BÁO CÁO THỰC HÀNH TUẦN 3

Load/Store, Jump & Branch instructions

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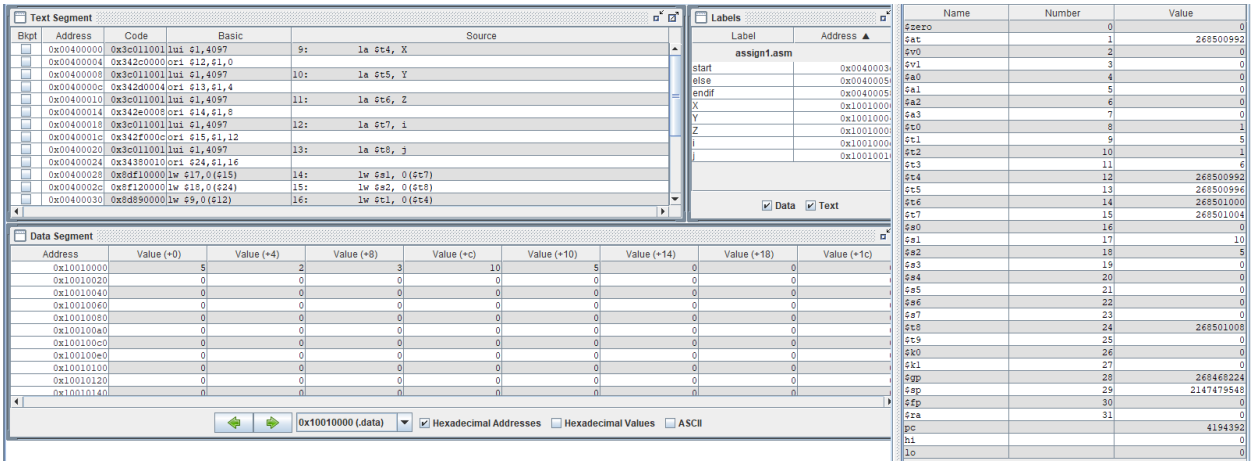
Bài 1.

- Mã nguồn

```
#Assignment 1
.data
        X: .word 5
        Y: .word 2
        Z: .word 3
        i: .word 10
        j: .word 5
.text
        la $t4, X
        la $t5, Y
        la $t6, Z
        la $t7, i
        la $t8, j
        lw $s1, 0($t7)
        lw $s2, 0($t8)
        lw $t1, 0($t4)
        lw $t2, 0($t5)
        lw $t3, 0($t6)

start:
        slt $t0, $s2, $s1       #s2<s1 -> t0=1
        bne $t0, $zero, else    #ktra gtri t0
        addi $t1, $t1, 1
        addi $t3, $zero, 1
        j endif                 #skip "else" part
else:
        addi $t2, $t2, -1
        add $t3, $t3, $t3
endif:
```

- Kết quả



Text Segment

Bkpt	Address	Code	Basic	Source
	0x00400000	0x3c011001	lui $1,4097	9: la $t4, X
	0x00400004	0x342c0000	ori $12,$1,0	
	0x00400008	0x3c011001	lui $1,4097	10: la $t5, Y
	0x0040000c	0x342d0004	ori $13,$1,4	
	0x00400010	0x3c011001	lui $1,4097	11: la $t6, Z
	0x00400014	0x342e0008	ori $14,$1,8	
	0x00400018	0x3c011001	lui $1,4097	12: la $t7, i
	0x0040001c	0x342f000c	ori $15,$1,12	
	0x00400020	0x3c011001	lui $1,4097	13: la $t8, j
	0x00400024	0x34390010	ori $24,$1,16	
	0x00400028	0x8def0000	lw $17,0($15)	14: lw $s1, 0($t7)
	0x0040002c	0x8f120000	lw $18,0($24)	15: lw $s2, 0($t8)
	0x00400030	0x8d890000	lw $9,0($12)	16: lw $t1, 0($t4)

Labels

Label	Address
assign1.asm	
start	0x00400034
else	0x00400058
endif	0x00400058
X	0x10010000
Y	0x10010004
Z	0x10010008
i	0x1001000c
j	0x10010010

Data Text

Data Segment

Address	Value (+0)	Value (+4)	Value (+8)	Value (+c)	Value (+10)	Value (+14)	Value (+18)	Value (+1c)
0x10010000	5	2	3	10	5	0	0	
0x10010020	0	0	0	0	0	0	0	
0x10010040	0	0	0	0	0	0	0	
0x10010060	0	0	0	0	0	0	0	
0x10010080	0	0	0	0	0	0	0	
0x100100a0	0	0	0	0	0	0	0	
0x100100c0	0	0	0	0	0	0	0	
0x100100e0	0	0	0	0	0	0	0	
0x10010100	0	0	0	0	0	0	0	
0x10010120	0	0	0	0	0	0	0	
0x10010140	0	0	0	0	0	0	0	

