CSI 2372 – Lab Task 6

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Templates in C++

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Your task in this lab is to get yourself familiarized with the concept of templates in C++. In the test, we defined a class for arrays of integers that can have a desired range of indexes. Your task in this lab is to turn that class into a template class. So, we can have an array of any type with desired range of indexes. Make sure you have C++ installed, and you are familiar with the header files, and coding files. If you need help, ask your TA to help you with this.

Then, you should do the following programming task. Each programming task in the lab is a design based on the subjects you learned during lectures. There is a test code that you can use to test your design. If you have questions, ask your TAs.

Your task is to create a dynamic array with desired range of indexes for any types of elements. You have the solution for arrays of integers. You can use that class to turn it into a template class. Your class should have the following methods. Note that the solution does not have some methods that are listed here and you need to add them.

Class Array	
Method	**Description**
Array	User constructor that creates an empty array whose indexes start from 0
Array	User constructor that receives the number of elements of the array (0 to n – 1 indexes)
Array	User constructor that receives the lower bound and upper bound constructor. (Inclusive)
Array	The copy constructor
~ Array	Release all memories allocated for the array
add_item	Add an element to the end of the array (Increasing the upper bound)
insert_item	Insert an element at the given position (Increasing the upper bound)
remove_item	For removing the last element of the array (Decreasing the upper bound)
remove_item	For removing the first occurrence of a given value from the array if it exists in the array (Decreasing the upper bound)
erase_item	Removing the element at a given position (Decreasing the upper bound)
find_item	for finding an item in the array, your method should be able to say that the item is in the array or not and at what position

operator [ ]	For indexing the elements of the list
operator =	For assigning an array to another array
operator <<	For printing all elements of the array Example: 25, 12, 29, 35