

Bài 1:

Các bước làm

Bước 1:

Nhập số nguyên N sau đó kiểm tra điều kiện xem có phải là số có 2 chữ số trở lên chưa

Nếu chưa thỏa mãn yêu cầu nhập lại

```
.data
thongbao1: .ascii "\nNhap so nguyen N: "
thongbao2: .ascii "Ban da nhap sai hay nhap so co nhieu hon 2 chu so tro len hay nhap lai"
thongbao3: .ascii "So nho nhat trong N la: "
.text

        nhapso: #nhap so N
        li $v0,4
        la $a0,thongbao1 # hien ra thong bao nhap so N
        syscall
        li $v0,5 # nhap so N
        syscall
        move $a1,$v0 # gan gia tri vao thanh ghi $a1
        li $a2,10
        check_so: # kiem tra xem so co tu 2 chu so tro len khong
        slt $a3,$a1,$a2 # so sanh N voi 10
        beq $a3,$zero,main # neu N < 10 chay tiep vao thong bao 2, N>=10 nhay den main
        li $v0,4
        la $a0,thongbao2 # in ra thong bao 2
        syscall
        j nhapso # nhap lai so
```

Bước 2:

Tách các chữ số có trong N rồi so sánh phần dư bằng cách chia N/10 rồi giảm N

Tới khi số chia bằng 0 thì dừng lại

```
main:
div $a1,$a2 # chia N/10
mfhi $t4 # Luu so du
lap:
div $a1,$a2 # CHia N/10
mflo $t1 # Luu so chia
mfhi $t3 # luu so du
slt $t5,$t4,$t3 # So sanh cac so trong N (so du) neu t4>t3 cap nhat gia tri moi cho t4
beq $t5,$zero,k # t4< t3 thi chay tiep , t4>= cap nhat gia tri moi
add $a1,$zero,$t1 # cap nhat gia tri a1 bang gia tri so chia Lo
beq $t1,$zero,end_vonglap # bao gio so chia bang 0 thi dung lai
j lap

k: # cap nhat gia tri
add $t4,$zero,$t3 # update gia tri t4
add $a1,$zero,$t1 # cap nhat gia tri a1
beq $t1,$zero,end_vonglap
j lap

end_vonglap:
li $v0,4
la $a0,thongbao3
syscall
li $v0,1
move $a0,$t4
syscall
```

Code

```
mips1.asm 20194592_DươngQuốcKhánh_Giuaky_Bai1.asm 20194592_DươngQuốcKhánh_Giuaky_Bai2.asm 20194592_DươngQuốcKhánh_Giuaky_Bai3.asm
1 .data
2 thongbao1: .asciiz "\nNhap so nguyen N: "
3 thongbao2: .asciiz "Ban da nhap sai hay nhap so co nhieu hon 2 chu so tro len hay nhap lai"
4 thongbao3: .asciiz "So nho nhat trong N la: "
5 .text
6
7     nhapso: #nhap so N
8     li $v0,4
9     la $a0,thongbao1 # hien ra thong bao nhap so N
10    syscall
11    li $v0,5 # nhap so N
12    syscall
13    move $a1,$v0 # gan gia tri vao thanh ghi $a1
14    li $a2,10
15    check_so: # kiem tra xem so co tu 2 chu so tro len khong
16    slt $a3,$a1,$a2 # so sanh N voi 10
17    beq $a3,$zero,main # neu N < 10 chay tiep vao thong bao 2, N>=10 nhay den main
18    li $v0,4
19    la $a0,thongbao2 # in ra thong bao 2
20    syscall
21    j nhapso # nhap lai so
22
23
24    main:
25    div $a1,$a2 # chia N/10
26    mfhi $t4 # Luu so du
27    lap:
28    div $a1,$a2 # CHia N/10
29    mflo $t1 # Luu so chia
30    mfhi $t3 # luu so du
31    slt $t5,$t4,$t3 # So sanh cac so trong N (so du) neu t4>t3 cap nhat gia tri moi cho t4
32    beq $t5,$zero,k # t4< t3 thi chay tiep , t4>= cap nhat gia tri moi
33    add $a1,$zero,$t1 # cap nhat gia tri a1 bang gia tri so chia Lo
34    beq $t1,$zero,end_vonglap # bao gio so chia bang 0 thi dung lai
35    j lap
36
37    k: # cap nhat gia tri
38    add $t4,$zero,$t3 # update gia tri t4
39    add $a1,$zero,$t1 # cap nhat gia tri a1
40    beq $t1,$zero,end_vonglap
41    j lap
42
43    end_vonglap:
44    li $v0,4
45    la $a0,thongbao3
46    syscall
47    li $v0,1
48    move $a0,$t4
49    syscall
50    li $v0,10
51    syscall
52
53
```

