Assignment 1: Array List

An array is a popular data structure for storing and managing more than one data items. Since the items of an array are allocated at adjacent memory locations, we can access them using index/subscript, where the index of the first element is **0** and the last element is **length-1**. We need to do different operations on an array that includes accessing an element, adding an element, deleting an element, etc. In this assignment, you need to design an array data structure, namely Array, for holding a collection of strings (e.g., item name), and support the following operations (we will follow object oriented approach):

Operations:

//Constructors

Array() //create an array of a predefined size

Array(int n) //create an array of length n

Array(A[]) //Initialize the array with the given list of elements

//Methods

getArray() //return the array itself

getAnElement(int i) //return i th element of the array

add(element) // add an element at the end of the array and if the array is full, you need to increase the size of the array and insert it

add(int i,element) //add the element on the i-th position of the array

remove(element) //remove all the elements that match with the given element from the array

findIndex(element) //return the indexes of all the occurences where the given element are found

subArray(int start, int end) //return all elements within the given range, from start to end of the array

merge(A1[], A2[]) // populate the array with the merged list of two sorted arrays A1 and A2 (note that, you can assume that A1 and A2 are sorted, and you do not need to write codes to sort them)

length() // return the length of the array

isEmpty() //check whether the array is empty

Submission Guidelines

1. **Create a directory with your 7 digit student id as its name**
2. **Put the source files only into the directory created in step 1**
3. **Zip the directory (compress in .zip format. Any other format like .rar, .7z etc. is not acceptable)**
4. **Upload the .zip file on Moodle.**

For example, if your student id is 1805xxx, create a directory named 1805xxx. Put only your source files(.c, .cpp, .java, .h, etc.) into 1805xxx. Compress the directory 1805xxx into 1805xxx.zip and upload the 1805xxx.zip on Moodle.

Failure to follow the above-mentioned submission guideline may result in upto 10% penalty.