Exercise 0

Object Oriented Programming

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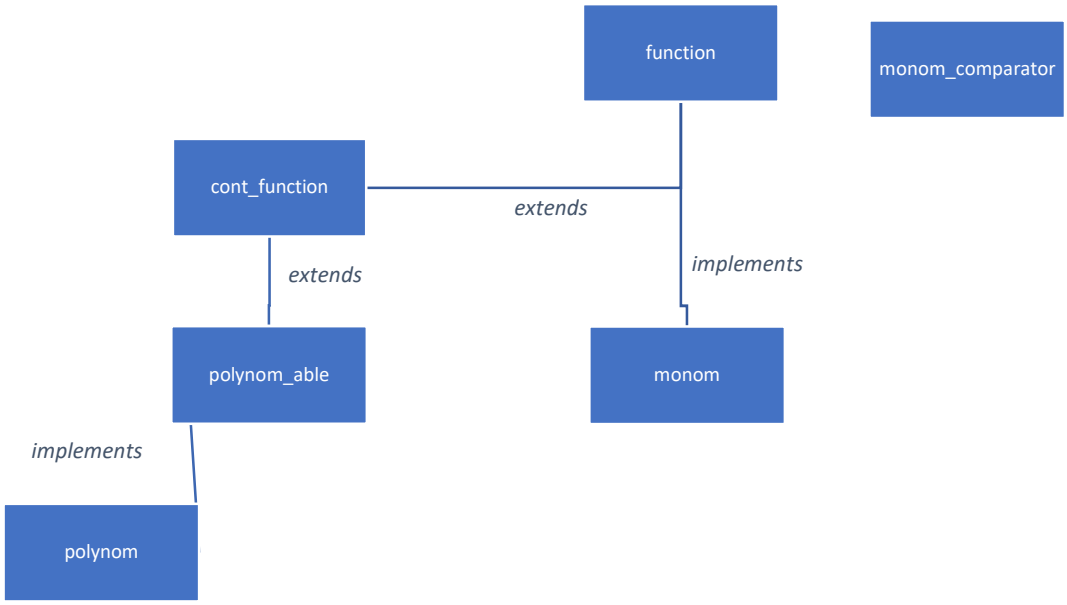
This project represents the uses of the mathematical uses of monoms and polynoms, as well as allowing to use simple arithmatics on them, along with some basic functions such as derivation, root and so on.

The project is realized in accordance to this inheritance tree:



Program explanation:

Monom class - enables to create a monomial object. Monom is described as "ax^b"

This class supports the following functions:

1) Initiator : either 0x^0 or any given monom.
2) Add : adding function between two monoms, sum saved in operand.
3) Multiply : multiply function between two monoms, returns multiply result.
4) Derivative: derivate this monom. Returns result as new monom.
5) F(x) : returns value of x for f(x) = ax^b

Polynom class – a Polynom is collection of monoms. This class implements polynom_able class, this object described as "a_1x^b_1 + …. + a_nx^b_n", this is achieved through arrayList<monom>.

This class supports the following functions:

1) Initiator : either new empty polynom (which has empty monom in it), or with string method (string must be in the shape of "a_1x^b_1 + …. + a_nx^b_n").
2) Add : either single monom or monom's collection (as polynom), sum saved in operand
3) Substract: just as adding polynom, just as negative operation.
4) Multiply : multiply 2 polynoms. Multiply result saved in operand.
5) Equals : checks if 2 polynoms are equal to another.
6) isZerp : checks if polynom is the 'zero polynom' (0x^0).
7) Root : returns root for polynom between two bounds on X-line. Those values **must follow f(x0)*f(x1)<=0.** This function works as intended ONLY if the rule Is met.
8) Copy : makes copy of polynom, returns it as new polynom.
9) Derivative : derivates polynom by following the basic rules of derivation, creates new polynom as result.
10) Area : computes area **above X-line** between given bounds for polynom.
11) F(x) : returns f(x) value for x.
12) toString : returns polynom as String

Deployment:

This project was created in Java language using Ecplise software, therefore is advised to run on the same deployment.