

Chris Grimes
CS 35101
average.pdf

List of the assembly code files:

average.asm

To implement this project I had to create a file that took a user's input, in integer form, and then take X more inputs, in float form, where X equals the user's first input. Then I averaged the floating number inputs by dividing their sum by the first integer received. To accomplish this goal I prompted the user for an integer. Next, I used a while loop to ask for a float number X times and in the same while loop I summed the float inputs thus far. After exiting the while loop I converted the original integer input to a float and then averaged the float inputs and returned the average.

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average.pdf

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File Edit Run Settings Tools Help

Run speed at max (no interaction)

Labels

Label	Address
(global)	
main	0x00400000
average.asm	
while	0x00400040
exit	0x00400070
outPrompt	0x10010000
outStr	0x10010020
average	0x10010040
number1	0x10010060

Registers

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
\$a4	8	0
\$a5	9	0
\$t0	10	0
\$t1	11	0
\$t2	12	0
\$t3	13	0
\$t4	14	0
\$t5	15	0
\$t6	16	0
\$t7	17	0
\$s0	18	0
\$s1	19	0
\$s2	20	0
\$s3	21	0
\$s4	22	0
\$s5	23	0
\$s6	24	0
\$s7	25	0
\$s8	26	0
\$s9	27	0
\$fp	28	268449324
\$sp	29	214747944
\$gp	30	0
\$ra	31	0
\$pc		4194304
\$hi		0
\$lo		0

Mars Messages

Run IO

Clear

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Labels

Label	Address
(global)	
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average.asm	
while	0x00400040
exit	0x00400070
outPrompt	0x10010000
outStr	0x10010020
average	0x10010040
number1	0x10010060

Registers

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
\$a4	8	0
\$a5	9	0
\$t0	10	0
\$t1	11	0
\$t2	12	0
\$t3	13	0
\$t4	14	0
\$t5	15	0
\$t6	16	0
\$t7	17	0
\$s0	18	0
\$s1	19	0
\$s2	20	0
\$s3	21	0
\$s4	22	0
\$s5	23	0
\$s6	24	0
\$s7	25	0
\$s8	26	0
\$s9	27	0
\$fp	28	268449324
\$sp	29	214747944
\$gp	30	0
\$ra	31	0
\$pc		4194304
\$hi		0
\$lo		0

Mars Messages

Run IO

Clear

Enter an integer value (syscall 5)

11

OK

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File Edit Run Settings Tools Help

Run speed at max (no interaction)

Text Segment

Offset	Address	Code	Basic	Source
0x00400000	0x00400000	21:	la \$a0, outputStr	# system call 4 for print string needs ...
0x00400001	0x00400001	22:	li \$v0, 4	# system call 4 for print string needs ...
0x00400002	0x00400002	23:	syscall	
0x00400003	0x00400003	24:	la \$a0, outputPrompt	# system call 4 for print string needs ...
0x00400004	0x00400004	25:	li \$v0, 4	# system call 4 for print string needs ...
0x00400005	0x00400005	26:	syscall	
0x00400006	0x00400006	27:	move \$t0, \$v0	# move the amount of inputs to register \$t0 as amt...
0x00400007	0x00400007	28:	addi \$t1, \$zero, 0	# loop variable for while loop
0x00400008	0x00400008	29:	lwi \$f16, number1	# prep f16 to hold the sum of the user's input
0x00400009	0x00400009	30:	lwi \$f6, number1	# puts 0 in f6
0x0040000A	0x0040000A	31:	hlt	

Labels

Label	Address
(global)	
main	0x00400000
average.asm	0x00400000
while	0x00400007
exit	0x0040000A
outputPrompt	0x00400003
outputStr	0x00400001
Average	0x00400006
number1	0x00400009

