Homework 1

Due date: January 23, 2023, 12pm (noon)

Learning Objectives

- Trace operations on a linked list.
- Identify linked list designs.
- Implement linked list operations.

Exercises

1. (9 points)
   Trace the following program segment. List the elements in `list1` at the end of the program segment from the first to last element.

   ```
   LinkedList list1 = new empty LinkedList;
   LinkedList list2 = new empty LinkedList;

   list1.addHead(A);
   list1.addHead(B);
   list1.addHead(C);
   list1.addHead(D);
   while (list1 is not empty) {
        list2.addTail(list1.getHead());
        list1.removeHead();
   }
   while (list2 is not empty) {
        list1.addTail(list2.getHead());
        list1.addTail(list2.getTail());
        list2.removeTail();
   }
   ```

   Content of `list1` from head to tail: _____

2. (9 points)
   Download and open the Eclipse project CS3151Homework01. Open the linked list class in the model package. Determine how the linked list is designed:
   a) Does the linked list maintain a header node?
   b) Does the linked list maintain a sentinel?
   c) Is it a singly-linked list or a doubly-linked list?

3. (11 points)

    In project CS3151Homework01, implement method `LinkedList::addTail()` and copy the code of the method below.

4. (11 points)

    In project CS3151Homework01, implement method `LinkedList::removeTail()` and copy the code of the method below.

Submission

Upload your solution as a PDF file. If you hand-write your solutions, scan the solutions as pdf file. I recommend using an app for image to PDF conversion, like ScanPro, Scanbot, or PDFelement, for example. You can take pictures of your solution, embed the pictures in a Word document, and then print the Word document to PDF.