

# Relatório 8

## Programa 09

C:\Users\Lu\Documents\Faculdade\AC II\Relatório8\programa9.asm - MARS 4.5

File Edit Run Settings Tools Help

Run speed 14 inst/sec

Edit Execute

Text Segment

Bkpt	Address	Code	Basic	Source
	0x00400000	0x20081001	addi \$t0,\$t0,4097	7: addi \$t0,\$zero,0x1001 #t0=0x1001
	0x00400004	0x00084400	sll \$t0,\$t0,16	8: sll \$t0,\$t0,16 #t0=0x10010000
	0x00400008	0x8d100000	lw \$t0,0(\$t0)	9: lw \$t0,0(\$t0) #x=valor de t0
	0x0040000c	0x8d110004	lw \$t1,4(\$t0)	10: lw \$t1,4(\$t0) #t1=valor de t0+4bits
	0x00400010	0x8d120008	lw \$t2,8(\$t0)	11: lw \$t2,8(\$t0) #t2=valor de t0+8bits
	0x00400014	0x8d13000c	lw \$t3,12(\$t0)	12: lw \$t3,12(\$t0) #t3=valor de t0+12 bits
	0x00400018	0x02114820	add \$t1,\$t0,\$t1	14: add \$t1,\$t0,\$t1 #t1=t0+t1
	0x0040001c	0x01324820	add \$t1,\$t1,\$t2	15: add \$t1,\$t1,\$t2 #t1=t1+t2
	0x00400020	0x01334820	add \$t1,\$t1,\$t3	16: add \$t1,\$t1,\$t3 #t1=t1+t3
	0x00400024	0xad090010	sw \$t1,16(\$t0)	18: sw \$t1,16(\$t0) #armazenar o valor da soma

Data Segment

Address	Value (+0)	Value (+4)	Value (+8)	Value (+c)	Value (+10)	Value (+14)	Value (+18)	Value (+1c)
0x10010000	15	25	13	17	70	0	0	0
0x10010020	0	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

Mars Messages Run I/O

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

Registers Coproc 1 Coproc 0

Name	Number	Value
\$zero	0	0
\$at	1	0
\$v0	2	0
\$v1	3	0
\$a0	4	0
\$a1	5	0
\$a2	6	0
\$a3	7	0
\$t0	8	268500992
\$t1	9	70
\$t2	10	0
\$t3	11	0
\$t4	12	0
\$t5	13	0
\$t6	14	0
\$t7	15	0
\$s0	16	15
\$s1	17	25
\$s2	18	13
\$s3	19	17
\$s4	20	0
\$s5	21	0
\$s6	22	0
\$s7	23	0
\$s8	24	0
\$s9	25	0
\$k0	26	0
\$k1	27	0
\$gp	28	268468224
\$sp	29	2147479548
\$fp	30	0
\$ra	31	0
pc		4194344
hi		0
lo		0

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## Programa 10

C:\Users\Lu\Documents\Faculdade\AC II\Relatório8\programa10.asm - MARS 4.5

File Edit Run Settings Tools Help

Run speed 14 inst/sec

Edit Execute

Text Segment

Bkpt	Address	Code	Basic	Source
	0x00400000	0x20081001	addi \$t0,\$t0,4097	7: addi \$t0,\$zero,0x1001 #t0=0x1001
	0x00400004	0x00084400	sll \$t0,\$t0,16	8: sll \$t0,\$t0,16 #t0=0x10010000
	0x00400008	0x8d100000	lw \$t0,0(\$t0)	9: lw \$t0,0(\$t0) #x=valor de t0
	0x0040000c	0x8d110004	lw \$t1,4(\$t0)	10: lw \$t1,4(\$t0) #t1=valor de t0+4bits
	0x00400010	0x00104820	add \$t1,\$zero,\$t0	12: add \$t1,\$zero,\$t0 #t1=x
	0x00400014	0x001081c0	sll \$t0,\$t0,7	13: sll \$t0,\$t0,7 #t0=128x
	0x00400018	0x02098022	sub \$t0,\$t0,\$t1	14: sub \$t0,\$t0,\$t1 #t0=128x-x=127x
	0x0040001c	0x00115020	add \$t2,\$zero,\$t1	16: add \$t2,\$zero,\$t1 #t2=x
	0x00400020	0x00118980	sll \$t1,\$t1,6	17: sll \$t1,\$t1,6 #t1=64x
	0x00400024	0x022a8820	add \$t1,\$t1,\$t2	18: add \$t1,\$t1,\$t2 #t1=64x+t2=65x
	0x00400028	0x02119022	sub \$t2,\$t0,\$t1	20: sub \$t2,\$t0,\$t1 #t2=t0-t1(127x-65x)
	0x0040002c	0x23520001	addi \$t2,\$t2,1	21: addi \$t2,\$t2,1 #t2=t2+1
	0x00400030	0xad120008	sw \$t2,8(\$t0)	23: sw \$t2,8(\$t0) #armazenar valor