Registers

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
\$a4	8	0
\$a5	9	0
\$t0	10	0
\$t1	11	0
\$t2	12	0
\$t3	13	0
\$t4	14	0
\$t5	15	0
\$t6	16	0
\$t7	17	0
\$t8	18	0
\$t9	19	0
\$s0	20	0
\$s1	21	0
\$s2	22	0
\$s3	23	0
\$s4	24	0
\$s5	25	0
\$s6	26	0
\$s7	27	0
\$s8	28	268469224
\$s9	29	2147479544
\$fp	30	0
\$ra	31	0
\$pc		4194384
\$hi		0
\$lo		0

MIPS Keyboard Input

Enter a float value (syscall 6)

1.25

OK

Mars Messages

Run IO

This is Chris Grimes presenting average.
Please enter the amount of numbers you wish to average:
**** user input : 11
Please enter a 3 digit decimal d.dd:

Clear

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File Edit Run Settings Tools Help

Run speed at max (no interaction)

Text Segment

Offset	Address	Code	Basic	Source
0x00400000	0x00400000	21:	la \$a0, outputStr	# system call 4 for print string needs ...
0x00400001	0x00400001	22:	li \$v0, 4	# system call 4 for print string needs ...
0x00400002	0x00400002	23:	syscall	
0x00400003	0x00400003	24:	la \$a0, outputPrompt	# system call 4 for print string needs ...
0x00400004	0x00400004	25:	li \$v0, 4	# system call 4 for print string needs ...
0x00400005	0x00400005	26:	syscall	
0x00400006	0x00400006	27:	move \$t0, \$v0	# move the amount of inputs to register \$t0 as amt...
0x00400007	0x00400007	28:	addi \$t1, \$zero, 0	# loop variable for while loop
0x00400008	0x00400008	29:	lwi \$f16, number1	# prep f16 to hold the sum of the user's input
0x00400009	0x00400009	30:	lwi \$f6, number1	# puts 0 in f6
0x0040000A	0x0040000A	31:	hlt	

Labels

Label	Address
(global)	
main	0x00400000
average.asm	0x00400000
while	0x00400007
exit	0x0040000A
outputPrompt	0x00400003
outputStr	0x00400001
Average	0x00400006
number1	0x00400009

Registers

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
\$a4	8	0
\$a5	9	0
\$t0	10	0
\$t1	11	0
\$t2	12	0
\$t3	13	0
\$t4	14	0
\$t5	15	0
\$t6	16	0
\$t7	17	0
\$t8	18	0
\$t9	19	0
\$s0	20	0
\$s1	21	0
\$s2	22	0
\$s3	23	0
\$s4	24	0
\$s5	25	0
\$s6	26	0
\$s7	27	0
\$s8	28	268469224
\$s9	29	2147479544
\$fp	30	0
\$ra	31	0
\$pc		4194384
\$hi		0
\$lo		0

MIPS Keyboard Input

Enter a float value (syscall 6)

1.25

OK

Mars Messages

Run IO

This is Chris Grimes presenting average.
Please enter the amount of numbers you wish to average:
**** user input : 11
Please enter a 3 digit decimal d.dd: **** user input : 1.25
Please enter a 3 digit decimal d.dd:

Clear

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Text Segment

Offset	Address	Code	Basic	Source
0x00400000	0x00400000	21:	la \$a0, outputStr	# system call 4 for print string needs ...
0x00400001	0x00400001	22:	li \$v0, 4	# system call 4 for print string needs ...
0x00400002	0x00400002	23:	syscall	
0x00400003	0x00400003	24:	la \$a0, outputPrompt	# system call 4 for print string needs ...
0x00400004	0x00400004	25:	li \$v0, 4	# system call 4 for print string needs ...
0x00400005	0x00400005	26:	syscall	
0x00400006	0x00400006	27:	move \$t0, \$v0	# move the amount of inputs to register \$t0 as amt...
0x00400007	0x00400007	28:	addi \$t1, \$zero, 0	# loop variable for while loop
0x00400008	0x00400008	29:	lwi \$f16, number1	# prep f16 to hold the sum of the user's input
0x00400009	0x00400009	30:	lwi \$f6, number1	# puts 0 in f6
0x0040000A	0x0040000A	31:	hlt	

