CSE 215: Programming Language II Lab

Lab – 7

Classes & Objects

Objective:

- To learn about class and objects
- To learn to implement a class using UML

Java has very strong leanings towards Object Oriented Programming.

A class can be thought of as the "concept" of an "idea", while objects can be thought of as the "materialization" of that idea.

Formal, dilated definition: A non-primitive data type created by programmer is called class. An instance of a class is known as object.

This is similar to `struct` in C, however, we could not include methods in `struct`.

```
// class signature, access_modifier can't be "private"
<access_modifier> class <identifier> {
  // attributes
  // methods
}
```

Example:

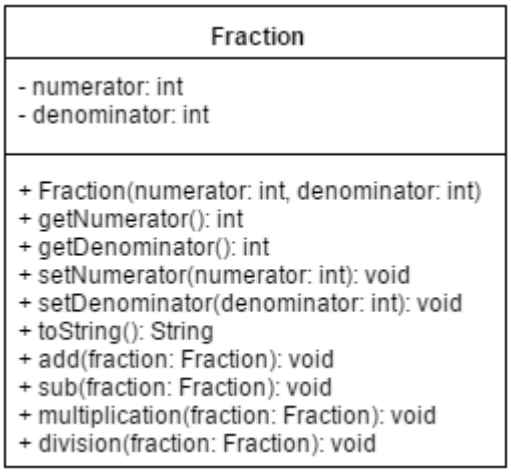
```
public class Person {
  public int age;
  public float heightInCm;

  // default constructor
  Person() {
  }

  // overloaded constructor
  Person(int age, float heightInCm) {
    this.age = age;
    this.heightInCm = heightInCm;
  }
  // other methods belonging to this class
}
```

Task:

Implement the following class and test its methods:



`void add(Fraction fraction)`

Adds two Fraction objects and **stores the result** into **calling object**. This is how addition is performed for fractions (assume that this is how it works):

$$\frac{1}{4}+\frac{3}{5}=\frac{1*5+3*4}{4*5}=\frac{17}{20}$$

`String toString()`

Returns the value of the fraction in $\frac{n}{m}$ format where n is the numerator and m is denominator.

e.g. Your console output should look like: `17 / 20`

Now write a test program, take two Fraction objects. Print both of them. Test add, sub, multiplication and division methods. Print calling object after each method call.