1. **Problem statement:**

To define a new class called Fraction to represent a fraction. The users can input fractions and make calculations (add, subtract, multiple and divide) through the functions of class. The data members of the class Fraction are two integers top and bottom, denoting the numerator and denominator, respectively.

1. **Analysis:**

Inputs: two integers representing the numerator and denominator of a fraction

Outputs: the results of addition, subtraction, multiplication, division and the comparison between two fractions

Additional requirements: must define a class called Fraction to achieve the goals.

1. **Design:**

Class definition

1. Define two integers representing numerator and denominator
2. Define a default constructor and a normal constructor
3. Define input function and an output function
4. Define function add, subtract, multiple, divide and compare, which are of type fraction and return the result as fraction
5. Define find function which is used to find the most common divisor of two integers
6. Define reduction function which first find the most common divisor by using find function and then divide it to achieve reduction

Main function

1. declare six variables of type fraction
2. ask user to choose whether to input two fractions
3. store the input as fraction type F1 and F2
4. make calculations and display the four results of addition, subtraction, multiplication and division
5. display the results of comparison

**4. Implementation**: see C++ code in file 1405347\_2-2.cpp with comments.

**5. Testing:**

The C++ program was tested by carrying out a set of experiments and the C ++program output was verified successfully. For example