Labels

Label	Address
(global)	
main	0x00400000
average.asm	0x00400000
while	0x00400004
exit	0x00400007
outputStr	0x0040000A
outputPrompt	0x0040000D
average	0x0040000E
number1	0x0040000F

Registers

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
\$a4	8	0
\$a5	9	0
\$a6	10	0
\$a7	11	0
\$t0	12	0
\$t1	13	0
\$t2	14	0
\$t3	15	0
\$t4	16	0
\$t5	17	0
\$t6	18	0
\$t7	19	0
\$t8	20	0
\$t9	21	0
\$s0	22	0
\$s1	23	0
\$s2	24	0
\$s3	25	0
\$s4	26	0
\$s5	27	0
\$s6	28	268469224
\$s7	29	214747944
\$s8	30	0
\$s9	31	0
\$f0	32	0
\$f1	33	0
\$f2	34	0
\$f3	35	0
\$f4	36	0
\$f5	37	0
\$f6	38	0
\$f7	39	0
\$f8	40	0
\$f9	41	0
\$f10	42	0
\$f11	43	0
\$f12	44	0
\$f13	45	0
\$f14	46	0
\$f15	47	0
\$f16	48	0
\$f17	49	0
\$f18	50	0
\$f19	51	0
\$f20	52	0
\$f21	53	0
\$f22	54	0
\$f23	55	0
\$f24	56	0
\$f25	57	0
\$f26	58	0
\$f27	59	0
\$f28	60	0
\$f29	61	0
\$f30	62	0
\$f31	63	0
\$f32	64	0
\$f33	65	0
\$f34	66	0
\$f35	67	0
\$f36	68	0
\$f37	69	0
\$f38	70	0
\$f39	71	0
\$f40	72	0
\$f41	73	0
\$f42	74	0
\$f43	75	0
\$f44	76	0
\$f45	77	0
\$f46	78	0
\$f47	79	0
\$f48	80	0
\$f49	81	0
\$f50	82	0
\$f51	83	0
\$f52	84	0
\$f53	85	0
\$f54	86	0
\$f55	87	0
\$f56	88	0
\$f57	89	0
\$f58	90	0
\$f59	91	0
\$f60	92	0
\$f61	93	0
\$f62	94	0
\$f63	95	0
\$f64	96	0
\$f65	97	0
\$f66	98	0
\$f67	99	0
\$f70	100	0

Mars Messages

Run IO

This is Chris Grimes presenting average.
Please enter the amount of numbers you wish to average:
**** user input : 11
Please enter a 3 digit decimal d.dd: **** user input : 1.25
Please enter a 3 digit decimal d.dd: **** user input : 2.75
Please enter a 3 digit decimal d.dd:

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Run speed at max (no interaction)

Text Segment

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0x00400003	0x00400003	24:	la \$a0, outputPrompt	# system call 4 for print string needs ...
0x00400004	0x00400004	25:	li \$v0, 4	# system call 4 for print string needs ...
0x00400005	0x00400005	26:	syscall	
0x00400006	0x00400006	27:	move \$t0, \$v0	# move the amount of inputs to register \$t0 as amt...
0x00400007	0x00400007	28:	addi \$t1, \$zero, 0	# loop variable for while loop
0x00400008	0x00400008	29:	lwi \$f16, number1	# prep f16 to hold the sum of the user's input
0x00400009	0x00400009	30:	lwi \$f6, number1	# puts 0 in f6
0x0040000A	0x0040000A	31:	hlt	

Labels

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(global)	
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outputStr	0x0040000A
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average	0x0040000E
number1	0x0040000F

