Assignment 3

CONCLUSION ON THE HEIGHT, IDEAL SCENARIO AND COMPLEXITY OF THE BST

The height of the tree depends on the element inserted in the BST. If the elements are inserted such that it forms a really skewed BST, Then height will be more. A BST which is balanced, which means

1. left and right subtree of root node have the same length.
2. Every node have left and right subtrees of same height.

Will make the height lesser than the skewed BST. A balanced BST is therefore an ideal scenario for the height of the tree to be as less as possible.

As we are sorting our array in knuth algorithm, if it happens to be sorted then it will become balanced BST and then the worst case complexity for height of the tree becomes O(log(n)), otherwise in an unsorted array, which makes an unbalanced binary search tree, the worst case complexity for height of the tree gets O(n).

The worst case time complexity of access, search and insertion in a BST is O(n), while the average time complexity of access, search and insertion in a BST is O(log(n)).