Sorting Permutations with Finite-Depth Stacks

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Sorting organizes information for optimal usage and is desirable in many different fields. Noted computer scientist Donald Knuth first considered using stacks of infinite depth as a powerful means to sort data. We extend this work to consider stack-sortable permutations using stacks of specified finite depths. We characterize patterns that sortable permutations must avoid and derive a handy enumeration formula. Further generalizations include the introduction of multiple stacks and the analysis of the resulting counting sequences.

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