Registers

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\$at	1	0
\$v0	2	0
\$v1	3	0
\$a0	4	0
\$a1	5	0
\$a2	6	0
\$a3	7	0
\$a4	8	0
\$a5	9	0
\$a6	10	0
\$a7	11	0
\$t0	12	0
\$t1	13	0
\$t2	14	0
\$t3	15	0
\$t4	16	0
\$t5	17	0
\$t6	18	0
\$t7	19	0
\$t8	20	0
\$t9	21	0
\$s0	22	0
\$s1	23	0
\$s2	24	0
\$s3	25	0
\$s4	26	0
\$s5	27	0
\$s6	28	268469224
\$s7	29	214747944
\$s8	30	0
\$s9	31	0
\$f0	32	0
\$f1	33	0
\$f2	34	0
\$f3	35	0
\$f4	36	0
\$f5	37	0
\$f6	38	0
\$f7	39	0
\$f8	40	0
\$f9	41	0
\$f10	42	0
\$f11	43	0
\$f12	44	0
\$f13	45	0
\$f14	46	0
\$f15	47	0
\$f16	48	0
\$f17	49	0
\$f18	50	0
\$f19	51	0
\$f20	52	0
\$f21	53	0
\$f22	54	0
\$f23	55	0
\$f24	56	0
\$f25	57	0
\$f26	58	0
\$f27	59	0
\$f28	60	0
\$f29	61	0
\$f30	62	0
\$f31	63	0
\$f32	64	0
\$f33	65	0
\$f34	66	0
\$f35	67	0
\$f36	68	0
\$f37	69	0
\$f38	70	0
\$f39	71	0
\$f40	72	0
\$f41	73	0
\$f42	74	0
\$f43	75	0
\$f44	76	0
\$f45	77	0
\$f46	78	0
\$f47	79	0
\$f48	80	0
\$f49	81	0
\$f50	82	0
\$f51	83	0
\$f52	84	0
\$f53	85	0
\$f54	86	0
\$f55	87	0
\$f56	88	0
\$f57	89	0
\$f58	90	0
\$f59	91	0
\$f60	92	0
\$f61	93	0
\$f62	94	0
\$f63	95	0
\$f64	96	0
\$f65	97	0
\$f66	98	0
\$f67	99	0
\$f70	100	0

Mars Messages

Run IO

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Please enter the amount of numbers you wish to average:
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Please enter a 3 digit decimal d.dd: **** user input : 1.25
Please enter a 3 digit decimal d.dd: **** user input : 2.75
Please enter a 3 digit decimal d.dd: **** user input : .75
Please enter a 3 digit decimal d.dd:

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Text Segment

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0x00400004	0x00400004	22:	li \$v0, 4	# system call 4 for print string needs ...
0x00400008	0x00400008	23:	syscall	
0x0040000c	0x0040000c	24:	la \$a0, outputPrompt	# system call 4 for print string needs ...
0x00400010	0x00400010	25:	li \$v0, 4	# system call 4 for print string needs ...
0x00400014	0x00400014	26:	syscall	
0x00400018	0x00400018	27:	move \$t0, \$v0	# move the amount of inputs to register \$t0 as amt...
0x0040001c	0x0040001c	28:	addi \$t1, \$zero, 0	# loop variable for while loop
0x00400020	0x00400020	29:	lwi \$f16, number1	# prep f16 to hold the sum of the user's input
0x00400024	0x00400024	30:	lwi \$f6, number1	# puts 0 in f6
0x00400028	0x00400028	31:	hlt	

