characters to read = 50

syscall

get\_length: la $a0,string # $a0 = address(string[0])

add $t0,$zero,$zero # $t0 = i = 0

check\_char: add $t1,$a0,$t0 # $t1 = $a0 + $t0

# = address(string[i])

lb $t2, 0($t1) # $t2 = string[i]

beq $t2, $zero, end\_of\_str # is null char?

addi $t0, $t0, 1 # $t0 = $t0 + 1 -> i = i + 1

j check\_char

end\_of\_str:

end\_of\_get\_length:

print\_length: addi $t0, $t0, -1

li $v0, 56

la $a0, Message2

move $a1, $t0

syscall

-Chạy chương trình

-Nhập xâu kí tử: xâu là “do dai cua xau la”

-Kết quả cho ra đúng với lý thuyết.

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Assignment 5Write a program that let user input a string by typing individual letters. Input  
process will be terminated when user press Enter or then length of the string  
exceed 20 characters. Print the reverse string.

#Laboratory Exercise 5, Assignment 5

.data

get\_char: .space 20

message1: .asciiz "Nhap ky tu thu "

message2: .asciiz ": "

message3: .asciiz "\n"

message4: .asciiz "Chuoi ky tu vua nhap (Bi dao nguoc thu tu) la: "

.text

li $s0, 20 # N = 20

li $s1, 0 # i = 0

la $s2, get\_char # Load address of get\_char[0]

li $s3, 10 # Char \n in ASCII

read\_char:

beq $s1, $s0, end\_read\_char # i = N branch to exit

# Show message "Nhap ky tu thu i: "

li $v0, 4

la $a0, message1

syscall

addi $t1, $s1, 1

li $v0, 1

move $a0, $t1

syscall

li $v0, 4

la $a0, message2

syscall

li $v0, 12 # Read character

syscall

move $t0, $v0

beq $t0, $s3, end\_read\_char # Press "Enter" branch to exit

li $v0, 4

la $a0, message3

syscall

add $s5, $s2, $s1 #$s5 = Address of get\_char[i] = get\_char[0] + i

sb $t0, 0($s5) #Store character to get\_char[i]

addi $s1, $s1, 1 # i++

j read\_char

end\_read\_char:

li $v0, 4

la $a0, message4

syscall

print\_string:

li $v0, 11

lb $a0, 0($s5)

syscall

beq $s5, $s2, exit

addi $s5, $s5, -1

j print\_string

exit:

li $v0, 10

syscall

- Trường hợp nhập đủ 20 kí tự

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- Trường hợp nhập ít hơn 20 kí tự:

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=> Đúng với lý thuyết.