Karim Itani
ECE 368
DUE Mar - 3rd

PROGRAMMING ASSIGNMENT 3 - REPORT

Time complexity to create tree from input file:
Each input must be pushed onto the stack and popped from the stack. If the total set of inputs is n, there will be ((n+1)/2) boxes and ((n-1)/2) cutlines.

If each of these need to be pushed and popped then that gives us a total of 2 * ((n+1)/2 + (n-1)/2), operations before we can create the tree. This is equal to 2n operations. This is directly proportional to n, hence the **time complexity is O[n]**.

Time complexity to compute X and Y coordinates:
The 'calcXY' function uses postorder traversal to set the X and Y values, so it visits each node exactly once. Within each of these visits/ calls to each node, the left and right node of the current node are also accessed. This adds up to 2*n additional traversals, which leaves us with a total of 3*n traversals. This is, however, proportional to n. Hence, the overall **time complexity of this function is O[n].**