0x10010000 (.data) Hexadecimal Addresses Hexadecimal Values ASCII

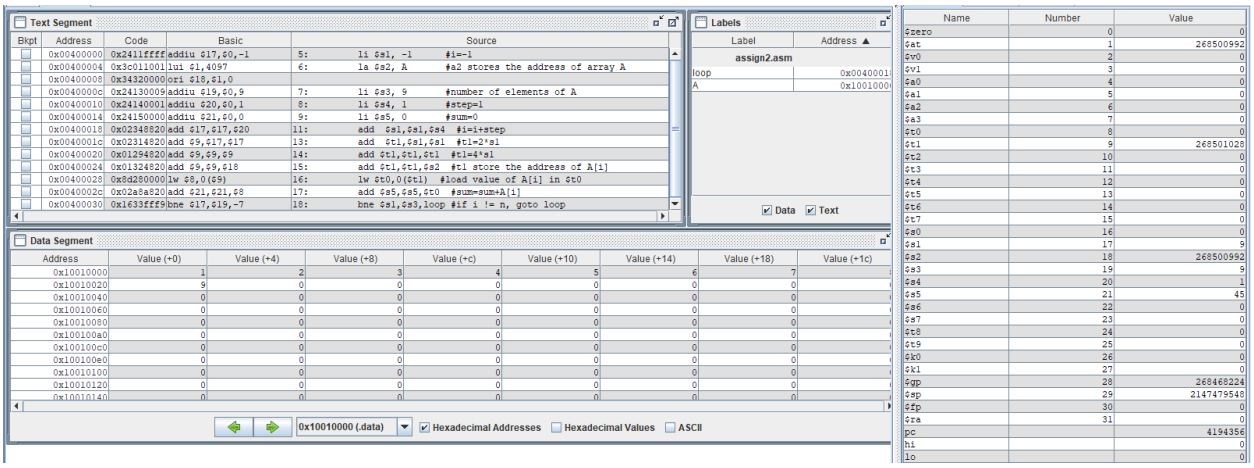
Name	Number	Value
$zero	0	0
$at	1	268500992
$v0	2	0
$v1	3	0
$a0	4	0
$a1	5	0
$a2	6	0
$a3	7	0
$t0	8	1
$t1	9	5
$t2	10	1
$t3	11	6
$t4	12	268500992
$t5	13	268500996
$t6	14	268501000
$t7	15	268501004
$s0	16	0
$s1	17	10
$s2	18	5
$s3	19	0
$s4	20	0
$s5	21	0
$s6	22	0
$s7	23	0
$t8	24	268501008
$t9	25	0
$k0	26	0
$k1	27	0
$gp	28	268468224
$sp	29	2147479548
$fp	30	0
$ra	31	0
pc		4194392
hi		0
lo		0

Bài 2.

- Mã nguồn

```
#Assignment 2
.data
        A: .word 1, 2, 3, 4, 5, 6, 7, 8, 9
.text
        li $s1, -1      #i=-1
        la $s2, A       #a2 stores the address of array A
        li $s3, 9       #number of elements of A
        li $s4, 1       #step=1
        li $s5, 0       #sum=0
loop:
        add  $s1,$s1,$s4  #i=i+step
        #sll $t1, $s1, 2
        add  $t1,$s1,$s1  #t1=2*s1
        add $t1,$t1,$t1  #t1=4*s1
        add $t1,$t1,$s2  #t1 store the address of A[i]
        lw $t0,0($t1)  #load value of A[i] in $t0
        add $s5,$s5,$t0  #sum=sum+A[i]
        bne $s1,$s3,loop #if i != n, goto loop
```

- Kết quả



Text Segment

Bkpt	Address	Code	Basic	Source
	0x00400000	0x2411ffff	addiu $17,$0,-1	5: li $s1, -1 #i=-1
	0x00400004	0x3c011001	lui $1,4097	6: la $s2, A #a2 stores the address of array A
	0x00400008	0x34320000	ori $18,$1,0	
	0x0040000c	0x24130009	addiu $19,$0,9	7: li $s3, 9 #number of elements of A
	0x00400010	0x24140001	addiu $20,$0,1	8: li $s4, 1 #step=1
	0x00400014	0x24150000	addiu $21,$0,0	9: li $s5, 0 #sum=0
	0x00400018	0x02348820	add $17,$17,$20	11: add $s1,$s1,$s4 #i=i+step
	0x0040001c	0x02314820	add $9,$17,$17	13: add $t1,$s1,$s1 #t1=2*s1
	0x00400020	0x01294820	add $9,$9,$9	14: add $t1,$t1,$t1 #t1=4*s1
	0x00400024	0x01324820	add $9,$9,$18	15: add $t1,$t1,$s2 #t1 store the address of A[i]
	0x00400028	0x8d280000	lw $8,0($9)	16: lw $t0,0($t1) #load value of A[i] in $t0
	0x0040002c	0x02a8a820	add $21,$21,$8	17: add $s5,$s5,$t0 #sum=sum+A[i]
	0x00400030	0x1633fff9	bne $17,$19,-7	18: bne $s1,$s3,loop #if i != n, goto loop

Labels

Label	Address
assign2.asm	
loop	0x00400014
A	0x10010000

Data Text

Data Segment

Address	Value (+0)	Value (+4)	Value (+8)	Value (+c)	Value (+10)	Value (+14)	Value (+18)	Value (+1c)
0x10010000	1	2	3	4	5	6	7	
0x10010020	9	0	0	0	0	0	0	
0x10010040	0	0	0	0	0	0	0	
0x10010060	0	0	0	0	0	0	0	
0x10010080	0	0	0	0	0	0	0	
0x100100a0	0	0	0	0	0	0	0	
0x100100c0	0	0	0	0	0	0	0	
0x100100e0	0	0	0	0	0	0	0	
0x10010100	0	0	0	0	0	0	0	
0x10010120	0	0	0	0	0	0	0	
0x10010140	0	0	0	0	0	0	0	

0x10010000 (.data) Hexadecimal Addresses Hexadecimal Values ASCII

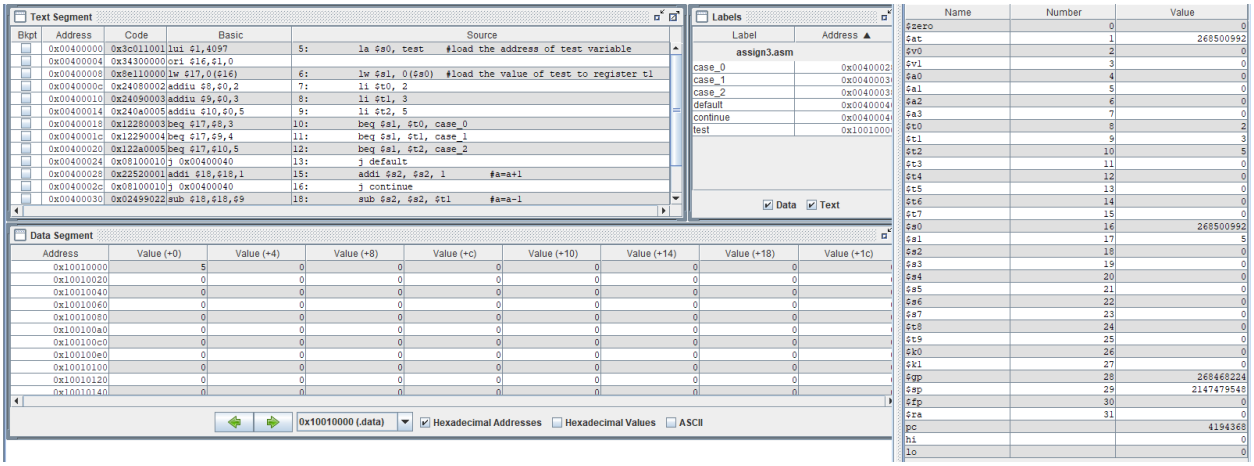
Name	Number	Value
$zero	0	0
$at	1	268500992
$v0	2	0
$v1	3	0
$a0	4	0
$a1	5	0
$a2	6	0
$a3	7	0
$t0	8	0
$t1	9	268501028
$t2	10	0
$t3	11	0
$t4	12	0
$t5	13	0
$t6	14	0
$t7	15	0
$s0	16	0
$s1	17	9
$s2	18	268500992
$s3	19	9
$s4	20	1
$s5	21	45
$s6	22	0
$s7	23	0
$t8	24	0
$t9	25	0
$k0	26	0
$k1	27	0
$gp	28	268468224
$sp	29	2147479548
$fp	30	0
$ra	31	0
pc		4194356
hi		0
lo		0

