

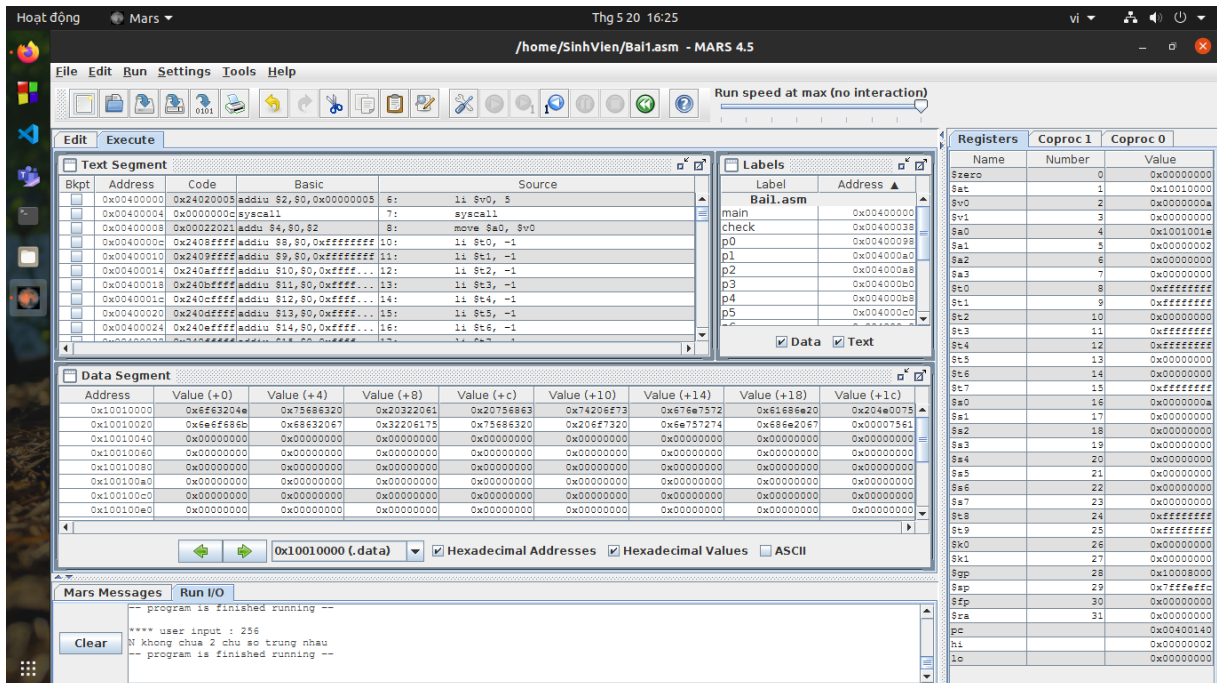
Bài 1: (A3)

1. Ý tưởng

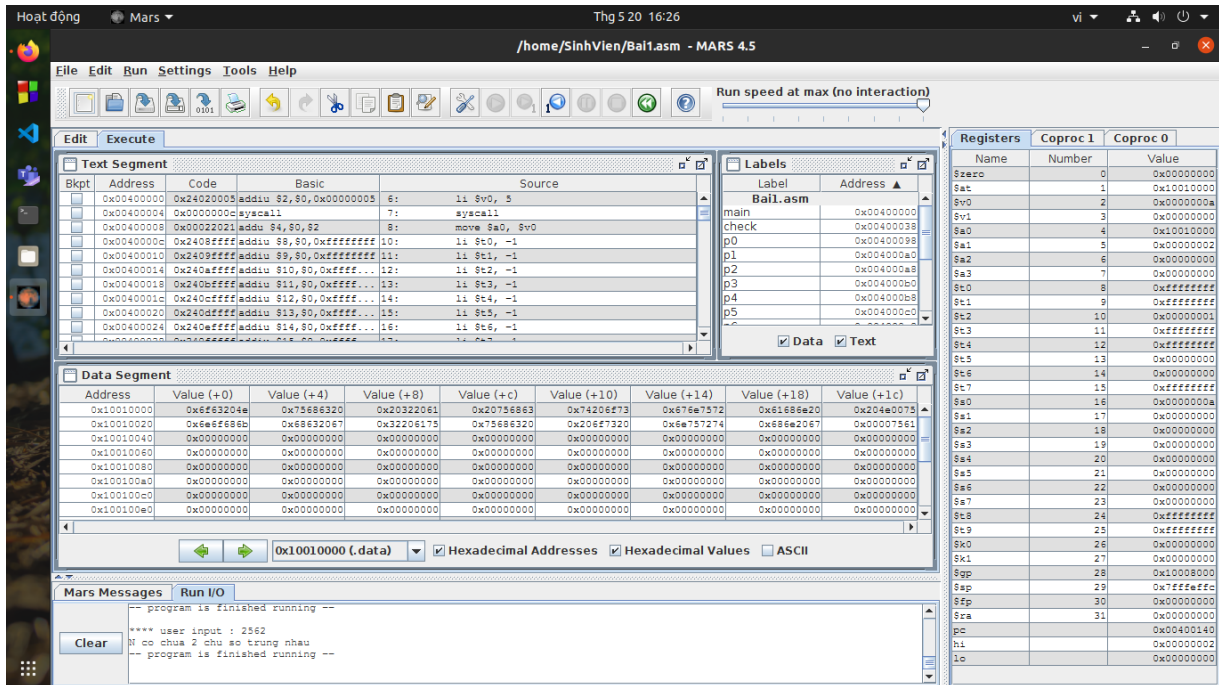
- Đầu tiên, em khởi tạo giá trị các thanh ghi từ \$t0 đến \$t9 là -1.
- Em dùng phép chia có dư cho 10 để lấy lần lượt từng chữ số cuối của số nhập vào. Với mỗi số thì em cộng thêm 1 vào thanh ghi tương ứng (ví dụ 256 chia 10 dư 6, thương là 25 => Em cộng 1 vào \$t6, rồi tiếp tục vòng lặp, lấy 25 chia 10...)
- Từ đó, em lấy được tất cả các chữ số của số nhập vào, và nếu nó có số trùng nhau (ví dụ 2 xuất hiện 3 lần) thì thanh ghi \$t2 = -1+3=2.
- Sau đó, em check xem nếu có 1 thanh ghi > 0 (nghĩa là được cộng 2 lần) thì có chữ số trùng nhau. Không thì không có.

2. Ảnh chụp chạy thử

- Khi nhập số 256 => N không chứa 2 chữ số trùng nhau (đúng)



- Khi nhập 2562 => N có chứa 2 chữ số trùng nhau (đúng)



3. Source code

.data

msg1: .ascii "N co chua 2 chu so trung nhau"

msg2: .ascii "N khong chua 2 chu so trung nhau"

.text

main:

li \$v0, 5

syscall

move \$a0, \$v0

li \$t0, -1

li \$t1, -1

li \$t2, -1

li \$t3, -1

li \$t4, -1

li \$t5, -1

li \$t6, -1

li \$t7, -1

li \$t8, -1

li \$t9, -1

li \$s0, 10

check:

beqz \$a0, complete

div \$a0, \$s0

mfhi \$a1 # remainder

mflo \$a0 # quotient

beq \$a1, 0, p0

beq \$a1, 1, p1

beq \$a1, 2, p2

beq \$a1, 3, p3

beq \$a1, 4, p4

beq \$a1, 5, p5

beq \$a1, 6, p6

beq \$a1, 7, p7

beq \$a1, 8, p8

beq \$a1, 9, p9

p0:

add \$t0, \$t0, 1

j check

p1:

add \$t1, \$t1, 1

j check

p2:

add \$t2, \$t2, 1

j check

p3:

add \$t3, \$t3, 1

j check

p4:

add \$t4, \$t4, 1

j check

p5:

add \$t5, \$t5, 1

j check

p6:

add \$t6, \$t6, 1

j check

p7:

add \$t7, \$t7, 1

j check

p8:

add \$t8, \$t8, 1

j check

p9:

add \$t9, \$t9, 1

j check

complete:

bgtz \$t0, trung

bgtz \$t1, trung

bgtz \$t2, trung

bgtz \$t3, trung

bgtz \$t4, trung

bgtz \$t5, trung

bgtz \$t6, trung

bgtz \$t7, trung

bgtz \$t8, trung

bgtz \$t9, trung

la \$a0, msg2

li \$v0, 4

syscall

b exit

trung:

la \$a0, msg1

li \$v0, 4

syscall

b exit

exit:

li \$v0, 10

Syscall

Bài 2: (B3)

1. Ý tưởng

- Em tạo biến \$s1 để tính tổng cần tìm, và mỗi khi nhập 1 phần tử mới ở mảng, em sẽ kiểm tra điều kiện của nó. Nếu thỏa mãn điều kiện thì sẽ cộng \$s1 với phần tử mới đó, nếu không thì bỏ qua. Tiếp tục chạy vòng lặp đến khi nhập hết số lượng phần tử
- "Điều kiện" ở ý trên là chia 10 dư 5. Để thấy tất cả các số lẻ chia hết cho 5 thì đều chia 10 dư 5 và ngược lại

2. Ảnh chụp chạy thử

- Em nhập 4 số 2, 5, 10, 15 => Trả về 20 (đúng do $5+15=20$)

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Text Segment

Bkpt	Address	Code	Basic	Source
0x00400000	0x4020033	addiu \$2,\$0,0x00000033	9:	li \$v0, 51
0x00400004	0x4020034	lui \$1,0x00000001	10:	la \$a0, msg0
0x00400008	0x4020035	lwi \$t0,0x00000000		
0x0040000c	0x00000000	syscall	11:	syscall
0x00400010	0x0044021	addiu \$8,\$0,\$4	12:	move \$t0, \$a0 # 10 is the length o...
0x00400014	0x4090000	addiu \$9,\$0,0x00000000	13:	li \$t1, 0 # iterator
0x00400018	0x4030000	addiu \$16,\$0,0x00000000	14:	li \$a0, 10 # use 10 to compute
0x0040001c	0x4110000	addiu \$17,\$0,0x00000000	15:	li \$a1, 5
0x00400020	0x0810000	j	16:	j input
0x00400024	0x11002a	exit	17:	bge \$t1, \$t0, exit
0x00400028	0x00000000			
0x0040002c	0x00000000			
0x00400030	0x00000000			
0x00400034	0x00000000			
0x00400038	0x00000000			
0x0040003c	0x00000000			
0x00400040	0x00000000			
0x00400044	0x00000000			
0x00400048	0x00000000			
0x0040004c	0x00000000			
0x00400050	0x00000000			
0x00400054	0x00000000			
0x00400058	0x00000000			
0x0040005c	0x00000000			
0x00400060	0x00000000			
0x00400064	0x00000000			
0x00400068	0x00000000			
0x0040006c	0x00000000			
0x00400070	0x00000000			
0x00400074	0x00000000			
0x00400078	0x00000000			
0x0040007c	0x00000000			
0x00400080	0x00000000			
0x00400084	0x00000000			
0x00400088	0x00000000			
0x0040008c	0x00000000			
0x00400090	0x00000000			
0x00400094	0x00000000			
0x00400098	0x00000000			
0x0040009c	0x00000000			
0x004000a0	0x00000000			
0x004000a4	0x00000000			
0x004000a8	0x00000000			
0x004000ac	0x00000000			
0x004000b0	0x00000000			
0x004000b4	0x00000000			
0x004000b8	0x00000000			
0x004000bc	0x00000000			
0x004000c0	0x00000000			
0x004000c4	0x00000000			
0x004000c8	0x00000000			
0x004000cc	0x00000000			
0x004000d0	0x00000000			
0x004000d4	0x00000000			
0x004000d8	0x00000000			
0x004000dc	0x00000000			
0x004000e0	0x00000000			
0x004000e4	0x00000000			
0x004000e8	0x00000000			
0x004000ec	0x00000000			
0x004000f0	0x00000000			
0x004000f4	0x00000000			
0x004000f8	0x00000000			
0x004000fc	0x00000000			
0x00400100	0x00000000			
0x00400104	0x00000000			
0x00400108	0x00000000			
0x0040010c	0x00000000			
0x00400110	0x00000000			
0x00400114	0x00000000			
0x00400118	0x00000000			
0x0040011c	0x00000000			
0x00400120	0x00000000			
0x00400124	0x00000000			
0x00400128	0x00000000			
0x0040012c	0x00000000			
0x00400130	0x00000000			
0x00400134	0x00000000			
0x00400138	0x00000000			
0x0040013c	0x00000000			
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0x00400144	0x00000000			
0x00400148	0x00000000			
0x0040014c	0x00000000			
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0x00400180	0x00000000			
0x00400184	0x00000000			
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0x0040018c	0x00000000			
0x00400190	0x00000000			
0x00400194	0x00000000			
0x00400198	0x00000000			
0x0040019c	0x00000000			
0x004001a0	0x00000000			
0x004001a4	0x00000000			
0x004001a8	0x00000000			
0x004001ac	0x00000000			
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0x004001b8	0x00000000			
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0x004001cc	0x00000000			
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0x004001d8	0x00000000			
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0x004001e4	0x00000000			
0x004001e8	0x00000000			
0x004001ec	0x00000000			
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0x0040020c	0x00000000			
0x00400210	0x00000000			
0x00400214	0x00000000			
0x00400218	0x00000000			
0x0040021c	0x00000000			
0x00400220	0x00000000			
0x00400224	0x00000000			
0x00400228	0x00000000			
0x0040022c	0x00000000			
0x00400230	0x00000000			
0x00400234	0x00000000			
0x00400238	0x00000000			
0x0040023c	0x00000000			
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0x00400380	0x00000000			
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0x0040038c	0x00000000			
0x00400390	0x00000000			
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0x004003a8	0x00000000			
0x004003ac	0x00000000			
0x004003b0	0x00000000			
0x004003b4	0x00000000			
0x004003b8	0x00000000			
0x004003bc	0x00000000			
0x004003c0	0x00000000			
0x004003c4	0x00000000			
0x004003c8	0x00000000			
0x004003cc	0x00000000			
0x004003d0	0x00000000			
0x004003d4	0x00000000			
0x004003d8	0x00000000			
0x004003dc	0x00000000			
0x004003e0	0x00000000			
0x004003e4	0x00000000			
0x004003e8	0x00000000			
0x004003ec	0x00000000			
0x004003f0	0x00000000			
0x004003f4	0x00000000			
0x004003f8	0x00000000			
0x004003fc	0x00000000			
0x00400400	0x00000000			
0x00400404	0x00000000			
0x00400408	0x00000000			
0x0040040c	0x00000000			
0x00400410	0x00000000			
0x00400414	0x00000000			

