Programming Project 2

Rational Numbers

Due: 11:59pm 4/28 (Sun)

In this programming project, you will write `Rational` class that represents a rational number with a numerator and a denominator of integer type. The class should be defined in `Rational.h` and `Rational.cpp`. The class should work with the given `main.cpp` and generate the below output.

`main.cpp`

```cpp
#include <iostream>
#include "Rational.h"

int main(int argc, char** argv)
{
    Rational A(1,2), B(2,3);

    cout << A << " + " << B << " = " << A+B << " or " << Rational(A+B).floating() << endl;
    cout << A << " - " << B << " = " << A-B << " or " << Rational(A-B).floating() << endl;
    cout << A << " * " << B << " = " << A*B << " or " << Rational(A*B).floating() << endl;
    cout << A << " / " << B << " = " << A/B << " or " << Rational(A/B).floating() << endl;
    cout << A << " < " << B << " is " << ((A<B)?"true":"false") << endl;
    cout << A << " > " << -B << " is " << ((A>-B)?"true":"false") << endl;
    cout << A << " == " << B << " is " << ((A==B)?"true":"false") << endl;
    cout << A << "'s numerator is " << A[0] << endl;
    cout << A << "'s demoninator is " << A[1] << endl;
    cout << endl;

    Rational C(0.5), D(3);
    cout << A << " + " << 1.2 << " = " << A+1.2 << " or " << Rational(A+1.2).floating() << endl;
    cout << B << " * " << 1.2 << " = " << B*1.2 << " or " << Rational(B*1.2).floating() << endl;
    cout << A << " == " << 0.5 << " is " << ((A==0.5)?"true":"false") << endl;
    cout << C << " == " << 0.5 << " is " << ((C==0.5)?"true":"false") << endl;
    cout << D << " / " << C << " = " << D/C << " or " << Rational(D/C).floating() << endl;

    return 0;
}
```

Output

```
1/2 + 2/3 = 7/6 or 1.16667
1/2 - 2/3 = -1/6 or -0.166667
1/2 * 2/3 = 1/3 or 0.333333
1/2 / 2/3 = 3/4 or 0.75
1/2 < 2/3 is true
1/2 > -2/3 is true
1/2 == 2/3 is false
1/2's numerator is 1
1/2's demoninator is 2

1/2 + 1.2 = 17/10 or 1.7
2/3 * 1.2 = 4/5 or 0.8
1/2 == 0.5 is true
1/2 == 0.5 is true
3 / 1/2 = 6 or 6
```

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Please answer the following questions.

1. In the given `main.cpp`, construct `A` as `21/9` and `B` as `3/5`. Show the screen capture of your output.

Please submit

1. Program file `Rational.h` and `Rational.cpp`
2. Screen capture for problem 1.

to the TA via jyoonkim@korea.ac.kr.

If you have any question for this project assignment, please contact me or TA.