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# Báo cáo thực hành tuần 5

## Bộ môn THỰC HÀNH KỸ THUẬT MÁY TÍNH

### Bài 1:

-Code:

#Thuc hanh ki thuat may tinh tuan 5 - Bai 1

.data

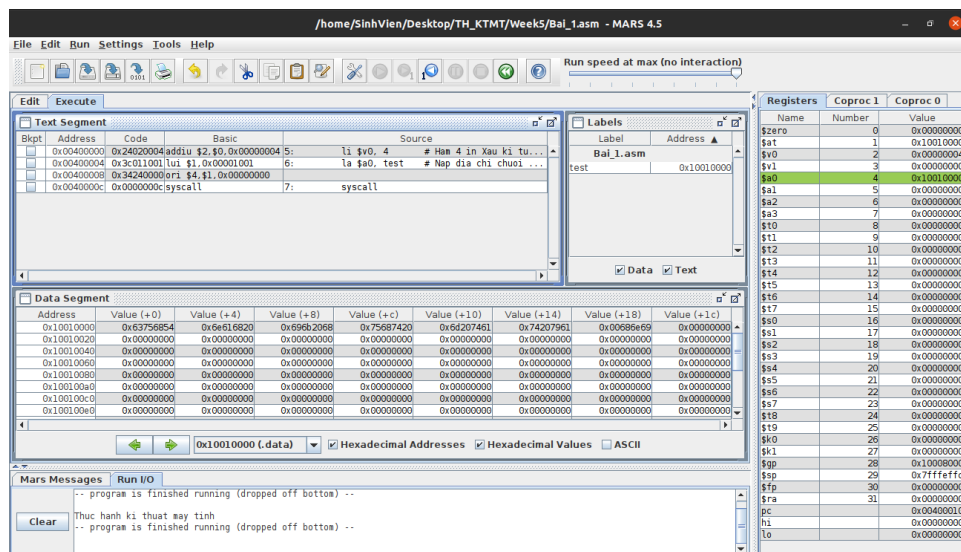
test: .asciiz "Thuc hanh ki thuat may tinh"

.text

li \$v0, 4 # Ham 4 in Xau ki tu trong cua so Run I/O

la \$a0, test # Nap dia chi chuoi vao thanh ghi a0

syscall



## **Bài 2:**

- Code:

.data

str1: .ascii "The sum of "

str2: .ascii " and "

str3: .ascii " is "

.text

li \$s0, 3           # Khoi tao gia tri s0

li \$s1, 4           # Khoi tao gia tri s1

add \$s2, \$s0, \$s1       # s2 = s0 + s1

li \$v0, 4           # V0 lenh in String

la \$a0, str1           # gan chuoi String

syscall

li \$v0, 1           # Lenh in So nguyen

add \$a0, \$zero, \$s0    # Gan a0 = s0

syscall

li \$v0, 4           # V0 lenh in String

la \$a0, str2           # gan chuoi String

syscall

li \$v0, 1           # Lenh in So nguyen

add \$a0, \$zero, \$s1    # Gan a0 = s1

syscall

li \$v0, 4           # V0 lenh in String

la \$a0, str3           # gan chuoi String

syscall

li \$v0, 1           # Lenh in So nguyen

add \$a0, \$zero, \$s2       # Gan a0 = sw

syscall

The screenshot displays the Mars MIPS simulator interface. The main window is divided into several panels:

- Text Segment:** Shows assembly code with addresses, hex codes, and source code. The code includes instructions like `addiu $2, $0, 0x00000001`, `add $a0, $zero, $s1`, `syscall`, `addiu $2, $0, 0x00000004`, `li $v0, 4`, `li $v0, 1`, and `add $a0, $zero, $s2`.
- Data Segment:** Shows memory addresses and their corresponding values in hexadecimal.
- Registers:** A table showing the state of MIPS registers. The `$a0` register contains the value `0x00000004`, and the `$v0` register contains `0x00000001`.
- Mars Messages:** A log window showing the execution status, including the message "program is finished running (dropped off bottom)".

The simulator is running at "Run speed at max (no interaction)".

