Design Patterns Labs

Polynomial Calculator

Group 933
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Description

Current project had the meaning to teach and familiarize student with Java programming language development tools and design patterns.

On building this project it was asked to follow the following requirements:

- design the UML of the application
- write a good description of the required classes with all the attributes and operations it must contain
- implement the project in Java
- comment your code in order to generate a comprehensive javadoc documentation
- test your code and provide data for testing and results for your tests
- write a document explaining everything (used ideas, implementation, ideas, libraries). (← this document)

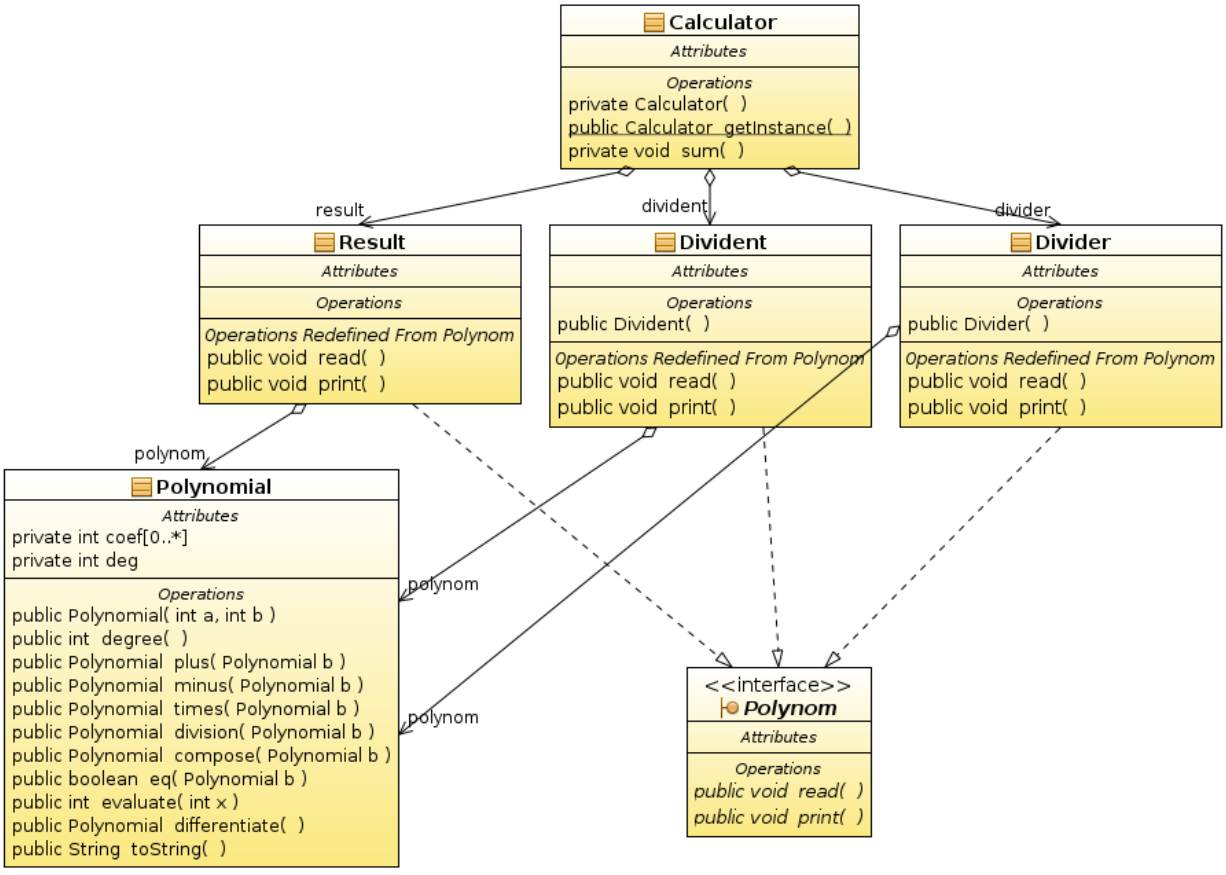
The project theme and features

The theme of the project was to implement a polynomial calculator able to calculate for two polynomials the following operations:

- polynomials summing
- polynomials decrease
- polynomials multiplication
- polynomials division
- one of the additional tasks:
  - polynomial derivative
  - polynomial integral
  - polynomial plot

The UML design

Below is the UML diagram of the project. You can find it inside the distribution package in the *docs/uml* directory.



Final result and testing

As testing data one can use:

`3x^4+5x^2`	– as for the first polynomial input
`2x^2+6x^19`	– as for the second polynomial input

the results should look like this:

`6x^19+3x^4+7x^2`	– as for summing
`-6x^19+3x^4+3x^2`	– as for decrease
`18x^23+30x^21+6x^6+10x^4`	– as for multiplication
`4x^19+1x^2+2`	– as for division, probably incorrect
`12x^3+10x`	– as for derivative for the first polynomial
`114x^18+4x`	– as for derivative for the second polynomial