

CO322 – LAB04

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E/16/172

1) Memory space usage

Word File	Memory space usage in Trie (bytes)	Memory space usage in Radix Trie (bytes)
wordlist1000.txt	216000	123872
wordlist10000.txt	2160216	1809024
wordlist70000.txt	15099264	7609728

If the Trie is dense and all internal nodes contain 1 character, both implementations doesn't make a big difference. Because in this scenario, both trials will look the same. But if the sort is less dense and there are more letters on a given Radix sort node the implementation will save much more memory space.

Radix sorts saves almost twice the amount of memory required by regular sorts. So if the trie is small and not dense The Radix trie is memory efficient.

2) Time taken to store the dictionary

Word File	Time taken to store the dictionary in Trie (s)	Time taken to store the dictionary in Radix Trie (s)
wordlist1000.txt	0.003650	0.003446
wordlist10000.txt	0.027012	0.021880
wordlist70000.txt	0.073105	0.062791

Considering the time taken to store the dictionary, we can see that Radix sorts less store the time that the regular trie So the insertion is also a little faster in radix trie but it is not much different.

3) Time taken to print a list of suggestions for chosen word prefixes

i. chosen word prefix - 'accept'

Word File	Time taken to print a list Time taken to print a list of of suggestions for in Trie suggestions for Radix Trie (s)	Time taken to print a list of suggestions for Radix Trie(s)
wordlist1000.txt	0.000023	0.000048
wordlist10000.txt	0.000068	0.000100
wordlist70000.txt	0.000114	0.000123

ii. chosen word prefix - 'I'

Word File	Time taken to print a list Time taken to print a list of of suggestions for in Trie suggestions for Radix Trie (s)	Time taken to print a list of suggestions for Radix Trie(s)
wordlist1000.txt	0.000380	0.000344
wordlist10000.txt	0.012661	0.004098
wordlist70000.txt	0.004371	0.008292

iii. chosen word prefix - 'pa'

Word File	Time taken to print a list Time taken to print a list of of suggestions for in Trie suggestions for Radix Trie (s)	Time taken to print a list of suggestions for Radix Trie(s)
wordlist1000.txt	0.000241	0.000170
wordlist10000.txt	0.001672	0.000342
wordlist70000.txt	0.007868	0.006547

Given these 3 scenarios, Time needed to print a list of suggestions for the chosen word prefixes is a little less in the regular trie. But this difference is not considerable. So that we can say that the time taken to print a list of suggestions for the chosen word prefixes is almost the same in two methods.