CS270 Recitation 10
"LC-3 Stack Protocol"

Goals

Improve your understanding of the stack protocol by implementing and calling a function using activation records (a.k.a. "stack frames") in LC-3.

The Recitation:

Make a subdirectory called R10 for the recitation and download the following file:
http://www.cs.colostate.edu/~cs270/.Spring12/Recitations/R10/stackprotocol.asm

The assembly program found in this file takes a 16-bit word LZ_IN and sets the leading LZ_AMOUNT bits to zero (MSB to LSB). Many of the lines of code have been broken, however.

Your task is to reason about the stack protocol in order to fix the broken lines of code and restore the program. Note that the program is already written—you do not need to provide any more code. The TA will demonstrate a working version of the program.

Refer to the following figure when working with the stack:

	← Callee's SP (R6) points here
...	
R1 of Callee	
R0 of Callee	← Callee's FP (R5) points here
Caller's Frame pointer	Callee saves caller's FP (i.e., R5) and caller's return address (i.e., R7)
Caller's Return address	
Return value	← Callee saves the result here
	Caller pops the result from here
Parameter 1	
...	
Parameter (n-2)	Caller pushes parameters of the subroutine (that it will call) in reverse order
Parameter (n-1)	
Parameter n	
...	
R1 of Caller	Caller saves its local variables before calling a subroutine
R0 of Caller	