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Text Segment

Bkpt	Address	Code	Basic	Source
0x00400024	0x012802a	exit \$1, \$9, \$8	19:	bge \$t1, \$t0, exit
0x00400028	0x012802b	beq \$1, \$0, 0x0000000b		
0x0040002c	0x01280001	addi \$9, \$9, 0x00000001	20:	addi \$t1, \$t1, 1
0x00400030	0x04002033	addiu \$2, \$0, 0x00000033	22:	li \$v0, 51
0x00400034	0x3c011001	lui \$1, 0x00001001	23:	la \$a0, msg
0x00400038	0x34240002	ori \$4, \$1, 0x00000012		
0x0040003c	0x00000000	syscall	24:	syscall
0x00400040	0x0090001a	div \$4, \$16	26:	div \$a0, \$a0
0x00400044	0x00000010	mflr \$10	27:	mflr \$t0
0x00400048	0x00000005	addi \$1, \$0, 0x00000005	28:	bnz \$t0, 0x00000005

Labels

Label	Address
main	0x00400000
input	0x00400024
exit	0x00400038
msg0	0x00010000
msg	0x00010012
list	0x00010024

Registers

Name	Number	Value
\$zero	0	0x00000000
\$at	1	0x00000000
\$v0	2	0x00000033
\$v1	3	0x00000000
\$a0	4	0x0000000a
\$a1	5	0x00000000
\$a2	6	0x00000000
\$a3	7	0x00000000
\$t0	8	0x00000004
\$t1	9	0x00000003
\$t2	10	0x00000000
\$t3	11	0x00000000
\$t4	12	0x00000000
\$t5	13	0x00000000
\$t6	14	0x00000000
\$t7	15	0x00000000
\$a0	16	0x0000000a
\$a1	17	0x00000000
\$a2	18	0x00000000
\$a3	19	0x00000000
\$a4	20	0x00000000
\$a5	21	0x00000000
\$a6	22	0x00000000
\$a7	23	0x00000000
\$t8	24	0x00000000
\$t9	25	0x00000000
\$k0	26	0x00000000
\$k1	27	0x00000000
\$fp	28	0x10008000
\$sp	29	0xfffffff0
\$ra	30	0x00000000
\$pc	31	0x0040000e
\$hi		0x00000000
\$lo		0x00000000

Input

Nhập phân tử:

OK Cancel

Registers

Name	Number	Value
\$zero	0	0x00000000
\$at	1	0x00000000
\$v0	2	0x00000033
\$v1	3	0x00000000
\$a0	4	0x0000000a
\$a1	5	0x00000000
\$a2	6	0x00000000
\$a3	7	0x00000000
\$t0	8	0x00000004
\$t1	9	0x00000003
\$t2	10	0x00000000
\$t3	11	0x00000000
\$t4	12	0x00000000
\$t5	13	0x00000000
\$t6	14	0x00000000
\$t7	15	0x00000000
\$a0	16	0x0000000a
\$a1	17	0x00000000
\$a2	18	0x00000000
\$a3	19	0x00000000
\$a4	20	0x00000000
\$a5	21	0x00000000
\$a6	22	0x00000000
\$a7	23	0x00000000
\$t8	24	0x00000000
\$t9	25	0x00000000
\$k0	26	0x00000000
\$k1	27	0x00000000
\$fp	28	0x10008000
\$sp	29	0xfffffff0
\$ra	30	0x00000000
\$ra	31	0x00000000
\$pc		0x0040000e
\$hi		0x00000000
\$lo		0x00000000

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Text Segment

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0x0040002c	0x01280001	addi \$9, \$9, 0x00000001	20:	addi \$t1, \$t1, 1
0x00400030	0x04002033	addiu \$2, \$0, 0x00000033	22:	li \$v0, 51
0x00400034	0x3c011001	lui \$1, 0x00001001	23:	la \$a0, msg
0x00400038	0x34240002	ori \$4, \$1, 0x00000012		
0x0040003c	0x00000000	syscall	24:	syscall
0x00400040	0x0090001a	div \$4, \$16	26:	div \$a0, \$a0
0x00400044	0x00000010	mflr \$10	27:	mflr \$t0
0x00400048	0x00000005	addi \$1, \$0, 0x00000005	28:	bnz \$t0, 0x00000005

Labels

Label	Address
main	0x00400000
input	0x00400024
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msg0	0x00010000
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list	0x00010024

Registers

Name	Number	Value
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\$at	1	0x00000000
\$v0	2	0x00000033
\$v1	3	0x00000000
\$a0	4	0x0000000a
\$a1	5	0x00000000
\$a2	6	0x00000000
\$a3	7	0x00000000
\$t0	8	0x00000004
\$t1	9	0x00000003
\$t2	10	0x00000000
\$t3	11	0x00000000
\$t4	12	0x00000000
\$t5	13	0x00000000
\$t6	14	0x00000000
\$t7	15	0x00000000
\$a0	16	0x0000000a
\$a1	17	0x00000000
\$a2	18	0x00000000
\$a3	19	0x00000000
\$a4	20	0x00000000
\$a5	21	0x00000000
\$a6	22	0x00000000
\$a7	23	0x00000000
\$t8	24	0x00000000
\$t9	25	0x00000000
\$k0	26	0x00000000
\$k1	27	0x00000000
\$fp	28	0x10008000
\$sp	29	0xfffffff0
\$ra	30	0x00000000
\$ra	31	0x00000000
\$pc		0x0040000e
\$hi		0x00000000
\$lo		0x00000000

Input

Nhập phân tử:

OK Cancel

Registers

Name	Number	Value
\$zero	0	0x00000000
\$at	1	0x00000000
\$v0	2	0x00000033
\$v1	3	0x00000000
\$a0	4	0x0000000a
\$a1	5	0x00000000
\$a2	6	0x00000000
\$a3	7	0x00000000
\$t0	8	0x00000004
\$t1	9	0x00000003
\$t2	10	0x00000000
\$t3	11	0x00000000
\$t4	12	0x00000000
\$t5	13	0x00000000
\$t6	14	0x00000000
\$t7	15	0x00000000
\$a0	16	0x0000000a
\$a1	17	0x00000000
\$a2	18	0x00000000
\$a3	19	0x00000000
\$a4	20	0x00000000
\$a5	21	0x00000000
\$a6	22	0x00000000
\$a7	23	0x00000000
\$t8	24	0x00000000
\$t9	25	0x00000000
\$k0	26	0x00000000
\$k1	27	0x00000000
\$fp	28	0x10008000
\$sp	29	0xfffffff0
\$ra	30	0x00000000
\$ra	31	0x00000000
\$pc		0x0040000e
\$hi		0x00000000
\$lo		0x00000000

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File Edit Run Settings Tools Help

Run speed at max (no interaction)

Text Segment

Bkpt	Address	Code	Basic	Source
0x00400024	0x00000010	mflr \$10	27:	mflr \$t2 # remainder
0x00400028	0x00000005	addi \$1, \$0, 0x00000005	28:	bnz \$t2, \$t10, 0xfffffff0
0x00400034	0x02248820	add \$17, \$17, \$4	29:	add \$a1, \$a1, \$a0
0x00400038	0x00000000	syscall	30:	li \$v0, 1
0x0040003c	0x00000000	syscall	31:	li \$v0, 1
0x00400040	0x00000000	syscall	32:	li \$v0, 1
0x00400044	0x00000000	syscall	33:	li \$v0, 1
0x00400048	0x00000000	syscall	34:	li \$v0, 1
0x0040004c	0x00000000	syscall	35:	li \$v0, 1
0x00400050	0x00000000	syscall	36:	li \$v0, 1
0x00400054	0x00000000	syscall	37:	li \$v0, 1
0x00400058	0x00000000	syscall	38:	li \$v0, 1
0x0040005c	0x00000000	syscall	39:	li \$v0, 1
0x00400060	0x00000000	syscall	40:	li \$v0, 1

Labels

Label	Address
main	0x00400000
input	0x00400024
exit	0x00400038
msg0	0x00010000
msg	0x00010012
list	0x00010024

Registers

Name	Number	Value
\$zero	0	0x00000000
\$at	1	0x00000000
\$v0	2	0x0000000a
\$v1	3	0x00000000
\$a0	4	0x0000000a
\$a1	5	0x00000000
\$a2	6	0x00000000
\$a3	7	0x00000000
\$t0	8	0x00000004
\$t1	9	0x00000003
\$t2	10	0x00000000
\$t3	11	0x00000000
\$t4	12	0x00000000
\$t5	13	0x00000000
\$t6	14	0x00000000
\$t7	15	0x00000000
\$a0	16	0x0000000a
\$a1	17	0x00000014
\$a2	18	0x00000000
\$a3	19	0x00000000
\$a4	20	0x00000000
\$a5	21	0x00000000
\$a6	22	0x00000000
\$a7	23	0x00000000
\$t8	24	0x00000000
\$t9	25	0x00000000
\$k0	26	0x00000000
\$k1	27	0x00000000
\$fp	28	0x10008000
\$sp	29	0xfffffff0
\$ra	30	0x00000000
\$ra	31	0x00000000
\$pc		0x0040000e
\$hi		0x00000000
\$lo		0x00000000

Input

Nhập phân tử:

OK Cancel

Registers

Name	Number	Value
\$zero	0	0x00000000
\$at	1	0x00000000
\$v0	2	0x0000000a
\$v1	3	0x00000000
\$a0	4	0x0000000a
\$a1	5	0x00000000
\$a2	6	0x00000000
\$a3	7	0x00000000
\$t0	8	0x00000004
\$t1	9	0x00000003
\$t2	10	0x00000000
\$t3	11	0x00000000
\$t4	12	0x00000000
\$t5	13	0x00000000
\$t6	14	0x00000000
\$t7	15	0x00000000
\$a0	16	0x0000000a
\$a1	17	0x00000014
\$a2	18	0x00000000
\$a3	19	0x00000000
\$a4	20	0x00000000
\$a5	21	0x00000000
\$a6	22	0x00000000
\$a7	23	0x00000000
\$t8	24	0x00000000
\$t9	25	0x00000000
\$k0	26	0x00000000
\$k1	27	0x00000000
\$fp	28	0x10008000
\$sp	29	0xfffffff0
\$ra	30	0x00000000
\$ra	31	0x00000000
\$pc		0x0040000e
\$hi		0x00000000
\$lo		0x00000000

3. Source code

.data

msg0: .asciiz "Nhap so phan tu: "

msg: .asciiz "Nhap phan tu: "

