Source File: lab19.asm
Input: Standard Input
Output: Standard Output
Value: 2

     Write a program to reverse the elements of an integer array in place. Do not copy the elements to any other array. Use the following initialized variables:

```
1  SECTION .data
2  myArray times   40 dd 0
3  length  equ     ($ - myArray) / 4
```

     Begin by using the `loop` instruction with indirect or indexed addressing to initialize the elements of the integer array from standard input. Use a second `loop` instruction with indirect or indexed addressing to reverse the elements of the integer array in place.

     Use the following code segment as a guide to display the hexadecimal contents of an area of memory. Use this code segment to display the contents of the array three times—before the array is initialized, after the elements of the array have been initialized, and after the elements of the array have been reversed.

```
1  mov    esi, myArray    ; esi = starting offset
2  mov    ecx, length     ; ecx = # of units
3  mov    ebx, 4          ; ebx = unit size (1=byte, 2=word, 4=dword)
4  call   DumpMem
```

(The `DumpMem` procedure is explained in Section 5.4.)

     Add an identification section as shown below to the top of your source file.

```
; Your name
; CS 3304
; Lab 19
```

A sample execution sequence is shown in Figure 1. To use the `Makefile` as distributed in class, add a target of `lab19` to `targetsAsmLanguage`.

```
 1   newuser@csunix ~/3304/19> cp /usr/local/3304/data/19/* .
 2   newuser@csunix ~/3304/19> make lab19
 3   nasm -f elf32  -l lab19.lst -o lab19.o lab19.asm -I/usr/local/3304/include/ -I.
 4   ld -m elf_i386 --dynamic-linker /lib/ld-linux.so.2 -o lab19 lab19.o \
 5   /usr/local/3304/src/Along32.o -lc
 6   newuser@csunix ~/3304/19> ../irvine_test.sh lab19 01.dat
 7
 8   Dump of offset 0804A010
 9   -----------------------------
10   00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
11   00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
12   00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
13   00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
14   00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
15
16   Dump of offset 0804A010
17   -----------------------------
18   FFFFFFFF  FFFFFFFE  FFFFFFFC  FFFFFFF8  FFFFFFF0  FFFFFFE0  FFFFFFC0  FFFFFF80
19   FFFFFF00  FFFFFE00  FFFFFC00  FFFFF800  FFFFF000  FFFFE000  FFFFC000  FFFF8000
20   FFFF0000  FFFE0000  80000001  80000000  00000000  00000001  00000002  00000004
21   00000008  00000010  00000020  00000040  00000080  00000100  00000200  00000400
22   00000800  00001000  00002000  00004000  00008000  00010000  00020000  7FFFFFFF
23
24   Dump of offset 0804A010
25   -----------------------------
26   7FFFFFFF  00020000  00010000  00008000  00004000  00002000  00001000  00000800
27   00000400  00000200  00000100  00000080  00000040  00000020  00000010  00000008
28   00000004  00000002  00000001  00000000  80000000  80000001  FFFE0000  FFFF0000
29   FFFF8000  FFFFC000  FFFFE000  FFFFF000  FFFFF800  FFFFFC00  FFFFFE00  FFFFFF00
30   FFFFFF80  FFFFFFC0  FFFFFFE0  FFFFFFF0  FFFFFFF8  FFFFFFFC  FFFFFFFE  FFFFFFFF
31   newuser@csunix ~/3304/19>
```

Figure 1. Commands to Assemble, Link, & Run Lab 19