

Source File: lab12.asm
Input: Standard Input
Output: Standard Output
Value: 1

Modify Lab 11 to use uninitialized variables for the addends. Reserve four doublewords in the `.bss` section to represent the addends. Use only the `eax` register. Show the contents of the registers after each step in the calculation. Your program should adhere to ordinary rules of algebraic precedence and associativity. Add an identification section as shown below to the top of your source file.

```

; Your name
; CS 3304
; Lab 12

```

A sample execution sequence is shown in Figure 1. To use the Makefile as distributed in class, add a target of `lab12` to `targetsAsmLanguage`.

```

1  newuser@csunix ~/3304/12> make
2  nasm -f elf32 -l lab12.lst -o lab12.o lab12.asm -I/usr/local/3304/include/ -I.
3  ld -m elf_i386 --dynamic-linker /lib/ld-linux.so.2 -o lab12 lab12.o \
4  /usr/local/3304/src/Along32.o -lc
5  newuser@csunix ~/3304/12> # Execute ./lab12 with interactive input
6  newuser@csunix ~/3304/12> ./lab12
7  1
8  -2
9  3
10 -4
11
12  EAX=FFFFFFFC EBX=F7792FBC ECX=F778CBBF EDX=F7780480
13  ESI=FF98CE9C EDI=080481B0 EBP=00000000 ESP=FF98CE90
14  EIP=080481DD EFL=00000286 CF=0 SF=1 ZF=0 OF=0 AF=0 PF=1
15
16
17  EAX=00000001 EBX=F7792FBC ECX=F778CBBF EDX=F7780480
18  ESI=FF98CE9C EDI=080481B0 EBP=00000000 ESP=FF98CE90
19  EIP=080481E7 EFL=00000286 CF=0 SF=1 ZF=0 OF=0 AF=0 PF=1
20
21
22  EAX=FFFFFFFF EBX=F7792FBC ECX=F778CBBF EDX=F7780480
23  ESI=FF98CE9C EDI=080481B0 EBP=00000000 ESP=FF98CE90
24  EIP=080481F2 EFL=00000286 CF=0 SF=1 ZF=0 OF=0 AF=0 PF=1
25
26
27  EAX=00000002 EBX=F7792FBC ECX=F778CBBF EDX=F7780480
28  ESI=FF98CE9C EDI=080481B0 EBP=00000000 ESP=FF98CE90
29  EIP=080481FD EFL=00000213 CF=1 SF=0 ZF=0 OF=0 AF=1 PF=0
30
31
32  EAX=FFFFFFFE EBX=F7792FBC ECX=F778CBBF EDX=F7780480
33  ESI=FF98CE9C EDI=080481B0 EBP=00000000 ESP=FF98CE90
34  EIP=08048208 EFL=00000282 CF=0 SF=1 ZF=0 OF=0 AF=0 PF=0
35

```

Figure 1. Commands to Assemble, Link, & Run Lab 12 (Part 1 of 2)

```
36 newuser@csunix ~/3304/12> # Create an input file 01.dat
37 newuser@csunix ~/3304/12> # Enter the data items 1, -2, 3, -4, one item per line
38 newuser@csunix ~/3304/12> cat 01.dat
39 1
40 -2
41 3
42 -4
43 newuser@csunix ~/3304/12> # Execute ./lab12 using ./irvine_test.sh
44 newuser@csunix ~/3304/12> ./irvine_test.sh lab12 01.dat
45
46 EAX=FFFFFFFC EBX=F77B9FBC ECX=F77B3BBF EDX=F77A7480
47 ESI=FFA65ADC EDI=080481B0 EBP=00000000 ESP=FFA65AD0
48 EIP=080481DD EFL=00000286 CF=0 SF=1 ZF=0 OF=0 AF=0 PF=1
49
50
51 EAX=00000001 EBX=F77B9FBC ECX=F77B3BBF EDX=F77A7480
52 ESI=FFA65ADC EDI=080481B0 EBP=00000000 ESP=FFA65AD0
53 EIP=080481E7 EFL=00000286 CF=0 SF=1 ZF=0 OF=0 AF=0 PF=1
54
55
56 EAX=FFFFFFFF EBX=F77B9FBC ECX=F77B3BBF EDX=F77A7480
57 ESI=FFA65ADC EDI=080481B0 EBP=00000000 ESP=FFA65AD0
58 EIP=080481F2 EFL=00000286 CF=0 SF=1 ZF=0 OF=0 AF=0 PF=1
59
60
61 EAX=00000002 EBX=F77B9FBC ECX=F77B3BBF EDX=F77A7480
62 ESI=FFA65ADC EDI=080481B0 EBP=00000000 ESP=FFA65AD0
63 EIP=080481FD EFL=00000213 CF=1 SF=0 ZF=0 OF=0 AF=1 PF=0
64
65
66 EAX=FFFFFFFE EBX=F77B9FBC ECX=F77B3BBF EDX=F77A7480
67 ESI=FFA65ADC EDI=080481B0 EBP=00000000 ESP=FFA65AD0
68 EIP=08048208 EFL=00000282 CF=0 SF=1 ZF=0 OF=0 AF=0 PF=0
69
70 newuser@csunix ~/3304/12>
```

Figure 1. Commands to Assemble, Link, & Run Lab 12 (Part 2 of 2)