Assignment # 4

Binary Search Trees

Submission Dead Line: Monday 23/10/2015

LATE SUBMISSION WILL NOT BE ACCEPTED

Question:

Write a C++ class BST (binary search tree) with the following functions:

1. **Constructor, Destructor**
2. **Is-Empty**
3. **Search**
4. **Insert**
5. **Delete**
6. **Print,** in ascending and descending order, by using both recursive and iterative algorithms and level order by using iterative algorithm.The time complexity of search, insert and delete should be O (log N), and that of destructor and print should be O (N).
7. **Copy constructor**
8. **Overloaded Assignment Operator**
   These functions should make a copy of the whole tree (deep copy). Time complexity should be O (N).
9. **Equality operator (==)** that compares two BST's.
   It returns true only when both trees have a same structure and same data values. Complexity should be O (N).
10. **CountNodes**
    Write a recursive and non-recursive function to count the total nodes in the tree.
11. **MirrorBST**
    Changes the tree to a mirror image of itself. So all right sub trees get exchanged by left sub trees for all the nodes (not just the root).
12. **FindDepth**
    Determines the depth of BST. You can assume that an empty tree has depth zero and a tree with only one node has depth one.

HAPPY PROGRAMMING!