BÁO CÁO THỰC HÀNH KIẾN TRÚC MÁY TÍNH – TUẦN 5

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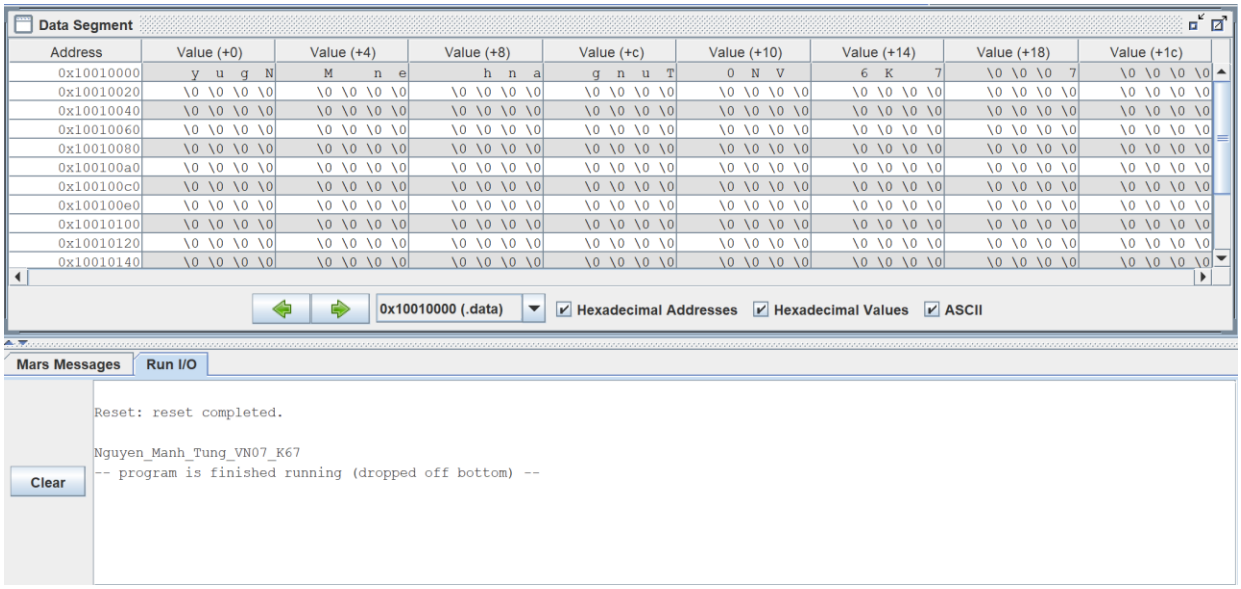
Assignment 1:

- Code:

```
.data
test: .asciiz "Nguyen_Manh_Tung_VN07_K67"
.text
li $v0, 4          # lựa chọn chức năng
la $a0, test       # cập nhật dữ liệu cần in cho $a0
syscall            # in ra màn hình
```

- Kết quả:



+ Dữ liệu được cập nhật theo tựng cụm 32-bit, theo chiều từ phải qua trái.

➔ Kết quả đúng với lí thuyết.

Assignment 2:

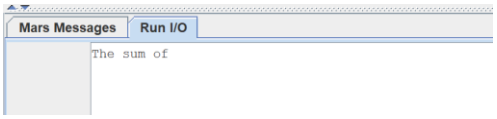
- Code:

```
.data
msg_1: .asciiz "The sum of "
msg_2: .asciiz " and "
msg_3: .asciiz " is "
.text
add $s0, $zero, 28          # $s0=28
add $s1, $zero, 10          # $s1=10
add $t0, $s0, $s1           # $t0=$s0+$s1
# print msg_1
li $v0, 4
la $a0, msg_1
syscall
# print value of $s0
li $v0, 1
move $a0, $s0
syscall
# print msg_2
li $v0, 4
la $a0, msg_2
syscall
# print value of $s1
```

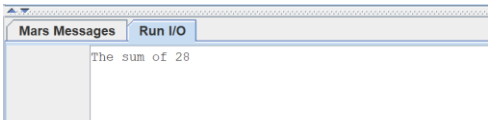
```
li $v0, 1
move $a0, $s1
syscall
# print msg_3
li $v0, 4
la $a0, msg_3
syscall
# print réult
li $v0, 1
move $a0, $t0
syscall
```

- Kết quả:

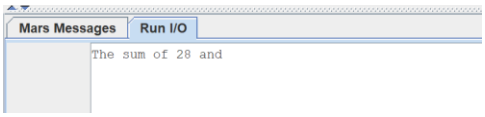
+ msg_1:



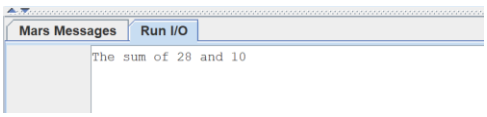
+ value of $s0:



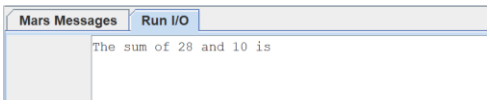
+ msg_2:



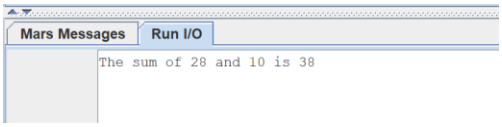
+ value of $s1:



+ msg_3:



+ value:



➔ Kết quả đúng với lí thuyết.

