**CHS CS 0401 Intermediate Programming**

**Assignment 4**

**Topics: More arrays and inheritance**

We have discussed encapsulation, abstraction and inheritance in lecture, and have seen several examples illustrating these principles. We have also discussed arrays and the logical vs. physical size when an array is used to store data.

In this assignment you will implement your own (slightly simplified) version of a StringBuilder, called MySBuilder, using an underlying array of characters to represent your string. The class is specified as follows:

**public class MySBuilder extends SimpleSBuilder**

I have implemented SimpleSBuilder for you using an array of char for the underlying data. Look it over in file SimpleSBuilder.java. This class has some basic functionality but clearly is very limited. The class you will write will inherit this basic functionality, but you must add many additional constructors, accessors and mutators.

I have listed the required methods for MySBuilder with comments in file MySBuilder.java. **Read over these comments very carefully, as they describe what you need to do in each of the methods.** To complete this assignment you can simply download the provided MySBuilder.java file and fill in the missing code for each of the methods.

**Once completed, your MySBuilder class must run with the driver program SBuilderTest.java and produce output identical to that shown in a4out.txt.**

**Restrictions:**

* All code in your MySBuilder class must be your own. You may not copy code from the Internet or any predefined Java source code.
* You may not use the predefined StringBuilder or StringBuffer or **any similar classes** in your code.
* You may not use the String class other than in a very restricted way (as an argument or return type, possibly accessing the characters in the String but not using any other String methods)
* Some methods have additional requirements / restrictions. Read over the comments for each method carefully before implementing it.

**Important Notes:**

* Although you may not use StringBuilder or StringBuffer in your code (or String in more than a limited way), you may want to look these classes up in the Java API. Most of the methods in this assignment are taken right from these classes so reading the official docs may give you some insight into them. However, be sure you implement the methods as specified in the assignment and NOT as specified in the Java API.
* Format your code nicely (indenting, etc) and be sure to **use comments** to explain your code where appropriate. Minimally you should have your name, course, section and a brief explanation at the beginning of your program. You should also have brief comments wherever the meaning of the code is not obvious.
* If you are interested in doing some extra credit, come up with some additional non-trivial methods and add them to your code. If you do this also write a second driver program Extra.java which demonstrates your additional methods.