Labels

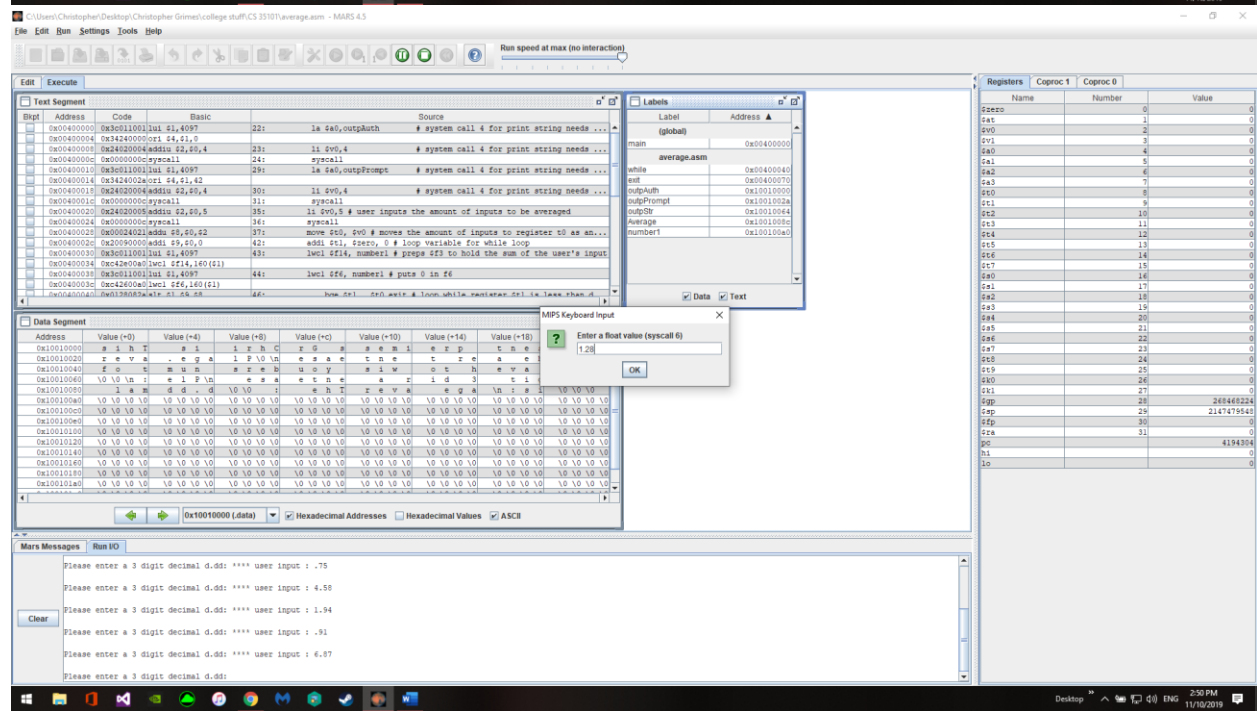
Label	Address
(global)	
main	0x00400000
average.asm	0x00400000
exit	0x00400000
outputPrompt	0x00400000
outputStr	0x00400000
Average	0x00400000
number1	0x00400000

