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Fibonacci-like Sequences for Variants of the Tower of Hanoi, with Corresponding Graphs and Gray Codes,

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Abstract

We modify the rules of the classic Tower of Hanoi puzzle in a way to get the Fibonacci sequence involved in the optimal algorithm of resolution and show some nice properties of such a variant. In particular, we deduce from this *Tower of Hanoi-Fibonacci* a Gray-like code on the set of binary words without the factor 11, which has some properties interesting in its own right, and from which an iterative algorithm for the Tower of Hanoi-Fibonacci is obtained. Such an algorithm involves the Fibonacci substitution. Eventually, we briefly extend the study to some natural generalizations.