CPTR-301 HW#7

Create a class called polynomial that will create an object for either of the two orders shown below for either integer parameters or double parameters. Data passed to the constructor will be values for a, b, or c depending on the equation order. Create overloaded methods called poly that will compute polynomials for the respective types of objects. Data passed to the method will be a value for x.

$y = ax + b$ (first order equation)
$y = ax^2 + bx + c$ (second order equation)

To be clear, we wish to create one class that uses overloaded constructors to create one of 4 different object types: first order or second order with integer coefficients; first order or second order with type double coefficients. A polynomial with integer coefficients will return integer results and a polynomial with type double coefficients will return results of type double.

Within this class there will be two methods (such as poly_i and poly_r for integer and real), one for calculating a polynomial if the value of x is an integer and the second for x being of type double (recall that the return type must match that specified in the definition of the method). Poly_i will return an integer and poly_r a double compatible with the type of object that was created. Because one of two polynomial orders is possible, each method will need to determine if the object is a first order object or a second order object which implies that when an object is created there needs to be variable that is set within a constructor to specify the order for that object.

Write a main class (program) that will call each method and demonstrate operation. The main program should display the a, b, or c coefficients used to create an object, the value of x passed to the method which does the calculation, and the result that comes back from the method. There are 4 permutations of objects to create and to display the results from:

integer first order
double first-order
integer second order
double second order

Copy your .java file to D2L