

Assignment 5

Recursion & Linked List

COMP1004/1406 Introduction to Computer Science II
Summer 2022

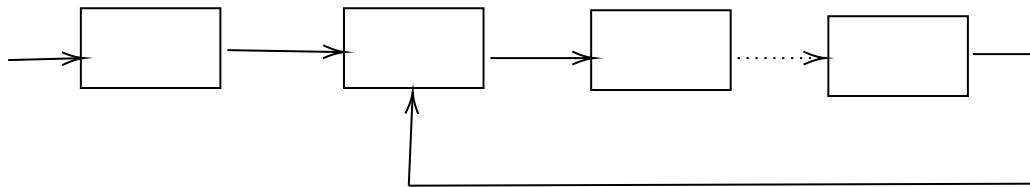
Due date: August 11, submit your work on Brightspace.

1. Recursion

Write a program that takes a String and returns a list of all its permutations. You may assume that the String characters are all unique. (See A5Q1.java for more details)

2. Linked List

A Linked List is printing non-stop until a stack overflow occurs, knowing that there is nothing wrong with the print function or the way it was implemented. You are to investigate and write code to find if the following scenario may be the reason the printing never stops:



Note that the actual size of the linked list is not just 4 nodes... its bigger. The dashed arrow indicates there is a lot more nodes in between these two nodes. You are required to write a function that returns true if the above scenario was the root cause of the problem ... if the list contains a loop. Your function should not exceed the complexity $O(n)$.

3. Linked List

Given a Linked List write a program that would remove the duplicates from an unsorted linked list with a time constraint of $O(n)$. By duplicates, we mean nodes having equal data.

```
node1.data == node2.data; //these are considered duplicates
```