CS 252 Spring '18
Homework 8

Instructor: Prof. Adil Ibrahim

Due Date: April 25, 2018
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1 Program 1 (20 points)

Write an assembly code to right shift a given number by 4 bits for positive 2's complement number.
Right shift by 4 bits on a binary string (say 00110011), will shift bits to right, appending 0 to the left at every shift(00000011). The program should take in a 16-bit positive value at memory location Loc1. Store the 16-bit result in Loc2. You can declare the memory locations Loc1 and Loc2 using .BLKW directive. For example, if [Loc1]=0x00A0 then after execution of the program [Loc2] = 0x000A. Your code should start at memory location 0x3000.

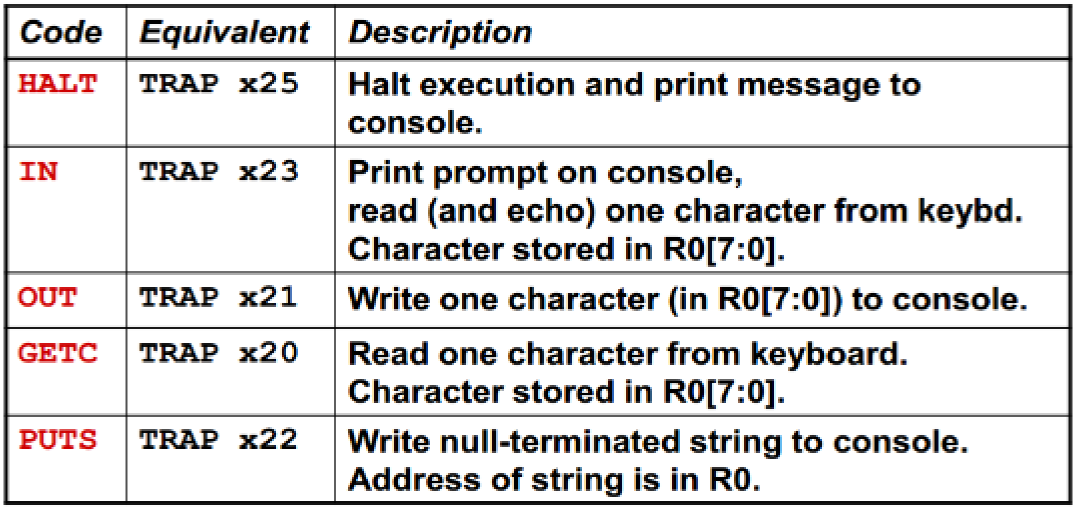
(Hint: Right shift operation can be obtained if you divide the number by 2. This implementation is to be done only for positive numbers. You can create a subroutine DivideBy2 and call it 4 times to shift by 4 bits. You can come up with other methods as well but make sure to use subroutines.)

2 Program 2 (20 points)

a.) Write a program to reverse a sentence and store the reversed string in place (In place reversal implies that the original string is replaced with the reversed string at its location). Also, display the reversed string on the screen.
(The string should start at memory location 0x5000 and your code should start at memory location 0x3000).
For example, if the original starting at 0x5000 was "Dazzling!", the reversed string should be "!gnilzzaD" occupying the same location from 0x5000.

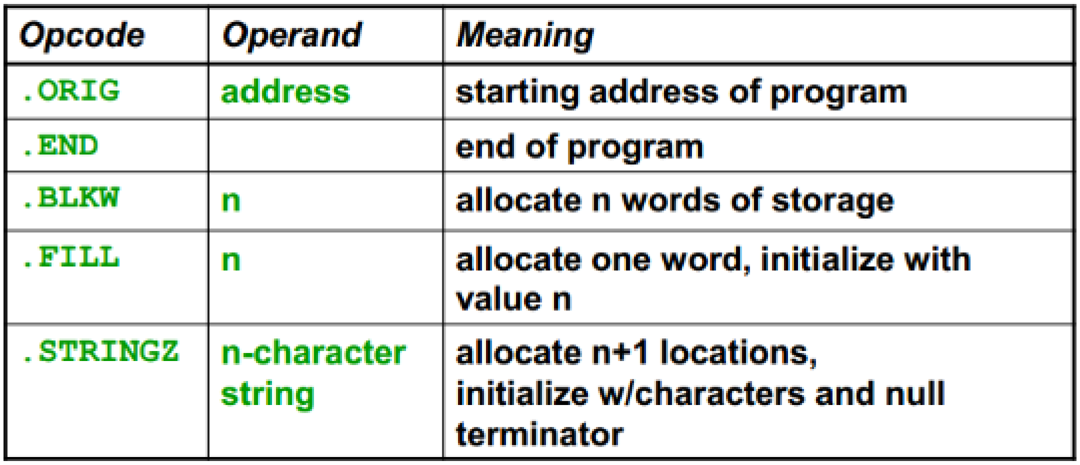
Note: Your code will be graded through automated scripts. Name your files as Q1.asm and Q2.asm respectively. You must upload a zip file HW8.zip which has both Q1.asm and Q2.asm. To check the correctness of your code, you may run the given sample scripts. Your code will be tested on different test cases.

TRAP CODES



Code	*Equivalent*	*Description*
HALT	TRAP x25	Halt execution and print message to console.
IN	TRAP x23	Print prompt on console, read (and echo) one character from keybd. Character stored in R0[7:0].
OUT	TRAP x21	Write one character (in R0[7:0]) to console.
GETC	TRAP x20	Read one character from keyboard. Character stored in R0[7:0].
PUTS	TRAP x22	Write null-terminated string to console. Address of string is in R0.

ASSEMBLER DIRECTIVES



Opcode	*Operand*	*Meaning*
.ORIG	address	starting address of program
.END		end of program
.BLKW	n	allocate n words of storage
.FILL	n	allocate one word, initialize with value n
.STRINGZ	n-character string	allocate n+1 locations, initialize w/characters and null terminator