Registers

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
\$a4	8	0
\$a5	9	0
\$a6	10	0
\$a7	11	0
\$t0	12	0
\$t1	13	0
\$t2	14	0
\$t3	15	0
\$t4	16	0
\$t5	17	0
\$t6	18	0
\$t7	19	0
\$t8	20	0
\$t9	21	0
\$s0	22	0
\$s1	23	0
\$s2	24	0
\$s3	25	0
\$s4	26	0
\$s5	27	0
\$s6	28	268469224
\$s7	29	214747944
\$s8	30	0
\$s9	31	0
\$f0	32	4194384
\$f1	33	0
\$f2	34	0
\$f3	35	0
\$f4	36	0
\$f5	37	0
\$f6	38	0
\$f7	39	0
\$f8	40	0
\$f9	41	0
\$f10	42	0
\$f11	43	0
\$f12	44	0
\$f13	45	0
\$f14	46	0
\$f15	47	0
\$f16	48	0
\$f17	49	0
\$f18	50	0
\$f19	51	0
\$f20	52	0
\$f21	53	0
\$f22	54	0
\$f23	55	0
\$f24	56	0
\$f25	57	0
\$f26	58	0
\$f27	59	0
\$f28	60	0
\$f29	61	0
\$f30	62	0
\$f31	63	0
\$f32	64	0
\$f33	65	0
\$f34	66	0
\$f35	67	0
\$f36	68	0
\$f37	69	0
\$f38	70	0
\$f39	71	0
\$f40	72	0
\$f41	73	0
\$f42	74	0
\$f43	75	0
\$f44	76	0
\$f45	77	0
\$f46	78	0
\$f47	79	0
\$f48	80	0
\$f49	81	0
\$f50	82	0
\$f51	83	0
\$f52	84	0
\$f53	85	0
\$f54	86	0
\$f55	87	0
\$f56	88	0
\$f57	89	0
\$f58	90	0
\$f59	91	0
\$f60	92	0
\$f61	93	0
\$f62	94	0
\$f63	95	0
\$f64	96	0
\$f65	97	0
\$f66	98	0
\$f67	99	0
\$f68	100	0
\$f69	101	0
\$f70	102	0
\$f71	103	0
\$f72	104	0
\$f73	105	0
\$f74	106	0
\$f75	107	0
\$f76	108	0
\$f77	109	0
\$f78	110	0
\$f79	111	0
\$f80	112	0
\$f81	113	0
\$f82	114	0
\$f83	115	0
\$f84	116	0
\$f85	117	0
\$f86	118	0
\$f87	119	0
\$f88	120	0
\$f89	121	0
\$f90	122	0
\$f91	123	0
\$f92	124	0
\$f93	125	0
\$f94	126	0
\$f95	127	0
\$f96	128	0
\$f97	129	0
\$f98	130	0
\$f99	131	0
\$f100	132	0
\$f101	133	0
\$f102	134	0
\$f103	135	0
\$f104	136	0
\$f105	137	0
\$f106	138	0
\$f107	139	0
\$f108	140	0
\$f109	141	0
\$f110	142	0
\$f111	143	0
\$f112	144	0
\$f113	145	0
\$f114	146	0
\$f115	147	0
\$f116	148	0
\$f117	149	0
\$f118	150	0
\$f119	151	0
\$f120	152	0
\$f121	153	0
\$f122	154	0
\$f123	155	0
\$f124	156	0
\$f125	157	0
\$f126	158	0
\$f127	159	0
\$f128	160	0
\$f129	161	0
\$f130	162	0
\$f131	163	0
\$f132	164	0
\$f133	165	0
\$f134	166	0
\$f135	167	0
\$f136	168	0
\$f137	169	0
\$f138	170	0
\$f139	171	0
\$f140	172	0
\$f141	173	0
\$f142	174	0
\$f143	175	0
\$f144	176	0
\$f145	177	0
\$f146	178	0
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\$f148	180	0
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\$f150	182	0
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\$f155	187	0
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\$f177	209	0
\$f178	210	0
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\$f181	213	0
\$f182	214	0
\$f183	215	0
\$f184	216	0
\$f185	217	0
\$f186	218	0
\$f187	219	0
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\$f189	221	0
\$f190	222	0
\$f191	223	0
\$f192	224	0
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\$f194	226	0
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\$f196	228	0
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\$f201	233	0
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\$f203	235	0
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\$f206	238	0
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\$f208	240	0
\$f209	241	0
\$f210	242	0
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\$f213	245	0
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\$f215	247	0
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\$f222	254	0
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\$f224	256	0
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\$f226	258	0
\$f227	259	0
\$f228	260	0
\$f229	261	0
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\$f231	263	0
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\$f236	268	0
\$f237	269	0
\$f238	270	0
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\$f243	275	0
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\$f252	284	0
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\$f268	300	0
\$f269	301	0
\$f270	302	0
\$f271	303	0
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\$f274	306	0
\$f275	307	0
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\$f277	309	0
\$f278	310	0
\$f279	311	0
\$f280	312	0
\$f281	313	0
\$f282	314	0
\$f283	315	0
\$f284	316	0
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\$f286	318	0
\$f287	319	0
\$f288	320	0
\$f289	321	0
\$f290	322	0
\$f291	323	0
\$f292	324	0
\$f293	325	0
\$f294	326	0
\$f295	327	0
\$f296	328	0
\$f297	329	0
\$f298	330	0
\$f299	331	0
\$f300	332	0
\$f301	333	0
\$f302	334	0
\$f303	335	0
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\$f305	337	0
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\$f307	339	0
\$f308	340	0
\$f309	341	0
\$f310	342	0
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\$f312	344	0
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\$f314	346	0
\$f315	347	0
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\$f317	349	0
\$f318	350	0
\$f319	351	0
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\$f324	356	0
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\$f327	359	0
\$f328	360	0
\$f329	361	0
\$f330	362	0
\$f331	363	0
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\$f333	365	0
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\$f335	367	0
\$f336	368	0
\$f337	369	0
\$f338	370	0
\$f339	371	0
\$f340	372	0
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\$f346	378	0
\$f347	379	0
\$f348	380	0
\$f349	381	0
\$f350	382	0
\$f351	383	0
\$f352	384	0
\$f353	385	0
\$f354	386	0
\$f355	387	0
\$f356	388	0
\$f357	389	0
\$f358	390	0
\$f359	391	0
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\$f361	393	0
\$f362	394	0
\$f363	395	0
\$f364	396	0
\$f365	397	0
\$f366	398	0
\$f367	399	0
\$f368	400	0
\$f369	401	0
\$f370	402	0
\$f371	403	0
\$f372	404	0
\$f373	405	0
\$f374	406	0
\$f375	407	0
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\$f377	409	0
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\$f379	411	0
\$f380	412	0
\$f381	413	0
\$f382	414	0
\$f383	415	0
\$f384	416	0
\$f385	417	0
\$f386	418	0
\$f387	419	0
\$f388	420	0
\$f389	421	0
\$f390	4	

