Lab 5: Classes Design and "Aggregation"/Containment

Frequently in the design of classes, a class will contain as one of its data members an instance of another class. By doing so the containing class may invoke methods from the other class to do part of its work. In this lab you will create a class MixedNumber to represent numbers which have both a whole number and a fractional part. **IE: 3 2/ 3, 7 2/5, 8 0/1, 0 10/25**

In our class design we must allow for situations where a fraction may not be present and where the whole number is zero. Below is the UML diagram for this class:

Mixed Number

- whole : int = 1
-fractionPart: Fraction = 0/1

+ MixedNumber(): default constructor
+MixedNumber(in whole:int, in fract: Fraction)
+MixedNumber(in fract: Fraction)
+setWhole(in num: int): void
+ getWhole( ): int
+setFraction (in newFract: Fraction): void
+getFraction(): Fraction
+toString(): String
+add (in B: MixedNumber): MixedNumber
+add(in B: Fraction): MixedNumber
+subtract(in B : MixedNumber): MixedNumber
+ subtract(in B: Fraction): Mixed Number
+multiply(in B: MixedNumber): mixedNumber
+multiply(in B: Fraction): MixedNumber
+divide(in B: MixedNumber): mixedNumber
+divide(in B: Fraction): MixedNumber
+ convertToImproperFraction(): Fraction

STATIC:: +convertToMixedNumber(in B: Fraction) : MixedNumber

RULE: The fraction part of a mixed number must always be a proper fraction .