
Summing pairs of fractions**S24486_en**

Write a program to sum a sequence of pairs of fractions. To practice top-down design, the program should be the result of completing the lines of code outlined below.

```
....

struct Rational {
    int num; // numerator
    int den; // denominator
};

//pre: ....
//post: ....
int gcd_euclides(...)

//pre:---
//post: returns r in simplified form
Rational simplify(Rational r)

//....
void write_rational(Rational r) {
    if (r.num == 0) cout << "0";
    else if (r.den == 1) cout << r.num;
    else cout << r.num << "/" << r.den;
}

....
....
....

int main() {
    Rational rat1, rat2, total={0,1};
    while (read_pair_rationals(...)) {
        Rational sum = sum_and_simp(...);
        write_sum(...);
        ...
    }
    write_result(total);
}
```

Input

Input consists of sequence of lines. Each line contains four integers a, b, c, d representing fractions $\frac{a}{b}$ and $\frac{c}{d}$. It holds $b \neq 0$ and $d \neq 0$

Output

Summation of the pairs of fractions $\frac{a}{b} + \frac{c}{d}$ (one per line) and the final sum of all of them at the end. The result fractions need to be simplified: numerator and denominator have no common factors, and the denominator is positive. If a fraction is $\frac{0}{n}$ you should write only 0. If the fraction is $\frac{n}{1}$ you should write only n . Follow the format of examples below.

Sample input 1

```
1 3 2 3
-1 5 2 10
34 45 12 12
```

Sample output 1

```
1/3 + 2/3 = 1
-1/5 + 2/10 = 0
34/45 + 12/12 = 79/45
Total = 124/45
```

Sample input 2

```
1 2 1 -2
1 3 2 -3
3 1 -10 -2
```

Sample output 2

```
1/2 + 1/-2 = 0
1/3 + 2/-3 = -1/3
3 + -10/-2 = 8
Total = 23/3
```

Sample input 3

```
-5 -5
```

Sample output 3

```
Total = 0
```

Problem information

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