Data Segment

Address	Value (+0)	Value (+4)	Value (+8)	Value (+c)	Value (+10)	Value (+14)	Value (+18)	Value (+1c)
0x10010000	5	7	181	0	0	0	0	0
0x10010020	0	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

Mars Messages Run I/O

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

Registers Coproc 1 Coproc 0

Name	Number	Value
\$zero	0	0
\$at	1	0
\$v0	2	0
\$v1	3	0
\$a0	4	0
\$a1	5	0
\$a2	6	0
\$a3	7	0
\$t0	8	268500992
\$t1	9	5
\$t2	10	7
\$t3	11	0
\$t4	12	0
\$t5	13	0
\$t6	14	0
\$t7	15	0
\$s0	16	635
\$s1	17	455
\$s2	18	181
\$s3	19	0
\$s4	20	0
\$s5	21	0
\$s6	22	0
\$s7	23	0
\$s8	24	0
\$s9	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

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## Programa 11

C:\Users\Lu\Documents\Faculdade\AC II\Relatório\programa11.asm - MARS 4.5

File Edit Run Settings Tools Help

Run speed 14 inst/sec

Edit Execute

Text Segment

Bkpt	Address	Code	Basic	Source
	0x00400000	0x20081001	addi \$t0,\$zero,0x1001	#t0=0x1001
	0x00400004	0x00084400	sll \$t0,\$t0,16	#t0=0x10010000
	0x00400008	0x8d100000	lw \$s0,0(\$t0)	#x=valor de t0
	0x0040000c	0x8d110004	lw \$s1,4(\$t0)	#z=valor de t0+4bits
	0x00400010	0x2009493e	addi \$t1,\$zero,0x493e	#t1=0x493e
	0x00400014	0x00094900	sll \$s1,\$s1,4	#t1=0x493e0
	0x00400018	0x02119022	sub \$s2,\$s0,\$s1	#y=X-z
	0x0040001c	0x02499020	add \$t6,\$s2,\$t1	#y=y+300000
	0x00400020	0xad120008	sw \$s2,8(\$t0)	#armazenar valor

Data Segment

Address	Value (+0)	Value (+4)	Value (+8)	Value (+c)	Value (+10)	Value (+14)	Value (+18)	Value (+1c)
0x10010000	100000	200000	200000	0	0	0	0	0
0x10010020	0	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

Mars Messages Run I/O

Clear

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

Registers Coproc 1 Coproc 0

Name	Number	Value
\$zero	0	0
\$at	1	0
\$v0	2	0
\$v1	3	0
\$a0	4	0
\$a1	5	0
\$a2	6	0
\$a3	7	0
\$t0	8	268500992
\$t1	9	300000
\$t2	10	0
\$t3	11	0
\$t4	12	0
\$t5	13	0
\$t6	14	0
\$t7	15	0
\$s0	16	100000
\$s1	17	200000
\$s2	18	200000
\$s3	19	0
\$s4	20	0
\$s5	21	0
\$s6	22	0
\$s7	23	0
\$s8	24	0
\$s9	25	0
\$k0	26	0
\$k1	27	0
\$gp	28	268468224
\$sp	29	2147479548
\$fp	30	0
\$ra	31	0
pc		4194340
hi		0
lo		0

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## Programa 12

C:\Users\Lu\Documents\Faculdade\AC II\Relatório\programa12.asm - MARS 4.5

File Edit Run Settings Tools Help

Run speed 14 inst/sec

Edit Execute

Text Segment

Bkpt	Address	Code	Basic	Source
	0x00400000	0x20081001	addi \$t0,\$zero,0x1001	#armazenar endereço 0x1001
	0x00400004	0x00084400	sll \$t0,\$t0,16	#shift nele para deixar-lo 0x10010000
	0x00400008	0x3508000c	ori \$t0,\$t0,0x000c	#endereço 0x1001000c
	0x0040000c	0x8d090000	lw \$t1,0(\$t0)	#armazena em t1 o endereço guardado em t0
	0x00400010	0x8d2a0000	lw \$t2,0(\$t1)	#armazena em t2 o endereço guardado em t1
	0x00400014	0x8d4b0000	lw \$t3,0(\$t2)	#armazena em t3 o endereço guardado em t2
	0x00400018	0x8d6c0000	lw \$t4,0(\$t3)	#armazena em t4 o valor de k
	0x0040001c	0x000c6040	sll \$t4,\$t4,1	#multiplica por 2 o valor de t4
	0x00400020	0xad6c0000	sw \$t4,0(\$t3)	

Data Segment

Address	Value (+0)	Value (+4)	Value (+8)	Value (+c)	Value (+10)	Value (+14)	Value (+18)	Value (+1c)
0x10010000	0x00000004	0x10010000	0x10010004	0x10010008	0x00000000	0x00000000	0x00000000	0x00000000
0x10010020	0x00000000	0x00000000	0x00000000	0x00000000	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
0x10010100	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000

Mars Messages Run I/O

Clear

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

Registers Coproc 1 Coproc 0

Name	Number	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	0x1001000c
\$t1	9	0x10010008
\$t2	10	0x10010004
\$t3	11	0x10010000
\$t4	12	0x00000004
\$t5	13	0x00000000
\$t6	14	0x00000000
\$t7	15	0x00000000
\$s0	16	0x00000000
\$s1	17	0x00000000
\$s2	18	0x00000000
\$s3	19	0x00000000
\$s4	20	0x00000000
\$s5	21	0x00000000
\$s6	22	0x00000000
\$s7	23	0x00000000
\$s8	24	0x00000000
\$s9	25	0x00000000
\$k0	26	0x00000000
\$k1	27	0x00000000
\$gp	28	0x10008000
\$sp	29	0x7ffffeffc
\$fp	30	0x00000000
\$ra	31	0x00000000
pc		0x00400024
hi		0x00000000
lo		0x00000000

0 Digite aqui para pesquisar

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C:\Users\Lu\Documents\Faculdade\AC II\Relatório8\programa13.asm - MARS 4.5

Windows taskbar showing search bar, taskbar icons (Chrome, Edge, File Explorer, Settings, Mail, Skype, etc.), and system tray (clock, date, volume, network, etc.).

C:\Users\Lu\Documents\Faculdade\AC II\Relatório8\programa14.asm - MARS 4.5

Windows taskbar showing search bar, taskbar icons (Chrome, Edge, File Explorer, Settings, Mail, Skype), and system tray (clock, date, volume, network, battery).

## Programa 15

C:\Users\Lu\Documents\Faculdade\AC II\Relatório8\programa15.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	0x20100064	addi \$t6,\$0,100	10: addi \$s0,\$zero,100 #flag=100
	0x00400004	0x20110000	addi \$t7,\$0,0	11: addi \$s1,\$zero,0 #soma=0
	0x00400008	0x20120000	addi \$t8,\$0,0	12: addi \$s2,\$zero,0 #aux=0
	0x0040000c	0x20081001	addi \$t0,\$0,4097	13: addi \$t0,\$zero,0x1001 #ir para o primeiro endereço
	0x00400010	0x00844000	sll \$t0,\$t0,16	14: sll \$t0,\$t0,16 #shift para o endereço ficar 0x10010000
	0x00400014	0x00124840	sll \$t1,\$t1,1	16: sll \$t1,\$t2,1 #2i+1
	0x00400018	0x21280001	addi \$t1,\$t1,1	17: addi \$t1,\$t1,1 #armazenar t1 no endereço de t0
	0x0040001c	0x20900000	sw \$t1,0(\$t0)	19: sw \$t1,0(\$t0) #soma=soma+t1
	0x00400020	0x02298820	addi \$t7,\$t7,\$t0	20: addi \$s1,\$s1,\$t1 #aux=aux+1
	0x00400024	0x22520001	addi \$t8,\$t8,1	21: addi \$s2,\$s2,1 #prox endereço
	0x00400028	0x21080004	addi \$t8,\$t8,4	22: addi \$t0,\$t0,4 #se aux!=flag
	0x0040002c	0x1650fff9	bne \$t8,\$t6,-7	23: bne \$s2,\$s0,do
	0x00400030	0xad110000	sw \$t7,0(\$t0)	25: sw \$s1,0(\$t0)

**Data Segment**

Address	Value (+0)	Value (+4)	Value (+8)	Value (+c)	Value (+10)	Value (+14)	Value (+18)	Value (+1c)
0x100100e0	113	115	117	119	121	123	125	127
0x10010100	129	131	133	135	137	139	141	143
0x10010120	145	147	149	151	153	155	157	159
0x10010140	161	163	165	167	169	171	173	175
0x10010160	177	179	181	183	185	187	189	191
0x10010180	193	195	197	199	10000	0	0	0