average.pdf

C:\Users\Christopher\Desktop\Christopher Grimes\college stuff\CS 35101\average.asm - MARS 4.5



Chris Grimes

CS 35101

average.pdf

C:\Users\Christopher\Desktop\Christopher Grimes\college stuff\CS 35101\average.asm - MARS 4.5

The screenshot displays the MARS 4.5 IDE with the assembly code for 'average.asm'. The code is as follows:

```
0x00000000: 0x30110010:li $t0,4097          # system call 4 for print string needs ...
0x00000001: 0x34240001:li $t1,5             # system call 4 for print string needs ...
0x00000002: 0x24200004:addui $t2,$t0,4      # system call 4 for print string needs ...
0x00000003: 0x00000000:syscall              # system call 4 for print string needs ...
0x00000004: 0x34240001:li $t1,4097          # system call 4 for print string needs ...
0x00000005: 0x34240001:li $t1,42          # system call 4 for print string needs ...
0x00000006: 0x24200004:addui $t2,$t0,4      # system call 4 for print string needs ...
0x00000007: 0x00000000:syscall              # system call 4 for print string needs ...
0x00000008: 0x24200004:addui $t2,$t0,5      # user inputs the amount of inputs to be averaged
0x00000009: 0x00000000:syscall              # system call 4 for print string needs ...
0x0000000A: 0x00024002:move $t0,$t2      # move $t0, $t2 # moves the amount of inputs to register $t0 as amt...
0x0000000B: 0x20090000:addi $t0,$t0,0      # addi $t0, $zero, 0 # loop variable for while loop
0x0000000C: 0x30110010:li $t1,4097          # li $t1, $zero, 0 # prep $t1 to hold the sum of the user's input
0x0000000D: 0x42000000:lw $f16,$t1($t0)      # lw $f16, number1 # puts $f16 in $f6
0x0000000E: 0x30110010:li $t1,4097          # li $f6, number1 # puts 0 in $f6
0x0000000F: 0x42000000:lw $f16,$t1($t0)      # lw $f16, number1 # puts 0 in $f6
0x00000010: 0x00000000:syscall              # system call 4 for print string needs ...
```

