Steve Smith
ELEC 385, Section 1
Dr. Marino
27 March 2015

Homework #10

/Users/Steve/Documents/Class/ELEC 385 - Computer System Design/Homework 10/summation.asm - MARS 4.5

File Edit Run Settings Tools Help

Run speed at max (no interaction)

Edit Execute

summation.asm

```
1  .data
2          arr:    .float          82.6, -1.0, -6.7348483, 0.0, 100.9, 82.0116
3          counter:.word           6
4          const:  .float          82.0116
5          sum:    .float          0.0
6  .text
7          la      $t0, arr        # Initialize pointer
8          lw      $t1, counter    # Load the counter into $t1
9          lwc1    $f12, sum       # Initialize the sum (which starts at 0.0) into $f12 (also the register printing a double reads from in future syscall)
10         lwc1    $f1, const      # Initialize the constant we're going to subtract by
11 loop:
12         lwc1    $f2, 0($t0)     # load the value from the array
13         sub.s   $f3, $f2, $f1   # subtract the value from array by the constant, place in $f3
14         mul.s   $f3, $f3, $f3   # (x-82.0116)^2
15         add.s   $f12, $f12, $f3 # add to the running total
16         addi    $t0, $t0, 4     # increment the address for the array index
17         addi    $t1, $t1, -1    # decrement the counter
18         beq     $t1, $0, exit   # if the counter is 0, exit
19         j       loop            # keep looping
20 exit:
21         li      $v0, 2          # the syscall to print a float to the console
22         syscall                 # print to screen
23         li      $v0, 10         # load syscall to exit program
24         syscall                 # exit program
25
```

Line: 3 Column: 18 Show Line Numbers

Mars Messages Run I/O

```
21849.877
-- 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	0
$a1	5	0
$a2	6	0
$a3	7	0
$t0	8	268501016
$t1	9	0
$t2	10	0
$t3	11	0
$t4	12	0
$t5	13	0
$t6	14	0
$t7	15	0
$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		4194384
hi		0
lo		0

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File Edit Run Settings Tools Help

Run speed at max (no interaction)

Edit Execute

summation.asm

```
1  .data
2          arr:    .float          82.6, -1.3, 0.0, 82.0116
3          counter:.word           4
4          const:  .float          82.0116
5          sum:    .float          0.0
6  .text
7          la      $t0, arr        # Initialize pointer
8          lw      $t1, counter    # Load the counter into $t1
9          lwc1    $f12, sum       # Initialize the sum (which starts at 0.0) into $f12 (also the register printing a double reads from in future syscall)
10         lwc1    $f1, const      # Initialize the constant we're going to subtract by
11 loop:
12         lwc1    $f2, 0($t0)     # load the value from the array
13         sub.s   $f3, $f2, $f1   # subtract the value from array by the constant, place in $f3
14         mul.s   $f3, $f3, $f3   # (x-82.0116)^2
15         add.s   $f12, $f12, $f3 # add to the running total
16         addi    $t0, $t0, 4     # increment the address for the array index
17         addi    $t1, $t1, -1    # decrement the counter
18         beq     $t1, $0, exit   # if the counter is 0, exit
19         j       loop            # keep looping
20 exit:
21         li      $v0, 2          # the syscall to print a float to the console
22         syscall                 # print to screen
23         li      $v0, 10         # load syscall to exit program
24         syscall                 # exit program
25
```

Line: 8 Column: 45 Show Line Numbers

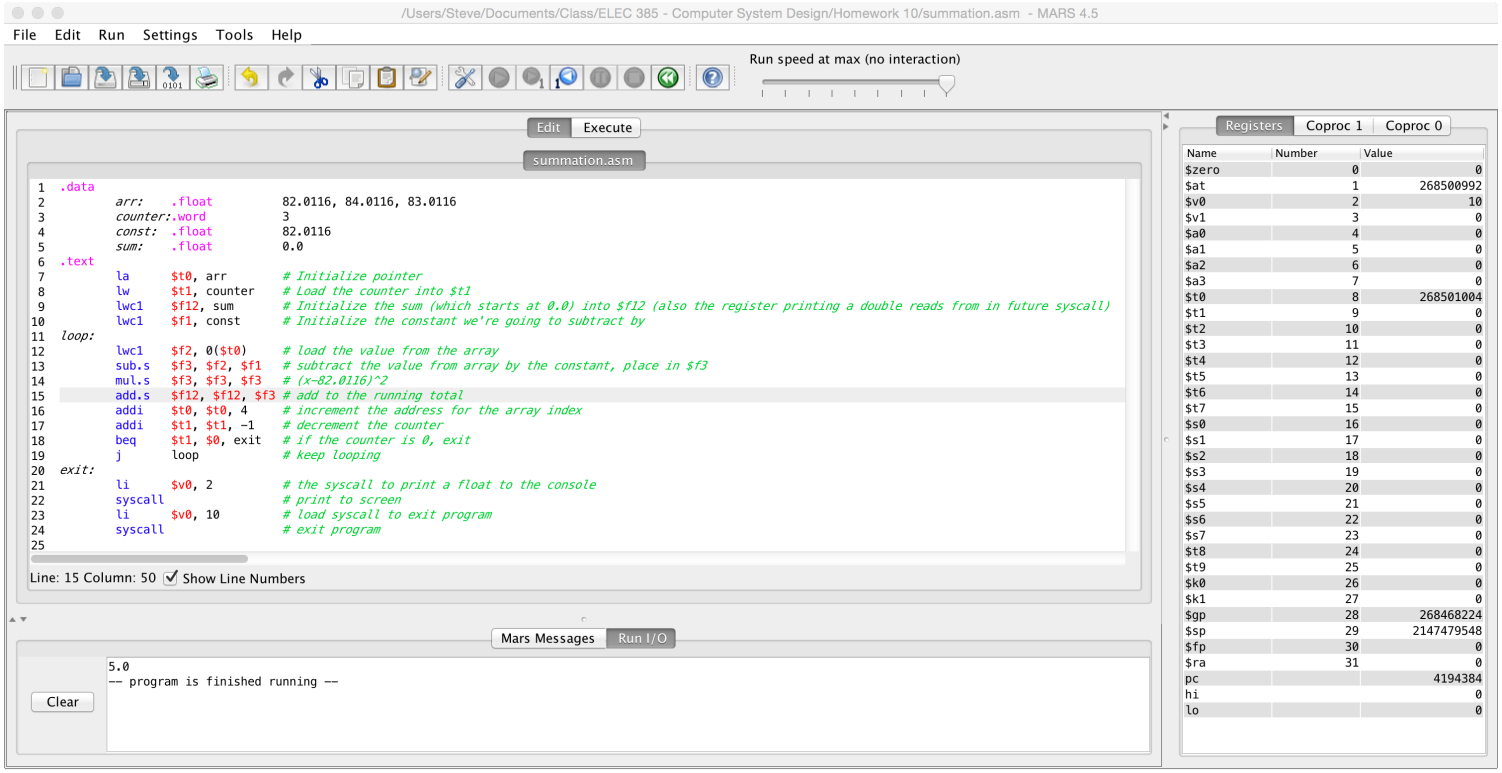
Mars Messages Run I/O