Bài 3.

- Mã nguồn

```
#Assignment 3
.data
        test: .word 5
.text
        la $s0, test     #load the address of test variable
        lw $s1, 0($s0)   #load the value of test to register t1
        li $t0, 2
        li $t1, 3
        li $t2, 5
        beq $s1, $t0, case_0
        beq $s1, $t1, case_1
        beq $s1, $t2, case_2
        j default
case_0:
        addi $s2, $s2, 1         #a=a+1
        j continue
case_1:
        sub $s2, $s2, $t1        #a=a-1
        j continue
case_2:
        add $s3, $s3, $s3        #b=2*b
        j continue
default:
continue:
```

- Kết quả



Bài 4.

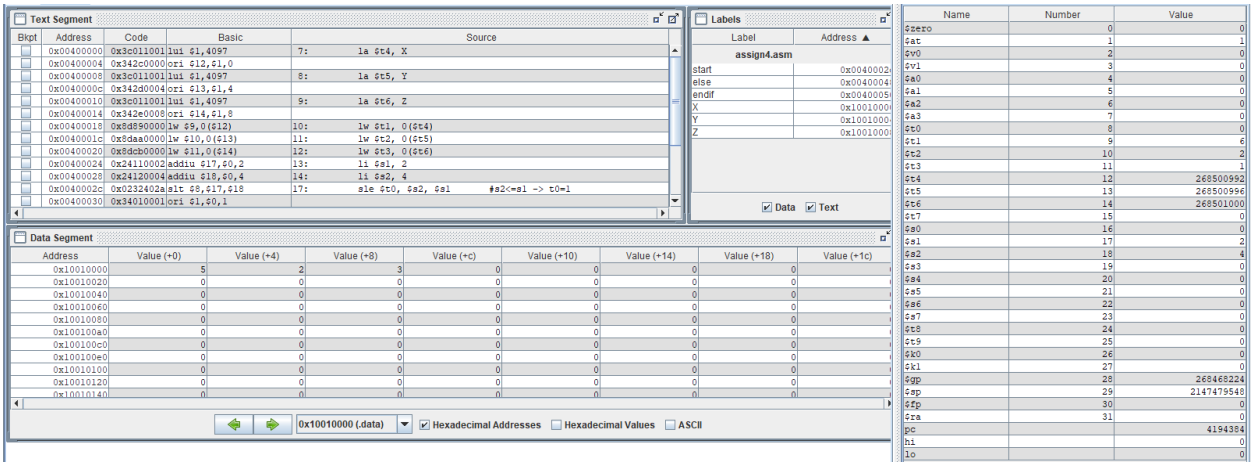
a. i<j

- Mã nguồn

```
#Assignment 4a
.data
        X: .word 5
        Y: .word 2
        Z: .word 3
.text
        la $t4, X
        la $t5, Y
        la $t6, Z
        lw $t1, 0($t4)
        lw $t2, 0($t5)
        lw $t3, 0($t6)
        li $s1, 2
        li $s2, 4

start:
        sle $t0, $s2, $s1       #s2<=s1 -> t0=1
        bne $t0, $zero, else    #ktra gtri t0
        addi $t1, $t1, 1
        addi $t3, $zero, 1
        j endif                 #skip "else" part
else:
        addi $t2, $t2, -1
        add $t3, $t3, $t3
endif:
```

- Kết quả



Text Segment

Bkpt	Address	Code	Basic	Source
	0x00400000	0x3c011001	lui $1,4097	7: la $t4, X
	0x00400004	0x342c0000	ori $12,$1,0	
	0x00400008	0x3c011001	lui $1,4097	8: la $t5, Y
	0x0040000c	0x342d0004	ori $13,$1,4	
	0x00400010	0x3c011001	lui $1,4097	9: la $t6, Z
	0x00400014	0x342e0008	ori $14,$1,8	
	0x00400018	0x8d890000	lw $9,0($12)	10: lw $t1, 0($t4)
	0x0040001c	0x8daa0000	lw $10,0($13)	11: lw $t2, 0($t5)
	0x00400020	0x8dcb0000	lw $11,0($14)	12: lw $t3, 0($t6)
	0x00400024	0x24110002	addiu $17,$0,2	13: li $s1, 2
	0x00400028	0x24120004	addiu $18,$0,4	14: li $s2, 4
	0x0040002c	0x0232402a	slt $8,$17,$18	17: sle $t0, $s2, $s1 #s2<=s1 -> t0=1
	0x00400030	0x34010001	ori $1,$0,1	

Labels

Label	Address ▲
assign4.asm	
start	0x00400024
else	0x00400048
endif	0x00400058
X	0x10010000
Y	0x10010004
Z	0x10010008

☑ Data ☑ Text

Data Segment

Address	Value (+0)	Value (+4)	Value (+8)	Value (+c)	Value (+10)	Value (+14)	Value (+18)	Value (+1c)
0x10010000	5	2	3	0	0	0	0	
0x10010020	0	0	0	0	0	0	0	
0x10010040	0	0	0	0	0	0	0	
0x10010060	0	0	0	0	0	0	0	
0x10010080	0	0	0	0	0	0	0	
0x100100a0	0	0	0	0	0	0	0	
0x100100c0	0	0	0	0	0	0	0	
0x100100e0	0	0	0	0	0	0	0	
0x10010100	0	0	0	0	0	0	0	
0x10010120	0	0	0	0	0	0	0	
0x10010140	0	0	0	0	0	0	0	

