Homework 1: The Extended Student Pointer array

This initial homework requires you to create an extended Student array class (Esa)

which wraps and extends an array of Student pointers (so elements can

be optionally ordered by the client at insertion time - no sorts needed).

Required Functionality:

- **getSize**: Get current # elements in array
- **isEmpty:** True if no elements are in array
- **Prepend**: Put new student element at the front of the Array
    - Move all subsequent elements up one
    - Auto resizing may happen

- **Append:** Put new student element at the back of the Array
    - Auto resizing may happen

- **Insert**: Put new student element at indicated offset
    - Move all subsequent elements up one
    - Auto resizing may happen

- **Remove**: Remove Student element at Indicated offset
    - Move all subsequent elements down one
- **Get**: Return pointer to Student element at given index
- **Set:** Replace Student element at given index with supplied Student

There are 7 files involved in Homework 1. I will supply 1-5 and you will return 6 and 7.

1. Homework 1.pdf , which describes the HM 1 assignment (and is a duplicate of these instructions)
2. Student.h: Defines the Student object (data **and** code) whose pointers are being collected
3. StudentEsa.h Defines the public interface to a Student Extended Array object that you will write.

You may need to add additional private data members.

Extra credit if you make this into a template so that Enhanced Arrays for objects other than Student may be easily generated.

4. HM1.cpp - The "mainline" which reads the test commands and invokes StudentEsa public methods
5. Hm1Testing .txt - The data that will drive the testing. Supply this in response to the programs asking for the input file name.
6. **StudentEsa.cpp. Your implementation of StudentEsa.**
7. **The output printout after the tests are run on your code (capture Cout)**

Assignment:

Copy the 5 supplied text files into a directory / Visual Studio project (or equivalent)

Convert text files 2-5 into their real extensions (ex: HM1.cpp.txt becomes HM1.cpp)

Change StudentEsa.h to add any private data your implementations require

Create StudentEsa.cpp to implement the "interface contract" defined in StudentEsa.h

Successfully compile all files and build the program.

Run the compiled Hm1.cpp program, specifying " Hm1Testing.txt " as an argument

<Debug>

When things "look good", print out the following 2 files, and write your name on each printout:

- **The recorded output (capture "cout")**
- **The EsaStudent.ccp file in which you implemented the code for the Extended Array**

Note** Your EsaStudent implementation will form the basis of subsequent homeworks.**