Assignment 3:

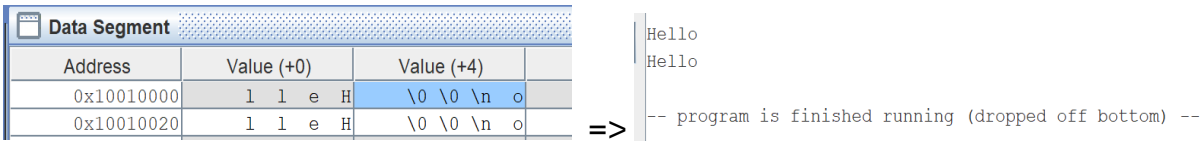
- Code:

```
.data
x: .space 32            # destination string x, empty
y: .asciiz "Hello\n"    # source string y
.text
strcpy:
add $s0,$zero,$zero     # $s0 = i = 0
la $a1, y               # load adress of y to $a1
la $a0, x               # load adress 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:
# print y
li $v0, 4
la $a0, y
syscall
# print x
li $v0, 4
la $a0, x
syscall
```

- Để copy xâu, thực hiện vòng lặp để copy từng kí tự của xâu y qua xâu x theo thứ tự từ trái qua phải. Kết quả được lưu giống như trong Assignment 1.

- Kết quả:



➔ Kết quả đúng với lí thuyết.

Assignment 4:

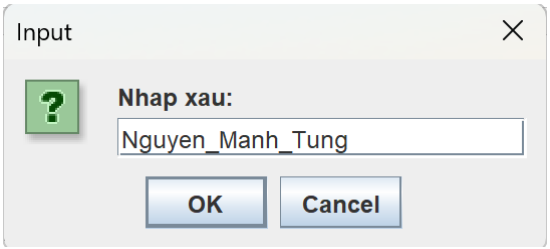
- Code:

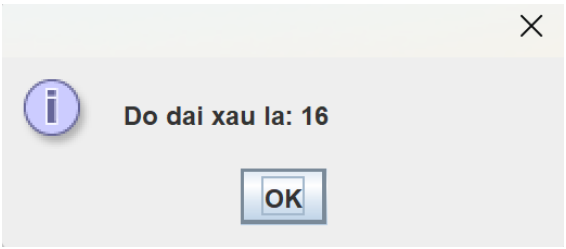
```
.data
string: .space 50
msg_1: .asciiz "Nhap xau: "
msg_2: .asciiz "Do dai xau la: "
.text
main:
get_string:
li $v0, 54                  # get str fr dialog
la $a0, msg_1               # load address msg_1 to $a0
la $a1, string              # load address string to $s1
la $a2, 50                  # max 50 characters
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, msg_2
move $a1, $t0
syscall
```

- Kết quả:

+ Kiểm tra độ dài xâu: “Nguyen_Manh_Tung” (length = 16)





➔ Kết quả đúng với lí thuyết.

Assignment 5:

- Code:

```
.data
get: .space 20
msg_1: .asciiz "Nhap ki tu thu "
msg_2: .asciiz ": "
msg_3: .asciiz "Ket qua la: "
```

```
msg_4: .asciiz "\n"
.text
li $s0, 20          # max 20 characters
li $s1, 0           # i=0
la $s2, get         # load address get to $s2
li $s3, 10
load_char:
beq $s1, $s0, end # i=20, exit
# print msg_1
li $v0, 4
la $a0, msg_1
syscall
# print ki tu thu i
addi $t1, $s1, 1
li $v0, 1
move $a0, $t1
syscall
# print msg_2
li $v0, 4
la $a0, msg_2
syscall
li $v0, 12          # read char
syscall
```

```
move $t0, $v0
beq $t0, $s3, end # $t0="enter" -> exit
li $v0, 4
la $a0, msg_4
syscall
add $s5, $s2, $s1
sb $t0, 0($s5)
addi $s1, $s1, 1    # i=i+1
j load_char
end:
li $v0, 4
la $a0, msg_3
syscall
print:
li $v0, 11
lb $a0, 0($s5)
syscall
beq $s5, $s2, exit
addi $s5, $s5, -1
j print
exit:
li $v0, 10
syscall
```

- Kết quả:

+ TH1: <= 20 kí tự

```
Nhap ky tu thu 1: 1
Nhap ky tu thu 2: 2
Nhap ky tu thu 3: 3
Nhap ky tu thu 4: 4
Nhap ky tu thu 5: 5
Nhap ky tu thu 6:
Chuoi ky tu vua nhap (Bi dao nguoc thu tu) la: 54321
-- program is finished running --
```

+ TH2: >20 kí tự

```
Nhap ki tu thu 11: sh
Nhap ki tu thu 12: dg
Nhap ki tu thu 13: j
Nhap ki tu thu 14: a
Nhap ki tu thu 15: h
Nhap ki tu thu 16: s
Nhap ki tu thu 17: v
Nhap ki tu thu 18: a
Nhap ki tu thu 19: s
Nhap ki tu thu 20: c
Ket qua la: csavshajdsajgdhsadáa
-- program is finished running --
```

=> chỉ cho phép nhập đến 20 kí tự rồi in ra kết quả

➔ Kết quả đúng với lí thuyết.