# Fractions

## Assignment Description

We can easily calculate with integers int and real numbers float in Python, but what if we want to work with fractions? For example, we can create our own class Fraction by representing a fraction with 2 integers. Write out a class that is able to perform basic operations using fractions. Your code must implement and will be tested on:

- Casting to float, int and str (For strings simplify your fractions: str(Fraction(4,6)) = '2/3' and str(Fraction(4,1)) = '4')
- Binary operators such as +, -, \*, /, >, <, ==, >=, <=, !=
- Unary operators such as +,-,abs
- Addition, substraction, multiplication and division of fractions and integers (in both orders)

This is a **group assignment**, so while you are allowed to do this alone, you are also allowed to work on this on groups of at most 3 students. If you do it in group, then **everyone must turn in the same program** (preferably at the same time) and you must put all of the names of your group as a comment in your code.

## Example

```
p = Fraction (2,3)
q = Fraction (123,456)
r = (p - q)/(1 + q) * (-q)*(p / 5)
print(r)
-7421/660060
print(abs(r))
7421/660060
print(float(r))
-0.011242917310547527
```

### **Further Reading**

Python documentation: Emulating numeric types Wikipedia: Euclidean algorithm

### Notes

Make sure to turn in your code with the filename "Fractions.py". If you turn it in with any other name it will fail the tests. This is due to instead of this assignment giving you an input and you having to print an output. This assignment will run unit tests on your program itself.

A template for this assignment is provided with most of the functions you must implement. Don't make your functions too long, keep them short and concrete. Feel free to write help functions where needed.