Data Structures (810:052) Lab 2 Name:_____

Objectives: You will gain experience:

- using C++ classes and objects
- implementing C++ classes with operator overloading and dynamically allocated member data.

Download the following file to your desktop: http://www.cs.uni.edu/~fienup/cs052s10/labs/lab2.zip
Extract this file by right-clicking on lab2.zip icon and selecting Extract All.

Part A: Yesterday in class we considered a simple IntArray class from Chapter 14. The `lab2.zip` file you downloaded and extracted contains a `IntArray` folder with a Visual Studio C++ project file: `IntArray.sln` inside. Double-click on it to open this project in Visual Studio. Run the current main program (in `main.cpp`).

a) Why doesn't the `"Attempting "myIntArray[100] = 100;:"` never print?

b) Get it to print. How did you get it to print?

c) In the overloaded `operator[]` why does both the "l-value" access and the "r-value" access work correctly?

```
myIntArray[3] = 50;       // l-value access
myInt = myIntArray[3];    // r-value access
```

After you have debugged your program, raise your hand and demonstrate your program.

Part B: Add to the `IntArray` class the following new member functions:

- A constructor that accepts two int arguments: the array `size` and a `fillValue` that is used to initialize each array element (to perhaps something other than 0)
- An overloaded assignment `operator=`
- A `resize` member function that accepts an integer argument `newSize` that is used to modify the size of the array. This function will need to: (1) allocate a new array with the `newSize`, (2) copy all (or part of) the elements from the "old" array to the new one, and (3) delete the old array. If the `newSize` argument is less than the current `arraySize`, then only the element from 0 to (`newSize` - 1) are copied. If the argument `newSize` is greater than the current `arraySize`, then the right end of the array if filled with 0's.

Write a simple test program that demonstrates the new features to the IntArray class.

After you have debugged your program, raise your hand and demonstrate your program.

If you complete all parts of the lab, nothing needs to be turned in for this lab. If you do not get done today, then show me the completed lab in next week's lab period. Make sure that you log off the computer before you leave.