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Assignment #01 Report

Design Decisions

I confess that I was a little in doubt about what was expected from this assignment so I assumed that it was expected to work with operations with power of 10. So the mantissa variable from each instance it the number that comes before the potencial and the exponent it is the number that exponents 10. Following this example:

5 * 10 ^ 3

5 is the mantissa and 3 is the exponent.

So basically following the Math rules for the basic operations for the potencial of 10 I developed all the classes required: add, sub, mul, div, toString and compareTo.

I basically decided to never work with the initialVal variable, every time that the constructor with just one parameter is called I store its value into the mantissa variable and I assume that in this case the exponent is 1, so never changes and I cant work with the same functions for both constructors.

The way I make the calculations for the add method is that if the exponent from both numbers are the same so we just return a new instance with mantissa equal to the sum of both mantissas and exponent equal to the exponent from the first instance. If the exponents are different so I decided to always give preference to the biggest exponent so I will adjust the other mantissa value in order to keep both instances in the same exponent level. After this I just return a new instance with the mantissa being the sum of both mantissas(after the mantissa from the lower exponent and the exponent itself being adjusted) and the biggest exponent.

For the sub method the idea is the same, the only difference is that instead returning an instance with the sum of the mantissas I return an instance with the subtraction of the mantissas. The returned exponent is the biggest too.

The multiplication is pretty easy since I don't have to check differences between the exponential, so I just return an instance with the multiplication from both mantissas and the sum of the exponents, as the Math rule demands.

The division is very similar to the multiplication, the difference is that instead of making a multiplication with the mantissas I make a division and instead of adding I subtract the exponents.

All the operation methods and the constructors also checks if the elements are between the allowed range(-2^31 and 2^31-1).

All my code was developed using Test-Driven Development technique so my tests are in the EnhancedRangeDoubleTest.java file, I test all the methods with different inputs. I also test numbers without the range to check if an exception is returned. All the tests are green.

My biggest difficult was related to understand what was expected from the problem, once I assumed that I had to make operations with the power of 10 everything was easier.