ĐẠI HỌC QUỐC GIA THÀNH PHỐ HỒ CHÍ MINH
TRƯỜNG ĐẠI HỌC KHOA HỌC TỰ NHIÊN
KHOA CÔNG NGHỆ THÔNG TIN

HỆ THỐNG MÁY TÍNH

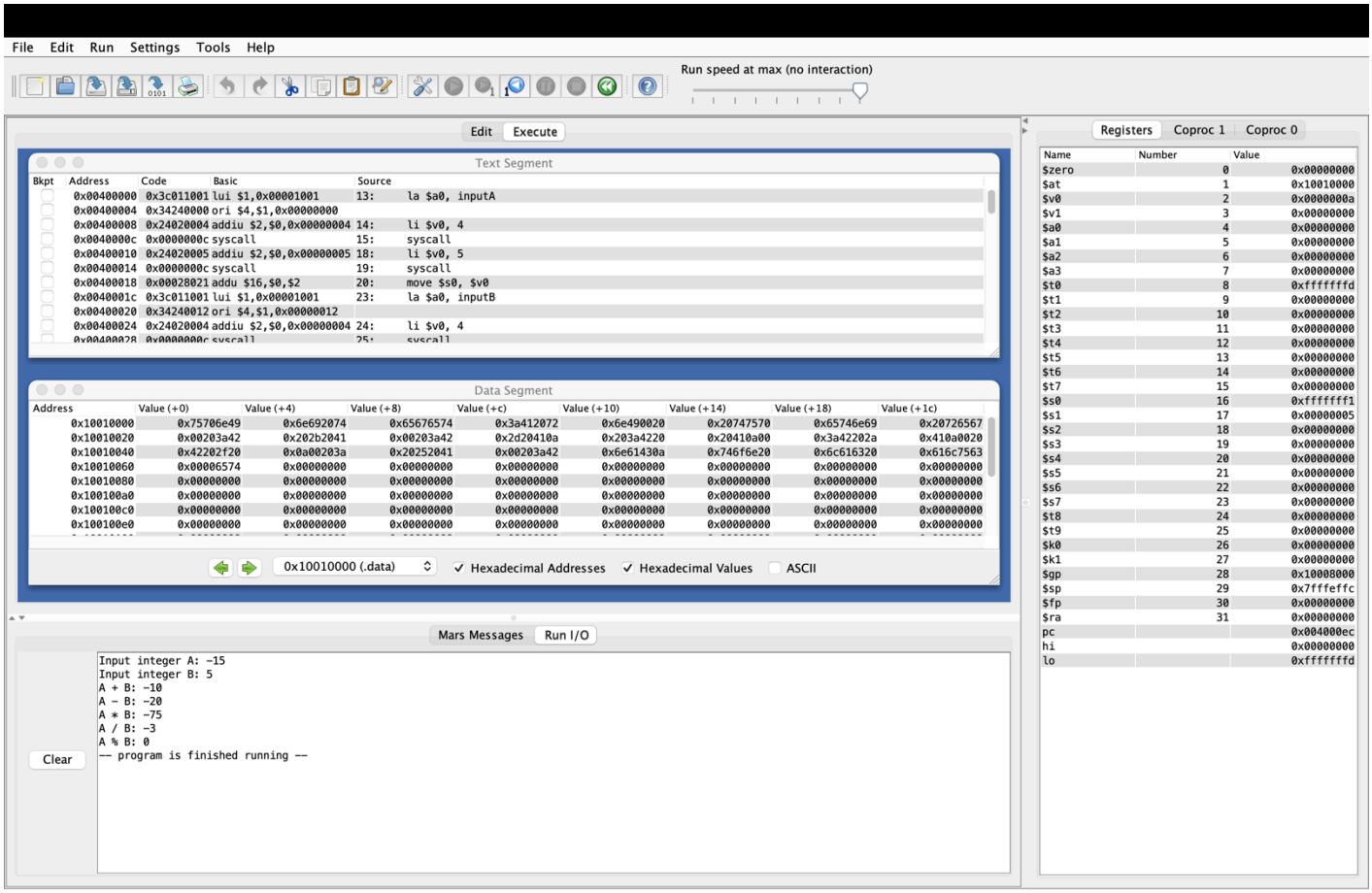
Assignment 02: MIPS ARITHMETIC

Giảng viên hướng dẫn	**:**	**Thầy LÊ QUỐC HÒA**
Lớp	**:**	**22CLC08**
Sinh viên	**:**	**Nguyễn Minh Triết - 22127427**

