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CS 202 Section 1103

4/26/20

Project 10 Documentation

This project requires students to implement Array and Node based variants of stacks, but as class templates. Class templates are important for generic programming and are able to be implemented with virtually every data type. Stacks themselves are a last in first out data structure, or elements are inserted at the top and also removed from the top. Both of my variants work very similarly, except the array based variant uses an array to hold data with no dynamic memory allocation, while the node based variant uses pointers to nodes that hold data with dynamic memory allocation, which means more methods should be further implemented to ensure proper allocation and deallocation, which isn’t necessary in array.

My design seemed to work perfectly fine, as I was able to show in my project test driver. My test driver first makes an integer array stack, and tests methods on it with output displayed to the terminal. Then my test driver makes a double node stack and tests the same methods on it with output displayed to the terminal. At the end of the driver, all destructors are called with no memory leaks, meaning the node stack methods properly allocated and deallocated. Most of my problems came from figuring out how to template a class properly, or where to put <T> or template <typename T>. One problem that took me a little while to solve was using template <class U> for the friend operator<< overload, but eventually I figured this out. After fixing that problem, my list of errors shrunk from 100 to 0.