CPP tasks — Assignment_03 T.R. Werner, May 13, 2021 (20:28)

Problem 1

Define a class **Frac** describing fractions (rational numbers). In particular write

- Constructor taking numerator `n` and denominator `d` and creating an object representing the fraction $\frac{n}{d}$. Both arguments should have default values in such a way that
  - object `Frac(n)` represents whole number `n` (fraction with denominator equal to 1);
  - object `Frac()` represents zero.

  Representation of a fraction should be unique, so, independently of arguments passed to the constructor, (private) fields denoting the numerator and denominator must not have any common factors, denominator should always be positive, and if the numerator is 0, the denominator should be 1, to ensure unique representation of zero.

  A private member function calculating the greatest common divisor will probably be useful.

  Note that the class contains only numeric fields so, as is usual in such cases, the system-provided copy constructor and copy-assignment operator are sufficient.
- Overloadings of the addition, subtraction, multiplication and division operators.
- Overloading of **operator<<** for objects of type **Frac**.

The following **main** function

download *RatOver.cpp*

```
int main() {
    Frac a(2), b(4,10), c(24,-15), x(1,-3), y(2,6);

    std::cout << -2*((a+b)*5-4)/c     << " "
              << (7 + x + y*1114/111) << std::endl;
}
```

should print

```
10 3334/333
```