Quiz 3
CMPE 364
Spring 2017

Name:
Student ID:

Write an ARM assembly language subroutine called find, which searches for a number in an array of words, and returns the number of occurrences of the number. Your subroutine should follow the conventions specified by the AAPCS. Your answer should include only the subroutine.

Parameters:

1. The 32-bit value to be searched for
2. The address of the array
3. The number of entries in the array

Returns:

1. The number of times the value is found in the array

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; r0 is the value searched for
; r1 is in the number of entries in the array
; r4 is the address of the array
find:
        ; I change r4 and r5, so I need to save them.
        stmfd sp!, {r4,r5}

        ; r2 is the counter for my loop
        mov r2, #0

        ; r3 counts how many times the items has been found
        mov r3, #0

s_loop:
        ; Check if I'm done going through the loop
        cmp r2, r1
        bge s_done

        ; Load the item from the array
        ldr r5, [r4], #4

        ; Check if the item is the one I'm looping for,
        ; increment r3 if so
        cmp r5, r0
        bne skip
        add r3, r3, #1
skip:
        add r2, r2, #1
        b s_loop

s_done:
        ; Restore the modified registers
        ldmfd sp!, {r4,r5}

        ; Put the return value in r0
        mov r0, r3

        ; Return from subroutine
        bx lr
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