
Python For Fine Programmers

Deadline: June 4, 2009

Problem 1 (6 Points)

Write a python program which implements a Binary Search Tree. Implement the methods for insertion, deletion, searching and traversal.

The binary tree class from previous lecture could be used as the base class.

Problem 2 (6 Points)

Write a python program to evaluate a mathematical expression (which uses +, -, * and /). (Hint: Infix to Postfix and use List as a stack)

Bonus: Implement the ability to have parenthesis.

Problem 3 (4 Points)

Implement any three of the set operations for any collective (list, sets) using lambda forms/functions

Problem 4 (6 Points)

Implement all the three order statistics algorithms (for finding the k^{th} largest element in an array/list with n elements) discussed in the lecture.

The three algorithms:

- Sorting
- Using a binary search tree (from problem 1)
- Using a pivot element

Problem 5 (6 Points)

Implement three different methods to reverse a given string. The same functions can be used for reversing a list as well.

Use the string methods to reverse a sentence in English, without reversing the words in it.

e.g.: "wow, this is wonderful" becomes "wonderful is this wow,"