Project 1 Design Document

Requirement List:

Fraction Calculator which can perform various operations just like a Normal Calculator but for fractions. At the program start it'll give you all the options which you can perform on any fraction after selecting. System will give you option to choose fraction randomly or could input at runtime, after that you could enter value or get result according to whatever operation you choose.

Function List:

- Options(): This function is printing/displaying the options or operations which user could perform on the fraction like add, sub, div, etc.

  Function Name: options()

  Return Value: None

  Incoming Parameters: None

  Outgoing Parameters: None

- Operations(): This function is used to perform actions/operations choose by the user and call function from the Fraction Class which is imported at the top of the file.

  Function Name: operations()

  Return Value: None

  Incoming Parameters: O for option that user chooses, f1 as in first fraction object which is passed by reference to use the memory efficiently, f2 as in second fraction object which is passed by reference to use the memory efficiently.

  Outgoing Parameters: f1 & f2 because whatever operation performed on those objects it going to affect the real objects in the main body as they are passed by reference.

- randFraction(): By this function system is creating a random fraction to perform operations on it, which would be only called if user chooses Yes or y to generate a fraction randomly or it will not call.

  Fraction Name: randFraction()

  Income Parameters: Object of Fraction by reference, which going to be generated and set the value of Numerator and Denominator. And it would does affect that object in main body also because of passing it by reference.

  Outgoing Parameters: Setting new Num & Den for an object generated randomly.

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Menu Demo:

***** Fraction Calculator *****

Operations:

0. Exit

1. +

2. -

3. *

4. /

5. isExact: ==

6. ==

7. <

8. >

9. <=

10. >=

11. !=

12. ++

13. --

You wanna select a random fraction? Y or N:

Test Cases: Pass / Fail

Case 1:

You wanna select a random fraction? Y or N: Y

Random Fraction: 42/68

Choose Option: 11

Case ++: 110/68

Reduced Fraction: 55/34

Expected:

Case ++: 110/68

Reduced Fraction: 55/34

Case 2:

You wanna select a random fraction? Y or N: N

First Fraction: 1/2

Choose Option: 1

Second Fraction: 1/2

Case ++: 4/4

Reduced Fraction: 1/1

Expected:

Case +: 4/4

Reduced Fraction: 1/1

Case 3:

You wanna select a random fraction? Y or N: ½

Error: xxxxx Infinite Loop

Case 4:

You wanna select a random fraction? Y or N: n

First Fraction: 11/22

Choose Operation: 6

Second Fraction: 22/44

Case ==: False

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Expected:

Case ==: False

F1	F2	Operator	Result	Expected	Final Result
42/68		++	110/68	110/68	Pass
½	½	+	4/4	4/4	Pass
Error	-	-	-	-	Error
1/2	1/2	<=	True	True	Pass
3/4	3/4	<	False	False	Pass
11/22	22/44	isExact	False	False	Pass
11/22	22/44	==	True	True	Pass