

CENG 112 – DATA STRUCTURES

Homework 3

March 25, 2017

Due Date: April 03, 2017

Assignment 1 Stacks with Linked Lists

Modify the Stack implementation in RPN calculator code to use a singly linked list to store stack contents instead of the `Array` object `m_items`.

- Add a `Node` structure to the `Stack` class in order to store the stack data and the next pointers.
- Add a field `m_head` to the `Stack` class of type `Node *` that points to the node at the top of the stack.
- Modify the class member functions including `push` and `pop` to use `Nodes` and `m_head`.

Once you are done modifying the stack implementation, the RPN calculator program in `main.cc` should compile and run without any changes.

Assignment 2 *Bonus: Queue with a Circular Doubly Linked List*

Modify the Queue implementation to use a circular doubly linked list and a single pointer to the head of the list (you must remove the `m_tail` field).

NOTE: This is a single part homework, there will be no late submission deadline. The *BONUS* exercise will add a maximum of 50 points to your HW1 to HW3 total. Check your programs with `valgrind` to ensure that they do not have memory leaks.