```
13667.07
-- 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	0
$a1	5	0
$a2	6	0
$a3	7	0
$t0	8	268501008
$t1	9	0
$t2	10	0
$t3	11	0
$t4	12	0
$t5	13	0
$t6	14	0
$t7	15	0
$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		4194384
hi		0
lo		0


/Users/Steve/Documents/Class/ELEC 385 - Computer System Design/Homework 10/summation.asm - MARS 4.5
File Edit Run Settings Tools Help
Run speed at max (no interaction)
Edit Execute
summation.asm
1 .data
2 arr: .float 82.0116, 84.0116, 83.0116
3 counter:.word 3
4 const: .float 82.0116
5 sum: .float 0.0
6 .text
7 la $t0, arr # Initialize pointer
8 lw $t1, counter # Load the counter into $t1
9 lwc1 $f12, sum # Initialize the sum (which starts at 0.0) into $f12 (also the register printing a double reads from in future syscall)
10 lwc1 $f1, const # Initialize the constant we're going to subtract by
11 loop:
12 lwc1 $f2, 0($t0) # load the value from the array
13 sub.s $f3, $f2, $f1 # subtract the value from array by the constant, place in $f3
14 mul.s $f3, $f3, $f3 # (x-82.0116)^2
15 add.s $f12, $f12, $f3 # add to the running total
16 addi $t0, $t0, 4 # increment the address for the array index
17 addi $t1, $t1, -1 # decrement the counter
18 beq $t1, $0, exit # if the counter is 0, exit
19 j loop # keep looping
20 exit:
21 li $v0, 2 # the syscall to print a float to the console
22 syscall # print to screen
23 li $v0, 10 # load syscall to exit program
24 syscall # exit program
25
Line: 15 Column: 50 Show Line Numbers
Mars Messages Run I/O
Clear
5.0
-- program is finished running --
Registers Coproc 1 Coproc 0
Name Number Value
$zero 0 0
$at 1 268500992
$v0 2 10
$v1 3 0
$a0 4 0
$a1 5 0
$a2 6 0
$a3 7 0
$t0 8 268501004
$t1 9 0
$t2 10 0
$t3 11 0
$t4 12 0
$t5 13 0
$t6 14 0
$t7 15 0
$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 4194384
hi 0
lo 0