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## COM S 213 – Fall 2002

**ASSIGNMENT #2:**                      **Calculator Class**

**DATE GIVEN:**                        **9/12/02**

**DATE DUE:**                            **9/19/02**

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### **PURPOSE:**

The purpose of this assignment is test your ability to design, implement and use a C++ class.

### **ASSIGNMENT:**

You need to design a class named `Calculator` which is used to perform one of four simple calculations: add, multiple, subtract or divide. The class will have two member variables –

- `mValue` – Keeps track of the “running total”
- `mMessage` – A place to store an error message, by default should be “No Error”

The default constructor will provide an intelligent initial value for the class and a second constructor will allow the user to set `mValue` upon construction of the class.

A getter and setter should be provided for the `mValue`, and only a getter should be provided for `mMessage`.

Finally, a member function named `calculate()` should be provided. This member function returns a Boolean (`bool`) and takes two arguments:

- The operation to perform (+,-,/,\*)
- The argument to use when performing the operation.

Since the four operations in question are all binary operators, the existing value stored in the calculator (`mValue`) will be the first argument, and the argument passed will be the second argument. The result of the calculation is stored back into `mValue`, and `true` is returned. If some error occurs (divide by zero, unrecognized operation) the message field is updated appropriately and `false` is returned.

You should test your class by creating a loop in which users can arbitrary enter as many calculations as they want and see the results or an error message back, like this (assumes you initialize the calculator with a 0 value):

```
Welcome to the CS213 Calculator:  
Enter 'q' to quit...
```

```
Current Value:      0  
Enter Operation:    +  
Enter Argument:    5
```

```
Current Value:      5  
Enter Operation:    *  
Enter Argument:    5
```

```
Current Value:     25  
Enter Operation:   -  
Enter Argument:   5
```

```
Current Value:     20  
Enter Operation:   /  
Enter Argument:    0  
ERROR, divide by zero, last request aborted!
```

```
Current Value:     20  
Enter Operation:   &  
Enter Argument:    5  
ERROR, unrecognized operation, last request aborted!
```

```
Current Value:     20  
Enter Operation:   q
```

Thanks for using the Calculator!

### **SUGGESTIONS:**

Make sure you understand (from lecture) the notions of getter/setter functions and why they are necessary. Make sure that your Calculator can handle floating point numbers. Use the `double` type where appropriate. Make sure you remember the rule of thumb for when to define member functions in the class definition and when to define them outside of it. Finally, make sure you remember the convention for how to break down your solution into the appropriate files (header file, class file, main file).