



The theoretical time complexity discussed in the lecture for the insertion of an element into a BST was $O(h)$ where h is the height of the binary search tree. The above graph shows the experimental results. The graph above roughly shows a time complexity of $O(h)$. This is because the user can observe, as elements are added to the BST at the same height the time stays consistent, however, as the tree height increases, so does the time for insertion. Take for example the height at 11, we can see a few elements added were within the 0-1000ns range, however as more elements are added at the same height, the time jumps past 1000ns and past 2000ns. The same process takes place for addition at height of 7 and onwards as we see an increase in time to add the element as height increases. It is however important to note that the graph contains outliers due to various factors such as CPU processing and code execution times, as such, it does not perfectly reflect $O(h)$ but rather roughly shows $O(h)$ when discounting the outliers.