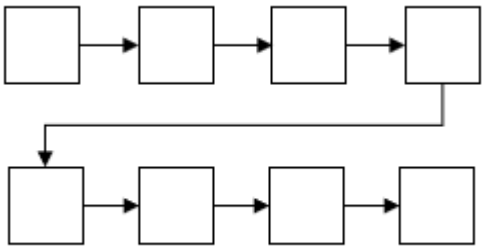
Homework 4 – Due Apr. 3rd 23:59, KST

Instructions: Complete the implementation and turn it in before the due date. Any deviations from the instructed deliverable format will result in a deduction of grade. DO NOT COPY OTHER'S WORKS!

In this assignment, you will be implementing a matrix using a singly-linked list. For simplicity, this matrix will only store integers. The matrix is represented as a chain (i.e., linked list) that is "bent" several times to the shape of a rectangle. For example, a 2x4 matrix (a matrix having two rows and four columns) is represented by the following chain:



Here, the first element of the list corresponds to the element in the first row and first column of the matrix. The second position corresponds to the first row and second column, etc. and so on. This kind of format is known as a 'row-major order' and is a popular choice among many programming languages to store 2D arrays. Note that the chain itself is still 1-dimensional although we interpret it as having a 2-dimensional layout.
Your task is to fill in the methods provided in LLMatrix.java so that the class can perform trivial matrix operations. Carefully read all comments given in LLMatrix.java before proceeding with the homework. The instructions in the comments are also part of the official requirements.

- Documentation (40 points): You should provide a header comment that provides a big-O time complexity analysis for each of the two conversion methods. Notice that I'm not providing the variable of complexity: You have to clearly identify with respect to what variable the time complexity will be. In addition to the big-O's, provide a brief explanation of how you arrived at that conclusion.
- Correctness (60 points): Your code should behave as required. We will use our own grading script to assess the correctness.
- Miscellaneous: Do not change the method and class names. Do not use a package structure. The submission should be error-free for full credit.

Deliverable: A single LLMatrix.java source file. DO NOT provide a zip file. Just submit a single Java file with no package structure.