### **Bài 3:**

- Code:

.data

x: .space 32                      # Khai bao Xau ki tu dich

y: .asciiz "Thuc hanh KTMT"      # Khai bao Xau ki tu nguon

.text

la \$a1, y              # a1 chua dia chi cua CHUOI y

li \$v0, 4

la \$a0, x

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

L1:      add \$t1,\$s0, \$a1            # t1 = s0 + a1 = dia chi y[i]

lb \$t2, 0(\$t1)              # t2 = gia tri tai dia chi t1 = gia tri cua y[i]

add \$t3, \$a0, \$s0            # t3 = dia chi bat dau cua xau dich + index = dia chi cua x[i]

sb \$t2, 0(\$t3)              # Gan gia tri cua y[i] cho o nho co dia chi t3 (x[i])

beq \$t2, \$zero, end\_of\_strcpy    #Neu ki tu vau doc la KI TU KET THUC CHUOI, KET THUC

nop

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

j L1

nop

end\_of\_strcpy:

/home/SinhVien/Desktop/TH\_KTMT/Week5/Bal\_3.asm - MARS 4.5

File Edit Run Settings Tools Help

Run speed at max (no interaction)

**Edit Execute**

**Text Segment**

Bkpt	Address	Code	Basic	Source
	0x00400018	0x02054820	add \$9,\$16,\$5	11: L1: add \$t1,\$s0,\$a1 # t1 = s0 +...
	0x0040001c	0x612a0001	lb \$t2,0(\$t1)	12: lb \$t2, 0(\$t1) # t2 = g1a...
	0x00400020	0x00905820	add \$t3,\$a0,\$s0	13: add \$t3,\$a0,\$s0 # t3 = dia...
	0x00400024	0xa16a0000	sb \$t2,0(\$t3)	14: sb \$t2, 0(\$t3) # Gan gia t...
	0x00400028	0x11400004	beq \$t2,\$zero,end_of_stncpy	15: beq \$t2,\$zero,end_of_stncpy #He...
	0x0040002c	0x00000000	nop	16: nop
	0x00400030	0x22100001	addi \$s0,\$s0,1	17: addi \$s0,\$s0,1 # s0 = s0+1...
	0x00400034	0x06100006	j L1	18: j L1
	0x00400038	0x00000000	nop	19: nop
	0x0040003c	0x0000000c	syscall	20: end_of_stncpy: syscall

**Labels**

Label	Address
Bal_3.asm	
stncpy	0x00400014
L1	0x00400018
end_of_stncpy	0x0040003c
...	0x10010000
...	0x10010020

**Data Segment**

Address	Value (+0)	Value (+4)	Value (+8)	Value (+c)	Value (+10)	Value (+14)	Value (+18)	Value (+1c)
0x10010000	0x63756854	0x6e616820	0x544b2068	0x0000544d	0x00000000	0x00000000	0x00000000	0x00000000
0x10010020	0x63756854	0x6e616820	0x544b2068	0x0000544d	0x00000000	0x00000000	0x00000000	0x00000000
0x10010040	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000
0x10010060	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000
0x10010080	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000
0x100100a0	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000
0x100100c0	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000
0x100100e0	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000

0x10010000 (.data) Hexadecimal Addresses Hexadecimal Values ASCII

**Registers**

Name	Number	Value
\$zero	0	0x00000000
\$at	1	0x10010000
\$v0	2	0x00000004
\$v1	3	0x00000000
\$a0	4	0x10010000
\$a1	5	0x10010020
\$a2	6	0x00000000
\$a3	7	0x00000000
\$t0	8	0x00000000
\$t1	9	0x1001002e
\$t2	10	0x00000000
\$t3	11	0x1001000e
\$t4	12	0x00000000
\$t5	13	0x00000000
\$t6	14	0x00000000
\$t7	15	0x00000000
\$s0	16	0x0000000e
\$s1	17	0x00000000
\$s2	18	0x00000000
\$s3	19	0x00000000
\$s4	20	0x00000000
\$s5	21	0x00000000
\$s6	22	0x00000000
\$s7	23	0x00000000
\$t8	24	0x00000000
\$t9	25	0x00000000
\$k0	26	0x00000000
\$k1	27	0x00000000
\$gp	28	0x10008000
\$fp	29	0x7ffff1ff
\$tp	30	0x00000000
\$ra	31	0x00000000
\$pc		0x00400040
\$hi		0x00000000
\$lo		0x00000000

