Task-4

**Step 1) In your own words, describe what a Binary Search Tree (BST) is.**

Binary Search Tree is a data structure that represents hierarchical structure. Binary Tree have a root node on top, and children nodes. Every node can be a subtree. The difference between Binary Tree and Binary Search Tree is that the value of the left node in BST is always less than the value of its parent’s node and the value of the right node in BST is always bigger than the value of its parent’s node. Because of that, it is very easy to search, insert, delete value in the data structure.

**In addition, describe two important properties of a BST: depth and height. How are they different?**

The depth in BST is the distance, that is, the number of edges from the root node to the particular node. Height in BST is the literally the height of the tree. It refers to the longest path from the root node to a leaf node(which is a node without any children).

**Step 2) In your own words, describe how an algorithm to find an item in a Binary Search Tree works.**

When we are searching in a Binary Search Tree, the algorithm starts looking from the root node. Then if the value we are looking for is less than the node we are on, we go to its left node and so on. But if it’s bigger than the node, then we go to its right node and continue. We repeat this process until we find the item or until we reach a leaf node where the item is not found.

**Step 3) In your own words, describe what a balanced BST is.**

A balanced BST is a BST where the heights of the left and right subtrees of any node differ by at most one. The tree is almost symmetrically balanced around its root node.

**Step 8) With the newly balanced BST, how many steps does it take at most to find an existing item in the**

**search tree?**