

MS-3812
C++ Program #1
Simple Classes

Date Assigned: **Wednesday, November 29, 2006**
Date Due: **Wednesday, December 6, 2006**

A rational number is any quantity that can be expressed as i/j where both i and j are integers. Rational addition, subtraction, multiplication, and division are defined as follows:

$$\frac{a}{b} + \frac{c}{d} = \frac{ad + bc}{bd}$$

$$\frac{a}{b} - \frac{c}{d} = \frac{ad - bc}{bd}$$

$$\frac{a}{b} \times \frac{c}{d} = \frac{ac}{bd}$$

$$\frac{a/b}{c/d} = \frac{ad}{bc}$$

Create a rational number class which implements the above operations using ordinary member functions (named: `add`, `sub`, `mult`, and `div` respectively). As always, a well commented source code implementation is required, with separate files for the declarations, definitions, and user application code. Be sure to demonstrate all aspects of your implementation in the test cases presented in the user program.