**Proj10.cpp Documentation**

**Purpose:**

The purpose of this project was to be familiar with templates along with stack based dynamic data structures.

**Design:**

The design of this project was not much different than other projects. Driver file was not given to us and we had to make it ourselves along with making the NodeStack and ArrayStack implementation. A lot of this project was trial and error and figuring out how to get the project to work correctly. Me and a group of 2 people worked on the project together and so we have similar but different code. All which my function similarly.

**Challenges:**

This was one of the harder projects only because this is very conceptually based and now, we are diving into Data structures which is notorious for being a hard class. I am still having a hard time understanding data structures. I find it a lot harder than making fun projects like calculators and such.

**Changes:**

This project was hard to understand and figure out what we were really supposed to do. It would help tremendously if we had an example output in our project file to help us understand what the desired output should look like. Like I said in past projects, I am getting tired of conceptual projects and I learn better with projects that I am more interested in like calculators, tic tac toe, etc.

**Observations:**

My code compiles and does everything I expected it to do. Not going to write much of my observation here but I will paste a snippet of the printout I am receiving.

$ ./proj10.exe

Default ctors

ArrayStack: This Stack is empty!!!

NodeStack: This Stack is empty!

Parameterized ctors

ArrayStack: [1, 1, 1, 1, 1]

NodeStack: [3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3]

Copy ctors

ArrayStack: [1, 1, 1, 1, 1]

NodeStack: [3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3]

Assignemnt operator: Changing default to copy.

Old ArrayStack: This Stack is empty!!!

New ArrayStack: [1, 1, 1, 1, 1]

Old NodeStack: This Stack is empty!

New NodeStack: [3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3]

Top value of stack:

ArrayStack: 8

NodeStack: 5

Push function:

ArrayStack: [8, 8, 8, 8, 8]

NodeStack: [44, 5]

Pop function:

Old ArrayStack: [8, 8, 8, 8, 8]

Old NodeStack: [44, 5]

New ArrayStack: [8, 8, 8, 8]

New NodeStack: [5]

Size function:

ArrayStack: 4

NodeStack: 1

Testing empty function:

Empty ArrayStack: true

Regular Array Stack: false

Empty NodeStack: true

Regular NodeStack: false

Testing full function:

Full ArrayStack: true

Regular ArrayStack: false

NodeStacks have no limit, NodeStack of size 1001: false

Clear function:

Full ArrayStack: This Stack is now empty.

This Stack is empty!!!

NodeStack: This Stack is now empty.

This Stack is empty!

Tests Done!

This Stack is empty!

NODESTACK DTOR CALLED.

This Stack is empty!

ARRAYSTACK DTOR CALLED.

This Stack is empty!

NODESTACK DTOR CALLED.

This Stack is empty!

ARRAYSTACK DTOR CALLED.

This Stack is now empty.

NODESTACK DTOR CALLED.

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ARRAYSTACK DTOR CALLED.

