Листинг программы по теме ”Классы”

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Программа на C++

```
#include <iostream>

using namespace std;

class ratio
{
  private:
    int num, den;
    void reduce();
    int gcd(int n, int m);
    int lcm(int a, int b);
  public:
    ratio();
    ratio(int n, int d);
    void set(int, int);
    void show();
    ratio operator*(ratio);
    ratio operator+(ratio);
    ratio operator*(int);
    friend ratio operator*(int, ratio);
};

void ratio::set(int n, int d) {
  num = n;
  den = d;
  reduce();
}

ratio::ratio() {
  set(1,1);
}

ratio::ratio(int n, int d) {
  set(n, d);
}

void ratio::show() {
  if (num < 0)
    cout << endl << "  "<< -num << endl << "- ###" << endl << "  " << den <<
       endl;
  else
    cout << endl << num << endl << "###" << endl << den << endl;
}

int ratio::gcd (int a, int b) {
  return b ? gcd (b, a % b) : a;
```

```
46      }
47
48      int ratio::lcm (int a, int b) {
49        return a / gcd (a, b) * b;
50      }
51
52      void ratio::reduce() {
53        int buf = abs(gcd(num,den));
54        num /= buf;
55        den /= buf;
56        if (den < 0) {
57          num *= (-1);
58          den *= (-1);
59        }
60      }
61
62      ratio ratio::operator*(ratio r) {
63        return ratio(num * r.num, den * r.den);
64      }
65
66      ratio ratio::operator+(ratio r) {
67        int b = lcm(r.den, den);
68        int a = num * b / den + r.num * b / r.den;
69        return ratio(a,b);
70      }
71
72      ratio ratio::operator*(int k) {
73        return ratio(k * num, den);
74      }
75
76      ratio operator*(int k, ratio r) {
77        return r*k;
78      }
79
80      int main() {
81        ratio r1(2,-3), r2(3,4);
82        r1 = r1 * r2;
83        r1.show();
84        r1.set(1,-6);
85        r2.set(-3,14);
86        r1 = r1 + r2;
87        r1.show();
88        r1 = 6 * r1;
89        r1.show();
90        r2 = r2 * 3;
91        r2.show();
92      }
```