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November 12, 2018

# Assignment5 Binary Search Tree

Data:

The data result is in the attachment. N is the number of elements , I chose about 100 number of N from 100 to 10000. X is the running times of insertion and deletion, I selected 3 different X values in the task. The Average and Max in the chart means Average Depth and Max Depth for different N and X. And I used 2 * N to be the range of the keys.

Inference:
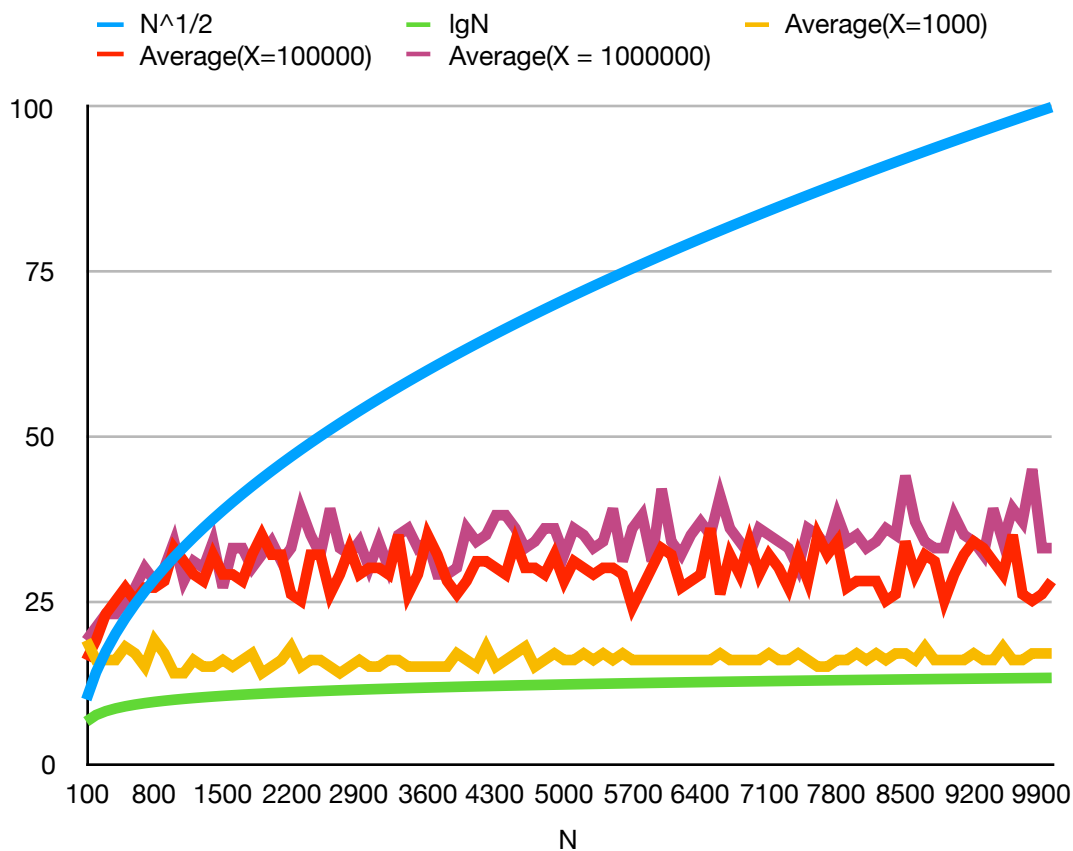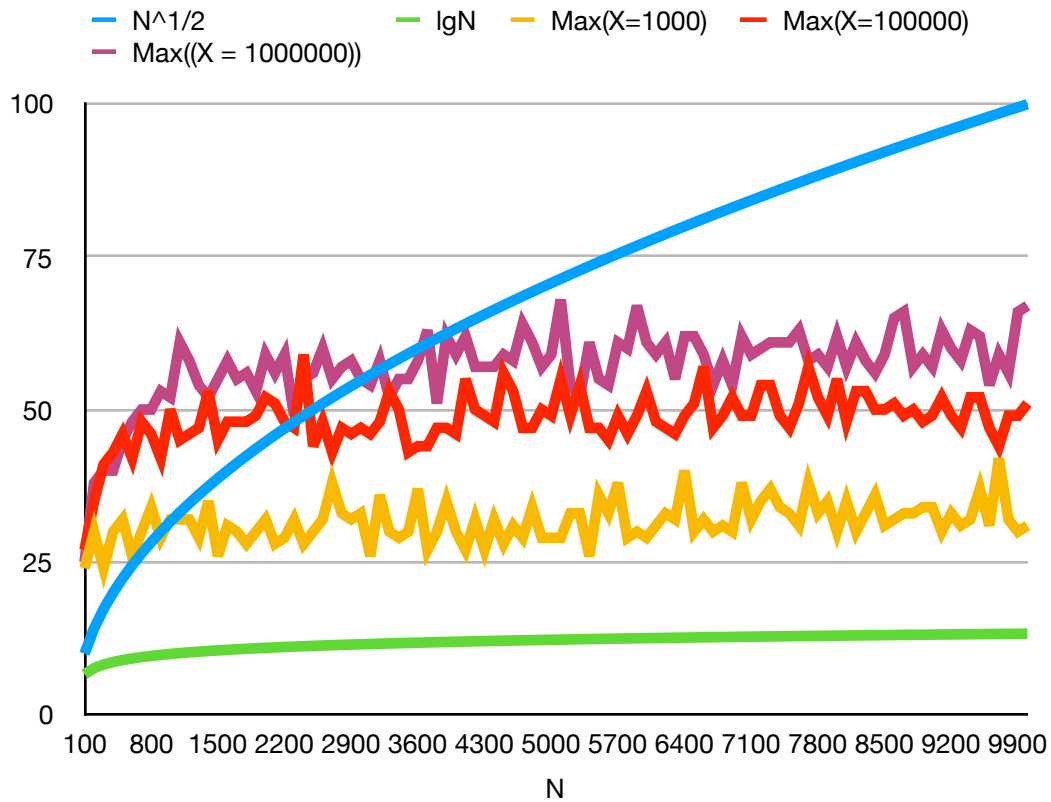