**Mars Messages**

-- program is finished running (dropped off bottom) --

Thuc hanh KTMT

-- program is finished running (dropped off bottom) --

Clear

#### **Bài 4:**

- Code:

```
.data

string: .space 50      # Khai bao xau ki tu
Message1: .asciiz "Nhau xau: "
Message2: .asciiz "Do dai xau la: "

.text

main:

li $t1, 0

get_string:    li $v0, 54          # Ham 54 nhap va xau ki tu

la $a0, Message1      # Tieu de

la $a1, string        # Khai bao DL nhap vao se duoc luu vao string

la $a2, 50            # Khai bao so ki tu toi da co the nhan

syscall

get_length:     la $a0, string      # a0 chua dia chi cua Xau KI TU string

                add $t0, $zero, $zero    # s0 = i = 0

check_char:     add $t1, $a0, $t0      # t1 = a0+t0, dia chi cua string[i]

lb $t2, 0($t1)

beq $t2, $zero, end_of_str    #neu t2 la NULL

nop

add $t0, $t0, 1          # t0 = t0+1 (dem)

j check_char           # quay lai kiem tra ki tu tiep theo

nop

end_of_str:

end_of_get_length:

printf_length:

li $v0, 56            # Tao ra hop thoai chua string va so nguyen

la $a0, Message2      # Tieu de

add $a1, $zero, $t0    # a1 = t0 do dai xau
```

syscall

Kết quả:

/home/SinhVien/Desktop/TH\_KTMT/Week5/Bai\_4.asm - MARS 4.5

File Edit Run Settings Tools Help

Run speed at max (no interaction)

**Edit Execute**

**Text Segment**

Bkpt	Address	Code	Basic	Source
0x00400000	0x24090000	addiu	\$9,\$0,0x00000000	7: li \$t1, 0
0x00400004	0x24020036	addiu	\$2,\$0,0x00000036	8: get_string: li \$v0, 54
0x00400008	0x3c011001	lui	\$1,0x00001001	9: la \$a0, Message1
0x0040000c	0x34240032	ori	\$4,\$1,0x00000032	10: la \$a1, string
0x00400010	0x3c011001	lui	\$1,0x00001001	11: la \$a2, 50
0x00400014	0x34250000	ori	\$5,\$1,0x00000000	12: syscall
0x00400018	0x24060032	addiu	\$6,\$0,0x00000032	13: get_length: syscall
0x0040001c	0x0000000c	syscall		
0x00400020	0x3c011001	lui	\$1,0x00001001	
0x00400024	0x34240000	ori	\$4,\$1,0x00000000	
0x00400028	0x00000000	addiu	\$2,\$0,0x00000000	

**Data Segment**

Address	Value (+0)	Value (+4)	Value (+8)	Value (+12)
0x10010000	0x00000000	0x00000000	0x00000000	0x00000000
0x10010020	0x00000000	0x00000000	0x00000000	0x00000000
0x10010040	0x20696164	0x20756178	0x203a616c	0x00000000
0x10010060	0x00000000	0x00000000	0x00000000	0x00000000
0x10010080	0x00000000	0x00000000	0x00000000	0x00000000
0x100100a0	0x00000000	0x00000000	0x00000000	0x00000000
0x100100c0	0x00000000	0x00000000	0x00000000	0x00000000
0x100100e0	0x00000000	0x00000000	0x00000000	0x00000000

**Labels**

Label	Address
Bai_4.asm	0x00400000
main	0x00400000
get_string	0x00400004
get_length	0x00400020
check_char	0x0040002c
end_of_str	0x00400048
end_of_get_len...	0x00400048
printf_length	0x00400048
ping	0x10010000

**Registers**

Name	Number	Coproc 1	Coproc 0	Value
\$zero	0			0x00000000
\$at	1			0x00000000
\$v0	2			0x00000000
\$v1	3			0x00000000
\$a0	4			0x00000000
\$a1	5			0x00000000
\$a2	6			0x00000000
\$a3	7			0x00000000
\$t0	8			0x00000000
\$t1	9			0x00000000
\$t2	10			0x00000000
\$t3	11			0x00000000
\$t4	12			0x00000000
\$t5	13			0x00000000
\$t6	14			0x00000000
\$t7	15			0x00000000
\$t8	16			0x00000000
\$t9	17			0x00000000
\$s0	18			0x00000000
\$s1	19			0x00000000
\$s2	20			0x00000000
\$s3	21			0x00000000
\$s4	22			0x00000000
\$s5	23			0x00000000
\$s6	24			0x00000000
\$s7	25			0x00000000
\$s8	26			0x00000000
\$s9	27			0x00000000
\$gp	28			0x10008000
\$sp	29			0x7fffffc0
\$fp	30			0x00000000
\$ra	31			0x00000000
pc				0x00400000
hi				0x00000000
lo				0x00000000

**Mars Messages** Run I/O

-- program is finished running (dropped off bottom) --

Clear

-- program is finished running (dropped off bottom) --

**Input**

Nhau xau:

1234

OK Cancel

/home/SinhVien/Desktop/TH\_KTMT/Week5/Bai\_4.asm - MARS 4.5

File Edit Run Settings Tools Help

Run speed at max (no interaction)