0x10010000 (.data) ☑ Hexadecimal Addresses ☐ Hexadecimal Values ☐ ASCII

Name	Number	Value
$zero	0	0
$at	1	1
$v0	2	0
$v1	3	0
$a0	4	0
$a1	5	0
$a2	6	0
$a3	7	0
$t0	8	0
$t1	9	6
$t2	10	2
$t3	11	1
$t4	12	268500992
$t5	13	268500996
$t6	14	268501000
$t7	15	0
$s0	16	0
$s1	17	2
$s2	18	4
$s3	19	0
$s4	20	0
$s5	21	0
$s6	22	0
$s7	23	0
$t8	24	0
$t9	25	0
$k0	26	0
$k1	27	0
$gp	28	268468224
$sp	29	2147479548
$fp	30	0
$ra	31	0
pc		4194384
hi		0
lo		0

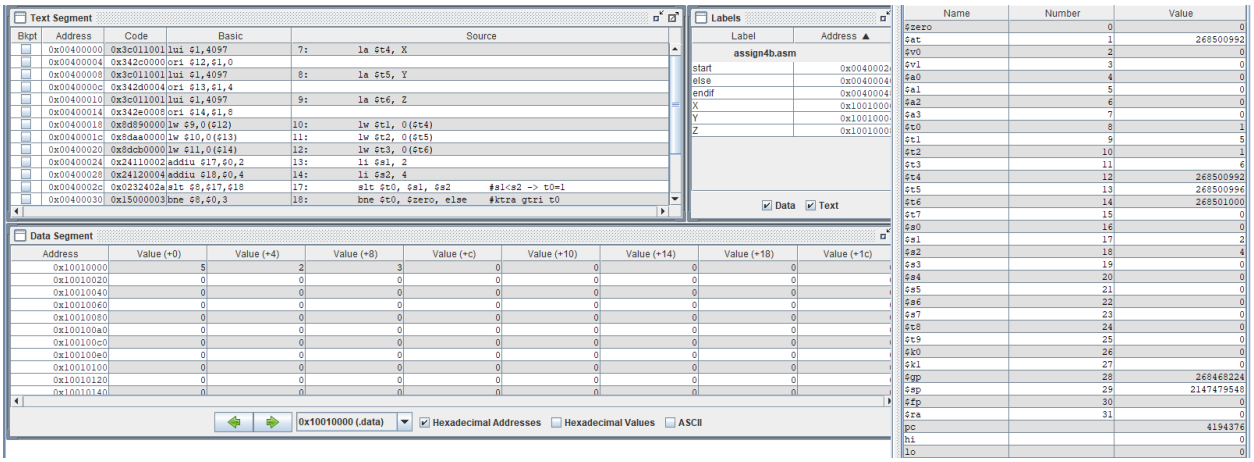
b. i>=j

- Mã nguồn

```
#Assignment 4b
.data
        X: .word 5
        Y: .word 2
        Z: .word 3
.text
        la $t4, X
        la $t5, Y
        la $t6, Z
        lw $t1, 0($t4)
        lw $t2, 0($t5)
        lw $t3, 0($t6)
        li $s1, 2
        li $s2, 4

start:
        slt $t0, $s1, $s2       #s1<s2 -> t0=1
        bne $t0, $zero, else    #ktra gtri t0
        addi $t1, $t1, 1
        addi $t3, $zero, 1
        j endif                 #skip "else" part
else:
        addi $t2, $t2, -1
        add $t3, $t3, $t3
endif:
```

- Kết quả



Text Segment

Bkpt	Address	Code	Basic	Source
	0x00400000	0x3c011001	lui $1,4097	7: la $t4, X
	0x00400004	0x342c0000	ori $12,$1,0	
	0x00400008	0x3c011001	lui $1,4097	8: la $t5, Y
	0x0040000c	0x342d0004	ori $13,$1,4	
	0x00400010	0x3c011001	lui $1,4097	9: la $t6, Z
	0x00400014	0x342e0008	ori $14,$1,8	
	0x00400018	0x8d890000	lw $9,0($12)	10: lw $t1, 0($t4)
	0x0040001c	0x8daa0000	lw $10,0($13)	11: lw $t2, 0($t5)
	0x00400020	0x8dcb0000	lw $11,0($14)	12: lw $t3, 0($t6)
	0x00400024	0x24110002	addiu $17,$0,2	13: li $s1, 2
	0x00400028	0x24120004	addiu $18,$0,4	14: li $s2, 4
	0x0040002c	0x0232402a	slt $8,$17,$18	17: slt $t0, $s1, $s2 #s1<s2 -> t0=1
	0x00400030	0x15000003	bne $8,$0,3	18: bne $t0, $zero, else #ktra gtri t0

Labels

Label	Address
assign4b.asm	
start	0x00400024
else	0x00400040
endif	0x00400048
X	0x10010000
Y	0x10010004
Z	0x10010008

Data Text

Name	Number	Value
$zero	0	0
$at	1	268500992
$v0	2	0
$v1	3	0
$a0	4	0
$a1	5	0
$a2	6	0
$a3	7	0
$t0	8	1
$t1	9	5
$t2	10	1
$t3	11	6
$t4	12	268500992
$t5	13	268500996
$t6	14	268501000
$t7	15	0
$s0	16	0
$s1	17	2
$s2	18	4
$s3	19	0
$s4	20	0
$s5	21	0
$s6	22	0
$s7	23	0
$t8	24	0
$t9	25	0
$k0	26	0
$k1	27	0
$gp	28	268468224
$sp	29	2147479548
$fp	30	0
$ra	31	0
pc		4194376
hi		0
lo		0

Data Segment

Address	Value (+0)	Value (+4)	Value (+8)	Value (+c)	Value (+10)	Value (+14)	Value (+18)	Value (+1c)
0x10010000	5	2	3	0	0	0	0	[illegible]
0x10010020	0	0	0	0	0	0	0	[illegible]
0x10010040	0	0	0	0	0	0	0	[illegible]
0x10010060	0	0	0	0	0	0	0	[illegible]
0x10010080	0	0	0	0	0	0	0	[illegible]
0x100100a0	0	0	0	0	0	0	0	[illegible]
0x100100c0	0	0	0	0	0	0	0	[illegible]
0x100100e0	0	0	0	0	0	0	0	[illegible]
0x10010100	0	0	0	0	0	0	0	[illegible]
0x10010120	0	0	0	0	0	0	0	[illegible]
0x10010140	0	0	0	0	0	0	0	[illegible]