The pictures above are Average Depth and Max Depth changed following N. As you can see, most of the values of Depth are between lg N and $N^{1/2}$, and as the
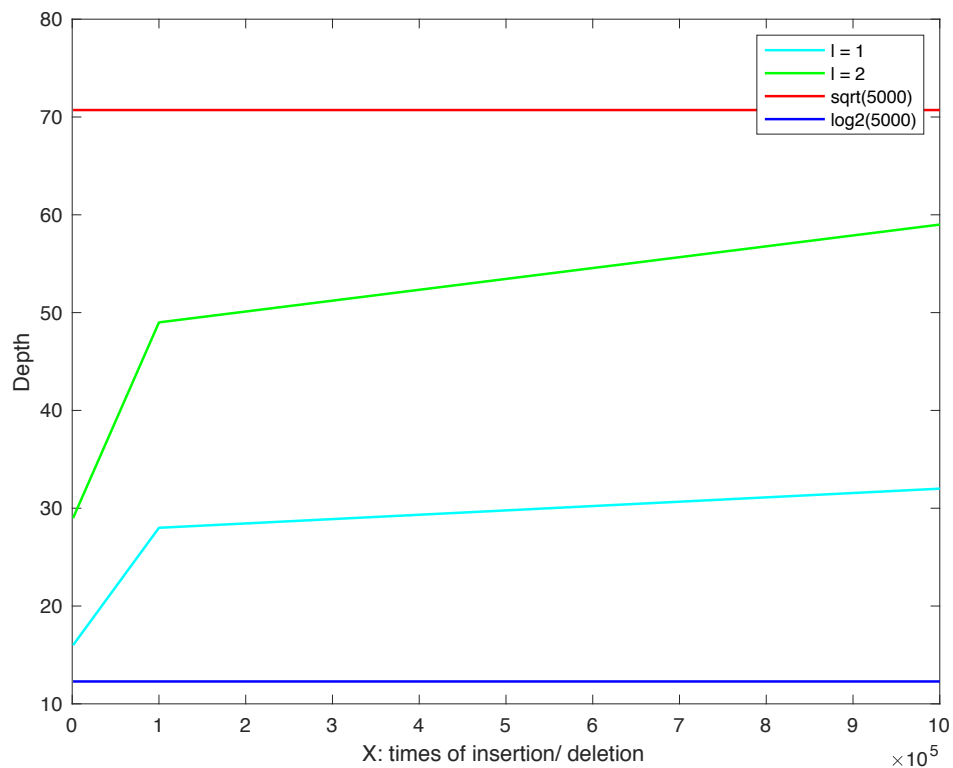
values of X become larger, the datas are closer to the $N^{1/2}$.

The third picture is more decreeable to get this conclusion, this is about how the depths changed following X when N is constant, and the depths of the tree all between lg N and $N^{1/2}$.

So we can infer that when X become very large, the depth of the tree will start out at lg N and degrade to $N^{1/2}$ followed the increase of X.