EEE 102 C++ Programming and Software Engineering II

Assessment 1

SDP Report

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Problem statement:

Exercise 2 requires students to design a class which could represent a fraction. The fractions can have these functions: add, subtract, multiple and divide. In addition, it can compare the values of two fractions and has the function of inputting and outputting. Moreover, the fraction could fix its format such as 1/-2 can be converted into -1/2. Lastly, the final fraction can be converted into decimals.

Model Answer – Software Development Process

Analysis

Input:

- User input the real number and use space to separate numerator and denominator.
- Input the operation: +, -, *, /.
- Input another fraction.

Output:

- Show the marked words.
- Show the result of two fraction which have been operated.
- If this is any 0 in denominator, it will report to user.

Design:

1. Create a constructor to initialize the top and the bottom.
2. Create an algorithm to realize the function of comparison.
3. Get greatest common divisor for each fraction to normalize the format of the resulting fraction.
4. Show the marked words.
5. Create menu (switch) to choose operation.

Implementation:

See the code for algorithm 1 in the file: exercise 2.cpp.

Testing:

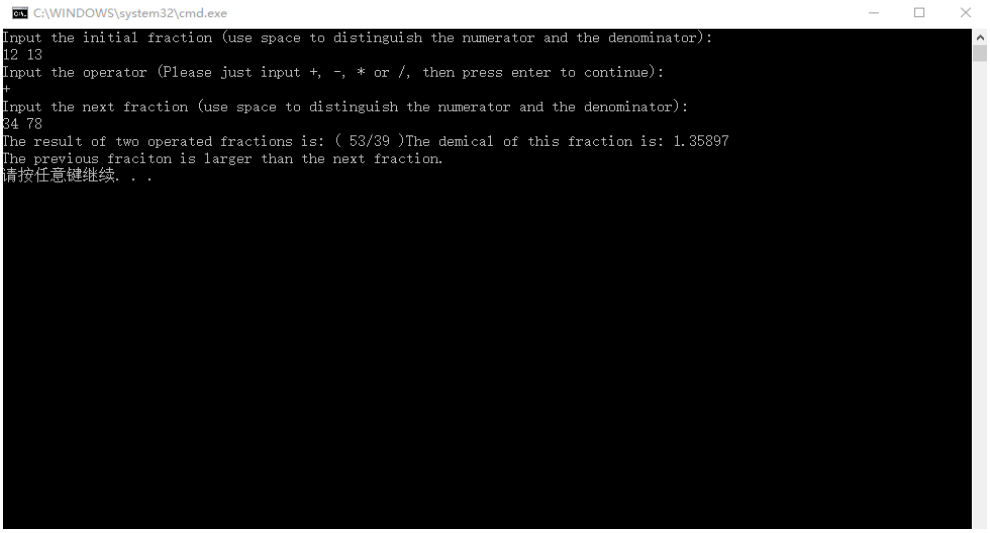

Figure 1: Create two fractions and do add operation.

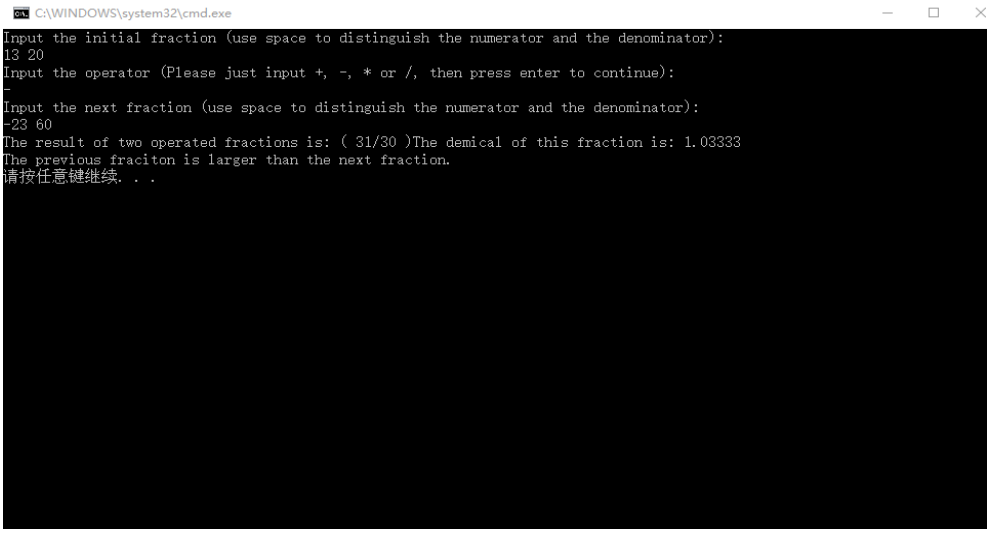

Figure 2: Create two fractions and do subtract operation.