The 'Mars Messages' window shows the following output:

```
Please enter a 3 digit decimal d.dd: **** user input : 4.50
Please enter a 3 digit decimal d.dd: **** user input : 1.94
Please enter a 3 digit decimal d.dd: **** user input : .91
Please enter a 3 digit decimal d.dd: **** user input : 6.97
Please enter a 3 digit decimal d.dd: **** user input : 1.28
Please enter a 3 digit decimal d.dd: **** user input : 1.28
```

C:\Users\Christopher\Desktop\Christopher Grimes\college stuff\CS 35101\average.asm - MARS 4.5

The screenshot displays the MARS 4.5 IDE with the assembly code for 'average.asm'. The code is as follows:

```
0x00000000: 0x30110010:li $t0,4097          # system call 4 for print string needs ...
0x00000001: 0x34240001:li $t1,5             # system call 4 for print string needs ...
0x00000002: 0x24200004:addui $t2,$t0,4      # system call 4 for print string needs ...
0x00000003: 0x00000000:syscall              # system call 4 for print string needs ...
0x00000004: 0x34240001:li $t1,4097          # system call 4 for print string needs ...
0x00000005: 0x34240001:li $t1,42          # system call 4 for print string needs ...
0x00000006: 0x24200004:addui $t2,$t0,4      # system call 4 for print string needs ...
0x00000007: 0x00000000:syscall              # system call 4 for print string needs ...
0x00000008: 0x24200004:addui $t2,$t0,5      # user inputs the amount of inputs to be averaged
0x00000009: 0x00000000:syscall              # system call 4 for print string needs ...
0x0000000A: 0x00024002:move $t0,$t2      # move $t0, $t2 # moves the amount of inputs to register $t0 as amt...
0x0000000B: 0x20090000:addi $t0,$t0,0      # addi $t0, $zero, 0 # loop variable for while loop
0x0000000C: 0x30110010:li $t1,4097          # li $t1, $zero, 0 # prep $t1 to hold the sum of the user's input
0x0000000D: 0x42000000:lw $f16,$t1($t0)      # lw $f16, number1 # puts $f16 in $f6
0x0000000E: 0x30110010:li $t1,4097          # li $f6, number1 # puts 0 in $f6
0x0000000F: 0x42000000:lw $f16,$t1($t0)      # lw $f16, number1 # puts 0 in $f6
0x00000010: 0x00000000:syscall              # system call 4 for print string needs ...
```

The 'Mars Messages' window shows the following output:

```
Please enter a 3 digit decimal d.dd: **** user input : .91
Please enter a 3 digit decimal d.dd: **** user input : 6.97
Please enter a 3 digit decimal d.dd: **** user input : 1.28
Please enter a 3 digit decimal d.dd: **** user input : 1.28
Please enter a 3 digit decimal d.dd: **** user input : 1.28
Please enter a 3 digit decimal d.dd: **** user input : 1.28
```

average.pdf

The screenshot displays the Immunity Debugger interface with the following components:

- Top Bar:** Includes menu options (Edit, Run, Settings, Tools, Help) and a status bar showing "Run speed at max (no interaction)".
- Assembly View:** Shows assembly code for a segment named "Test Segment". The code includes instructions like "pushad", "push", "call", "add", "loop", and "ret". Comments indicate system calls for printing strings and averaging inputs.
- Registers View:** Displays the state of registers (Name, Number, Value). Notable values include \$eax = 26150092, \$edi = 2615010, and \$ecx = 4194466.
- Console View:** Shows the output of the program, including prompts for user input and the final message: "The average is: 3.432771".
- Memory View:** Displays a memory dump with addresses and hexadecimal values.

This project showed me how to manipulate float numbers both from the registers and taking input form the user.