0x10010000 (.data) Hexadecimal Addresses Hexadecimal Values ASCII

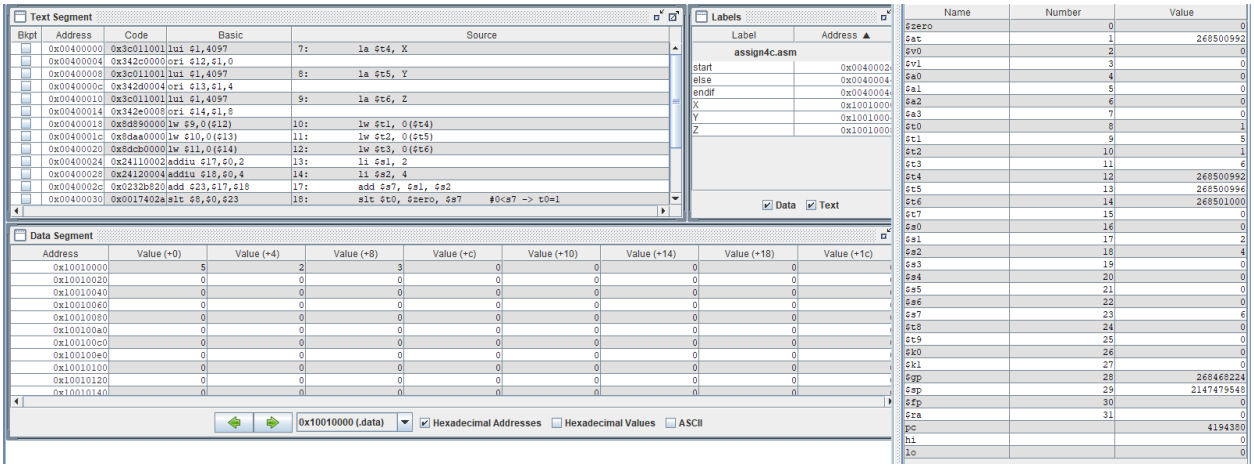
c. i+j <= 0

- Mã nguồn

```
#Assignment 4c
.data
        X: .word 5
        Y: .word 2
        Z: .word 3
.text
        la $t4, X
        la $t5, Y
        la $t6, Z
        lw $t1, 0($t4)
        lw $t2, 0($t5)
        lw $t3, 0($t6)
        li $s1, 2
        li $s2, 4

start:
        add $s7, $s1, $s2
        slt $t0, $zero, $s7     #0<s7 -> t0=1
        bne $t0, $zero, else    #ktra gtri t0
        addi $t1, $t1, 1
        addi $t3, $zero, 1
        j endif                 #skip "else" part
else:
        addi $t2, $t2, -1
        add $t3, $t3, $t3
endif:
```

- Kết quả



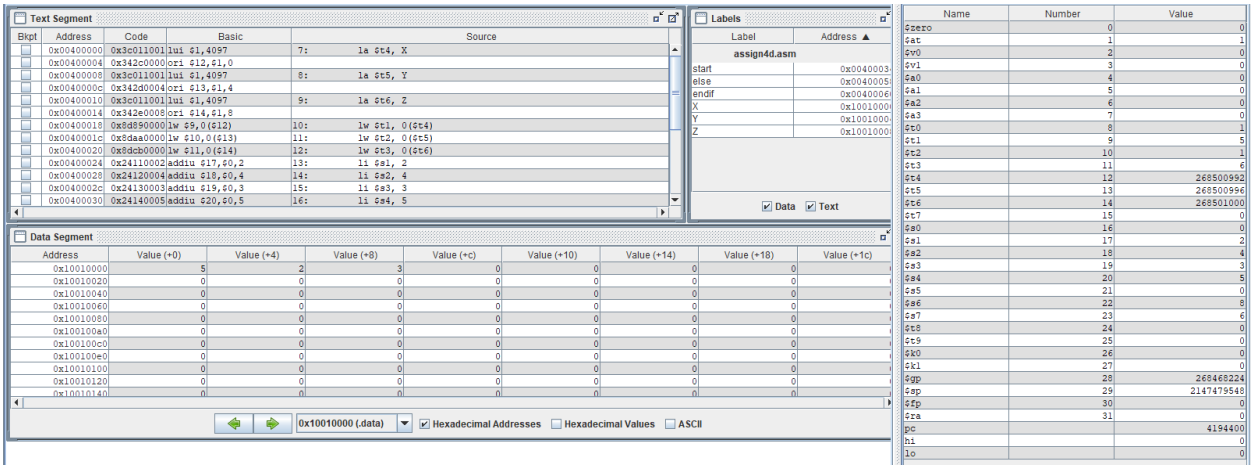
d. i+j > m+n

- Mã nguồn

```
#Assignment 4d
.data
        X: .word 5
        Y: .word 2
        Z: .word 3
.text
        la $t4, X
        la $t5, Y
        la $t6, Z
        lw $t1, 0($t4)
        lw $t2, 0($t5)
        lw $t3, 0($t6)
        li $s1, 2
        li $s2, 4
        li $s3, 3
        li $s4, 5

start:
        add $s7, $s1, $s2       #s7=i+j
        add $s6, $s3, $s4       #s6=m+n
        sle $t0, $s7, $s6       #s7<=s6 -> t0=1
        bne $t0, $zero, else    #ktra gtri t0
        addi $t1, $t1, 1
        addi $t3, $zero, 1
        j endif                 #skip "else" part
else:
        addi $t2, $t2, -1
        add $t3, $t3, $t3
endif:
```

- Kết quả



Bài 5.