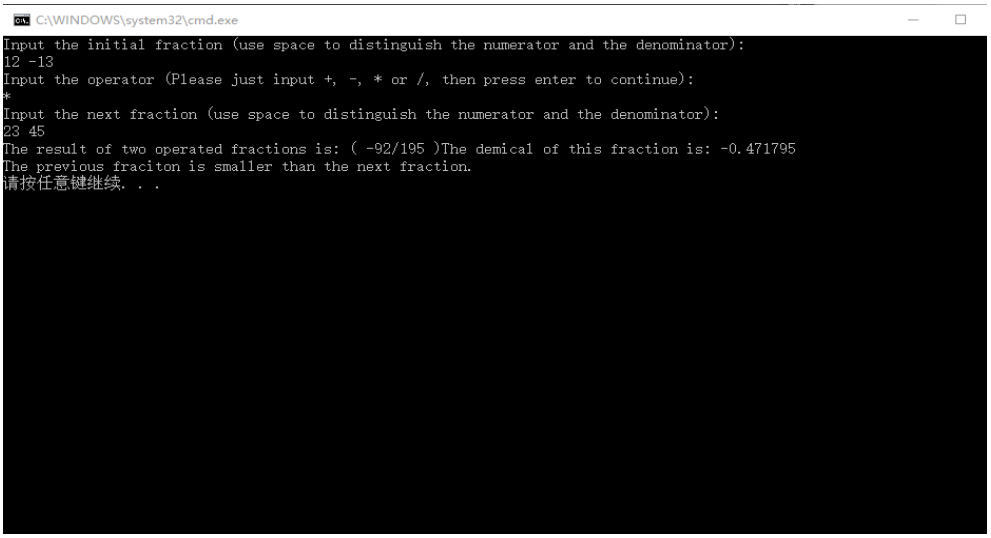

Figure 3: Create two fractions and do multiple operation.

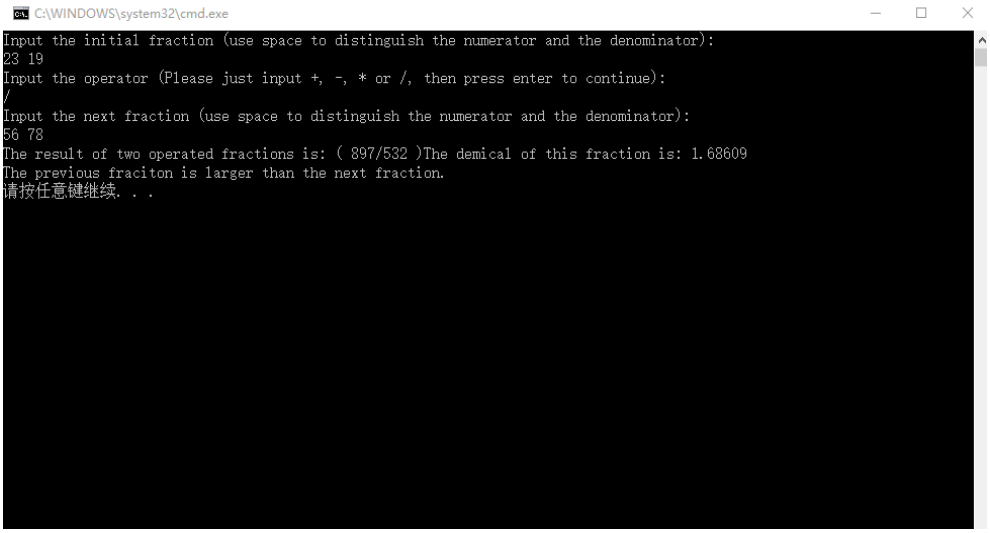

Figure 4: Create two fractions and do divide operation.

Figure 5: If the top is equal to 0.

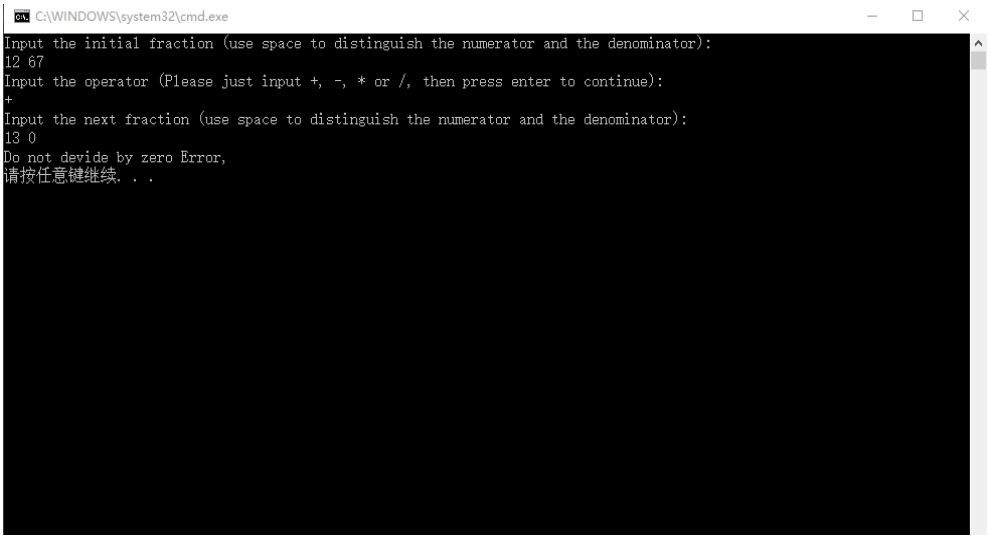

Figure 6: If the bottom is equal to 0.