On the first two lines of ***pol.txt*** you will find 2 lists of **m/n** numbers representing the coefficients two an **m/n** degree polynomials. Reading those numbers from the file, construct the two polynomials from those coefficients.

On next **k** lines of ***pol.txt*** you will have ***k*** commands, each corresponding to a specific function which is to be applied on one or both polynomials. Read the lines and execute the commands sequentially.

Structure your code such that you have ***at least*** a *Polynomial* class, a *Functions* class and InputOutput class. All the results should be written in *output.txt*

Example of input:

*pol.txt*

|  |
| --- |
| 5 -4 2 0 -2 3 0 3 -17  4 -2 0 1  ADD  SUBTRACT  MULTIPLY  MUL\_SCAL 4  EVAL 5  EVAL 2  EVAL 9 |

The first polynomial is equivalent to: *5x^8 – 4x^7 + 2x^6 – 2x^4 + 2x^3 + 3x – 17*

The second polynomial is equivalent to: *4x^3 – 2x^2 + 1*

ADD – Add the two polynomials together and write the resulting polynomial   
SUBTRACT – Subtract the two polynomials and write the resulting polynomial  
MULTIPLY – Multiply the two polynomials and write the resulting polynomial  
MUL\_SCAL ‘n’ – Multiply the two polynomials with a scalar value and write the resulting polynomials  
EVAL ‘n’ – Evaluate both polynomials on ‘n’ and write the results in the output file

\*polynomials should be written in the *mathematical* form (e.g. *5x^8 – 4x^7*… )

Twist:   
Implement division of polynomials.

Twist2:  
Implement root approximation using one of the following techniques: *Bisection,* *Linear Interpolation, Newton’s method, Birge-Vietta* (or whichever method you find fit)

Twist3:  
Read the two polynomials in their mathematical form. (hint: use stacks)