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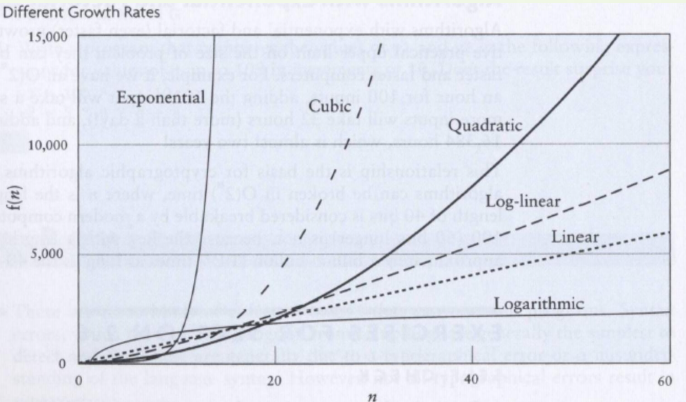
Title: Analysis Report – AC CA3

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Inserting a new node containing city information

*Can this be implemented with reasonable efficiency using a BST?*

This operation can be performed in O(logN) time. From timing the processes in the main class I could see that this closely matched the growth rate of the wall clock. Below is a diagram taken from computational theory that shows this on a chart.



Logarithmic is the way this function is implemented. The times recorded below effectively show that this can be implemented efficiently with a BST.



Traversing the tree in order by coordinates

*Can this be implemented with reasonable efficiency using a BST?*

This function can be implemented in linear time O(n). This grows a little faster than adding a new node to the database but it is still efficient. Each node is visited once in the tree.



Searching for a record in the database

*Can this be implemented with reasonable efficiency using a BST?*

This is another function which can be completed in O(logN) time which is efficient. As we can see from the image below not much CPU time is needed to find a record.