.align 2

list: .space 100

.text

main:

input len of array

li \$v0, 51

la \$a0, msg0

syscall

move \$t0, \$a0 # t0 is the length of array

li \$t1, 0 # iterator

li \$s0, 10 # use 10 to compute

li \$s1, 0

j input

input:

bge \$t1, \$t0, exit

addi \$t1, \$t1, 1

Nhap phan tu

li \$v0, 51

la \$a0, msg

syscall

div \$a0, \$s0

mfhi \$t2 # remainder

bne \$t2, 5, input # Chia 10 không dư 5 => không thỏa mãn

add \$s1, \$s1, \$a0

j input

exit:

Print the sum

move \$a0, \$s1

li \$v0, 1

syscall

li \$v0, 10

syscall

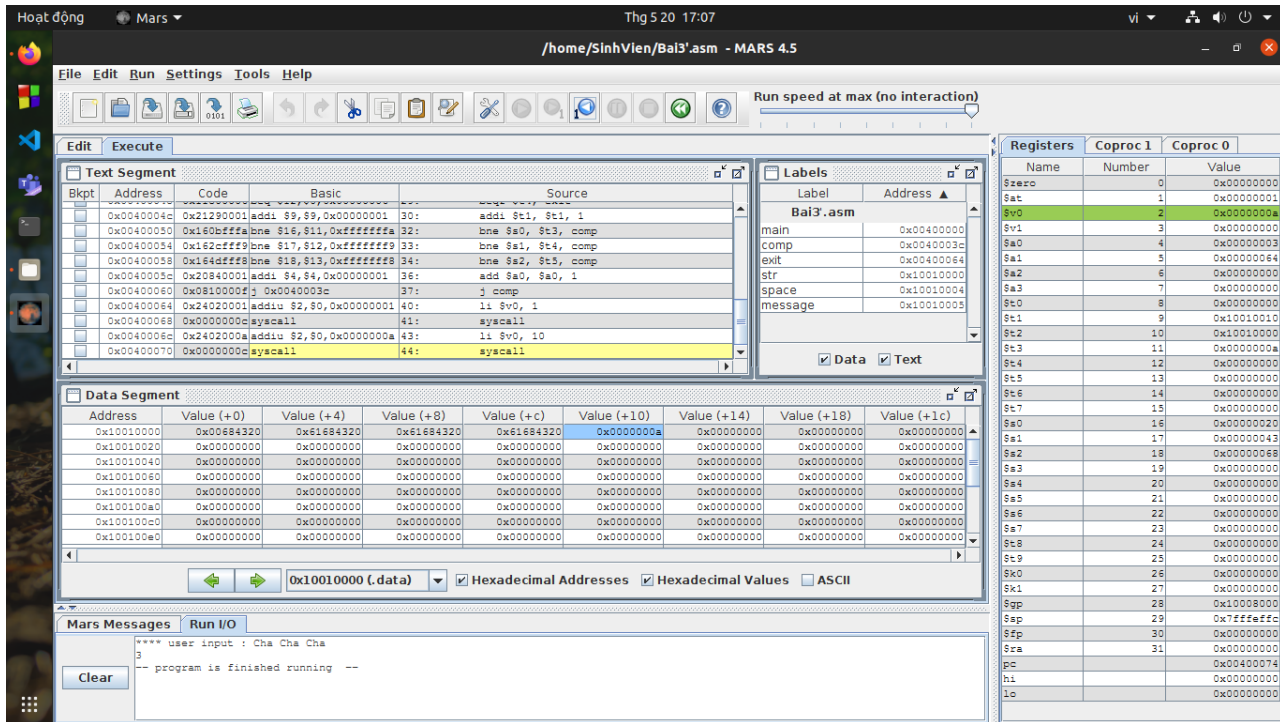
Bài 3: (C6)

1. Ý tưởng:

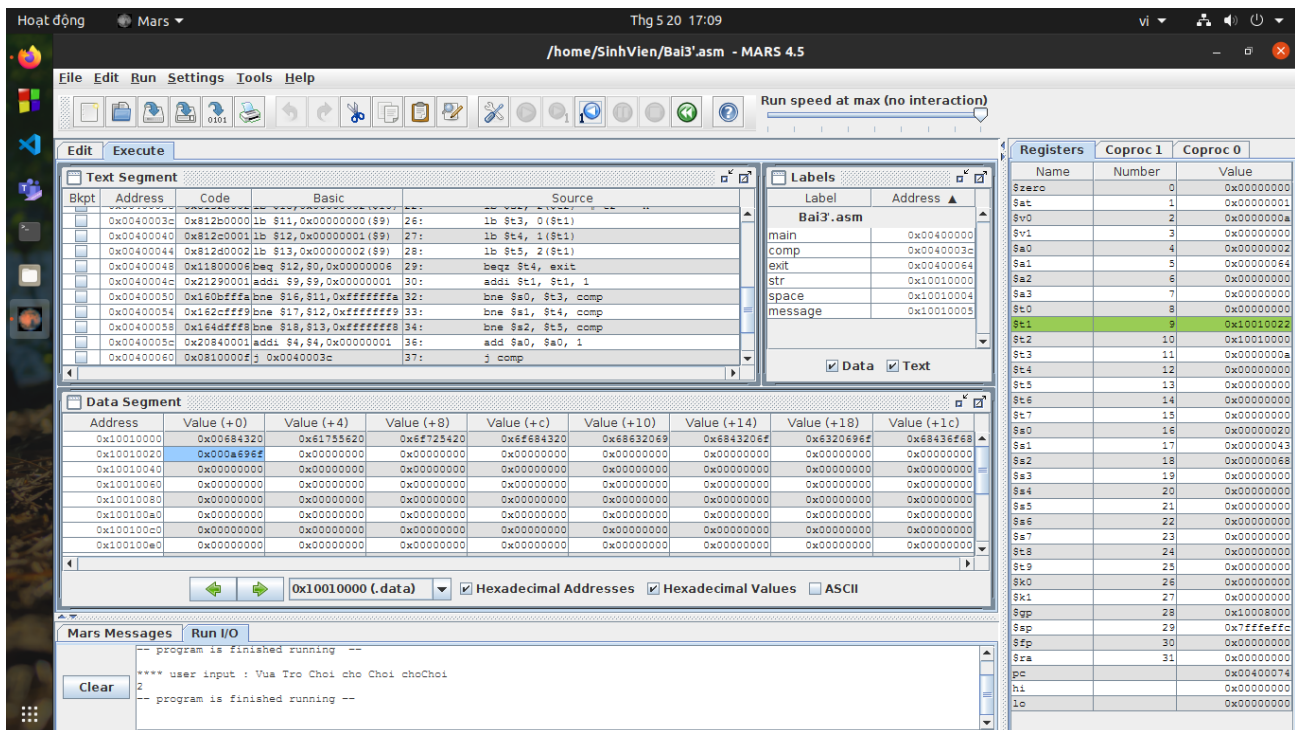
- Do từ bắt đầu bằng "Ch" chứ không phải "Ch" ở giữa 1 từ, em đã quét lần lượt 3 ký tự liên tiếp từ đầu đến cuối của chuỗi ký tự. Nếu 3 ký tự đó giống với "Ch" thì là có thêm 1 từ trong chuỗi bắt đầu bằng "Ch"
- Để so sánh 2 chuỗi có độ dài 3, em so sánh đôi một với nhau, nếu cả 3 ký tự đều giống nhau thì 2 chuỗi 3 ký tự đó giống nhau

2. Ảnh chụp chạy thử

- Em nhập "Cha Cha Cha" => Trả về 3 (đúng)



- Em nhập "Vua Tro Choi cho Choi choChoi" => Trả về 2 (đúng)



.data

str: .asciiz " Ch"

space: .ascii " "

message: .space 100

.text

main:

Read the string S from the user

la \$a0, message

li \$a1, 100

li \$v0, 8

syscall

la \$t1, message

la \$t2, str

subi \$t1, \$t1, 1

li \$a0, 0 # sum

lb \$s0, 0(\$t2) # t0 = " "

lb \$s1, 1(\$t2) # t1 = "C"

lb \$s2, 2(\$t2) # t2 = "h"

comp:

load 3 character of the message continuously

lb \$t3, 0(\$t1)

lb \$t4, 1(\$t1)

lb \$t5, 2(\$t1)

beqz \$t4, exit

addi \$t1, \$t1, 1

bne \$s0, \$t3, comp

bne \$s1, \$t4, comp

bne \$s2, \$t5, comp

add \$a0, \$a0, 1

j comp

exit:

li \$v0, 1

syscall

li \$v0, 10

syscall