

PROG24178

Structures Homework Exercise

Part 1

Create a struct called Fraction to deal with fractions and a series of functions to work with them. The struct should store two ints. Call the first int num (short for numerator), and the second denom (short for denominator). Typedef your struct so that its data type is a single word (Fraction).

Write a function called printFraction that accepts a Fraction as a parameter and prints it in a readable way (use something like "%d / %d").

Write a main function that reads in two Fractions using just two lines. This means you should read both the num and denom in a single scanf. Put another way, you should use one scanf statement per Fraction. Then print out the two fractions.

Write the following functions to multiply and add Fraction variables. I'll give you the declarations, but you must fill in the definitions.

```
Fraction mulFraction(Fraction a, Fraction b)
```

```
Fraction addFraction(Fraction a, Fraction b)
```

If you can't remember how to work with fractions, you're not alone (we almost always use decimals and calculators these days). Google for the appropriate equations, and implement them using the Fraction struct type.

Part 2

Using your fully tested and completely error free code, calculate the result of $2/5 * (3/7 + 5/8)$ and print it. The correct answer should be 118 / 280.

Bonus

The answer in part 2 above is correct, but it's not simplified. Write another function declared as shown below that accepts a fraction, simplifies it to make the numerator and denominator as small as possible, then returns the result.

```
Fraction simplifyFraction(Fraction fr)
```

Hint: Think of a simple algorithm you can use to simplify. You'll require a loop. You can also look up how a mathematician would do it – GCD algorithm!