

Ceng 241 Lab Work 7

Operator Overloading II: overloading the subscript operator and Composition: Objects as Members of Classes

Implement a **RationalNumber** class. For this exercise, the numerator and denominator parts should be **integer**. The public interface consists of methods to

- Compute the subtraction of two Rational numbers by overloading subtraction operator
- Compute the addition of two Rational numbers by overloading addition operator
- Overload stream insertion (>>) operator for entering data from keyboard
- Overload stream extraction (<<) operator for displaying data on the screen
- Compare two RationalNumbers by overloading "==" , ">=" and ">" operators
- Overload the assignment operator(=) for assigning to rational numbers

Implement a **Set** class, where a set is an unordered collection of one or more elements with no duplicates. For this exercise, the elements should be **RationalNumbers**. The public interface of Set class consists of methods to

- Remove a specified element from a Set
- Enumerate the elements in the Set
- Add a new element to a set using array subscript operator(i.e. overload the subscript operator "operator[]")
- Overload stream extraction (<<) operator for displaying data on the screen

Sample Test Program:

```
#include "Set.h"
#include <ctime>
#include <iostream>
using std::endl;
```

```
using std::cout;
using std::cin;

int main(){

    const int size=10;

    Set a(size);

    srand(0);
    for(int i=0;i<size;i++){
        Rational temp(rand()%5,rand()%12);
        a[i]=temp;
    }
    cout<<a;

    a.enumerate();
    cout<<a;

    a.remove(a[5]);
    cout<<a;

    return 0;
}
```