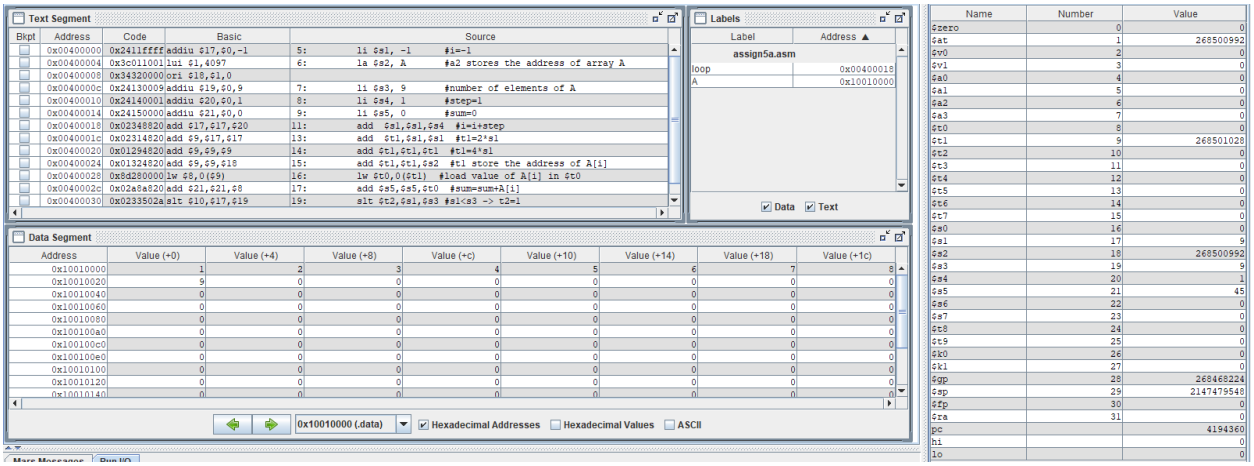
a. i<n

- Mã nguồn

```
#Assignment 5a
.data
        A: .word 1, 2, 3, 4, 5, 6, 7, 8, 9
.text
        li $s1, -1      #i=-1
        la $s2, A       #a2 stores the address of array A
        li $s3, 9       #number of elements of A
        li $s4, 1       #step=1
        li $s5, 0       #sum=0
loop:
        add  $s1,$s1,$s4  #i=i+step
        #sll $t1, $s1, 2
        add  $t1,$s1,$s1  #t1=2*s1
        add $t1,$t1,$t1  #t1=4*s1
        add $t1,$t1,$s2  #t1 store the address of A[i]
        lw $t0,0($t1)  #load value of A[i] in $t0
        add $s5,$s5,$t0  #sum=sum+A[i]

        slt $t2,$s1,$s3 #s1<s3 -> t2=1
        bne $t2, $zero, loop
```

- Kết quả



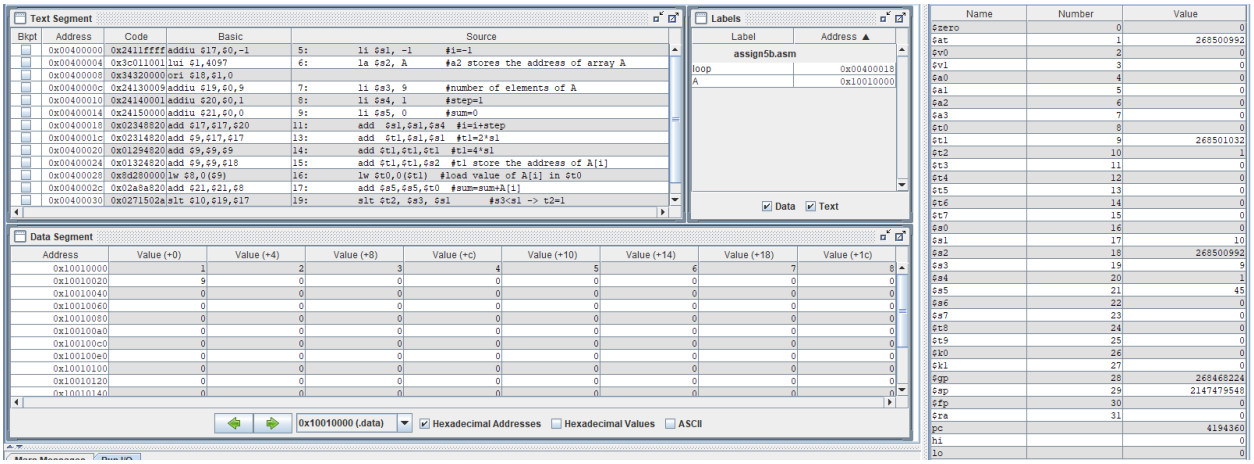
b. i<=n

- Mã nguồn

```
#Assignment 5b
.data
        A: .word 1, 2, 3, 4, 5, 6, 7, 8, 9
.text
        li $s1, -1      #i=-1
        la $s2, A       #a2 stores the address of array A
        li $s3, 9       #number of elements of A
        li $s4, 1       #step=1
        li $s5, 0       #sum=0
loop:
        add  $s1,$s1,$s4  #i=i+step
        #sll $t1, $s1, 2
        add  $t1,$s1,$s1  #t1=2*s1
        add $t1,$t1,$t1  #t1=4*s1
        add $t1,$t1,$s2  #t1 store the address of A[i]
        lw $t0,0($t1)  #load value of A[i] in $t0
        add $s5,$s5,$t0  #sum=sum+A[i]

        slt $t2, $s3, $s1       #s3<s1 -> t2=1
        beq $t2, $zero, loop
```

- Kết quả



Text Segment

Bkpt	Address	Code	Basic	Source
	0x00400000	0x2411ffff	addiu $17,$0,-1	5: li $s1, -1 #i=-1
	0x00400004	0x3c011001	lui $1,4097	6: la $s2, A #a2 stores the address of array A
	0x00400008	0x34320000	ori $18,$1,0	
	0x0040000c	0x24130009	addiu $19,$0,9	7: li $s3, 9 #number of elements of A
	0x00400010	0x24140001	addiu $20,$0,1	8: li $s4, 1 #step=1
	0x00400014	0x24150000	addiu $21,$0,0	9: li $s5, 0 #sum=0
	0x00400018	0x02348820	add $17,$17,$20	11: add $s1,$s1,$s4 #i=i+step
	0x0040001c	0x02314820	add $9,$17,$17	13: add $t1,$s1,$s1 #t1=2*s1
	0x00400020	0x01294820	add $9,$9,$9	14: add $t1,$t1,$t1 #t1=4*s1
	0x00400024	0x01324820	add $9,$9,$18	15: add $t1,$t1,$s2 #t1 store the address of A[i]
	0x00400028	0x8d280000	lw $8,0($9)	16: lw $t0,0($t1) #load value of A[i] in $t0
	0x0040002c	0x02a8a820	add $21,$21,$8	17: add $s5,$s5,$t0 #sum=sum+A[i]
	0x00400030	0x0271502a	slt $10,$19,$17	19: slt $t2, $s3, $s1 #s3<s1 -> t2=1

