Search Engine: Hash Tables vs BSTs

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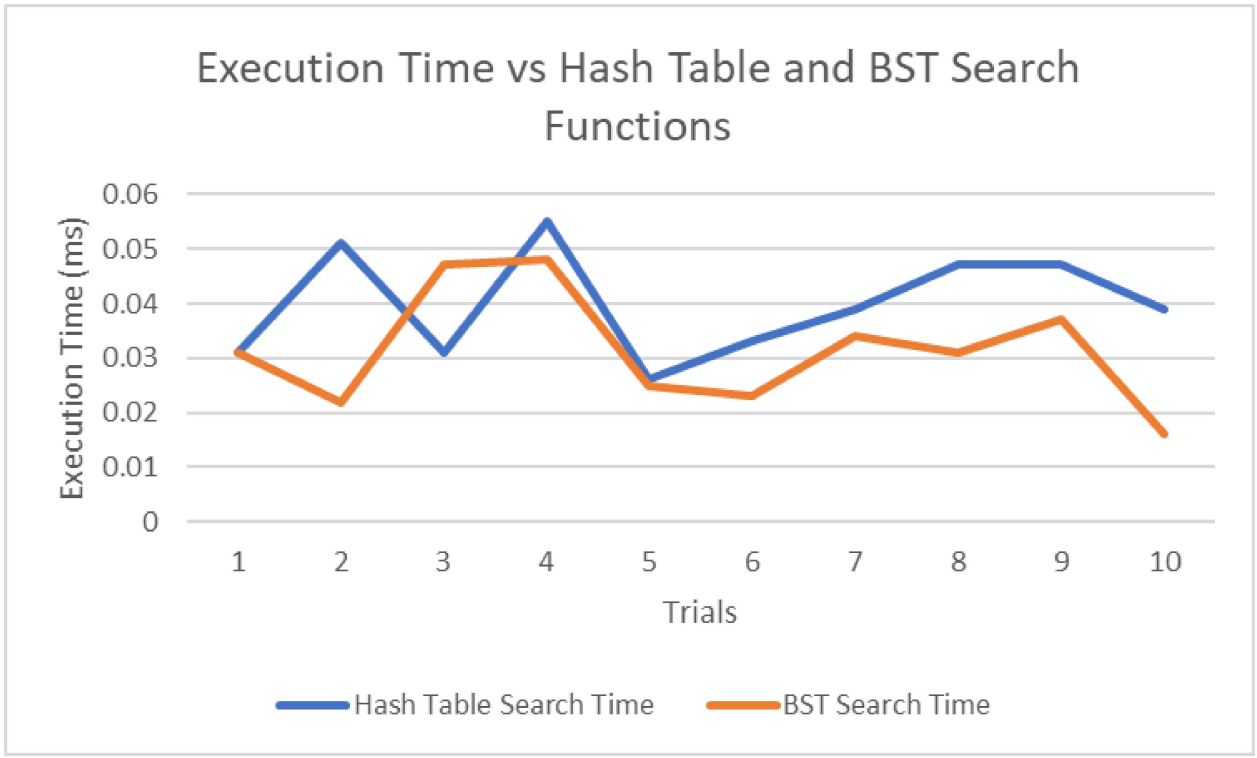
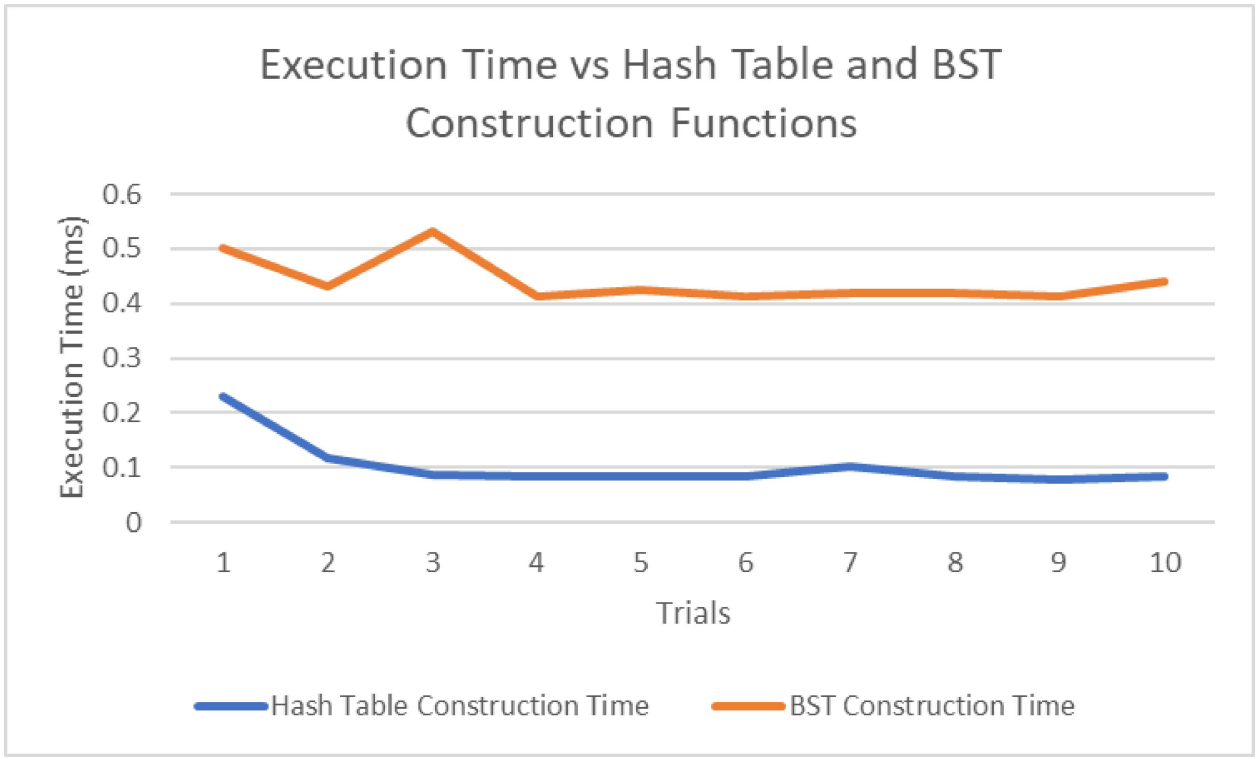
The graphs below demonstrate how long it takes to search and construct a binary search tree and a hash table. The sample data provided contained 31,984 characters, 5704 words, and 699 lines spread across 14 text files.

While the binary search tree typically has a faster execution time when it comes to its search function than the hash table. The averaged difference between each algorithm's search functions is fairly small (0.0085 ms), especially when compared to the averaged difference demonstrated in execution time between each algorithm's construction functions (0.3375 ms). Given the slight averaged difference in execution time for their search functions and stark averaged difference in execution time for their construction functions, hash tables appear to be a better and more efficient choice for a search engine than a binary search tree.


Execution Time vs Hash Table and BST Search Functions
Execution Time (ms)
0.06
0.05
0.04
0.03
0.02
0.01
0
1
2
3
4
5
6
7
8
9
10
Trials
Hash Table Search Time
BST Search Time


Execution Time vs Hash Table and BST Construction Functions
Execution Time (ms)
0.6
0.5
0.4
0.3
0.2
0.1
0
1
2
3
4
5
6
7
8
9
10
Trials
Hash Table Construction Time
BST Construction Time