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RANDOM PERMUTATIONS, RANDOM SUDOKU MATRICES AND RANDOMIZED ALGORITHMS

KRASIMIR YORDZHEV

Faculty of Mathematics and Natural Sciences
South-West University, Blagoevgrad, Bulgaria

Abstract

Some randomized algorithms, used to obtain a random $n^2 \times n^2$ Sudoku matrix, where n is a natural number, is reviewed in this study. Below is described the set Π_n of all $(2n) \times n$ matrices, consisting of elements of the set $\mathbb{Z}_n = \{1, 2, \ldots, n\}$, such that every row is a permutation. It is proved that such matrices would be particularly useful in developing efficient algorithms in generating Sudoku matrices. An algorithm to obtain random Π_n matrices is presented in this paper. The algorithms are evaluated according to two criteria - probability evaluation, and time evaluation. This type of criteria is interesting from both theoretical and practical point of view because they are particularly useful in the analysis of computer programs.

Key Words : *Randomized algorithms, Random objects, Permutation, Binary matrix, Algorithm evaluation, Sudoku matrix.*

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