Mars Messages Run I/O

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

Registers Coproc 1 Coproc 0

Name	Number	Value
\$zero	0	0
\$at	1	0
\$v0	2	0
\$v1	3	0
\$a0	4	0
\$a1	5	0
\$a2	6	0
\$a3	7	0
\$t0	8	268501392
\$t1	9	199
\$t2	10	0
\$t3	11	0
\$t4	12	0
\$t5	13	0
\$t6	14	0
\$t7	15	0
\$s0	16	100
\$s1	17	10000
\$s2	18	100
\$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
\$fp	29	2147479548
\$sp	30	0
\$ra	31	0
pc		4194356
hi		0
lo		0

## Programa 16

C:\Users\Lu\Documents\Faculdade\AC II\Relatório8\programa16.asm - MARS 4.5

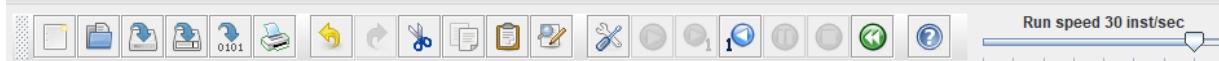
File Edit Run Settings Tools Help

Run speed 14 inst/sec

**Edit Execute**

**Text Segment**

Bkpt	Address	Code	Basic	Source
	0x00400000	0x20100064	addi \$t6,\$0,100	10: addi \$s0,\$zero,100 #flag=100
	0x00400004	0x20110000	addi \$t7,\$0,0	11: addi \$s1,\$zero,0 #aux=0
	0x00400008	0x20081001	addi \$t8,\$0,4097	12: addi \$t0,\$zero,0x1001 #ir para o primeiro endereço
	0x0040000c	0x00844000	sll \$t0,\$t0,16	13: sll \$t0,\$t0,16 #shift para o endereço ficar 0x10010000
	0x00400010	0x0084820	add \$t1,\$zero,\$t0	14: add \$t1,\$zero,\$t0 #armazenar o endereço de t0
	0x00400014	0x8d0a0000	lw \$t0,0(\$t0)	16: lw \$t2,0(\$t0) #carregar numero na primeira posição
	0x00400018	0x8d0b0004	lw \$t1,4(\$t0)	17: lw \$t3,4(\$t0) #carregar segundo numero
	0x0040001c	0x016a0022	sub \$t2,\$t1,\$t0	18: sub \$t4,\$t3,\$t2 #testar se um é maior que o outro
	0x00400020	0x000c67c3	sra \$t2,\$t2,31	19: sra \$t4,\$t4,31 #shift mantendo o sinal
	0x00400024	0x1580000a	bne \$t2,\$t0,10	20: bne \$t4,\$zero,trocar #trocar os números, caso não seja
	0x00400028	0x22310001	addi \$t7,\$t7,1	22: addi \$s1,\$s1,1 #aux=aux+1
	0x0040002c	0x21080004	addi \$t8,\$t8,4	23: addi \$t0,\$t0,4 #prox endereço
	0x00400030	0x1630fff8	bne \$t7,\$t6,-8	24: bne \$s1,\$s0,loopInt #se aux!=flag
	0x00400034	0x2210ffff	addi \$t6,\$t6,-1	25: addi \$s0,\$s0,-1 #flag=flag-1
	0x00400038	0x20110000	addi \$t7,\$t7,0	26: addi \$s1,\$zero,0 #aux=0
	0x0040003c	0x3c01ffff	lui \$t1,-1	27: andi \$t0,\$t1,-1
	0x00400040	0x3421ffff	ori \$t1,\$t1,65535	
	0x00400044	0x01214024	and \$t8,\$t8,\$t1	
	0x00400048	0x1600fff2	bne \$t6,\$t0,-14	28: bne \$s0,\$zero,loopInt
	0x0040004c	0x08100017	j 0x0040005c	29: j fim
	0x00400050	0xad0b0000	sw \$t3,0(\$t0)	31: sw \$t3,0(\$t0) #trocando
	0x00400054	0xad0a0004	sw \$t0,4(\$t0)	32: sw \$t2,4(\$t0)
	0x00400058	0x0810000a	j 0x00400028	33: j return



Edit Execute

Data Segment

Address	Value (+0)	Value (+4)	Value (+8)	Value (+c)	Value (+10)	Value (+14)	Value (+18)	Value (+1c)
0x10010000	0	0	0	0	0	0	0	0
0x10010020	0	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	1	2	3	4
0x10010140	5	6	7	8	9	10	11	12
0x10010160	13	14	15	16	17	18	19	20
0x10010180	21	22	23	24	25	0	0	0
0x100101a0	0	0	0	0	0	0	0	0
0x100101c0	0	0	0	0	0	0	0	0
0x100101e0	0	0	0	0	0	0	0	0