**COM267 Fall 2016**

**PA2:**

**Due Date: 28.10.2016, 23:59**

**IMPORTANT: Please follow Moodle course discussion group for submission announcements!**

**The Assignment:**

You will implement and test a revised sequence class that uses a dynamic array to store the items.

**Purposes:**

Ensure that you can write a small class that uses a dynamic array as a private member variable.

1. sequence2.h: The header file for the new sequence class. Actually, you don't have to write this file. Just start with our version.

By the way, you might want to compare this header file with your first sequence header file (sequence1.h). The new version no longer has a CAPACITY constant because the items are stored in a dynamic array that grows as needed. But there is a DEFAULT\_CAPACITY constant, which provides the initial size of the array for a sequence created by the default constructor.

1. sequence2.cpp: The implementation file for the new sequence class. You will write all of this file, which will have the implementations of all the sequence's member functions. You will submit this file.

**Other files that you may find helpful:**

1. [sequence\_test2.cpp:](http://www.cs.colorado.edu/~main/projects/sequence_test.cxx) This is the same interactive test program that you used with the earlier sequence (with minor modifications in the names of the included files and namespaces etc.)
2. [sequence\_exam2.cpp:](http://www.cs.colorado.edu/~main/projects/sequence_exam.cxx) A non-interactive test program that will be used to grade the correctness of your new sequence class.

**The Sequence Class Using a Dynamic Array   
Discussion of the Assignment**

Your sequence class for this assignment will differ from your previous sequence in the following ways:

* The number of items which may be stored in the sequence should only be limited by the amount of memory available on the heap. When new items are added to a sequence which is at capacity, the size of the data array in which items are stored should be automatically enlarged.
* Because you are dynamically allocation memory within your sequence class, you will need to define a copy constructor, an assignment operator, and a destructor.
* The constructor should have a default argument which allows the user to set the initial capacity of the sequence.
* There should be a resize function that allows the user to explicitly set the the capacity of the sequence.

Once again, do your work in small pieces. For example, at the beginning of your development, start writing your sequence class with a constructor, start, insert, advance, and current member functions. Other member functions can be started out as stubs (i.e. initially implemented as empty functions-just to be able to compile without problems-; later on the implementation is finalized one by one, after validating each implementation).

Use the interactive test program and the debugger tools to track down errors in your implementation. If you have an error, *do not start making changes until you have identified the cause of the error*.

When a member functions needs to increase the size of the dynamic array, it is a good idea to increase that size by at least 10% (rather than by just one item).

**Submission Files:**

Submit only your sequence2.cpp file. Your file should be renamed as: **sequence2\_<YOUR\_ID>.cpp**

Example: Assume that your id is 11290001. Then the file will be renamed as: **sequence2\_11290001.cpp**