

```
/**
 * Manipuler et calculer avec des fractions.
 *
 * @author biech153 (Biersbach Chris) / gamca174 (Gamboa Carlos) / olial319 (Olinger Alex)
 * @version 27/06/2019 7:00:50
 * Classe: 3GIG
 */
public class Fraction
{
    private int numerator;
    private int denominator;

    public Fraction(int pNumerator, int pDenominator)
    {
        setFraction(pNumerator, pDenominator);
    }

    public void setFraction(int pNumerator, int pDenominator)
    {
        numerator = pNumerator;
        denominator = pDenominator;

        simplify();
    }

    public int getNumerator()
    {
        return numerator;
    }

    public int getDenominator()
    {
        return denominator;
    }

    public double getDecimal()
    {
        return numerator / (double) denominator;
    }

    public String toString()
    {
        String res = "["+numerator;
        if (denominator != 1)
            res = res + "/" + denominator;
        res = res + " (" + getDecimal() + ")"]";
        return res;
    }

    public int gcd(int a, int b)
    {
        int h;
        while (b != 0)
        {
            h = a % b;
            a = b;
            b = h;
        }
        return a;
    }

    public int lcm(int a, int b)
    {
        return (a*b) / gcd(a, b);
    }

    public void simplify()
    {
        int g = gcd(numerator, denominator);
        numerator = numerator / g;
        denominator = denominator / g;
    }

    // ... suite page suivante ...
}
```

```
/**
 * operation:
 *  $f = f + pF$ 
 * (f est l'objet courant)
 */
public void add(Fraction pF)
{
    int l = lcm(denominator, pF.getDenominator());
    int m1 = l / denominator;
    int m2 = l / pF.getDenominator();

    numerator = numerator * m1 + pF.getNumerator() * m2;
    denominator = l;

    simplify();
}

/**
 * operation:
 *  $f = f - pF$ 
 * (f est l'objet courant)
 */
public void subtract(Fraction pF)
{
    int l = lcm(denominator, pF.getDenominator());
    int m1 = l / denominator;
    int m2 = l / pF.getDenominator();

    numerator = numerator * m1 - pF.getNumerator() * m2;
    denominator = l;

    simplify();
}

/**
 * operation:
 *  $f = f * pF$ 
 * (f est l'objet courant)
 */
public void multiply(Fraction pF)
{
    numerator = numerator * pF.getNumerator();
    denominator = denominator * pF.getDenominator();

    simplify();
}

/**
 * operation:
 *  $f = f / pF$ 
 * (f est l'objet courant)
 */
public void divide(Fraction pF)
{
    numerator = numerator * pF.getDenominator();
    denominator = denominator * pF.getNumerator();

    simplify();
}
}
```

```
/**
 * Tester la classe Fraction.
 *
 * @author      biech153 (Biersbach Chris) / gamca174 (Gamboa Carlos) / olial319 (Olinger Alex)
 * @version     27/06/2019 7:00:50
 * Classe:     3GIG
 */
import java.util.Scanner;
public class FractionTest
{
    /**
     * Programme principal.
     * Ici on utilise la lecture au clavier pour effectuer des tests.
     */
    public static void main(String[] args)
    {
        Scanner scanner = new Scanner(System.in);
        int n, d;
        String op;

        System.out.print("N1: ");
        n = scanner.nextInt();
        System.out.print("D1: ");
        d = scanner.nextInt();
        Fraction f1 = new Fraction(n, d);

        System.out.print("N2: ");
        n = scanner.nextInt();
        System.out.print("D2: ");
        d = scanner.nextInt();
        Fraction f2 = new Fraction(n, d);

        System.out.print("Operation (+ - * / x): ");
        op = scanner.next();

        while(!op.equals("x"))
        {
            if (op.equals("+"))
            {
                System.out.print(f1+" + "+f2+" = ");
                f1.add(f2);
                System.out.println(f1);
            }
            else if (op.equals("-"))
            {
                System.out.print(f1+" - "+f2+" = ");
                f1.subtract(f2);
                System.out.println(f1);
            }
            else if (op.equals("*"))
            {
                System.out.print(f1+" * "+f2+" = ");
                f1.multiply(f2);
                System.out.println(f1);
            }
            else if (op.equals("/"))
            {
                System.out.print(f1+" / "+f2+" = ");
                f1.divide(f2);
                System.out.println(f1);
            }
            else
                System.out.println("Operation "+op+" invalide!");

            System.out.print("Operation (+ - * / x): ");
            op = scanner.next();
        }
    }
}
```