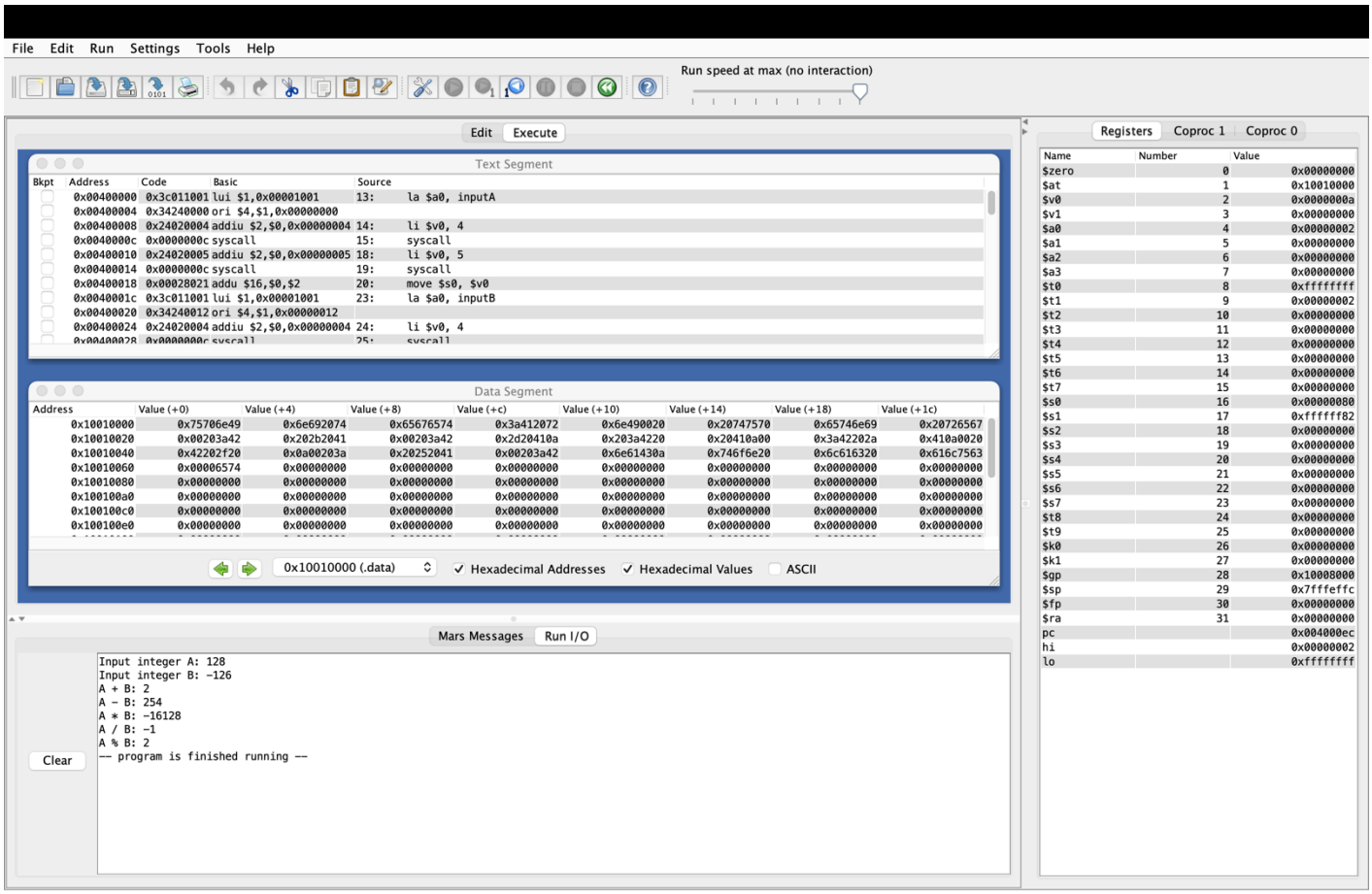
Hồ Chí Minh – 2023

I. ALL TEST CASES:

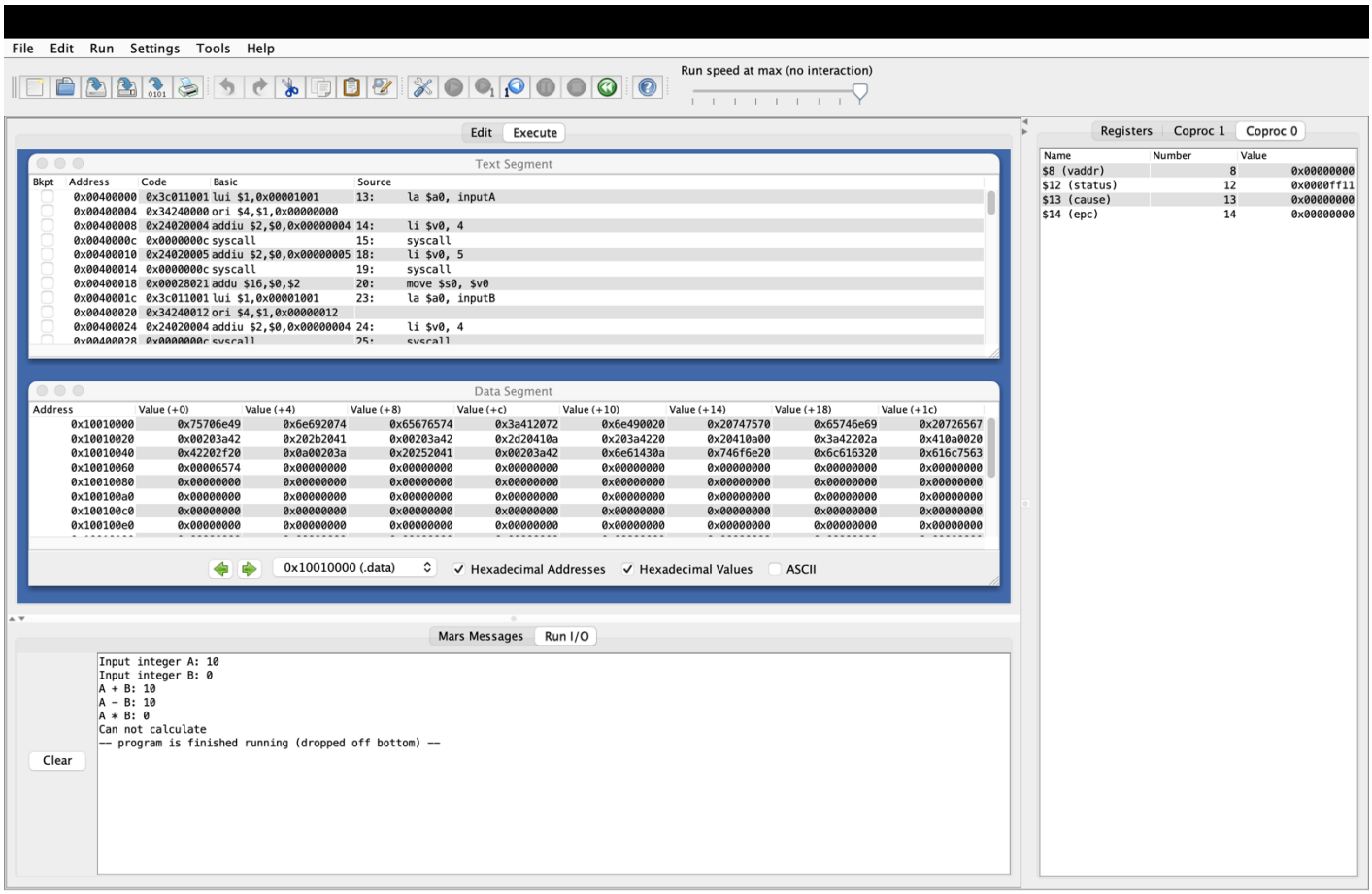
a. A = -15, B = 5



b. A = 128, B = -126


File Edit Run Settings Tools Help
Run speed at max (no interaction)
Edit Execute
Text Segment
Bkpt Address Code Basic Source
0x00400000 0x3c011001 lui $1,0x00001001 13: la $a0, inputA
0x00400004 0x34240000 ori $4,$1,0x00000000
0x00400008 0x24020004 addiu $2,$0,0x00000004 14: li $v0, 4
0x0040000c 0x0000000c syscall 15: syscall
0x00400010 0x24020005 addiu $2,$0,0x00000005 18: li $v0, 5
0x00400014 0x0000000c syscall 19: syscall
0x00400018 0x00028021 addu $16,$0,$2 20: move $s0, $v0
