LAB 1 - Linked List

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21 Sep 2020

Description

This lab is designed to work on **Linked List**. This is an individual work and you may not share code with other students.

There are two problems below:

1. Implement a polynomial class using `linked list`
2. Implement an Integer editor using `doubly linked list`

Attention!!

- **Only one problem** is required to be solved.
- If more than one problems are solved, the one with highest score will be counted.
- Written in **Java**.
- Some codes are shown in **lab01_struct.zip**

Specification

Problem 1

To implement a polynomial class that uses a **linked list** to store the polynomial's terms. Each node of the list holds the coefficient and exponent for one term. The terms are kept in order **from the largest to the smallest exponent**.

In addition, a `toString()` method of the polynomial class should be implemented to provide a more natural representation, as well as the operation to `add()` two polynomials.

Problem 2

To implement a most powerful editor for integer sequences. The sequence is just an empty list when initialized, and the editor for the sequence should support the following 5 operations:

Operation	Description
I x	Insert x after the cursor
L	Move the cursor left unless it's at the first element
R	Move the cursor right unless it's at the last element
D	Delete the element before the cursor
Q	Suppose the current sequence before the cursor is $a_1, \cdots, a_k$, **Output** $max_{1 \leq i \leq k} S_i$ where $S_i = a_1 + \cdots + a_i$.

Please write a program to implement this editor.

Hint: doubly linked list

Additional: Not required to complete !!

S_i in Q modified to $S_i = a_j + \cdots + a_i, 1 \leq j \leq i$

Submission

Deadline: In class / 21 Sep 2020 23:59, any uploads after 21 Sep 2020 23:59 wil get **ZERO** points.

Create a zip file named **StudentID-StudentName-Lab01.zip** that contains your code project and **upload your zip file to https://wss.pet/s/3jom1vopzu0 (password: 6481)** . Enter **StudentName** in the *Your Name* field.