King Saud University
College of Computer and Information Sciences
Computer Science Department

CSC 212 **First Semester 1439-1440**

Tutorial #4 (List and DLL)

Problem 1

Method Reverse ( )
Requires: none. **Input**: none **Output**: none.
Results: the elements of the list will be stored in reverse order.
Where the 1st, 2nd, 3rd, ... , i-1th, ith elements will be ith, i-1th, i-2th, ... , 2nd, 1st
Example. We have a List<Integer> in our main class.
With its elements looking like this:(14; 43; 28; 66; 33; 21)
Once we execute the reverse method they should look like this:(21; 33; 66; 28; 43; 14)

-Write the reverse method as an **<u>implementer</u>** of the LinkedList ADT
-Write the reverse method as a **<u>user</u>** of the List ADT

Problem 2

A circular left shift (CLS) of a list consists in moving the first element to the last position while leaving the order of the remaining elements unchanged. Write a static method CLS (user of ADT) that takes as input a non-empty list l and an integer n (n >= 0) and applies n circular left shifts to the list l.

Example: assuming l: 1, 2, 3, 4. After calling CLS(l, 2) then l will be: 3, 4, 1, 2.

Method: *public static<T> void CLS(List<T> l, int n)*

Problem 3

Write a static method switch that takes as input two lists, and switches all the elements of the two lists except for the first element in both lists.

Example: assuming l1: 1, 2, 3 and l2: 4, 5.

Calling switch(l1, l2) will result in l1: 1, 5 and l2: 4, 2, 3.

Method: *public static<T> void switch(List<T> l1, List<T> l2)*

Problem 4

Write the method ***isPalindrome*** part of the Double linkedList ADT. It should return true if the list is a palindrome. False otherwise. A palindrome is a word, phrase or anything that reads the same forward or reversed.
Examples:
l(13, 54, 76, 54, 13) → true
l("A", "Bus", "Bus", "A") → true
l(300, 400, 500) → false
Method: *public boolean isPalindrome()*