0x0040001c 0x3c011001 lui $1,0x00001001 23: la $a0, inputB
0x00400020 0x34240012 ori $4,$1,0x00000012
0x00400024 0x24020004 addiu $2,$0,0x00000004 24: li $v0, 4
Data Segment
Address Value (+0) Value (+4) Value (+8) Value (+c) Value (+10) Value (+14) Value (+18) Value (+1c)
0x10010000 0x75706e49 0x6e692074 0x65676574 0x3a412072 0x6e490020 0x20747570 0x65746e69 0x20726567
0x10010020 0x00203a42 0x202b2041 0x00203a42 0x2d20410a 0x203a4220 0x20410a00 0x3a42202a 0x410a0020
0x10010040 0x42202f20 0x0a00203a 0x20252041 0x00203a42 0x6e61430a 0x746f6e20 0x6c616320 0x616c7563
0x10010060 0x00006574 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
Mars Messages Run I/O
Input integer A: 128
Input integer B: -126
A + B: 2
A - B: 254
A * B: -16128
A / B: -1
A % B: 2
-- program is finished running --
Clear
Registers Coproc 1 Coproc 0
Name Number Value
$zero 0 0x00000000
$at 1 0x10010000
$v0 2 0x0000000a
$v1 3 0x00000000
$a0 4 0x00000002
$a1 5 0x00000000
$a2 6 0x00000000
$a3 7 0x00000000
$t0 8 0xffffffff
$t1 9 0x00000002
$t2 10 0x00000000
$t3 11 0x00000000
$t4 12 0x00000000
$t5 13 0x00000000
$t6 14 0x00000000
$t7 15 0x00000000
$s0 16 0x00000080
$s1 17 0xffffff82
$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
$sp 29 0x7fffeffc
$fp 30 0x00000000
$ra 31 0x00000000
pc 0x004000ec
hi 0x00000002
lo 0xffffffff

