Experimental Evaluation of Succinct Ternary Tree

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Abstract : Tree data structures, such as binary or in general k-ary trees, are essential in computer science. The applications of these data structures can range from data search and retrieval to sorting and ranking algorithms. Naive implementations of these data structures can consume prohibitively large volumes of random access memory limiting their applicability in certain solutions. Thus, in these cases, more advanced representation of these data structures is essential. In this paper we present the design of the compact version of ternary tree data structure and demonstrate the results for the experimental evaluation using static dictionary problem. We compare these results with the results for binary and regular ternary trees. The conducted evaluation study shows that our design, in the best case, consumes up to 12 times less memory (for the dictionary used in our experimental evaluation) than a regular ternary tree and in certain configuration shows performance comparable to regular ternary trees. We have evaluated the performance of the algorithms using both 32 and 64 bit operating systems.

Keywords : algorithms,data structures,succinct ternary tree,per- formance evaluation
Conference Title : ICCMMA 2021 : International Conference on Computational Methods, Mathematics and Algorithms
Conference Location : Kuala Lumpur, Malaysia
Conference Dates : December 06-07, 2021