**CSCI 520.01E**

**Programming Assignment #3**

Due: 11:59pm, Thursday, Feb. 12, 2015

Turn in your work in the drop box for Assignment 3 (for Week 3).

In this assignment, you write a C++ program for logical cyclic shift of n-bit numbers.

You are required to create a circular list to store a given binary number. Then your program will be able to rotate the number left by one position for the cyclic left operation, and rotate the number by right by one position for the cyclic right operation. The provided sample input below elaborates on these operations.

In this assignment you are required to use **a circular linked list** to create a circular representation for the n-bit number. The cyclic shift operations will change where the first bit starts in the number. The cyclic shift left shifts every bit to the left by one position and the leftmost bit moves cyclically to the vacated rightmost position. Similarly, the cyclic shift right shifts every bit to the right by one position and the rightmost bit moves cyclically to the vacated leftmost position.

You may choose to use doubly-linked circular linked list, or make a full circular traversal on each cyclic shift as we discussed in the lecture.

/\* first input n = \*/ 8

/\* next inputs are n bits, from leftmost bit to rightmost bit =\*/ 1 1 1 1 0 0 0 0

L /\* rotate left \*/

result=11100001

L /\* rotate left \*/

result=11000011

L /\* rotate left \*/

result=10000111

L /\* rotate left \*/

result=00001111

R /\* rotate right \*/

result=11100001

The above is one simple example your program must be designed to work for every n and every n-bit number.

Good Luck

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