PSOFT hw3 problem 2

Brian Wang-Chen

February 2024

- We have chosen the array representation of a polynomial: RatNum[] coeffs, where coeffs[i] stores the coefficient of the term of exponent i. An alternative data representation is the list-of-terms representation: List¡Term¿ terms, where each Term object stores the term's RatNum coefficient and integer exponent. The beauty of the ADT methodology is that we can switch from one representation to the other without affecting the clients of our RatPoly. Briefly list the advantages and disadvantages of the array representation versus the list-of-terms representation.

  The advantages of the array representation is that compared to the array List, the array is more simple and straightforward for arithmetic. However the array is not very flexible in terms of when the array requires a resize when the degree of the polynomial changes. This is the advantages of a array list because you would not need to resize the array list when the degree changes, instead you can just add elements into the array list and change the degrees of each individual polynomial. However Array lists is less efficient in terms of accessing terms by exponent

- Where did you include calls to checkRep() in RatPoly (at the beginning of methods, the end of methods, the beginning of constructors, the end of constructors, some combination)? Why?

  I only included checkRep() calls at the ends of the constructors because RatPoly has no mutator methods so the instance variables are final once set. Our arithmetic functions always return a new RatPoly so it does not modify the original RatPoly.