



Assignment on Dynamic Array Lists

Building a DAL from Scratch in C++ and useful functions for it

Due on: **11.59** PM, Monday, 10 April 2023

Total Marks: 20

CSE 204 (Data Structure and Algorithms Sessional - I)

Lec Raiyan Rahman

Dept of CSE, MIST

raiyan@cse.mist.ac.bd

Introduction

Dynamic Array Lists can be a very useful way of working with arrays especially when we're looking for efficiency in terms of space. In the last lab, we got introduced to the concept of Dynamic Arrays and how they can be implemented. Then we saw two ways we can implement using C++:

1. Using the built-in STL called Vector. (std::vector).
2. Making a DAL from scratch.
(This gave us much more flexibility on how to use and implement such dynamic arrays).

Assignment (20 marks)

Adding some additional features to our DAL program from scratch. Here's what you need to do:

1. Download the "DAL.cpp" from [this](#) folder. **Write your code on top of it in the appropriate portions.**
2. Implement the menu options 3-7 on your own. Options 1 & 2 (insert last with dynamic array size expansion and printing the array) are already done for you.
3. The description for each of the option is given in the following table:

Initially, consider the current Dynamic Array as: 5 6 5 4 5 7 2 4 9 8			
Menu Option	Description	Sample Input	Sample Output
3	Let the user delete the value from a particular position in the DAL.	Enter Position to Delete from: 6	Deleted the value in position 6 which was '7'. The current Array is: 5 6 5 4 5 2 4 9 8
4	Let the user insert a value into a particular position in the DAL.	Enter Position to Insert Into: 6 Enter the Value to insert: 7	Inserted '7' at position 6. The current Array is: 5 6 5 4 5 7 2 4 9 8

5	Delete ALL matching values. Resize the Dynamic array as per the algorithm shown in class (think when it'll be resized carefully).	Enter the value to delete: 5	Deleted all occurrences of '5'. Total 3 items were deleted. Array Resized. The current Array is: 6 4 7 2 4 9 8
6	Replace ALL matching values. There may be two cases as shown in the sample input-output.	Enter the value to replace: 5	No occurrence of '5' was found. No Items were replaced.
		Enter the value to be replaced by: 6	
		Enter the value to replace: 8	'8' replaced with '6'. Total 1 replacement.
		Enter the value to be replaced by: 6	The current Array is: 6 4 2 4 9 6
7	A unique function that you think can be beneficial for DALs. Write appropriate comments on top of your function in the C++ code.	Your function. Your Design.	

Submission Guidelines:

1. Name the Assignment as **yourStudentID_DAL.cpp**. For example, 202014005_DAL.cpp.
2. **Submit only the .cpp file using the "turn in" option in the classroom. Do not submit multiple files or zip files.**