

COMP 203 Data Structures and Algorithms, Fall 2024

Lab Assignment 5

Deadline: 04.11.2024 11:00 am

Read the questions and rules carefully. They are clear and well defined.

Rules:

1. **No Cheating:** You are not allowed to collaborate with your friends and use any kind of websites or AI. If your homework gives a sign of any of them, **directly it will be graded as zero.**
2. **Goal:** Please do your homework alone. Our main aim is to **learn.**
3. **Submission:** Submit your work in **TWO java files. DON'T USE ZIP/RAR etc. In these cases, your points will be deducted by 30%.**
4. **Coding policy:** Explain your code in comments. **This is a must!**
5. **Latency policy:** A 30% deduction will be applied for each day of late submission.

Files to submit: Permutation.java, ReverseSLL.java

1. Permutation (Submit as Permutation.java) Total: 40 pt

a. Generate all permutations of a given string using recursion. You may use built-in string manipulation functions of String class. **30pt**

Example: Input: "AGU"

Output:

AGU

AUG

GAU

GUA

UAG

UGA

b. Write a test case in main to test your code. **10pt**

2. Reverse a singly linked list (Submit as ReverseSLL.java) Total: 60pt

a. Write a recursive function to reverse a singly linked list (with integer data) type and print the result. To do that you have to write Node class and its constructor. **50pt**

b. Write a test case in main to test your code **10pt**

Example: Input: header-> 4->6->8->10->12->null

Output: header-> 12-> 10->8->6->4->null