c. A = 10, B = 0


File Edit Run Settings Tools Help
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Edit Execute
Text Segment
Bkpt Address Code Basic Source
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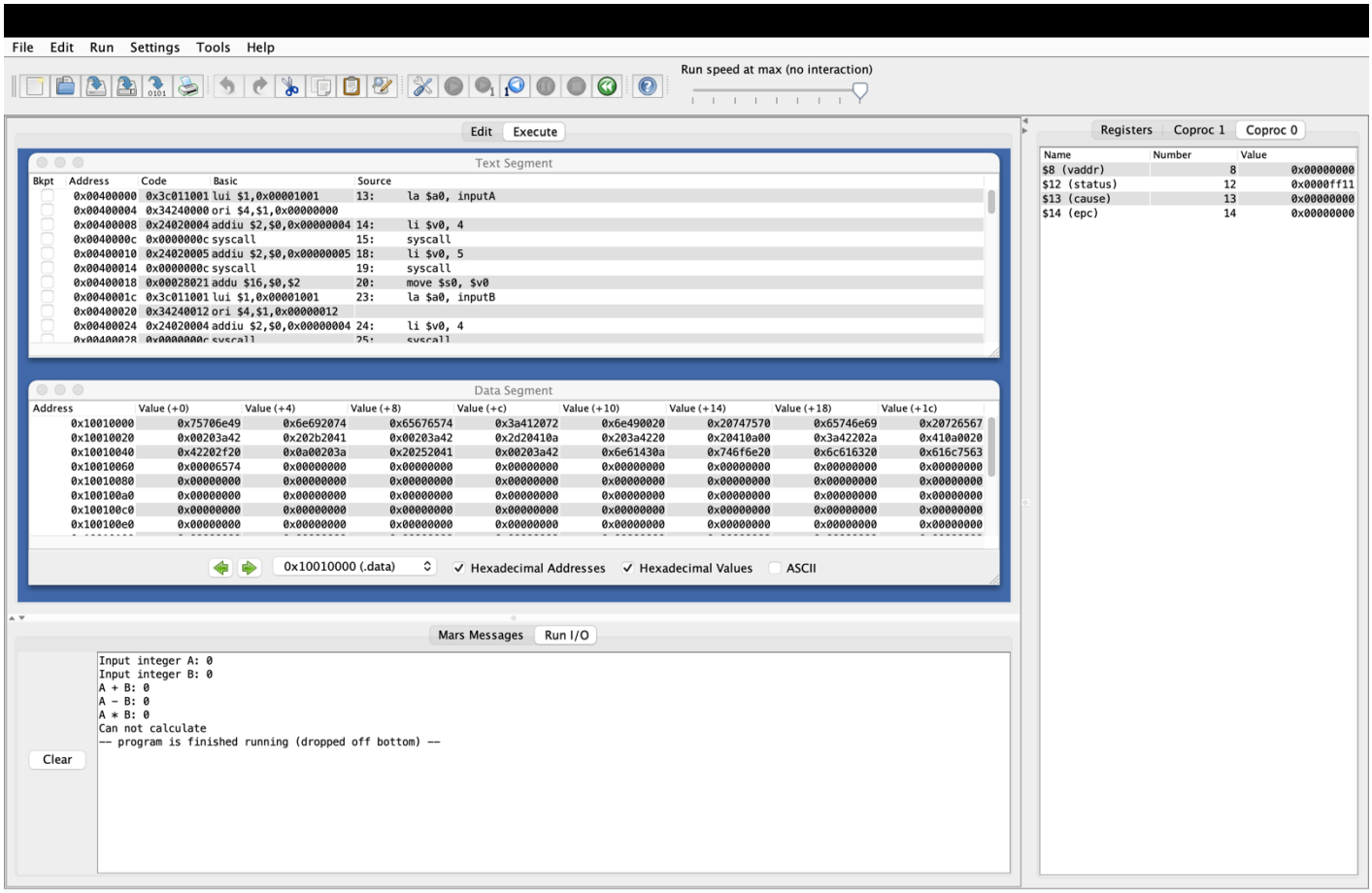
0x00400004 0x34240000 ori $4,$1,0x00000000
0x00400008 0x24020004 addiu $2,$0,0x00000004 14: li $v0, 4
0x0040000c 0x0000000c syscall 15: syscall
0x00400010 0x24020005 addiu $2,$0,0x00000005 18: li $v0, 5
0x00400014 0x0000000c syscall 19: syscall
0x00400018 0x00028021 addu $16,$0,$2 20: move $s0, $v0
0x0040001c 0x3c011001 lui $1,0x00001001 23: la $a0, inputB
0x00400020 0x34240012 ori $4,$1,0x00000012
0x00400024 0x24020004 addiu $2,$0,0x00000004 24: li $v0, 4
Data Segment
Address Value (+0) Value (+4) Value (+8) Value (+c) Value (+10) Value (+14) Value (+18) Value (+1c)
0x10010000 0x75706e49 0x6e692074 0x65676574 0x3a412072 0x6e490020 0x20747570 0x65746e69 0x20726567
0x10010020 0x00203a42 0x202b2041 0x00203a42 0x2d20410a 0x203a4220 0x20410a00 0x3a42202a 0x410a0020
0x10010040 0x42202f20 0x0a00203a 0x20252041 0x00203a42 0x6e61430a 0x746f6e20 0x6c616320 0x616c7563
0x10010060 0x00006574 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 Coproc 1 Coproc 0
Name Number Value
$8 (vaddr) 8 0x00000000
$12 (status) 12 0x0000ff11
$13 (cause) 13 0x00000000
$14 (epc) 14 0x00000000
Mars Messages Run I/O
Input integer A: 10
Input integer B: 0
A + B: 10
A - B: 10
A * B: 0
Can not calculate
-- program is finished running (dropped off bottom) --
Clear

