Problem Statement

Description

In this assignment you are required to implement a class which will encapsulate C++ strings. This class will contain member functions to manipulate and access the string in various ways. A great deal of functionality will be implemented using C++ operator overloading.

Requirements

1. The character array (which is used to store the string) should be **dynamic** in nature. Assume a default size of 50 bytes.
2. Your class must have the following constructors:
    a. Default constructor
    b. Constructor which accepts a character array
    c. Constructor which takes the size of string
3. Implement class destructor.
4. Function which returns the size of string.
5. Function which returns the size of character array.
6. Overload all the operators, mentioned in Table 1.
7. In main() function, test all operations/functions of the string class. Print string(s) before and after every operation.

Note: Do not use C/C++ string library functions.

```
// Assume that above mentioned class is implemented as

// CMyString


CMyString a ("ABCDEFG");

CMyString b ("1234567");
```

Table 1: Operators

Operator	Usage/Operator	Example

+	String concatenation	CMyString c;
		
		c = a + b;
		
		// c = "ABCDEDG123456"

+=	String concatenation	a += b;
		
		// a = "ABCDEDG123456"

[ ]	Get/Set individual characters	char d = a [1];
		
		// d = 'B'
		
		b [4] = '1';
		
		// b = "123416"

= =	Test string equality	bool t = (a == b);
		
		// t = false
		
		bool p = (a == a);
		
		// p = true

!=	Test string inequality	if(a != b) // Condition true
		
		{
		
		    ...
		
		    ...
		
		}

>	String comparison	if(a > b) // Condition true
		
		{
		
		    ...
		
		    ...
		
		}

<	String comparison	if(a < b) // Condition false
		
		{
		
		    ...

		... }

( )	Get sub-string	CMyString c;
		
		c = a (0, 3);
		
		// c = "ABCD"

<<	Print string using ostream	cout << a << b;
>>	Input string using istream	cin >> a;

=	String assignment	b = a;
		
		// b = "ABCDEFG"

<<	String left shift	CMyString c;
		
		c = a << 1;
		
		// c = "A" and a = "BCDEFG"
		
		c = a << 3;
		
		// c = "BCD" and a = "EFG"

>>	String right shift	CMyString c;
		
		c = a >> 1;
		
		// c = "G" and a = "ABCDEF"
		
		c = a >> 3;
		
		// c = "FED" and a = "ABC"

Submission

Submit your assignment via MS Teams.