COSC 3100 – Data Structures II

Assignment 11
Deadline November 29, 2023

Develop a template class called 'SortedList' to store an array of values of some type, and provide the following public functions:

SortedList(int size)
Constructor in which the initial size of the array is specified and dynamically allocated.

~SortedList()
Destructor to destroy the array of values.

void insert(const T& item);
Insert a value into the list. If the list is already full then an additional 10 elements should be added.

void randomise()
Randomise the order of the values in the array.

void selectionSortA()
Perform the 'selection sort' algorithm to sort the array of values into ascending order.

void selectionSortD()
Perform the 'selection sort' algorithm to sort the array of values into descending order.

void quickSortA()
Perform the 'quick sort' algorithm to sort the array of values into ascending order.

void quickSortD()
Perform the 'quick sort' algorithm to sort the array of values into descending order.

void heapSortA()
Perform the 'heap sort' algorithm to sort the array of values into ascending order

void heapSortD()
Perform the 'heap sort' algorithm to sort the array of values into descending order

void display() const
Display the list of values.

Write a main() function to create a variable of type SortedList. The variable should be able to store values of type Stock. Populate the list with values by reading from a file and display the original list. Call the 'randomise()' function and re-display the list. Proceed by invoking one of the sorting functions, displaying the resulting list of values, and then calling 'randomise()'. Repeat these steps for the other sorting functions.

THE DEPARTMENT STANDARDS FOR "STYLE GUIDELINES" SHOULD BE FOLLOWED IN ALL CODE.