Labels

Label	Address ▲
assign5b.asm	
loop	0x00400018
A	0x10010000

☑ Data ☑ Text

Data Segment

Address	Value (+0)	Value (+4)	Value (+8)	Value (+c)	Value (+10)	Value (+14)	Value (+18)	Value (+1c)
0x10010000	1	2	3	4	5	6	7	8
0x10010020	9	0	0	0	0	0	0	0
0x10010040	0	0	0	0	0	0	0	0
0x10010060	0	0	0	0	0	0	0	0
0x10010080	0	0	0	0	0	0	0	0
0x100100a0	0	0	0	0	0	0	0	0
0x100100c0	0	0	0	0	0	0	0	0
0x100100e0	0	0	0	0	0	0	0	0
0x10010100	0	0	0	0	0	0	0	0
0x10010120	0	0	0	0	0	0	0	0
0x10010140	0	0	0	0	0	0	0	0

0x10010000 (.data) ☑ Hexadecimal Addresses ☐ Hexadecimal Values ☐ ASCII

Name	Number	Value
$zero	0	0
$at	1	268500992
$v0	2	0
$v1	3	0
$a0	4	0
$a1	5	0
$a2	6	0
$a3	7	0
$t0	8	0
$t1	9	268501032
$t2	10	1
$t3	11	0
$t4	12	0
$t5	13	0
$t6	14	0
$t7	15	0
$s0	16	0
$s1	17	10
$s2	18	268500992
$s3	19	9
$s4	20	1
$s5	21	45
$s6	22	0
$s7	23	0
$t8	24	0
$t9	25	0
$k0	26	0
$k1	27	0
$gp	28	268468224
$sp	29	2147479548
$fp	30	0
$ra	31	0
pc		4194360
hi		0
lo		0

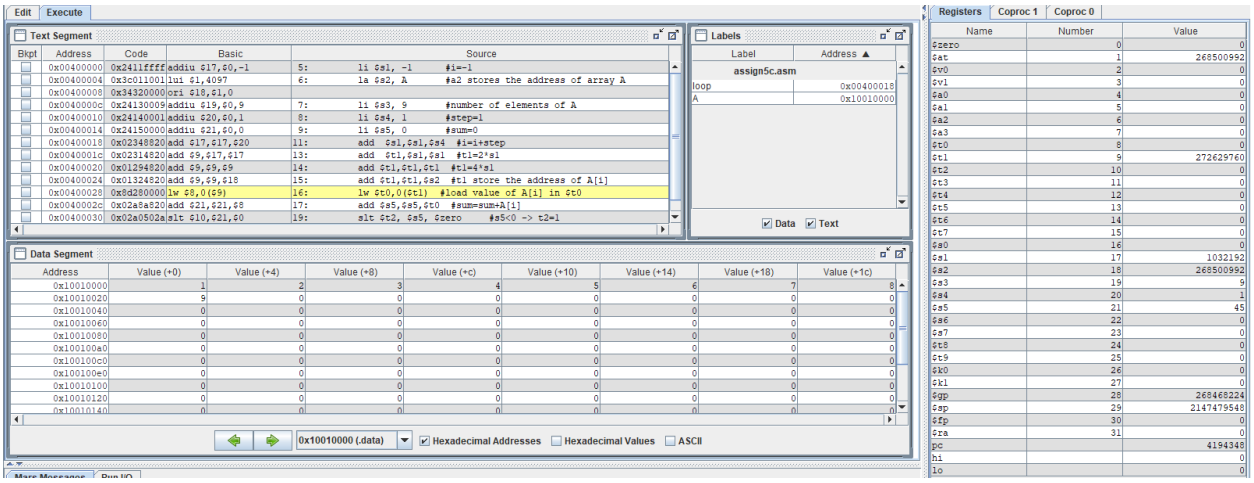
c. sum >= 0

- Mã nguồn

```
#Assignment 5c
.data
        A: .word 1, 2, 3, 4, 5, 6, 7, 8, 9
.text
        li $s1, -1      #i=-1
        la $s2, A       #a2 stores the address of array A
        li $s3, 9       #number of elements of A
        li $s4, 1       #step=1
        li $s5, 0       #sum=0
loop:
        add  $s1,$s1,$s4  #i=i+step
        #sll $t1, $s1, 2
        add  $t1,$s1,$s1  #t1=2*s1
        add $t1,$t1,$t1  #t1=4*s1
        add $t1,$t1,$s2  #t1 store the address of A[i]
        lw $t0,0($t1)  #load value of A[i] in $t0
        add $s5,$s5,$t0  #sum=sum+A[i]

        slt $t2, $s5, $zero     #s5<0 -> t2=1
        beq $t2, $zero, loop
```

