**Name**

**Advanced Programming in C++**

**Lab Exercise 2/21/2025**

In this exercise you will build a Fraction class. The Fraction class has the following:

1. Two private integer members; numerator and denominator.
2. A private double member that contains the decimal equivalent of the fraction.
3. A public get and set methods for all private fields.
4. It must have member function for add, subtract, multiply, and divide.
5. It also must have a member function reciprocate that takes the object and swaps the numerator and denominator as well as updating the decimal equivalent field.
6. The Fraction class also has a constructor that initializes the private members of the constructed object to some safe value. Initializing the denominator to 0 is not a real good idea.
7. It also must have a constructor that initializes the Fraction object to some program specified values ( i.e. Fraction one(2, 3) )
8. It must have a reduce member function that will reduce the fraction using Euclid’s Algorithm to find the GCD.

function gcd(a, b)

while b ≠ 0

t := b

b := a mod b

a := t

return a

1. It must have a print member function to print the fraction in the form n/d.

Be sure to write a main driver program to thoroughly test your class.

Submit the source code for your class implementation as well as your main driver program.

Here is a copy of my fraction.h class definition file.

#ifndef FRACTION\_H

#define FRACTION\_H

class Fraction

{

private:

int numerator;

int denominator;

double decimalEquivalent;

void reduce();

void calcDecimalEquivalent();

int gcd();

public:

Fraction();

Fraction(int, int);

Fraction add(Fraction);

Fraction subtract(Fraction);

Fraction multiply(Fraction);

Fraction divide(Fraction);

void reciprocate();

int getNumerator();

int getDenominator();

double getDecimalEquivalent();

void setNumerator(int);

void setDenominator(int);

void print();

};

#endif