Bảng Text Segment

Execute

Text Segment

Bkpt	Address	Code	Basic	Source
	4194304	0x24020004	addiu \$2,\$0,4	li \$v0,4
	4194308	0x3c011001	lui \$1,4097	la \$a0,thongbao1 # hien ra thong bao nhap so N
	4194312	0x34240000	ori \$4,\$1,0	
	4194316	0x0000000c	syscall	syscall
	4194320	0x24020005	addiu \$2,\$0,5	li \$v0,5 # nhap so N
	4194324	0x0000000c	syscall	syscall
	4194328	0x00022821	addiu \$5,\$0,52	move \$a1,\$v0 # gan gia tri vao thanh ghi \$a1
	4194332	0x2406000a	addiu \$6,\$0,10	li \$a2,10
	4194336	0x0a6382a1	alt \$7,\$a1,\$a2	# so sanh N voi 10
	4194340	0x10e00005	beq \$7,\$0,5	beq \$a3,\$zero,main # neu N < 10 chay tiep vao thong bao 2, N=10 nhay den main
	4194344	0x24020004	addiu \$2,\$0,4	li \$v0,4
	4194348	0x3c011001	lui \$1,4097	la \$a0,thongbao2 # in ra thong bao 2
	4194352	0x34240000	ori \$4,\$1,0	
	4194356	0x0000000c	syscall	syscall
	4194360	0x08100000	j \$194304	j nhapso # nhap lai so
	4194364	0x00a6001a	div \$5,\$a2	# chia N/10
	4194368	0x00006010	mflr \$12	# luu so du
	4194372	0x00a6001a	div \$5,\$a2	# chia N/10
	4194376	0x00004812	mflr \$5	# luu so chia
	4194380	0x00005810	mflr \$11	# luu so du
	4194384	0x018b682a	alt \$13,\$12,\$11	alt \$t5,\$t4,\$t3 # so sanh cac so trong N (so du) neu t4>t3 cap nhap gia tri moi cho t4
	4194388	0x11a00003	beq \$t5,\$zero,k	# t4< t3 thi chay tiep . t4=> cap nhap gia tri moi
	4194392	0x00000000	add \$a1,\$zero,\$t1	# cap nhap gia tri ai bang gia tri so chia lo
	4194396	0x12000005	beq \$t1,\$zero	# cap nhap gia tri ai bang gia tri so chia lo
	4194400	0x00000011	j \$194372	j lap
	4194404	0x000b6020	add \$12,\$0,\$11	add \$t4,\$zero,\$t3 # update gia tri t4
	4194408	0x00092820	add \$5,\$0,\$9	add \$a1,\$zero,\$t1 # cap nhap gia tri ai
	4194412	0x11200001	beq \$5,\$0,1	beq \$t1,\$zero,end vonglap
	4194416	0x08100011	j \$194372	j lap

Mars MessagesRun I/O

Nhap so nguyen N: 1

Ban da nhap sai hay nhap so co nhieu hon 2 chu so tro len hay nhap lai

Nhap so nguyen N: 15

So nho nhat trong N la: 1

-- program is finished running --

Clear

Registers

Coproc 1

Coproc 0

Name	Number	Value
\$zero	0	0
\$at	1	268500992
\$v0	2	10
\$v1	3	0
\$a0	4	268500992
\$a1	5	100
\$a2	6	0
\$a3	7	0
\$t0	8	0
\$t1	9	0
\$t2	10	0
\$t3	11	1
\$t4	12	1
\$t5	13	0
\$t6	14	0
\$t7	15	0
\$a0	16	0
\$a1	17	0
\$a2	18	0
\$a3	19	0
\$a4	20	0
\$a5	21	0
\$a6	22	0
\$a7	23	0
\$t8	24	0
\$t9	25	0
\$k0	26	0
\$k1	27	0
\$gp	28	268468224
\$fp	29	2147479540
\$f0	30	0
\$f2	31	0
pc		4194456
hi		1
lo		0