**Edit Execute**

**Text Segment**

Bkpt	Address	Code	Basic	Source
0x00400000	0x24090000	addiu	\$9,\$0,0x00000000	7: li \$t1, 0
0x00400004	0x24020036	addiu	\$2,\$0,0x00000036	8: get_string: li \$v0, 54
0x00400008	0x3c011001	lui	\$1,0x00001001	9: la \$a0, Message1
0x0040000c	0x34240032	ori	\$4,\$1,0x00000032	10: la \$a1, string
0x00400010	0x3c011001	lui	\$1,0x00001001	11: la \$a2, 50
0x00400014	0x34250000	ori	\$5,\$1,0x00000000	12: syscall
0x00400018	0x24060032	addiu	\$6,\$0,0x00000032	13: get_length: syscall
0x0040001c	0x0000000c	syscall		
0x00400020	0x3c011001	lui	\$1,0x00001001	
0x00400024	0x34240000	ori	\$4,\$1,0x00000000	
0x00400028	0x00000000	addiu	\$2,\$0,0x00000000	

**Data Segment**

Address	Value (+0)	Value (+4)	Value (+8)	Value (+12)
0x10010000	0x00000000	0x00000000	0x00000000	0x00000000
0x10010020	0x00000000	0x00000000	0x00000000	0x00000000
0x10010040	0x20696164	0x20756178	0x203a616c	0x00000000
0x10010060	0x00000000	0x00000000	0x00000000	0x00000000
0x10010080	0x00000000	0x00000000	0x00000000	0x00000000
0x100100a0	0x00000000	0x00000000	0x00000000	0x00000000
0x100100c0	0x00000000	0x00000000	0x00000000	0x00000000
0x100100e0	0x00000000	0x00000000	0x00000000	0x00000000

**Labels**

Label	Address
Bai_4.asm	0x00400000
main	0x00400000
get_string	0x00400004
get_length	0x00400020
check_char	0x0040002c
end_of_str	0x00400048
end_of_get_len...	0x00400048
printf_length	0x00400048
ping	0x10010000

**Registers**

Name	Number	Coproc 1	Coproc 0	Value
\$zero	0			0x00000000
\$at	1			0x00000000
\$v0	2			0x00000000
\$v1	3			0x00000000
\$a0	4			0x00000000
\$a1	5			0x00000000
\$a2	6			0x00000000
\$a3	7			0x00000000
\$t0	8			0x00000000
\$t1	9			0x00000000
\$t2	10			0x00000000
\$t3	11			0x00000000
\$t4	12			0x00000000
\$t5	13			0x00000000
\$t6	14			0x00000000
\$t7	15			0x00000000
\$t8	16			0x00000000
\$t9	17			0x00000000
\$s0	18			0x00000000
\$s1	19			0x00000000
\$s2	20			0x00000000
\$s3	21			0x00000000
\$s4	22			0x00000000
\$s5	23			0x00000000
\$s6	24			0x00000000
\$s7	25			0x00000000
\$s8	26			0x00000000
\$s9	27			0x00000000
\$gp	28			0x10008000
\$sp	29			0x7fffffc0
\$fp	30			0x00000000
\$ra	31			0x00000000
pc				0x00400000
hi				0x00000000
lo				0x00000000

**Mars Messages** Run I/O

-- program is finished running (dropped off bottom) --

Clear

-- program is finished running (dropped off bottom) --

**Do dai xau la: 5**

OK

### **Bài 5:**

- Code:

.data

string: .space 21

.text

la \$a0, string      # a0 chua dia chi cua string

li \$s0, -1            # s0 la i

loop:

add \$s0, \$s0, 1    #s0 = s0 + 1

addi \$s3, \$s0, -19      #s3 = s1 -20 = count - 20

beq \$s3, \$zero, endloop#neu so luong qua 20, thoat

nop

li \$v0, 12            #doc vao v0

syscall

add \$s4, \$v0, -10      # Kiem tra v0 co phai Enter?

beq \$s4, \$zero, endloop# Neu co thoat

add \$s1, \$s0, \$a0      #s1 = dia chi cua a[i]

sb \$v0, 0(\$s1)        #Luu vao a[i]

j loop

nop

endloop:

print\_loop:

li \$v0, 11            # Ham 11 in character

la \$a2, string

lb \$a0, 0(\$s1)        # ln s1



syscall

beq \$s1, \$a2, end\_print\_loop # Neu den a[0], thoat

nop

addi \$s1, \$s1, -1 # s1= s1-1

j print\_loop

nop

end\_print\_loop:

