
Generating Spanning Tree Sequences of a Fan Graph in Lexicographic Order and Ranking/Unranking Algorithms

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Abstract

Cameron et al. recently presented an algorithm for generating all spanning trees of a fan graph that fulfill the so-called pivot Gray code property in $O(1)$ -amortized time. They also presented algorithms for ranking and unranking a spanning tree in the listing in $O(n)$ time using $O(n)$ space. This paper first observes that all spanning trees of a fan graph can be naturally represented by integer sequences with regular properties. We propose a simple algorithm for generating spanning-tree sequences in lexicographic order in $O(1)$ -amortized time according to these properties. Additionally, based on the lexicographic order, we develop ranking and unranking algorithms in $O(n)$ -time using $n+O(1)$ space.

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