Kết quả của chương trình

Mars MessagesRun I/O

Nhap so nguyen N: 1

Ban da nhap sai hay nhap so co nhieu hon 2 chu so tro len hay nhap lai

Nhap so nguyen N: 15

So nho nhat trong N la: 1

-- program is finished running --

Clear

Bài 3:

Execute

Text Segment

Bkpt	Address	Code	Basic	Source
	4194304	0x24020008	addiu \$2,\$0,8	li \$v0,8
	4194308	0x3c011001	lui \$1,4097	la \$a0,inputString
	4194312	0x34240000	ori \$4,\$1,0	
	4194316	0x240500e4	addiu \$5,\$0,100	li \$a1,100
	4194320	0x0000000c	syscall	syscall
	4194324	0x24020004	addiu \$2,\$0,4	li \$v0,4
	4194328	0x24080000	addiu \$8,\$0,0	li \$t0,0
	4194332	0x3c011001	lui \$1,4097	lb \$t1,inputString(\$t0)
	4194336	0x00280821	addu \$1,\$1,\$8	
	4194340	0x00290000	lb \$9,0(\$1)	
	4194344	0x20010000	addi \$1,\$0,0	beq \$t1,0,exit
	4194348	0x12900112	beq \$1,\$9,10	

Mars MessagesRun I/O

khanh

KHANH*

-- program is finished running --

Clear

khanh

KHANH*

-- program is finished running --

Labels

Label	Address
20194592_DuongQuocKh...	4194332
loop	4194372
tolowercase	4194400
exit	4194424
inputString	268500992

Data Segment

Address	Value (+0)	Value (+4)	Value (+8)	Value (+12)	Value (+16)	Value (+20)	Value (+24)	Value (+28)
268500992	1312901195	2768968	0	0	0	0	0	0
268501024	0	0	0	0	0	0	0	0
268501056	0	0	0	0	0	0	0	0
268501088	0	0	0	0	0	0	0	0
268501120	0	0	0	0	0	0	0	0
268501152	0	0	0	0	0	0	0	0
268501184	0	0	0	0	0	0	0	0
268501216	0	0	0	0	0	0	0	0
268501248	0	0	0	0	0	0	0	0
268501280	0	0	0	0	0	0	0	0

Registers

Coproc 1

Coproc 0

Name	Number	Value
\$zero	0	0
\$at	1	268500992
\$v0	2	10
\$v1	3	0
\$a0	4	268500992
\$a1	5	100
\$a2	6	0
\$a3	7	0
\$t0	8	0
\$t1	9	0
\$t2	10	0
\$t3	11	0
\$t4	12	0
\$t5	13	0
\$t6	14	0
\$t7	15	0
\$a0	16	0
\$a1	17	0
\$a2	18	0
\$a3	19	0
\$a4	20	0
\$a5	21	0
\$a6	22	0
\$a7	23	0
\$t8	24	0
\$t9	25	0
\$k0	26	0
\$k1	27	0
\$gp	28	268468224
\$fp	29	2147479540
\$f0	30	0
\$f2	31	0
pc		4194448
hi		0
lo		0

Bảng Text Segment

Code

mips1.asm	20194592_DươngQuốcKhánh_Giucky_Bai1.asm	20194592_DươngQuốcKhánh_Giucky_Bai2.asm*
1	.data	
2	inputString: .space 100 # 100 byte chưa chuỗi kí tự cần	
3	.text	
4	li \$v0, 8	
5	la \$a0, inputString	
6	li \$a1, 100	
7	syscall	
8		
9	li \$v0, 4	
10	li \$t0, 0	
11	loop:	
12	lb \$t1, inputString(\$t0)	
13	beq \$t1, 0, exit	
14	bgt \$t1, 'a', toupcase	
15	blt \$t1, 'z', tolowcase	
16		
17	toupcase:	
18	sub \$t1, \$t1, 32	
19	sb \$t1, inputString(\$t0)	
20	addi \$t0, \$t0, 1	
21	j loop	
22	tolowcase:	
23	add \$t1, \$t1, 32	
24	sb \$t1, inputString(\$t0)	
25	addi \$t0, \$t0, 1	
26	j loop	
27	exit:	
28	li \$v0, 4	
29	la \$a0, inputString	
30	syscall	
31		
32	li \$v0, 10 # exit	
33	syscall	