- Kết quả



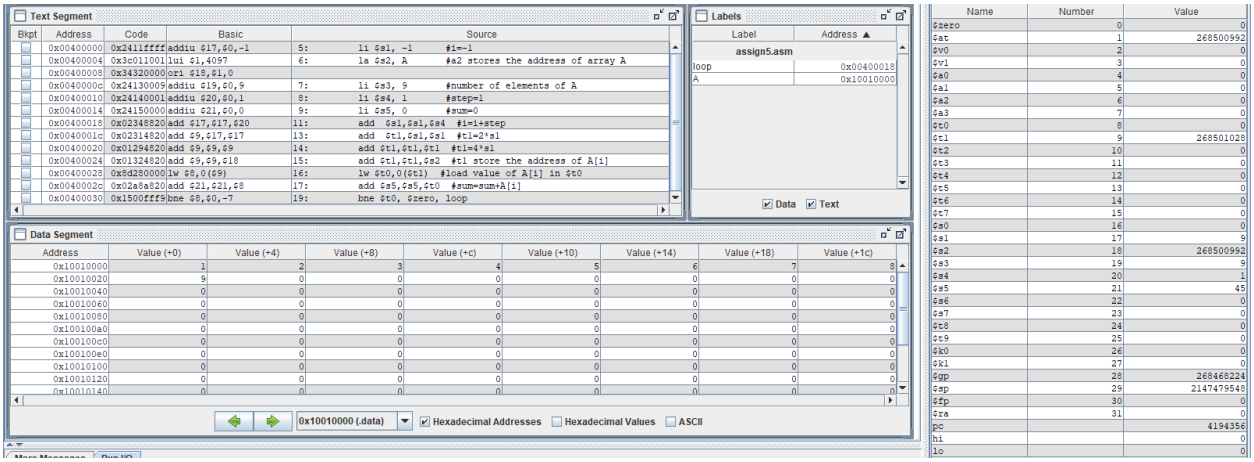
d. A[i] == 0

- Mã nguồn

```
#Assignment 5
.data
        A: .word 1, 2, 3, 4, 5, 6, 7, 8, 9
.text
        li $s1, -1      #i=-1
        la $s2, A       #a2 stores the address of array A
        li $s3, 9       #number of elements of A
        li $s4, 1       #step=1
        li $s5, 0       #sum=0
loop:
        add  $s1,$s1,$s4  #i=i+step
        #sll $t1, $s1, 2
        add  $t1,$s1,$s1  #t1=2*s1
        add $t1,$t1,$t1  #t1=4*s1
        add $t1,$t1,$s2  #t1 store the address of A[i]
        lw $t0,0($t1)  #load value of A[i] in $t0
        add $s5,$s5,$t0  #sum=sum+A[i]

        bne $t0, $zero, loop
```

- Kết quả



Bài 6.

- Mã nguồn

```
#Assignment 6
.data
        A: .word 1, 2, 3, 4, 5, 6, 7, 8, 9
.text
        li $s1, 1       #i=1
        la $s2, A       #get address of array A
        li $s3, 9       #number of elements
        li $s4, 1       #step=1
        li $s5, 0       #max=0
        li $s6, 1
        li $t8, -1
loop:
        add  $s1, $s1, $s4      #i=i+step
        add  $t1, $s1, $s1      #t1=2*s1
        add $t1, $t1, $t1               #t1=4*s1
        add $t1, $t1, $s2               #t1 store the address of A[i]
        lw $t0, 0($t1)          #load value of A[i] in $t0
start:
        slt $t4, $t0, $zero     #A[i]<0 -> t4=1
        bne $t4, $zero, else
        mul $s7, $t0, $s6
        j endif
else:
        mul $s7, $t0, $t8
endif:

starts:
        slt $t5, $s7, $s5       #s7<s5 -> t5=1
        bne $t0, $zero, elses
        mul $s5, $s7, $s6
        j endifs
elses:
        mul $s5, $s5, $s6
endifs:
        bne $s1, $s3, loop
```

- Kết quả

Text Segment

Bkpt	Address	Code	Basic	Source
	0x00400000	0x24110001	addiu $17,$0,1	5: li $s1, 1 #i=1
	0x00400004	0x3c011001	lui $1,4097	6: la $s2, A #get address of array A
	0x00400008	0x34320000	ori $18,$1,0	
	0x0040000c	0x24130009	addiu $19,$0,9	7: li $s3, 9 #number of elements
	0x00400010	0x24140001	addiu $20,$0,1	8: li $s4, 1 #step=1
	0x00400014	0x24150000	addiu $21,$0,0	9: li $s5, 0 #max=0
	0x00400018	0x24160001	addiu $22,$0,1	10: li $s6, 1
	0x0040001c	0x2418ffff	addiu $24,$0,-1	11: li $t8, -1
	0x00400020	0x02348820	add $17,$17,$20	13: add $s1, $s1, $s4 #i=i+step
	0x00400024	0x02314820	add $9,$17,$17	14: add $t1, $s1, $s1 #t1=2*s1
	0x00400028	0x01294820	add $9,$9,$9	15: add $t1, $t1, $t1 #t1=4*s1
	0x0040002c	0x01324820	add $9,$9,$18	16: add $t1, $t1, $s2 #t1 store the address...
	0x00400030	0x8d280000	lw $8,0($9)	17: lw $t0, 0($t1) #load value of A[i] in $t0

Labels

Label	Address ▲
assign6.asm	
loop	0x00400020
start	0x00400030
else	0x00400040
endif	0x00400048
starts	0x00400040
elses	0x00400050
endifs	0x00400054
A	0x10010000

☑ Data ☑ Text

Data Segment

Address	Value (+0)	Value (+4)	Value (+8)	Value (+c)	Value (+10)	Value (+14)	Value (+18)	Value (+1c)
0x10010000	1	2	3	4	5	6	7	
0x10010020	9	0	0	0	0	0	0	
0x10010040	0	0	0	0	0	0	0	
0x10010060	0	0	0	0	0	0	0	
0x10010080	0	0	0	0	0	0	0	
0x100100a0	0	0	0	0	0	0	0	
0x100100c0	0	0	0	0	0	0	0	
0x100100e0	0	0	0	0	0	0	0	
0x10010100	0	0	0	0	0	0	0	
0x10010120	0	0	0	0	0	0	0	
0x10010140	0	0	0	0	0	0	0	

0x10010000 (.data) ☑ Hexadecimal Addresses ☐ Hexadecimal Values ☐ ASCII

Name	Number	Value
$zero	0	0
$at	1	268500992
$v0	2	0
$v1	3	0
$a0	4	0
$a1	5	0
$a2	6	0
$a3	7	0
$t0	8	0
$t1	9	268501028
$t2	10	0
$t3	11	0
$t4	12	0
$t5	13	0
$t6	14	0
$t7	15	0
$s0	16	0
$s1	17	9
$s2	18	268500992
$s3	19	9
$s4	20	1
$s5	21	0
$s6	22	1
$s7	23	0
$t8	24	-1
$t9	25	0
$k0	26	0
$k1	27	0
$gp	28	268468224
$sp	29	2147479548
$fp	30	0
$ra	31	0
pc		4194400
hi		0
lo		0