d. A = 0, B = 0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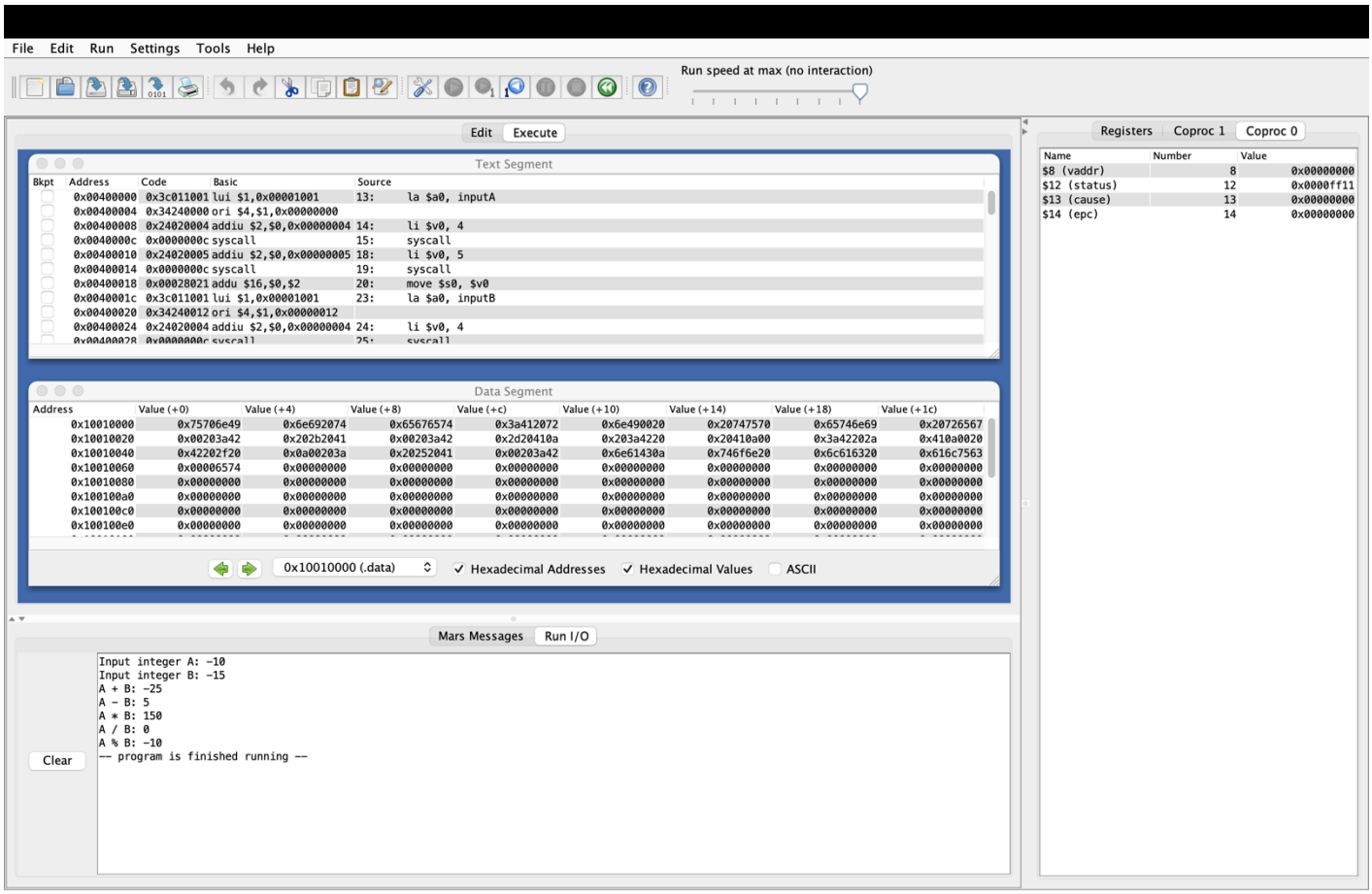
Edit Execute
Text Segment
Bkpt Address Code Basic Source
0x00400000 0x3c011001 lui $1,0x00001001 13: la $a0, inputA
0x00400004 0x34240000 ori $4,$1,0x00000000
0x00400008 0x24020004 addiu $2,$0,0x00000004 14: li $v0, 4
0x0040000c 0x0000000c syscall 15: syscall
0x00400010 0x24020005 addiu $2,$0,0x00000005 18: li $v0, 5
0x00400014 0x0000000c syscall 19: syscall
0x00400018 0x00028021 addu $16,$0,$2 20: move $s0, $v0
0x0040001c 0x3c011001 lui $1,0x00001001 23: la $a0, inputB
0x00400020 0x34240012 ori $4,$1,0x00000012
0x00400024 0x24020004 addiu $2,$0,0x00000004 24: li $v0, 4
Data Segment
Address Value (+0) Value (+4) Value (+8) Value (+c) Value (+10) Value (+14) Value (+18) Value (+1c)
0x10010000 0x75706e49 0x6e692074 0x65676574 0x3a412072 0x6e490020 0x20747570 0x65746e69 0x20726567
0x10010020 0x00203a42 0x202b2041 0x00203a42 0x2d20410a 0x203a4220 0x20410a00 0x3a42202a 0x410a0020
0x10010040 0x42202f20 0x0a00203a 0x20252041 0x00203a42 0x6e61430a 0x746f6e20 0x6c616320 0x616c7563
0x10010060 0x00006574 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 Coproc 1 Coproc 0
Name Number Value
$8 (vaddr) 8 0x00000000
$12 (status) 12 0x0000ff11
$13 (cause) 13 0x00000000
$14 (epc) 14 0x00000000
Mars Messages Run I/O
Input integer A: 0
Input integer B: 0
A + B: 0
A - B: 0
A * B: 0
Can not calculate
-- program is finished running (dropped off bottom) --
Clear

e. A = -10, B = -15



II. Percentage of work is done: 100 %