

# LAB 2 – EE 352

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## 1. Memory Map:

Main Program:

Address	Code	Basic	Source
0x00400000	0x3c011001	lui \$1,0x00001001	11: main: la \$t0, array # Load address of the array
0x00400004	0x34280000	ori \$8,\$1,0x00000000	
0x00400008	0x8d0a0000	lw \$10,0x00000000(\$8)	12: lw \$t2, 0(\$t0) # Load first address of the array
0x0040000c	0x3c011001	lui \$1,0x00001001	13: la \$t1, size # Load address of the size variable
0x00400010	0x34290028	ori \$9,\$1,0x00000028	
0x00400014	0x8d290000	lw \$9,0x00000000(\$9)	14: lw \$t1, 0(\$t1) # Load size of the array
0x00400018	0x200b0000	addi \$11,\$0,0x00000000	15: addi \$t3 \$zero, 0 # Set the counter variable to zero.
0x0040001c	0x000a7821	addu \$15,\$0,\$10	16: move \$t7, \$t2 # Set the max value (\$t7) initiall...
0x00400020	0x01ea702a	slt \$14,\$15,\$10	18: loop: slt \$t6 \$t7, \$t2 # Compares \$t7 with \$t2
0x00400024	0x11c00001	beq \$14,\$0,0x00000001	19: beqz \$t6, smaller # Branches to smaller in the case ...
0x00400028	0x000a7821	addu \$15,\$0,\$10	20: move \$t7, \$t2 # If a new max was found, the max ...
0x0040002c	0x216b0001	addi \$11,\$11,0x0000...	21: smaller: addi \$t3, \$t3, 1 # Increments the counter
0x00400030	0x21080004	addi \$8,\$8,0x00000004	22: add \$t0, \$t0, 4 # Updates the address of the curre...
0x00400034	0x8d0a0000	lw \$10,0x00000000(\$8)	23: lw \$t2, 0(\$t0) # Update the current value
0x00400038	0x0169702a	slt \$14,\$11,\$9	24: slt \$t6, \$t3, \$t1 # Compares the counter with the si...
0x0040003c	0x1dc0fff8	bgtz \$14,0xffffffff8	25: bgtz \$t6, loop # When there is more iterations to...

Array and size data:

Address	Value (+0)	Value (+4)	Value (+8)	Value (+c)	Value (+10)	Value (+14)	Value (+18)	Value (+1c)
0x10010000	11	81	44	14	59	75	12	80
0x10010020	29	88	10	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

Array: 11, 81, 44, 14, 59, 75, 12, 80, 29, 88.

Size: 10.

## 2. Content of the registers for each iteration

a. Iteration 0:

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	268500992
\$t1	9	10
\$t2	10	11
\$t3	11	0
\$t4	12	0
\$t5	13	0
\$t6	14	0
\$t7	15	11
\$s0	16	0
\$s1	17	0
\$s2	18	0
\$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		4194336
hi		0
lo		0

b. Iteration 1:

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	268500996
\$t1	9	10
\$t2	10	81
\$t3	11	1
\$t4	12	0
\$t5	13	0
\$t6	14	1
\$t7	15	11
\$s0	16	0
\$s1	17	0
\$s2	18	0
\$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		4194364
hi		0
lo		0

c. Iteration 2:

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	268501000
\$t1	9	10
\$t2	10	44
\$t3	11	2
\$t4	12	0
\$t5	13	0
\$t6	14	1
\$t7	15	81
\$s0	16	0
\$s1	17	0
\$s2	18	0
\$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		4194364
hi		0
lo		0

d. Iteration 3:

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	268501004
\$t1	9	10
\$t2	10	14
\$t3	11	3
\$t4	12	0
\$t5	13	0
\$t6	14	1
\$t7	15	81
\$s0	16	0
\$s1	17	0
\$s2	18	0
\$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		4194364
hi		0
lo		0

e. Iteration 4:

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	268501008
\$t1	9	10
\$t2	10	59
\$t3	11	4
\$t4	12	0
\$t5	13	0
\$t6	14	1
\$t7	15	81
\$s0	16	0
\$s1	17	0
\$s2	18	0
\$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		4194364
hi		0
lo		0

f. Iteration 5:

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	268501012
\$t1	9	10
\$t2	10	75
\$t3	11	5
\$t4	12	0
\$t5	13	0
\$t6	14	1
\$t7	15	81
\$s0	16	0
\$s1	17	0
\$s2	18	0
\$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		4194364
hi		0
lo		0

g. Iteration 6:

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	268501016
\$t1	9	10
\$t2	10	12
\$t3	11	6
\$t4	12	0
\$t5	13	0
\$t6	14	1
\$t7	15	81
\$s0	16	0
\$s1	17	0
\$s2	18	0
\$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		4194364
hi		0
lo		0



h. Iteration 7:

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	268501020
\$t1	9	10
\$t2	10	80
\$t3	11	7
\$t4	12	0
\$t5	13	0
\$t6	14	1
\$t7	15	81
\$s0	16	0
\$s1	17	0
\$s2	18	0
\$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		4194364
hi		0
lo		0

i. Iteration 8:

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	268501024
\$t1	9	10
\$t2	10	29
\$t3	11	8
\$t4	12	0
\$t5	13	0
\$t6	14	1
\$t7	15	81
\$s0	16	0
\$s1	17	0
\$s2	18	0
\$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		4194364
hi		0
lo		0

j. Iteration 9:

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	268501028
\$t1	9	10
\$t2	10	88
\$t3	11	9
\$t4	12	0
\$t5	13	0
\$t6	14	1
\$t7	15	81
\$s0	16	0
\$s1	17	0
\$s2	18	0
\$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		4194364
hi		0
lo		0

k. Iteration 10:

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	268501032
\$t1	9	10
\$t2	10	10
\$t3	11	10
\$t4	12	0
\$t5	13	0
\$t6	14	0
\$t7	15	88
\$s0	16	0
\$s1	17	0
\$s2	18	0
\$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		4194364
hi		0
lo		0