

User-defined Data Types

We can also set our own preferences for the input and output operators.

If you overload the input and output operators, your data type behaves like a built-in data type.

```
friend std::istream& operator>> (std::istream& in, Fraction& frac);  
friend std::ostream& operator<< (std::ostream& out, const Fraction& frac);
```



For overloading the input and output operators you have to keep a few rules in mind:

- To support the chaining of input and output operations you have to get and return the input and output streams by non-constant reference.
- To access the private members of the class, the input and output operators have to be *friends* of your data type.
- The input operator `>>` takes its data type as a non-constant reference.
- The output operator `<<` takes its data type as a constant reference.

```
#include <iostream>  
  
class Fraction{  
public:  
    Fraction(int num=0, int denom=0):numerator(num), denominator(denom){}  
  
    friend std::istream& operator>> (std::istream& in, Fraction &frac);  
    friend std::ostream& operator<< (std::ostream& out, const Fraction& frac);  
  
private:  
    int numerator;  
    int denominator;  
};  
  
std::istream& operator>> (std::istream& in, Fraction& frac){  
  
    in >> frac.numerator;  
    in >> frac.denominator;
```



```

    return in;
}

std::ostream& operator<< (std::ostream& out, const Fraction& frac){

    out << frac.numerator << "/" << frac.denominator;
    return out;
}

int main(){

    std::cout << std::endl;

    Fraction frac(3, 4);
    Fraction frac2(7, 8);
    std::cout << "frac(3, 4): " << frac << std::endl;
    std::cout << frac << "    " << frac2 << std::endl;

    std::cout << std::endl;

    std::cout << "Enter two natural numbers for a Fraction: " << std::endl;
    Fraction fracDef;
    std::cin >> fracDef;
    std::cout << "fracDef: " << fracDef << std::endl;

    std::cout << std::endl;

}

```



Overloading input and output operator