ESO207: Data Structures and Algorithms

Programming Assignment *3* *Due: 24 October 23:59 hrs*

Problem 1. Binary Search Tree. In this problem you are asked to implement binary search trees whose keys are alphanumeric words only ordered as per the classical dictionary (also called lexicographic) ordering. The input will consist of any legal sequence of the following commands, separated by whitespaces.

- `+<word>` means insert the word `<word>` into the BST. Duplicates should be maintained.
- `-<word>` means delete `<word>` from the BST if `<word>` is already present, and ignore the command if the `<word>` is not present.
- `><word>` means print the successor of `<word>` if `<word>` is already present in the BST, otherwise, print the word in the BST that is the smallest in the dictionary order among all words in the BST that are larger than `<word>`. Print the string ERROR if `<word>` is the last word of the BST or is larger than any other word in the BST.
- `?<word>` means print `<word>` if it is in the BST and otherwise print the string ERROR.
- `.` Print all the words in the BST in sorted and non-decreasing order.

The last command of the input will be `.`

Example Input: `+Today +is +a +very +cold +day -hot -day >yesterday >bay ?very .`

Output: `ERROR day very a cold hot is today very`