My Sorting Methods

This is my version of sorting a double-linked list of nodes using two different functions and hosting a testing suite to test the sorting functions. The soring algorithms I implemented were insertion sort and selection sort which I wrote in C++. Also, the node and linked list classes along with all their functions are created using generic templates which allows them to store various types of data for the convenience of the user.

Classes

**Node**

|  |  |  |  |
| --- | --- | --- | --- |
| Class/Function Name | Parameters | Return Type | Explanation |
| **Node( )** | None | None | This creates a new Node constructor that contains no data |
| **Node(a,b,c)** | Generic\_Type | None | This creates a new Node that contains data specified by what is entered in as an argument |

**DL\_List**

|  |  |  |  |
| --- | --- | --- | --- |
| Class/Function Name | Parameters | Return Type | Explanation |
| **DL\_List( )** | None | None | This creates a new DL\_List constructor that contains no nodes |
| **DL\_List(a,b,c)** | Generic\_Type | None | This creates a new linked list object, DL\_List, that contains nodes starting with a top node with null head and tail pointers. |
| **Insert(a)** | Generic\_Type | Void | Creates a new node with a pointer & adds it to the top of the existing linked list. Uses data passed to it as an argument as the node’s data. |
| **\*Find(a)** | Generic\_Type | Pointer | Iterates through the current linked list nodes for data that matches data passed to it as argument. Returns pointer of matching node |
| **Delete(a)** | Generic\_Type Node pointer | Void | Iterates through current linked list for node that matches node pointer passed to it as argument. Deletes the node that matches its argument |
| **InsertSort\_DLL(a )** | Generic\_Type reference to linked list | Void | Takes in a referenced linked list as an argument and iterates through this list to sort it in ascending order by node data |
| **SelectSort( a)** | Generic\_Type head node of linked list | Void | Takes in the head node of a linked list and uses it to iterate through and sort the list in ascending order by node data |
| **DisplayDLL( )** | None | Void | Iterates though current linked list and prints data from every node in list. Usually done through console. |

**Main/Testing**

|  |  |  |  |
| --- | --- | --- | --- |
| **Main( )** | None | Void | Main function that begins execution of the entire program. It also starts the menu loop. |
| **Menu** | N/A | N/A | Uses a do while loop to offer the user options for executing the testing suite. When user chooses an option they can either sort the provided linked list using insertion sort or selection sort. |