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CS 202 - 1101

### Project 7 Documentation

**Purpose:** The purpose of this project is to create and utilize dynamic memory and properly allocate and deallocate it. Additionally, it uses aspects of previous knowledge such as pointers, string manipulation, iostream, along with other key aspects of C++. It expands on the use of the new operator and the delete operator to allocate dynamic memory in the freestore and proper conventions of dynamic memory.

**Design:** The project is organized into four folders and a make file. Within the src folder is the proj7.cpp main source file and another folder holding all my other source files. The include file holds all my header files. The build folder holds the executable along with the cmake folders and libraries created by cmake. The main function file proj7.cpp is a test driver for the functions and methods of the MyString class. The MyString header file was already given to us and the implementation was done by ourselves. Within the MyString.cpp file, there are constructors, methods, and operator overloads. The default constructor creates a MyString object with NULL values while the parameterized constructor uses information given to create a MyString object with given values. The copy constructor copies the values of one object to a new object. The destructor destroys the objects created by the program. The size function returns the length of a string including the NULL character \0 while the length function returns the length without the NULL character. The c\_str function converts the values in the object to a c string. The operator overload for == checks the buffer strings in the object if they are the same and returns true or false respectively. The operator overload for = assigns the values of one MyString object to

another object. The operator overload for + takes two strings and concatenates them, returning the concatenated string out. The operator overload for [] is done twice with one being done for a const char value and one that is done for a normal char value.

**Problems/Challenges:** I had a bit of trouble with segmentation faults and how my program was not properly allocating enough space for my data. I later fixed it as it was a problem of allocation and not a problem with my constructors. I also had a problem with the [] operator overload but it was due to my overcomplication of the function and that I did not have to return a separate char. Overall, there were not too many problems with the program and the instructions were fairly straightforward.

**Possible Changes:** I would try to simplify my code and clean it up to make it easier to read and understand. I would also try to make the program more efficient for allocation and deallocation purposes of dynamic memory. I would also experiment with dynamic memory if I had more time.