CPP Problem Design

Subject: Fraction

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Main testing concept: Class

Basics	Functions
■ C++ BASICS	☐ SEPARATE COMPILATION AND NAMESPACES
☐ FLOW OF CONTROL	☐ STREAMS AND FILE I/O
■ FUNCTION BASICS	☐ RECURSION
☐ PARAMETERS AND OVERLOADING	☐ INHERITANCE
☐ ARRAYS	☐ POLYMORPHISM AND VIRTUAL FUNCTIONS
■ STRUCTURES AND CLASSES	☐ TEMPLATES
☐ CONSTRUCTORS AND OTHER TOOLS	☐ LINKED DATA STRUCTURES
☐ OPERATOR OVERLOADING, FRIENDS, AND REFERENCES	☐ EXCEPTION HANDLING
☐ STRINGS	☐ STANDARD TEMPLATE LIBRARY
☐ POINTERS AND DYNAMIC ARRAYS	☐ PATTERNS AND UML

Description:

Define a class for a type called Fraction. This class is used to represent a ratio of two integers. Include mutator functions that allow the user to set the numerator and the denominator. Also include a member function that returns the value of the numerator divided by the denominator as a double, **but if the value can only represent by an integer, then it should be represented integer.** Include an additional member function that outputs the value of the fraction reduced to lowest terms. For example, instead of outputting 20/60 the function should output 1/3. This will require finding the greatest common divisor for the numerator and denominator, and then dividing both by that number. Embed your class in a test program.

Input:

No input.

Output:

As following sample.

Sample Input / Output：

Sample Input	Sample Output
``int main()
{
    Fraction f1, f2;
    f1.setNumerator(4);
    f1.setDenominator(2);
    f1.getDouble();
    f1.outputReducedFraction();

    f2.setNumerator(20);
    f2.setDenominator(60);
    f2.getDouble();
    f2.outputReducedFraction();
    return 0;
}``` | ```2
2
0.333333
1/3``` |

■ Eazy,Only basic programming syntax and structure are required.

☐ Medium,Multiple programming grammars and structures are required.
☐ Hard,Need to use multiple program structures or more complex data types.
Expected solving time:
15 minutes
Other notes: