Exam #1:
Pseudo-code, Big O Notation, Linear Lists, Stacks, and Queues

60min, 100 points, open book, open notes.

1. (15 points) – Pseudocode Algorithm Efficiency and the Big O Notation
   Read pseudocode and explain what it does
   Read pseudocode and determine the Big O Notation

2. (20 points) – Singly, Doubly and Multi-linked lists
   Doubly-Linked list – basic operations: insert, delete, search, traverse, etc.
   Multi-linked list – basic operations: insert, delete, search, traverse, etc.
   Header and Sentinel nodes

3. (20 points) – Stacks
   Stack Applications – infix, postfix, prefix, evaluate postfix
   Stack Operations
   Stack ADT

4. (15 points) – Queues
   Basic queue operations: enqueue, dequeue, etc.
   Queue applications
   Queue ADT

5. (30 points)

Stacks & Queues: Write a function or pseudocode for problems such as

A. Write a reverse stack function to be added to the stack class
B. Write a reverse stack function calling existing stack functions (and using other temp stacks as needed).
C. Given a stack and a queue, write a function that calls existing stack/queue functions to check if they contain the same data (top of the stack must be identical to the front of the queue, etc.)

OR

Singly and Doubly-Linked Lists with sentinel node[s]: Write a function or pseudocode for problems such as

A. Swap consecutive nodes in a doubly-linked list.
B. Swap any two nodes in a doubly-linked list. See a calling statement below

```
done = list.swap(3, 6);
done = list.swap(6, 2);
```