# CS270 Recitation 8
# "LC-3 Programming Practice"

**Goals**

Practice LC-3 programming and improve your understanding of the LC-3 machine.

**The Recitation:**

Make a subdirectory called R8 for the recitation and download the following file:

**TRAP CALL**
http://www.cs.colostate.edu/~cs270/.Fall13/recitations/R8/hello.asm
http://www.cs.colostate.edu/~cs270/.Fall13/recitations/R8/hello.txt

This file uses a TRAP call and prints "HELLO WORLD" on the screen. Make a modification in this, such that it prints "HELLO CS270".

**More on Multiplication & Subroutines**
Download the following file to the R8 folder which you created earlier.
http://www.cs.colostate.edu/~cs270/.Fall13/recitations/R8/SIGN_MUL.asm
http://www.cs.colostate.edu/~cs270/.Fall13/recitations/R8/SIGN_MUL.txt

In earlier recitations, we have seen the multiplication but limited to unsigned numbers. In this recitation, use this file to write an assembly program that takes two positive 16-bit 2's complement numbers as input and computes the product. The input numbers are stored in variables called **MULTIPLICAND & MULTIPLIER** and the output must be stored back into a variable called **RESULT**. To accomplish the task, you need to write and use a subroutine to multiply two positive 2's complement numbers. The specification for this subroutine is as follows:

**Subroutine:**

| | |
|---|---|
| Name: | **MULTIPLY** |
| Input: | **MULTIPLICAND**, **MULTIPLIER** |
| Output: | **RESULT** |

The subroutine **MULTIPLY** takes two 2's complement numbers and multiplies them using repeated addition. The multiplicand is stored in a variable called **MULTIPLICAND** and the multiplier is stored in a variable called **MULTIPLIER**. The result must be stored back into a variable called **RESULT**.

Use the lc3 simulator and **sign_mul.txt** to test your program.